

Industry-specific

QAD SOLUTIONS

Manufacturing Applications

User Guide
The Planner



Version 3.43
May 2003

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THE PLANNER FOR MFG/PRO

Real-time, Interactive, Resource Scheduling Software

Installation details and system requirements are contained in Install.pdf. The latest changes to Planner at release of any new version, not included in this manual, are described in Readme.txt. Both document files can be read directly from the distribution CD's root directory.

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INTRODUCTION

What Is The Planner?

The Planner is suitable for any organisation that can plan its production or activities on a planning board - it is particularly suited to discrete manufacturing or Jobbing industries, but is also applicable in batch processing and in some cases, process manufacturing. In essence it is a planning board on a computer, with all the visual features and impacts of a board but with the speed, utility and “smarts” that a computer can add.

The philosophy behind **The Planner** is that no machine can ever plan production as well as an industry experienced person, but if the right tools are given to assist him, then the production planner or scheduling person can be more efficient and thorough.

Throughout this manual the use of **The Planner** refers to the Scheduling Tool used by the scheduling person or persons in the organisation. The reporting or viewing system able to be used by many people to check on schedule information is referred to as **MultiUser**. The programs used to receive work order information from and send back schedule information to **MFG/PRO** are referred to as the **Interfaces**.

Features that The Planner offers include:

- ♦ Interfaces to **MFG/PRO** to allow very easy movement of new and altered Work Order/Route information to and from **MFG/PRO**,
- ♦ Interfaces are user configurable to ensure that relevant **MFG/PRO** information is handy when scheduling,
- ♦ Virtually unlimited numbers of Resources (machines, work centers or people), Work Orders, and Operations,
- ♦ Viewing of the board by Machine, Work Center, Department, Work Order, Customer, Item Number, and many more possibilities.
- ♦ Work Order status can be instantly comprehended by reference to colours and symbols used. An excellent overall feel can be obtained for the

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organization's loading as well as being able to see in detail each Resource's loading,

- ♦ Onscreen access to Work Order information including estimated times for each Operation and editing of the planned times with consequent revision of the board,
- ♦ "What-if" scenarios can be tested by shifting Work Orders in time or between Machines and consequent effects of any alteration can be seen before final decisions about schedules are made,
- ♦ The time grid scale is user selectable, with rapid scrolling into the future and back to check on loading days, weeks, or months out,
- ♦ Machine schedules reports are available, as are several other standard reports for management and production personnel, including Resource capacity and late Work Order reports.
- ♦ By testing and verifying various overtime scenarios, allowing earlier feedback to crews and management about overtime requirements.
- ♦ For production or planning meetings held daily in the organisation, ***The Planner*** offers instant testing of planning alternatives as well as sensible reports.
- ♦ Multi-User option to allow the dissemination of information throughout the organisation, in "read-only mode" if required.
- ♦ The most noticeable feature of ***The Planner*** is its speed and its easy comprehension by a wide range of staff. It is not a mysterious magic box that needs an expert to interpret it, but the information in it and the concepts that drive it are easily accessible to all.

In general terms, ***The Planner*** is used to allocate Resource time to activities. Activities consist of either Work Orders or blocked out Downtime (the term for time determined as non-productive). All non-allocated Resource/Machine time is considered available.

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The Terminology Used In Defining Activities

- each **Work Order** consists of one or more **Stages** (with **MFG/PRO** work orders have a maximum of 1 stage/workorder)
- each **Stage** consists of one or more **Operations** (also known as routes)
- each **Operation** is assigned a block of non-overlapping **Resource** time (normally)
- **Downtime** is any period(s) of Resource(s) time that is not available for production and that is not in any way associated with a **Stage** or **Work Order**.

Who Should Use The Planner?

The Planner is suitable in all or any of the following situations:

- Any site that requires excellent customer service, as **The Planner** allows the most complete and up-to-date answer to be given to the customer,
- Any site that has a person spending much of their time actually planning, or preparing schedules,
- Any site that has a plant capacity problem that is affecting delivery performance,
- Any site that knows it can load its Resources more effectively and efficiently, but does not have the time or the experienced staff to attend to the problem.

Prerequisite Knowledge

Planning Knowledge

It is assumed throughout this manual that the person using the system needs no instruction in the Planning Function, as it is intended to be used by those already in this occupation. There are some comments on certain topics in this regard where it is felt these are warranted, or necessary for the topic being described, however.

Computer Knowledge

It is also assumed throughout this manual that the person using the system has a good understanding of using applications in the environment being used, i.e. Windows 98/NT4/W2K/XP. In addition to The Planner, knowledge of how to use Window Explorer and Crystal Reports is likely to be required. For definitions of the few terms used, refer to the glossary in the Appendices.

Windows & Layout

There are a number of windows, but the four main windows in **The Planner** are:

Main Planner Window

This is the window that opens when you first start **The Planner**. Within this window all other planner windows are arranged. This window also provides access to a comprehensive menu system, and a large number of shortcut buttons.

Menus

The menus across the top of this window provide for most scheduling, editing, interfacing and utility functions. They may be accessed using the mouse, or with [Alt] key combinations as is standard for windows functions, e.g. [Alt]+[P] to open the Plan menu.

Buttons

A large number of buttons are provide for

- altering how other windows look, e.g. is downtime displayed or not,
- editing information
- moving operations or work orders
- undoing/redoin moves
- reorganizing other windows within the main window

Lower Bar

On the right hand end is the current time. If this is incorrect then it must be reset in Control Panel, using Date/Time. If correct time is not kept by your computer, you should have it repaired.

It also displays the current database, or “Plan” name. Unlimited copies (saved versions) of the database may be stored (subject to disk space availability). These may be loaded into the current directory or switched to at any time and run from their own directory.

Resource Board Window

This is the window used the majority of the time within **The Planner**. In effect it represents a picture of the entire planning board the size of which is limited only by available memory. The key elements on the Resource Board Window are:

Initially this has a grey background representing an empty planning board. On it are the black vertical time bars with date and time headings. These headings change as scrolling occurs forward and back in time, and also as the time scale is altered. Once work centers and machines are created the board has bands of colour representing periods of time.

The resource board window holds the vertical yellow bar which represents where “now” (current time and date) is on the board, hence its name, the Now Bar.

The resource board window displays the yellow triangular planning Pointer to show where the operator is positioned in the screen. The position of this is critical because many actions are initiated from the position of the Pointer. In addition, whatever Operation the planning Pointer is pointing at has some additional information revealed in the Data Window, which can be displayed on another part of the main Planner window (see below).

The resource board window displays the list of Resource/Machine names on the left.

Most importantly the resource board window holds the actual planned work in the form of rectangles or blocks of variable amounts of committed time on each Resource/ Machine.

Data Window

This window contains information about the Work Order, Stage, and Operation the pointer is currently pointing at on any of the other windows. There are multiple "cards" which may be viewed by pressing the relevant Data Window Tab, with options provided for views similar to Work Order Maintenance and Routing maintenance in **MFG/PRO**. The user may modify or design extra cards as required, with whatever fields are considered appropriate.

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Note that the names displayed in the Data Window are those that come as standard with The Planner. These are customizable (see Customization Section).

Resource View Window

This window is a reporting screen on which information about the Work Orders on one particular Resource/Machine is displayed. All move buttons are available for use from it. On higher video resolution systems, this window may be placed besides the Resource Board window. Often it is made available from a tab, and shares the Resource Board's display space. It is generally displayed with the data window underneath it:

It holds all information about the Operations on that Resource. Their order on this window matches their planned order on this Resource in the Resource Board window. Also displayed is the Resource/Machine that each Operation came from, and the next Resource/Machine used in processing each Operation.

Loading The System

A key requirement in running any planning system is to be able to easily load Work Orders into the system and to easily take them out once complete. **The Planner** has a number of options in this area.

Loading the Board

This can be achieved in one of three ways:

1. **The Planner** can import and export between itself and **MFG/PRO** (which has all the necessary work order and routing information required to schedule by) using the Interfaces' part of The Planner, which can be tailored to suit scheduling and reporting requirements. The Information transferred with these Interfaces can be modified, but should be carefully considered with your implementation consultant before starting. The section of this manual entitled 'Interfaces' details the necessary considerations.

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2. Work Orders can be directly keyed into ***The Planner***. There are a number of edit routines that allow the construction of Work Orders, Stages and Operations and placement of these against any number of Resources/ Machines. The mechanics of these options are explained in Planning Section. When Interfaced with ***MFG/PRO*** this would not normally be used.
3. Work Orders for which quick answers are required on availability of capacity can have 'Work Order templates' constructed in the "Library", and copied to the live scheduling database to give the answers without having to yet enter the Work order in MFG/PRO. Once the answer is obtained the 'dummy job' is deleted from The Planner, just leaving the template in the library for future use.
4. In all cases Work Orders, with their Operations, are first loaded into a holding area, the Bin, where they can be further manipulated, before actual placement on the planning board.

Unloading the Board

This is achieved in one of two ways:

1. Operations and their Work Orders can be automatically deleted from The Planner if this is set up in the interfaces. As operations and Work Orders are closed in MFG/PRO, transactions are automatically sent to Planner to remove them.
2. When interfaced with MFG/PRO care should be taken when deleting work orders from The Planner. If any change is made to the W/O in MFG/PRO, a change transaction will be sent to Planner, and if the work order does not exist, applying of the change will fail!
3. When not using the automatic deletion option of interfaces, For Work Orders that are completed, delete the Work Order, Stage or Operation from the board using function keys or a menu. Alternatively first remove a Work Order from the board into the Bin, and then delete the Work Order,

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Stage and Operations permanently from the Bin. This is achieved either through the Planning menu or by Function keys. Note that Work Orders may be copied into a "Library" for more permanent storage and re-use.

An Explanation of the Work Order Fields

A Work Order, as defined in **The Planner**, is a record of activities occupying time on one or more Resources/Machines. Each Work Order consists of a two-tier Bill of Materials structured as a single "Work Order" record, having one or more "Stages" (sub-components, assemblies) to be produced, each Stage having one or more "Operations" (activities, tasks, processes), each to be processed on a Resource/Machine.

An unlimited number of Stages may exist within a Work Order, but **Work Orders from MFG/PRO will have one Stage**. As in MFG/PRO an unlimited number of Operations may be performed in order to produce each Work Order/Stage. Stages may be created in any sequence within the Work Order record, but Operations must be created in the sequence in which they are to be performed within the Stage.

In Planner each Stage is considered as a separate entity within the Work Order, connected only by the common Work Order identifier (number, code) and Work Order information. Stages may be placed on the Planning Board, moved around on the Board, and removed from the Board individually. Each Stage may therefore carry its own Due Date, quantities, and set of Operations. Optionally the Stages within a Work Order may be "linked" in order, so that their processing must be performed in sequence. Work Orders with only one Stage must still contain a Stage line, although the fields in the Stage line may be left blank.

The Planner is a highly user-definable product. It has had many fields renamed and/or disabled to make it more easily used by MFG/PRO users. Many 'spare' fields may be used for purposes other than that which may be immediately obvious, and varied depending on the nature of your business. A brief explanation of the *intended* use of each field is recorded here for the purpose of understanding their characteristics, but unless otherwise stated, the fields are available for other uses. The names of fields are shown as those that come standard with the MFG/PRO Planner. Please refer to the appendix 'File Structure' if more detail is required.

Work Order Record

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Work Order	<i>Work Order Number from MFG/PRO. Non unique.</i>
ID	<i>As the unique identifier for each Work Order, this is a required field. It will appear in scrollers whenever a list of Work Orders is displayed.</i>
Description	<i>Intended to provide a description of the nature of the Work Order, but not essential. Generally populated from Description1, ie pt_mstr.pt_desc1</i>
Quantity Order	<i>From Work Order Qty Ordered</i>
Due Date	<i>Essential to determine whether a Work Order is late, cannot be used for other purposes. From wo_due_date.</i>
Due Time	<i>Used with the Due Date. Not essential, but cannot be used for other purposes. Default value of 00:00 hrs can be altered in MFG/PRO Interface Setup Utility.</i>
Customer Customer Name	<i>Populated by so_mstr.so_cust if wo_so_job exists.</i>
Priority	<i>After selecting a customer via the Customer Code field lookup, the priority from the customer file will be entered into this field. It may be overwritten with an alternative value (0 lowest, 9 highest), for any work order, but cannot be used for other purposes.</i>
Item Number	<i>Populated by wo_part from MFG/PRO.</i>
W/O Status	<i>Work Order status from MFG/PRO.</i>
W/O SpareTxt1 & 2	<i>25 Chrs Alphanumeric - available for use, except when interfaced to MFG/PRO repetitive.</i>
W/O Spare Var 1 & 2	<i>9 digit Numeric field available for any purpose. Accepts positive numbers and decimal points only.</i>

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Stage Record

Stage	<i>Not required unless Stage linking is used. Then used to uniquely identify each Stage in the Work Order. When Integrated with MFG/PRO populated by work order ID</i>
StageSpareTxt1	<i>25 Chrs Alphanumeric - available for use.</i>
Stage Quantity	<i>Automatically copied from the Work Order Quantity field. May be changed for this Stage. Value in this field will be copied into the Operation Quantity fields within the Stage. Cannot be used for other purposes.</i>
No Up	<i>Turned off in MFG/PRO Integration. Used to tell Planner that more than one unit is produced at one time. The value in this field will be copied into the Operation Number Up field. If left blank, will default to ONE. Not essential, but cannot be used for other purposes.</i>
Stage Due Date	<i>The Work Order Due Date will automatically be copied into the Stage Due Date field. Each Stage may carry its own (different) Due Date if desired, by changing the date in this field. It is <u>this</u> date field which is used to place by due date, and it also determines the lateness of the Work Order. Cannot be used for other purposes.</i>
Stage Due Time	<i>Used with the Stage Due Date. Not essential, but cannot be used for other purposes.</i>
Late Alert	<i>Stages will display as late <u>earlier</u> than their actual Due Date by the time entered in this field. Cannot be used for other purposes.</i>
Release Date	<i>Populated by Work Order Release Date from MFG/PRO . This date becomes the default for operation EDates</i>

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Earliest Time	<i>Defaults to 0:00 hrs. This time becomes the default for operation Etimes</i>
StageSpareTxt2 to 7	<i>25 Chrs Alphnumeric - available for use.</i>
StageSpare Var1 & 2	<i>9 digit Numeric field available for any purpose. Accepts positive numbers and decimal points only.</i>

Operation Record

Machine	<i>The Machine selected to run this Operation. Use [Select] to lookup available Machines. Cannot be used for other purposes. Is combined Work Center-Machine name from MFG/PRO.</i>
Preference List	<i>The list of possible alternate Machines for this Operation. Cannot be used for other purposes. See Interface section of this manual for details on when created.</i>
Operation Quantity	<i>This is the Route Quantity Ordered value from MFG/PRO. Cannot be used for other purposes.</i>
Op Up	<i>Turned off in MFG/PRO Integration. Copied from the Stage "No Up" field, but may have a different value entered here. Operation Quantity is divided by the value in this field to calculate Run time. If blank, defaults to ONE. Cannot be used for other purposes.</i>
Rate	<i>Derived in The Planner from the operation Qty and run duration. In units per hour. The planned processing speed on this Machine for this Operation. If Rates have been setup for the Machine, they may be looked up with [Select], or typed in. Used to calculate the Run time. Cannot be used for other purposes.</i>

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Setup	<i>Used to record the planned setup time for the Operation. Added to Run & Clean times to determine total processing time for the Operation. Cannot be used for other purposes.</i>
Run Dur'n	<i>The estimated duration to run the Operation Quantity ordered. Calculated from MFG/PRO Run and Route Qty Ordered. May be entered manually or calculated from Quantity divided by No Up divided by Rate. Added to Setup & Clean times to determine total time for the Operation. Cannot be used for other purposes.</i>
Clean	<i>Turned of in MFG/PRO Integration. Used to record the planned cleanup time for the Operation. Added to Run & Setup times to determine total time for the Operation. Cannot be used for other purposes.</i>
Overlap	<i>Allows the next Operation's Run time to overlap this Operation's Run time by this value. Is in hours/mins. Calculated from MFG/PRO Qty overlap by interfaces. Cannot be used for other purposes.</i>
Transit	<i>Forces a delay between the end of this Operation's Run time and the beginning of the next Operations Run time by this value. Used for drying time, curing, cooling etc. Calculated from MFG/PRO Wait and Move. Cannot be used for other purposes.</i>
Display Status	<i>Displays single or double dotted line through operation bars on board if operation is on Hold or complete. Cannot be used for other purposes.</i>
UserStatus1 to 5	<i>The five User statuses. The names may be changed, but the fields cannot be used for other purposes. Used to display operation bars on board in a different colour.</i>
Opn Status	<i>Used to display work route status from MFG/PRO.</i>
Operation	<i>Used to display route sequence number.</i>

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Operation Due Date	<i>Turned of for MFG/PRO integration. Reference only - non-functional. May be used for other purposes but must be date format.</i>
Opn Due Time	<i>Turned of for MFG/PRO integration. Reference only - non-functional. May be used for other purposes but must be time format.</i>
Use EDate	<i>Switch to tell Planner to use the Operation's Earliest Start Date or not when placing or moving the Work Order. Cannot be used for other purposes.</i>
Operation EDate	<i>The Earliest date that this Operation may start processing. Activated by the "Use EDate" switch. Can be populated with W/O Release date value from MFG/PRO to ensure don't start too early. Cannot be used for other purposes.</i>
Operation ETime	<i>The Earliest time on the above date that this Operation may start processing. Activated by the "Use EDate" switch. Cannot be used for other purposes.</i>
Use LDate	<i>Switch to tell Planner to use the Operation's Latest Finish Date or not when placing or moving the Work Order. May prevent violation. Cannot be used for other purposes.</i>
Operation LDate	<i>The Latest date that this Operation may complete processing. Activated by the "Use LDate" switch. Cannot be used for other purposes.</i>
Operation LTime	<i>The Latest time on the above date that this Operation may complete processing. Activated by the "Use LDate" switch. Cannot be used for other purposes.</i>
OpSpareVar1 & 2	<i>9 digit Numeric field available for any purpose. Accepts positive numbers and decimal points only.</i>

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OpSpareTxt1 to 6

25 Chrs Alphanumeric fields - available for use.

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The Use of Colour

The use of colour on the board is central to the operation of **The Planner**. Colours may be customized (see Customizing Section). Care must be taken if changing colours, so that grey text does not end up on a grey background! On the Resource Board the standard colours used are

shaded blue	The background colour of the planning board.
light grey	Areas containing information e.g. the Resources/Machines listed down the left or the Details Block at the bottom.
yellow	The colour associated with the planning pointer and the Now bar.
green	Any Work Order/Stage/Operation that is on time. This colour can also be highlighted to show a Work Order or Stage that is of special interest.
bright green	A highlighted Operation, which is currently on time.
red	Any Work Order, Stage, or Operation that is late. This colour can also be highlighted to show a Work Order, Stage, or Operation that is of special interest.
bright red	A highlighted Operation, which is currently late.
blue	An Operation which has a special user-defined status and which is currently on time.
bright blue	A highlighted Operation, which has a special user-defined status and which, is currently on time.
magenta	An Operation which has a special user-defined status and which is currently late.

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bright magenta	A highlighted Operation, which has a special user-defined status and which, is currently late.
dark grey	Downtime or unproductive time on any Resource/Machine.

Positioning Rules

It will be helpful to you to understand why certain things happen when placing Work Orders on the board and when moving Work Orders around. A general discussion follows below, with a more specific breakdown of occurrences during each move type following that.

Positioning Operations

Because the Machines in **The Planner** are finite unless otherwise specified, it is not possible to overlay one Work Order onto another. Each Work Order has its own space on a finite Machine. Therefore an attempt to place a Work Order, Stage or Operation on top of another Work Order, Stage or Operation will result in one of the following consequences, depending on the settings which have been applied in Customizing (see Customizing Section):

Note: There are a number of settings that may be made in order to force specific outcomes in planning moves. These are described in both the Customizing Section and the Planning Section. But generally:

Operation Positioning Conflict

When an Operation is placed on another, **The Planner** will decide which is the closest point possible to place the new Operation. In effect, it will either slide to one end or the other of the Operation that already exists, or displace the existing Operation, depending on the options chosen at the time of the placement, and the various Board Switch settings.

The point at which the pointer is positioned on an Operation when selecting it for a move is assumed to be the beginning of that Operation, unless position by endtime is selected from the 'Current Move Configuration' window.

Moving a Work Order or an Operation

When moving a Work Order to the left or right, if anything is in the way, it moves to the right unless the "push left on moves" switch is set. When Operations are pushed to the right as a consequence, subsequent Operations will also move to the right on that Machine if there is no slack time, and therefore Operations on other Machines subsequent to all those moved Operations will also move right.

Pushing an Operation

Push Right

When an Operation is pushed right, all subsequent Operations on that Machine and all their connected Operations are also pushed right. Therefore a gap can be created on other Machines in addition to the chosen Machine when this is the case.

Push Left

When an Operation is pushed left, all previous Operations on that Machine and their connected Operations are also pushed left. Therefore a gap can be created on other Machines in addition to the chosen Machine when this is the case. The push left applies for a specified distance or until the NOW bar is reached. If the NOW bar is reached, the push left will optimize to that point (plus any Now Offset), governed by the left-most Operation involved in the push.

Packing the Board or a Machine Left

This option moves all Operations in the specified range as close to the left edge of the range as possible. Some gaps may still occur because of the relationships to be retained between Operations. Some gaps will close if it is possible for **The Planner** to jump Operations to insert other Operations.

Overlap Between Operations

An Operation may overlap a previous Operation in the same Work Order. Overlap in Planner is expressed as a period of time, being the time difference from the end of the first operation to the start of the second

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operation being overlapped, where the second operation starts before the first finishes.

Note that Setup and Clean times are excluded from overlap. Overlap applies only to the Run time period component of Operations. The rules that apply for overlap are:

- a) If Operation B follows Operation A, Operation B Run start time must be equal to or later than the start time of Operation A *plus a minimum of 6 minutes.*
- b) If Operation B follows Operation A, Operation B Run end time must be equal to or later than the end time of Operation A.

Placement of Work Orders/Stages on the Board

There are several options to choose from when placing Work Orders/Stages on the board, and also usually up to four placement methods for each option.

The placement methods are:

Place Work Order or Stage at the Pointer

This option allows the selection of a Work Order or Stage in the Bin to be placed at the Pointer position.

Place by Due Date

When this option is used, **The Planner** first attempts to place the last Operation in the Work Order structure in its correct position on the board. If anything is in the way, it is moved according to the settings that are currently applied. This Operation continues until a Machine is full back to the NOW bar, when thereafter, the Operations on that Machine are positioned differently depending on the placement *method* chosen.

Place by Major Operation

The *major* Operation is defined as the one that is processed on a specific Machine; usually the Machine that is the most constraining factor because of its loading.

Section 2 - Introduction

Place All at End

Very simple application for one or many Work Orders which are placed at, or to the right of, the Pointer, except if any other Operations are present on the Machine(s), in which case the incoming Operations are floated to the right of all existing Operations on each Machine.

Place By Earliest Start Date

This option allows the placement of Work Orders so that they will not be positioned before their earliest start date, as defined in the "Earliest Start Date" and "Earliest Start Time" fields in each Operation Record. The earliest start date may also optionally be taken into account during moves.

The placement and re-placement Types are:

Insert

The incoming Operations are given priority over existing ones, whose positions are displaced by the incoming ones.

Slide to First Available space

Operations in the incoming Work Order are "floated" to the right of the Pointer until they locate a space large enough to accommodate them on each Machine they use.

Slip to End of Operation

The Operation at the immediate Pointer position is not displaced, but the Operation being placed is "slipped" past this. Subsequent existing Operations are displaced to accommodate the incoming ones.

Anchoring and the Push Level Options

A feature called "Anchoring" allows the locking of individual Operations into a fixed position on the Planning Board.

Section 2 - Introduction

The consequences and impact of this feature on Operations that are placed or moved into positions that attempt to force an anchored Operation out of the bounds of its anchoring range are significant.

In order to assist the user to understand and predict the outcome of such situations, a set of rules is implemented. The basis of these rules is described here for reference.

The various possibilities are accommodated by a user-set switch named "Push Level". There are four possibilities that exist for this switch.

Understanding the Push Levels

There are four levels of complexity which apply to pushes made on the Planning Board. *Note that when "push" is referred to here, it means any function which moves Operations on the Board, i.e. a Work Order/Stage Placement, a Push, any of the Moves, Downtime additions.* The Move Levels are set in Utilities, System configuration from the main Planner window. They may be changed for just a short period, or saved as startup defaults.

It should be remembered when studying the options for this switch, that when performing a "move" or "place" of Operations on the Board, there are usually more Operations involved than just the one being moved/placed. When this occurs, the "Push Right/Left" function is automatically invoked without user intervention. Because of this, the impact of the level settings of this switch should be fully understood.

The four levels of functionality for this feature. are described below. Set the field to a value between one and four.

Level One When set to level one, all moves involving a push are ***always successful***. Operations may be pushed anywhere, regardless of anchors (except if the "Anchors On Moves" switch above is ON).

Level Two If any restrictions are met, the push ***always fails***.

Section 2 - Introduction

Level Three If any restrictions are met, the push is **optimized**. That is, the push occurs as far as it can without violating the anchoring settings of any Operation.

Level Four This is the highest level push. It will allow Operations to be **jumped** if they are restricted in any way. In this way, the move is completed as fully as possible.

Further considerations apply:

Generally...

- a) Push Levels 1 through 3 try to maintain the order of Operations on the Board.
- b) Because Push Levels 2 through 4 may not always be successful, there is a possibility that Moves / Places / Grouping / Ganging etc. will abort because a space cannot be cleared for the incoming Operations.
- c) Some of the situations which can occur have more than one possible outcome and it is not possible to predict results accurately for all situations. Where anchors are violated, a message is displayed, and these may be seen visually by using the "Anchor Violations" display feature described later.

How This Manual is Organized

Sections

This documentation is split into Sections, each with a specific topic. The sections are organized in the usual sequence of requirement, i.e., each topic is dealt with in the order in which it is expected a "new" user may need the information. More experienced computer users may wish to skip certain Sections.

Installation details and system requirements are contained in Install.pdf. The latest changes to Planner at release of any new version, not included in the manual, are described in Readme.txt. Both document files can be read directly from the distribution CD's root directory.

The Section topics contained in the manual are described below for convenience:

Section One:	Table of Contents of the manual
Section Two:	Introduction to the design and functionality concepts Basic operating rules Prerequisite knowledge required Conventions used in style and descriptors Keys used as standard throughout the program Instructions on the Notepad Editor Help available
Section Three	Getting started with the scheduling software Basic functions such as creating a Work Center, creating a Resource/Machine, creating a Work Order, placing a Work Order on the Board, moving a Work Order
Section Four	Customizing the scheduling software to suit individual requirements Setting the various options
Section Five	A full description of all the planning possibilities Advanced features and their use

Section 2 - Introduction

Section Six	Reports and samples
Section Seven	Interfaces to MFG/PRO
Section Eight	The MultiUser Planner for Viewing schedule information from the Scheduling Board.
Appendices	Definitions used in Planner Implementation of the Planner File Structure and Descriptions Switches that are available at start up Utilities available for the database Fast Keys

Index

The Index, located at the extreme rear of this manual, is designed to be as comprehensive as possible without being too difficult or too busy to locate the required topic.

Conventions Used in this Manual

Throughout this manual, consistency is maintained in the use of terminology, descriptors, typography, and symbols used. A description of each follows.

Terminology

Please refer to Appendix G for a glossary and definitions of terms used throughout this manual and applicable to the software.

Typography

Several typefaces are used for emphasis:

BOLD CAPITALS Used to indicate letters or characters to be typed as when entering commands at the DOS prompt.

Bold Italics Important points or warnings, sometimes enclosed in a shaded box for greater emphasis.

Normal Italics Used for simple emphasis only, not critical.

Underlining Special emphasis to the words underlined. In the glossary, a word which is used for definition which is itself defined.

Note Headers To draw attention to specific topics.

"Quotation Marks" Usually indicate the first instance in a topic of a special phrase or proper name, as in "Plan Menu".

Symbols

A range of symbols are used to define the use of mouse and key functions.

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[Press]	depress the left mouse button, or the indicated keyboard key
[Click]	depress the left mouse button
[RightClick]	depress the right mouse button
[Square Brackets]	The key or button enclosed is pressed, as in [Enter] and [Undo] .
[Key]+[Key]	The plus sign is used to indicate that each key in the string is pressed simultaneously. In practice, this means to hold down the first keys listed, while the last key is pressed.
[F11]	Refers to the use of a function key. Function keys are the keys along the top of a standard 101 key keyboard labelled F1 through F12.
[left] [right] arrow	Indicates the cursor movement keys positioned on the lower left of the keyboard, including [up] and [down] . Sometimes shown combined as in the expression [Ctrl]+[left/right] arrow .

Illustrations

Where appropriate, illustrations of menus and screens are provided.

When an item from a menu is discussed, that item is then "highlighted" on the menu illustration by the position of the shaded rectangle.

Windows & Standard Keys

Throughout **The Planner**, standard Windows mouse functions and a range of keyboard combinations are used to perform certain functions. These functions and their descriptions are listed here.

Windows

If you are unfamiliar with Windows, it is recommended that some time be spent learning the basics before starting work with The Planner. Knowledge of Windows can be transferred with good effect to any other windows applications such as spreadsheets & word processors you are likely to use.

Using the mouse

The mouse controls the windows pointer position on the screen.

- **[Left Click]** – means to point to an item on the screen (with the windows mouse pointer) and then press and release the left mouse button. The windows pointer tip has to actually touch the item being selected.
- **[RightClick]** – as for left click, but using the right mouse button.
- **[Double Click]** – as for left click, except press the button twice in succession.
- **[Drag]** – Pointing to an item and then pressing and holding the left mouse button down is called dragging. This allows selection of multiple lines in scrollers, is used for selecting a range of operations in the resource board window, and is used to move (drag) an operation from one position to another.
- **[Scroll]** – Use the mouse pointer to move the views left, right, up or down using the window's scroll bars

Keyboard

[TAB] Used to move the cursor to the next field when in a window with multiple fields.

Section 2 - Introduction

[Shift]+[TAB]	Used to move the cursor to the previous field when in a window with multiple fields. If pressed when the cursor is in the first (top) field, will move the cursor to the last (bottom) field.
[Home] [End]	Used to move the cursor to the top-most or bottom-most position in a scroller, on the Planning Board, in the Resource Screen, in the Notepad. Also used to move the cursor to the first and last character position within a field.
[PgUp] [PgDn]	Used to move the cursor one whole screen up or down in a scroller, on the Planning Board, in the Resource Screen, in the Notepad.
[arrow keys]	Move the cursor or the planning Pointer one position at a time in any direction; the highlight bar up and down. In time, date, and some numeric value fields, left and right arrows rotate the values in the field as an alternative to typing the new value.
[Enter]	In a menu, selects the highlighted menu item. In a window, either accepts data and closes the window, or opens a new line, depending on the nature of the current window.
[Escape]	Used to "back out" of a situation or window, without saving data or performing the selected function.
[Insert]	Opens a data entry window in some scrollers for the entry of a new entity in that scroller; switches between "overtyping" and "insert" mode when the cursor is in a data entry field (default is insert mode).

Section 2 - Introduction

[Delete]	Removes an item from a scroller. Deletes the character at the current cursor position in a data entry field.
[F1]	Open the HELP window for the current topic.
[F8]	The standard "lookup" key to search for the possible alternatives in the current field (there are a few variations on this, described as needed).

The Notepad Editor

The Planner allows for unlimited notes to be held against every Work Order, every Stage in a Work Order, and every Operation in a Stage in a separate notepad. In addition, each instance of Downtime in every day, and every Weekly Downtime Table may also carry unlimited notes with the use of the Notepad.

The Note lines for work orders and operations in The Planner are populated by the respective comment lines from MFG/PRO.

Opening the Notepad

The Notepad is accessed in the Work Order Edit window by pressing **[Menu]** on the appropriate Work Order, Stage or Operation line, and selecting 'Notes'

Once work orders are on the Board, notes held for each of these are indicated in the Data Window with flags. Each flag indicates the type of notes (whether for Work Order, Stage, or Operation). The default flag takes the form of a checkbox (although this may be edited in the Customizer). **[X]** indicates that notes are held for the particular item, **[]** indicates no notes exist.

To open each Notepad, use the Edit menu, or press:

[Ctrl]+[N] for Work Order and Downtime notes,
[Shift]+[N] for Stage notes, and
[Control]+[Shift]+[N] for Operation notes.

For Downtime, notes may be held against every contiguous period of Downtime in every day. Point to the period of Downtime and press **[Ctrl]+[N]**. A single flag in the Details Block refers to Downtime notes when the Pointer is on each block of Downtime.

When the cursor is positioned on any line in a Weekly Downtime Schedule, its notes may be viewed, created, edited or deleted for the period, again by pressing **[F9]**.

Section 2 - Introduction

For the Weekly Downtime Tables, the only place notes may be created, edited, or viewed is on their scroller, which indicates the presence of the notes with a Y/N flag opposite the Table name and description. These notes apply to the *entire week*, since each individual day cannot have notes attached.

The editing keys used in the Notepad editor are described on the next page...

Editing keys in the Notepad Editor

The Notepad operates like a word processor, although somewhat less sophisticated. Text can be Cut and Pasted here or elsewhere.

Note: if pasting more than 51 characters, the 52nd and further characters will be truncated.

The buttons & keys which are used to operate it are:

[Save]	To save the notes.
[Delete Notes]	To delete every line of the notes shown.
[Enter]	Open a new line and position the cursor at the first position in it.
[BackSpace]	Delete the character to the left of the cursor, carrying all characters to the right of the cursor with it. If at the left margin, move the cursor to the last position in the previous line, again carrying all characters to the right of the cursor with it.
[Home] [End]	Move the cursor to the first or last position on the current line.
[Escape]	Close the Notepad without saving any changes.

Getting Help

At any time during the operation of **The Planner** or Customizer, on-line, context-sensitive Help is available, by pressing the **[F1]** key.

While any Help window is open, further functions are available:

1. Cross References

In most Help windows it will be seen that there are some words in blue. These are "cross references". Click on the required cross reference, and The Help window will swap to the Help for the cross-referenced topic.

2. Help Topic Search

Select **[Search]** from the top of the Help window. Type in the name of the topic being searched. As letters are keyed in, only those topics containing all keyed letters in sequence will remain in the scroller. Choose the topic, and **[Go]**

3. Scroll Through Help

After viewing more than one Help screen by using cross-references or the Index, it is possible to return to the previously viewed screen, and the next, right back to the first screen (maximum 9). Use the **[Back]** button.

In addition, you can then scroll forward through them again, thereby reviewing your selected Help windows. Press **[Prev]** to "back up" through the windows, and press **[Next]** to move forward again

Section 3 – Getting Started

GETTING STARTED SECTION

What Do I Do First?

This section is NOT about installation.
It is NOT about customization.

This Section is about How to Start to Use The Planner.

It is designed to give you a quick tutorial on the basic planner functions.

Once you have finished the tutorial, refer to the appendix for an implementation sequence that can be followed to help you use this planning tool successfully.

It is assumed that by now you will have installed your Planner Scheduler software successfully on the right type of hardware. You know this is OK because when you clicked on “Planner” in the Start / The Planner program folder (as described in the Installation instructions), you got the main Planner window with 3 smaller panes within it, the top left hand one looking like an empty planning board.

If this doesn't sound like where you are up to, then read no further...
You probably have either:

a) Overlooked some aspect of the installation

Check: that you followed the installation instructions

- that you selected a Typical install, which will put all necessary files on your drive
 - that you have disk space available (at least 20MB?)
 - that you have at least 24MB of RAM
- (the Installation Section provides all this information)

b) Attempted to install on incompatible hardware

Section 3 – Getting Started

Check: your system configuration against the specifications provided in the Installation Section

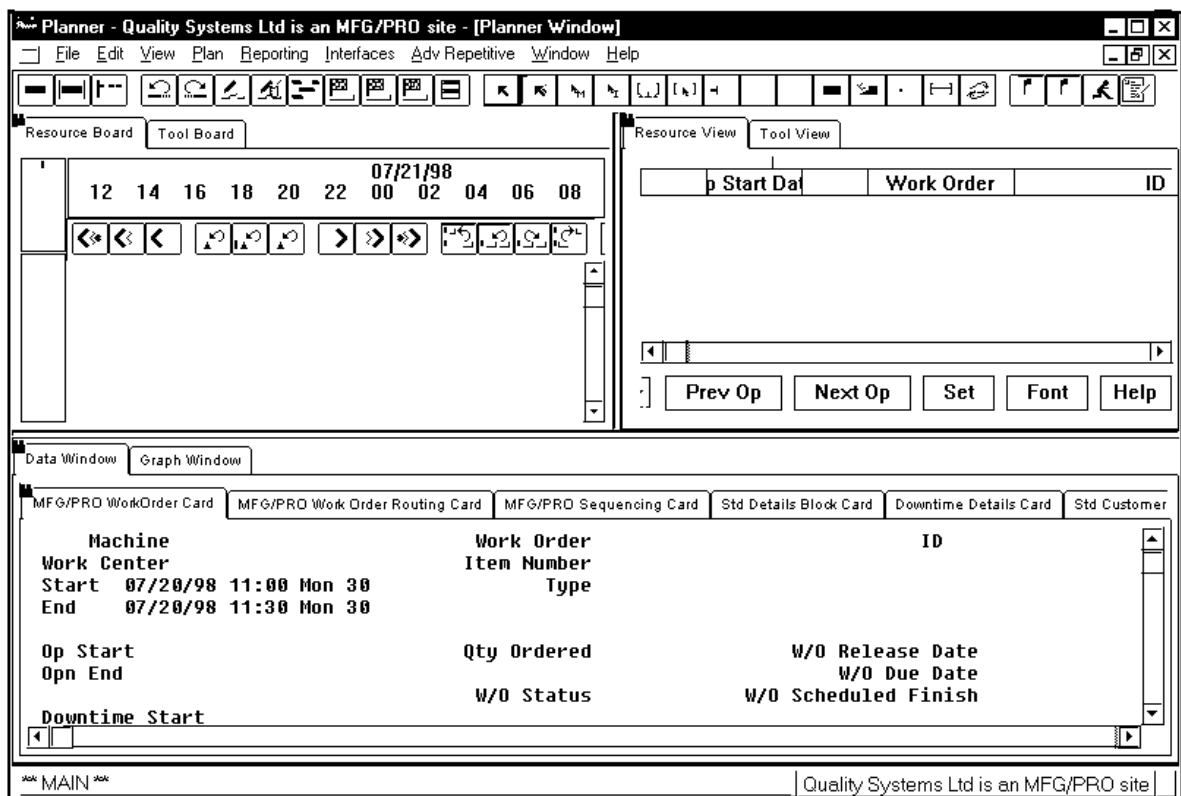
- that all components of your computer are correctly wired together and plugged into power outlets

I'm on the Planning Board. Now what?

You will find that when you first start your **Planner**, you have a main window with 3 other 'window panes' within it. Maximise the main Planner window. Each pane may have a number of view options, obtained by selecting the appropriate window pane tab.

To display the Resource Planning Board window pane right across the top area, drag the yellow divider bar from the centre to the right. The height of the Data/Graph window pane can similarly be altered.

(for access to all window arrangements, use view menu, display configuration, window display)



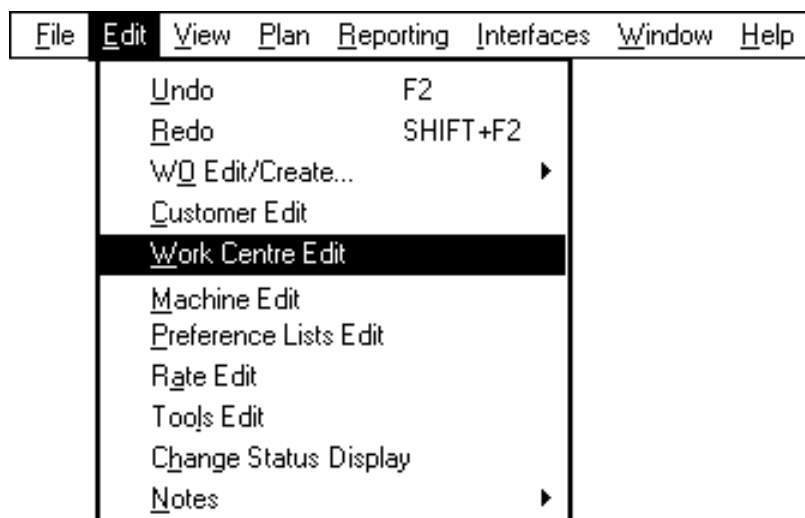
Section 3 – Getting Started

You cannot move the yellow spearhead 'Pointer' with any of the arrow keys, or with the mouse. This is because there is nothing on the board to move to. You must first create Machines.

Notice the menu choices at the top of the main planner window? These provide access to the various menus. Open the Edit menu, by pointing to and clicking on Edit.

Remember that throughout The Planner you have context sensitive help at the press of [F1]

Editing Work Orders & Machines



As you can see, the Edit Menu makes a number of options available. All these options are accessible at any time, *except when you first start **The Planner***.

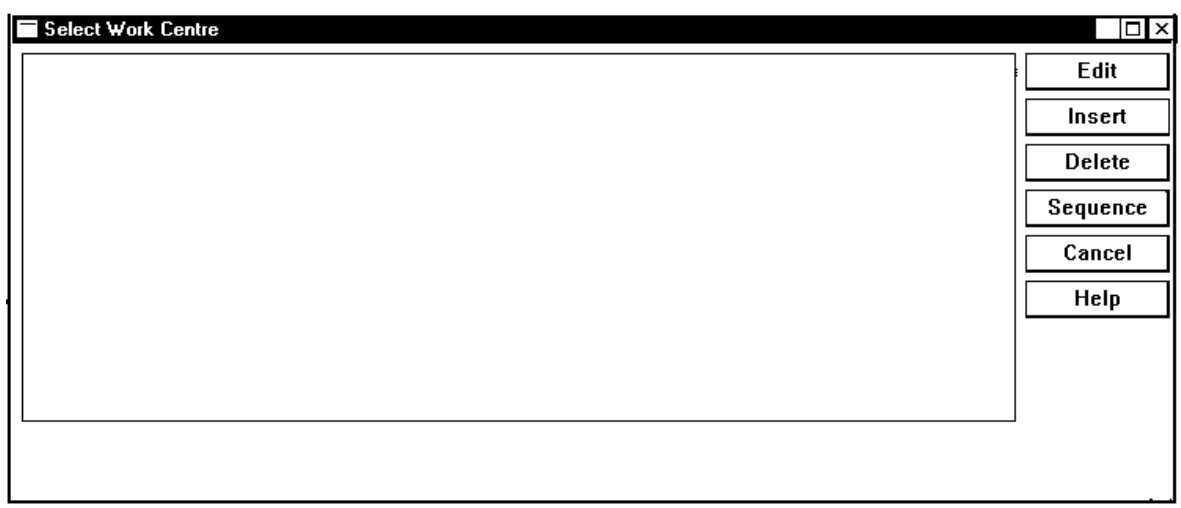
When you first start, without any data, there are a some things you must do in a certain sequence to set up your planning board. These steps are set out in the following pages in this Section. Without following this sequence, you will find it necessary to go back to the beginning again later, so initialise your planning board now.

Section 3 – Getting Started

Once you are interfaced to MFG/PRO you will not normally edit work order information in The Planner, but will do so in MFG/PRO and have those changes brought into the Planner. This section is to familiarise yourself with **The Planner** and its functionality, to both help in decision making on how to use the tool and so that an understanding of its functions allows speedy use once it is integrated.

When ready to obtain information from MFG/PRO, the Planner must be emptied of data, as all work center, machine, customer and work order information must be exactly as established in MFG/PRO for the systems to work 'in sync'. If you wish to retain a copy of your manually made 'trial plan' as set out below, to refer to later, you will be able to do so using the 'Save Plan' facility which is explained in the 'Planning' section of this manual.

First Step: Create a Work Center

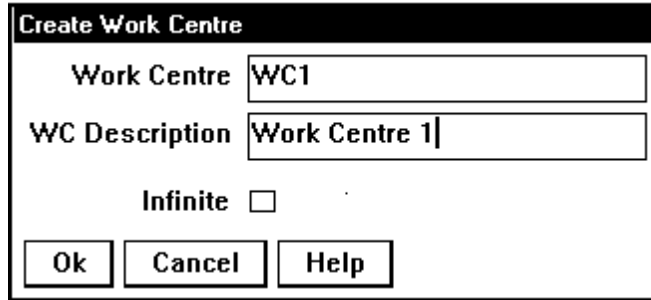


Select 'Work Center Edit' which opens a scroller window (which is really just a computer term for a list). This list will be blank, because we have not yet created our first Work Center.

Click the **[Insert]** button. Yet another window will open, with some "fields" in which to type information. Type in a Work Centre name of up to 8 characters. (If you are not sure what to call your Work Centers, just type WC1 for now. You can change it later). For an explanation of the use of Work Centers, see "Definitions" in the Appendix, or press **[F1]**.

Section 3 – Getting Started

Type in a description for this Work Center so that it makes it easier to identify it later. Don't worry about the "Infinite" field at this stage, leave it off (empty) for now. This is explained in the Planning Section of this manual.



When it looks right, press **[OK]**. *The Planner* uses the **[OK]** button to confirm all is OK and to "Go" to the next process. If you make a mess in any window and you don't want to "Go" with it, press the **[Cancel]** button. That tells *Planner* that you don't want to save your changes, and to exit from the window.

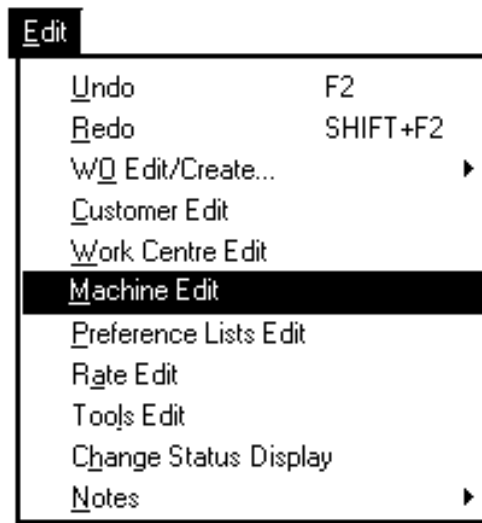
You'll notice that now you have one Work Center in the scroller. You may add more if you want to: just press the **[Insert]** button again and repeat the exercise. For example, you could add WC2, WC3, etc.

When you've finished entering Work Centers, press **[Cancel]** to leave the scroller and return to the Edit Menu. You are now ready to move to the next step: creating your Machines.

Second Step: Create Machines

With the Edit Menu open, select the option to 'Machine Edit'. As with editing Work Centers, press the **[Insert]** button to open a new editing window. Several fields are available to enter information. Type in the Resource name, using up to 17 characters.

Section 3 – Getting Started



When you move to the Work Center field, you don't have to remember the names of your Work Centers; you use **The Planner's** "lookup" feature. Press **[Select]** to look up the Work Center names (Machines MUST belong to a Work Center). A scroller (list) opens with the names of all the previously created Work Centers.

Choose the one to which this Machine belongs by double clicking on it or pressing the **[Select]** button. This will automatically write the name of the Work Center into the correct field.

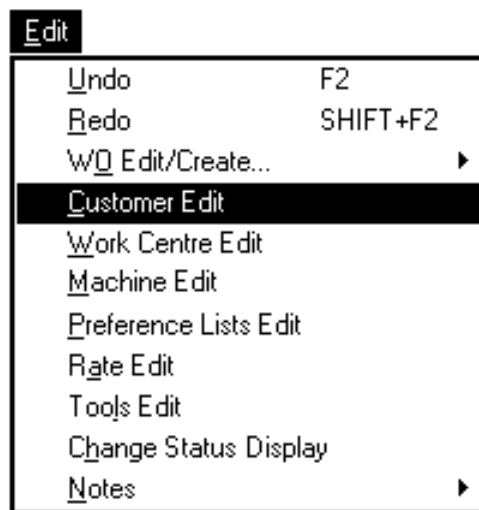
Create New Machine	
Machine	
Work Centre	Select
Group	
Speed Ratio	100
Ok Cancel Help	

Optionally fill in the rest of the Machine information and press **[OK]** when done. If you make a mistake, just move to the problem area and overtype the correct data. At this point it is really not necessary to concern yourself with the "Group" and "Speed Ratio" fields. They are explained in the "Planning" section of this manual, or by pressing **[F1]**.

Section 3 – Getting Started

Third Step: Create a Customer

The next logical step (although not absolutely necessary) is to create a file of customers. The reason customers are created at this point is so we can use the customer file to update the Work Orders as we create the Work Orders, rather than having to type in the name of the customer each time. Once interfaced to MFG/PRO customer information will only be attached to work orders that have a direct relationship with a sales order.



To create a new customer, select 'Customer Edit' from the Edit Menu. The customer scroller displays, and of course this will be blank at first, until the first customer is entered.

Press the **[Insert]** button to open the customer scroller window, allowing the entry of customer related data. The "Customer Code" is used to quickly identify a customer without the need to type the full name.

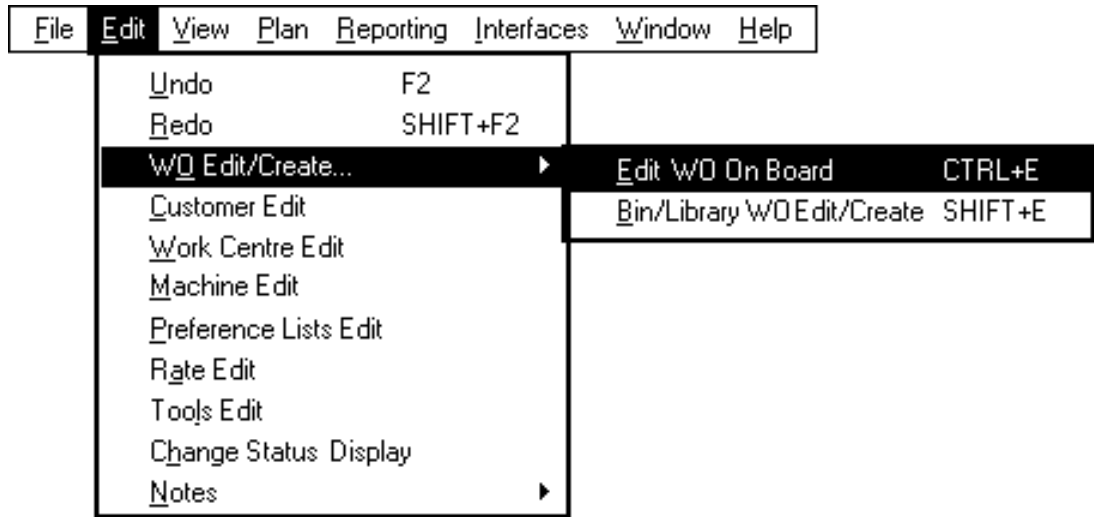
Type in the relevant information. Don't worry if it is incomplete or incorrect at this point; you can always change it later.

When the first customer's data is entered, press **[OK]** to save the record to the database. The 'create customer' window will close and return to the customer scroller.

Press **[Insert]** again to open a new 'create customer' window, or press **[Cancel]** to close the scroller and return to the editing menu.

Fourth Step: Create a Work Order

There are many things you could do before advancing to this stage, but none of them are essential, so we'll get right to it and come back to those other options later.



Open the Edit Menu again. This time, select "Work Order edit/create". This will open another window. Select "Bin/library work order edit/create" because you are going to create a Work Order in the "Bin". (See definitions in the Appendices to clarify these terms, or use **[F1]** and the search facility).

The "Edit Bin/Library Work Order" window will now be open. ***At this point it may be helpful to review the descriptive comments on Work Order fields in the Introduction Section.***

Use the bottom scroll bar to view all the work order fields in the "Edit Bin/Library Work Order" window.

Press the **[Edit]** button to enter work order information.

Type in a Work Order Number and ID (ID may be alphanumeric, but must be unique). Move to the work order description field. You'll notice that some of this field is longer than it first appears. You can just keep typing as the field scrolls around, your speaker sounds when you have filled the available spaces. **[Home]** and **[End]** will take you to the beginning and end of your field entry respectively.

Continue to enter whatever data you like. You don't have to fill in all the fields. You can return to and edit any displayed field.

Section 3 – Getting Started

WO Line Edit

Work Order ID

Item Number

WO Desc

Qty Ordered

WO Due Date

WO Status

Cust Code

Customer

Priority

WO SpareTxt 1

WO SpareTxt 2

WO SpareVar 1

WO SpareVar 2

When you get to the "customer code" field, you get the opportunity to "look up" the customer file you created in Step Three. Press the **[Select]** button besides the customer field. The customers you have created will be listed in the customer scroller, in alphabetic customer order. **[Select]** the desired customer, or **[Insert]** a new one. You will notice that the code is written into the Work Order record field. All other information about the customer is also held against the Work Order, but it is not seen here.

The **mandatory** Work Order information is:

Work Order Fields

Work Order ID
Date Required

Stage Fields

Date Required

Operation Fields

Machine
Duration for
Setup, Run, or clean

Section 3 – Getting Started

Preferable Work Order information includes:

Work Order Fields	Stage Fields	Operation Fields
Quantity	Quantity	Quantity
Description		
Customer		Rate

Note that at this stage you have not customized (renamed) any of the spare fields, so you may have to use your imagination a little! Customizing is described in its own Customizing Section. You will also learn how to switch off any fields you don't need to use so that they don't get in the way.

Special Note:

DATE

For Date fields enter the date with leading zeros if less than 10, no separator required.

TIME

Time fields are in six-minute intervals.

To enter minutes, Press the [:] key.

To enter decimal hours, Press the [.] key.

No matter how they were entered, times are displayed in minutes to the nearest 6 minute interval.

When you've finished entering data on the Work Order line, press **[OK]**. Press **[Create Stage]** to open a new line: the "Stage" line (each Work Order ID in Planner can consist of any number of Stages to be made under the one Work Order ID but all Work Orders from MFG/PRO will have one stage). You'll notice that the Quantity and the Date Required has defaulted from those entered in the Work Order line.

Press **[Edit]** and when you've entered some data in the Stage line, press **[OK]**.

Press **[Create Operation]** to create a further new line, the "Operation" line.

Section 3 – Getting Started

Press **[Edit]** and the cursor waits in the Machine field. This is another "lookup" field. Press **[Select]** to look up all the Machines you have previously set up, select one from the scroller to write it into the field. Continue entering data in the same way.

Setup, Run and Clean. These are independent duration fields that add up to the total time taken to complete this Operation. The Setup and Clean times are "static", that is they remain as you set them (you can change them manually), whereas the Run time is "dynamic": it can be automatically recalculated if you wish, based on changes in Quantity, Number Up, and Machine output Rate. See "Recalculating Run Time" in the Planning Section topics "Work Order Editing" and "Rate Editing" for more information on Recalculating.

When you have entered enough information on this Operation, Press **[OK]**, then you may open a new Operation line for this Stage by pressing **[[Create Operation]** again. A duplicate line opens for you to enter another (or the same) Machine and data on this Operation in the same way as the first one. Continue this process until you have entered all the Operations required for this Stage.

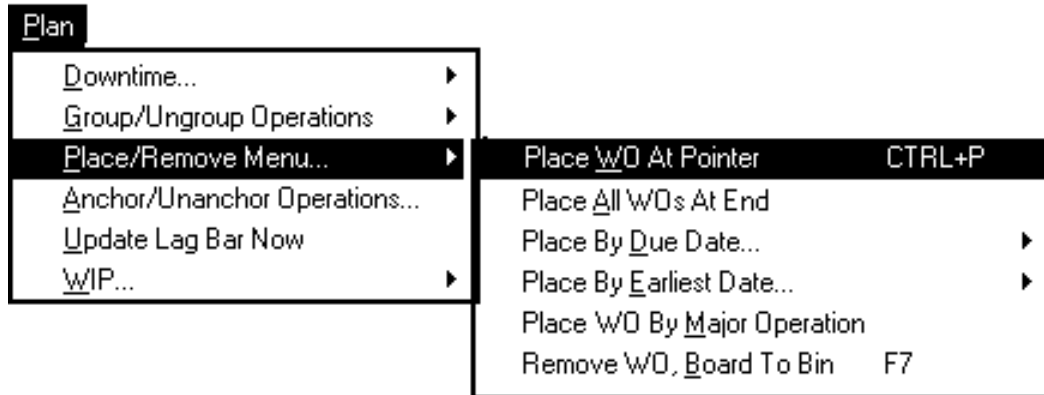
If you wish to enter another **Stage** within this Work Order ID, press **[Create Stage]** to open a new stage line after the last Operation line, and you can then begin entering data for the stage, and the Operations required to process it. (Remember all Work Orders from MFG/PRO will have just one stage)

When you have finished entering all the Work Order information (don't worry if it's not complete or accurate at this stage - you can edit it at any time), the next step is to **save** it. To do this, press **[Save]**. A window will open asking if you want to save this Work Order to the "Bin" or the "Library". For now, save it to the Bin, because we are going to place this Work Order on the Planning Board and see what it looks like.

After you save your Work Order, the blank Work Order Edit window will still display, waiting for you to enter another Work Order. Press **[Cancel]** to close the window.

Having created your first Work Order, now move on to Step Four.

Fourth Step: Place the Work Order on the Board



Back on the Resource 'planning board' window, open the 'Plan Menu'. The option to select from the Plan Menu is the "Place/remove menu...". When selected, a sub-menu will open which lists all the optional methods for placing Work Orders or Stages on the board as shown above. For now, choose "Place Work Order at Pointer".

As soon as you select this option, the menus close and a scroller opens so you can select the Work Order to be placed. If you have created only one Work Order, this will be displayed and all you need to do is press **[Select]** or double click on the scroller line to action the place.

After selecting the Work Order, you are presented with the placement options. Select "Insert" for now. The Placement Options are described fully in the Planning Section, and by pressing **[F1]**.

The Work Order you created is placed on the board, commencing where you had the pointer, and progressing in the sequence you created in the Work Order Edit window.

Study the Work Order. Notice that as you move the Pointer over each Operation, the information you entered for each is displayed in the "Data Window" at the bottom of the main window. Study the layout of the Data Window, and note that the Work Order Number, ID, and Operation data is displayed in a similar way to the maintenance screens in MFG/PRO. Click on the data window tabs to obtain different 'display cards'. (The field names will change when you customize them, and not display if you disable them in the customizing program). The more you familiarise yourself with this window, the more productive your planning will be, as you will be able to locate the exact information you want, quickly.

Section 3 – Getting Started

Moving About on the Board

There are many ways to move the Pointer around on the planning board. By learning these now, you will save a lot of time when you are working with larger amounts of Work Order data.



1. Single Pointer Positions

The Pointer may be moved left or right by pressing the [**<**] or [**>**] button. Alternatively the Pointer may be moved in any direction by pressing the [**up**], [**down**], [**left**], or [**right**] key. By holding the arrow keys down, the Pointer moves faster until the key is released.

2. Ten Pointer Position Movements at One Time

By pressing the [**<<<**] or [**>>>**] button, or the [**Ctrl**]+[**left**] or [**Ctrl**]+[**right**] key combination, the Pointer is "jumped" 10 positions at a time to the left or right.

3. One Entire Screen at a Time

By pressing the [**<<<<**] or [**>>>>**] button, or the [**Shift**]+[**Ctrl**]+[**left**] or [**Shift**]+[**Ctrl**]+[**right**] key combination, the Resource 'planning board' window jumps one whole screen to the left or right behind the Pointer.

4. Next/Previous Operation on a Machine

To move to the beginning of the next or previous Operation on a Machine, press the [**GoTo Next Operation on Machine**] or [**GoTo Previous Operation on Machine**] button, or the [**Shift**]+[**right**] or [**Shift**]+[**left**] key combinations. This is specially useful when long Operations exist.

5. Next Previous Operation in a Work Order

To move up and down the Operations in a single Work Order Stage, first move the pointer to any Operation in the required Work Order. Then press the [**GoTo Previous Operation in W/O Stage**] or [**GoTo Next Operation in W/O Stage**] button, or the [**Shift**]+[**up**] or [**Shift**]+[**down**] key combination.

6. Scrolling Through the Machines

Use the Resource Board Window's right hand scroller, or the [**Home**], [**End**], [**PgUp**], [**PgDn**] keys to quickly scroll through long lists of Machines.

Quick View or Edit Work Orders on the Board

To quickly view the entire Work Order structure of any Work Order on the board, place the pointer at any operation in the work order and press the **[Ctrl]+[V]** key combination.

To quickly look at and edit any Work Order on the board, press the **[Edit Board Work Order]** button. A scroller will open with all the Work Orders currently on the board listed in Work Order Number sequence. A hint: the Work Order that the Pointer is currently positioned on is the "default" selection in the Work Order scroller. You can point to the required Work Order first, then press **[Edit Board Work Order]** and **[Select]** to instantly open the Work Order Edit window. Changes may be made and saved which automatically and dynamically alter the Work Order on the board and may affect other Work Orders.

Viewing the Resource List

Select the "Resource View" tab. This view of the planning board changes to a list of the Operations planned for the machine shown in both the window header and footer. Select any other machine from the footer drop down list to display its operations.

The Data Window can be displayed at the bottom of the main Planner window. As you search through all the operations on the Machine with the Scroll bar, or **[up]** and **[down]** arrows, the data in the Data Window changes to show the currently highlighted Work Order's data. The moves in this window are:

1. Moving Through a Work Order Structure on Different Machines

To jump to the next Operation in a Work Order, maybe on a different Machine, position the highlight bar over the Operation in the required Work Order on the current Machine, and press the **[Next Op]** button. The Machine that is processing the next Operation is displayed, with the Operation highlighted. You can continue through each Operation in the Work Order in the same way, and you can go back through its structure with the **[Prev Op]** button.

2. Moving Through the Machine List

Section 3 – Getting Started

To swap to any other Machine on the planning board without returning to the board, select any other machine from the footer drop down list to display its operations.

3. Viewing a Work Order in Detail

As in the Resource 'Planning Board' window, the Resource View allows you to view the full Work Order structure of the Work Order that is currently highlighted. Press **[Ctrl]+[V]** to do this. You cannot edit any Work Order information here, though.

4. Editing a Work Order

Any work order can be highlighted from this window, by pressing the **[Edit Board Work Order]** or **[Edit Bin Work Order]** button in the Main Planner window.

5. Returning to the Planning Board

Click on the 'Resource Board' tab

By now you will have a "feel" for the functionality of **The Planner**. There are many other things that can be done, and of course many other things to learn, but almost everything works in the same way as the basic functions you have learnt so far.

If you are having any trouble with your mouse or negotiating menus or windows, it will be well worth the effort to spend some time viewing the 'Tour' and 'Tips and Tricks' from the Windows Help, available from the Start menu.

In this Section, we will finally move a Work Order on the planning board, and then for further information, all functions will be found in the Planning Section, described in detail. Remember that context sensitive help is available at all times, just press **[F1]**.

Moving a Work Order on the Board



Section 3 – Getting Started

All planned moves of operations on the Board are carried out using one of the move buttons.

To see what a button does, move your mouse arrow to the button, and just leave the arrow on the button for a second or so. Do not press any mouse buttons. A label describing the button action will appear.

The move types are described fully in the Planning Section of this manual, and in the Help. For the purpose of acquainting you with their operation, we will make just one simple move here. We will move an entire work order Stage (see definitions in the Appendix or Help).

To move the work order Stage on the board:

- Ensure the yellow pointer is on the first operation of the stage.
- Press the **[Move W/O Stage]** button.
- Place your mouse arrow on the first operation, hold down your left mouse button and 'drag' the arrow with its attached operation bar to another time on the same machine.
- Release the left mouse button when the left edge of the arrow/bar is at the time you wish to start the stage.

All operations in the stage will be moved, with the first operation starting where you release the mouse button.

All operations in the stage will now have become highlighted, and will be a lighter colour. This is done so that you can easily see which Operations belong to the Work Order Stage being moved. See Highlighting in the Planning Section for more details on this very useful function.

Now that the basics have been explained, it is up to you to read the appropriate sections of this manual for more detailed information on the full range of features available within **The Planner**. You are not left alone, however. There is one more tool to help you in whatever you do...

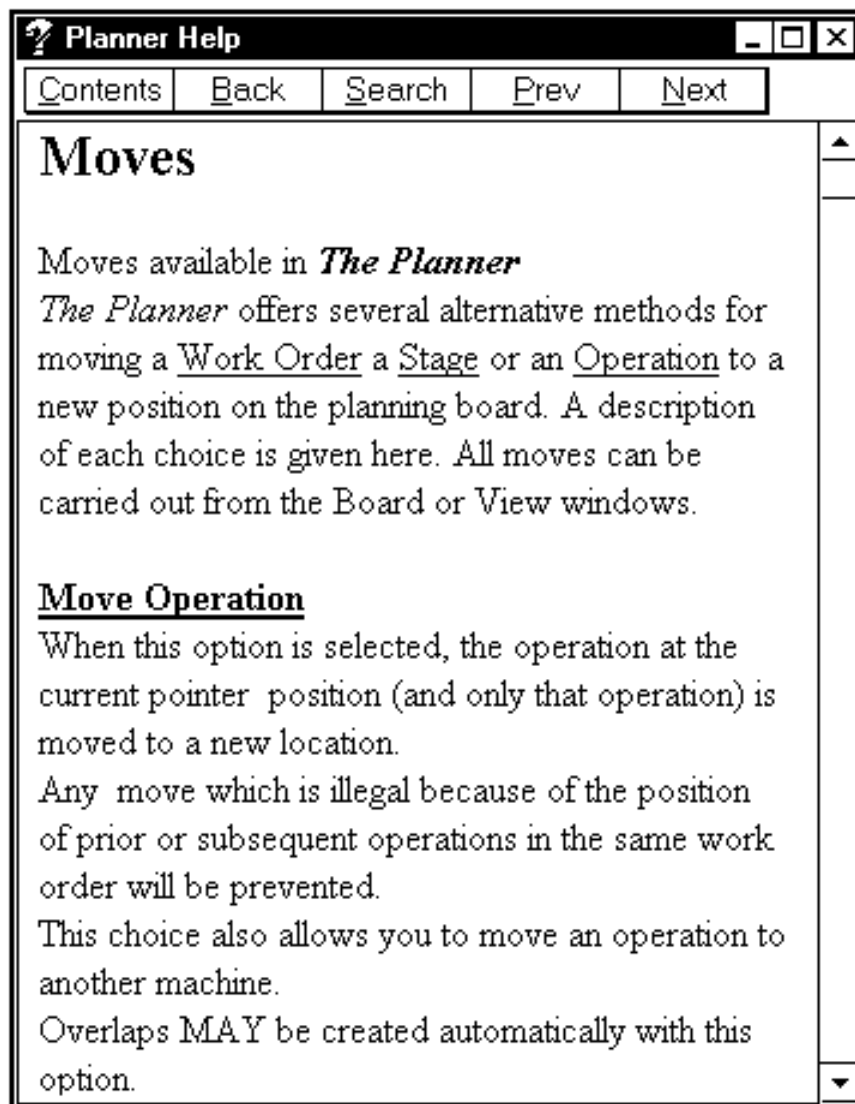
Getting Help

At any time during any process while planning, it is possible to get help on all the options available to you at the time.

Section 3 – Getting Started

Press the [F1] key to open the Help window to provide help for the current function in the system. Click on any coloured cross reference to open the Help window for that topic

While in a window of the Help system, press the
[Search] button to display an index of Help topics to view.
[Back] button to display an index of Help topics to view.
[Prev] or [Next] to scroll through the help windows available.



SECRET TIPS

Even after you have been using an application for some time, some features that can be of considerable benefit to you may have been missed, forgotten, or simply remained secrets, as they were not adequately documented.

Here are some that many Planner users do not know about. Some are new, others have been around for a while. We hope you find some of them useful.

Instant Reports

From any window in Planner, press **[Shift+Ctrl+P]** to print out the window to a selected printer.

Fine tune your instant report by

- resizing the window to suit the actual data, and choosing portrait or landscape format
- using Highlighting to select the records required, and print from the 'Highlight List' window
- keying in the required details using the 'search' area above any scroller window.

Searching through Scroller Windows

Why use the scroller buttons to try to find a needle in a haystack?

If a sought after number or letter combination is keyed into the 'search' area above any scroller window, the scroller will filter out any rows not containing the exact combination keyed in.

The scroller filters from all fields that are displaying, AND those that may be hidden if the window is reduced in size.

- If necessary add new fields to a particular scroller for frequently used searches. (see customizing section on how to)
- Use spaces before and/or after a letter/word to tune the search

Secret Tips

Right Click

Use the mouse to move pointer under an operation on the board, then right click to

- Edit the selected WO
- List and Highlight linked WOs – either previous or next WOs

Fast Keys

Many repetitive tasks in Planner can be carried out using ‘fast keys’.

Some examples are:

- Edit Job on Board [Ctl]+[E]
- GoTo Now [F3]
- Alter Timescale [+] and/or [-]
- Remove WO from Board [F7]
- Lookup Bin Job to Edit [Shift]+[E] then [F8]

Use Help, search for Fast Keys to see the full list.

The full list is also in the appendix of the Manual, page 594

Also check menus for fast keys to use.

CUSTOMIZING

Customising The Planner

All the standard field names used throughout **The Planner**, all the Menu titles and the Menu contents, all the scrollers, even all the system messages, are completely customizable. You can even decide whether you want field names and menu options to display at all, if you are not currently using them. Many system defaults too, can be customised to your individual requirements. The range of changes available make **The Planner** extremely flexible and adaptable to many environments.

Changes to how **The Planner** is setup for your use are carried out in one of two places depending upon how frequently you are likely to want to change settings, and how secure the settings need to be.

From the **Customizer** program you can change:

- Database initialisation settings,
- Interface settings,
- Menus and Scrollers
- Field names

From within **The Planner** you can temporarily or permanently change:

- Move types
- Operation interaction settings
- Timescale settings

Before beginning to customize The Planner you will need to analyse your requirements, and consider how these can be met with **The Planner**. This is a most important step.

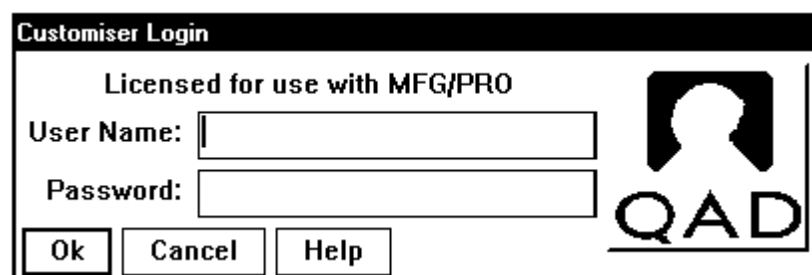
Proceeding with your implementation without due consideration may mean you never benefit from the many capabilities of **The Planner**. Proper analysis of your needs, with help from a Planner implementation specialist, before you start configuring **The Planner** will ensure you do not waste time and effort redoing work, but instead benefit as quickly as possible from this planning tool.

A list of suggested implementation steps and questions you should be obtaining answers to before customizing are contained in the appendix

Starting the Customizing Program



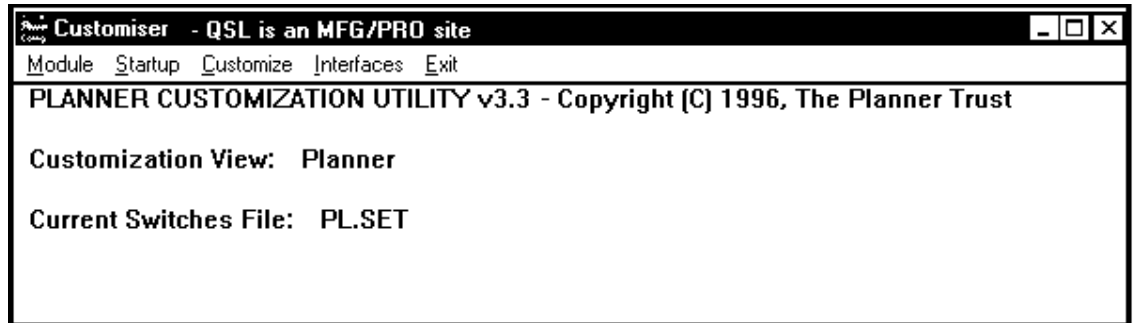
By clicking on the "Customizer" icon from The Planner Program menu, the Customizer will be run. You will be asked for a username and password, so enter those that you set up earlier when the planner was first installed.



Help During Customizing

On-line, context-sensitive help is available for quick reference on each window by pressing the **[F1]** key at any time.

The Opening Customization Window



This is the Main Window for the customization program. Each of the options shown on it lead to further sub-menus below them that allow specific choices to be made relating to the main topic.

This section of the manual will fully explain the options for every sub-menu, but first a brief explanation of the function and purpose of each.

Module

This is where you can choose to customize The Planner, or The customizer itself.

Startup

Database setup

This gives access to create new users and passwords, or a completely new plan (that removes all data from any existing main plan).

Select Switches File

The default file for storing the switch settings is named PL.SET but you may have different versions of setup for different purposes or users. Here is where the file for these versions is created/selected for editing.

Customize Switches

There are a number of choices available whenever *The Planner* is used. Most switches are controlled from within *The Planner* but those available here include how dates are entered and displayed, what names you wish to

Section 4 - Customizing

use to identify statuses, what default timescale you wish ***The Planner*** to open at.

Customize

Customize Menus

Every "pop-up" menu in the system may be customized: a new title can be added, the selections on the menu may be renamed, and the selections can even be disabled so they don't display on a menu.

Customize Scrollers

Scrollers are lists from which choices may be made, for example, a list of all Jobs on the planning board. Here you can choose which fields from the Job records you want on the scrollers, in which sequence they display, and how long you want them to be for your scroller display.

Customize Details Block Cards

The Details Blocks at the bottom of the Planning Board and the Resource screen are customizable with this option. Multiple cards may be designed and switch between within ***The Planner***.

Customize by Grouping

This option sorts all the fields by their records, so that it is easier to find the field to be customized. It is used to customize by *groups* of records, as in Reports, and in the ***Report Writer***, etc.

Customize Text

Every word of text used in the system is customizable. Here is where all text that is not a field title is located for customizing.

Customize Field Titles

Every field title may be edited here, and they may also be switched off so they don't display anywhere in ***The Planner***. This is useful when a field is not used because it avoids the need to display unwanted fields, and also the need to pass the cursor over unnecessary fields when entering data.

Section 4 - Customizing

Export Field Titles

This option exports the field titles for use in translation, and for use in MulitUser so that consistent terminology is used.

Interfaces

Many of the Interfaces specifications have been created especially for the dedicated MFG/PRO Interface. If any of the existing specifications are altered your system may not perform as expected.

Customize Interface Specs

To edit the import and export file specifications, and create new specifications.

Dump Interface Specs

To make a copy of the interface specifications and place them in a file. The file can then be for printed or loaded at another installation.

Load Interface Specs

To copy from a file the interface specs dumped from another planner installation to save re-keying of changes made.

Customize Export Spec Sets

To edit the file specifications, and create new specifications.

Customize Interface Channels

To specify where files or databases used to import and export data are on your system

Customize Active Channels

To specify which (if any) channel is to be used for background importing into The Planner.

Quit

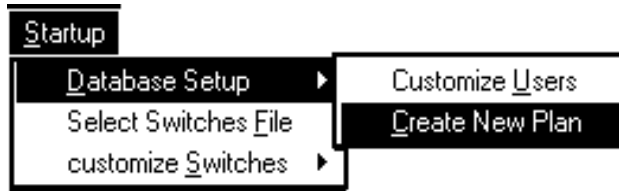
Exit the Customizer program and go back to the Main Menu.

Section 4 - Customizing

A detailed explanation of each choice on all sub-menus follows.

Throughout the remainder of this section, entries are listed in alphabetical order by their title as displayed on the menus.

Create New Plan



This option is to create a completely new set of 'Main' database files, ie the database files resident in the \database\plan directory.

Any data in the existing 'Main' plan, i.e. the plan in \ThePlanner\database\plan directory will be lost.

If you require to keep this information, then carry out a 'Save As' Plan before creating a new plan.

'Save' Plan places a copy of the datafiles in a named subdirectory off \plan, eg \plan\B4NEW.PDB.

The 'Save As' Plan option is available from the File menu within The Planner. If in doubt about how Save As works, consult Help in The Planner.

Customize Active Channels



Once an Interface channel has been defined it may be added to the list of active channels. The Planner regularly polls these channels in the background looking for data to import when there is no foreground activity.

As active channels cannot be used for manual importing, the default channel cannot be active. You must have created another channel, and this can then be made active.

Adding an Active channel

To make a channel Active, Select 'customize Active channels' from the interface menu, which will open a window displaying any presently active channels.

Press the **[Add]** button to list other previously created channels able to be made active. **[Select]** the one required, to add it to the active channel list.

Deleting an Active channel

Select the active channel you wish to remove from the active list, and press the **[Delete]** button and confirm. Carrying out this procedure does not remove the channel from the system, only from being active. For more details refer to the Interface Section.

Customize By Grouping

Grouping of records enables an alternative guide to the location of items to be customized.

Changes made here are local changes only. To change the field title globally, use the "Customize Text" or "Customize Field Titles" options.



After selecting this option, the "Search Criteria" window opens. Fill in any fields if desired (see Search Criteria) and press **[Search]**.

A scroller opens with all the selected records listed. Choose the record to be changed by moving the highlight bar to it and pressing **[Edit]**. The chosen record editing window opens with all fields available for editing.

Each of the options in the records editing window are explained below.

Editing the Title

Title

The title of any record may be edited here by pressing **[Dup]** while it is highlighted. A window opens in which to edit the title. Type in the new title and press **[OK]** to save it. If it is required to restore the title to its original setting, highlight the title and press **[Dup]** again. The original title name will be displayed to copy the name from. **[OK]** to save it.

Section 4 - Customizing

Title Enabled

When ON [X] the record will be available in *The Planner's* reports, but when disabled [] (by pressing the [F6]) the record title does not show.

Field	[]	[X]
Lib Quoted Resource	[]	[X]
Lib Actual Resource	[X]	[X]
Lib Passes	[X]	[X]
Lib Q	[X]	[X]
Lib Quoted Setup	[X]	[X]
Lib Quoted Run	[X]	[X]
Lib Quoted Clean	[X]	[X]
Lib Job Status	[X]	[X]
Lib Overlap	[X]	[X]
Lib Transit	[X]	[X]
Lib Setup	[X]	[X]
Lib Run	[X]	[X]
Lib Clean	[X]	[X]

Editing Fields in a Record

Highlight the field choice to be edited. The options you have in this area are:

Edit Field Title

Press [Dup] to open the field to edit. The original name and field information remains displayed for reference. Type in the new name for the choice. To save the change, press [OK]. The edited field title window will close, and the highlight bar may be moved to another option for editing.

If the field title is edited and it is required to restore the title to its original setting, highlight the field title and press [Reset]. The original title name will be displayed.

Section 4 - Customizing

Enable/Disable

When a field choice is highlighted it is possible to disable it from displaying in reports by pressing the **[Toggle]** button or **[F6]** key. The first checkbox to the right of the menu choice will display whether it is enabled or not. When the checkbox is checked ON **[X]** the field is displayed in **The Planner's** reports. When OFF **[]** the field is not displayed.

Save

When all changes have been made to the menu, press the **[OK]** key again, confirm the changes and close the scroller. Pressing **[Cancel]** instead of **[OK]** here will abort all changes made and close the scroller.

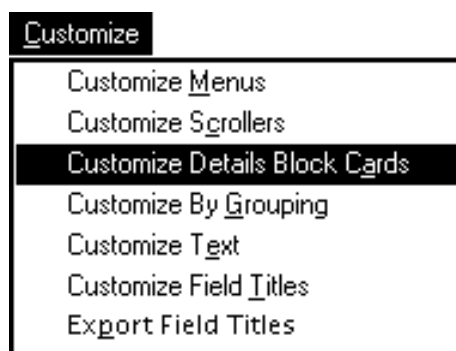
Changes made here are local changes only. To change the field title globally, use the "Customize Text" or "Customize Field Titles" options.

Section 4 - Customizing

Customize Details Block Cards

The Data Window is often displayed at the bottom of the main Planner window to display all details for Jobs, Downtime, etc. The data window may have multiple "Details Block Cards" that may be switched between when in **The Planner**.

The Details Block Cards are created, edited, deleted, and enabled/disabled with this option.



After selecting this option, the "Search Criteria" window opens. Enter any card categories if desired (see Search Criteria) and press **[Search]**.

A scroller opens with all the selected card stacks listed. Choose the stack to be changed by highlighting it and pressing **[Edit]**. The editing window for the chosen stack opens with its title and a list of all the cards in the stack available for selection.

A "Stack" is the term given to a stack of cards in a category of cards, i.e. Board Details Block Stack, Tools Block Stack. "Cards" are the range of cards that exist or are created within a stack.

Each of the options in the stacks and cards editing windows are explained below.

Editing the Stack Title

The title of any stack may be edited here by pressing **[Dup]** and typing a new one in the field, and pressing **[OK]** to save the title change. If the title is edited and it is required to restore it to its original setting, press **[Reset]** while the cursor is in this field.

Editing the Cards in the Stack

Move the cursor into the card choices area and place the highlight bar on the card name to be edited.

The options you have in this area are:

Edit the Selected Card

Press the **[Edit]** button (or **[F4]**) to open the selected (highlighted) card to edit. See the section below "Editing a Card" for details.

Create a New Card

You can create/design your own cards to add to the list. Press the **[Create]** button (or **[F7]** key) to open a blank card ready for you to customize. See the section "Editing a Card" below for instructions.

Delete a Card

Cards may be permanently removed from the stack by highlighting them and pressing the **[Delete]** button or key. It is recommended however, that instead of deletion, the disable function is used. In this way, existing cards will remain available in case they are required.

Enable/Disable

When a card choice is highlighted it is possible to disable it from displaying in the *The Planner* by pressing the **[Toggle]** button (or **[F6]** key). The checkbox to the right of the card name will display whether it is enabled or not. When the checkbox is checked ON **[X]** the card is available for display

Section 4 - Customizing

in **The Planner**. When OFF [] the card is not available, and no tab will show.

Move a Card

The order in which the card titles display in this list is the order in which the Data Window tabs are arranged in **The Planner**. The top card in the list is the one displayed by default each time **The Planner** is started up.

This order may be changed if desired. Move the highlight bar to the card to be moved and press **[Reorder]**. Now highlight the new position for the selected card and press **[Normal]** to move it to this position.

Save

When all changes have been made to the card list, press the **[OK]** button, confirm the changes and close the list. Pressing **[Cancel]** instead of **[OK]** here will abort all changes made and close the list.

Editing a Card

When the **[Edit]** button (or **[F4]** key) is pressed from the stack display, the selected card is made available for editing, with the cursor in its title field. Type in a new name for the card title if desired. *There is no reset function for this title.*

Section 4 - Customizing

Create New Card

Card Desc: CONF_C(1)

Card Title: Details Block Card

Card Contents:

```

XXXXXXXXXXXXX          XXXXXX          XXXX
XXXXXXXXXXXXX          XXXXXXXXXXXXXXXXXXXXX          XXXX
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          XXXXXXXXXX          U/Stat 1 [X]
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          XXXXXXXXXX          U/Stat 2 [X]
99                      Act Fin Date 99/99/99 99:99 DDD          U/Stat 3 [X]
99 Job Reqdd 99/99/99 99:99          XXXXXXXXXX          U/Stat 4 [X]
Act Fin Date 99/99/99 99:99          XXXXXXXXXX          U/Stat 5 [X]
[X]          [X]          Notes [X]
XXXXXXXXXXXXX          XXXXXXXXXX          9999:99          XXXX
XXX          XXXXXXXXXX          9999:99          99/
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          XXXXXXXXXX          9999:99          99/
XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          utput Rate XXXXXXXXXXXXXXXXXXXXXXXX
99                      XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
X

```

Ok Edit ++ - Switch Delete Cancel Help

Move the cursor into the card editing area. Here you may design the layout of the card. These are the functions available for editing a card:

To Insert Fields Or Text , use the Right mouse button.

To Move Text Or Fields once they are on the editing area, use the mouse with depressed left button to Drag & Drop.

Field Colours

At this point it will be useful to understand the significance of the colour of a field in its various states.

Yellow A field's ***title*** is displayed in yellow in the card (unless it is the "current" field, see below). This indicates the position it occupies in the card and also distinguishes it from ordinary text characters that are typed in manually.

Red The field's ***picture*** is displayed in red in the card (unless it is the "current" field, see below). This indicates the position it occupies in the card.

Section 4 - Customizing

- Blue** When the cursor is positioned *anywhere on a field's title or contents display area*, the entire field title and contents picture turns blue. This is so that it can easily be seen which field title belongs to which field "picture". This is known as the *current* field (see below).
- Black** Any ordinary text characters entered from the keyboard are displayed in black to distinguish them from field titles.

The Current Field

When the mouse arrow is clicked on any part of a field title or its contents "picture", both the title and the picture turn blue. The title does not have to be positioned adjacent to its picture: both may be moved independently. Because of this fact, the connection between the two components is made by the similarity in colour. The blue field is considered the **Current Field**.

Lookup Fields

Any field from the database (and other, derived fields that exist) may be added to the card. Press **[Right Mouse Button]** , and **Insert Field** to lookup a field. When selected, it will be positioned with the first character of its contents where you right clicked, and its title to the left of this.

Notes Fields

Job, Item, Operation and Downtime notes are some of the fields able to be displayed in the data window.

It is possible to display a number of, say, Job Note Lines.

Insert the field 'Block Job Note Line' the required number of times, say one under the other. Click on the first field to make it current, then press the **[Edit]** button, and say which job line number you wish to display in this field.

Moving Fields

When on a current field, its Title or Picture (contents) may be moved by Dragging and Dropping with the mouse.

Section 4 - Customizing

Selecting Title or Picture

Use the **[switch]** button to change from the Title to Picture component of the current field. This is required when resizing either field.

Resizing

It is possible to vary the amount of a Title or Picture displayed, so as to suit the space available. You can even "hide" a field title if it is to be replaced by a manually typed title.

When either the title or the picture field are switched to , successive presses of the **[++]** or **[-]** buttons will increase or decrease the amount of field to be displayed.

Deleting a Field

If a field is no longer required, it may be removed by clicking on its title or picture (so that it turns blue), and pressing the **[Delete]** button.

Card Size

The recommended display for **The Planner** is using at least 1024 x 768 video mode. All but two of the standard cards are for viewing in this mode.

If 1024X768 is not possible, 2 cards displaying only 80 columns of data may remove the necessity to always use the scroll bars to see information in the data window. These are all switched on (enabled) at installation. To switch off unnecessary cards from displaying, see the section on "Enabling/Disabling" cards above.

When designing additional cards with the tools described here, have regard for the display mode of your computer,

Save

When all changes have been made to a card, press the **[OK]** button, and confirm the changes. Pressing **[Cancel]** instead of **[OK]** here will abort all changes made and close the card edit window.

Customize Export Specification Sets

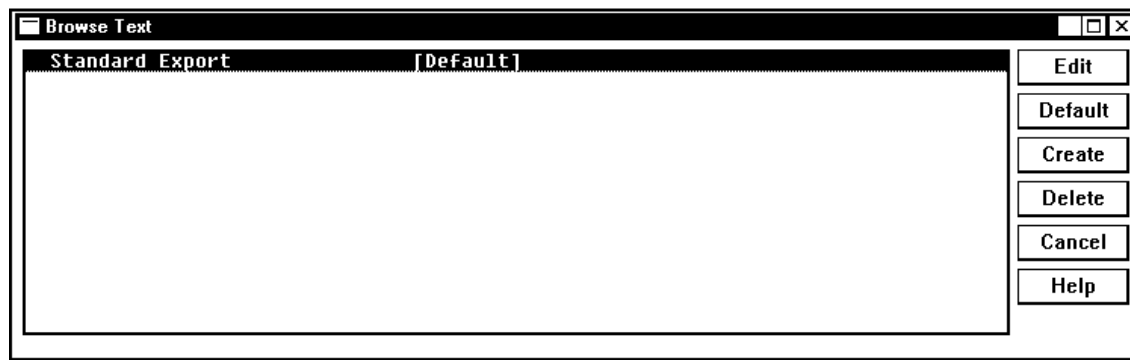


These are not utilised in the MFG/PRO version of The Planner . A database is used for export instead.

An Export Interface Specification Set is a particular group of transaction specifications that are used to define how data regarding particular Planner entities is to be exported. There are no default export sets.

The creation of Export Spec Sets is performed using this menu option, and selecting from the pool of Interface Specifications. Any non standard specifications will need to have been created earlier in "customize Interface specs". A specification may be part of many export sets.

For a full overview refer to the Interface Section.



Creation of an Export Spec Set

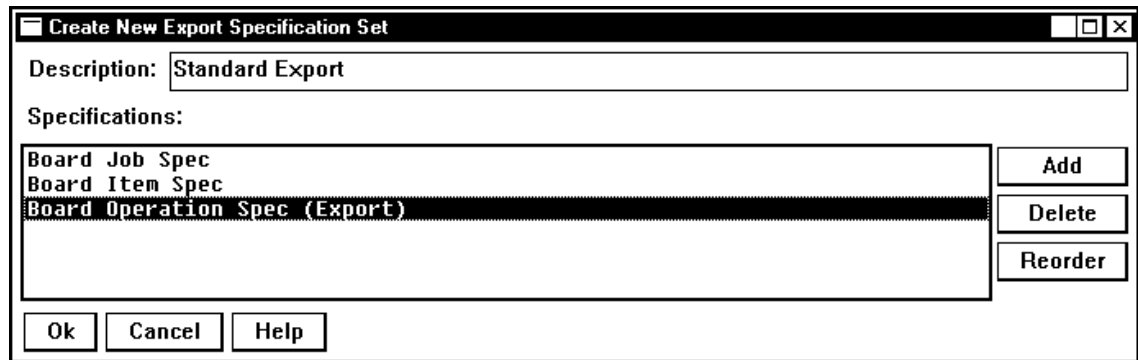
Pressing the **[Search]** button with no search criteria will list all previously created Export Spec sets (if any), and allow addition of new ones.

Section 4 - Customizing

Press the **[Create]** button to open the export spec set editing window. Key in a name for the set, then press the **[Add]** button to look up interface specifications to add to the export set.

The order of the specs may be changed using the **[Reorder]/[Normal]** button.

A specification can be removed from the set by pressing the **[Delete]** button. Pressing the **[OK]** button saves the changes, **[Cancel]** ignores them.



Editing of an Export Spec Set

This is substantially the same as for creating a new set, but press the **[Edit]** button with the required set highlighted in the export set scroller. The export spec set name can be changed. Press the **[Add]** button to look up interface specifications to add to the export set. A specification can be removed from the set by pressing the **[Delete]** button. The order of the specs may be changed using the **[Reorder]/[Normal]** button. Pressing the **[OK]** button saves the changes, **[Cancel]** ignores them.

Deleting an Export Spec set

Simply press the **[Delete]** button with the required set highlighted in the export set scroller.

Default Export Spec Set

To specify a particular Export Set as the default (first suggestion during export) use **[Default]** on that set in the Export Set scroller.

Customize Field Titles



All field titles in **The Planner** are capable of being customized.

Many of the field titles have been altered to reflect MFG/PRO terminology. For a full list of field titles, with original names and MFG/PRO version names please refer to the appendix 'File Structure'

After selecting this option, the "Search Criteria" window opens. Fill in any fields if desired (see Search Criteria) and press **[Search]**.

Renaming Fields

A scroller opens with all the selected field titles listed. Choose the field to be changed by moving the highlight bar to it and pressing the **[Edit]** button (or **[F4]** key.) The chosen field's editing window opens to allow renaming if desired, while the original title remains displayed. Type in the new name for the choice.

Disabling/ Enabling Fields

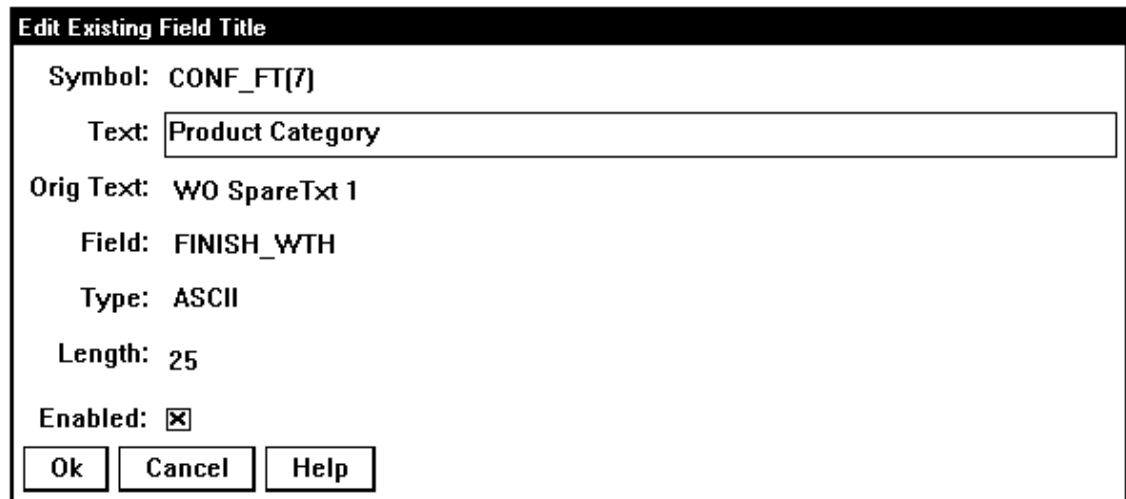
It is possible to Enable and Disable the display of fields in The Planner. Click on the **[Enabled]** checkbox to enable or disable the field display. When ON **[X]** the field is displayed in **The Planner**. When OFF **[]** the field is not displayed.

Please Note:

Some interactive fields should not be disabled without consideration of the possible implications. For example if Item Date Required has been disabled,

Section 4 - Customizing

and a Job Date Required is edited without being **[Adjust]**ed, the Item Date Required will not change. This may mean the job goes late without being noticed, as the Item Date Required is what determines if a job is on time or not.



Edit Existing Field Title

Symbol: CONF_FT(7)

Text:

Orig Text: WO SpareTxt 1

Field: FINISH_WTH

Type: ASCII

Length: 25

Enabled: ☒

Saving Changes

To save the changes, press **[OK]**, or press **[Cancel]** to abort changes. After confirmation, the edit window will close, and you are returned to the text selection scroller.

At this point it is possible to reset the field title to its original state by highlighting it and pressing the **[Reset]** button. When all fields have been edited, press **[Cancel]** to close the scroller.

Changes made here are global changes: that is, they take effect throughout the product being customized, except where a local change exists, when the local change has precedence.

Customize Interface Channels



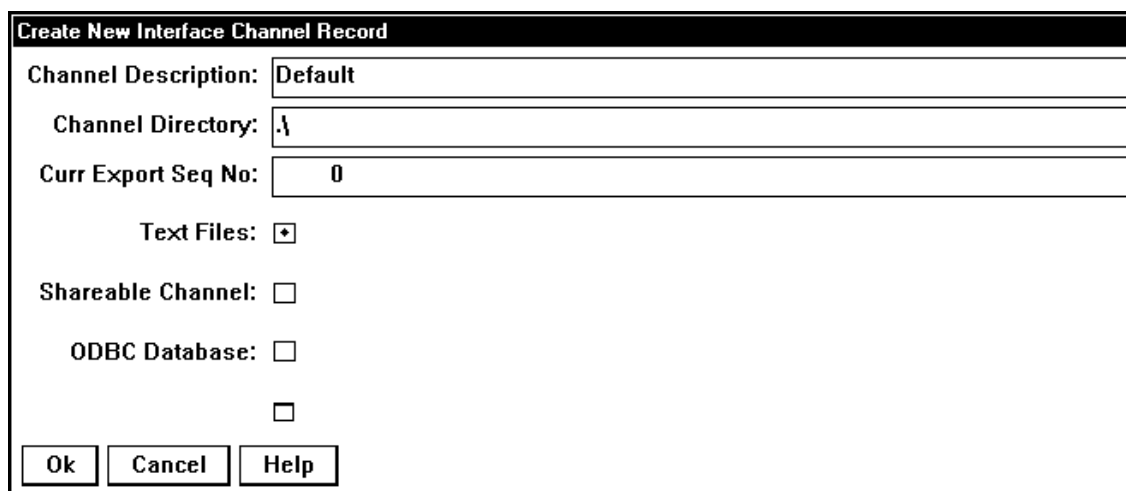
A channel is simply a nominated directory containing either 2 files (IMPORT.IF and EXPORT.IF) or an ODBC Database, that act as buffers for import and export from the Planner.

After selecting this menu option, the "Search Criteria" window opens. Fill in any fields if desired (see Search Criteria) and press **[Search]**.

This opens a scroller of interface channels meeting the search criteria. From this window you are able to Edit, Create or Delete channels. In addition you can set or reset the default channel.

Edit/Create a Channel

Press the **[Edit]** or **[Create]** button to open the edit window.



Create New Interface Channel Record	
Channel Description:	Default
Channel Directory:	.\
Curr Export Seq No:	0
Text Files:	☒
Shareable Channel:	☐
ODBC Database:	☐
	☐
Ok	Cancel Help

Section 4 - Customizing

Channel Description

Key in the name for the channel.

Channel Directory

The directory name format depends upon what type of channel you are creating.

Text or Shared Channels :The directory where The Planner is to locate the import file, and add to the export file. (e.g. .\ where the channel is same directory that the planner is installed in)

Database Channels: The directory name is the ODBC connect parameter string. (e.g. "DNS=X" where X is the database name. See ODBC doc's for other parameters that may be specified.

Channel Type

Select the channel type required. Once a channel has been used it is not possible to change the channel type, as the channel files will already have been created.

Exit

To save the changes to the channel, press **[OK]**, or press **[Cancel]** to just return to the channel scroller.

Default Channel

Press the **[Default]** button with the required channel highlighted in the channel scroller.

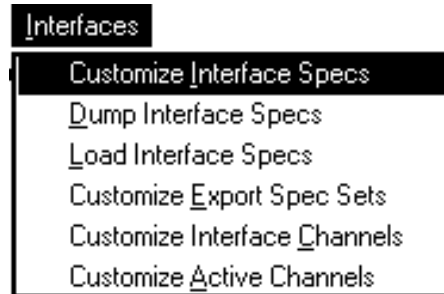
Delete Channel

Press the **[Delete]** button to permanently remove the channel from The Planner.

Cancel

This leaves the scroller as it is and returns to the main customizer window.

Customize Interface Specifications



Many of the Interfaces specifications have been created especially for the dedicated MFG/PRO Interface. If any of the existing specifications are altered your system may not perform as expected.

Selecting this menu option, and searching for all entries, gives a listing of the set of default Interface Specifications supplied with this version of **The Planner**. Default transactions are defined for all valid Planner entities and contain the superset of valid fields for that entity.

It is recommended that these specifications be left unchanged and that any modifications are instead made to duplicates of the supplied specs.

General

An Interface Specification is a definition of what pieces of data are included for a transaction that relates to a Planner entity e.g. a transaction record to create a Bin Job might contain several but not all fields that the Planner provides for a Bin Job.

The specification for a Bin Job creation transaction record therefore lists all the fields that will be included so that The Planner knows what it is looking at when that record is imported.

Alternatively a specification can detail what data to include (in what order) on export of a transaction relating to a Planner entity.

Refer to the Interface section for further details.

Edit / Duplicate

When setting up interface channels, pressing the **[Edit]** button allows editing of the selected interface spec. The **[Duplicate]** button takes a copy of the selected spec, allowing it to be renamed and other changes made without compromising the original spec. Both [Edit] and [Duplicate] lead to the same specification edit window.

Within the editing window the following actions are possible:

Description - key in a new description if required.

Title - key in a new title if required.

Type – Specifications can be for either new information (Add), for changes to information previously sent to **The Planner**, or for deleting information previously sent to **The Planner**.

Action - Specifications can be for either standard importing into the Planner, where the information is held ready for applying (Hold), for importing and Automatic Updating of the plan (AutoUpdate), or for Export of information from the Planner.

Area – This describes the area that the spec will add to, change or delete from.

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Edit Existing Interface Record Spec

Description:

Spec ID:

Title:

Record:

Type:

Action:

Area:

☒

Fields:

Field	Status
Bin Job Number	[X]
Bin Rep	[]
Bin Customer Code	[]
Bin Customer	[]
Bin Description	[]
Bin Product	[]
Bin Height	[]
Bin Width	[]
Bin Depth	[]
Bin Priority	[]
Bin Order Qty	[]
Bin Job Spare Var 1	[]
Bin Job Spare Var 2	[]
Bin Date Job Req	[]
Bin Time Req Job	[]

Fields – When editing a supplied or duplicated specification, the fields available for the specification are generally all listed. Some have an [X] besides them indicating that these are required fields for this spec, and should not be altered. They are unable to be deleted.

Edit Fields

Generally all the chosen fields for a spec will be for receiving information from another system (or from **The Planner** itself if exporting). However if no information is received into a field from the other system, two other options are available.

1 A fixed entry may be 'Hard Coded' into the field. For example Time Required might be set to 16:00 hrs, as no value is available from the main system.

2 Information may be duplicated in more than one field. For example the Order Qty might be duplicated in a renamed job field called 'Orig Order Qty' when jobs are added. Changes to the job could then be made and leave the 'Orig Order Qty' untouched. The other system is setup to never send data directly to 'Orig Order Qty', so that this field is only populated upon

Section 4 - Customizing

addition of a job, and remains unchanged until the job is deleted from The Planner.

Select the field you wish to change, and press the **[Edit]** button.

Other fields may not be required, in which case they can be deleted by pressing the **[Delete]** button while they are selected.

If another field is required, pressing **[Add]** opens a scroller of all available fields that may be added.

Selecting a field, pressing **[Reorder]**, clicking where you wish to reposition the field to, and pressing the **[Normal]** button will change the order of the fields in the spec.

When you have finished editing the specification press the **[OK]** button to accept changes and close the window.

Press the **[Cancel]** button to abort changes and close the window

Customize Menus



All menus in **The Planner** are capable of being customized. Customizing extends to enabling/disabling the menu completely, changing the menu title, changing the name of each menu choice, enabling/disabling each menu choice, and setting a default menu choice selection for each time the menu is opened.

After selecting this option, the "Search Criteria" window opens. Fill in any fields if desired (see Search Criteria) and press **[Enter]**.

A scroller opens with all the selected menus listed. Choose the menu to be changed by moving the highlight bar to it and pressing the **[Edit]** button or **[F4]** key. The chosen menu editing window opens with all fields available for editing.

Each of the fields in the top section of the window are explained below:

Enabled

When ON **[X]** the menu will display in **The Planner**, but when disabled **[]** (by pressing the **[SpaceBar]**) the entire menu is not available to users.

Default Option

By entering a number that corresponds to the **position** of an entry in the menu choices list, this menu choice will be the default (highlighted) each time the menu is opened. This only applies to non Win95 menus.

Title

The title of any menu may be edited here, by pressing the **[Dup]** button. If the title is edited and it is required to restore it to its original setting, press the **[Reset]** button.

Editing Menu Choices

Move the cursor into the menu choices area and highlight the menu choice to be edited.

The options you have in this area are:

Edit Menu Option Title

Press the **[Dup]** button (or **[F5]** key) to open the menu option title to edit. The original name remains displayed for reference. Type in the new name for the choice. To save the changes, press **[OK]**. The edited field will close, and the highlight bar may be moved to another option for editing. If the title is edited and it is required to restore it to its original setting, highlight the menu option again and press **[Reset]**.

Enable/Disable

When a menu choice is highlighted it is possible to disable it from displaying in the menu by pressing **[Toggle]** or **[F6]**. The checkbox to the right of the menu choice will display whether it is enabled or not. When the checkbox is checked ON **[X]** the menu item is displayed in ***The Planner***. When OFF **[]** the item is not displayed.

Reorder Menu Option Choices

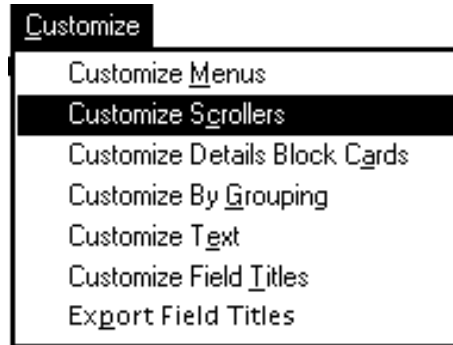
To change the sequence of menu choices in the menu, highlight the choice to be moved, press **[Reorder]** (or **[F2]**), click on its new position, and press **[Normal]** (or the **[F2]** again) to leave the menu choice into its new position.

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Save

When all changes have been made to the menu, press the **[OK]** button, confirm the changes and close the scroller. Pressing **[Cancel]** instead of **[OK]** here will abort all changes made and close the scroller.

Customize Scrollers



Scrollers are lists from which one or more of the listed things can be selected. For example, a scroller of all Jobs on the Board. Several items of information display in a scroller, and these items may be edited, added to, and deleted. The only restriction is the maximum width of a scroller. You are warned if you exceed this maximum.

After selecting this option, the "Search Criteria" window opens. Fill in any fields if desired (see Search Criteria) and press **[Search]** which opens a scroller of all the scroller titles. To edit a scroller, select it from the scroller of scrollers!

The options are explained below.

Highlight the scroller to be edited and press the **[Edit]** button. A window, like that shown below, opens with a display of the current scroller settings. Press the **[Dup]** button, and then type in a new scroller title. Press **[OK]** when you have finished. To reset the title to its original setting, press **[Reset]**.

To change the fields that display in a scroller, select a field with the highlight bar.

The options you have at this point are:

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Scr Desc: CONF_S(61)

Title:

Record: Bin Job Record

Bin Job Number	[X]	[X]	11
Bin Customer	[X]	[X]	20
Bin Description	[X]	[X]	20
Bin Date Job Req	[X]	[X]	0
Bin Time Req Job	[X]	[X]	0

XXXXXXXXXX XXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXX 99/99/99 99:99

Remove the Field

To remove the display of a field, press the **[Del]** button. *You cannot remove the first field in any scroller. This is the "key" field: the one the scroller is built from.*

Insert a New Field After the Current One

To insert a new field in a scroller, press the **[Select]** button. A scroller of all valid fields opens from which to choose the required one. The other fields will reposition to accommodate the new field.

Change the Displayed Length of a Field

Having selected new fields for the scroller, it may happen that the total width of all fields is greater than the maximum allowable. In this case, select the field with the highlight bar, and press the **[-]** or **[++]** buttons to alter the length of the field. Have regard for the information in the field whose length is being altered.

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Reorder Fields

Resequencing of fields in the scroller is possible by highlighting the field to be moved, pressing **[Reorder]**, then clicking where you want it moved to. Press **[Normal]** to leave the moved field at its new position.

It is not possible to move the first (key) field in a scroller.

Enable/Disable the Field

You may wish to leave a field in the scroller window but not have it display in the scroller itself (rather than deleting it). By pressing **[Toggle]** you can switch the highlighted field's display ON **[X]** or OFF **[]**.

There are two checkboxes on this line. One indicates the display status of the field "at the Scroller"; the other "at the Field". The only checkbox that may be activated with the **[Toggle]** key at this point is the "at Scroller" checkbox. This tells you whether the field is enabled/disabled *in this scroller* as you make your selection of ON/OFF. The other checkbox displays whether *the field itself* is displayed anywhere in the system (*this checkbox is set with the "Edit Field Titles" option*).

It is not possible to disable the first (key) field in a scroller.

Save

To save the changes, press the **[OK]** button. The edited scroller window will close, and the highlight bar may be moved to another option for editing. When all scrollers have been edited, press **[Cancel]** from the scroller list to return to the Main Menu.

Abort

Press **[Cancel]** at any time to abort changes and close the window.

The Scroller "Picture"

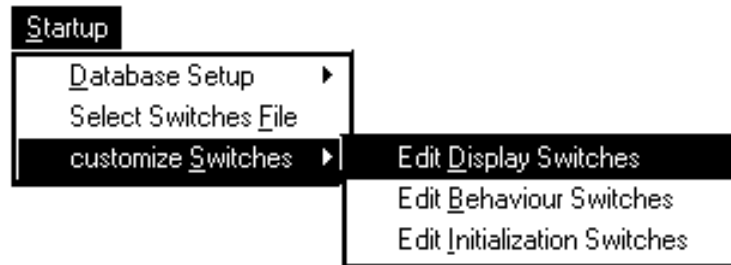
At the bottom of the screen is a window that displays an active picture of the scroller's current state. When the highlight bar is positioned on a field in the scroller editing window, that field changes colour in the picture window.

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As you change the width of a field in the scroller, its picture changes to reflect the changes you make.

***Any changes made to scrollers here are local changes only.
To change the field title globally, use the "Customize Text" or
"Customize Field Titles" options.***

Customize Switches



Switches are used to turn on and off certain functions that affect the way **The Planner** operates.

Many switches affecting the way The Planner behaves and displays information are now set within **The Planner** itself in the System and Display Configuration windows, available from the Properties option under File menu, or View menu respectively. These are switches that may be changed while carrying out a planning session.

The menu shown above lists by category the switches that are unlikely to be frequently adjusted, and hence are within the **Customizer**. In addition, some other items may be edited here, such as the minimum and maximum limits that are to be applied in certain circumstances.

Each option is described under its own name in this documentation.

Customize Text



Changes made here are global changes: that is, they take effect throughout the entire product being customized, except where a local change exists, when the local change will take precedence.

All titles and messages in **The Planner** are capable of being customized. The "Text" option includes error messages and system messages, and all titles that are not fields.

After selecting this option, the "Search Criteria" window opens. Fill in any fields if desired (see Search Criteria) and press **[Search]**.

A scroller opens with all the selected text strings listed. Choose the text to be changed by moving the highlight bar to it and pressing **[Edit]**. The chosen text string's editing window opens for editing. The original title remains displayed, and an editing field is provided.

Type in the new name for the choice. To save the change, press **[OK]**, or press **[Cancel]** to abort changes. After confirmation, the edit window will close, and you are returned to the text selection scroller. At this point it is possible to reset the text string to its original state by highlighting it and pressing **[Reset]**. When all the desired text strings have been edited, press **[Cancel]** to close the scroller.

Customize Users



After the Planner is first installed, you must set up at least one username and password. The default username 'admin', password 'secret' will only work the first time you run the customiser.

Note: Usernames and passwords are case sensitive

New Users

The Customise Users menu leads to a scroller of users. If none are listed, and you wish to add one then press the **[Insert]** button

A screenshot of a 'Create User' dialog box. It has a title bar 'Create User'. Inside, there are three text input fields labeled 'Username', 'Password', and 'Re-Type Password'. Below these are two checkboxes: 'Customizer Access' and 'Planner Access'. At the bottom are three buttons: 'Ok', 'Cancel', and 'Help'.

Key in the username you wish to use or issue to someone else, followed by the password, then the password check.

Ensure that you give access to either The Planner, the Customiser or Both, by turning on the relevant access checkboxes. **[X]** is **ON**, **[]** is **OFF**. To save the change, press **[OK]**, or press **[Cancel]** to abort changes.

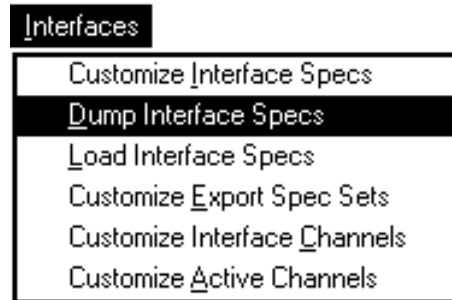
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Existing Users

Existing usernames can have passwords and access altered. From the Database Users scroller, press the **[Edit]** button with the username highlighted in the scroller.

Existing users can also be deleted from the system so that access to ***The Planner*** is no longer permitted. From the Database Users scroller, press the **[Delete]** button with the username highlighted in the scroller.

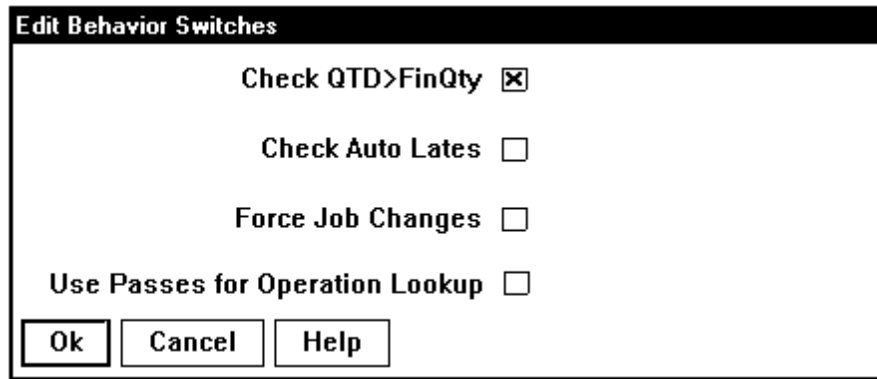
Dump Interface Specifications



This option creates a file PLINTER.SPC in the main planner directory, e.g. C:\Program Files\The Planner\, that contains all of the interface specifications set up in The Customizer.

This file may be printed out, or it may be used to create an identical set of interface specifications in another Planner installation, where the file plinter.spc would be loaded, using 'Load interface specs' from the same menu as above.

Edit Behaviour Switches



Check Auto Lates

This feature works in conjunction with the "Auto Lag Update" feature described above. When Auto Update is set to ON, "Check Auto Lates" displays a screen message whenever a Job is forced into a late state by the automatic updating of Jobs that have not started as WIP.

When ON [**X**], the messaging is activated, requiring a keypress to clear each message.

When OFF [], the messaging of late Jobs during Auto Update is not functional, and Jobs will go late without notifying the user.

Check if QTD > Opn Qty Required

When using the Work In Progress data entry screen, the quantity produced to date is entered. This feature performs a validity check on the quantity entered as Work in Progress.

When ON [**X**], if the quantity entered as quantity completed to date is greater than the Operation quantity, a warning message is given.

When OFF [], no warning message is displayed if the quantity entered as quantity completed to date is greater than the Operation quantity.

Force Job Changes

When ON [X]; any Critical Operation Changes other than ADDS will be applied to the Board, with whatever consequences. If the only critical operation changes are to, say, Run duration arising from quantity changes, and it is desired that these be applied without removing the jobs from the board and without any prompting, turn this switch on. A means of managing critical changes as they arrive in **The Planner** is provided and is explained in the Interfaces section of the manual.

Use Passes for Operation Lookup

This switch should only be altered by persons modifying the programs that interface Planner to the Manufacturing system being used.

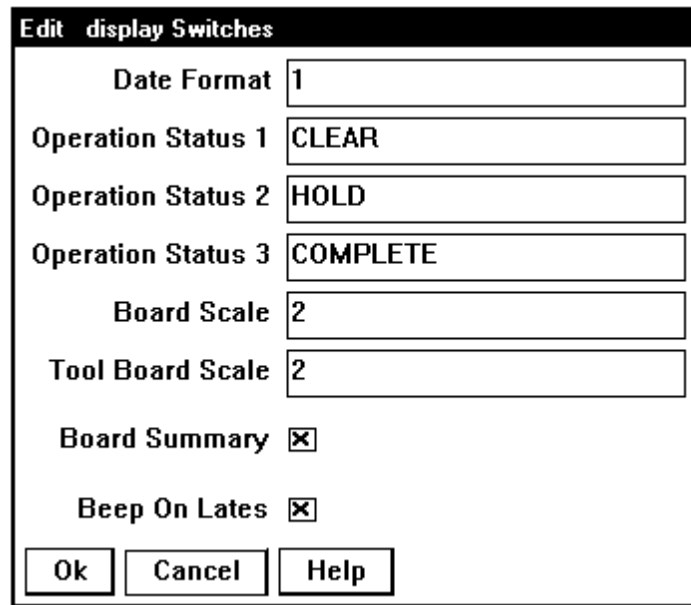
This is new to v3.2b. It changes the way operation sequence number works for interfaces.

When [ON] the operation sequence number is matched / sorted by the numeric value stored in the operation 'passes' field, when updating / adding / finding operation records. (the field is converted to a numeric value, with anything in this field that is NOT a numeric causing the field to have a value of 0).

Since the planner does NOT enforce either that operation order (by passes field value), nor passes being numeric, the manual editing of jobs can override / cause problems with future referencing of that job's operations. This feature is presently OFF by default, but will be used later with interfaces to some systems.

Refer to the Interface section of this manual for more details

Edit Display Switches



Date Format	1
Operation Status 1	CLEAR
Operation Status 2	HOLD
Operation Status 3	COMPLETE
Board Scale	2
Tool Board Scale	2
Board Summary	☒
Beep On Lates	☒
Ok Cancel Help	

Date Format

The Planner caters for three international date formats:

1. DD/MM/YY
2. MM/DD/YY
3. YY/MM/DD

Set the number in this field to correspond to the number shown above for the format required.

Operation Statuses 1, 2, & 3

The standard settings for each of the "Standard Statuses" are **CLEAR**, **HOLD**, and **COMPLETE**. These may be renamed here.

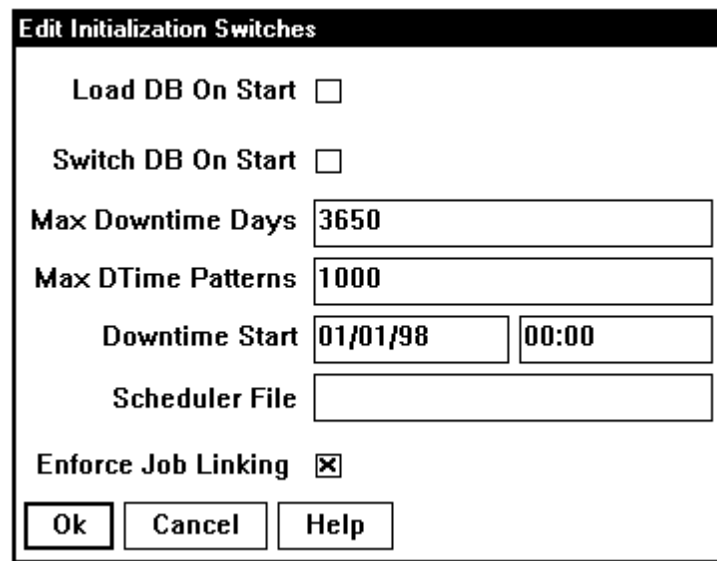
Board Scale

Sets the default startup timescale for the Resource Board Window. Default is 2.

Tool Board Scale

Sets the default startup timescale for the Tools Board Window. Default is 2.

Edit Initialization Switches



Edit Initialization Switches

Load DB On Start ☐

Switch DB On Start ☐

Max Downtime Days

Max DTime Patterns

Downtime Start

Scheduler File

Enforce Job Linking ☒

Initialization switches perform the task of setting up certain options in **The Planner** so that every time it starts up, these options are activated.

Load Database On Start

This option, when ON [X], prompts for a saved plan to load into the main Planner directory (see Saving and Loading Plans in the Planning Section). A scroller (list) of all saved plans is displayed, from which the desired plan may be chosen with the highlight bar and the [Select] button.

Switch Database On Start

Similar to "Load" above, but instead of loading the saved plan into the main directory, **The Planner** is told to switch to an alternative working directory. The name of the working directory (if not the main one) is displayed in the header and footer of the Main Planner Window. See the Planning Section for full details.

Note that when a plan is switched to, it becomes the working directory, meaning that all saving and loading is performed into that directory, overwriting its contents.

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When ON **[X]**, prompts for a saved plan to be switched to from a list of all saved plans.

Maximum Downtime Days

To conserve memory, a limit may be placed on the maximum number of days to which Downtime may be allocated. The default is ten years, but changing the value in this field will reset this.

Maximum Downtime Patterns

Downtime patterns are the blocks of time that are set aside as non-available time on a Resource. ***A pattern is one day of a particular series of Downtime start and stop periods.*** Again to conserve memory, the number of Downtime patterns may be limited by changing the value in this field.

Downtime Start

The Downtime calendar within ***The Planner*** is a rolling period, beginning at this date and extending for the period set in the "Maximum Downtime Days" field above. The default start date is January 1, 1994 (if date format is changed in "Edit Board Switches", the current date format applies). This may be changed to commence at any date. *Note that before advancing the start date, any Downtime that exists prior to the new start date, should first be deleted.*

Scheduler File

This box is only used when you have MultiUser installed.

The scheduler file, created in scheduler/site maintenance of MultiUser, needs to be copied from your multiuser directory e.g. C:\Program Files\Planview into the main planner directory, e.g. C:\Program Files\The Planner.

Key the name of the file, including its extension in this box, e.g. QueenSt.sit

This identifies the plan received in Multiuser as being from a particular scheduler.

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Planner scheduler can't be started when the .sit scheduler file can't be read. Message 'Scheduler file entered in customiser does not exist in specified directory' displays. This covers situations where scheduler file name is entered in Customiser, and the file was created within Planview, but in the incorrect directory. (The message is in the resource file so it can't be edited in the customiser)

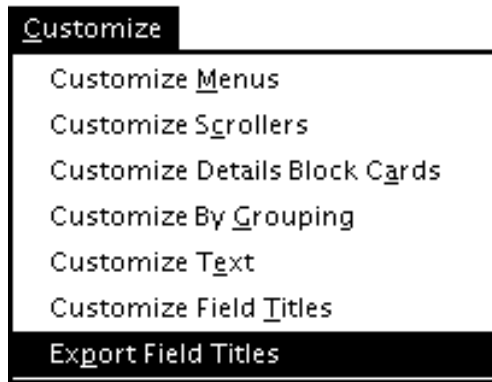
Enforce Job Linking

Work orders may be linked to other work orders in The Planner, so that their processing is planned to be carried out in a particular sequence.

This switch when ON **[X]** - ensures the sequence between work orders established in the Planner is enforced.

Alternatively, with this switch OFF **[]** - means breaking of the work order sequence is allowed, but is reported on in a similar ways to late jobs and tool conflicts.

Export Field Titles



This option exports the field titles for use in MulitUser so that consistent terminology is used.

Load Interface Specifications



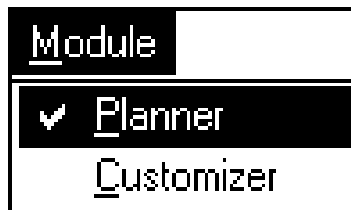
This option is to load a complete set of interface specifications created at another installation of The Planner, without the need for rekeying information.

Place the PLINTER.SPC file in the main planner installation directory, e.g. c:\Program Files\The Planner, and then run this option.

Any previous customizing of interface specs within the receiving planner will be overwritten by the loading from the file.

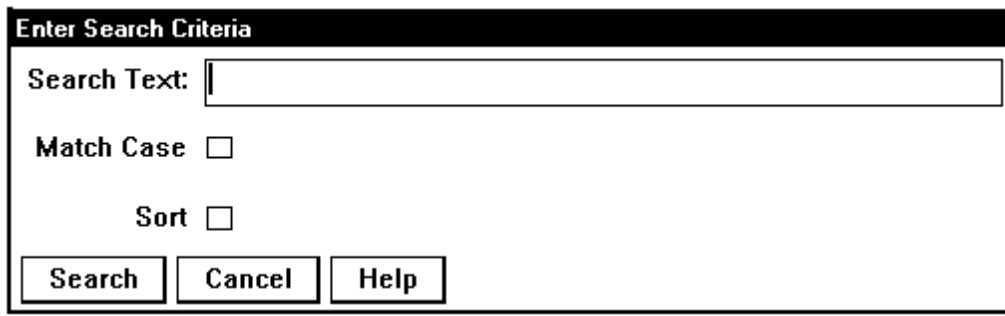
Module to Customize

The Customizer is used to customize the information and display in both ***The Planner*** and ***Customizer***.



By selecting the module from this menu, access may be gained to the same features in both for customization purposes. The name of the current product being customized is displayed in the main customizer window. The default product that is loaded each time the Customizer is run is ***The Planner***.

Search Criteria



Enter Search Criteria

Search Text:

Match Case ☐

Sort ☐

As each of the editing options in the Customizer are selected, usually the first window presented is the "Enter Search Criteria" window.

The use of this feature when "looking up" field, menu, group and scroller titles can make it easier to locate the exact choice that is required to be edited. Essentially it "narrows down" the range of choices from which to select the one to edit.

When the window opens, there are three options to use. The use of any or all of these options is optional. If you do not want to use this feature, simply press **[Search]** and the window will close and all fields, menus, etc will be displayed in the selection scroller.

To use the Search option, fill in the fields as described below.

Search Text

Enter any text string to be searched, for example the word "bin" (without the quotes). In this case, all instances of choices in the category being selected (field title, menu title, etc) containing the string "bin" **anywhere** in its title will be displayed on the scroller that results.

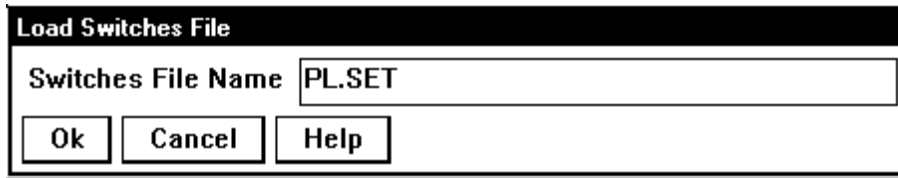
Match Case

The search may be narrowed further by having regard to the **case** of letters (capital or small letters) by checking this option ON **[X]** with the **[SpaceBar]**. By changing the above example above to "Bin" with "Match Case" switched on, the search results *may* be quite different.

Sort

By checking this option ON **[X]** with the **[SpaceBar]** the resulting scroller display will be sorted alphabetically in *ascending* order (a-z).

Select Switches File



The use of different setfiles has diminished with version 3.x, as most switches are now set from within The Planner.

The Planner comes with a standard setfile, named **PL.SET**, with the default settings for switches set in The Customizer. When you start up the Customizer, this standard setfile is loaded automatically, ready to be edited. It is possible, however, to choose to load another setfile for editing instead, if one has been created.

At any time during the customization of **The Planner**, you may save the current switch setup to a new filename using this option from the Main Menu. This may be useful when, for example, you have already made changes to the setup, and you want to test further changes. You may in this case load an existing setfile by entering its name here, make the required changes, then save the new version without losing the existing version.

When "saving as" a file, you must remember to give the new setfile a different name to any existing setfile, otherwise the existing one will be overwritten (lost).

To run The Planner using a setfile other than the standard PL.SET file, the shortcut will need to run `PL.EXE -SETFILE (setfilename)`. This will load the named setfile with all its data. See "Startup Switches" in the Appendices for more detail on this and other startup switches.

An example of a custom startup using switches as described here is:

PLS -SETFILE JOHN.SET

PLANNING

Scheduling Your Production

The Planner offers many tools to make the scheduling process more accurate and timely, to ensure that work orders don't get forgotten, and so that delivery targets don't get missed.

This section of the manual is dedicated to explaining how the scheduling process is carried out on **The Planner's** computerized planning board. It lays out how to:

- Create work order structures quickly and easily; (although when interfaced with **MFG/PRO** this function will continue to be carried out in MFG/PRO),
- Position work orders on the planning board and later move them around to reflect your constantly changing production environment;
- Plan for work shifts, overtime, and preventive maintenance and for those situations when "the plan" is unexpectedly disrupted because vital machines are put out of action without warning;
- Gain the most benefit from the information that is provided from the system.

This section is an in-depth look at the features of **The Planner**, each listed alphabetically by its menu or button name. For a quick tour of the main features in the logical order that each feature might be used, see the "Getting Started" Section.

Please Note

Remember that **The Planner** is fully customizable. You can set up the fields for almost any purpose (see Customizing Section). The names used throughout this section conform to the original names that came with this MFG/PRO tailored system. You will need to substitute any names you have customized as you read.

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Menu Choices

There are eight main menus used: **File**, **Edit**, **View**, **Plan**, **Reporting**, **Interfaces**, **Window** and **Help**. These are accessed by clicking on the menu item at the top of the main Planner window.

Alternatively hold down the **[Alt]** key and simultaneously press the underlined letter of the required menu: for example, to pop up the Plan Menu, press the letter **[P]** on the keyboard (capitals or lower case both work) while holding down the **[Alt]** key. Likewise for the Edit Menu, type **[E]** and the View Menu, type **[V]**.

To quit The Planner at any time, press **[Alt]+[F4]** keys when no menus are open. Alternatively use exit from the File menu, or double click on the top right hand [X].].

Important Information regarding additional modules:

This documentation is for The Planner scheduling tool.

Information on the setting up and use of MFG/PRO interfaces is contained in its own section: Interfaces.

The MultiUser section covers the configuring and use of the system that enables many people to access schedule information.

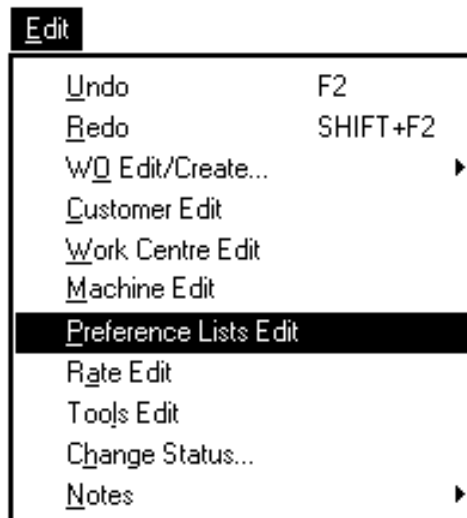
Alternative Machines

It is often desirable to process an Operation on a Machine other than its planned Machine. This is only possible of course, if the alternative Machine has the capability to perform the same function as the original Machine.

The Planner permits the setting up of alternative Machines in lists, known as "Preference Lists". Any number of Preference Lists may be created. Any number of Machines may belong to a Preference List. A Machine may belong to any number of Preference Lists.

When Interfaced to MFG/PRO, some preference lists can be automatically setup, depending on how work centers and machines are structured in the implementation of MFG/PRO. See page 120 for details.

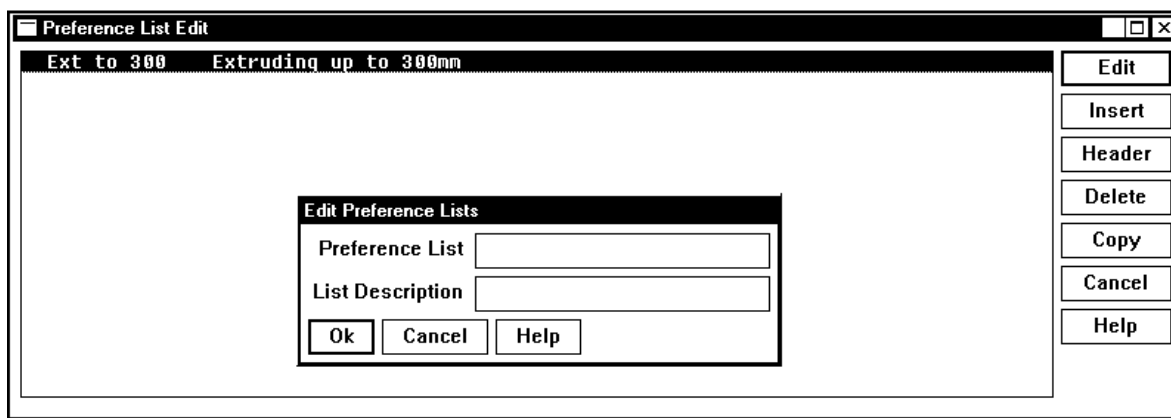
When **The Planner** is installed, an option is available on the "Edit Menu" called "Preference Lists Edit". This is where the alternative Machine lists are created/edited/deleted, as described below. They are then used in editing Work Orders by applying them to specific Operations in the Work Order(s), thereby creating an alternate routing should the preferred Machine be too busy. The decision to move an Operation from one Machine to another in the Preference List is determined by the switch settings made in the System Configuration window. These aspects are discussed later in this section.



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Creating Preference Lists

Selecting this option opens a scroller of all Work Centers. (Only the Machines within a Work Center may be included on any Preference List). Choose the Work Center you wish to create the Preference List for, and press **[Select]**. The Preference List Edit scroller window opens displaying all the Preference Lists existing for the chosen Work Center (blank if none yet created). Press **[Insert]** to create a new Preference List header, and enter the name and description of the new Preference List. When done, press **[OK]** to save the new list header details. A scroller opens automatically so that Machines can be added to this Preference List.



To add Machines to the list, press the **[Insert]** key. The 'Select Preferred Machine' window opens listing all Machines in the chosen Work Center. Choose the Machine to be placed in the Preference List and press **[Select]** to transfer it into the Preference List. Continue this process (press **[Insert]**/choose/**[Select]**) until all the required Machines have been transferred into the new Preference List.

Don't be concerned about the order of the Machines in the list at this stage, as they can be reordered at any time. This is discussed next. If the Machines are already in the correct (preferred) sequence, press **[Cancel]** to return to the preference list scroller window.

Reordering Machines in Preference Lists

Once a Preference list has been created, it is necessary to reorder the Machines in that list to reflect the preferred sequence of usage. For

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example, if Machine A is not available, try using Machine B, then Machine C, etc, in that preferred order.

To perform a reorder of Machines in the Preference List scroller, the relevant Preference List must be open. Position the highlight bar over the Machine to be moved. Press **[Reorder]**. This action causes the selected Machine to "stick" to the highlight bar. You may now click on the new position (or use the **[up]** and **[down]** arrow keys to move the selected Machine to its new position in the sequence). Press **[Normal]** to drop the Machine into its new position.

Repeat this process with other Machines until the sequence is correct. When done, press **[Cancel]** to return to the preference list scroller window.

Removing Machines from a Preference List

To remove a Machine from its Preference List, first select it with the highlight bar, then press the **[Delete]** button or key. This will not delete the Machine, but simply remove it from the current Preference List.

Deleting Preference Lists

At any time when the Preference List scroller is open, positioning the highlight bar on a list name/description and pressing the **[Delete]** button or key will permanently remove the Preference List from the database. Before deletion, **The Planner** checks whether the Preference List is in use for any Operation. If it is, you are first warned of this fact. On confirmation, the Preference List is removed from each affected Operation, then permanently deleted from the database.

Editing Preference Lists

At any time, preference lists may be edited to change the name and/or description of the list. Select the required Preference List to edit from the Preference List scroller and press **[Header]** to open its editing window. Make the required changes in the usual way and press **[OK]** to save the changes. Pressing **[Cancel]** when the edit window is still open will abort any changes.

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Copying Preference Lists

When setting up a new Preference List, it will sometimes be more expedient to use an existing one and then edit it with the appropriate changes. In this way duplication of data entry can be minimised.

To copy a Preference List, select it from the Preference List scroller and press **[Copy]**. A new Preference List name/description window will open to enter the details. When the new name and description details are entered, press **[OK]** to save them. All of the Machines belonging to the original List will be present in the new List, and these may be deleted or added to as desired.

Assigning Preference Lists to Operations

To assign any of the pre-defined Preference Lists to any Operation, open the Work Order Edit window in the location where the Work Order is situated (Bin, Library, Board), lookup the Work Order, and call it into the editing window.

Highlight the required operation and press **[Edit]**. Press on the **[Select]** button besides the Preference List field (next to the "Machine" field).

The Preference List scroller opens listing all the Preference Lists to which the Machine for this Operation has been assigned. Choose the required Preference List from the scroller and press **[Select]**. The chosen Preference List will be entered into the Preference List field.

The selected Preference List may be changed at any time. Simply press the Preference List **[Select]** again when in the Operation line edit window, and select another Preference List.

When creating a new operation line, if Preference List **[Select]** is pressed before assigning a machine to the operation, you will be prompted to select a machine, then a preference list that that machine belongs to.

Creating Preference Lists On the Fly

At some point in time it may be desirable to assign alternate Machines to an Operation, but a Preference List may not yet have been created to include

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the desired alternate Machine(s). A Preference List may be created "on the fly" without having to exit from the Work Order editing window.

Press the Preference List **[Select]** button of the Operation line, as explained above. If no Preference List has been created for the Machine that is selected for the Operation, a blank Preference List scroller is displayed. Press **[Insert]** and proceed as if creating a new Preference List as described earlier.

Enter the name and description of the new Preference List. When done, press **[OK]** to save the new list header details. A scroller opens automatically so that Machines can be added to this Preference List.

To add Machines to the list, press the **[Insert]** button or key. A window opens listing all Machines in the chosen Work Center. Choose the Machine to be placed in the Preference List and press **[Select]** to transfer it into the Preference List. Continue this process (press **[Insert]**/choose/**[Select]**) until all the required Machines have been transferred into the new Preference List.

You may also re-sequence the Machines on the list using **[Reorder]**/**[Normal]** as described above. Press **[Cancel]** to save the list when done.

Alternate Machines When Moving Operations

The use of Alternate Machines provides semi-automated choices for Machine selection when processing Operations. The rules governing the selection of Alternate Machines in Preference Lists depend on the various switch settings at the time of the move.

See "System Configuration" for more information.

Note that Preference Lists (Alternate Machines) are ignored if the Operation being moved is part of a Grouped or Ganged set of Operations.

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Preference Lists Established by MFG/PRO Interface Program

If the Interface option to send preference lists to The Planner is turned on, the preference lists will have been set up in accordance with the following table.

MFG/PRO Wkctr	MFG/PRO Mch	Machines (wc_mch_wk ctr)	Preference Lists sent to Planner
W1	M1	Any Value	No Pref List
W2 W2 W2	'blank' M1 M2	1 1 1	Pref list named 'W2' containing W2-'blank' W2-M1 W2-M2
W3	'blank'	Any Value	No Pref List
W4 W4 W4	'blank' M1 M2	0 1 1	Pref List named 'W4' containing W4-M1 W4-M2
W5 W5 W5	'blank' M1 M2	0 3 2	Like W4 but stupid. (Create entries for all M1 & M2 machines so get a proper spread of work in a preference list.)
W6 W6	M1 M2	1 1	No Pref List, must create a "W6- 'blank'" with machines=0 entry if want to use pref lists.

NB: On a route cannot put in say "W6 'blank'", because it does not exist in wc_mstr.

UnHelpful Workcenter-Machine Setups in MFG/PRO

If MFG/PRO has been setup using only W/C names, with like machines having different Wkctr, such as in W10 & W11 below, preference lists can

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still be created to make use of the Alternative Machine features of **The Planner**.

MFG/PRO O Wkctr	MFG/PRO O Mch	Machines (wc_mch_wkctr)	Preference Lists sent to Planner
W10	'blank'	1	No Pref List
W11	'blank'	1	No Pref List

To spread workload over the like machines W10-blank and W11-blank, without changing the whole W/C structure and routings in MFG/PRO:

1. Modify the MFG/PRO setup at screen 14.5 to be as follows:

MFG/PRO O Wkctr	MFG/PRO O Mch	Machines (wc_mch_wkctr)	Preference Lists sent to Planner
W10 W10	'blank' 10	0 1	Now get pref list W10, with just W10-10 in it
W11 W11	'blank' 11	0 1	Now get pref list W11, with just W11-11 in it

2. Now create a new Work Center in Planner, called say CNC,

3. Once the initial download to The Planner has been run, reassign the machines in Planner (which would be W10 10 and W11 11) to Work Center CNC.

4. Edit both preference lists W10 and W11 which would have been automatically created during the first download. As the machines W10 and W11 are now in the same workcenter as far as Planner is concerned, they can be in preference lists together

Pref List Name	Pref List Contents Created as	Change the Pref List contents to Contain
W10	W10 10	W10 10 W11 11

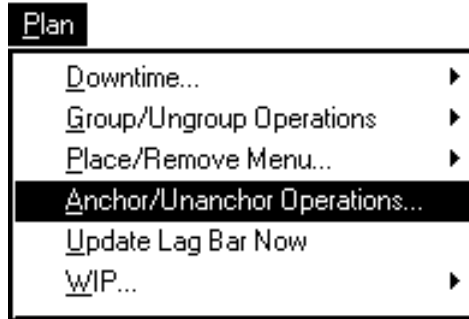
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W11	W11 11	W11 11 W10 10

5. As the routings in MFG/PRO still say W10-blank or W11-blank, each operation sent to planner will have a preference list name attached to the operation, W10 or W11 respectively. The load will now spread over the W10 10 and W11 11 machines based on how 'Alternative Machines' are set up in System Configuration.

If any operation must run on one machine and not an alternative – change the routing to specify wkctr W10 AND Mch W10. Then no preference list will be attached to these operations.

Anchoring Operations



Anchoring is the term used to describe the *locking* of Operations to a fixed position on the Planning Board.

Two means of anchoring are available –

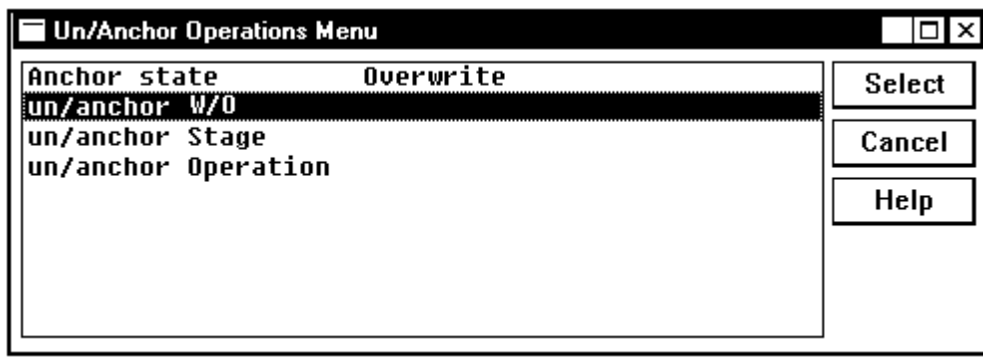
- Anchoring a selected work order/stage/operation. This is carried out using the “Anchor/unanchor Operations” option from the Plan menu.
- Anchoring all operations within a selected range of time, which are on selected machines on the board. This is carried out using the “Anchor/unanchor operation Range” button and your mouse to select the range to anchor.

Both methods use similar menus, and terms. The method to anchor a selected work order/stage/operation will be described first.

Anchoring a selected work order/stage/operation

Selecting the “Anchor/unanchor Operations” option from the Plan Menu opens another menu as shown below, from which to select the *extent* of the anchoring to be performed. Each of these options in turn leads to a further menu from which it is possible to select the type of anchoring/unanchoring. All of these options are described below.

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Each of the options are described below for both anchoring and unanchoring.

Anchor State

Set this option to SKIP or OVERWRITE prior to selecting one of the other options. The default is SKIP. Press **[Select]** with this line highlighted to switch between both options.

The "Skip" option means that the new anchoring will not affect any Operations which already have anchors applied. The existing anchors will be preserved. The "Overwrite" option has the opposite effect, in that any existing anchors will be lost and replaced by the new un/anchoring criteria.

Anchor Work Order

When this option is chosen, the anchor type menu opens. Select the type required (see anchor types explained page 125), then the Work Order scroller opens listing all Work Orders currently on the Planning Board. highlight the Work Order to be un/anchored and press **[Select]**. After determining the "Float" time (see page 126), the selected Work Order will be un/anchored in its current position.

Anchor Stage

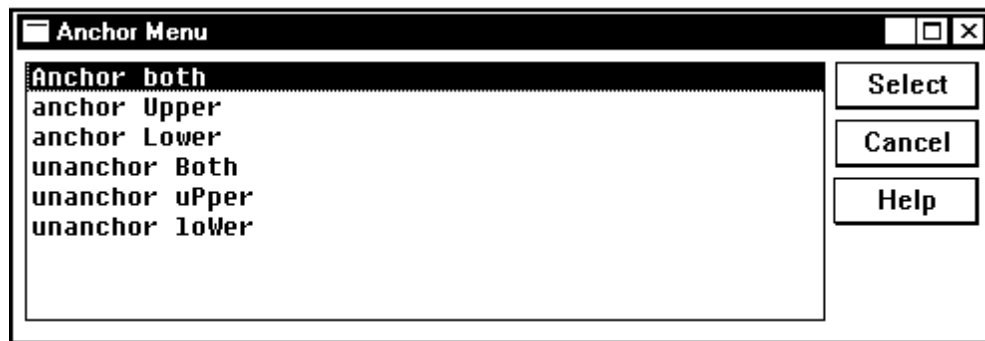
When this option is chosen, the anchor type menu opens. Select the type required (see anchor types explained page 125), then a scroller opens listing all Work Orders currently on the Planning Board. Highlight the Work Order to be un/anchored and press **[Select]**, and then another scroller lists all Stages in the Work Order. Highlight the Stage to be un/anchored and

press **[Select]**. After determining the "Float" time (see page 126), the selected Stage will be un/anchored in its current position.

Anchor Operation

When this option is chosen, the anchor type menu opens. Select the type required (see anchor types explained page 125), then a scroller opens listing all Work Orders currently on the Planning Board. Highlight the Work Order to be un/anchored and press **[Select]**, and then another scroller lists all Stages in the Work Order. Highlight the Stage to be un/anchored and press **[Select]** again to open the last scroller listing all Operations in the selected Stage. Finally highlight the Operation to be un/anchored and press **[Select]** once more. After determining the "Float" time (see page 126), the selected Operation will be un/anchored in its current position.

Anchor Types



Anchor Both

Each Operation has a start time and an end time, relative to their current position on the Board. These are referred to, for the purposes of anchoring, as the "Upper" and "Lower" times. Upper time is equivalent to the *end* time of the Operation, and Lower time relates to the Operation's *start* time.

With this option, you can choose to anchor both the start time and the end time of an Operation(s) at one time.

Anchor Upper

Selection of this option anchors just the *end time* of an Operation's Run.

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(i.e. Clean can take place later than the Upper anchor)

Anchor Lower

Selection of this option anchors just the *start time* of an Operation's Run.

(i.e. Setup can take place earlier than the Lower anchor)

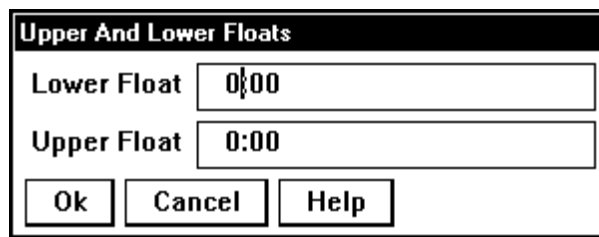
Unanchor Both / Upper / Lower

Refer to the comments made in the above items. The same principles apply, except that when "Unanchor" is selected, anchors are removed from any anchored Operations, and they are free to move without restriction.

When the above options are chosen, the anchor menu opens, from which to select the anchor or unanchor type. Note that the same menu is used for both anchoring and unanchoring.

Float

When anchoring Operations, after each of the possibilities described above is selected, the final window that opens is to select the "Float".



Float is a range of time in which the Operation(s), although anchored, are permitted to slide within. Upper Float relates to the latest time for the completion of the Operation (the LDate), and Lower Float relates to the earliest time for the commencement of the Operation (the EDate). The following diagram will help to explain:



The line represents the range of float that the Operation is permitted to move between. It will be seen in the Work Order edit window that the "Use EDate" and "Use LDate" switches are set ON when anchoring has been applied to an Operation. These switches may also be set within the Work Order edit window.

Please note that the Start Time and End Time shown are those for the 'Run' component of the Operation. Setup can take place earlier than the Edate, and Clean can be carried out later than the Ldate.

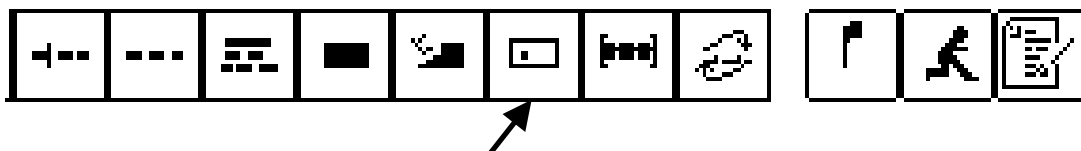
See "Push Levels" for more information.

Anchor/Unanchor Operation Range

This option allows the un/anchoring of all Operations that start or end within a time range on the Board.

Methods

- No menu choice is provided for this option, instead one of the buttons in the Main Planner Window is used.



Anchor/Unanchor Operation Range Button

- The range to be anchored or unanchored is first selected using the mouse. Two methods are available to select the range of the board; "Drag & Drop" and the "Three Step Method". Both are described below.
- Once the range has been selected, the anchoring/unanchoring options are chosen

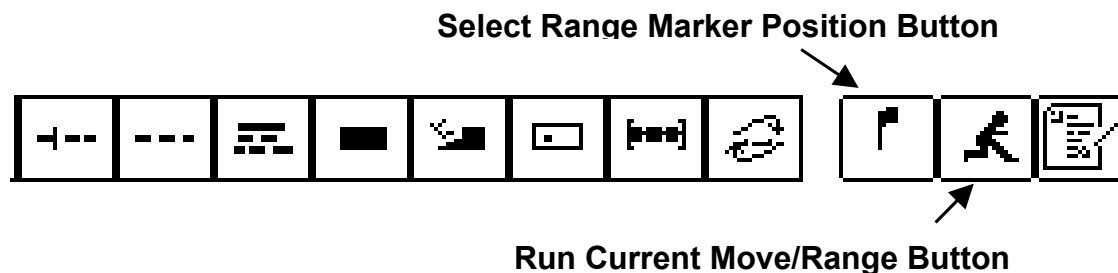
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“Drag & Drop”

1. Press the **[Anchor/Unanchor Operation Range]** button,
2. Left click at (say) the left-most, or earliest point in the range to be anchored or unanchored,
3. While holding down the left mouse button, drag the mouse pointer to the right-most or latest point in the range,
4. Select the Anchor Type required (anchor types are explained earlier in this topic),
5. Select the Machine, or Machines, to include in the range to action
6. Enter any floats required, and press **[OK]** to complete the anchoring/unanchoring.

“Three Step” Method

1. Press the **[Anchor/Unanchor Operation Range]** button,
2. Left Click at (say) the left-most or earliest point in the range to be anchored or unanchored,
3. Press the **[Select Range Marker Position]** button. At this point a vertical line will mark the position on the board, or a black rectangle in the view,



4. Left Click at the right-most or latest point in the range to be anchored or unanchored,
5. Press the **[Select Range Marker Position]** button again. At this point another vertical line, or black rectangle will appear and mark the range end position,
6. Press the **[Run Current Move/Range]** button to confirm the selected range,
7. Select the Anchor Type required (anchor types are explained earlier in this topic),
8. Select the Machine, or Machines, to include in the range to action

9. Enter any floats required, and press **[OK]** to complete the anchoring/unanchoring.

Notes about the “Drag & Drop” and “Three Step” methods

Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window.

Displaying Anchored Operations

Normally operations that are anchored in any way do not display any differently on the Board because they are anchored. They may be a different colour, red or blue, from being late or having a user status display on, but normally they are just regular green.

At times though it may be desirable to display them differently from others. This can be achieved by changing the display variables in ‘Display Configuration’, accessed from the View menu, or with the **[Ctrl]+[F11]** keys.

See the Display Configuration entry.

Automatic Update

As part of the Work In Process (WIP) Update function, it is possible to have **The Planner** automatically keep Work Orders current. That is, those Work Orders which have not been flagged as commenced (WIP'd) are moved forward in time until you notify the system that work has started on them. In this way it can be assured that no Work Order is forgotten as the "NOW Bar" passes over its position on the board. It will not be allowed to simply "drift" leftwards into history!

The method that is employed to keep 'unstarted' Work Orders current is the "Auto Update" feature. This is switched on/off in System Configuration, in Preferences from the File menu. Switching of this function to ON can be temporary, or the permanent default. Alternatively the 'Update Lag Bar Now' option is available from the Plan menu when required.

To use this Updating method with MFG/PRO, the setting in MFG/PRO Export utility "Use Qty Left to Run" must be turned on. Please see 'Update Lag Bar now' on page 131.

How Auto Update Works

When the Auto Update feature is switched on, a red vertical line is displayed on the planning board at a distance behind (left of) the "NOW Bar". This red line is named the "LAG Bar", and its distance behind NOW is constant: it follows the NOW Bar at a preset period of time, explained below.

The LAG Bar, upon reaching Operation cards that have not been flagged as started (WIP'd), pushes such Operations to the right. A message briefly displays to indicate that this process has occurred. Of course, any Operations subsequent to the one pushed are pushed also, and the planning board is automatically adjusted to accommodate the pushed Operations.

Any Operations that have been flagged as WIP are not pushed to the right. In this case the LAG Bar passes over the Operations in WIP. When a pushed Operation meets a WIP Operation, the WIP Operation remains in its fixed position and the pushed Operation "jumps" over it.

How Much "Lag"?

The period of time between NOW and the LAG Bar is also set in System Configuration, in Preferences from the File menu. The value set for the 'Lag Offset' is expressed in hours and minutes, and can be temporary, or the permanent default.

If WIP update is entered from daily time sheets, it is recommended that the Lag Offset is set at more than 24 hours to allow time for the entry of WIP data before the automatic update takes effect. On the other hand, if WIP is fed directly to **The Planner** via an electronic means, the lag would be more appropriately set at just a few minutes or longer, depending on the time it takes to get the data from the other system onto the planning board.

Auto Update Delay

The period between automatic updates when auto update is turned on is governed by the period set in the Auto Update Delay field of the System Configuration window, in Preferences from the File menu.

Update Lag Bar now

It is not necessary to switch on the Auto Update feature in order to use the WIP Update feature.

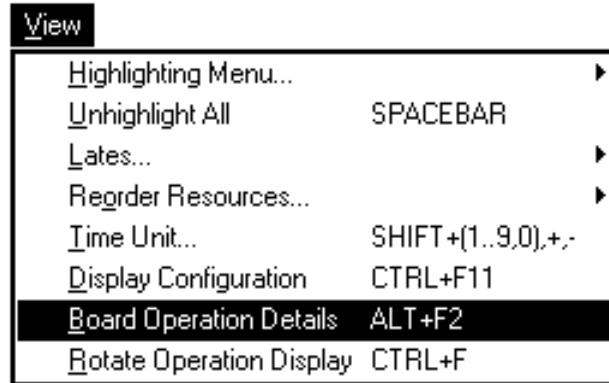
Instead the setting in MFG/PRO Export utility "Use Qty Left to Run" should be turned on. This ensures that the lengths of the operation bars on the board reflect the amount of work still to be done, at the time the MFG/PRO information was current.

The lag bar offset must then be set to the difference between the current time and the time the information was current in MFG/PRO. That is, if the data in MFG/PRO was 'as at 7am' night shift finish, and it is now 10am, the lag offset must be set to 3 hours.

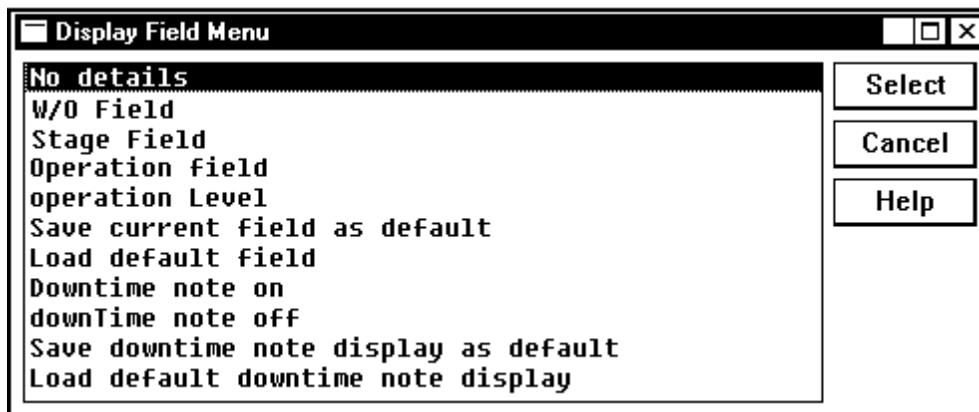
Once this is done, running 'Update Lag Bar Now' from the Plan menu pushes all earlier work outstanding up to 7am.

Board Operation Details

The normal display of Operation cards on the Planning Board is the card only, but there are several alternatives that may be displayed *beneath* each card.



By pressing **[Alt]+[F2]**, or selecting 'Board Operation Details' from the View menu, the Display Field Menu window opens which offers the alternative display settings.



Only one display option is possible at one time
Because each character in the display occupies a whole time bucket, large (zoomed out) time scales may result in a truncated display when an Operation card is of insufficient length to accept the full field width

No Details

"No Details" is the default setting unless changed. In this state, the only time there is any display below the Operation cards is when an Operation is updated into WIP, when an asterisk (*) displays.

Work Order/Stage/Operation Field

By moving the highlight bar to either of the Work Order, Stage or Operation fields options and pressing **[Select]**, a scroller with all the fields in each of those records is displayed. **[Select]** the desired field. The contents of the chosen field will display beneath each Operation card on the Board.

Operation Level

If the "Operation Level" option is chosen, it will display a number from one to nine in every *time* position below each card. This number relates to the number of Operations that overlap in the corresponding time "bucket". Multiple Operations per time bucket can occur when:

- a large time scale is selected. In this case it is possible for more than one Operation to be present in a time bucket.
- infinite Machines are used. Infinite Machines can have Operations stacked on top of each other in time.
- when Ganging of operations is used.
- on the Tools Board when Tools are used.

Where there are more than nine Operation cards in the Stack, an asterisk (*) is displayed.

Save Current Field as Default / Load Default Field

This option allows the currently selected field display to be saved as the default, so that whenever **The Planner** is started, or 'load default' is selected this field displays under the operation bars.

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Downtime Note On /Off

When the "Downtime Note On" option is selected, the first line of notes held for the period of Downtime is displayed (depending on the length of Downtime available to display the notes; also subject to the current time scale used).

When the "Downtime Note Off" option is selected, the Downtime notes display is suppressed.

Save Downtime Note display as Default / Load default downtime note Display

This option allows the current downtime notes display setting to be saved as the default, so that whenever ***The Planner*** is started, or 'load default...' is selected this field displays under the operation bars.

Board Update Summary

Whenever a change is made to the Planning Board because of placement, moving, pushing of Operations, or addition or deletion of Downtime that results in Operations being moved to a new position on the Board, the Board Update Summary window displays.

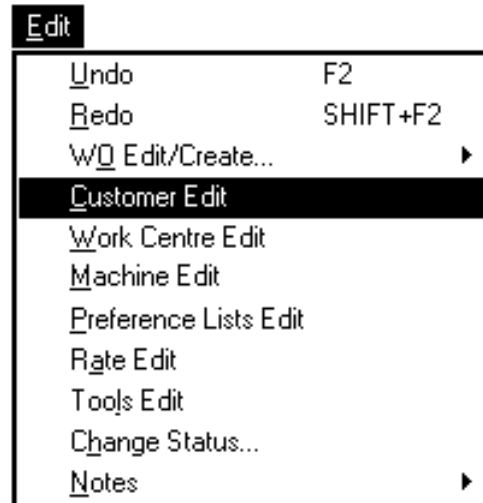
Board Update Summary	
Operations Modified	361
% Of Plan Modified	%37.139
New Late W/Os	0
New On-Time W/Os	20
New LDate Anchor Violations	0
New LDate Anchor Violations Cleared	0
New EDate Anchor Violations	0
New EDate Anchor Violations Cleared	0
New Tool Conflicts	0
New Tool Conflicts Cleared	0
New Job Link Conflicts	0
New Job Link Conflicts Cleared	0
Ok Help	

By viewing this window the effects of changes made can immediately be seen. When the results indicate a change to **lates, violations or conflicts** has occurred, these changes can be studied from the Lates Menu which is found under the View menu.

The Board Update Summary can be stopped from displaying after each change if desired. Do this in the Customizer, using 'Edit Display Switches'.

If you 'OK'd the last board update summary too quickly, or wish to view it again, it is possible to so from the Reporting Menu, choose Last board update summary.

Customer File Editing



The Customer file is where information is stored for all customers in the system. It is not *essential* to load customers into this file, but it does make working with the system easier, particularly in the Work Order editing window. *In Work Order editing it is possible to "lookup" customers in the customer file to avoid the need to type in customer details repetitively. See "Work Order Edit".*

If Work Orders in MFG/PRO are directly related to a sales order, (i.e.wo_mstr.wo_so_job exists) the customers details will be automatically attached to the Work Order via the Interface, and will be added to the customer file in The Planner. Changes in customer details will also be sent to Planner. Hence this customer editing facility would not be used.

To set up a customer in the customer file, select the "Customer Edit option from the Edit Menu. A scroller will first open to list all the existing customers in the file.

To edit an *existing* customer's details, select the customer from the scroller and press the **[Edit]** button.

To add a *new* customer, press **[Insert]**.

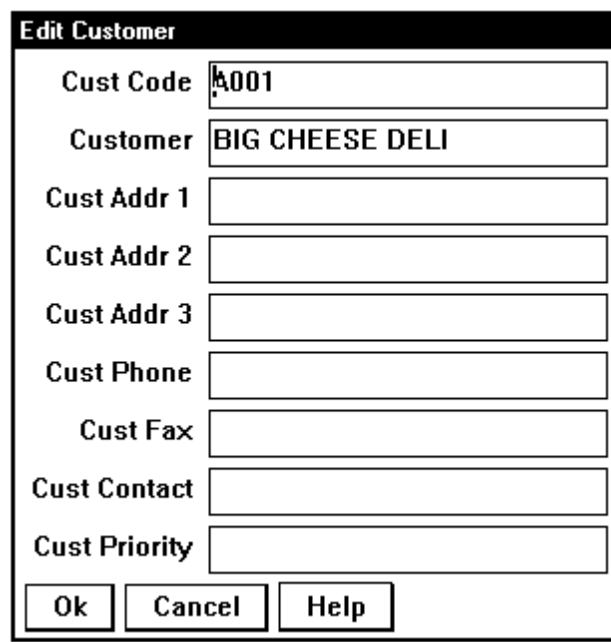
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To *remove* a customer from the file, select the customer with the highlight bar and then press **[Delete]**.

Entering New Customer Details

The "Cust Code" field is the one that the system uses to lookup the file. This cannot be left blank. Other fields are not mandatory.

The "Priority" field is used only as a variable for sequencing. When set here it applies to the customer and becomes the default priority for any work orders for the customer. It may be overwritten with a different value for specific work orders.



Edit Customer	
Cust Code	A001
Customer	BIG CHEESE DELI
Cust Addr 1	
Cust Addr 2	
Cust Addr 3	
Cust Phone	
Cust Fax	
Cust Contact	
Cust Priority	
Ok Cancel Help	

When done, press **[OK]** to save changes and close the window. To leave the window without saving any changes, press **[Cancel]**.

Using the Customer File for Other Purposes

If there is no need for a customer file in a particular business, it is possible to use it for another purpose, for example a stock/materials file. By creatively

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using the system's Customizer (see Customization Section), each of the fields may be renamed and put to an alternative use. The entire file must be held together though. It is not possible to use some of the customer fields in another area.

As a suggestion for a stock file, the field names could become:

Stock Code
Description
Thickness
Width
Height
Item Number
Specification Number
Alternative Description
Colour Code

Details Card Rotation

The Data Window is the information section of the system often arranged across the bottom of the main Planner Window. In it is displayed information about the area of the Board or View window on which the Pointer is positioned. The type of information displayed is also determined by which “detail card” is selected.

There are several types of standard Details Cards available within the system; these and unlimited extra ones may be designed and switched ON or OFF by the user. See Customizing Section to learn how to create and edit a Details Card, and how to switch them ON and OFF.

All the Details Cards that are currently switched ON may be rotated in the window to locate the information that is relevant at the time. They will each have a tab (at the top of the data window), labelled with the Detail Card name and any one card can be displayed by clicking on its tab.

There is one ‘stack’ of Details Cards for the Resource Board and View, and another stack for the Tools Board and View.

The Details Block cards that come standard with the system are:

Resource Board and View

- 132 column MFG/PRO Work Order data (similar to 16.1)
- 132 column MFG/PRO Routing data (similar to 16.13.13 or 14.13.1)
- 132 column MFG/PRO Sequencing Card
- 132 column Std Work Order data
- 80 column Downtime data
- 132 column Std Customer data
- 80 column Work Order data
- 80 column Stage data

Tools Board and View

- 132 column Tool/Work Order data

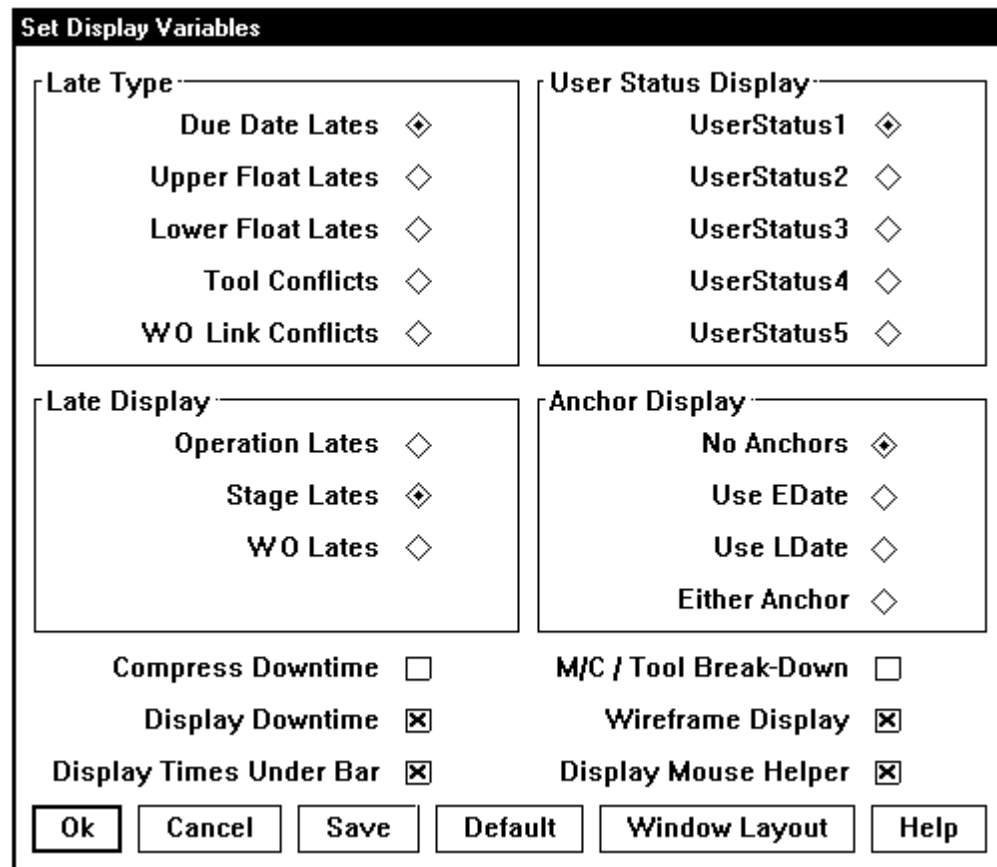
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Fonts and Colours

The data window display fonts and colours can be changed. With the mouse arrow over the Data window, press your right mouse button, colours and choose between changing fonts or colours.

Display Configuration

Much of the way *The Planner* displays aspects of the system is variable, depending on user preferences. These display variables are accessed via the View menu, in Display Configuration or by pressing **[Ctrl]+[F11]**. The display variables window is shown below, with a description of its contents.



The 'Set Display Variables' dialog box is divided into four main sections, each with a title bar and a list of options with radio buttons. At the bottom, there are several checkboxes and a row of buttons.

Section	Option	Radio Button
Late Type	Due Date Lates	☐
	Upper Float Lates	☐
	Lower Float Lates	☐
	Tool Conflicts	☐
	WO Link Conflicts	☐
Late Display	Operation Lates	☐
	Stage Lates	☒
	WO Lates	☐
User Status Display	UserStatus1	☒
	UserStatus2	☐
	UserStatus3	☐
	UserStatus4	☐
	UserStatus5	☐
Anchor Display	No Anchors	☒
	Use EDate	☐
	Use LDate	☐
	Either Anchor	☐

Below the sections are two columns of checkboxes:

Compress Downtime ☐	M/C / Tool Break-Down ☐
Display Downtime ☒	Wireframe Display ☒
Display Times Under Bar ☒	Display Mouse Helper ☒

At the bottom are six buttons: **Ok**, **Cancel**, **Save**, **Default**, **Window Layout**, and **Help**.

In all cases, left click on the radio button beside your choice of option, to switch the option ON/OFF. When done press;

[OK] to close the window and change the display variables to the new settings for this session, or

[Default] to close the window and change the display variables to the new settings for this and any new sessions, or

[Cancel] to abort changes to the settings and close the window.

[Window Layout] to alter the arrangement of windows within the main Planner window. See page 144.

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Late Types

These mutually exclusive (only one at a time) switches set the method for displaying the green/red colour cards on the Board. The default setting is for when Work Orders/Stages/Operations are late, but alternatively the display may be changed to highlight when either upper or lower anchors are violated or when a Tool is used by more than one Operation at a time.

Due Date Lates

This is the default setting. It causes Operation cards on the Board to display in green/blue if they are on time, or red/purple if they are late, ***based on the setting in the Late Display section of the window (see below).***

Upper Float Lates

An alternative to the default setting is to display all Operations which have been moved to a position such that their completion date/time is outside of their LDate (upper anchor) limit in red/purple.

Lower Float Lates

An alternative to the default setting is to display all Operations which have been moved to a position such that their start date/time is outside of their EDate (lower anchor) limit in red/purple.

Tool Conflicts

When this radio is switched ON, all Operations that are positioned on the Planning Board such that any Tool required for that Operation is also required for another Operation at any time during the same period are displayed in red/purple.

On the Tools Board, each Tool that is in conflict with any other Tool is displayed in red/purple. This display is fixed, regardless of the Late Types setting in the Display Variables window.

Late Display

When Work Orders/Stages/Operations are on time (by their due date) they are displayed in green (*or blue, see User Status Display below*). When they are late, they are displayed in red (*or purple*).

It is possible to have either entire Work Orders which have some late Operations to be displayed in red/purple, or just the affected Stage, or just the affected Operation(s) by choosing the appropriate switch setting in this section of the window. The default is Stage Lates.

User Status Display

Of the five User Statuses, any one at one time may display Operation cards on the Board in an alternative colour. This assists in identifying Operations that have a particular status display flag set, much like the coloured stickers so often used with manual planning systems.

The status display names displayed here are the defaults that come with the system. If you have customized the status display names, your changes will display.

The default setting is for the UserStatus1 to be displayed in the alternative colour.

The other three statuses (Standard Status Displays) already have identifiers when they are set ON. They use single or double dashed lines.

Anchor Display

When Work Order/Stages/Operations are anchored, their operation cards on the board do not normally appear differently to unanchored operation cards. This area allows you to display anchored operations differently, in dark green or yellow when highlighted. Select the anchoring type for an anchored operation card to be displayed differently.

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Window Layout

When the window layout button is pressed from the Set Display Variables window, the window layout selection window is opened.

Select the placement of the desired sub-windows, or 'panes', within the main Planner scheduler window. Pressing **[OK]** saves the settings for this and future Planner sessions.

With higher resolution PC Video systems, you may care to have both top left and top right windows. With 1024x768 or lower resolution however this may be impractical, and having a number of windows set to 'Top Left' allows tabs to be used to select the window required to be active at any one time.

Similarly for the middle and bottom windows, if a number of windows are set to use the same portion of the screen, tabs are provided to select the window required to be active at any one time.

Not all windows need be activated: if they are not required they can be set to 'none'.

When finished, Press **[OK]** to save the settings for this and future Planner sessions.

Window Layout					
	Window Panes				
	Top Left	Top Right	Middle	Bottom	None
Resource Board	☒	☐	☐	☐	☐
Tool Board	☒	☐	☐	☐	☐
Resource View	☒	☐	☐	☐	☐
Tool View	☒	☐	☐	☐	☐
Data Window	☐	☐	☒	☐	☐
Graph Window	☐	☐	☒	☐	☐
Ok Cancel Help					

Other Switches

Compress Downtime

When this radio button is ON , Downtime display on the Board will be **compressed** wherever possible. Compression is possible only when all Machines displayed in the current window have common (global) areas of Downtime. This option may also be activated directly by pressing the **[Squash Downtime]** button, or the **[Shift]+[Alt]+[F11]** keys.

Display Downtime

At any time, the display of all Downtime may be **suppressed** by choosing this option. Note that the Downtime still *exists*, it is simply not *displayed*. When it is suppressed on the Resource Board window, it is also suppressed in the Resource View window. To avoid confusion when Downtime display is suppressed, the Operation cards on the Board "fill in" the time which would otherwise display as Downtime.

This option may also be activated directly by pressing the **[Display Downtime]** button or the **[Alt]+[F11]** keys. in which case the switch in this window is set automatically. Pressing the **[Display Downtime]** button or the **[Alt]+[F11]** keys again will redisplay the Downtime and reset this switch.

Machine/Tool Breakdown

It is possible at times to have operation cards stacked on top of one another. This can occur both on the Resource board and the Tools board.

This option may also be activated directly by pressing the **[Res/Tool Breakdown]** button, or the **[Shift]+[Alt]+[F2]** keys in which case the switch in this window will be set automatically. Pressing **[Shift]+[Alt]+[F2]** again will redisplay the Machine/Tool normally and reset this switch.

With Infinite Machines

Where "Infinite Machines" are present, it is possible for many Operations to be stacked on 'top of each other' in one single period of time (*to see how many Operations are stacked, see Board Display*).

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Whenever an infinite Machine has more than one Operation in the same time period, this switch when ON will duplicate the Machine name on the Board as many times as necessary to display all the stacked Operations. The original Machine name continues to be displayed in white letters, but the duplicates are displayed in yellow letters beneath this.

With Tools

On the Tools Board any Tool which is scheduled to be used more than once, at the same time, on the same or different operations, can give rise to Tool Cards being stacked one on top of another.

When this checkbox is switched ON, the breakdown displays all the instances of a Tool's use in the same time period.

The original Tool name is displayed in the normal way (in white letters) and the duplicated Tool names are displayed in yellow letters immediately below the original, each displaying one instance of the Tool's use.

Note that a Tool is considered to be in use throughout the entire duration of the Setup, Run, and Clean time periods of an Operation.

Ganged Operations

This display option is also used for the display of Ganged Operations, which by definition are planned to occur concurrently on the same machine.

Wireframe Display

This radio button controls how the Planners Resource and Tools Boards refresh their display when an operation or tool is moved. The default setting is for the Wireframe display to be on, but your PC's display system may permit fast response even with Wireframe display turned OFF. Try it!

Display Times Under Bar

Turn on to display an extra line under the each operation card, showing the durations for setup and clean separately from run. The colours of these thinner bars can be selected using the colour button. Change the operation setup bar, operation run bar, operation clean bar options as required.

Display Mouse Helper

Turn on to display a line joining previous, current and next operations for the work order at the pointer.

Distribute Current Plan



This option is used to update the reporting database used by Crystal Reports and the MultiUser module.

When a plan is finalised, and a Report Writer report is to be run using the updated plan, you must first 'Distribute the Current Plan'.

When running this process you are able to control the information you pass to the reporting database, both for speed of processing and to limit information to others receiving it with the MultiUser module. For example you may have a policy of only distributing plan information for the next four weeks, so the date range would be limited to that date. If you wish to quickly run a Report Writer report on operations on the board for this week, then you can just send this data to the reporting database.

A screenshot of a dialog box titled 'Distribute Current Plan Include Options'. It contains several checkboxes and date range inputs. The checkboxes are: 'Board' (checked), 'Bin' (checked), 'Library' (checked), 'Downtime' (checked), 'Coalesce Downtime' (checked), 'Free Capacity' (checked), 'Customers' (checked), and 'Date Range' (unchecked). Below these are two date range inputs: 'Start Range' with values '11/11/97' and '09:42', and 'End Range' with values '16/12/97' and '09:42'. At the bottom, there are two dropdown menus: 'Distribute To: Standard Plan' and 'What If Plan'. At the very bottom are three buttons: 'Ok', 'Cancel', and 'Help'.

The check boxes are:

Board	to download all board work order information
Bin	to download all bin work order information

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Library	to download all library work order information
Downtime	to download all downtime information

Coalesce Downtime

Downtime is stored in the Planner in chunks no greater than one day and frequently as several different sections for a single contiguous (non-broken) displayed section of downtime. This option allows control over Downtime coalescing. Selecting 'Coalesce Downtime' forces the download to convert all contiguous downtime blocks on a machine to one block of downtime in the Report Database.

Free Capacity	to download all free capacity information
Customers	to download all customer information

Date Range	To download information from the selected Date range. The default date range is set in System Configuration, in Preferences from the File menu. When left off [], ALL board information is downloaded.

Distribute To:

The Default, and the Options change depending on whether the installation is standalone (Single User) or Distributes the Plan to The Planner MultiUser module.

Single User:

The Default Option is to distribute to the Standard area for use with Crystal reports or another ODBC compliant Report Writer. Any named plan, eg MAIN, or Test1.pdb can be sent here. The use of the WhatIfPlan option is only when you wish to keep separate areas for normal as opposed to what if plans to report on. When both options are used, the report query will have to specify which option is to be used. See the 'Reports' section of the manual.

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Distribute Current Plan Include Options

Board ☒ Bin ☒

Library ☒ Downtime ☒

Coalesce Downtime ☒ Free Capacity ☒

Customers ☒ Date Range ☐

Start Range 11/11/97 08:36 End Range 16/12/97 08:36

Distribute To: Multiuser Plan ☐ What If Plan ☐

Ok Cancel Help

MultiUser:

The Multiuser Plan option is the plan data that is distributed to users of the MultiUser module. The other option is to distribute to the 'What If Plan' area for use reporting on, without distributing to everyone else, eg for What Ifs. Crystal reports or another ODBC compliant Report Writer can be made to access either, but the report query will have to specify this. See the 'Reports' section of the manual.

When you have made your choice press the **[OK]** button. If you have a large plan this may take a few minutes, depending on your PC's processing and disk speed. The database and manner of distribution also affects the time taken. The 'FoxPro' option in Utilities, System Configuration is the fastest.

Running other functions afterwards

Distribute the Current Plan' from the Interface menu within Planner Scheduler will now run a batch file "expfin.bat" in the planner scheduler install directory after the 'Distribute the Current Plan' is finished. The Planner scheduler is locked out while the batch file is run. Expfin.bat must be created, and can include any functions that are necessary to be run after distributing a plan.

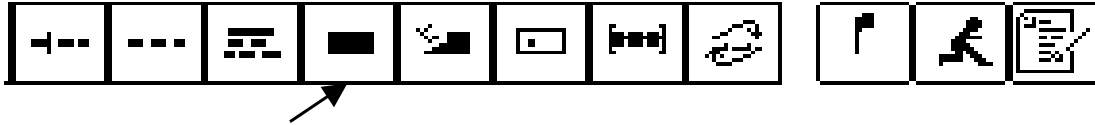
From v3.2b expfin.bat is only run on 'standard'/'multiuser' plan distributes. Distributing current plan to 'What-if Plan' runs expfin2.bat upon completion, if expfin2.bat exists.

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Provided on the distribution CD, in Utilities directory is the program repcp.exe, which copies a Planner Reporting database, (\plreport*.*) from one location to another. It is run from a configuration file repcp.cfg

The above procedures may be required to run Planview over a WAN. Refer to Installation of Planner Multiuser, in Install.pdf for further details.

Downtime Adding



Add Downtime Button

Downtime, or any time when machines are unavailable for processing operations may be added in a number of ways. This button is more useful for add hoc addition of downtime, rather than for setting up shift patterns when 'Schedule Machines' from the Downtime menu should be used.

The application of Downtime causes ***The Planner*** to automatically adjust the planning board to accommodate the new Downtime: all Operations to the right of the insertion point and occupying the period of the new Downtime are "pushed" to the right.

The insertion of Downtime in this way will split an Operation at the insertion point, and all other Operations will split wherever they encounter Downtime. This is not a permanent split, however. The Operations "flow" around the Downtime and will reset automatically whenever they or the Downtime are moved.

This button can be used to add downtime using either the "Drag & Drop" or "Three Step" method.

"Drag & Drop"

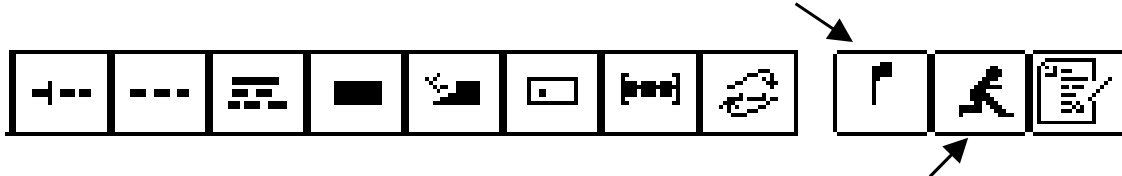
1. Press the **[Add Downtime]** button,
2. Left click at (say) the left-most or earliest point in the range to have downtime added,
3. While holding down the left mouse button, drag the mouse pointer to the right-most or latest point in the range,
4. Select the machine (or machines) to add the downtime to.

The downtime will appear as black bars on the Board if downtime display is turned on.

“Three Step” Method

1. Press the **[Add Downtime]** button,
2. Left click at (say) the left-most or earliest point in the range to have downtime added,
3. Press the **[Select Range Marker Position]** button. At this point a vertical line will mark the position on the board, or a black rectangle in the view,

Select Range Marker Position Button



Run Current Move/Range Button

4. Left Click at the right-most or latest point in the range to have downtime added,
5. Press the **[Select Range Marker Position]** button again. At this point another vertical line, or black rectangle will appear and mark the range end position,
6. Press the **[Run Current Move/Range]** button to confirm the selected range,
7. Select the machine (or machines) to add the downtime to.

The downtime will appear as black bars on the Board if downtime display is turned on.

Notes about the “Drag & Drop” and “Three Step” methods

Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

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Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window.

Downtime Compression



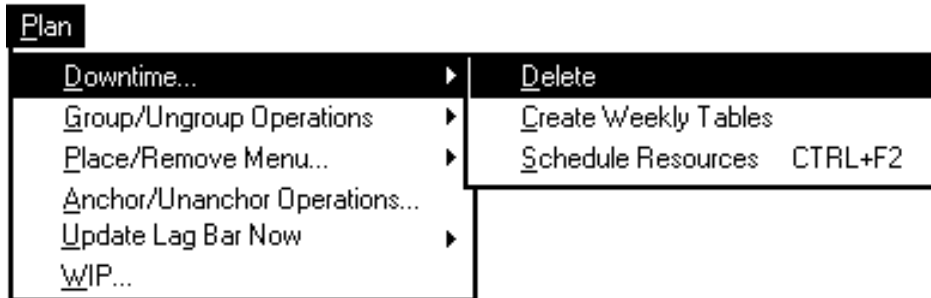
Squash Downtime Button

Downtime on the planning Board can sometimes become dominant to the point where it tends to overpower the display of Work Orders. This may be overcome by using either of the Downtime display alternatives provided in ***The Planner***.

At any time, the display of all Downtime that is global across all Machines within the current planning window may be ***compressed (or “squashed”)*** by pressing the **[Squash Downtime]** button or the **[Shift]+[Alt]+[F11]** key. Pressing the button or keys again will decompress the display. The option to have this feature applied automatically (or not) at startup is achieved with switches found in View menu, under Display Configuration.

See also Downtime Suppression.

Downtime Deletion



In any day, it may be necessary to make minor changes to the Downtime on one or more Machines to account for (say) extra hours being worked over a break period or after the usual end of day.

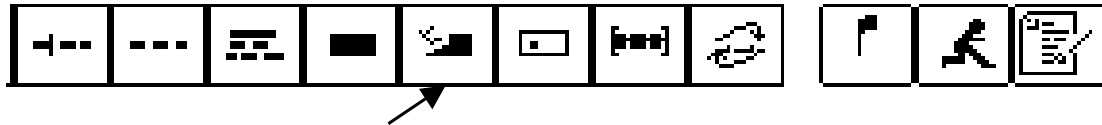
The Delete option deletes one block of downtime from one machine. If you wish to remove more than one block, this may be achieved more quickly and easily using the “Delete Downtime Range” button.

To use the Menu method;

Select the block of Downtime to be deleted by placing the Pointer on it,
Open the Downtime menu, and select “Delete”,
Confirm the deletion.

The Planner then removes the selected block of Downtime within the day that the Pointer is pointing to.

Downtime: Deleting a Range on Machines



Delete Downtime Range Button

There are two methods of using the **[Delete Downtime Range]** button to delete Downtime on the planning board, the “Drag & Drop” and “Three Step” methods. Both can delete downtime from a single or from multiple Machines

“Drag & Drop”

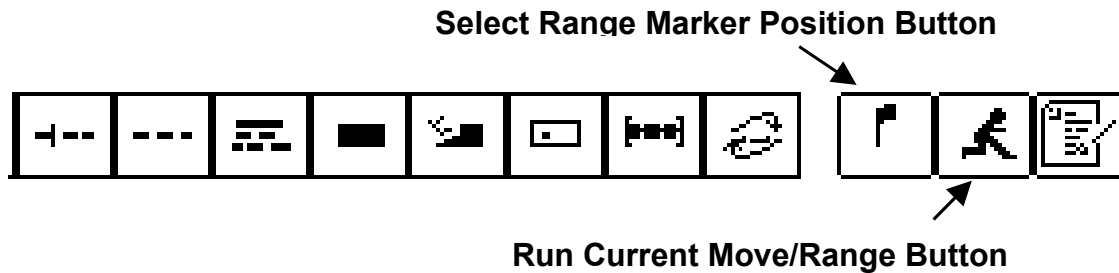
1. Press the **[Delete Downtime Range]** button,
2. Left click at (say) the left-most or earliest point in the range to have downtime deleted from,
3. While holding down the left mouse button, drag the mouse pointer to the right-most or latest point in the range,
4. Select the machine (or machines) to delete the downtime from.

The black bars of downtime will disappear from the Board if downtime display is turned on. Operations that could now potentially be processed earlier are not moved earlier automatically, as it is not normally mandatory that they be brought earlier.

“Three Step” Method

1. Press the **[Delete Downtime Range]** button,
2. Left click at (say) the left-most or earliest point in the range to have downtime deleted from,
3. Press the **[Select Range Marker Position]** button. At this point a vertical line will mark the position on the board, or a black rectangle in the view,

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4. Left Click at the right-most or latest point in the range to have downtime deleted from,
5. Press the **[Select Range Marker Position]** button again. At this point another vertical line, or black rectangle will appear and mark the range end position,
6. Press the **[Run Current Move/Range]** button to confirm the selected range,
7. Select the machine (or machines) to delete the downtime from.

The black bars of downtime will disappear from the Board if downtime display is turned on. Operations that could now potentially be processed earlier are not moved earlier automatically, as it is not normally mandatory that they be brought earlier.

Notes about the “Drag & Drop” and “Three Step” methods

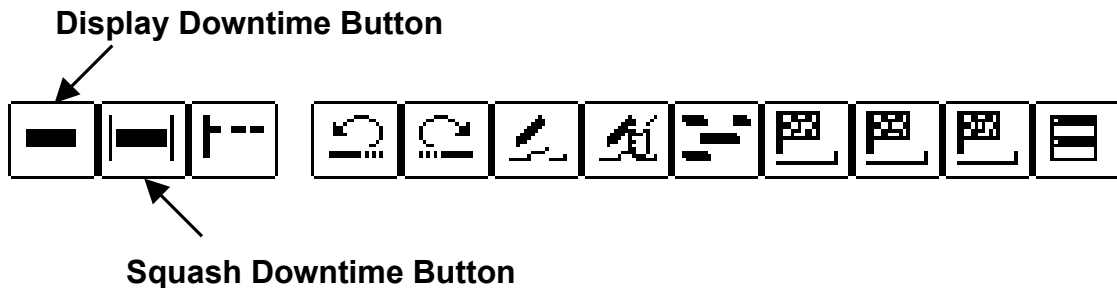
Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window.

Downtime Display



Downtime on the planning Board can sometimes become dominant to the point where it tends to overpower the display of Work Orders. This may be overcome by using either of the Downtime display alternatives provided in *The Planner*.

Downtime Compression

At any time, the display of all Downtime which is global across all Machines within the current planning window may be **compressed** by pressing the **[Squash Downtime]** button or the **[Shift]+[Alt]+[F11]** keys. Pressing the button or keys again will decompress the display.

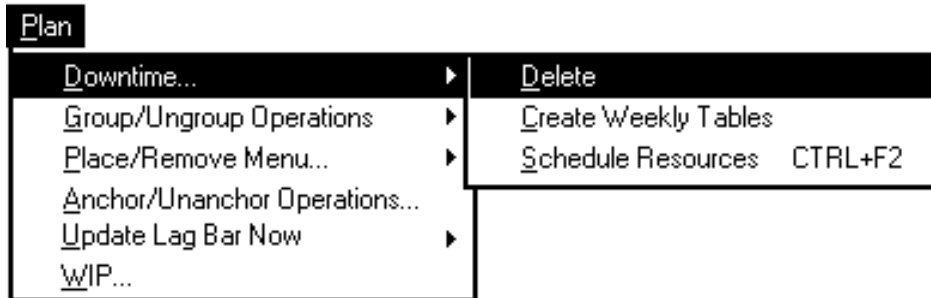
The option to have this feature applied automatically (or not) at startup is achieved with switches found via the View menu, in Display Configuration.

Downtime Suppression

At any time, the display of all Downtime may be **suppressed** by pressing the **[Display Downtime]** button or the **[Alt]+[F11]** keys. Pressing this button or keys again will redisplay the Downtime. Note that the Downtime still *exists*, it is simply not *displayed*. When it is suppressed on the Resource Board window, it is also suppressed in the Resource View window. To avoid confusion when Downtime display is suppressed, the Operation cards on the Board "fill in" the time which would otherwise display as Downtime.

The option to have this feature applied automatically (or not) at startup is achieved with switches found via the View menu, in Display Configuration.

Downtime Menu



Downtime is defined as any period of time that a Machine is not available for work (production or output). A Machine may be a person, an item of machinery or equipment, a third party, or even a work area, depending on how you elect to set up your **Planner**.

Throughout **The Planner**, Downtime is always referred to as NON-productive time; that is, when setting up calendars and when looking at Downtime schedules or time on the board, we refer to the zones of Downtime, not work time.

A brief description of the items on the Downtime Menu is later followed by more detailed explanation.

Delete Downtime

Provides a method of quickly removing individual daily periods of Downtime on a single Machine with the Pointer.

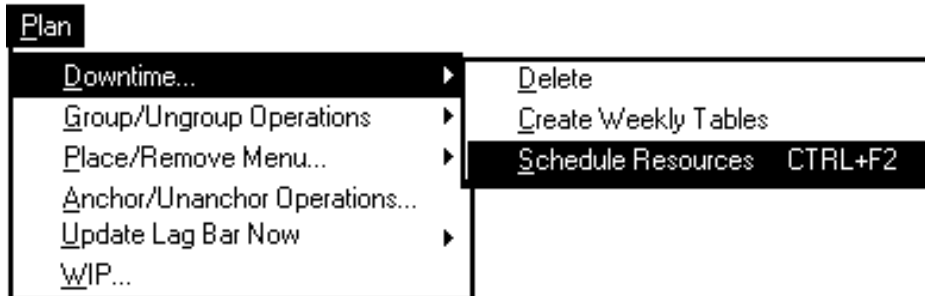
Create Weekly Tables

Any number of standard weekly Downtime tables may be set up, named, and described. These are later applied when and where required to Machines for any week or range of weeks.

Schedule Machines

Machines are scheduled on a weekly basis, either using the preset Downtime Tables or on a one-off basis with this option. Existing Downtime schedules or individual days may be edited.

Downtime: Scheduling Machines



Machines can be very dynamic in their availability, with illness and vacations being major causes of unavailability for human Machines, and breakdowns and preventive maintenance being examples of unavailability for plant and equipment influencing planning decisions and disrupting normal work patterns. This is why **The Planner** is strong on flexibility in the Downtime scheduling area. One topic details how to create various weekly Downtime Tables; this section describes how to apply those Tables to the Machines on the board and how to quickly make changes to cater for unexpected situations.

The Steps Involved in Scheduling Downtime

There are three main steps involved to schedule a Machine with Downtime:

1. Select the Machine to schedule
2. Select the week to apply the schedule to
3. Select the Table to apply (or create a weekly schedule)

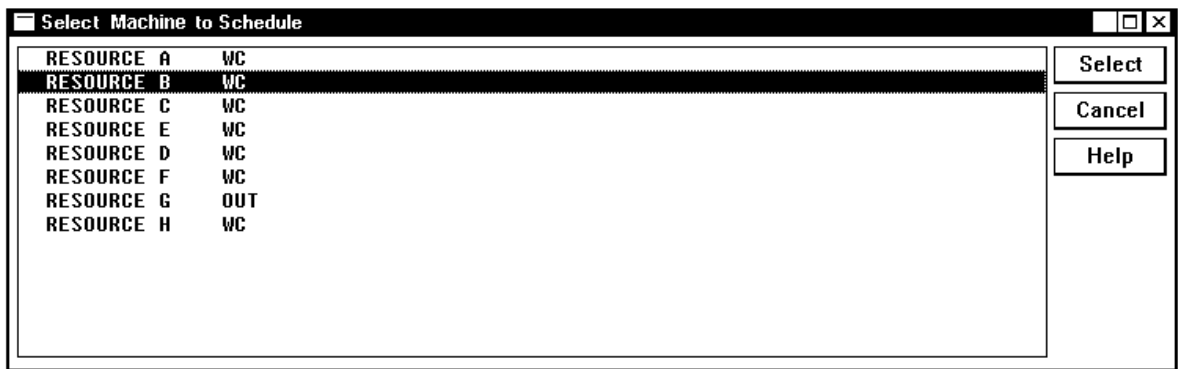
Further tools provide for copying a week or a range of weeks' Downtime calendars to a Machine (or group of Machines) for a week or a further range of weeks. This involves three additional steps:

1. Select the Machine and week(s) to copy from
2. Select the Machine(s) to copy to
3. Select the week(s) to copy to

Let's look at these steps in sequence...

Selecting the Machine to Schedule

Choose "Schedule Machines" from the Downtime Menu. A window opens with all Machines listed. Select the Machine to be scheduled from the scroller in the usual way.



The "Edit Downtime Schedule" window shown below will open. The left part of the window is a list of weeks, with the current (Pointer is positioned in it) week highlighted. The right window is the Downtime calendar that exists currently for the chosen Machine in the current week. As you scroll up and down the left part of the window, and change the week highlighted, the Downtime that has been applied to each highlighted week is displayed in the right window.

An important point to make here is that all occurrences of Downtime display in the right window, not just those which are part of the Weekly Tables. In fact, the weekly table that has been applied to a Machine for the week is adjusted with any changes (additions or deletions) that are made on the board.

Selecting the Week to Schedule

To schedule a single week, simply select the required week by clicking on it, which positions the highlight bar over it. To schedule a range of weeks with the same Weekly Downtime Table, first apply Downtime in the manner described below, then copy to other weeks.

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Edit Downtime Schedule

1997 23 Jun 02 03 04 05 06									
1997 24 Jun 09 10 11 12 13									
1997 25 Jun 16 17 18 19 20									
1997 26 Jun 23 24 25 26 27									
1997 27 Jun 30 01 02 03 04									
1997 28 Jul 07 08 09 10 11									
1997 29 Jul 14 15 16 17 18									
1997 30 Jul 21 22 23 24 25									
1997 31 Jul 28 29 30 31 01									
1997 32 Aug 04 05 06 07 08									
1997 33 Aug 11 12 13 14 15									
1997 34 Aug 18 19 20 21 22									
1997 35 Aug 25 26 27 28 29									
1997 36 Sep 01 02 03 04 05									
1997 37 Sep 08 09 10 11 12									
1997 38 Sep 15 16 17 18 19									
1997 39 Sep 22 23 24 25 26									
1997 40 Sep 29 30 01 02 03									
1997 41 Oct 06 07 08 09 10									
1997 42 Oct 13 14 15 16 17									
1997 43 Oct 20 21 22 23 24									
1997 44 Oct 27 28 29 30 31									
1997 45 Nov 03 04 05 06 07									
1997 46 Nov 10 11 12 13 14									
1997 47 Nov 17 18 19 20 21									
1997 48 Nov 24 25 26 27 28									
1997 49 Dec 01 02 03 04 05									
1997 50 Dec 08 09 10 11 12									
1997 51 Dec 15 16 17 18 19									
1997 52 Dec 22 23 24 25 26									
1998 01 Dec 29 30 31 01 02									
1998 02 Jan 05 06 07 08 09									
1998 03 Jan 12 13 14 15 16									
1998 04 Jan 19 20 21 22 23									
1998 05 Jan 26 27 28 29 30									

	Tot Down	Tot Up
Start Downtime Downtime End		
Monday	0:00	0:00
	0:00	24:00
Tuesday	0:00	0:00
	0:00	24:00
Wednesday	0:00	7:00
	7:00	17:00
Thursday	0:00	7:00
	7:00	17:00
Friday	0:00	7:00
	7:00	17:00
Saturday	0:00	0:00
	0:00	24:00
Sunday	0:00	0:00
	0:00	24:00
	21:00	147:00

Quit Copy Help Menu Cancel Save Edit Add

Applying a Weekly Table

Pressing **[Menu]**, then selecting **[Lookup Table]** when the highlight bar is positioned over the week to have Downtime scheduled will open a window with the list of the Weekly Downtime Tables.

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Weekly DownTime Tables		
5DAYWEEK	PLAN FOR MACHINES WORKING 5 DAYS ONLY	N
6DAYWEEK	PLAN FOR MACHINES WORKING 6 DAYS	N

Edit
Insert
Delete
Notes
Cancel
Help

Any notes that are held for a Table may be viewed and edited when the Table is highlighted in this scroller by pressing **[Notes]**. (The notes flag indicates when notes are held with a **Y** on the right of the scroller).

Select the required Table from the scroller by pressing **[Select]** when it is highlighted. The Weekly Table will be displayed to confirm it is suitable. If not, press **[Cancel]** to close the Table window and select another Table.

Edit Downtime Table			
Sch Name	5 DAYWEEK		
Sch Desc	5 DAYWEEK DOWNTIME TABLE		
	Tot Down	Tot Up	
	Start	Downtime	End
Monday	0:00	0:00	
	0:00	24:00	
Tuesday	0:00	0:00	
	0:00	24:00	
Wednesday	0:00	7:00	
	7:00	17:00	
Thursday	0:00	7:00	
	7:00	17:00	

Menu Cancel Apply

When the correct Table is selected, press the **[Apply]** button to apply the Table to the selected Machine for the week. The Machine will be scheduled

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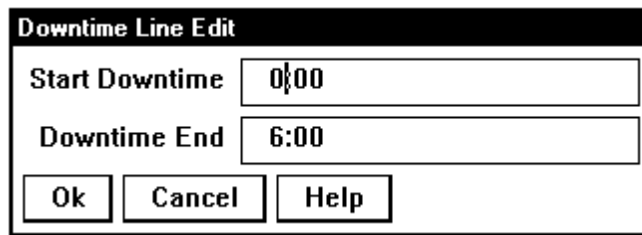
with the selected Table for that week, and you will be returned to the “Edit Downtime Schedule” window.

At this stage you can then **[Save]** then **[Quit]**, (or just **[Quit]** and confirm you wish to save) from editing the schedule you have applied to one machine for one week.

Modifying the Selected Table

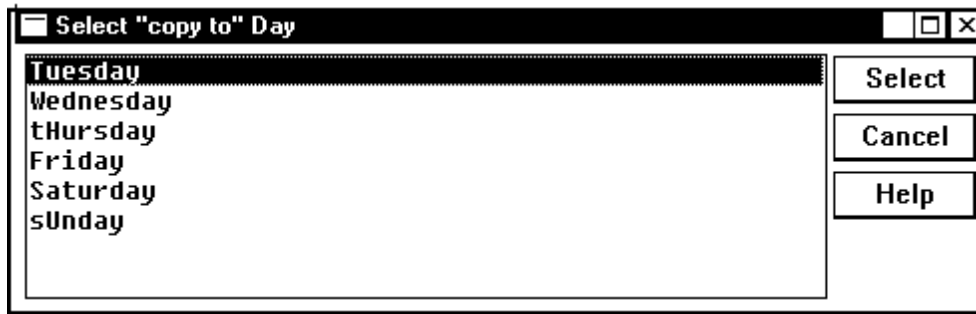
It is sometimes useful to select the nearest suitable Weekly Downtime Table, apply it, and then modify it slightly. To do this, apply the Table in the manner just described. The “Edit Downtime Schedule” windows will remain open.

Select the day of the week you wish to modify, and press **[Edit]**. You may now edit the schedule in the same way that the original Table was created. See “Downtime: Weekly Tables” for details. When done, press **[Save]** to save the changes.



The 'Downtime Line Edit' dialog box has a title bar with the text 'Downtime Line Edit'. It contains two input fields: 'Start Downtime' with the value '0:00' and 'Downtime End' with the value '6:00'. At the bottom, there are three buttons: 'Ok', 'Cancel', and 'Help'.

If you are scheduling a Machine without applying an existing Weekly Downtime Table, skip the **[Lookup Table]** step and simply press **[Edit]** to enter in downtime periods for each day.



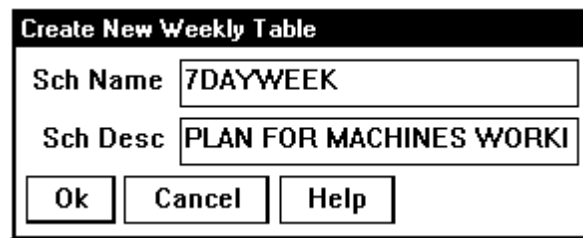
The 'Select "copy to" Day' dialog box has a title bar with the text 'Select "copy to" Day'. It contains a list box with the following items: Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday. To the right of the list box are three buttons: 'Select', 'Cancel', and 'Help'.

You can create a special schedule on the fly, by using **[Copy Day]** from the **[Menu]**, to copy one days downtime to another day. Press **[Save]** to save that schedule to the highlighted week, for machine selected earlier. This

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schedule may be copied to other weeks, and/or other machines. This is explained below.

If the table you've just created is one that you would like to have as a standard Weekly Table, you can save it as a new table at this point. To do so select **[Create Table]** from the **[Menu]**, and enter the name and description for this new table in the same way as when creating Weekly Tables

A screenshot of a dialog box titled "Create New Weekly Table". It contains two text input fields: "Sch Name" with the value "7DAYWEEK" and "Sch Desc" with the value "PLAN FOR MACHINES WORKI". At the bottom are three buttons: "Ok", "Cancel", and "Help".

Create New Weekly Table	
Sch Name	7DAYWEEK
Sch Desc	PLAN FOR MACHINES WORKI
Ok	Cancel Help

Note that if the new name entered here already exists, it will not be overwritten. So it is possible to have more than one table of the same name when using this method.

Copying a schedule to Other Machines and Weeks

If you are starting at this point, you will have chosen "Schedule Machines" from the Downtime menu, selected a Machine to schedule, and will now be at the "Edit Downtime Schedule" window.

Having established a Downtime schedule for at least one week on a Machine, it is now possible to copy that schedule to other Machines and other weeks, quickly and easily.

As you scroll up and down the left part of the "Edit Downtime Schedule" window, the Downtime that has been applied to any highlighted week is displayed in the right window.

Start with the week to be copied highlighted on the left of the "Edit Downtime Schedule" window, and the schedule to be copied able to be seen in the right hand part of the same window.

Press the **[Copy]** button, which opens the "Range (of weeks) to copy from" scroller.

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Selecting the (Range of) Week(s) to Copy From

If you are starting at this point, you will have chosen “Schedule Machines” from the Downtime menu, selected a Machine, selected a weeks schedule, and will have pressed [Copy] from the “Edit Downtime Schedule” window.

To copy from a single week, select the required week by clicking and highlighting it, then pressing **[Select]**.

To copy from a range of weeks, drag your mouse over the range of weeks, then press **[Select]**. ***The selected weeks may contain any combination of Downtime schedules.***

A window opens with all Machines listed, ready for the next step.

Select the Machine(s) to Copy To

To select a single Machine to copy to, simply highlight it on the scroller in the usual way and press **[Select]**.

To select a range of Machines to copy the schedule to, highlight them on the scroller and press **[Select]**. The standard windows method using the shift or control key in conjunction with the mouse allows highlighting of a continuous or discontinuous range

A window opens with the weeks listed, ready for the next step.

Selecting the (Range of) Week(s) to Copy To

You will notice (if you selected a range of weeks to copy from), that the same range of weeks has been marked in the list of weeks to copy to. You can accept this default, or modify the selected range.

When you have selected the week or range of weeks to copy to, press **[Select]** to confirm the choice and action the adding (scheduling) of the downtime process.

All the choices you have made will be applied to the planning board. Press **[Quit]** to close the windows and return to the planning board.

Note: The extensive application of Downtime on the board can place a high overhead on the computer processor, possibly degrading its performance.

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It is recommended therefore, that Downtime is applied to the planning board only for as far out into the future as is required for normal planning purposes, and that obsolete Downtime is deleted.

Editing Downtime on the Board

The Planner provides a quick method of making minor changes to Downtime schedules on any Machine, *directly to the planning board*. This is useful (say) in the event that a Machine is going to work some extra unscheduled time on a day, or series of days in close proximity.

A speed key is provided for this purpose. First position the Pointer on the Machine and anywhere in the week to be edited. Press **[Ctrl]+[F2]** to open the "Edit Downtime Schedule" window for this "Current Machine" and "Current week" (the ones the Pointer is on). The "Edit Downtime Schedule" window display has the current week highlighted, and the Downtime calendar, for current machine and week, displayed on the right.

You can now make any required changes to the current week's calendar for the chosen Machine without having to go through all the menu choices. Don't forget to press **[Save]** to save your changes, or **[Cancel]** to abort your changes before saving them. Pressing **[Quit]** closes the window.

You can of course simply delete and add Downtime directly to any Machine over any time period with the Mouse, using Drag & Drop. See the sections on Downtime Add and Downtime Deleting.

Notes On Downtime

It is possible to hold unlimited notes on any contiguous period of Downtime within a day, using the standard Notepad feature. The Notepad for each Downtime period may be opened when a days downtime period is highlighted in the "Edit Downtime Schedule" window. From the **[Menu]** button listing select **[Notes]**.

Alternatively, when the Pointer is positioned on any period of Downtime on the Board or in the View window, press **[Ctrl]+[N]**.

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The notes applied to any period of Downtime on the Board may be viewed when the cursor is in a field of the same period in the Weekly Schedule, again by pressing **[Menu]**, then selecting **[notes]**. The notes may be added to, edited, or deleted in either place. The fact that notes exist for any Downtime period is indicated in the most of the standard Data Window cards, where a **[X]** or **[]** flag in the "notes" field displays for each daily contiguous period of Downtime.

Display of Downtime

Downtime on the planning Board can sometimes become dominant to the point where it tends to overpower the display of Work Orders. This may be overcome by using either of the Downtime display alternatives provided in *The Planner*.

Downtime Compression

At any time, the display of all Downtime which is global across all Machines within the current planning window may be be **compressed** (or "**squashed**") by pressing the **[Squash Downtime]** button or the **[Shift]+[Alt]+[F11]** key. Pressing the button or keys again will decompress the display. The option to have this feature applied automatically (or not) at startup is achieved with switches found in View menu, under Display Configuration.

Downtime Suppression

At any time, the display of all Downtime may be **suppressed** by pressing the **[Display Downtime]** button or the **[Alt]+[F11]** keys. Pressing this button or keys again will redisplay the Downtime. Note that the Downtime still *exists*, it is simply not *displayed*. When it is suppressed on the Resource Board window, it is also suppressed in the Resource View window. To avoid confusion when Downtime display is suppressed, the Operation cards on the Board "fill in" the time which would otherwise display as Downtime.

The option to have this feature applied automatically (or not) at startup is achieved with switches found via the View menu, in Display Configuration.

Downtime Suppression

Sometimes Downtime can become very dominant on the Planning Board, especially when there are many periods within a day or there are long periods of Downtime. By suppressing the display of Downtime, the Board appears less cluttered and Work Orders are easier to see.

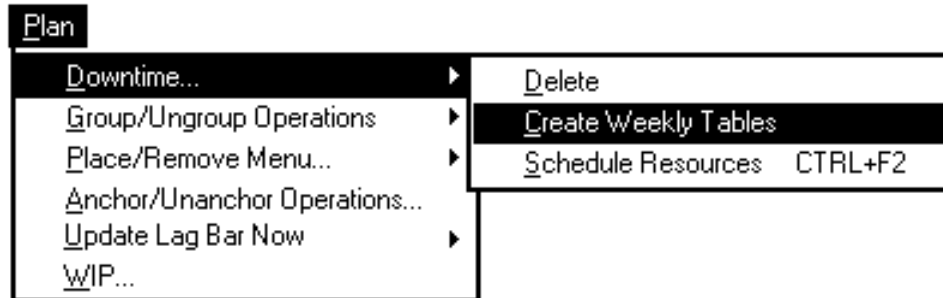
At any time, the display of all Downtime may be **suppressed** by pressing the **[Display Downtime]** button or the **[Alt]+[F11]** keys. Pressing this button or keys again will redisplay the Downtime.

Note that the Downtime still *exists*, it is simply not *displayed*. When it is suppressed on the Resource Board window, it is also suppressed in the Resource View window. To avoid confusion when Downtime display is suppressed, the Operation cards on the Board "fill in" the time which would otherwise display as Downtime.

The option to have this feature applied automatically (or not) at startup is achieved with switches found via the View menu, in Display Configuration.

See also Downtime Compression.

Downtime Weekly Tables



The provision of multiple weekly tables of Downtime provide for maximum flexibility in setting up your planning board with an infinite possibility of Downtime calendars on individual Machines over any period of time for up to 20 years. Weekly tables, or calendars, are set up to provide a range of "standard" weekly work patterns which you can choose at any time for any Machine.

It is not necessary to have a calendar for every Machine or for every week. In fact it is not necessary to have any weekly tables at all! The feature is provided as a tool for those environments where changes in work patterns occur frequently; it gives the planner the ability to quickly apply one of the standard calendars from those that have been set up. The standard calendars can be edited at any time, even after they have been applied to a Machine for any week or range of weeks. And where no weekly tables are set up, the work pattern for any machine can be designed on the fly.

To set up a weekly table, choose the "Create Weekly Tables" option from the Downtime Menu. A scroller window is opened which displays a list of all the tables that have been set up. Highlight the one to **[Edit]**, or press **[Insert]** to create a new one. The "Edit Downtime Table" window opens displaying a name field, a description field, and two time fields for each day of the week. Listed under the time fields for each day of the week are two other time fields in yellow. These are the 'Tot Down' (time) and 'Tot Up' (time) for each day of the week. A grand total for the whole week is displayed in red numbers beneath Sunday's times.

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	Tot Down	Tot Up
Start	Downtime	Downtime End
Monday	0:00	24:00
Tuesday	0:00	24:00
Wednesday	0:00	24:00
Thursday	0:00	24:00

Press **[Title]**, and type in the name of this table, and a description. The description assists when identifying each table from a scroller (list) when selecting one to apply or edit. Press the **[OK]** key to save the title details and close its window.

Creating the Calendar

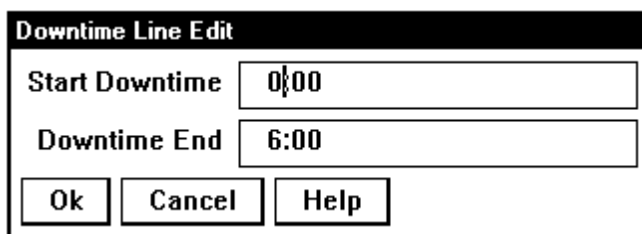
Remember that the times in the calendar refer to times when the Machine is DOWN, ie: not available. Therefore the first entry starts at midnight at the beginning of Monday.

Note: Military time format is used, ie; a 24 hour day.

For our example, the daily work time is 6:00am to 5:00pm (17:00). This means that during each day we have two periods of downtime – the first period of **downtime starts at 00:00 hours, ending 6:00am.**

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	0:00	6:00	17:00	24:00
Work Time		START	END	
D/Time	START	END	START	END



Downtime Line Edit

Start Downtime 0:00

Downtime End 6:00

Ok Cancel Help

Click on the day to edit, highlighting it, then press the **[Edit]** button to open the Downtime Line edit window.

Type in the first downtime end for the day, i.e. 6:00 when work can begin, and press **[OK]**.

To enter the second period of downtime for the day, highlight it, then press **[Add]** and key in 17:00 start, 24:00 end, **[OK]** to save.

To enter time:

Use the **[:]** key to enter minutes, the **[.]** key for decimal hours. Times are in intervals of six minutes, and always display as minutes

While you can enter as many periods of Downtime in the day as required, it is suggested that tea and meal breaks, and general utilisation be accounted for in the start and finish times. For example, if you work one shift from 8:00 to 17:00, with breaks of 1 hour each day, then make the work time from 8:00 to 16:00. Similarly for 3 shifts a day, with each shift having total breaks of 1 hour, then one period of downtime, say from 0:00 to 3:00 would give the correct total of available hours per day. The reduced 'accuracy' is often quite acceptable, and your PC will operate faster.

The Next Day

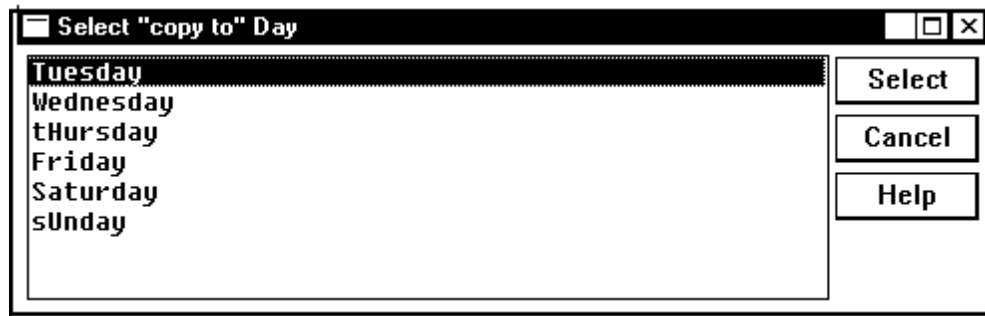
Highlight the next day, press the **[Edit]** again. Key in the Downtime start and finish times as for the first day. **[Add]** extra lines if necessary, and **[OK]** to save each line.

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If this becomes tedious because each day is the same, you can copy from one day to another.

Copying One Day to Another

To save time entering repetitive data, **The Planner** offers a copying facility. To copy, first highlight the day you wish to copy from. Press **[Copy Day]**, and **[Select]** the day or days to copy to, confirming each copy. Repeat this as often as required.



Saving the Schedule

When you have finished creating the week's schedule, you must save it by pressing the **[Save]** button. The window closes and you are returned to the Weekly Downtime Tables scroller. Repeat the process by pressing the **[Insert]** key, to set up as many schedules as required.

Fixing Mistakes

If you make mistake on any line, you can delete the entire line by highlighting it and **[Delete]**.

If you have reached a point where the entire Table is not worth saving and you want to start over, simply press the **[Cancel]** button. You are returned to the Weekly Tables scroller without saving the Table.

To remove a table from **The Planner** permanently, select it from the Weekly Tables scroller with the highlight bar and press the **[Delete]** button.

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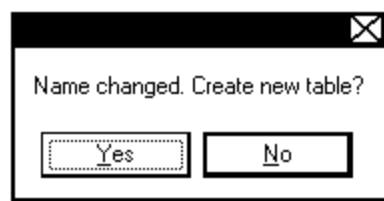
Other Features with Weekly Tables

Notes

In addition to the name and description fields that help you to identify the characteristics of individual Tables, you can hold unlimited notes. To access the notes area, press the **[Notes]** button while the required Table is highlighted in the Weekly Downtime Tables scroller. The notes window opens with the first page of notes displayed. You will notice that a "Notes Flag" exists beside the name and description of each Table on the Weekly Tables scroller. The letters **Y** or **N** denote whether notes exist or not for each Table. See the "Notes Editor" elsewhere in this manual for instructions on using the notes fields.

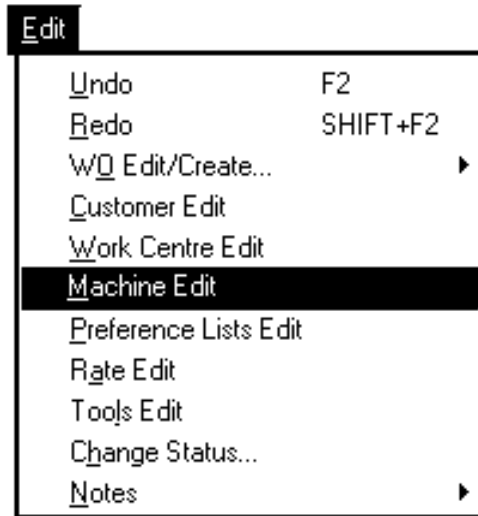
Copying and Changing Table Names

To copy a Table to use as a base to create another Table, simply press **[Edit]** with the original one highlighted from the Weekly Tables scroller, make the changes, and **rename it prior to saving it** again.



If you change the Table name without making any other changes, on saving **The Planner** recognises the name change, reminds you about it, and asks you if you want to create a new Table with the changed name or not. If you don't want to create a new Table, (just change the name), answer no and the original name will be changed.

Edit Menu



This menu has all the facilities required to create, edit, and delete Work Orders and Machines. There are several other functions that are accessed through this menu, all of which are explained in detail throughout this section of the manual. But firstly, a quick overview of each feature:

To ensure that common work order, work center and machine data is the same in MFG/PRO and The Planner, it is generally best to carry out any changes within MFG/PRO and allow the changes to be brought into The Planner via the interface.

Remember that the primary function of The Planner Scheduler is to schedule work planned in MFG/PRO, based on the finite capacity of the resources/machines available.

Work Order Edit / Create

Any necessary manual entry of Work Order information is performed with this choice, and all editing and deleting also. The section on Work Order editing is further broken down into several sections explaining all the various functions and features of Work Orders. These functions are also available using the **[Edit Board Work Order]** and **[Edit Bib Work Order]** buttons.

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Customer Edit

This option maintains the customer file. Details about customers are entered through this editing window, and may be "looked up" when creating Work Orders, to avoid unnecessary duplication of data entry.

Work Center Edit

Each Machine **MUST** belong to a Work Center, and it is with this selection that Work Centers are first created and edited.

Machine Edit

Machines are created, edited, and deleted through this choice. All features of Machines are entered here.

Rate Edit

Each Machine may have an unlimited number of output rates (expressed in units per hour). This where these are set up and edited or deleted.

Change Status Display

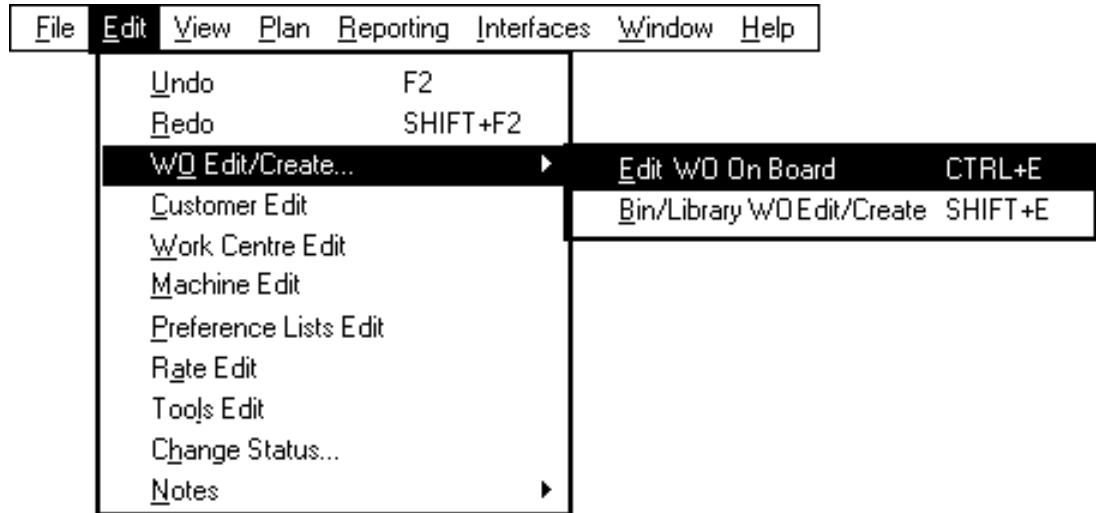
Alters the status display of existing Work Orders so that this information is graphically displayed and able to be reported.

The Change Status buttons along the top of the main Planner window are more often used. For discussion of the display of work order/item/operation status display see page 360

Notes

Notes can be kept on work orders, items and operations as well as on any period of downtime. See page 289.

Edit Work Order



To ensure that common work order, work center and machine data is the same in MFG/PRO and The Planner, it is generally best to carry out any changes within MFG/PRO and allow the changes to be brought into The Planner via the interface.

Remember that the primary function of The Planner Scheduler is to schedule work planned in MFG/PRO, based on the finite capacity of the resources/machines available.

The Planner allows the creation and subsequent editing of Work Orders in several different locations, each functionally similar but with some differences. Work Order creation and editing is standard throughout ***The Planner***, except that there are some minor differences relating to the location of the Work Order. The three locations for Work Orders in the system are:

1. On the board
2. In the "Bin"
3. In the Library

Each of these is explained in the "overview" over the next few pages:

The editing of Work Orders should mostly be carried out in MFG/PRO. If editing of Work Order data is carried out in The Planner, the data in

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the two systems may become 'out of sync'. Even if all available update switches are set on in the Interface Utility, at most Release and Due dates for Work Orders and Routes along with changed machine and run durations are sent back to MFG/PRO.

The following detailed editing instructions relate to situations where The Planner is used in a standalone fashion, without the interface to MFG/PRO

Remember that all field names can be customized to individual requirements, therefore the field names used throughout this manual are those of the default system... as supplied before customization.

Work Order Overview

The Board

The planning board holds Work Orders in their planned state: each Operation in the Work Order has a definite start and end time, denoted by its position on the Resource Board window. This positioning always follows a logical sequence, based on the way the Work Order was set up when it was created. Work Orders are graphically displayed when they are on the planning board as green, red, blue, or pink blocks or "cards", the length of each being in proportion to the time planned to perform each Operation on its chosen Machine. See "The Use of Colour" in the Introduction Section, and "Lates", and "User Status" in this section for information on the colours mentioned here. An unlimited number of Work Orders may exist on the Board at any time.

The Bin

When Work Orders are in the Bin they are not graphically displayed. They are viewed as textual information in the "Edit Bin Work Order" window. This window displays each Work Order as a structure, having a logical sequence and layout based on the Work Order's routing through the chosen Machine set.

An unlimited number of Work Orders may exist in the Bin at any time. It is from here that Work Orders are **Placed** into the required position on the planning board.

The Library

The Library is another "Bin", and functions in exactly the same way as the Bin discussed above. It is a separate storage area for Work Order information, and is intended to hold "standard", "dummy", or "template" type Work Orders: those which have a pattern which is regularly repeated. Thus it is possible to set up Work Orders in the Library and copy them from there into the Bin, where they can be edited for minor changes and then scheduled on the planning board.

An unlimited number of Work Orders may exist in the Library at any time. Work Orders are created in the "Edit Bin/Library Work Order" window and are then saved to the Bin or to the Library. If first saved to the Library, they may later be copied and saved to the Bin. Likewise, Work Orders may be copied from the Bin to the Library.

Work Orders are Unique

Their unique Work Order "ID" identifies work orders. This is the default name for this field, but it need not be a number, as the field accepts alphabetic characters. Further, it need not be a Work order ID, as you may redefine the field to have another name, such as "Batch Number" or "Work Order Number" or "Process ID", etc). A Work Order cannot exist in the Bin and on the Board at the same time. There cannot be two instances of the same Work Order ID in the Bin, or on the Board at the same time. Saving a Work Order with a Work Order ID that already exists will display an error message. The library may however contain a Work Order with the same Work Order ID as one already on the Board or in the Bin. Often work order templates in the library have their product number duplicated in the work order number field for easy searching later.

The Work Order Structure

It is important that you understand the structure possibilities of a Work Order in ***The Planner***. This is a powerful yet very flexible aspect of the system, enabling the creation of very simple, single Operation Work Orders through to very complex, multi-level Work Orders with unlimited linkage potential, and multiple completion dates for individual project task completions or staged deliveries (call offs). The Work Order structure consists of three levels:

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1. The Work Order level
2. The Stage level
3. The Operation level

Each of these levels and their interaction with one another is explained below. Please take time to read this section in depth.

The Work Order Level

This is the highest level of a Work Order record, holding information that applies to the total Work Order - every aspect of its structure. Fields such as Work Order ID, Customer, Rep name are examples of default field names which are usually universal to the entire Work Order. There are many other fields which are available on the Work Order line, however. The fields and their uses are explained later in this section.

The Stage Level

The next level down in a Work Order record, holding information that applies to an individual entity existing within the Work Order. For example, a desk may consist of three Stages: the top, the frame/legs structure, and perhaps some drawer units. Each of these may be processed individually and at separate times, and not necessarily in any sequence. A Work Order may have an unlimited number of Stages, or just one stage.

It may however be required to process these Stages in a definite sequence, for example when an assembly stage is added. By making the assembly stage another "Stage" and using the "Stage Linking" feature described later in this section, any possible sequencing between Stages may be achieved.

The Operation Level

This is the lowest level in the Work Order record, holding information that applies to each individual Stage existing within the Work Order. Using the desk example above, the Operations that might exist to build the table top

may be: cutting to size, edging, sanding, polishing, etc. The other Stages may have different Operations performed to produce them (although they may use some/all of the same Machines at different times). The sequence in which Machines are chosen to process a Stage as the Work Order structure is created defines the routing through those Machines (this may be edited at any time, however). Any number of Operations may be created for each Stage.

Rules Regarding Work Order Structure

It can be seen from the structure described above that Work Orders may be created to suit almost all situations. There are a few rules that must be followed, however. These are described below:

- A Work Order may consist of any number of Stages but must have at least one Stage.
- Similarly, a Stage may consist of any number of Operations but must have at least one Operation.
- Each Operation must have a Machine and a minimum of six minutes duration on each Machine (the time may exist in any of the three available time fields).

Not all the available fields need be used, but a few are mandatory. These mandatory fields are described below.

Mandatory Fields

The Work Order Record

1. A unique identifier is required for each Work Order record
This field is identified in the default system as the "Work Order ID". It may consist of any characters. The Work Order identifier must not be the same as that of any other Work Order in the database.
2. A due date is required for each Work Order record

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A default due date will display in this field, based on a specified time from "now" (the time/date the Work Order is first created). This default timespan is defined in the System Configuration. described elsewhere in this Planning Section.

The Stage Record

No fields are mandatory in this part of the Work Order structure, although the existence of at least one Stage is mandatory.

If not keyed in the following fields default to WO values

Due date/.time

Qty Ordered

Release Date defaults to Today.

Note that if Stage Links (described later) are required, then a unique Stage identifier is required for the linked Stages within a Work Order.

The Operation Record

1. A Machine is required for each Operation record

Before a Work Order can be saved, a machine must exist for every Operation in the Work Order structure. This need not be a pre-existing Machine: whatever is entered in the Machine field, if not existing, will be created.

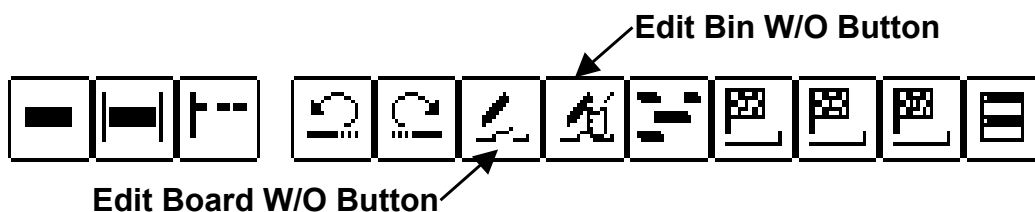
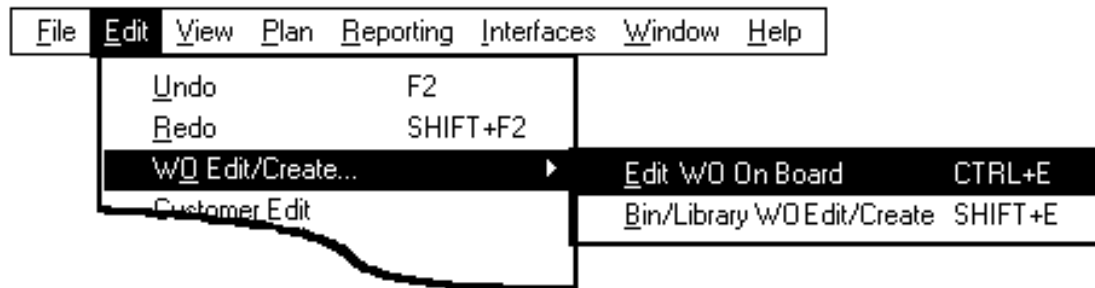
2. The machine must be used for some time for each Operation record

To enable **The Planner** to plan a Work Order, each Operation in the Work Order structure must have a minimum of six minutes duration (six minutes is the basic and smallest time unit used in the system). This time may exist in any or all of the three time fields available in each Operation record. The "Run" time field may (if desired) be calculated automatically. See "Recalculate" elsewhere in this section.

The exception to the above rules is the Library, where even incomplete and partial Work Order structures may exist.

This has been an overview of the Work Order structure. For information on editing Work Orders in their various locations, see the next topic, "Work Order Editing"

Editing Work Orders



To ensure that common work order, work center and machine data is the same in MFG/PRO and The Planner, it is generally best to carry out any changes within MFG/PRO and allow the changes to be brought into The Planner via the interface.

Remember that the primary function of The Planner Scheduler is to schedule work planned in MFG/PRO, based on the finite capacity of the resources/machines available.

Editing of Work Orders is carried using the options shown from the Edit Menu, or by pressing the required Edit Work Order button.

IMPORTANT

Editing for all three locations is described in this section. There are slight differences in the editing capabilities for Work Orders in each location, however. When these differences arise they will be discussed in bold italics. The basic description of Work Order editing will refer to editing in the Bin unless otherwise stated.

Creating a Work Order in the Bin

This is the point at which to begin entering Work Orders into the system. All Work Orders must be created in the Bin (*except when imported into the system with the Interfaces Module*), although once created and saved to the Bin or the Library, or placed on the planning board, they may be edited in any location.

Selecting this option from the Work Order Edit Menu or pressing the **[Bin Work Order Edit]** button opens the Work Order edit window. This window is the same in layout whether you are editing a Bin, Library, or Board Work Order. All the fields for the Work Order record are displayed (although, because there are many, you cannot see them all at once). To create a new Work Order, press the **[Edit]** button, and the cursor will be waiting in the Work Order ID field. The available buttons and keys are described in detail over the next few pages, as are some of the more important fields.

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W/O Line Edit

Work Order: 03030030
ID: 401495
Item Number: 99-510
Description1:
Qty Ordered: 1600 Cal Run
W/O Due Date: 29/11/97 17:00 Adjust
W/O Status: R
Customer: Select Clear
Priority: 0
W/O SpareTxt1:
W/O SpareTxt2:
W/O SpareVar1: 0
W/O SpareVar2: 0
Ok Help

Left Panel:
Edit Bin/Library W/O
Work Order: 03030030
Stage ID StageSpa: 401495
Actual Machine P: 12000
1030

Right Panel:
Description:
ate Stage Du: 17:00
Status Dis: CLEAR
CLEAR

Bottom Bar: Menu Cancel Save Create Stage Edit Delete Bin Lib Notes

Note that in addition to being able to customize the names of all the fields, you are also able to switch off any fields in the database that you do not require. In this way you can avoid even having to pass over these unwanted fields during data entry. The renaming and suppression of display of fields is accomplished in the Customizer, described in detail in its own Section.

Editing Keys in Work Order Edit

Date and Time Fields

Date and time fields are special, and cannot be used for any other purpose, even though their names may be customized. Date and time fields also have special editing characteristics. There are several ways of editing date and time fields.

- To type in dates, enter the DDMMYY without separators, (or MMDDYY, or YYMMDD if so set up in Customizer). For day and month values less than 10, enter leading zeros, eg 070997
Years input as 00 to 49 are presumed to be 2000 to 2049.

- You can type in the required time or duration using basic time format by entering hours, then a colon, then minutes, as: **8:30** which displays as: 08:30

Note that the leading zero is not required. As soon as the colon key is hit, the cursor moves into the minute area of the field. It is not necessary to "shift" the colon key, either. Just hit the **[:;]** key without the **[Shift]** key.

- You can enter the time as decimal hours by typing the hours, a full point, and then minutes, as: **8.5** which displays as: 08:30

The Planner uses a six-minute interval clock in all time fields. Therefore one decimal point equals six minutes ($\frac{1}{10}$ of an hour).

Field Size

Not all fields are the same size, the exact size of fields can be seen in the Appendix titled "File structure". Please note that while many are alphanumeric, others are numeric or logical.

Editing a Work Order

To edit an existing Work Order in the Bin, press **[Bin]** (the lookup button) from the Edit Bin/Library Work Order window to open a scroller that lists all Work Orders currently in the bin. Select the required Work Order by positioning the highlight bar over it and press the **[Select]** button. The full work order structure is displayed, and all details may be viewed by using the scrollers.

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The Display of Work Order Details

When you first open the Bin/Library Work Order edit window, only one line is displayed: the top line (Work Order line). Each time the **[Create Stage]** or **[Create Operation]** button is pressed, a new line is created (see below). When a Work Order is called in from the lookup scroller, the full Work Order record is displayed with all its existing lines. ***Since you cannot create a Work Order in the Board Work Order edit window, it never displays only one line. It always displays the full Work Order structure.***

Each line in the Work Order edit windows is one of three parts of the Work Order record:

1. Work Order header details, (which is always the first line)
2. Stage details
3. Operation details

(In addition there are some special lines, which will be discussed later).

Work Order Header Details

Using the editing keys described earlier, **[Edit]** a new Work Order line or **[Edit]** an existing one that has been looked up in the **[Bin]** or the **[Library]**.

When all the required Work Order details are entered, pressing **[OK]** returns you to Edit Bin/Library Work Order window, with the just entered work order details visible. There can only be one Work Order line for any Work Order.

Item Details

Using the editing keys described earlier, press **[Create Stage]** to create a new Stage line, and then press **[Edit]** to edit it or an existing one. When all the required Stage details are entered, pressing **[OK]** returns you to Edit Bin/Library Work Order window, with the just entered stage details visible.

Operation Details

Using the editing keys described earlier, press **[Create Operation]** to create a new Operation line, and then press **[Edit]** to edit it or an existing one. When all the required operation details are entered, pressing **[OK]** returns you to Edit Bin/Library Work Order window, with the just entered operation details visible.

Field Descriptions

Not all fields will be described here, just those of significance. Default field names are used. If you have customized field names, they will obviously be different to the names shown here.

Work Order Line Fields

WO Line Edit

Work Order

ID

Item Number

WO Desc

Qty Ordered

Cal Run

WO Due Date

15/08/97

16:00

Adjust

WO Status

Cust Code

select

clear

Customer

Priority

WO SpareTxt 1

WO SpareTxt 2

WO SpareVar 1

WO SpareVar 2

Ok

Help

Work Order	The identifier for the Work Order
ID	A mandatory field. The identifier for the Work Order. It must be unique. This is a lookup field.
Description	This is a scrolling field of 51 characters.
Quantity Ordered	A mandatory field. The quantity entered in this field will automatically default to the Stage and Operation quantity fields.

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Customer Code	The key field from the Customer file. This is a lookup field which will automatically fill in all the customer details (see Customer Edit). If a customer record has not yet been created, press [Select] to lookup existing customers, then press [Insert] from the Customer scroller to create a new customer record on the fly.
Priority	When a customer is looked up from the Customer file, the Priority from the file is written into this field. It may subsequently be changed. <i>The value in this field is able to be used in the "sequencing operations" move type.</i>
Due Date	A mandatory field. The date entered in this field will automatically default to the Stage and Operation date fields. <i>(It is actually the Stage date required field that determines whether a Work Order [Stage] is late).</i> This date is automatically filled in with the "Due Date Offset" as set in the System Configuration (default is one week from today's date) but may be overwritten.
Time Required	As Date Required above. If time is not important, this field may be suppressed.
Spare Variables	These are strictly numeric fields. Only numbers and the decimal point are valid characters.

Stage Line Fields

Stage Number	Mandatory only when Stage Linking occurs in a Work Order.
Quantity	The value in this field defaults from the Order Quantity field in the Work Order record. It may be overwritten.
Date Required	A mandatory field. The value in this field defaults from the Work Order Date Required field, but it may be overwritten here. It is this date that determines whether a Work Order (Stage) is late or not.
Release Date	This date field is for information only, although any value here becomes the default for the operation Edate.
Earliest Time	As above. May be suppressed
Spare Variables	These are strictly numeric fields. Only numbers and the decimal point are valid characters.

Stage Line Edit			
Stage ID			
StageSpareTxt1			
Stage Qty Ordered		Cal Run	
Stage Due Date		Cal Run	
Late Alert	26/08/97	16:00	Adjust
W/O Release Date	0:00	Adjust	
StageSpareTxt2	19/08/97	00:00	
StageSpareTxt3			
StageSpareTxt4			
StageSpareTxt6			
StageSpareTxt5			
StageSpareTxt7			
StageSpareVar1			
StageSpareVar2			
Ok Help			

Operation Line Fields

Machine	The machine/person processing this stage of production. This is a lookup field. Press [Select] to search the list of current Machines. A new Machine name may be entered, in which case it will be created when the Work Order is placed on the Board.
Quantity	The value in this field defaults from the Stage Quantity field, but it may be overwritten. Quantity changes may be used in automatic recalculation of Run time (see Recalculation).
Rate	The output (in units per hour) of the Machine. A numeric field fixed with four decimal places. The Operation Quantity is divided by the Number Up and then this Rate value to calculate the Operation's run time (see Recalculation).

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Setup	The duration planned for 'online' machine setting prior to running the Operation is entered in this field. It is a <i>static</i> time field: it is not recalculated according to quantity, speed or any other variable. It is not mandatory and may be suppressed.
Run Dur'n	This is the time to actually <i>run</i> the Operation on this Machine. It may be recalculated based on variable factors such as Quantity, Number Up, and Rate (see Recalculation).
Clean	The time planned for machine clean up after to running the Operation is entered in this field. It is a <i>static</i> time field: it is not recalculated according to quantity, speed or any other variable. It is not mandatory and may be suppressed. Turned off in MFG/PRO version.
Overlap	Used to enter a period of time in which the <i>next</i> Operation's <i>Run</i> may commence before this Operation's <i>Run</i> has completed. (Moving an Operation on the Board may automatically write a time into this field, depending on the current Board "Recalculate Overlap" switch setting, see System Configuration). See Overlap between Operations.
Transit	Used to enter a period of time in which the <i>next</i> Operation's <i>Run</i> is prevented from commencing after this Operation's <i>Run</i> has completed. If an Overlap time has also been entered, Transit will prevail. See Transit between Operations.

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Standard Status Display The Standard Status Display flags may be set in this field by using the drop down box.

User Statuses Each of the five User Status flags may be set On **[X]** by clicking on them, or left OFF **[]**.

Earliest Date This date field sets the Lower Float date for the Operation when setting anchors. Populated by Stage Earliest date

Earliest Time This date field sets the Lower Float time for the Operation when setting anchors. Populated by Stage Release date

Use EDate This switch sets the Lower anchor ON, or OFF for the Operation. Default is OFF

Latest Date This date field sets the Upper Float date for the Operation when setting anchors.

Latest Time This date field sets the Upper Float time for the Operation when setting anchors.

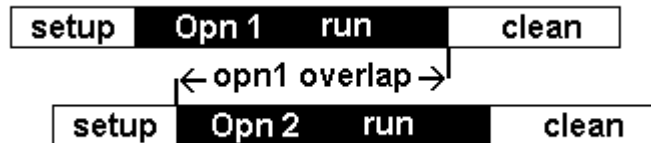
Use LDate This switch sets the Upper anchor ON, or OFF for the Operation. Default is OFF

Spare Variables These are strictly numeric fields. Only numbers and the decimal point are valid characters.

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Overlap between Operations

Overlap between operations is specified as the period of time before the end of the run of the current operation when the run of the next operation may start. The period of time is in six minute increments. The overlap allowed by the second operation over the first is specified in the field of the first operation.



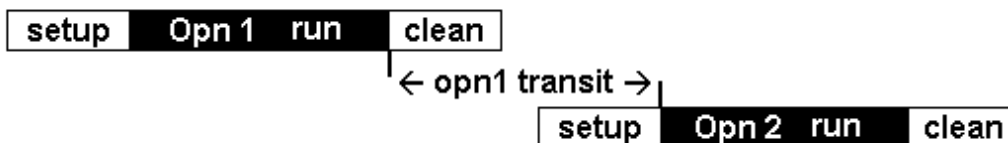
Even when specified, overlap is not mandatory, but is dependant on capacity being available in time for the second operation to be setup and run with the given overlap.

The second operation run cannot start until at least 6 minutes after the start of the run for the first, and must finish at least 6 minutes after the finish of the first. Any additional amounts used for overlap will be ignored.

Setup for the second operation cannot start until at least 6 minutes after the setup (or run if setup =0) of the first operation

Transit between Operations

Transit between operations is specified as the period of time the next Operation's Run is prevented from commencing after the current Operation's Run has completed. The period of time is in six minute increments. The transit, or delay period, that the second operation must wait after the first operation's run is finished is specified in the field of the first operation.



Transit is mandatory, that is, a second operation will not be able to be moved any sooner after the first operation than the transit value specified.

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To move the second operation closer to the first, the transit would need to be reduced in the Work Order Edit window.

Transit is applied according to clock time. Periods when resources are unavailable are ignored. For example, a 24 hour transit after an operation finishing Friday afternoon means the next operation could start Saturday afternoon. But if the factory does not work weekends, the next operation would instead be able to start immediately the factory restarts on the following Monday. It would not have to wait until Monday afternoon.

"Lookup" Fields

There are several fields in the Work Order record for which it is possible to look up (search for) possible data to save having to remember it or retype it each time.

The lookup button in each case (and throughout *The Planner*) is the **[Select]** button.

In the Work Order editing window, the fields which have the lookup facility are:

Work Order ID

To lookup existing Work Orders in the Bin, while the cursor is on the Work Order line, press the **[Bin]** lookup button. To lookup existing Work Orders in the Library, while the cursor is on the Work Order line, press the **[Lib]** lookup button. Both of these open scrollers listing all work orders in the Bin or Library respectively.

Customer Code

Whenever the cursor is in the Cust Code field, press the **[Select]** lookup button to search the Customer file and write all customer details in the appropriate fields.

Machine

Whenever the cursor is in any Machine field, press the **[Select]** lookup button to display a list of all the existing Machines. You may however, type in the name of a new Machine at this point. It will be created on the Board when the Work Order is placed.

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Preference Lists

Whenever the cursor is in any Preference List field, These can also be looked up using the [Select] button.

Rate

Whenever the cursor is in any Machine's Rate field, press the **[Select]** button to display a list of all the Rates currently existing for that Machine. You may however, type in a new Rate at this point. If a Rate is entered manually, it will be necessary to press the **[Cal]** button in order to recalculate the Run time for the Operation.

Adding New Stages and Operations

Each time the **[Create Stage]** button is pressed, a new stage is created immediately below the line the cursor was on.

Each time the **[Create Operation]** button is pressed, a new operation is created immediately below the line the cursor was on. The **[Create Operation]** button is not available when on the work order line, as an operation by definition belongs to a stage, with the stage belonging to the work order.

This process may be repeated as many times as required, creating an unlimited number of Stages within a Work Order, each with an unlimited number of Operations.

Whatever line is highlighted, be it the Work Order, a Stage or an Operation line, pressing the **[Edit]** button will allow editing of that line.

No new lines may be created when editing a Board Work Order except when copying or splitting lines.

Saving a Work Order

When you have completed entry of your Work Order details, the next step is to save the Work Order, either to the Bin, the Library or back to the Board. To save the Work Order, press the **[Save]** button. With Bin/Library Work

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Order editing, a window opens prompting for instructions about where to save the Work Order: the Bin or the Library. Choose the required option and press **[Select]**. The Work Order edit window is then cleared ready to enter the next Work Order. If you have finished entering Work Order data for now, press the **[Cancel]** button to close the Work Order edit window.

It is a good practice when entering large Work Orders, to save the Work Order during its creation. This can be done at any time providing each Machine line is complete, and as many times as desired. Press **[Save]** in the usual way, then **[Bin]** or **[Lib]** to lookup the Work Order scroller and retrieve the Work Order again for further editing.

Any notes created for a Bin or Library Work Order will not be saved unless the Work Order itself is saved.

Deleting Lines in a Work Order Record

When mistakes are made during Work Order creation or editing, it is easy to correct them. Each field on any line can be accessed at any time by highlighting the line, pressing the **[Edit]** button and then editing in the usual way.

To delete an entire line from the Work Order structure, highlight the line, then press the **[Delete]** button. Pressing the **[Delete]** button will delete the highlighted line **and all related lines**. For example, if a Stage line is deleted, all the Operation lines for that Stage are deleted as well. If the Work Order line is deleted, the whole Work Order is deleted from the Work Order edit window. The work order must be saved with the **[Save]** button for the deletions to be permanent.

Deleting a Saved Work Order from the Database

Note that if a Work Order was previously saved, deleting the Work Order line as described above does not delete the Work Order record from the database. The only way to permanently delete a Work Order record is to remove it from the Work Order scroller. To do this, whenever the lookup **[Bin]** or **[Library]** buttons are pressed and a list of all Work Orders is displayed, highlight the Work Order to be deleted and press the **[Delete]** button. A confirming message is displayed before the deletion is made.

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Reordering Operations

Sometimes it will be necessary to change the sequence of Operations in a Stage. This can be achieved very easily when the Work Order is in the Bin or Library.

Highlight the operation line to be moved, press the **[Insert]** key or select **[Reorder]** from the **[Menu]**. Left Click on the new position ***required within the stage***, and then press the **[Insert]** key again or select **[Normal]** from the **[Menu]** button to complete the move. All other operations will move to accommodate the position of the moved operation.

This feature can be very useful after 'copying' a stage. The duplicated stage may require some sequencing changes, which can be performed very quickly and easily using this function. Copying operations and stages is explained later in this section

It is not possible to move an operation out of its current Stage record.

Copying an Entire Work Order Record

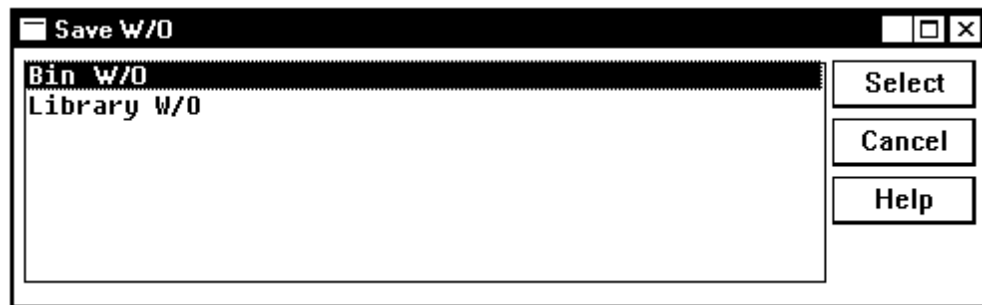
To save time when creating Work Orders in the system, it is useful to be able to take an existing Work Order, copy it, and then modify it as appropriate to create a new work order. This avoids having to create the new Work Order completely from the beginning, saving time. In ***The Planner*** it is possible to copy a Work Order record between the following locations:

- ♦ From the Bin back to the Bin
- ♦ From the Bin to the Library
- ♦ From the Library back to the Library
- ♦ From the Library to the Bin

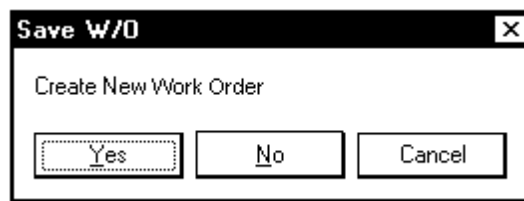
You cannot copy a Work Order into the same location with the same Work order ID (identifier) as an existing Work Order. Therefore before copying, it is essential to apply a new Work Order identifier to the Work Order to be copied. All other information may remain the same.

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To copy a Work Order to and from any of the above locations, start with the original Work Order displayed in the Work Order edit window. Change its unique identifier (Work order ID) as explained above. Press **[Save]** as if you were going to save the Work Order. The usual window opens:



Choose the destination for the Work Order to be copied in the usual way. If copying to the same location, the system recognises that the Work order ID has been changed and opens a new window:



Choosing "Yes" will create the copy. Choosing "No" will overwrite the existing Work Order record with the new Work Order being saved.

Copying Lines Within a Work Order

During the creation or editing of Work Order data, it is useful to be able to copy any line, or group of lines, so that less data entry is required. There are two methods of "copying" in **The Planner**, and the differences between them should be thoroughly understood in order to maximise productivity during Work Order entry and subsequent editing, and to cater for the two different scenarios.

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Copying

The first method of copying exactly duplicates the line or lines being copied. This is used whenever a Stage or an Operation line is to be duplicated exactly as it is in the original, and then perhaps modified slightly, simply to save time.

Splitting

The second method of copying is "splitting" which is similar to copying except that it allows different methods with which to split the Stage or Operation being copied.

Splitting an Operation is useful in situations where for some reason it is necessary to stop processing the Operation at some point, then to reschedule the balance of the Operation at a later time. The case of an Operation being "lifted" in order to insert a more urgent Operation from another Work Order, or when something is wrong with the current process which requires that the operation must cease temporarily and begin at another point in time.

Splitting a Stage is useful when the Stage is to be processed in two or more "stages", as when partial deliveries (or call-offs) are planned. In this case, each Stage may be split to process a proportion of the total quantity, and each Stage may also carry its own delivery (due) date.

Because the entire Stage with all its associated Operations has been split, it will be possible to continue to schedule and process the remaining Operations from the first part of the split Stage through to completion. This is not possible when only a single Operation is split (unless the second part of the split Operation was itself another Stage).

In the case of splitting, it is necessary to edit the quantity and/or time(s) for each part of the split (you can split a Stage or an Operation as many times as you like). **The Planner** offers some automation in this function.

Copying and Splitting are easily achieved in **The Planner** with the use of the **[Menu]** button in the Work Order edit windows.

Copying an Operation

To copy the details of one Operation line to the next line, first position the highlight bar over the line to be copied. Press the **[Menu]** button, and select **[Duplicate]**. The highlighted line is exactly duplicated immediately below itself. It is now possible to edit the new Operation line by pressing **[Edit]**.

Copying an Entire Stage

With the highlight bar positioned on the Stage line to be copied, Press the **[Menu]** button, and select **[Duplicate]**. The Stage line and all its Operation lines are duplicated as if creating a new Stage below the last Operation line of the active Stage.

You can edit the due date of each Stage in the copy, so that each copy of the Stage can be scheduled according to its own due date. In fact, the copied Stage is a new and independent entity, not attached to the Stage from which it was copied.

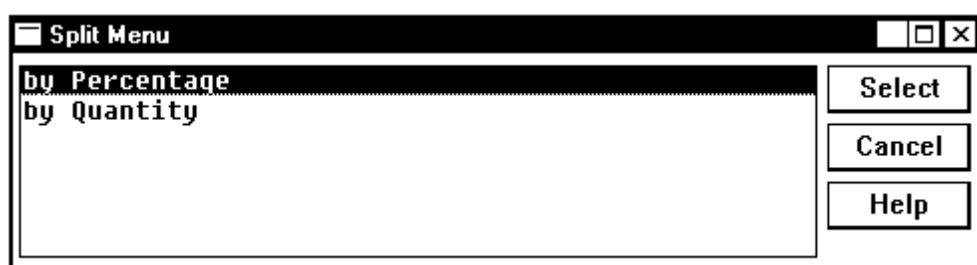
If sequencing of the copied Stage is required, Stage Links must be used (see later in this section).

To edit the quantities, see the later discussion on "marking" Stages for group editing later in this topic.

Splitting a Stage

Splitting a Stage functions in a similar manner to copying, except that a different choice is made from the menu – **[Split]**., and a decision must be made about the point at which the split occurs.

Position the highlight bar on the Stage line to be split, and press the **[Menu]** button, and select **[Split]**. A window opens to offer the split options:



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Splitting by percentage allows entry of the split proportion, with 50% as the default. Type in the new value for the split. *The percentage entered here is applied to the new (split) Stage. The balance is applied to the existing Stage.*

Splitting by quantity allows the entry of a definite quantity to write into the new Stage quantity field, with the balance remaining in the original Stage.

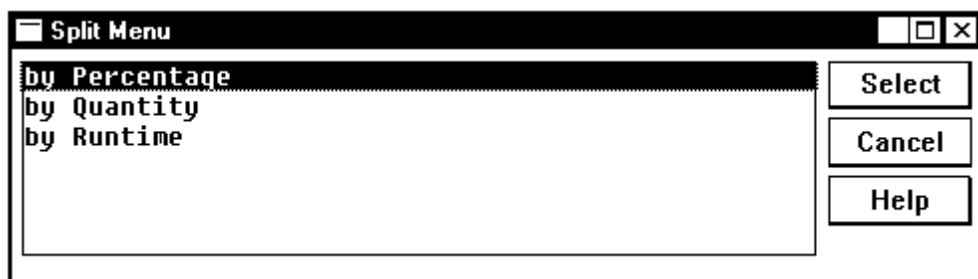
Press **[OK]** to complete the splitting function. The Split window closes and the balance of the Stage is copied to a position immediately below the last Operation of the existing Stage.

Splitting a Stage is useful in situations where for some reason it is necessary to stop processing the Stage at some point, then to reschedule the balance of the Stage to continue processing at a later time. One case would be a Stage being "lifted" in order to insert a more urgent Operation from another Work Order. Or when something is wrong with the current Stage which requires that it must cease temporarily and begin at another point in time, or to cover the situation where split deliveries are requested (call offs).

Because the entire Stage with all its associated Operations has been split, it will be possible to continue to schedule and process the remaining Operations from the first part of the split Stage through to completion. This is not possible when only a single Operation is split.

Splitting an Operation

As with splitting a Stage, the Operation is split by positioning highlight bar over the Operation to be split and pressing the **[Menu]** button, then selecting **[Split]**. A window opens to offer the split options:



Splitting by percentage allows entry of the split proportion, with 50% as the default. Type in the new value for the split. *The percentage entered here is*

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applied to the new (split) Operation. The balance is applied to the existing Operation.

Splitting by quantity allows the entry of a definite quantity to write into the new Operation quantity field, with the balance remaining in the original Operation.

Splitting by Run time allows the entry of a definite period to write into the new Operation Run time field, with the balance remaining in the original Operation.

Press **[OK]** to complete the splitting function. The Split window closes and the balance of the Operation is copied to a position immediately below the split Operation.

To later edit the quantities further, see the later discussion on "group editing" Stages next in this topic.

Group Editing of Work Order

A number of changes can be made to the whole work order by changing just one field in the Work Order and having that change reflected through the work order.

Quantity Changes

To change all the quantities in each line of the entire Work Order, simply position the cursor in the Work Order Quantity field, change the quantity to the new value and press the **[Cal Run]** "Recalculate" button. ***This makes proportionate changes to Quantities and Run times.*** That is the values in every stage and operation quantity field will be changed in proportion to the change that was made in the Work Order quantity field. At the same time any change in operation quantities will result in a change to 'Run' duration, based on the previous 'Rate' at which the operation was to be processed.

Required Date & Time Changes

To change all the Date and Time Required fields in each line of the entire Work Order, simply position the cursor in the Work Order Date Required field, change the date (and time if desired) to the new value and press the **[Adjust]** button. ***This makes proportionate changes to Date/Time required fields.*** That is the values in every stage and operation Date/Time

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required field will be changed in proportion to the change which was made in the Work Order Date/Time required fields, as stages may have different required by dates.

Group Editing of Stage

A number of changes can be made to the whole stage by changing just one field in the Stage and having that change reflected through the Stage.

Quantity Changes

To change all the quantities in each line of the entire Stage, simply position the cursor in the Stage Quantity field, change the quantity to the new value and press the "Recalculate" button: **[Cal Run]**. ***This makes proportionate changes to Quantities and Run times.*** That is the values in every operation quantity field will be changed in proportion to the change that was made in the Stage quantity field. At the same time any change in operation quantities will result in a change to 'Run' duration, based on the previous 'Rate' at which the operation was to be processed.

No Up

This field is turned off in the MFG/PRO version. Changing the value in the Stage No Up field and the pressing its **[Cal Run]** button changes the number up (Op Up) in each operation line proportionally to the change made in the Stage No Up field. This will also change the run duration for the operations, as the run is inversely proportional to the Op Up. For instance a doubling of OpUp from 2 to 4 up, will mean the operation takes half as long to process.

If the Op Up field was the default, (0 meaning 1 up) then the **[Cal Run]** recalculation will have no affect on these operation lines.

Late Alert

Changing the Late alert value in one stage and pressing the **[Adjust]** button, **Copies** the Late Alert value entered to all other stages, overwriting any existing values.

Required Date & Time Changes

To change all the Date and Time Required fields in each line of the entire Stage, simply position the cursor in the Stage Date Required field, change the date (and time if desired) to the new value and press the **[Adjust]** button. ***This makes proportionate changes to Operation Date/Time required fields.*** That is the values in every operation Date/Time required

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field will be changed in proportion to the change which was made in the Work Order quantity field, as stages may have different required by dates. (Please note that Operation Due dates and times are not interactive in any way)

Linking Stages in Sequence

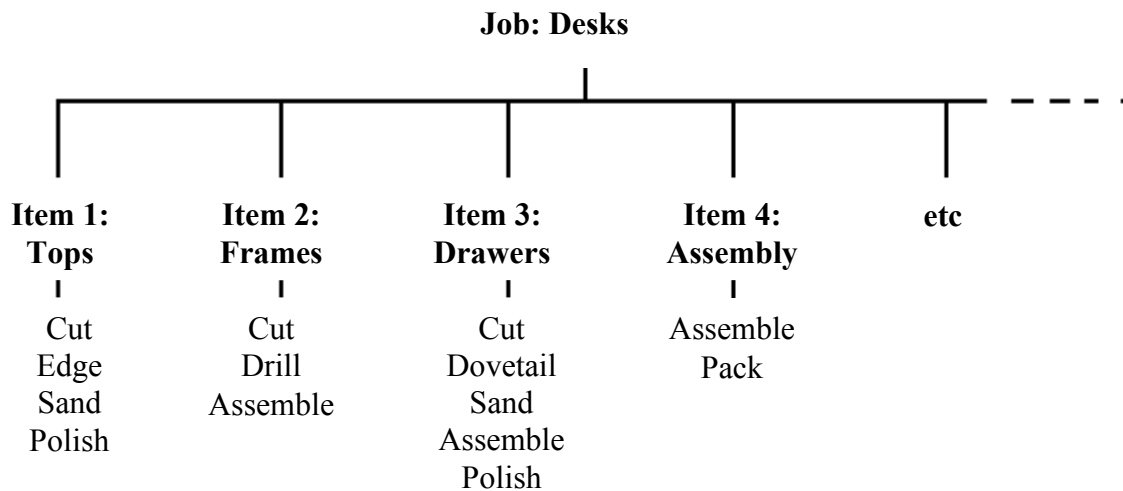
The purpose of linking Stages is to set up sequential processing chains that rely on consideration of predecessors before allowing certain actions. Stage links apply when, for example, the last Stage of a work order cannot be started until prior Stages are completed. The movement of individual Stages on the planning board therefore takes into account and preserves the relationships that have been set up between the linked Stages.

For an example, let us examine the manufacture of a desk. A desk may consist of three Stages: the table top, the frame/legs structure, and perhaps some drawer units. Each of these may be processed individually and at separate times, and not necessarily in any sequence. All Work Orders in ***The Planner*** may have an unlimited number of Stages, so the Bill of Materials can be unlimited.

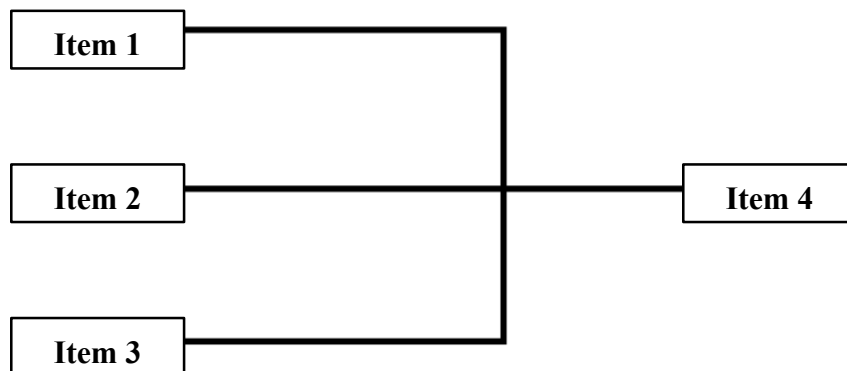
It may be required to process these Stages in a definite sequence, however, as when an assembly stage is added to our example. By making the assembly stage another "Stage" and using the "Stage Linking" feature, any possible sequencing between Stages may be achieved. In this way we can ensure that each of the three manufactured Stages are completed before the assembly stage.

A diagram may help to make this clearer. Each Work Order can have an unlimited number of Stages, and each Stage can have an unlimited number of Operations.

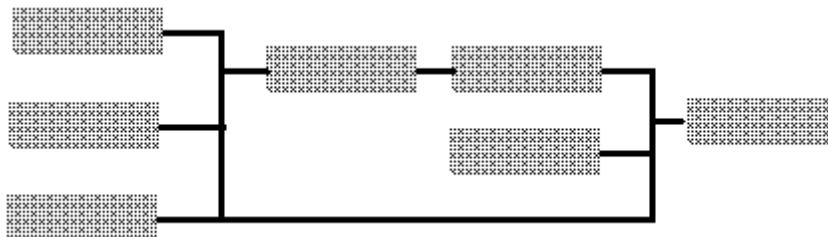
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If we link these Stages in the sequence required to make this order, the "network diagram" would look like this:



In fact, almost unlimited, very complex sequencing may be structured using the Stage Linking feature, by establishing predecessor/successor relationships throughout the Work Order structure. For example:



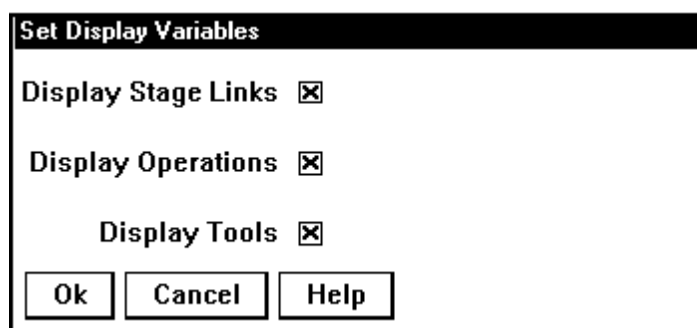
Creating the Links

Note: Before Stage Linking can be performed, all Stages within the Work Order *MUST* have unique identifiers in their "Stage" field (the first field on the Stage line).

***** VERY IMPORTANT *****

Linking stages when a Work Order is already positioned on the Planning Board is not recommended. It is permissible, but be sure that the Stages are positioned on the Board in the correct sequence before proceeding. Unpredictable results may occur if Stages are linked in a sequence other than their present sequence on the Planning Board.

To begin creating the Stage links, first ensure that the Display State will allow the display of the link information. Press the **[Menu]** button when any line in the work order edit window is highlighted, and select **[Display Config]**. If the option "Display Stage Links" is not ON, turn it on by left clicking on it. Press **[OK]** to close the window.

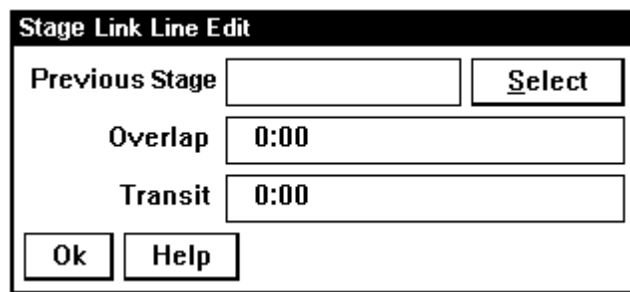


To create a Stage link line, position the cursor on the Stage to have a predecessor linked to it, and press **[Create Link]**. A new line opens

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immediately below the current Stage line. This field is where the Stage ID of the required predecessor to this stage is entered.

Press the **[Edit]** button to open the Stage link line edit window. If the Stage ID is known it may be typed in directly. If not, it may be looked up by pressing **[Select]** when the cursor is in this field. If required overlap or transit times between the linked stages may be entered – see below for details. Press **[OK]** to complete the link line



The screenshot shows a dialog box titled "Stage Link Line Edit". It contains three input fields: "Previous Stage" with a "Select" button to its right, "Overlap" with a value of "0:00", and "Transit" with a value of "0:00". At the bottom are "Ok" and "Help" buttons.

Before exiting the Work Order Editing window, the changes made to the Work Order must be saved with the **[Save]** button.

At any time Stage Links can be edited, although the earlier warning about doing so while the work order is on the Board should be borne in mind. It is safest to only carry out any significant changes to stage links with the work order in the bin.

Hint: To make the screen less cluttered when setting up Stage Links, switch OFF the display of Operation lines: press **[Menu]** , and turn off the display operations and tools. Don't forget to turn these on again when finished.

Adding More Predecessor Stages to One Stage

If more than one predecessor is needed, while still on the first Previous Stage line, press **[Create Link]** again. A second previous stage line opens ready for editing as before.

If the Stage lookup is used, you will notice that only valid Stages are listed in the Stage scroller. The one previously entered will not be listed for example.

Continue entering Stage Links in this way until done. Before exiting the Work Order Editing window, the changes made to the Work Order must be saved with the **[Save]** button.

Overlap & Transit

Just as Overlap or Transit may exist between Operations, they may exist between Stages that are linked.

Overlap

Overlap between Stages tells **The Planner** that whenever possible, you would like to commence the Run time of the first Operation of a successor Stage before the Run time of the last Operation of a predecessor Stage is complete, by the amount of time in this field.

Transit

Transit is the reverse of Overlap. A time entered into the Transit field tells **Planner** that you require a forced period of time after the completion of the Run time of the last Operation in a predecessor Stage before the Run time of the first Operation of a successor Stage can begin. If both Overlap and Transit times are entered, Transit will dominate.

Invalid Data

If an error message is displayed: "Invalid Stage Number", this means that you have attempted to link Stages in a sequence which is not logical or permitted. An example of invalid sequencing is when a "loop" is created. That is, when each Stage precedes one another so that there is no unlinked beginning or end to the sequence.

Pressing the **[Select]** button when the cursor is in the Stage number field will overcome this "Invalid Stage" problem. The scroller displays a list of only valid Stages that may be linked to the current Stage. Select the Stage by using the **[up]** and **[down]** arrow keys or typing in the number, and pressing **[Enter]** in the usual way.

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Deleting the Links

Pressing the **[Delete]** button or key while the highlight bar is on the Previous Stage line will delete the entire line and therefore the link information.

Note that the Work Order structure is left intact. Deleting a Previous Stage line in this manner deletes only the link that had been established between the Stage highlighted and the Stage with which it was linked.

Work Order Linking

As well as linking parts of work orders in a sequence, ie operations and stages; Planner is able to link individual work orders, so that they can only be scheduled in a desired sequence.

***** VERY IMPORTANT ******Linking work orders when they are already positioned on the Planning Board is not recommended. It is permissible, but be sure that the Work Orders are positioned on the Board in the correct sequence before proceeding. Unpredictable results may occur if Work Orders are linked in a sequence other than their present sequence on the Planning Board.*

Work Order links may be created via the interfaces from MFG/PRO. For details please see the Interfaces section, Settings.

Creating a Work Order Link

From the Work Order edit window, with the Work Order line highlighted, press the **[Create WO link]** button. This creates a 'Previous WO' line between the work order and stage lines. Editing this 'Previous WO' line opens the following window.

Key in or choose the work order ID that is to be the predecessor to the current one being edited.

Enter any overlap or transit values that are to apply.

Press **[OK]** to save the line.

Please Note: More than one previous Work Order link line may be created for a work order.

When complete, ensure that the edited Work Order is saved.

The dialog box is titled "Edit Previous WO Link". It contains a "Previous WO" label followed by a text input field. To the right of the input field are two buttons: "Bin WO" and "Board WO". Below the input field are two more input fields, one labeled "Overlap" and one labeled "Transit", both containing the text "0:00". At the bottom left are two buttons: "Ok" and "Help".

WO Links from MFG/PRO

It is possible to use the interface from MFG/PRO to establish links between work orders in Planner. However a work order can only have one previous work order setup for it at present. For details on how this is carried out, please see the setup part of the Interface section of this manual.

Work Order Edit Window Display Variables

As has been seen earlier in this section, the appearance of the Work Order edit window may be changed to suit the display requirements at the time. Each of these variables is explained here. Press the **[Menu]** button and select **[Display Config]**.

The dialog box is titled "Set Display Variables". It contains three checkboxes, each with a label and a checked box: "Display Stage Links" with a checked box, "Display Operations" with a checked box, and "Display Tools" with a checked box. At the bottom are three buttons: "Ok", "Cancel", and "Help".

Display Stage Links

When this checkbox is set to ON **[X]** all Stage Link lines are displayed. When OFF **[]**, the display of Stage Link lines is suppressed. Ensure this is ON before creating Stage Links.

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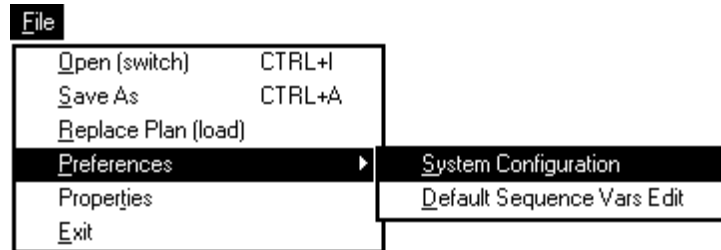
Display Operations

When this checkbox is set to ON ☒ all Operation lines are displayed. When OFF ☐, the display of Operation lines is suppressed (this is useful when editing Stage Links, as the screen is not as cluttered with information).

Display Tools

When this checkbox is set to ON ☒ all Tool lines are displayed. When OFF ☐, the display of Tool lines is suppressed.

File Menu



Open (switch) Plans

When Planner starts it displays the "MAIN" plan by default. The Open option only needs to be used when wishing to SWITCH to another previously saved plan. See page 369

Save As

While *The Planner* saves your plans to disk as you work, it pays to **(frequently)** save additional copies throughout the day. Earlier saved plans can then be used to replace a corrupt or bad plan, or you can switch between saved plans to try out what-ifs. See page 343.

Replace Plan (Load)

Replace does exactly that: The plan currently being viewed is replaced with the one selected to be LOADED over it. See page 248.

Preferences

System Configuration

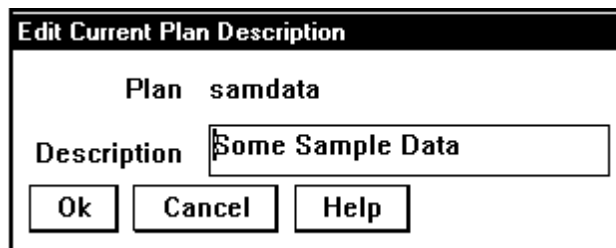
This option allows you to make quick, temporary or permanent changes to most system settings prior to performing a function, or to test the results of such changes during this session.

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Properties

Edit Description of Plan

At any time, you may edit the description of the current plan. Choose the Properties option from the File Menu, and a window opens with the name of the current plan and the cursor waiting in its description field. Note that you cannot edit the name of a plan, just its description, and you can only edit the description of the *current* plan.



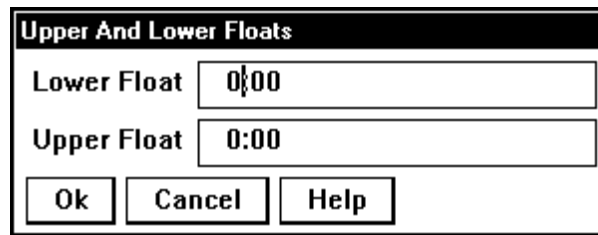
Simply type in the new description and press **[OK]** to save it. Press **[Cancel]** to abort changes and close the window.

The description of a plan displays in three places in the system. When saving, loading or switching, the description of saved plans appears in the scroller.

Float

Float is a range of time in which the Operation(s), although anchored, is (are) permitted to slide within. Upper Float relates to the latest time for the completion of the Operation (the LDate), and Lower Float relates to the earliest time for the commencement of the Operation (the EDate).

After selecting an anchoring or unanchoring function, the last window to open prior to the action being performed is the Float Time window shown below.



The dialog box is titled "Upper And Lower Floats". It contains two input fields: "Lower Float" with the value "0:00" and "Upper Float" with the value "0:00". At the bottom, there are three buttons: "Ok", "Cancel", and "Help".

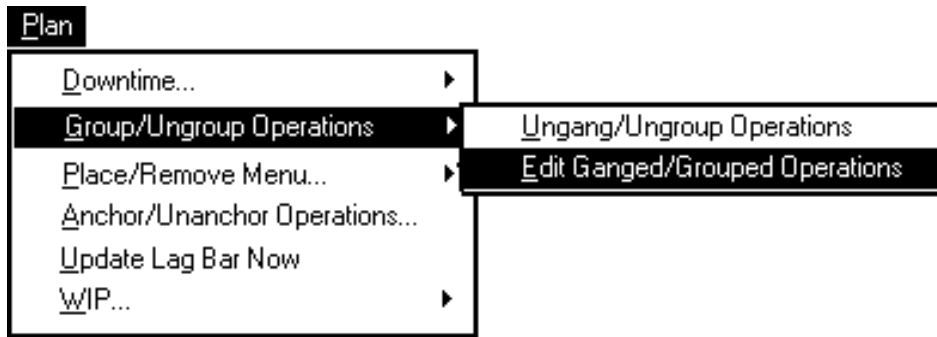
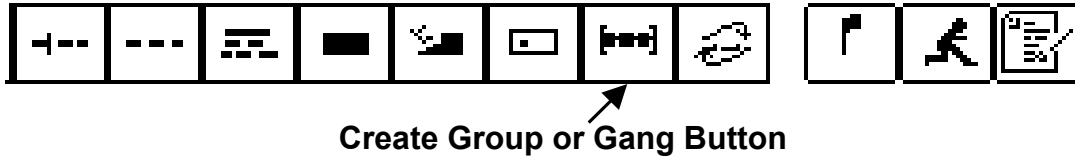
Setting the float time sets the limits for an Operation's movement on the Board when it is anchored.

The following diagram will help to explain:



The line represents the range of float that the Operation is permitted to move between. It will be seen in the Work Order edit window that the "Use EDate" and "Use LDate" switches are set ON when anchoring has been applied to an Operation. These switches may also be set within the Work Order edit window. Also see "Push Levels" for more information.

Ganging Operations



For various reasons it may be desirable to position certain Operations together on a Machine **so that they are processed on that Machine at the same time, i.e. concurrently**. These Operations may be from different Work Orders but have similar characteristics, for example when they are the same colour or the same size, or when a Machine is capable of processing multiple Work Orders, such as a kiln or a printing press. *This should not be confused with grouping, which simply locks operations to be processed one after the other, i.e. sequentially.*

The Planner provides the facility to "Gang" Operations together and locks them in place for as long as required. A visual indicator is applied to the Ganged Operations both on the Resource Planning Board and in the Resource View window. This takes the form of a broad, solid, horizontal line through all the affected Operations on the Board. In the Resource View window, the first and last Operations in the Gang have the line only half way through their width so that more than one of a series of Gangs positioned adjacent to one another may be more easily identified.

Having locked these Operations together, no foreign Operations may be positioned into the Gang. Any changes or additions to the sequence must then be deliberate, avoiding unintentional errors. UnGanging or editing of the Gang is performed using the same menu choice from the Plan Menu.

Not all Operations in the Gang need to commence processing at the same time. There is a facility in the system to "offset" any number of Operations to start at a specific period of time from the start point of the first Operation in the Gang.

How to Gang Operations

Initial ganging of operations is carried out using the **[Create Group/Gang]** button. Editing of ganged operations, and unganging them for any reason is accomplished using the "Group/ungroup operations" choice from the Plan Menu.

To Gang operations, generally three steps are involved;

1. Position the required Operations together on the machine,
2. Mark them as a gang,
3. "Lock them" together to create the Gang.

Step One: Position the Operations

First move the desired Operations together into the position required. Their sequence is not important since they will all run at the same time unless any "offsets" are applied, and this is performed during editing.

Positioning may be achieved using any of the move button options (see the appropriate section on moving). The Operations do not have to be touching each other: as any gaps which exist between Operations when Ganging will be closed automatically when they are moved to the common start-point of the first Operation in the Gang.

Ensure that any previous operations are scheduled early enough to not conflict with related operations being moved within the gang during ganging

Step Two: Mark the Operations to Gang

As with many of the Planner function buttons, the **[Create Group/Gang]** button can be used either in a "Drag & Drop" or "Three Step" manner to select the range of operations to gang.

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“Drag & Drop” to select operations to gang

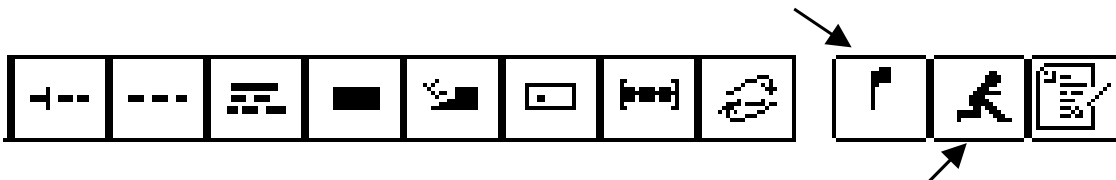
1. Press the **[Create Group/Gang]** button,
2. Left click on (say) the left-most or earliest operation in the range to be ganged,
3. While holding down the left mouse button, drag the mouse pointer to the right-most or last operation in the range to be ganged,
4. Select “Create Gang” from the Group/Gang scroller.

Operations that were “dragged over” now appear in the “Ganged Operations” window.

“Three Step” method to select operations to gang

1. Press the **[Create Group/Gang]** button,
2. Left click at (say) left-most or earliest operation in the range to be ganged,
3. Press the **[Select Range Marker Position]** button. At this point a vertical line will mark the position on the board, or a black rectangle in the view,

Select Range Marker Position Button



Run Current Move/Range Button

4. Left Click at the right-most or last operation in the range to be ganged,
5. Press the **[Select Range Marker Position]** button again. At this point another vertical line, or black rectangle will appear and mark the range end position,
6. Press the **[Run Current Move/Range]** button to confirm the selected range,
7. Select “Create Gang” from the Group/Gang scroller.

The Operations that were selected now appear in the “Ganged Operations” window.

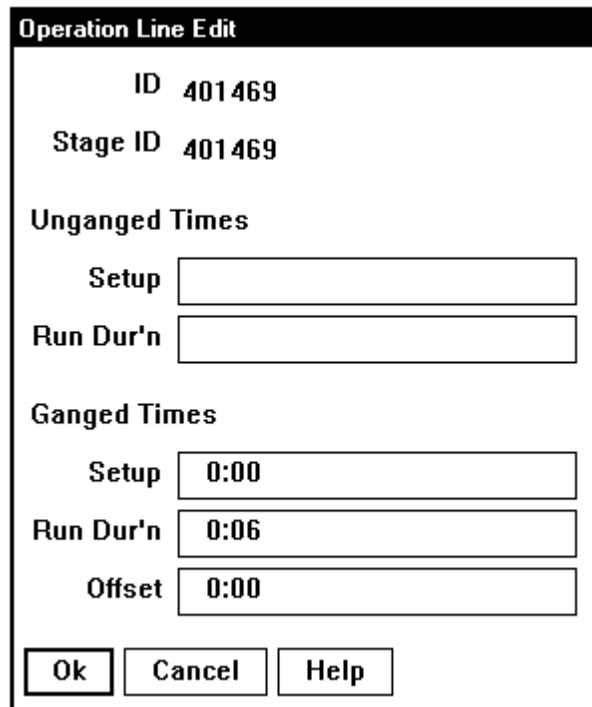
Step Three: Create the Gang

The Ganged Operations window is opened and displays a brief description of each Operation in the selected Gang, and their Setup/Run/Clean times

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(these are the standard field names that come with the Planner. If you have customized these field names, your custom names will display)

Pressing the **[Edit]** button allows editing of the Setup, Run and Clean duration of any highlighted operation about to be included in the group. In this way, changes may be made to accommodate any economies that may be gained by ganging the Operations. An additional field displays on each line to enter the "offset" period. This is discussed later. Each Operation's original hours are displayed for reference. Press **[OK]** to save any edited operation information.



The image shows a dialog box titled "Operation Line Edit". It contains the following fields and controls:

- ID 401469
- Stage ID 401469
- Section: Unganged Times
 - Setup: [Empty text box]
 - Run Dur'n: [Empty text box]
- Section: Ganged Times
 - Setup: [0:00 text box]
 - Run Dur'n: [0:06 text box]
 - Offset: [0:00 text box]
- Buttons: Ok, Cancel, Help

The total hours for each column are dynamically updated (displayed above the columns), and each Operation's original hours are displayed for reference in the "Ganged Operation" window

At any time, the **[Save]** button can be pressed to complete the ganging process. At this time, a message window opens asking for confirmation to save the changes. Confirming completes the ganging process.

To abort the ganging process at any time, press the **[Cancel]** key. The window will close and you will be returned to the Resource planning Board or View.

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The display of the new Gang will be significantly different to the individual Operations' display: they will all occupy the same space on the Machine, so their total time will be less than the sum of the originals. Also, the Gang will have a broad solid line through its center.

Ganged Operations

Totals : 21:00 22:00 44:12 1:00

ID	Stage ID	Unganged Times			Ganged Times			Off
		Setup	Run	Clean	Setup	Run	Clean	
10028	001	6:00	9:36	0:00	6:00	9:36	0:00	
10022	001	6:00	9:36	0:00	6:00	9:36	0:00	
10020	001	5:00	10:00	0:00	5:00	10:00	0:00	
10016	001	5:00	15:00	1:00	5:00	15:00	1:00	

Menu Cancel Save Add Delete Edit View Job Reorder

Editing the Ganged Operations

At any time, the Ganged Operations may be edited.

[Add] to add Operations to an existing Gang,

[Delete] to delete Operations from the Gang, and

[Edit] to reset each Operation's SetUp, Run Clean and "offset" within the Gang.

To edit Operations in a Gang, position the Pointer anywhere on the Ganged Operations on the Board and select "Group/ungroup operations" from the Plan Menu. Another menu opens, offering a choice to edit or unGang the Gang. Select "Edit Gang". The Gang window for the selected Gang opens. Position the highlight bar on the Operation to be edited.

Adding a New Operation

Press **[Add]** to display all Operations available for inclusion in the Gang. A list of all Operations scheduled on that Machine, not already in the Gang is displayed. *You cannot include an Operation from a different Machine in a Gang.*

Choose the Operation to be included in the Gang and press **[Select]**. The selected Operation will be added to the start of the Gang. If it is required to have the Operation start at a later time in the Gang, set its "offset" time. This is explained later.

Deleting an Operation

With the highlight bar positioned on the Operation to be deleted, press **[Delete]**. The selected Operation will be removed from the Gang and re-positioned as close as possible on the Board.

It is not possible to delete an Operation from the Gang once that Operation has been commenced as Work In Progress using the WIP Update feature.

Resequencing Operations in the Gang with OFFSET

To alter the sequence (start time from the beginning of the Gang - the "zero" point) of the Ganged Operations, position the highlight bar on the Operation to be moved and press **[Edit]**. Key in the "offset" field a time greater than 00:00 hours. This causes the selected Operation's start time to commence later than the first Operation in the Gang by the value in this field.

At least one Operation in the Gang must have a Gang Offset time of zero (00:00). This sets the start time for the Gang.

Viewing the Full Work Order

It is possible to view the full Work Order record. Position the highlight bar on the Operation to be viewed. Press **[View]** and the Work Order viewing window opens to display all Work Order details. This is a view only window: you cannot make changes to the Work Order here.

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UnGanging the Operations

Ganged Operations may be unGanged. This may be necessary if an error was made in the Ganging procedure.

To unGang a Gang of Operations, position the Pointer anywhere on the Gang. Choose "Group/ungroup Operations" from the Plan Menu. A menu is displayed to select Edit or UnGang the Ganged Operations.

On selecting "UnGang" an Unganging Operations window opens, similar to that in the Ganging function, with the current time fields displayed for each Operation in the Gang. All the original time fields are displayed and are available for line editing in the normal manner, and the Ganged times are displayed for reference.

The same editing buttons are available, and **[Save]** completes the process after confirmation. Confirming the unGanging causes each of the Ganged Operations to revert to their original, independent state. To abort the unGanging process at any time, press the **[Cancel] button**. The window will close and you will be returned to the planning board with the Operations still Ganged.

Moving Ganged Operations

Moving a Gang of Operations or a Stage with Operation(s) in a Gang is possible, but with a few restrictions.

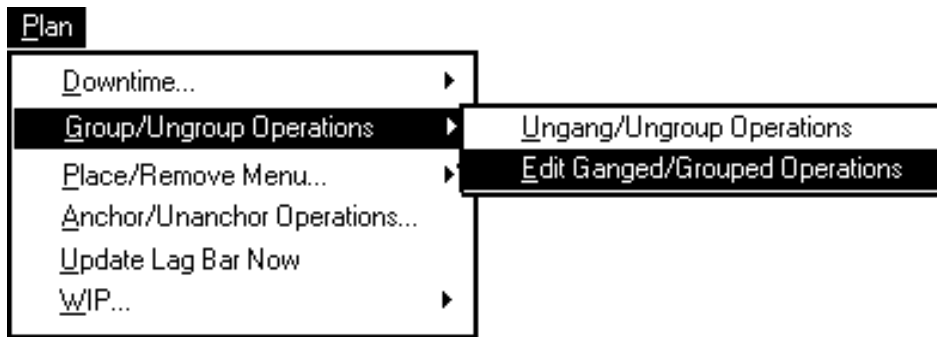
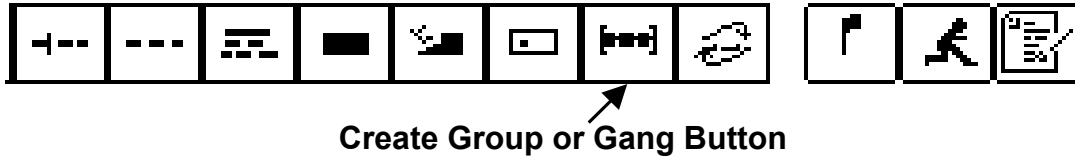
If a "Move by Major Operation", Move Rest of W/O Stage", or "Move W/O Stage" involves a Ganged Operation, all Operations in the Gang cannot be moved to a position before or after their previous and next Operations, or any Stage-Linked Operations.

Preference Lists (Alternate Machines) are ignored if the Operation being moved is part of a Grouped or Ganged set of Operations.

Updating Gangs in WIP

There are a few additional rules that apply to Ganged Operations when WIP updating is performed. See "WIP" in this documentation.

Group Operations



Often it is desirable to process certain Operations sequentially, one after another, through a machine/machine, generally to save time setting up or cleaning down the machine between operations. That is, processing is planned to be carried out in this particular sequence, and we wish to ensure that no other Operations are **accidentally** inserted into the sequence by mistake. The Operations in the sequence may be from different Work Orders, but will generally have some similar characteristics, for example when they are the same colour or the same size, or a gradually reducing or increasing range of like features.

The Planner provides the facility to "Group" Operations together, i.e. to lock them in this sequence for as long as required. A visual indicator is applied to the grouped Operations both on the Resource board and in the Resource view windows. This takes the form of a broad, solid, horizontal line through all the affected Operations. In the Resource View window, the first and last Operations in the group are indicated by a line only half way through their width. This allows a series of groups positioned adjacent to one another to be more easily identified.

Having locked these Operations together, no foreign Operations can be accidentally positioned into the group. Any changes or additions to the sequence must then be deliberate, avoiding unintentional errors.

How to Group Operations

Initial grouping of operations is carried out using the **[Create Group/Gang]** button. Editing of groups of operations, and ungrouping of them for any reason is accomplished using the “Group/ungroup operations” choice from the Plan Menu.

To Group operations, generally three steps are involved;

4. Sequence the required Operations together on the machine,
5. Mark them as a group,
6. “Lock them” together as the Group in the previously established sequence.

Step One: Sequencing/Positioning the Operations

First move the desired Operations together into the order and position required. This may be achieved using any of the Move buttons to manually move the operations, or by using the “Sequence Operations” button, if the sequencing criteria is straightforward and the sequence criteria can be developed from the options available. (see the appropriate sections on moving).

The Operations do not have to be touching each other: any gaps that exist between Operations when grouping will be closed automatically. In such circumstances, all Operations will be moved to their left-most position to line up with the first one in the group (if allowed to by predecessor operations)

Step Two: Mark the Operations to Group

As with many of the Planner function buttons, the **[Create Group/Gang]** button can be used either in a “Drag & Drop” or “Three Step” manner to select the range of operations to group.

“Drag & Drop” to select operations to group

1. Left click on (say) the left-most or earliest operation in the range to be grouped,
2. While holding down the left mouse button, drag the mouse pointer to the right-most or latest operation in the range to be grouped,
3. Select “Create Group” from the Group/Gang scroller.

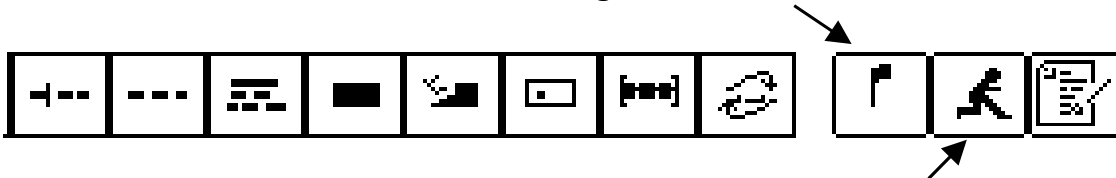
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Operations that were “dragged over” now appear in the “Grouping Operations” window.

“Three Step” method to select operations to group

1. Press the **[Create Group/Gang]** button,
2. Left click at (say) left-most or earliest operation in the range to be grouped,
3. Press the **[Select Range Marker Position]** button. At this point a vertical line will mark the position on the board, or a black rectangle in the view,

Select Range Marker Position Button



Run Current Move/Range Button

4. Left Click at the right-most or last operation in the range to be grouped,
5. Press the **[Select Range Marker Position]** button again. At this point another vertical line, or black rectangle will appear and mark the range end position,
6. Press the **[Run Current Move/Range]** button to confirm the selected range,
7. Select “Create Group” from the Group/Gang scroller.

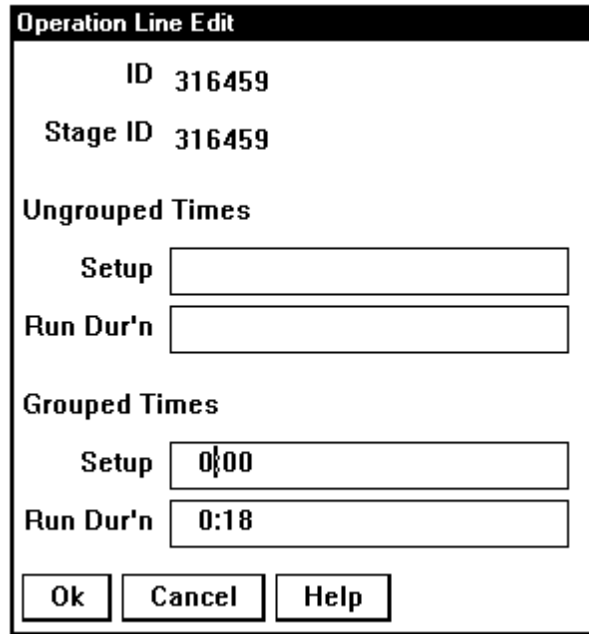
The Operations that were selected now appear in the “Grouping Operations” window.

Step Three: Grouping the Operations

The “Grouping Operations” window displays a brief description of each Operation in the selected group, and their Setup/Run/Clean times (these are the standard field names that come with the Planner. If you have customized these field names, your custom names will display).

Pressing the **[Edit]** button allows editing of the Setup, Run and Clean duration of any highlighted operation about to be included in the group. In this way, changes may be made to accommodate any economies that may be gained by grouping the like Operations together.

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The image shows a dialog box titled "Operation Line Edit". It contains the following fields and controls:

- ID 316459
- Stage ID 316459
- Ungrouped Times
 - Setup: [Empty text box]
 - Run Dur'n: [Empty text box]
- Grouped Times
 - Setup: 0:00
 - Run Dur'n: 0:18
- Buttons: Ok, Cancel, Help

The total hours for each column are dynamically updated (displayed above the columns), and each Operation's original hours are displayed for reference in the "Grouping Operation" window

At any time, the **[Save]** button can be pressed to complete the grouping process. At this time, a message window opens asking for confirmation to save the changes. Confirming completes the grouping process.

To abort the grouping process at any time, press the **[Cancel]** key. The window will close and you will be returned to the Resource planning Board or View.

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Grouping Operations

Totals : 59:12 14:00 45:12 0:00

ID	Stage ID	Ungrouped Times			Grouped Times		
		Setup	Run	Clean	Setup	Run	Clean
10032	001	1:00	13:00	0:00	1:00	13:00	0:00
10030	001	1:00	13:00	0:00	1:00	13:00	0:00
10028	001	6:00	9:36	0:00	6:00	9:36	0:00
10022	001	6:00	9:36	0:00	6:00	9:36	0:00

Menu Cancel Save Add Delete Edit View Job Reorder

Editing the Grouped Operations

At any time, the group of Operations may be edited. The editing features available include

[Add] to add Operations to an existing group,

[Delete] to delete Operations from the Group,

[Reorder] to re-sequence Operations within a Group.

To edit Operations in a Group, position the Pointer anywhere on the Grouped Operations on the Board and select "Group/ungroup operations" from the Plan Menu. Another menu opens, offering a choice to edit or ungroup. Select "Edit Group". The Group window for the selected Group opens.

Position the highlight bar on the Operation to be edited.

Adding a New Operation

Press the **[Add]** button to lookup all Operations available for inclusion in the Group. A list of all Operations scheduled on that Machine appears.

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You cannot include an Operation from a different Machine in a Group. First move the Operation to the current Machine, and then it will display on this scroller.

Highlight the Operation to be included in the Group and press **[Select]**. The selected Operation will be added to the end of the Group, but may be repositioned - see below

Press the **[Save]** button to save the changes made to the group.

Deleting an Operation

With the grey highlight bar positioned on the Operation to be deleted, press the **[Delete]** button. The selected Operation will be removed from the Group and repositioned as close as possible on the Board.

Press the **[Save]** button to save the changes made to the group.

Once an Operation has been commenced using the Work In Progress (WIP) feature, it cannot be deleted from the Group.

Resequencing Operations in the Group

To alter the sequence of the Grouped Operations, position the highlight bar onto the Operation to be moved and press the **[Reorder]** key. This causes the selected Operation to "stick" to the highlight bar. Click on the position to move the selected Operation to, i.e. its new position in the Group, and press the **[Normal]** button to drop it in place.

Press the **[Save]** button to save the changes made to the group.

Viewing the Full Work Order

It is possible to view the full Work Order record. Position the highlight bar on the Operation to be viewed. Press **[View Work Order]** and the Work Order Viewing window opens to display all Work Order details. This is a view only window: you cannot make changes to the Work Order here.

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Ungrouping the Operations

Grouped Operations may be ungrouped. This may be necessary if an error was made in the grouping procedure.

To ungroup a group of Operations, position the Pointer anywhere on the group. Choose "Group/ungroup Operations" from the Plan Menu. A window opens, similar to that in the Grouping function, with the current time fields displayed for each Operation in the group. All the original duration fields are displayed and are available for editing in the normal manner, and the grouped duration times are displayed for reference.

The same editing keys are available, and **[Save]** completes the process. Confirming the ungrouping causes each of the grouped Operations to revert to their original, independent state. To abort the ungrouping process at any time, press the **[Cancel]** button. The window will close and you will be returned to the planning board with the Operations that are still grouped.

Moving Grouped Operations

Moving a group of Operations is possible, but with the following rules:

In the case of the "Move Rest of W/O Stage" and "Move by Major Operation" moves, The *other* Operations in the Group cannot be moved to a position where their start and/or end times exceed the link to their previous and next Operations, OR the Operations in a Linked Stage.

If these moves are attempted, an error message is displayed and the move is aborted.

Grouping Operations in the same Stage

Operations within the same stage may be grouped, but only if they are NEXT operations. e.g. In a work order structure like this:

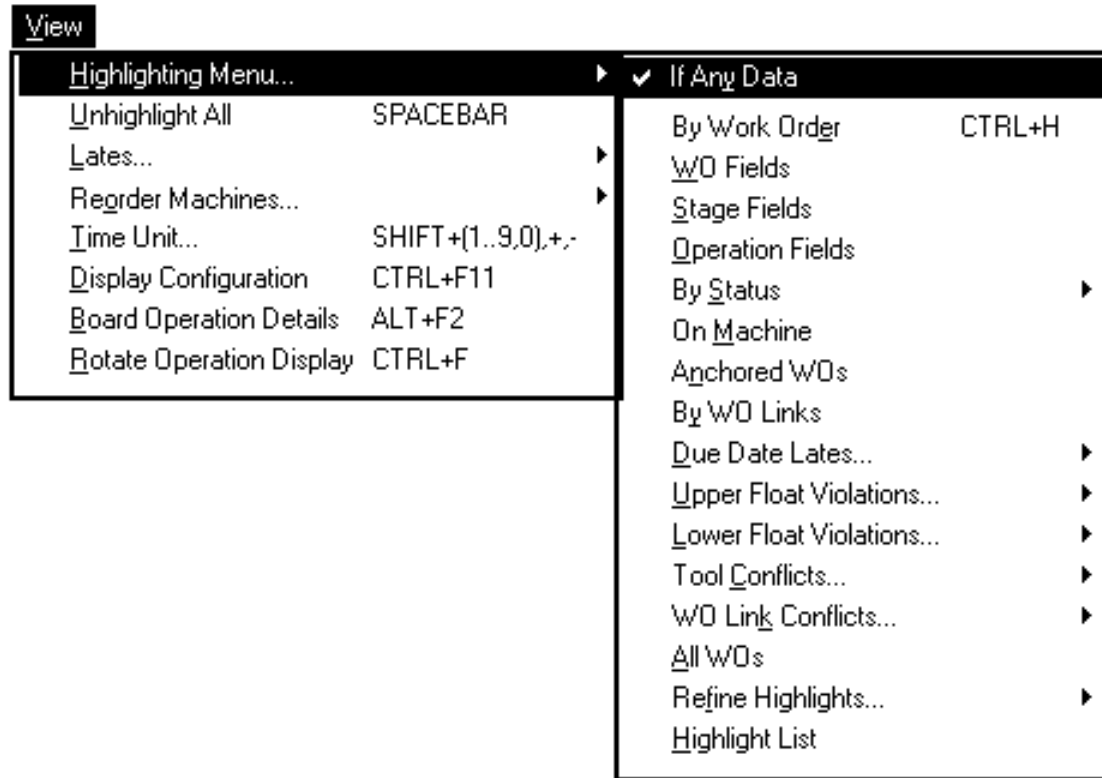
Work Order:	1	2
Stage:	1	1
Operation 1:	Machine A	Machine A
Operation 2:	Machine A	Machine B
Operation 3:	Machine B	Machine A

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The two operations on Machine A in Work Order 1, stage 1 may be grouped together.

The two operations on Machine A in Work Order 2, Stage 1 may NOT be grouped together because the two operations on Machine A are NOT NEXT operations.

Highlight Menu



Whatever method of highlighting is used, all highlights are cleared by pressing the [Spacebar].

"Highlighting" is a useful and powerful feature of **The Planner**. It allows the Operations in individual Work Orders and Stages to be displayed in such a way as to make them stand out from all the others on the Planning Board. In addition, highlighted Work Orders and Stages may be printed in a report, they can be quickly removed from the Board, or permanently deleted from the system.

In all these options the result of the selection returns with the planning cursor in the same screen position after the windows are closed. For instance, if you highlight a Work Order that is not within the current view, then you will have to scroll to see this work order.

Alternative Quick Highlighting

Instead of using the menu to highlight one Work Order or Stage, the alternatives are:

Place the pointer at any operation in the work order or stage to be highlighted on the board or view windows and

Press the **[Highlight]** button or **[Ctrl]+[H]** key combination to highlight all operations in the work order, or

Press the **[Shift]+[H]** key combination to highlight all operations in the stage

If Any Data

This option can affect highlighting by criteria at the stage or operation level. Normally ON (with a tick beside it) 'if any data' means that if any stage or operation in the work order has characteristics meeting the highlighting criteria, the work order will be highlighted. For example if just one operation in a work order has had its status display changed to 'Complete', and we had highlighted by Standard Status Display, where the value had to be 'Complete', then the work order would be highlighted.

With 'If Any Data' set OFF (with NO tick beside it) the work order above with just one out of 3 operations marked 'Complete' would not highlight when the highlight criteria was Standard Status Display = 'Complete'.

However if all operations in the work order had their status display set to 'Complete', the work order would highlight with 'If any data' OFF. (or with it ON of course)

By Work Order

A window opens and all Work Orders on the board are listed in Work Order ID sequence. Choose the Work Order required and press **[Select]**. If no further highlighting options are required at this time, press **[Cancel]**. The highlighting window closes and you are returned to your previous window with all operations in the selected work order highlighted. The Resource Board window will also have been rearranged, with the machine order being that as used by the selected work order.

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By Stage

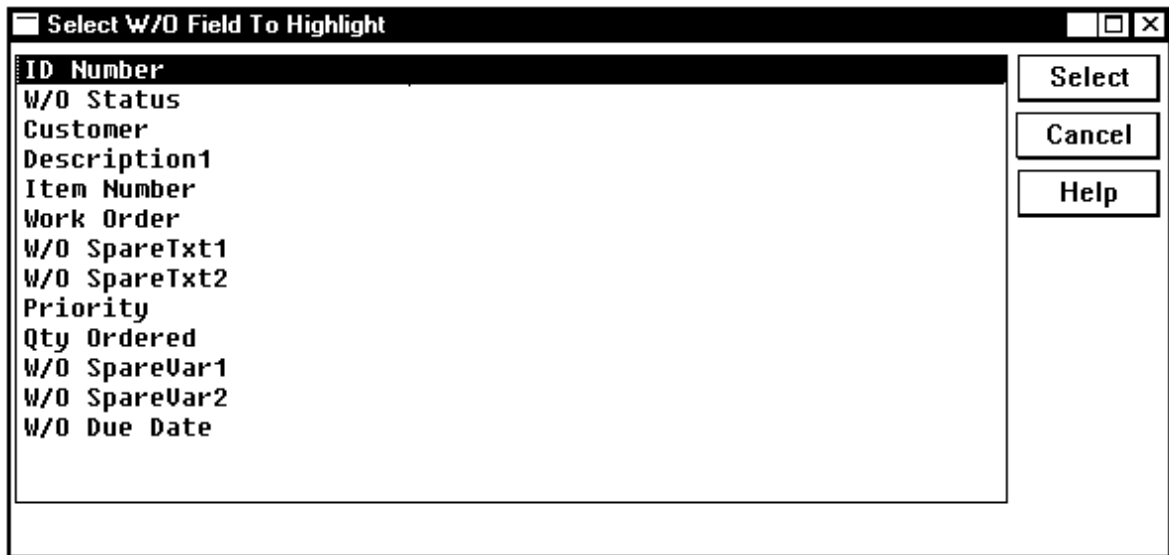
A window opens and all Work Orders on the board are listed in Work order ID sequence. Choose the Work Order required and press **[Select]**. A further window opens listing all the Stages for the selected Work Order. Choose the Stage required and press **[Select]**. If no further highlighting options are required at this time, press **[Cancel]**. The highlighting window closes and you are returned to your previous window with all operations in the selected stage highlighted. The Resource Board window will also have been rearranged, with the machine order being that as used by the selected stage.

Work Order Fields

A scroller opens which lists all of the Work Order fields in the database. Choose the field to highlight by and press **[Select]** to display all values in the selected field. Choose the desired value to highlight and press **[Select]** again to cause all Work Orders which have the same value in that field to be highlighted on the Board. *It is possible to choose more than one value at a time by dragging your mouse over them, or using the [Shift] or [Ctrl] key in conjunction with your mouse in the normal windows manner.*

Stage Fields

A scroller opens listing all the Stage fields in the database. Choose the field to highlight by and press **[Select]** to display all values in the selected field. Choose the desired value to highlight and press **[Select]** again to cause all Work Orders which have the same value in that field to be highlighted on the Board. *It is possible to choose more than one value at a time by dragging your mouse over them, or using the [Shift] or [Ctrl] key in conjunction with your mouse in the normal windows manner*



Operation Fields

A scroller opens which lists all the Operation fields in the database. Choose the field to highlight by and press **[Select]** to display all values in the selected field. Choose the desired value to highlight and press **[Select]** again to cause all Work Orders which have the same value in that field to be highlighted on the Board. *It is possible to choose more than one value at a time by dragging your mouse over them, or using the [Shift] or [Ctrl] key in conjunction with your mouse in the normal windows manner*

By Status Display

A window opens and the two Status Display types are listed. Select from Standard or User Status Display. A further window opens for either choice from which to select the required Status Display. Note that User Statuses can be selected by a combination of choices. **[LeftClick]** to select/deselect the options. If a Status Display option is NOT to be included in the choice combination, switch off the "Use" flag by left clicking on it.

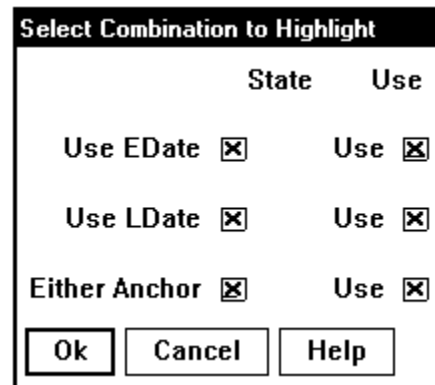
On Machine

A window opens and the Machines are listed. Highlight the Machine required and press **[Select]**. The window clears and the screen returns with all Work Orders highlighted that have at least one Operation on that Machine. The selected machine will also be at the top of the Machine Board window.

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Anchored Work Orders

Work Orders that are anchored in any way may be highlighted with this option.



The dialog box titled "Select Combination to Highlight" contains a table with two columns: "State" and "Use". The table has three rows of options, each with a checkbox in the "State" column and a "Use" checkbox in the "Use" column. All checkboxes are checked. At the bottom of the dialog are three buttons: "Ok", "Cancel", and "Help".

	State	Use
Use EDate	☒	Use ☒
Use LDate	☒	Use ☒
Either Anchor	☒	Use ☒

Ok Cancel Help

Select the combination of anchors you wish to highlight by clicking their checkboxes. The Use checkboxes when off [], cause the option they are beside to be ignored. The "If Any Data" option at the top of the highlighting menu can also be used to affect the highlighting of anchored work orders.

By WO Links

A window opens with all work orders on the board listed. Select the work order to highlight the linked work orders of. A further window opens, from which a selection of related work orders to highlight may be made.

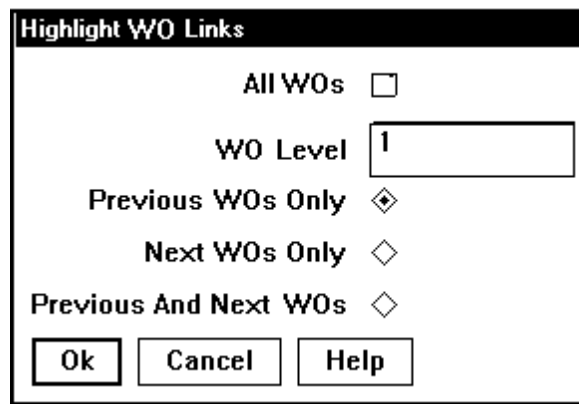
All Work Orders: when turned on, will highlight every work order linked directly or indirectly to the one first selected.

WO Level: determines how many levels, up and or down, the 'relationship tree', that work orders will be highlighted. Is only available when 'All Jobs' is off.

Previous WOs Only: when turned on only work orders previous to the selected one are highlighted.

Next WOs Only: when turned on only work orders next to, i.e. after, the selected one are highlighted.

Previous and Next WOs: when turned on both previous and next work orders to that selected are highlighted, to the job level selected.



Due Date Lates

Selecting this option opens another window to allow the selection of either "New" late Work Orders, "All" late Work Orders, those Work Orders in the current "Lates List", or those Work Orders which have just come back on time as a result of the last planning move.

Upper Float Violations

Selecting this option opens another window to allow the selection of either "New" upper float violations, "All" upper float violations, those Work Orders in the current " Upper Float Violations List", or those Work Orders which have just had their upper float violations cleared as a result of the last planning move.

Lower Float Violations

Selecting this option opens another window to allow the selection of either "New" lower float violations, "All" lower float violations, those Work Orders in the current " Lower Float Violations List", or those Work Orders which have just had their lower float violations cleared as a result of the last planning move.

All Work Orders

This option highlights all Work Orders on the board. The purpose of this option may not be immediately apparent, but it is useful. It is a quick way to start a highlighting selection before "refining" the selection list (see Refine Highlights next page). Also, if only a few Work Orders are not going to be

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highlighted, highlighting all to start with, and then narrowing down the options is more efficient.

All highlighted Work Orders may be removed from the board and placed back in the Bin, and they may also be permanently deleted from the system (see Highlight List).

The last two options from this menu, "**Refine Highlights**" and "**Highlight List**" are discussed separately in more detail.

Highlight List

This option on the Highlight Menu opens a further window that displays all the currently highlighted Work Orders. While the Highlight List window is open, selected Work Orders may be removed from the highlight list (thereby de-highlighting them), or added to the list (highlighting them).

Position the highlight bar over the required Work Order in the Highlight List scroller and press **[Clear]** to remove a highlighted Work Order from the list. This will not delete the Work Order, just remove it from the highlight list and de-highlight it on the board.

Press **[Add]** to add another Work Order. A list of all unhighlighted Work Orders is displayed to select from. Choosing a Work Order from this list removes it from the 'unhighlighted' list and places it in the Highlight List. The Work Order is instantly highlighted on the board. You can repeat this process until no more Work Orders remain on the unhighlighted work orders list. Press **[Cancel]** to close the unhighlighted work orders list.

Removing Highlighted Work Orders to the Bin

While still in the Highlight List, press **[Remove]** to remove all Work Orders currently on the list (and therefore highlighted) into the Bin. A confirming message is first displayed.

Deleting all Highlighted Work Orders

While still in the Highlight List, press **[Delete]** to permanently delete all Highlighted Work Orders from the system. A confirming message is first displayed.

All or Any Stage Highlighted

Pressing the **[Any Stage]** button will ensure that a work order which has **any stage highlighted** on the board will show on the list.

Alternatively pressing **[All Stages]** means that only those work orders that have **all their stages highlighted** appear on the list.

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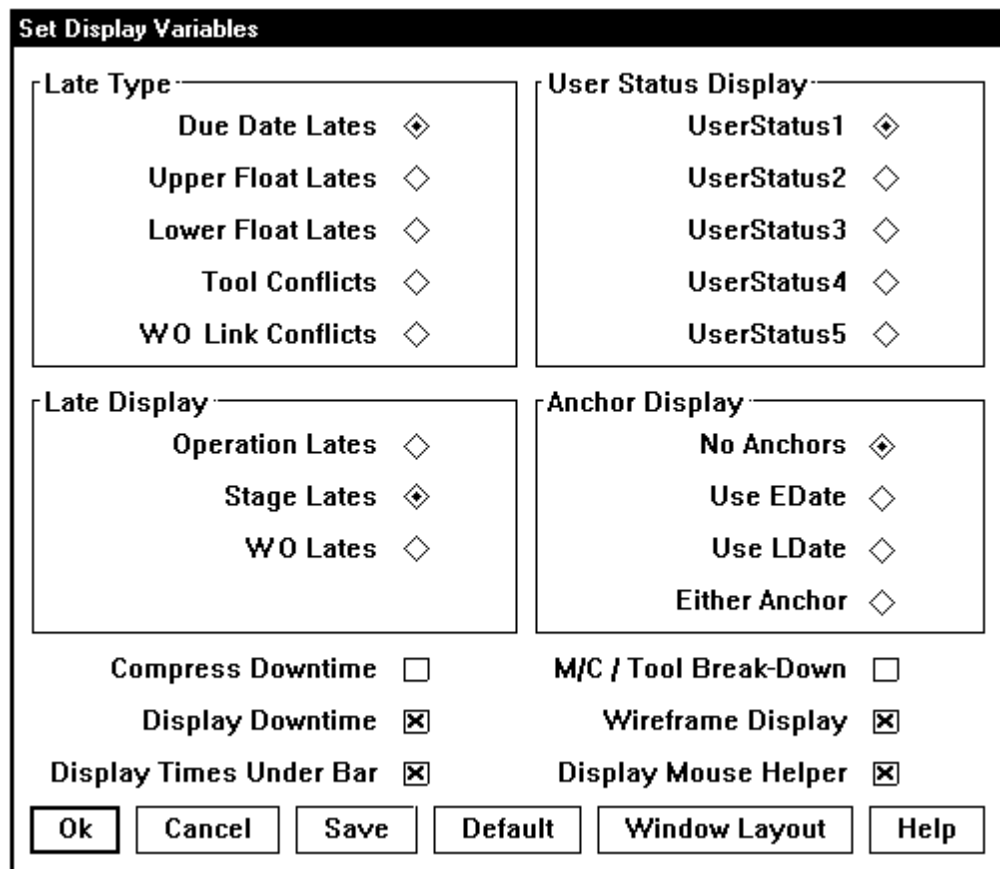
Viewing the Work Orders in the List

While any Work Order is selected in the Highlight List scroller, its full structure may be viewed by pressing **[View]**.

Late Display

When Work Orders/Stages/Operations are on time (by their due date) they are displayed in green (*or blue, see Status Display*). When they are late, they are displayed in red (*or purple*).

It is possible to have either entire Work Orders which have some late Operations to be displayed in red/purple, or just the affected Stage, or even just the affected Operation(s). To do this, the "Late Display" needs to be changed from Work Order Lates to either of Stage Lates or Operation Lates.



The dialog box is titled "Set Display Variables". It contains several sections for configuring display options:

- Late Type:** A list of options with diamond-shaped selection buttons: Due Date Lates, Upper Float Lates, Lower Float Lates, Tool Conflicts, and WO Link Conflicts.
- User Status Display:** A list of options with diamond-shaped selection buttons: UserStatus1, UserStatus2, UserStatus3, UserStatus4, and UserStatus5.
- Late Display:** A list of options with diamond-shaped selection buttons: Operation Lates, Stage Lates, and WO Lates.
- Anchor Display:** A list of options with diamond-shaped selection buttons: No Anchors, Use EDate, Use LDate, and Either Anchor.
- Compress Downtime:** A checkbox, currently unchecked.
- Display Downtime:** A checkbox, currently checked (marked with an 'X').
- Display Times Under Bar:** A checkbox, currently checked (marked with an 'X').
- M/C / Tool Break-Down:** A checkbox, currently unchecked.
- Wireframe Display:** A checkbox, currently checked (marked with an 'X').
- Display Mouse Helper:** A checkbox, currently checked (marked with an 'X').

At the bottom of the dialog are six buttons: Ok, Cancel, Save, Default, Window Layout, and Help.

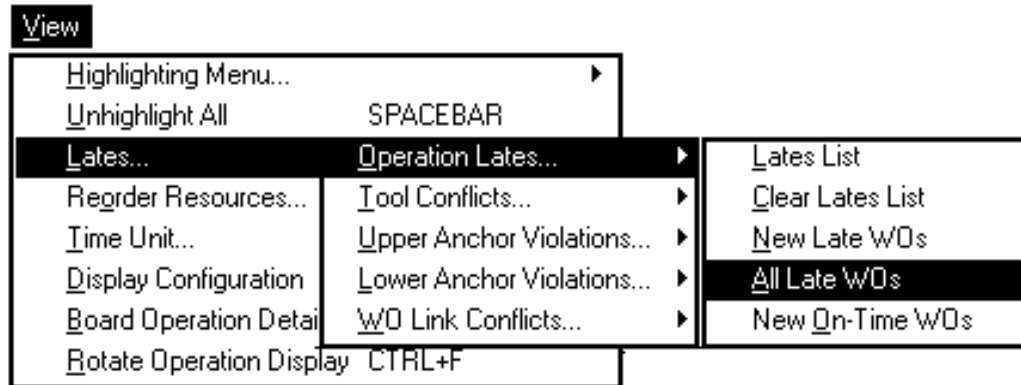
Reset the Late Display by selecting **[Display Configuration]** from the View menu, or by pressing **[Ctrl]+[F11]** to open the Display Variables window. Click on either of the Work Order/Stage/Operation fields to turn that option ON, and press **[OK]** to close the window. Now instead of late Stages (the default) being displayed in red/purple, either the entire Work Orders which have late Operations will be, or even just the individual Operations.

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Press **[Save]** if you wish to have the chosen setting as your default.
The **[Default]** button loads earlier saved settings to replace temporary you have chosen earlier in the session.

See also "Display Variables".

Late Work Orders



A basic concept of **The Planner** is that late Work Orders are indicated so that the planning department is immediately warned of the consequences of actions (or suggested actions) well before they are implemented.

The definition of "Late" needs some discussion. Due dates for Work Orders are actually held at the Stage level. When a Work Order is entered into the system, it may be given a Work Order due date, but unless specific Stage due dates are entered also, the Work Order due date is automatically defaulted to each Stage in the Work Order. This is logical, since each Stage in a Work Order is an entity in itself, and may be scheduled independently of other Stages in the same Work Order (unless Stage Linking has been applied, see appropriate section for this). In addition, there is another factor that can impact on the lateness of a Stage:

The Late Offset

This is a field held for each Stage which sets the late warning at a time earlier than the actual due date. It is calculated as hours and minutes subtracted from the Stage due date and time.

Late Work Orders Summary Message

Whenever a Work Order is forced late as a result of a planning action a message is displayed in the performance summary window (which opens every time the Board is changed). The window contains a count of the number of Work Orders that have just gone late as a result of the last action.

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Conversely, when late Work Orders are brought back to a position on the board where they are now on time, a message window opens and a count of the number of Work Orders that have been brought back on time is displayed. It is possible to view these late Work Orders (and the new on-time Work Orders) in detail by using the options on the Late Work Orders menu.

Lates List

If as a result of a planning move a Work Order is made late, this Work Order is then added to a reference list called the "Lates List". At any time it is possible to look at this list and see the late Work Orders added since the list was last cleared. The **Lates list** opens a window showing the Work Order information for all the affected Work Orders.

This list can be cleared by the next option, **Clear lates list**. This allows the Lates List to be used as a cumulative listing of Work Orders made late as the result of a series of moves, not just one move (which is shown in the **New Lates List**).

Clear Lates List

When you wish to clear the above Lates List, select this option. When selected, the Lates List is automatically cleared of all Work Order information. The reference to existing late Work Orders is not lost, however. All late Work Orders are constantly held in the **All Lates List**.

New Late Work Orders

"New Lates" are defined as Work Orders that have been placed in a late situation as a result of the last planning function. Selecting this option opens a window showing the Work Order information for the newly late Work Order(s). ***Note that this list is cleared when the next move is made or if the program is exited.***

All Late Work Orders

This is the option to display all late Work Orders on the board. It is never automatically reset, nor can it be reset manually. It picks up all late Work Orders that exist right now anywhere on the planning board and displays

them. The **All late work orders** option opens a window showing the Work Order information for all late Work Orders.

New On-Time Work Orders

If, as a result of an action taken on the Planning Board, a Work Order is returned from a late position to a position where it is again on time, this fact is displayed in the performance summary window immediately after the action is completed. By selecting this option from the menu, a window opens to display all Work Orders that have been brought back on time. ***Note that this list is cleared when the next move is made or if the program is exited.***

Viewing Late Work Order Information

When either of the three Lates Lists are active, it is possible to look at the full Work Order data for any of the Work Orders on the lists. Scroll up or down the list, and press **[View]** to view the entire set of Work Order information on the selected late work order. Coloured blocks on the left indicate which Operations in each Stage of the Work Order are late or not late, using the standard green and red indicators of **The Planner**. Press **[Cancel]** to exit the Work Order display and return to the previous Lates list.

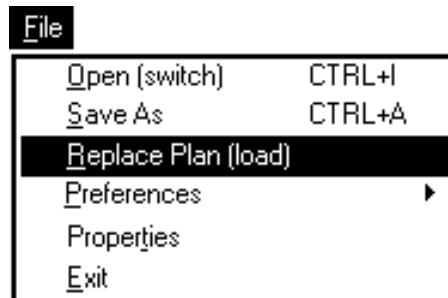
Viewing Late Work Orders on the Board

It is possible to have either entire Work Orders containing late Operations to be displayed in red/purple instead of green/blue, or just the affected Stage, or even just the affected Operations.

To do this, the "Late Display" needs to be changed from Work Order Lates to either of Stage Lates or Operation Lates. Reset the Late Display by selecting **[Display Configuration]** from the View menu, or by pressing **[Ctrl]+[F11]** to open the Display Variables window. Click on either of the Work Order/Stage/Operation fields to turn that option ON, and press **[OK]** to close the window. Now instead of late Stages (the default) being displayed in red/purple, either the entire Work Orders which have late Operations will be, or even just the individual Operations.

See "Late Display"

Loading a Plan



The Planner allows any number of planning databases to be saved to their own directories, limited only by available disk space. These can then be reloaded to the current directory, or switched between during a session. You can even set it up so that at the start of a planning session you are prompted for which database to load or to switch to before the session begins (see Switches and Configuration in the Customizing Section).

The name of the plan currently being worked on is always displayed at the bottom left of the main Planner window. A description of loading follows, but first a few definitions:

Current

The plan database that is presently being viewed/edited. When another database is "switched" to, this becomes the current database.

Main

The default name for the main database, which is in the \Planner Scheduler\Database\Plan directory.

The main, and any other plan is comprised of a set of 21 files. Each set of files comprising a plan must be kept together. They must never be 'mixed and matched'.

Name

The (up to) 8 character name of a saved plan, which is also the name given to the sub-directory in which its files are stored. Plan subdirectory names have the suffix .pdb

Description

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A (up to) 40 character field displayed next to a plan's name to enhance its label for easier identification.

Save As

To copy the current database to another named database or to a previously saved plan. If to a previous, this action overwrites the original saved plan.

Replace / Load

To copy a saved database into the current directory to view/edit it. Note that this action will overwrite the plan in the current directory, which may not necessarily be the "**Main**" plan if you have switched to an alternative plan.

Switch

To view/edit a saved plan in its own directory, leaving the current plan intact in its own directory. After switching to another directory (plan), this becomes the current plan/directory, and as such, any loading is performed into *this* directory, overwriting the plan in *this* directory.

Time/Date Stamp

The display of the date and time that the named plan was last saved or the current plan was last updated.

Loading a Saved Plan

To load a saved plan into the current directory, and thereby replace (and overwrite) the current plan, choose the "Replace Plan (Load)" option from the File Menu.

A window opens with the names of all the currently saved plans, their descriptions, and their time/date stamps listed. Choose the plan to be loaded by selecting it with the highlight bar and pressing **[Load]**.

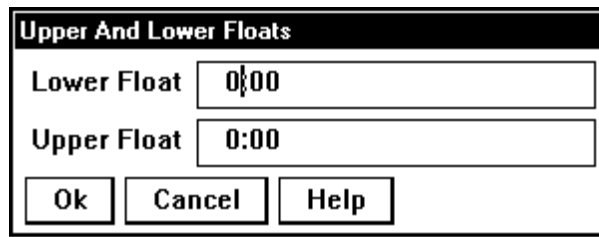
Note that the current plan will be lost by loading a new plan in this way. Either save the current plan first, or for a temporary look at another plan, use the "Switch" option instead.

To abort the option of loading a saved plan, press the **[Cancel]** button. (This will not prevent the loading of a plan if loading has already been initiated).

Lower Float

Float is a range of time in which the Operation(s), although anchored, are permitted to slide within. Upper Float relates to the latest time for the completion of the Operation (the LDate), and Lower Float relates to the earliest time for the commencement of the Operation (the EDate).

After selecting an anchoring or unanchoring function, the last window to open prior to the action being performed is the Float Time window shown below.



The dialog box is titled "Upper And Lower Floats". It contains two input fields: "Lower Float" with the value "0:00" and "Upper Float" with the value "0:00". At the bottom, there are three buttons: "Ok", "Cancel", and "Help".

Setting the float time sets the limits for an Operation's movement on the Board when it is anchored.

The following diagram will help to explain:

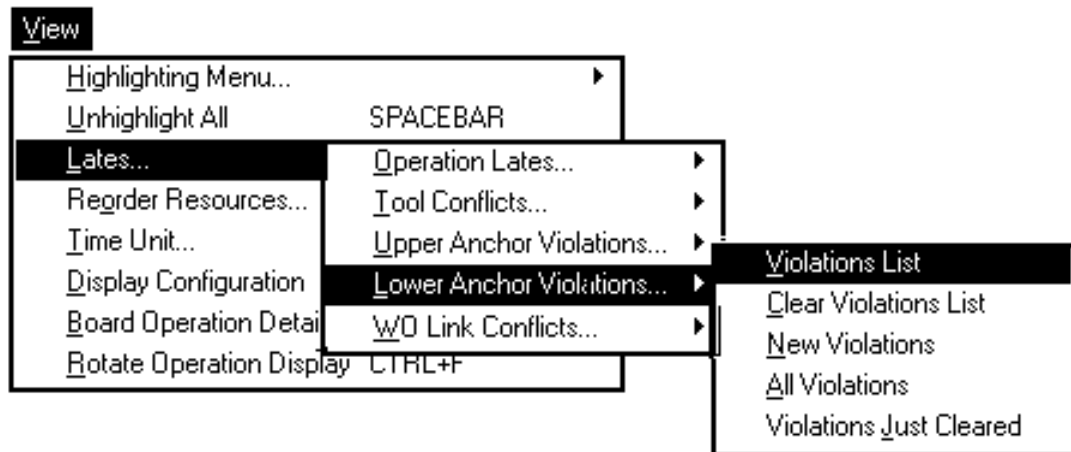


The thin line represents the range of float that the Operation is permitted to move between. It will be seen in the Work Order edit window that the "Use EDate" and "Use LDate" switches are set ON when anchoring has been applied to an Operation. These switches may also be set within the Work Order edit window. See "Push Levels" for more information.

Lower Float Violations List

Because the Lower Float of an Operation can be exceeded (see "Float" and "Push Levels"), a method of displaying these "float violations" has been devised in the form of Violations Lists.

In essence the violations lists are similar to the Lates Lists, and in fact they are located in the same menu:



There are four lists for violations. Each of these is explained below.

Violations List

This is a cumulative list. It may be cleared at any time with the next option, and then used to build a list of violations that occur as the result of a series of planning moves. When this option is selected, a list of all Work Orders that have Operations that are starting before their Lower Float time is displayed. To view a Work Order on the list in detail, move the highlight bar to the Work Order and press **[View]**. Press **[Cancel]** to close the list.

Clear Violations List

Selecting this option deletes all entries in the above list. This is used at the start of a "what-if" planning session, so that the cumulative effect on Lower Floats of a series of planning moves can be seen.

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New Violations

This list collates only those Lower Float violations which have just occurred as a result of the *last* planning move. Press **[View]** on any selected Work Order to view the details. The contents of this list are lost whenever a new move is made or when the program is exited.

All Violations

This list holds the balance of all current Lower Float violations. Press **[View]** on any selected Work Order to view the details.

Violations Just Cleared

This list works in the opposite manner to the "New Violations" list. Whenever a planning move causes a Work Order containing an Operation which has its lower float violated to move into a position on the Board which cancels the violation of the lower float, that Work Order is listed here. Press **[View]** on any selected Work Order to view the details.

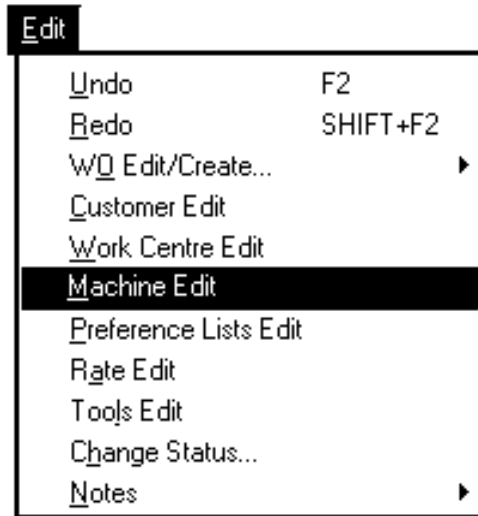
Viewing Lower Float Violations on the Board

It is possible to have those Work Orders containing Operations with lower float violations to be displayed in red/purple instead of green/blue, in the same way as due date lates are displayed.

To do this, the "Late Display" needs to be changed from Due Date lates to Lower Float Lates. Reset the Late Display by selecting **[Display Configuration]** from the View menu, or by pressing **[Ctrl]+[F11]** to open the Display Variables window. Click on the Lower Float Lates field to turn that option ON, and press **[OK]** to close the window. Now instead of Late Work Orders being displayed in red/purple, the Work Orders that have Lower Float Violations will be.

See "Late Display".

Machine Editing & Creating



To ensure that common work order, work center and machine data is the same in MFG/PRO and The Planner, it is generally best to carry out any changes within MFG/PRO and allow the changes to be brought into The Planner via the interface.

Remember that the primary function of The Planner Scheduler is to schedule work planned in MFG/PRO, based on the finite capacity of the resources/machines available.

Machines can be created, edited or deleted from **The Planner**. Each Machine must belong to a Work Center and may belong to a Group. Each Machine may be either “Finite” or “Infinite”, depending on how the Work Center it belongs to was set up. See Work Center Editing for details on finite/infinite Machines.

When this option is selected from the Edit Menu, a list of all Machines on the board (if any exist) is displayed in a selection window. Choose the machine that you want to view or edit and press **[Select]**. The three fields described above are opened so that you can modify or view them.

If you want to enter any new Machines, see “Adding a New Machine” on next page.

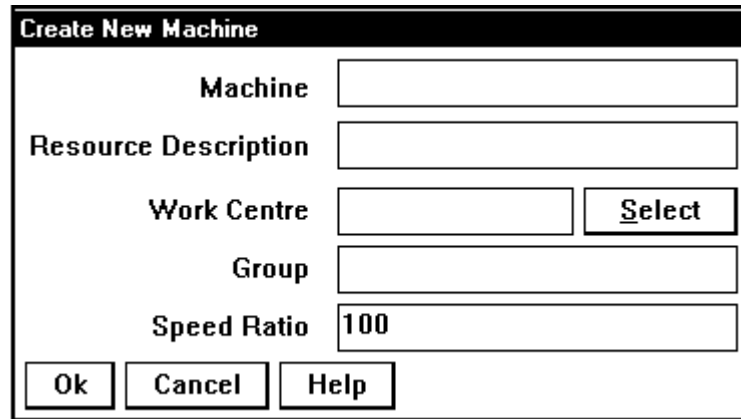
Section 5 - Planning

Machine The name of the Machine. It is a key field for sorting records and finding information in **The Planner**. (Field size increased to 17chtrs from v3.4)

Resource Description A new field with v3.4, 24 Chtrs. Displays when place the mouse pointer over the machine name on the Planning Board.

Work Center This is a key field that can be used to reorder Machines on the left hand side of the planning screen, and to select data for reports. Machines must belong to a Work Center.

Group This is a another key field that can be used to reorder Machines on the left hand side of the planning screen, and for report selection.



The image shows a dialog box titled "Create New Machine". It contains five input fields: "Machine", "Resource Description", "Work Centre", "Group", and "Speed Ratio". The "Speed Ratio" field is pre-filled with the value "100". To the right of the "Work Centre" field is a button labeled "Select". At the bottom of the dialog box are three buttons: "Ok", "Cancel", and "Help".

Speed Ratio This option allows you to have the run duration automatically adjusted when moving an operation between machines which process at different rates. It should only be used if in moving operations in any Work Order from one machine to another the proportional increase or decrease in processing time is the same.

If all machines are left at the default setting of 100%, the run time duration will be unchanged when moving an operation from one machine to another. An operation moved from a machine with 100% speed ratio to one with 200% speed ratio will have its run time duration halved, or if moved to a 50% speed ratio machine the run time will be doubled. Setup and clean times will be unaffected.

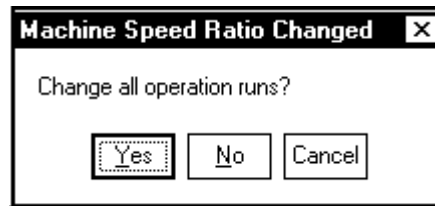
Changes in run durations are always rounded to the nearest 6 minute interval. So if speed ratios vary greatly, large durations may be reduced to

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zero when moving an operation from a slow to a fast machine. Similarly inaccuracies in small durations may be accentuated when the run duration is increased by the operation being moved to a much slower machine.

All speed ratios for machines in MFG/PRO are assigned a value of zero.

To utilise speed ratio functionality with MFG/PRO, first edit the speed ratio of all machines, and change to say 100. When asked if you want the runs for all operations on the machine, on the board, to be changed, select **[No]**.



The machines you wish to have set to different speed ratios should now be changed to values less than or greater than 100. If operations are on resources assigned from MFG/PRO, then operation runs should again not be changed when resetting the speed ratios. But runs will be now changed whenever operations are moved between machines having different speed ratios.

Adding a New Machine

To add a new Machine, choose the Machine Edit option from the Edit Menu and then press the **[Insert]** button when the list of current Machines is displayed. This will open the Create New Machine window, which looks the same as the Machine Edit window.

Type in the new Machine name. When this line is complete, press the **[Select]** button beside the Work Center field] to look up all the Work Center names which have been entered. *(Each Machine MUST belong to a Work Center, so these must be set up first).*

Type the Group name (if desired).

The Speed Ratio field is used as explained above. If all machines are left with the default 100%, the run duration can be edited on a work order by work order basis if necessary.

Press the **[OK]** button to save the machine.

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Deleting a Machine

To delete an existing Machine from the database, simply press the **[Delete]** key when a Machine is highlighted in the Machine scroller. A confirming Yes or No is prompted for before an action is taken. If there is any work scheduled on a Machine, deletion is not possible.

Editing an Existing Machine

Choose the required Machine from the Select Machine to Edit scroller, and press **[Select]**. All the fields may be edited by over typing.

Press the **[OK]** button to save the changes to the machine.

Machine/Tool Display



Res/Tool Breakdown button

It may be changed by pressing the **[Res/Tool Breakdown]** button or **[Ctrl]+[F11]** from the Planning Board, the Tools Board, the Tools View window, or the Work Order edit window. See Display Configuration to learn about the window which contains this switch.

Tool Board

When the Res/Tool checkbox is switched ON (**X**), any Tool(s) have the potential to be displayed in an "exploded" manner. This occurs when more than one Operation requires a Tool at any time during the same period, resulting in a "Tool Conflict". It also occurs when more than two or more of the same tool are available and they are planned on being used at the same time. The breakdown displays all the instances of a Tool's use in the same time period.

The original Tool name is displayed in the normal way (in white letters) and the duplicated Tool names are displayed in yellow letters immediately below the original, each displaying one instance of the Tool's use.

Note that a Tool is considered to be in use throughout the entire duration of the Setup, Run, and Clean time periods of an Operation.

Machine Board

When the Mch/Tool checkbox is switched ON (**X**), any machines planned to process more than one operation during the same time period are displayed in an "exploded" manner.

Machines that have Operations that are Ganged, and infinite machines are candidates for the use of this display switch. The breakdown displays all the instances of a Machine's use in the same time period.

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The original Machine name is displayed in the normal way (in white letters) and the duplicated Machine names are displayed in yellow letters immediately below the original, each displaying one instance of the Machine's use.

This option may also be activated directly by pressing **[Shift]+[Alt]+[F2]** in which case the switch in the Display Variables window will be set automatically. Pressing **[Shift]+[Alt]+[F2]** again will redisplay the Machine normally and reset this switch.

Machine Summary



The Machine Summary option displays a summary of *current planned* performance indicators by Machine.

Select this option from the Plan Summary Menu. A scroller window opens with the Machines listed. Choose the required Machine and press **[Select]** to view the Machine summary screen. A brief description of the data displayed in the Machine Summary window follows.

The selected Machine name is displayed at the top of the window. This is followed by the number of Operations scheduled on that Machine, and a statistical breakdown of these in terms of average numbers, numbers currently highlighted and status display flags set.

At the bottom of the window the number of Operations which are late is displayed, the default setting being in one day periods for five days, with a sixth column showing the number of Operations which are more than five days late. The number of days in each period may be changed to reflect a different picture of the situation. The cursor waits in the "Late Period" field for this purpose. Type in the days required for each period (any periods up to 999 days each may be viewed) to redisplay the time periods with the Operations redistributed into the new periods.

In the lower part of the window are the "Lates Type" checkboxes. See Late Type for information on this. By switching each late type ON or OFF (mutually exclusive), the Late Operations display changes to reflect the Lates Type currently switched ON.

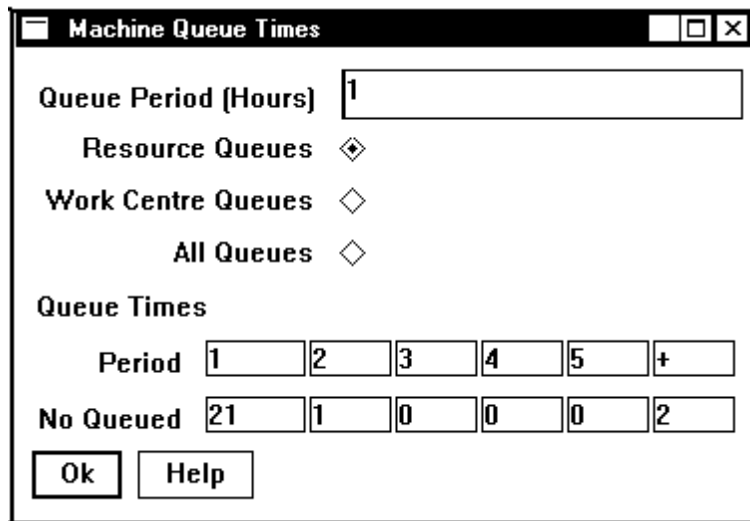
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Machine Summary						
Machine	E1					
No Operations	20					
No Optools	5					
	No	%		No	%	
No Operations Late	0	0	UserStatus1	0	0	
No OpTools Late	0	0	UserStatus2	0	0	
No Ops Highlighted	0	0	UserStatus3	0	0	
Clear	1	5	UserStatus4	0	0	
Hold	0	0	UserStatus5	1	5	
Complete	19	95				
Late Period (Days)	1					
Due Date Lates	◆	Upper Float Lates	◆			
Lower Float Lates	◆	Tool Conflicts	◆			
WO Link Conflicts	◆					
Late Operations:						
Period	1	2	3	4	5	+
No Late	0	0	0	0	0	0
Ok	Queue Times	Print	Help			

Printing the Machine Summary Information

To print the summary information, press **[Print]** while the window is open. Select a suitable font and the screen information will be printed to your default window printer.

Resource Queues



The dialog box titled "Machine Queue Times" contains the following fields and controls:

- Queue Period (Hours):** A text input field containing the value "1".
- Resource Queues:** A radio button with a diamond symbol, currently selected.
- Work Centre Queues:** A radio button with a diamond symbol.
- All Queues:** A radio button with a diamond symbol.
- Queue Times:** A section header.
- Period:** A row of six text input fields containing the values "1", "2", "3", "4", "5", and a "+" sign.
- No Queued:** A row of six text input fields containing the values "21", "1", "0", "0", "0", and "2".
- Buttons:** "Ok" and "Help" buttons at the bottom.

The number of operations queuing for any period of time at the selected resource/ work centre, or resource group can be displayed by pressing the **[Queue Times]** option from the resource summary window.

For all calculations, the queue time for an operation at a resource, is the time between the previous operation being processed and the operation at the current resource being setup or run. Any overlap allowed between operations, and not used, is considered queue time.

If a transit period (a move and or wait) is required, then this is not considered part of the queue time.

First operations and single operation work orders are considered to have no queue time.

Periods of downtime may be included or excluded from the queue time calculations. This can be altered via the View menu, using the System Configuration option.

Alter the queue period scale by keying in a new value.

Options:

Alter the hours of queue period scale by keying in a new value.

Select whether to show queues for just the selected resource, all resources in its work centre, or all resources.

Markers

Markers are used within the system to set up specific positions on the Resource or Tool Board windows, so that you can quickly return to those points with just a few keystrokes.

Markers are not found on any menus. They are activated only with function key combinations.

The keys to activate the setting of markers and the "Goto" function are described below. First, a brief description of the types of markers that are available.

There are Two Types of Markers

Temporary Markers

Temporary markers are used within a single planning session, and are lost when the program is exited. There are up to 27 temporary markers available at one time.

Permanent Markers

Permanent markers are stored in a list, and the list is retained after exit for use in the next session. The number of permanent markers is unlimited.

There are Three Marker Functions

Time/Machine Markers

Time/Machine markers are used to mark a point on the Board. The point is fixed at a point in **time** on a specific **Machine** in a specific Board **Timescale**.

Operation Markers

Operation markers are used to mark an Operation. When the marked Operation is moved to a new position on the Board, the marker remains with the Operation. This is a good way to keep track of an Operation during any "what-if" testing, when the unexpected can happen.

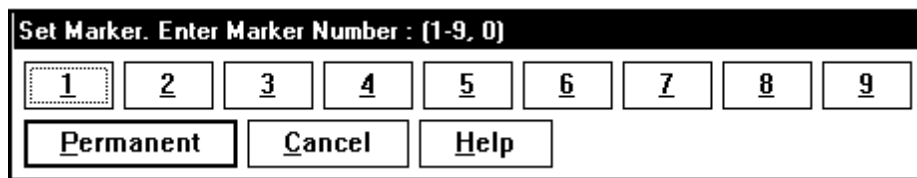
Tool Markers

Tool markers are used to keep track of the use of Tools. The procedure to set and GoTo tool markers is the same as for operation markers, but is carried out in the Tools Board Window

Setting a Time/Machine Marker

The first step in marking a point on the Board is to place the Pointer in that position. (Use the **[Goto Machine/Time]** button or **[Ctrl]+[F3]** to locate a specific point in time on the board). Position the Pointer at the point in *time* on a *Machine*, and choose the *Timescale* as desired.

Next set the marker. Press **[Ctrl]+[S]** (S for "set") to set a Time/Machine marker. A window opens, prompting you to select a marker number. Pressing a number button between one and nine (1 - 9) inclusive, you will be setting a temporary marker. The prompt window will close and the marker will be set.



Set Marker. Enter Marker Number : (1-9, 0)									
1	2	3	4	5	6	7	8	9	
Permanent			Cancel			Help			

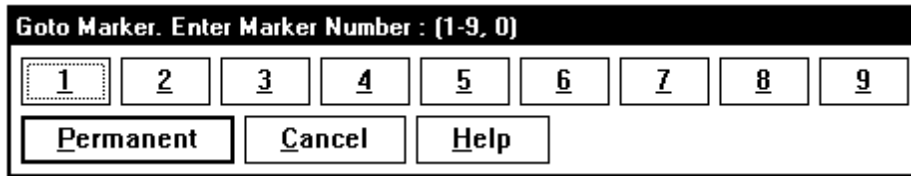
If you wish to set a *permanent* marker, press the **[Permanent]** button. A scroller will open listing all the previously set Time/Machine permanent markers. To add a new marker to the scroller, press **[Create]**. You will then be prompted for a description to identify the marker for later use in the Goto function. Type in the description and press **[OK]** to save and close the window.

While the permanent marker scroller is open, it is possible to delete any unwanted markers by highlighting them and pressing **[Delete]**. A confirming message is displayed before deletion. Pressing **[Overwrite]** on an existing Marker when setting a new Marker will replace the old Marker with the new one.

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Going to a Time/Machine Marker

To go to (Goto) a Time/Machine marker, press **[Ctrl]+[G]** (G for "Goto"). A window opens, prompting you to specify a marker number. If you press a number button between one and nine (1 - 9) inclusive, you will automatically jump to the selected temporary marker. The prompt window will close and the Pointer will be positioned on the selected marker.



Goto Marker. Enter Marker Number : (1-9, 0)									
1	2	3	4	5	6	7	8	9	
Permanent			Cancel			Help			

If you press the **[Permanent]** button you will be going to a *permanent* marker. A scroller will open listing all the previously set Time/Machine permanent markers. Press **[Select]** with the one desired highlighted, to Goto the selected marker. The Pointer will be positioned on the selected marker.

Note that even the *Board timescale* is held in the marker memory, so the current Board scale may change when performing a Goto marker function.

Setting an Operation Marker

The first step in marking an Operation is to place the Pointer on the Operation to be marked. (Use the Goto Work Order function **[Shift]+[F3]** to locate a specific Operation). Position the Pointer anywhere on the desired Operation.

Next set the marker. Press **[Shift]+[S]** (S for "set") to set an Operation marker. A window opens, prompting you to specify a marker number. If you press a number button between one and nine (1 - 9) inclusive, you will be setting a temporary marker. The prompt window will close and the marker will be set.

If you select the **[Permanent]** button, you will be setting a *permanent* marker. A scroller will open listing all the previously set permanent Markers. To add a new marker to the scroller, press **[Create]**. You will then be prompted for a description to identify the marker for later use in the Goto function. Type in the description and press **[Ok]** to save and close the

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window. Pressing **[Overwrite]** on an existing Marker when setting a new Marker will replace the old Marker with the new one.

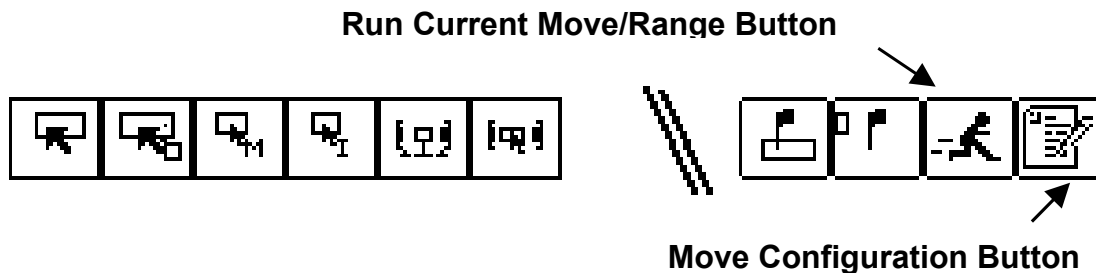
While the permanent marker scroller is open, it is possible to delete any unwanted markers by highlighting them and pressing **[Delete]**. A confirming message is displayed before deletion.

Going to an Operation Marker

To go to (Goto) an Operation marker, press **[Shift]+[G]** (G for "Goto"). A window opens, prompting you to specify a marker number. If you select a number button between one and nine (1 - 9) inclusive, you will automatically jump to the selected temporary marker. The prompt window will close and the Pointer will be positioned on the selected marker.

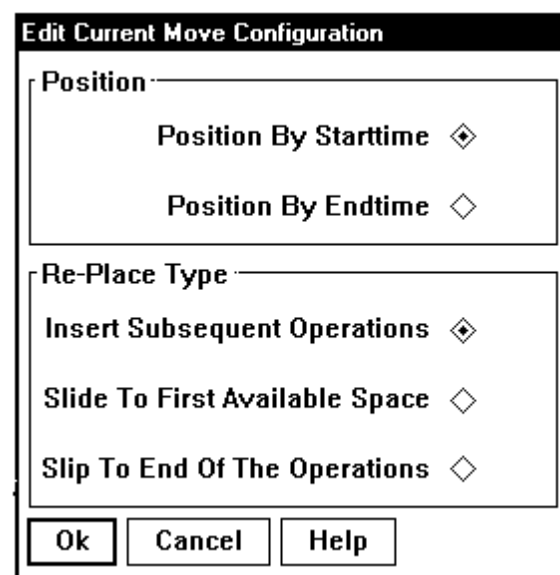
If you select the **[Permanent]** button), you will be going to a *permanent* marker. A scroller will open listing all the previously set permanent Operation markers. Press **[Select]** with the one desired highlighted, to Goto the selected marker. The Pointer will be positioned on the selected marked Operation.

Move Configuration



Before running a move, the settings for re-placement of operations on the board may be altered from those normally used. The standard, most frequently used settings for move type are established in System Configuration, in Preferences from the File menu.

To change the settings for a move, press the **[Move Configuration Button]**, to open the Edit Current Move Configuration window.



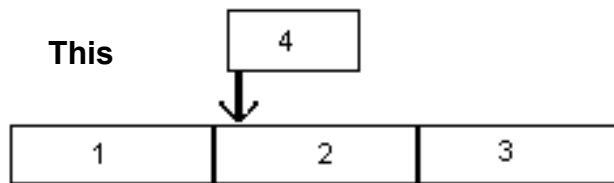
Position

When moving or pushing an operation, the newly selected position can be where the operation is to start, or end. Click on the required option to set it.

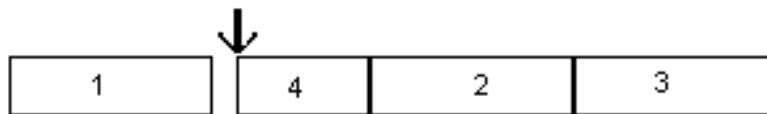
Re-Place Type

Insert Subsequent Operations

Use this choice when the Stage/Operation(s) being moved and re-placed must have priority over those that are already placed on the board. Each Operation being re-placed will force any others in the way to the right, and each successive Operation will be placed immediately after its predecessor in time.

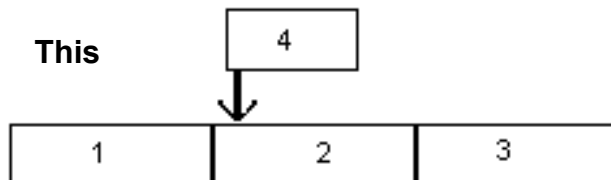


becomes this if INSERT

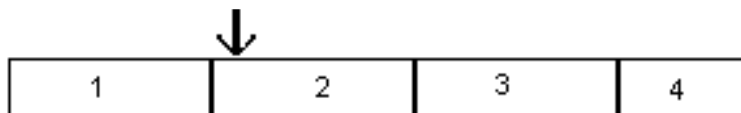


Slide to First Available Space

In a sense, this is the opposite of "Insert". The incoming Operations are placed to the right of the Pointer wherever a gap large enough to accommodate them is found. No existing cards on the board are pushed out of the way.



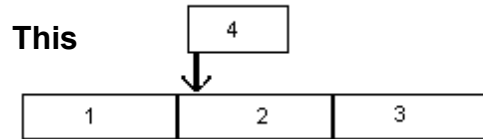
becomes this if SLIDE to FIRST AVAILABLE space



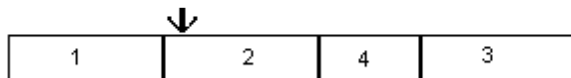
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Slip to the End of the Operations

This is a compromise situation. The incoming Operations do not displace the ones that are immediately in the way, but "slip" to the end of these and then push their way in. Any Operations after the immediate one will then be pushed to the right.

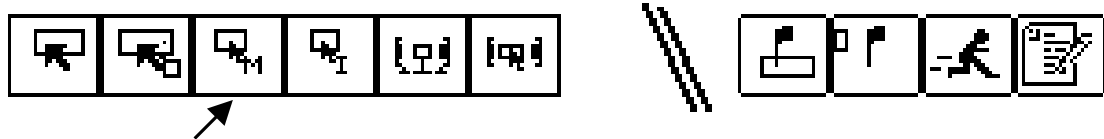


becomes this if SLIP to END of OPERATION



The system configuration setting of 'Push Left on Moves' may affect the above behaviours - if set ON and earlier capacity is available.

Move by Major Operation



Move By Major Operation Button

A major Operation in a work order is defined as the critical Operation: usually the Operation on the Machine that is working at full capacity (the bottleneck Machine). As such, you may wish to plan Work Orders around this Machine, using it as the determining factor (the constraint) in the positioning of Work Orders on the board. All other Operations in the Work Order become secondary, and placement of these flows around the Major Operation as a “best fit”. These secondary Operations can of course be moved or placed independently.

With this option you move all operations in the Stage forward or back along the timescale. A move will result in a gap being left on the board in the position the Stage was in. How the operations in the Stage are re-placed on the board is affected by options set via the **[Move Configuration]** button.

Either of two methods may be used to move the Stage by its Major Operation:

“Drag & Drop”

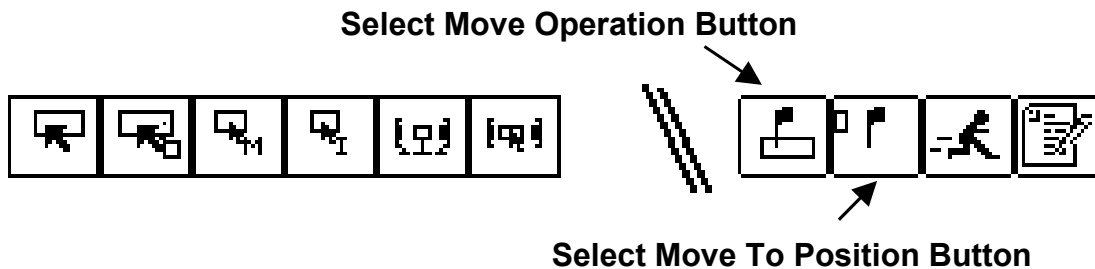
1. Press the **[Move By Major Operation]** button,
2. Left click on the ‘Major’ operation in the Stage to move,
3. While holding down the left mouse button, drag the mouse pointer to the new position on the board timescale (or the view list) you wish to move the Stage’s “Major” operation to,
4. Release the mouse button.

The Major operation and all others operations in the Stage are moved.

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“Three Step” Method

1. Press the **[Move By Major Operation]** button,
2. Left click on the ‘Major’ operation in the Stage to move,
3. Press the **[Select Move Operation]** button. At this point a red arrow will mark the Major operation in the Stage to be moved,



4. Left Click at the the new position on the board timescale (or on the View list) you wish to move the Stage’s ‘Major’ operation to,
5. Press the **[Select Move To Position]** button. At this point a blue arrow will appear and mark the new position,
6. Press the **[Run Current Move/Range]** button to action the move.

The Major operation and all others operations in the Stage are moved.

Notes about the “Drag & Drop” and “Three Step” methods

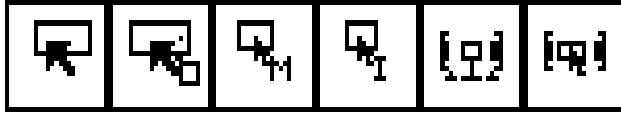
Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window.

Move Methodology



The Move buttons – from left to right:

- Move Operation
- Move Rest of W/O Stage
- Move by Major Operation
- Move W/O Stage
- Move Operation Range

These are some of the fundamental planning options available to the operator. A thorough knowledge and understanding of these facilities is central to the successful operation of **The Planner** (see Section One on Rules).

Each of the move option buttons is described under their separate titles. This is a discussion about the options that are available when moving a Stage or an Operation. It is suggested that some time is spent in studying this aspect of **The Planner**, as this will save much time later when it is required to modify the plan to accommodate changes that occur in the workplace, and to investigate alternative planning options when opportunities or crises present themselves!

The Steps in Making a Move

There are three basic steps involved in moving a Work Order card from its current position on the board to a new position, once you have determined what move type is required:

So:	Select the <u>move</u> method, and
Optionally	Select a different move configuration
Then:	
Step 1	Select the operation, stage, or operation range
Step 2	Move to the new location
Step 3	Action the move

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The procedure for carrying out the moves varies slightly depending on whether you use the “Drag and Drop” or the “Three Step” method. Both methods are described below, as well being explained under the Move Type’s own title heading

Selecting the Move Method

Selecting the Move Method simply involves left clicking on the required move button. You will notice that the button stays depressed, with any previously depressed Move button becoming ‘un-depressed’.

Each of the move types is explained under its separate heading.

Selecting the Move Configuration

You must decide how you want the incoming Stage/Operation(s) to be placed in their new position on the board, and how their placement will interact with other Operation/Work Order cards that are in positions which may be in conflict. The default method may be OK, but you may wish to change the settings for particular moves. For any changes to be effective, they must be made before you start ‘Drag & Drop’, or at some stage before pressing the ‘Run’ button with the ‘Three Step’ method. For full details see section titled “Move Configuration”, page 266.

“Drag and Drop” Method

In the Board window this method can only be used to move within the time scale displayed. If a move is to be made to a location not displayed, you will need to zoom out and/or reorder the machines before starting, or use the ‘Three Step’ method. In the View window, the list will scroll as you ‘drag’ beyond the window.

Selecting the Operation to Move

The Operation, Stage or Range of operations to be moved, are selected using the mouse, either by clicking on the operation, or dragging over a range of them, when carrying out a ‘Move Operation Range’ move.

Moving to the new location

Once selected, the operation is dragged to its new location with the left mouse button depressed.

Action the Move

Releasing the left mouse button actions the move.

“Three Step” Method

This method can be used in the Board or View windows. The board time scale may be changed in the middle of a move, similarly the scrollers may be used to move up/down the board or view window during a move.

Selecting the Operation to Move

The Operation, Stage or Range of operations to be moved, are selected using the mouse, either by clicking on the operation, or dragging over a range of them, when carrying out a ‘Move Operation Range’ move.

The **[Select Move Operation]** button is then pressed, and a red arrow now marks this operation.

Moving to the new location

The pointer is moved to the new location, using GoTo buttons or markers if desired. The **[Select Move to Position]** button is then pressed, and a blue arrow now marks this position.

Action the Move

Press the **[Run Current Move/Range]** button to action the move.

Undoing and Redoing Moves

Moves can be undone and redone if necessary. In fact the last 9 moves are able to be undone, and then all of them redone, and undone again....

However if other planning actions (such as placing or removing work orders, adding downtime or grouping operations) are carried out after some moves, the memory of these earlier moves is lost, and Undo and Redo will not function.

Use the **[Undo]** or **[Redo]** buttons, or the **[F2]** or **[Shift]+[F2]** keys to respectively undo and redo the moves.

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Understanding the Push Levels

There are four levels of complexity that apply to moves made on the Planning Board. Note that when "move" is referred to here, it means any function which moves Operations on the Board, i.e. a Work Order/Stage Placement, a Push, any of the Moves, Downtime additions. The Move Levels are set in the System Configuration window, in Preferences from the File menu.

Understanding these Move Levels is important to the proper functioning of the system. Each level is explained:

Level One

This is the basic level, and is ***always a successful move*** because it does not take account of any potential restrictions on the Board. A Push Left beyond the "Now Bar" plus its "Now Offset" is optimized. Anchored Operations will be moved. The only Operations not moved are those in WIP.

Level Two

When this level is set and a Push Left pushes Operations beyond the NOW bar plus its Now Offset, OR the push meets any (upper or lower) anchored Operations, OR the push meets any Operations in WIP, ***the move aborts***. There is no attempt to optimize the move to achieve a compromise situation.

Level Three

When this level is set and a Push Left pushes Operations beyond the NOW bar plus its Now Offset, OR the push meets any (upper or lower) anchored Operations, OR the push meets any Operations in WIP, ***the move is optimized***. Operations are moved as far as they can be, without jumping other Operations.

Level Four

When this level is set and a Push Left pushes Operations beyond the NOW bar plus its Now Offset, OR the push meets any (upper or lower) anchored Operations, ***the Push Left is optimized*** and where possible, restricted Operations are ***jumped***.

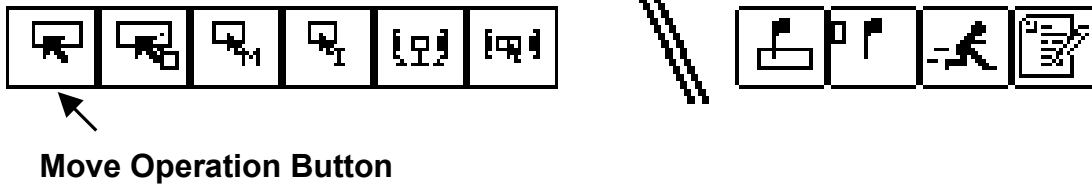
Section 5 - Planning

If a Push Right is used in a move, and if the push meets any Operations in WIP, OR the push meets any (upper or lower) anchored Operations, the restricted Operations in the way are ***jumped***, thereby optimizing the move fully.

Generally...

- a) Push Levels One through Three try to maintain the order of Operations on the Board.
- b) Because Push Levels Two through Four may not always be successful, there is a possibility that Moves / Places / Grouping / Ganging etc. will abort because a space cannot be cleared for the incoming Operations.
- c) Some of the situations that can occur have more than one possible outcome and it is not possible to predict results accurately for all situations. Where anchors are violated in Level One, a message is displayed, and these affected Work Orders may be seen visually by using the "Anchor Violations" display feature.

Move Operation



With this option you can potentially move one Operation in any direction. It is used to move an Operation to another point in time, another Machine or to create overlap between Operations. Moving the operation generally results in a gap being left on the board in the position the Operation was in.

An Operation can only be moved such that its start position is not prior to the start of its predecessor Operation, or its end position is not after its successor Operation. (See Positioning rules in the Introduction Section). Violation of this rule results in an error message being displayed and the move being aborted.

How an operation is re-placed on the board is affected by options set via the **[Move Configuration]** button.

Overlaps

Moving an Operation is the only move which allows the automatic construction of overlap between Operations in the same Stage. The overlap thus created is written into the Work Order record to be used whenever possible if the Stage is moved elsewhere at a later time. Overlap can of course be designed into the Work Order record when creating or editing the Work Order. (See also "Recalculate Overlaps" in System Configuration).

Methods

Either of two methods may be used to move an Operation:

“Drag & Drop”

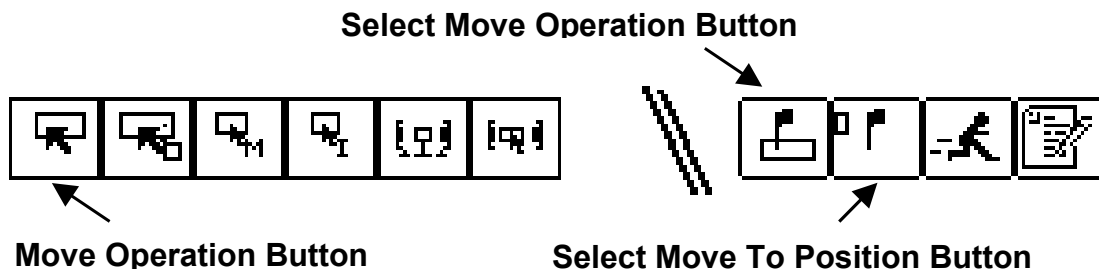
1. Press the **[Move Operation]** button,
2. Left click on the operation to move,

3. While holding down the left mouse button, drag the mouse pointer to the new position on the board timescale (or the view list) you wish to move the operation to,
4. Release the mouse button.

The operation is moved.

“Three Step” Method

1. Press the **[Move Operation]** button,
2. Left click on the operation to move,
3. Press the **[Select Move Operation]** button. At this point a red arrow will mark the operation to be moved,



4. Left Click at the new position on the board timescale (or view list) you wish to move the operation to,
5. Press the **[Select Move To Position]** button. At this point a blue arrow will appear and mark the new position,
6. Press the **[Run Current Move/Range]** button to action the move.

The operation is moved.

To move an operation from one machine to another in the view window, the Machine drop down scroller is used to select the machine to move to, then the position on that list is marked.

Notes about the “Drag & Drop” and “Three Step” methods

Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

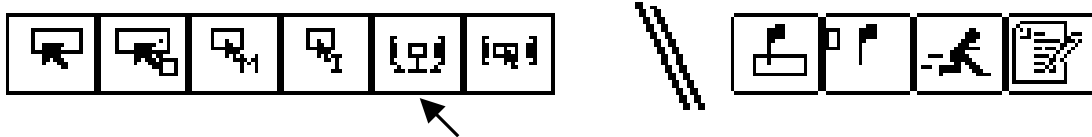
Section 5 - Planning

In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window.

Move Operation Range



Move Operation Range Select Button

This move allows the user to select a range of operations on a single machine and move them all at once, to another time, or another machine or both at once.

All operations are moved to the destination in a packed order.
If one operation fails to move, because of previous/next operation sequence conflicts, then the whole move is aborted.

How the 'range of operations' is re-placed on the board is affected by options set via the **[Move Configuration]** button.

Methods

Either of two methods may be used to move a Range of Operations:

“Drag & Drop”

This method can be used in either the Resource Board or View windows.

1. Press the **[Move Operation Range Select]** button,
2. Left click on the first operation in the range to move,
3. While holding down the left mouse button, drag the mouse pointer to the last in the range of operations you wish to move,
4. Release the mouse button.
5. A selection window opens listing the operations dragged over.

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Selected Operations For Move Operation Range						
Job	Item	Date	Time	Setup	Run	Clean
10028	001	16/10/97	07:12	6:00	9:36	0:00
10022	001	16/10/97	22:48	0:00	2:30	0:00
10020	001	17/10/97	01:18	6:00	9:36	0:00

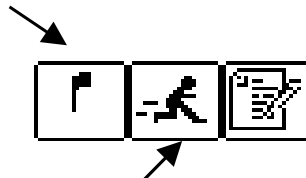
6. Press the **[Move]** button, then confirm the selection. (other button options are discussed separately further in this section). This will also return you to the Board or View window you left earlier.
7. Left click again on the first operation in the range to move and
8. While holding down the left mouse button, drag the mouse pointer to the position you wish to move to,
9. Release the mouse button.
10. The selected range of operations are moved.

“Three Step” Method

This method can be used in either the Resource Board or View windows.

1. Press the **[Move Operation Range Select]** button,
2. Left click the first operation in the range to move,
3. Press the **[Select Range Marker Position]** button. At this point a vertical line (black rectangle in the view) will mark the first position on the board,

Select Range Marker Position Button



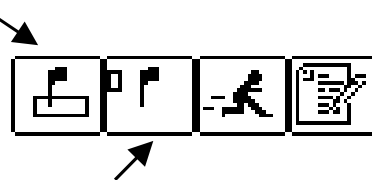
Run Current Move/Range Button

4. Left Click the last operation in the range to move,
5. Press the **[Select Range Marker Position]** button again. At this point another vertical line, or black rectangle will appear and mark the operation range end position,

Section 5 - Planning

6. Press the **[Run Current Move/Range]** button to confirm the selected range,
7. A selection window (Step 5 in Drag & Drop above) opens listing the operations dragged over.
8. Press the **[Move]** button, then confirm the selection. (other button options are discussed separately further in this section). This will also return you to the Board or View you left.
9. Left click again on the first operation in the range to move and press the **[Select Move Operation]** button.

Select Move Operation Button



Select Move To Position Button

7. Left Click at the the new position on the board timescale (or View list) you wish to move the operation range to,
8. Press the **[Select Move To Position]** button. At this point a blue arrow (or box) will appear and mark the new position,
9. Press the **[Run Current Move/Range]** button to action the move.
10. The operation range is moved.

Notes about the “Drag & Drop” and “Three Step” methods

Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

Section 5 - Planning

Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window.

Changing the Operation Range Selection

Selected Operations For Move Operation Range						
ID	Stage	Date	Time	Setup	Run Dur'n	Clean
10028	001	16/10/97	07:12	6:00	9:36	0:00
10022	001	16/10/97	22:48	0:00	2:30	0:00
10029	001	17/10/97	01:18	6:00	9:36	0:00

Menu Cancel Move Add Delete View Job Reorder

While selecting the range of operations to be moved a number of options are available.

[Add] displays a list of the operations on the selected machine that may be added to the already selected list.

[Delete] deletes the currently highlighted operation from the list of operations to be moved.

[View Work Order] displays the work order structure of the highlighted operation.

[Reorder]/[Normal] toggles the 'sticking mode', allowing the order of operations to be changed during the move. When **[Reorder]** is pressed the position of the highlighted operation can be changed by clicking on its new list position (or by using the up/down arrow keys). Pressing **[Normal]** leaves the operation in its new position.

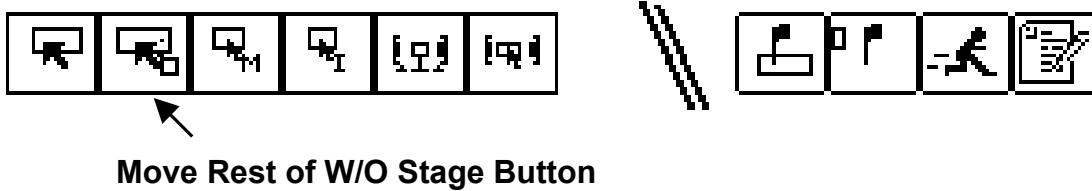
[Move] accepts the selected list, and returns you to the board/view, waiting to be shown from where, and where to move the selection to.

Note:

All operations are moved to the destination in a packed order.

If one operation fails to move, because of previous/next operation sequence conflicts, then the whole move is aborted.

Move Rest of W/O Stage



This move is provided to allow a break in the processing of a Stage when, for example, you wish to delay further processing of the Stage after a certain Operation is finished. Selecting and moving any Operation to the right during a "Move Rest" will move all the subsequent Operations in the Stage also. Selecting and moving any Operation to the left when "Moving Rest" will move it and subsequent Operations in the Stage also, except if a violation of sequence is encountered by attempting to move to the left of a prior Operation, in which case the move is aborted by **The Planner**. (See Positioning Rules in the Introduction Section).

Any next Stages linked to the Stage being moved will also be moved if necessary to do so.

How an operation is re-placed on the board is affected by options set via the **[Move Configuration]** button.

Methods

Either of two methods may be used to move the 'Rest of W/O Stage':

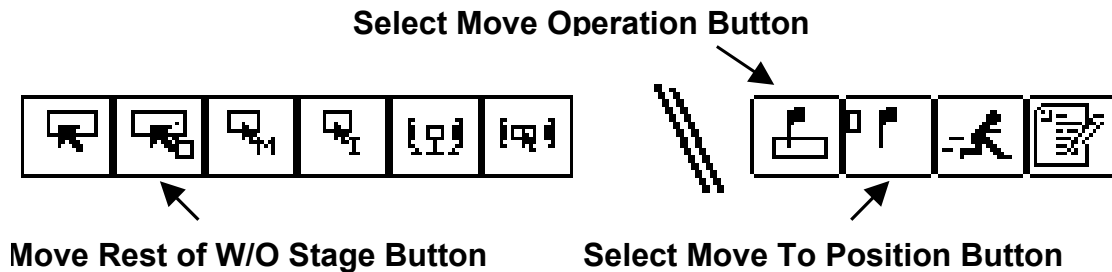
"Drag & Drop"

1. Press the **[Move Rest Of W/O Stage]** button,
2. Left click on the first operation in the 'Rest Of W/O Stage' to move,
3. While holding down the left mouse button, drag the mouse pointer to the new position on the board time scale (or View List) you wish to move the Rest of W/O Stage to,
4. Release the mouse button.

The operation selected and the rest of the Stage are moved.

“Three Step” Method

1. Press the **[Move Rest of W/O Stage]** button,
2. Left click on the first operation in the ‘Rest of W/O Stage’ to move,,
3. Press the **[Select Move Operation]** button. At this point a red arrow will mark the first operation in the ‘Rest of W/O Stage’ to be moved,



4. Left Click at the the new position on the board time scale (or View List) you wish to move the ‘Rest of W/O Stage’ to,
5. Press the **[Select Move To Position]** button. At this point a blue arrow will appear and mark the new position,
6. Press the **[Run Current Move/Range]** button to action the move.

The operation selected and the rest of the Stage are moved.

Notes about the “Drag & Drop” and “Three Step” methods

Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

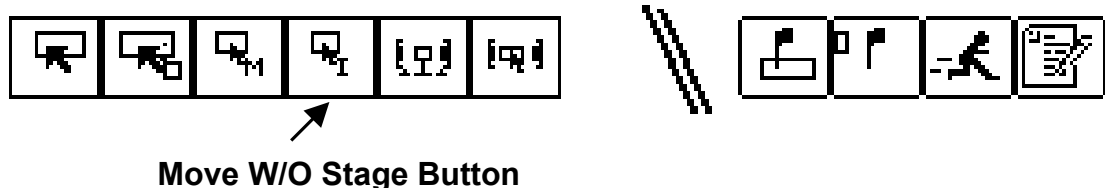
In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window.

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Move W/O Stage



To move an entire Stage from its current position on the board to another location, chose this move button option. The Pointer needs to be on the first Operation of the Stage, when this option is selected so that the movement and replacement of the Stage on the board begins from its first Operation.

With this option you move all operations in the Stage forward or back along the timescale. A move will result in a gap being left on the board in the position the Stage was in. How the operations in the Stage are re-placed on the board is affected by options set via the **[Move Configuration]** button.

Either of two methods may be used to move the Stage:

“Drag & Drop”

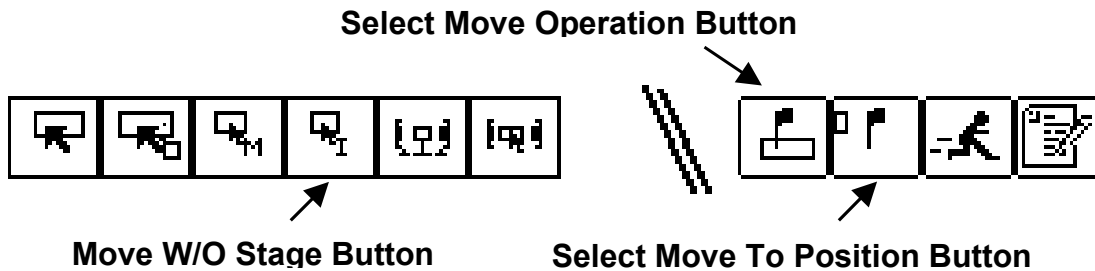
1. Press the **[Move W/O Stage]** button,
2. Left click on the first operation in the Stage to move,
3. While holding down the left mouse button, drag the mouse pointer to the new position on the board timescale (or in the view list) you wish to move the Stage's first operation to (along with its successors) ,
4. Release the mouse button.

The first operation and its successors in the Stage are all moved.

“Three Step” Method

1. Press the **[Move W/O Stage]** button,
2. Left click on the first operation in the Stage to move,
3. Press the **[Select Move Operation]** button. At this point a red arrow will mark the first operation in the Stage to be moved,

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4. Left Click at the the new position on the board timescale (or in the view list) you wish to move the Stage's first operation to (along with its successors),
5. Press the **[Select Move To Position]** button. At this point a blue arrow will appear and mark the new position,
6. Press the **[Run Current Move/Range]** button to action the move.

The first operation and its successors in the Stage are all moved.

Notes about the “Drag & Drop” and “Three Step” methods

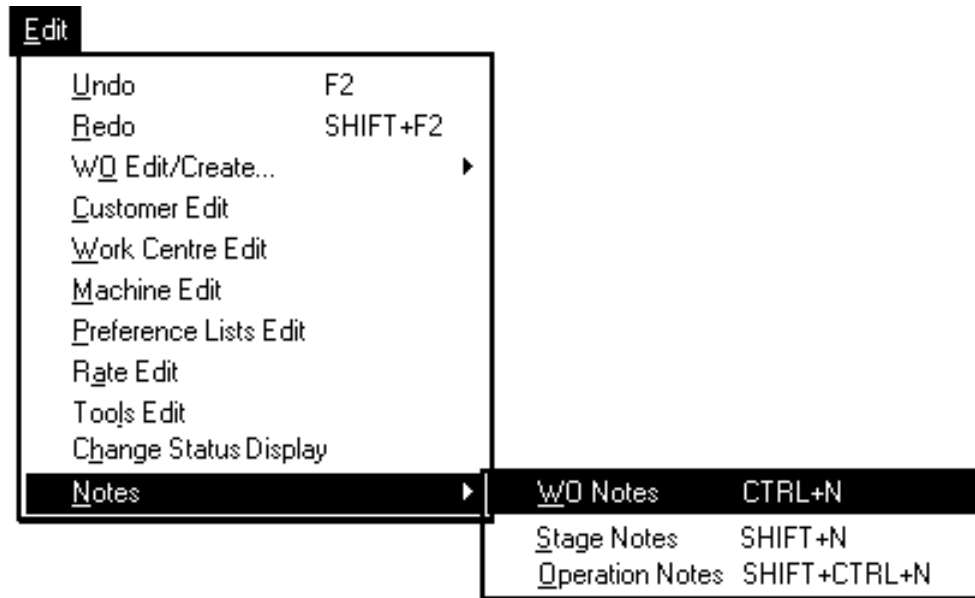
Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window.

Notes



Unlimited notes may be held, edited, and added to, for every Work Order, every Stage within a Work Order, and every Operation within an Item. Notes may also be kept for each period of downtime.

Notes may be edited or added to on the board using the above menu, or using fast keys. The pointer must be at an operation first, or at a period of downtime.

For Work Orders on the Board, and Downtime:

On the Resource Planning Board or View windows, press

- **[Ctrl]+[N]** to access the Work Order or Downtime notepad,
- **[Shift]+[N]** to access the Stage notepad, and
- **[Ctrl]+[Shift]+[N]** to access the Operation notepad
- **for the Operation at the current Pointer position.**

While Editing a Work Order

To add/edit notes at the work order, item or operation level in the Work Order structure while editing the work order, highlight the required line, and

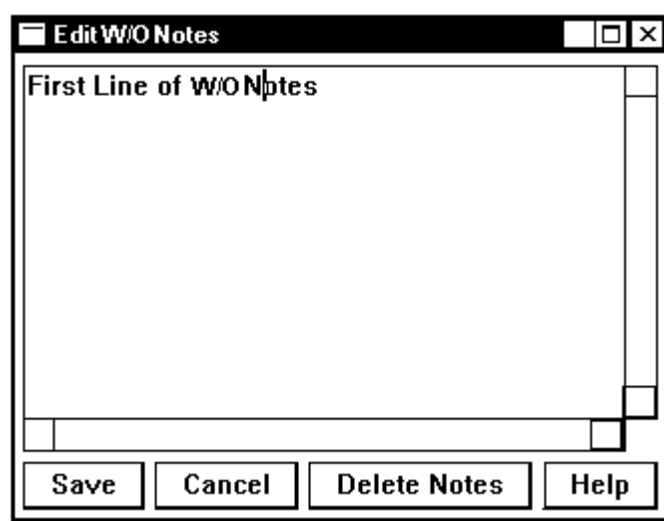
Section 5 - Planning

press **[Notes]**. A notepad window opens. See the Introduction Section for instructions on using the Notepad facility.

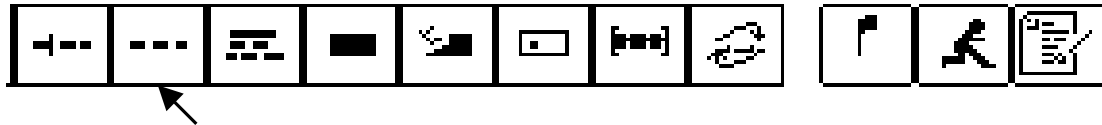
A separate Notepad is held for every line in the Work Order structure.

Press **[Save]** to save the notes. Unless the Work Order being edited or created is saved when exiting, the notes will not be saved.

To delete the notes held for any line, open the Notepad and press the **[Delete]** button.



Pack Left



Pack Left Button

After completing a series of moves, in particular Pushing Left or Pushing Right, or after deleting Downtime, there will be gaps between Operations on one or more Machines. These can be closed as much as possible, (determined by their processing sequence), by using the 'Pack Left' function.

'Pack Left' tries to close gaps on all machines on the board, that is all Operations in the select time range on the board, which are capable of being packed, will be. To pack operations on just one or a selection of machines, use 'Pack Left on Machine(s)'.

While packing, **The Planner** keeps a check on their relationships with other Operations and advises you of progress.

This button can be used to Pack Left using either the "Drag & Drop" or "Three Step" method.

"Drag & Drop"

1. Press the **[Pack Left]** button,
2. Left click at (say) the left-most or earliest point in the range to be Packed Left,
3. While holding down the left mouse button, drag the mouse pointer to the right-most or latest point in the range,
4. Release the mouse button to action the Pack Left.

8

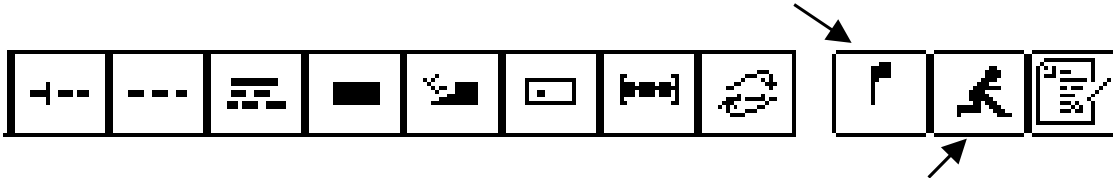
"Three Step" Method

1. Press the **[Pack Left]** button,
2. Left click at (say) the left-most or earliest point in the range to be Packed Left,

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3. Press the **[Select Range Marker Position]** button. At this point a vertical line will mark the position on the board, or a black rectangle in the view,

Select Range Marker Position Button



Run Current Move/Range Button

4. Left Click at the right-most or latest point in the range to be Packed Left,
5. Press the **[Select Range Marker Position]** button again. At this point another vertical line, or black rectangle will appear and mark the range end position,
6. Press the **[Run Current Move/Range]** button to action the Pack Left.

Notes about the “Drag & Drop” and “Three Step” methods

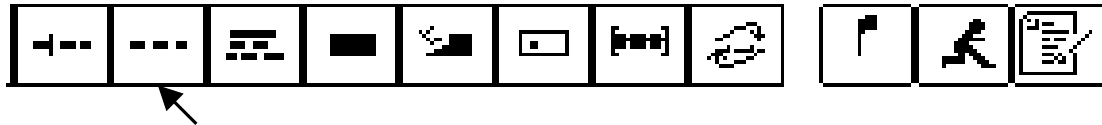
Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window. Either way, operations are only packed to the left to take up earlier capacity if possible.

Pack Left On Machine(s)



Pack Left on Machines Button

This is functionally the same as Pack Left except that only selected Machines are packed.

This button can be used to Pack Left on Machine(s) using either the “Drag & Drop” or “Three Step” method.

“Drag & Drop”

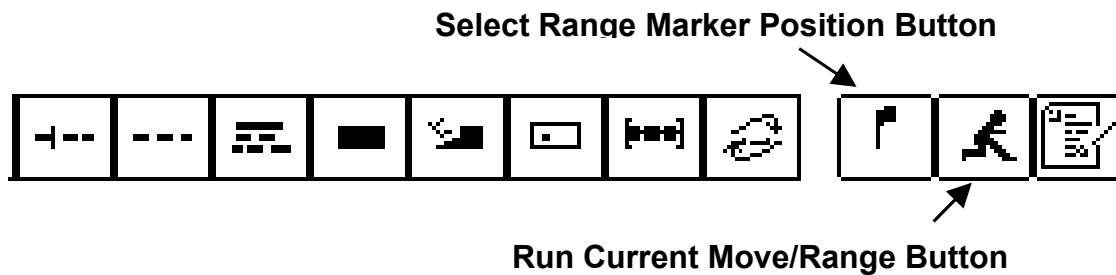
1. Press the **[Pack Left on Machine(s)]** button,
2. Left click at (say) the left-most or earliest point in the range to be Packed Left,
3. While holding down the left mouse button, drag the mouse pointer to the right-most or latest point in the range,
4. Select the machine (or machines) to Pack Left on,
5. Release the mouse button to action the Pack Left on the selected Machine(s).

“Three Step” Method

This method can be used in either the Resource Board or View windows.

7. Press the **[Pack Left on Machine(s)]** button,
8. Left click at (say) the left-most or earliest point in the range to be Packed Left,
9. Press the **[Select Range Marker Position]** button. At this point a vertical line will mark the position on the board, or a black rectangle in the view,

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10. Left Click at the right-most or latest point in the range to be Packed Left,
11. Press the **[Select Range Marker Position]** button again. At this point another vertical line, or black rectangle will appear and mark the range end position,
12. Select the machine (or machines) to Pack Left on,
13. Press the **[Run Current Move/Range]** button to action the Pack Left on the selected machine(s).

Notes about the “Drag & Drop” and “Three Step” methods

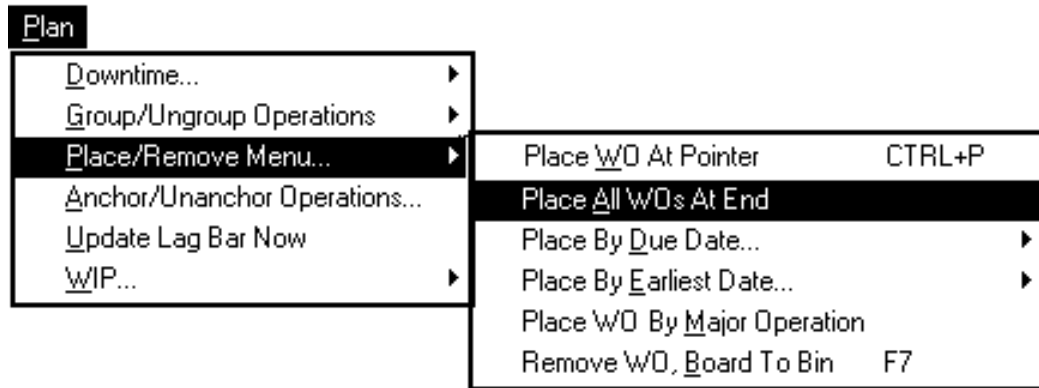
Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window. Either way, operations are only packed to the left to take up earlier capacity if possible.

Place All Work Orders at End



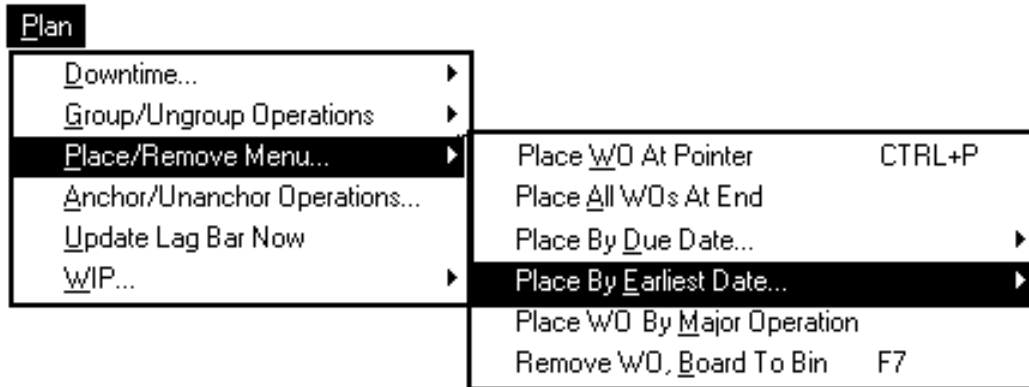
Firstly place the Pointer at the position where you want the Work Orders to start to be placed on the board (the "End" is defined as anywhere to the right of the current Pointer position and to the right of any existing Work Orders). Then choose this option from the Place Menu.

All work orders in the bin are placed on the board to the right of the Pointer. If there are Work Orders on any machine to the right of the Pointer, the new Work Orders are placed after the last Work Order on each Machine.

This option is used to quickly load large numbers of work orders onto the board.

See "Place Menu & Methodology" for information on the specifics of the various placement options which apply to all placements.

Place by Earliest Start Date



This option allows the placing of Work Orders on the Planning Board based on the "Earliest Date" setting for each Operation.

Selecting "Place by Earliest Date" from the Place/Remove Menu opens a further sub-menu prompting whether to place selected Work Orders or all Work Orders by their due dates. If "Place All" is selected, all Work Orders currently in the Bin will be placed on the Board. If "Place Work Order" is selected, a scroller opens to display all Work Orders currently in the Bin. Choose the Work Order(s) to place by their earliest start date and press **[Select]** to place.

Placing Rules

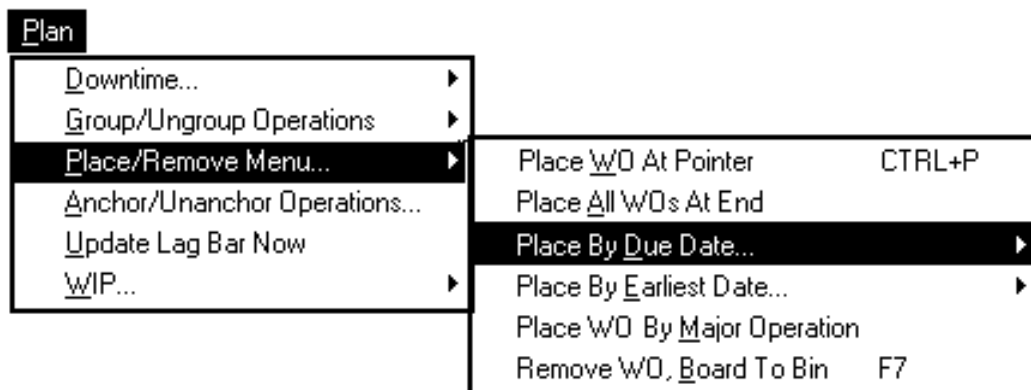
- ♦ Earliest date is defined by the "Op EDate" and "Op ETime" fields in each Operation line.
- ♦ The EDate and ETime fields in the Operation line default from the "Earliest Date" and "Earliest Time" fields from the Stage line.
- ♦ The Place by Earliest Date feature takes account of the Operation EDate and ETime fields only when the activation field "Use EDate" is set to ON **[X]**.
- ♦ If the Operation field "Use EDate" is not set on, the Operations are placed immediately to the right of the NOW bar, depending on the place

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method and switch settings chosen, and the proximity of other Operations.

The key to the activation of the Place by Earliest Date feature is the setting of the "Use EDate" switch for each Operation. Without this switch set to ON, the earliest start date is considered to be NOW.

Place by Due Date



The basic philosophy behind placing Work Orders by their due date is the "Just-In-Time" (JIT) principle. In other words, Work Orders are backward scheduled, and placed so that they are scheduled for completion just prior to their due date (and time).

The Work Order structure provides for a "Late Alert" time period which sets the late warning flag at a point in time prior to the Work Order's due date, and this has an affect on Work Orders placed by their due date.

See the Section on Customization Switches for information on the "Due Date Offset", and see also the Section on Positioning Rules for more on the factors that apply when placing Work Orders by their due date where conflicts arise.

This choice takes you to a sub-menu:



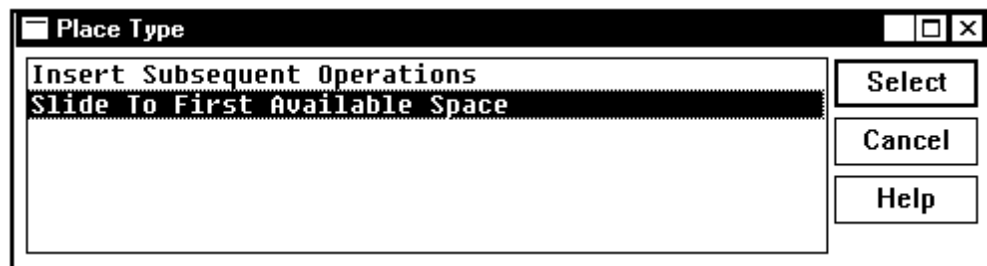
Each of these options is explained further.

Place Work Order

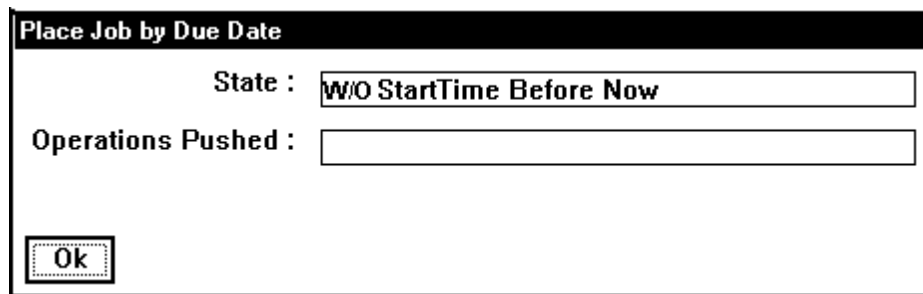
Choose this option when you want to place just selected Work Orders from the bin onto the planning board. When this method of placing by due date is selected, a window opens with the details of all Work Orders in the bin listed.

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Choose the Work Order(s) you want to place on the board and press **[Select]**. You are then asked to select the Place Type, and the work order(s) are placed on the board, with each new operation in each work order interacting with existing operations in the manner selected.



If the due date and the length of a work order is such that its placement position forces its start time to be earlier than “Now”, a message box appears:



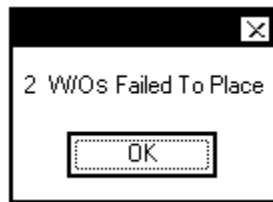
Pressing **[OK]** will abort the move, with the Work Order remaining in the bin, ready to be placed in another manner, e.g. at the pointer

Place All Work Orders

Choose this option when you want to place all Work Orders from the bin onto the planning board. When this method of placing by due date is selected, all work orders in the bin are automatically placed on the board to complete processing as close as possible to their due dates.

If the due date and the length of any Work Order is such that its placement forces its start time to be earlier than “Now” during the placing, a message box such as the one above appears, with another on top saying how many work orders failed to place:

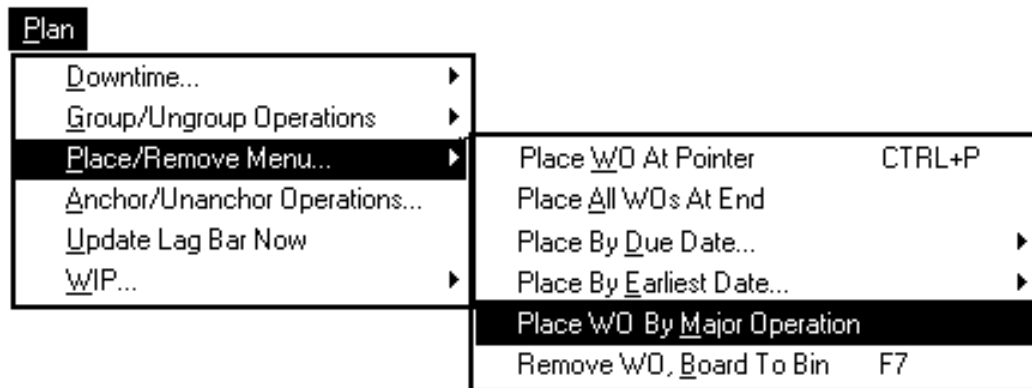
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Pressing **[OK]** will abort the placement of the problem Work Order(s) and continue with the placement of the rest of the Work Orders in the bin. The problem Work Order(s) remaining in the bin must then be placed in another manner, e.g. at the pointer

See "Place Menu & Methodology" for information on the specifics of the various placement options which apply to all placements.

Place by Major Operation



A "Major" Operation is defined as that Operation in a Stage that is critical to the whole Work Order's planning. It may be, for example, the Operation that is to be processed on a Machine that is at full capacity. Placing a Work Order by its Major Operation enables the Machine that is used to process this Operation to be the key factor in its placement. All other Operations in the Work Order are seen as secondary and, depending on the placement method chosen, are usually placed wherever possible around the major Operation. Of course, individual Operations may be moved to new locations after the place.

Firstly place the Pointer at the position in time that you want the Major Operation to be inserted on the board. Choose this option from the Place Menu and a selection scroller window opens with a list of all the Work Orders currently in the bin displayed. Select the required Work Order by highlighting it and pressing **[Select]**.

Another selection scroller window then displays the Stages associated with the selected Work Order. Select the Stage you want to place on the board in the same way. A third window opens which lists all the Operations that are to be performed to process the chosen Stage. Selecting any Operation defines it as the "Major" Operation for the place, and takes you to that Machine to place the Work Order. **A Stage "Linked" to another Stage cannot be placed separately.**

See "Place Menu & Methodology" for information on the specifics of the various placement options which apply to all placements.

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Place Stage at Pointer

This option is turned off in the MFG/PRO version as MFGPRO work orders are all one stage per work order.

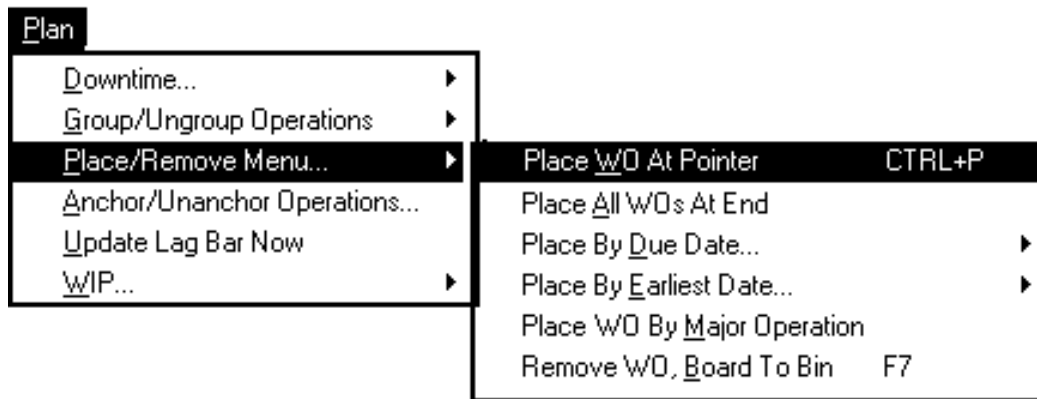
This placement method may be used to place part of a work order on the board. However a Stage ***"Linked" to another Stage cannot be placed separately, all stages (the whole work order) must be placed at the one time.***

To Place a Stage at the Pointer, first place the Pointer at the position where you want the Stage to be placed on the board. Choose this option from the Place Menu and a selection window opens with a list of all the work orders currently in the bin displayed. Select the required work order. Another selection scroller window then displays the Stages associated with the Work Order. Select the Stage you want to place on the board. Choose the Place Type then and press **[Select]** to place the whole Stage on the board.

Another method of placing a Stage at the Pointer is to use a function key. First place the Pointer in the appropriate position and then press **[Shift]+[P]**. The selection scroller window opens as described above, with a list of all the work orders currently in the bin displayed. Continue through the series of windows in the same way.

See "Place Menu & Methodology" for information on the specifics of the various placement options which apply to all placements.

Place Work Order at Pointer

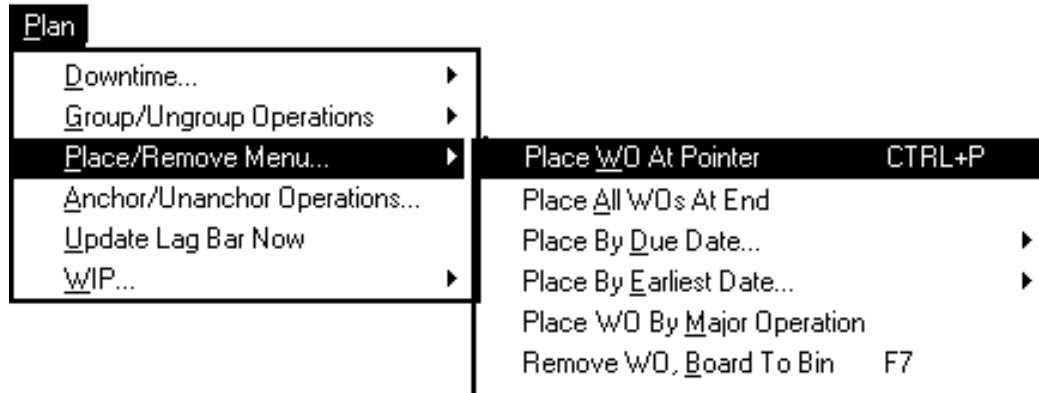


Firstly place the Pointer at the position where you want the Work Order to be inserted on the board. Choose this option from the Place Menu and a selection scroller window opens with a list of all the work orders currently in the bin displayed. Choose the work order you want to place on the board and press [Select]. Then choose the Place Type and press [Select] again to place the whole Work Order on the board.

Another method of placing a work order at the pointer is to use a function key. First place the pointer in the appropriate position and then press **[Ctrl]+[P]**. The above series of windows will open in the same way.

See "Place Menu & Methodology" for information on the specifics of the various placement options which apply to all placements.

Place Menu & Methodology



The Planner provides a two stage import and remove procedure. For importing/loading Work Orders, the first step is to either "download" the Work Order data from another system or to manually key them into the "bin" holding area.

To download electronically, **The Planner's** "Interfaces Module" must be used. The procedures for interfacing are documented under the Interfaces Section.

Having loaded the Work Orders into the bin by either method, they are then placed individually or as a group onto the planning board.

Any work orders that do not have a stage or an operation for any reason, or that have a zero value for [setup+run+clean] will not be able to be placed on the board. They will be left in the bin. If an incomplete work order is being placed on the board at the same time as others, no error message will be returned. If being placed one at a time, a notification message will be displayed.

The Steps in Placing a Work Order

There are three basic steps involved in placing a Work Order card from the bin to the board:

Step 1. Position the Pointer at the placement point

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- Step 2. Select the placement method
Step 3. Select the type of place to perform

1. Position the Pointer

The first step for most of the place options is to decide where the Work Order/Stage to be placed from the bin is going to be positioned on the planning board. Move the Pointer to the start point on the board for the first Operation in the Work Order/Stage to be placed.

2. Select the Placement Method

Choose the required option from the "Place Menu". After you choose one of the placement methods, a scroller (list) of all Work Orders in the bin is displayed for you to select the Work Order to be placed. The first Work Order is highlighted, but you can select any Work Order from the scroller by highlighting it and pressing **[Select]**. Each of the placement methods is explained under separate headings.

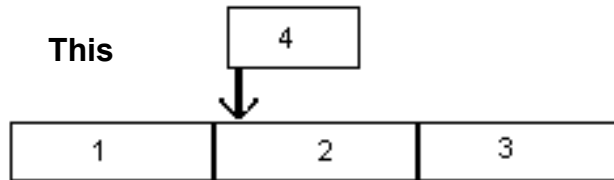
3. Select the Place Type

The next choice to make is the place type. For most of the "place" methods, you will be prompted for the usual three place types as described below. Choose the one appropriate for your Work Order/Stage placement from the list, considering how their placement will interact with other Work Order cards which are in positions which may be in conflict with the incoming ones, and press **[Select]** to action the place.

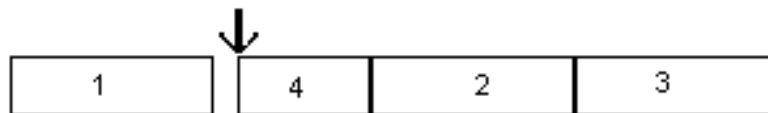
Each of these options and the way they interact with other Work Order cards on the board is explained below. You can set the default choice to be any of these. Do so from the System Configuration, in Preferences from the File menu. This will set the highlight bar on your most-used choice so you only have to press **[Select]** to proceed.

Insert Subsequent Operations

Use this choice when the Stage/Operation(s) being placed must have priority over those that are already placed on the board. Each Operation being placed will force any others in the way to the right, and each successive Operation will be placed immediately after its predecessor in time.

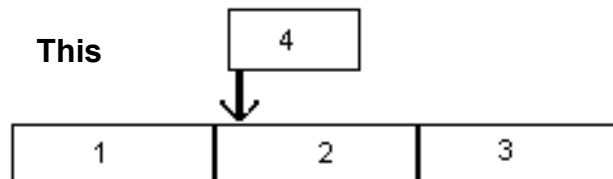


becomes this if INSERT

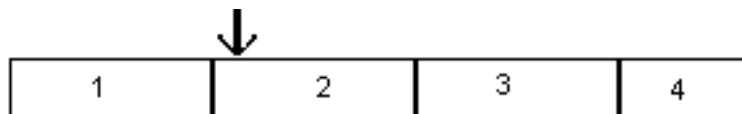


Slide to First Available Space

In a sense, this is the opposite of "Insert". The incoming Operations are placed to the right of the Pointer wherever a gap large enough to accommodate them is found. No existing cards on the board are pushed out of the way.



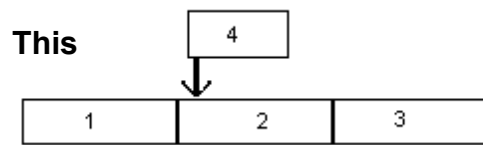
becomes this if SLIDE to FIRST AVAILABLE space



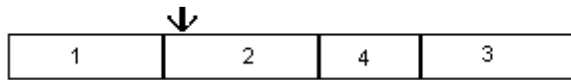
Slip to the End of the Operations

This is a compromise situation. The incoming Operations do not displace the ones that are immediately in the way, but "slip" to the end of these and then push their way in. Any Operations after the immediate one will then be pushed to the right.

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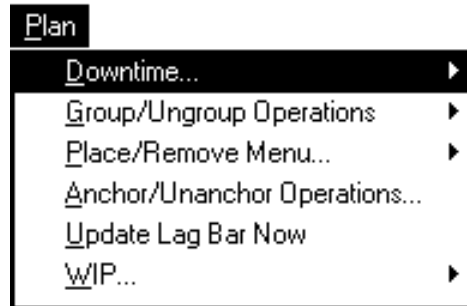


becomes this if SLIP to END of OPERATION



The system configuration setting of 'Push Left on Moves' may affect the above behaviours - if set ON and earlier capacity is available.

Plan Menu



This is the "Plan" Menu. All the general planning functions are performed with choices from here. It is a "parent" menu: it has "children" or sub-menus below it that lead to more choices of the parent topic. Each of the parent choices is explained here briefly. Details of each have their own page.

Downtime Menu

The addition and removal of non-productive time to Machines on the planning board, both planned and unplanned.

Group/ungroup Operations

To edit Grouped Operations, i.e. operations 'tied together' in a series on a machine so they always stay together when moved, until they are deliberately ungrouped.

Place/remove Menu

To position (place) work orders onto the board from the Bin, and to remove work orders from the board back to the Bin.

Anchor/Unanchor Operations

Anchoring allows the setting of fixed start and finish times for Operations on the Board. Then, when placements and moves force anchored Operations from their designated anchor limits, they are flagged as "anchor violations" and may be viewed as if late, with a change of colour and the ability to see them on a "violations list".

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Update Lag Bar Now

Use to push right all non-WIPed operations, up to the lag bar. See page 131 for details, and see WIP Updating, page 332..

WIP Updating

This menu gives access to the various updating and Un-updating options. For a full discussion of WIP rules and procedures refer to page 332.

Plan Summary



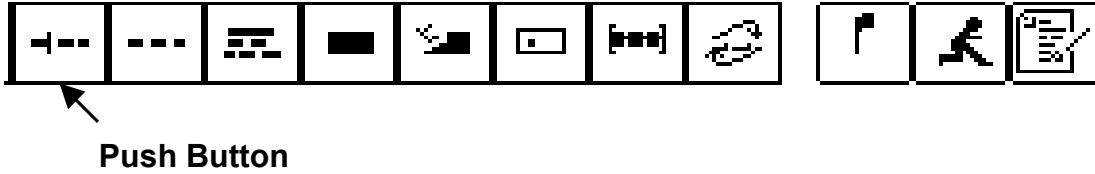
In addition to its standard reporting facilities, **The Planner** offers a quick-look summary feature that gives statistical information on the Work Orders currently on the board or on any Machine.

Choosing this option from the Reporting Menu opens a further menu which allows access to either a Work Order Summary or a Machine Summary.

Choose either of “Work Order Summary” or “Machine Summary” from the Plan Summary Menu by Left Clicking the required option.

See each of these topics for further information.

Push



This option provides the facility to move the selected Operation and all previous Operations on the current Resource to the left, OR to move the selected Operation and all subsequent Operations to the right. It is useful for quickly creating gaps in the planning board.

Operations in the same work order, or stage, but on other machines, may also be pushed to maintain operation sequences. Predecessor operations may be affected when pushing left, successor operations when pushing right.

The Planner keeps a check on these relationships during pushing and advises you of progress, and if as a result of the push, any Work Orders have been made late. (See Lates Lists).

How an operation behaves when pushed is also affected by the 'Push Level' setting in System Configuration.

Note that you cannot push Operations through "Now" (current real time) when pushing left. This limiting factor is varied by the value in the "Now Offset" field, also set in System Configuration. If you do push Operations into or through the Now Offset or Now, the push will be optimized to as close as possible to the Now Offset zone.

The Push button can be used to push operations left or right, using either of the 'Drag and Drop' or 'Three Step' methods.

"Drag & Drop"

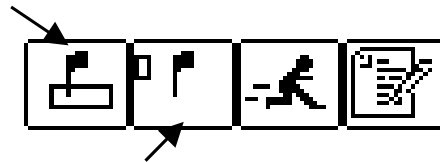
1. Press the [Push] button,
2. Left click on the operation to be pushed,

3. Continue holding down the left mouse button and drag the mouse pointer to the position where the operation is to be pushed to,
4. Release the mouse button to action the Push.

“Three Step” Method

1. Press the **[Push]** button,
2. Left click on the operation to be pushed,
3. Press the **[Select Move Operation]** button. At this point a red arrow marks the position on the board, (or a red rectangle in the view),

Select Move To Position Button



Select Move Operation Button

4. Left Click at the position where the operation is to be pushed to,
5. Press the **[Select Move To Position]** button. At this point a blue arrow marks the position on the board (or a blue rectangle in the view),
6. Press the **[Run Current Move/Range]** button to action the Push.

Notes about the “Drag & Drop” and “Three Step” methods

Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window.

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Push Levels

Understanding the Push Levels

There are four levels of complexity that apply to moves made on the Planning Board. Note that when "move" is referred to here, it means any function which moves Operations on the Board, i.e. a Work Order/Stage Placement, a Push, any of the Moves, Downtime additions. The Move Levels are set in the System Configuration window, in Preferences from the File menu.

Understanding these Move Levels is important to the proper functioning of the system. Each level is explained:

Level One

This is the basic level, and is ***always a successful move*** because it does not take account of any potential restrictions on the Board. A Push Left beyond the "Now Bar" plus its "Now Offset" is optimized. Anchored Operations will be moved. The only Operations not moved are those in WIP.

Level Two

When this level is set and and a Push Left pushes Operations beyond the NOW bar plus its Now Offset, OR the push meets any (upper or lower) anchored Operations, OR the push meets any Operations in WIP, ***the move aborts***. There is no attempt to optimize the move to achieve a compromise situation.

Level Three

When this level is set and and a Push Left pushes Operations beyond the NOW bar plus its Now Offset, OR the push meets any (upper or lower) anchored Operations, OR the push meets any Operations in WIP, ***the move is optimized***. Operations are moved as far as they can be, without jumping other Operations.

Level Four

When this level is set and and a Push Left pushes Operations beyond the NOW bar plus its Now Offset, OR the push meets any (upper or lower)

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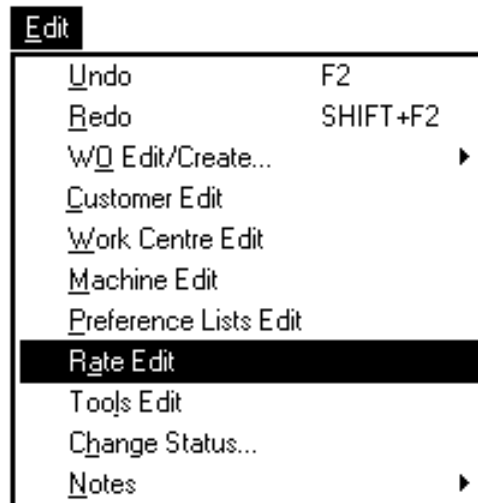
anchored Operations, ***the Push Left is optimized*** and where possible, restricted Operations are ***jumped***.

If a Push Right is used in a move, and if the push meets any Operations in WIP, OR the push meets any (upper or lower) anchored Operations, the restricted Operations in the way are ***jumped***, thereby optimizing the move fully.

Generally...

- a) Push Levels One through Three try to maintain the order of Operations on the Board.
- b) Because Push Levels Two through Four may not always be successful, there is a possibility that Moves / Places / Grouping / Ganging etc. will abort because a space cannot be cleared for the incoming Operations.
- c) Some of the situations that can occur have more than one possible outcome and it is not possible to predict results accurately for all situations. Where anchors are violated in Level One, a message is displayed, and these affected Work Orders may be seen visually by using the "Anchor Violations" display feature.

Rate Editing



To ensure that common work order, work center and machine data is the same in MFG/PRO and The Planner, it is generally best to carry out any changes within MFG/PRO and allow the changes to be brought into The Planner via the interface.

Remember that the primary function of The Planner Scheduler is to schedule work planned in MFG/PRO, based on the finite capacity of the resources/machines available.

The Planner has a feature to incorporate various running Rates (speeds) on Machines, expressed in **units per hour** (whatever the unit of measure). This can save time when calculating the hours/minutes of each Operation's processing time when keying in operation information. The run duration is automatically calculated based on the quantity and the run Rate.

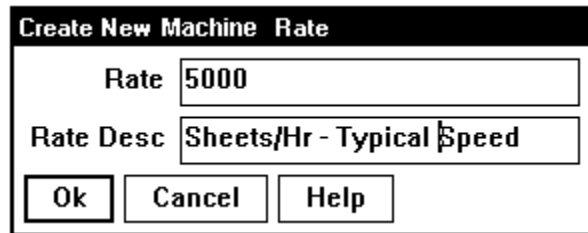
Note that Machine Rates are not mandatory. You can enter any run Rate for any Machine at any time during Work Order editing. Run Rates are calculated automatically by the system if none are entered.

Choosing the above option opens a window listing all Machines. Select the Machine to add Rates to and press the **[Select]** button. This opens another window listing all the current Rates for that Machine (blank if none yet set).

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Adding Rates

To set a new Rate, press the **[Insert]** button, which opens a window to enter the Rate and a description of the Rate if required. Key in the rate information, and press **[OK]**.



Any number of Rates may be entered for each Machine (by pressing **[Insert]** again) so that a Rate can be selected quickly off the list of all possible Rates for the chosen Machine when editing a Work Order.

When entering Rates for a Machine is completed, press the **[Cancel]** button to close the window and (if desired) select another machine. It is not essential to have a Rate for each machine.

Deleting Rates

To delete a Rate for any Machine, follow the above procedure until the listing of current Rates is displayed, then highlight the Rate to be deleted and press the **[Delete]** button. A confirming message is displayed before the deletion takes place.

Reordering Rates on the Scroller

The position of each Rate on the scroller is variable so that the most commonly used ones are at or near the top for easy selection. Move the highlight bar over the Rate to be moved to a new location in the list, and press **[Reorder]**. The selected Rate becomes “stuck” to the highlight bar and may now be moved by clicking on a new position in the list. Press **[Normal]** to release the selected Rate, and repeat this process on other Rates if required.

Using the Rate/Time Calculator

Having entered Rates on Machines or not, it is now possible to amend the run time of any process by adjusting either the Quantity, Rate, Number Up, or Run Time fields. Go to the Board or Bin Work Order editing window.

Recalculating Run Time Durations

Amending the Work Order quantity proportionally amends all Stage and Operation quantities. Amending the Stage quantity proportionally amends all Operation quantities within that Stage, but does not affect other Stages or the total Work Order quantity. Individual Operation quantities may be amended without affecting any other Operation in the Stage or the Work Order.*

Amending the Rate of any Machine for an Operation and pressing **[Cal]** also recalculates the Run time field.* Note that the Rate will be rounded to the nearest Rate compatible with the six-minute time intervals used in **The Planner**.

** Recalculating Run time after editing the Quantity, Number Up, or Rate fields is not automatic unless the Rate is selected from the Rates scroller. The respective **[Cal]**, “Recalculate” button must be pressed to action the recalculation. (See Work Order Editing).*

Pressing the rate **[Select]** button will open a scroller window listing all the Rates that have been set up for that Machine. Choose the desired Rate off this list and press **[Select]**. Alternatively, a Rate may be keyed into the Rate field directly.

How Rates Work

The Run time of each Operation is a calculation of several factors:

1. The Operation quantity

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2. The Number Up (turned off in customiser in MFG/PRO version)
3. The current Machine Rate

The formula used is:

Quantity divided by Number Up divided by Rate equals Run Time

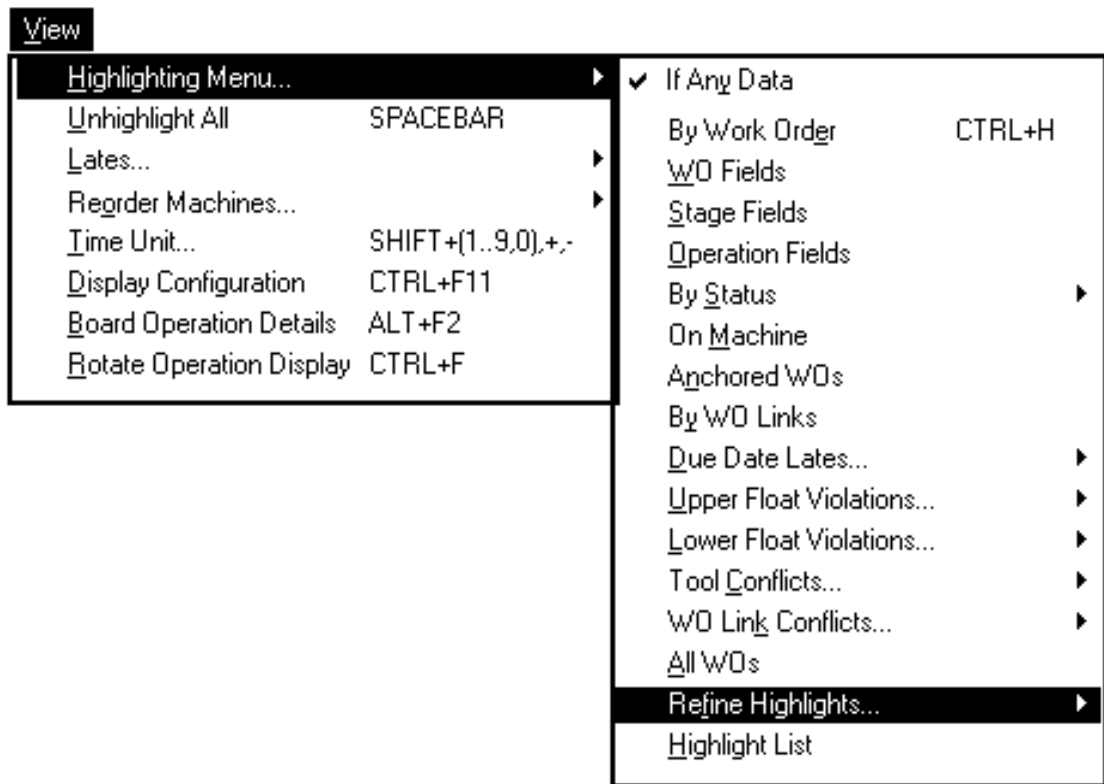
Where no Number Up is entered, the default is **One**. When no Rate is entered it is automatically calculated by the system which divides the Operation quantity by the Run time which has been set for the Operation. Whichever **[Cal]** "Recalculate" button is pressed is the dominant field for the purposes of the calculation. Thus, if the Rate field **[Cal]** button is pressed, it will force the automatic recalculation of Run time using the new Rate as the change agent.

Operation Line Edit			
Operation	10	Opn Status	
OpSpareVar1	0	OpSpareVar2	0
OpSpareTxt1		OpSpareTxt2	
Actual Machine	12000	Select	Preference List
Opn Qty	1600	Cal	Setup
			0:00
			Rate
			8000.0000
			Select
			Cal
			Run Dur'n
			0:12
			Cal
Status Display	CLEAR		Transit
			0:00
			Overlap
			0:12
Op EDate	☐ 10/12/97	00:00	Op LDate
			☐ 10/12/97
			00:00
UserStatus1	☐	UserStatus2	☐
UserStatus3	☐	UserStatus4	☐
UserStatus5	☐		
Ok	Speed Ratio	Help	

A variation on this feature occurs when the Run recalculate button is pressed. In this situation, because Run time is dominant, a potential Quantity based on Run Time multiplied by Rate is calculated.

Refine Highlights

This option is a powerful tool for “drilling down” on the previous highlighting choice in order to fine tune (refine) your choices. *For example, suppose you wanted to highlight all Work Orders for a certain **Rep** which have a **Status Display** of “Waiting for OK” (user-defined Status Display) and which were currently running **late**...*



Before starting press the [Spacebar] to turn off any existing highlights.

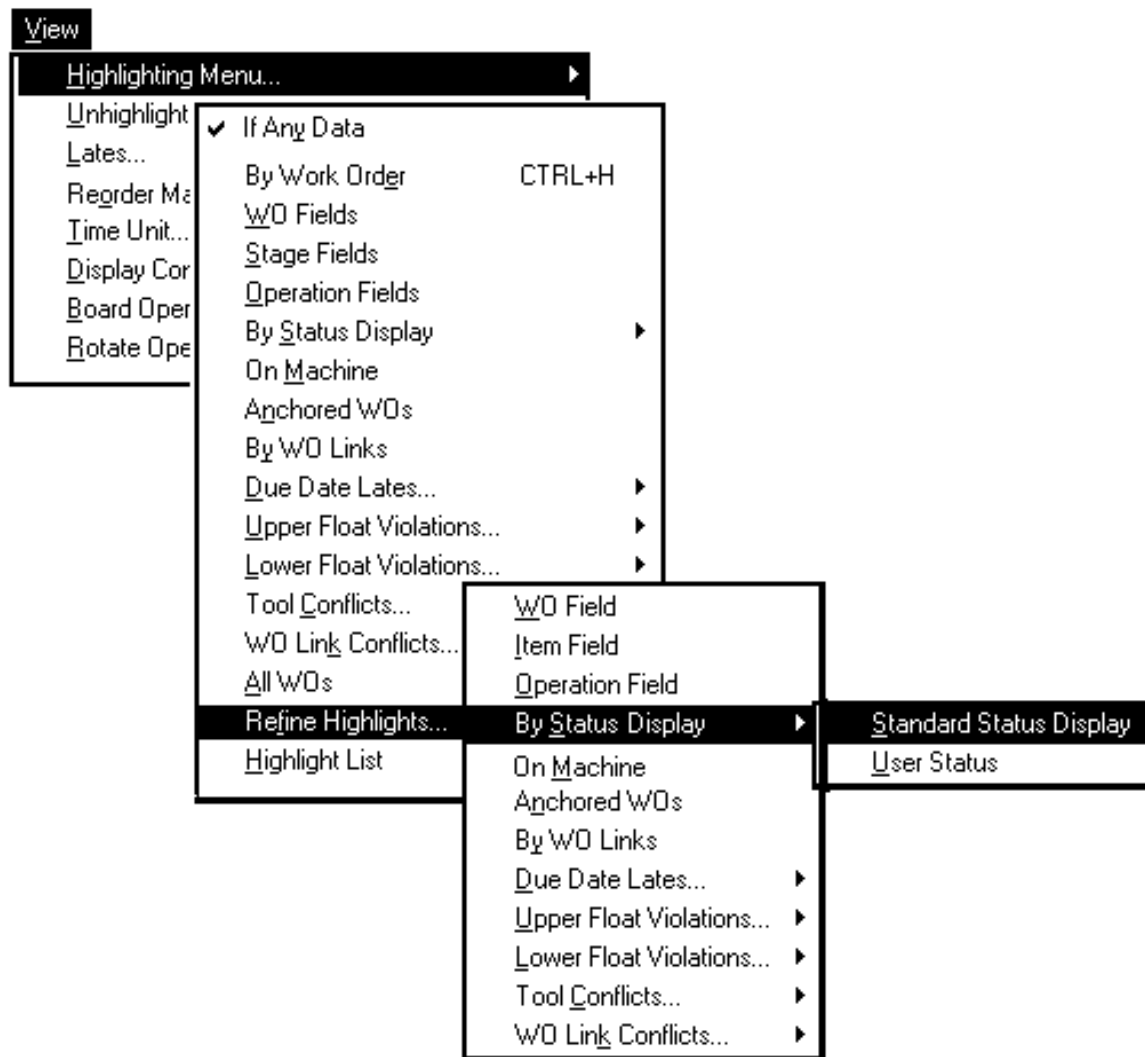
First highlight by Rep (Work Order field).

Then choose “Refine Highlights” from the Highlight Menu, “By Status Display”, finally selecting “User Status”. A window opens to list all the possible options to choose from.

Select the required choice by clicking on the appropriate switches. Your choice automatically deselects highlights from all Work Orders that do NOT match the selected status display.

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Now, also from the Refine Highlights menu, choose “Due Date Lates”, and select “All Lates”. All Work Orders that are NOT late will be de-highlighted.



So the work orders now highlighted meet the following criteria:

They are for Rep = X AND

They have UserStatus chosen = as selected AND

They are scheduled to be Late

The list of work orders meeting your selection criteria can be seen using the Highlights List.

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Note that when selecting Work Order/Stage/Operation fields for highlighting, it is possible to select more than one field in each record at one time. Use the [Shift] or [Ctrl] key in conjunction with the mouse to choose a selection.

Remove Stage, Board to Bin

This option is turned off in the MFG/PRO version as MFGPRO work orders are all one stage per work order.

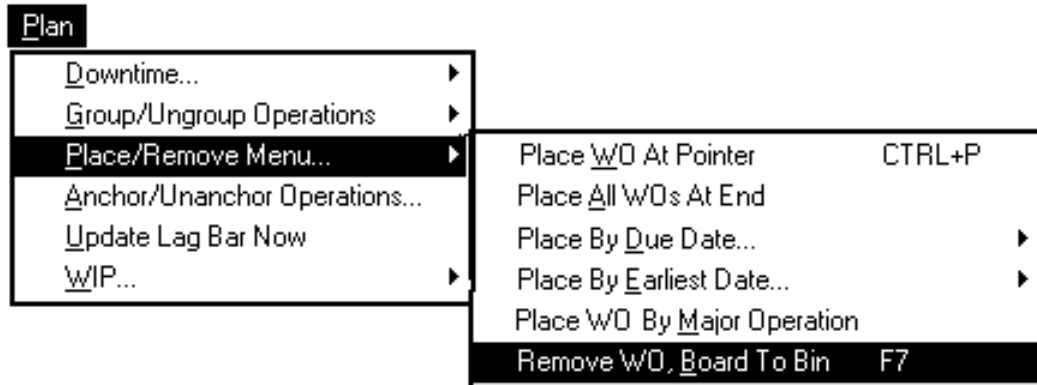
Use this option to remove a Stage of a Work Order from the planning board and place it back in the bin.

Choose "Remove Stage, Board to Bin" from the Place Menu. A selection scroller window opens listing all the Work Orders currently on the board. Choose the required Work Order and press **[Select]**, which opens another scroller window listing all the Stages which are part of the selected Work Order. Choose the Stage to be removed in the same way.

The selected Stage is removed from the board and placed back in the bin. Its space on the board is left open; other Work Orders are not automatically moved into the space the removed Work Order vacated.

Another method of removing a Stage from the board to the bin is to position the Pointer on any Operation card of the required Stage and press **[Shift]+[F7]**. A confirming message is displayed before the removal is carried out.

Remove Work Order, Board to Bin



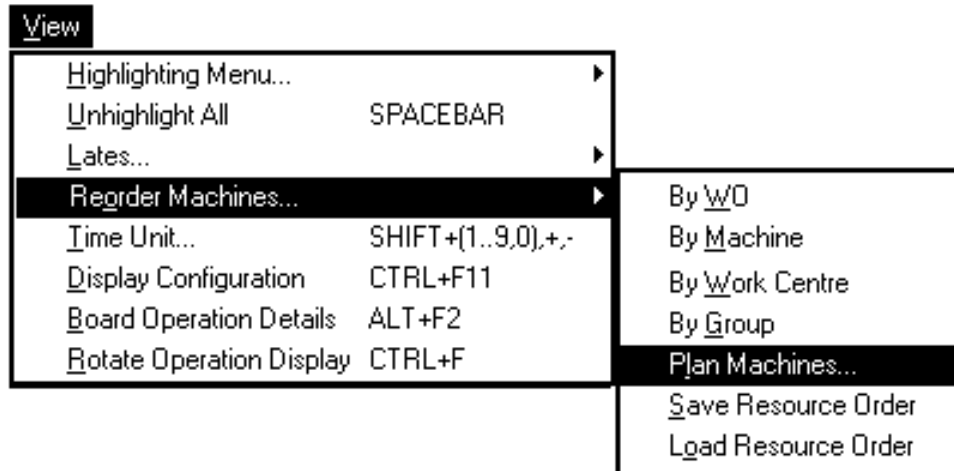
Use this option to remove an entire Work Order from the planning board and place it back in the bin.

Choose “Remove Work Order, Board to Bin” from the Place Menu. A selection scroller window opens with a list of all the Work Orders currently on the board displayed. Choose the required Work Order and press **[Select]**.

The whole Work Order is removed from the board and placed back in the bin. Its space on the board is left open; other Work Orders are not automatically moved into the space the removed Work Order vacated.

Another method of removing a Work Order from the board to the bin is to position the Pointer on any Operation card of the required Work Order and press **[F7]**. A confirming message is displayed before the removal is carried out.

Reorder Machines



The sequence in which Machines appear on the planning board can be changed, either as a result of some of the planning moves, or deliberately. As an example of a deliberate change, assume a meeting of production staff of a Department is taking place. Only those Machines belonging to that Department are of interest to the parties in the meeting. In this example, it is possible to “Reorder” the Machines on the board so that all the Machines in the Department concerned are at the top of the board. At the conclusion of the meeting, the Machines can be set to their original sequence.

When you choose “Reorder Machines” from the View menu, you can select the method to reorder the machines on the board from the above options.

Note that you can save a default order of Machines and reload the default order at any time. See the instructions on saving/loading the default order at the end of this topic.

By Work Order

A selection window opens with a list of the Work Orders on the board. Choose the Work Order and press **[Select]**. The Machines used by that Work Order are moved to the top of the board in the sequence they are used by that Work Order.

By Stage

A selection window opens with a list of the Work Orders on the board. Choose the Work Order and press **[Select]**. The Stages for that Work Order are then displayed. Another selection window then opens with a list of the Stages in that Work Order. Choose the Stage and press **[Select]**. The Machines used by that Stage are moved to the top of the board in the sequence they are used by that Stage.

By Machine

A selection window opens with a list of the Machines on the board. Choose the Machine and press **[Select]**. The selected Machine is then moved to the top of the board.

By Work Center

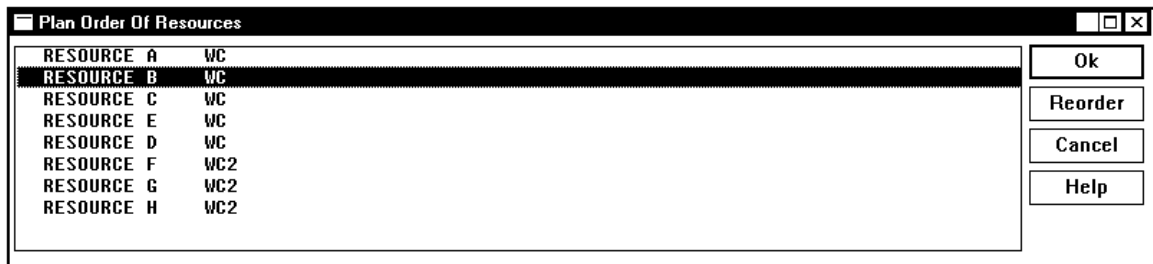
A selection window opens with a list of the Work Centers that the Machines on the board belong to. Choose the Work Center and press **[Select]**. The Machines in the selected Work Center are then moved to the top of the board.

By Group

A selection window opens with a list of the Groups that the Machines on the board belong to. Choose the Group and press **[Select]**. The Machines in the selected Group are then moved to the top of the board.

Plan Machines

Selection of this option from the above menu allows Machines to be sorted in **any** order. A list of all Machines is displayed, sorted in the order in which they currently appear on the planning board.



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By moving the highlight bar to any Machine then pressing the **[Reorder]** button (or **[Insert]** key), the selected machine “sticks” to the highlight bar and can be moved to any position, by clicking on the new position, or using the **[up]** and **[down]** arrow keys. When the move is complete, press the **[Normal]** key (or **[Insert]** key) to “unstick” the Machine from the highlight bar.

Each of the Machines can be moved to any position by repeating this process. When the desired order of Machines is achieved, pressing **[OK]** will close the menu windows and reorder the machines on the planning board in the planned order.

Setting a Default Order of Machines

It is easy to set up a default (standard) sequence for your Machines to display on the planning board. Follow these simple steps.

1. Set the Machines in the Required Order

You can do this in a variety of ways, as described on the preceding pages. The recommended method is to first use the “course” sorting options of reordering by Department or Group, and then fine tune the sequence using the “Plan Machines” option.

2. Save the Default Order

Having established the Machines in the required default order, the next step is to save them this way. To save the default order, again from the Reorder Machines menu, select Save Machine Order. A message will display advising you that the order has been saved.

3. Loading the Default Order

After the default Machine sequence has been saved, it may be reloaded at any time (after a reordering process) by selecting Load Machine Order from the Reorder Machines menu. This will be necessary after any deliberate changes to the sequence, or after some planning moves which force a reorder during their execution.

Repetitive Scheduling

Using version 3.42 of The Planner, interfaced with MFG/PRO Repetitive or Advanced Repetitive, the following outputs are possible:

- A Schedule for each Line, showing all items planned to be processed on the line, in start order
- Graphical displays of load used/capacity available allowing ready understanding, and quick investigation of alternatives
- Finite capacity scheduling with full item routing, rather than just Line routing
- Split, combine, or adjust Jobs for qty (or line) as necessary for mixed product scheduling.
- Use the 'Alternate Machines' functionality to spread load from over utilized machines, when scheduling repetitively made items using full routing

The Interfaces Section of this manual, that covers the setup choices possible when interfacing to MFG/PRO Repetitive, should be read in conjunction with this chapter and the next on Repetitive Scheduling in The Planner.

Importing the Repetitive Transactions

As well as the normal Work Order, Stage and Operation ADDS/CHANGES/DELETE transactions for discrete work orders that are imported to The Planner Scheduler via the Interface Menu, 'Import on Channel' option, there are now additional transactions specifically for Items that are 'Made Repetitively'.

Existing MFG/PRO schedules, and Planned work orders with Release dates within the 'Schedule Update Horizon' are handled differently to standard, discrete work orders.

Quantity Adds or Changes are received in Planner as "MFG/PRO Repetitive Adjustment" transactions. The same transaction type is used for a positive or negative quantity adjustment. The adjustment quantity, and whether it is positive or negative can be seen in the editing window for one of these transactions

Section 5 - Planning

Held Interface Record Types For Group 5641	
MFGPRO Machine Add	ADD BOARD
MFGPRO Workcentre Add	ADD BOARD
MFGPRO Repetitive Adjust	REPADJ BOARD
Library WO Add	ADD LIBRARY
Library Stage Add	ADD LIBRARY
Library Operation Add	ADD LIBRARY

Select
Apply
Cancel
Help

Note below the 'Lib WO ID' that has a number EX-0000002 besides it in the Edit MFG/PRO Repetitive Adjustment window.

This refers to the 'Library Template' with route information that is first used to create the 'job' in The Planner Scheduler, and contains the information on how to represent the load for the Item-Site-Line-Date. This template remains in The Planner until such time as no more quantity for the Item-Site-Line, made this way, is required in MFG/PRO.

Seq No 1585

Group 5

Err Code 0

Operation StartDate 07/20/99

Run Dur'n 12:48

Item Number 88-300

WO SpareTxt 2 20000 L:88-300

Qty Adjust 7650

Qty Negative ☐

Lib WO ID EX-0000002

WO Due Date 07/21/99

WO Due Time 23:54

New WO ☒

Ok Cancel Help

Applying Repetitive Txns

Repetitive import transactions are applied like any other import transactions. If they are applied singly, rather than as a 'complete group' then they must be applied, as with all other txns - strictly in the order set out in the Interfaces Section, "Routine for Importing and Applying Transactions."

The Library template is actually used at the time that 'Repetitive Adjustment Transactions' are applied, so the Library transactions must have been applied before any adjustment transactions referring to them

In addition to being used to create new 'jobs' representing a schedule entry in MFG/PRO, the Library Template is used to help determine what 'job' a later positive or negative adjustment should be made to.

All Repetitive 'jobs' in Planner have their Library Template number (EX-route number) stored in what is for discrete work orders the 'Work Order' field.

If a new job is created for an Item-Site-Line when a positive adjustment transaction is applied in the Planner Scheduler, then this job is assigned an 'ID' for use in Planner itself. This ID has the prefix "PL-".

It is not possible to interface with MFG/PRO repetitive when the MFG/PRO Work Order ID numbering system uses a "PL-" prefix.

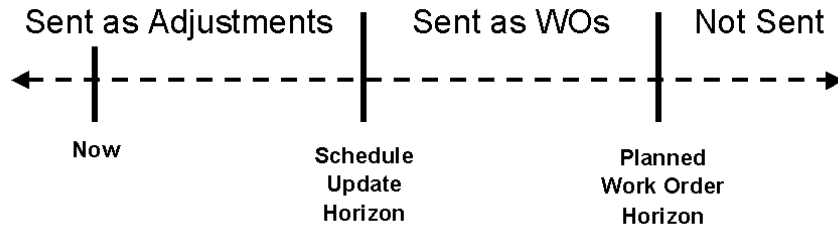
This PL- ID is only used internally in the Planner Scheduler. When the Interface with MFG/PRO Repetitive Schedules is used, there is no 1:1 relationship between a MFG/PRO work order and a Planner Work Order/Job, as there is with discrete work order scheduling.

Handling Repetitive Work 'Load' in Planner

Each 'PL- job' in the Planner Scheduler simply represents some capacity requirement from the Schedule in MFG/PRO for the Item-Site-Line.

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The 'PL- job' may also have originated from a Planned work order in MFG/PRO, one having a release date before the Schedule Update Horizon.



In the Planner, any load for the same Item-Site-Line may be combined into fewer larger 'PL- jobs', or split into more, smaller 'PL- Jobs', depending upon requirements. The tools for this are covered in the chapter on the "Repetitive Menu", page 335.

The normal functionality of Planner Scheduler in terms of placing, moving, pushing, downtime, etc is still used when interfaced to MFG/PRO Repetitive. However the 'PL-Jobs' will have the simplified 'one operation' line routing as established for the item-site in MFG/PRO Production Line maintenance, unless "Full Routing" was turned on during Interface setup.

During the Update to MFG/PRO, the correct daily quantities for each day are assigned and 'CIM' updated to the Repetitive Schedule - even when a 'job' for an Item/Site/Line spans a number of days in the Planner scheduler. Similarly, if more than one job for an Item/Site/Line is scheduled in Planner for the same day, these are combined for the update to give a daily total for Item/Site/Line CIM entry.

When "Full Routing" is used, updating is still made to the repetitive schedule, (NOT to type S Orders), with the update quantities for each schedule date being driven off the last operation in the route.

The Closest PL-Job to adjust

When Repetitive Adjustment Transactions are applied in Planner

1. When adding qty (positive adjustment) to plan
 - a. If there is already a 'PL-job' on the board for the Item/Site/Line,

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with the same EX-route (EXxxxxxxx's of 'PL-Job' and Adjustment Txn the same)

with an overlap as with PL01, PL02 and PL03 in the figure below

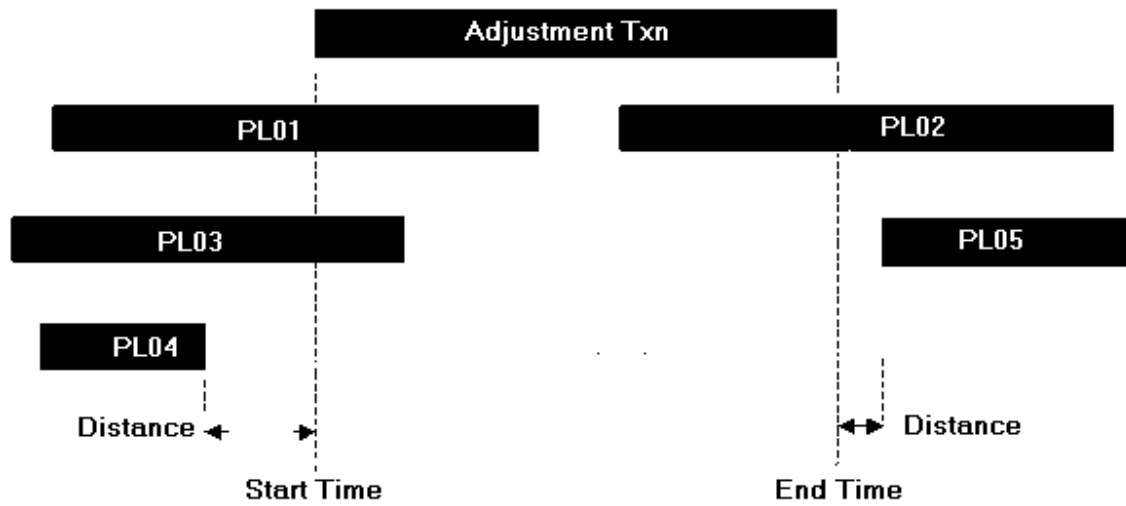
– then the new qty will be added to the existing 'PL-job'

if more than one 'PL-job' meets the above conditions, the most overlapped is added to

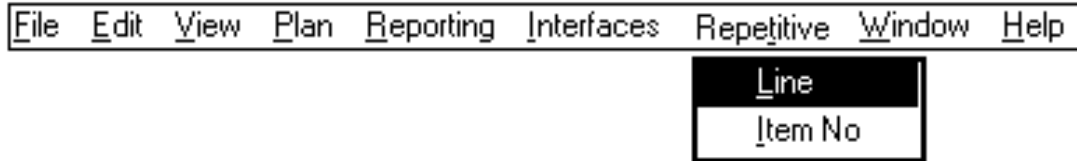
if more than one 'PL-job' has the same overlap, as with PL01 and PL02 the earlier, PL01, is added to.

- b. If there is no existing 'PL-job' for the Item/Site/Line, with the same EX-route (EX000000000x's the same) scheduled for the period specified in the adjustment– a new 'PL-job' will be created in the Bin
 - c. If 'New Job for Qty Inc' is checked On in MFG/PRO Interface Utility, any Quantity increase does not look for an existing job to add quantity to, but instead creates a new one in the Bin
2. When subtracting qty (negative adjustment) from plan, the negative adjustments are made from 'PL-Jobs' in the following order:
- a. Jobs on Board for Item/Site/Line, with the same EX-route. If more than one, then in order PL01, PL02, PL03, PL05, PL04 as in figure below.
 - b. Jobs in Bin, other criteria as per board jobs
 - c. Jobs on Board, then Bin for Item/Site/Line, i.e. with any EX-route; other criteria as per previous
 - d. Jobs on Board, then Bin for Item/Site, i.e. for any Line, with any EX-route; other criteria as per previous
 - e. If no PL-job of same Item/Site, or a balance to reduce by remains, then an error message "Insufficient Quantity of Item Number ' ' exists in Planner to Apply Negative Adjustment to" displays.

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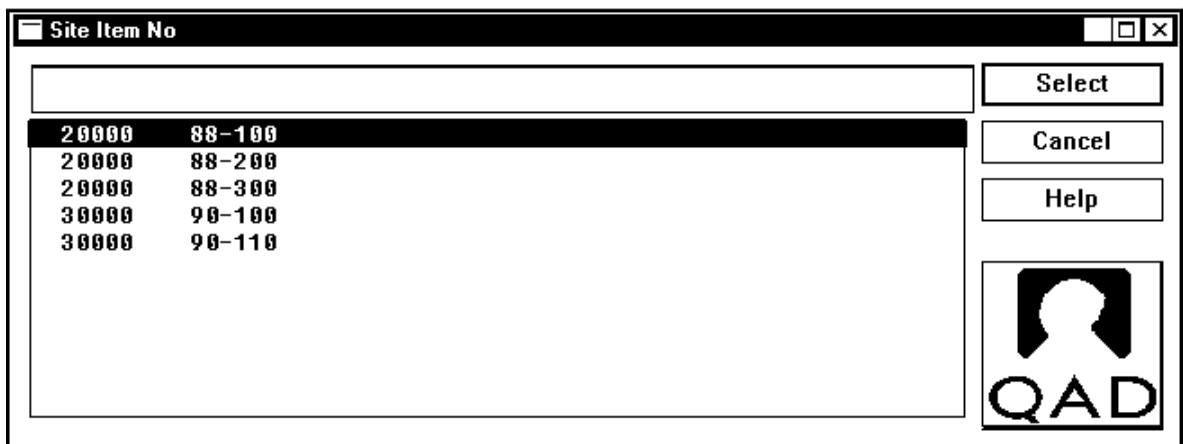


Repetitive Menu



This menu option is used to edit the Quantity, Setup, Run duration, run Rate, or Line (but not actual machine) for the Repetitive Schedule Work imported into Planner from MFG/PRO, which is represented as 'jobs' with IDs having the prefix 'PL-'.

The 'PL- jobs' for the sites being scheduled in Planner, can either be accessed by Line or Item No, that is, by the Line they are assigned to, or by the Item number of the product they represent.



Once the Site-Line or Site-Item is selected, the editing windows are very similar.

They both show rows of the capacity requirements for the Line or Item, listed in the order they have been scheduled to start on the Planning Board. Each row represents one 'PL- job' on the planning board.

'PL- jobs' still in the bin are not shown here. To be edited in this window, and to be updated to MFG/PRO with other schedules, the repetitive 'PL- jobs' must be placed on the board.

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To edit the schedule for the selected Site-Line or Site-Item, highlight any column of the required row, then key in new values in the edit boxes for the Schedule Quantity, Setup, Run/Rate.

If work has been pulled from one line to another on the planning board, the line change must also be confirmed here - by highlighting the row with the mismatched Machine and Line entries, and editing the Line field. When the row is being viewed from the Site-Line list, the row will disappear once the change is saved. (The MFG/PRO Item-Site-Line combination must exist for the update to MFG/PRO to be successful).

When 'Full Routing' has been turned ON in Interface Maintenance, the machine column displays the last operation in the route. The only way to change the machine field, is to move the line operation (or last operation if full routing) for the 'PL-job' on the planning board.

Press the **[Save]** button once finished editing the rows.

The **[Undo Edit]** button ONLY works before the save is confirmed

[Cancel] closes this window and returns to the list of Site-Lines, or Site-Items.

Site Line View : 30000 90-1XX

Marked Total Sched Qty	Marked Total Opn Qty	Marked Total Setup	Marked Tot Run Dur'n
200000	200000	0:00	40:00

200000	200000	0:00	

Schedule Qty	Opn Qty	Setup	Run	Line	Rate
100000	100000	0:00	20:00	90-1XX	5000.0000

	Start	Item Number	Description1	Routing	Machine	Opn Qty	Setup	Run Dur'n
	09/16/99 14:36	90-110	KOOLAIRE(TM) MEDIC-GRADE	90-110	L:90-1XX	100000	0:00	20:00
	09/17/99 10:36	90-100	KOOLAIRE(TM) COOLANT	90-100	L:90-1XX	100000	0:00	16:42
	09/18/99 03:18	90-110	KOOLAIRE(TM) MEDIC-GRADE	90-110	L:90-1XX	100000	0:00	20:00
	09/18/99 23:18	90-100	KOOLAIRE(TM) COOLANT	90-100	L:90-1XX	100000	0:00	16:42
	09/19/99 16:00	90-110	KOOLAIRE(TM) MEDIC-GRADE	90-110	L:90-1XX	100000	0:00	20:00
	09/20/99 12:00	90-100	KOOLAIRE(TM) COOLANT	90-100	L:90-1XX	100000	0:00	16:42
X	09/21/99 04:42	90-110	KOOLAIRE(TM) MEDIC-GRADE	90-110	L:90-1XX	100000	0:00	20:00
X	09/22/99 00:42	90-110	KOOLAIRE(TM) MEDIC-GRADE	90-110	L:90-1XX	100000	0:00	20:00

Split Combine Save Undo Edit Unselect All Font Help Cancel Graph Window

Combining Repetitive Schedule Rows

If a number of separate rows exist for the same Item, the rows may be combined to simplify scheduling in The Planner. Check the rows of the Item to be combined ON, by clicking in the first column of each row, or by highlighting and pressing the spacebar for each row.

The site-line view shown above has products 90-110 and 90-100 alternating on the 90-1XX line. Note the last two rows, both for 90-110, that have been marked, so that they can be combined to make one 'PL- job' for 20000

To start the combining of the marked rows, press the **[Combine]** button.

They are by default combined on to the machine of the still highlighted schedule row, (the one starting 22nd September above) - using the:

- Start Date of the still highlighted schedule row
- Due Date of the still highlighted schedule row
- Totalled Quantities of the Schedule rows being combined
- Totalled Setups of the Schedule rows being combined
- Totalled Run Duration of the schedule rows being combined

Other work on the machine on the planning board will be pushed out to make room for the combining.

Other quantities, setups, run durations-rates and dates may be used for the Combining. They are keyed in to the appropriate edit field, or selected as appropriate before pressing the **[OK]** button, which saves the combining.

[Cancel] closes this window. It does NOT undo any combining that has been Oked

Of course it is not permissible to combine rows for different products.

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Combine Schedules			
Total Sched Qty	Total Opn Qty	Total Setup	Tot Run Dur'n
200000	200000	0:00	40:00
Schedule Qty	Opn Qty	Rate	Run
200000	200000	5000.0000	40:00
Total Individual Setup ◇		Starttime	09/21/99 04:42 ▼
Use Largest Setup ◇		Due Date/Time	09/16/99 23:54 ▼
Use Smallest Setup ◇			
New Setup ◇			
Ok Cancel Help			

Splitting a Repetitive Schedule Row

Any row for an Item may be split, to allow moving of some of the required quantity for the Item to another time, or perhaps to another Production Line. The former reason may be to allow a product change down the line, while the latter may allow concurrent processing on more than one line.

Once the row to be split is highlighted, press the **[Split]** button.

The previously highlighted schedule row can be split in a number of ways. The default is to split the scheduled quantity in half.

The other options are:

Quantity per Schedule: the row may be adjusted to create a split into more than 2 rows. The last row will contain a balancing quantity of the original row.

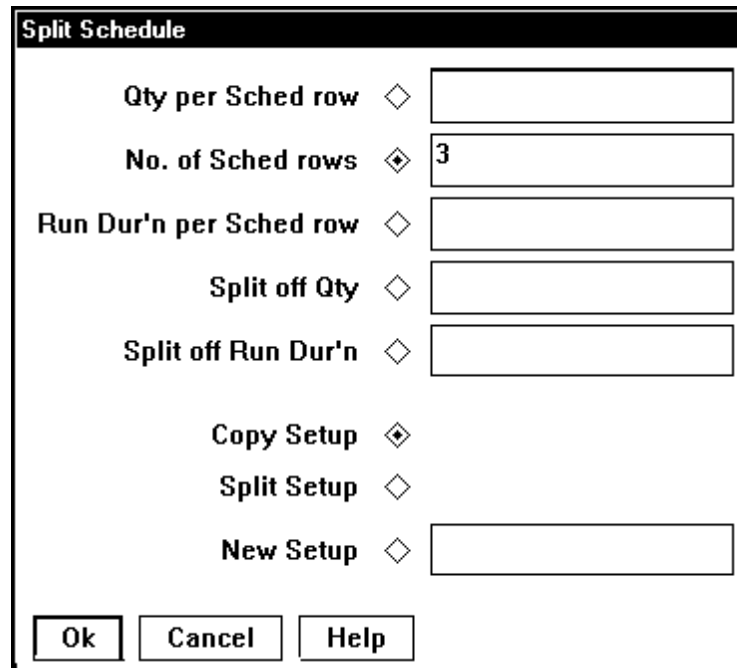
Number of Schedule rows for the row to be split into.

Run Duration per Schedule row for the row to be split into multiple rows with the same running time

Split Off Quantity allows all but the specified quantity to be split off into a second row

Split Off Run Duration allows all but the specified run duration to be split off into a second row

Whichever way the split is made, each new schedule row created will be seen as a new 'PL- job' on the planning board, cloned off the one being split.



The 'Split Schedule' dialog box contains the following fields and controls:

- Qty per Sched row**: A text input field with a diamond icon.
- No. of Sched rows**: A text input field containing the value '3' with a diamond icon.
- Run Dur'n per Sched row**: A text input field with a diamond icon.
- Split off Qty**: A text input field with a diamond icon.
- Split off Run Dur'n**: A text input field with a diamond icon.
- Copy Setup**: A dropdown menu with a diamond icon.
- Split Setup**: A dropdown menu with a diamond icon.
- New Setup**: A text input field with a diamond icon.
- Buttons**: 'Ok', 'Cancel', and 'Help' buttons at the bottom.

Set Up

This allows adjustments to be made to any existing setup/changeover time, by copying, splitting or creating a completely value.

Pressing the **[OK]** button will action the split.

[Cancel] closes this window.

Once the Split has been carried out, the rows making up the split are marked. If an undo function is needed here, the **[Combine]** button can be used to make the split into one row again.

The Repetitive Graph Window

Pressing the Graph Window button displays a capacity graph for the Site-Item or Site-Line as displayed.

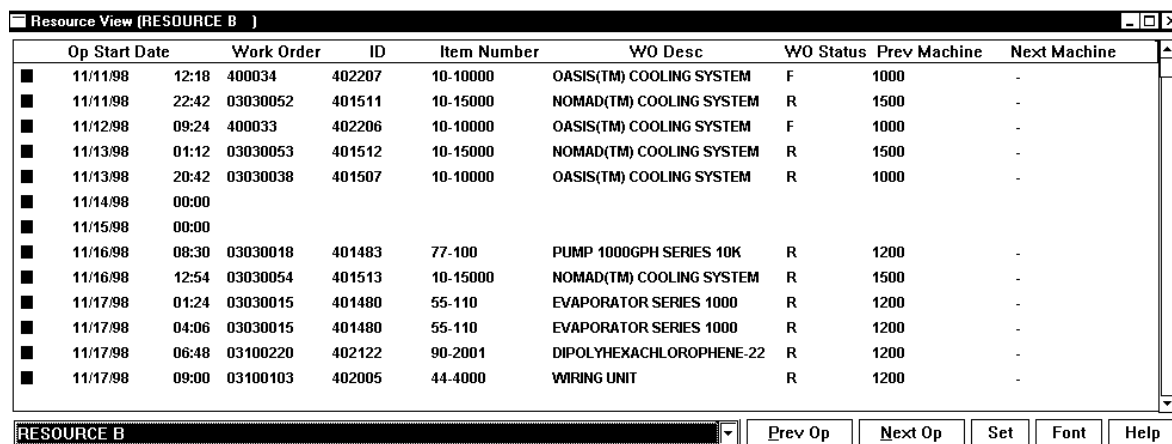
A number of options are possible

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Resource View Window

An alternative to viewing the Planning Board window is to switch to the Resource View window, which displays all the Operations listed in the order they are planned on the Board. Basic work order/stage/operation information is displayed with each operation line. Additional information on any selected operation is of course available from the Data window. Within the Resource view window it is possible to perform most scheduling functions.

To switch to the Resource View screen from the Resource Board window, select the "Resource View" tab from the top of the Resource Board window.



The screenshot shows a window titled "Resource View (RESOURCE B)". It contains a table with the following columns: Op, Start Date, Work Order, ID, Item Number, WO Desc, WO Status, Prev Machine, and Next Machine. The table lists several operations, including cooling systems and pumps. Below the table is a control bar with a dropdown menu set to "RESOURCE B" and buttons for "Prev Op", "Next Op", "Set", "Font", and "Help".

Op	Start Date	Work Order	ID	Item Number	WO Desc	WO Status	Prev Machine	Next Machine
■	11/11/98 12:18	400034	402207	10-10000	OASIS(TM) COOLING SYSTEM	F	1000	-
■	11/11/98 22:42	03030052	401511	10-15000	NOMAD(TM) COOLING SYSTEM	R	1500	-
■	11/12/98 09:24	400033	402206	10-10000	OASIS(TM) COOLING SYSTEM	F	1000	-
■	11/13/98 01:12	03030053	401512	10-15000	NOMAD(TM) COOLING SYSTEM	R	1500	-
■	11/13/98 20:42	03030038	401507	10-10000	OASIS(TM) COOLING SYSTEM	R	1000	-
■	11/14/98 00:00							
■	11/15/98 00:00							
■	11/16/98 08:30	03030018	401483	77-100	PUMP 1000GPH SERIES 10K	R	1200	-
■	11/16/98 12:54	03030054	401513	10-15000	NOMAD(TM) COOLING SYSTEM	R	1500	-
■	11/17/98 01:24	03030015	401480	55-110	EVAPORATOR SERIES 1000	R	1200	-
■	11/17/98 04:06	03030015	401480	55-110	EVAPORATOR SERIES 1000	R	1200	-
■	11/17/98 06:48	03100220	402122	90-2001	DIPOLYHEXACHLOROPHENE-22	R	1200	-
■	11/17/98 09:00	03100103	402005	44-4000	WIRING UNIT	R	1200	-

If your video display system can handle 1280x 1024 or higher with 64K colours you may wish to have both the Resource View and Board windows displaying at the same time on occasions. **The Planner** allows arranging and resizing any of the available windows within the main Planner window.

Viewing another Machine

To view the Operation list on another Machine click on the Machine drop down box and select the Machine from the box.

Viewing the next Operation in a Work Order

On the right of the display it will be seen that the previous and next Machines are displayed for each Operation. To follow the chain of

Operations within the Stage of the current Operation, press the **[Prev Op]** or **[Next Op]** button.

Viewing the Operation on the Resource Board

When the **[Set]** button is pressed, the operation selected in this window will be the same operation the pointer is placed beneath in the Resource Board Window.

Setting the View window Display Font

Press the **[Font]** button and choose the font and size to suit.

Setting the Resource View Window Column Widths

Adjusting the column widths is the same as in most windows applications. Point to the column heading divider and when the '<||>' double arrow appears, drag the column divider to the desired new position. The altered column widths are saved as the defaults next time you quit **The Planner**

Moving, Downtime, Editing Work Orders....

It is possible to perform almost all the main window functions in this window. Use either the "Drag and Drop" or "Three Step" method as described with each move method. In this window downtime can also be added or deleted, displayed or turned off, grouping and ganging can be carried out, in fact most main window button choices are available.

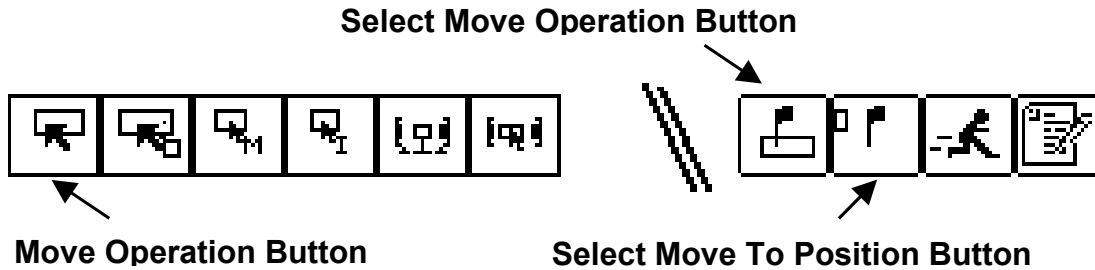
However most users prefer to use the board where seeing relationships with the graphical display allows more intuitive planning. In this window, altering the sequence of single operation work orders can be done economically, but moving multiple Stage/Operation work orders over large periods of time can be difficult.

The basic "Move Operation" move carried out in this Resource View window allows the standard two options: (a) you can move an Operation up and down the list on the current Machine, or (b) you can move an Operation to another Machine. The former method is covered in the 'Move Operation' section. Outlined below are the steps to move an operation from one machine to another in this window.

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Moving an Operation To Another Machine

1. Press the **[Move Operation]** button,
2. Left click on the operation to move,
3. Press the **[Select Move Operation]** button. At this point a red box will mark the operation to be moved,



4. Choose the machine to move to from the Machine drop down box, and the Left Click at the the new position you wish to move the operation to,
5. Press the **[Select Move To Position]** button. At this point a blue box will appear and mark the new position,
6. Press the **[Run Current Move/Range]** button to action the move.

The operation is moved.

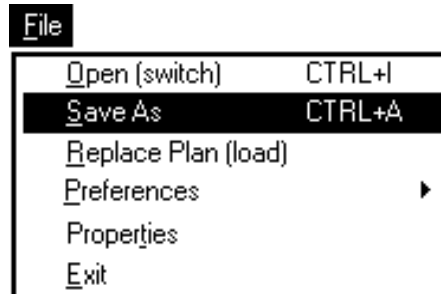
Viewing the Full Work Order Details

To view the full Work Order structure of any Operation in the Machine list, highlight it and then press **[Ctrl]+[V]**. Details in this view window cannot be edited: they are for viewing only. To edit a work order use the Edit menu, **[Edit Board Work Order]** button or the fast keys **[Ctrl]+[E]**.

Changing from the Resource View window

To return to another window, choose the tab for the required window.

Saving a Plan



The Planner is continually saving plan data to disk as you work. This function allows additional saves to be made, maybe for extra security, or to use for 'What-Ifs'

The Planner allows any number of planning databases to be saved to their own directories, limited only by available disk space. These can then be reloaded to the current directory, or switched between during a session.

You can even set it up so that at the start of a planning session you are prompted for a database to load or to switch to before the session begins (see Startup, Customize Switches, in the Customizing Section).

The name of the plan currently being worked on is always displayed at the left of the planner window footer bar. For plans that have been switched to, the plan name is also displayed in the top window bar. A description of saving follows, but first a few definitions:

Current

The plan database that is being viewed/edited at any time is called the "Current" plan. When another database is "switched" to, this becomes the current database.

Main

The default name for the database which resides in the ...Planner\Database\Plan subdirectory.

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Name

The (up to) 8 character name of a saved plan, which is also the name given to the sub-directory in which its files are stored. (all plan subdirectory names are also given an extension of .PDB)

Description

A (up to) 40 character field displayed next to a plan's name to enhance its label for easier identification.

Save As

To copy the current database to another named database.

Replace/Load

To copy a saved database into the current directory to view/edit it. Note that this action will overwrite the plan in the current directory, which may not necessarily be the “*Main*” plan if you have switched to an alternative plan.

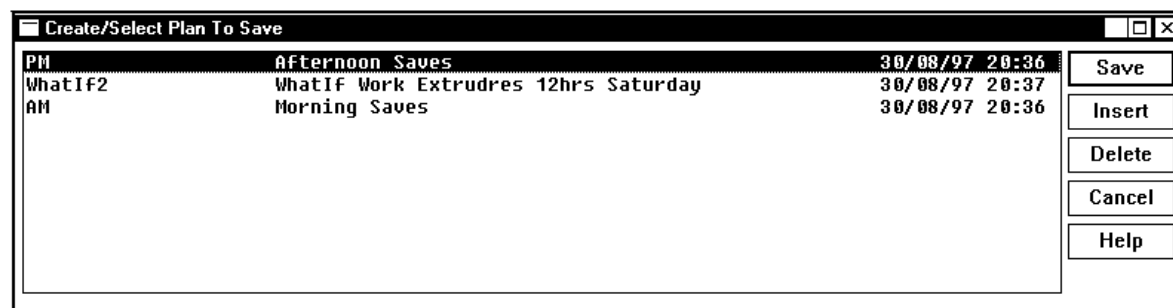
Open/Switch

To view/edit a saved plan in its own directory, leaving the current plan intact in the current directory. After switching to another directory (plan), this becomes the current plan/directory, and as such, any loading is performed into *this* directory, overwriting the plan in *this* directory.

Time/Date Stamp

The display of the date and time that the named plan was last saved or the current plan was last updated.

Saving a Plan

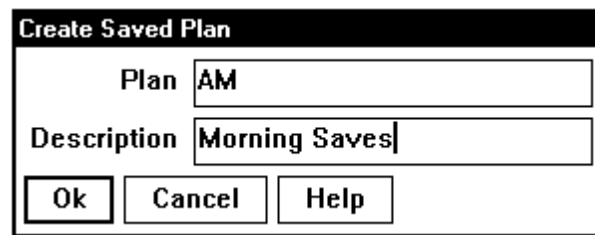


Choosing the 'Save As' option from the File Menu or pressing **[Ctrl]+[A]** opens a window with the names, descriptions, and time/date stamps of all saved plans listed (blank if none yet saved).

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To copy the current plan to a named plan and thereby overwriting the previously saved plan of that name, highlight the required name and press **[Save]**.

To create a new saved plan, press the **[Insert]** button or key while in the saved plans list window. Another window opens to allow the entry of a new plan name and description. Press **[OK]** when the data is entered. All the relevant files will be copied to a sub-directory below the main plan directory with the name you have designated and an extension of .PDB ("Plan DataBase").



A screenshot of a dialog box titled "Create Saved Plan". It contains two text input fields: "Plan" with the text "AM" and "Description" with the text "Morning Saves". Below the fields are three buttons: "Ok", "Cancel", and "Help".

Note that this is a very quick and easy form of backup for the system. It is advisable to save your current plan frequently during use in case of any situation occurring that may corrupt your database. You can then easily load from this saved plan to restore the current plan to its last saved position.

Note also that because the name of a saved plan is the name that is used to create the sub-directory for the saved data, only valid DOS directory names may be used to name a saved plan. For the sake of inexperienced DOS users, we have made this even easier by excluding any character except a letter of the alphabet or a number. Any number of characters between one and eight may be used (no spaces).

To avoid saving a plan, press **[Cancel]** to leave this menu.

Deleting a Saved Plan

At any time, any plan which has been saved may be deleted by first selecting it from the list of saved plans described above. The name,

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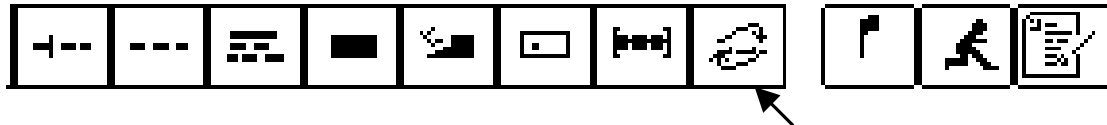
description, and time/date stamp are displayed to assist in identifying any saved plan.

The existing plan may be deleted by selecting it with the highlight bar and pressing the **[Delete]** button or key. A confirming message is displayed before the saved plan is deleted.

Press **[Cancel]** to quit this menu if you decide not to delete a plan.

Note that The Planner automatically saves the current plan to the *Main* database during the course of using the system, and when you exit from the program. Therefore if a power failure occurs, almost all transactions will be saved.

Sequencing



Sequencing Button

This move method is an automated way of arranging operations that are scheduled on a machine into a processing sequence according to some 'rules'.

These rules are established to ensure that work orders are scheduled in a manner that suits your business. The rules may just try to have work orders scheduled to finish by the due date, or they may include rules for other factors such as customer priority, or to match on 'colour' to save on setup and clean time through a paint booth.

Sequencing Variables

In The Planner the rules are known as Sequencing Variables. They may be global, or made to apply to only specific Work Centers.

Three sequencing variables are fixed fields; Due Date, Latest Start and Priority. A further seven are able to be used to carry out a selection of ranking, associating and matching characteristics from any field in The Planner. All variables are given a rank and a sort level.

Weighting

Each variable is weighted, so that its importance to your business can be varied. The weighting given to a variable determines how much it will be involved in determining the Operation Sequence. A weighting of zero means the variable has no influence at all, 99 will have a high degree of influence

Sort Level

Each variable is given a sort level, either all 0; or some 0, some 1, some 2 etc.

Sort Levels are used to sub-sort sequencing. There are 10 sort levels, 0 to 9, with 0 the first to 9 the last. Rather than all variables being considered at once, sort levels are used so that variables can be considered one after

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another, for example sequence by like resin types through a plastic extruder, then within each resin type go from lightest to darkest colour,.... then on to the next resin type.

All variables given a sort level of 0 are sequenced first, then any with a sort level of 1 are used to carry out the 'sub-sequence', followed by further sub-sequencing with variables that have sort level set at 2, and so on. If a number of sort levels are used they must be continuous, as sequencing stops at the first level with nothing to sort. For example if 3 levels of sort are required, use levels 0,1 and 2; not 0,1 and 3.

Fixed Field Variables

Due Date

In determining operation sequence, a high weighting for this variable means that **The Planner** will try to sequence them so that as many work orders as possible are scheduled to finish on time, or if not possible, that the number of late work orders and how late they are is minimized.

This means that it is possible for some work orders with later due dates to be started before others with earlier due dates. Factors influencing the positioning of operations when sequencing by Due date include:

The duration of each process,

The completion time of previous operations of the same Stage/Work Order,

The start time of subsequent operations of the same Stage/Work Order.

Work Orders that would be finished well before their due dates (i.e. are very On Time) are positioned randomly by this variable, and rely on other variables, eg Latest Start, to remove the randomness.

Latest Start

This is particularly useful when most work orders are on time. It sequences operations based upon how much processing has to be carried out to complete the stage, and starts those with most processing time required earliest.

When used in combination with Due Date, both minimising any lateness and setting 'a start time priority' is achieved. One scenario to achieve this might have Due Date weight 99, sort level 0; Latest Start weight 99, sort level 1.

Priority

This variable uses the value in the Priority field for the work order, which will have defaulted from that set for the customer in the 'Edit Customer' window. In determining operation sequence, a high weighting for this variable means that **The Planner** will try to sequence them so that high priority are scheduled first. Priority is best used with some other sequencing variable. Priority values are [Space] lowest, 0 next, 9 highest.

User Selectable Variables

A selection of up to seven different Planner fields are able to be used to achieve a combination of ranking, associating and matching.

Rank

Pressing the **[Rank]** button for any of the seven fields shows that the following entries are required:

- a Weighting
- a Sort Level
- whether the rank is to be Ascending or Descending
- the work order/stage/operation field that the information to rank on is stored in

For ascending ranks

Operation sequence is determined by the values for the chosen field being arranged so that they increase in value for as long as possible, then drop to the lowest possible value and work up again - creating a saw tooth graph of values.

For descending ranks

The operation values will start high and decrease in value for as long as possible, then jump to the highest possible value and work down again, as if the saw is being viewed from the other side.

Values to rank on

- The value of any operation previous to the resource range being sequenced, will affect the starting point of the rank, unless Use Previous Values is turned OFF in setup.

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- The field chosen to rank on must be a number field, or an alphanumeric field containing numbers only.
- Any fields containing non-numeric values are assigned the same rank number, zero.
- If the field has decimal numbers, they are chopped to integers, i.e 1.25, 1.7, 1.0 are all worth the same, 1

The range of allowable integers is from 0 to 42 million odd ($2^{32} / 100$)

Associative

Pressing the **[Associative]** button for any of the seven fields shows that the following entries are required:

- a Weighting
- a Sort Level
- a 'Drop Percent'
- whether the association is to be Ascending or Descending
- the work order/stage/operation field that the information to rank on is stored in

Associating is very similar to ranking, indeed if a value for 'Drop Percent' of zero was allowed (it isn't) and used, they would be the same.

For Ascending

In determining operation sequence, the values for the chosen field are arranged so that they tend to be somewhat 'ranked' by the value, but associating prefers to have a slight decrease in value rather than a large increase in value. If neither is possible, a drop to the bottom of the saw tooth as in rank above takes place. The higher the drop percent is set determines how 'slight' the allowed decrease is before a larger increase or a large drop is taken instead.

For Descending

Is just the reverse of ascending, with 'drop percent' perhaps more aptly called 'jump percent'

The field chosen to associate on must be a number field, or an alphanumeric field containing numbers only. Any fields containing non-numeric values are assigned the same number to associate on, zero.

Match

Pressing the **[Match]** button for any of the seven fields shows that the following entries are required:

- a Weighting
- a Sort Level
- the work order/stage/operation field that the information to rank on is stored in

In determining operation sequence, the values for the chosen field are arranged so that they tend to keep identical values together, but are not concerned with the values of the next grouping. The field value for the first operations in match is random, so it is often best used in conjunction with another variable to get some value order.

Values for matching on may be numeric or alphanumeric.

Other Considerations

All or a variety of variables may be used during a sequencing move, with weightings, sort levels, etc set for each variable. All constraints applying to the plan are observed, ie established shift patterns/downtime; Setup, Run and Clean durations; Transit durations, with allowable overlaps used if possible.

Treatment of Previous, Anchored, Grouped and Ganged operations during sequencing is discussed later in this section starting on page 357.

Steps to Sequencing

The steps to carry out a sequencing move are:

1. Establish the required sequencing variables
2. Select the range of operations to sequence
3. Run the sequencing move

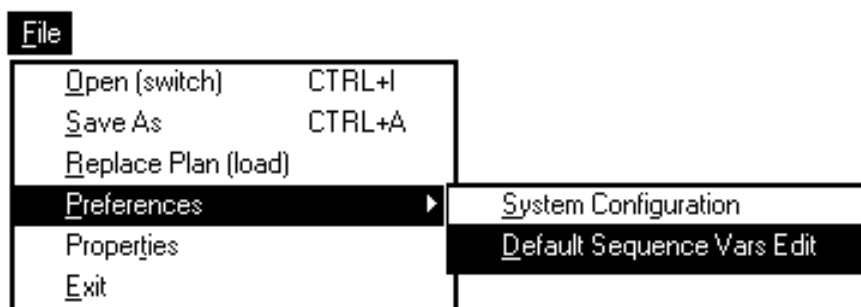
The sequencing variables may be established as defaults to be applied globally, or can be established specifically for a Work Center. Both global and work center variables can be modified just before the move is run.

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The operation range to be sequenced is selected using the 'Drag and Drop' or 'Three Step' methods as used for other move functions. Both of these are described below.

Editing Sequencing Variables

The Sequencing Variables are normally established using 'Preferences' from the File menu.



Settings to apply globally are edited using the 'Default Sequence Vars Edit' option.

Settings for individual work centers are edited using the 'Work Center Edit' option, and then pressing the 'Sequence' button with the required Work Center highlighted. Both methods present similar editing windows.

If the Work Center settings are to be used in preference to the Global settings, ensure that the 'Override Global Settings' checkbox is marked.

Weightings

A weighting of between 0 and 99 is required for each variable. A zero value for a variable indicates that it will have no influence in the sequencing move. A value of 99 means that the variable will have a high influence in determining the sequence of operations. More than one variable can have the same weighting value, in which case the variables would have equal influence, if they have the same sort levels

Sort Level

A sort level of between 0 and 9 is required for each variable to be used. A value of zero for a variable means that it will be considered first, or together with other variables with the same sort level. If a number of sort

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levels are used they must be continuous, as sequencing stops at the first level with nothing to sort. For example if 3 levels of sort are required, use levels 0,1 and 2; not 0,1 and 3.

Edit Sequence Variables			
Due Date Weight	99	Sort Level	0
Latest Start Weight	0	Sort Level	0
		All Fields	More Fields
Field 1: Rank	☐	Associative	☐
Match	☐	Sort Level	0
Weight	0	Increasing ☒ Decreasing ☐	
Field	Width	Op	Stage WO
Field 2: Rank	☐	Associative	☒
Match	☐	Sort Level	0
Weight	0	Drop Percent	5
		Increasing ☒ Decreasing ☐	
Field	Colour	Op	Stage WO
Field 3: Rank	☐	Associative	☐
Match	☒	Sort Level	0
Weight	0		
Field	Spare Txt 3	Op	Stage WO
Field 4: Rank	☒	Associative	☐
Match	☐	Sort Level	0
Weight	0	Increasing ☐ Decreasing ☒	
Field	Actual Resource	Op	Stage WO
Ok Default Cancel Help			

Field Variables

Rank, Associative and Match variables also require a field to carry out their function on. This field may be selected from the Work Order, Stage or Operation level data. Press the required button to open a scroller listing all the fields for that level. Highlight and select the required field.

Rank and Associative generally require number fields. However an alphanumeric field may be used if has been used to keep numbers in. Date fields are converted to very large numbers. Please refer to the earlier

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discussion regarding using Rank and Associative variables for details on ascending/descending and 'drop percent'.

If your video display is less than 1280 x 1024 , then **[More Fields]** button will need to be pressed to display and set up Fields 5 to 7. If using 1280 x1024, pressing **[All Fields]** will display all sequencing variable fields.

Global or Work Center

Settings established as the Default values via the 'Default Sequence Vars Edit' option are used when sequencing unless different settings are set up for one or more work centers AND the 'Override Global Settings' checkbox is turned on in the Edit Sequence Variable window for the Work Center.

Selecting the Range to Sequence

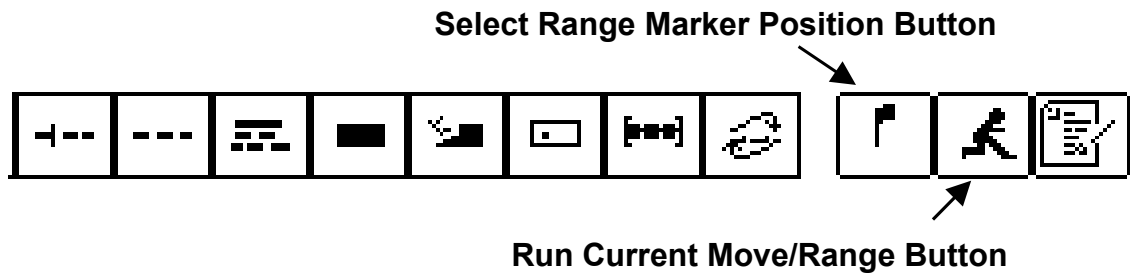
Either the "Drag & Drop" or "Three Step" method may be used to select the range of operations to be sequenced.

"Drag & Drop"

1. Press the **[Sequence]** button,
2. Left click at (say) the left-most or earliest point in the range to be sequenced,
3. While holding down the left mouse button, drag the mouse pointer to the right-most or latest point in the range,
4. Select the machine (or machines) to be sequenced from the scroller.
5. The Sequence Operations window will open showing the date range selected during the Drag
6. See 'Running the Sequencing Move' which follows for the next steps.

"Three Step" Method

1. Press the **[Sequence]** button,
2. Left click at (say) the left-most or earliest point in the range to be sequenced,
3. Press the **[Select Range Marker Position]** button. At this point a vertical line will mark the position on the board, or a black rectangle in the view,



4. Left Click at the right-most or latest point in the range to be sequenced,
5. Press the **[Select Range Marker Position]** button again. At this point another vertical line, or black rectangle will appear and mark the range end position,
6. Press the **[Run Current Move/Range]** button to confirm the selected range,
7. Select the machine (or machines) to be sequenced from the scroller.
8. The sequence Operations window will open showing the date range selected.
9. See 'Running the Sequencing Move' which follows for the next steps.

Notes about the “Drag & Drop” and “Three Step” methods

Drag and Drop can only be used on the area of Board displayed. If the range required is greater than the board display, change the time scale or use the “Three Step” method

In “Drag & Drop” whenever the small white operation bar attached to the arrow displays, its left hand end is the exact arrow position.

Any of the GoTo buttons or fast keys can be used to go to the first and second marker positions, eg GoTo Machine/Time

Both methods can be carried out from left to right, or right to left on the board window. Both methods can be carried out from top to bottom, or vice versa in the view window.

Running the Sequencing Move

Once the range of operations has been selected using either the ‘Drag & Drop’ or ‘Three Step’ method, the Sequence Operations window will be

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opened showing the date range chosen. This date range may be edited here if required.

Sequence Operations			
Start Date	10/10/98		16:00
Finish Date	14/10/98		08:00
Sequence Cancel Global Work Centre Setup Help			

Run the Move

Assuming the variables have already been set, the previous operation and enforce anchors switches considered and setup, press the **[Sequence]** button to action the sequencing.

If necessary the Global Default or particular Work Center variables can be adjusted before running the sequencing, by pressing the appropriate button. The procedures for editing the variables are the same as described earlier, in Editing Sequencing Variables.

Sequencing Setup

Sequencing Setup	
Adjust Previous Operations	☐
Enforce Anchors	☐
Subsort Range Local	☒
Use Previous Values	☐
Descending Priority Order	☒
Ascending Priority Order	☐
Ok Cancel Help	

Adjust Previous Operations

When in the Sequence Operations window, just before running the sequencing move, the option to adjust previous operations in a Stage/Work Order during the move is available.

When left off, ☐, the sequencing of operations in a Stage/Work Order which have previous operations will be restricted by the endtime of the previous operation. That is an earlier 'previous' operation may prevent an 'ideal' sequenced positioning of its next operation. Any Overlap or Transit values for the previous operation will continue to affect possible movement and placing of the operation being sequenced also.

When turned on, ☒, if there are any previous operations, and they are within the selected time range, then they will be sequenced also. The variables for the previous operations will be those set for their own Work Center if 'Override Global Settings' is enabled, otherwise the Default Global Variables are used.

Other operations on the same machine as a 'previous operation' will be cleared out of the way so that all previous operations are re-placed as sequenced. The settings established in System Configuration for 'Push Level' and 'Push Left on Moves' will affect the clearing and replacing outcome.

Enforce anchors

When in the Sequence Operations window, just before running the sequencing move, the option to enforce anchors during the move is available.

When left off, ☐, any operations that are anchored will be treated as if they are not anchored.

When turned on, ☒, any anchored operations being sequenced have their anchors respected, if possible.

Subsort Range Local

When ☒ this allows subsorts on rank, associative and match to be sequenced only within their own subsort group (level), instead of globally. A simple example of how this works might be:

Have 4 single operation work orders, numbered 1 to 4. The values to be sequenced by are:

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W/O No	Var1	Var2
1	1	10
2	1	20
3	2	15
4	2	25

When all four work orders are sequenced, with settings:

Match on Var1, Sort Level = 0, Weight = 99

Rank (increasing) on Var2, Sort Level = 1, Weight = 99

With Subsort Local ON **[X]**, operation order would be 1,2,3,4

(the ranking is done within the groups established by the 1st sort (level 0))

With Subsort Local OFF **[]**, operation order would be 1,2,4,3

(as in the global rank on Var2, W/O 4 must go after W/O2, before dropping to W/O 3)

Use Previous Values

Values for earlier operations not being sequenced may be used as the initial starting values for later operations being ranked, associated or matched. This allows an earlier sequence to be continued into the subsequent period.

When [OFF] the first value for matching will be random, if no other factors apply.

Descending/Ascending Priority Order

When using Work Order Priority to sequence, is 9 or 1 the highest priority value?

When Descending is ON, 9 is highest priority, followed by 8,7,6....1,0 then 'space' or nothing in the field is lowest.

When Ascending is ON, 0 is highest priority, followed by 1,2,3....8,9 then 'space' or nothing in field is lowest.

Grouped and Ganged Operations

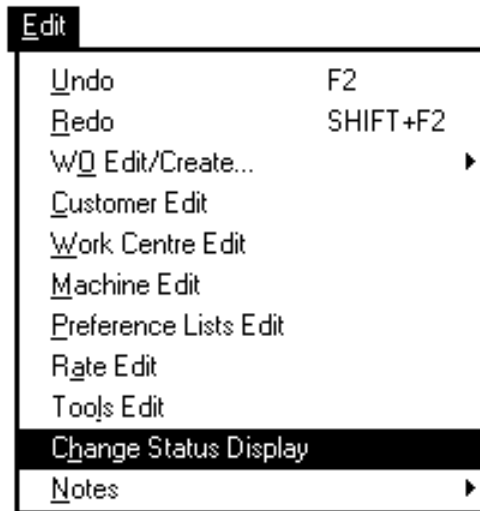
If the selection of operations to be sequenced includes some that have been previously grouped or ganged, using the respective feature in The Planner,

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the sequencing will be aborted. The same applies to any operations that have been marked as being in WIP.

If “adjust previous operations” is on, and some ‘previous operations’ are grouped or ganged, they will be left where they are. Similarly any previous operations that have been marked as being in WIP will not be moved.

Status Display Flags Explained



As Work Orders/Stages/Operations are worked on there is a need to indicate their status display. Manual planning systems often use coloured stickers on the Work Order cards to represent certain statuses which are appropriate to the business using them.

In **The Planner**, the status of on time or late is shown via colour (green being on time, red being late). Other status categories are shown by displaying various “flags”, sometimes in the Work Order cards themselves, and sometimes as indicators in the Details Block. Status Display is recorded at the Operation level but is applied at any of the three levels of the Work Order structure.

A change in Work Order status display affects all Operations in the Work Order. A change in Stage status display affects all Operations in the Stage. A change in Operation status display affects only that Operation which has been changed.

There are two types of status displays provided in **The Planner**: the “Standard” status display and the “User” status display. There are three Standard statuses, which are those set by the system, and five User statuses, which are those that you can set to be whatever you wish, as appropriate to your business. See the Customizing Section to learn how to set the status names for your environment.

The Three Standard Status Display Categories

Clear

The Work Order/Stage/Operation is active, or ready for processing. This is the default status with which all Operations in all Stages of all Work Orders are loaded.

On Hold

The Work Order/Stage/Operation is on hold, ie: it is not being processed for some reason. This status display is indicated on the planning board by a single dashed line through Work Order/Stage/Operation cards, which have had the status applied to them.

Complete

The Work Order/Stage/Operation is finished and no additional processing is necessary. This status display is indicated on the planning board by a double dashed line through Work Order/Stage/Operation cards, which have had the status applied to them.

As Work Orders are completed, it is optional whether they are removed from the planning board or not. They will not interfere with active Work Orders, because their position on the planning board will be to the left of “real time”, or the “Now Bar”. It is advisable however, to remove completed Work Orders from the board at a convenient time so that the computer processor is not overloaded with unnecessary work, thereby degrading its performance.

The Five User Status Display Categories

Remember that User Statuses are user-definable, and therefore it is not of much value to describe their default settings here. The next section will focus on how to use the status displays, and how to gain the best advantage from their use.

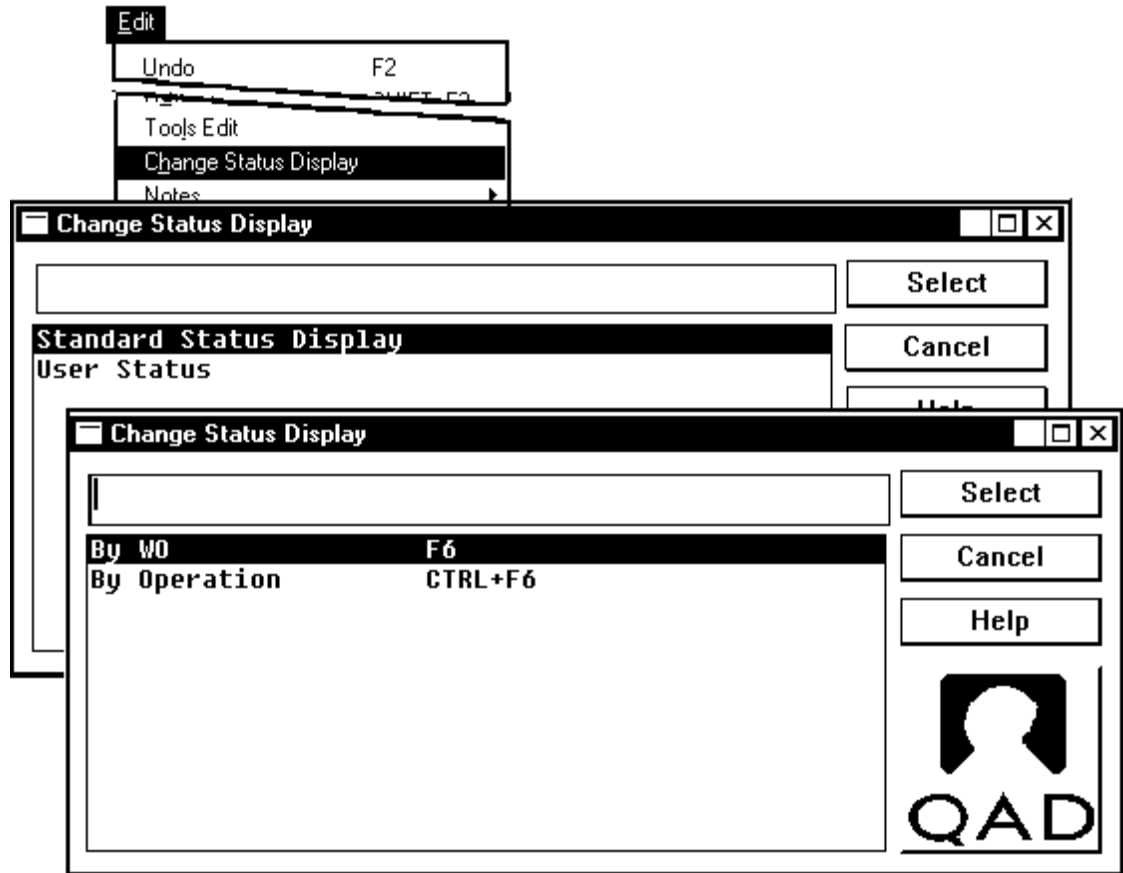
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The Status Display Flags

All the status display flags can be seen at any time by moving the Pointer to the required Work Order card and looking at the Details Block Card in the Data Window. The Standard status display settings are shown as the words: CLEAR, HOLD, or COMPLETE in the field. The User status display settings are shown as an **X** beside the name of the status as defined in the set up program.

Alternatively, status display settings may be highlighted. See the section on highlighting to learn how to highlight by Standard or User status display.

Status Display Flags: Changing



When you choose “Change Status Display” from the Edit menu, a sub-menu opens to ask whether you want to change a Work Order’s Standard status display or User Status. Whichever option you choose opens a further sub-menu asking you to select whether you want to change the status display of all operations in the entire Work Order, operations in a Stage from the Work Order, or just a single Operation. The next step depends on which of these options you choose. Each is explained below.

By Work Order

All operations in an entire Work Order can have a chosen status display. Select this option and the ‘Select Work Order for Status Display Change’ window lists all the Work Orders on the board. Choose the required Work Order and press **[Select]**. A ‘Select Status Display Window’ opens with the

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status display options (depending the type of status display chosen) listed. Select the appropriate status(es). All Operations in that Work Order then have the chosen status display applied to them. Another method of applying Work Order Status Display when Pointing to a Work Order is by pressing the **[Change Work Order Status Display]** button or the **[F6]** key.

By Item

All operations in a Stage can have a chosen status display. Select the option and the 'Select Work Order for Status Display Change' window lists all the Work Orders on the board. Choose the required Work Order and press **[Select]**. The Stages of that Work Order are then displayed in another scroller. Select the desired Stage. A 'Select Status Display Window' opens with the status display options (depending the type of status display chosen) listed. Select the appropriate status(es). All Operations in that Stage then have the chosen status display applied to them. Another method of applying Stage Status Display when Pointing to a Stage is by pressing the **[Change Stage Status Display]** button or the **[Shift]+[F6]** key combination.

By Operation

An Operation can have a chosen status display. Select the option and the 'Select Work Order for Status Display Change' window lists all the Work Orders on the board. Choose the required Work Order and press **[Select]**. The Stages of that Work Order are then displayed in another scroller. **[Select]** the desired Stage. The Operations that make up the selected Stage are displayed. **[Select]** the required Operation.

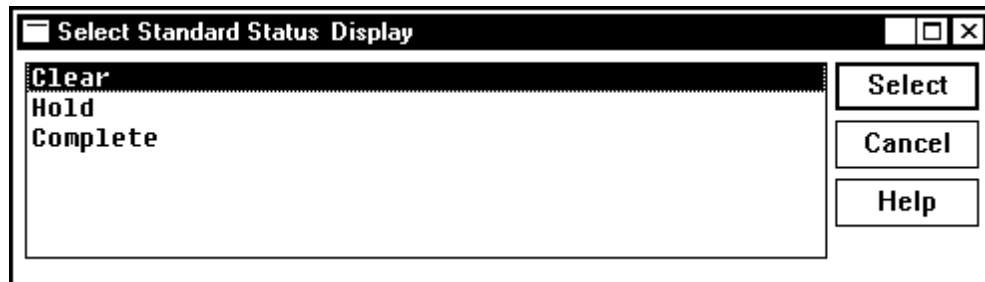
A 'Select Status Display Window' opens with the status display options (depending the type of status display chosen) listed. Select the appropriate status(es). The selected Operations will then have the chosen status display applied to it. Another method of applying Operation Status Display when Pointing to an Operation is by pressing the **[Change Operation Status Display]** button or the **[Ctrl]+[F6]** key combination.

Selecting the Status Display

The last window to open when applying any status display to a Work Order/Stage/Operation is the window where you choose the actual status display to apply. If you chose the Standard Status Display option at the beginning, the choice window is this one:

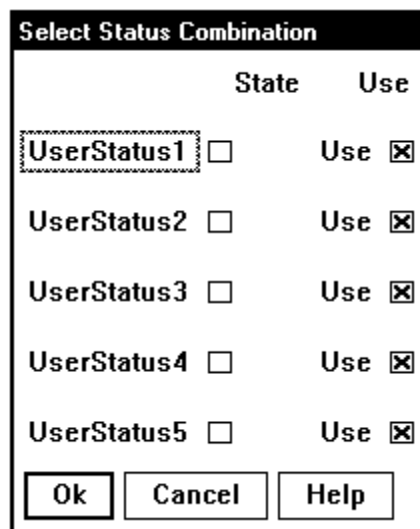
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If you chose the User Status option at the beginning, the choice window is the next one:



Simply choose the required status display to apply to the Work Order, Stage, or Operation you selected, and press **[Select]**. Your selected status display will be automatically applied to the Work Order, Stage or Operation, replacing its previous status display setting.

If you chose the User Status option at the beginning, the choice window is this one:



Choose the required statuses to apply to the Work Order, Stage, or Operation you selected. Click on the option's checkbox to choose it. An **X** appears in the checkbox. Continue to select as many of the status display options as required in the same way.

When changing the user status display of a single operation, the above window will open displaying the settings presently applied to that operation.

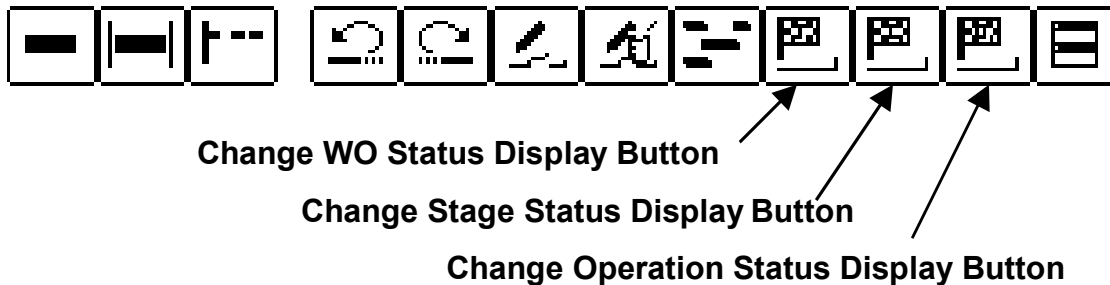
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When all selections have been made, press **[OK]**. Your selected status display choices will be automatically applied to the Work Order, Stage or Operation, replacing its previous status display setting.

The “Use” Field

When applying a User Status to a Work Order, Stage, or Operation, the “Use” field tells **Planner** whether or not to change the status display adjacent to it, ie: to use its current value or not. If no change has been made to a user status display, you should switch it “off” by unchecking its “Use” checkbox], otherwise the system will reset that status display to the new value as displayed (the default for all options is “ON”).

Button and Speed Keys for Status Display Setting



To quickly change status display settings directly from the board, position the Pointer over the Operation card to be changed, and press the:

[Change Work Order Status Display] button or the **[F6]** key to change the Work Order status display,

[Change Stage Status Display] button or **[Shift]+[F6]** to change the Stage Status Display,

[Change Operation Status Display] button or **[Ctrl]+[F6]** to change the Operation status display.

The Work Order, Stage or Operation affected is the one to which the Operation card pointed to by the Pointer belongs.

Colours for User Statuses

By default, the User Status1 causes all Work Orders/Stages/Operation cards with this flag set to display blue in colour (pink if late). It is possible however, to change the colour attribute to any of the other User Statuses using the Display Configuration choice from the View menu, or by pressing **[Ctrl]+[F11]**. Both methods open the Display Variables window. The current setting for the colour change on the User Statuses is displayed by the position of the **[X]** checked box, indicating which of the statuses has the colour change (blueness) applied to it.

It is possible to change the default for which User Status (when turned on) will cause operations to display in blue (pink if late). This will assist in visually locating Operations on the Board with any one of the User Status flags set.

Check the User Status that you wish to have operations with this status display set on display in blue.

Press the **[OK]** button to have your choice actioned for this session.

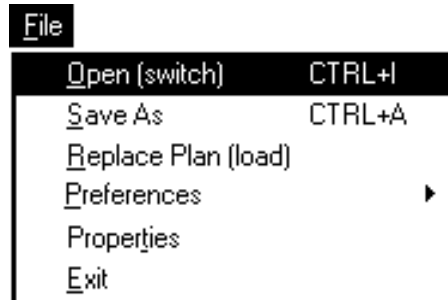
Press the **[Save]** button to have your choice be the default at start up of ***The Planner***.

The **[Default]** button replaces any temporary setting chosen earlier in a session to be replaced by a previously saved selection. Other temporary displays (Downtime, Late Type etc) may be affected by pressing this button.

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Set Display Variables	
Late Type	User Status Display
Due Date Lates ☒	UserStatus1 ☒
Upper Float Lates ☐	UserStatus2 ☐
Lower Float Lates ☐	UserStatus3 ☐
Tool Conflicts ☐	UserStatus4 ☐
WO Link Conflicts ☐	UserStatus5 ☐
Late Display	Anchor Display
Operation Lates ☐	No Anchors ☒
Stage Lates ☒	Use EDate ☐
WO Lates ☐	Use LDate ☐
	Either Anchor ☐
Compress Downtime ☐	M/C / Tool Break-Down ☐
Display Downtime ☒	Wireframe Display ☒
Display Times Under Bar ☒	Display Mouse Helper ☒
Ok	Cancel
Save	Default
Window Layout	Help

Opening a Plan (Switching between Plans)



The Planner allows any number of planning databases to be saved to their own directories, limited only by available disk space. These can then be reloaded to the current directory, or switched between during a session.

You can even set it up so that at the start of a planning session you are prompted for a database to load or to switch to before the session begins (see Startup, Customize Switches, in the Customizing Section).

The name of the plan currently being worked on is always displayed at the left of the Planner window footer bar. For plans that have been switched to, the plan name is also displayed in the top window bar. A description of saving follows, but first a few definitions:

Current

The plan database that is being viewed/edited at any time is called the “Current” plan. When another plans database is “switched” to, this becomes the current plan database.

Main

The default name for the database which resides in the ...Planner\Database\Plan subdirectory. All other plan databases are stored in subdirectories off ...Planner\Database\Plan.

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Name

The (up to) 8 character name of a saved plan, which is also the name given to the sub-directory in which its files are stored. (all plan subdirectory names are also given an extension of .PDB)

Description

A (up to) 40 character field displayed next to a plan's name to enhance its label for easier identification.

Save As

To copy the current database to another named database.

Replace/Load

To copy a saved database into the current directory to view/edit it. Note that this action will overwrite the plan in the current directory, which may not necessarily be the “*Main*” plan if you have switched to an alternative plan.

Open/Switch

To view/edit a saved plan in its own directory, leaving the current plan intact in the current directory. After switching to another directory (plan), this becomes the current plan/directory, and as such, any loading is performed into *this* directory, overwriting the plan in *this* directory.

Time/Date Stamp

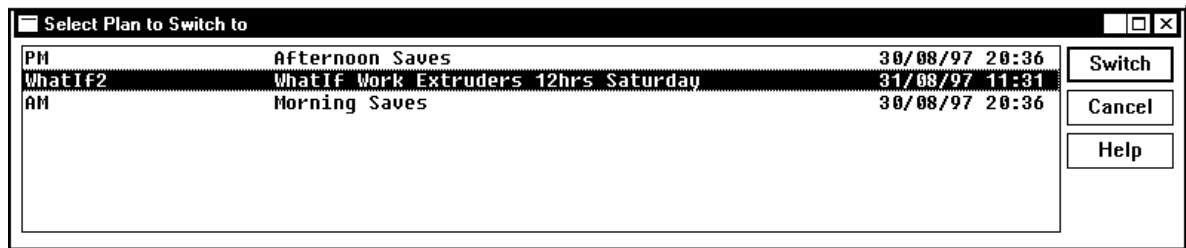
The display of the date and time that the named plan was last saved or the current plan was last updated.

Switching Plans

At any time, the current plan may be left and a saved plan can be viewed/edited by using the “Switch” option. The current plan is left intact in the current directory: **The Planner** simply “looks” at another directory's database. The switched to plan becomes the active (current) one for all planning purposes.

To switch plans, choose the Open (switch) option from the File Menu or press **[Ctrl]+[I]**. A window opens with the names, descriptions, and time/date stamps of all saved plans listed. This scroller will be blank if no plans have yet been saved. As a plan must have been previously saved to be able to switch to it. Refer to ‘Save Plan’ for the procedure.

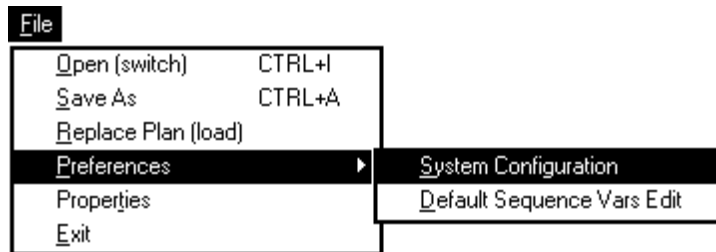
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To switch to one of the previously saved plans, highlight the required name and press **[Select]**. To abort the option of switching plans, press the **[Cancel]** button. (This will not prevent the switching of a plan if switching has been initiated).

Note that because the plan switched to becomes the current plan, any further editing/saving will be carried out in this database/directory. The name of the plan switched to is displayed at the top and bottom of the Planner Window.

System Configuration



This option allows you to make **temporary or permanent** changes to your setup. Some additional options are available only in the Customizer- see Customizing Section.

Choosing this option from Preferences under the File Menu opens a window with all the parameters that are available for change. The options applying to each one are described below.

Saving Changes

After editing any of the Planner system variables in this window, they may be saved in two ways:

1. If you make changes and wish them to only apply to this session, press the **[OK]** button when finished.
2. If you wish the changes to be the defaults that load each time you start **The Planner**, press the **[Save]** button instead.

Pressing the **[Cancel]** button will leave the settings as they were when you first opened this window.

Edit Planner System Variables	
Board Variables:	
Place Selection	1
Date Req Offset	168:00
Now Offset	1:00
Due Date Offset	0:00
Pack Left Iterations	1
Goto Operation	☐
Recalculate Overlap	☒
Alternate Machines	4
Anchors On Moves	☒
Reorder M/C On Moves	☐
Purge Interface File After Import	☒
Include D/T In Queue Times	☒
Export Upper Days	28
Auto Update	☐
Lag Offset	4:00
Auto Update Delay	0:00
Push Left On Moves	☒
Move Option 1	☒
Move Option 2	☒
Push Level	3
Alt M/C Use Cur M/C	☐
Use EDate On Moves	☒
Overlap WIP Ops	☒
Backup Interface Files	☒
Export Lower Days	7
Ok Cancel Save Default Help	

Place Selection

When placing a Work Order/Stage/Operation on the board either from the bin or as part of a move from another position, a choice is made as to how you want to place it (the Place Type). This is described fully in the 'Place Menu and Methodology' section. There will probably be one of these placing methods that you use most of the time. This option allows you to make the most commonly used placement method the **default** one while using **The Planner**.

Numbered from one to three, the placement options can have the highlight bar set on any choice by typing in the number corresponding to its order in the window.

Zero is the first choice (Insert)

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One is the next choice (Slide to first available)
Two is the third choice (Slip to end of Operation).

Type in the number of your choice, and press **[OK]**. This is now a temporary setting, applying to this session only.
If you require this to be your default setting, press the **[Save]** button instead.

Date Required Offset

When setting up a new Work Order, one of the basic questions to be asked is when the Work Order is due for completion or delivery. There is a special field for this purpose at the Work Order level, and another at the Stage level (so that Stages within a Work Order can have independent completion dates).

This function is only used when creating work orders manually in the Bin, or from the Library. It does not affect work orders created in another system and brought into The Planner via Interfaces.

This offset field allows the default date in the due date field to be any time out from "now" (the time and date current at the time of setting up the Work Order). For example, if you want the Date Required to default to one week from today at midday, enter 180:00 hours (7 times 24 plus 12). One month from today at 5:00pm would be 737:00 hours (30 times 24 plus 17).

Type in the required offset in hours and minutes. Use the **[:]** key to enter minutes, the **[.]** key for decimal hours. Times are in intervals of six minutes.

Now Offset

The "Now" Bar is the vertical yellow line that represents the current date and time on the planning board. You can set a zone to the right of this called the "Now Offset" by using this field. Now Offset comes into play when planning moves such as Pushing Left etc, force Work Order cards to be pushed in close proximity to, or even beyond, the Now Bar. No Work Order can be **pushed** to the left of Now (a Work Order card can be moved to the left of Now). When Now Offset has been established, no Work Order can be pushed to the left of the Now Offset, the zone to the right of Now.

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Type in the required offset in hours and minutes. Use the [:] key to enter minutes, the [.] key for decimal hours. Times are in intervals of six minutes.

Push Left On Moves

When set to ON [X], a push left may be performed when planning moves require it: Operations which are in the way of incoming Operations being placed may force the incoming Operation to the left of the existing one when this is possible. *(This option is considered before any other option, except when "Alt Res" options 2 and 4 have precedence).*

When OFF [], this is prevented. The incoming Operation is always pushed to the right of the existing one, regardless of the placement method chosen.

Switch this option ON by left clicking on the ☐ box or pressing the [SpaceBar] while the cursor is in this field. Clicking the box or Pressing the [SpaceBar] again switches it OFF.

Move Option 1

This option comes into effect in only certain circumstances. It only affects three moves:

- Place by Due Date
- Place by Major Operation
- Move by Major Operation

and these only when the following placement options are chosen:

- Slip to the End of Operations
- Slide to First Available Space

When any of these combinations are selected, different results may be achieved for the move by switching ON or OFF the Move Option 1 selection. The effects are described below:

When ON [X], if any existing Operations are in the way of incoming Operations, the incoming Operations slide to the left until they find a gap large enough to accommodate them. If no gaps can be found, they instead slide to the right of the existing Operations.

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When OFF [☐], the incoming Operations are always slid to the right of the existing ones.

Switch this option ON by left clicking on the ☐ box or pressing the [SpaceBar] while the cursor is in this field. Clicking the box or Pressing the [SpaceBar] again switches it OFF.

Move Option 2

Similar to the above, but adding a degree of subtlety to the Move Option 1, this option takes effect only when Move Option 1 is ON, and only to the same range of moves. It causes the selected Operation (the Major Operation in a "Move by Major", or the last Operation in a "Place by Due Date") to be positioned slightly differently when it is placed back on the board.

When ON [X], the selected Operation slides to the left of a Work Order card in its way.

When OFF [☐], the selected Operation slides to the right of a Work Order card in its way.

Push Level

It should be remembered when studying the options for this switch, that when performing a "move" or "place" of Operations on the Board, there are usually more Operations involved than just the one being moved/placed. When this occurs, the "Push Right/Left" function is automatically invoked without user intervention. Because of this, the impact of the level settings of this switch should be fully understood.

There are four levels of functionality for this feature. Set the field to a value between one and four, as described below.

Level 1 When set to level one, all moves involving a push are ***always successful***. Operations may be pushed anywhere, regardless of anchors (except if the "Anchors On Moves" switch above is ON).

Level 2 If any restrictions are met, the push ***always fails***.

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- Level 3** If any restrictions are met, the push is **optimized**. That is, the push occurs as far as it can without violating the anchoring settings of any Operation.
- Level 4** This is the highest level push. It will allow Operations to be **jumped** if they are restricted in any way. In this way, the move is completed as fully as possible.

For a full explanation of this switch and its implications, see Page 274.

Auto Update

The Planner has the ability to automatically keep your planning board current. That is, it can keep pushing Work Orders on the board along to the right with the "Now" Bar until you tell it that you have actually started each Operation. In this way, it is impossible to loose track of any Work Orders which have not started on time for any reason, but which have not yet been moved to a new position on the board to reflect their new projected start time.

Individual Operations of Work Orders that have been started are updated in the WIP Update (Work In Progress Update) window. (See this topic for a full description of the functionality of this option). These are then automatically flagged with an asterisk (*) below the beginning of the appropriate Operation card on the board (*when the "Board Display" option is set to its default of "Normal"*).

When Auto Update is ON **[X]**, any Operations which have not been updated as WIP, and which are to the left of those which have been updated as WIP are automatically "jumped" over those already WIP'd. The WIP Operations are "set" in place and continue processing from that point, and those not yet started are "floating".

Switch this option ON by left clicking on the ☐ box or pressing the **[SpaceBar]** while the cursor is in this field. Clicking the box or Pressing the **[SpaceBar]** again switches it OFF.

See the next entry for another variable that affects this function.

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Lag Offset

This option is active only when "Auto Update" (see above entry) is ON [X]. It sets a period of time to the left of the "Now" Bar as a buffer zone for the automatic updating described in the above entry. A red vertical bar, running parallel to the Now Bar follows it at a distance which is equivalent to the time value in this field.

This lag bar sets the point behind the "Now" Bar at which Operations which are not updated as WIP are shunted forward to remain current. So, for a company which updates its WIP on the planning board once a day, this Lag Offset should be set at around 24 to 30 hours to allow time for updating the board before **The Planner** updates it automatically. For any company which has an on-line system providing feedback into **The Planner**, only a small buffer zone need be set, anywhere from 6 minutes to an hour, depending on the nature and timing of the updates from the on-line system.

Type in the required offset in hours and minutes. Use the [:] key to enter minutes, the [.] key for decimal hours. Times are in intervals of six minutes.

Auto Update Delay

When Auto Update is turned on, auto updating of operations to the lag bar is carried out every 6 minutes. If a longer period between auto updates is required, key the value in minutes here.

Due Date Offset

The Due Date Offset presets a "safe zone" when placing Work Orders on the board with the "Place by Due Date" facility. Where there is no other factor impacting on the placement of Work Orders by this method, a Work Order will be placed so that the completion date/time of its last Operation will be set earlier than its actual Date/Time Required by the time value in this field.

Of course, many factors can affect the placement of Work Orders by their due date, including the proximity of other Work Orders on the board, and the placement method chosen at the time, which may make it impossible to place exactly according to the settings of the Due Date Offset. However, the Offset will be used wherever possible.

Type in the required offset in hours and minutes. Use the **[:]** key to enter minutes, the **[.]** key for decimal hours. Times are in intervals of six minutes.

Pack Left Iterations

The Pack Left feature involves some very complex processing in order to perform this function accurately. The default setting for the number of passes is ONE (the number of times **The Planner** goes through the packing process each time this is used).

When very complex Work Order structures are created, particularly those with multiple instances of Stage Linking (see the section on Work Order Editing), the first pass of the Pack Left function may not produce optimum results. The end result could be improved by having the system perform the Pack Left more than once each time it is selected. By entering a value higher than ONE in this field, the Pack Left facility may be improved in these situations. The downside of setting this value higher than ONE is that it will take more time to process. It should never need to be set higher than THREE.

To increase/decrease the value type in a number directly.

Go To Operation

This function, when ON **[X]**, forces the Pointer to be positioned at the first Operation in a Stage whenever a Stage or Work Order is placed at the Pointer. When OFF **[]**, the Pointer is not forced to function in this way. In fact when certain Place types are chosen, involving the selection of Work Orders for placement from a scroller, the scroller will be left open after the place, ready to place another Work Order when this option is set to OFF.

Switch this option ON by left clicking on the **[]** box or pressing the **[SpaceBar]** while the cursor is in this field. Clicking the box or Pressing the **[SpaceBar]** again switches it OFF.

Recalculate Overlap

Overlap is when the time span between the end of one Operation's **Run time** and the start of the next Operation's **Run time** is such that the next can start processing before the first is completed.

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Whenever the "Move Operation" move is used to move an Operation on the planning Board, overlap can be created automatically by the positioning of the two Operations, and, if this relative position changes, so does the overlap. Such overlap is written into the Work Order record, as if it were typed into the Overlap field, and this value changes with each move of the Operations.

To allow variable overlap, leave this option ON **[X]**. The existing overlap value is not checked, and the new overlap value is written to the Operation's record at the end of the move.

To have the overlap value in the Work Order record remain constant, and therefore prevent the Operations from being moved into a position which violates the allowed overlap, set this option to OFF **[]**.

Switch this option ON by left clicking on the **[]** box or pressing the **[SpaceBar]** while the cursor is in this field. Clicking the box or Pressing the **[SpaceBar]** again switches it OFF.

Alternate Resources

There are four levels of functionality for this feature. Set the field to a value between one and four, as described below.

Level 1	Alternate Machines on the Preference List for this Operation are not used.
Level 2	An attempt is made to place the Operation being moved on the highest (first) Machine on the Preference List with the most free space.
Level 3	An attempt is made to place the Operation being moved by clearing a space on the highest (first) Machine on the Preference List. If this fails, the second Machine on the list is tried, and so on.

Level 4 This level is a mix of levels two and three. It tries placing by level one first, and if this fails, moves automatically up to level three.

Alternate Machines Use Current Machine

This switch tells **The Planner** when it is moving an Operation to *firstly* use the Machine on which the Operation is currently scheduled, *then* if that is too busy, to use the Machines in the Preference List in sequence.

When ON **[X]** the Machine on which the Operation is currently scheduled will continue to be used and other Machines on its Preference List will be ignored.

When OFF **[]** the Preference List comes into action during the move, and the first Machine on the list will be used instead of the current Machine. *The selection of the Machine(s) on the Preference List will also be affected by the setting in the "Push Level" switch.*

Anchors On Moves

This switch activates the use of "Anchoring" during moves and placements of Operations.

When ON **[X]**, any Operations that are anchored will not be permitted to be moved/placed beyond their anchor dates (their earliest start date [EDate] and their latest finish date [LDate]) including any "Float" time within the EDate and LDate range.

When OFF **[]** Operations may be moved beyond their EDate and LDate range, whereupon the usual "late" routines and reports apply.

Reorder Machines on Moves

When ON **[X]**, when a move is in progress it is possible to have the Machine from which a Stage or Operation is being moved to be automatically repositioned at the top of the Machine Planning Board window for ease of viewing.

Alternatively, this option may be left OFF **[]**, in which case the Machines remain in their current positions.

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Use EDate On Moves

This switch has regard to the use of the "EDate" (or earliest start date anchor) of Operations.

When ON **[X]**, the Operation being moved will not be positioned further left than its earliest start date (when its "Use EDate" switch is ON). In other words the Edate/time is always equal to or greater than their start date/time.

When OFF **[]** the Edates are ignored, and Operations are permitted to be positioned earlier than these dates/times.

Overlap WIP Operations

When ON **[X]**, two or more successive operations may be "overlapped" on the same machine. This is to cover situation where WIP is used, but run lengths are not recalculated. If a second operation on a machine started before the first was "planned" to finish, WIP Update would not normally allow this "overlapping". May also be used to WIP an operation split on the floor - so a second work order could be run before first finished - but the first work order has not yet been 'Split' in The Planner.

When OFF **[]**, a second operation on a machine is not allowed to start before the end of a previous operation. (Unless ganged, or the machine is of infinite capacity)

Purge Interface File after Import

When ON **[X]**, **The Planner** will automatically clear the import file import.if after it has read, and imported data from. The file header information will be left untouched. This works for both text and shared channels using import.if.

This switch has **no effect** on job.txt import file.

When OFF **[]**, no changes are made to import.if for text channels. For shared channels, the "read to" marker is moved, but the file contents are left.

Backup Interface Files

When ON [X]: the text import file 'import.if' is copied to 'import.if.date.time' after being cleanly read, before being purged.

Export Lower Days

This affects "distributing the plan" for reporting on, or for use with the Multiuser module. It can be used to restrict the board work order information being sent to any work orders that have an operation being processed after this number of days before now. To change, type in the desired number of days before now.

Export Upper Days

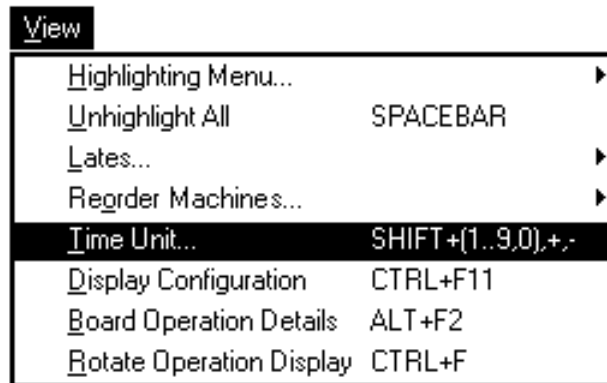
Like "Export Lower Days", this affects "distributing the plan" for reporting on, or for use with the Multiuser module. It can be used to restrict the board work order information being sent to any work orders that have an operation being processed before this number of days after now. To change, type in the desired number of days after now.

Include Downtime in Queue Times

When ON [X]: the time an operation is required to queue at a machine before setup or processing starts includes any machine time not available because of downtime. Used for queue summaries in the plan summaries and queue graphs.

When OFF []: the queue time ignores any periods that are not available on the machine due to downtime.

Timescale Changes



Time unit

Your Video Display's characteristics and how they have been set up in Windows restricts the Resource Planning Board Window viewing size and resolution. To allow a variety of views of the total planning situation, there is an option to change the displayed time scale. There are ten time scales ranging from a very fine viewing through to a very coarse scale that is useful for obtaining a generalised machine loading picture.

The minimum displayed time unit is one tenth of an hour (six minutes). The maximum is 7 days. A time unit is the space traversed by the planning Pointer when moved left or right one space. The "Time" field in the Data Window Card shows the actual clock time that the planning Pointer is pointing to. As the time scale changes so does the total amount of time displayed on the board. The date and time scale shows this across the top of the Board window.

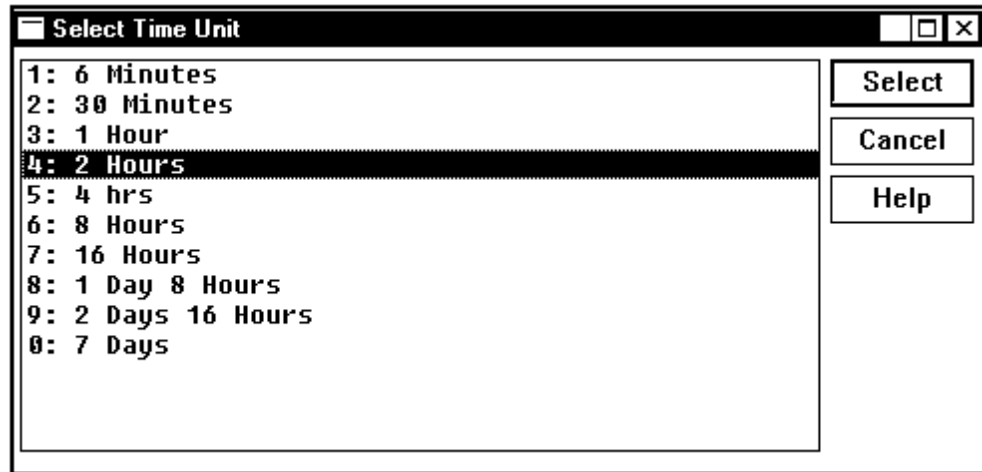
Note that the date displays at the top of the screen as a new day as at midnight on the beginning of the day. As the timescale is changed up and down, the viewing position is maintained relative to the operation the pointer is on. The effective resolution of the screen gets coarser and coarser. Eventually work orders may begin to apparently "disappear" as the definition forces display of multiple Work Order cards into single, large timeslots.

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The scales are:

6 minutes per timeslot

The minimum scale - one tenth of an hour. Good for planning short work orders and viewing in detail. About 10 hours are displayed in the window at any time with 1024x768 resolution.



30 minutes per timeslot

The system default timescale. Over 2 days can be displayed on the screen at one time.

1 hour per timeslot

Almost 5 days can be displayed on the screen at any one time.

2 hour per timeslot

Almost 10 days can be displayed on the screen at any one time.

4 hours per timeslot

About 20 days can be displayed on the screen at any one time.

8 hours per timeslot

About 40 days can be displayed on the screen at any one time.

16 hours per timeslot

Over 11 weeks can be displayed on the screen at any one time.

1 day 8 hours per timeslot

About 5 months can be displayed on the screen at any one time.

2 days 16 hours per timeslot

About 10 months can be displayed on the screen at any one time.

7 days per timeslot

Over 18 months can be displayed on the screen at any one time.

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* Note that the actual display of these timescales will vary on some computers. In 800x600 mode for example, less will be displayed, and similarly 1280x1024 will display more than 1024x768 mode.

As multiple Work Order cards compress into large timeslots, it can be difficult to determine which cards are part of the “stack” of cards in the timeslot. The ‘Board Operation Details’ option from the View menu (or **[Alt]+[F2]**) allows selection of displaying the “stack” height. This shows how many cards exist in a given timeslot by means of a number underneath the cards in that slot. By pointing to the number with the Pointer and pressing **[Shift]+[Alt]+[F6]** repeatedly, each Work Order card in the stack is rotated and displayed in turn in the Data Window Block Card.

Adjusting the Timescale

There are much quicker ways to change the timescale than to go through the View menu each time.

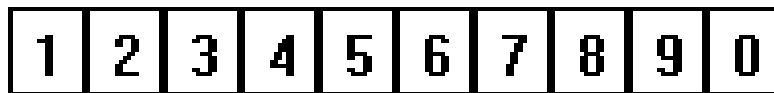
Either Fast keys or buttons may be used to change the timescale of the board at any time.

Timescale Fast Keys

By pressing the **[Shift]+[number]** keys (One [1] through Zero [0]), you can jump instantly into any of the ten timescales, and then to another, without any intermediate keypress.

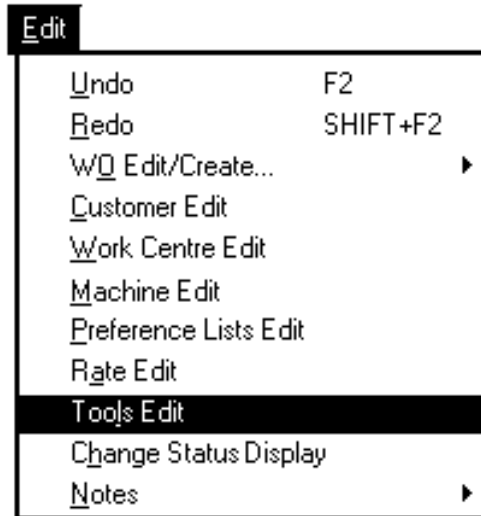
Alternatively, you can press the **[+]** (plus) or **[-]** (minus) keys repeatedly to change the timescale up or down one scale at a time. *(You don't have to press the **[Shift]** key to use the plus and minus keys on the keyboard).*

Timescale Buttons



Press the button number to change the Board Window to that timescale.

Tools



The Planner schedules the use of a Tool or multiple Tools per Operation, and to ensure a Tool is not planned to be used in more than one position in time at once, issues 'tool conflict' messages to highlight potential problems. Provision is made for the situation where more than one Tool of the same type is available.

In order for **The Planner** to take Tools into consideration, the Tools must first be created in the database, then applied to each Operation where the Tool is necessary to perform the Operation. Setting up Tools is explained here, and using them in Work Orders is explained later in this section.

Creating Tools

From the Edit menu select "Tools Edit". This is where Tools are added to the database, edited, and deleted.

A list of all existing Tools is displayed (if any have been created). To create a new Tool, press the **[Insert]** button. An editing window opens in which to add the new Tool name and description. You can have more than one instance of a Tool. Enter the number of Tools of the same kind. When done, press **[OK]** to close the window and save the Tool details. Or press **[Cancel]** to abort your changes. When saved, the newly created Tool now displays in the Select Tools to Edit list.

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Product	Tool Name	Description	Quantity
433620	350 CVL	350mm Cylinder	6

Tool Line Edit

Tool Name

Tool Description

No Of Tools

Editing Tools

To change the details of any Tool, choose it from the Tools scroller (as above) with the highlight bar and press **[Select]** to open its editing window. All the original Tool information is available to be edited.

If another Tool of the same type and specifications is to be added, simply change the value in the "Number of Tools" field. Press **[OK]** to save your changes and close the window. Press **[Cancel]** to abort your changes.

Deleting Tools

Tools may only be deleted if they are not in use in any Work Order. When the Tools scroller is displayed, position the highlight bar over the Tool to be deleted and press the **[Delete]** button or key. The selected Tool will be permanently removed from the scroller and the database. In the event that the Tool is in use on any Operation, you will first be warned of this fact. If you confirm the deletion, the Tool will be deleted from all Operations where it

has been applied, and then the Tool will be permanently deleted from the database.

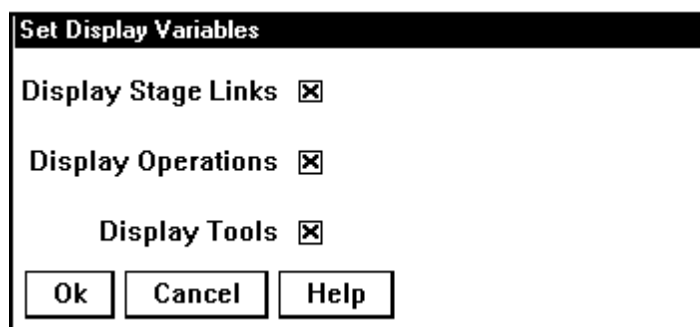
Reordering Tools

The order in which tools are displayed in the tools scroller windows and on the tool board can be changed using the **[Reorder]/[Normal]** buttons in the Select Tool to Edit window. Choose the tool to reposition in the list, press **[Reorder]**

Applying Tools to Operations

When editing a Work Order in either of the Work Order Edit windows (Board or Bin/Library) any of the existing Tools may be applied to any Operation in the Work Order. In addition, if a Tool has not yet been added to the database, it can be created on the fly. There is no need to quit the Work Order edit window to create the Tool.

First ensure that the Display State is set to display Tool lines in the Work Order edit window. To do this, press the **[Menu]** button, and choose Display Config. A window opens to advise the current display options. If the "Display Tools" checkbox is **not** set to ON **[X]**, click on its checkbox.

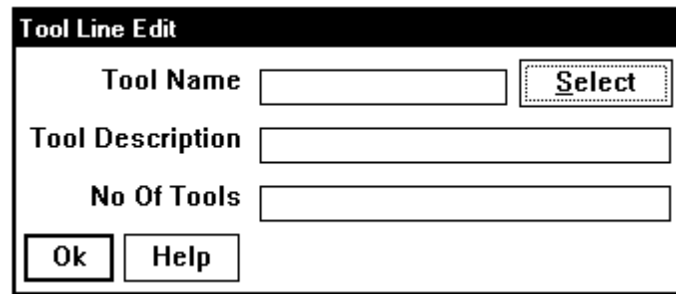


Press **[OK]** to close the Display Variables window and set the Tool display ON. Now Tool lines will be displayed when they are created.

To create a Tool line, position the cursor on the Operation line that is to have the Tool applied to it. Press **[Create Tool]** and a new line will display below

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the current Operation line. With this new tool line highlighted press the **[Edit]** button.



The screenshot shows a dialog box titled "Tool Line Edit". It has three text input fields: "Tool Name", "Tool Description", and "No Of Tools". To the right of the "Tool Name" field is a button labeled "Select". At the bottom of the dialog are two buttons: "Ok" and "Help".

Press **[Select]** to open the Tools list. (The Tools list will be empty if none yet created - discussed later). Choose the required Tool by positioning the highlight bar over it and pressing **[Select]**. The selected Tool details will be copied into the Operation Tools field.

You may select as many Tools as required for each Operation. By simply pressing **[Create Tool]** from the current Tools line, a new Tools line will open for the current Operation. By repeating the steps above any number of Tools may be selected for each Operation in the Work Order.

When the required Tools have been selected and applied to the current Operation, move on to the next Operation.

When the cursor is positioned on a Tools line, you may press **[Create Operation]** to create a new Operation below it (*not in **Board** edit window*).

See Work Order Editing in the main manual for more details on editing keys in the Work Order editing windows.

Removing Tools from an Operation Tools List

Whenever the Tools List for an Operation is open as described above, you may remove the Tool from the Operation record by placing the highlight bar over the Operation Tool to be removed and press the **[Delete]** button or key. This does not delete the Tool record; it merely removes the use of this Tool from this Operation.

Creating Tools on the Fly

If, when opening the Tools List during Work Order editing, it is found that the desired Tool has not yet been added to the database, it may be created "on the fly" to avoid exiting the Work Order edit window to create it.

Press **[Create Tool]** to open a Tool line for an Operation, then **[Edit]** , **[Select]** to edit the tool line and lookup the Tool. Press **[Insert]** to open a new Tools editing window. Enter the details for the new Tool (just the same as when creating a new Tool during "Tools Edit") and press **[OK]** when done. Now that the required Tool has been added to the Tools scroller, it may be selected for the current Operation in the same way as described above.

Note that The Planner considers an Operations' Setup, Run and Clean duration when assessing Tool availability. The tool is considered unavailable for other Operations throughout the entire duration of Setup, Run, and Clean times of the current Operation.

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Tool Board and View Windows

When Tools are used, there is an additional planning board available to display the usage of the Tools with the Operations that require them. It is called the Tool Board. Listings of the use of tools are available in the Tools View window.

To get to the Tool Board display from the Resource Board window, press the Tool Board tab, (or see Display Configuration for how to rearrange the windows)

The Tool Board displays Operations that are using the Tools listed on the left of the Board (where Machines are usually displayed) in their planned position in time. *The Operation cards are referred to as **Operation-Tools, or OpTools**.*

Any Operation-Tools that requires the use of a Tool at the same time as another Operation-Tool are displayed in red/purple. Operation-Tools not in this conflict are displayed in green/blue (colours depend on Status). This colour usage is fixed regardless of the Late Type setting in the Display Variables window.

Buttons and Keys Available on the Tools Board

Most of the Main Planner window buttons are available.

For example Work Orders may be edited directly from the Tool Board, and Work Order/Stage/Operation status display can be changed. However while operations can even be moved around on the tool board, it is not always appropriate to carry out some functions on this board. For example, not all consequences of moves will be evident for a number of reasons, such as

- Not all operations may have a tool assigned to them

- Some operations may have more than one tool assigned to them

The Tool Board is best used to display the use of the available tools over any period of time.

The Machine/Tool Display breakdown helps identify the use of multiple tools in any period, and any operations where there is a tool conflict.

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Moving the pointer around the Tool Board uses the fast keys as used on the regular Planning Board:

Arrow key combinations	All the same except there is no use of [Shift]+[up/down] arrows, as there are no links between the Operation-Tools as there are with regular Operations.
Goto Markers	Both Time/Machine Markers and Operation Markers are available, in both temporary and permanent types.
Data Window Card Rotate	As on the regular Planning Board, there may be multiple Data Window Block cards set up in the Customizer, and these may be switched between (rotated) in the same way.
Display Variables Window	Same except that Late display is fixed to "Tool Conflicts" and cannot be changed.
Highlighting	Operation-Tools may be highlighted in the same way as Operations on the Planning Board. When an Operation-Tool is highlighted, the corresponding Operation is highlighted when a return is made to the Planning Board.
Machine/Tool Display	Supported.
User Status Display	Supported.

The Tools View Window

When the Tool View window is selected, the window changes to one similar to the Resource View window.

The Tools View window has very similar characteristics to the Resource View, with the absence of the ability to follow the chain of Operations (since

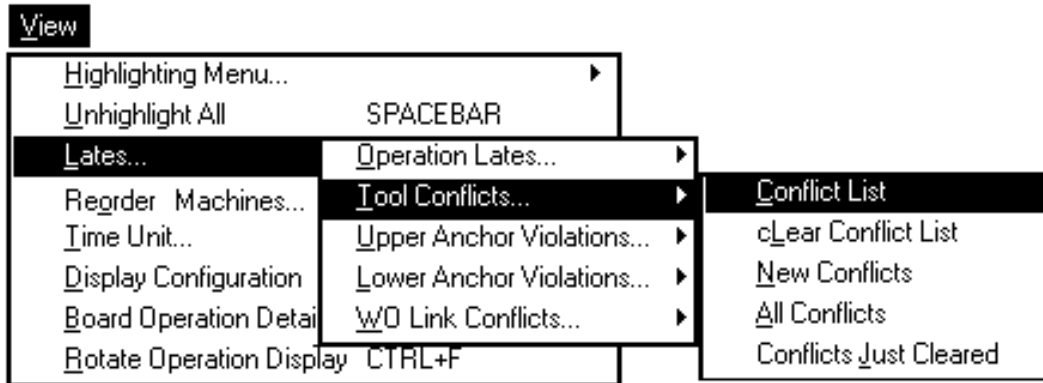
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there is no Operation-Tool link as with Operations in a Work Order), and the ability to move Operation-Tools up and down the list.

The keys available are:

Data Window Card Rotate	As on the regular Planning Board, there may be multiple Data Window Block cards set up in the Customizer, and these may be switched between (rotated) in the same way.
Display Variables Window	Same as Resource Board/Resource View.
Highlighting	Operation-Tools may be highlighted in the same way as Operations on the Planning Board. When an Operation-Tool is highlighted, the corresponding Operation is highlighted when a return is made to the Planning Board.
Machine/Tool Display	Supported.
User Status Display	Supported.
Display Variables Window	Supported.

Tool Conflicts



At any time during planning moves, it may occur that an Operation requiring a specific Tool is moved into a position on the Planning Board that conflicts with another Operation requiring the use of the same Tool. This is known as a Tool Conflict.

Tools are considered to be required by an Operation throughout the operations entire Setup, Run, and Clean times.

A special display mode is used in **The Planner** so that these conflicts may be identified. It is referred to as a Late Type. There are four different Late Types available, only one of which may be active at any time. They are found in the Display Configuration window which is opened from the View menu or by pressing [Ctrl]+[F11].

When the Late Type switch in the Display Variables window is set to "Tool Conflicts", any Operations which require the use of a Tool at the same time as another Operation are displayed in red/purple on the Resource Board or View windows. Operations not in this conflict are displayed in green/blue (colours depend on Status).

The Late Type setting in the Tools Board window is fixed as the Tool Conflicts switch.

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It is possible to view a listing of all current tool conflicts. Since a tool conflict is a Late Type, in the "Lates" Menu there is an option to view any of three conflicts lists, in much the same way as you would view current late Work Orders.

From the View menu select "Lates Menu" and then "Tool Conflicts" from the Select Lates Type menu.

When Tool Conflicts is selected, another window opens offering the three lists. These are in essence the same as the three lates lists, but are explained briefly here:

Conflicts List

Displays all Work Orders involved in a Tool conflict. The list is as current as the last time it was cleared using the next option.

Clear Conflicts List

Clears all Work Orders from the above list. This is done so that a cumulative list may be kept to record the results of a series of planning moves for "what-if" planning purposes.

New Conflicts

Displays all Work Orders involved in a new Tool conflict. The list is as current as the last planning move that caused a conflict, and is cleared each time a new conflict occurs, and when exiting the program.

All Conflicts

The current, full list of Tool conflicts. It is kept up to date constantly and cannot be cleared.

Conflicts Just Cleared

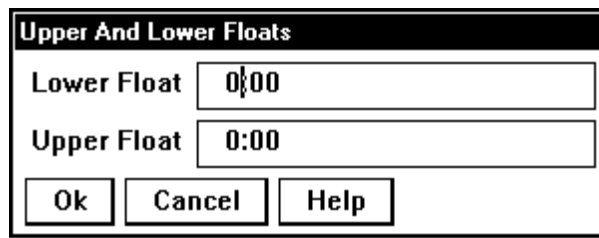
Essentially the opposite of New Conflicts, where, as a result of a planning move any Tool conflict(s) is/are cleared, they are displayed in this list until a new conflict is cleared or the program is exited.

The full Work Order structure of all Work Orders displayed in all these lists is available by positioning the highlight bar on the Work Order to be viewed and pressing **[View]**. Press **[Cancel]** to close the Work Order viewing window.

Upper Float

Float is a range of time within which the Operation(s), although anchored, are permitted to slide. Upper Float relates to the latest time for the completion of the Operation (the LDate), and Lower Float relates to the earliest time for the commencement of the Operation (the EDate).

After selecting an anchoring function, the last window to open prior to the action being performed is the Float Time window shown below.



The dialog box titled "Upper And Lower Floats" contains two input fields. The "Lower Float" field is set to "0:00" and the "Upper Float" field is set to "0:00". At the bottom are three buttons: "Ok", "Cancel", and "Help".

Setting the float time sets the limits for an Operation's movement on the Board when it is anchored.

The following diagram will help to explain:

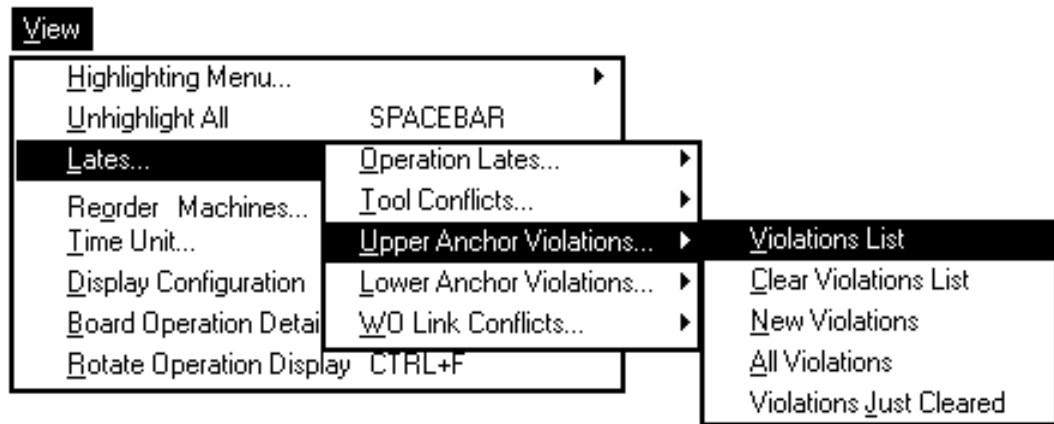


The line represents the range of float that the Operation is permitted to move between. It will be seen in the Work Order edit window that the "Use EDate" and "Use LDate" switches are set ON when anchoring has been applied to an Operation. These switches may also be set within the Work Order edit window. See "Push Levels" for more information.

Upper Float Violations List

Because the Upper Float of an Operation can be exceeded (see “Float” and “Push Levels”), a method of displaying these “float violations” has been devised in the form of Violations Lists.

In essence the violations lists are similar to the Lates Lists, and in fact they are located in the same menu:



There are four lists for violations. Each of these is explained below.

Violations List

This is a cumulative list. It may be cleared at any time with the next option, and then used to build a list of violations that occur as the result of a series of planning moves. When this option is selected, a list of all Work Orders which have Operations that are finishing beyond their Upper Float time is displayed. To view a Work Order on the list in detail, move the highlight bar to the Work Order and press **[View]**. Press **[Cancel]** to close the list.

Clear Violations List

Selecting this option deletes all entries in the above list. This is used at the start of a “what-if” planning session, so that the cumulative effect on Upper Floats of a series of planning moves can be seen.

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New Violations

This list collates only those Upper Float violations that have just occurred as a result of the *last* planning move. Press **[View]** on any selected Work Order to view the details. The contents of this list are lost whenever a new move is made or when the program is exited.

All Violations

This list holds the balance of all current Upper Float violations. Press **[View]** on any selected Work Order to view the details.

Violations Just Cleared

This list works in the opposite manner to the “New Violations” list. Whenever a planning move causes a Work Order containing an Operation which has its upper float violated to move into a position on the Board which cancels the violation of the upper float, that Work Order is listed here. Press **[View]** on any selected Work Order to view the details.

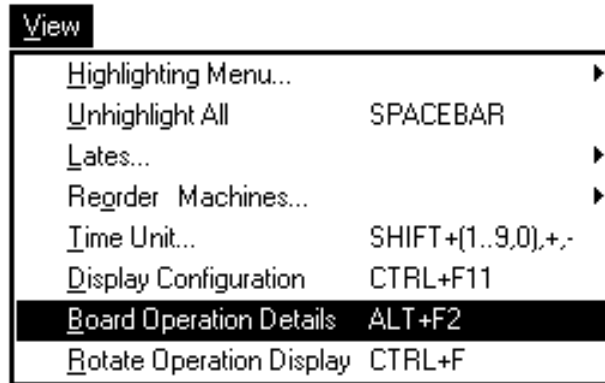
Viewing Upper Float Violations on the Board

It is possible to have those Work Orders containing Operations with upper float violations to be displayed in red/purple instead of green/blue, in the same way as due date lates are displayed.

To do this, the “Late Display” needs to be changed from Due Date lates to Upper Float Lates. Reset the Late Display from the Display Configuration option in the View menu, or by pressing **[Ctrl]+[F11]**. This opens the Display Variables window. Turn on the Upper Float Lates checkbox then press **[OK]** to close the window. Now instead of Late Work Orders being displayed in red/purple, the Work Orders that have Upper Float Violations will be.

See “Late Display”.

View menu



The Planner offers many features for imparting the information that it helps develop and contains. Using the various options from the view menu allows the required information to be emphasised.

Most of the View Menu options have separate entries in this manual under the heading name.

Apart from looking at the visual planning board, the "Reporting menu" is another option where this information is best obtained.

Highlight Menu

A variety of options to make one or a group of work orders stand out from other work orders on the board, both visually and functionally.

Late Work Orders

Three lists of late work are kept to assist in minimising choices that result in late work. These are viewed with various options from the Lates menu.

Reorder Machines

The sequence in which Machines are displayed on the planning board may be changed at any time and by various criteria through this sub-menu.

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Time Unit

Change the timescale of the planning board display with this option.

Display Configuration

This option allows you to make quick, temporary or permanent changes to the way *The Planner* displays operations.

Board Operation Details

This option allows changes to be made in the information displayed under the operation bars.

Rotate Operation Display

At times, data in the data card may not appear for an operation at the pointer.

This can happen in the Resource Board window, either when using a large timescale, or when a resource belongs to an infinite work centre, and a number of operations are scheduled concurrently.

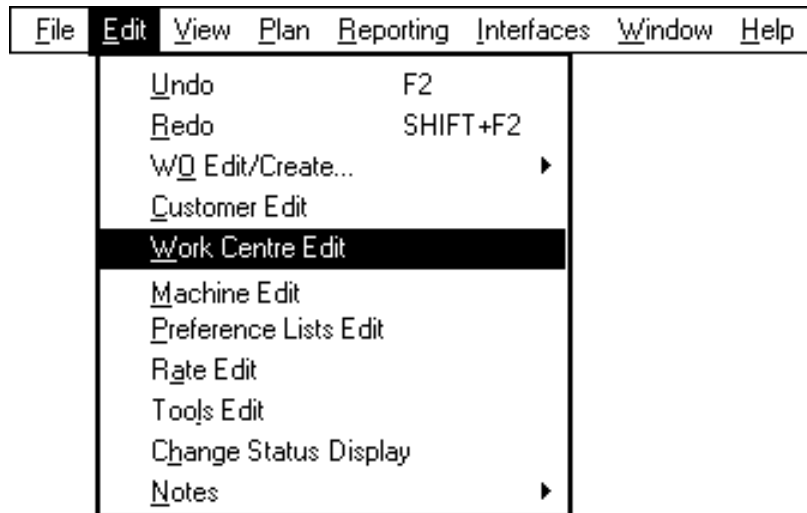
Using this option, or pressing **[Ctrl]+[F]** repeatedly will rotate the data in the data window for all operations appearing at the same time/place where the pointer is. Another useful tool for displaying 'stacked' operations on infinite resources is the **[Machine/Tool breakdown]** button, see page 145

Violations

Violations refer to the movement of Operations beyond the allowable range of the anchoring that has been applied to them.

See “Upper Float Violations” and “Lower Float Violations”.

Work Center Creating & Editing



Work Centers are groups of Machines that have the same or similar characteristics. Typically they are similar such that an Operation may be processed on either of the Machines in the Work Center. As such, when moving an Operation from one Machine to another that belongs to a different Work Center, a warning message is first given before the move is allowed.

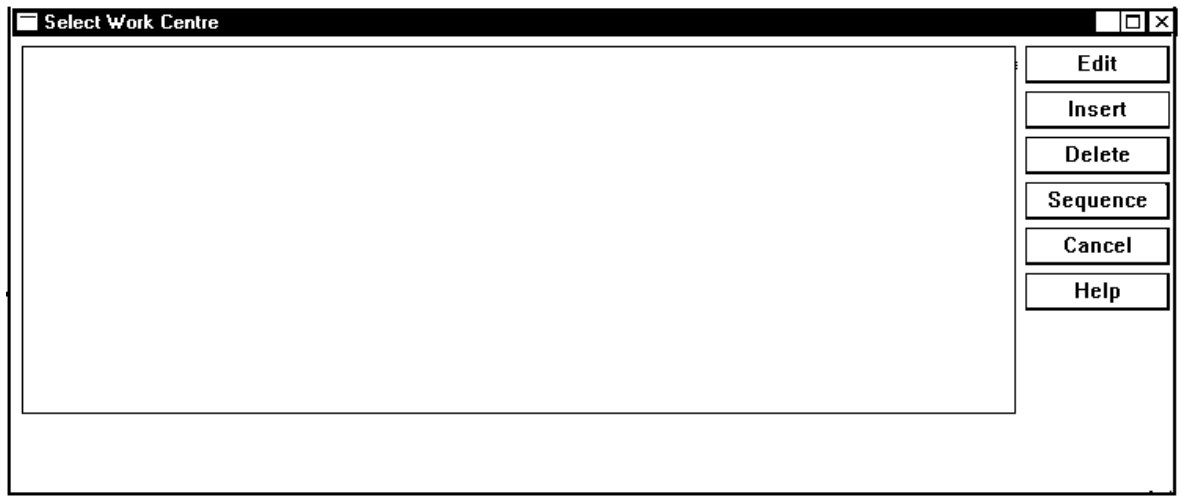
Work Centers MUST be set up before Machines, so that, as Machines are created they are assigned to a Work Center.

When integrated to MFG/PRO work centers, and their machines, are automatically created by the interfacing program.

Every Work Center name from MFG/PRO is assigned a work center number in Planner. The name shown on the Resource board in Planner is a combination of the MFG/PRO work center and machine names, with a space between.

If multiple entries exist in MFG/PRO for the same work centre name, then the MFG/PRO machines will be assigned the same work center in Planner.

Adding a New Work Center



To create a new Work Center select 'Work Center Edit' to open the Work Center scroller window. This list will be blank if you have yet to create a first Work Center.

Click the **[Insert]** button. The Create Work Center window will open. Type in a 3 character Work Center name, along with a description.

A screenshot of a software window titled "Create Work Centre". It contains two text input fields: "Work Centre" with the text "WC1" and "WC Description" with the text "Work Centre 1". Below these fields is a checkbox labeled "Infinite" which is currently unchecked. At the bottom of the window are three buttons: "Ok", "Cancel", and "Help".

Press the **[OK]**. button to confirm.

Infinite Work Centers

The Planner is capable of supporting both finite and infinite capacity. A Machine is defined as finite or infinite at the time when it is set up, by assigning it to a Work Center that is infinite. To set the Work Center as infinite, click on the Infinite checkbox.

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Note that Work Center capacity cannot be changed once defined.

Infinite Machines have different characteristics to finite Machines. They can still have Downtime scheduled to them, but any number of Work Orders/Stages/Operations may be planned on an infinite Machine during the same timeslot.

Functions like Outwork are best suited to be scheduled on infinite Machines. In this situation, we are not concerned about the details of exactly when our Work Order is to be processed or whether it conflicts with other Work Orders. Usually all we need to know is that one of the Work Order's Operations is at an outworker for a period of time and is due back to us at a certain date/time. Internal departments where there are too many small Operations being handled at once to plan just who is going to do what, and when can also be planned on infinite Machines. Most planning personnel see little benefit gained from making a 'Bottleneck Machine' (machines constraining processing) infinite, generally it is counterproductive..

Deleting a Work Center

Work Centers may be removed from the database by pressing the **[Delete]** button or key when the Work Center to be removed is highlighted in the Work Center scroller. If any Machines are attached to the Work Center being removed, it cannot be deleted.

Editing an Existing Work Center

Existing Work Centers may be edited by choosing them from the Work Center scroller, and pressing **[Edit]**. All the fields except the "Infinite" field may be edited by over typing. Once a Work Center is set up as finite or infinite, it cannot be changed.

Press the **[OK]** button to save the edited work center details.

Sequencing

The **[Sequence]** button allows the setting up of the variables to be used with the 'Sequencing' move method. This allows the sequencing criteria to vary for different Work Centers. See the separate entry for 'Sequencing'.

Work In Progress Updating

New Work Orders are planned on the planning board to be processed at a future point in time. When (or before) that time arrives, and work commences on any Operation in a Work Order, the Work Order becomes Work In Progress (WIP, also known as Work In Process). As WIP is processed, the Operation cards on the planning board may be updated to reflect the actual (rather than the planned) situation.

Updating involves the input of data on one or more of several possibilities:

- Moving the Operation card to its actual start date and time
- Adjusting the time taken for Machine Setup prior to production commencing
- Entering the quantity completed to date
- Adjusting the expected time to completion based on actual output to date
- Adjusting the time for Machine cleanup after the Operation completion
- Changing the Status display of the operation

The information required to update the planning board may be returned to **The Planner** by various means. These methods may include the completion of daily time sheets, a personal check on a Work Order's progress, file transfer from another system, or electronic, on-line systems. In each case, as the information gathered about each Operation's progress is fed back to the planning board, Work Orders are moved to their real start times, Operation quantities completed to date are entered, output rates of Machines may be adjusted, Operation completion times entered.

When Interfaced to MFG/PRO

Depending upon the settings chosen for the MFG/PRO export program, updated operations/routes and Work Orders from MFG/PRO can be passed automatically to The Planner. However as no operation start date/time is available in MFG/PRO, the work progress information brought to Planner

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can only tell us how much is completed and how much is left to run, as at the time the data was collected, eg end of shift. A method of automating keeping the plan up to date is outlined in 'Update Lag Bar Now' on page 131.

Please also see the Interfaces section, on using the utility to set up MFG/PRO exports.

How to Enter WIP Information

There are two methods of updating the planning board to reflect the actual situation: by moving Operations physically on the board, and by using the WIP Update window. Moving Operations physically (graphically) directly on the machine planning board is explained in the section on "Moving Work Orders", and editing (and recalculating) their output rates is explained in the "Work Order Edit" section. This section explains the WIP Update window.

Selecting the Operation to Update

The WIP Update window is accessed using the WIP Option from the Resource Board or View windows.

To update an Operation, first place the pointer at it on the Board, or highlight it in the view Window.

Then select 'Update', from the WIP option of the Plan menu, (or press **[Ctrl]+[W]**) to open the WIP Update window with the selected Operation's details. Not all fields in the Operation are available for updating; only those relative to the update procedure.

Pressing **[Ctrl]+[Shift]+[W]** (Quick WIP Update) instead simply marks the operation as being in process, but does not allow moving or editing of the operation.

Updating

The WIP Update window is shown below, and each field is explained.

Operation Updated

This is not an editing field, It is a display field which states whether the Operation is currently in WIP, i.e. whether it has been updated before. If so, an **[X]** will display.

Update Complete

Another display only field, this one describes whether the Operation is considered complete or not. The definition of complete is not based on quantity completed, because this would not take account of the occasional need for overruns. Completeness is based on the finish time of the Operation: if the time entered in the "To Date" field is equal to or greater than the End Time of the Operation, the Operation is considered to be complete. In this case, an **[X]** displays in this field.

Machine

It is possible that the planned Machine was not actually the Machine used to process the Operation. This field allows the changing of the Machine to the *actual* Machine used.

There is a lookup on this field. Press **[Select]** to display a scroller of all suitable Machines and **[Select]** the required actual Machine.

Update Operation In WIP			
Operation Updated	☐		
Update Complete	☐		
Machine	RESOURCE A	Select	
Start	12/10/97	20:54	
QtyToDate			
Shift Qty	0		
To Date	12/10/97	20:54	Cal
Opn Qty	10000		
Rate	769.2308	Select	Cal Run
Setup	1:00		
Run Dur'n	13:00		
Status Display	CLEAR v		
Ok Cancel Calculate Times Calculate Clean Help			

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Start

Here is where the *actual* start date and time are entered, replacing the planned start date/time which displays in the fields initially. Enter the date and time. Type in decimal hours, or type in hours [;:] minutes.

Quantity To Date

Enter the **total** quantity completed to date in this field (must be added to any previously entered quantity manually). *If the Operation is running over a period of days or shifts and this data is fed in periodically, it is better to use the next field, which does the addition automatically.*

Shift Quantity

If the Operation is running over a period of days or shifts and this data is fed in periodically, enter the period quantity in this field. It will automatically be added to the previous balance in the “Qty To Date” field above it.

To Date

This field may be used in several different ways:

- a) It may be ignored completely, in which case it will default to the same date/time as the “Start” field.
- b) The date/time that the information was valid may be entered. That is, the time that the Operation or the shift finished. This is the recommended option, particularly if a recalculation of the total Operation time is to be performed.
- c) If (b) is entered, a recalculation may be performed on the Run time and/or the Clean time. A recalculation may be performed for one of two reasons.
 - 1. If the Operation is complete, the *actual* time taken to complete it may be calculated, which will automatically adjust the length of the Operation card on the Board and allow the next Operation to start immediately after it. Press **[Calculate Times]** after entering the Start, QuantityToDate and the To Date.

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2. Part way through the Operation (especially a long one) it may be desirable to project its completion time. By establishing its *actual start time*, its *quantity to date*, and its valid “*To Date*” and then recalculating based on these factors, the Operation’s length will be adjusted to forecast its completion at the current rate of output. Press **[Calculate Times]** after entering the Start, QuantityToDate and the To Date.

This option is not always desirable, however, as initial production may not be up to average speed and therefore a recalculation would yield misleading results in terms of predicted total run time. **The Planner** allows the recalculation as an optional feature.

If, as a result of recalculation, an Operation card is lengthened on the Board, any other Operations to the right of the updated one will be pushed further to the right to make room for its extra length. This will automatically and completely reshuffle the entire planning board to allow for the extra time required to complete the partially completed Operation.

If a zero QuantityToDate value is entered, with a To Date greater than the Start, and the **[Calculate Times]** button is then pressed, The Planner assumes this is the setup duration and alters the setup value accordingly.

- d) If the Operation completion date and time only is known, pressing the **[Cal]** button for To Date will calculate the Operation Start date and time based upon the Completion Date and Time entered in To Date. The values for Setup, Run and Clean, and any Downtime in the period concerned will be used in the calculation of Start.

This option is mainly used to move operations into WIP when no earlier operation details are available, such as when operations are just reported as being complete in other manufacturing systems.

Final Quantity

This is an information only field that displays the order quantity for the Operation (comes from the Work Order data).

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Number Up

If used, this is an information only field that displays the number of units being produced simultaneously by this Operation (comes from the Work Order data).

Rate

This field displays the production rate (in operation units per hour) for the Operation. If a recalculation (see above) is not performed, it remains the same as it was set to in the Work Order data. If a recalculation is performed, the rate may change based on the quantity completed and the time taken to complete the quantity.

Setup

This is the original Setup time as passed from the Work Order data. It may be edited to reflect the *actual* setup time, and will alter the Operation card's length on the Board accordingly.

Recalculation of Setup time is possible: if the Quantity To Date and Shift Quantity fields are zero or empty, AND a valid To Date time is entered, pressing **[Calculate Times]** will recalculate the Setup time. *Note that recalculation will only extend the Setup time, not reduce it.*

Run Duration

This is the original Run duration as passed from the Work Order data. It may be edited to the *actual* Run duration to alter the Operation card's length on the Board accordingly, OR it may be automatically recalculated as explained above, based on the quantity completed to date and the start/end times entered. Press **[Calculate Times]** to recalculate it.

Clean

(Turned off in MFG/PRO) This is the original Clean time as passed from the Work Order data. It may be edited to the *actual* Clean time to alter the Operation card's length on the Board accordingly, OR it may be automatically recalculated as follows.

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If the time between the *Start* date/time and the *To Date* date/time is greater than the sum of the Setup, Run and Clean hours, pressing **[Recalculate Clean]** will add the balance to the Clean hours. In this way, having established that the *start* time, the *end* time, and the Setup and Run hours are correct, the Operation's length on the Board may be automatically adjusted by adding the difference to the Clean hours field.

Status Display

Use the drop down box to select any of the three standard status displays to apply to the selected operation.

Saving WIP Data

To save the changes made in the WIP Update window press **[OK]**. The window will close and the system will attempt to reposition the Operation based on the information entered. If the update fails (see WIP Update Rules below), all changes made in the WIP window will **not** be saved.

To abort changes and close the window without saving, press **[Cancel]** at any time.

You may update an Operation in progress as many times as desired, as information on its progress comes to hand.

The Display of WIP on the Board

Each Operation that has been updated as WIP is flagged in the system, and a flag is also displayed on the board. This is seen as an asterisk (*) immediately below the start of the updated Operation card. Operations flagged in this manner will not be moved by the "Auto Update" function (see elsewhere in this section). The asterisk will be overwritten if any of the "Board Display" options are switched on, but will display once more when this is switched off.

Removing an Operation from WIP

At any time after an Operation has been updated as WIP and set at its start position on the Board, it may be removed from WIP. Removing an Operation

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from WIP will remove the asterisk beneath the Operation card on the Board, and allow the Operation to be moved by the “Auto Update” feature.

To remove an Operation from WIP, place the pointer at the operation on the Board, or highlight it in the View window and press **[Ctrl]+[U]**. This has the opposite effect to pressing **[Ctrl]+[W]** which opens the WIP window to place the Operation *into* WIP.

WIP Updating Rules

The following rules are applied when using the WIP Update feature. An understanding of these rules will assist when an update fails for any reason.

- ◆ An Operation cannot be updated into WIP if any ***previous*** Operation in the Work Order/Stage has not been updated into WIP.
- ◆ An Operation’s WIP start time must be before NOW (current time)
- ◆ An Operation’s start time must not be greater than its end time (To Date time)
- ◆ If a *subsequent* Operation has been updated into WIP, the *current* Operation’s end time cannot exceed the subsequent Operation’s start time
- ◆ If the Operation is in a “Group”, the Operation is automatically removed from the Group
- ◆ There must not be any Operations in WIP positioned on the Board in the area where the new Operation is to be placed in WIP (there can be no overlap) **unless [Overlap WIP Ops]** is turned on in ‘System Configuration’. Non-WIP Operations will be moved automatically.

Ganged operations

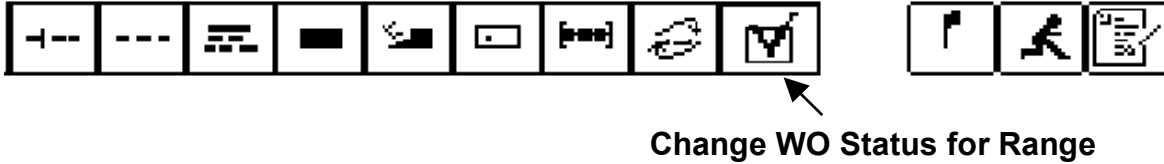
- ◆ For an operation in a gang, if it is the first Operation in the Gang to be updated into WIP, then it must be one of the Operations at the “zero Offset” position in the Gang. Gang Offsets for subsequent Operations in the Gang are reset to the new start time entered in the WIP update window.

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- ◆ For an operation in a gang, if it is not the first Operation in the Gang to be updated into WIP, then it must be the next Operation in Offset order within the Gang. The Offsets are then recalculated by the new Start time entered plus the already updated Operations.
- ◆ For an operation in a gang, there must not be any Operations in WIP positioned on the Board in the area where the new Operation is to be placed in WIP (there can be no overlap). In a Gang, this includes the whole Gang, even if only a single Operation is being updated into WIP. Non-WIP Operations will be moved automatically.
- ◆ When one Operation in a Gang is updated into WIP, it effectively anchors the entire Gang. The entire Gang is moved into WIP. Gangs can still be edited, but not unGanged.
- ◆ Gang Offsets are recalculated by the new (actual) start times entered during WIP.

See “Automatic Update” for a topic related to WIP Updating.

Work Order Status Changing



This Work Order Status should not be confused with the Status Display of operations.

Work Order status values originate from MFG/PRO, but from v3.3 of Planner, Work Order Status Updates were introduced, so that WO Status changes can be optionally driven from Planner.

This functionality has been added to the scheduler, making it possible to select an area of the Board, (using Drag & Drop or 3 step method) and change the Status of any Work Orders with operations in that area.

“Drag & Drop”

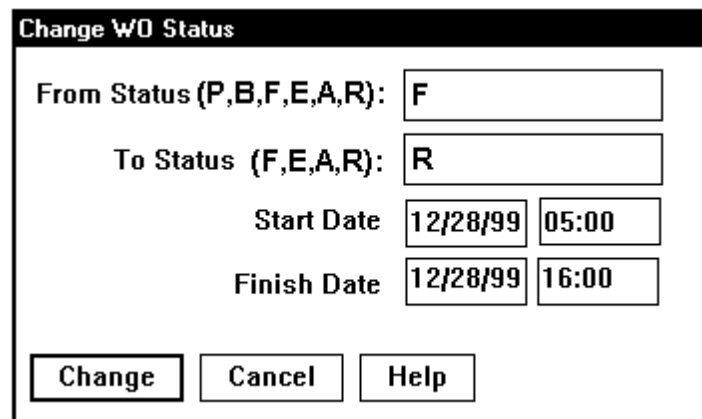
5. Press the **[Change WO Status for Range]** button,
6. Left click at (say) the left-most or earliest point in the range to have Work Order Status changed,
7. While holding down the left mouse button, drag the mouse pointer to the right-most or latest point in the range,
8. Select the machine (or machines) the Work Orders must have an operation on for the WO Status to be changed.

The change WO Status window will open, showing the date range selected, and allowing entry of the 'From Status' and the required 'To Status' values

Note that normal MFG/PRO WO Status change criteria apply, such as no changing of status to P.

All completions of Work Orders remain being carried out from MFG/PRO

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The image shows a 'Change WO Status' dialog box. It has a title bar with the text 'Change WO Status'. Inside the dialog, there are four input fields: 'From Status (P,B,F,E,A,R):' with the value 'F', 'To Status (F,E,A,R):' with the value 'R', 'Start Date' with the date '12/28/99' and time '05:00', and 'Finish Date' with the date '12/28/99' and time '16:00'. At the bottom of the dialog are three buttons: 'Change', 'Cancel', and 'Help'.

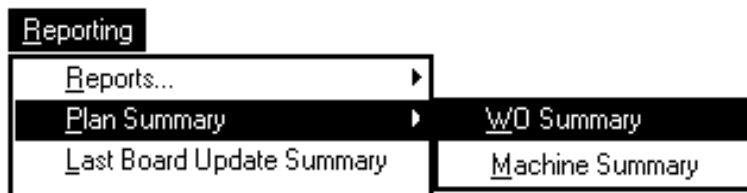
The status of the work order will not be changed in MFG/PRO until the next 'Distribute current plan', 'Import to Multiuser' and 'Update MFG/PRO' processes have all been run

When instigating the explosion/allocation/release of a planned/batch/firm order from Planner, note that no updates are made to routings at this time. This allows the next MFG/PRO Export run to compare the newly exploded routings in MFG/PRO with the routings that were originally sent to Planner for the work order, and provide "Critical Operation Change Txns" for any that differ.

These changes may be reviewed upon import to Planner Scheduler, and applied, edited or discarded, as required by the scheduling person.

The next update to MFG/PRO may update routings, if the conditions outlined in the Multiuser Section of this manual, " Update MFG/PRO' are met.

Work Order Summary



The Work Order Summary option displays summary *current* performance indicators for the entire plan. A brief description of the data displayed in this window follows.

The number of Work Orders, and a breakdown of these is provided, displaying the number of Stages and Operations, average numbers of each, and number and percentages of each which are late. The number and percentage of Operations flagged with each of the Standard and User statuses is also given, and the number currently highlighted.

At the bottom of the window is a display that shows by how much Stages and Operations are late. The default lists the number of lates on a daily basis for five days (with a sixth column listing those that are more than five days late). This is shown for both Stages and Operations. The number of days in each period may be changed to reflect a different picture of the situation. The cursor waits in the "Late Period" field for this purpose. Type in the days required for each period (any periods up to 999 days each may be viewed). The window will redisplay the time periods with the Operations redistributed into the new periods.

At the bottom right of the window are the "Lates Type" checkboxes. See Late Type for information on this. One Late type can be switched on at a time, and the Late Operations display to the left changes to reflect the Lates Type currently switched ON.

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WO Summary									
No WOs	220		Aver No Stages/WO	1.0					
No Stages	220		Aver No Oper/Stage	1.89					
No Operations	416		Avg No OpTools/Oper						
No Optools	0								
No Bin Jobs	5								
No WOs Highlighted	No	%							
	0	0							
No Stages Highlighted	0	0							
No Ops Highlighted	0	0							
Clear	325	78							
Hold	69	16							
Complete	22	5							
No Jobs Late	27	12							
No Stages Late	27	12							
No Operations Late	40	9							
			UserStatus1	No	%				
				10	2				
			UserStatus2	0	0				
			UserStatus3	7	1				
			UserStatus4	1	0				
			UserStatus5	6	1				
			Late Period (Days)	1					
			Due Date Lates	◆					
			Upper Float Lates	◆					
			Lower Float Lates	◆					
			Tool Conflicts	◆					
			WO Link Conflicts	◆					
Late Items:									
Period	1	2	3	4	5	+			
No Late	7	2	2	3	2	11			
Late Operations:									
Period	1	2	3	4	5	+			
No Late	8	2	5	6	2	17			
Ok		Queue Times		Print		Help			

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Printing the Work Order Summary Information

To quickly print the summary information, press **[Print]** while the window is open, select a suitable font and printer.

Work Order Queues

WO Queue Times

Queue Period (Hours)

WO Queues

Stage Queues

Operation Queues

Total Queue Times

Period

No Queued

Avg Queue Time

Period

No Queued

The number of work orders queuing for any period of time can be displayed with the **[Queue Times]** option from the work order summary window.

For all calculations, the queue time for an operation at a resource, is the time between the previous operation being processed and the operation at the current resource being setup or run. Any overlap allowed between operations, and not used, is considered queue time.

If a transit period (a move and or wait) is required, then this is not considered part of the queue time.

First operations and single operation work orders are considered to have no queue time.

Periods of downtime may be included or excluded from the queue time calculations. This can be altered via the View menu, using the System Configuration option.

Options:

Alter the hours of queue period scale by keying in a new value.

The Queue time for a work order is the sum of queue times for each of its operations.

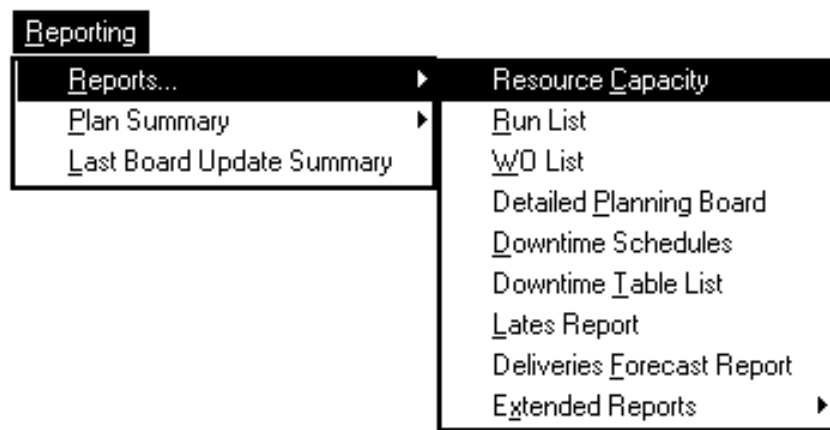
The Average Queue time shown is the operation average, not the work order average.

The first operations in all work orders are considered to not have any queue time.

Section 6 - Reports

REPORTS

The Planner comes with some standard reports. These are described in detail separately in this section. Report writers such as Crystal Reports can also be used to create custom reports on schedule information from **The Planner**. Please refer to the 'Report Writer' heading in this section for details.



The standard reports are available from the Reporting menu.

Window Printing from Planner

Pressing the [Shift]+[Ctrl]+[P] key combination prints the active Planview window. A print dialogue box first displays, allowing selection of printer, paper orientation etc.

This allows any selection of Planner data displayed on the screen to be output to paper if required.

Dates

Most reports require a date range to be entered. This is the same for all such reports and is therefore explained at this point.

Section 6 - Reports

Start Date	01/09/99
Finish Date	01/09/99

Both the start and Finish dates generally default to the current system date, the start being 00:00hrs, finish 24:00hrs. Key in the required dates directly in the same format as that displayed, but do not enter any dividers. If the day or month is less than 9, key in 09.

Output

All reports can be output to your window's printer or the screen. If selecting printer be sure to choose a font and size that will suit your paper size and orientation. Most reports are 132 characters wide, so require a small font size and/or landscape orientation.

Printer ◆		Screen ◆	
Ok	Cancel	Font	Help

Press the **[OK]** button to action the report generation.

Report Samples

Each report is explained in this documentation under its own menu description. A sample printout of each report type using demonstration data is included.

Deliveries Forecast Report

Select Forecast Report Parameters

All

Rep +

Customer

WO

Highlight

JWR

RG

TUP

WWP

rep

Start Date 14/08/99

Finish Date 30/08/99

Printer + Screen

Ok Cancel Font Help

Delivery Forecasts provide details about Jobs that are due for completion on the selected day(s) of the report. These are useful for informing shipping personnel, Reps, Management, and Customers.

Selecting the Range and Subset to Report on

Choosing the Range

You may elect to print the Deliveries Forecast for a just certain selection of jobs. For instance, listing the jobs in completion order for just one or more Reps, or just a few Customers.

Select the desired range by clicking on its radio button. (Only one button can be turned on at a time.)

Section 6 - Reports

After you have made your subset selection, the scroller window displays all the possible selections for your chosen Job Subset opens.

Choosing the Subset

You may now choose the required Rep (or Reps, or Customer(s), or Job(s) when their radio button is pressed) from the chosen subset using your mouse.

Selecting the Output

The report may be output to the screen or to your printer. Press the required radio button.

Before printing, press the **[Font]** button, and choose a suitable non-proportional font from your windows selection (e.g. Courier), and choose a size to fit the report on the paper size being used.

Finally, press **[OK]** to print or view the report.

Section 6 - Reports

03/09/97 15:54		Quality Systems Limited The Planner				page 1	
Deliveries Forecast Report		Range: 20/10/97-26/10/97					
Job Number	Cust Name	Job Desc	Qty	Date	Reqd	Fin Date	Days Late
10016	SPARKS ELECTRICAL	200KG COPPER WIRE CARTON	50000	30/10/97	20/10/97		0
10020	THE CHEESE FACTORY	1KG CHEESE BOXES	10000	30/10/97	21/10/97		0
10014	SPARKS ELECTRICAL	100KG WIRE DISPENSING CARTON	10000	30/10/97	21/10/97		0
10012	BIG CHEESE DELI	1KG RASPBERRY BOXES	5000	30/10/97	22/10/97		0
10004	BIG CHEESE DELI	1KG CHOCOLATE BOXES	10000	30/10/97	22/10/97		0
10026	SPARKS ELECTRICAL	500KG 3-PHASE WIRE CARTON	10000	30/10/97	24/10/97		0
10024	BIG CHEESE DELI	1KG CHEESE BOXES	2000	30/10/97	24/10/97		0
10010	THE CHEESE FACTORY	1KG CAMEMBERT BOXES	25000	30/10/97	25/10/97		0

Detailed Planning Board Report

Select Detailed Board Report Parameters

All ➤

Work Centre <

Group <

Resource <

Time Scale

2:00

4:00

8:00

16:00

24:00

32:00

64:00

Infinite Lines ☐

Start Date 01/09/97

Finish Date 01/09/97

Printer ➤ Screen <

Ok Cancel Font Help

The Detailed Board Report lists all Operations for each Resource in turn, and on the right of the page, a symbolic timescale which displays (using different symbols) the Setup, Run, and Clean time duration on a simple calendar. The calendar timescale is selectable in the "Timescale" field.

If you want to run the report for all Resources and at the lowest timescale, simply press **[OK]** to accept the default choice.

Section 6 - Reports

Selecting the Resource Type

You may elect to print the report for certain Work Centres, Groups or Resources only. To do this, press the required choice of radio button. The mark in the **All** button will disappear and will instead display in the selected button. After you have made your selection of the type of Resource choice, the scroller lists all the possible selections for your chosen "Resource Subset".

You may now choose the required selection from the scroller. Drag the mouse pointer to highlight the selection, or use the **[Ctrl]** or **[Shift]** key in conjunction with the mouse to make the selection.

Choosing the Timescale

You may now choose the required Timescale from a list of the options by highlighting the desired option.

Note that lower timescales may consume much paper to print a report consisting of many Resources and a wide date range.

The Report Width

This report has the potential to be very long! The width of the report is limited to the width of the paper being used, unless special software is used to print the report sideways on computer paper. For this method, set the "Infinite Lines" switch ON **[X]** and print the report to a file that may later be imported by the other print program.

When set ON, this switch does not enter a carriage return at the end of the specified width for the report, but allows each line to print its full width.

Finally, press **[OK]** to accept the selections and prepare the report.

03/09/97 16:36 Quality Systems Limited The Planner (forpics) page 1
Detailed Planning Board Range: 20/10/97-24/10/97

Job Number	Item No	Job Desc	Qty	Rate	M+R+C	Date	20/10/97	21/10/97	22/10/97	23/10/97	24/10/97
		Hour					00	00	00	00	00
RESOURCE A											
10002	001	2KG CHEESE BOX	10000	769.2308		14:00					
10008	001	50KG WIRE DISP	12500	961.5385		14:00					
10000	01	1KG CHEESE BOX	10000	5000.000		3:42					
10018	001	50KG COPPE WIR	10000	769.2308		14:00					
10000	02	1KG CHEESE BOX	10000	1000.000		17:00					
10000	03	1KG CHEESE BOX	10000	2000.000		11:00					
10000	04	1KG CHEESE BOX	10000	847.4576		17:48					
Job Number Item No Job Desc Qty Rate M+R+C Date 20/10/97 21/10/97 22/10/97 23/10/97 24/10/97											
Hour 00 00 00 00 00 00 00 00 00 00 00 00											
RESOURCE B											
10026	001	50KG 3-PHASE	10000	1041.666		15:36					
10002	001	2KG CHEESE BOX	10000	1041.666		15:36					
10008	001	50KG WIRE DISP	12500	961.5385		14:00					
10000	01	1KG CHEESE BOX	10000	666.6667		21:00					
10018	001	50KG COPPE WIR	10000	769.2308		14:00					
10000	02	1KG CHEESE BOX	10000	666.6667		20:30					
Job Number Item No Job Desc Qty Rate M+R+C Date 20/10/97 21/10/97 22/10/97 23/10/97 24/10/97											
Hour 00 00 00 00 00 00 00 00 00 00 00 00											
RESOURCE C											
10026	001	50KG 3-PHASE	10000	2857.142		9:30					
10008	001	50KG WIRE DISP	12500	833.3333		21:00					
10002	001	2KG CHEESE BOX	10000	800.0000		18:30					
10000	01	1KG CHEESE BOX	10000	833.3333		20:00					

Downtime Report

Select Downtime Report Parameters

☒ All
☐ Work Centre
☐ Group
☐ Resource +

RESOURCE A
RESOURCE B
RESOURCE C
RESOURCE D
RESOURCE E
RESOURCE F
RESOURCE G
RESOURCE H

Start Date 01/08/97
Finish Date 31/08/97

☒ Printer + ☐ Screen

Ok Cancel Font Help

This report lists the hours that each Resource is not available on a daily and weekly basis for any date range. Each day and each week is summarised as hours (and percentages) of available and unavailable time. The entire date range selection is summarised in the same way at the end.

Selecting the Resource Type

You may elect to print the report for certain Work Centres, Groups or Resources only. To do this, press the required choice of radio button. The mark in the **All** button will disappear and will instead display in the selected button. After you have made your selection of the type of Resource choice, the scroller lists all the possible selections for your chosen "Resource Subset".

Section 6 - Reports

You may now choose the required selection from the scroller. Drag the mouse pointer to highlight the selection, or use the **[Ctrl]** or **[Shift]** key in conjunction with the mouse to make the selection.

Note that this report will display the Downtime schedules for whole weeks regardless of the fact that the chosen date range may commence or end in the middle of the week .

Section 6 - Reports

09/11/97 16:48		The Planner (AM)							page
Downtime Schedules Report									
RESOURCE F									
Yr	Wk	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	TOTAL
1997	42	13 0:00- 7:00	14 0:00- 7:00	15 0:00- 7:00	16 0:00- 7:00	17 0:00- 7:00	18 0:00-24:00	19 0:00-24:00	
D/T Hours/Day		7:00	7:00	7:00	7:00	7:00	24:00	24:00	83:00
D/T %		29.16%	29.16%	29.16%	29.16%	29.16%	100.00%	100.00%	49.40%
Avail Hours		17:00	17:00	17:00	17:00	17:00	0:00	0:00	85:00
Available %		70.83%	70.83%	70.83%	70.83%	70.83%	0.00%	0.00%	50.59%
Yr	Wk	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	TOTAL
1997	43	20 0:00- 7:00	21 0:00- 7:00	22 0:00- 7:00	23 0:00- 7:00	24 0:00- 7:00	25 0:00-24:00	26 0:00-24:00	
D/T Hours/Day		7:00	7:00	7:00	7:00	7:00	24:00	24:00	83:00
D/T %		29.16%	29.16%	29.16%	29.16%	29.16%	100.00%	100.00%	49.40%
Avail Hours		17:00	17:00	17:00	17:00	17:00	0:00	0:00	85:00
Available %		70.83%	70.83%	70.83%	70.83%	70.83%	0.00%	0.00%	50.59%
Summary :									
Period Hours		48:00	48:00	48:00	48:00	48:00	48:00	48:00	336:00
Total Down		14:00	14:00	14:00	14:00	14:00	48:00	48:00	166:00
Down %		29.16%	29.16%	29.16%	29.16%	29.16%	100.00%	100.00%	49.40%
Avail Hours		34:00	34:00	34:00	34:00	34:00	0:00	0:00	170:00
Available %		70.83%	70.83%	70.83%	70.83%	70.83%	0.00%	0.00%	50.59%

Downtime Table List Report

Downtime Tables are set up in **The Planner** to provide faster scheduling of Downtime on Resources, and therefore their shift patterns and overtime. You can have an unlimited number of Downtime Tables, and can apply them to any Resource, over any range of time, at any time.

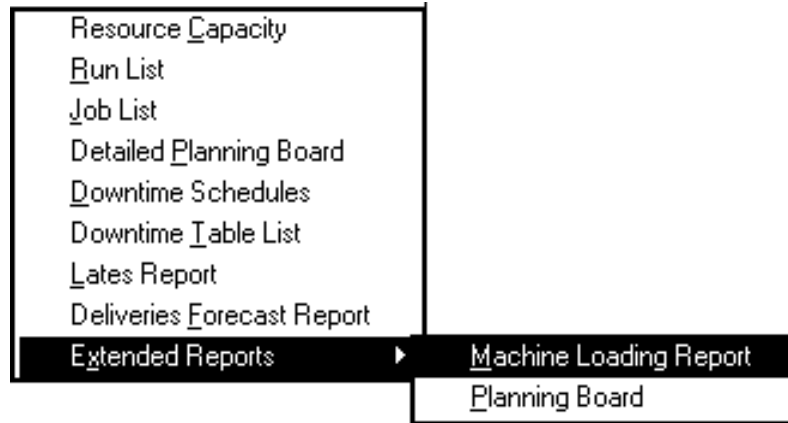
To view the Downtime Tables at any time, the Downtime Table List may be run, and printed on the screen, or to a file, or to the printer.

The Downtime Table List shows the name and description of the Table, and each occurrence of Downtime on each day of the week, with a summary of the hours for each day and for the week. Each Table prints on a new page.

Section 6 - Reports

03/09/97 16:06		Quality Systems Limited The Planner							page 1
Downtime Tables Report									
Name	Description	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	TOTAL
7 oclock start		0:00- 7:00	0:00- 7:00	0:00- 7:00	0:00- 7:00	0:00- 7:00	0:00-24:00	0:00-24:00	
D/T Hours/Day		7:00	7:00	7:00	7:00	7:00	24:00	24:00	83:00
D/T %		29.16%	29.16%	29.16%	29.16%	29.16%	100.00%	100.00%	49.40%
Avail Hours		17:00	17:00	17:00	17:00	17:00	0:00	0:00	85:00
Available %		70.83%	70.83%	70.83%	70.83%	70.83%	0.00%	0.00%	50.59%

Extended Reports



Machine Loading Report

This report generates a gantt style chart of operations for selected resources over a selected time period. It is similar to the Detailed Board Report but the Work Order/Stage/Operation details displayed are configurable. This report is designed as a wall chart.

Section 6 - Reports

Select Report Parameters

☒ All < ☐ Work Centre < ☐ Group < ☒ Resource >

RESOURCE A
RESOURCE B
RESOURCE C
RESOURCE D
RESOURCE E
RESOURCE F
RESOURCE G
RESOURCE H

Time Scale

2:00
4:00
8:00
16:00
24:00
32:00
64:00

Infinite Lines ☐

Start Date 13/10/97
Finish Date 19/10/97

Printer > Screen <

Ok Cancel Font Field Help

Selecting the Resource Type

You may elect to print the report for certain Work Centres, Groups or Resources only. To do this, press the required choice of radio button. The mark in the **All** button will disappear and will instead display in the selected button. After you have made your selection of the type of Resource choice, the scroller lists all the possible selections for your chosen "Resource Subset".

You may now choose the required selection from the scroller. Drag the mouse pointer to highlight the selection, or use the **[Ctrl]** or **[Shift]** key in conjunction with the mouse to make the selection.

Choosing the Timescale

You may now choose the required Timescale from a list of the options by highlighting the desired option.

Section 6 - Reports

Note that lower timescales may consume much paper to print a report consisting of many Resources and a wide date range.

The Report Width

This report has the potential to be very long! The width of the report is limited to the width of the paper being used, unless special software is used to print the report sideways on computer paper. For this method, set the "Infinite Lines" switch ON **[X]** and print the report to a file that may later be imported by the other print program.

When set ON, this switch does not enter a carriage return at the end of the specified width for the report, but allows each line to print its full width.

Field

This allows a choice of information to be displayed for peration line in the report. Additional display fields can be selected from any Work Order, Stage, Operation, or Customer fields. Press the required button to open the relevant scroller listing the field choices, then press **[Select]**. Generally up the report format allows up to four fields to be displayed.

To alter the order that fields are displayed in the report, highlight the field to move, press **[Reorder]**, click on the new position required and press **[Normal]**.

To remove a display field, highlight the field and press the **[Delete]** button.

Finally, press **[OK]** to accept the selections and prepare the report.

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Planning Board Report

This report generates a hard copy of the Planning Board for selected resources and time range. Information displayed for each Work Order/Stage/Operation is configurable.

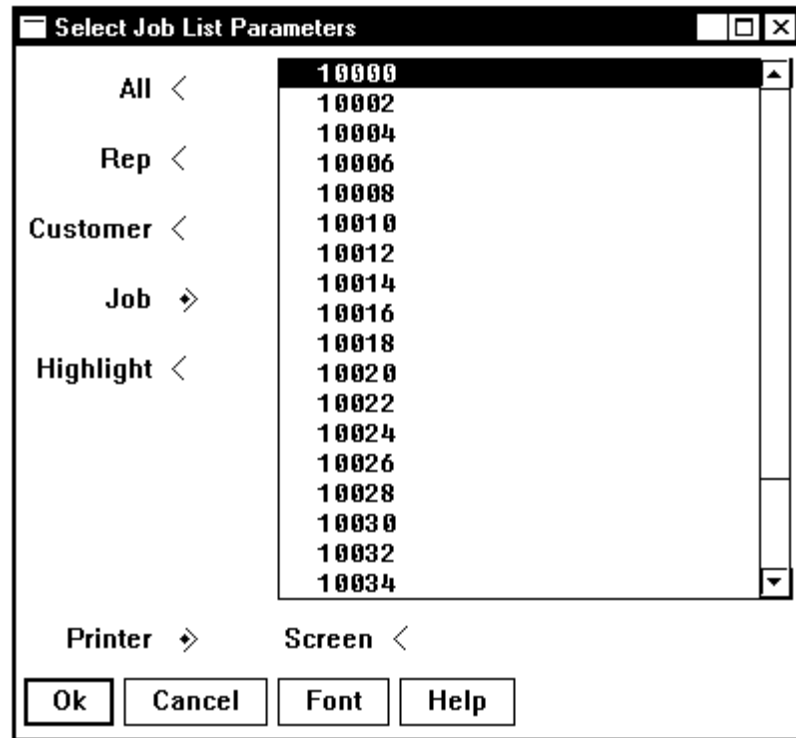
The report lists all Operations for each selected Resource in turn, with the selected Work Order details inside the operation 'Card'.

The procedure to prepare the running of this report is the same as that described for the machine loading report.

Section 6 - Reports

03/09/97 16:24		Quality Systems Limited The Planner																				page 1	
Planning Board Report		Range: 17/10/97-21/10/97																					
Resource		17/10/97					18/10/97					19/10/97					20/10/97						
		00	03	06	09	12	15	18	21	00	03	06	09	12	15	18	21	00	03	06	09		
RESOURCE A		=====																					
Job Number		1110020					10016			10014		10012					10010						
Product		00000-2					0000-3			0000-1		0000-1					0000-2						
Job Date Req		30/10/97					30/10/97			30/10/97		30/10/97					30/10/97						
Cust Code		A0002					A0004			A0004		A0001					A0002						
		=====																					
RESOURCE B		=====																					
Job Number		10020					10016			10014		10012					10010						
Product		0000-2					0000-3			0000-1		0000-1					0000-2						
Job Date Req		30/10/97					30/10/97			30/10/97		30/10/97					30/10/97						
Cust Code		A002					A004			A004		A001					A002						
		=====																					
RESOURCE C		=====																					
Job Number		10028					10022			10016		10014					10012						
Product		0000-1					0000-3			0000-3		0000-1					0000-1						
Job Date Req		30/10/97					30/10/97			30/10/97		30/10/97					30/10/97						
Cust Code		A002					A001			A004		A004					A001						
		=====																					

Work Order List Report



The Work Order List reports are full of information about the Work Orders on the planning board. They print out in order of Work Order ID. The window above allows you to select **All** Work Orders or a subset of all Work Orders. If you want to print a report of all Work Orders, simply press **[OK]** to accept the default choice of "All".

Choosing Selected Work Orders

If you wish to print out details of selected Work Orders, Click on the "Work Order" radio button. The mark in the **All** radio will disappear and will instead display in the **Work Order** checkbox.

After you have made your selection of the type of Work Order choice, the scroller lists all the possible selections for your chosen "Work Order Subset".

Section 6 - Reports

Choosing Highlighted Work Orders

It is possible to print information only on Work Orders which are currently highlighted by marking the **Highlight** radio button with the mouse.

Choosing the Work Order Subset

You may now choose the required selection from the scroller. Drag the mouse pointer to highlight the selection, or use the **[Ctrl]** or **[Shift]** key in conjunction with the mouse to make the selection.

03/09/97 15:42 Quality Systems Limited The Planner page 1

 Job List:

Job Number Customer Qty Job Desc

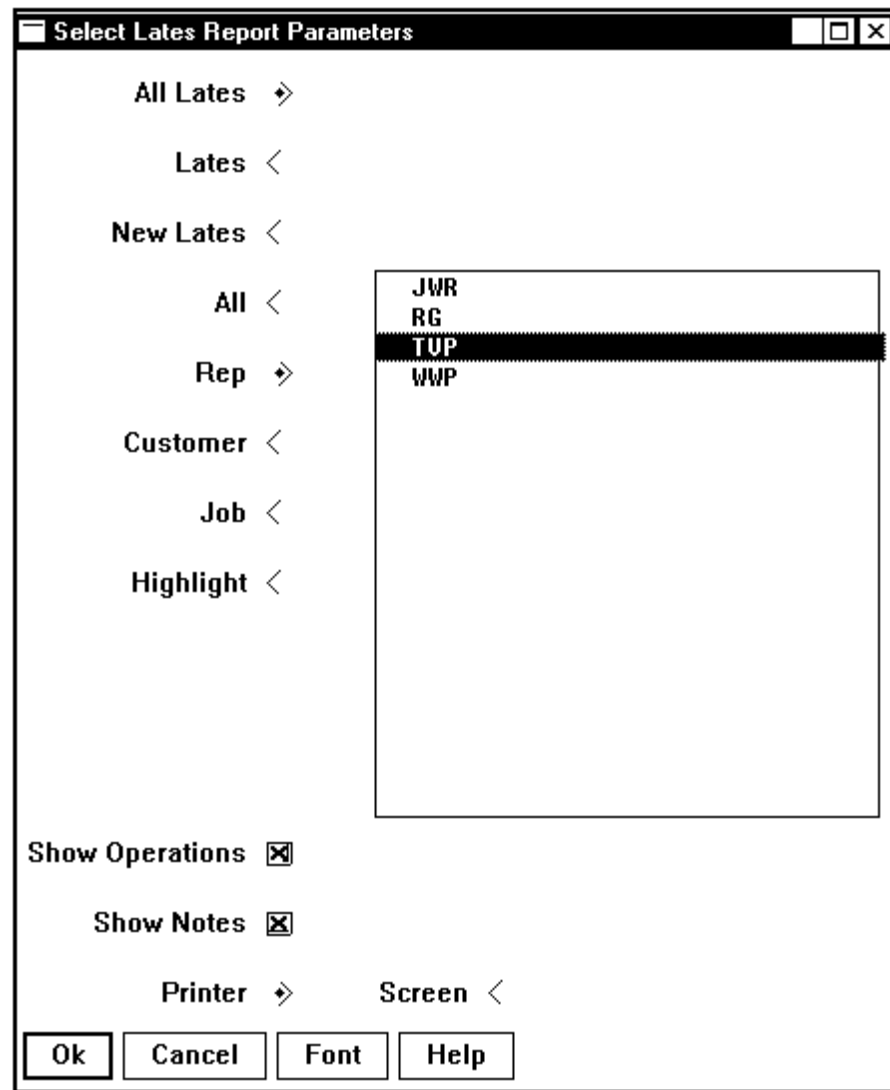
 10000 LITTLE CHEESE DELI 10000 1KG CHEESE BOXES
 Notes: JOB NOTES LINE 1
 2 LINE NOTES JOB

Item No Item Desc Due Date Qty

 01 BOX 30/10/97 10000
 Notes: ITEM NOTES LINE 1
 2 LINE NOTES ITEM

Resource	Startdate/Time	Fin Date/Time	Status	Qty	User	US2	US3	US4	US5
RESOURCE A	24/10/97 16:48	24/10/97 20:30	CLEAR	10000	Y	Y	Y	Y	Y
Notes: TOP QUALITY PLEASE! MARK ERRORS FOR REMOVAL									
RESOURCE B	25/10/97 05:48	26/10/97 02:48	CLEAR	10000	N	N	N	N	N
Notes: MARK AS URGENT,									
RESOURCE C	26/10/97 16:18	27/10/97 19:18	CLEAR	10000	N	N	N	N	N
RESOURCE D	28/10/97 13:18	29/10/97 16:48	CLEAR	10000	N	N	N	N	N
RESOURCE E	29/10/97 10:18	31/10/97 15:18	CLEAR	10000	N	N	N	N	N
RESOURCE F	31/10/97 09:18	03/11/97 20:18	CLEAR	10000	N	N	N	N	N
RESOURCE H	03/11/97 19:48	04/11/97 10:48	CLEAR	10000	N	N	N	N	N

Lates Reports



The "Lates" reports display information about late Work Orders, including how late they are. There are several options to make these reports flexible in their output.

Which Lates List?

There are three lates lists. See the Planning Section on Lates Lists for an explanation of each of these. Your first choice when running the Lates

reports is which Lates List you wish to print. To select an option other than the "All Lates", click on the required radio button.

Choosing the Range of Work Orders to Print

If you want all Work Orders in the selected list to print out, accept the default **All**. You can, however, choose to print only those Work Orders in the chosen list from a range of Reps, Customers, or Work Orders in that list. To select an option other than "All", click on the required radio button. You may now choose a range from the chosen subset.

You may now choose the required selection from the scroller. Drag the mouse pointer to highlight the selection, or use the **[Ctrl]** or **[Shift]** key in conjunction with the mouse to make the selection of individual Reps, Customers, or Work Orders.

Choosing How Much Detail to Report

The default option for the Lates reports is to print all details about each Operation in the late Work Orders, and any notes that are held for them. To make the list less detailed, switch off the "Show Operations" and "Show Notes" checkboxes.

When all selections have been made, press **[OK]** to run the report.

Section 6 - Reports

03/09/97 15:48

 Lates Report - All Lates

 Job Number Cust Name Job Desc Qty Job Date

 10000 LITTLE CHEESE DELI 1KG CHEESE BOXES 10000 30/10/97

 Item No Item Desc Qty Date Req'd Fin Date Days Late

 01 BOX 10000 30/10/97 04/11/97 6

page 1

03/09/97 15:48

 Lates Report - All Lates

 Job Number Cust Name Job Desc Qty Job Date

 10006 SPARKS ELECTRICAL 200KG WIRE DISPENSING CARTON 10000 30/10/97

 Item No Item Desc Qty Date Req'd Fin Date Days Late

 001 BOX 10000 30/10/97 04/11/97 6

page 2

Machine Capacity Report

It is often required to know the extent of Resource loading and how much spare capacity a resource is likely to have. For finite Resources the maximum capacity is 24:00 hours in one day. This report shows each Resource's loading in both hours and percentage of total hours. Another requirement is to see what effect on the current loading any "unplanned" (or Work Orders in the bin) Work Orders may have.

This report takes into account this information, enabling the planning staff to see the potential problems before putting them on the board. The report is very useful to indicate available capacity to sell, it also indicates bottlenecks and therefore warns of overtime requirements. The cumulative figures reveal trends in the plant and show the ripple effect of Resource requirements accumulating in the factory.

Section 6 - Reports

Definitions

Free

Time on a Resource that is not taken by any, i.e. Capacity that is free or available for work. This is expressed in hours, the maximum being 24:00 and the minimum being 0:00. The % Free is the Free hours divided by 24:00 expressed as a percentage. So, if the whole day is free then the % Free would be 100%.

Planned

Time on a Resource that is occupied by an Operation that is on the board, i.e. Load. This is expressed in hours, the maximum being 24:00 and the minimum being 0:00. The % Planned is the Planned hours divided by 24:00 expressed as a percentage. So, if there is 6 hours work on the board for a day then the % Booked would be 25%.

Downtime

Time on a Resource that is classed as Downtime. This is expressed in hours, the maximum being 24:00 and the minimum being 0:00. The % Downtime is the Downtime hours divided by 24:00 expressed as a percentage. So, if there is 12 hours Downtime for that Resource on the board for a day then the % Downtime would be 50%.

Unplanned

Time on a Resource that may potentially be used by Work Orders that are in the bin. This is expressed as hours, the maximum being 9999:00 and the minimum being 0:00. The % Unplanned is the unplanned hours divided by 24:00 expressed as a percentage. So, if there is 36 Unplanned hours for that Resource in the Bin for a day then the % Unplanned would be 150%.

Please be aware how the Unplanned Load is defined. When Work Orders are in the bin, the system cannot tell how this work may interact with the Work Orders on the board. So, in calculating the spread of the work, it takes each Work Order, one at a time and assumes that it will be finished on the due date. The calculation takes into account existing Downtime. So, while the hours in Planned, Free and Downtime must add to 24:00, the Unplanned time can be overloaded as it has not yet been placed.

Further valuable information can be gained if we calculate the available capacity for each day, taking into account potential load from jobs still in the Bin. By also accumulate these daily values and displaying a running total we can see how the position changes over time.

Two ways of looking at the available capacity are displayed:

The first column assumes that the actual total potential capacity is 24:00 minus Downtime. This would be appropriate for plants where no overtime or extra shifts can be arranged.

The second column assumes that the actual total potential capacity is 24:00.

Summary Columns

Where Capacity is 24:00 minus Downtime

Capacity: (24:00 - Downtime) - Planned - Unplanned. This can be a negative number, in which case the resource is overloaded for that day.

%: Capacity divided by (24:00 - Downtime) expressed as a percentage. If this is a negative value then it is shown as 0%** , the two asterisks "***" showing that it is an overloaded Resource for that day.

Cumulative: The capacities (in hours) are accumulated. If negative (i.e. a cumulative overloaded Resource) then it is marked with a double asterisk "***" e.g. -6:30**.

Where Capacity is 24:00 (Downtime not a factor)

Capacity: 24:00 - Booked - Unplanned. This can be a negative number, in which case the Resource is overloaded for that day even if the resource is operated 24hrs for the day.

%: Capacity divided by 24:00 expressed as a percentage. If this is a negative value then it is shown as 0%** , the two asterisks "***" showing that it is an overloaded Resource for that day.

Cumulative: The capacities (in hours) are accumulated. If negative (i.e. a cumulative overloaded Resource) then it is marked with a double asterisk "***" e.g. -6:30**.

Section 6 - Reports

The report breaks the date range chosen into seven day periods and provides subtotals for the 7 day periods.

The report always starts on the report 'Start Day' (and includes values for all of that day) and can be run for any period.

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Run List Report

Select Run List Parameters

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Start Date: 01/09/97
Finish Date: 07/09/97

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Ok Cancel Font Help

Run Lists are the type of reports that are generally suitable to machine operators or other production personnel. They list the planned work for each Resource in the order it is planned on the planning board. They are also known as 'Dispatch Lists' or 'Machine Schedules'.

The Run List may be printed for any selection of Resources and for any date range. If you want to run a Run List for all Resources on the board, simply press **[OK]** to accept the default choice of **All**.

Selecting the Resource Type

You may elect to print the report for certain Work Centres, Groups or Resources only. To do this, press the required choice of radio button. The mark in the **All** button will disappear and will instead display in the selected button. After you have made your selection of the type of Resource choice,

the scroller lists all the possible selections for your chosen "Resource Subset".

Choosing the Resource Subset

You may now choose the required selection from the scroller. Drag the mouse pointer to highlight the selection, or use the **[Ctrl]** or **[Shift]** key in conjunction with the mouse to make the selection.

Finally, press **[OK]** to accept the selection and prepare the report.

Section 6 - Reports

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Report Writers

The standard reports described earlier in this section are all specially hard coded to read **The Planner** database directly, are fast to run, but cannot be changed to suit individual needs. They are run from within The Planner itself. The Planner also outputs planning data to a FoxPro database. Any report writer that can access that chosen database, via ODBC or otherwise, can be used to report on the planning data.

This reporting database is separate from the active Planner database, and is used because much information in The Planner is not stored, but derived as needed, and would not normally be available for reporting on by a report writer. The information in this reporting database is updated with the latest plan information when “**Distribute Current Plan**” is selected and run from the Interfaces menu.

While experienced report writer users/programmers may not have difficulty establishing links between the tables in the reporting database, most planner users will be pleased to know that complete data dictionaries are provided for Crystal Reports. This means that no puzzling is required on table links, you just select the information fields you wish to display in your report or query, and they will be correct.

Before running reports on data from the report database be sure to first update the data from The Planner by running ‘Distribute Current Plan’ from the Interfaces menu within The Planner. Refer to ‘Distribute Current Plan’ in the Planning Section of this manual.

Section 6 - Reports

Using Seagate Crystal Report Writer

It is recommended that version 8.5 of Seagate Crystal Reports is used. Sample Planner reports for version 8.5 of Crystal reports can be found on the 3.43 Planner distribution CD.

When using earlier versions of Crystal, particularly if other newer software such as Office 2000 is loaded on the PC, some awkward manual changes to Crystal SQL code are required. However sample reports are also provided on the CD for versions 5 to 7. Be sure to study Planner342_Mdac21.doc before starting.

Crystal Reports Standard allows all creating, editing and running of reports; Professional also allows editing of the dictionaries, if required.

Full instructions in the use of Crystal reports is beyond the scope of this manual, but the peculiarities in getting started to write a report accessing the data in one of **The Planner's** reporting databases. \plreport or \plwhatif' is outlined below. Many distributors of Seagate Crystal Reports provide training courses, and the Crystal manual has full details on use of the product.

Sample Crystal Reports

A number of sample reports created with Crystal v8.5 are provided in the 'Sample CRW Reports\CRW v8.5' directory on the Planner distribution CD.

A quick start in creating reports on the Planner can be achieved by opening and modifying these reports, then saving them as a new name. Documentation of what the sample reports contain is also provided on the CD, in ReportSamples.doc

When using Crystal v8.5, as long as Crystal was installed first, the Planner installation will have set up ODBC and dictionaries correctly. Just copy the required \CRW v8.5 sample report from the CD to the PC.

Whenever copying off a CD, ensure that files that are to be modified/written to have their 'read only' attribute turned off.

Section 6 - Reports

Note:

If using versions of Crystal earlier than v8.5, then please see the document 'Planner_Mdac21.doc' in \ Sample CRWReports\CRW v5 to 7 on the Planner v3.43 distribution CD before starting

Separate sets of dictionary files and sample reports are provided for use with earlier version combinations of Crystal and MDAC and care must be taken to ensure the correct ones are used.

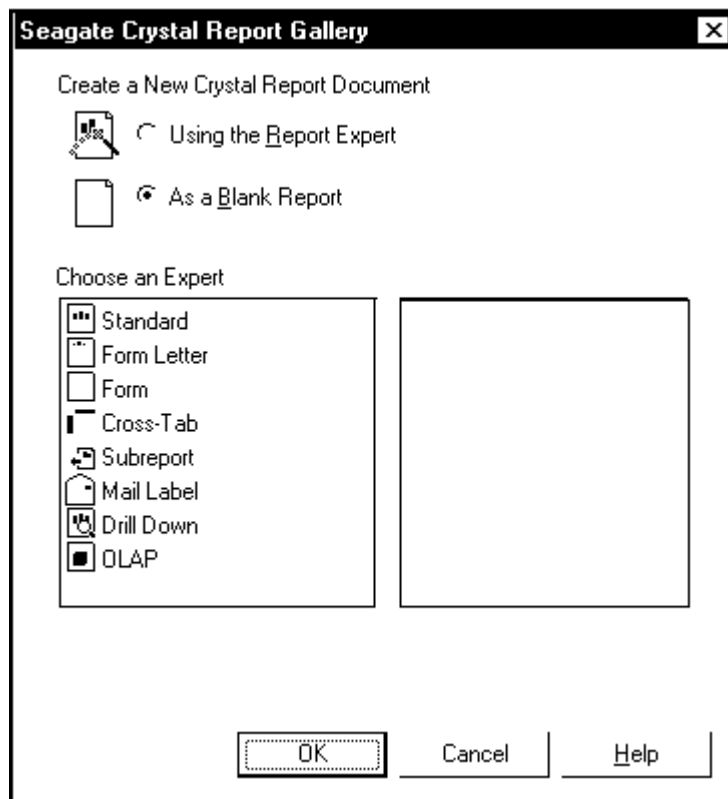
Creating Reports in Crystal Reports

Before beginning to create a report for the first time, run "Distribute Current Plan" from the Interface menu in The Planner to populate the report database.

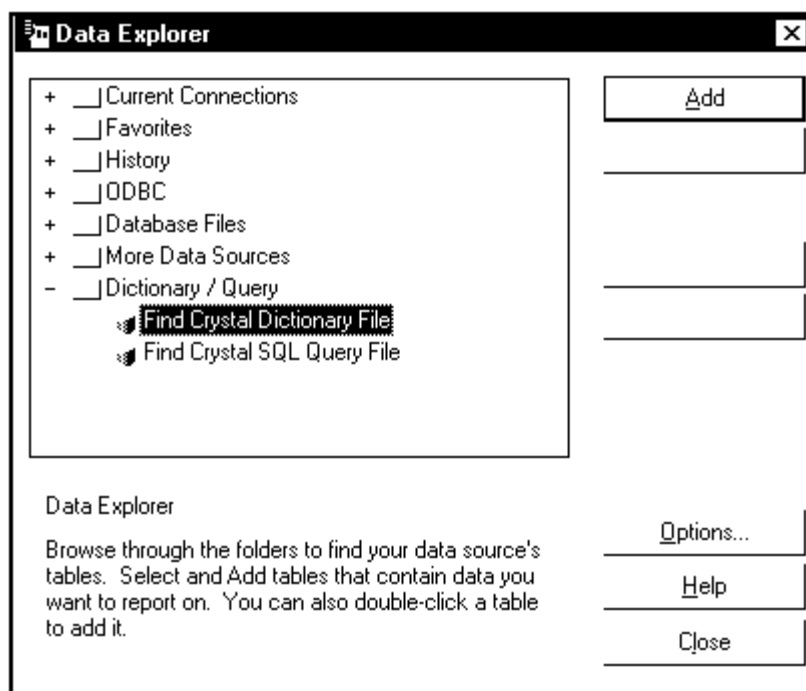
Once Crystal has a Planner Report open, it is not possible to 'Distribute the Current Plan' again until Crystal is closed.

When Crystal Reports is run, and you choose to create a new report the following window opens.

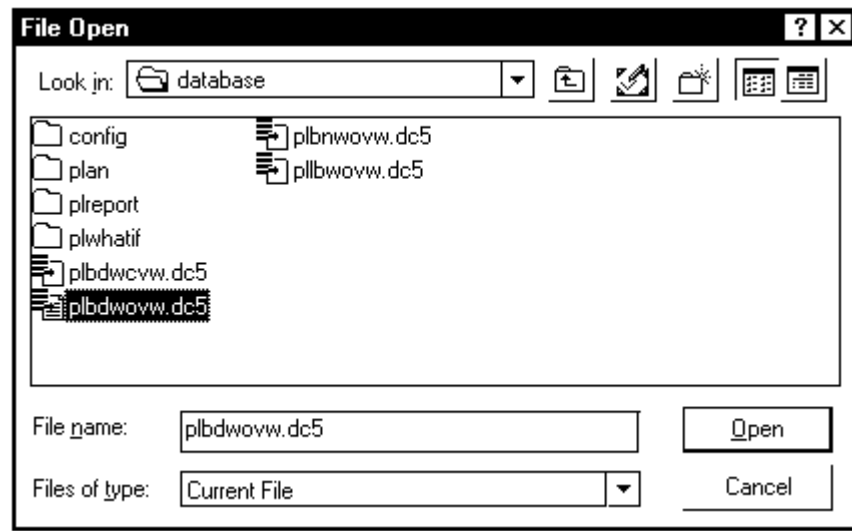
Section 6 - Reports



When using the 'Report Expert', or starting with a 'Blank Report', use the 'Crystal Dictionary' option to connect to the planner data.



You will then be prompted for a dictionary file to use. The Crystal Dictionary files provided during a typical installation of **The Planner** will be in the database directory, under the main planner directory. The default installation directory structure is shown in the File Open window below.



Crystal Dictionary Choices

There are four dictionaries provided with **The Planner** for use with Crystal Reports. From v3.3 they are as follows:

plbnwovw.dc5	for views of work orders in the Bin
plbdwovw.dc5	for views of work orders on the Board
pllbwovw.dc5	for views of work orders in the Library
plbdwcvw.dc5	for views of work centres/resources on the Board

The Crystal v8.5 sample reports on the distribution CD are prefixed 343_ , and use these dictionaries. See ReportSamples.doc on the CD for more information.

The earlier dictionaries; pljbview.dc5, plbnjbvw.dc5, pllbjbvw.dc5, and plwcview.dc5 are left during an upgrade, as these are still required for any earlier reports.

Section 6 - Reports

The three work order views are for reports that list data by Work Order, from the Board, Bin or Library. The Work centre view is for reports that list capacity data by Work Centre/Resource.

Board WO View

The Board Work Order View dictionary file should be used to create reports that access the data by work order. Examples of this type of report include:

'WO Sheet'	listing all the information about one or more WOs
'Lates Report'	listing all information about WOs which are 'late' in some way.
'Delivery Forecast Report'	listing all Work Orders (not operations) scheduled to be completed on a day, or period of days.
'Scheduled Sales Value Report'	listing all WOs planned to finish in a period, and uses sales value data held for each WO to calculate the scheduled sales for that period.
'Reps Report'	listing all WOs with planned completion dates, but sorted by Sales Rep - to allow them to keep their clients informed.

Board Work Centre View

The Board Work Centre View dictionary file should be used to create reports that access the data by work centre or resource. Examples of this type of report include:

"Run List"	listing the information on operations planned to be processed at one or more work centres or resources. (also known as Machine Dispatch Lists, or Machine Schedules)
'Operations Waiting for Materials Report'	listing all operations which have a renamed UserStatus field (now called W/F Mat'ls) set on. ([X] in planner = 1 in report database)
'Long SetUp Report'	listing (say) all operations with a Setup greater than 2hrs, scheduled to start in a period.

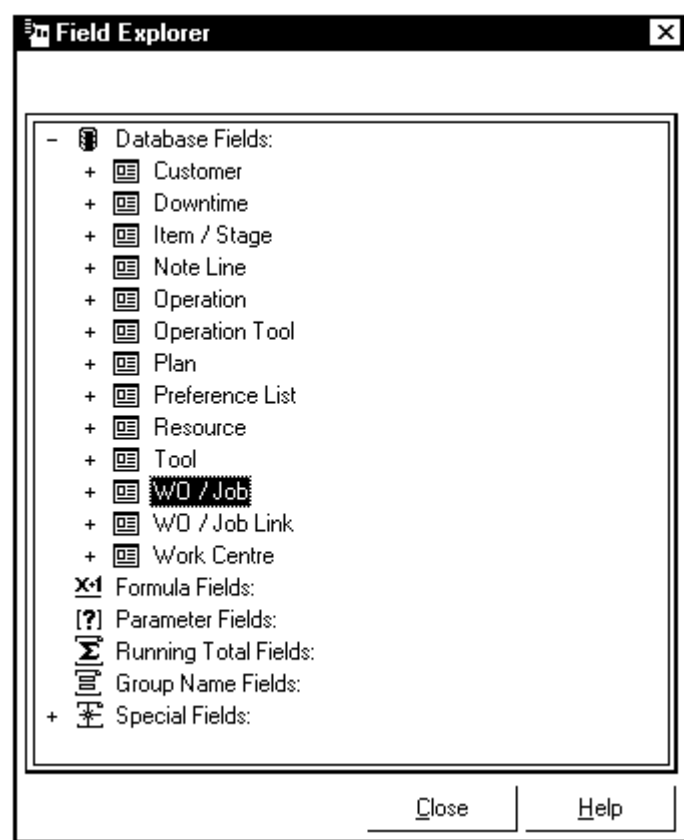
'Free Capacity Report' listing machines and all periods over ½ hr when no work is scheduled on them, maybe used for reps to 'sell this capacity'.

Bin WO and Library WO Views

These are the dictionary files to use for any reporting you wish to make on WOs in the Bin or Library respectively.

Inserting Fields in Report

Once you have chosen the dictionary file you wish to use, Crystals Design window opens, with the Field Explorer sub-window ready for you to "Drag and Drop" Planner data on to the report. Expand 'Database Fields' to display the tables available, and expand a table to see the fields available.



The tables are listed alphabetically, with their fields listed under the table. For example Customer Code is listed under Customer, WO Number (Job ID)

Section 6 - Reports

and Rep (W/O Status) are under WO / Job; SetUp, Run and Clean are under Operation; and Resource (Machine) Name is under Resource. If you have changed field names in the **Customizer** the new names will not appear in the list until they are changed in Crystal. See page 468.

Refer to the Appendix section of this manual, 'File Structure' for earlier standard names and MFG/PRO version names for fields in this dictionary.

The Fields with an 'id' suffix are used to link the tables, and contain information which is generally meaningless to most of us. So for example, rather than selecting 'prefid' from Operation, go to Preference List and select 'Preference Name'

You will notice that durations are listed as 'setup secs' , 'run secs' , etc. You will need to use the formula editor to convert some fields like this to the desired units.

Formula Fields

Some information is held in the Report Database in a format that is not understood by most people we are likely to distribute our reports to.

For example:

Planner Field	Planner Value	Report Value
Standard Status	Clear	0
	Hold	1
	Complete	2
UserStatus	[]	0
	[X]	1
Run	1:00	3600
Time Required	10:00	36000

To convert this information a formula field is created, with a name that makes sense, such as 'Standard Status Display', 'Run Dur'n Hrs'.

To convert the Standard Status fields to display as Clear, Hold, etc or the User Status to [X] /[] or Yes/No use the "If x then y else z" operator.

To convert durations to **decimal** hours, divide by 3600

More Complex Formulas

To obtain displays in hours and minutes is slightly more complex and is outlined in the examples below. The formula is shown under the formula name.

Objective

Formula name

Formula

To extract hours only from time

{Time Reqd}

Truncate ({Job.Time Required} / 3600)

To extract minutes only from time

{Minutes Reqd}

Truncate (Remainder ({Job.Time Required}, 3600) / 60)

To convert Date Required and Time Required to one field

{Date/TimeReqd}

DateTime ({Job.Date Required}, Time ({Time Reqd},{Minutes Reqd} , 0))

To extract hours only from duration secs

{RunHrsOnly}

Truncate ({Operation.Run Secs} / 3600)

To extract minutes only from duration secs

{RunMinsOnly}

Truncate (Remainder ({Operation.Run Secs}, 3600) / 60)

To display a duration in hours and minutes

{RunHrsMins}

ToText ({RunHrsOnly}, "0") + ":" + ToText ({RunMinsOnly}, "00")

The report samples supplied on the CD have examples of some of the most commonly used conversions, which can be copied to other new reports, and modified if necessary. **Remember: Files copied from a CD will have the Read only attribute set. So remove this from any copied reports before trying to modify and save them! Or use Save As, to save them to another name.**

Section 6 - Reports

Copying Formulas from one report to another

To enable full use to be made of formulas generated in a report, they can be copied to many other reports as required.

To copy a formula from one report to another, select the formula field from the first report design, edit/copy, switch to the second report design, edit/paste, and move it to the new position on the design. Refer to Crystal Reports manual for full details.

Avoiding Extra Pages in a Printout

Many reports require a page break between different sets of data. For example, a 'Run List' or 'Machine Dispatch List' is often sorted by resource and a new page started for each resource. To achieve this, place all page header details in a 'Group by Resource' header, and using Format/Section, set 'new page after on' for that Groups footer. If page headings are placed in the Page Header area, an extra page with headers prints after the last resource.

Distribute To Options

When Distributing the Current Plan from the Interfaces menu, two options are given to distribute to, and these differ for the type of installation.

Please Note: This changed significantly for v3.2

MultiUser Planners

The options are 'MultiUser Plan' and 'What If Plan'. This allows the scheduling person to distribute any 'What If' plan to report on it, without distributing this plan to all the others using the MultiUser system.

The scheduling person may then use Crystal Reports to report on the FoxPro database in;

1. \PlannerInstallDirectory\database\plwhatif for 'What If Plans', or to avoid reading conflicts with the 'import to Planner multiuser' routines in 2 below.
2. \PlannerInstallDirectory\database\plreport for the plan being sent to the Multiuser system. Be aware though that the transferring of data from \plreport to the Progress Planview database, may cause problems for crystal if access is required at the same time, e.g. when 'Import to Planner Multiuser' is automated.

3. the Multiuser Progress Planview database for the actual plan distributed to all others. You should ensure that you read the latest plan though, as a number may be present. See 'Reporting on the Latest Plan' on page 465 for the requirements for this.

The plan-directory to be reported on must be established in ODBC setup. A quick method of achieving this for \plwhatif and \plreport is provided with the Planner program menu options – 'ODBC Multiuser Plan' and 'ODBC What If Plan'.

Single User Planners

The options are 'Standard Plan' and 'What If Plan'. Distributing to standard plan populates the \plreport directory database.

To switch between these plans, the plan-directory to be reported on must be established in ODBC setup. A quick method of achieving this for \plwhatif and \plreport is provided with the Planner program menu options – 'ODBC Multiuser Plan' and 'ODBC What If Plan'.

The Correct Site & Schedulers Plan (with MultiUser installed)

The MultiUser module allows viewing of plans from a number of different 'Sites' and "Schedulers" Each 'Site – Scheduler' combination is assigned a different identifier, called plan.siteid. When writing reports the required plan.siteid must be specified in the selection criteria, and normally the first Group (sorting) must be by **plan.siteid**. The report samples supplied on the CD have examples of this.

Reporting on The Latest Plan in Planview (with MultiUser installed)

When using Crystal (or another Report Writer) and you have the MultiUser module installed, reporting on the Progress Planview database is possible. However it is possible that data exists in the Planview database from a number of "Distribute Current Plan' runs. Normally earlier versions of the plan are deleted, but if an earlier plan is still being looked at by a someone with the MultiUser viewer, then there can be two versions in the database. The Planner stores the date/time that each "Distribute Current Plan' data is created, and this can be used to ensure reports access the latest plan.

Section 6 - Reports

1. Create calculated fields for the date and time of the plan, then a calculated field for the latest Plan Date/Time. These fields have been created in the sample reports provided on The Planner distribution CD.

{ReportPlanTimeHrs}
Truncate ({Plan.PlanTime} / 3600)

{ReportPlanTimeMins}
Truncate (Remainder ({Plan.PlanTime}, 3600) / 60)

{ReportPlanDateTime}
***DateTime ({Plan.PlanDate}, Time ({@ReportPlanTimeHrs},
{@ReportPlanTimeMins} , 0))***

{ReportPlan_Latest}
Maximum ({@ReportPlanDateTime}, {Plan.siteid})

2. Once you have completed designing the report, from the Format menu choose 'Section'. Add a calculated formula for the "Details" section "Suppress (No Drill-Down)" of

{@ReportPlanDateTime} <> {@ReportPlan_Latest}

This will ensure that the report is only on the latest plan for the site specified in your selection formula.

Section 6 - Reports

Section Expert

Sections:

Report Header
Page Header
Group Header #1: Plan.siteid - A
Group Header #2: Resource.Resource Name - A
Details
Group Footer #2: Resource.Resource Name - A
Group Footer #1: Plan.siteid - A
Page Footer
Report Footer

Common

☒ Free-Form Placement
☐ Hide (Drill-Down OK)
☒ **Suppress (No Drill-Down)** 
☐ Print at Bottom of Page 
☐ New Page Before 
☐ New Page After 
☐ Reset Page Number After 
☒ Keep Together 
☐ Suppress Blank Section 
☐ Underlay Following Sections 
☐ Format with Multiple Columns 

Format Formula Editor

Fields:

Operation.StartTime
Operation.FinishTime
Operation.StartDate
Operation.FinishDate
Item.Number Of Days Late
Item.Date Required
Operation.Setup Secs
Operation.Run Secs

Functions:

Remainder (num, denom)
Abs (x)
Round (x)
Round (x, #places)
Truncate (x)
Truncate (x, #places)
Sum (fld)
Sum (fld, condFld)

Operators:

x + y Add
x - y Subtract
x * y Multiply
x / y Divide
x % y Per cent
-x Negate

Conversion:

Formula text:

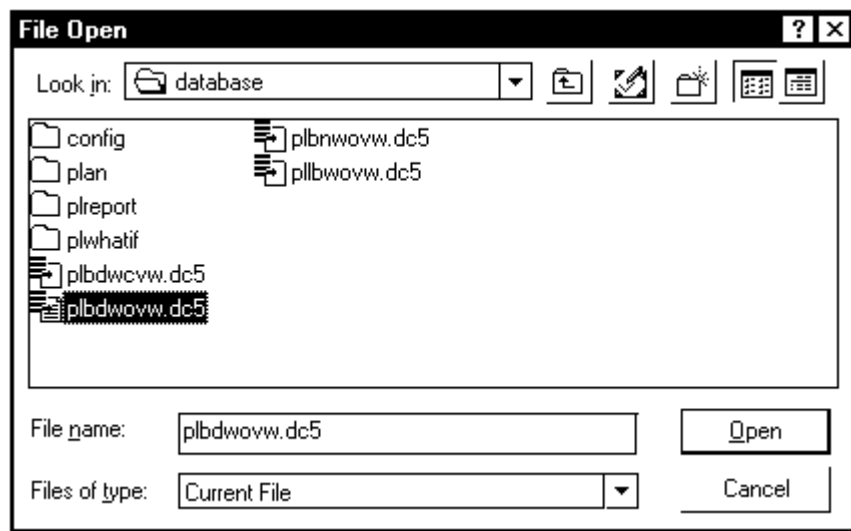
{@ReportPlanDateTime} <> {@ReportPlan_Latest}

Section 6 - Reports

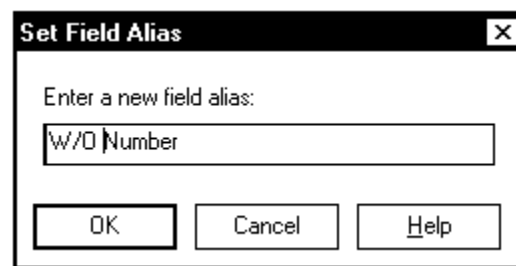
Editing Crystal Dictionary

If field titles have been changed in the **Customizer** so they appear differently in **The Planner**, more suited to your business, then they can also be changed in Crystal. Renaming does not have to be carried in Crystal if you can still easily identify the fields required in reports from their original names, but if a number of users create reports for The Planner it is probably worthwhile making the effort.

Start 'Crystal Dictionaries' from your Crystal Reports Professional menu, and open the dictionary file you wish to edit. The Dictionaries supplied with **The Planner** for use with Crystal should be in the database directory under your main planner directory. The defaults are shown below.



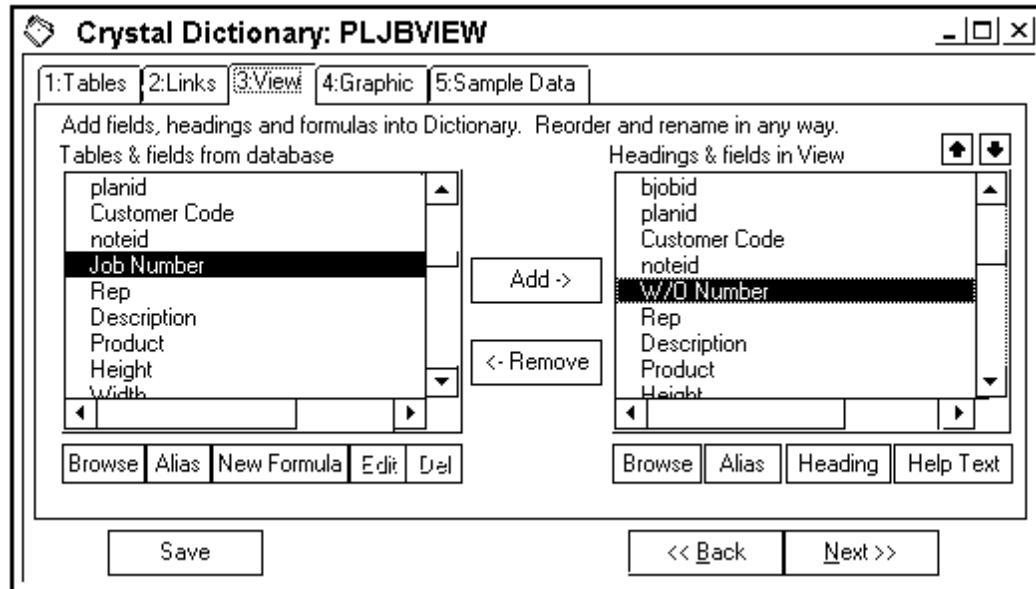
When opened select the view tab, and find the Table or Field entries you wish to change in the right hand scroller box 'Headings & Fields in View'. Click on [Alias], and edit the name to be seen when creating reports.



Section 6 - Reports

When you press the **[OK]** button to save the new name you will notice the change to the entry in the right hand scroller box.

Press the **[Save]** button when finished before exiting.

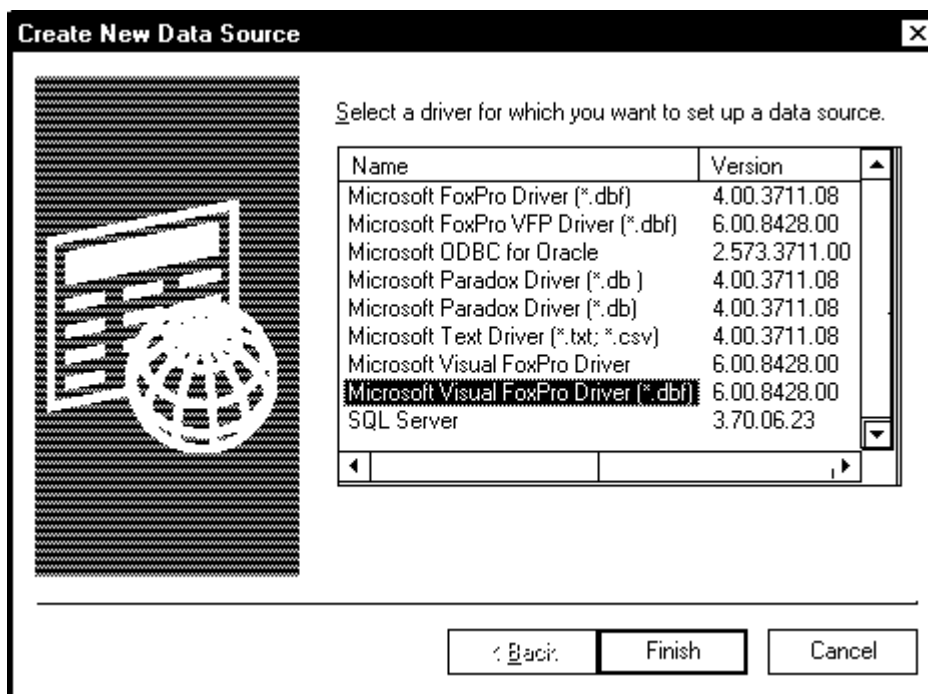


Setting up ODBC Data Source for Reporting

If you had problems with your Crystal v8 or Planner installation and the ODBC data source was not correctly set up, then you can correct this manually, or carry out a custom install, with ODBC only.

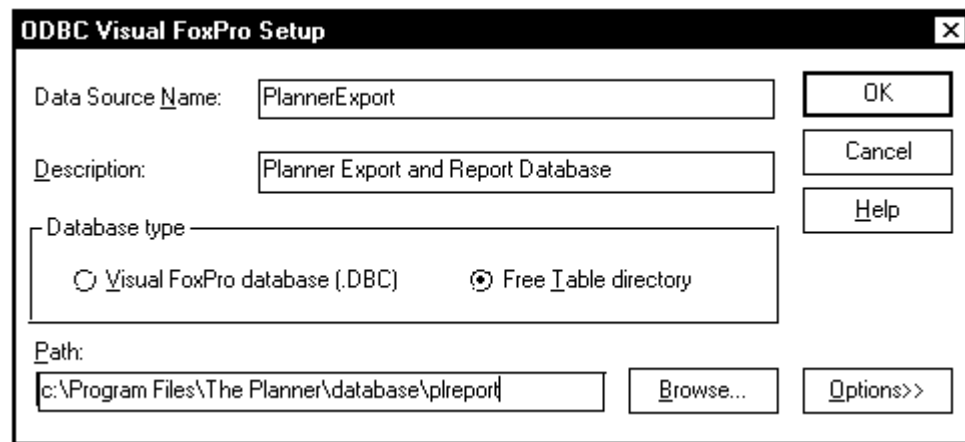
To create the Data Source manually on a PC with MDAC 2.1+

1. Close all applications that are running
2. Run the ODBC Data Sources administrator from the Control Panel (under 'Administrative Tools' in Win2000 and XP Control Panels).
3. Press the **[Add]** button, then from the 'Create New Data Source' window scroll down to and select "Microsoft Visual Foxpro Driver (*.dbf) ", then press the **[Finish]** button.



4. Type "**PlannerExport**" into the "Data Source Name" field - without a space or quote marks.
5. Type "**Planner Export & Report Database**" into the description.

Section 6 - Reports



6. Select the 'Free Table Directory' radio button.
7. Press the **[Browse]** button, and select the drive:\.....\Planner Installed Directory\database \plreport directory.
8. Press the **[OK]** button, a total of 3 times, to exit the ODBC administrator program.

This has now established the 'PlannerExport' data source using the Foxpro ODBC driver supported by Microsoft with MDAC 2.1+.

The data source may be directed to drive:\.....\Planner Installed Directory\database \plwhatif directory - if desired to run reports on this area. Run the ODBC administrator, select PlannerExport, then press configure button, and edit the directory path. Of course the current plan will first have to have been distributed to the what-if area from 'distribute current plan'

A shortcut is also provided to change the datasource directory from \plreport to \plwhatif and vice-versa. It is the 'ODBC Setup' option available from the Start menu, Planner Scheduler group of programs.

Section 7 - Interfaces

MFG/PRO - PLANNER INTERFACES

This section deals with obtaining the information necessary for scheduling in The Planner from MFG/PRO and bringing it into The Planner.

The section is in two basic parts; the user instructions for bringing the information into The Planner once all setup is complete, and the setup of the dedicated MFG/PRO to Planner Interfaces themselves.

Once setup, the interfaces can work in the background, presenting the scheduling person or persons with new and changed data in a 'bin area' in The Planner which they may view generally or in detail. Alternatively the system can be setup to just apply any changes to work orders in the Plan.

Importing Data into The Planner	Page 473
Routine for Importing and Applying Transactions	Page 484
Exporting Data from The Planner	Page 490
MFG/PRO Export to Planner Setup	Page 492
Planner to MFG/PRO Update Setup	Page 531
MFG/PRO Repetitive Export Setup	Page 538

Importing Data into The Planner

The following instructions assume that the MFG/PRO export system has been installed, and setup, and that a Planner import channel has been specified in the Customizer. It is suggested that a manual channel is initially used until the various procedures are understood. At a later date this channel may be made active to automate the procedure.

Active Channels/Background

Active Channels are automatically checked for non processed export transactions from MFG/PRO, when the Planner itself is not performing updates on the database. Any data found is imported in the background. Changes that affect the Board and therefore the screen are displayed at the end of each record set.

The Planner performs checking on the transactions read and aborts the read without purging the text file if the type of data being imported disagrees with the Interface specification for that particular transaction type.

If a syntax error is found on an active channel then the channel will be disabled and an error message will be able to be viewed via the Active Channel Status option from the Interfaces menu.

NB: This option will only display status's for active channels.

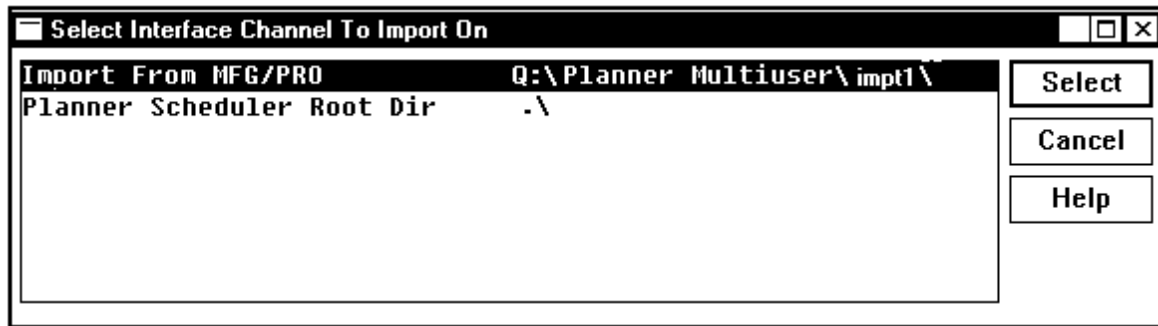
Manual Import



From the Interfaces menu, select the Import on Channel option. A list of valid non-active channels will be displayed. Select the channel required. If any data can be read it will be.

Section 7 - Interfaces

The Planner will perform syntax checking on the transactions read and abort the read without purging the file if the type of data being imported disagrees with the Interface specification for that particular transaction type.



As the MFG/PRO interface is a standard product, Syntax errors should not be encountered. If they do arise they should be corrected with a suitable editor, and the problem reported to Support.

Applying

The Planner will attempt to apply any AUTO UPDATE transactions immediately they are received.

Other transactions will be placed in the HOLD BIN, able to be viewed from the HOLD BIN LIST. These transactions can be applied by selecting from the Hold Bin List from the Interfaces menu.

All MFG/PRO interface specifications are supplied with the type 'Hold' action. Once the system is understood and running smoothly, some of these specifications may be altered to have "Auto Update" action. See page 551.

Any Auto Update transactions that fail will be seen in the Hold Bin List and marked as having an error.

Held Transactions - The Hold Bin

The Hold Bin is a general holding area for any transaction.

It is used for storing imported transactions that have yet to be applied.

It also holds erroneous transactions.

Section 7 - Interfaces

Hold Bin Indicator

Whenever transactions are held in the Hold Bin awaiting application, a green 'traffic light' shows at the right hand side of the main Planner lower window bar.

If transactions with errors are in the Hold Bin, the traffic light will show up Red.

View By Group

Allows viewing of transactions by their group identifier, then by type within that group. Choose 'Hold Bin List By Group' from the Interface menu.

Each time an export is made from MFG/PRO, a sequential group number is assigned to each transaction in the export.

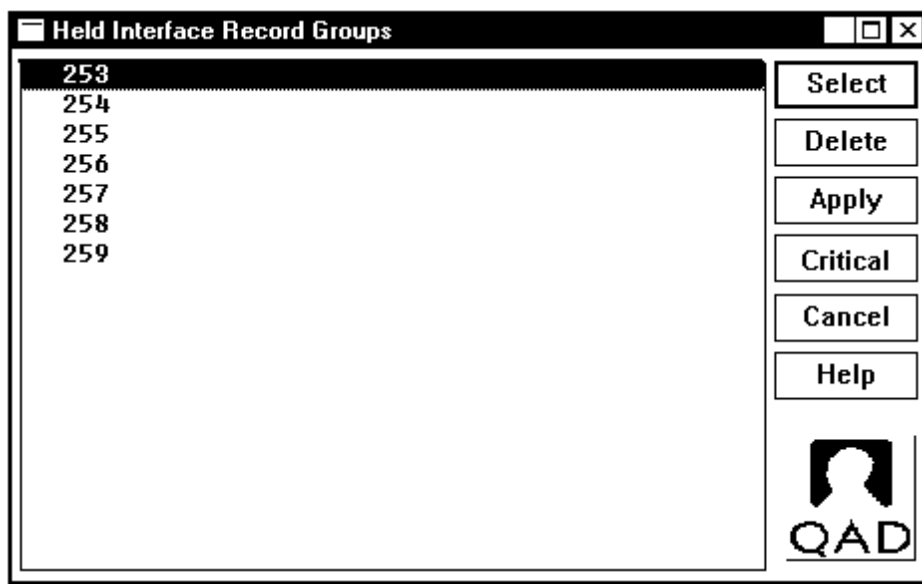
This means that if MFG/PRO exports are carried out frequently, but not imported into or applied to The Planner each time, then by applying transactions in group order there is no chance of attempting to change something that does not yet exist in The Planner Bin or Board,

For example Group 20 may contain details on Work Order 401223, Group 21 has a change of Due Date for that work order. The change cannot be applied to the work order until the work order exists in either the Bib or Board in The Planner. If an attempt is made to apply the due date change transaction before the Work Order ones, the applying will fail, and an error message will be attached to the transaction.

Held Transactions - View by Group

As group identifiers have been included in the transactions from MFG/PRO, the groups for which transactions are held will be listed. The group in MFG/PRO is a sequential number, distinguishing between each export made from MFG/PRO.

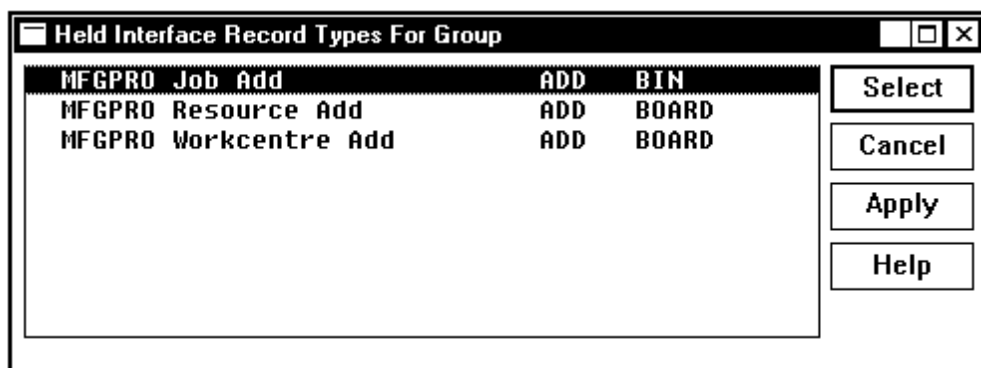
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All transactions belonging to each group should be applied in group order, lowest group number first. Highlight the group and press the **[Apply]** button.

Only under exceptional circumstances should a group of transactions be deleted. If a group contains any add transactions, any change transactions in a later group will fail as the add was never made.

Choosing a group and pressing **[Select]** will list all held transaction Types for that group.



If for any reason Transactions are to be applied from this window,

- EITHER all types must be highlighted and the **[Apply]** button pressed, allowing Planner to apply them all in the logical transaction orders,

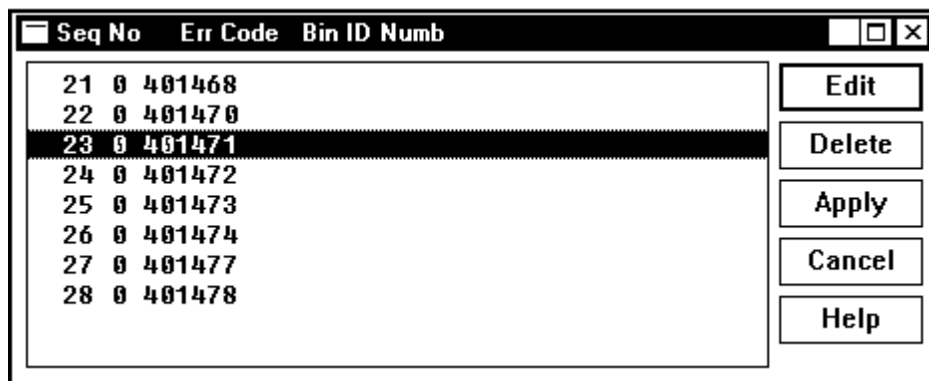
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- OR great care must be taken to apply the types of transactions one at a time in their logical sequence. See “Routine for Importing and Applying Transactions”, page 484.

Press **[Select]** with a Type highlighted to list all transactions of that type within the previously selected group.

The individual transactions may be edited, deleted or applied from this window.

If problems have been encountered applying a particular transaction Group or Type, the applying of individual transactions may isolate the problem to a single transaction, which when edited will display an error code to help solve the problem. The bad transaction may be corrected, and then re-applied.



The individual transactions may be edited, deleted or applied from this window.

Critical Operation Changes

The term 'Critical Operation Change' refers to any interface transaction that has or that will change one or more of the following for **an operation on the board**.

Resource
Setup, Run, Clean
Overlap, Transit

As the MFG/PRO export routine does not know whether existing Work orders are 'in the Bin' or 'on The Board' in Planner Scheduler, any operation

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changes to the above fields are sent as 'critical operation change transactions'. When these transactions are imported into Planner Scheduler, if any of these Work orders are on the board, a notification message is displayed



A 'critical operation change' can also be the addition of a new operation to the work order/stage. The transaction adding the operation would be just a regular 'Operation Add' txn, but if the work order is already on the board, then the operation add is considered critical.

The Planner will normally remove the Work Order (or the Stage to be completely correct) from the Board when a critical change is applied. No option is available if for operation adds, but a choice is available for other critical changes.

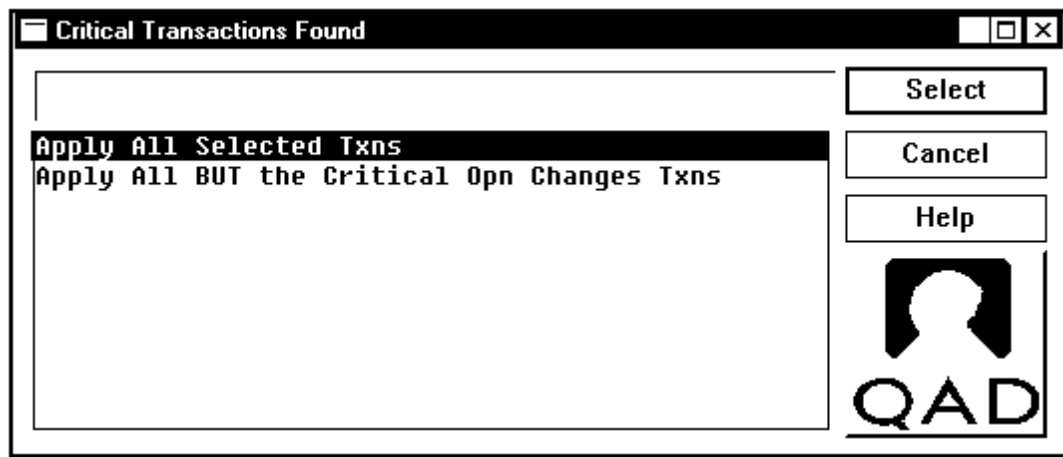
When critical changes are applied, maybe unknowingly, a warning message appears:



Pressing [OK], opens a scroller with options.

Apply all Selected Txns: will apply all the transactions earlier selected, and remove Work Orders with critical changes from the board.

Apply all BUT the Critical Change Txns: will remove work orders with 'critical operation adds' from the board, will apply all standard txns, BUT will not apply critical changes, instead leaving them un-applied for their significance to be investigated.

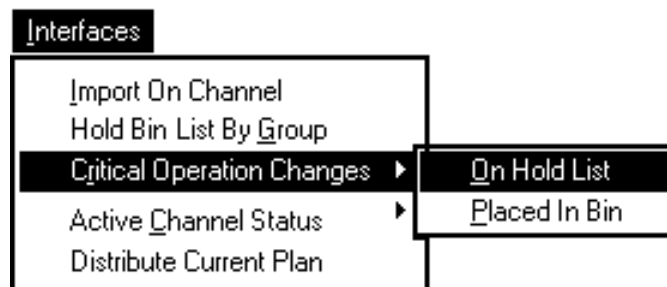


Alternative:

By turning on 'Force Job Changes' under "Edit Behaviour Switches" in the customiser, Work orders will be left on the board when Critical Operation Change transactions are applied. The changed operations may then push other operations on the board to reflect the changes - with no restriction on how badly the board is thereby reorganised.

Viewing Critical Changes

Held and Applied Critical Operation Changes can be viewed via the Interface Menu, using the highlighted option. Details on applied critical transactions are lost when exiting the Planner, or when switching to another plan.



On Hold List

This opens a scroller listing Work Orders which have Critical Operation Changes held, waiting to be applied.

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As with applying any changes, ensure they are **applied in ascending Group order**.

Press:

[Bin Apply] to apply the Critical Operation Changes for the highlighted work orders, removing the work orders to the bin at the same time.

[Board Apply] to apply the Critical Operation Changes for the highlighted work orders, leaving the work orders on the Board. Note that there is no restriction on how badly the planning board may be reorganised. If in doubt check the changes with [View Details], or [Bin Apply] instead

[Print] to print to printer, or screen, the work orders listed in this scroller and more of their details.

[Delete] to delete Transactions from the list.

[Cancel] to leave this window as it is now and return to the previous window

49	401221	10542	R	1002756
49	404875	10697	A	1002536
49	404875	10697	A	1002536
49	405363	10831	R	1000228
49	405366	10834	R	1000236
53	407153	11352	R	4000951
53	407152	11351	R	4000949
53	407152	11351	R	4000949
53	407151	11350	R	4000945
50	405660	10910	R	4001045
50	406801	11223	R	1003102
50	406802	11224	F	4000867
50	406827	11234	F	1002562
50	406876	11238	R	4001081
50	406878	11240	F	1002912
50	406878	11240	F	1002912
50	406878	11240	F	1002912
50	406879	11241	F	1004152
50	406879	11241	F	1004152
47	406407	11140	R	1003074
47	406407	11140	R	1003074
47	406409	11141	R	4001050

[View Details] to view the changes, and further details for the highlighted work order, as shown below. The example is for an ADD operation transaction, as only one 'New' operation line is displayed, with no 'Current' line.

Please Note: ADD Operation Transactions cannot be applied with the Work Order/Stage remaining on the Board.

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Current W0 Data:						
Work Order	ID	Status	Item Number	W0 Desc	Qty Ordered	Due Date
6545B	62548	F	2531-0023	0500/45SIMC/10PE/F/24SUR	3000	01/11/97

Current Item Data:			
Stage ID	Stage Qty	Stage Due Date	Release Date
62548	3000	01/11/97	01/11/97

Current/New Operation Data:								
Actual Machine	Preference List	Opn	Op Stat	Setup	Run Dur'n	Clean	Overlap	Transit
New: 25 1		75		0:06	0:00	0:00	0:00	0:00

Ok View W0 Help

Placed In Bin

This displays a scroller list of work orders that have been removed to the bin this session due to Critical Operation Changes being applied to them.

Removed W0 s List						
65788	4200002569	F	5540-0006	1035/24PE/82SK/24PE	27/11/97	

View Details
Print
Cancel
Help

Press:

[View Details] to view the changes, and further details for the highlighted work order.

[Print] to print to printer, or screen, the work orders listed in this scroller and more of their details.

[Cancel] to leave this window and return to the previous window.

[View Details] to view the changes, and further details for the highlighted work order as shown below.

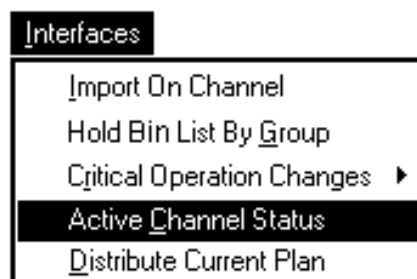
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W0 Critical Changes								
Current W0 Data:								
Work Order	ID	Status	Item Number	W0 Desc	Qty Ordered	Due Date		
4200002569	65788	F	5540-0006	1035/24PE/82SK/24PE	20000	27/11/97		
Current Item Data:								
Stage ID	Stage Qty	Stage Due Date	Release Date					
65788	20000	27/11/97	20/11/97					
Current/Old Operation Data:								
Actual Machine	Preference List	Opn	Op Stat	Setup	Run Dur'n	Clean	Overlap	Transit
Current: 11 1		40		0:00	8:12	0:00	8:12	0:00
Old: 11 1		40		0:00	9:06	0:00	9:06	0:00
Ok Help								

These are the details for the work order that had one or more Critical Operation Changes, and was removed from the board when the changes were applied.

When an operation has been changed, two operation lines will be displayed, one showing the current data, with the changes contained in the Critical Operation Changes transaction applied, the other line showing the original data (old) from prior to the changes being applied.

Active Channel Status



Selecting the Active Channel Status option from the Interfaces menu in the Planner will display any error messages generated on that channel.

If error messages are present the channel will be disabled. As the only errors that prevent a channel from operating are syntax or physical errors you must fix the problem with a suitable editor.

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Leaving the Planner also clears the error messages allowing the Planner to attempt to restart the channel.

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Routine for Importing and Applying Transactions in Planner (from MFG/PRO)

(Intended as a check list)

1. Select 'Import on Channel' from Interfaces menu
2. Highlight the channel to import on, and press {Select}.
3. Imported Txns will now be in the Hold bin
4. Select 'Hold Bin List by Group' from Interfaces menu
5. Select lowest group and press [Apply]
6. Repeat for each group in ascending order

Critical operation changes

If when applying a group, a message is received warning that "Critical Transactions Found", then select to

- Apply all BUT the Critical Change Txns

Then use the 'Critical' button in the 'Held Interface Record Groups' to view changes, and apply in appropriate manner.

- #71 Txns – reduce the operation bar length
- #52 Txns increase operation bar length => at least check details of these with the critical button as they can push your plan around.

All transactions, including all critical change transactions for a group must be applied before continuing to apply transactions for the next group.

- If "Apply all Selected Txns" is selected after a warning that "Critical Transactions Found", then all jobs with critical txns will be removed from the board.

If a group fails to apply and remains on the list – UNDER NO CIRCUMSTANCES should you apply any later groups. FIRST find out what is wrong with the problem group.

IF a group fails to apply, it may be caused by a problem with a particular txn, So:

1. Highlight the group, press the Select button
2. This lists the txn types included in the group

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3. Highlight the txn types one at a time, IN ORDER LISTED BELOW and Apply the txn type
4. If a txn type fails to apply, select it, and check for error numbers in the second column.
5. Select the txn with an error, to determine what is being added/deleted/changed. Press help, to determine what the error number means
6. Modify the data being added/deleted/changed as needed.
7. Cancel back to the window listing the transaction types for the group, and repress the apply button for the earlier failure.
8. Continue to apply all the Txn types one at a time in the order given below, or cancel to the group listing window, and attempt to apply the remains of the previously failed group.

Order in which to Apply Transactions from A Txn Set (Group)

(Most common Txn types in Upper Case)

W/O Noteline Deletes

Opn Noteline Deletes

OpTool Deletes

Job Link Deletes

OPERATION DELETES

Stage Deletes

W/O DELETES

Library W/O DELETES (Repetitive)

Work Centre Adds

Machine Adds

TOOL ADDS

Preference List Adds

Machine Preference Adds

CUSTOMER ADDS

Library W/O ADDS (Repetitive)

Library STAGE ADDS (Repetitive)

Library OPERATION ADDS (Repetitive)

W/O ADDS

STAGE ADDS

OPERATION ADDS

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Job Link Adds
OPTOOL ADDS

Work Centre Changes
Machine Changes
TOOL CHANGES
CUSTOMER CHANGES
Preference List Changes
Machine Preference Changes
W/O CHANGES
STAGE CHANGES
OPERATION CHANGES
Job Link Changes
OPTOOL CHANGES
W/O NOTELINE CHANGES
OPN NOTELINE CHANGES
OP CHANGE CRITICAL DATA**
OP SETUP/RUN REDUCTION

REPETITIVE ADJUSTMENTS (Repetitive)

Machine Preference Deletes
Preference List Deletes
Tool Deletes
Machine Deletes
Work Centre Deletes
CUSTOMER DELETES

Work Order 0000ERRORXX in Bin

If after an export, a new WO with ID of style 0000ERRORXX appears in the Bin, the Notes for this WO should be checked.

They will contain information regarding some problem with the export from or update to MFG/PRO.

The WO will have the description "ERRORS IN EXPORT/UPDATE" visible in both the Work Order Edit and Place Work Order scrollers

The Notes will be of the form:

REMEDY THE FOLLOWING ERRORS THEN DELETE THIS JOB 04/25/00 14:56:15.833 P-EXMRP NO MFG/PRO RPS_MSTR RECORD SITE: 20000 LINE: 88-200 PART: 88-200 DATE: 06/04/00 SCHLID: 1

Explanations of the possible message lines are

NO MFG/PRO RPS_MSTR RECORD

The CIM load/process part of the repetitive update has failed, as the export has found rps_mstr records written to Plexport.db during the last update, which should have been, but were not written to MFG/PRO.

If this has occurred during initial setup of Planner, the most likely cause is that the MFG/PRO client to carry out the CIM Load/process is not starting. Check that the MFG/PRO Client startup parameters (as called from plupdate on unix, plupdate.ini for NT) are correct. Also check the mfgadv.out log file.

If the update procedure has worked properly, then the cause is likely to be that the site-line-item combination trying to be CIMed to is not setup in Production Line Maintenance, 18.(22).1.1 as a valid combination.

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CANT FIND SCHLID FOR PART

The Item No/Site/Line sent from Planner is not valid for MFG/PRO. This may be because the PL- job in Planner was incorrectly edited at some time before the update.

COULDNT FIND ROUTING

The Item No/Site/Line/routing sent from Planner is not valid for MFG/PRO. This may be because the PL- job in Planner was incorrectly edited at some time before the update.

To Restart One of A Number of Planner Schedulers – when a number use the same MFG/PRO Export program and plexport database.

Please note this routine has changed slightly from v3.2x.

1. Ensure that no MFG/PRO Exports or Updates are running or about to run, disabling the AT command or cron if necessary.
2. Run MFG/PRO Interface Utility, Schedulers, select/highlight the correct scheduler from the list, and press "Clear Scheduler Data". This clears all the data held in the plexport database for the selected scheduler.
3. Check the import.if file in the \planner multiuser\imptX directory, where imptX is for the scheduler concerned. Scheduler 1 has \planner multiuser\impt1; Scheduler 2 has \planner multiuser\impt2; etc. It should have been emptied by step 2 above
4. On the schedulers PC, run Customiser, Startup, Database Setup, Create new Plan.
5. Reinstate the running of MFG/PRO Exporting and Updating
6. After the next run of the MFG/PRO Export routine, all current work should be present in the import.if of the particular schedulers \planner multiuser\imptx directory, all ready to import into Planner Scheduler.
7. Run Planner Scheduler, Import on correct channel, Apply group by group, if more than one. This should empty the import.if file in the selected \imptX directory.

Exporting Data from The Planner

Background Exporting is not supported. When a new Plan is arranged and ready for export to MultiUser viewers, and for Updating MFG/PRO if desired, the option 'Distribute Current Plan' is selected from the Interface menu in The Planner.



A number of options, as shown below, are available when running this export. For details please refer to "Distribute Current Plan" in the Planning section of this manual. If the 'Distribute To' Options are not as shown, you have not entered the "Scheduler/Site File" in the Customizer, and must do so.

Distribute Current Plan Include Options			
Board ☒		Bin ☒	
Library ☒		Downtime ☒	
Coalesce Downtime ☒		Free Capacity ☒	
Customers ☒		Date Range ☐	
Start Range	11/11/97 08:36	End Range	16/12/97 08:36
Distribute To: Multiuser Plan ☐		What If Plan ☐	
Ok Cancel Help			

If the MFG/PRO Repetitive Interface is being used, it is most important that No Date Range restriction is set

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MFG/PRO - Planner Interfaces Setup

Prior to implementing The Planner a close examination of the business issues surrounding the scheduling and the distribution of the schedule information throughout the company must be made, particularly when using MultiUser, and updating MFG/PRO from The Planner. A guide to some of the questions that need to be asked is provided in the Appendix section of this manual, 'Implementation of The Planner'.

It is highly recommended that a person very familiar with The Planner and MFG/PRO be involved. This person would generally be an external implementation consultant. As well, people very familiar with the planning, manufacturing and customer service functions at your company should be involved in determining how **The Planner** can best be used to support your particular strategies and help you meet your business objectives.

Only one compiled set of the Progress programs; used for MFG/PRO Export, Update and Planview, is now provided.

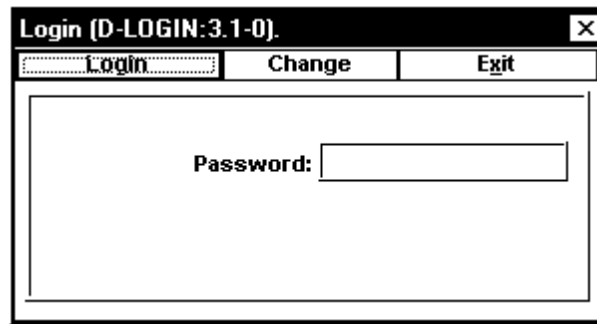
For Planner v3.43 this is for MFG/PRO eB with v9.1 Progress

For interfacing to other versions of MFG/PRO-Progress, the Interface and Planview programs must be recompiled against the MFG/PRO-Progress versions being used.

Setting Up the Interface

When first logging in to the MFG/PRO Export Interface Utility the login window opens. Click on the password entry area and key in the password.

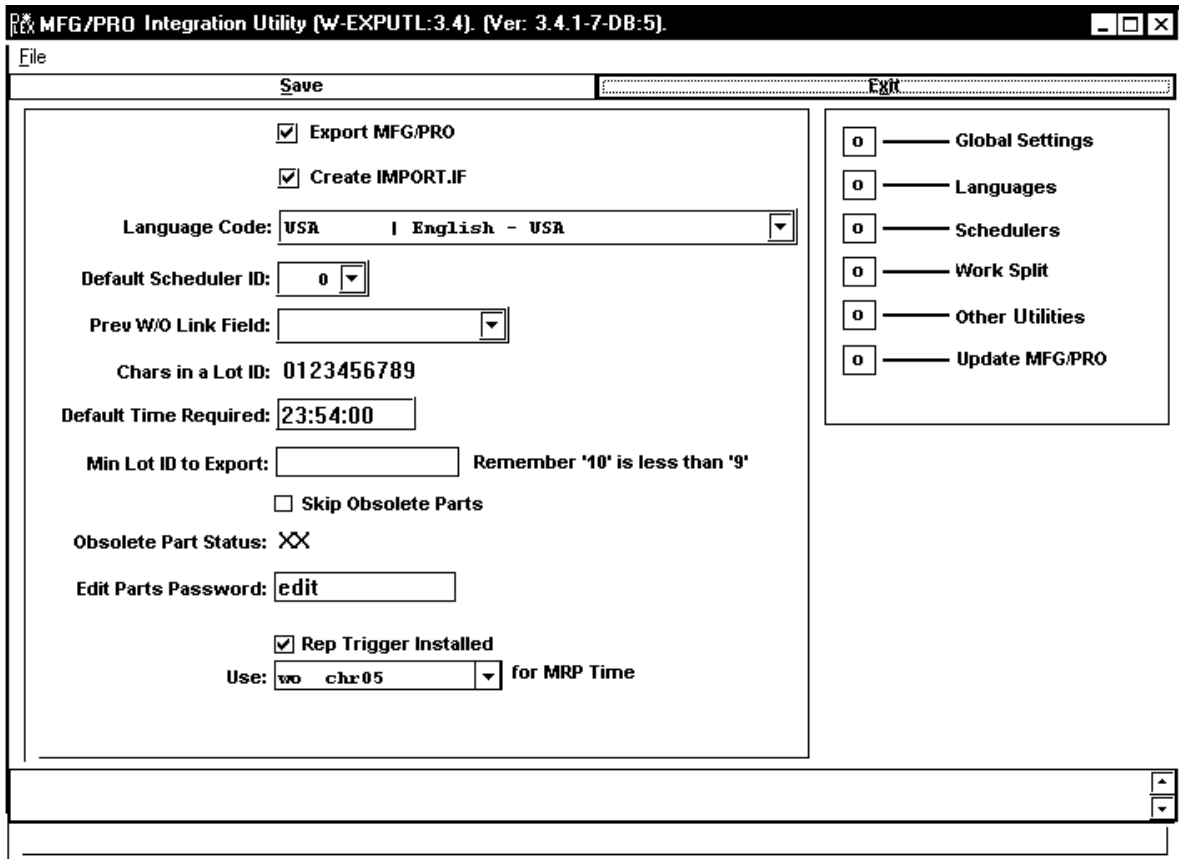
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A small dialog box titled "Login (D-LOGIN:3.1-0)". It has three buttons at the top: "Login", "Change", and "Exit". Below the buttons is a text input field labeled "Password:".

The initial login password is 'secret' (without speech-marks)
To alter the password, press the **[Change]** button.

Once the correct password is entered and the **[Login]** button pressed, the following utility window opens.



A screenshot of the "MFG/PRO Integration Utility (W-EXPUTL:3.4) [Ver: 3.4.1-7-DB:5]" window. The window has a menu bar with "File", "Save", and "Exit". The main area is divided into two panes. The left pane contains various settings: "Export MFG/PRO" (checked), "Create IMPORT.IF" (checked), "Language Code: USA | English - USA" (dropdown), "Default Scheduler ID: 0" (dropdown), "Prev W/O Link Field:" (dropdown), "Chars in a Lot ID: 0123456789", "Default Time Required: 23:54:00", "Min Lot ID to Export:" (text field), "Remember '10' is less than '9'" (checkbox), "Skip Obsolete Parts" (checkbox), "Obsolete Part Status: XX", "Edit Parts Password: edit", "Rep Trigger Installed" (checked), and "Use: wo chr05" (dropdown) for MRP Time. The right pane contains a list of settings: "Global Settings", "Languages", "Schedulers", "Work Split", "Other Utilities", and "Update MFG/PRO", each with a radio button.

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Export MFG/PRO: Leave this box checked ON as you want MFG/PRO data to be exported. Else a cron, AT or manual start of 'MFG/PRO Export' will do nothing.

Create IMPORT.IF File: If running the Windows version of 'MFG/PRO Export' this should be checked ON.

If running the unix version of the application 'MFG/PRO Export' turn this OFF, and run a 'Create IMPORT.IF File' from a Windows client to avoid having to FTP files from unix.

Language Code: The drop down box is used to select the language required to display.

Default Scheduler ID: It is possible to split work orders by certain criteria amongst a number of schedulers. Since v3.3 the settings chosen can be different or the same for all Schedulers. See page 502 for splitting work amongst a number of schedulers.

Previous Work Order Link Field: Planner Scheduler has supported work order linking from v3.2. Use this drop down box to select the field in the MFG/PRO work order record to use to store the information on what the preceding work order must be.

Characters in a Lot ID: So that fields such as 'Remarks' may be used to store both 'Previous ID' and any required remarks, this allows setup of allowable characters for previous IDs. Additionally the double quote character (") indicates that the Previous ID value 'ends here', such as in 401500"This is a remark", where 401500 is the Previous Work Order Lot ID (terminated by the " character) and the remainder is ignored. The character " can not be used in a Previous Work Order Lot ID. But any character that appears in "Chars in a Lot ID" will be treated as part of the Lot ID. That is, your Lot ID's may contain the Hyphen character as in 4015-20; You would then set the "Chars in a Lot ID" to contain "0123456789-".

Default Time Required: When passing due dates of orders to The Planner this sets a time component to the date. Do you wish to aim to have work orders finished by 5pm at night (17:00 hrs), or by the end of night shift for shipping that day (eg 08:00 hrs).

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Minimum Lot ID: If large numbers of closed work orders are in the MFG/PRO database, the MFG/PRO Export can be sped up by setting a minimum value to start looking for active ones from.

Obsolete Parts: If large numbers of obsolete items are in the MFG/PRO database, and their pt_status is coded as obsolete in MFG/PRO, then this can be used to speed up the MFG/PRO Export. Turn on 'Skip Obsolete Parts', and enter the status code used for obsolete parts.

Edit Parts Password: Use this to change the password to the Edit Sequencing Data program. See page 515.

Rep Trigger Installed: When using Repetitive Interfaces, and updating MFG/PRO from Planner, and running MRP each day – then the standard MFG/PRO wow.r trigger will need replacing by one that 'time stamps' any work order creates and changes. Suitably modified wow triggers are provided for MFG/PRO versions 8.5D and later. See next paragraph, and "Delays in Export of Planned WOs" page 545 for other details. Turning this switch ON allows selection of one of the Work Order Spare fields to store the 'time' data in.

Use field for MRP Time: If 'Rep Trigger Installed' is turned on, then a choice is provided of some spare Work Order fields in MFG/PRO to use to store the 'time stamp' data. The correct wow.r for the field and MFG/PRO version must be used. Select one that is not already being used, or planned to be used by any other applications. The default is wo__chr05.

The **[Global Settings]** button opens the 'MFG/PRO Export Interface Maintenance' window giving the various choices of what to import from MFG/PRO as defaults.

If only one scheduler is to be used, then all work and data selection for the scheduler is made here. See page 496 for details.

If more than one scheduler is being used, and if the settings are to be varied for the other schedulers, it is best to set up the Global settings first for the default scheduler, so that less work is required in setting up for the other schedulers later.

The **[Languages]** button allows editing of the language translations for all the display text used in this utility. The Language drop down box is used to select the language version to start to modify.

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The **[Schedulers]** button is used if it is desired to have two schedulers handling work from the one MFG/PRO database. See page 502.

The **[[Work Split]** button allows selection of the work orders to be scheduled, based upon part and site information. This is used even when only a single scheduler is being used, for example to ensure work for any other sites using the MFG/PRO database, but not using the Planner, is not brought into Planner.

[Other Utilities] includes one to clear the plexport database and a logging system.

[Update MFG/PRO] button opens the 'Update MFG/PRO Settings' window, allowing selection of what Work Order information is to be returned to MFG/PRO.

MFG/PRO Export Interface Maintenance Window

A large number of variations to the interface setup are possible, and full consideration must be given to the possibilities and implications involved.

The default settings for all schedulers are set up by accessing this window from the opening 'MFG/PRO to Planner Integration Utility' window using the **[Global Settings]** button.

Once these global settings have been established, individual differences may be made for any other schedulers being used, with the MFG/PRO Interface Maintenance Window for a specific scheduler. These windows are accessed via the **[Work Split]** button in the opening 'MFG/PRO to Planner Integration Utility' window.

MFG/PRO Export Interface Maint (W-MFGPRO:3.42p22-7)

File Fields

Save Exit

Split Order: Global
Send To Scheduler ID: 0
Description: Default Scheduler

☐ Repetitive Interface

☐ Use Qty Left to Run
☒ Export Prefrnce List
☒ Export Route/Op Note
☐ Skip Cstm Prt Extrct
☐ Skip Cstm W/O Extrct
☐ Skip Cstm OP Extract

☐ Export Tools Default Tool:

☐ Release Date Limit Range Limit: 0

Work Order Type:
☒ Standard
☐ Cumulative
☐ Re-Work
☐ Scheduled
☐ Final Assembly

Export From Status:
☒ Planned
☐ Firm
☐ Exploded
☐ Allocated
☐ Released
☐ Batch

Completed Operations
☒ Delete
☐ Mark Completed

Completed Work Orders:
☐ Delete
☐ Mark Completed

Field Selection:
☐ Customer
☐ Work Order
☐ Stage
☐ Route (Op)
☐ Machine
☐ Item Route(Op)
☐ Sequence Label
☐ Sequence Data
☐ Sequence Value

The **Split Order and Scheduler** being setup are shown at the top of this window. When Global settings are being edited, the default scheduler chosen in the opening 'MFG/PRO to Planner Export Utility' window will display.

Repetitive Interface Setup

This is a separate area for determining how Items made repetitively in MFG/PRO are to be handled in Planner. The setup for this is covered in detail on page 538

Additional Field Data:

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☐	Customer
☐	Work Order
☐	Stage
☐	Route (Op)
☐	Machine
☐	Item Route(Op)

Extra information from MFG/PRO may be sent to and placed in suitable spare fields in The Planner. See page 507 for details.

Additional Data for Scheduling:

☐	Sequence Label
☐	Sequence Data
☐	Sequence Value

This area is for keeping part information that is not kept in MFG/PRO as, for example, no suitable field exists to store it in. For details see page 511

Export Work Order Type:

Work Order Type:	
☒	Standard
☐	Cumulative
☐	Re-Work
☐	Scheduled
☐	Final Assembly

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Check the options required

If any of these types of work orders are used without defined routings (eg Re-work) then there is little sense in including them, as the planner schedules routings.

When “Repetitive Interface” is turned on in this utility, it is no longer possible to export Scheduled, i.e. type S work orders from MFG/PRO.

Export from Status:



Export From Status:

☐ Planned

☒ Firm

☐ Exploded

☐ Allocated

☐ Released

☐ Batch

One radio button only is pressed, if Firm is pressed, then MFG/PRO Work Orders with status **From Firm**, ie of F, E, & R will be sent to Planner. If Batch work orders are used, and required to be scheduled, check this box.

Planned work orders will only be sent to Planner if they are for Items that have a pm_code (from pt_mstr or ptp_det as appropriate for the site) with a value of ' ' (blank) 'M' (manufactured), 'R' (routable), 'C' (component) or 'L' (line schedule – from v9.0)

Work Order Completions and Partial Completions

Completed Operations

As operations are completed (changed to status C) in MFG/PRO, say at 17.1, (or 17.2 , etc, or from another system), this can be used to do one of two things

1. delete the operation from the Planner, OR
2. place a double dotted line through the operation bar on the planning board to show that it is complete..

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If an operation is the last operation in a work order to be completed, and delete has been selected, then the work order header record is also deleted.

The image shows two identical interface boxes stacked vertically. Each box has a title bar at the top. The top box is titled 'Completed Operations' and the bottom box is titled 'Completed Work Orders:'. Both boxes contain two radio button options: 'Delete' (which is selected, indicated by a dot inside the circle) and 'Mark Completed' (which is unselected, indicated by an empty circle).

Completed Work Orders

When the work order status is changed to closed (C), two options are available.

1. delete the work order (and all of its operations) from the Planner, OR
2. place a double dotted line through all the operation cards for the work order on the planning board to show that the work order is complete.

If 'Delete Completed Operations' was selected, then work order headers may be deleted before the work order is closed, i.e. when the last operation is completed in MFG/PRO.

Use Qty left to run

When OFF, the total Operation Order Quantity and a Run duration based on this value will be used.

When ON, the operation quantity in the Planner Scheduler becomes essentially 'quantity left to run', which starts at the operation order quantity, and reduces as finished quantities are entered via the Shop Floor Control part of MFG/PRO (17.1, 17.2 etc)

This means that the Quantity and the Run length are adjusted in The Planner as Labour feedback adjusts the Quantity processed at each operation for a work order in MFG/PRO.

The quantity used to calculate the run length is the order quantity minus the quantity completed, minus the reject quantity for the operation.

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Once the quantity completed is greater than zero, then setup is reduced to zero. When the quantity calculation produces a value less than zero, (i.e. have overmade for the operation) a quantity of zero is used, but a minimum of 1 time unit (6 mins) will be sent for the run length.

If 'Delete Completed Operations' is turned on, and completed operations are reported as completed in MFG/PRO, then these operations will have delete transactions sent to the planner scheduler.

Please Note:

Partial work order completions entered at 16.12 or 16.13 do not reflect in Planner - as Planner schedules *operations* of the work orders.

Whatever operation quantity setting is selected, the quantity value sent for the Work Order is still the W/O Order Quantity.

Export Preference Lists:

Check this if you wish to send a preference list with operation routes to the Planner. These are used to allow the automatic use of alternative machines to spread load. For details on when preference lists are created and attached to routes refer to 'Alternative Machines' in the Planning section of this manual.

Export Route Comments:

Checking this box sends all route comments to the relevant operation notes in Planner. Work Order comments from MFG/PRO are always sent to Work Order Notes in the Planner.

Export Tools:

Check this to export the tool specified in the route operation, if one has been entered for the operation.

Default Tool is used to send a Tool for any Routes that do not have a tool specified. Leaving this field blank ensures that no tool is sent when no tool is specified on an operation in a route.

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Release Date Limit:

This allows limiting of work to be scheduled based upon the release date of the work orders. Check this box to enable, and key in a value, in days from 'today', to accept as the **range limit** of valid release dates. 'Today' is the system date when the MFG/PRO Export is run.

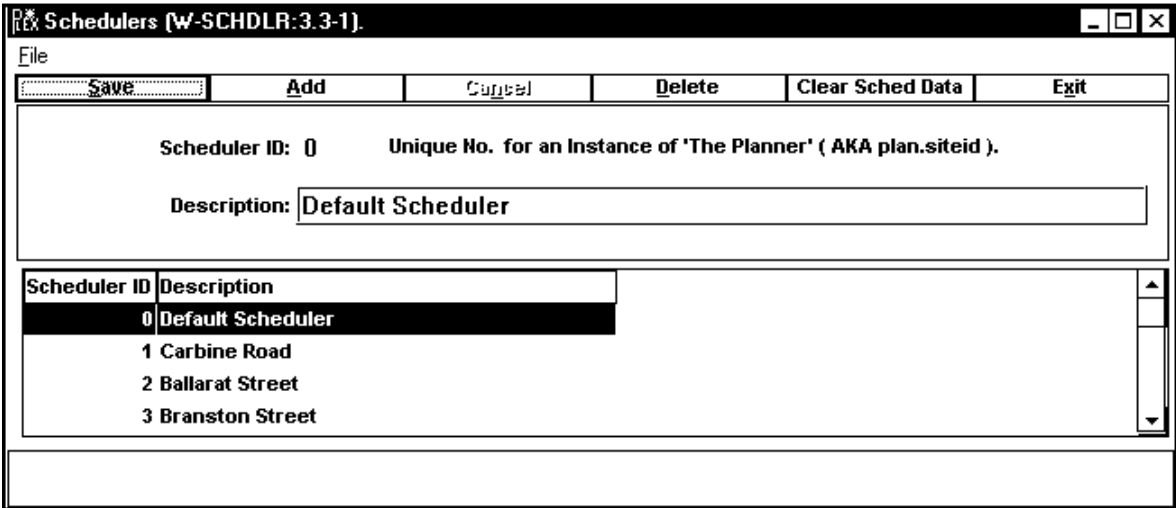
Splitting the Work to Schedule

The Planner can be used to schedule work from an MFG/PRO database for just one or for multiple sites, using one or a number of schedulers.

If it is desired to have more than one scheduler handling work from one MFG/PRO database, first add the other schedulers, then use the Work Split facility to distinguish between the items they will schedule. This can be based on site, part type, product line, planner/buyer, and/or Group. Please refer to 'Note on Splits', page 504.

Schedulers:

If more than one scheduler is to be used, then they must be established in the Schedulers window, via the **[Schedulers]** button on the opening MFG/PRO to Planner Export Utility window.



Scheduler ID	Description
0	Default Scheduler
1	Carbine Road
2	Ballarat Street
3	Branston Street

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When the routine 'MFG/PRO Export Scheduled' is run, an import.if file is created for each scheduler, containing the work they are to schedule. The scheduler ID used in this Scheduler setup window determines the directory off the Planner Multiuser installation directory where the import file for the scheduler is placed. For example:

Scheduler ID	File Placed in Directory
0	\Planner Multiuser
1	\Planner Multiuser\impt1
5	\Planner Multiuser\impt5

The directory where the import.if files are placed is also where the import.if backups are placed. So even when sending work to just one Scheduler it is safer to create a Scheduler with ID > 0, and assign work to this Scheduler ID X, with the import.if file directory being \Planner Multiuser\imptX

This means that when periodically clearing out old backups of import files there is less danger of accidentally deleting any application programs. Scheduler Users may then also have rights restricted to all but their own \imptX directory.

Press:

[Add], then key in a Scheduler ID and a description

[Save] once a new scheduler has been added, or a description has been edited.

[Clear Schedulers Data] button is pressed if at any time it is necessary to clear the work order data for a particular scheduler from the Plexport database. This will cause all work order information to be resent to the import.if text file next time a scheduled MFG/PRO export is run. The Planner Scheduler database for that scheduler must also be cleared before reimport (from Customiser, Startup, Database Setup, Create New Plan.

Work Split:

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Work Split Export Fields (W-SELECT:3.3-1)

File

Save Add Cancel Delete Exit

Split Order: 15

Scheduler ID: 2

Description: Ballarat Street

☐ Create / Edit Custom Export Parameters
☐ Delete Custom Export Parameters

From Site: 2000 To Site: 2000 wo_mstr.wo_site
 From Item Type: To Item Type: pt_mstr.pt_part_type
 From Product Line: To Product Line: pt_mstr.pt_prod_line
 From Buyer: To Buyer: ptp_det.ptp_buyer
 From Group: To Group: pt_mstr.pt_group

Split Order	Send To Scheduler	From Site	To Site	From Item Type	To Item Type	From Product Line	To Product Line
0	0	ZZZZZZZZ	ZZZZZZZZ				
10	1	1000	1000				
15	2	2000	2000				
20	3	3000	3000				

The split shown above separates work for the sites 1000, 2000 and 3000 so that they can each be scheduled by their own scheduler. With this setup arrangement the schedulers will get work orders for all items to be made at their site.

Unless a site ZZZZZZZ is used, Scheduler 0 will receive no work with this setup

The split order is the sequence in which work is assigned to the individual schedulers. This would only be significant when, if through some incorrect settings, the same selection criteria is accidentally set up for two schedulers. Then the work would go to the scheduler with the lowest split order number.

Note on Splits :

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When any work splits are made here, the machines/resources used to make products planned by the separate schedulers are assumed to be available for the exclusive use of only one scheduler.

If any one resource is shared between products being scheduled by different schedulers, then the capacity of the resource will be overstated, and will need adjusting at each scheduler.

So if scheduling at a factory is being split, then the products being scheduled by each scheduler should generally be processed on their own machinery. A shared paint booth or a QC station may work, but if half of the equipment is shared between schedulers, scheduling with Planner is likely to be unmanageable.

Press:

[Add], then key in a Split Order No., select the Scheduler ID and edit the split criteria.

- **The 'From Site' and 'To Site' fields must have entries.**
- **Empty fields for the other part characteristics denote 'any value'**

Else: Left click on the desired split order/scheduler line at the bottom, and key in the selection range.

[Save] once a new split order/scheduler entry has been added, or an existing one has been edited.

The next example shows work for site 2000 being sent to 2 different schedulers. Scheduler 1 gets all work for Product Lines RAM and DAG, while Scheduler 2 gets all work for Product Lines DRE to OZY.

The point to note is that a new split order line is required for each discrete product selection for a scheduler. But if a selection range for a scheduler does not conflict with selection criteria for another scheduler, then the range may be used.

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Work Split Export Fields (W-SELECT:3.3-1)

File

Save Add Cancel Delete Exit

Split Order: 20

Scheduler ID: 2

Description: Ballarat Street

Create / Edit Custom Export Parameters
 Delete Custom Export Parameters

From Site: 2000 To Site: 2000 wo_mstr.wo_site
 From Item Type: To Item Type: pt_mstr.pt_part_type
 From Product Line: DRE To Product Line: QUE pt_mstr.pt_prod_line
 From Buyer: To Buyer: ptp_det.ptp_buyer
 From Group: To Group: pt_mstr.pt_group

Split Order	Send To Scheduler	From Site	To Site	From Item Type	To Item Type	From Product Line	To Product Line
0	0	ZZZZZZZZ	ZZZZZZ				
10	1	2000	2000			RAM	RAM
11	1	2000	2000			DAG	DAG
20	2	2000	2000			DRE	OZY

Pic:MFGWorkSplitFields2

Custom Export Parameters

If a different type or status of work order is required to be exported from MFG/PRO for one of several schedulers, then these variations can be made using the **[Create/Edit Custom Export Parameters]** button while the required split order line is highlighted. If the scheduler has a number of split order lines, then the custom export parameters will need to be set for each line.

Create / Edit Custom Export Parameters
 Delete Custom Export Parameters

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The 'MFG/PRO Interface Maintenance' window shown on page 496 opens when the **[Create/Edit Custom Export Parameters]** button is pressed. However the difference is that now the details are for a specific scheduler/split order rather than global.

Split Order: Global		Split Order: 10
Send to Scheduler: 0	is now	Send to Scheduler: 1
Description: Default Scheduler		Description: Carbine Road

If at any stage it is desired to return the customised export parameters for a scheduler to the global settings, then highlight the required split order line, and press the **[Delete Custom Export Parameters]** button.

Additional Field Data

Some essential work order data is always sent to The Planner along with the selected work orders.

The data sent by default is

- Work Order ID
- Work Order Status
- Customer (only if a wo_so_job entry exists for the work order)
- Work Order Due Date
- Work Order Release Date
- Quantity Ordered
- Item Number
- Operation Work Centre-Machine
- Operation Setup
- Operation Run Duration
- Operation (i.e route sequence number)
- Operation Status

By pressing the **[Customer]**, **[Work Order]**, **[Stage]**, **[Route]**, **[Machine]**, or **[Item Op]** button extra information from MFG/PRO can be sent to and placed in suitable spare fields in The Planner.

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Customer Data

This has been setup by default already, and this information is available for any work orders that are directly related to a sales order, and hence a customer, i.e for work orders where a wo_so_job entry exists.

If you wish to change the MFG/PRO fields used to populate the Planner fields, use the drop down box to select another allowed field from the list.

The screenshot shows a window titled "Customer Export Fields (W-EXPCUS:3.3-2)". It has a menu bar with "File" and a toolbar with "Save" and "Exit". Below the toolbar, there are settings: "Split Order: Global", "Send to Scheduler: 0", and "Description: Default Scheduler". The main area contains a table with four columns: "To Field", "File and Field to Transfer", "From Field Format", and "To Field Format".

To Field	File and Field to Transfer	From Field Format	To Field Format
Description:	ad_mstrlad_name	x(28)	x(41)
Address Line 1:	ad_mstrlad_line1	x(28)	x(31)
Address Line 2:	ad_mstrlad_line2	x(28)	x(31)
Address Line 3:	ad_mstrlad_line3	x(28)	x(25)
Phone No:	ad_mstrlad_phone	x(16)	x(15)
Fax:	ad_mstrlad_fax	x(16)	x(15)
Attention:	ad_mstrlad_attn	x(24)	x(25)
Priority:			x(1)

Work Order

A number of spare text and number fields are available at this level. Most users will probably choose the MFG/PRO field **pt_mstr.pt_desc1** to place in the Description1 Planner field.

Use the Planner spare field drop down boxes to select the MFG/PRO field you wish to send data from. When finished press the **[Save]** button.

Work Order Export Fields (W-EXPJOB:3.3-2)

File Save Exit

Split Order: 10 Send to Scheduler: 1

Description: Carbine Road

To Field	File and Field to Transfer	From Field Format	To Field Format
Description1:	pt_mstr pt_desc1	x(24)	x(51)
W/O SpareTxt1:	pt_mstr pt_desc2	x(24)	x(25)
W/O SpareTxt2:	pt_mstr pt_site	x(8)	x(25)
Priority:	wo_mstr wo_bom_code		9(1)
W/O SpareVar1:	wo_mstr wo_cc		9(12),9(6)
W/O SpareVar2:	wo_mstr wo_flr_acct		9(12),9(6)
	wo_mstr wo_flr_cc		

Stage

As MFG/PRO work orders are have only one Stage, all the spare fields at this level in the Planner may be used for Work Order or Part information. Alternatively the dedicated sequencing fields provide in this utility may be used to store part information used to sequence operations for the part through one or more machines/processes. The window dump shows the first 3 spare Planner fields being used to accept scheduling fields data.

Stage Export Fields (W-EXPITM:3.3-2)

File Save Exit

Split Order: 20 Send to Scheduler: 2

Description: Ballarat Street

To Field	File and Field to Transfer	From Field Format	To Field Format
Stage SpareTxt1:	sequence 1	x(25)/9(8)	x(21)
Stage SpareTxt2:	sequence 2	x(25)/9(8)	x(25)
Stage SpareTxt3:	sequence 3	x(25)/9(8)	x(25)
Stage SpareTxt4:			x(25)
Stage SpareTxt5:			x(25)
Stage SpareTxt6:			x(25)
Stage SpareTxt7:			x(25)
Stage SpareVar1:			9(12),9(6)
Stage SpareVar2:			9(12),9(6)
Late Alert:			9(8)

Route (Op) and Item Route (Op)

The tables that can be used to populate the operation (route) records in Planner for **ALL** work orders are the Work Order Master (wo_mstr), and the Item Master (pt_mstr), and the routing used by the work order.

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As work orders of Status F,E,A and R have their own routings, they can have information from the Work Order Route (wr_route) sent to spare operation fields in Planner. The **[Route]** button is used for these work orders.

Work Orders of Status P and B however do not have their own routes, so additional information can instead be sent from the Route record for the Item, i.e, the ro_det record. The **[Item Route]** button is used for these work orders.

Use the respective drop down boxes to choose the table and field required for the selected Planner field.

The standard information brought down for each route is:
Work Centre Machine (that is Work Center, space, Machine) ,
Preference List (if any),
Setup,
Run duration,
Qty Ordered,
Opn Status,
Operation (sequence number).

This information is from the wr_route table for the route, or if it does not exist (i.e. for Planned) then from the ro_det table.

Route (Op) Export Fields (W-EXP0PR:3.3-2)

File

Save Exit

Split Order: Global Send to Scheduler: 0

Description: Default Scheduler

To Field	File and Field to Transfer	From Field Format	To Field Format
OpSpareTxt1:	wr_route wr_tool	x(8)	X(25)
OpSpareTxt2:	wr_route wr_desc	x(24)	X(25)
OpSpareVar1:			>>>>>>>>9,9<<<<<
OpSpareVar2:			>>>>>>>>9,9<<<<<
UserStatus1:			yes/no
UserStatus2:			yes/no
UserStatus3:			yes/no
UserStatus4:			yes/no
UserStatus5:			yes/no
OpEDate:			99/99/99
OpETime:			>>>>9
OpLDate:			99/99/99
OpLTime:			>>>>9
Use Edate:			yes/no
Use Ldate:			yes/no

Machine

The only options here are for assigning a group and a speed ratio to the machine. While group might be sensibly populated by wkctr_mstr.wc_dept for instance, speed ratio may be best manually entered within the Planner, (For a full description of speed ratio see 'Machine Edit' in the Planning section of this manual, or use the search facility in The Planner's Help.

Sequencing Data

Using this utility, Item data specifically relevant to sequencing operations can be made readily available in the scheduler, (after also mapping to spare Planner Scheduler fields, see page 507), for either manual or automated sequencing. (This data entry/editing utility can also be accessed directly, as set out on page 515)

The information is part (item number) and site specific, and might be used to help ensure that operations are scheduled through the machines used to

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process them in an order that maximises the overall throughput of the machines. The data of course might not be required for sequencing, but may be desirable to be included on the despatch list for the factory floor, which is created from Planner or Planview.

Room has been provided to store data on up to sixteen extra pieces of data used by the scheduling person. If the data is already in MFG/PRO, it of course does not need to be replicated here. This is for information that is not kept in MFG/PRO as, for example, no suitable field exists to store it in.

Item Number, Product Line, Drawing Number, Tool, etc are examples of data already available in MFG/PRO, that can be taken directly to The Planner, without need to duplicate it here.

Sequencing Labels

Once the most important sequencing criteria have been established, use this option to rename the field names to suit.

Remember that some (maybe most) fields will only be used at one work center, where that criteria affects throughput, eg 'Finished Colour' might only be used at the 'Paint Booth' to try and run like coloured products together and avoid unnecessary setup/cleanups.

Similarly 'Resin Type' might only affect the extrusion or moulding work centers, as downstream operations are more affected by Size.

Considerable care should be given before deciding on the criteria, and especially before entering the data for each item number.

A clear understanding of how 'Sequencing' in The Planner works should also be a prerequisite before making the final decision. Having to re-enter data needlessly, as in any system setup, is heartbreaking and costly!

The screenshot shows a window titled 'Seq Sequencing Labels (W-SEQLBL:3.3-2)'. It has a menu bar with 'File' and buttons for 'Save' and 'Exit'. The main area contains the following fields:

- Split Order: Global
- Send to Scheduler: 0
- Description: Default Scheduler
- Sequence 1: Resin Type
- Sequence 2: Film Thickness (mm)
- Sequence 3: Film Colour
- Sequence 4: Film Finished Width
- Sequence 5: Bag Finished Width
- Sequence 6: Size
- Sequence 7: Label 7
- Sequence 8: Label 8
- Sequence 9: Label 9
- Sequence 10: Label 10
- Sequence 11: Label 11
- Sequence 12: Label 12

Sequencing Data Maintenance

This is the window where the sequencing data for each item is entered. The fields are all alphanumeric, but if only numbers are entered, they may be sent to spare number fields in The Planner. An alternative to editing sequence data here is to use the separate editing program. See page 515 for details.

Pressing the **[Extract from MFG/PRO]** button will extract all items from MFG/PRO which have Pur//Mfg of Blank, M(manufacture), R(outable), C(onfigured) or L(line -MFG/PRO version 9 on), and which are made at one of the sites established in 'Work Split'

If an item is made at a number of sites, then a different set of entries is made for the item at each site.

When exporting Planned work orders for items made repetitively in MFG/PRO, to be scheduled using the repetitive functions of Planner, the

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determination as to how a particular item is sent to Planner is determined by the **[Made Repetitively]** checkbox setting.

If a particular item was previously made repetitively at a site, (i.e. has a line setup for it in Repetitive Production Line Maintenance) , it will have **[Made Repetitively]** checked ON.

If this Item is now made using 'discrete work orders', then turn ON the **[NOT made Repetitively]** radio button, then press the **[Save]** button. This will uncheck 'Made Repetitively'.

Sequencing Data Maintenance (W-SEQDAT:3.4-4)

File Save Exit

Split Order: Global

Send to Scheduler: 0

Description: Default Scheduler

Item Code: 88-300 | 12000

Description: BOTTLE,PLASTIC,1 LITRE

Resin Type	7155R
Film Thickness (mm)	
Film Colour	CLEAR
Film Finished Width	
Bag Finished Width	
Size	1.0
Label 7	
Label 8	
Label 9	
Label 10	
Label 11	
Label 12	
Label 13	
Label 14	
Label 15	
Label 16	

Extract from MFG/PRO

Clear All Part Data

☒ Made Repetitively

☒ No Over Ride

☐ Made Repetitively

☐ NOT Made Repetitive

When using the 'Rank' or 'Associative' sequencing methods in The Planner, data that includes any characters other than numbers is given a value of zero.

Sequence Code Values

For criteria, for example colours, which you wish to rank or associate on, you can store the colour name in one of the data fields. Then use the Sequence Code Values window to assign a numeric value to each colour name. This means that you do not have to laboriously change the colour value for every item number if you introduce a new colour, say 'light pink', which should fit between red and pink.

When a sequencing data field is selected for sending to The Planner, if a Code value exists for the field, the code value will be sent, otherwise the actual data in the sequencing field will be sent. So if the colour itself, as well the value of the colour, is required in The Planner, then two sequencing labels should be used.

Sequence	Code	Value
3	BLACK	99
3	CLEAR	0
3	OPAQUE	1

Editing Sequencing Data

A program, w-selprt.w, is provided to allow someone to edit/add the sequencing data held for items being scheduled, without them having to have access to all of the Interface Utility.

Copy the shortcut used for the "MFG/PRO Interface Utility", and edit it to run

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w-selprt.w instead of the w-exputl.w. Rename the shortcut “Edit Part Data”, and establish a password in the opening MFG/PRO Interface Utility window. The default password is ‘edit’

The ‘Edit Part Data’ shortcut should open the window shown below, that allows selection of the scheduler ‘work split’ that the data is to be entered/edited for. Once the scheduler is selected, the Labels, Data and Values are able to be changed, in the same manner outlined from page 511.

Adding Sequence Fields Data Programmatically

If data to be used already exists in some other electronic format such as a spreadsheet, then this data may be used to populate the plexport table, if someone with suitable skills is available. The background information below may be of assistance to them.

The plexport part data, including sequence field data, is in the mptmstrx table

As outlined above, parts of this table are populated during an MFG/PRO Export run, or from the ‘Sequencing Data maintenance’ window, by pressing the ‘Extract from MFG/PRO’ button.

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If all work splits use the 'Global' split order values, then there will be just one entry for each pt_part – ptp_site combination. [where the item has a pm_code (from pt_mstr or ptp_det as appropriate for the site) with a value of ' ' (blank) 'M' (manufactured), 'R' (routable), 'C' (component) or 'L' (line schedule – from v9.0)]

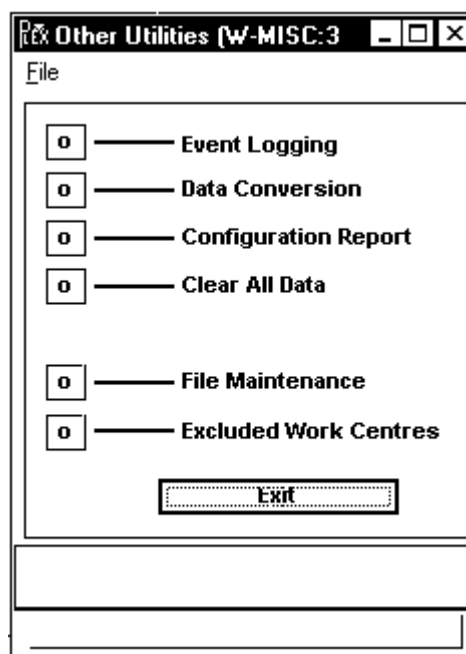
These Global mptmstrx entries will all have seqnce field values of 999999.

Only if 'Custom Export Parameters' have been set for a particular work split, will duplicates then be found for each pt_part – ptp_site combination. That is one additional entry for each pt_part – ptp_site combination, for each work split that has Custom Export Parameters set. The seqnce value of these additional entries is the work split sequence value.

Each pt_part – ptp_site combination will have the initial values for reptve field (made repetitively) based upon the settings for each item in MFG/PRO Production Line Maintenance

The 16 plexport.mptmstrx fields available for storage of item information are seqnc1 – seqnc9, seqnca,b,c, and seqn13 – seqn16.

Other Utilities



Section 7 - Interfaces

A number of other utilities are available from this window.

Event Logging

A variety of options are available for logging the operation of export from MFG/PRO. Only basic logging is turned on by default, but other options can be turned on if problems arise.

Logging (W-LOGING:3.42p22-3).

File

Save **Exit**

Log Length: 160	Logging Element	ADD	CHG	DEL
Log Limit: 1000	Work Order Trans	☐	☐	☐
Current Log: 0	Work Route Trans	☐	☐	☐
☒ Dates of Run	☐ Critical	☐	☐ Qty Reduce	
☒ Utility Prog Access	Standard Route Trans	☐	☐	☐
☒ Import.if Runs	☐ Critical	☐	☐ Qty Reduce	
☐ Log/Debug Language	Tool Transactions	☐	☐	☐
☐ Procedure Debugging	W/O Comments Trans		☐	☐
Debug Level Code: 0	Stage Comment Trans		☐	☐
☒ Data Convert Errors	Route Comment Trans		☐	☐
Log R0 Route Errors	Item Transactions	☐	☐	
☐ Log WR Route Errors	Customer Trans	☐	☐	☐
	Work Centre Trans	☐	☐	☐
	Machine Transactions	☐	☐	☐
	Preference List Tran	☐		☐
	Pref Resource Trans	☐		☐
	Route Tool Trans	☐		☐
	Work Order Link Tran	☐	☐	☐
	Library Job Trans	☐		☐
	Library Oper Trans	☐		
	Adv Rep Adjust Trans	☐	☐	☐

Data Conversion

When setting up to send additional MFG/PRO data to the planner, it is possible to send alphanumeric and number data to fields in the planner that are of different types.

Once the “Convert Data” checkbox is ON, and saved, fields of all types are listed in the drop down boxes of all the Additional Field Data selection windows.

First an explanation of the options, then an example of how it may be used.

MFG/PRO Integer or Decimal to Planner Logical

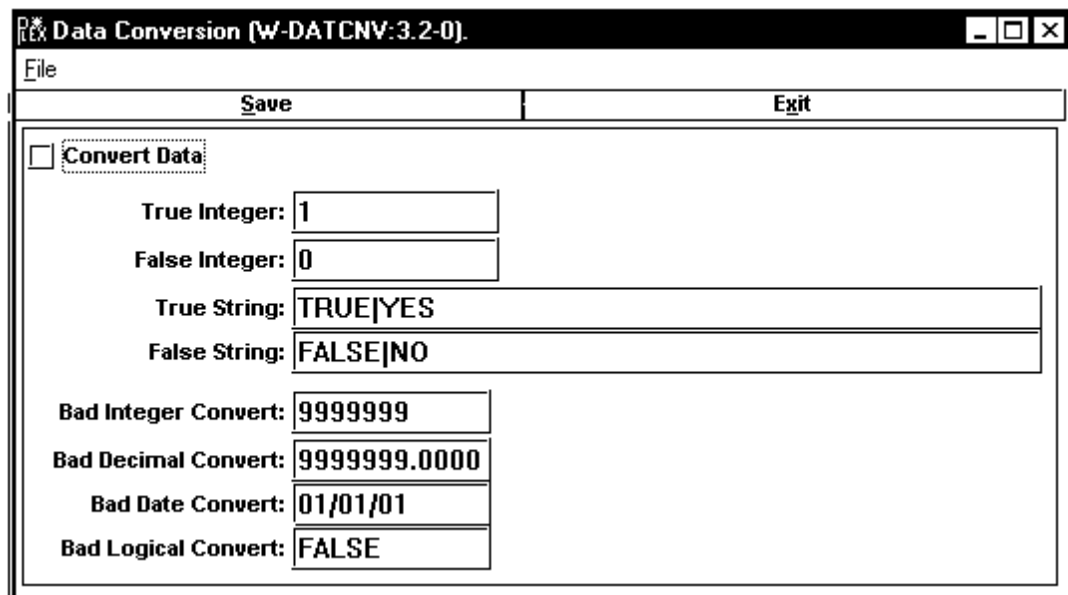
Set the 'True Integer' value to the “True Value” stored in Integer or Decimal fields in MFG/PRO that you wish to send to a Logical field in The Planner.

Likewise,

Set the 'False Integer' value to the “False Value” stored in Integer or Decimal fields in MFG/PRO that you wish to send to a Logical field in The Planner.

MFG/PRO alphanumeric to Planner Logical

Set the 'True String' value to the ‘True Value’ (or true values separated by a '|' character) that you wish to send as TRUE to a Planner logical field from an MFG/PRO alphanumeric field. Likewise, Set the 'False String' value.



Data Conversion (W-DATCNV:3.2-0)

File Save Exit

☒ **Convert Data:**

True Integer: 1

False Integer: 0

True String: TRUE|YES

False String: FALSE|NO

Bad Integer Convert: 9999999

Bad Decimal Convert: 9999999.0000

Bad Date Convert: 01/01/01

Bad Logical Convert: FALSE

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Bad Conversions

Bad Integer/Decimal Convert - when an MFG/PRO text field (containing a number) is sent to a Planner number field.

Set the 'Bad Integer Convert' value to a number that indicates (and will be sent to The Planner) when an MFG/PRO field could not be converted to an integer. Likewise, set the 'Bad Decimal Convert'.

Bad Date Convert - when an MFG/PRO text field (containing a date) is sent to a Planner date field.

Set the 'Bad Date Convert' value to a value that indicates (and will be sent to The Planner) when the value from MFG/PRO could not be converted to a date.

Bad Logical Convert - when an MFG/PRO field (containing logical data) is sent to a Planner logical field.

Set the 'Bad Logical Convert' value to a value that indicates (and will be sent to The Planner) when the value from MFG/PRO could not be converted to a logical value.

Example 1

To get a way of making operations stand out in the Scheduler - if they have had work reported to them in MFG/PRO Shop Floor Control Module (and presumably have started processing)

1. send wr_qty_comp to Planner User Status1

To Field	File and Field to Transfer	From Field Format	To Field Format
OpSpareTxt1:		x(8)	X(25)
OpSpareTxt2:		x(24)	X(25)
OpSpareVar1:			>>>>>>>>9.9<<<<<<
OpSpareVar2:			>>>>>>>>9.9<<<<<<
UserStatus1:	wr_route wr_qty_comp		yes/no
UserStatus2:			yes/no
UserStatus3:			yes/no

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2. Set data conversion ON, and set Bad Logical convert to True.

File Save Exit

☒ **Convert Data**

True Integer: 1

False Integer: 0

True String: TRUE|YES

False String: FALSE|NO

Bad Integer Convert: 9999999

Bad Decimal Convert: 9999999.0000

Bad Date Convert: 01/01/01

Bad Logical Convert: TRUE

So now have situation where:

If wr_qty_comp = 0, will send False (as False Integer = 0)

If wr_qty_comp = 1, will send True (as True Integer = 1)

If any other value it will send the value set in 'Bad Logical Convert', i.e. True= 1.

So any operations with quantities reported against them will display as blue on the planning board in Planner (from having Userstat1=ON)

Operations that are also "late" will show up as Purple.

Example 2

To ensure that when placing WOs on the board that they do not start before the Release Date from MFG/PRO, need to:

- Set Convert Data, make Bad Logical Convert = True
- set OpEDate for operations to be MFG/PRO Release date, AND
- set Use EDateON for imports to planner

If going to do for status P WOs as well as ones with their own routes, then repeat for 'Item Route Op'

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Data Conversion (W-DATCNV:3.42p22-1).

File

Save Exit

☒ **Convert Data:**

True Integer: 1

False Integer: 0

True String: TRUE|YES

False String: FALSE|NO

Bad Integer Convert: 9999999

Bad Decimal Convert: 9999999.0000

Bad Date Convert: 01/01/01

Bad Logical Convert: TRUE

Route (Op) Export Fields (W-EXPOPR:3.42p22-3).

File

Save Exit

Split Order: Global Send to Scheduler: 0

Description: Default Scheduler

To Field	File and Field to Transfer	From Field Format	To Field Format
OpSpareTxt1:			x(25)
OpSpareTxt2:			x(25)
OpSpareVar1:			9(12).9(6)
OpSpareVar2:			9(12).9(6)
UserStatus1:			yes/no
UserStatus2:			yes/no
UserStatus3:			yes/no
UserStatus4:			yes/no
UserStatus5:			yes/no
OpEdate:	wo_mstr wo_rel_date 99/99/99 D	99/99/99	99/99/99
OpETime:			9(5)
OpLdate:			99/99/99
OpLTime:			9(5)
Use Edate:	wo_mstr wo_lot x(8) C	x(8)	yes/no
Use Ldate:			yes/no
OpSpareTxt3:			x(25)
OpSpareTxt4:			x(25)
OpSpareTxt5:			x(25)
OpSpareTxt6:			x(25)

If you don't want lots of bad logical convert messages filling the plex0000.log during exports, then go to Other Utilities, Event Logging , and turn OFF 'Data Convert Errors'

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Logging Element	ADD	CHG	DEL
Work Order Trans	☐	☐	☐
Work Route Trans	☐	☐	☐
☐ Critical	☐ Qty Reduce		
Standard Route Trans	☐	☐	☐
☐ Critical	☐ Qty Reduce		
Tool Transactions	☐	☐	☐
W/O Comments Trans		☐	☐
Stage Comment Trans		☐	☐
Route Comment Trans		☐	☐
Item Transactions	☐	☐	
Customer Trans	☐	☐	☐
Work Centre Trans	☐	☐	☐
Machine Transactions	☐	☐	☐
Preference List Tran	☐		☐
Pref Resource Trans	☐		☐
Route Tool Trans	☐		☐
Work Order Link Tran	☐	☐	☐
Library Job Trans	☐		☐
Library Oper Trans	☐		
Adv Rep Adjust Trans	☐	☐	☐

When placing the jobs on the board by earliest date, the first operation will not start its run until the rel date.

- If there is contention for resource time – the place type will determine which operation goes first.

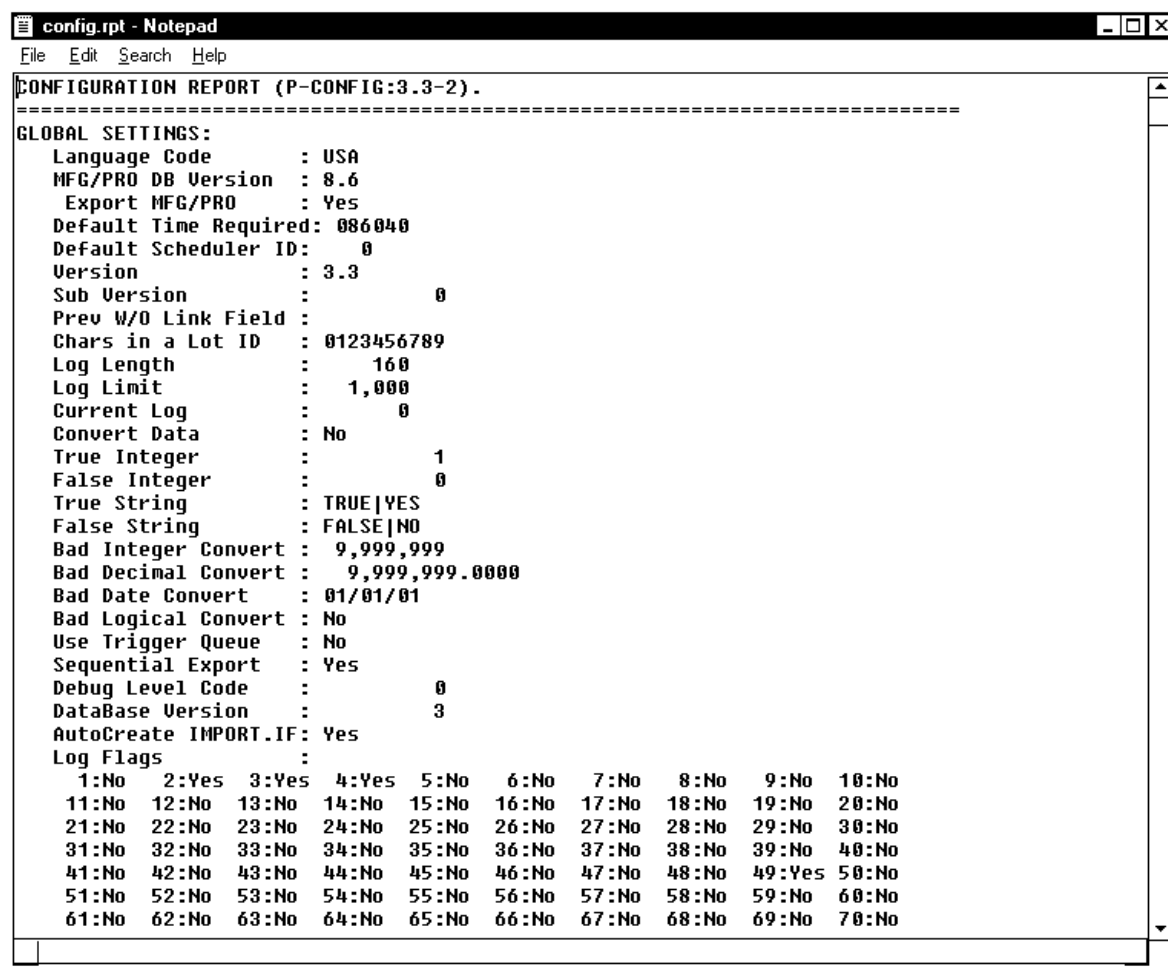
This example is using Anchoring in the Planner Scheduler, by setting the lower anchor for all opns to be the release date for the WO. If you want to move the WO or an opn earlier than that, the WO or Opn will need unanchoring – using

- Board WO Edit, Edit Opn line, turn off ‘Use Edate’ OR
- Plan Menu, Anchor/Unanchor WO, OR
- Select Anchor button, then drag over the Opn/WO and unanchor lower or both.

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Configuration Report

When this option is run, a report on all settings in the MFG/PRO Export Utility is printed to a default text file Config.rpt, placed in the \Planner Multiuser root install directory. The directory and filename may be changed.



```
config.rpt - Notepad
File Edit Search Help
=====
CONFIGURATION REPORT (P-CONFIG:3.3-2).
=====
GLOBAL SETTINGS:
Language Code      : USA
MFG/PRO DB Version : 8.6
Export MFG/PRO     : Yes
Default Time Required: 086040
Default Scheduler ID: 0
Version           : 3.3
Sub Version        : 0
Prev W/O Link Field :
Chars in a Lot ID  : 0123456789
Log Length         : 160
Log Limit          : 1,000
Current Log        : 0
Convert Data       : No
True Integer       : 1
False Integer      : 0
True String        : TRUE|YES
False String       : FALSE|NO
Bad Integer Convert : 9,999,999
Bad Decimal Convert : 9,999,999.0000
Bad Date Convert   : 01/01/01
Bad Logical Convert : No
Use Trigger Queue  : No
Sequential Export   : Yes
Debug Level Code   : 0
DataBase Version    : 3
AutoCreate IMPORT.IF: Yes
Log Flags          :
  1:No  2:Yes  3:Yes  4:Yes  5:No  6:No  7:No  8:No  9:No  10:No
  11:No 12:No 13:No 14:No 15:No 16:No 17:No 18:No 19:No 20:No
  21:No 22:No 23:No 24:No 25:No 26:No 27:No 28:No 29:No 30:No
  31:No 32:No 33:No 34:No 35:No 36:No 37:No 38:No 39:No 40:No
  41:No 42:No 43:No 44:No 45:No 46:No 47:No 48:No 49:Yes 50:No
  51:No 52:No 53:No 54:No 55:No 56:No 57:No 58:No 59:No 60:No
  61:No 62:No 63:No 64:No 65:No 66:No 67:No 68:No 69:No 70:No
```

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Configuration Report (W-CONFIG:3.4-0)

File

Print Exit

Output to File: c:\temp\config.rpt

☐ Print Part Details

Writing Config Report.
Config report Completed.

Turning ON 'Print Part Details' before running the report also provides sequencing field data, as well as data concerning repetitive manufacture. This data is provided for each manufactured item stored in the Plexport database, so can take some time to run if the number of parts that are made is large. An example for one part is shown below.

Untitled - Notepad

File Edit Search Help

HPTMSTRX: Split Order [999999] SETTINGS:

Item Code : 90-110

Setup : 0.0

Run : 0.000166667

Routing :

PM Code : M

Description : KOOLAIR(TM) MEDIC-GRADE
COOLER CONDITIONER

Sequence 1 :
Sequence 2 :
Sequence 3 :
Sequence 4 :
Sequence 5 :
Sequence 6 :
Sequence 7 :
Sequence 8 :
Sequence 9 :
Sequence 10 :
Sequence 11 :
Sequence 12 :
Made Repetitively : Yes
Made Rep Override : 0
Primary Line :
Sequence 13 :
Sequence 14 :
Sequence 15 :
Sequence 16 :

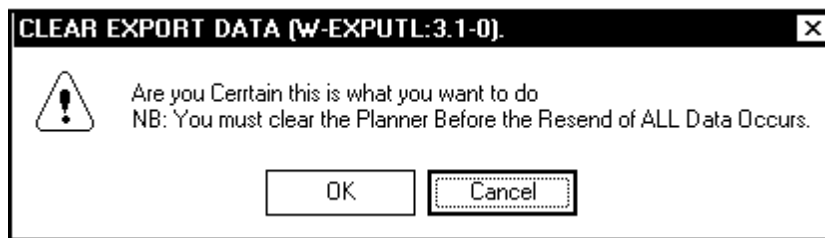
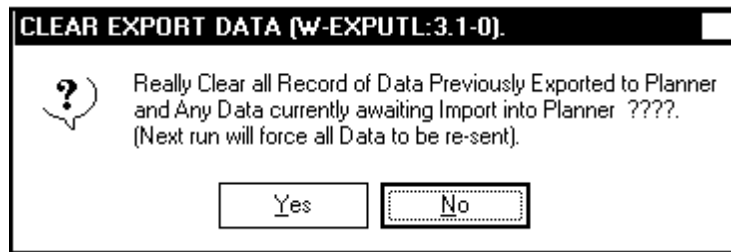
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Clear All WO Data

Empties the Plexport, MFG/PRO Export to Planner, database of all Work Order (and Repetitive Schedule Data, if any), for use when testing, or at any time when it is desired to make a fresh start.

Two prompts are given so that this option is not carried out accidentally.

This option should not be carried out without due consideration, as if this database is cleared at any time, then the Planner Scheduling database also must be cleared (in Customizer, Startup, Database Setup, Create New Plan).



Does not clear Item (part) data, which must be cleared from the Sequencing Data Maintenance window.

Fix MFG/PRO Demo Data

Under no circumstances should this be used against live data, as all routing runs/rates are reset. Two further confirmations to proceed are required for safety.

This utility changes any routings, ro_det or wr_route, that have a run value of 1, to .001. This can be used to reduce the work ahead in mfgdemo.db so that it fits within the 10 year Planner scheduling window.

File Maintenance - WO Maintenance

If at any time it is required to remove a work order from the plexport database, and have it resent as an 'ADD' from MFG/PRO, then the W/O

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maintenance option allows the selection of the required W/O to delete from plexport. One reason for using this option might be that a work order has been manually & accidentally deleted from the planner scheduler.

Excluded Work Centers

Some implementations of MFG/PRO require routings with separate 'labor' operations that overlap with each 'machine' operation, as labor costs are dependant on the product, not on the work centers being used. That is, the labour requirement at a work center may vary, depending on what product is being processed.

But for scheduling purposes it may be desirable to exclude these labor work centre operations from being brought into Planner, as they affect standard costing more than capacity.

Having any machine on the 'Excluded Work Center' list means that:

- Any operations assigned to a work center-machine on the list will be ignored completely, no matter the sequence of the operation in the route.
- Any overlap, wait or move times specified in an operation preceding an excluded one, would instead be applied to the operation succeeding the excluded one.
- Any overlap, wait or move times specified in an excluded operation would be ignored

Adding of Work Centers to the 'Excluded Work Center' list must be carried out before the first MFG/PRO Export is run.

Once an MFG/PRO Export run has been carried out, any Work Centers previously marked 'Exclude from Planner Route' cannot easily be included in the route sent to Planner again. Similarly no new additions may be made to the list of excluded work centers after the first MFG/PRO Export run.

The data for all schedulers must first be cleared from Plexport, using the Other Utilities, Clear All WO Data option. This also means all the schedulers would also need to restart with empty plans.

This function only affects Work Orders sent to Planner, and does not affect the repetitive interface, even when full routing is switched on.

To add a work centre-machine to the list, press the [Add] button, look up the work center – machine, then press the [Save] button.

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Excluded Work Centres

File

Save Add Cancel Delete Exit

Work Centre: LABOR | LAB1

Description: Labor for Operation

Work Centre	Description
LABOR LAB1	Labor for Operation

Customising Exports from MFG/PRO

It is possible to customise the exports to Planner of Item (Part) data, Work Order data, and with SP1 for v3.42 applied, Routing data.

The customising is carried out by adding code to the respective procedure(s) as listed below, which allows the sending of additional or alternative data.

Custom Item data	p-cusprt.p
Custom Work Order data	p-cuswo.p
Custom Route data	p-cuswr and p-cusro.p

Unencrypted source for the empty routines is available from the CD, src\plexport\custom\mfg, and once modified should replace the installed version(s) in InstallDir\custom\mfg. The modified files may need placing in the Unix Planner application area as well as the Windows Planner Multiuser application area – if exports are to be run under Unix. Recompiles must be carried out.

Example for p-cusprt.p

The following example is code added to p-cusprt.p to

- obtain part data from a database separate to mfg.db,

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- place the data in the sequence fields shown, from where they are mapped to suitable spare fields in the scheduler, using the standard interface functions, described under Additional Field Data, page 507.
- Trim the field format_prn to 20chtrs if necessary, and if overgloss is yes append O/G
- The extra database must be connected to during compile and running of exports (use compile.pf and plexport.pf)

```
find pt0_mstr where pt0_mstr.pt0_part = ic-pt-part no-lock no-error.

if available pt0_mstr then
do :
    assign uc-seqnc1 =          pt0_mstr.pt0_filmcol
        uc-seqnc2 = string( pt0_mstr.pt0_extwid      )
        uc-seqnc3 = trim(    pt0_mstr.pt0_format_prn ).

    if pt0_mstr.pt0_overglos then
        if length( uc-seqnc3 ) > 20 then
            assign uc-seqnc3 = substring( uc-seqnc3, 1, 20 ) + ' -O/G':u.
        else
            assign uc-seqnc3 = uc-seqnc3 + ' -O/G':u.
    end.
end.
```

Example for p-cuswr.p

The following example is code added to p-cuswr.p to:

- put some extra MFG/PRO route information in OpnSpareTxt5 & 6 fields (Could also be mapped there with the Interface Utility – but would not have prefix:)
- put the standard setup and run values ready to go to the scheduler into OpnSpareTxt3 & 4 fields – and express these as 1/10ths of an hour
- sum the standard setup and run values, and place in run
- zero out the setup from the operation

```
DEFINE BUFFER b-wr-route FOR wr_route.
FIND FIRST b-wr-route WHERE rowid( b-wr-route ) = ir-wr-rowid NO-LOCK NO-ERROR.
IF AVAILABLE b-wr-route THEN
DO :
    ASSIGN uc-optxt6 = 'DESC: ':u + b-wr-route.wr_desc
        uc-optxt5 = 'NUM OPS: ':u + STRING( b-wr-route.wr_men_mch )
        uc-optxt3 = STRING(ui-qumred / 360 )
        uc-optxt4 = STRING(ui-qutrun / 360 )
        ui-qutrun = INTEGER(ui-qumred + ui-qutrun )
        ui-qumred = INTEGER ( 0 ).
    END.
ELSE
```

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```
DO :  
    ASSIGN uc-opttxt6 = '** BAD IR-WR-ROUTE ID **':u.  
END.
```

Update MFG/PRO Interface

Updates to MFG/PRO are made from the Multiuser Planview database, which must be setup to receive data from the schedulers being used, as set out in the Multiuser section of this manual.

When the Repetitive Interfaces are turned on, updates to the MFG/PRO schedules are required. Indeed to turn on the Export of Repetitive work, the **[Update MFG/PRO]** switch must already have been turned on. The Log directory, where the CIM files are also placed needs to be entered, and the CIM Update routine must have been installed and configured for the Updating to function. See page 535 for further discussion of Updating Repetitive Schedules.

It is not imperative to Update MFG/PRO Work Orders from The Planner. But when exporting only "Work Orders" from MFG/PRO to Planner, if update options are selected, then the CIM Update routine must have been installed, configured and tested for the update to work.

Careful consideration must be given to the implications of updating MFG/PRO with data from the schedule. Until the scheduler is confident that their plan is correct, then do not update the live MFG/PRO.

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MFG/PRO Update Settings (W-UPDATE:3.4-0)

File Save Exit

☒ Update to MFG/PRO

Update Logging Dir
C:\cim\

☐ Update W/O Status if Changed **Work Orders**

☒ Skip "PL-" ID's in WO Update

☒ Update W/O Release Date with Scheduled W/O Start

When a Work Order is Scheduled to be significantly Late, i.e.
The Scheduled Start Date is AFTER MFG/PRO Due Date

☐ Update Release Date, Empty Due Date, Let MFG/PRO Calculate New Due Date.

☐ Update Release Date, And Change Due Date to Scheduled Completion.

☐ Update Release Date to the Due Date, Leave Due Date as is.

☒ Allow to Fail and Leave as Previous

☒ Update W/O Due Date with Scheduled W/O Completion

When a Work Order is Scheduled to be significantly Early, i.e.
The Scheduled Completion Date is EARLIER than MFG/PRO Due Date

☐ Update Due Date, Empty Release Date, Let MFG/PRO Calculate New Release Date.

☐ Update Due Date, And Change Release Date to Scheduled Start.

☐ Update Due Date to the Release Date, Leave Release Date as is.

☒ Allow to Fail and Leave as Previous

Repetitive

☒ Explode Schedule after Update

Schedule Explosion Output Field
printer

☐ Update Repetitive Schedule

☐ Update Route Start Date with Scheduled Opn Start. **Route**

☐ Update Route Due Date with Scheduled Opn Completion.

☐ Update Route W/C Machine with Scheduled W/C Mch.

☐ Update Route Setup Duration with Scheduled Setup.

☐ Update Route Run Rate with Scheduled Run Rate.

Log Directory

The name of the directory in which the update log will be created. This must end in a forward or backslash, (e.g C:\mfgup\ if updates are run from windows) and the directory must exist.

The log files are of the format err000x.log and era000x, where x = a number.

The log directory is also used to place the CIM load files in, (for updating MFG/PRO) and as MFG/PRO only allows 25 characters for the Path\Directory\CIM Filename.extension, make this short. Relative addresses may be used.

Work Orders

Most sites will probably choose to update the release date as all material requirements are then driven by the scheduled start of the work order.

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Ensure that the choices of what to update (if any) are fully discussed with your implementation consultant before proceeding.

The automated update of MFG/PRO with Work Order information must obey the same rules as when this information is keyed into MFG/PRO. How the update of Release and Due dates is handled, when work orders are scheduled to be quite late or quite early, must also be determined in this setup window.

The options are

For work orders that are significantly late, i.e scheduled start is after MFG/PRO due date:

When updating release date with scheduled start date, and new release date will be greater than due date, CIM update will fail, as Due must be $>$ or $=$ to Release. Choices are:

- 1 Change the release date, empty due date and let MFG/PRO calculate the new Due date, as per keying in.
- 2 Change the release date, and also change the due date to scheduled completion from Planner
- 3 Change the release date to the due date, leave Due as is.
- 4 Allow to Fail and leave as previous. (Default)

For work Orders that are being run significantly earlier than planned in MFG/PRO, ie scheduled completion is before MFG/PRO release date:

When Updating Due Date with scheduled completion, and due date will be less than MFG/PRO release, CIM update will fail, as Due must be $\geq$ to Release. Choices are:

- 1 Change the Due date, empty the Release date, and let MFG/PRO calculate the new Release date, as per keying in.
- 2 Change the due date, and also change the release date to the scheduled start from Planner
- 3 Change the due date to the release date, leave Release as is.
- 4 Allow to Fail and leave as previous. (Default)

Basic Rules:

Work Order Date Updates are only made to orders with MFG/PRO status greater than Planned, i.e. B, F, E, A and R.

Route Updates are only made to work orders with status greater than Firm Planned, i.e. E, A and R, that are not completed

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No Updates are made to Type S work orders.

Work Order Status Updates were introduced with v3.3, so that WO Status changes can be optionally driven from Planner. Functionality has been added to the scheduler, making it possible to select an area of the Board and change the Status of any Work Orders with operations in that area.

Procedurally, any changes to Work Order Status should ALL be made in MFG/PRO or ALL in Planner Scheduler, but NOT some in both, else the timing of changes becomes important in determining if changes from one system are overwritten in the other. The exception is closing work orders in MFG/PRO. Whilst carrying out other status changes in Planner; no changes are made from Planner to Work Orders of Status 'C' in MFG/PRO.

When instigating the explosion/allocation/release of a planned/batch/firm work order from Planner, note that no updates are made to routings at this time. This allows the next MFG/PRO Export run to compare the newly exploded routings in MFG/PRO with the routings that were originally sent to Planner for the work order, and provide "Critical Operation Change Txns" for any that differ.

These changes may be reviewed upon import to Planner Scheduler, and applied, edited or discarded, as required by the scheduling person.

The next update to MFG/PRO may update routings, if the logic conditions outlined below are met.

All completions of Work Orders remain being carried out from MFG/PRO.

What is the Work Order update logic

Update MFG/PRO from Planner as follows:

Where

MFG/PRO wo_type = "S", then no updating at all

MFG/PRO wo_status = "C" then no updating at all

MFG/PRO wo_status = "P" and Planner WO Status is :

"P", "B", "C" then no updating.

"F", "E", "A", "R" then change MFG/PRO wo_status to Planner WO Status (if selected),

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and update other work order header changes as selected.

MFG/PRO wo_status = "F" or "B" and Planner WO Status is :

"P", "B", "C" then do not change MFG/PRO wo_status,
but update other work order header changes as selected.

"F", "E", "A", "R" then change MFG/PRO wo_status to Planner WO Status (if selected),
and update other work order header changes as selected.

MFG/PRO wo_status = "E", "A", "R" and Planner WO Status is:

"P", "B", "C" then do not change MFG/PRO wo_status,
but update other work order header changes as selected,
and update routing changes as selected, where wr_status <> "C".

"F" then change MFG/PRO wo_status to Planner WO Status (if selected),
and update other work order header changes as selected.

"E", "A", "R" then change MFG/PRO wo_status to Planner WO Status (if selected),
and update other work order header changes as selected
and update routing changes as selected, where wr_status <> "C".

Updating Repetitive Schedules

If the Planner integration to MFG/PRO Repetitive is to be used, then the Update to MFG/PRO must first be turned on.

What is to be updated in MFG/PRO from 'repetitive work' in Planner is fixed. Data is gathered for each Item/Site/ProdnLine/Date in Planner. Then the update routines assign the correct daily quantities for each day - even when a 'job' for a Item/Site/ProdnLine/Date spans a number of days in the Planner scheduler. This information may be viewed in the collection of Axxxx.log files in the Planner Mutliuser install directory.

This information is then written to the text file, plupadv.cim, and is 'CIMed' to the "Repetitive Schedule Maintenance" window in MFG/PRO (rerpmt.p)

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The only options are:

- **Explode Schedule after Update** – i.e. run schedule explosion in MFG/PRO for each Item-Site-ProdnLine that has had data updated
- **Schedule Explosion Output Field** –i.e. where the outputs of the explosion are to be sent.

Beware that if a schedule update/change is made for an item, no backflush reporting of work will be allowed in MFG/PRO until such time as a schedule explosion (or MRP) for that item has been run.

The Interface Program knows what Repetitive is being used in MFG/PRO from the setting in the (Advanced) Repetitive Control file. The contents of 'Enable New Repetitive', determines the appropriate explosion program to run, *repex.r* for repetitive, or *reschex.r* for Advanced.

If no Schedule Explosion is run as part of the update, then MRP should be run, at least for the items made repetitively, that are being scheduled in the Planner.

Required Updates to MFG/PRO

When scheduling MFG/PRO Work Orders only, the interfacing of Planner Scheduler does not mandate that 'Work Order Updates' be made to MFG/PRO. However the usefulness of the Planner Scheduler is obviously reduced if updates are not made on a regular basis.

When scheduling Repetitive Work in Planner, using the Repetitive Interfaces, it is mandatory that Updates to MFG/PRO are carried out, and that they are successful. This is because MFG/PRO Repetitive Schedule records must be both created and deleted for proper functioning.

- Moving all load from one day to another in Planner, results in zeroing of the MFG/PRO Schedule for the original day, and increasing the Schedule for the new day.
- Planned Work Orders, for Items made Repetitively, having Release dates within the 'Schedule Update Horizon' as set in the Interface Utility, will have Schedules created in MFG/PRO for them on the days the Items are scheduled in Planner. (Any changes to these Planned Work Orders, Status

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P, in MFG/PRO will not be reflected in MFG/PRO Exports to Planner until after an update is made to MFG/PRO, and MRP is rerun.)

- Increases or Reductions of quantities of an Item scheduled for any particular day, no matter whether from altering the shift patterns, downtime, the run rate, or the quantity in Planner Scheduler; must give rise to the equivalent changes in the MFG/PRO Repetitive Schedule Maintenance screen. For this to happen successful CIM updates must be made to MFG/PRO.

Any problems with the creating, loading, processing of the CIM files for Updating of MFG/PRO will show up in CIM log reports, and in the update log files, which should be checked.

Some problems may also show up as Work Orders, such as '0000ERRORXX' in the Bin after the next export run. The notes for this type of Work Order will contain information that may help in finding the problem. See page 487 for details.

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Repetitive Interface – for Exports from MFG/PRO

M.R.P. and Repetitive Schedule (W-MRP-3.42-2)

File

Save Exit

Split Order: Global

Send to Scheduler: 0

Description: Default Scheduler

Repetitive & Adv Rep Schedule

☒ Send Repetitive Schd

☐ Full Routing
Must Clear Data to Change Routing Type

☐ Resource Line

☐ New Job for Qty Incr

☐ JOB Extra Data

☐ Stage Extra Data

☐ Operation Extra Data

Planned Orders made Repetitively

☒ Limit by W/O RelDate

Schedule Update Horz: 7

Planned WO Horizon: 90

Once **[Update to MFG/PRO]** has been turned on, as outlined on page 535, the requirements for the export of repetitive work from MFG/PRO may be setup.

These settings may be at a global level, i.e applicable to ALL schedulers being sent items that are made repetitively in MFG/PRO, or different settings may be established for each Work Split/Scheduler.

The export of 'Repetitive Work' from MFG/PRO extracts from tables used by both standard repetitive and advanced repetitive, so no special settings are required to distinguish what version of repetitive is being used in MFG/PRO. Only the 'Schedule Explosion' part of the interfacing differs, and the update program identifies and uses the appropriate explosion program.

Send Repetitive Schedule

Turn **[Send Repetitive Schedule]** ON to have any items that are setup to be made repetitively in MFG/PRO, sent to Planner as blocks of work for the item-site-line-date. That is, for items having entries in the Schedule Maintenance window, that are not yet completed (where $rps\_qty\_comp < rps\_qty\_req$)

With the initial export from MFG/PRO, for every uncompleted item-site-line-date entry, a new 'job' will be created in Planner. These may be later combined, split or adjusted in Planner Scheduler, as appropriate, to arrive at a suitable line or machine schedule.

Later, any change made in MFG/PRO Repetitive to the quantity required for an item-site-line-date entry, will cause the MFG/PRO Export program to send a quantity adjustment for that item-site-line to Planner Scheduler, to be applied to the work 'closest' to the MFG/PRO due date entry. How 'closest' is arrived at is discussed in detail in the chapter titled Repetitive Scheduling, in the Planning section of this manual.

Repetitive Completions

As work completed for each item-site-line is reported in Repetitive, or Advanced Repetitive MFG/PRO, the transaction information is stored, against a cumulative order, in the operation history file (op_hst table).

The next time the 'MFG/PRO Export' routine is run, quantity completions made since the last export run, for the last operation of an Item, cause transactions to be sent to reduce the amount of that Item scheduled in Planner. Completions do not include any quantities scrapped.

If a number of completion reporting transactions are made before another run of MFG/PRO Export takes place, the transactions seen in Planner may be an accumulation of a number of transactions made for the Item-Site-Line-Route.

How the Planner Scheduler handles the applying of these transactions is covered in the Planning section of the manual, Repetitive Scheduling, "Closest PL-Job to adjust".

Section 7 - Interfaces

This method of decrementing repetitive workload in Planner Scheduler has been refined with each release since v3.41.

Full Routing

Two options are available, Line or Full routing

By default the simplified 'line routing' for the Item-Site is used, so all repetitive 'jobs' in Planner scheduler are 'single operation jobs'. The line is as established in MFG/PRO Production Line Maintenance for the Item-Site and start date, with the 'operation rate' being from the same record entry. This is displayed in Planner as "L:" followed by the line_id, as in "L:99-1XX"

In some situations, whilst using MFG/PRO Repetitive functionality, it is desired to schedule operation by operation, as the factory/plant is more like a 'job shop' than a 'continuous line'. Turning **[Full Routing]** ON then ensures the routing for the item is used, with all operations in the routing being sent to Planner to be processed on their designated Work Center – Machine.

The Full Routing option may only be selected before the first export from MFG/PRO, or the first export after starting again by clearing all data from the Plexport database.

With 'Export Preference Lists' and 'Full routing' both turned on the alternate machines functionality may be used. Refer to 'Alternative Machines' in the Planning Section of this manual.

Neither route comments, nor tools are sent for repetitively scheduled work.

Resource Line

When [ON] this causes the actual Resource Line in the Planner Scheduler to be used as the 'production line' during updates to MFG/PRO for the item/site/line. When [OFF] the line component of the 'Site Line' field (WO SpareTxt2) is used as the line to update to.

The line component of WO SpareTxt2 was originally populated by the primary line, although it is able to be edited inside the scheduler for that PL-job.

Section 7 - Interfaces

The Line must have been established for the Item and Site in MFG/PRO, 'Production Line Maintenance' for the update to be successful.

New Job for Qty Incr

As stated previously, any changes made to quantity required for an item-site-line-date entry in a MFG/PRO Repetitive Schedule, will cause the MFG/PRO Export program to send quantity adjustments for that item-site-line to Planner Scheduler, to be applied to the work 'closest' to the MFG/PRO date entry.

If desired any increase in quantity required for an existing MFG/PRO schedule, can have this extra quantity created as a new 'job' in the Planner's Bin. This is as an alternative to increasing the length of the 'closest' existing operation bar on the board for a job with the same item-site-line, and perhaps pushing other unrelated operations on the Planning Board about too much.

Job, Stage, Operation - Extra Data

While the essential information is available in Planner for Repetitive work, extra information may be required to help the scheduling person arrange the sequence of operations for the items down the lines or machines they are responsible for.

The default data sent to Planner, for Items made Repetitively is

- Due Date
- Release Date
- Quantity Required
- Item Number
- Routing (WO Spare Txt1)
- Site & Production Line (as Site space L:Line in WO Spare Txt2)
- BOM (Stage Spare Txt7)
- Line or Work Centre-Machine for the operation
- Operation Run Duration
- Operation (i.e route sequence number)

(Planner's Work Order and ID fields are used internally by Planner. Their contents have no equivalent in MFG/PRO for Repetitive work. For details

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please see the chapter titled Repetitive Scheduling, in the Planning section of this manual.)

By pressing the, **[Job Extra Data]**, **[Stage Extra Data]**, or **[Operation Extra Data]** button, additional information from MFG/PRO can be sent to and placed in suitable spare fields in The Planner, in a similar way to that used with work orders, as set out on page 507.

Extra data does not come from Work Orders though, but from the item data for the site, including the item routing, and from any of the plexport database sequencing data fields that may have been setup and populated. See page 511.

Planned Orders Made Repetitively

MRP generated Work Orders from MFG/PRO, of Status P, can be sent to Planner to be handled in a repetitive fashion, and incorporated into existing scheduled repetitive work.

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Sequencing Data Maintenance (W-SEQDAT:3.4-4)

File Save Exit

Split Order: Global

Send to Scheduler: 0

Description: Default Scheduler

Item Code: 88-300 | 12000

Description: BOTTLE,PLASTIC,1 LITRE

Resin Type	7155R
Film Thickness (mm)	
Film Colour	CLEAR
Film Finished Width	
Bag Finished Width	
Size	1.0
Label 7	
Label 8	
Label 9	
Label 10	
Label 11	
Label 12	
Label 13	
Label 14	
Label 15	
Label 16	

Extract from MFG/PRO

Clear All Part Data

☒ Made Repetitively

☐ No Over Ride

☐ Made Repetitively

☐ NOT Made Repetitive

The Items represented by the Planned work orders must first have a valid Line, for the Site. If this is the case, their entry in the plexport database will have **[Made Repetitively]** turned ON during the first export from MFG/PRO after they have the Line entry. This may be seen in the “Sequencing Data Maintenance” window, as above.

For Work Orders of Status P to be included as Repetitive work, ‘Standard’ Type Work Orders, and From Status ‘P’ must both be turned on as shown on page 498. These must be Global settings, or at least for the Site in question.

How the **[Full Routing]** switch is set also determines what type of routing is used for Planned orders made repetitively.

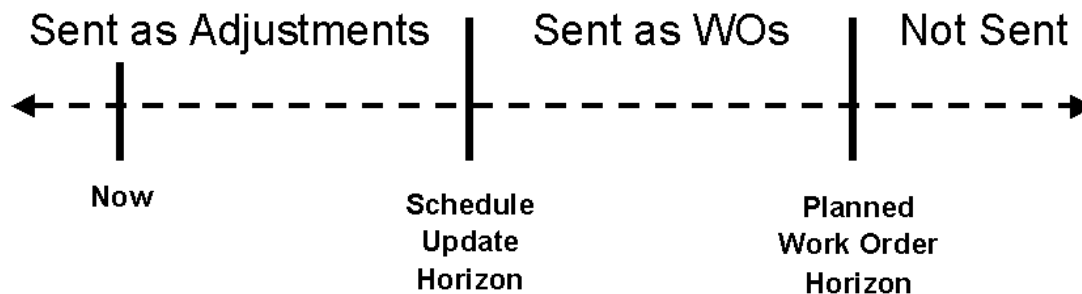
Section 7 - Interfaces

Schedule Update Horizon

Most schedulers will not want ALL Planned Work Orders for an item made repetitively to be turned into schedules.

More likely they will wish to limit this to work orders with Release Dates falling in the next short interval. This limit is called the **[Schedule Update Horizon]**, and is measured in days, from the system date when the MFG/PRO Export is run.

Any change to these Planned work orders in MFG/PRO, will not be sent to Planner until after a) the next Update to MFG/PRO AND b) the next MRP run after the Update.



Planned WO Horizon

Schedulers may also wish to have the 'Planned Load' brought into The Planner for a longer period, but without converting the Planned Work Orders to schedules.

The period this applies to is between the 'Schedule Update Horizon' and the **[Planner WO Horizon]**.

Planned work orders having Release Dates between these two horizons are treated in a similar way to ordinary 'discretely made' work orders. Except that they may have a simplified 'line routing'. But they have still the IDs from MFG/PRO, and any changes made to them with a rerun of MRP will see the changes brought in to Planner. As with 'discretely made' work orders of Status P, no date updates are made to MFG/PRO.

Section 7 - Interfaces

Planned Work Orders with Release Dates after the 'Planner WO Horizon' will not be sent to Planner by the MFG/PRO Export program.

Delays in Export of Planned WOs (for Repetitive)

After the first MFG/PRO Export run has taken place with Repetitive Interfaces turned on, no additions or changes to work for an Item 'Scheduled' from MRP Planned Work Orders will be sent to Planner by any subsequent Export runs - until such time as an Update to MFG/PRO, followed by an MRP run has been made for that item.

For the MFG/PRO Export 'system' to determine that this is the case, normally means that the Update has to have been made one day, and the MRP run the next day. This is because the 'mrp run date', i.e. wo_ord_date, is the only means of telling when MRP was last run for the item in question, and it has no time component.

This delay in having changes to MRP planned orders (that have been earlier exported to Planner as 'Schedule' adjustments) can be shortened by implementing some 'database trigger' code. This extra code has been added to copies of each version specific wow.t, and is supplied on the distribution CD. The version of MFG/PRO being interfaced to must be 8.5d or later.

With this trigger implemented, whenever a Planned WO is created or modified (by MRP), a 'time' stamp is placed in the selected wo_chr0X spare field. This then allows time, as well as date, comparisons to be made between time of 'Update to MFG/PRO' and 'MRP run'. This means that exports will again be carried out even when Planner Updates to MFG/PRO followed by MRP runs have all occurred during the same day.

If no earlier changes have been made to the standard wow.r supplied with MFG/PRO, then after compiling the interface programs, copy the appropriate wow.r to the MFG/PRO triggers directory. This is detailed in the Install Guide, Program Setup Checklist, "MFG/PRO wow Trigger (for Repetitive Interfacing)".

As well as copying the trigger code, do not forget to setup the **Rep Trigger Installed** switch and the **Use field for MRP Time** lookup described on page 495 in the opening MFG/PRO Integration Utility window.

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MFG/PRO Data to Planner

Tables accessed by the Interface programs

ad_mstr
cmt_det
ln_mstr
lna_det (from eB)
lnd_det
mfc_ctrl
op_hist
opm_mstr
pt_mstr
ptp_det
ro_det
rps_mstr
so_mstr
wc_mstr
wo_mstr
wr_route

Data imported to Planner by default for Work Orders

Work Order wo_nbr
ID wo_lot
Work Order Status wo_status
Customer so_cust
(only if a wo_so_job entry exists for the work order)

Work Order Due Date wo_due_date
Work Order Release Date wo_rel_date
WO Quantity Ordered wo_qty_ord
Item Number wo_part
Operation Work Centre-Machine wr_wkctr wr_mch
Operation Setup wr_setup
Operation Run Duration derived from wr_run
Operation Qty Ordered wr_qty_ord
Operation (sequence number) wr_op

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Operation Status	wr_status

Where no wr_route records exist for the Work Order, eg a WO of Status P , then data is from equivalent fields in the ro_det table.

Data imported to Planner by default for Repetitive Schedules

Item Number	rps_part
Site	rps_site
Qty Required	rps_qty_req
Due Date	rps_due_date
Routing Code	rps_routing
BOM Code	rps_bom_code
Production Line *	rps_line
Run duration *	derived from Ind_rate

If work is from a Status P work Order, i.e with release date within the Schedule Update horizon, then wo_ , ro_ , and Ind_ equivalents are used.

* If full routing ON, then

Operation Work Centre-Machine	ro_wkctr ro_mch
Operation Setup	ro_setup
Operation Run Duration	derived from ro_run
Operation (sequence number)	ro_op

Planner Scheduling Import Interfaces

Interface Specifications

Selecting the “Customize Interface Specs” menu option in the Customizer, and searching for all entries, gives a listing of the set of default Interface Specifications supplied with this version of **The Planner**. Many of them are specifically for use with the MFG/PRO export-Planner Import interface.

This section is supplied to provide some details of the mechanics of the interfaces, not how to modify them.

Generally no changes should be made to any of the existing specifications, as the MFG/PRO interface may cease to function properly. An exception is that once the complete system is understood and functioning, then some non critical ‘change’ type interface specifications could be altered from a ‘Hold’ action and set to ‘AutoUpdate’ instead. This would then allow transactions such as status changes to work orders and routes to be applied without manual intervention.

General

An Interface Specification is a definition of what pieces of data are included for a transaction that relates to a Planner entity i.e. a transaction record to create a Bin Work Order might contain several but not all fields that the Planner provides for a Bin Work Order.

The specification for a Bin Job creation transaction record therefore lists all the fields that will be included so that The Planner knows what it is looking at when that record is imported.

Alternatively a specification can detail what data to include (in what order) on export of a transaction relating to a Planner entity.

Interface Specifications can be created and edited from the Interfaces menu in the Customizer.

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Version 3.42 is supplied with a set of default Interface Specifications. Default transactions are defined for all valid Planner entities and contain the superset of valid fields for that entity.

- The default specifications provided can be copied and edited to suit.
- The default specifications cannot however be deleted.

This means that at least one instance of a description for any Planner entity will exist in some form. It is recommended that these specifications be left unchanged and that any modifications are instead made to duplicates of the supplied specs.

Specifications are able to be Imported and Exported in text form. This allows Specification configuration from one Planner installation to be transferred with a minimum of work to another Planner installation. The 'Dump Interface Specs' and 'Load Interface Specs' choices from the Interfaces menu in the customizer are used for this purpose. The text file used for the transfer is PLINTER.SPC, and may also be used to obtain a hard copy of the specifications.

All specifications have one or more compulsory fields that cannot be removed. They are used to identify the record that the specification is accessing, creating or altering. If mandatory fields are unpopulated, the record will not be able to be applied to The Planner.

Field Contents

All specifications have 'pool' records from which fields can be selected for use in the specification itself.

The Planner can also provide:

Hard coded defaults for fields on import.

An alternate 'source' field from which default information for a field can be supplied on import.

When a "Hard Coded" or "Alternate Fields" are specified the field is still part of the record specification. It just means that if the field is "blank" on importing, then the field is populated with the "Hard Coded" value or the "Alternate Field" value. So the host system still has control of the data if it chooses to populate the field on exporting from that system. If the field is left unpopulated by the host, then it is filled by The Planner upon import.

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Special Field Contents

A few specific field types need special mention.

Operation Seq No (IF): Any operation transactions must refer to the correct operation, and as well as the Job and Item Numbers, an identifier for the operation must be used. Operation Seq No (IF) is understood to be 0 for first operation, 1 for second operation, 3 for third, and so on. While an operation sequence number (e.g. 10, 20 or 30) may be amongst data sent to Planner from another system, the Planner only uses Operation Seq No (IF) to order operations, and as stated earlier the values start at 0 , and increment by one for each further operation.

With vs 3.2b, a switch in Customize Behaviour Switches, 'Use 'passes' for Operation Lookup' was introduced and alters the above behaviour. It changes the way operation sequence number works for interfaces.

When [ON] the operation sequence number is matched / sorted by the numeric value stored in the operation 'passes' field , when updating / adding / finding operation records. (the field is converted to a numeric value, with anything in this field that is NOT a numeric causing the field to have a value of 0)

Since the planner does NOT enforce either the 'passes' operation order (i.e by passes field value), nor passes being numeric, the manual editing of jobs in Planner can override / cause problems with future referencing of that job's operations. From v3.3 this feature is turned ON by default with the MFG/PRO version of Planner. This switch should only be altered by persons able to modify the programs that interface Planner to the Manufacturing system being used.

WIP Update (IF): When this field is utilised by any WIP specification, a Y or 1 value will move the operation to the specified start date/time, and place it in WIP. All normal WIP rules have to be met, please refer to the Planning section of the manual for full WIP details.

Op Complete (IF): When this field is utilised by any WIP specification, a Y or 1 value will instead move the operation to the specified completion date/time which must be specified in the Date Last Updtd (IF) and Time Last Updtd (IF) fields of the same specification transaction. All normal WIP rules have to be met, please refer to the Planning section of the manual for full WIP details.

Transaction Types

Each Interface Specification can be of a particular type; ADD, CHANGE or DELETE.

A special case is WIP (Work In Progress update). A WIP spec is provided solely for this purpose. This is the only way that critical Board Operation data may be altered with the job remaining on the board e.g. run duration change etc.

Transaction Actions

The direction that a transaction type is designed for is required, i.e.. EXPORT or Import. For Import transaction types the user can specify how this transaction enters the Planner database, by AUTO UPDATE or HOLD for manual application.

HOLDing a transaction allows for editing and partial application of subsets of an import. This is useful when testing and building interfaces to the Planner. The Transactions are held in a Hold Bin List. Erroneous transactions are also stored here.

Transactions with specifications set to AUTOUPDATE are automatically applied, without the necessity to apply them from one of the Hold Bin lists. Any specification can be set to have "autoupdate" as its action. If for any reason an autoupdate transaction fails to apply, it is placed into the hold bin, where it can be viewed, edited and manually applied once fixed.

For full details on how to customize the Interface Specifications refer to the Customizing Section of this manual.

Compulsory Transaction Entries

In addition ALL transactions have a number of compulsory fields which must appear at the start of each transaction in the file, but which DO NOT APPEAR in the specification which describes that transaction.

1. Specification ID

A unique number provided automatically by the Specification Customization routines. This identifies what specification describes the transaction that follows.

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2. Sequence Number

A number used to describe the order in which transactions are applied within an IMPORT Record Set (see later).

eg. This could control whether a Job creation transaction is applied before an Item creation transaction is applied which depends on that Job's existence.

3. Group ID

An alpha-numeric text string of not more than 10 characters. This field allows the user to associate a combination of transactions together such that they can be viewed, manipulated on the Hold Bin list together or applied together from the Hold Bin List.

4. Error Code

Always set to 0 for import transactions. This field (if non zero) will indicate an error code describing what error condition was encountered on application of that transaction (see later for a list of errors).

5. Exclusion field.

This is 50 characters long, and is only expected for import transactions. The MFG/PRO export programs only generate entries for change transactions. The Exclusion field rules are that each character must be a space or a non-space. A space means include the field and a non-space means exclude the field, where the first character is the first field specified in the interface record spec, the second character is the second field specified in the interface record spec and so on.

If the length of the field is less than the total number of fields, the rest of the fields are assumed to be included.

e.g. „, would include all fields, but „ x xx", (i.e. quote space space ex space space ex ex quote) would include the 1st, 2nd, 4th, 5th, and 8th and higher fields, but would exclude the 3rd, 6th, and 7th fields in the specification.

In the Hold Bin List the excluded fields are not displayed. When in the Hold Bin List edit window, it is as if the excluded fields do not exist in the interface spec. You cannot exclude or include fields from the Hold Bin List edit.

Export Interface Sets:

An Export Interface Set is a particular group of transaction specifications that are used to define how data regarding particular Planner entities is to be exported if using a shared or text file type channel.

No export specification sets are required are required for the MFG/PRO interface, as an export database is used instead of files. The FoxPro database in PlannerDirectory\database\plreport, populated upon 'Distributing the Plan' from within The Planner is used to provide data for The Multiuser Progress database, and Updating (if desired) to MFG/PRO of schedule information.

Channels

For the MFG/PRO interfaces a channel is a file, IMPORT.IF in a nominated directory which act as buffers for import and export from the Planner.

Multiple channels may exist, and all but the default channel may be made 'active', that is The Planner regularly polls these channels in the background looking for data to import when there is no foreground activity, all without manual intervention. Active channels are not accessible for manual import and are designed to run transparently.

Channels are established, edited, made the default, or made active in The Customizer, using the Customize Interface channels and Customize Active Channel options.

Text Type Channel

A text file may contain many different types of transactions, in the format and order that have been established for the MFG/PRO interfaces.

A text file is designated such by placing 'I0' (i.e. Eye-zero) as the first 2 characters in that section. The next 32 characters are ignored. The first import/export is on the 35th character.

Normally characters 3-32 are spaces, 33-34 CR/LF

If Import.if does not exist, the MFG/PRO export program will generate it, with the above characters first followed by the MFG/PRO export transactions.

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Text file channels are locked exclusively when being read or written to. Before attempting to read from / write to the file, ***The Planner*** will check to see if it is locked, OR if a file import.lk is present. If the import.lk file is present, it takes this to mean the file is unavailable ('locked').

When reading from a text file ***The Planner*** locks the text file AND also creates lock files, import.lk or export.lk. The planner deletes the .lk file when it is finished with the text file.

There is an option in the Utilities/System Configuration Menu option for purging a channel on import.

As text file channels can be made active, if a text channel is active the channel is always purged no matter what the state of the purge option set in System Configuration.

Transactions in the File

All transactions in an interface file reside in a transaction record set.

A record set is simply any grouping of a/some transactions between open and closed curly braces. The braces must be on their own lines eg.

```
{
12,1,"Group 1",0, .....
12,2,"Group 1",0, .....
.
.
.
}
```

Record sets are used by the Planner to determine:

1 Read Size

For Text style files a record set is simply the amount of transactions that are read in at one go before processing is performed. For text style files the record set may encompass the entire file.

Section 7 - Interfaces

If the file is being read in the background (ie. file is part of an active channel) then the record set defines the amount of records to be read in at one time and therefore processed at any one time. The user can therefore have control of the 'granularity' of the background processing i.e.

2 Transaction Ordering

If the record set contains transactions that are designated AUTO UPDATE (i.e. they are not held for manual application to the database) then those records in that record set will be applied as a batch. If the board has to be updated then this will also occur before the next record set is read.

The Sequence No of the transaction determines the order in which transactions are applied within the record set. The Sequence No field is always the 2nd field on the transaction line.

Interface Error Messages

Error Number	Description
1	Error seeking to File marker position in Import file.
2	End Of File reached before end of record set.
3	Missing start-of-record-set mark ('{').
4	Input marker position less than end of record set in Import file.
5	Missing end-of-record-set mark ('}').
6	Invalid Interface Specification ID.
7	Invalid Specification Action (ie. Update/Hold).
8	Comma expected on transaction line.
9	Invalid alpha-numeric field.
10	Invalid numeric field.
11	Invalid date field.
12	Invalid status field.
13	Invalid YES/NO field.
14	Invalid field.
15	Invalid Sequence No.
16	Blank compulsory field.
17	Transaction line exceeds 300 characters.
18	Planner entity (or entity that transaction has dependency on) does not exist.
19	Planner entity already exists.
20	Transaction type not valid in area (Bin/Board/Lib).
21	Too few fields in transaction line.
22	Invalid Field in record.
23	Key Field missing.
24	Duplicate key field.
25	Cannot apply transaction - ie. change a resource's workcentre if resource has operations etc.
26	Attempt to update WIP after NOW.
27	Invalid Resource in WIP update.
28	WIP Date Last Updated after End Of Operation.
29	WIP Update violates gang.
30	Cannot place operation in WIP Update.
31	WIP Update violates preference list.
32	WIP database error.

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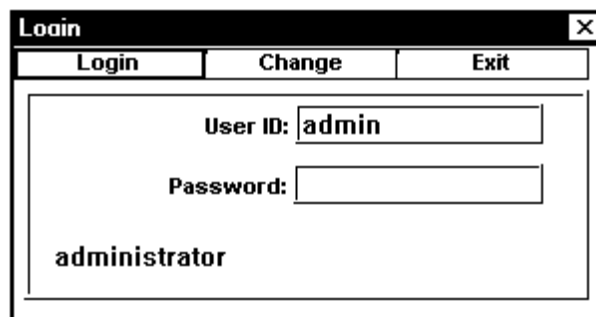
- 33 Operation is un-updated already in WIP Update.
- 34 Next Operation updated while attempting un-update.
- 35 Can't delete record.
- 36 Database error.
- 37 Error reading from Import file.

MULTIUSER

This section is made of two parts. First the use of the MultiUser, i.e. PlanView, Module is explained. Secondly the setting up of Schedulers/Sites, Users, Views and other system configuration options is detailed for System Administrators. The setup component of the system can only be accessed by use of the admin user with the system password.

PlanView

When the MultiUser module is started, you are presented with a login dialogue. You must have a user name and password from your administrator to use the PlanView system and create views or access views that have already been established for you.



The screenshot shows a 'Login' dialog box with a title bar containing a close button (X). Below the title bar are three tabs: 'Login', 'Change', and 'Exit'. The 'Login' tab is selected. Inside the dialog, there are two input fields: 'User ID:' with the text 'admin' entered, and 'Password:' with an empty field. Below these fields, the word 'administrator' is displayed. The dialog box has a standard Windows-style border.

Once you have logged in, you will be presented with the main PlanView window, with any views already established for you having icons on the top of the button bar.

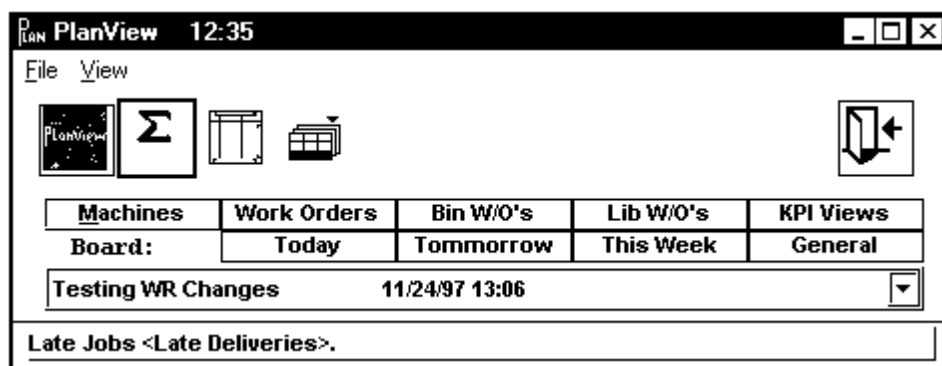
Multiple Plans

If the plans from more than one scheduler are imported into Planview, the drop down box under the buttons of the opening Planview window allows selection of the scheduler required for viewing. The schedulers displayed in the drop down box will have been established earlier, and assigned a 'siteid' which determines the order they display in the drop down box.

Views from Icons

To see what view the large buttons with icons lead to, click on one with the right mouse button. The description of the view for each large button may be seen in the footer of the window.

One Click with the left button of your mouse will start the view. Some views such as KPIs are very quick to display; others, which involve collecting a large amount of data to display, may take longer, depending upon the speed of your system.



A large number of views are possible, from lists of Operations scheduled at a machine, to views of the 'Planning Board', very similar to those that the scheduling person has.

Three predefined Board views are supplied, for work Today, Tomorrow, and for this week. In each case, work is displayed from the start of the day you press the button, (0:00hrs of System date), to the end of the period chosen.

The icon displayed on a button may be changed by double clicking on it with the right mouse button, and choosing another from the selection.

The labeled buttons shown above allow additional views to be created by any user. These additional views may be saved and even attached to their own icon buttons, until you have used all 9 spaces. How to create extra views is explained further.

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Printing from Planview

Clicking anywhere on a Planview window , then pressing the [Ctrl] and P keys at the same time prints this focussed Planview window.

A print dialogue box will display, allowing selection of printer, paper orientation etc, if using MS Windows 95/98. MS NT only allows printing to the default printer and settings.

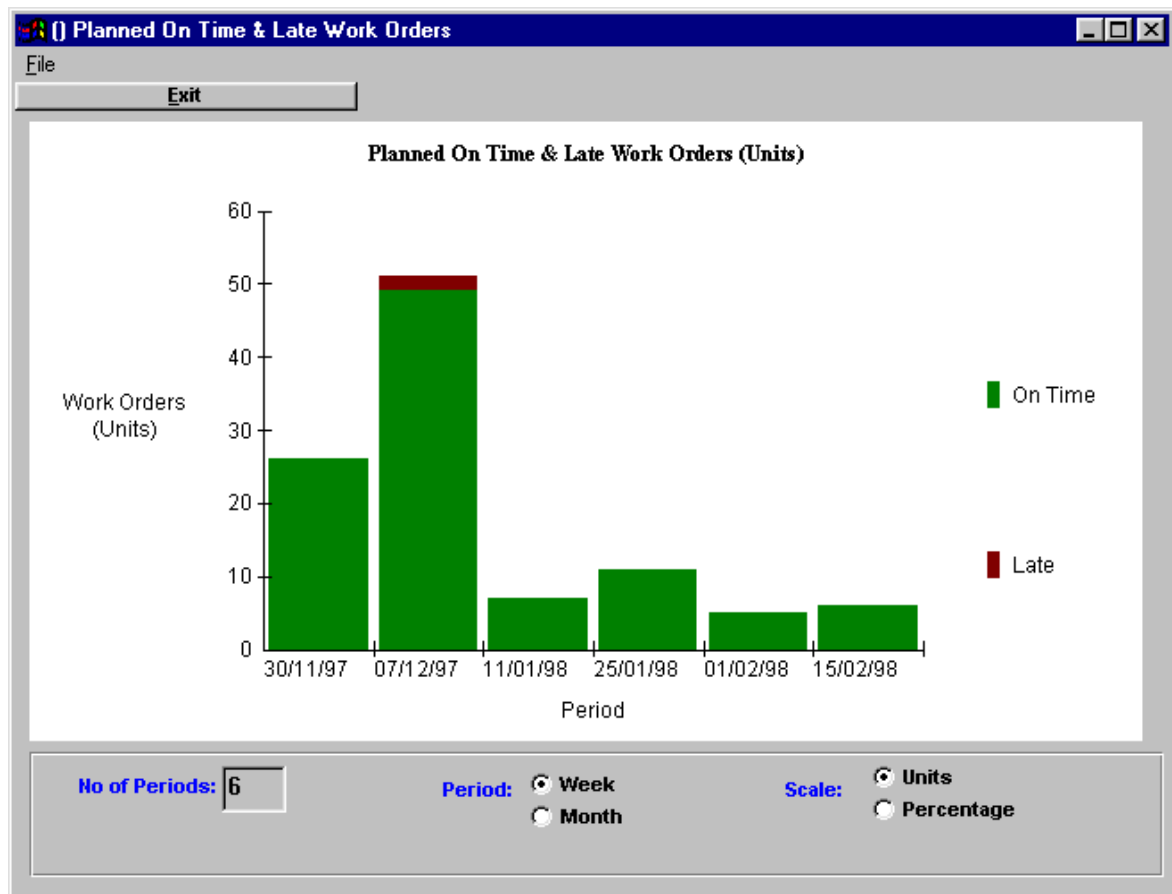
This printing functionality allows any selection of Planview data displayed on the screen to be output to paper if required.

KPIs

A number of frequently required key performance indicator graphs are supplied. They are listed when the **[KPI Views]** button is pressed.

They may be attached to one of the large buttons on the opening button bar.

Most have a number of parameters that can be altered to suit.



Board Views

Whenever any Icon or button linked to a board view is pressed with the left mouse button, a board like the one shown below is displayed.

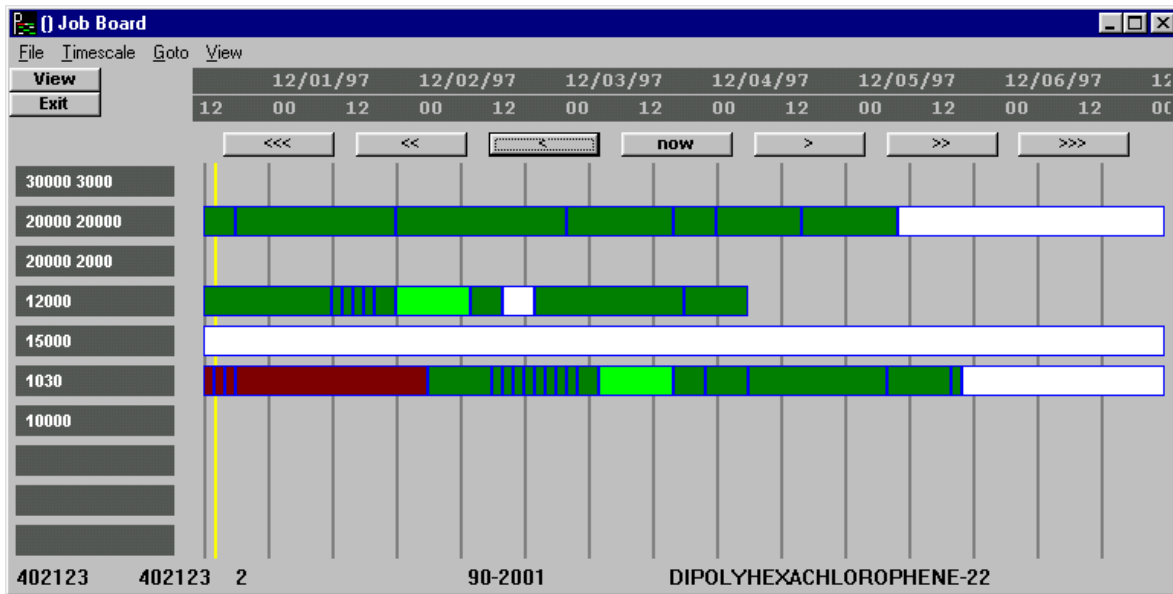
The colors of the board are as follows:

Green – Operations of Work Orders that are scheduled to be finished by their Due Date, i.e. On Time

Red - Operations of Work Orders that are scheduled to be finished after their Due Date, i.e. Late

Blue – Operations that have a User Status set on, and the Work Order is On Time.

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Purple - Operations that have a User Status set on, and the Work Order is Late.

White – Free capacity between other operations on the same machine.

Black – Downtime, when the machine is not available for work for whatever reason, e.g. non-shift time, Holidays, Planned maintenance, etc.

The machines that have been selected are shown listed on the left-hand side of the window. When more than ten machines are chosen in the Board selection criteria, two extra buttons, **[Up]** and **[Down]** appear, allowing the other machines and their work to be displayed.

A vertical black line separates each operation on a machine. The length of the bar for an operation represents how much of the machines time is used to process that operation. The scale for the length is displayed along the top of the window.

A number of changes can be made to the display of work on the board

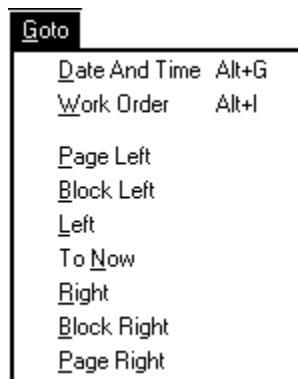
Time scale

Selecting another period display from the time scale menu allows 'Zooming' in and out. The periods listed relate to how far the display moves each time the single arrow buttons move when pressed.



GoTo

The board can be moved to the left or right using the **[Arrow]** buttons. The three arrow buttons move the board one 'page' each time they are pressed. The **[Now]** button moves the yellow vertical line to the left side of the screen. This means that the board only displays work scheduled from now.



The GoTo menu also allows going directly to a period on the board, or to a selected work order on the board.

Highlighting

Whenever the right mouse button is pressed with the arrow on an operation, all other operations in the same work order are highlighted with a lighter shade of their display colour

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Work Order Information

Work Order Details (401472)			
File		View	
Notes	Stage	Exit	
ID: 401472 Work Order: 03030007			
Description1: CASE AUTO-UNIT			
Customer: ?			
Description: ?			
Qty Ordered: 2000		Late: no	
Item Number: 88-100		Late List: no	
W/O Status: R		New Late: no	
Due Date: 12/01/97		New Clear: no	
Due Time: 10:00		Lower Anchor Conflict: no	
Start Date: 11/27/97		Lwr Anchr Cnflct Lst: no	
Start Time: 13:36		New Lwr Anchr Cnflct: no	
Finish Date: 11/28/97		Nw Clr Lwr AnchrCnflc: no	
Finish Time: 22:54		Upper Anchor Conflict: no	
Priority: 0		Upr Anchr Cnflct Lst: no	
		New Upr Anchr Cnflct: no	
		Nw Clr Up Anchr Cnflc: no	
Line1SpareTxt2:		Tool Conflict: no	
Line1SpareTxt1:		Tool Conflict List: no	
Line1SpareVar1: 0.0		New Tool Conflict: no	
Line1SpareVar2: 0.0		New Clr Tool Conflict: no	
Stage	Due Date	Finish Date	Line2SpareTxt1
401472	12/01/97	11/28/97	10000

Whenever the left mouse button is pressed with the arrow on an operation, the Work Order ID, Item Number, Description etc are displayed at the bottom of the board.

Double clicking the left mouse button will open a data window with all the work order data brought into The Planner from MFG/PRO. The stage at the bottom of this window may in turn be double clicked to display information held at this level of the work order, and in turn information on each operation may be viewed.

Changing the Board Data

Pressing the **[View]** button opens the board parameters window, where the data used to create the board display may be altered, or established if a new board view is being setup.

Board Parameters.

File View Select

Save View Details Exit

Load View None

Work Orders	W/O L2	Operations	Customers
W/O Criteria	W/O L2 Criteria	Op Criteria	Op Durations

☒ Immediately Update Resource Selection

Machine	Work Centre	Machine Group
SSM	SSM	
30000 3000	6	
20000 20000	5	
20000 2000	5	
15000	4	
12000	3	
1030	2	
10000	1	

☒ Downtime
☒ Operations
☒ Free Capacity

Graph Period:

Graph:

Date From: 01/01/1900

To: 01/01/2100

New Selection Has Been Created 3410

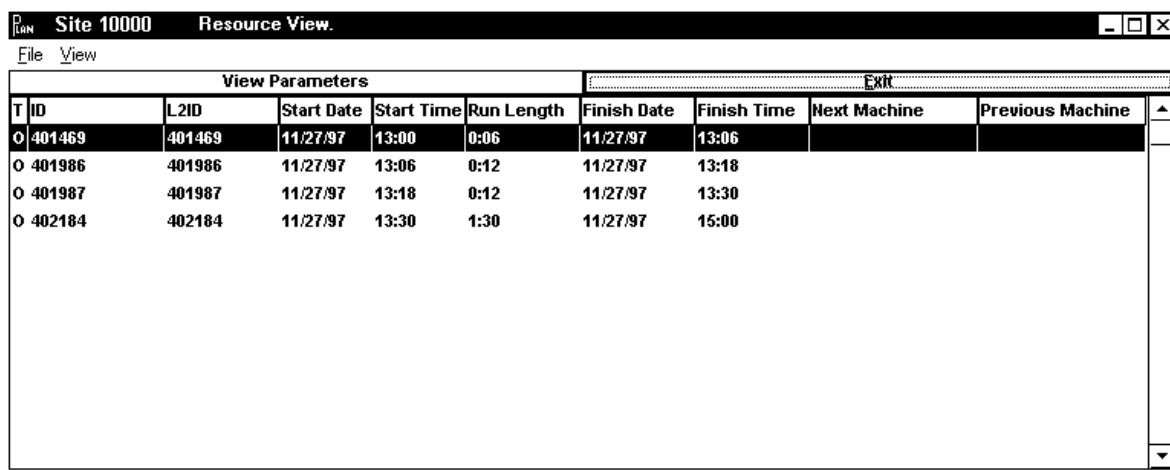
If the criteria is altered for an existing view, or a new set of criteria are setup for a new view, this can be saved, and assigned to another button on the opening MultiUser button bar.

Section 8- MultiUser

Some views created by others for you is not bale to be modified and the **[View]** button will not work

Machine Views

Pressing the **[Machine]** button on the opening button bar opens the list of operations scheduled on the chosen machine, in the order in which they will be processed.



View Parameters								
T ID	L2ID	Start Date	Start Time	Run Length	Finish Date	Finish Time	Next Machine	Previous Machine
O 401469	401469	11/27/97	13:00	0:06	11/27/97	13:06		
O 401986	401986	11/27/97	13:06	0:12	11/27/97	13:18		
O 401987	401987	11/27/97	13:18	0:12	11/27/97	13:30		
O 402184	402184	11/27/97	13:30	1:30	11/27/97	15:00		

Changing the Machine Data displayed

The criterion used for selecting any machine view can be altered in a way similar to that for the board.

Press the **[View Parameters]** button to open the Resource list Parameters window, giving access to a range of selection criteria. Views can be saved and attached to the large buttons on the opening button bar.

By clicking on the column headings, a window opens allowing repositioning of the available data columns. To move a selected column to the 3rd column form the left, key in position '3'

PLN () Resource List Parameters.

File View Select

Save View

Details

Exit

Load View

None

Work Orders

W/O L2

Operations

Customers

W/O Criteria

N/O L2 Criteria

Op Criteria

Op Durations

Machine	Work Centre	Machine Group
SSM	SSM	
REPAIR	9	
30000 3000	6	
20000 2000	5	
15000	4	
12000	3	
1030	2	
10000	1	

☒ Downtime

☒ Operations

☒ Free Capacity

Graph Period:

Graph:

Date From: 01/01/1900 Cal

To: 01/01/2100 Cal

New Selection Has Been Created 3410

Work Order Lists

Lists of work orders meeting selected criteria may be setup by pressing the **[Work Order]** button on the opening button bar.

When a particular work order on the list is highlighted, press **[Work Order Details]** to see all details, and drill down to the operations in the work order if required.

Press the **[Work Order Criteria]** button to alter selection of work orders for viewing.

Section 8- MultiUser

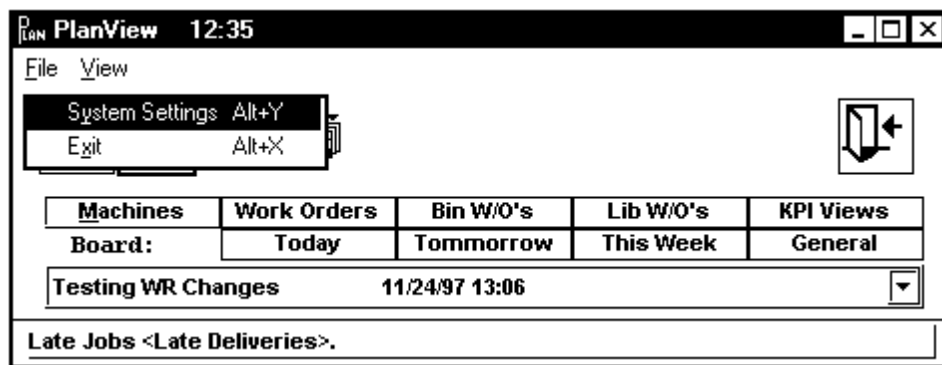
Job List		
Customers	Work Order Criteria	Work Order Details >>>
Load View User: ALL W/OS Date From: 01/01/1900 Cal Save View To: 01/01/2100 Cal		
ID	Description1	Customer
401477	EVAPORATOR SERIES 10K	
401478	EVAPORATOR SERIES 10K	
401479	EVAPORATOR SERIES 1000	
401480	EVAPORATOR SERIES 1000	
401481	PUMP SOLAR/LUNAR POWERED	
401482	PUMP AUTO BATTERY LINK	
401483	PUMP 1000GPH SERIES 10K	
401484	PUMP 1000GPH SERIES 10K	
401494	BOX SHIPPER LARGE	
401495	BOX SHIPPER LARGE	
401496	BOX SHIPPER LARGE	
401575	BATTERIES ALKALINE STD.	
401582	BATTERIES ALKALINE STD.	

New Selection Has Been Created

Work Order				Update Selection				Exit			
ID:				to:							
Work Order:				to:							
Description1:				to:							
Item Number:				to:							
W/O Status:				to:							
Qty Ordered:				to:							
Priority:				to:							
Line1SpareTxt1:				to:							
Line1SpareTxt2:				to:							
Line1SpareVar1:				to:							
Line1SpareVar2:				to:							
Due Date:		Cal		to:		Cal					
Start Date:		Cal		to:		Cal					
Finish Date:		Cal		to:		Cal					

Setting up MultiUsers

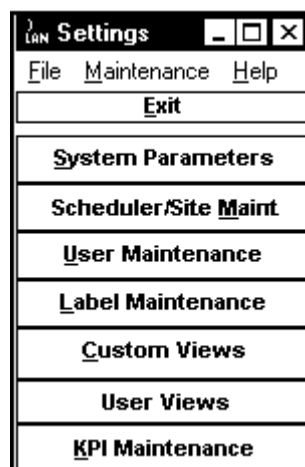
The default login admin, password secret, allows access to the system settings for all users of the PlanView system. From the file menu choose 'System Settings'



A series of buttons give access to the various settings, including Scheduler/Site and User Maintenance.

Note:

Settings for Updating MFG/PRO from the Planview database are now accessed from the "MFG/PRO Interface Utility" option of the Planner Multiuser menu.



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System Parameters

Use this to setup the initial parameters for the MultiUser system.

Note:

Settings for Updating MFG/PRO from the Planview database are now accessed from the “MFG/PRO Interface Utility” option of the Planner Multiuser menu.

The screenshot shows a window titled "System Parameter Maintenance" with a menu bar containing "File". Below the menu bar are two buttons: "Save" and "Exit". The main area of the window contains several input fields and options:

- "Next Site ID:" followed by a text box containing the number "4".
- "Label Source:" with three radio buttons: "Global Labels" (selected), "Labels by Scheduler", and "Users Can Import Data" (unchecked).
- "Import Polling Interval:" followed by a text box containing the number "2".
- A section titled "Process Notes:" containing four input fields:
 - "Viewer Program:"
 - "File Directory:"
 - "Table Name:" with a dropdown arrow.
 - "Field Name:" with a dropdown arrow.

Next Site ID

This determines the ID used for the next scheduler/site created using Scheduler/Site Maintenance. Normally increments by 1, but may be reset, for example after some scheduler/sites are deleted.

Labels Source

Global Labels – All labels are the same regardless of which scheduler the plan is from

Labels by Site/Scheduler – Allows different labels for each scheduler.

Users can import Data

Should users scan for new plans to import from the scheduler, or should this only be done as a separate job.

Import Polling Interval

The number of minutes between checking for new plans.

Note:

From v3.43, the “Import to Multiuser” routine also carries out a purge of older plans that are not being viewed. Previously this was carried out by a Planview client immediately after connection, sometimes resulting in a delay before the current plans could be viewed.

To stop a run of “Import to Multiuser” carrying out a purge, edit the shortcut that runs it so that the target ends

```
-p planner\P-impsgo.p           instead of  
-p planner\P-impsgo.p -param -purge
```

Process Notes

Notes for a work order or any of its operations, that are held in a separate file, and accessible on the network, are able to be viewed directly using this feature.

This feature allows a specified viewing/editing program to start, and opens file related to the operation/stage/work order.

The example below shows how some of the jobs have their drawing file name stored in the W/OSpareTxt2 field of Planview. Originally this file name may have come from the part field 'Drawing' in MFG/PRO, having been mapped to W/OSpareTxt2 in Planner Scheduler with the MFG/PRO Export Utility.

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Highlighting a line such as that for ID 402236, and pressing the **[Process Notes]** button, will start acrobat reader, and open the file Drawing1.pdf

Plan (Plan With Drawing Details) Resource View - 2000						
File View						
View Parameters				Process Notes		Exit
ID	Work Order	W/O	Item Number	Description1	WO SpareTxt2	
402210	400036	F	88-300	BOTTLE PLASTIC 1 LITRE		
402233	400059	F	88-300	BOTTLE PLASTIC 1 L PINK	Drawing2.pdf	
402226	400052	F	88-310	BOTTLE PLASTIC 1 L GRN		
402236	400062	F	88-300	BOTTLE PLASTIC 1 L YELLO	Drawing1.pdf	
402220	400046	F	88-305	BOTTLE PLASTIC 1 L BRN		
402218	400044	F	88-300	BOTTLE PLASTIC 1 LITRE		
402237	400063	F	88-300	BOTTLE PLASTIC 1 L YELLO	Drawing1.pdf	
402228	400054	F	88-310	BOTTLE PLASTIC 1 L GRN	Drawing3.pdf	
402222	400048	F	88-305	BOTTLE PLASTIC 1 L BRN		

The file Drawing1.pdf must of course exist, have the correct extension for the application, and be in the directory specified in the process notes setup area of 'System Parameters'.

Established all the details in the process notes setup area for:

- the viewing program (with full path),
- the Process notes file directory,
- the Planner table and
- The Planner field name holding the filename for the related process notes.

The file type and viewing application must also be registered with windows on the PC trying to access the Process notes.

Process Notes:

Viewer Program: c:\acrobat\reader\AcroRd32.exe

File Directory: c:\Drawings

Table Name: Work Order

Field Name: WO SpareTxt2

Scheduler/Site Maintenance

Each scheduler to be displayed in the Planview system, (and whose data is perhaps also to be updated to MFG/PRO) must be setup here with a description and the directory where the \plreport files to import data from may be found.

After setting of a default scheduler/site, a scheduler file must be created and copied into that Planner Schedulers directory, e.g. c:\Program Files\The Planner. If using multiple schedulers, each will require a scheduler file.

When creating a number of scheduler files, make sure the correct scheduler row is highlighted before pressing the **[Create Scheduler File]** button. This ensures that the **Sched ID** column value displayed for a scheduler in this window is (and must be) the same as contained in the scheduler file (.sit) for that scheduler. If in doubt recreate the scheduler file for a particular row.

The import directory is relative to the machine being used to run 'Import to MultiUser Scheduled'.

For example the picture below shows the \plreport data from a remote scheduler is copied to D:\Planner Multiuser\Remote Plan on our local NT Server, but the local plan is left on the Schedulers PC, now mapped as H: drive from the NT Server's perspective. The 'Import to MultiUser Scheduled' is run from the NT server (maybe using the AT command).

A better method is to copy both plans to the NT server keeping one plan in D:\Planner Multiuser\Remote Plan\ , the other in D:\Planner Multiuser\Local Plan\

The \plreport data files from the schedulers PC may be copied (using expfin.bat and repcp.exe) to the server at the time of "Distributing Current Plan" from the scheduler. For more information check out repcp_readme.txt in \utilities on the CD, and "Distributing the Current Plan to the File Server", in Install.pdf

The columns marked 'MFG PlanID' and 'ADV PlanID' are used by the 'Update MFG/PRP' programs to determine if an update has been carried out on a particular set of plan data, and would not normally be edited.

The columns marked 'What if only site', 'Skip Import' and 'Hide Plans' are for future development and are not functional for v3.42

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Press the **[Save]** button to save the data before exiting this window.

Scheduler Description	Import Directory	Sched ID	MFG PlanID	ADV PlanID	What If Only S
Scheduler - Local Site	H:\The Planner\database\plreport\	1	0	0	no
Scheduler - Remote	d:\Planner Multiuser\Remote Plan\	2	0	0	no

User Maintenance

Use this window to setup users and passwords.

The only login with access to change the setting is admin, and the password for this login should be changed from the default 'secret' at the opening login to Planview.

User ID	User Name
admin	Administrator

Label Maintenance

If it is desired to change any specific labels, then use this option.

Custom Views

For system wide views of data. Normally no need to modify.

User Views

Provided for the administrator to copy views created by one user to other users. Highlight the view to copy, press [Copy] button, key in UserID, the press **[Save]** button.

If the view has been assigned an icon number by the creator, then this will also be copied to the new user.

User Id	Procedure ID	Extra ID	View Name	Description
admin	W-RESALT	M	EXTRUDER BOARD	Extruder Planning Board
admin	W-RESALT	S	1030	Machine 1030 Schedule
admin	W-RESALT	S	1200	Machine 1200 Schedule
Fred	W-RESALT	S	1200	Machine 1200 Schedule

User Id:

Procedure ID: Extra ID:

View Name:

Description:

KPI Maintenance

To allow setup of extra KPIs that may be provided in future.

APPENDICES

Contents

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Definitions Used In Planner

Because of the relatively specialised nature of the product and the wide variation in terms used in various manufacturing industries, a Definition Appendix is provided to define the terms used in **The Planner**. Words underlined are defined under their own entry.

Alt key	A special key which, when pressed together with another key, alters the functioning of the other key.
Board	The Resource 'Planning <u>Board</u> ' window: the main window used.
Bin	The area where Work Orders (jobs) are stored when not located on the Planning Board or in the <u>Library</u> .
Configuration	The way in which the computer is set up; the way in which this product is set up; the <u>menu</u> choice to set up various options.
Context-sensitive	Relating to the current context, as in " <u>on-line</u> , context-sensitive <u>Help</u> ".
Control key	A special key which, when pressed together with another key, alters the functioning of the other key.
Copy	To duplicate an item, as in copying an <u>Item</u> (Stage) or <u>Operation</u> within a <u>Work Order</u> .
Cursor	The object that moves on the screen, indicating the current position of data entry.
Data	<u>Files</u> and <u>records</u> held about <u>Work Orders</u> , <u>Items</u> , <u>Operations</u> , <u>Resources</u> , etc.
Database	A set of <u>files</u> , consisting of <u>records</u> , stored on <u>disk</u> .

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Data Entry	The typing of information <u>into</u> fields in a <u>window</u> .
Date range	The beginning and end of a period of time, as required when printing <u>reports</u> .
Details Block	The Data <u>Window</u> that can be made to display at the bottom of the Planning <u>Board</u> , in which the <u>data</u> about the <u>Work Order</u> at the <u>Pointer</u> is displayed.
Disk	(Hard Disk): Area for storage of <u>data</u> in the computer.
Due Date	The date and time at which a <u>Work Order</u> , <u>Item</u> , or <u>Operation</u> is due to be completed.
Enter key	The (usually) large key positioned just to the right of the alpha keys on the keyboard, used to confirm an action and proceed.
Escape key	The key positioned on in the extreme top left of the keyboard, used to "back out" of a situation or <u>window</u> ..
File	A set of <u>data</u> .
Field	An area for entering and storing the lowest level of information contained in a <u>record</u> , which in turn is held in a <u>file</u> .
Function Key	The row of keys across the top of the standard keyboard labelled F1 to F12, used for special purposes.
Help	Assistance from the <u>on-line</u> , <u>context-sensitive text windows</u> .
Highlight	A function which causes a colour change to one or more <u>Operations</u> to make them stand out from other Operations of the same colour. Also used to

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indicate the currently selected choice in a menu or scroller.

Item	One of a potentially unlimited number of separate entities belonging to a <u>Work Order</u> . May have its own <u>due date</u> , and may be <u>linked</u> to other Items in the same Work Order. Known as a Stage in MFG/PRO version. MFG/PRO work orders have just one item (stage)
Job	Refer to Work Order
Late	Defined as a <u>Work Order</u> , <u>Item</u> , or <u>Operation</u> which is planned to be completed at a date/time later than its <u>Due Date</u> .
Lates List	A list of all currently late <u>Work Orders</u> .
Library	A storage area for "template", "dummy", "standard" <u>Work Orders</u> which at any time may be used to create "real" Work Orders without losing the original Work Order in the Library.
Link	A connection in sequence between two or more <u>Items</u> (Stages) belonging to the same <u>Work Order</u> . As MFG/PRO work orders have only one Item or stage, no Links are available.
Load	Copy a <u>database</u> or <u>file</u> from its present location to <i>the current</i> location.
Menu	A <u>window</u> listing various functional choices.
Mouse	A device to point to and move elements on the computer screen.
Move	A function which alters the position of one or more <u>Operations</u> on the Planning <u>Board</u> .

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New Lates	Those <u>Work Orders</u> which have been placed in a <u>late</u> state as a result of the very last planning <u>move</u> .
Notepad	The data entry <u>window</u> which allows unlimited notes to be held for every <u>Work Order</u> , <u>Item</u> , <u>Operation</u> , and <u>Downtime</u> in this product.
NT	Short for the Microsoft Windows NT operating system. This product requires NT 4.0 or Windows95 operating system.
On-line	Available immediately, as in "on-line, <u>context-sensitive Help</u> ".
Operation	The lowest level in a <u>Work Order</u> . Work Orders may have unlimited <u>Items</u> , each of which may have unlimited Operations which are <u>sequenced</u> on the Planning <u>Board</u> . In MFG/PRO version details are from the route record.
Place	To remove a <u>Work Order</u> or <u>Item</u> from the <u>Bin</u> and position it on the Planning <u>Board</u> .
Pointer	The yellow, upwards pointing arrowhead which "points" to each <u>Operation</u> on the Planning <u>Board</u> .
Rate	The speed at which a <u>Resource</u> can output units of production, measured in whatever unit of measure is appropriate for that Resource, per hour.
Recalculate	To force a recalculation of Run time based on a new Quantity, Number Up, or <u>Rate</u> being entered for an <u>Operation</u> .
Record	An item of information within a <u>file</u> .
Redo	Revoke the last <u>undo</u> .
Report	Output of information through a printing device to paper, screen or <u>file</u> .

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Resource	An entity which is capable of performing a task known as an <u>Operation</u> over a period of time. Each Resource must belong to a <u>Work Centre</u> . Known as a machine in MFG/PRO version.
Reorder	To resequence <u>Resources</u> on the Planning <u>Board</u> ; to resequence the processing of <u>Operations</u> in a <u>Work Order</u> .
Save	Copy the current <u>database</u> to a sub directory. Copy the current <u>Resource</u> order to a file for later <u>loading</u> .
Scroller	A <u>window</u> displaying list of items from which to choose.
Sequence	The order in which <u>Operations</u> are performed or processed through <u>Resources</u> .
Split	To duplicate an <u>Item</u> or <u>Operation</u> by a percentage of its quantity.
Stage	See Item
Status	A flag which may be defined and set against any <u>Work Order</u> , <u>Item</u> , or <u>Operation</u> to alert the user of the presence of a (set of) circumstances relating to these.
String	A combination of <u>text</u> in one continuous line or <u>field</u> , as in " <u>text</u> string".
TAB	The key located on the left hand side of a standard <u>keyboard</u> , usually marked with two parallel horizontal arrows. Moves between data entry <u>fields</u> in a <u>window</u> .

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Text	Any combination of letters and numbers, as in " <u>text string</u> ".
Text Editor	A DOS or proprietary software product which allows the editing of <u>files</u> , such as <u>CONFIG.SYS</u> and <u>AUTOEXEC.BAT</u> .
Timescale	A scale of time in which the Planning <u>Board</u> is displayed, varying from 6 minutes to as much as 18 months.
Version	The "model" number, i.e., version 3.0, NT 4. <u>0</u> .
Weekly Table	A range of Downtime set up as a weekly table which may be used to schedule <u>Downtime</u> on one or more <u>Resources</u> .
Window	A box which displays on the screen, usually containing information, lists of items, or <u>data entry fields</u> .
"Windows"	Short for Microsoft Windows <u>operating system</u> which allows multiple applications to be open. This product requires either Microsoft Windows95 or Microsoft NT4.0 operating system.
Work Centre	An entity in this product defined as a group of <u>Resources</u> having similar characteristics. All <u>Resources</u> must belong to a Work Centre.
Work Order	A uniquely identified record consisting of unlimited <u>Items</u> (Stages), each with unlimited <u>Operations</u> . MFG/PRO work orders have just one item (stage).
Undo	Revoke the last move. See <u>redo</u> .
Zoom	The action of changing the <u>timescale</u> on the <u>Board</u> to "zoom in" or "zoom out" in order to view varying aspects of the display.

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Implementation of The Planner

Experience shows that implementing any new system requires careful planning if the new system is to perform up to expectations.

A huge number articles and books have been written on the implications of introducing new methods to carrying out work. What most state is that the manner in which people in the organization are involved and respond to the changes, can make or break even exceptionally good new systems. To ensure that all issues are considered means putting in time with initial planning, and not just starting to get the new system going without involving others who are affected. These 'Others' who will be affected, may have valuable input which if given early on will be of much more use than if received half way through an implementation. The input may even be a general 'negativity towards change', and knowledge of this is well worth planning around, as it often kills otherwise sound changes.

Listed below are some questions to which answers should be sought before embarking on implementing ***The Planner***. They are by no means exhaustive, but can be used as a guide to develop a plan to ensure your organization gets the most from ***The Planner*** software.

Steps

Generally a number of steps should be followed to implement a system such as The Planner. Because they are listed one after the other does not mean that once we have completed a step we should not revisit it later. If new knowledge gained about our business, processing methods, or software suggests that maybe we could do things better, then we should revue what we are doing, and make changes if we feel they would be of overall benefit. Should we not apply new knowledge we have gained, and try to use it to continuously improve?

- Revue of previous experiences with projects – what can we learn?
- Setting measurable objectives in line with strategic plan, with time frames to achieve them
- Revue of present planning/scheduling activities and how used by others
- Determine how to setup Software and use

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- Establish initial software setup, enter sample data, create and evaluate likely outputs
- Create data entry system – manual or electronic
- Finalize initial procedures to go live
- Go live
- Review outputs against objectives

General Issues

What Previous Experience have we had?

What other new systems have we recently implemented?

What were the reasons for implementing them?

Have these objectives been met? How do we know?

Who initially wanted these systems?

Who pushed/championed the project? What was their Role / position?

Who managed the project, and what were their strengths?

Were there key factors in the success of earlier implementations?

Were extra people and resources needed? If so were they made available?
How?

What part(s) of implementation(s) was / were hardest?
What problems did we have with implementation?

Were they avoidable? How?

Planner Specific Issues

What strategic advantage are we seeking to be more competitive in by implementing The Planner?

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What objectives do we need to achieve to seek this advantage, and when will each objective be achieved?

How will we know we have achieved an objective? How are we going to measure attainment?

What are our present baselines for these measures?

Production Variables:

Present delivery lead time

Present delivery reliability

Important characteristics of jobs – that affect how we schedule, and which others need to know about jobs.

How do we plan now. Revue of current planning process

How frequently are our schedules changed?

What should be our closest time fence?

Do some resources cause us more heartache than others?

Do any operations on some resources just happen regardless of problems in other areas?

What criteria determines/influences the schedule order for different resources.

Information Requirements

Present Schedules and other relevant reports. Are these what we really need?

Who needs information based on the Plan?

What information do they need?

How should it be arranged?

How frequently do they need it updated?

Is our present WIP feedback information sufficient? Is it timely enough?

Configuring Software:

Revue The Planner fields, and how they should be assigned - see 'An Explanation of Work Order Fields' in Introduction Section.

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List of fields to be renamed in the Customizer

Workcentres / Departments - for grouping

Resources / Machines to schedule

How to structure the Work Orders, layout, routing?

How are the Work Orders, Work Centres, Machines, routings structured in MFG/PRO now?

Units of measure? Are they unambiguous, or do we need to specify them?

Planner Test setup – does our setup work for all types of Work Orders?

What menus and/or scrollers need changing? What default settings are not suitable for us?

Security? How will we make our planning system secure?

Interfacing

Have we all the information required for scheduling in MFG/PRO?

Is all the information accessible to send to The Planner?

Do we need to store extra sequencing data in the fields provided in MFG/PRO Export settings?

What information (if any) do we need back from The Planner to MFG/PRO?

File Structure

Database Specifications for The Planner Scheduler v3.42

Empty values are allowed in alpha and numeric fields but not in date or time fields. Alpha and numeric field contents can be any length up to the maximum. Date format depends on chosen setup (DD/MM/YY or MM/DD/YY or YY/MM/DD. Default is DD/MM/YY).

Note that the field names shown here are those that come as standard with the listed version of the software. MFG/PRO version names are in Column 1, Standard version names up to v3.2b in Column 2, and Standard version from v3.3 in column 3. Any further customization to field names is possible after installation. For convenience and reference, the original field names are always held in the Customization program, and are shown next to the changed name.

Please Note:

Digit fields only accept positive numbers

Spare Variable (Digit) Fields additionally accept decimal points.

Work Order (Job) Record

Field Name MFG/PRO	Field Name Std to v3.2b	Field Name Std v3.3+	Type	Size	Comments
ID	Job Number	WO No	ASCII	11	Unique key field, Required
W/O Status	Rep	Rep	ASCII	3	
Description	Job Desc	Description	ASCII	51	
Item Number	Product	Product	ASCII	25	
Work Order	Height	WO SpareTxt 0	ASCII	25	
W/O SpareTxt1	Width	WO SpareTxt 1	ASCII	25	
W/O SpareTxt2	Depth	WO SpareTxt 2	ASCII	25	
Priority	Priority	Priority	Digits	1	
Qty Ordered	Order Qty	Order Qty	Digits	9	
W/O SpareVar1	Job SpareVar 1	WO SpareVar 1	Digits	9	
W/O SpareVar2	Job SpareVar 2	WO SpareVar 2	Digits	9	blank, 0,1-9 allowable
W/O Due Date	Job Date Reqd	WO Due Date	Date	DD/MM/YY	
W/O Due Time	Job Time Reqd	WO Due Time	Digits	3	

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Stage (Item) Record

Field Name MFG/PRO	Field Name Std to v3.2b	Field Name Std v3.3+	Type	Size [3.3 in ()]	Comments
StageID	Item No	Item No	ASCII	8 (7)	Required if Item Linking. Size inc. with 3.4
StageSpareTxt1	Item Desc	Item SpareTxt 1	ASCII	25 (21)	Size inc. with 3.4
StageSpareTxt2	Item Height	Item SpareTxt 2	ASCII	25	
StageSpareTxt3	Item Width	Item SpareTxt 3	ASCII	25	
Stage Qty	Item Qty	Item Qty	Digits	9	If blank, defaults to W/O qty
StageSpareTxt4	Item Depth	Item SpareTxt 4	ASCII	25	
StageSpareTxt5	Size	Item SpareTxt 5	ASCII	25	
OFF	Number Up	Number Up	Digits	5	
StageSpareTxt6	Out	Item SpareTxt 6	ASCII	25	
StageSpareTxt7	Colour	Item SpareTxt 7	ASCII	25	
StageSpareVar1	Item SpareVar 1	Item SpareVar 1	Digits	9	
StageSpareVar2	Item SpareVar 2	Item SpareVar 2	Digits	9	
Late Alert	Late Alert	Late Alert	Digits	5	In 1/10ths of hr, eg 5 = 30 mins)
Stage Due Date	Item Date Reqd	Item Due Date	Date	DD/MM/YY	If blank, defaults to Job Due Date
Stage Due Time	Item Time Reqd	Item Due Time	Digits	3	In 1/10ths of hr, eg 5 = 30 mins
W/O Release Date	Earliest Date	Earliest Date	Date	DD/MM/YY	If blank, defaults to NOWTIME
W/O Rel Time	Earliest Time	Earliest Time	Digits	3	In 1/10ths of hr, eg 5 = 30 mins

Operation Record

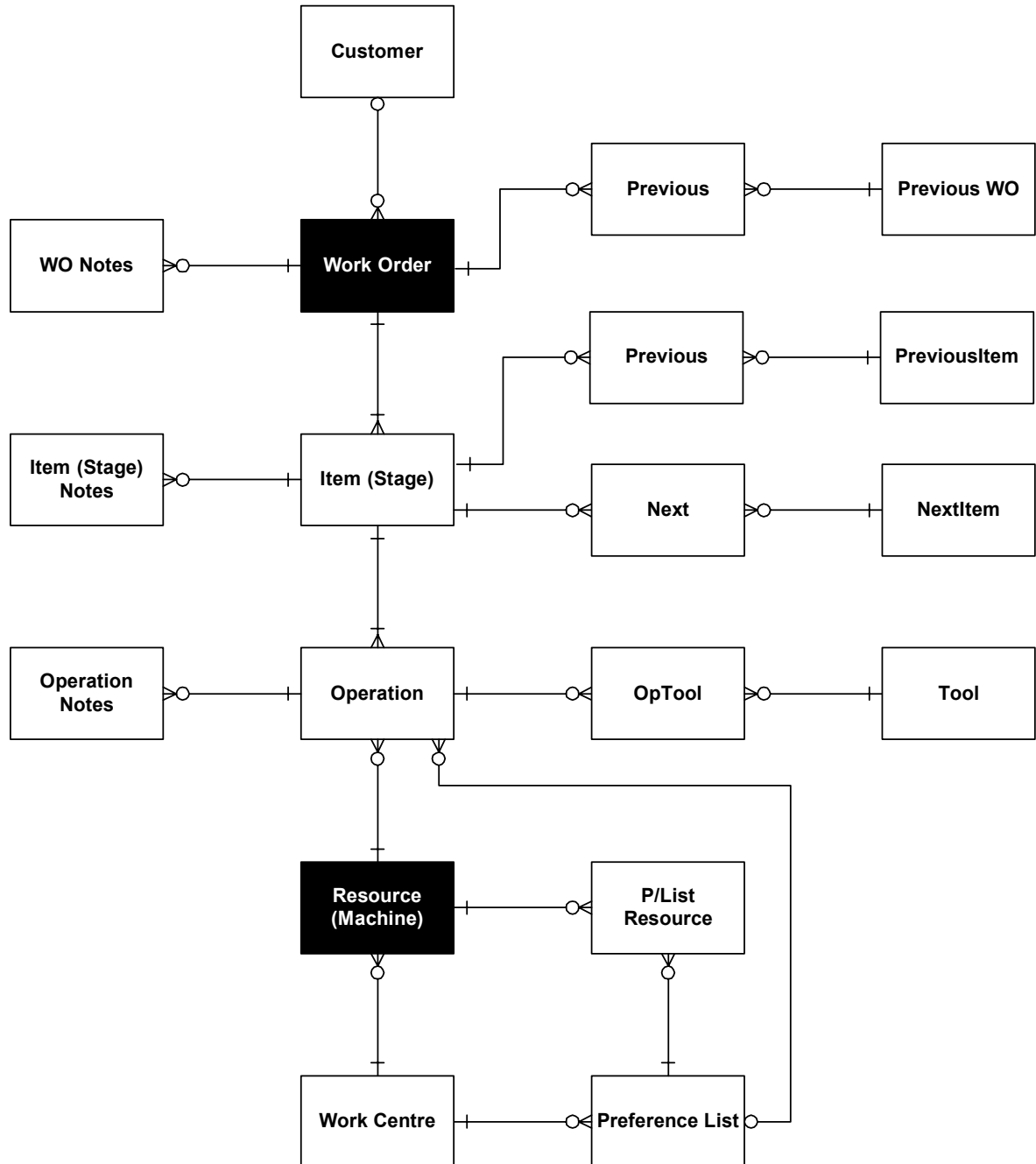
Field Name MFG/PRO	Field Name Std to v3.2b	Field Name Std v3.3+	Type	Size [3.3 in ()]	Comments
Machine	Resource	Resource	ASCII	17 (13)	Size inc. with 3.4
Preference List	Preference List	Preference List	ASCII	17 (13)	If not blank, list must exist. Size inc. with 3.4
Name	Name	Name			Size inc. with 3.4
Operation	Passes	Passes	ASCII	8 (3)	
Opn Status	Q	Q	ASCII	1	
Set Up	Set Up	Set Up	Digits	5	
Run Dur'n	Run	Run	Digits	5	
OFF	Clean	Clean	Digits	5	
Overlap	Overlap	Overlap	Digits	5	
Transit	Transit	Transit	Digits	5	
Opn Qty	Opn Qty	Opn Qty	Digits	9	
OFF	Opn Number	Op Up	Digits	5	
	Up				
Status Display	Std Status	Std Status	Digits	1	0=Clear, 1=Hold, 2=Complete, default=0
User Status 1	User Status 1	User Status 1	YesNo	1	Y = Yes, default = No
User Status 2	User Status 2	User Status 2	YesNo	1	Ditto
User Status 3	User Status 3	User Status 3	YesNo	1	Ditto
User Status 4	User Status 4	User Status 4	YesNo	1	Ditto
User Status 5	User Status 5	User Status 5	YesNo	1	Ditto
OFF	Opn Date Req	Opn Date Req	Date	DD/MM/YY	If blank, defaults to WO Due Date
OFF	Opn Time Req	Opn Time Req	Digits	3	
Use Earliest	Use Earliest	Use Earliest	YesNo	1	Y = Yes, default = No
Date	Date	Date			
Earliest Date	Earliest Date	Earliest Date	Date	DD/MM/YY	Defaults to Earliest Date on Item Line
Earliest Time	Earliest Time	Earliest Time	Digits	3	
Use Latest Date	Use Latest Date	Use Latest Date	YesNo	1	Y = Yes, default = No
Latest Date	Latest Date	Latest Date	Date	DD/MM/YY	If blank, defaults to Earliest Item Date, PLUS Run time
Latest Time	Latest Time	Latest Time	Digits	3	
Opn SpareVar 1	Spare Var 1	Opn SpareVar 1	Digits	9	
Opn SpareVar 2	Spare Var 2	Opn SpareVar 2	Digits	9	
Opn SpareTxt 1	Spare Txt 3	Opn SpareTxt 1	ASCII	25	
Opn SpareTxt 2	Spare Txt 4	Opn SpareTxt 2	ASCII	25	
Opn SpareTxt 3		Opn SpareTxt 3	ASCII	25	New with v3.4
Opn SpareTxt 4		Opn SpareTxt 4	ASCII	25	Ditto
Opn SpareTxt 5		Opn SpareTxt 5	ASCII	25	Ditto
Opn SpareTxt 6		Opn SpareTxt 6	ASCII	25	Ditto
Rate	Run Rate	Rate	Digits	19	Floating

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Updated Date	Updated Date	Updated Date	Date	DD/MM/YY	Point:Picture =14.4 digits
Updated Time	Updated Time	Updated Time	Digits	3	
Qty Completed	Qty Completed	Qty Completed	Digits	9	

Record Name	Field Name	Type	Size	Comments
Customer	Cust Code	ASCII	13	
	Cust Name	ASCII	41	
	Cust Addr 1	ASCII	31	
	Cust Addr 2	ASCII	31	
	Cust Addr 3	ASCII	25	
	Cust Phone	ASCII	15	
	Cust Fax	ASCII	15	
	Cust Contact	ASCII	25	
	Cust Priority	Digits	1	Blank, 0,1-9 allowable
Plan Description Field	Description	ASCII	40	
Preference List	List Name	ASCII	17 (13)	Size inc. with 3.4
	Description	ASCII	51	
Rate	Rate	Digits	19	
	Description	ASCII	41	
Resource	Resource Name (Machine)	ASCII	17 (13)	Size inc. with 3.4
	Resource Description	ASCII	25	New with v3.4
	Group	ASCII	3	
Work Center	Work Center Name	ASCII	8 (3)	Size inc. with 3.4
	Description	ASCII	51	
Tool	Tool Name	ASCII	13	
	Description	ASCII	51	
	No of Tools	Digit	9	

Planner Data Relationships



All Fast Keys In Planner

Print Key: - to print the active Planner window

Print Active Window

Shift + Ctrl + P

Global Keys: - able to be used in all Planner windows

Next Window	TAB (new feature, next MDI window)
Prev Window	SHIFT + TAB (new feature, previous MDI window)
Display Downtime	ALT + F11
Print Active Window	Shift + Ctrl + P
Undo	F2
Redo	SHIFT + F2
Edit Board Work Order	Ctl 'E'
Edit Bin Work Order	SHIFT + 'E'
Update (WIP)	Ctl 'W'
Quick Update	Ctl + SHIFT + W
Unupdate	CTRL + 'U'
Save Plan	CTRL + A
Switch Plan	CTRL + I
Machine / Tool Breakdown	SHIFT + ALT + F2
Highlight Work Order	Ctl 'H'
Highlight Stage	SHIFT + 'H'
Highlight Job Links	CTRL + J
Change Work Order Status	F6
Change Stage Status	SHIFT + F6
Change Operation Status Display	CTRL + F6
Remove Work Order	F7
Remove Stage	SHIFT + F7
Select Move Operation	Ctl 'O'
Select Move To Position	Ctl 'T'
Select Range Position	Ctl 'T'
Run Current Operation	Ctl 'R'
Move Configuration	Ctl 'C'
Select Move Rest Of Stage	F8
Select Move Stage	SHIFT + F8
Select Move Operation	CTRL + F8
Work Order or Downtime Notes	Ctl 'N'
Stage Notes	SHIFT + 'N'
Operation Notes	Shift + CTRL + 'N'
Downtime Schedule Edit	CTRL + F2
Downtime Un/Compress	SHIFT + ALT + F11
Display Configuration	CTRL + F11 (Also added to the view menu)
Unhighlight All	SPACE

Local Board Window Keys:

Goto Now	F3
Goto Machine/Time	CTRL + F3
Goto Stage	SHIFT + F3
Timescale Down	'_' or '_'
Timescale 1	'!'
Timescale 2	'@'
Timescale 3	'#'
Timescale 4	'%'
Timescale 5	'^'

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Timescale 6	'^'
Timescale 7	'7'
Timescale 8	'**'
Timescale 9	'('
Timescale 10	')'
Timescale Up	'=' or '+'
Place Work Order At Pointer	Ctl 'P'
Place Stage At Pointer	SHIFT + 'P'
Goto Machine/Time Marker	CTRL + 'G'
Set Machine/Time Marker	CTRL + 'S'
Goto Operation Marker	SHIFT + 'G'
Set Operation Marker	SHIFT + 'S'
Rotate Operation Display	Ctl 'F'
Cursor Home	HOME
Cursor End	END
Cursor Left	LEFT
Previous Machine Operation	SHIFT + LEFT
Cursor Left Block	CTRL + LEFT
Cursor Left Page	SHIFT + CTRL + LEFT
Cursor Left Screen	ALT + LEFT
Cursor Right	RIGHT
Next Machine Operation	SHIFT + RIGHT
Cursor Right Block	CTRL + RIGHT
Cursor Right Page	SHIFT + CTRL + RIGHT
Cursor Right Screen	ALT + RIGHT
Cursor Up	UP
Previous Stage Operation	SHIFT + UP
Cursor Up Screen	ALT + UP
Cursor Down	DOWN
Next Stage Operation	SHIFT + DOWN
Cursor Down Screen	ALT + DOWN
Cursor Page Up	PAGEUP
Cursor Page Down	PAGEDOWN
Operation Display Field	ALT + F2 (Also added to the view menu)
View Work Order	CTRL + 'V'

Local Machine View Window Keys:

Previous Machine	CTRL + LEFT
Next Machine	CTRL + RIGHT
Previous Stage Operation	SHIFT + UP
Next Stage Operation	SHIFT + DOWN
Cursor Up	UP
Cursor Down	DOWN
Cursor Page Up	PAGEUP
Cursor Page Down	PAGEDOWN
Cursor Home	HOME
Cursor End	END
Cursor Left	LEFT
Cursor Right	RIGHT

Local Tool Board Window Keys:

Goto Now	F3
Timescale Down	'.' or '-'
Timescale 1	'1'
Timescale 2	'@'
Timescale 3	'#'
Timescale 4	'%'

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Timescale 5	'\u002F'
Timescale 6	'\u002F'
Timescale 7	'7'
Timescale 8	'*'
Timescale 9	'('
Timescale 10	')'
Timescale Up	'=' or '+'
Goto Tool/Time Marker	CTRL + 'G'
Set Tool/Time Marker	CTRL + 'S'
Goto Operation Tool Marker	SHIFT + 'G'
Set Operation Tool Marker	SHIFT + 'S'
Cursor Home	HOME
Cursor End	END
Cursor Left	LEFT
Previous Tool Operation	SHIFT + LEFT
Cursor Left Block	CTRL + LEFT
Cursor Left Page	SHIFT + CTRL + LEFT
Cursor Left Screen	ALT + LEFT
Cursor Right	RIGHT
Next Tool Operation	SHIFT + RIGHT
Cursor Right Block	CTRL + RIGHT
Cursor Right Page	SHIFT + CTRL + RIGHT
Cursor Right Screen	ALT + RIGHT
Cursor Up	UP
Cursor Up Screen	ALT + UP
Cursor Down	DOWN
Cursor Down Screen	ALT + DOWN
Cursor Page Up	PAGEUP
Cursor Page Down	PAGEDOWN

Local Tool View Window Keys:

Previous Tool	CTRL + LEFT
Next Tool	CTRL + RIGHT
Cursor Up	UP
Cursor Down	DOWN
Cursor Page Up	PAGEUP
Cursor Page Down	PAGEDOWN
Cursor Home	HOME
Cursor End	END
Cursor Left	LEFT
Cursor Right	RIGHT

Local Report View Window Keys:

Close Window	ESCAPE
Cursor Up	UP
Cursor Down	DOWN
Cursor Page Up	PAGEUP
Cursor Page Down	PAGEDOWN
Cursor Home	HOME
Cursor End	END
Cursor Left	LEFT
Cursor Right	RIGHT

Fast Key Features Not Implemented in GUI Version:

Late Display In display configuration

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Status Display	In display configuration
Late Type Display	In display configuration
Anchor Display	In display configuration
Load Plan	Removed (menu changed to "Load / Replace with"
Load Machine Order	Added to Reorder Machines Menu
Save Machine Order	Added to Reorder Machines Menu
Select Move By Major Operation	Removed because the ALT + F8 key can not be used

The Database Utilities

As with all database products, from time to time something occurs which makes the data in them unreliable or corrupt. The utilities described in this Appendix provide tools to deal with these situations when they occur.

General Security of Data

The Planner is continuously saving your work to disk while you work. By default the 'main plan', is the one which is seen when starting **The Planner** (i.e. the database files kept in the \database\plan subdirectory).

The Planner also has the ability to store other plans (other sets of database files) in subdirectories off the \database\plan one. The subdirectories that these other plans are stored in are suffixed with the extension '**.PDB**'. The 'Save As Plan' facility, accessed from the File menu in the planner, allows you to quickly and conveniently make extra copies of your 'main plan' as you work throughout the day.

It is strongly recommended that the save facility be used throughout the day to keep up to date copies of your main plan. These copies of your main plan can be called, say, AM for extra saves made in the morning, and PM for extra saves made in the afternoon. These extra saves ensure minimal loss of time:

- If your computer system 'misbehaves' at all
- If you wish to return to the plan as you had it half an hour ago, because you have just realised your plan from then was better, but to undo everything will take too long.

Routines to ensure security of your data

It is recommended that the following routines be established to ensure data integrity at all times, or if problems arise so that data integrity can be restored without delay.

During the day:

Copies of your main plan are made throughout the day using the 'Save As' facility in the File menu.

If any system problems or error messages are encountered during the day, check your database, as outlined further in this section.

Daily:

A backup copy of your main plan is made to other media than your local hard disk, e.g. to network drive, diskette or tape.

A Backup utility is provided with the system and is described later in this section

Weekly

Carry out both Physical and logical checks of you main database.

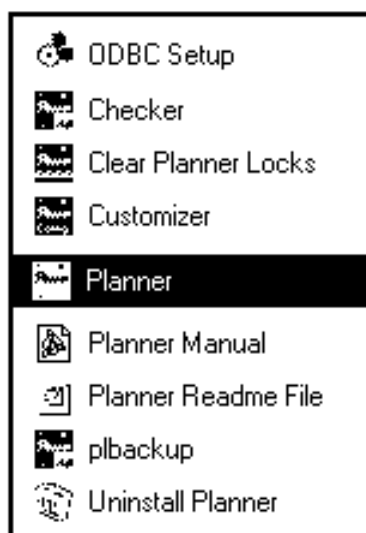
The necessary steps are outlined later in this section

Utilities

The Planner will generally inform you when a database error has occurred with an on-screen message each time it tries to access the problem record. When this happens, **exit** the program (press the Exit or Abort button) and return to the opening menu.

The opening menu shown below lists an option, "Checker". Checker is only available to users with customizer access. Its use is described in this Appendix, along with information on the "Backup" utility.

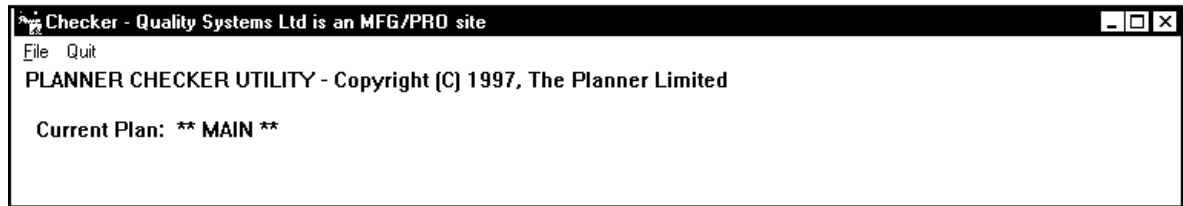
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Database Checker

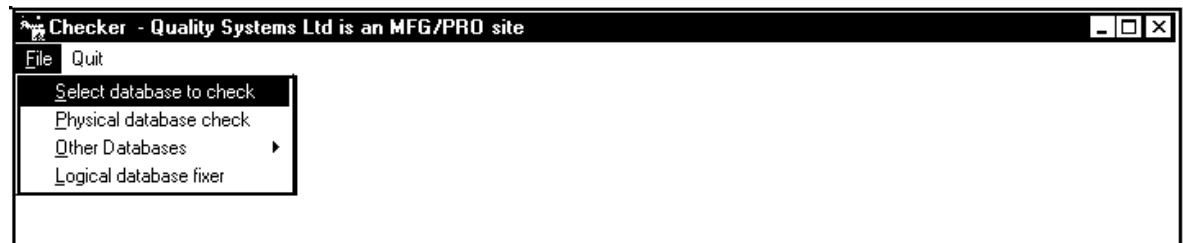
Checker

This is a utility for checking the physical integrity of Planner databases, and to check and fix some logical problems.



The default plan to be checked is the "Main" one, i.e the plan database stored in the \database\plan directory.

To check other plans, first "select the database to check" from the file menu.



Physical Database Check

After selecting which database to check, use this option to run a physical check of the chosen database. When complete, a window displaying the log of the check is displayed.

Scroll down the log and ensure that the last line of report states;

"0 errors where encountered in 0 records/nodes".

Then you can continue using the database as it is, or preferably carry out a logical check/fix as described below.

If any errors are present refer to "Recovery Actions for Planner Data" in this appendix.

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Logical Database Fixer

Only run this option if the selected database has already had a physical check and was found to have zero errors.

If the database is found to be sound, a message reporting “Check Finished” will display, and you can continue using the database as it is.

Allow checker to fix any errors that it finds. Jobs, items or operations titled may be Unlinked

If any unlinked records are present and are unable to be fixed, refer to **“Recovery Actions for Planner Data”** in this appendix.

Other Databases

The Planner and Customizer configuration databases, and the Planner’s Registry can also be checked with this option.

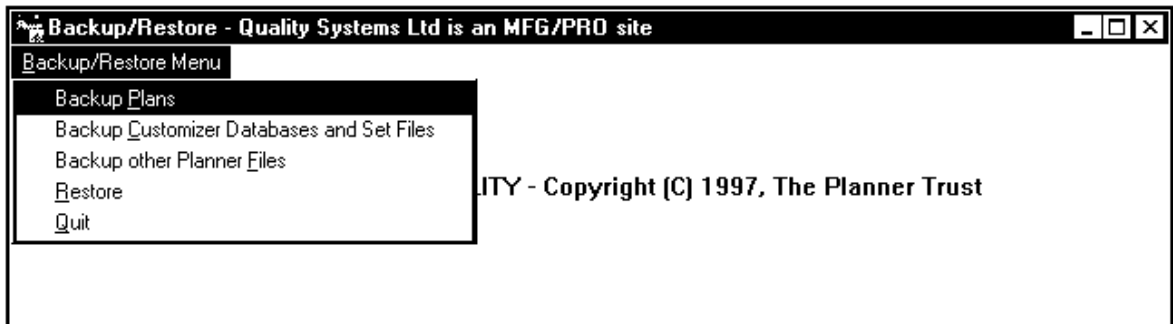
If any errors are present, you should restore from backup, or reinstall The Planner. Ensure a backup copy of the whole planner directory is taken before beginning either a restore or reinstall.

Backup

From within **The Planner** it is possible to save plans to another directory on the hard drive. We recommend that this be performed regularly through out the day, as outlined earlier in "General Security of Data".

In addition, a utility is provided to create backups to other local or network drives. Use this option to create backups to take offsite each day.

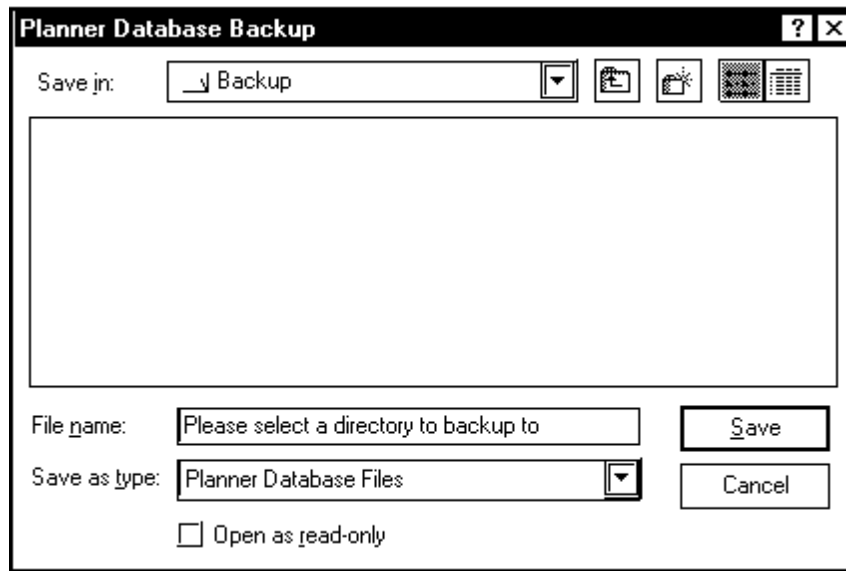
Choose Plbackup from the Planner Scheduler menu, enter the customizer login/password, and the backup program will start. A number of options, as described below, are available from the Backup/Restore menu.



Backup Plans

Selecting this option will open a list box scroller, which displays all the plan databases currently stored in the Planner. After selecting a plan or plans you wish to backup, an 'explorer window' requests you to choose the Backup destination folder. "Please select a directory to backup to", using the search facility in the 'explorer window' and click "OK" to run the backup of the selected plans to this directory.

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The backup creates one or more “*.cabd” files for the compressed plan(s) , e.g., “MAIN1.cabd”, “MAIN2.cabd” ...for the MAIN plan).

A “*.pld” control file will also be created for each plan, e.g. “MAIN.pld” for the MAIN plan, that describes this plan’s attributes.

You will be warned if other backups of the same plan exist in the chosen directory, and given the choice to overwrite or cancel. Floppy disks must be emptied first.

Backup customizer databases and set files

This option will backup configuration databases, customizer files and Planner setting files. This includes all the;

- “*.dbd”, “*.d?t”, and “*.k?y” files under the “planner install directory\database\config\ “ subdirectory
- “*.dbd”, “*.key”, “*.dat” files under the “planner install directory\database\ “ subdirectory
- “*.set” and “*.sit” files under the “planner install directory\ “ subdirectory.

The backup creates the following files:

“config.pls” and “config*.cabs”,

“database.pls” and “database*.cabs”,

“PlannerInstallDirName.pls” and “PlannerInstallDirName*.cabs”

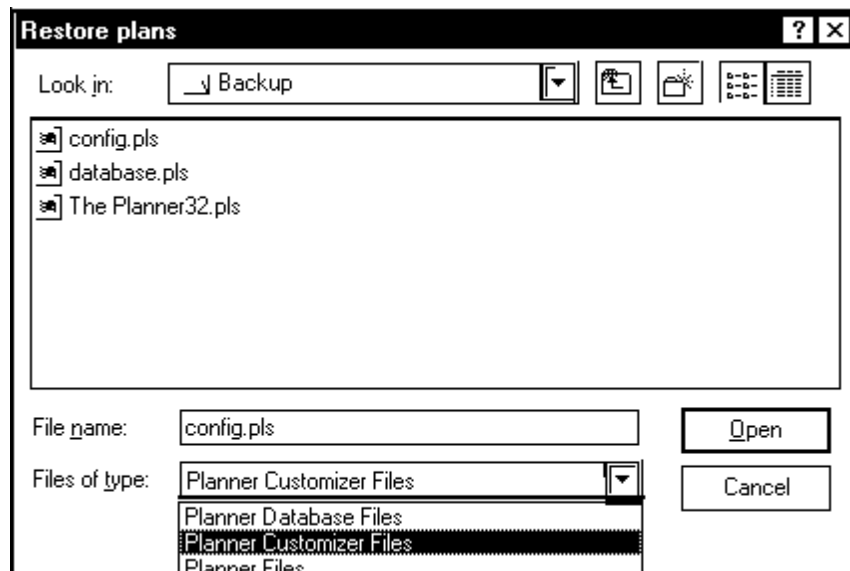
Backup Other Planner files

Under this option you can backup any file in the Planner directory (or any other directory if desired).

The files to be backed up are selected, and backed up to a selected destination. This functionality is similar to the general backup utility in windows. After prompting for a name, the backup proceeds and creates a "backupname.plf" control file and a series of "backupname.cabf" files.

(Note: if backing up to a floppy disk, ensure each backup disk has at least 1 Mb free)

Restore



This option opens an 'explore' window allowing selection of the directory, type of files, and files you wish to restore.

Restoration of Planner Customiser and Planner database files is to the correct subdirectory location relative to where the Planner is installed (and hence where Plbackup is run from).

Selecting Files to Restore

Selecting the 'files of type', allows restoring of complete Planner Plan Databases, Customiser databases and set files, or other planner files you have backed up earlier.

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If restoring files from a floppy drive, insert the last disk first, as the restore utility looks to the control file (“*.pld”, “*.pls”, or “*.plf”) in order to get the backup file attributes. (the control files are saved after all the “*.cab*” files have been created). You will then be prompted to insert the first disk to start restoration.

Depending on what type of files are being restored, one of three restore types will occur:

1. Restore Planner Database Files (plans)

The ‘Planner Database Restoration’ window opens, the left side displaying all the plans you have selected to restore. The right side lists all the plans in the Planner.

The default is to restore a plan to its original plan name.

Plans being restored for which the same named plan already exist in the planner, will display in red color in the destination column. Restoration to the same named plan will over write that plan.

To restore a selected plan to another name, click on the right hand side column for the plan, key in the name to restore to, press the [Enter] key, then [OK].

2. Restore customizer databases files and set files

A ‘Found Files’ window displays any customizer/set files selected for restoring that already exist in the Planner. Highlight the files you wish to restore then press [OK] to start the restoration.

3. Restore other files

Select the destination directory you want the selected files to be restored to and click “OK” to start the restoration.

Recovery Actions for Planner Data

These instructions assume that periodic copies of the main database have been made (using Edit, Save, Save, or **[Ctrl]+[A]**) to databases called AM and PM. When integrated to MFG/PRO, copies of all interface files imported since the saved/backedup plan was created must also be available.

A number of steps may be involved:

1. From The Planner main menu –
 - Select Checker to check your main database.
 - Select *main*, then
 - Carry out a Physical database check
 - If Physical check reports zero errors, do Logical database check/fix.
 - IF both OK , continue to use The Planner
 - Else Go to 2.
2. While still in Checker,
 - Select the last saved plan, eg AM or PM and
 - Carry out checks as in 1 above on it.
 - If the last saved has errors, check the earlier one.
 - IF OK, then note date/time in desc.txt, restart Planner, and File/Replace-Load the plan to be the new main plan. Apply any import.if* files that were imported to Planner after the date/time shown in desc.txt
 - Else Go To 3.
3. As your extra saved databases are also corrupted, you will need to go to your last data backup disk and restore from this. From the opening menu
 - Select Plbackup, Restore,
 - Place the last backup in drive and restore to *Main*.
 - When restore is finished, run Checker to check your main database as per 1. above.
 - IF OK, restart Planner, and adjust the plan to where you where before the problem.
 - Else repeat 3. above, with earlier, then earlier backup disks
4. If restoring from tape, ensure you keep a copy of the plan you intend to overwrite/restore to. If the plan restored from tape has no errors or

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unlinked records, then adjust the plan to where you were before the problem.

5. If all plans have errors or unlinked records, the options available are to:
- Reload your data from scratch, using a new empty database.
 - Attempt to fix your corrupted database. Utilities are available to help with this, but need a higher level of system knowledge than operating The Planner does. At this stage please refer to your support consultant for help.

All Plans are Corrupt

Free fixing of bad/corrupt data is generally not covered by support/maintenance agreements.

There is little excuse for having to try to fix bad data, as Planner has simple to use saving, backup and checking tools provided. Instructions/recommendations for backups, checking and recovery have all been covered earlier in this section.

While two advanced data fixing tools, dbfix.exe, and keybuild.exe are installed in the \database directory of Planner v3.x, the tools require a system person with expertise in DOS and databases to understand and use them. Schedulers/Planners should not expect outside support in their use.

Regular frequent backups, and, if a crash occurs, then checking plans out before continuing is the way to do things, and keep your data in good order.

To fix plan data

The order to carry out a fix of data is as follows - working on a copy of the bad plan please!! :

1. Use checker, to do a physical check on the suspect plan; if errors then 2), Else logical fix and continue using plan.
2. Copy dbfix.exe and work.dbd to the directory the plan is in and use dbfix to check the Plan, i.e. run dbfix from a DOS session, e.g. C:\Program

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Files\The Planner\database\plan>dbfix plan ,or perhaps C:\Program Files\The Planner\database\plan\pm.pdb>dbfix plan if fixing a saved plan called pm.

3. Run a physical check again, if OK then goto 4); Else repeat 2), give up, or restart with a less damaged, and earlier? plan.
4. Run Keybuild from the directory the plan is in, e.g. C:\Program Files\The Planner\database\plan> .\ keybuild plan
5. Run checker, logical fix. This does its own fixing of links when checking. Note any messages displayed for later.
6. Run Planner, and see what unlinked records are now linked to records made up and reported with the logical fix in 5) above. These may have to be deleted if you cannot work out what they really should be attached to.

Start Up Switches

Usually **The Planner** is started up by double clicking on a shortcut to **PL.EXE**. There are a few switches that can be invoked with this type of start up (see Section Four on Customizing).

Purpose

For more experienced users, and those with a special requirement at run time, there is an alternative start up procedure that adds more options to opening the database at run time. That alternative method involves the use of “switches”.

Switches are parameters that are passed to **The Planner** program at run time. They require a different command for the start up, followed by the switch name, followed by the value for the switch.

As an example, the switch to set the maximum number of Downtime days to 2000 at Run Time is:

-MAXDTDAYS 2000

The shortcut properties target to activate this switch on startup is :

C:\Program Files\The Planner\Pl.exe -MAXDTDAYS 2000

It can be seen that there are some differences to the normal start up shortcut, being:

- a) The shortcut properties must be edited. The target must be suffixed with all parts of the switch.
- b) A special character (the hyphen) is added before the switch. This may also be a forward slash / or a backslash \.
- c) A value is added to the switch parameter (2000).

So the target syntax is: Path**PL.exe** (space) - [switch] (space) [value]

or: Path\PL.exe (space) / [switch] (space) [value]
or: Path\PL.exe (space) \ [switch] (space) [value]

This Appendix briefly describes each of the available switches and their purpose, and lists any special values that apply to each.

The Switches

Syntax:

PL.exe [/ \ -] [Switch] [Value]

*Note that where defaults are provided, these refer to the standard defaults that were in place when **The Planner** was first installed. Subsequent changes to customize the setup become the defaults. With ON/OFF switches, if ON or OFF not specified then ON is used by default.*

BEEPONLATES < ON / OFF >

Sets the PC's speaker to sound whenever a job goes late as a result of any planning action.

BOARDSCALE < Number 1 - 10 >

Sets the Planning Board timescale (default is 2).

BOARDUPDATESUMMARY < ON / OFF >

Sets the board update summary screen on or off. Default is on.

CHECKAUTOLATES < ON / OFF >

Sets the on-screen messaging for Jobs gone late during Auto Update on or off (default is OFF).

CHECKQTDGTFINQTY < ON / OFF >

Sets the WIP Update Quantity checker on or off (default is ON).

DATEFORMAT < Number 1 - 3 >

Sets the date format (default is 1).

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DOWNTIMESTART < Date >

Sets the start date for Downtime on the Board (default is 01/01/90).

LOADDB < ON / OFF >

Activates the option to select a database to load at startup (default is OFF).

MAXDTDAYS < Number >

Sets the maximum number of Downtime days allowed (default is 3560).

MAXDTPATTERNS < Number >

Sets the maximum number of Downtime patterns allowed (default is 1000).

PROCESSSTATUS1 < String >

Sets the string for Operation Status One (default is CLEAR).

PROCESSSTATUS2 < String >

Sets the string for Operation Status Two (default is HOLD).

PROCESSSTATUS3 < String >

Sets the string for Operation Status Three (default is COMPLETE).

SETFILE < File Name.extension >

Loads the named setfile.

*NOTE: SETFILE works as an environment variable as well.
e.g. SET SETFILE=my.set*

SITEFILE <Path\File Name.extension >

Loads the sitefile in a multiuser system.

SWITCHDB < ON / OFF >

Activates the option to switch to a database at startup (default is OFF).

TOOLSBOARDSCALE < Number 1 - 10 >

Sets the Tools Board Timescale (default is 2).

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