

MFG/PRO® eB



MRP and CRP TRAINING GUIDE



Routing Maintenance (Date Based)	
Routing Code:	10-15000
Operation:	20
Standard Operation:	
Work Center:	1030 INSPECTION, ALL SITE
Description:	
Machines per Sp:	INSPEC PER PROC 00%
Overlap Units:	1
Queue Time:	1.0
Wait Time:	0.0
Setup Time:	0.0



70-2811A
MFG/PRO Version eB
Database: Demo
March 2001

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Course Description

QAD designed this course to cover the basics of preparing to implement Material Requirements Planning (MRP) and Capacity Requirements Planning (CRP) in MFG/PRO eB. The course includes:

- An introduction to MRP and CRP in MFG/PRO eB
- An overview of key business issues
- Setting up the MRP module
- Operating the MRP module
- Processing CRP
- Activities and exercises throughout the course
 - Students practice key concepts and processes related to MRP and CRP in MFG/PRO eB

Students learn how to:

- Analyze some key business decisions before setting up the MRP module
- Set up and operate MRP and CRP in MFG/PRO eB

Who Should Attend This Course

- Implementation consultants
- Members of implementation teams
- Operators

Prerequisites

- *Initial MFG/PRO eB Setup* training course
- Basic knowledge of:
 - American Production and Inventory Control Society (APICS) theory
 - Theory of MRP and CRP
 - MFG/PRO eB as it is used in the business
- Working knowledge of the manufacturing industry in general

Approximate Length of Course

- This course is designed to be taught in one day

Topics Covered

Business Issues

- Planning Parameters
- Kanban
- Demand Flow
- Batch Processing
- Cumulative Lead Times

Set Up

- Work Schedules
- Control File
- Planning Parameters

Operation

MRP

- Verifying Low-Level Codes
- Calculating Requirements
- Reviewing Action Messages
- Approving Planned Orders
- Reviewing MRP Information

CRP

- Recalculating CRP
- Infinite and Finite Capacity Planning
- Department and Work Center Capacities
- Input/Output Analysis
- Adjusting Capacity and Load
- Reports and Inquiries

Related Courses

- Purchase Order Management
- Work Orders
- Work Centers, Routings, and WO Subcontracting
- Product Structures and Formulas
- Sales Order Management
- Master Scheduling and Rough-cut Capacity Planning
- Forecast Simulation

Certification Preparation

This course is one of several courses designed to assist students in preparing for QAD certification examinations. However, QAD does not guarantee anyone a passing grade as a result of having taken this course.

Students preparing for certification examinations should study all available materials (user guides, training guides, on-line help, for example) and acquire industry and field experience.

Using This Training Guide

Implementation consultants, members of implementation teams, and operators can use this guide in instructor-led classes, while knowledgeable consultants who want to learn about the MRP module can use this guide for self-study.

This training guide provides a road map for instruction and learning. It contains:

- Annotated PowerPoint slides for instructors
- MFG/PRO eB screens annotated for instructors to demonstrate the module's functionality
- Exercises and study questions

Notes to Instructors

PowerPoint Slides

QAD created the slides using Microsoft® PowerPoint® 97. Instructors may want to animate text, graphics, and other objects on the slides to:

- Focus on important points
- Control the flow of information
- Add interest and variety to the presentation

Clicking on *Animation Preview* on the *Slide Show* menu previews animation of text and objects. To customize slides, click on *Custom Animation* on the *Slide Show* menu.

Class Kit

Kit for Students

- MRP and CRP Training Guide
- MFG/PRO eB GUI demo CD
 - Install the database entitled Demo for the exercises in this training course

Self-study students will require the following additional materials:

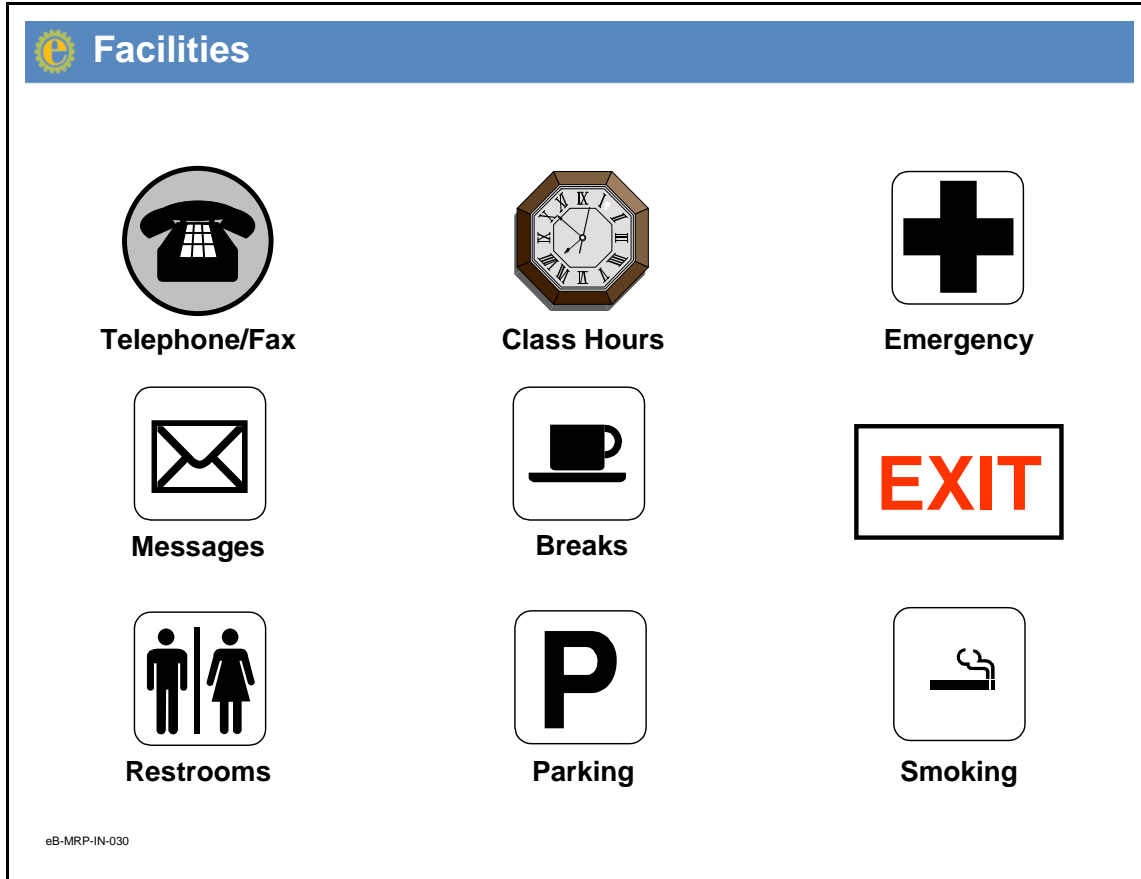
- MFG/PRO eB User Guides (printed material and compact disk are available from QAD Fulfillment, and electronic copies are available on the QAD website)
 - Volume 3, *Manufacturing*

Kit for Instructors

The instructor kit is the same as the student kit with the addition of the PowerPoint slides.

Configuration and Setup for This Course

For hardware requirements, refer to the Readme files on the MFG/PRO eB demo CDs.



General Training Facilities Information

- Telephone or fax
- Messages
- Restrooms
- Class hours: start and finish times, and punctuality
- Breaks: frequency, approximate times
- Parking considerations; carpooling
- Emergency procedures: location of first aid, contact person for assistance
- Exit locations, building hours
- Location of approved smoking area

CHAPTER 1

Introduction to MRP and CRP





Course Overview

- ◆ Introduction to Material Requirements Planning (MRP) and Capacity Requirements Planning (CRP)
- ◆ Business Considerations
- ◆ Set up MRP and CRP
- ◆ Use MRP and CRP

eB-MRP-IN-040

Overview

Planning and Scheduling Overview

Activity	Personnel	Planning Horizon (varies with industry)
Strategic Planning	CEO, CFO, VPs, etc.	3-5 years
MFG/PRO Planning and Control Modules		
Product Line Planning	Senior VPs, Plant Managers	Varies (1 Month is typical)
Forecasting, Master Scheduling, and RCCP	Master Schedulers	Cumulative Lead Time
MRP and CRP	Planners, Shop Floor Managers	Cumulative Lead Time

eB-MRP-IN-050

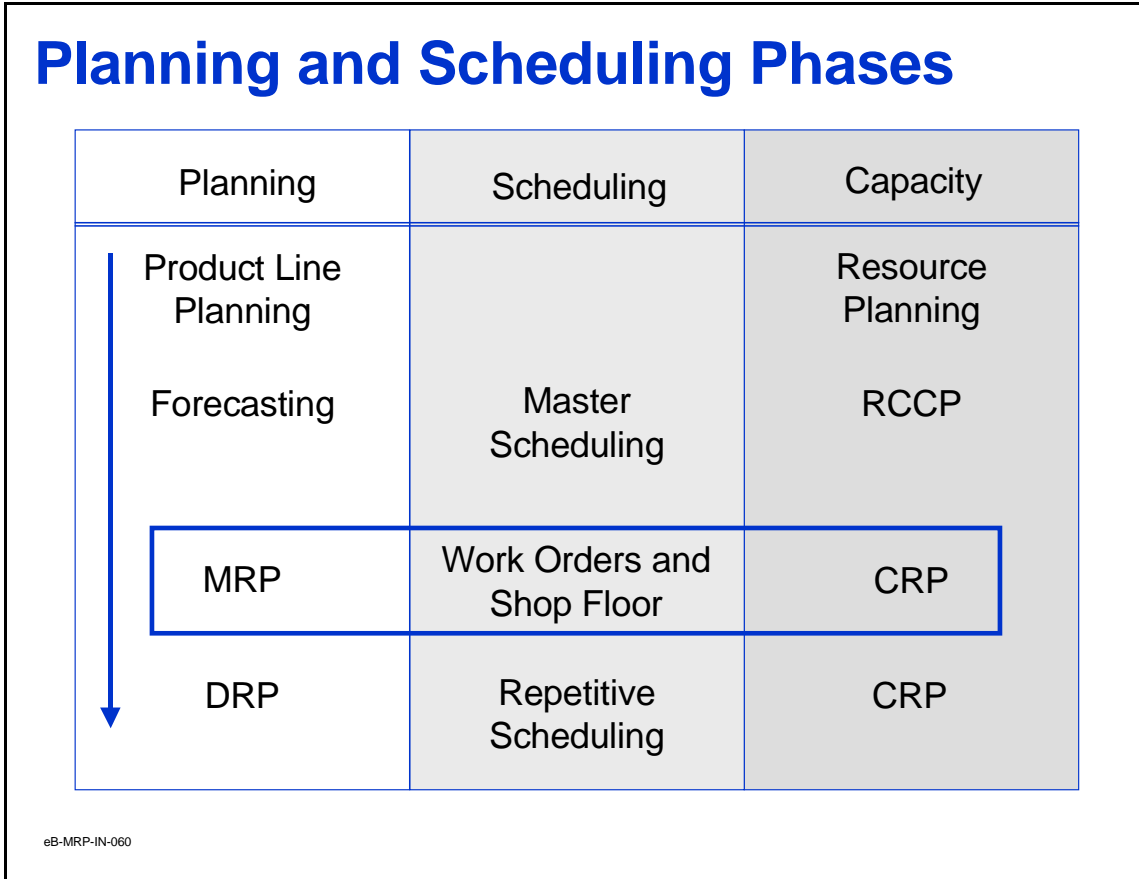
Planning and Scheduling

Component planning takes place in the Material Requirements Plan (MRP) module and the plans are checked against capacity in the Capacity Requirement Plan (CRP) module.

This tool enables you to schedule and issue orders for the items and for the work that will be needed to support the master schedule. You can use CRP to determine at a fairly precise level how this plan will load the resources you have at your site.

Component planning enables you to determine which work centers and components will be used to meet the plan. The check is to determine whether the work centers have the capacity to meet the schedule.

Items that are not master scheduled will be planned using MRP with master schedule as input. Master schedules generate demand for components. MRP uses this demand to schedule orders for components.



Phases





Planning and execution generally move down and to the right through the matrix shown above.

MRP is a time-phased priority planning system that calculates material requirements using:

- Product structures
- Inventory status
- The master schedule
- Open order dates

MRP plans orders, what to order, when to order, and how much to order. Supply is scheduled and rescheduled to meet changing demand and maintain valid due dates.

Planning and Scheduling Areas of Concern

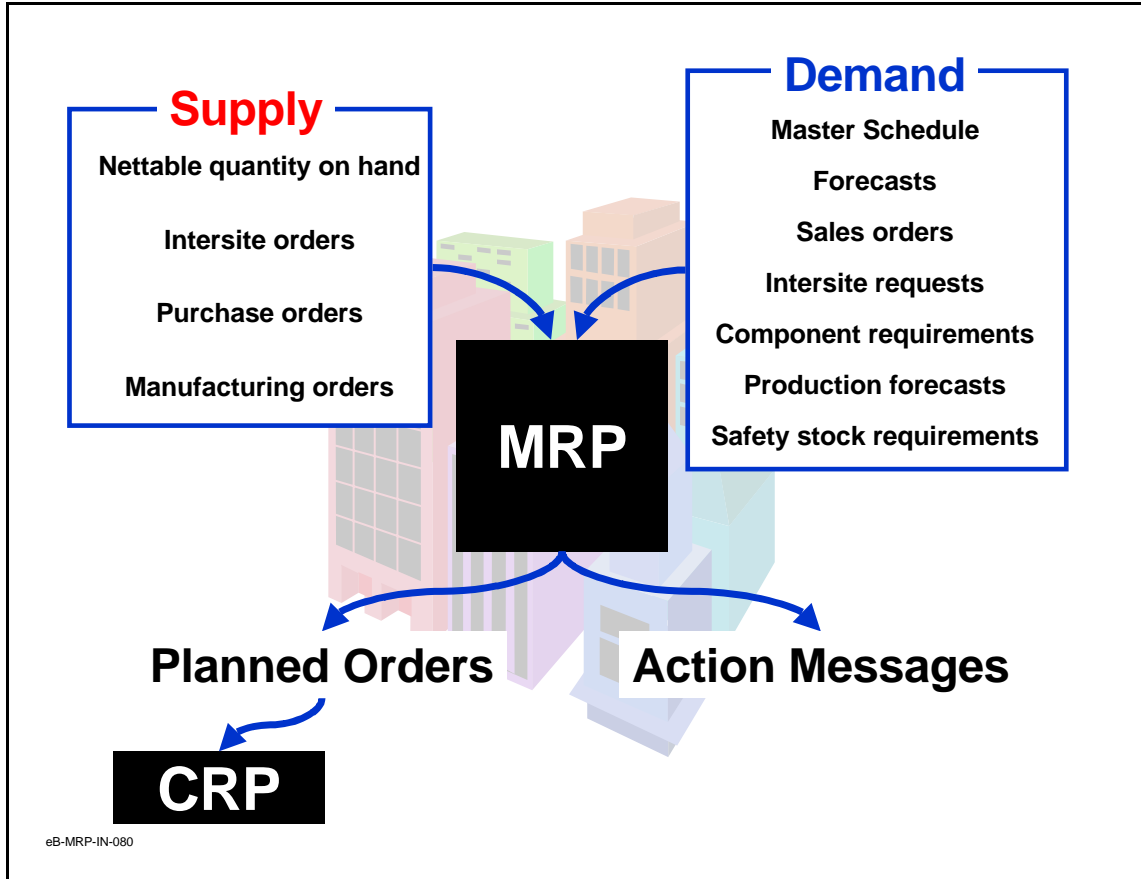
Activity	Concerns	Expectations vs Feasibility
Strategic Planning	 Sales and Profitability	Income vs Outlays
Product Line Planning	 Factories	Gross Sales vs Gross Production
Forecasting, Master Scheduling and RCCP	 End Items	Units vs Resources
MRP and CRP	 Departments, Work Centers, and Components	Planned Production vs Actual Production

eB-MRP-IN-070

Areas of Concern

MRP and CRP deal with departments, work centers, and components.

Planners and shop floor personnel use MRP results to determine manufacturing schedules which have the same time horizon as master schedules.



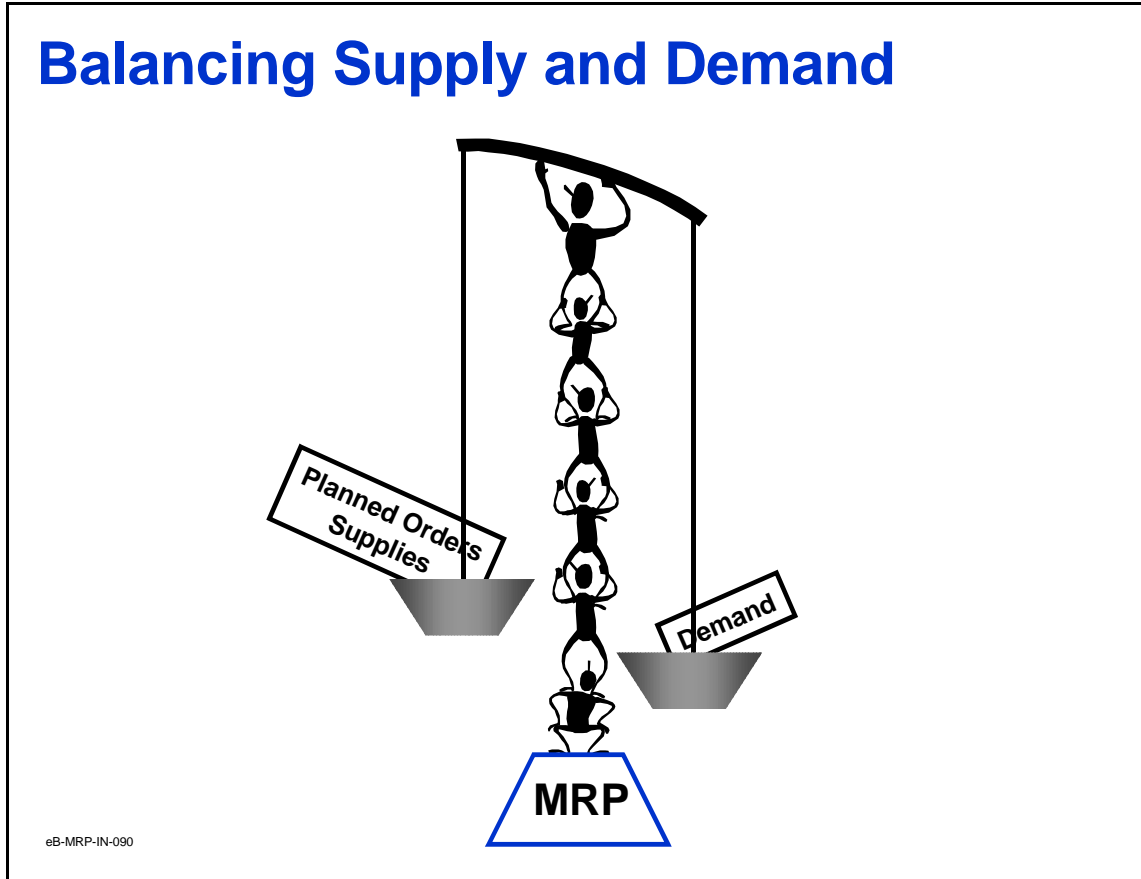
Materials Requirements Planning

MRP balances supply and demand for purchased and manufactured items. Given a set of demands or requirements, MRP automatically calculates a time-phased schedule of planned supply orders or replenishments to satisfy those demands.

It also generates action messages to alert you to any problems such as shortages and late receipts.

- MRP looks at demand for finished items and uses product structure information to calculate demand for component items
- For each item, MRP looks at the:
 - Ordering information
 - Amount currently on hand
 - Lead times

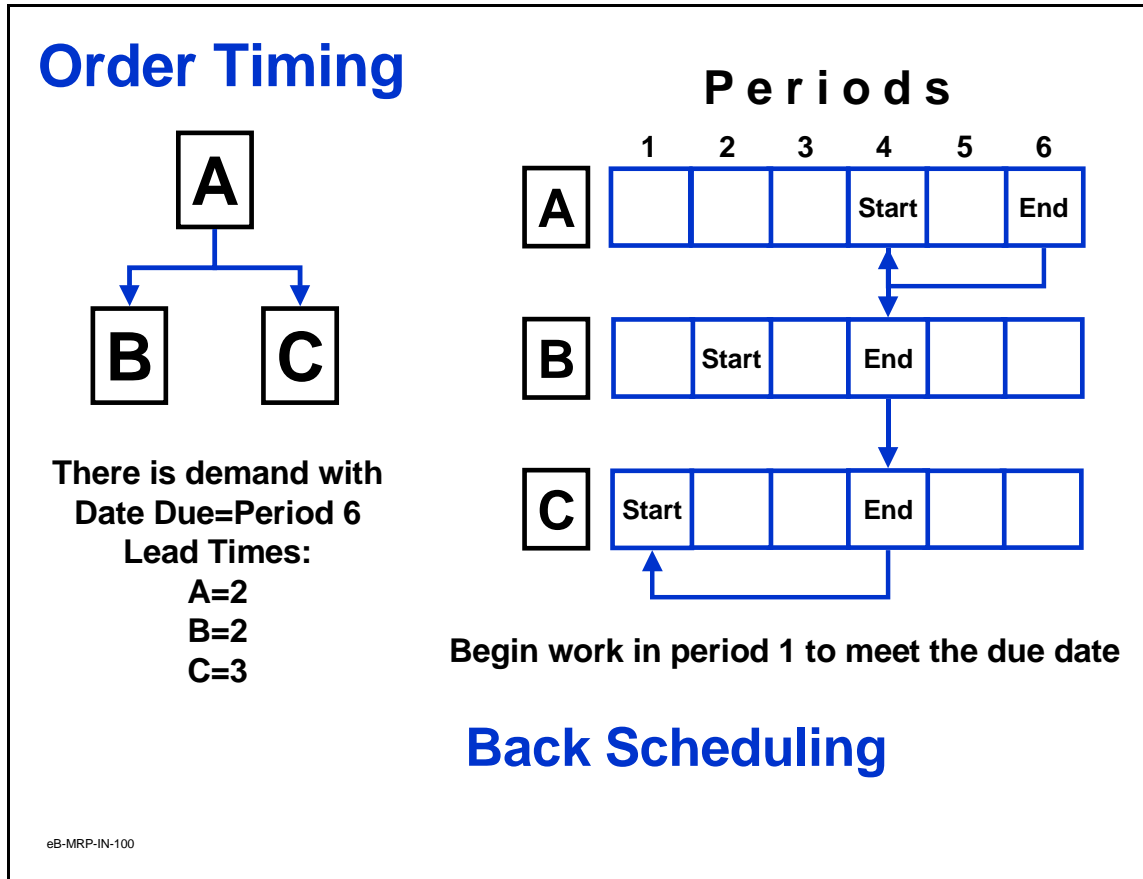
- MRP then generates planned orders suggesting how many of each item to buy or make and when to do so
- MRP's planning activity is performed by site
 - Each site's material plan is completely independent from inventory, demand, and supply at other sites
 - To plan for multiple sites, you run MRP for each site separately
- Reliable MRP processing depends on accurate:
 - Inventory data
 - Product structures and formulas
 - Manufacturing and purchasing lead times



Balancing Supply and Demand

MRP attempts to balance supply and demand. It detects imbalances in the plan and makes recommendations to restore the balance.

- It tries to drive inventory to zero, never planning more than it needs
- It plans without respect to capacity



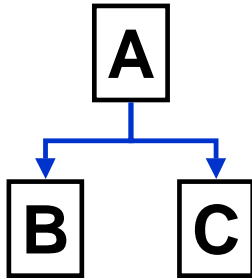
Order Timing

The master schedule sets the overall plan on which MRP bases the timing.

MRP uses backward scheduling:

- Subtract the lead time from the due date to arrive at the start date
- MRP performs this calculation for all planned orders
- A component due date is generally the parent item's release date
 - However, lead time offsets adjust the component due date
- For all non-purchased items, MRP counts only work days defined in the Shop Calendar 36.2.5
- For purchased items, MRP uses regular calendar days
 - If the release date is a non-workday, MRP uses the prior workday

Calculations



Gross Requirements = 100

– Quantity on Hand = 54

– Scheduled Receipts = 17

Net Requirements (MRP Orders) = 29

eB-MRP-IN-110

MRP Calculations

MRP uses this calculation for each period.

- Maintaining the balance across the planning horizon complicates the calculations

Calculations

A LT=1

B **C**

	Past Due	1	2	3	4
Gross Requirements		70	150	50	100
Net Requirements		0	0	0	70
Scheduled Receipts		250			
On-Hand Inventory	50	230	80	30	0
Planned Orders Due					70
Planned Order Release				70	

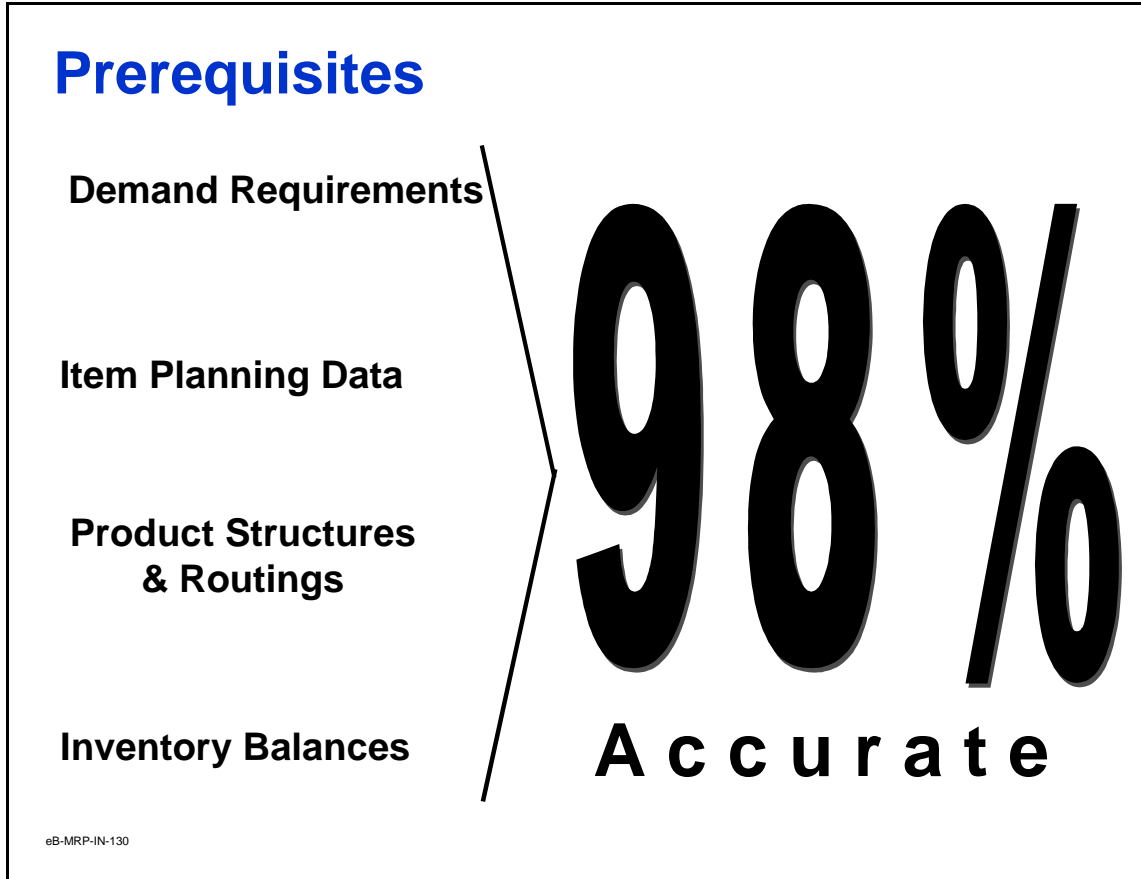
Demand for item A in period 4 is 100

MRP also calculates the requirements for components B and C

eB-MRP-IN-120

The illustration above shows the calculations for end item A.

- MRP also calculates the requirements for all components



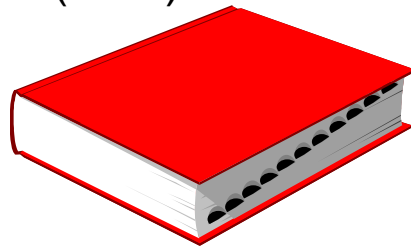
MRP Prerequisites

MRP is as accurate as its input allows it to be.

For useful output, the inputs should be more than 98% accurate.

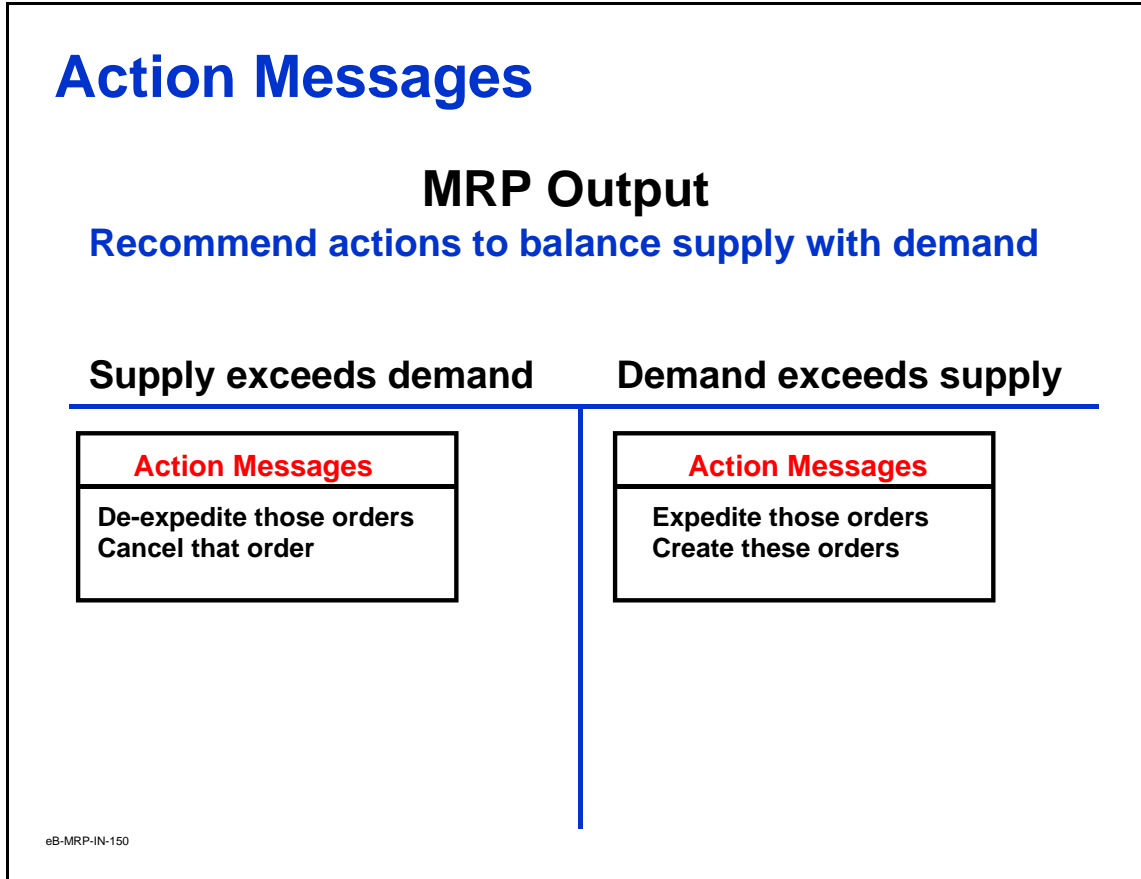
Terminology

- ◆ Action messages
- ◆ Available to promise (ATP)
- ◆ Low-level code
- ◆ Pegging
- ◆ MRP horizon



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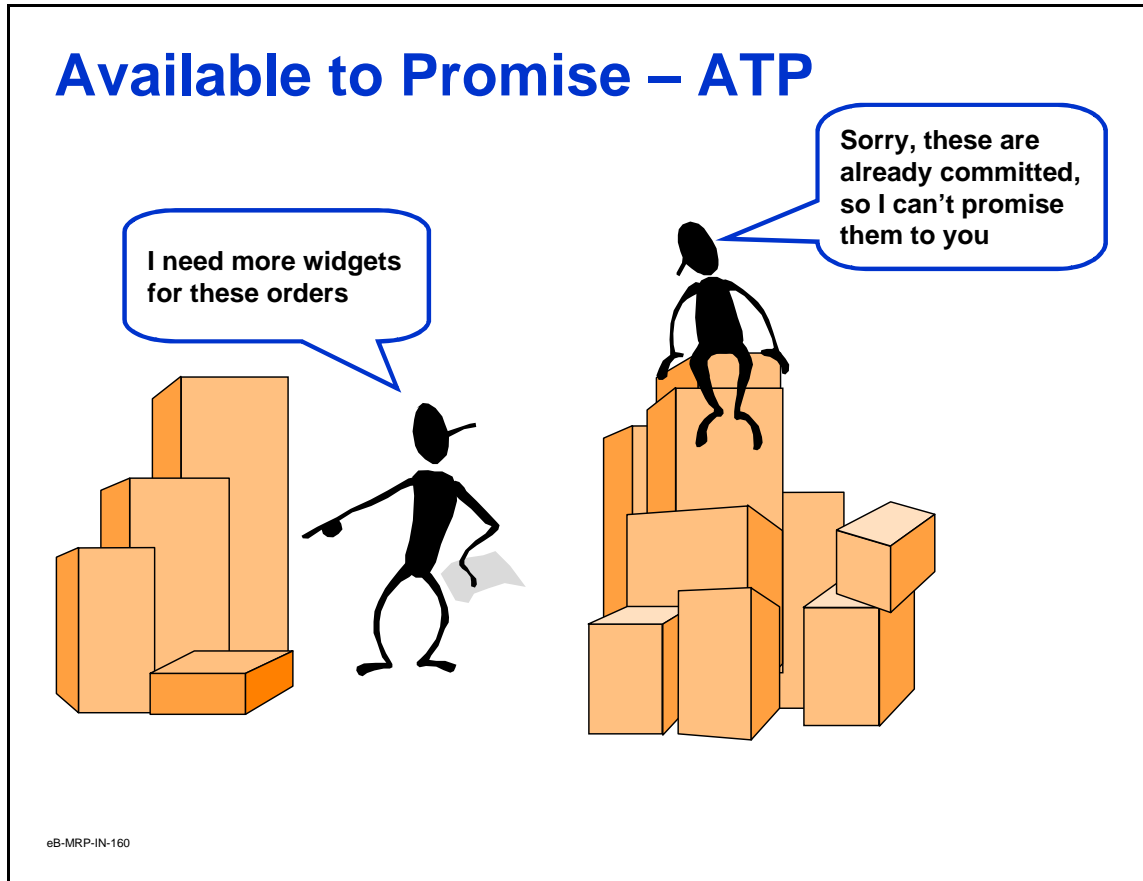
Terminology



Action Messages

Action messages recommend the actions a planner should take to balance supply with demand, such as rescheduling, canceling, or releasing orders.

- MRP generates action messages for all items with non-blank order policies
 - Non-existent order policies are planned as LFL



Available to Promise

Available-to-promise (ATP) is the uncommitted portion of inventory or planned production which is available to be promised to new sales orders. The system displays ATP quantities on master schedule reports and inquiries.

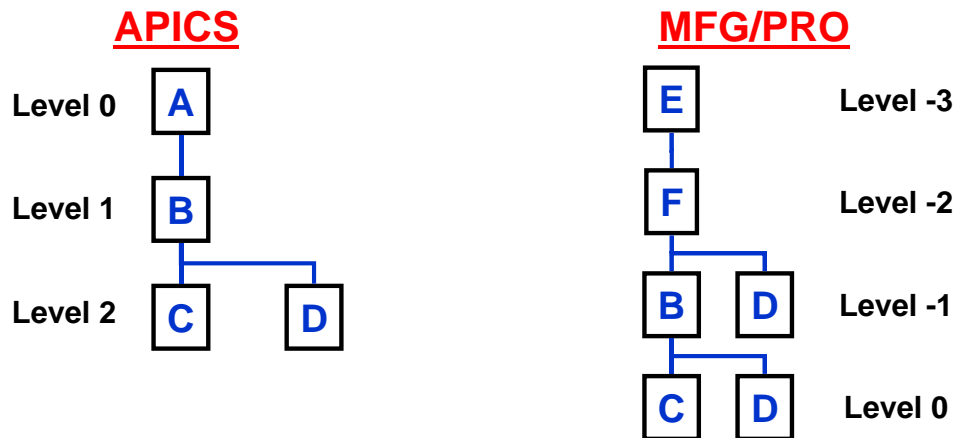
ATP can be used to verify whether a sales order can be filled within a specific time frame given other demands and currently scheduled supply orders.

- The system calculates ATP by time period by deducting real demand from real supply
 - Real demand includes requirements for work order components, sales orders, and required ship schedules
 - Real demand excludes forecast and production forecast

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- Real supply includes quantity-on-hand, purchase orders, work orders, and repetitive schedules
- A net decrease in demand increases ATP, while a net increase in demand decreases ATP

Low-Level Codes



eB-MRP-IN-170

Low-Level Codes

- Low-level codes indicate the relative position of each item within the product structures
- MRP uses low-level codes to ensure that all dependent demands from parent items are included
 - In the diagram above, item C's low-level code is determined by the product structure for item E, not by item A
- MRP stops searching for occurrences of the item when it reaches the lowest level in each product structure, thus saving time
- MFG/PRO eB and APICS number the levels differently, but the process is the same: search for the item from the top down in each structure and stop searching after the lowest-level code for the item

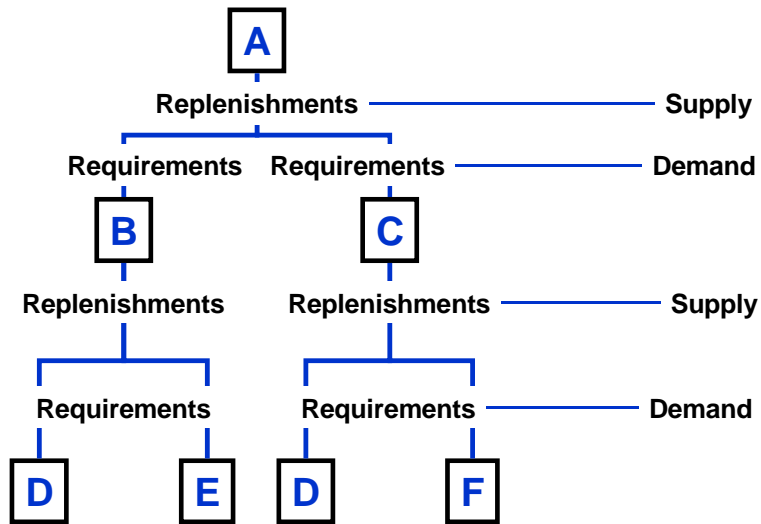
30 MFG/PRO TRAINING GUIDE — MRP AND CRP

- MFG/PRO eB automatically updates the low-level codes when you enter or modify product structures

Low-level codes can be inaccurate if you import data without testing it, or if you modify structures directly from PROGRESS.

If you believe that the codes are incorrect, you should run Low Level Code Update 23.22.

Pegging



eB-MRP-IN-180

Pegging

Pegging identifies the source of the requirements. For example, pegging identifies the sales order or forecast creating the need for an item.

Pegging is made possible by the low-level codes.

- Pegging is maintained for one level
 - In the above example, you can see that the requirement for E came from B, and the requirement for B came from A, but you cannot inquire about E and see that its requirement comes from A

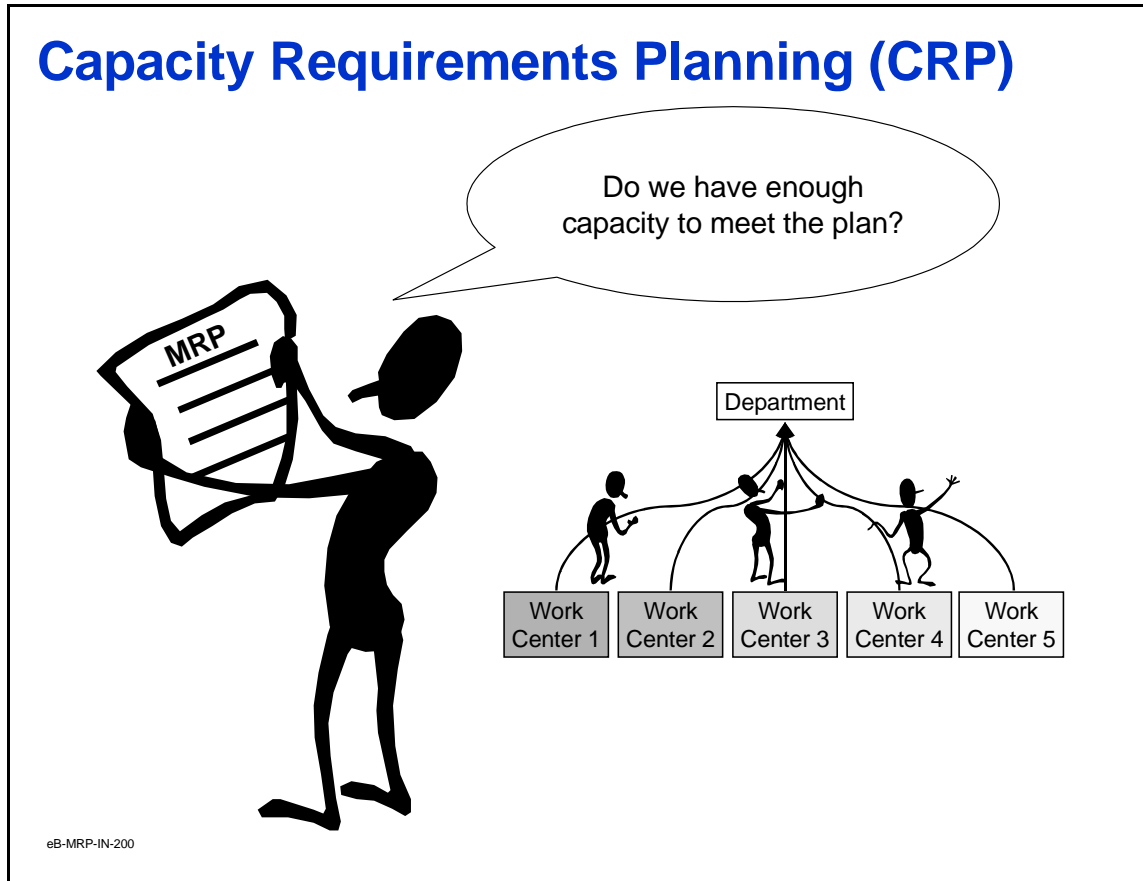
MRP Horizon

**The number of calendar days
to include in MRP**

eB-MRP-IN-190

MRP Horizon

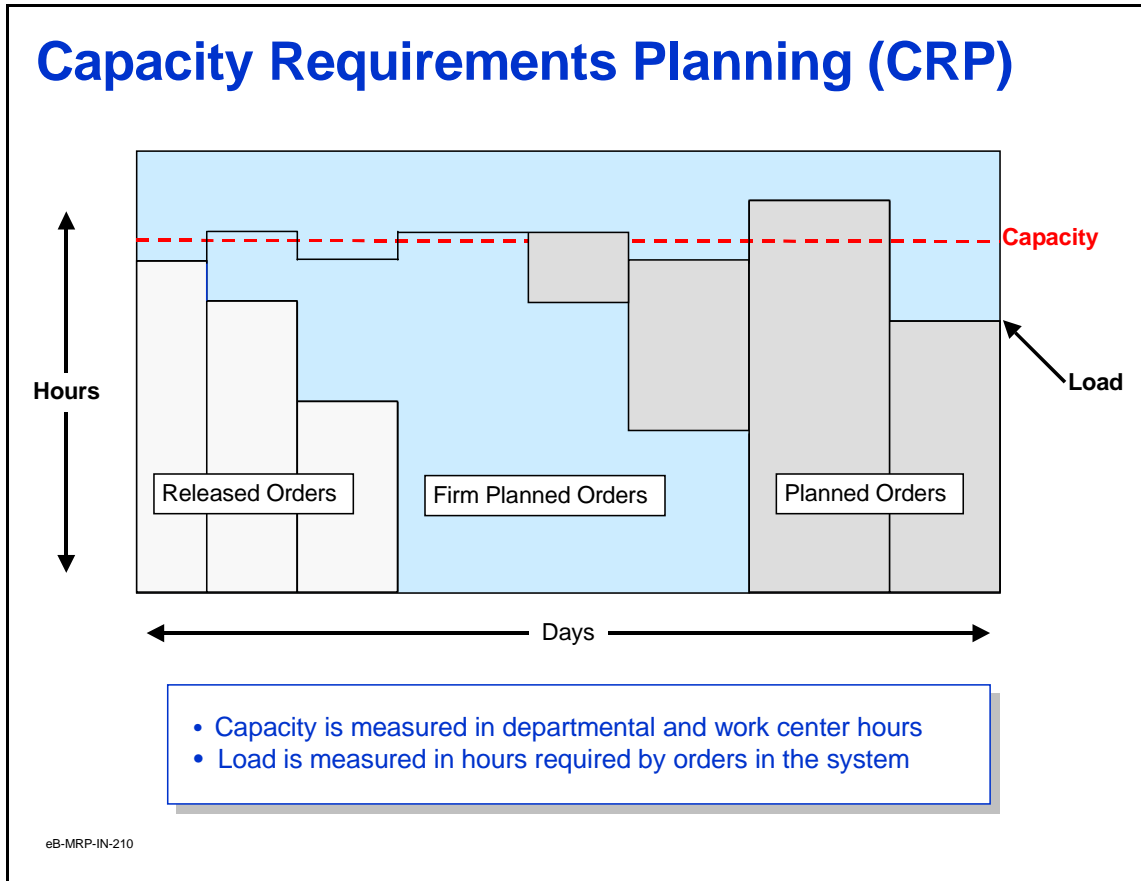
- The number of calendar days to include in the MRP planning horizon
 - MRP only processes material requirements within this planning horizon, ignoring activity outside this horizon
 - This horizon should be at least one day longer than your longest cumulative lead time
 - If you change the MRP planning horizon, replan all items by running Regenerate Materials Plan 23.2



Capacity Requirements Planning

CRP calculates the workload in a given department or specific work center or machine by:

- Exploding the routings and processes for MRP planned and firm planned orders
 - Updates or creates work order routings
- Determining the start/due dates for each operation using:
 - Work center and shop calendars
 - Back scheduling (start date of the last operation is the due date of the previous operation)



The Foundation for CRP

MRP provides the foundation for calculating CRP, a tool used to complete the master schedule.

Master scheduling and rough-cut capacity planning (RCCP) should have removed most of the capacity constraints before MRP is run.



Discussed in the following Training Guide: Master Scheduling and Rough-Cut Capacity Planning (RCCP)

- MRP looks at the inventory and at orders
- CRP uses routings and work centers
- RCCP uses resources and resource bills

Back Scheduling

When CRP back schedules orders, it takes the due date of an order or repetitive schedule and schedules each of its operations from the last operation in the order routing or process backward to the first one.

CRP assigns each operation a start date and a due date, using the operation lead time components—queue, setup, run, wait, and move—to calculate operation start dates.

- The start date of an operation is the same as the due date of the previous operation
- CRP calculates run times based on the actual order quantity
 - Order quantity less the quantity completed

Departments and Work Centers

- Resources used to process orders on the shop floor, from subassembly to end item, are:
 - Departments
 - Work centers
 - Number of machines

Departments

The capacity of a department is the:

- Total number of available labor hours per day for all work centers in the department
 - Defined in Department Maintenance 14.1

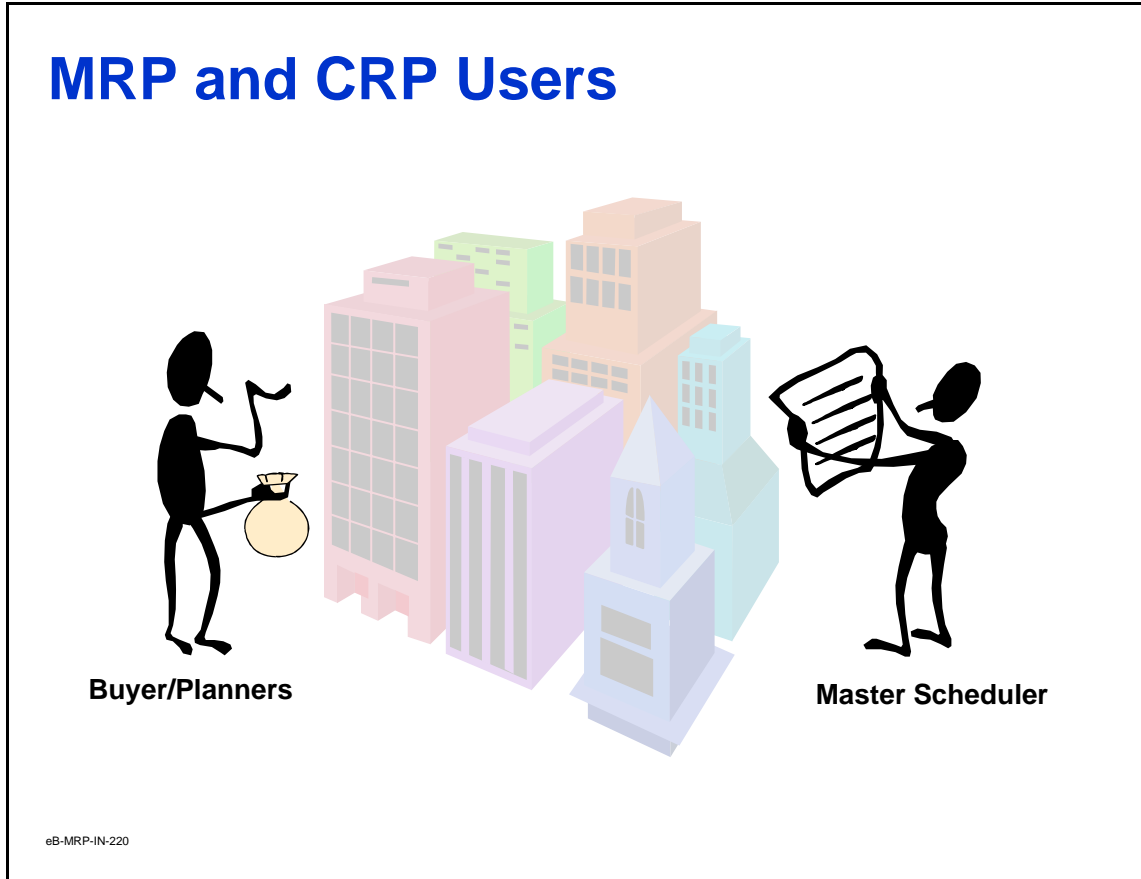
Work Centers

The capacity of a work center is the:

- Number of machines and personnel available multiplied by work hours in a period
 - Defined in Work Center Maintenance 14.5 and Calendar Maintenance 36.2.5

CRP loads (or simulates) the expenditure of work center and department hours using orders as production demand.

- Work order routings provide data about what orders will be using what work centers and when



MRP and CRP Users

MRP and CRP are high-level operations that should be password protected and used only by qualified employees.



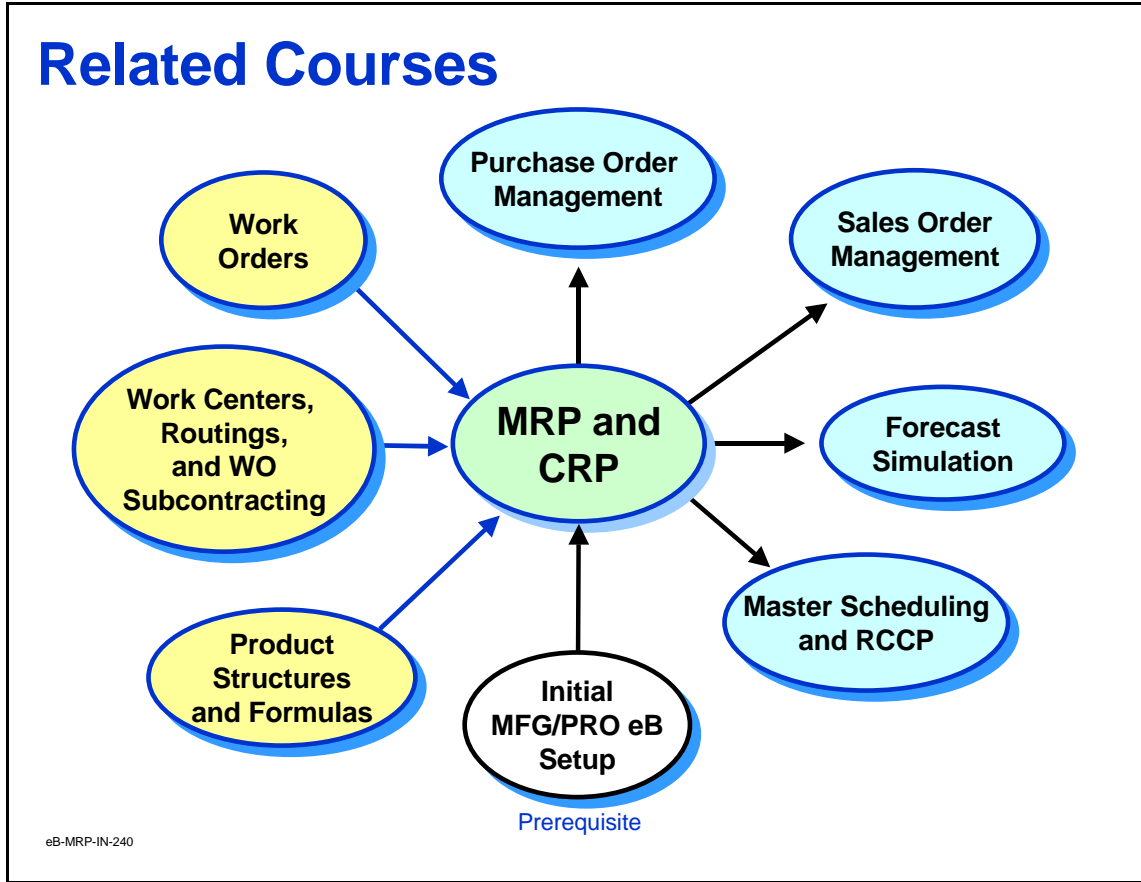
Course Objectives

In this class you learn how to:

- ◆ Identify some key business considerations before setting up MRP and CRP in MFG/PRO
- ◆ Set up MRP and CRP in MFG/PRO
- ◆ Use MRP and CRP in MFG/PRO

eB-MRP-IN-230

Course Objectives



Related Courses



Course Overview

- ✓ Introduction to MRP and CRP
- ◆ Business Considerations
- ◆ Set up MRP and CRP
- ◆ Use MRP and CRP

eB-MRP-IN-250

Course Overview

CHAPTER 2

Business Considerations

The image is a composite graphic. At the top left is a screenshot of a software application window titled "Quality Products Corp." with a menu bar (User Menu, Edit, Queue, Options, Help) and a "Manufacturing" section containing a list of options: Product Structure, Routing / Work Center, Formula / Process, Work Order, Shop Floor Control, Repetitive, Quality Management, Forecast / Order Plan, Material Control, and Inventory. Below the menu are icons for Distribution, Master Files, Manufacturing, Custom, Financials, and Field Service. In the center is a large clock face with the text "TIME-TO-BENEFIT" written across it. To the right of the clock is a flowchart diagram showing a process flow: "Bank" leads to "Bank Master", which leads to "Bank Master" (a second instance), which leads to "Bank Master" (a third instance), which leads to "Check Master". There are also arrows pointing from "Bank" to "Check Master" and from "Bank Master" to "Check Master". At the bottom is a screenshot of a routing maintenance screen titled "Routing Maintenance (Date Based)" with fields for Routing Code (10-15000), Operation (20), Standard Operation (1030), Work Center (1030), Machine (INSPEC PER PROC-00%), Description (INSPEC PER PROC-00%), Machines per Op (1), Overlap Units (1), Queue Time (1.0), Wait Time (0.0), and Setup Time (0.0).



Business Considerations

In this section you learn how to:

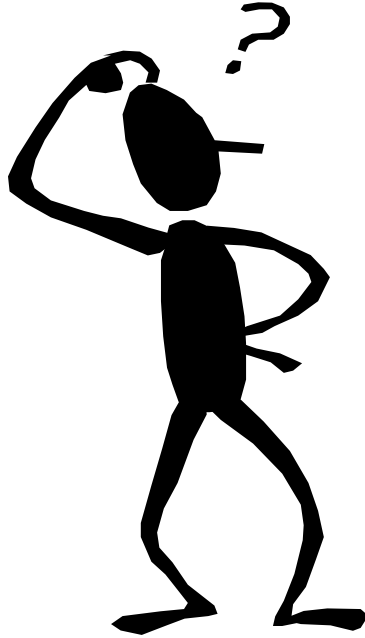
✓ **Identify some key business considerations before setting up MRP and CRP in MFG/PRO**

- ◆ Set up MRP and CRP in MFG/PRO
- ◆ Use MRP and CRP in MFG/PRO

eB-MRP-BU-010

Objectives

Business Considerations



eB-MRP-BU-020

- ✓ Planning parameters
- ✓ Kanban
- ✓ Batch processing
- ✓ Cumulative lead times

There are several business issues to take into consideration before using MRP and CRP.

This section does not discuss all potential issues, but presents some issues to generate thought and discussion.

Planning Parameters

Issue Policy: yes
Phantom: no
Min Ord: 0
Max Ord: 0
Ord Mult: 0

Buyer/Planner: KL
Supplier:
PO Site: train
Pur/Mfg: F
Configuration: ATO
Mfg LT: 0
Pur LT: 0
Inspect: no
Ins LT: 0
Cum LT: 20

Item Planning Data

Master Sched: yes
Plan Orders: yes
Time Fence: 0
MRP Required: yes
Order Policy: POQ
Order Qty: 0

eB-MRP-BU-030

Planning Parameters

You set these in Item Planning Maintenance 1.4.7 and Item-Site Planning maintenance 1.4.17.

Definition

Planning parameters are established for each item in your database; they govern the way MRP handles the items.

Why Consider?

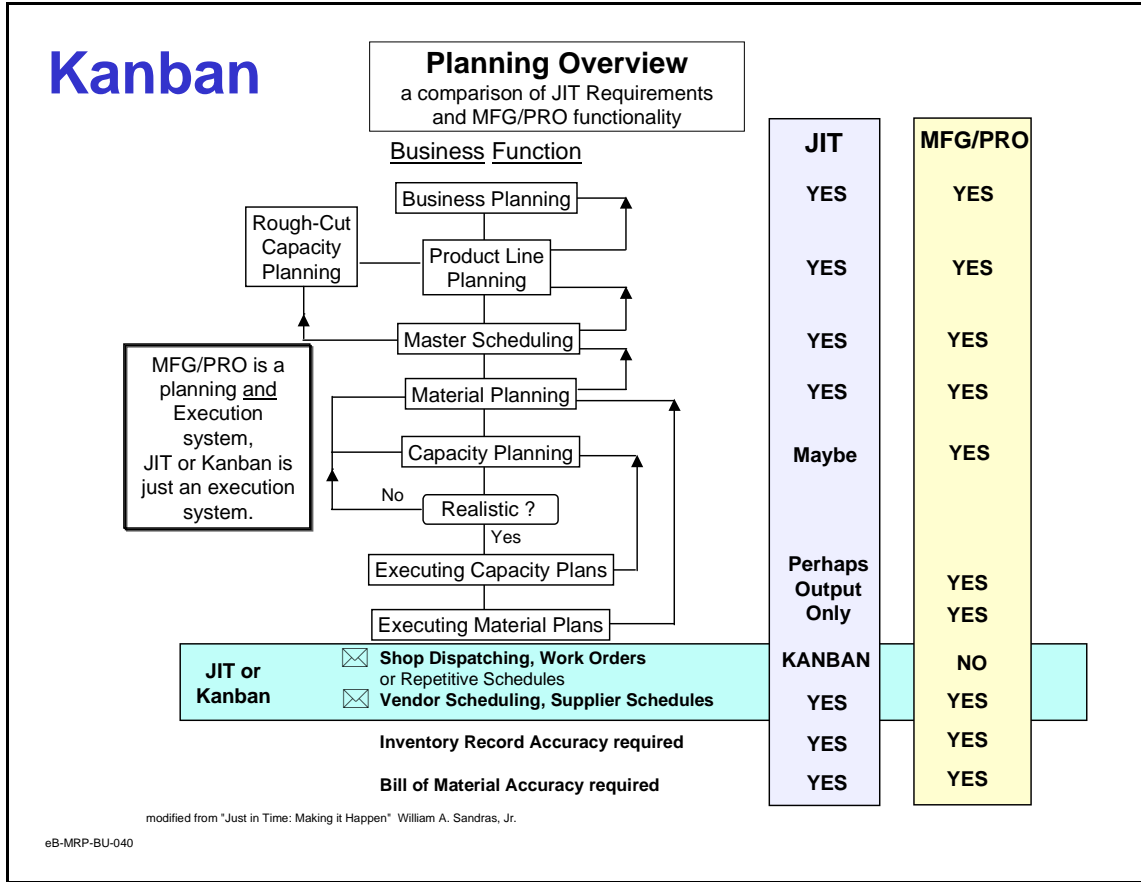
MRP is only as accurate as the data it processes; your planning parameters should have 98% plus accuracy.

Functionality in MFG/PRO

The item planning data is the most used information in your database.

Setup Implications

- Inaccurate data can be catastrophic
- A good clean-up of the database is always worthwhile



Kanban

Definition

A Japanese method of production and inventory control first developed and used at Toyota.

- Designed for day-to-day, on-floor control of production and inventory, it relies on a series of control triggers, typically a visual one in the form of cards
- Kanban is the predecessor of Just in Time

Kanban is an appropriate way to schedule a plant if:

- You use advanced repetitive with single-step routings or multiple steps with a milestone at the last operation

- Otherwise, you need a repetitive exploded schedule in place to net the work in process

Why Consider?

Many companies use it. Some QAD customers use kanban in their plants and MRP to create supplier schedules.

- You can set up separate Buyer/Planner codes to apply to kanban and non-kanban items

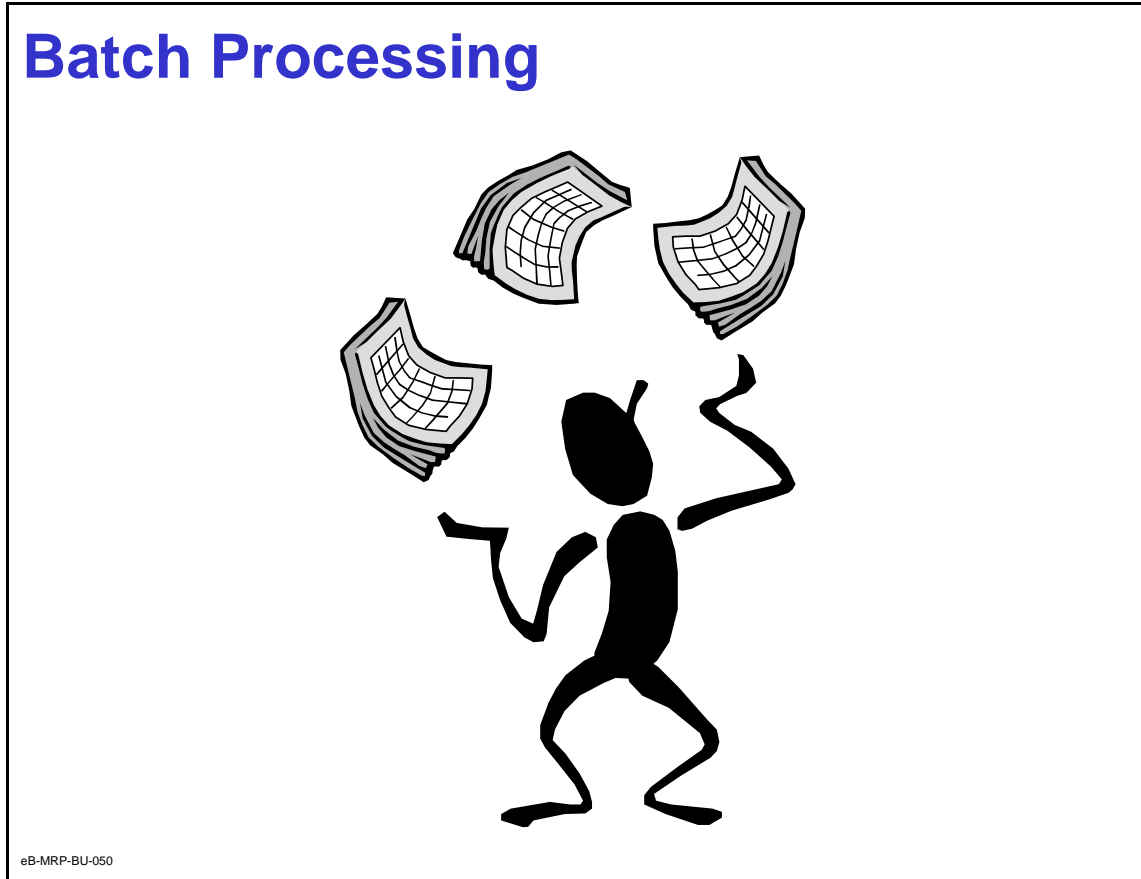
Functionality in MFG/PRO

None.

Setup Implications

Planning parameters in 1.4.7 can be set to conform with kanban needs.

- Set Order Policy to POQ with a period of 1 or 2 days
- Avoid order modifiers



Batch Processing

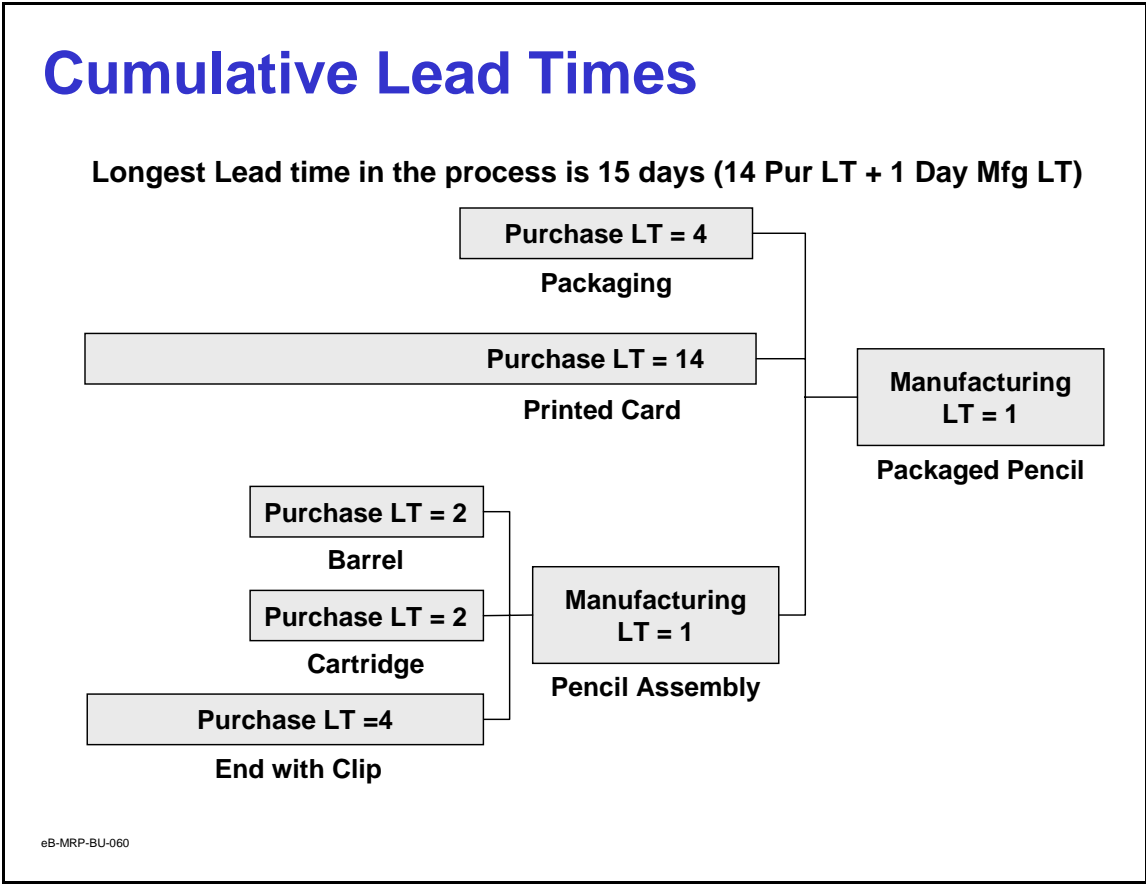
Definition

A computer technique where transactions are accumulated and processed together.

Why Consider?

MRP runs can take a long time.

- You should schedule MRP at reasonable intervals, depending on:
 - How often you require change, how often your suppliers need updates, and the length of your MRP horizon



Cumulative Lead Times

Definition

The time required to produce an item, based on component lead times.

Why Consider?

- MRP considers component lead times in generating its plan
- Inaccurate lead times result in faulty plans



Discussed in the following Training Guide: Product Structures and Formulas



Course Overview

- ✓ Introduction to MRP and CRP
- ✓ Business Considerations
- ◆ Set up MRP and CRP
- ◆ Use MRP and CRP

eB-MRP-BU-070

CHAPTER 3

Set Up MRP

The image is a composite graphic. At the top left is a screenshot of a software window titled "Quality Products Corp." with a menu bar (User Menu, Edit, Queue, Options, Help) and a "Manufacturing" menu listing items like Product Structures, Routings / Work Center, Formula / Process, Work Order, Shop Floor Control, Repetitive, Quality Management, Forecast / Master Plan, Material Control Plan, and Repetitive Order Plan. Below the menu are icons for Distribution, Master Files, Manufacturing, Custom, Financials, and Field Service. In the center is a clock face with the text "TIME-TO-BENEFIT" across it. To the right is a flowchart diagram showing relationships between entities like "Bank", "Bank Master", "Check Master", and "Date of Check". At the bottom is a data table for "Routing Maintenance (Date Based)".

Routing Maintenance (Date Based)	
Routing Code:	10-15000
Operation:	20
Standard Operation:	
Work Center:	1030 INSPECTION, ALL SITES
Machines:	1
Description:	INSPEC PER PROC 00%
Machines per Op:	1
Overlap Units:	1
Queue Time:	1.0
Wait Time:	0.0
Setup Time:	0.0



Set up MRP and CRP

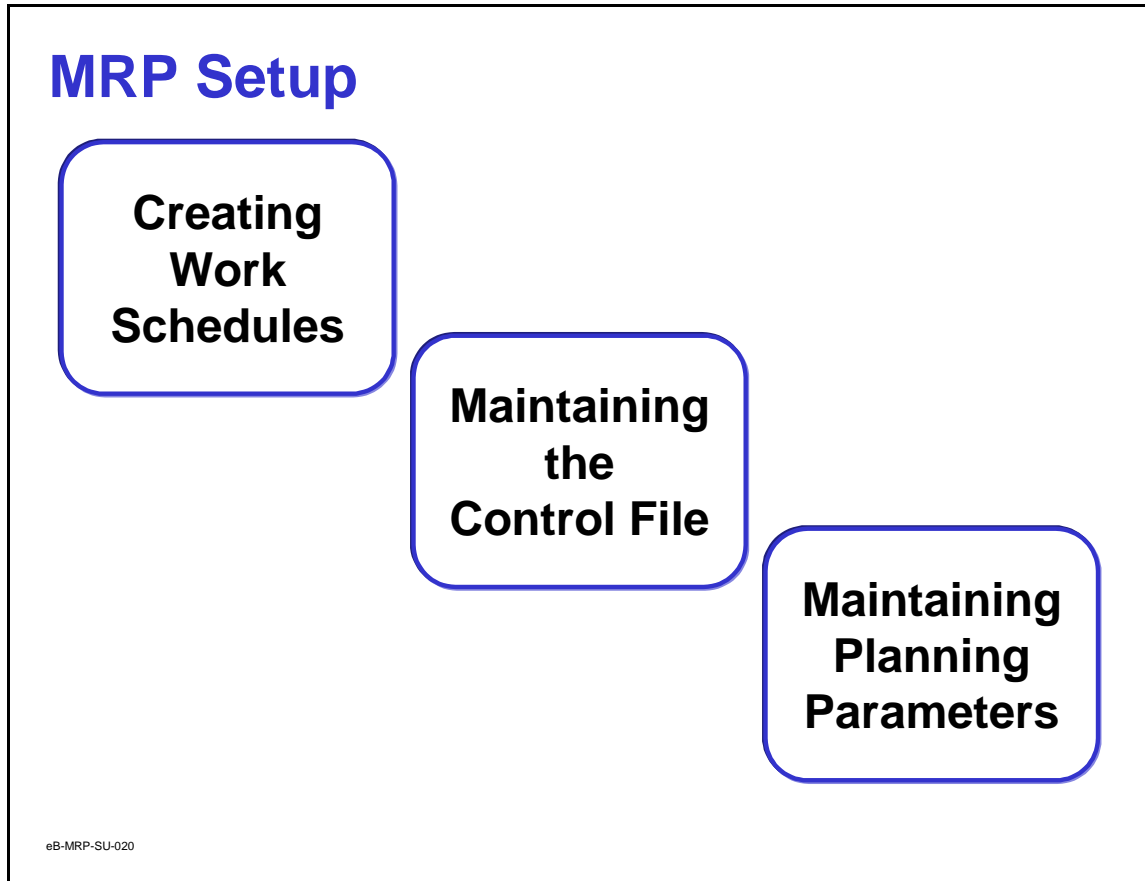
In this section you learn how to:

- ✓ Identify some key business considerations before setting up MRP and CRP in MFG/PRO
- ✓ **Set up MRP and CRP in MFG/PRO**
 - ◆ Use MRP and CRP in MFG/PRO

eB-MRP-SU-010

Lesson Objectives

This lesson covers the data you need to enter or configure for a successful MRP implementation.



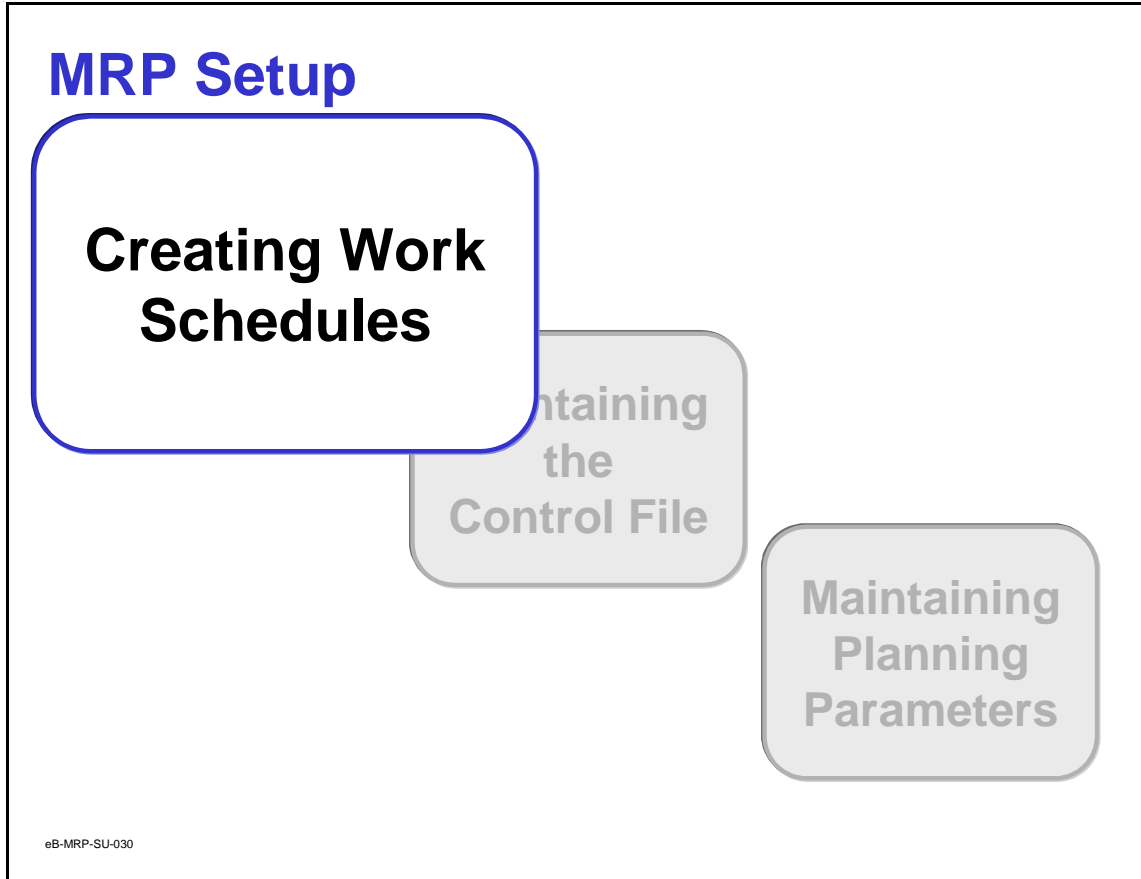
Introduction

This illustration is a suggested setup sequence for MRP.

The first step is to verify the accuracy of your work schedules and holidays so that MRP can properly plan your activities.

The second step is to set up or maintain the MRP control file.

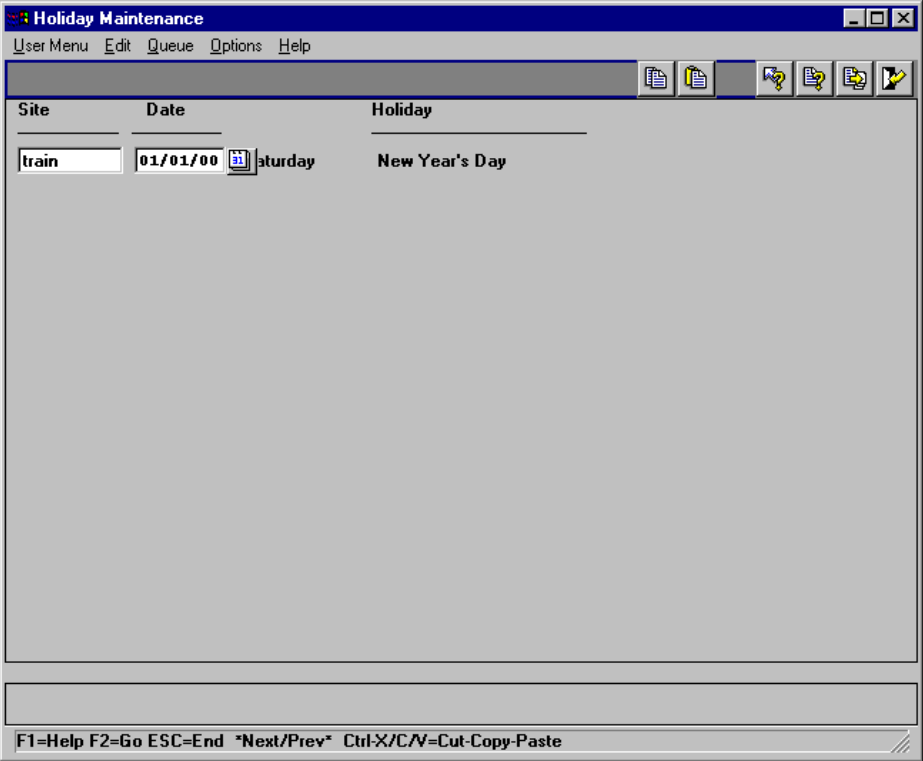
The third step is to verify the planning parameters of your items so that MRP can properly process them.



Creating Work Schedules

Here you look at how to create calendars and holidays in MFG/PRO eB.

36.2.1 – Holiday Maintenance



eB-MRP-SU-040

Holiday Maintenance

Menu Number 36.2.1

This program schedules nonwork days; MRP ignores these dates in planning work.

Site

The site to which the holiday applies.

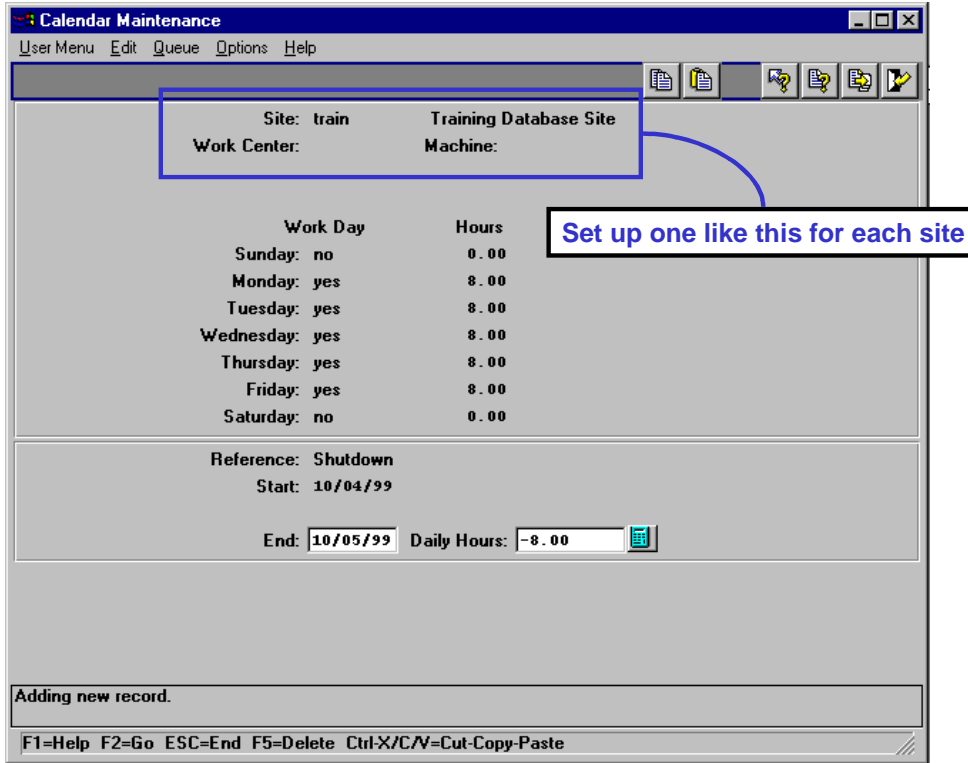
Date

The holiday date.

Holiday

A brief, reference-only description.

36.2.5 – Calendar Maintenance



eB-MRP-SU-050

Calendar Maintenance

Menu Number 36.2.5

Calendars provide the basis for MRP scheduling functions. You can create calendars for individual work centers or for the entire site.

At least one calendar must be defined. Calendars define the standard work week for a site and the work centers in it. They also define exceptions to the normal calendar, such as scheduled overtime or shutdown periods.

- For each site, set up at one calendar without specifying work centers or machines
 - This sets the default for the site

Site

This field contains the site code to which this shop calendar applies.

Work Center

The work center to which this shop calendar applies.

Machine

The machine to which this shop calendar applies.

A work center is uniquely identified by a work center code and a machine code.

Work Day / Hours

Shows which days are work days and how many hours are available for work.

When calculating schedule due and release dates, the system only looks at scheduled work days, ignoring exceptions and holidays.

- If you set work day to [N] on a Sunday, the system will never schedule a work order or purchase order due date that day
- If you sometimes work on a Sunday, you should enter *Yes* in work day and set the scheduled hours to zero, allowing due dates to fall on a Sunday, which you can reschedule manually

Exceptions to the Calendar

Exceptions to the normal calendar are identified by a reference code and a start and end date. Use these fields to schedule overtime, increased shifts, reduced shifts, preventative maintenance or shutdowns. The number of hours specified is added (or subtracted) from the normal work day for each day in the range of dates specified.

Reference

A reference code identifying an exception to the shop calendar, usually describing the type of exception, such as *Overtime* or *Shutdown*.

Exceptions only record holidays if the holiday only applies to some work centers. If the holiday applies to all work centers, use *Holiday Maintenance*.

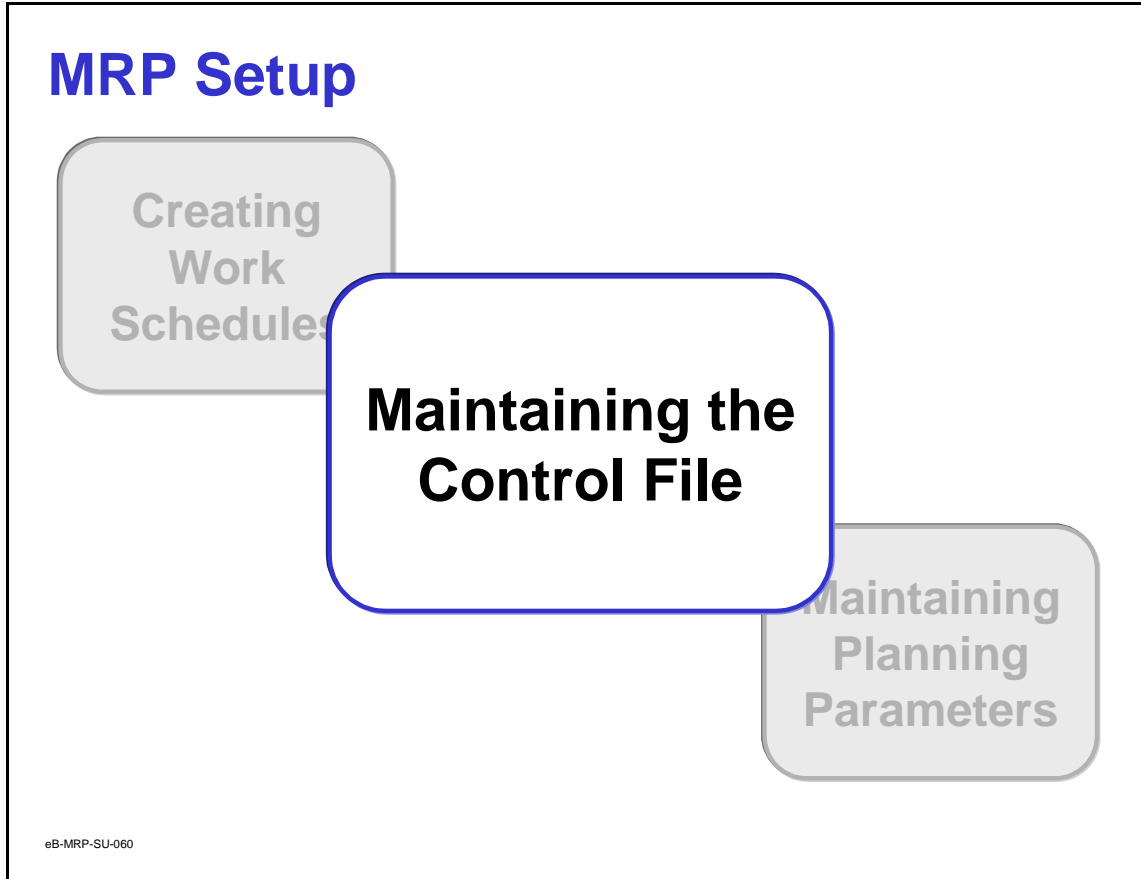
Start / End

The start and end dates of the exception.

Enter start and end dates carefully. The exception applies to all work days in the range of dates specified.

Daily Hours

Daily hours may be positive or negative. A positive number increases scheduled work hours; a negative number decreases them.



Maintaining the Control File

The MRP control file sets some basic parameters.

23.24 – MRP Control File

MRP Control File

User Menu Edit Queue Options Help

MRP Control File

MRP Horizon: 365

MRP/DRP Combined: no

Summary Default: Monday

Order Release Horizon: 0

F1=Help F2=Go ESC=End F5=Delete Ctrl-X/C/V=Cut-Copy-Paste

eB-MRP-SU-070

MRP Control File

Menu Number 23.24

MRP Horizon

The period of time, in calendar days, which MRP should plan.

- MRP calculations ignore data outside this time period
- The horizon should be at least one day longer than the longest item cumulative lead time in the database to avoid planning it late

Note If you change the MRP planning horizon, impacted items are not automatically replanned when you run Net Change Material Plan 23.1. Ensure that all items are replanned by running Regenerate Materials Plan 23.2.

MRP/DRP Combined

Indicates whether MRP planned items can be planned by the Distribution Requirement Planning (DRP). DRP is the balancing of supply and demand for items transferred between sites.

- *No*=MRP planned items may be recalculated only using the MRP functions
- *Yes*=MRP planned items may be recalculated using DRP planning functions
- When to run DRP and MRP depends on where in the structure your DRP items are:
 - If you are distributing finished products, you can usually run DRP followed by MRP
 - If you are supplying component items between sites, you can usually MRP followed by DRP
 - You would normally only need to run a combined MRP/DRP when you have DRP items at multiple levels of the product structure

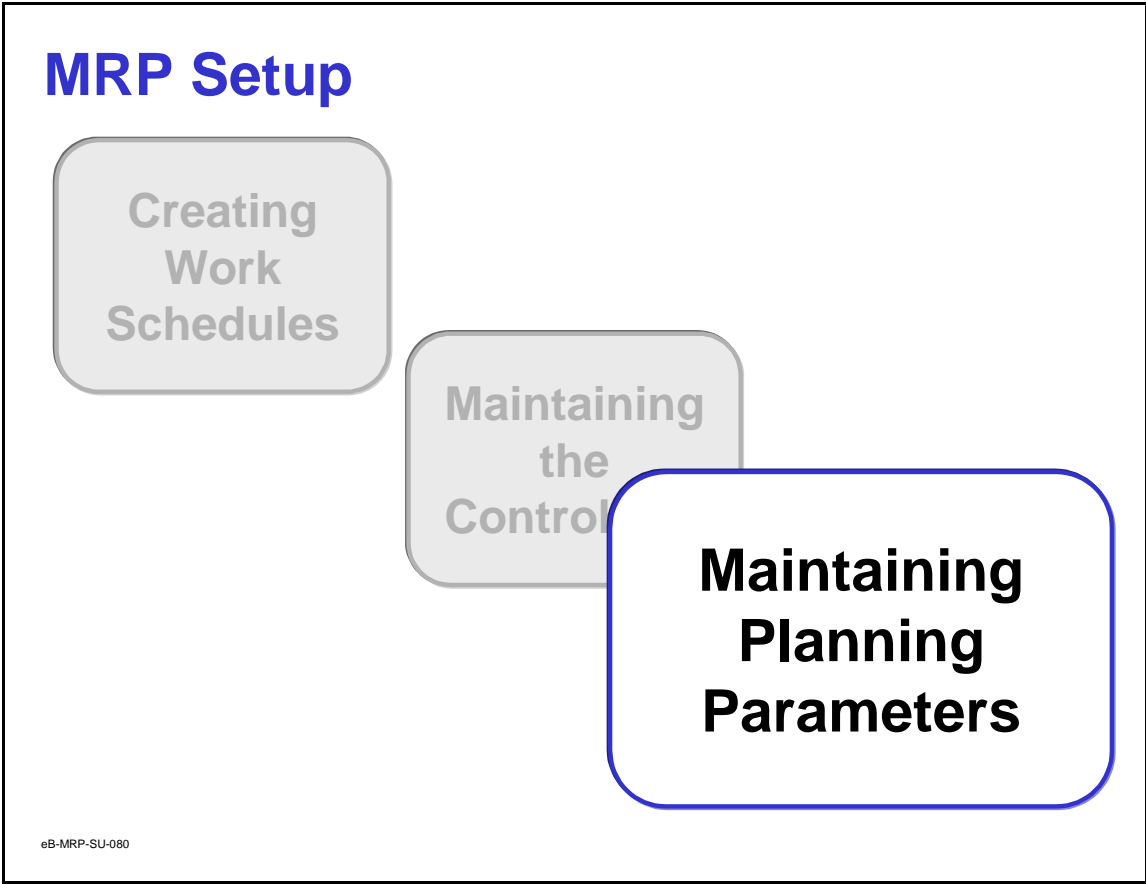
Summary Default

Indicates the day of the week all MRP summary reports and inquiries should start.

Order Release Horizon

The number of calendar days before planned order release that an action message should appear.

- MRP assigns *Release Due* action messages to orders with release dates within this release horizon
 - For example, if you set the release horizon to 7 days, all orders due to be released within the week have a *Release Due* action message
- This gives planners time to take appropriate actions
- The release horizon setting should reflect your normal paperwork leadtime and how often you run MRP
 - If you run MRP once a week, the release horizon should be at least 7 days
 - If you run MRP daily, you can leave this field at zero

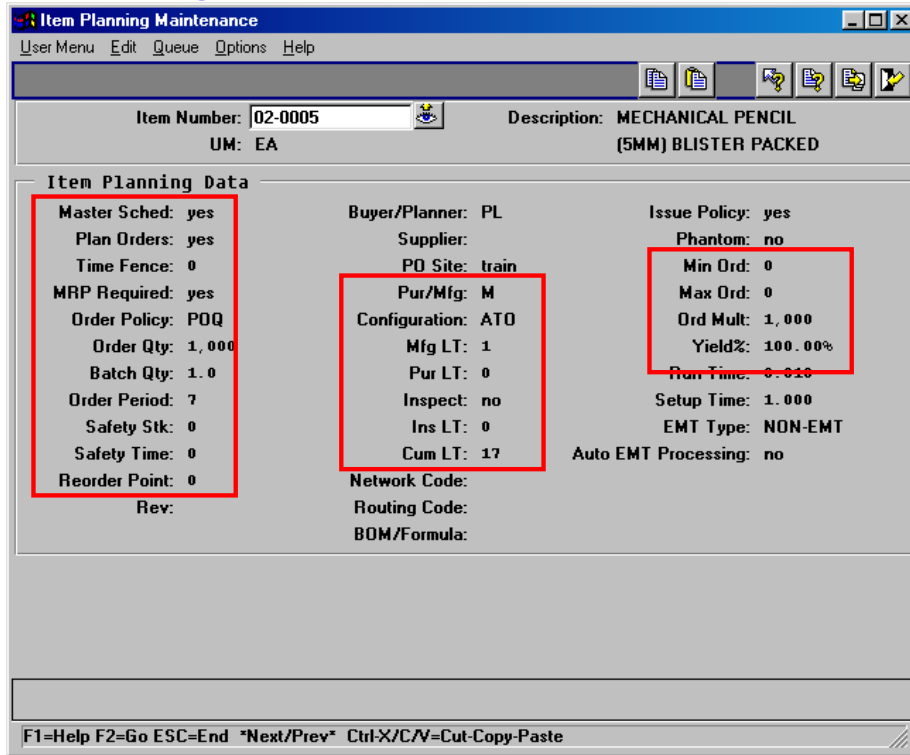


Maintaining Planning Parameters

The material planning department uses item planning data to determine how and when to replenish inventory. This data affects MRP, purchasing, manufacturing, configured products, and costing. Most of the fields are used in MRP.

Buyer/Planners need to understand the planning parameters for the items. These parameters must be set appropriately for your company.

1.4.7 – Item Planning Maintenance



eB-MRP-SU-090

Item Planning Maintenance

Menu Number 1.4.7

MRP uses item planning data to plan items. You define this data in Item Planning Maintenance 1.4.7. If an item is used at multiple sites, you can set up planning data differently for each site using Item-Site Planning Maintenance 1.4.17. Data not defined in Item-Site Planning Maintenance defaults from Item Planning Maintenance.

Independent demand items can be identified in the Master Production Schedule (MPS) and planned by a master scheduler, whereas dependent demand items are planned by MRP except items replenished according to a reorder point policy.

- MPS represents what the company plans to produce expressed in specific configuration, quantities, and dates

Master Schedule Item Parameters

- Master Schedule: Yes
- Plan Order: Yes
- Time Fence: Management policy
- Order Policy Any policy except blank

MRP Items

- Master Schedule: No
 - Yes if there is spare part or other independent demand usage to be master scheduled
- Plan Orders: Yes
- Time Fence: Optional
- Order Policy: Any policy except blank

Reorder Point Items

- Master Schedule: No
- Plan Orders: No
- Time fence: 0
- Order Policy: blank
- Reorder Point: Non-zero quantity, such as demand during lead time
- Issue Policy: No (Optional)



See in this training guide: *Order Policies and Modifiers* on page 65

1.4.17 – Item-Site Planning Maintenance

Item Number: 04-0005 Description: PENCIL ASSEMBLY
 UM: EA
 Site: 30000

Item Planning Data

Master Sched: no	Buyer/Planner: PH	Issue Policy: yes
Plan Orders: yes	Supplier:	Phantom: no
Time Fence: 0	PD Site: 30000	Min Ord: 0
MRP Required: no	Pur/Mfg: M	Max Ord: 0
Order Policy: LFL	Configuration: ATO	Ord Mult: 1,000
Order Qty: 1,000	Mfg LT: 1	Yield%: 100.00%
Batch Qty: 1.0	Pur LT: 0	Run Time: 0.001
Order Period: 7	Inspect: no	Setup Time: 1.000
Safety Stk: 0	Ins LT: 0	EMT Type:
Safety Time: 0	Cum LT: 5	Auto EMT Processing: no
Reorder Point: 0	Network Code:	
Rev: 1	Routing Code:	
	BOM/Formula:	

F1=Help F2=Go ESC=End *Next/Prev* Ctrl-X/C/V=Cut-Copy-Paste

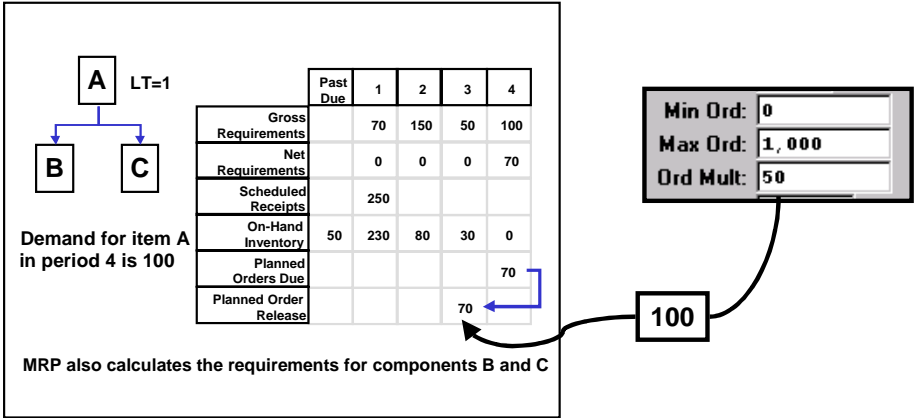
eB-MRP-SU-100

Item-Site Planning Maintenance

Menu Number 1.4.17

Use this function to set planning data for item on a site-by-site basis.

Order Policies and Modifiers



MRP also calculates the requirements for components B and C

Order policies and modifiers control the type and quantities of MRP-generated orders

eB-MRP-SU-110

Order Policies and Modifiers

The graphic shows the MRP calculation from the introduction and how it would change if the Order Multiples field were set to 50.

Order Policy

Lot-for-Lot (LFL)

Planned orders will be created for the net requirement quantities for each demand. LFL consumes on hand available and on order available prior to creating a supply order to cover this demand.

Period Order Quantity (POQ)

Planned orders will be created to satisfy requirements for the number of calendar days specified in the Order Period field each time an order is created. Orders are only created when needed.

Fixed Order Quantity (FOQ)

Planned orders will be created for the quantity specified in the Order Quantity field.

One Time Only (OTO)

A planned order will be made for a quantity of one only. As long as one (1) order exists, another will not be created. This can be used for prototypes.

No Order Policy (Blank)

MRP does not plan the item even when the Plan Orders flag is set to Yes.

Order modifiers

Order modifiers change planned order quantities.

Order Quantity

A specified quantity used in conjunction with the Fixed Order Quantity (FOQ) order policy. It is also used for all item cost and lead time calculations as the standard order quantity.

Safety Stock Quantity

A specified quantity used as inventory reserve to compensate for unexpected demand and to maintain desired service levels. This applies to all order policies, including a blank.

Minimum Order Quantity

This is the smallest order quantity that will be planned. Minimum quantities should only be used with items that have continuing demand, since the minimum order quantity could exceed the actual current demand. Items that have decimal demand values from yield or scrap calculations can be forced to whole numbers by setting this to 1 or to any whole number.

Maximum Order Quantity

MRP generates a warning message in the event a planned order quantity is larger than the specified maximum order quantity. Excessively large lot sizes may tie up a resource so that other orders may be delayed unnecessarily. Further, setting a quantity limit can uncover data entry errors (i.e., entry of 1,000 instead of 100).

Order Quantity Multiple

Planned orders will be created in multiples of this quantity. That is, if the order multiple is 100, planned orders will only be created for quantities of 100, 200, 300, etc. Order multiples are appropriate for multiple cavity molding applications, packaging, etc.



Course Overview

- ✓ Introduction to MRP and CRP
- ✓ Business Considerations
- ✓ Set up MRP and CRP
- ◆ Use MRP and CRP

eB-MRP-SU-120

CHAPTER 4

Use MRP and CRP

The image is a composite graphic with a blue tint and circuit-like patterns in the background. It features several key elements:

- Computer Window:** A window titled "Quality Products Corp." with a menu bar (User Menu, Edit, Queue, Options, Help) and a "Manufacturing" section. The menu items include: 12 Product Structure, 14 Routings / Work Center, 15 Formula / Process, 16 Work Order, 17 Shop Floor Control, 18 Repetitive, 19 Quality Management, 22 Forecast / Master Plan, 23 Material Control, and 24 Repetitive Plan.
- Clock:** A large analog clock with the text "TIME-TO-BENEFIT" written across its face.
- Globe:** A globe showing the Americas, positioned behind the clock.
- Flowchart:** A process flow diagram with boxes for "Bank", "Bank Master", "Check Master", and "Date of Check". Arrows indicate relationships between these elements, with labels like "Bank", "Bank up, Bank - SA, State", and "Date of Check or Bank - SA, State".
- Routing Maintenance Window:** A smaller window titled "Routing Maintenance (Date Based)" showing details for "Routing Code: 10-15000" and "Operation: 00". It lists: Standard Operation, Work Center: 1030 INSPECTION, ALL SITES, Machine, Description: INSPEC PER PROC 00%, Machines per Op: 1, Reflection, Overlap Units: 1, Queue Time: 1.0, Wait Time: 0.0, and Setup Time: 0.0.



Use MRP and CRP

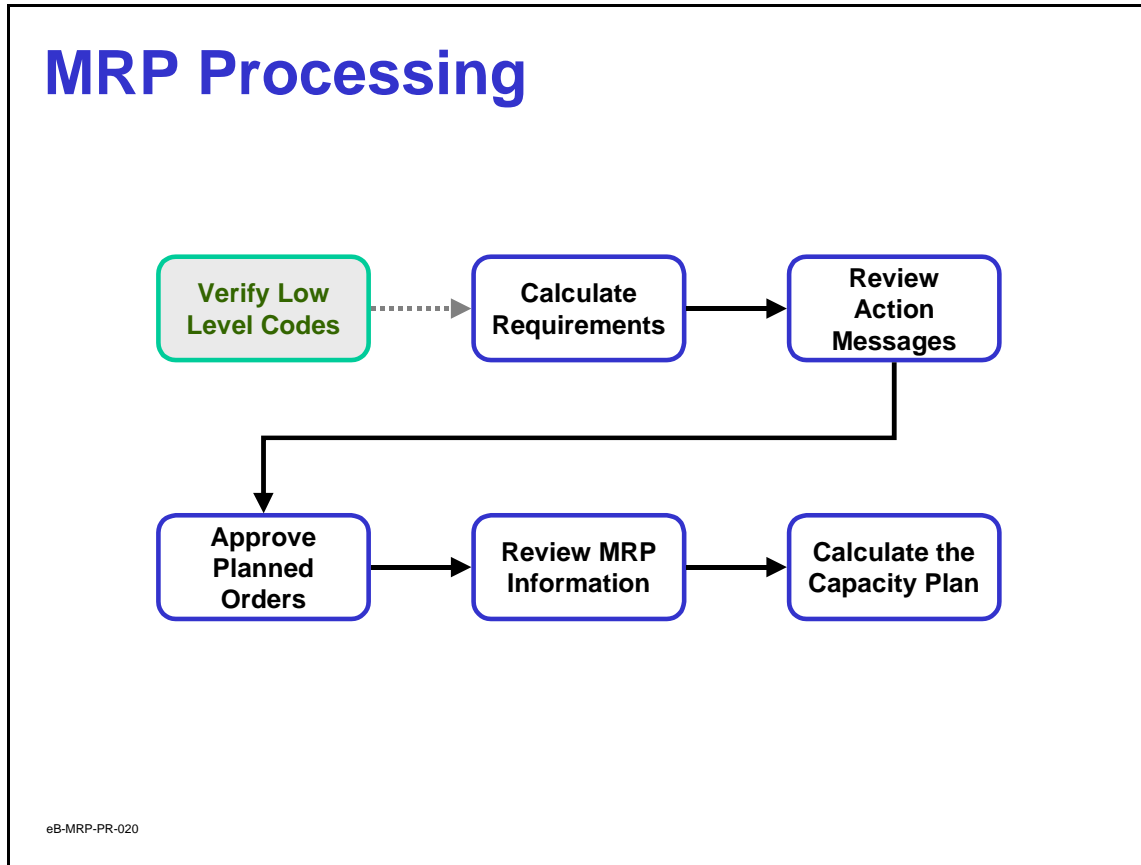
In this section you learn how to:

- ✓ Identify some key business considerations before setting up MRP and CRP in MFG/PRO eB
- ✓ Set up MRP and CRP in MFG/PRO eB
- ✓ **Use MRP and CRP in MFG/PRO eB**

eB-MRP-PR-010

Objectives

This section covers MRP processing.



MRP Processing

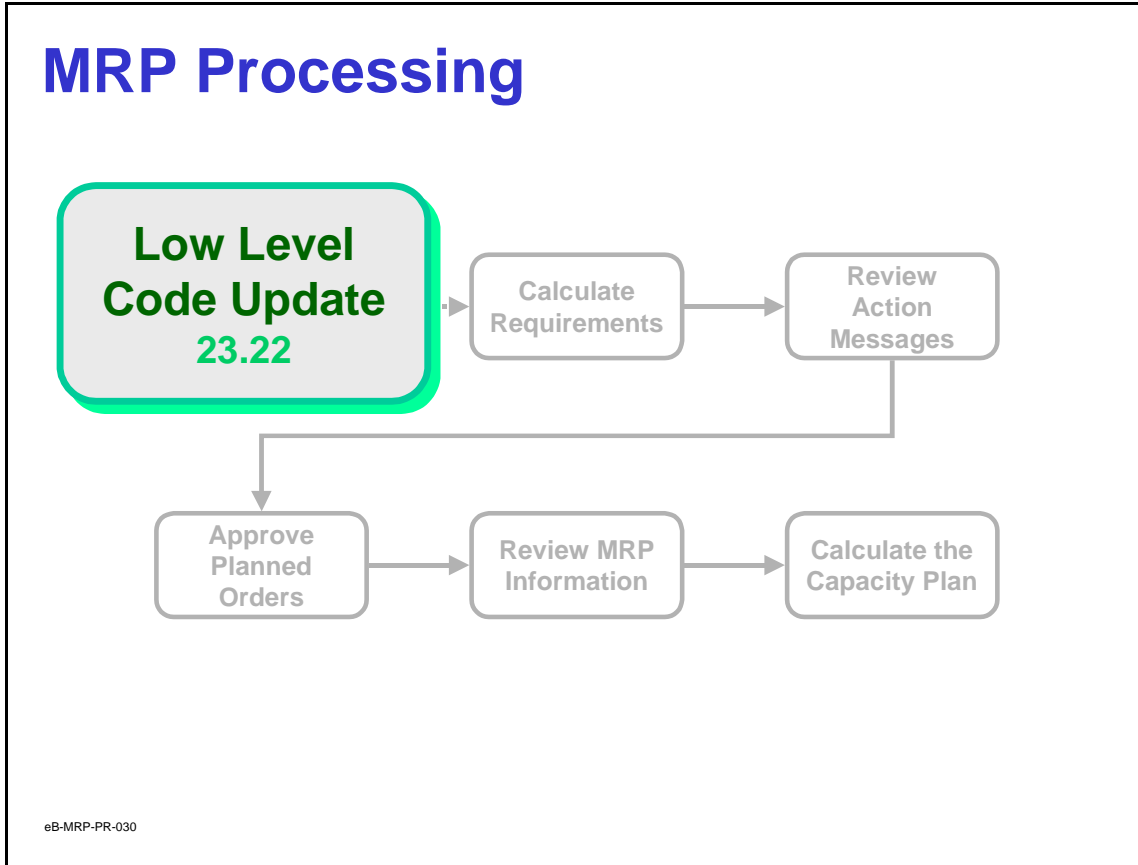
This illustration is a suggested processing sequence of master files for processing MRP which is based on information that flows from one master file to another and prerequisites that need to be accomplished. Reading the illustration:



Boxes with solid lines are required to process MRP and are covered in this course.



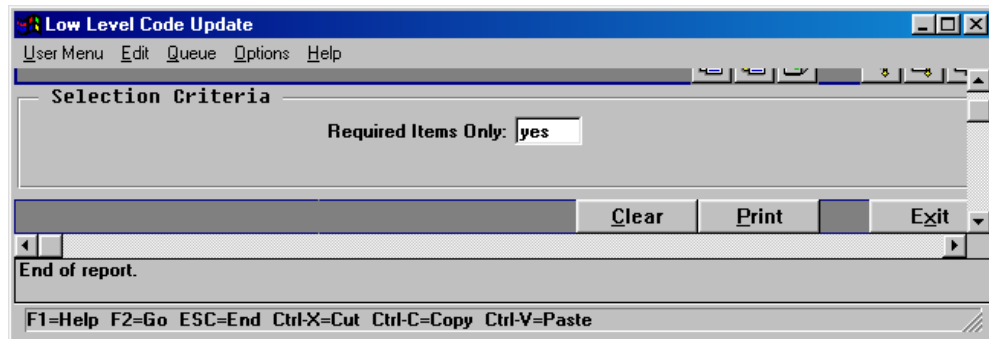
Shaded boxes reflect optional steps, but are covered in this course.



Verifying Low-Level Codes

Low-level codes maintain a numeric value for each item relative to its parent item. This accelerates MRP processing time.

23.22 – Low Level Code Update



eB-MRP-PR-040

Low Level Code Update

Menu Number 23.22

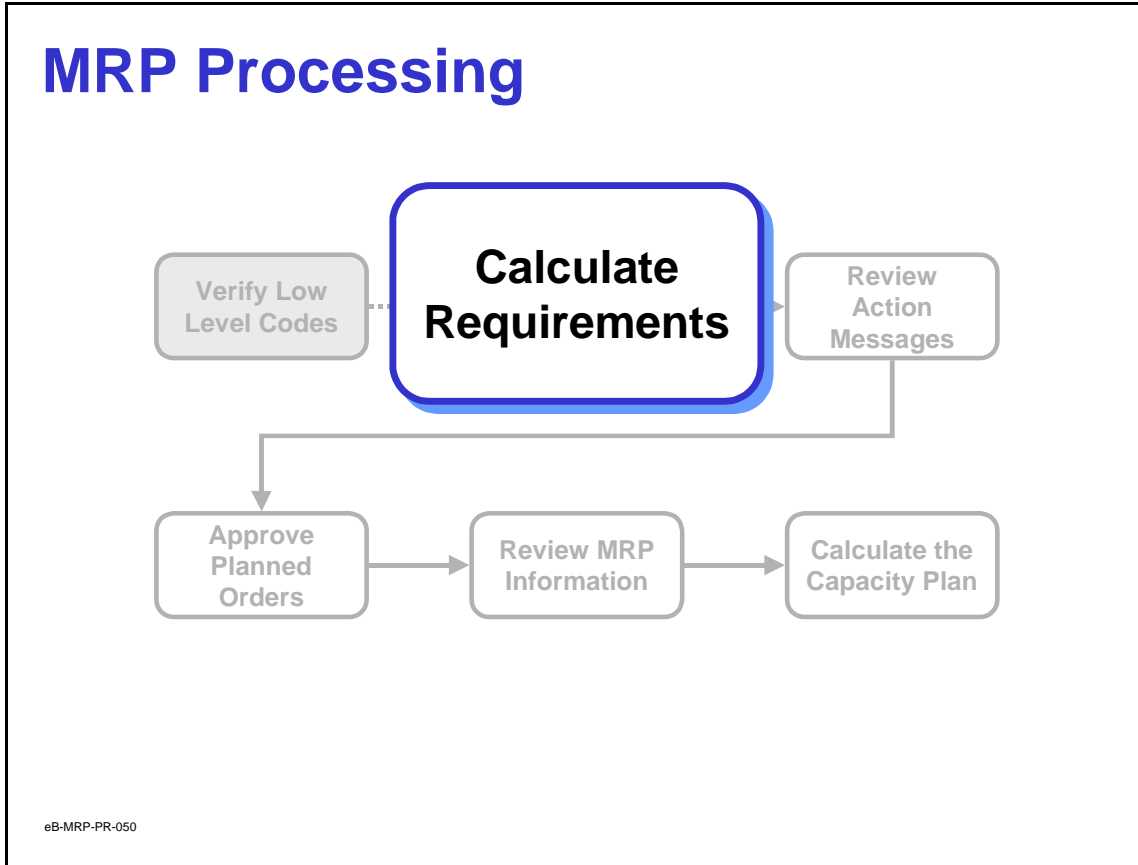
Normally, MFG/PRO eB automatically updates these codes through item planning, BOM, MRP, and DRP transaction.

- You can update them anytime with Low Level Code Update
- You can also do this through Selective Materials Plan 23.3

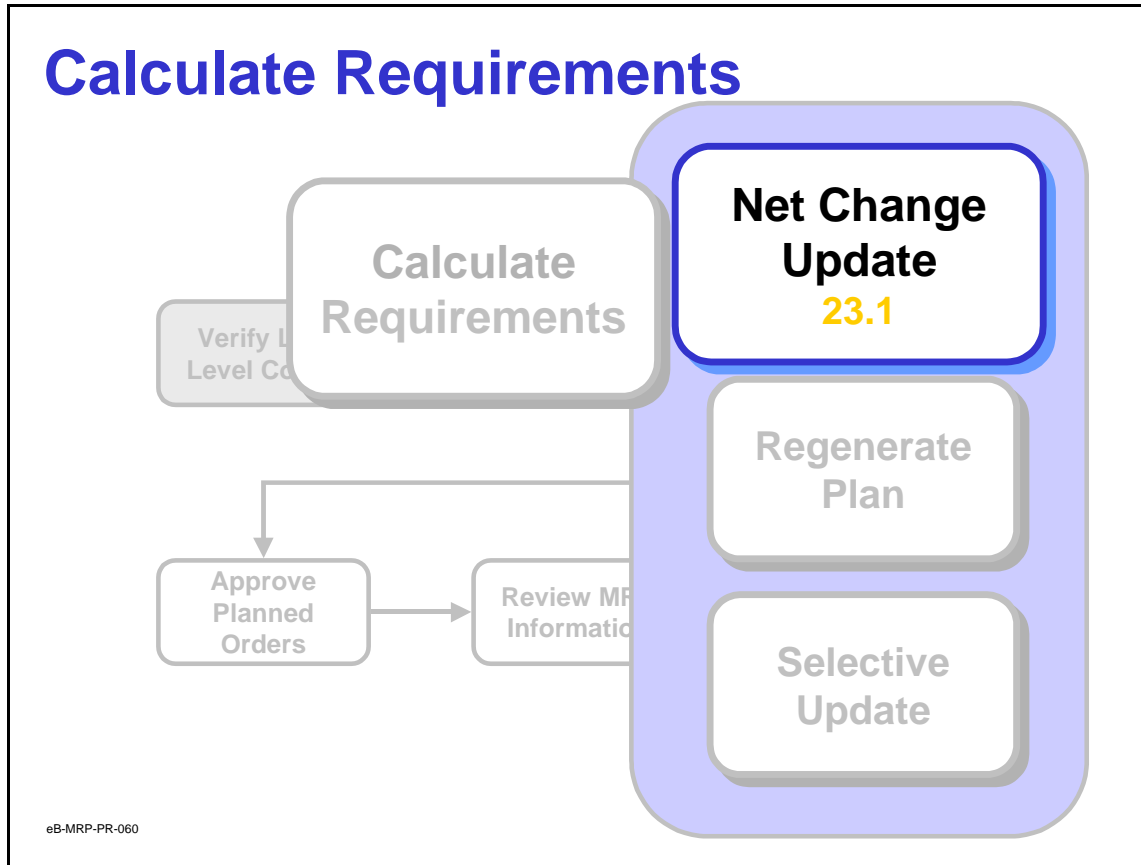
This program can take a long time to run depending on the number of items in your database.



Discussed in the following Training Guide: Product Structures and Formulas



Calculate Requirements



MFG/PRO eB offers you three ways to run MRP.

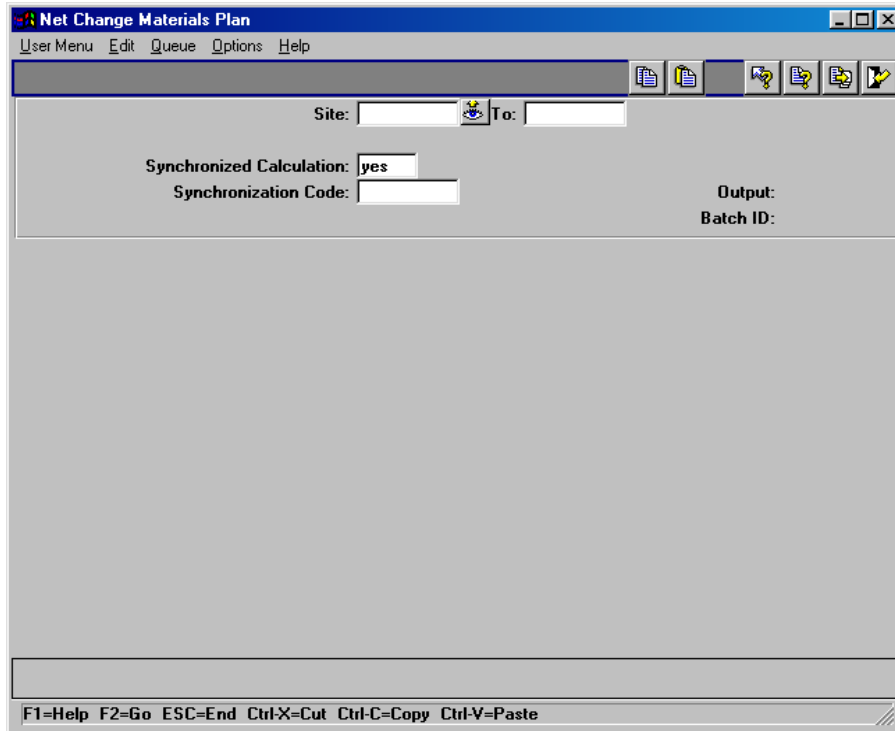
- Net Change Materials Plan 23.1 calculates requirements only for those items that have changed since the last update
- Regenerate Materials Plan 23.2 updates the entire database
- Selective Materials Plan 23.3 updates selected items only

MRP ignores items with an order policy of blank.

Net Change Update

Net Change Materials Plan 23.1 calculates demand and plans supply only for items that have changed since MRP was last run.

23.1 – Net Change Materials Plan



eB-MRP-PR-070

Net Change Materials Plan

Menu Number 23.1

This function may take some time to process.

- You may wish to submit it in batch

Net Change Materials Plan calculates demand and plans supply only for items that have changed since MRP was last run. These changes could involve any of the following:

- Item or item-site planning data
- Product structures
- Sales or purchase orders

- Work orders or repetitive schedules
- Inventory
- Forecasts
- Master production schedule
- Intersite demand

This function does not see demand or forecast for items moving into the MRP horizon as time passes.

Many companies use this option for their normal MRP runs.

If more than 50% of items have changed since the last MRP, then generally, a full regen takes no more time than net change.

Site / To

Enter the sites to plan for.

- One site's material plan is completely independent from inventory, demand, and supply in other sites

Synchronized Calculation

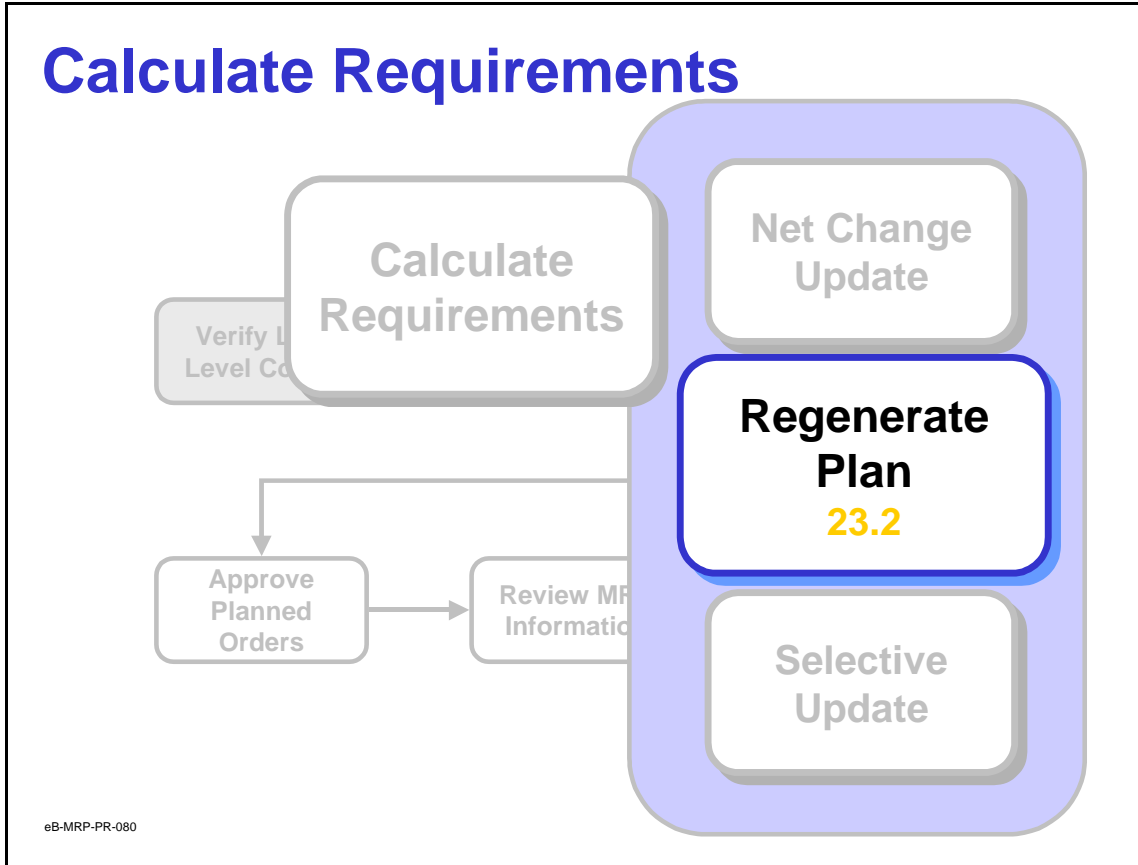
Determines whether this MRP/DRP calculation is to be run simultaneously with other calculations sharing the same synchronization code.

- Synchronized calculations benefit you if you have Symmetric Multiple Processor (SMP) computers

Synchronization Code

A user-defined alphanumeric code that is shared by multiple, concurrent synchronized MRP/DRP calculations.

- Blank is also valid



Regenerate Plans

This method generates a plan for all items, not just those that have changed since the last run.

23.2 – Regenerate Materials Plan

The screenshot shows a software window titled "Regenerate Materials Plan". The window includes a menu bar with "User Menu", "Edit", "Queue", "Options", and "Help". Below the menu bar is a toolbar with several icons. The main area of the window contains the following fields and labels:

- Site:** [input field]
- To:** [input field]
- Synchronized Calculation:** [input field with value "yes"]
- Synchronization Code:** [input field]
- Output: Batch ID:** [label]

At the bottom of the window, a status bar displays the following keyboard shortcuts: F1=Help F2=Go ESC=End Ctrl-X=Cut Ctrl-C=Copy Ctrl-V=Paste.

eB-MRP-PR-090

Regenerate Materials Plan

Menu Number 23.2

Regenerate Materials Plan recalculates demand and plans supply for all items in the site. The outputs of net change and regenerative MRP are the same. However, net change MRP generally runs faster than regenerative, since it only plans for items that changed since MRP was last run.

- The first time you run MRP, it should be regenerative
- You should always schedule periodic regenerative MRP runs, even if you primarily use net change MRP, since net change MRP does not consider demand or forecast for items entering the MRP horizon over time
- For forecasting, you may want to run this at 12:01 a.m. Monday

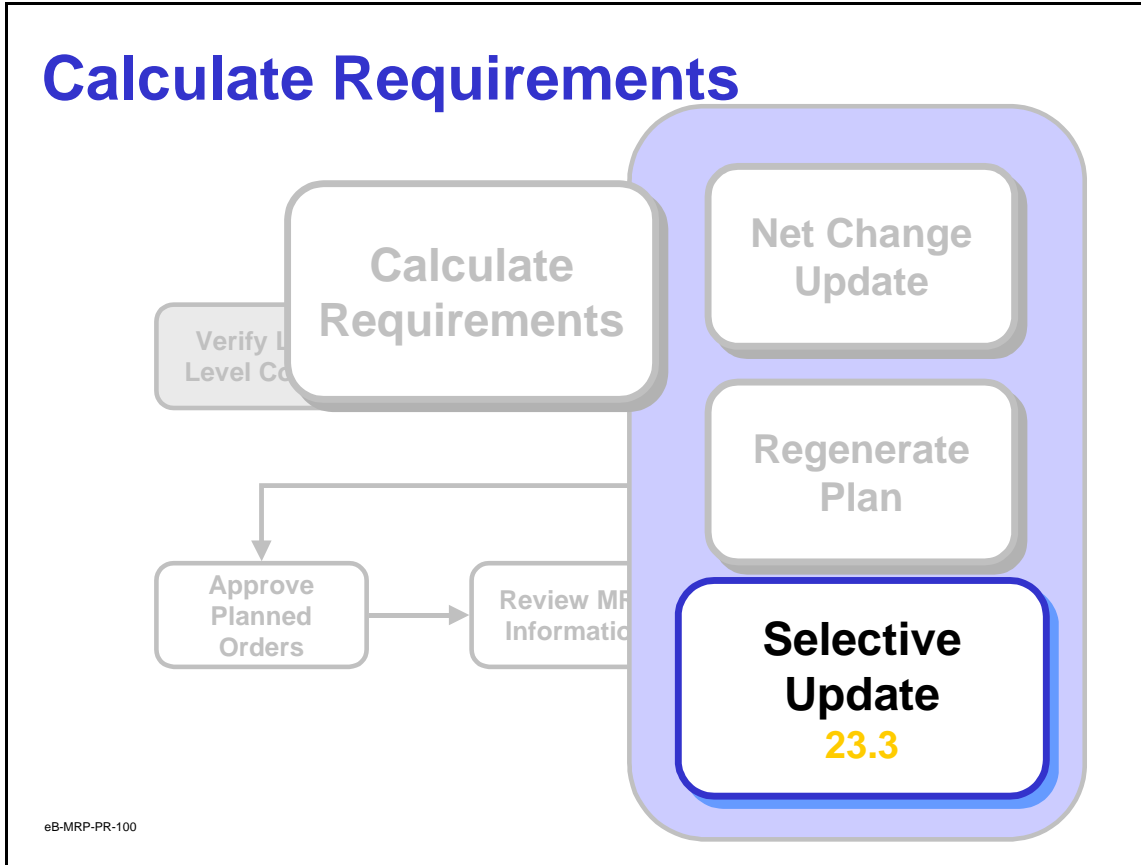
Synchronized Calculation

Determines whether this MRP/DRP calculation is to be run simultaneously with other calculations sharing the same synchronization code.

- Synchronized calculations benefit you if you have Symmetric Multiple Processor (SMP) computers

Synchronization Code

A user-defined alphanumeric code that is shared by multiple, concurrent synchronized MRP/DRP calculations.



Selective Update

This function enables you to select items for updating.

23.3 – Selective Materials Plan

eB-MRP-PR-110

Selective Materials Plan

Menu Number 23.3

This function plans only for items and sites you select.

- Only master schedulers should use this program
- This program plans down one level only
- It can be run in net change mode by setting the Required Items Only field to *Yes*, or in regenerative mode by setting Required Items Only to *No*
- You can use Selective Materials Plan to plan master schedule items separately from other items, or to plan small groups of items by using buyer/planner, product line, group, type, supplier, or any combination of these, as selection criteria

Item Number / To

Site / To

Enter the range of item numbers and sites you want to update.

Selection Criteria

Enter data in the fields for the criteria relevant to your needs.

- Bypass fields by leaving them blank

Master Scheduled Items

Yes: Replan those items flagged Master Sched = *Yes* in Item Planning Maintenance 1.4.7.

No: Ignore these items.

Non Master Scheduled Items

Yes: Replan those items flagged Master Sched flag = *No* in Item Planning Maintenance 1.4.7.

No: Ignore these items.

MRP Items

Yes: Replan items flagged as Plan Orders = *Yes* in Item Planning Data Maintenance 1.4.7.

No: Ignore these items.

DRP Items

Yes: Replan distribution items.

- Distribution items are flagged as Pur/Mfg = *D* in Item Master Maintenance 1.4.1
- This flag may only be set to *Yes* if the DRP/MRP Combined flag in the DRP Control File is set to *Yes*
- Normally these items are planned using DRP calculations

No: Ignore these items.

Required Items Only

Yes: Include only items flagged for replanning.

- The system flags replanning whenever a change is made affecting order timing or quantity, including changes to:
 - Planning data, inventory balance, product structure, purchase requisitions and orders, sales orders, work orders, master schedule, repetitive schedule, or forecast

No: include all selected items.

Resolve Low Level Codes

Yes: Analyze and resolve all low level codes.

No: Ignore the low level codes.

Note If low level codes are unresolved when MRP is run, the results of the MRP run may not be totally accurate.

Synchronized Calculation

Determines whether this MRP/DRP calculation is to be run simultaneously with other calculations sharing the same synchronization code.

- Synchronized calculations benefit you if you have Symmetric Multiple Processor (SMP) computers

Synchronization Code

A user-defined alphanumeric code that is shared by multiple, concurrent synchronized MRP/DRP calculations.

Buyer/Planner

An optional code identifying the person responsible for planning and ordering this item.

- MRP includes only items assigned to this planner

Prod Line

A code identifying a major item and product grouping.

- Every item/product must be assigned to a product line for planning
- If you enter a code, MRP plans only for items in that product line

Group

An optional code categorizing items

- If you enter a code, MRP plans only for items in that group

Item Type

An optional code maintained in Item Master Maintenance you can use to categorize similar items.

- If you enter a code, MRP plans only for items of that type

Supplier

An optional code identifying the normal or preferred supplier

- If you enter a code, MRP plans only items assigned to that supplier

Pur/Mfg

Enter a Pur/Mfg code to limit planning to items so flagged.

A code indicating if an item is manufactured, purchased, or configured to order, as set in Item Master Maintenance 1.4.1.

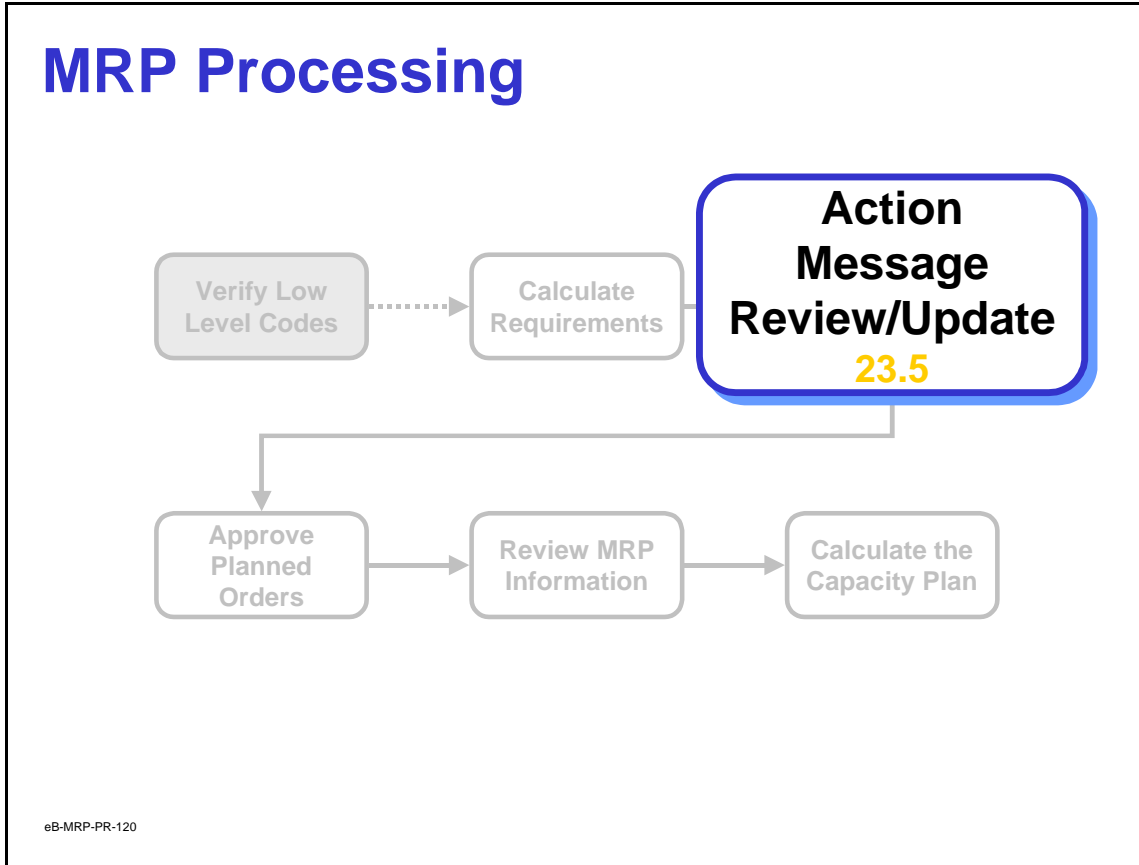
- Other special item codes identify items used for planning purposes only

Purchase/manufacture code controls how the system explodes forecasts, plans and creates orders, and calculates costs for the item.

Code options include the following.

- [P] Purchased : The item is normally purchased
 - MRP uses the purchasing and inspection lead time to calculate planned order release dates
 - MRP and cost calculations don't explode purchased assemblies, even if a product structure exists
 - Any routing/process operations are ignored
 - It is possible to manufacture an item designated as purchased; the product structure and routing are accessed if a work order is created for the item
- [D] DRP: The item is usually supplied internally from another site
- [M] Manufactured: The item is normally manufactured. MRP uses the manufacturing lead time to calculate planned order release dates
 - It is possible to purchase a manufactured item
- [R] Routable: A special type of manufactured item, made only when needed by an upper level assembly
 - A work order for the routable item is created automatically when a work order for the routable item's parent is released
- [C] Configured: The item is configured to order
 - When a sales quote or order is entered, the system prompts the operator to select from a list of configuration options
 - Valid options are defined in Product Configuration Maintenance
- [F] Family: A special type of item used for planning
 - It is never actually made or stocked
 - For multilevel master scheduling, family items are set up with a planning bill

- [L] Line manufactured: A special type of item manufactured repetitively on a single or on multiple production lines
 - MRP-planned orders for items flagged with this code can be approved for production using Planned Repetitive Schedule Approval



Review Action Messages

Action messages suggest courses of action to resolve problems found by MRP.

MRP Action Messages

Number	Message	Meaning
1000	Beginning Quantity Less Than Zero	Indicates that the initial nettable quantity on hand is negative.
1001	Beginning Available Less Than Zero	Indicates that the quantity on hand less safety stock is negative.

Number	Message	Meaning
1002	Create	Indicates that a supply order should be created to satisfy a negative projected on hand balance. This message is only generated if Plan Orders is No or if a new requirement appears within the time fence.
1003	De-Expedite	Indicates that a scheduled supply order is due before it is needed and should be delayed, or demand rescheduled to an earlier date.
1004	Expedite	Indicates that a scheduled supply order is due after it is needed and should be rescheduled to an earlier date, or demand rescheduled to a later date.
1005	Cancel	Indicates that a scheduled supply order is no longer needed and should be deleted.
1006	Release Due For	Indicates that a supply order should be released. If it is a planned order, it must also be approved. Use the Order Release Horizon field in the MRP Control File (23.24) to specify the number of days prior to the order release date for this action message to display.
1007	Release Past Due For	Indicates that a supply order was not released when it was due, and should be either released or expedited now, or the demand rescheduled for a later date.
1008	Quantity Less than Minimum	Indicates that a supply order was created for a quantity less than the minimum quantity set in the item planning data.
1009	Quantity Exceeds Maximum	Indicates that a supply order was created for a quantity greater than the maximum quantity set in the item planning data.
1010	Past Due	Indicates that a scheduled supply order receipt is past due.
1011	Time Fence Conflict	Indicates that there is an unsatisfied material requirement inside the planning time fence for this item. You should either manually schedule and expedite orders to fill this demand or delay fulfillment of the requirement that created the demand.
1012	Shipment Due	Indicates that a shipment for an intersite request item is due. Action should be taken at the source site to ensure that the order is received on time.
1013	Shipment Past Due	Indicates that a shipment for an intersite request item is past due. You should either delay the orders that created the requirement for the item or expedite them when the item does arrive.

Number	Message	Meaning
1014	No Source Of Supply	Indicates that the planning data for an intersite request item does not specify a valid source network for the date an intersite request is required.
1015	Planned Order Count Exceeds Maximum	Indicates that the maximum allowable number of 1000 planned orders has been generated by an item-site. Calculation for other items is not affected.

23.5 – Action Message Review/Update

The screenshot shows a window titled "Action Message Review/Update" with a menu bar containing "User Menu", "Edit", "Queue", "Options", and "Help". Below the menu bar is a toolbar with icons for file operations and navigation. The main area contains several input fields:

- Starting Item Number:
- BOM/Formula:
- Site:
- Buyer/Planner:
- Show Phantom Items:
- Include Base Process Orders:

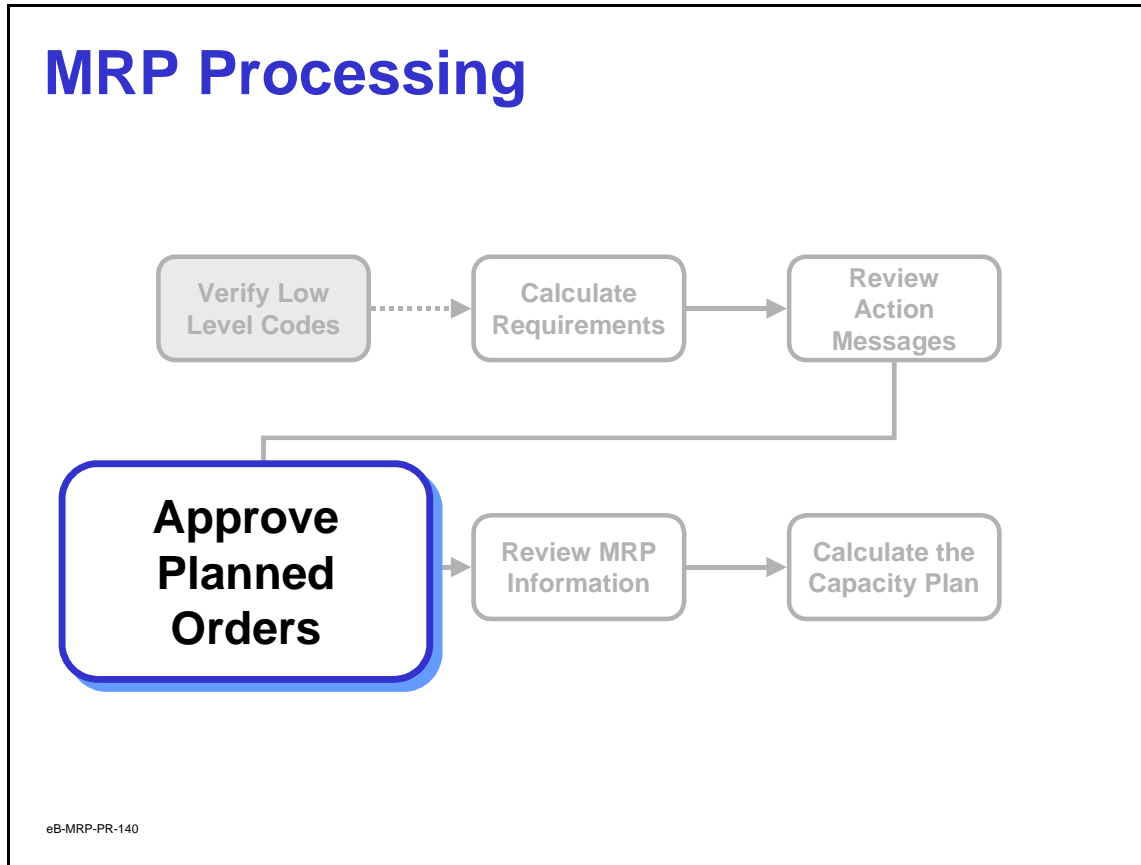
At the bottom of the window, a status bar displays the following keyboard shortcuts: F1=Help F2=Go ESC=End *Next/Prev* Ctrl-X/C/V=Cut-Copy-Paste

eB-MRP-PR-130

Action Message Review/Update

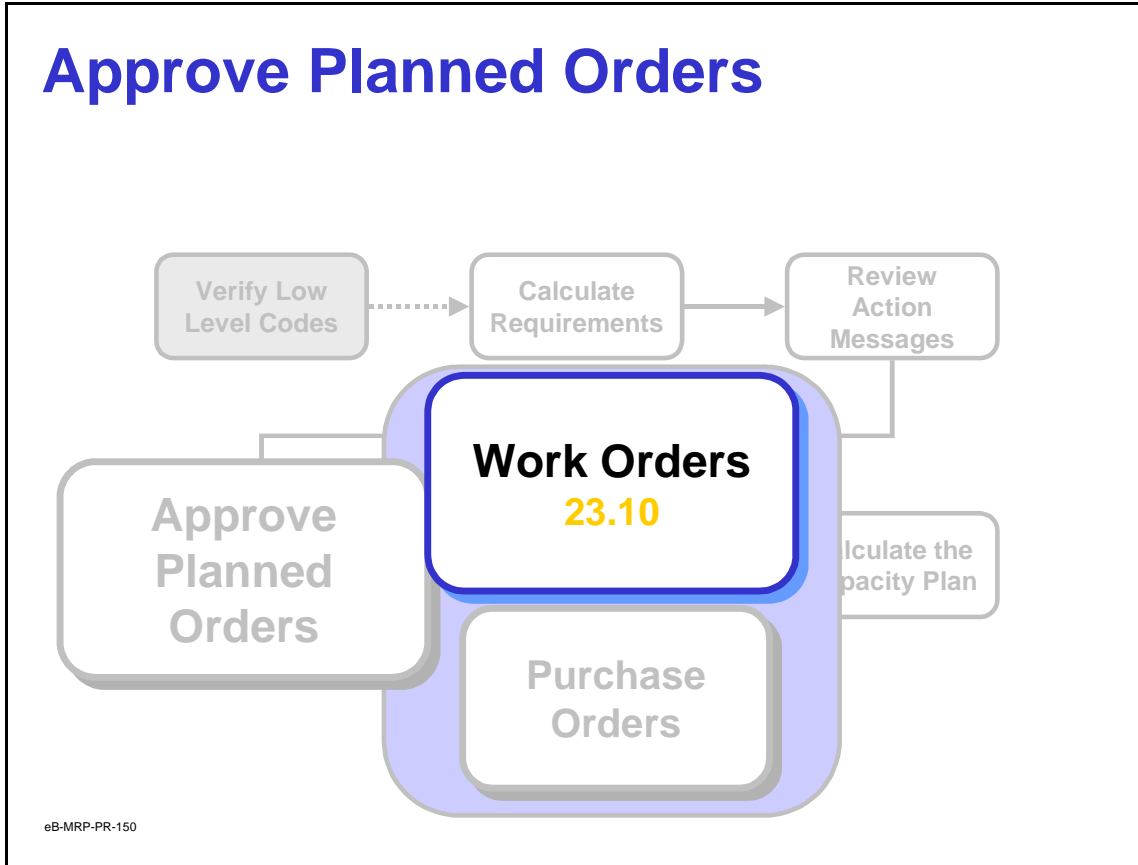
Menu Number 23.5

Action Message Review/Update reports on action messages using various selection criteria. Select the messages you want using the criteria.



Approving Planned Orders

MRP produces orders based on demand. The status of these orders is *planned*. Planned orders can be changed by subsequent MRP runs. To move these orders out of MRP's control, you approve them.



MRP creates planned orders for manufactured and purchased items and work orders.

- You release the orders for manufactured items as work orders
- You release the orders for purchased parts as requisitions

23.10 – Planned Work Order Approval: Screen 1 of 2

Planned Work Order Approval

User Menu Edit Queue Options Help

Item Number: To:

BOM/Formula: To:

Site: To:

Release Date: / / To: / /

Default Approve:

Buyer/Planner:

Include Phantoms:

Include Purchased Items:

F1=Help F2=Go ESC=End *Next/Prev* Ctrl-X/C/V=Cut-Copy-Paste

eB-MRP-PR-160

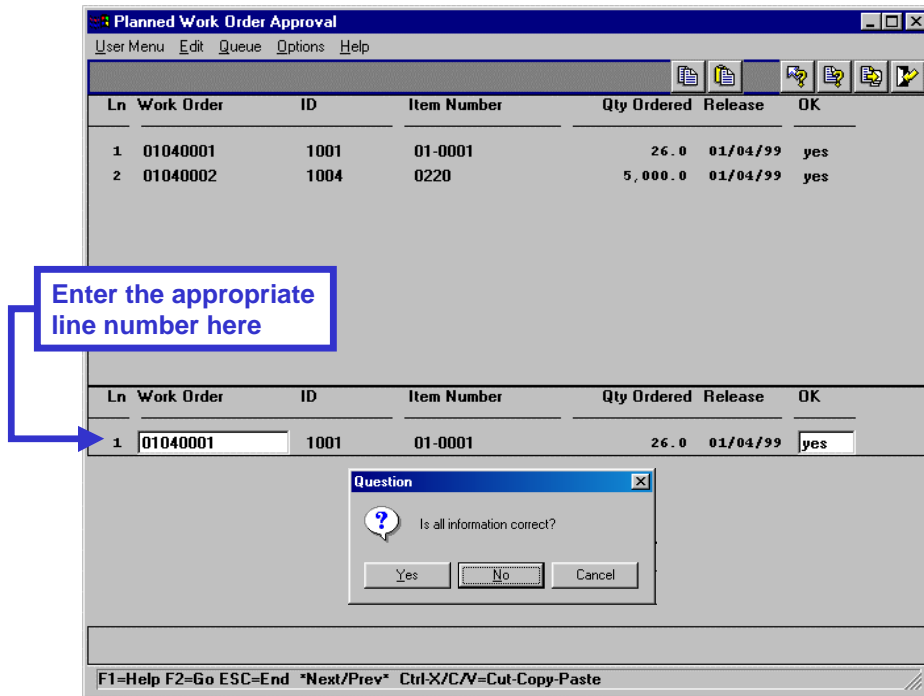
Planned Work Order Approval

Menu Number 23.10

Planned Work Order Approval approves the MRP plan, generating a firm order for the amount of each planned order, changing the status from *P* to *F*. After this step, items are ready for release.

- The new status prevents MRP from changing the order dates and quantities
- Select orders for approval with the criteria displayed

23.10 – Planned Work Order Approval: Screen 2 of 2



eB-MRP-PR-170

The screen displays the relevant work orders in the top half. In the bottom, you select orders by line number for processing.

Ln

- Enter the line number of the work order, shown in the top half of the screen

Work Order

- The number assigned by MRP
 - You can change this number, to match it up to the sales order, for example

ID / Item Number / Qty Ordered / Release

- Display-only fields

OK

- *Yes* to release the order
- *No* to prevent its release

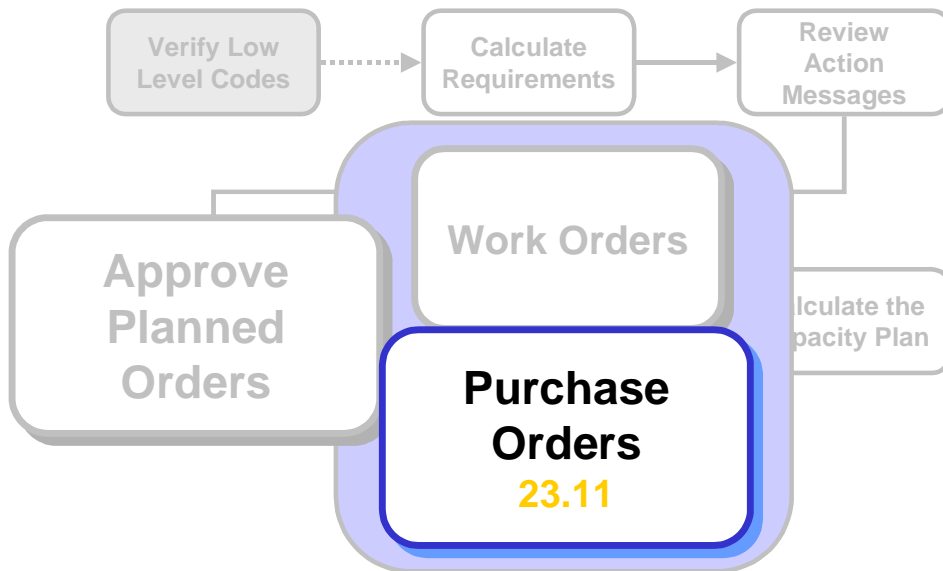
Is all information correct?

- *Yes*: Process
- *No*: Correct the data
- *Cancel*: Cancel the function



Discussed in the following Training Guide: Work Orders

Approved Planned Orders



eB-MRP-PR-180

23.11 – Planned Purchase Order Approval: Screen 1 of 2

Planned Purchase Order Approval

User Menu Edit Queue Options Help

Item Number: To:

Site: To:

Release Date: / / To: / /

Default Approve:

Buyer/Planner:

Include Phantoms:

Include Manufactured Items:

F1=Help F2=Go ESC=End *Next/Prev* Ctrl-X/C/V=Cut-Copy-Paste

eB-MRP-PR-190

Planned Purchase Order Approval

Menu Number 23.11

Planned Purchase Order Approval approves the MRP plan, generating purchase requisitions for the amount of each planned order. From here, the requisitions are ready to print.

This moves the purchase orders out of the MRP module and into the purchasing module.

On the first screen, select the planned orders to be approved, usually for a range of items and release dates. To approve the entire group, set Default Approve to *Yes*.

23.11 – Planned Purchase Order Approval: Screen 2 of 2

Ln	Req	Item Number	Qty Ordered	Release	Due	Approve
1	05190002	09-0001	10,000.0	05/14/99	05/19/99	yes
2	05190003	09-0001	8,000.0	05/14/99	05/19/99	yes
3	05190004	09-0035	1,000.0	05/05/99	05/19/99	yes

Enter the appropriate line number here

Ln	Req	Item Number	Qty Ordered	Release	Due	Approve
1	05190002	09-0001	10,000.0	05/14/99	05/19/99	yes

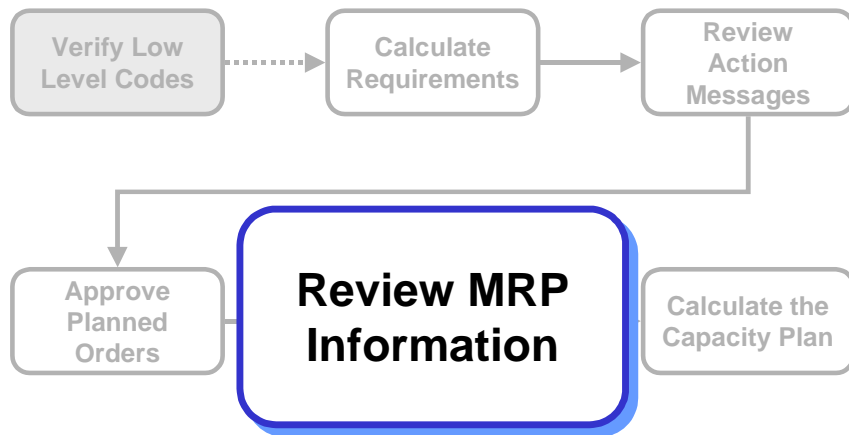
F1=Help F2=Go ESC=End *Next/Prev* Ctrl-X/C/V=Cut-Copy-Paste

eB-MRP-PR-200

This screen displays outstanding MRP-generated purchase requisitions and enables you to modify them.

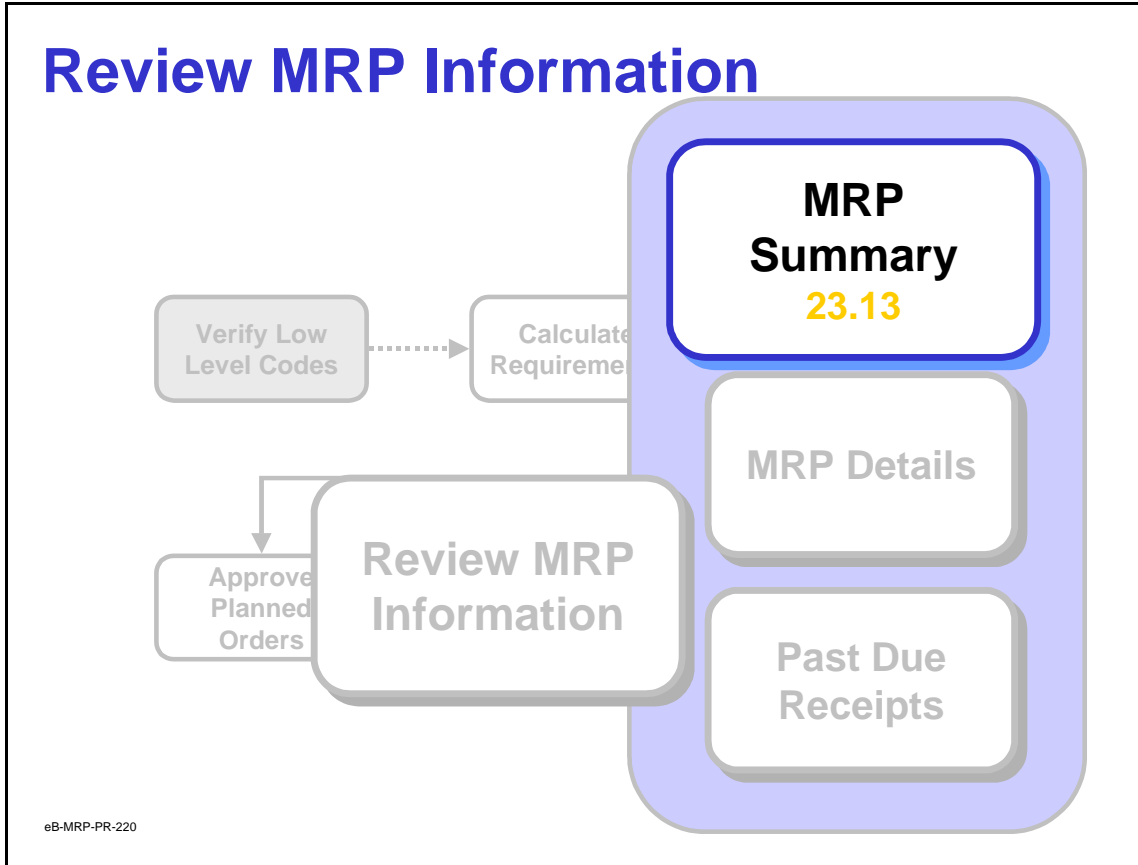
- Enter the line number in the indicated field to access the appropriate data

MRP Processing



eB-MRP-PR-210

Review MRP Information



MRP Summary

23.13 – MRP Summary Inquiry

MRP Summary Inquiry

User Menu Edit Queue Options Help

Item Number Site Start Date End Date Bucket # Output window

10-10000 10000 08/25/99 / / 1

MFG/PRO_9.0

mrmpiq.p e+ 23.13 MRP Summary Inquiry 08/26/99

Item Number: 960001-123 Site: 1f010 OASIS(TM) COOLING SYSTEM

Qty On Hand: 165.0 UM: EA Pur/Mfg: m

Buyer/Planner: Ord Pol: POQ Mfg LT: 0 Min Ord: 0

Master Sched: yes Ord Period: 7 Pur LT: 0 Max Ord: 0

MRP Required: no Time Fence: 0 Ins LT: 0 Ord Mult: 0

Plan Orders: yes Safety Time: 0 Inspect: no Order Qty: 0

Issue Policy: yes Safety Stk: 0 Cum LT: 0 Yield%: 100.00%

	Past	08/23/99	08/30/99	09/06/99	09/13/99	09/20/99	09/27/99
	08/22/99	08/29/99	09/05/99	09/12/99	09/19/99	09/26/99	10/03/99
Gross Reqs	149	172	165	126	145	132	156
Sched Receipts	0	200	175	0	0	0	0
Projected QOH	16	44	54	0	132	0	0
Plan Ords Due	0	0	0	72	277	0	156
Plan Ords Rel	0	0	0	72	277	0	156

F1=Help F2=Go ESC=End *Next/Prev* Ctrl-X/C/V=Cut-Copy-Paste

eB-MRP-PR-230

MRP Summary Inquiry

Menu Number 23.13

This inquiry you a brief view of the MRP outlook for specified date buckets.

23.14 – MRP Summary Report

The screenshot shows a software window titled "MRP Summary Report" with a menu bar (User Menu, Edit, Queue, Options, Help) and a toolbar with icons for file operations and help. The main area is titled "Selection Criteria" and contains the following fields:

- Item Number: []
- BOM/Formula: []
- Site: train
- Buyer/Planner: []
- Prod Line: []
- Group: []
- Item Type: []
- Supplier: []
- Pur/Mfg: []
- Print Detail: no
- Print Action Messages: no
- Print Substitute Items: no
- Include Zero Requirements: no
- To: []
- To: []
- To: train
- Use Cost Plans: no
- Include Base Process Orders: yes
- Sort by Item or BOM/Formula: Item Number
- Start Date: 04/19/99
- End Date: / /
- Day/Week/Month: W
- Per Column: 1

Buttons at the bottom include Clear, Print, and Exit. A status bar at the very bottom shows keyboard shortcuts: F1=Help, F2=Go, ESC=End, Ctrl-X=Cut, Ctrl-C=Copy, Ctrl-V=Paste.

eB-MRP-PR-240

MRP Summary Report

Menu Number 23.14

This report gives you summary information on MRP for specified date buckets. Information appears in columns, with one column per time period. Activity prior to the start date appears in the first column under the label *Past*.

Select the data according to the criteria displayed.

Print Detail

Allows to print order details following the summary.

- Useful to help resolve shortage situations

Use Cost Plans

Allows you to print a summary of production costs for each period.

- Normally production costs are based on the GL cost of the item, but if a cost plan is in place costs are based on these planned future costs
 - Costs plans are entered in the Cost Management module and allow you to project future cost changes, particularly useful for commodities or seasonal items

Print Action Messages

Allows you to print action messages following the summary report.

- Useful to help resolve shortage situations

Day / Week / Month

Indicates the length of each column period.

- D for Day, W for Week, M for Month, P for GL calendar period.
 - *P* works only if you are using the general ledger module
 - *M* requires that you set the *Per Column* field to *1*

23.14 – MRP Summary Report: Sample

MFG/PRO 9.0

mrmp11.p e+ 23.14 MRP Summary Report
 Page: 1 qad.inc

Item Number: 960001-123 OASIS(TM) COOLING SYSTEM
 Qty On Hand: 165.0 UM: EA Time Fence: 0
 Order Policy: POQ Min Ord: 0 Safety Time: 0 Pur/Mfg:
 Order Period: 7 Max Ord: 0 Safety Stk: 0 Inspect:
 Order Qty: 0 Ord Mult: 0 Yield%: 100.00%

	Past	08/23/99	08/30/99	09/06/99	09/13/99	09/20/99	09/27/99	10/04/99	10/11/99
Gross Reqs	149	172	165	126	145	132	156		
Sched Receipt	0	200	175	0	0	0	0		
Projected QOH	16	44	54	0	132	0	0		
Plan Ords Due	0	0	0	72	277	0	156		
Plan Ords Rel	0	0	0	72	277	0	156		

mrmp11.p e+ 23.14 MRP Summary Report

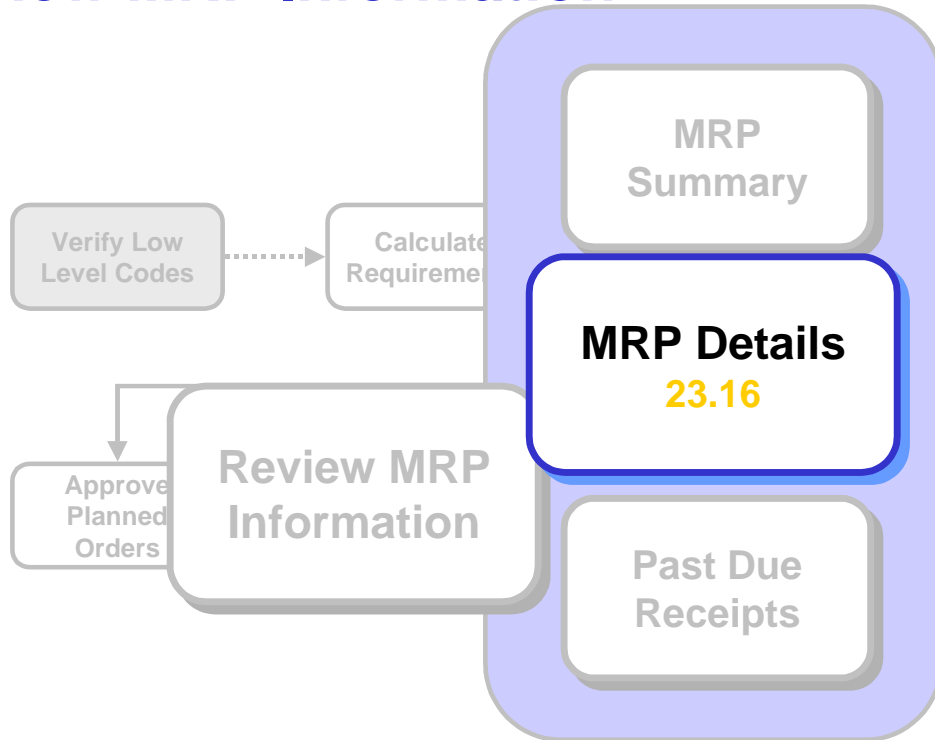
Page: 2 qad.inc

	Past	08/23/99	08/30/99	09/06/99	09/13/99	09/20/99	09/27/99	10/04/99	10/11/99
Total Units									
Gross Reqs	149	172	165	126	145	132	156		
Sched Receipt	0	200	175	0	0	0	0		
Projected QOH	16	44	54	0	132	0	0		
Plan Ords Due	0	0	0	72	277	0	156		
Plan Ords Rel	0	0	0	72	277	0	156		
Total GL Cost									
Gross Reqs	0	0	0	0	0	0	0		
Sched Receipt	0	0	0	0	0	0	0		
Inv Revalue	0	0	0	0	0	0	0		
Projected QOH	0	0	0	0	0	0	0		
Plan Ords Due	0	0	0	0	0	0	0		
Plan Ords Rel	0	0	0	0	0	0	0		

Browse or type search string and press [RETURN]:
 Use cursor and page keys to navigate. F4 to exit. [Line 20].

eB-MRP-PR-250

Review MRP Information



eB-MRP-PR-260

23.16 – MRP Detailed Inquiry

The screenshot shows the 'MRP Detail Inquiry' window. At the top, there is a menu bar with 'User Menu', 'Edit', 'Queue', 'Options', and 'Help'. Below the menu bar, there are input fields for 'Item Number: 10-10000', 'e: 10000', and 'Start Date: / /'. The window title is 'MRP Detail Inquiry' and the output is set to 'window'. The main content area displays the following information:

Item Number: 10-10000 Qty On Hand: 0.0 Site: 10000
 OASIS(TM) COOLING SYSTEM HOME/INDUST MODEL UM: EA Pur/Mfg: C
 Buyer/Planner: Ord Pol: POQ Min Ord: 0 Mfg LT: 1
 Master Sched: yes Ord Period: 7 Max Ord: 0 Pur LT: 0
 MRP Required: no Time Fence: 0 Ord Mult: 0 Ins LT: 0
 Plan Orders: yes Safety Time: 0 Order Qty: 0 Inspect: no
 Issue Policy: yes Safety Stk: 0 Yield%: 100.00% Cum LT: 8

Due Date	Gross Reqs	Sched Rcpt	Proj QOH	Plan Ords	Details
			0		Beginning Available
03/03/94	100		-100		S/O: SO10025 Line: 1
03/03/94	125		-225		S/O: SO10026 Line: 1
03/03/94	50		-275		S/O: SO10027 Line: 1
03/03/94	50		-325		S/O: SO10028 Line: 1
03/03/94			-225	100	PLANNED F/A ORDER
					S/O: SO10025 Line: 1
					Release Date 03/02/94

At the bottom of the window, there is a status bar with the text: 'F1=Help F2=Go ESC=End *Next/Prev* Ctrl-X/C/V=Cut-Copy-Paste'. The window title bar also shows 'eB-MRP-PR-270'.

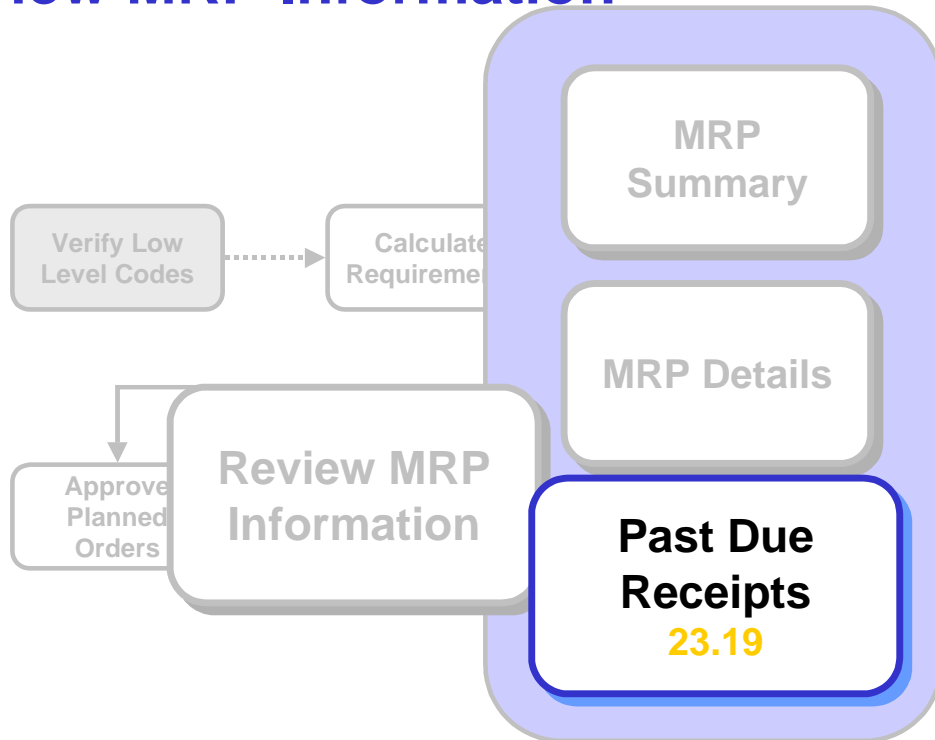
MRP Detailed Inquiry

Menu Number 23.16

This inquiry gives you a detailed look at MRP for specified date buckets.

- Buyer/Planners use this inquiry often

Review MRP Information



eB-MRP-PR-280

23.19 – Past Due Receipts Inquiry

Item Number: 10-10000 Buyer/Planner: Site: 10000
 OASIS(TM) COOLING SYSTEM HOME/INDUST MODEL

Due Date Release	Qty UM	Details
03/10/94 03/10/94	1,180.0 EA	Work Order past due W/O: 03030038 ID: 401507
03/14/94 03/03/94	100.0 EA	Work Order past due W/O: 03030004 ID: 401499
03/21/94 03/03/94	100.0 EA	Work Order past due W/O: 03030005 ID: 401500
03/03/94 03/02/94	50.0 EA	PLANNED F/A ORDER past due S/O: SO10027 Line: 1
03/03/94 03/02/94	50.0 EA	PLANNED F/A ORDER past due S/O: SO10028 Line: 1
03/03/94 03/02/94	100.0 EA	PLANNED F/A ORDER past due S/O: SO10025 Line: 1
03/03/94 03/02/94	125.0 EA	PLANNED F/A ORDER past due

F1=Help F2=Go ESC=End *Next/Prev* Ctrl-X/C/V=Cut-Copy-Paste

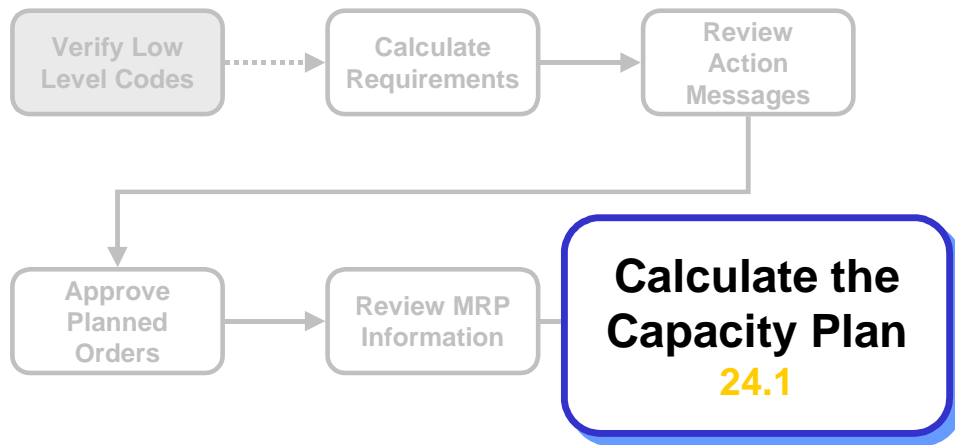
eB-MRP-PR-290

Past Due Receipts Inquiry

Menu Number 23.19

This inquiry shows you past due receipts.

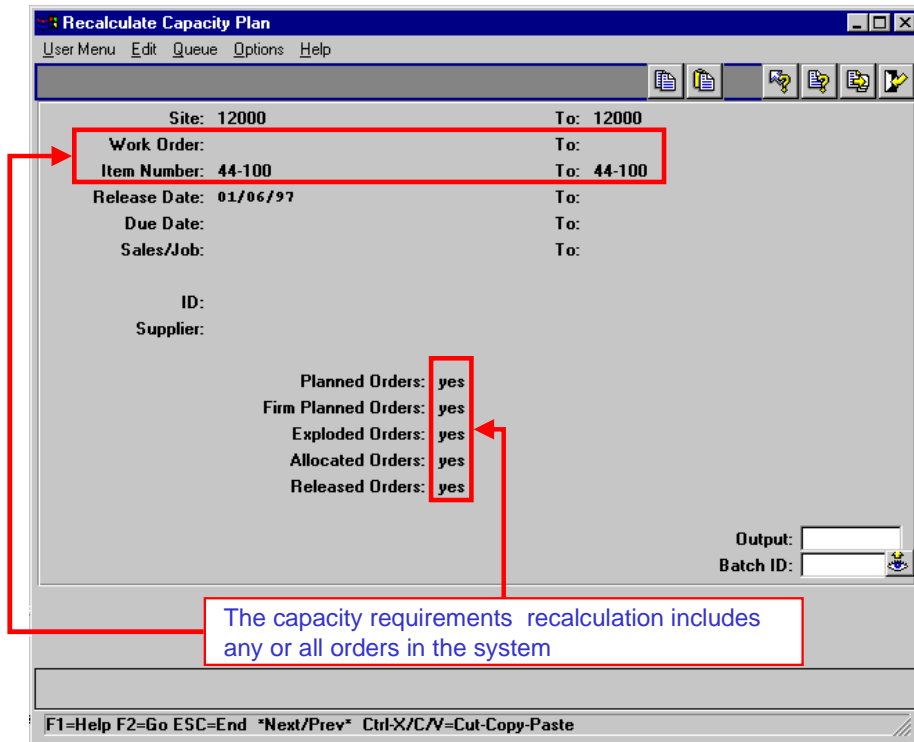
MRP Processing: **CRP Processing**



eB-MRP-PR-300

CRP Processing

24.1 – Recalculate Capacity Plan



eB-MRP-PR-310

Recalculating the Capacity Plan

Menu Number 24.1

Capacities and Load

- The capacity plan is usually recalculated after an MRP run
- CRP looks at the available hours or machines for departments and work centers

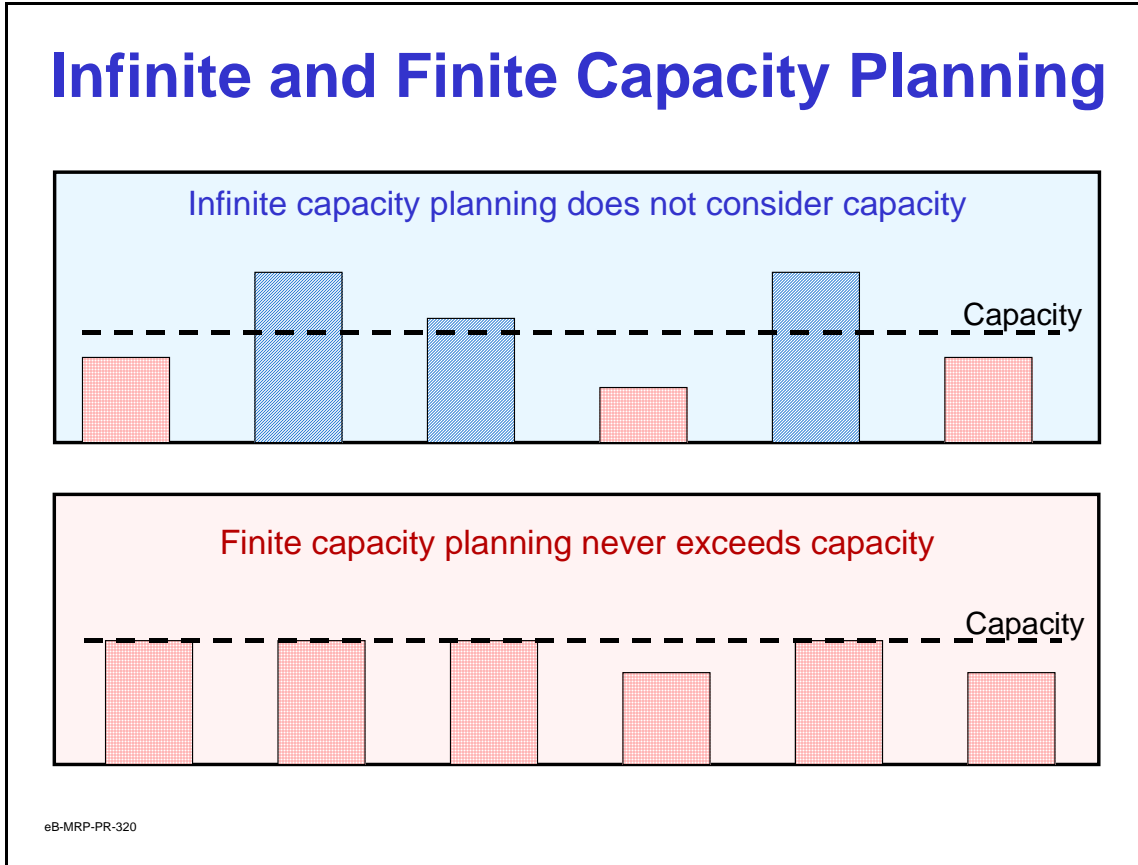


Discussed in the following Training Guide: Work Centers, Routings, and WO Subcontracting

CRP then loads the work center by locating all orders that meet the selection criteria and applies them to operations by start date, using backward scheduling from the orders' due dates.

Wait, queue, setup, and move times are included, as well as the run time multiplied by order quantity.

Note This may take some time to process; consider submitting it in batch mode.



Infinite (Unfixed) Capacity Planning

MFG/PRO eB uses infinite loading to schedule operation and work center production loads based on work order due dates.

- No work order routing dates are changed to accommodate insufficient capacity
 - Loading continues into the future without regard to capacity

Finite (Fixed) Capacity Planning

Finite capacity planning assigns no more work to a work center than the work center can be expected to execute in a given time period. MFG/PRO eB uses infinite loading only.

Loading to finite capacity will extend deliveries. As a result the Master Schedule will have to be changed.

Finite capacity looks at capacity and determines how much to produce, or how long it will take to produce it.

The Plan

The capacity plan is sorted by:

- Work order and item
- Work order due and release dates
- Quantity ordered and quantity completed
- CRP-scheduled start and last operation dates

The CRP indicates:

- *No Routing* for orders that cannot be exploded
- *Op Conflict* difference between operation start date and work order release date

Department and Work Center Capacities

Department: 10
Description: Assembly

Labor capacity: 14

Cost of Production:	6300	5010
Labor:	6500	5010
Burden:	6400	5010
Labor Usage Variance:	6850	5010
Labor Rate Variance:	6800	5010
Burden Usage Variance:	6470	5010
Burden Rate Variance:	6460	5010

Work Center: 12000 Machine:
Description: Assembly

Department: 10
Work Location:

Queue Time: 0.0
Wait Time: 0.0
Mach/Op: 1

Setup Crew: 0.00
Run Crew: 1.000
Machines: 1.000
Mach Bdn Rate: 10.00

Setup Rate: 10.00
Labor Rate: 10.00
Lbr Bdn Rate: 0.00
Lbr Bdn %: 100.00%

Capacities on the shop floor are the departmental labor capacity and the work center hours

eB-MRP-PR-330

Define Capacities

The resources used to process orders on the shop floor are work centers, departments, and machines. The capacity of a department or work center is the time available for production in that location.

Departments

The capacity of a department is the total number of available labor hours per day for all work centers in that department, defined in Department Maintenance 14.1.

Work Centers

The capacity for a work center is the number of machines or personnel available for that work center (defined in Work Center Maintenance 14.5) multiplied by work hours (defined in Calendar Maintenance 36.2.5).

If a work center or machine is over- or under-loaded, you can modify either its capacity or the timing or amount of the load.

Adjusting Capacity/Load

Capacity

- Adjust capacity using one of the following functions:
 - Calendar Maintenance 36.2.5
 - Holiday Maintenance 36.2.1
- Add or subtract workday hours as needed for work center or shop calendars

Adjusting Load

- Adjust the timing or amount of load by modifying:
 - Work order due dates
 - Operation lead time components
 - Repetitive schedules

Note If you manually adjust operation start and stop dates, CRP reschedules them the next time it is run.

24.4 – Input/Output Inquiry

	Past	01/06/97	01/13/97	01/20/97	01/27/97	02/03/97	02/10/97
	01/05/97	01/12/97	01/19/97	01/26/97	02/02/97	02/09/97	02/16/97
Input Plan	19,057	340	130	0	0	0	0
Input Actual	200	0	0	0	0	0	0
Cumulative Dev	-18,857	-19,197	-19,327	-19,327	-19,327	-19,327	-19,327
Output Plan	13,427	310	800	2,320	800	940	930
Output Actual	281	0	0	0	0	0	0
Cumulative Dev	-13,146	-13,456	-14,256	-16,576	-17,376	-18,316	-19,246
Queue Plan	5,630	30	-670	-2,320	-800	-940	-930
Queue Actual	-81	0	0	0	0	0	0

eB-MRP-PR-340

Input/Output Analysis

Input/Output Inquiry

Menu Number 24.4

In order to provide control and auditable shop floor data about planned versus actual results, compare the planned load input and output for a work center/machine with the actual load incurred and the actual output hours against that load.

Input/Output Inquiry and Report help evaluate a work center or machine's response to planned loads by:

- Displaying planned and actual input and output in daily, weekly, or monthly periods

24.5 – Input/Output Report

End of report.

```

sfiorp.p                               24.5 Input/Output Report
Page: 1                                Your Name Here
Work Center: 10000    ASSEMBLY,QASIS (TM) UNITS    Mach/Op: 1
Machine:                                           Queue Time: 0.0    Mach/Wk Ctr: 1.000
Department: 10      ASSEMBLY                        Wait Time: 0.0     Run Crew: 1.000

Past    06/30/99 07/07/99 07/14/99 07/21/99 07/28/99
06/29/99 07/06/99 07/13/99 07/20/99 07/27/99 08/03/99
-----
Input Plan      5,000      0      0      0      0      0
Input Actual    0      0      0      0      0      0
Input Cum Dev  -5,000  -5,000  -5,000  -5,000  -5,000  -5,000
    
```

eB-MRP-PR-350

Input/Output Report

Menu Number 24.5

- Spots “bottlenecks”
- Gives a perspective apart from traditional load reports

Planned Input

- Load on a work center or machine represented by:
 - Work order operations scheduled to start in a reporting period
- Determined using the following calculation:

$$\text{Standard Setup} + (\text{Standard Run} \times \text{Quantity Ordered})$$

Actual Input

- Load that has been moved to the first and subsequent order operations
- Calculated for a reporting period based on move transactions entered using:
 - Work order release and shop floor control functions
- Determined using the following calculation:

Standard Run Hours x Quantity Moved

Planned Output

- Load calculated based on order operations scheduled to be completed in a reporting period
- Determined using the following calculation:

Standard Setup + (Standard Run x Quantity Ordered)

Actual Output

- Load calculated for a reporting period based on operation quantity completed transactions for:
 - Work orders
 - Repetitive schedules
- Report completed quantities for order operations using labor feedback transactions in:
 - Shop Floor Control 17
 - Advanced Repetitive 18.22
 - Repetitive 18
 - Work Order Accounting Close 16.21
- Determined using the following calculation:

Actual Setup + (Standard Run x Quantity Completed)

Planned Queue

- Difference between planned input and planned output

Actual Queue

- Difference between actual input and actual output

Note Shop Floor Control must be used in order for this to be useful.



Summary and Detail Inquiries and Reports

You can generate load reports by department, work center, or machine using the work center and department load inquiries and reports.

CRP determines load hours for a work center based on setup and run times. Queue, wait, and move times are excluded from load calculations. To include queue times in load calculations, set up separate operations for queue. CRP then considers these operations when calculating load.

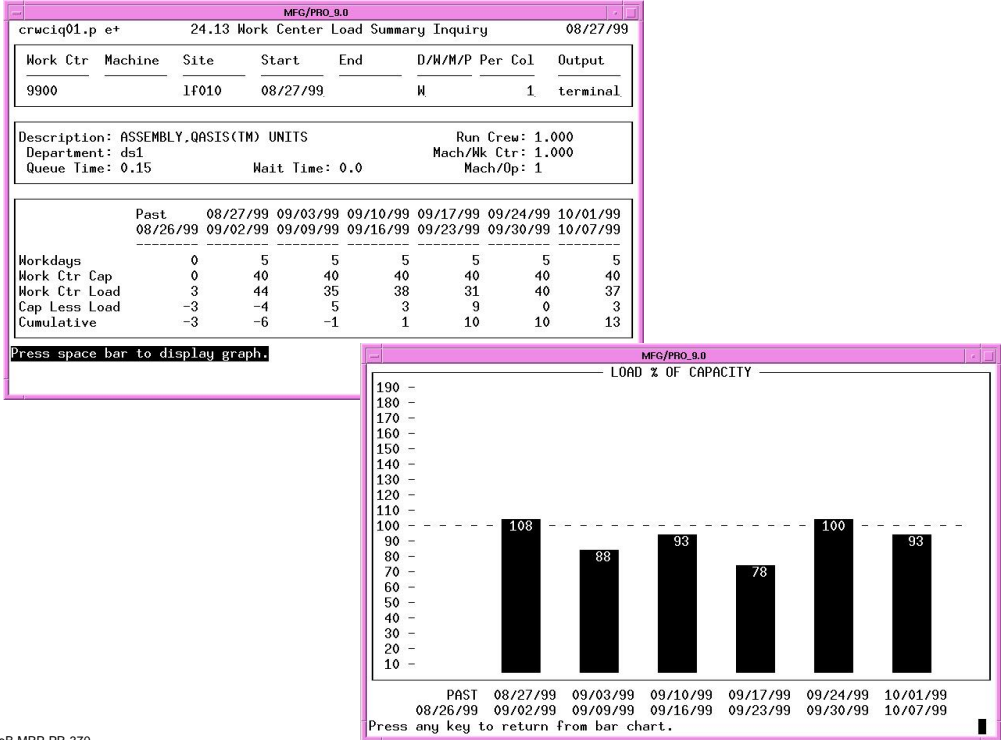
CRP determines the load an operation exerts on a work center using the following calculation:

$$\text{Operation Load} = \text{Setup Time} + (\text{Run Hours/Unit} \times \text{Quantity Open})$$

The quantity open for an operation is the order quantity minus any quantities reported complete.

The system assigns the entire load for an operation to its scheduled start date. Even for operations with run times longer than one day, load is not spread between operation start and due dates.

24.13 – Work Center Load Summary Inquiry



eB-MRP-PR-370

Work Center Summary Load Inquiry

Menu Number 24.13

24.14 – Work Center Load Summary Report

24.14 Work Center Load Summary Report													
crwcrp01.p	24.14 Work Center Load Summary Report										Date: 05/18/99		
Page: 1	MFG/PRO Training DB - V90										Time: 16:17:40		
Site: 10000						Queue Time: 1.0			Run Crew: 1.000				
Work Center: 1010	ASSEMBLY								Mach/Wk Ctr: 1.000				
Machine:						Wait Time: 0.0			Mach/Op: 1				
Department: 10	Assembly												
Past	05/18/99	05/25/99	06/01/99	06/08/99	06/15/99	06/22/99	06/29/99	07/06/99	07/13/99	07/20/99	07/27/99	08/03/99	
	05/17/99	05/24/99	05/31/99	06/07/99	06/14/99	06/21/99	06/28/99	07/05/99	07/12/99	07/19/99	07/26/99	08/02/99	08/09/99
Workdays	0	5	5	5	5	5	5	5	5	5	5	5	5
Work Ctr Cap	0	40	40	40	40	40	40	40	40	40	40	40	40
Work Ctr Load	0	0	0	0	0	0	0	0	0	0	0	0	0
Cap Less Load	0	40	40	40	40	40	40	40	40	40	40	40	40
Cumulative	0	40	80	120	160	200	240	280	320	360	400	440	480

Press space bar to continue.

eB-MRP-PR-380

Work Center Load Summary Report

Menu Number 24.14

24.17 – Work Center Load Detail Report

Report - Work Center Load Detail Report								
File Edit Search								
crwcrp02.p		24.17 Work Center Load Detail Report						
Page: 1		Your Name Here						
Work Center: 10000	ASSEMBLY, QASIS (TM)	UNITS	Department: 10	ASSEMBLY				
Machine:	Mach/Wk Ctr: 1.000		Run Crew: 1.000	Queue Time: 0.0	Wait Time: 0.0	Mach/		
Work Order	ID	Due	Op	Description	Start	Setup	Run Time	Load Hrs
03030038	401507	03/10/94	10	ASSEMBLE PER SPEC Item: 10-10000	08/17/93	0.0	1,170.0	1,170.0
03030039	401508	03/21/94	10	ASSEMBLE PER SPEC Item: 10-10000	09/27/93	0.0	970.0	970.0
03030040	401509	03/28/94	10	ASSEMBLE PER SPEC Item: 10-10000	10/04/93	0.0	970.0	970.0
03030041	401510	04/04/94	10	ASSEMBLE PER SPEC Item: 10-10000	10/08/93	0.0	979.0	979.0
03030004	401499	03/14/94	10	ASSEMBLE PER SPEC Item: 10-10000	02/24/94	0.0	100.0	100.0
03030005	401500	03/21/94	10	ASSEMBLE PER SPEC Item: 10-10000	03/03/94	0.0	100.0	100.0
03030032	401501	03/28/94	10	ASSEMBLE PER SPEC Item: 10-10000	03/10/94	0.0	100.0	100.0
03030033	401502	04/04/94	10	ASSEMBLE PER SPEC Item: 10-10000	03/16/94	0.0	100.0	100.0
03030034	401503	04/11/94	10	ASSEMBLE PER SPEC Item: 10-10000	03/23/94	0.0	100.0	100.0
03030035	401504	04/18/94	10	ASSEMBLE PER SPEC Item: 10-10000	03/30/94	0.0	100.0	100.0
03030036	401505	04/25/94	10	ASSEMBLE PER SPEC	04/07/94	0.0	100.0	100.0

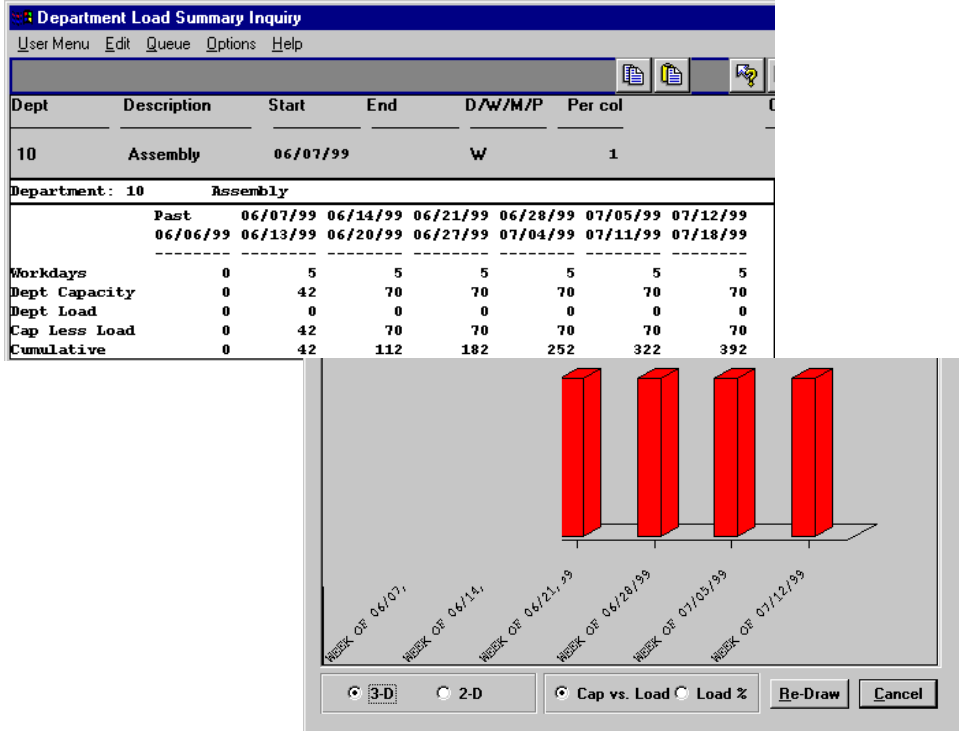
F1=Help F2=Go ESC=End Ctrl-X=Cut Ctrl-C=Copy Ctrl-V=Paste

eB-MRP-PR-400

Work Center Load Detail Report

Menu Number 24.17

24.19 – Department Load Summary Inquiry



eB-MRP-PR-410

Department Load Summary Inquiry

Menu Number 24.19

24.20 – Department Load Summary Report

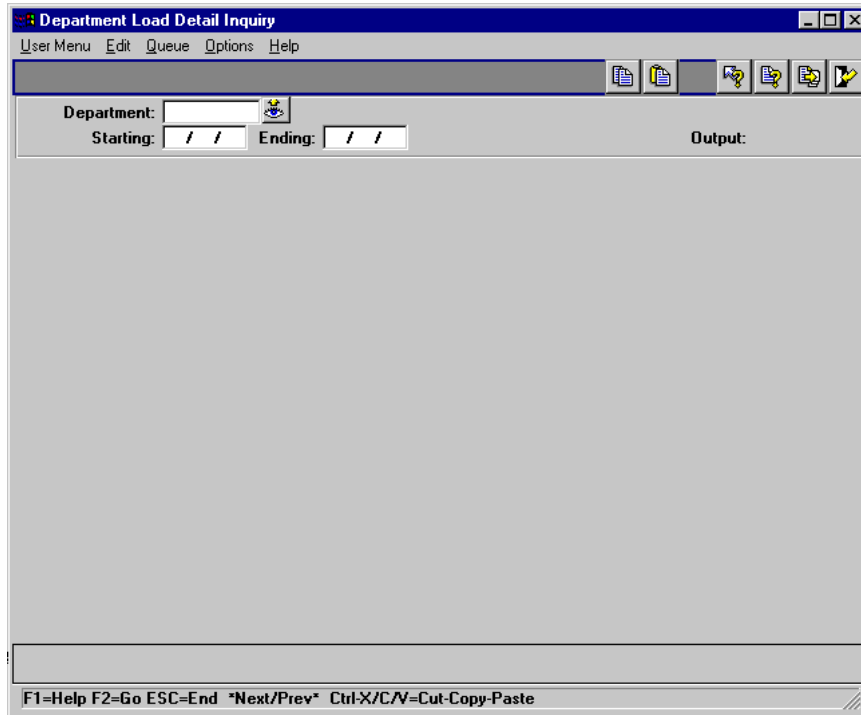
Report - Department Load Summary Report													
24.20 Department Load Summary Report													Date: 05/18/99
MFG/PRO Training DB - V90													Time: 16:48:01
Department: 10 Assembly Site: train													
Past	05/18/99	05/25/99	06/01/99	06/08/99	06/15/99	06/22/99	06/29/99	07/06/99	07/13/99	07/20/99	07/27/99	08/03/99	
	05/17/99	05/24/99	05/31/99	06/07/99	06/14/99	06/21/99	06/28/99	07/05/99	07/12/99	07/19/99	07/26/99	08/02/99	08/09/99
Workdays	0	5	5	5	5	5	5	5	5	5	5	5	5
Dept Capacity	0	70	70	70	70	70	70	70	70	70	70	70	70
Dept Load	0	0	0	0	0	0	0	0	0	0	0	0	0
Cap Less Load	0	70	70	70	70	70	70	70	70	70	70	70	70
Cumulative	0	70	140	210	280	350	420	490	560	630	700	770	840
Department: 20 Packaging Site: train													
Past	05/18/99	05/25/99	06/01/99	06/08/99	06/15/99	06/22/99	06/29/99	07/06/99	07/13/99	07/20/99	07/27/99	08/03/99	
	05/17/99	05/24/99	05/31/99	06/07/99	06/14/99	06/21/99	06/28/99	07/05/99	07/12/99	07/19/99	07/26/99	08/02/99	08/09/99
Workdays	0	5	5	5	5	5	5	5	5	5	5	5	5
Dept Capacity	0	35	35	35	35	35	35	35	35	35	35	35	35
Dept Load	0	0	0	0	0	0	0	0	0	0	0	0	0
Cap Less Load	0	35	35	35	35	35	35	35	35	35	35	35	35
Cumulative	0	35	70	105	140	175	210	245	280	315	350	385	420
Department: 22 Filling Site: train													
Past	05/18/99	05/25/99	06/01/99	06/08/99	06/15/99	06/22/99	06/29/99	07/06/99	07/13/99	07/20/99	07/27/99	08/03/99	
	05/17/99	05/24/99	05/31/99	06/07/99	06/14/99	06/21/99	06/28/99	07/05/99	07/12/99	07/19/99	07/26/99	08/02/99	08/09/99

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Department Load Summary Report

Menu Number 24.20

24.22 – Department Load Detail Inquiry



eB-MRP-PR-430

Department Load Detail Inquiry

Menu Number 24.22

24.23 – Department Load Detail Report

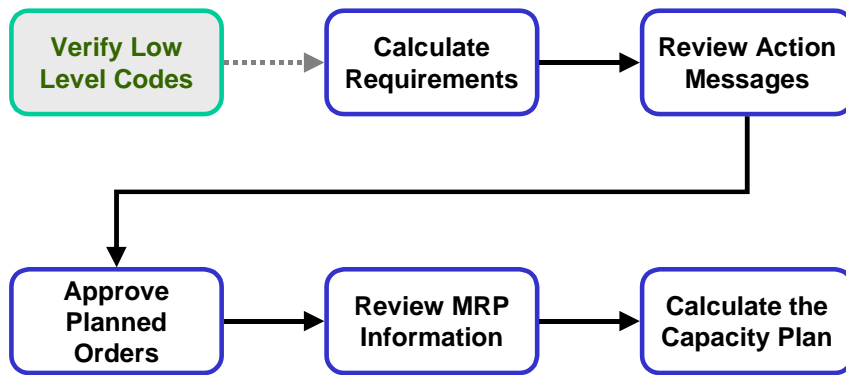
Work Order	Work Ctr	Machine	Op	Start	Dept Load	Qty Open
03030038	10000		10	08/17/93	1,170.0	1,170
Item: 10-10000		ID: 401507				
03030039	10000		10	09/27/93	970.0	970
Item: 10-10000		ID: 401508				
03030040	10000		10	10/04/93	970.0	970
Item: 10-10000		ID: 401509				
03030041	10000		10	10/08/93	979.0	979
Item: 10-10000		ID: 401510				
03030004	10000		10	02/24/94	100.0	100

eB-MRP-PR-440

Department Load Detail Report

Menu Number 24.23

MRP/CRP Processing Summary



eB-MRP-PR-450

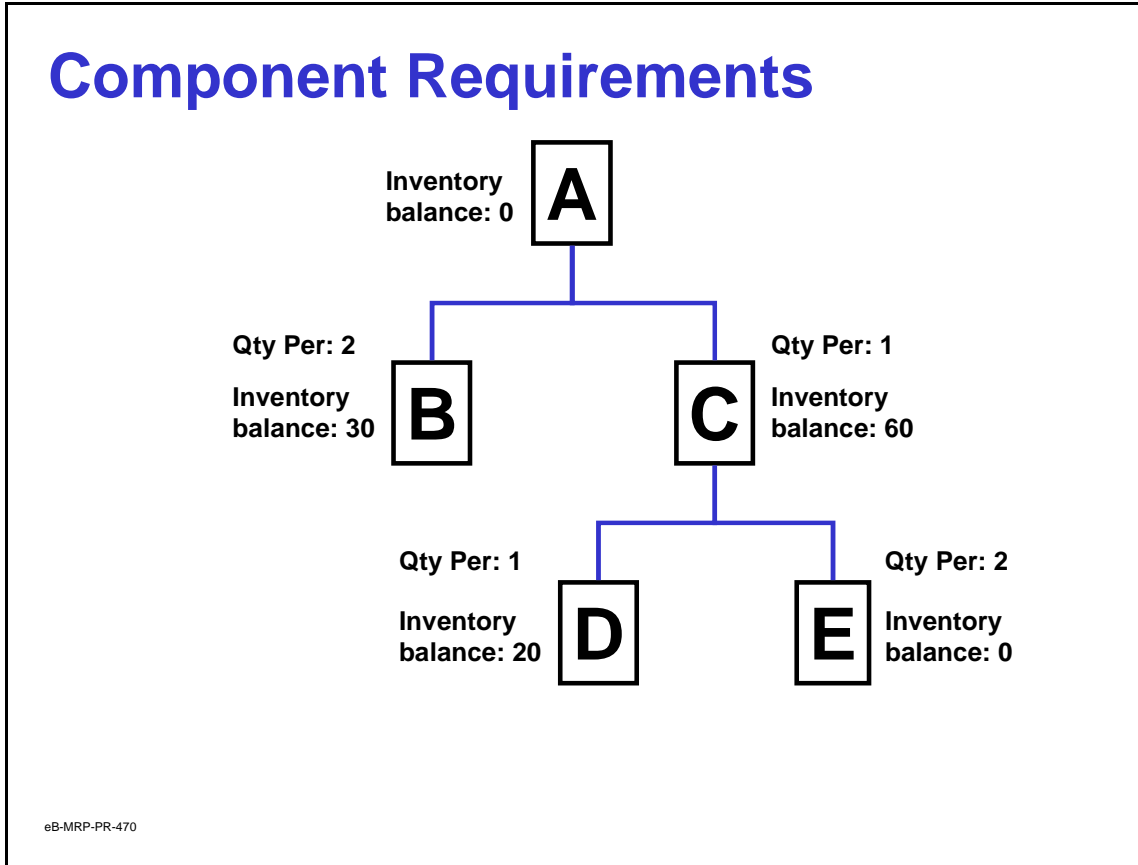
Processing Exercises



eB-MRP-PR-460

Exercises

Important The data used in these exercises may not be the same as the data shown in the screen captures in this lesson.



Component Requirements

Instruction: In this activity, you describe the determination of gross requirements (product structure explosion) and the subsequent determination of net requirements.

Using the product structure above, determine the net requirements for items B, C, D, and E to make 100 of item A.

- There are no item As or item Es in inventory, but there are on-hand inventory balances of 30 Bs, 60 Cs and 20 Ds

Order Policies and Modifiers

Period	1	2	3	4	5	6	7	8	9	10
Demand	25	30	20	35	25	30	25	35	30	25
LFL										
FOQ=35										
POQ 2 Periods										
POQ - 2 Periods Min Qty=60										
POQ - 2 Periods Multi Qty=25										

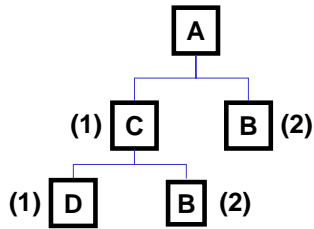
eB-MRP-PR-480

Order Policies and Modifiers

Instruction: This activity tests your knowledge of order policies and modifiers.

Using this table, determine in which periods orders are required and for what quantities. Assume that there is no on-hand inventory.

Order Calculation



Each period = 1 week (7 days)

A Lead time=1 wk
Min=200

	Period				
	1	2	3	4	5
Gross requirements					
Scheduled receipts					
On hand	0				
Planned order receipt					
Planned order release					

B Lead time=1 wk
Mult=250

	Period				
	1	2	3	4	5
Gross requirements					
Scheduled receipts					
On hand	30				
Planned order receipt					
Planned order release					

C Lead time=2 wks
Mult=50

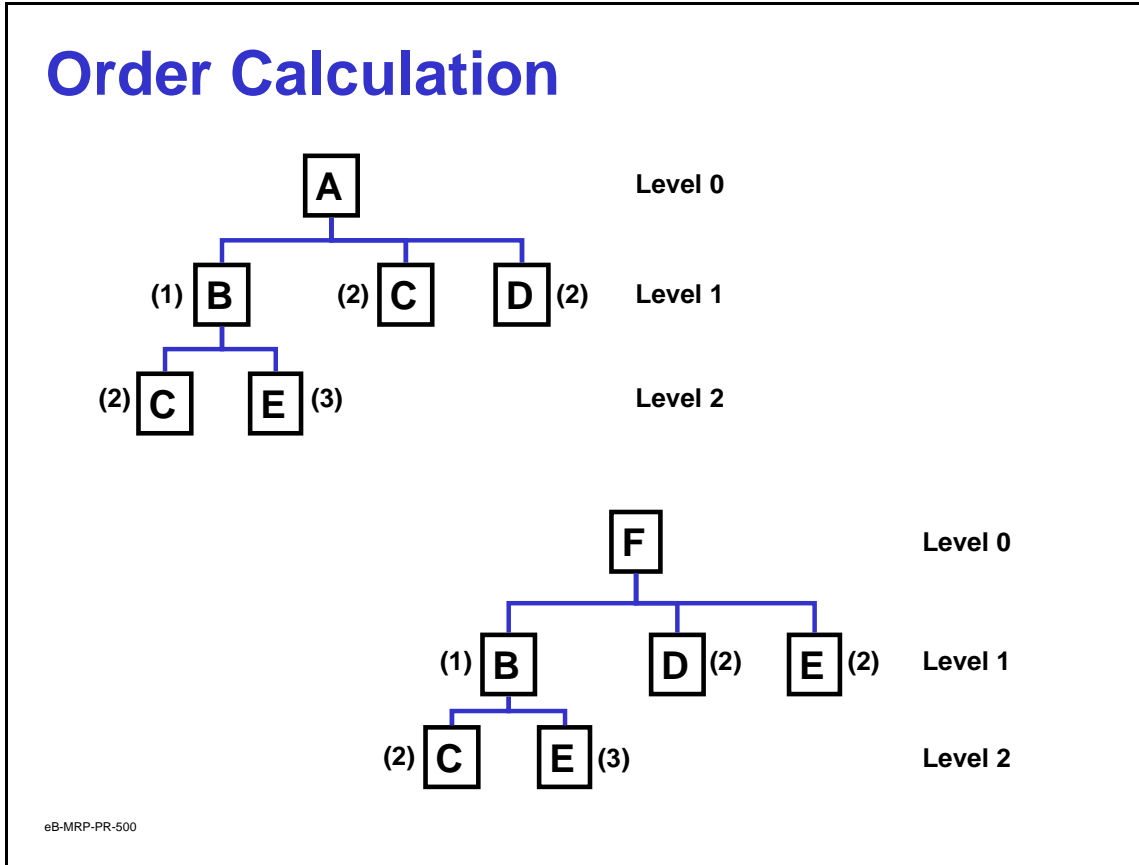
	Period				
	1	2	3	4	5
Gross requirements					
Scheduled receipts					
On hand	60				
Planned order receipt					
Planned order release					

eB-MRP-PR-490

Order Calculation

Instruction: This activity gives you an opportunity to determine how MRP plans orders.

Using the product structures and the information in these tables, determine the planned order releases for items B and C to satisfy a demand for 100 of item A in period 5.



Order Calculation

Instruction: This activity demonstrates how MRP plans orders.

Using these product structures and the data on the following worksheets, determine the required order releases.

Order Calculation (Continued)

MRP PLANNING SHEET						PT206350											
Lot Size	Lead Time	Safety Stock	Low Level Code	Item No.		Period											
						1	2	3	4	5	6	7	8				
LFL	2	0	0	A	Gross Requirements				10		100						
					Scheduled Receipts												
					Projected On-Hand												
					Net Requirements												
					Planned Order Receipts												
					Planned Order Releases												
LFL	1	0	0	F	Gross Requirements					20	20					10	
					Scheduled Receipts												
					Projected On-Hand												
					Net Requirements												
					Planned Order Receipts												
					Planned Order Releases												
LFL	1	0	1	B	Gross Requirements												
					A												
					F												
					Total												
					Scheduled Receipts												
					Projected On-Hand												
					Net Requirements					100							
					Planned Order Receipts												
					Planned Order Releases												

eB-MRP-PR-510

Order Calculation (Continued)

MRP PLANNING SHEET							PT206360							
Lot Size	Lead Time	Safety Stock	Allocated	Low Level Code	Item No.		Period							
							1	2	3	4	5	6	7	8
FOQ 100	1	0	120	1	D	Gross Requirements								
						A								
						F								
						Total								
						Scheduled Receipts	100							
						Projected On-Hand	150							
						Net Requirements								
Planned Order Receipts														
Planned Order Releases														
POQ 3 Pds.	2	15	0	2	C	Gross Requirements	10	10	10	10	10	10	10	10
						A								
						B								
						Total								
						Scheduled Receipts								
						Projected On-Hand	110							
						Net Requirements								
Planned Order Receipts														
Planned Order Releases														
POQ 2 Pds.	1	0	0	2	E	Gross Requirements								
						F								
						B								
						Total								
						Scheduled Receipts								
						Projected On-Hand	120							
						Net Requirements								
Planned Order Receipts														
Planned Order Releases														

eB-MRP-PR-520

Running MRP

Instruction: In this activity you do maintenance on an item and run selective MRP. You then compare the results of two different order policies.

- 1 For item 44-110 at site 10000, enter a yield of 90%.
Use Item-Site Planning Maintenance 1.4.17
- 2 Add operation 20 for item 44-110, using standard operation INSPECT.
Use Routing Maintenance 14.13.1
- 3 For parent item 44-110, change component 44-2000, referent R2, confirm Qty Per=1.0, and change Scrap% to 50.00%. Use Product Structure Maintenance 13.5.

- 4 Using MRP Summary Inquiry 23.13 and MRP Detail Inquiry 23.16, review the MRP Summary and Detail inquiries for items 44-110 and 44-2000 at site 10000.
How do you predict MRP will plan these items? Consider the family structure, the yield, and the scrap percentage on the structure.
- 5 Review the MRP control file to confirm that the MRP horizon is set to 120 days.
Use MRP Control File 23.24
- 6 Use Selective Materials Plan 23.3 to run selective MRP for items 44-100 to 44-2000 at site 10000, setting Required Items Only to No.
- 7 Review the Master Schedule Summary Inquiry for 44-100, 44-110, and 44-2000.
Use Master Schedule Summary Inquiry 22.18
- 8 Review the MRP Detail Inquiry for each of these items.
Use MRP Detail Inquiry 23.16
The program displays pegging information, such as the scrap requirements, seasonal builds, forecasts, and product structure requirements.
- 9 Using Order Action Message Inquiry/Browse 23.6, examine the action message details for items 44-0000 through 44-2000. For the items related to 44-110 (from 23.16 above), follow the instructions in the detail. (You may want to use the MRP Detail Report, 23.17, for a summary list of actions to review.)
For example, a past due release date should have a realistic due date instead. Go to the Master Schedule Order Maintenance (22.13), select the Work Order number from the Action Message, leave the ID field blank. Change the due date as suggested in the Action Message. Press Go and edit another item.
- 10 When you finish editing the schedules and orders based on your last run of MRP, rerun selective MRP for items 44-100 to 44-2000 at site 10000 again. Set *Required Items Only* = No.
Use Selective materials Plan 23.3
- 11 Review the action messages to see the effect of your changes.
Use Action Message Review/update 23.5

Calculating Work Center Load

Item Number	44-100
Site	12000
Work Center	1030
Total Workers	2
Worker Hours	8 hrs/day
Worker Days	Monday-Friday

WO Number	Qty	Status	Oper	Setup	Run Hours <small>Per Unit</small>	Sch. Start
1000	25	Planned	10	2.0	1.0	Week 2
1001	1000	Planned	10	0.5	0.001	Week 1
1002	50	Firm	30	0.0	0.1	Week 2
1003	5000	Firm	10	1.5	0.01	Week 1
1004	200	Released	30	0.0	0.05	Week 2
1005	6000	Planned	20	4.0	0.02	Week 3
1006	4000	Allocated	10	0.0	0.01	Week 1

eB-MRP-PR-530

Calculating Work Center Load

Instruction: This activity is intended to help you learn how to calculate work center load and compare it to capacity. For this activity, use item number 44-100 at site 12000, work center 1030. There are 2 workers, working 8 hours a day, Monday through Friday for a combined total of 80 hours a week. Use the graphic above for calculating your answers.

- 1 Determine the load represented by each work order.

WO Number	Total Run Time	Total Setup Time	Total Load
1000			
1001			
1002			

WO Number	Total Run Time	Total Setup Time	Total Load
1003			
1004			
1005			
1006			

2 Determine the cumulative load for weeks 1 through 3

	Week 1	Week 2	Week 3
Load	93	42	124
Capacity	80	80	80
Over/Under Capacity	-13	38	-44
Cumulative	-13	25	-19

3 What might be deduced from these results? What should be done?

4 Two hours of overtime for each worker is added. How does this affect the cumulative load calculations?

	Week 1	Week 2	Week 3
Load	93	42	124
Capacity	$80 + (2 \times 5 \times 2) = 100$	100	100
Over/Under Capacity	-7	58	-24
Cumulative	-7	65	41

5 What would be a more optimal solution to this resource problem?

Recalculating the Capacity Plan

Instruction: In this activity, you recalculate the capacity plan and then review the changes in the work center resulting from the recalculation.

1. Recalculate the capacity plan using the following information:

Site:	12000	To:	12000
Item Number:	44-100	To:	44-110
Release Date:	Next Monday	To:	blank

Accept the defaults for all remaining fields.

Use Recalculate Capacity Plan 24.1

2. Review the Work Center Load Summary Browse/Inquiry 24.13 for work center 1030 at site 12000. Use next Monday as the start date. Press the space bar to view the data as a bar graph.
 - a. How is the work center capacity calculated?
 - b. How is the work center load determined?
 - c. Why is the Cumulative row so important?
3. Review the work center load detail for work center 10000 starting on next Monday.
Use Work Center Load Detail Inquiry 24.16
4. Can you tie these work orders to the work center load from Work Center Load Summary Browse/Inquiry?

Answers to the Exercises

Component Requirement Calculation

B=170 C=40 D=20 E=80

Order Policies and Order Modifiers

Period	1	2	3	4	5	6	7	8	9	10
Demand	25	30	20	35	25	30	25	35	30	25
LFL	25	30	20	35	25	30	25	35	30	25
FOQ = 35	35	35	35	35	---	35	35	35	35	---
POQ 2 periods	55	---	55	---	55	---	60	---	55	---
POQ - 2 periods Min. Qty. = 60	60	---	60	---	60	---	60	---	60	---
POQ - 2 periods Multi. Qty. = 25	75	---	---	75	---	50	---	75	---	25

Order Calculation

Each period = 1 week (7 days)

A Lead time = 1 wks
 Min = 200

		Period				
		1	2	3	4	5
Gross requirements						100
Scheduled receipts						
On hand	0					100
Planned order receipt						200
Planned order release					200	

C Lead time = 2 wks
 Mult = 50

		Period				
		1	2	3	4	5
Gross requirements					200	
Scheduled receipts						
On hand	60				10	
Planned order receipt					150	
Planned order release			150			

B Lead time = 1 wks
 Mult = 250

		Period				
		1	2	3	4	5
Gross requirements			300		400	
Scheduled receipts						
On hand	30		230		80	
Planned order receipt			500		250	
Planned order release		500		250		

PT206300

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MRP PLANNING SHEET										PT206355				
Lot Size	Lead Time	Safety Stock	Allocated	Low Level Code	Item No.		Period							
							1	2	3	4	5	6	7	8
LFL	2	0	0	0	A	Gross Requirements				10		100		10
						Scheduled Receipts								
						Projected On-Hand				0		0		0
						Net Requirements				10		100		10
						Planned Order Receipts				10		100		10
						Planned Order Releases		10		100		10		
LFL	1	0	0	0	F	Gross Requirements					20	20		10
						Scheduled Receipts								
						Projected On-Hand					0	0		0
						Net Requirements					20	20		10
						Planned Order Receipts					20	20		10
						Planned Order Releases				20	20		10	
LFL	1	0	0	1	B	Gross Requirements								
						A		10		100		10		
						F				20	20		10	
						Total		10		120	20	10	10	
						Scheduled Receipts								
						Projected On-Hand	100	90		0	0	0	0	
						Net Requirements				30	20	10	10	
						Planned Order Receipts				30	20	10	10	
						Planned Order Releases			30	20	10	10		

MRP PLANNING SHEET							PT206365							
Lot Size	Lead Time	Safety Stock	Allocated	Low Level Code	Item No.		Period							
							1	2	3	4	5	6	7	8
FOQ 100	1	0	120	1	D	Gross Requirements								
						A		20		200		20		
						F				40	40		20	
						Total		20		240	40	20	20	
						Scheduled Receipts								
						Projected On-Hand	100							
						Net Requirements	150	130	130	90	50	30	10	10
						Planned Order Receipts				110				
Planned Order Releases				200										
POQ 3 Pds.	2	15	0	2	C	Gross Requirements	10	10	10	10	10	10	10	10
						A		20		200		20		
						B			60	40	20	20		
						Total	10	30	70	250	30	50	10	10
						Scheduled Receipts								
						Projected On-Hand	110	80	295	45	15	35	25	15
						Net Requirements			5			50		
						Planned Order Receipts			285			70		
Planned Order Releases	285			70										
POQ 2 Pds.	1	0	0	2	E	Gross Requirements								
						F				40	40		20	
						B			90	60	30	30		
						Total			90	100	70	30	20	
						Scheduled Receipts								
						Projected On-Hand	120		30	70	0	20	0	0
						Net Requirements				70		30		
						Planned Order Receipts				140		50		
Planned Order Releases			140		50									

Calculating Work Center Load

1.

WO Number	Total Run Time	Total Set Up Time	Total Load
1000	$25 \times 1.0 = 25$	2.0	$25 + 2 = 27$
1001	$1000 \times 0.001 = 1$	0.5	$1 + .5 = 1.5$
1002	$50 \times 0.1 = 5$	0.0	$5 + 0 = 5$
1003	$5000 \times 0.01 = 50$	1.5	$50 + 1.5 = 51.5$
1004	$200 \times 0.05 = 10$	0.0	$10 + 0 = 10$
1005	$6000 \times 0.02 = 120$	4.0	$120 + 4 = 124$
1006	$4000 \times 0.01 = 40$	0.0	$40 + 0 = 40$

PT212075

2.

	Week 1	Week 2	Week 3
Load	93	42	124
Capacity	80	80	80
Over / Under Capacity	- 13	38	- 44
Cumulative	- 13	25	- 19

PT212085

3 There appears to be a capacity shortage, although in real life it would be prudent to verify this by reviewing data collected over a longer period.

There is a capacity shortage in the first period and it may be necessary to increase short-term capacity or reschedule some operations. This may impact delivery for work orders 1001, 1003, and 1006.

4

	Week 1	Week 2	Week 3
Load	93	42	124
Capacity	$80 + (2 \times 5 \times 2) = 100$	100	100
Over / Under Capacity	- 2	58	- 24
Cumulative	- 7	65	41

PT212086

5 Adjust overtime more exactly or release work order 1005 early.

Recalculating the Capacity Plan

- a Workdays * Hours available at the work center.
These hours come from the shop calendar.
- b The work center load is determined by the operation start date and the number of hours the work order is to spend at that operation.
- c The cumulative row is important because the work center load is not spread over multiple time buckets (days, weeks, months). For example, if there are 40 hours available in a work center per week, and a work order is scheduled to spend 200 hours at the work center, the 200 hours will appear in the first time bucket. The 200 hours are not spread over the next 5 weeks. Therefore, it is important to look closely at the cumulative load to make sure that the following weeks have not been overloaded.

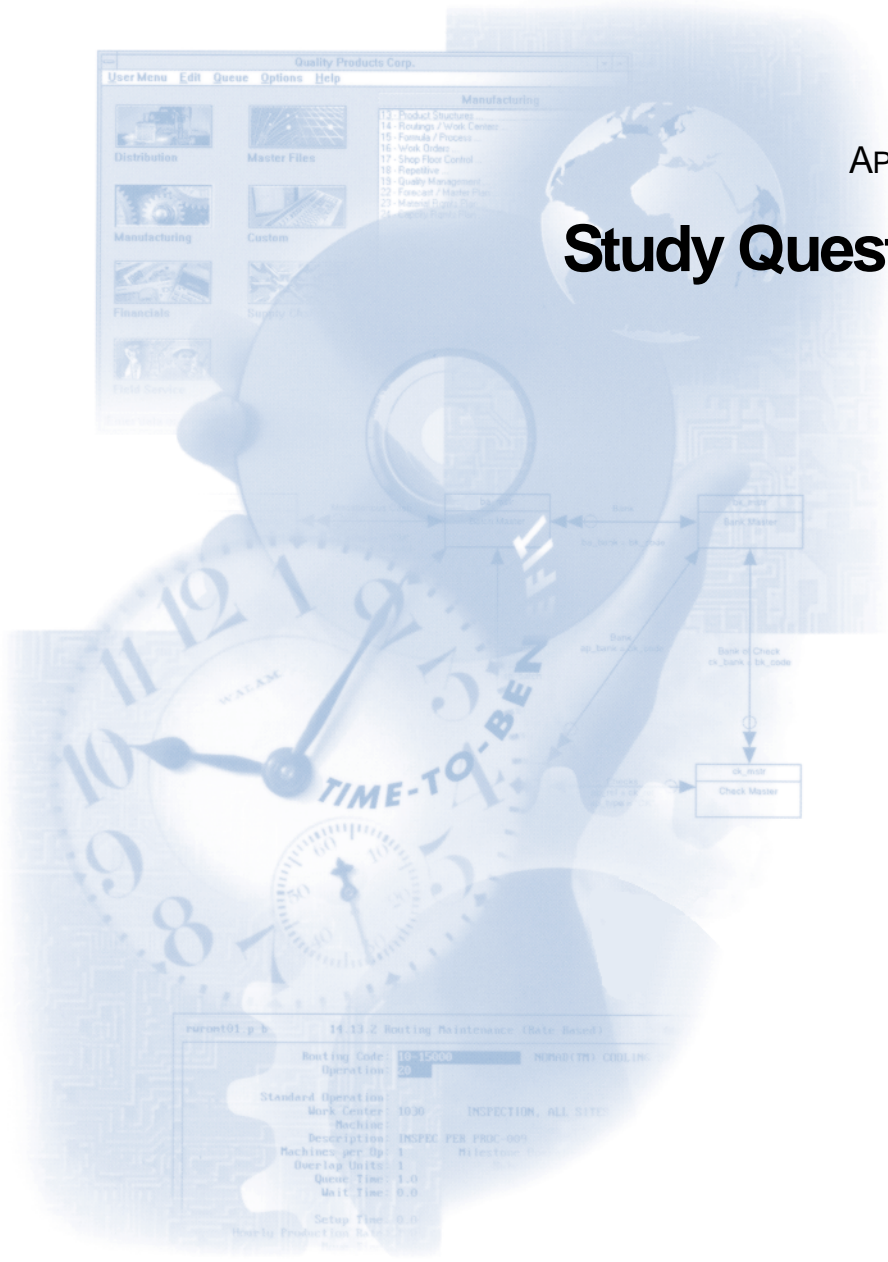


Course Overview

- ✓ Introduction to MRP and CRP
- ✓ Business Considerations
- ✓ Set up MRP and CRP
- ✓ Use MRP and CRP

eB-MRP-PR-540

Study Questions



Answers to Study Questions

- 1 *Net Change* plans only those items that has changed since the last MRP run. *Regenerative* replans all items. *Selective* allows you to specify which items to plan.
- 2 Set A represents independent demand items (MPS). Set B represents dependent demand items (MRP).
- 3 Minimum Order Quantity.
- 4 Lot-for-Lot (LFL).
- 5 False. Sales orders and forecasts are independent demand.
- 6 True.
- 7 False.
- 8 False. MRP does not reschedule firm orders; MRP generates action messages.
- 9 False. MRP increases the order quantity for items with less than 100% yield.

Reports, Inquiries, Browsers



The screenshot shows a window titled "Routing Maintenance (Date Based)". The data displayed is as follows:

Routing Code:	10-15000	NONAUT (TR) COIL-INS
Operation:	20	
Standard Operation:		INSPECTION, ALL SITES
Work Center:	1030	
Machines:	1	
Description:	INSPEC PER PROC-00%	
Machines per Op:	1	Reflection %
Overlap Units:	1	
Queue Time:	1.0	
Wait Time:	0.0	
Setup Time:	0.0	

Row by Product Line &...

MRP and CRP Reports, Inquiries, and Browsers

Menu	Name	Function / Purpose
23.6	Action Message Browse	Displays Action messages
23.7	Action Message Report	Prints action messages
23.9	Planned Order Browse	Displays planned orders
23.12	Planned Order Report	Prints planned orders
23.13	MRP Summary Inquiry	Displays summary MRP data
23.14	MRP Summary Report	Prints summary MRP data
23.16	MRP Detail Inquiry	Displays detailed MRP data
23.17	MRP Detail Report	Prints detailed MRP data
23.19	Past Due Receipts Inquiry	Displays past due receipts
23.20	Past Due Receipts Report	Prints past due receipts
24.4	Input/Output Inquiry	Compares planned load input and output for a work center/machine with actual load and actual output hours against that load.
24.5	Input/Output Report	Provides a report on input/output analysis; helps to spot bottlenecks.

The following summary and detail inquiries and reports display load information by work center, machine, and department.

24.13	Work Center Load Summary Inquiry	
24.14	Work Center Load Summary Report	
24.16	Work Center Load Detail Inquiry	
24.17	Work Center Load Detail Report	
24.19	Department Load Summary Inquiry	
24.20	Department Load Summary Report	
24.22	Department Load Detail Inquiry	
24.23	Department Load Detail Report	

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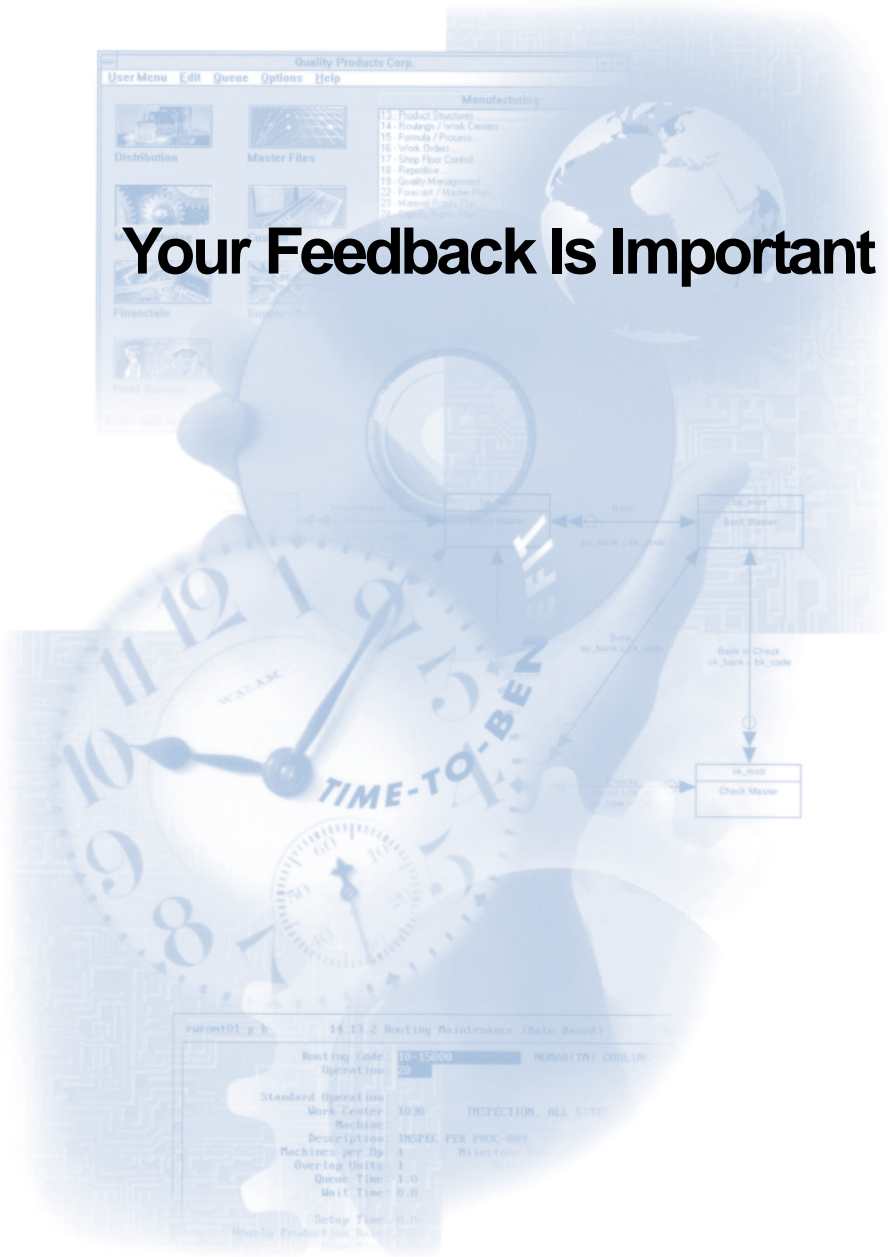
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