

MFG/PRO Quick Start

TRAINING GUIDE



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About This Course and Web Site Resources

Course Description



QAD designed this five-day course for those who do not need a complete introduction to the entire standard MFG/PRO product. MFG/PRO Quick Start is for those who want to “hit the ground running” with MFG/PRO software. This accelerated course provides a focused introduction to the fundamentals of MFG/PRO and demonstrates how to apply MFG/PRO functionality to critical business processes.

The format for this class is a combination of lecture and hands-on activities that simulate how to use MFG/PRO to run a business.

Organization of Training Guide

There are four main sections in this training guide—Organization of MFG/PRO, Setting Up MFG/PRO, Processing Transactions in MFG/PRO, and Planning in MFG/PRO.

Organization of MFG/PRO

This section provides a very high-level overview of how MFR/PRO is organized, its modules, program types, and types of data.

Setup, Processing Transactions, and Planning in MFG/PRO

These three sections really provide the core of the course because they focus on how to set up and use MFG/PRO. Each chapter in these sections contains three sub-sections—Key Concepts, Example, and Activity.

Key concepts are discussed at the beginning of each chapter to familiarize you with processes, work flows and terminology. For example, in the chapter on Accounts Payable, concepts discussed include “AP processing flow” and “vouchering.”

This is followed by an example illustrating how the functionality is set up or used. Throughout the training guide, the examples are all based on the same simple scenario: A yo-yo company that purchases supplies to make yo-yos, which it sells to a customer. Using this basic scenario, we can see how companies, customers and suppliers are entered in the system. And we can see how the purchasing, sales, manufacturing, accounts payable, accounts receivable, and planning processes work in the system.

Each chapter ends with an activities section based on the same scenario discussed in class.

Course Objectives

The overall objectives of the course are for you to learn how to set up and process basic functions in MFG/PRO, such as purchasing, sales orders, and work orders. More specifically, though, each chapter includes a list of learning objectives for the topics covered in that chapter.

Who Should Attend This Course

This course is intended for first-time users of MFG/PRO and those who want an overview of core MFG/PRO functionality.

Approximate Length of Course

QAD designed this course to be taught in five days

What's Next

The QAD web site is an invaluable resource for you to know about and use. We'll introduce you to areas of the web site that complement this training course.

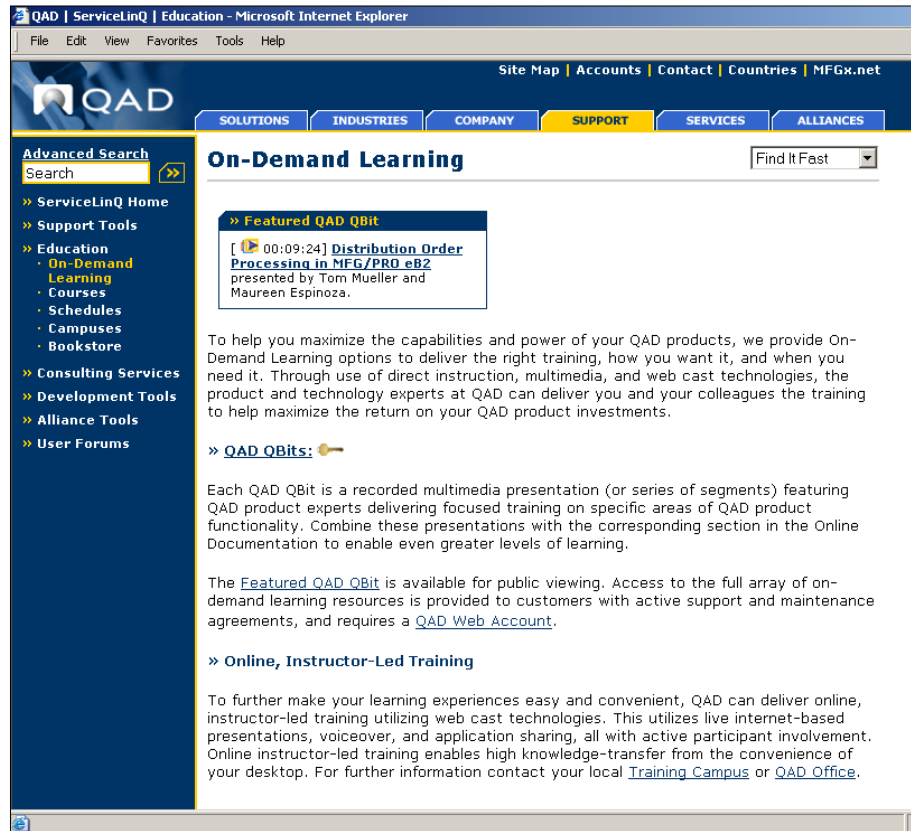
QAD Web Site



QAD's web site provides a wide variety of information about the company and its products. You can access the web site at:

<http://www.qad.com>

Education Page



The Education page on the QAD web site is an up-to-date source for information on courses, training locations, ordering materials, and money-saving specials. The Education page is located at:

<http://support.qad.com/education/>

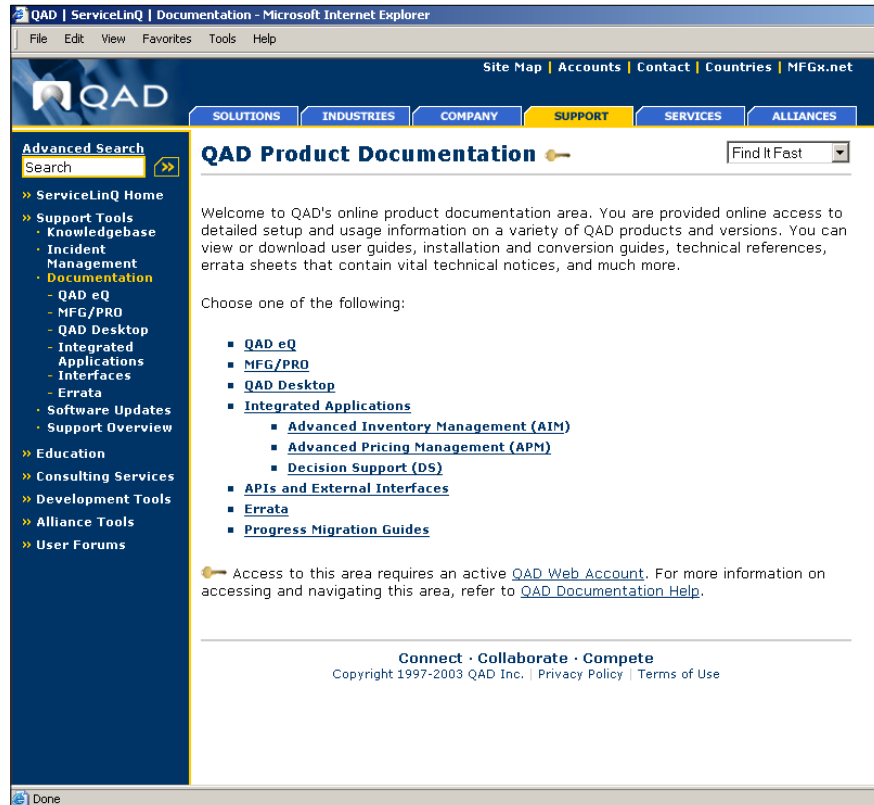
QAD QBits



For users with a QAD web account, MFG/PRO QAD QBits are available for viewing or downloading. QBits are recorded multimedia presentations featuring QAD product experts delivering focused training on specific areas of QAD product functionality. Combine these presentations with the corresponding section in Online Documentation to enable even greater levels of learning. QBits may be accessed at:

<http://support.qad.com/education/options.html>

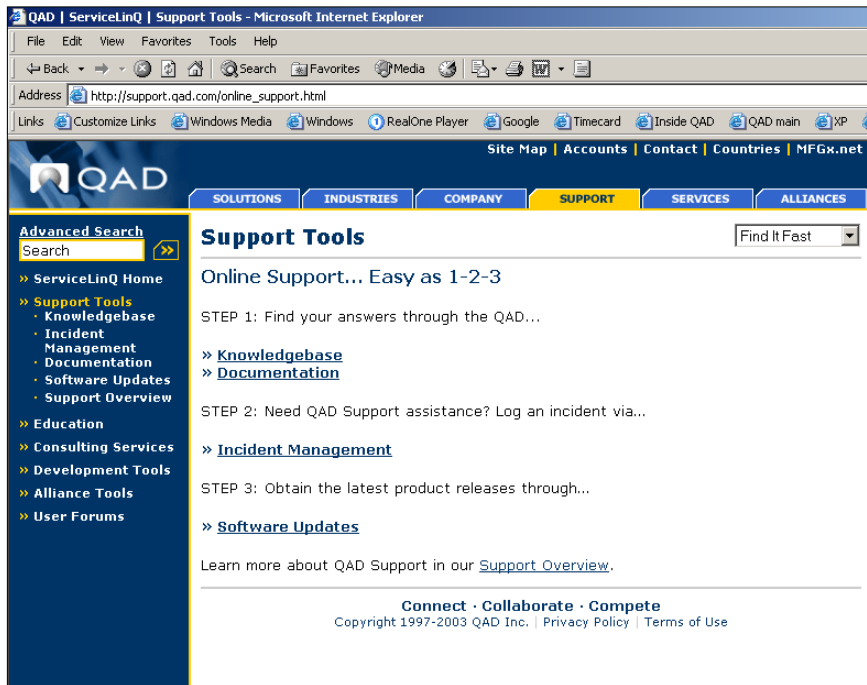
Online Product Documentation



Also for users with a QAD web account, MFG/PRO user-guide documentation is available for viewing or downloading at:

<http://support.qad.com/documentation/>

Support Tools



QAD Support Tools are another excellent resource to use for acquiring further knowledge and skills so that you can get the most out of MFG/PRO. Here you will find the Knowledgebase, which is an online solution database designed to answer your questions about setting up and using MFG/PRO.

How to Register for a QAD Web Account



QAD customers can register for a QAD web account by accessing the web site and clicking the Accounts link at the top of the screen. Your customer ID number is required. Access to certain areas is dependent on the type of agreement you have with QAD.

What's Next

In the next section, we'll get a brief overview of how MFG/PRO is organized. This overview should help you navigate through the system and provide you with a general understanding of the various types of MFG/PRO screens.

SECTION 1

Organization of MFG/PRO

Chapter 1

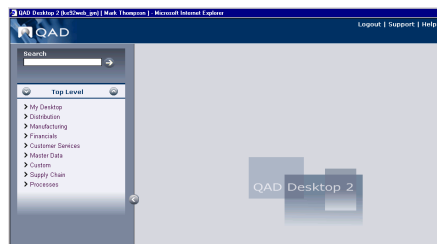
Organization of MFG/PRO

Introduction

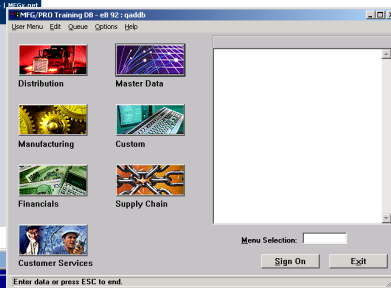
All MFG/PRO users have one thing in common—they manage and control inventory. Whatever the industry, manufacturing process, or organizational structure, companies must track the products they manufacture or distribute. Accordingly, MFG/PRO is organized around business activities related to inventory management.

The first menu in MFG/PRO is the main menu, which has seven application-related sections—Distribution, Manufacturing, Financials, Customer Services, Master Data, Custom, and Supply Chain. The figure below shows this top-level menu in three different MFG/PRO user interfaces.

Desktop Interface



Windows Interface



Character Interface

In turn, each of these sections consists of groups of related business activities called modules. In some cases, two related business activities are combined in one module, such as Formula/Process.

Two additional menu sections—My Desktop and Processes—apply only to the QAD Desktop interface. They let you access custom menus and personal bookmarks to Internet or intranet resources and view and use custom work flows created with Desktop's Process Editor.

On the next few pages, we'll take a quick look at these seven main menus and the modules each contains. As we go through the menus and list of modules, it is important to note that, in this class, we are covering only a very small portion of MFG/PRO functionality. There is much more that MFG/PRO includes. In-depth, module-based training is provided by other QAD classes; information and schedules can be accessed on the QAD web site (see page 18).

MFG/PRO Modules

Within each of the seven sections of the main menu are several top-level menu items. Each of these menu items represents a module.

Distribution



Distribution modules support two types of activity.

One kind of activity moves materials into inventory from external sources

such as suppliers or other company sites.

The other kind of activity moves materials out of inventory to satisfy external demand such as customer sales orders and intersite transfers.

These modules are used by warehousing, distribution, and field customer service operations. Purchasing is also used in manufacturing operations to obtain raw materials, components, and receive services such as subcontracting.

Distribution Modules

Modules in Distribution are: Purchase Requisitions, Purchasing, Sales Quotations, Sales Orders/Invoices, Release Management, Configured Products, Sales Analysis, and Consigned Inventory. In this course, we use the Purchasing, Purchase Requisitions, and Sales Orders/Invoices modules.

Manufacturing

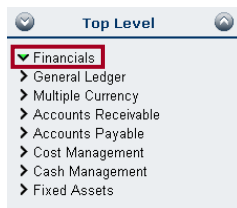
Manufacturing modules handle internal supply and demand. Material is moved out of inventory into production, or finished goods or components are moved from production into inventory.



Manufacturing Modules

Modules in Manufacturing are: Product Structures, Routings/Work Centers, Formula/Process, Work Orders, Shop Floor Control, Flow Scheduling, Kanban, Repetitive, Quality Management, Forecasting/Master Schedule Planning, Material Requirements Planning (MRP), and Capacity Requirements Planning (CRP). In this course, we use the Product Structures, Routings/Work Centers, Work Orders, Shop Floor Control, Forecasting/Master Schedule Planning, and MRP modules.

Financials



These modules support financial activities and system administration. General Ledger, Accounts Receivable, and Accounts Payable track the financial effects of activities in other modules. You can set up multiple currencies and exchange rates, develop simulated costs and copy them to multiple cost sets, and

track cash disbursements.

You can also use Financials to track your fixed assets from acquisition to retirement.

Financial Modules

Modules in the Financials section are: General Ledger (GL), Multiple Currency, Accounts Receivable (AR), Accounts Payable (AP), Cost Management, Cash Management, and Fixed Assets. In this course, we use the GL, AR, and AP modules.

Customer Services

Customer Services currently consists of two modules:

- Project Realization Management (PRM)
- Service/Support Management (SSM)



Both modules support activity that occurs after a product is sold. SSM supports traditional service activities such as warranties, contracts, returns, and call tracking. PRM provides tools for managing long-term installation activities at a customer site that combine both items and services. We do not cover these topics in this course.

Master Data



Use the modules in Master Data to set up basic business information—item codes, address codes, site codes, and inventory control information. Also use Master Data to perform administrative functions pertaining to users, security, printers, and

other administrative functions that apply throughout MFG/PRO.

Master Data also includes some special optional modules that affect base data, such as Product Change Control, Compliance, Intrastat, and Logistics Accounting.

Master Data Modules

Modules in Master Data are: Items/Sites, Product Change Control, Compliance, Addresses/Taxes, Intrastat, Logistics Accounting, Inventory Control, Physical Inventory, and Manager Functions. In this course, we use the Items/Sites, Addresses/Taxes, and Inventory Control modules.

Custom

This section can be used for organizing customized programs that your company creates and uses.

Supply Chain Management



Supply chain management is the movement of goods and information from suppliers and multiple company sites through the manufacturing process.

Modules in this section support supply chain planning practices—distribution, product line, resource, and operations—as well as electronic data interchange (EDI) transactions using EDI ECommerce.

Supply Chain Management Modules

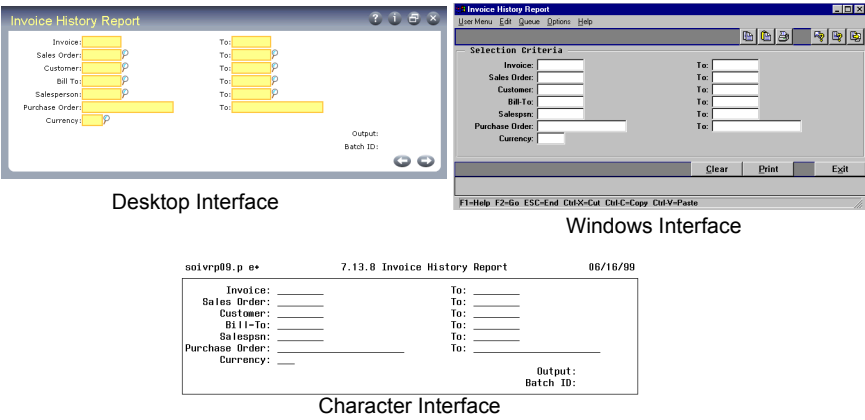
Modules in Supply Chain Management (SCM) are: Distribution Plan, Product Line Plan, Resource Plan, Enterprise Operations Planning, and EDI ECommerce. In this course, we discuss some of the planning functionality provided by the SCM modules in the Planning section.

User Interfaces

MFG/PRO features three user interfaces (UIs):

- MFG/PRO for Windows. This graphical user interface is designed to run on Windows clients in both UNIX and Windows client/server environments.
- Character Interface. This is the original user interface. It is primarily intended for UNIX-based environments with character clients.
- QAD Desktop. This browser-based UI is designed for use over a company intranet or wide-area network. It features screens that display as HTML pages, full text search, multiple detached windows, and a Process Editor for creating work flows with active Uniform Resource Locator (URL) links.

The figure below shows how a standard MFG/PRO report—Invoice History Report—displays in all three interfaces.



Program Types

While each interface has unique display characteristics, they all support the following types of programs:

- Maintenance programs
- Inquiry and report programs
- Browse programs
- Transaction programs
- Utility programs

This section summarizes the characteristics and functions of each type of program.

Maintenance Programs

Maintenance programs are used to create basic codes such as customers, inventory items, GL accounts, currencies, and other data. They are also used to record transactions that initialize business activity in a module.

When you enter data in a maintenance program, an entry (called a record) is made in one or more tables controlled by the maintenance program. For example, customer records are stored in the customer master table controlled by Customer Maintenance.

Inquiry and Report Programs

Inquiries and reports retrieve and display database records. Inquiries are primarily used to answer specific questions. Reports usually provide more detail and are printed for a range of data records. You select data by entering a specific range of criteria, such as item number or date.

Typically, inquiries are viewed online and reports are sent to a printer or file. However, you can also print inquiries and view reports. In addition, other output options, such as e-mail, are available.

Browse Programs

Browses are inquiry programs with advanced features such as filtering, sorting, and printing information. They can be used as *drill-down* browses within programs. Based on whether you choose to display substitute programs on the menus, browses can also replace many of the simple inquiries throughout the menus. How you access them depends on your user interface.

Look-up browses are one form of online help. When attached to individual fields, these simplified browses display the records in the associated master tables. You can then select a value and have the system insert it into the field.

Two user interfaces—QAD Desktop and MFG/PRO for Windows—provide tools that let you display browse data in graphical form such as pie charts and bar charts.

Transaction Programs

Transactions express the core business activities of a company. They control and record activities related to business documents such as sales orders and invoices. An example of a transaction is receipt of a shipment for a purchase order using Purchase Order Receipts.

Utility Programs

Utility programs enable you to manage and perform calculations in internal databases. In Purchasing, Closed PO Delete/Archive is a database management utility, and in MRP, Net Change Materials Plan causes the system to run net change MRP calculations. Both are utilities.

Often utilities are designed to be used only once. For example, many utilities perform one-time data conversions following system upgrades.

Types of Data

An MFG/PRO database contains three types of data:

- Control data
- Transaction data
- Static data

Control Data

When you implement a module, you enter data that the system uses later to control how the system interacts with users and with the database. This data is stored in control tables.

Control tables enable you to adapt MFG/PRO to your environment. The data and settings in these tables determine how certain programs are displayed, the numbers assigned to transactions, the GL accounts for particular transactions, and so on. When you can manage a typical manufacturing function in more than one way, control settings enables you to establish a preference.

Transaction Data

Most data in the database is transaction data. Every day, sales orders come in, purchase orders go out, and work orders make demands on and create material for inventory. These events result in transactions, which are stored in transaction tables. In contrast to control programs, transaction tables are constantly updated by users of the system.

Static Data

Static data contains information about the basic building blocks and relationships of a company—the ways it does business, and the entities it does business with. Static data is used to create transaction records. However, static data is changed infrequently. Examples of static data are records for customer, supplier, and employee addresses, items, inventory sites and locations, and GL accounts.

What's Next

How to set up MFG/PRO is the focus of the next section, which begins with a chapter on setting up entities, sites, and locations.

SECTION 2

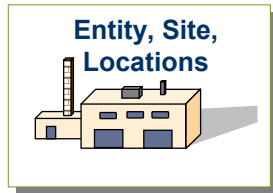
Setting Up MFG/PRO

CHAPTER 2

Set Up Entities, Sites and Locations

Overview

In this chapter, we will discuss and set up the most basic components representing a company in the system—entities, sites, and locations.



Key Concepts

Databases

Entities and Sites

Locations

Inventory Status Codes

Example

Add Company Address

Set Up Entity

Add Bank

Set Up Site

Define Status Code

Set Up Locations

Activities

Learning Objectives

When you finish this chapter, you should be able to:

- Describe what a database is and list the key data it contains
- Distinguish between the kind of information entities and sites contain
- Distinguish between the kind of information sites and locations contain
- Describe the difference between Default Entity and Primary Entity
- Give examples of status codes and explain how they are used
- Enter an entity, site, and location

Key Concepts

Introduction In MFG/PRO we can look at a company from either a financial or operational perspective. In financial terms, a company is an entity that publishes financial statements and files tax returns. In terms of other activities, a company may be defined by its combined operations, such as sales order entry, purchasing, manufacturing, and general accounting.

On the following pages, we'll discuss the most basic pieces that satisfy both kinds of requirements. First, there is the environment itself—the database. To this are added:

- Entity codes, which are used to identify financial entities and their general ledger transactions
- Sites and locations, which are used as a primary unit for inventory control and planning. Sites (and locations through sites) are assigned to an entity so that transactions are properly included in corporate financial reporting.

We'll begin this chapter with a discussion about databases.

DATABASES

A database is a collection of logically related files or records.



As shown in the figure above, in MFG/PRO there are several things that are identified by database.

- Base currency. Each database has only one base currency. All currencies convert to base currency on the financial reports.
- Chart of accounts. Each database has only one chart of accounts.
- General Ledger (GL) calendar. Each database has only one GL calendar.
- Master files. Each database contains master files—customers, suppliers, and items—that are not separated by company or responsible division.

Within a database, there can be menu security to prevent users from modifying or viewing information.

Geography may determine how many databases are required. Remote locations normally operate their own databases and consolidate information by transferring it to corporate.

When a multiple database environment is established, MFG/PRO has distributed functionality that allows planning and execution across the databases.

What's Next

Within a database are entities, sites, and locations, which we'll discuss next.

ENTITIES AND SITES

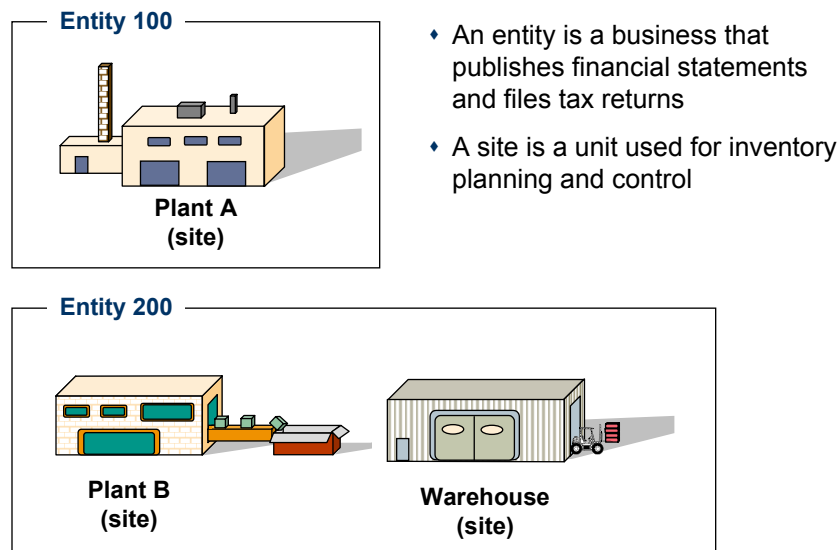
Entities The number of sets of financial statements produced by one database is determined by the number of entities you set up. An entity is an independent unit for financial reporting purposes that:

- Generates a separate balance sheet and income statement
- Plans budgets
- Is assessed for taxes

All GL transactions are posted by entity. The primary entity is the default entity for GL transactions.

Although there is no limit to the number of entities that can exist in a database, all information for one entity should be contained within a single database.

An entity can be comprised of a single facility (Plant A) or multiple facilities (Plant B and Warehouse), as shown in the figure below.



Sites A site is an inventory and planning concept. Inventory control and planning information is maintained by site, including inventory availability,

manufacturing methods and costs, sales and purchasing data, manufacturing plans and orders, and forecasts.

Each site belongs to one—and only one—entity, but each entity can have more than one site. A site can be, for example, a distribution center, warehouse, manufacturing facility or a combination of these.

Most functions work within one site. Manufacturing orders expect to find all their components at the same site; MRP or DRP calculates requirements one site at a time. A few functions deal with multiple sites (multisite purchase or sales orders, distribution orders, and distributed inventory inquiries, for example).

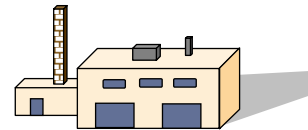
What's Next

Each site can have one or more associated inventory locations. Locations identify areas of a site where inventory is stored. Each time you perform an inventory transaction, such as an issue, receipt or transfer, you must specify both a site and a location, which we'll discuss next.

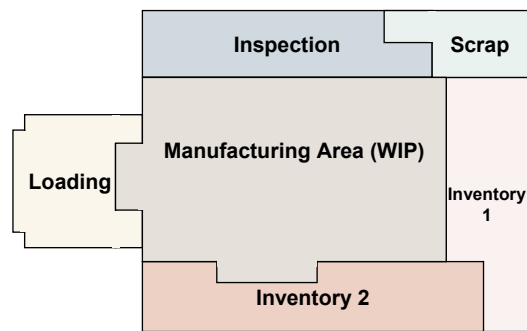
INVENTORY LOCATIONS

In MFG/PRO each site can be split into a variety of locations. These are simply the places where inventory is stored. Locations may include shelves, bins, tanks, lots or other storage areas. Each location's parameters identify what can be stored there and how that inventory can be used.

- **A site can have multiple locations**
- **A location is a place where inventory is stored**



Plant A



Every inventory transaction must have a site and location. Both default from the item master.

Predefined locations

Locations do not have to be predefined. The system can automatically create location codes whenever you enter an undefined value. (Do this by setting Automatic Locations to Yes in Site Maintenance.) This option is useful if you frequently need to define a new location while entering a transaction. However, most companies need to have at least a few predefined locations to handle special situations such as:

- Control capabilities
 - Certain items are assigned to certain locations
- Location type
 - Some locations have particular characteristics that are required for storing certain items; temperature and humidity, for example.

- Single lot
 - Some locations are dedicated to items or lots that cannot be mixed. These are flagged as Single Lots Only.
- Inventory status
 - Materials in some locations should not be considered available for use. For example, they may be reserved or damaged. This is controlled by assigning each location a status.

What's Next

Every location must have an inventory status code associated with it, so we'll discuss inventory status codes next.

INVENTORY STATUS CODES

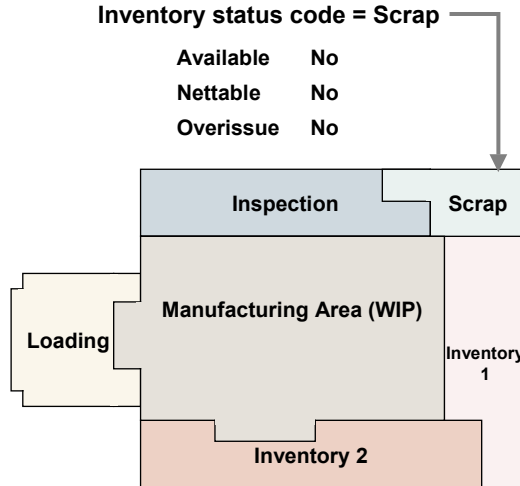
Inventory status codes control your inventory and manage how that inventory is used. Think about your facility—scrap is certainly managed differently than finished goods inventory or spares. In MFG/PRO, these different types of inventory are identified by their status codes.

Generic Inventory Status Codes

Generic inventory status codes are set up for each type of inventory you have. These identify whether inventory balances of this type are:

- Available to allocate to sales orders and manufacturing orders
- Nettable to be considered by MRP when calculating net quantity on hand
- Overissue to denote if this inventory balance may be negative

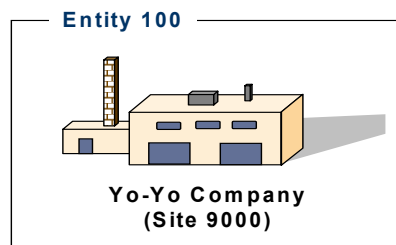
Example Generally, scrap inventory would not be available or nettable (see figure below).



In addition, certain transactions can be restricted. Each inventory status code can have a list of restricted transactions attached. For example, access to sales order issues can be restricted from a Quality Control Hold location.

Whenever items are received into inventory, a status code is associated with that inventory. This defaults to the status code entered for the location but can be changed using Inventory Detail Maintenance. Whenever you attempt to do something with this inventory—allocate it, issue it, move it—the system checks its status code and makes sure that this is a valid action.

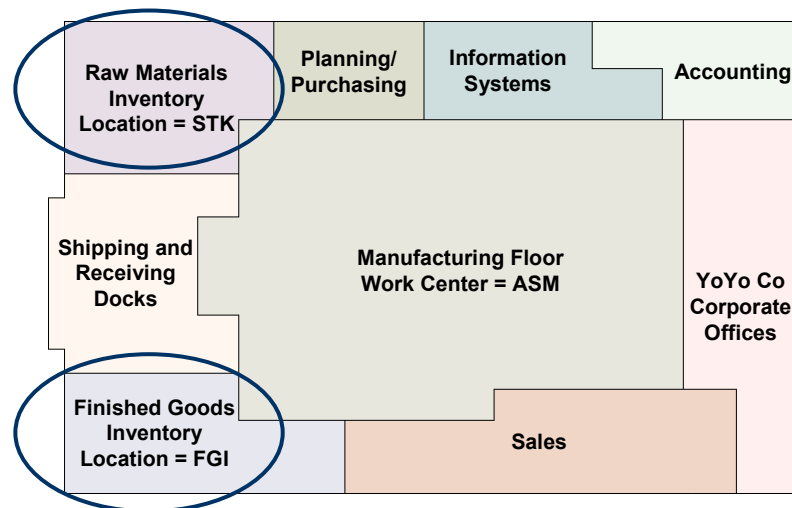
Example



- **Corporate Offices**
- **Manufacturing Facility**
- **Distribution Facility**

The example we will use throughout this course is based on a new yo-yo business called Yo-Yo Company. It's a single-site facility in Carpinteria, California, that includes the corporate office, and manufacturing and distribution areas (see figure above).

Yo-Yo Company has several departments and two key inventory locations for its raw materials and finished goods, as shown in the figure below.



In the example on the following pages, we will see how Yo-Yo Company sets up the foundations of its business structure:

- Entity
- Site
- Locations

SET UP ENTITY

Before Yo-Yo Company can set up an entity and designate it as its primary entity, it needs to do two things: enter its address and reset the “primary entity” flag. First, Yo-Yo Company will use Company Address Maintenance to enter its address.

Prerequisites

Enter Company Address

Using Company Address Maintenance, Yo-Yo Company’s Administrator enters an address code (9000) and basic address information.

The screenshot shows a software window titled "Company Address Maintenance". Inside, there is a form titled "Company Address". The form contains the following fields and values:

- Address: 9000
- Name: Yo Yo Co.
- Address: (empty field)
- Address: (empty field)
- Address: (empty field)
- City: Carpinteria
- State: CA
- Post: 93103
- Format: 0
- Country: USA
- County: (empty field)
- Attention: (empty field)
- Telephone: (empty field)
- Fax/Telex: (empty field)
- Tax Report: ☐
- Ext: (empty field)
- Tel: (empty field)
- Fax/Telex: (empty field)
- Name Control: (empty field)
- Last Filing: ☐

At the bottom right of the window, there are three buttons: a red 'X' button, a left arrow button, and a right arrow button. Below these buttons is the text "Add Link".

Find current “primary entity” and change its Primary Entity flag to “No”

Next, Yo-Yo Company’s Administrator uses Entity Code Maintenance to identify the existing primary entity and deselect its Primary Entity flag.

The screenshot shows the 'Entity Code Maintenance' window. The 'Entity' field is highlighted with a yellow box, and a red box highlights the 'Primary Entity' checkbox, which is currently unchecked. Below the main form is a 'Lookup - Entity Codes' window showing a table of entities.

Entity	Description	Primary Entity	Currency	Post Adj	Company Address	Tax ID - Federal
1000	QUALITY PRODUCTS COMPANY	yes	USD	yes	10000000	
2000	EAST COAST DIVISION	no	USD	yes	10000000	
3000	WEST COAST DIVISION	no	USD	yes	10000000	
4000	CANADIAN DIVISION	no	CAD	yes	10000000	
5000	EUROPEAN DIVISION	no	CHF	yes	10000000	

At the bottom of the lookup window are 'OK' and 'Cancel' buttons.

To find the current Primary Entity and deselect its Primary Entity flag, the Administrator does the following.

- Selects the lookup icon next to the Entity field. In this example, the lookup screen shows that Quality Products Company is currently the primary entity.
- Selects Quality Products Company and then, in the Entity Code Maintenance screen, deselects the Primary Entity flag

Enter entity for Yo-Yo Company

Entity Code Maintenance

Entity: 100
 Description: Yo Yo Co. Entity
 Primary Entity: ☒
 Currency: USD
 Post Translation Adj to (B/T): Bal Sheet
 Posting Audit Trail Page Nbr: 0
 Company Address: 9000

Entity Code Maintenance

Entity: 100
 Description: Yo Yo Co. Entity
 Default Sub-Account:
 Default Cost Center:
 Override: ☐
 Override: ☐

Accounts Payable (Debit): 1202
 Accounts Payable (Credit): 1202
 Accounts Receivable (Debit): 1203
 Accounts Receivable (Credit): 1203
 Fixed Assets (Debit): 1204
 Fixed Assets (Credit): 1204
 Inventory Control (Debit): 1201
 Inventory Control (Credit): 1201

Using Entity Code Maintenance, Yo-Yo Company's Administrator sets up an entity—entity 100.

Be careful how you set up your entity codes because data can be printed for a range of entity codes. For example, you may have subsidiaries in North America (U.S. and Canada) and Europe (France, Spain, and Italy). In order to print a separate European financial report, the European entity codes should be in a different number range (for example, 2100, 2200, 2300) than those for North America (1100, 1200).

Tip

Enter settings for Verify GL Accounts and default entity

The screenshot shows a window titled "System/Account Control" with a toolbar at the top containing icons for help, information, save, and close. The main area contains the following settings:

- Verify GL Accounts: ☐
- Base Currency: USD
- Entity: 100
- Bank Acct Validation: ☐
- Default System Language: US
- Audit Trail: ☒
- Server Time Zone: EST/EDT

At the bottom right of the window, there are navigation arrows and an "Add Link" button.

In System/Account Control, Yo-Yo Company's Administrator sets entity 100 as the default entity for the system.

Additional Notes

Notice the Verify GL Accounts field. Initially, upon implementation, the Verify GL Accounts flag may be set to No (or unchecked). But when the implementation is finished, this field would normally be reset to Yes. When set to Yes, the system verifies that codes entered for individual accounts, sub-accounts, and cost centers exist in the GL module. It also ensures that transaction dates are not entered for closed fiscal periods.

System Entity vs Primary Entity

MFGR/PRO distinguishes between the entity used for most database activities (the System Entity) and the default entity used in the General Ledger (the Primary Entity). This allows you to manage transactions for different entities within a single database. The code for the default System Entity is set up in System/Account Control. Here you designate the code for the company that will generate most of the non-GL transactions in the database. In the General Ledger module, the default entity is defined as the Primary Entity in Entity Maintenance. The code for the System Entity is often the same as the Primary Entity.

Enter bank information

Bank Maintenance

Bank: A
Description: Bank of Yo Yo Co.

Address And Telephone

Sort Name: Bank of Yo Yo Co. Added: 02/04/2003 Language: [?]
 Address: [?]
 Address: [?]
 Address: [?]
 City: [?] State: [?] Post: [?] Format: 0 [?]
 Country: United States of America USA [?] County: [?]
 Attention: [?] [2]: [?] [2]: [?]
 Telephone: [?] Ext: [?] [2]: [?] Ext: [?]
 Fax/Telex: [?] [2]: [?]

Bank Maintenance

Bank: A
Description: Bank of Yo Yo Co.

Checking Accounts

Next Check: 000001
 Currency: USD [?]
 Bank Acct 1: [?]
 Bank Acct 2: [?]
 Entity: 100 [?]
 Cash Account: 1040 [?]
 Payment in Process Acct: 1040 [?]

Using Bank Maintenance, Yo-Yo Company's Finance Administrator enters Bank A in the system.

Specify default bank and ship-to address

Accounts Payable Control

Next Batch: 220

Next Voucher: 910023

Next Journal: 000018

Voucher Open Qty/Amt: 1

AP Summarization Level: 1

Ship-To: 9000

Default Bank: A

Check Form: 1

Exchange Tolerance: 5.00%

Enter Vouchers Confirmed: ☒

Release Recur VOs Confirmed: ☐

Use Payment In Process Acct: ☐

Use Expensed Item Var Accts: ☐

External Voucher References Allowed: ☒

Use Assigned-To Field: ☒

Use Draft Management: ☒

Multi-entity Payments: ☐

ERS Packing Slip Error: ☐

ERS Update GL Avg Cost: ☐

ERS Voucher Date Option: 0

In Accounts Payable Control, Yo-Yo Company's Finance Administrator enters Bank "A" as the default bank. This is the bank that will display whenever Yo-Yo Company sets up suppliers in Supplier Maintenance, which will be done later in this course.

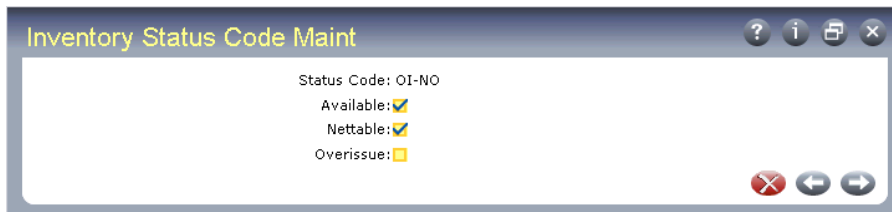
The Finance Administrator also enters site 9000 in the ship-to address field. This becomes Yo-Yo Company's default shipping address and is used when a voucher is entered that does not reference a purchase order number.

SET UP SITES

Before Yo-Yo Company can enter a site or items, it needs to define at least one inventory status code.

Prerequisites

Define inventory status codes



In Inventory Status Code Maintenance, Yo-Yo Company can indicate if the inventory is available for sales orders and/or work orders, nettable for MRP planning purposes, and whether overissues are permitted from the locations identified with this code.

Yo-Yo Company defines a status code of OI-NO to indicate that overissues are not permitted from locations having this status code.

If overissues are allowed, inventory is issued even if the location has a zero or negative inventory balance.

Additional Notes

Set up site

Site: 9000

Description: Manufacture/Distribution

Entity: 100

Default Inventory Status: OI-NO

Automatic Locations: ☒

Database:

EMT Supplier:

External Supplier:

Transfer Variance Acct: 5030

Transfer Ownership: ☐

Yo-Yo Company has only one site—site 9000. In Site Maintenance, Yo-Yo Company’s Production Manager associates this site with entity 100 and assigns to it an inventory status code of OI-NO, which was defined earlier.

SET UP INVENTORY LOCATIONS

Set up inventory locations

The image shows two overlapping screenshots of the 'Location Maintenance' window. The top window is for 'Raw Material' and the bottom window is for 'Finished Goods'. Both windows show the same fields with different values.

Field	Raw Material (Top Window)	Finished Goods (Bottom Window)
Site	9000	9000
Location	RawMat	FinGood
Description	Raw Material	Finished Goods
Inventory Status	01-NO	01-NO
Project		
Date Created	02/04/2003	02/04/2003
Permanent	☒	☒
Type		
Single Item	☐	☐
Single Lot/Ref	☐	☐
Capacity	0.0	0.0
Reserved Locations	☐	☐
Transfer Ownership	☐	☐

At Yo-Yo Company, there are two inventory locations, which are a subset of site 9000. Using Location Maintenance, Yo-Yo Company's Production Manager adds these two inventory locations—raw materials and finished goods. Notice the inventory status of these locations.

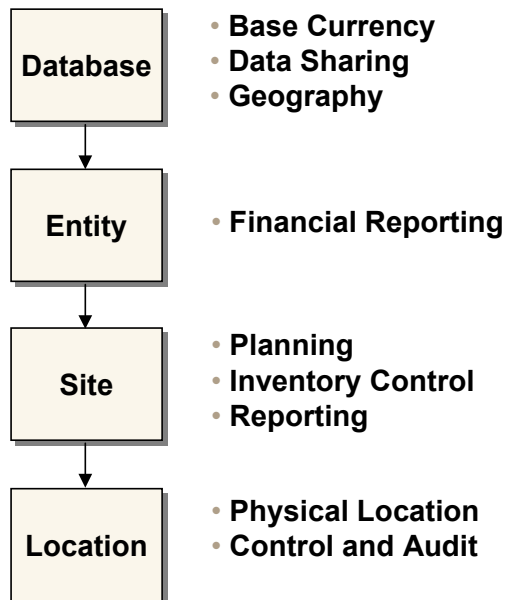
You must associate an inventory status code with every location. By default, this is the inventory status from the site record

Additional Notes

REVIEW

Database To summarize, a database is a physical set of tables. All users who have access to that database have access to the data in those tables (subject to Menu, Field, and Compliance Site Security).

- For each database, there is one:
 - Chart of accounts
 - GL calendar
 - Financial reporting currency



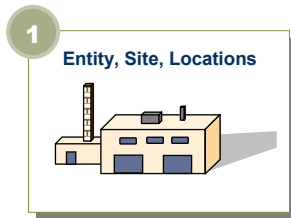
Entity An entity is a financial reporting concept. Balance sheets and income statements are produced by entity. There can be multiple entities in one database. Consolidated reports can be focused by selecting a range of entities to report.

Site A site is an inventory planning and control concept. All inventory is stored by site, and all planning is done by site. Each site belongs to one—and only one—entity, but each entity can have more than one site. Almost all reports produced in the system are selected and sorted by site.

Within a site there can be multiple inventory locations. These are used to physically identify and control individual items in stock. Inventory reports normally are selected and sorted by location.

Location

Review of Steps in Example



- **Company address**
Company Address Maint.
- **Entity**
Entity Code Maintenance
- **Default entity**
System/Account Control
- **Bank**
*Bank Maintenance and
Accounts Payable Control*
- **Inventory status**
*Inventory Status Code
Maintenance*
- **Site**
Site Maintenance
- **Location**
Location Maintenance

In the Example section, we saw how Yo-Yo Company first entered its address and, in Entity Code Maintenance, identified and deselected the current Primary Entity in preparation for entering a new entity, 100, and making it the Primary Entity in the database.

Yo-Yo Company then created the new entity (100) in Entity Code Maintenance and made this entity the Primary Entity in the system.

Yo-Yo Company also entered its bank (Bank Maintenance) and made it the company's default bank (Accounts Payable Control) in preparation for later transactions.

Next, in Inventory Status Code Maintenance, Yo-Yo Company defined an inventory status code of OI-NO (overissue = no) before setting up its site (site 9000).

After defining the inventory status code, Yo-Yo Company set up site 9000 in Site Maintenance and set OI-NO as the default inventory status.

In the last step, using Location Maintenance, Yo-Yo Company set up two locations at site 9000—RawMat and FinGood. The inventory status codes (OI-NO) associated with these locations defaulted from site 9000.

Activity

Prerequisites to Activity

Define Printer for Report Output

Printer Setup Maintenance

Printer Definition

Output To: printer

Description:

Max Pages: 0

Device Pathname: printer

Destination Type: Default

Printer Type: HP LASER

Lines / page: 60

Scroll Output: ☐

Spooler: ☒

Printer Control

Initialize Command:

Initialize Ctrl:

80 Column Start: /027E/027&l0O/027(8U/027(s0p10h12v0s0b3T/027&l6
/027&l2E/027&l7.8689C/027&l66F/027&k2G

132 Column Start: /027E/027&l0O/027(0U/027(s0p16.66h8.5v0s0b0T/02;
66P/027&l2E/027&l7.8689C/027&l66F/027&k2G

Reset Ctrl:

Reset Command:

Follow the directions provided by your instructor.

 QAD

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Add Your Name to Reports

To ensure that you can easily identify all reports that we print out in class for the activities, your name should appear on the top of the report. To set that up, use Company Address Maintenance, enter a special address code (~reports) and add your name in the Name field.

Set Up Entity

Enter Your Company Address

- 1 Use Company Address Maintenance to create records for your company. Fields to populate are:
 - Address (code) = 9000
 - Name = Yo-Yo Company
 - City = Carpinteria
 - State = CA
 - Post = 93013
 - Country = USA
- 2 Exit Company Address Maintenance.

Enter an Entity

- 1 In the Entity field, use the lookup to scroll through the pre-existing records in Entity Code Maintenance. Modify the entity that is flagged as the primary entity by setting the flag to No.
- 2 Use Entity Code Maintenance to add a record for your entity. Flag this entity as the primary entity.

Key fields to populate are:

- Entity = 100; press Go
 - Name = Yo-Yo Company
 - Primary Entity = Yes (or checked)
 - Currency = USD
 - Company Address Code = 9000; press Go
- 3 The second frame displays inter-company accounts for transactions across entities. These default from System/Account Control. Accept these defaults.

Set Entity as Default Entity for the Database

- 1 Modify System/Account Control. Key fields to populate are:
 - Entity = 100
 - This is the default entity used throughout the system. Whenever you add a new site or enter a financial transaction, this entity displays for you to accept or choose another.
 - Verify GL Accounts = No (unchecked)

There are several account frames after this. Accept the defaults.

Set Up a Bank for Your Entity

- 1 A new bank will do business with your business entity. Enter a record for it in Bank Maintenance. Make the bank currency the same as your base currency, and make the entity the same as your company entity. Key fields to populate are:

- Bank = A; press Go
- Description = Bank of Yo-Yo Company; press Go

In the Address and Telephone frame, add the bank's address:

- City = Carpinteria
- State = CA
- Post = 93013
- Country = USA

Press Go and accept the defaults in the remaining frames. (In the Checking Accounts frame, ensure that the entity for the bank is the same as the entity for Yo-Yo Company. If not, enter entity 100.)

- 2 Modify Accounts Payable Control to use the bank as the default bank for this database.

Set Up Sites

In this activity, you will set up a site. But first you need to set up an inventory status code, which will be used as the default inventory status for material at this site.

- 1 Add a new status code. Use Inventory Status Code Maintenance.

- Status Code = OI-NO (overissue No); press Go
- Available = Yes
- Nettable = Yes
- Overissue = No; press Go

Press Go until you come to the Restricted Transaction field, then press End.

- 2 Enter a record for your manufacturing/distribution site in Site Maintenance. Reference the inventory status OI-NO.
 - Site Code = 9000; press Go
 - Description = Manufacture/Distribution
 - Entity = 100
 - Default Inventory Status = OI-NO; press Go

Set Up Inventory Locations

Add two inventory locations—raw materials and finished goods—to site 9000. The inventory status code of OI-NO should default from site 9000.

- Use Location Maintenance:

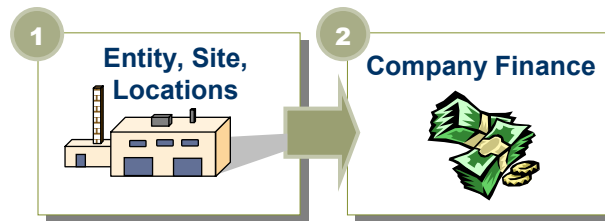
Site	Location Code	Description	Inventory Status
9000	RawMat	Raw Material	OI-NO
9000	FinGood	Finished Goods	OI-NO

CHAPTER 3

Set Up Basic Financial Structure

Overview

We have seen how to set up entities, sites, and locations. Next, in this chapter, we will look at setting up the basic financial structure for a company. First, though, we will discuss some key concepts—the General Ledger (GL) calendar, transactions and the GL, posting transactions, and the balance sheet and income statement.



Key Concepts

GL Calendar

Transactions and the GL

Posting Transactions

Balance Sheet

Example

Set Up GL Calendar

Enter Start-Up GL Account Balance

Post Transactions

Print Balance Sheet

Activities

Learning Objectives

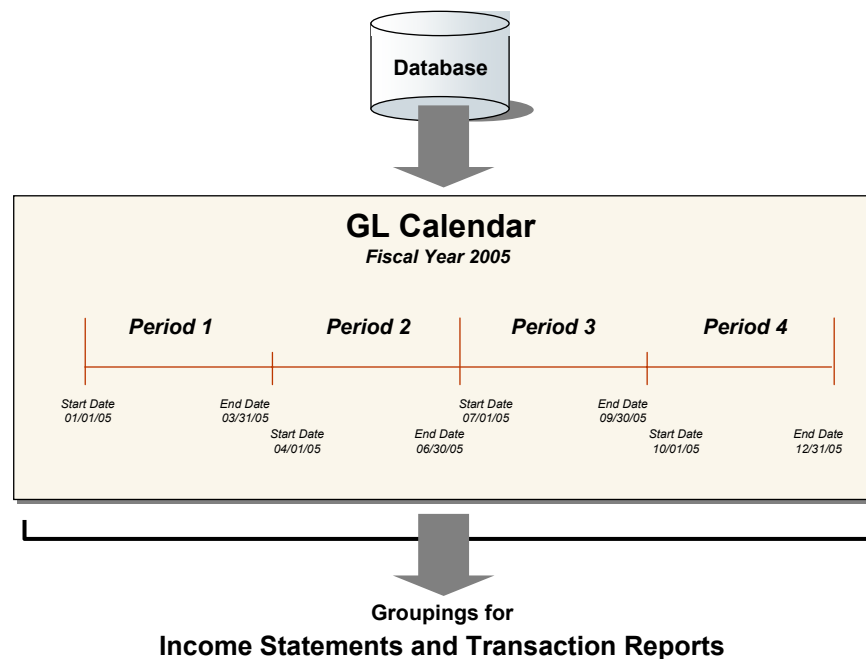
When you finish this chapter, you should be able to:

- Provide some examples of how transactions enter the GL
- Explain the importance of Transaction Post
- Explain format positions
- Set up the GL calendar
- Post a transaction
- Print a balance sheet

Key Concepts

GL Calendar The General Ledger (GL) Calendar defines the starting and ending dates of each calendar period within a fiscal year. This makes it possible to store transactions and print comparative reports for different periods.

A database can have only one GL calendar and at least one period must be defined. In the example below, there are four periods defined for fiscal year 2005.



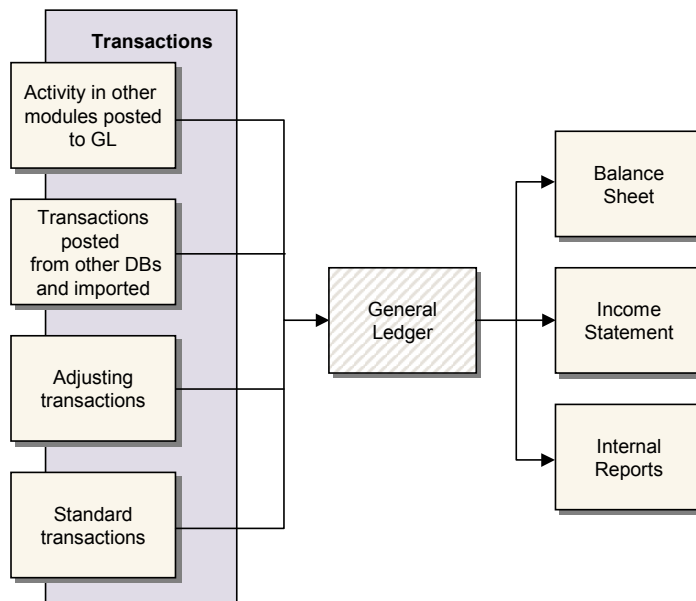
How do transactions—such as a sales order or work order transaction—enter the general ledger (GL)? This is discussed on the next page.

TRANSACTIONS AND THE GL

A transaction is an individual event—for example, the sale or purchase of an item—reported to a computer system, where an application such as MFG/PRO creates records to track the financial effects of business activities. These transaction records enter the GL in one of four ways:

- Activities in other MFG/PRO modules, which create journal entries that are subsequently posted to the GL module
- Posted transactions from other databases imported by a consolidation database
- Adjusting transactions entered in the GL journal file
- Standard transactions entered in the GL to record miscellaneous activity such as bank charges, loans, or acquisitions

As shown below, these transactions update account values in the GL where this information can be organized into balance sheets, income statements, or audit reports.



Notice, though, that these transactions are “posted” first before actually updating the accounts in the GL. So next, we’ll look at posting transactions.

POST TRANSACTION

The values in accounts are updated by transactions. However, this does not normally occur at the time of the transaction. For example, different people are often responsible for parts of the same transaction, or all parts of a transaction may not occur simultaneously. The most compelling reason for not automatically updating accounts, however, is the necessity for maintaining the integrity of the company's financial records.

For these reasons, transactions are normally verified by management, then allowed to update the accounts in a process known as posting (see figure below). During posting, transactions increase or decrease (debit or credit) the balances in two or more accounts. Employees maintaining the GL act as internal auditors for transactions, making sure that they update the correct accounts. This safeguard is vital because a transaction becomes a permanent part of the company's records once it is posted. Posted transactions cannot be modified directly, although account balances can be changed using adjusting entries.

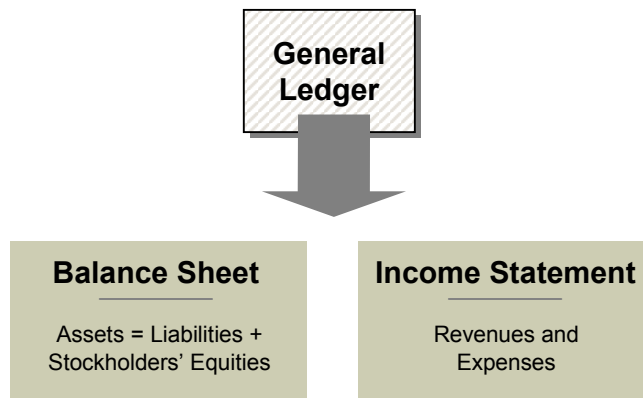


Once transactions are posted and account values updated in the GL, a company can generate key financial reports, such as an income statement and balance sheet. We'll discuss those next.

BALANCE SHEET

At its simplest, the GL is a system of accounts that shows the value of assets, liabilities, equities, revenues, and expenses.

Periodically, this information is compiled on two financial statements: the balance sheet and income statement. The balance sheet shows what resources the company has accumulated over time, while the income statement shows the profit (or loss) that business activities have generated in a particular time period.



Example

In this example, we'll see how Yo-Yo Company's Finance Department:

- Sets up the company's GL calendar
- Uses Standard Transaction Maintenance to enter the start-up account balance of \$10,000 based on a loan
- Posts that loan amount to the GL using Transaction Post

We'll also look at the company's balance sheet.

SET UP GL CALENDAR

First, we will review Yo-Yo Company's GL calendar for fiscal year 2005.

As shown in GL Calendar Maintenance, Yo-Yo Company's fiscal year is divided into 12 periods beginning January 1, 2005. The last period has a start date of December 1, 2005, and an end date of December 31, 2005.

Enty	Description	AP	AR	FA	WO IC	SO	GL	Year Closed
100	Yo Yo Co. Entity	☐	☐	☐	☐	☐	☐	☐

Throughout MFG/PRO, transactions are entered with a GL effective date; this date (and not the transaction date; although they are often the same) determines which GL calendar period the transaction affects.

Additional Notes

The GL calendar supports up to 999 fiscal periods within one fiscal year. Periods are defined manually by entering the start and end date. If you accidentally skip a date, you cannot post transactions with that effective date.

Fiscal years may correspond to a calendar year or they may span calendar years. For example, a fiscal year may begin July 1 and end June 30 of the following year.

ENTER START-UP GL ACCOUNT BALANCE

Yo-Yo Company has secured a loan of \$10,000. Using Standard Transaction Maintenance, the Finance Department enters the \$10,000 loan in a Cash account (asset account 1040) and makes a balancing entry of -\$10,000 in a Long-Term Debt account (liability account 2600).

Standard Transaction Maint

Yo Yo Co. Entity

GL Reference: JL030204000001 Type: JL Effective: 02/04/03 Period: 2/2003

Currency: USD Control: 10,000.00 Base Total: 0.00

Daybook: SYSTEM Entry Number: Correction: ☐

Line	Account	Project	Enty	Description	Cur	Amount
1	1040		100	Loan	USD	10,000.00
2	2600		100	Loan	USD	-10,000.00
3			100			

POST TRANSACTION

Using Transaction Post, the Finance Department posts the \$10,000 loan amount to the General Ledger so that account values are updated.

Transaction Post

Yo Yo Co. Entity

Entity: 100

To: 100

Effective Date: 02/04/2003

To: 02/04/2003

Transaction Type: JL

Daybook:

Post Transactions: ☒

Output:

Batch ID:

To be posted, transactions must be for active accounts, sub-accounts, cost centers, and projects; balanced (debits must equal credits); and for an open accounting period.

Additional Notes

PRINT BALANCE SHEET

Using Balance Sheet, let's look at Yo-Yo Company's balance sheet as of today's date.

Balance Sheet

Entity: 100 To: 100

Description: Yo Yo Co. Entity

Report Ending Date: 02/06/2003

Use Budgets: ☐ Budget Code:

Suppress Zero Amounts: ☒

Sub-Account: To:

Cost Center: To:

Level: 99

Summarize Sub-Accounts: ☐

Summarize Cost Centers: ☐

Suppress Account Numbers: ☒

Round to Nearest Thousand: ☐

Round to Nearest Whole Unit: ☐

Reporting Currency:

Output: page

Batch ID:

The balance sheet print-out is shown on the next page.

Yo Yo Co. Entity	Reporting Currency: USD
	Exchange Rate:
	Balance as of

ASSETS	
CURRENT ASSETS	
CASH	
CASH	10,000.00

TOTAL CASH - USD	10,000.00
CASH - FOREIGN	0.00

TOTAL CASH	10,000.00

TOTAL ASSETS	10,000.00
LIABILITIES & EQUITY	
LIABILITIES	
CURRENT LIABILITIES	
TAXES PAYABLE	0.00
ACCOUNTS PAYABLE	0.00

TOTAL CURRENT LIABILITIES	0.00
LONG TERM LIABILITIES	
LONG TERM DEBT	10,000.00

TOTAL LONG TERM LIABILITIES	10,000.00

TOTAL LIABILITIES	10,000.00

TOTAL LIABILITIES & EQUITY	10,000.00

Review the balance sheet above and notice how the \$10,000 recorded in the cash account (asset) and the \$10,000 recorded in the long-term debt account (liability) display. Total assets should equal total liabilities, and they do on this balance sheet.

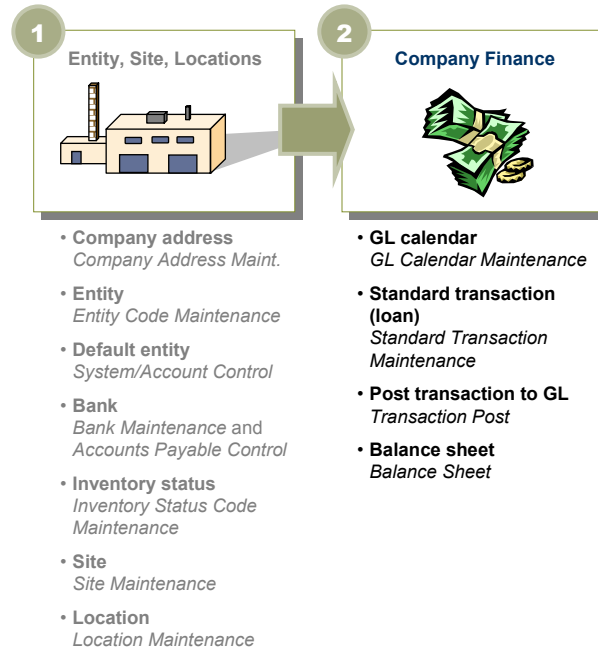
This report prints format headings based on the descriptions entered for format positions in the Format Position Maintenance function. Amounts are shown for all accounts when at the appropriate level. Totals are given for each format position heading.

How to Read

Format Positions on Income Statements and Balance Sheets

Format positions control the organization of the balance sheets and income statements. They are given descriptions which serve as labels for the account totals on these financial reports. Format positions also determine the order in which the GL accounts will appear on these reports, how the GL accounts will be totaled, and where page breaks will occur.

REVIEW



In this chapter, we have covered some basic financial concepts and saw how those work in MFG/PRO. We looked at:

- The GL calendar, where you define at least one period for the fiscal year. Once defined, you can print comparative reports for different periods.
- How transactions enter the GL to update accounts after being posted. In the example given, Yo-Yo Company's Finance Department used Standard Transaction Maintenance to enter a \$10,000 loan and then posted that transaction to update cash and long-term debt account values.
- The balance sheet, which is organized by format positions defined in Format Position Maintenance.

Activity

Enter Company Financing in General Ledger

- 1 Verify that the General Ledger has the current year set up in GL Calendar Browse/Inquiry. If not, use GL Calendar Maintenance to enter a calendar for the current year starting with period one (add 12 periods). Key fields to populate are:
 - Year = [current year]
 - Period = [add 12 periods]
 - Period Start = [first date of GL period being defined]
 - Period End = [last date of GL period being defined]
- 2 Add a record in Standard Transaction Maintenance to document the \$10,000 loan received from the bank.

Key fields to populate are:

- GL Reference. Press Return; the system will create number.
- Currency = USD; press Go
- Control: 10,000; press Go

Line	Account	Entity	Description	Currency	Amount
1	1040 (cash)	100	loan	USD	10,000
2	2600	100	loan	USD	-10,000

- 3** Post the transaction to your General Ledger by running the Transaction Post program.

Key fields to populate are:

- Entity = 100 to 100
 - Effective Date = (today's date to today's date)
 - Transaction Type = JL
 - Post = Yes (checked); press Go
 - Output = page
- 4** Use Balance Sheet to print a balance sheet for your entity with today as the ending date.

CHAPTER 4

Product Definition

Overview

Once the basic company structure has been set up—entity, site, locations, and company finance—we can enter information about the company's products.



Key Concepts

Product Lines

Current Costs

Item Information

Product Structure

Example

Set Up Product Lines

Set Up Accounting Parameters

Enter Item Information

Set Up Product Structure

Activities

Learning Objectives

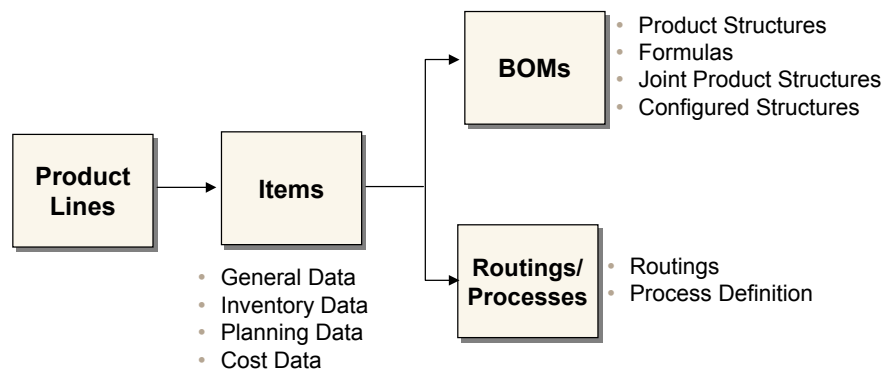
When you finish this chapter, you should be able to:

- Explain the importance of a product line
- Explain the difference between current costs and GL costs
- Provide examples of order policies and order modifiers
- List an item's five cost elements
- Describe the information contained in a product structure
- Set up a product line
- Enter an item
- Define an item's product structure

Key Concepts

Introduction To establish product definition, you must first establish product lines, then assign them to each item (see figure below). Although each item needs to have an associated product line to capture inventory costs and movement, each item may or may not have a bill of material (BOM) or routing associated with it. We'll be discussing bills of material in this chapter and routings later in the course, but briefly:

- Bills of material quantify how much of an item is required to produce the parent item
- Routings quantify where and how the product is made

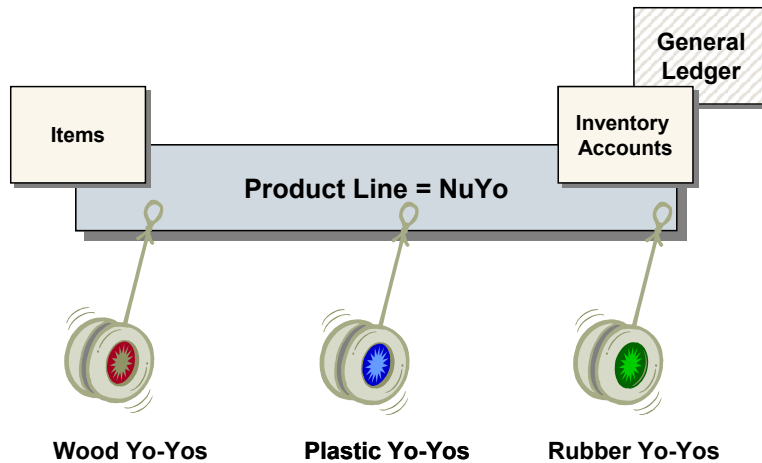


On the next few pages, we'll look at each step in the process flow shown in the figure above. We'll begin by looking at product lines, followed by items and bills of material (or product structures). Routings will be discussed on page 123 in Chapter 5, "Set Up Manufacturing Environment".

PRODUCT LINES

A product line is a group of similar items or products. Usually, the grouping is by similarities of manufacture or application.

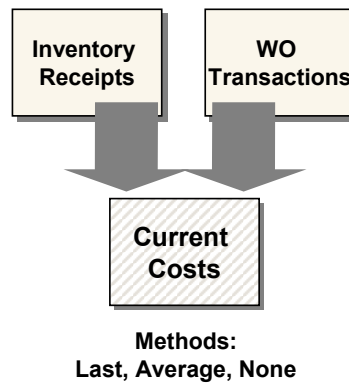
A product line also links items to general ledger accounts. This link is the way the system ensures that all transactions governing an item have GL consequences. All items must belong to a product line; otherwise, no GL transactions associated with them could be recorded.



After the product line has been set up, the method of updating the “current costs” of items is selected, which is discussed next.

CURRENT COSTS

Current costs are the actual costs from inventory receipts and work order labor transactions.



When you have a Standard Costing system, the current cost set can be used to track the running average or last cost for use in determining next year's standard cost or for providing a record of recent actual costs.

Methods that can be used with the Current Cost Set are Last, Average, or None.

- Last: Each receipt sets the current cost to the last cost of that item. In the case of purchased material, this is the purchase or invoice price.
- Average: Whenever an item is received, the new average cost is calculated and stored in the cost set
- None: Current costs are maintained manually in the system or not used

The method to be used is selected in Inventory Control.

We'll cover costing in more detail in the next section on Item Information.

Terminology

Cost Set. Identifies cost files in the system. MFG/PRO has two default cost sets—GL and Current—that are available for each site, but a site can have additional cost sets, such as historical costs from prior periods and simulated costs for planning purposes.

Current Cost Set. The current cost of an item is normally based upon recent production and/or purchases. Current costs are the actual costs from inventory receipts and work order labor transactions.

Standard Costing. Costs are pre-established for items and all transactions are valued at that cost as they are processed. Deviations in the costs are reported as variances.

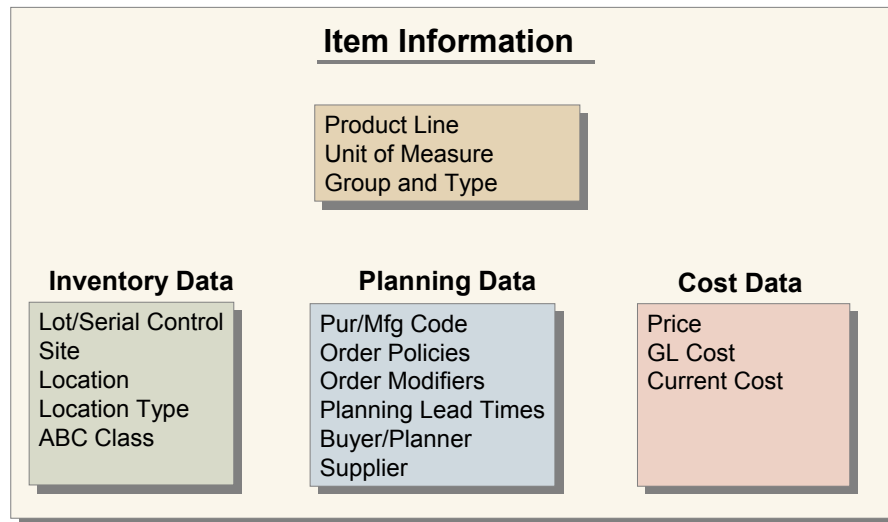
ITEM INFORMATION

After setting up the product lines and current cost method, we're ready to enter more specific information about each item.

Item information must be entered for every item you use or produce at every site using that item.

Every item is identified by an item number. This item number is the same for all sites, as is some of the other identifying information, such as product line, unit of measure, and group and type.

In Item Master Maintenance (or in separate functions), you can enter inventory data, planning data, and cost data. The basic information recorded in each of these areas is shown in the figure below.

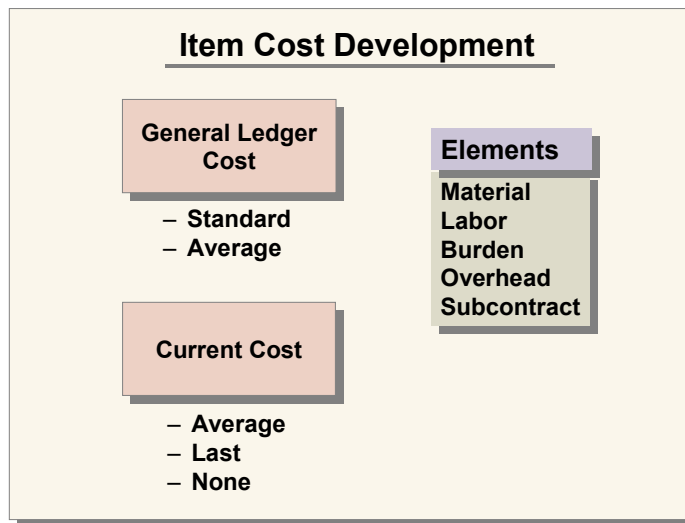


We'll take a closer look at the cost data next.

The cost of a manufactured item can be calculated based on its standard bill of material and routing. And, depending upon the BOM and routing, there may be both this-level and lower-level costs.

Item Cost Development

As shown in the following figure, there are two cost sets for an item—GL and Current. The GL cost set will have either a standard or average costing method; whereas the current cost set will be determined by either the average or last cost of the item; or maintained manually (setting = none). Both the GL and Current cost sets are split into five standard cost categories and elements: material, labor, variable burden, fixed overhead, and subcontract.



In the Example section, you will see how item costs are organized by these cost sets and elements.

Now that we have looked at product lines and items, we'll next discuss bills of material (BOMs), which are called product structures and formulas in MFG/PRO.

Average Costing. Costs are recalculated as they occur. The costs associated with a transaction are weighted with the existing costs to provide a new average cost. The average cost may be used for valuation as a GL cost or for information only as a Current cost.

Terminology

Bill of Material (BOM). A listing of all subassemblies, components, and raw materials of a parent assembly. Shows the quantity of each required to make one parent assembly. Also called a *product structure* or *formula*. Used with a master production schedule to determine items for which purchase requisitions and production orders must be released.

GL Cost Set. GL cost is a term that distinguishes costs used for valuing inventory and for determining cost of goods sold from other costs such as Current costs. GL costs can be based on either a Standard or an Average cost method.

This Level and Lower Level Costs. This Level costs are the costs to either obtain or produce an item. Thus, a purchased item has This Level Material cost, but it has no Lower Level costs. Lower-level costs represent costs that are added at prior stages of manufacturing.

PRODUCT STRUCTURE

Once items are identified in the system, you can set up product structures and formulas to identify the physical makeup of manufactured products in the system.

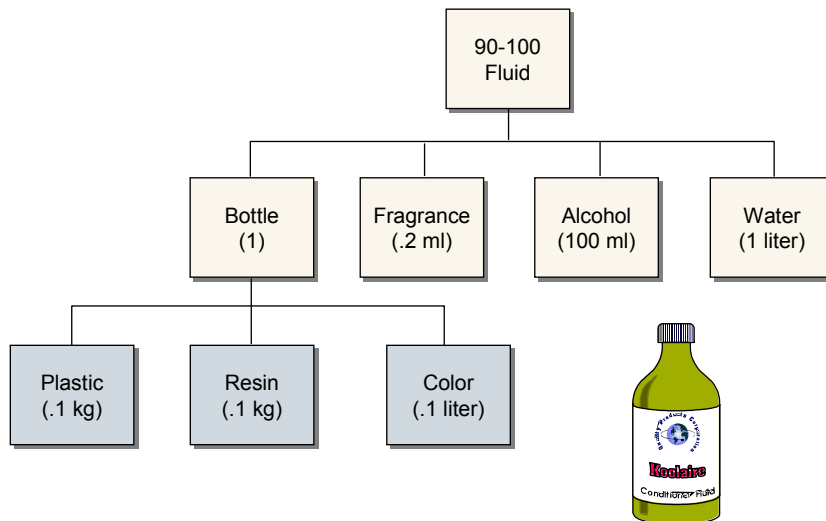
Product structures are associated with discrete items and identify the quantity of each component needed to manufacture one unit of an item, expected scrap percentage, and the operation where they are required. Formulas identify ingredient usage as a quantity per batch or percent of batch. These are vital to the planning process. In MFG/PRO you define these relationships in either Product Structure Maintenance or Formula Maintenance.

Note In general, product structures and formulas work in the same way, so we will refer to both as bills of material (BOMs).

The system uses BOMs—each a collection of parent-component relationships—for the planning and control of manufacturing.

For example, look at the bottle of conditioner fluid in the figure below. The plastic bottle is made from plastic pellets, resin, and colorant. In the bottle part of the BOM, the plastic bottle is the parent and the three raw materials are the components.

Parent/ Component Relationships



The bottle is filled with fragrance, alcohol, and water to make the final product: a bottle of conditioner fluid. In this part of the BOM, the finished bottle of conditioner fluid (item 90-100) is the parent and the bottle is a component. The other ingredients—fragrance, alcohol, and water—are also components in this BOM.

Note that the bottle is a parent item in one BOM and a component in another. This is called a multilevel BOM.

BOM Code Different formulas for different batch sizes of product, or alternate product structures used in different circumstances, require multiple BOMs for the same item. This is done by adding a BOM code in Product Structure Code Maintenance or Formula Code Maintenance and then using this BOM code as the parent in Product Structure Maintenance or Formula Maintenance.

Terminology **BOM Code.** A code uniquely identifying a product structure or formula.

Example

In this example, we'll see how Yo-Yo Company's Manufacturing Department:

- Sets up a product line called NuYo for its line of yo-yos
- Defines one of the component yo-yo items—the plastic half (10-01), which is a purchased item
- Defines the yo-yo's product structure, which shows the relationship between the parent item (the yo-yo) and its components (quantity required and routing operation for the plastic halves, pin, and string)

Additionally, we'll look at how Current Costs are calculated at Yo-Yo Company.

SET UP PRODUCT LINES

Yo-Yo Company's Manufacturing Department has set up a product line called NuYo for its plastic, wood, and rubber yo-yos. The sales and operations of yo-yos are planned, reported, and analyzed by this product line. Additionally, costs are tracked by the inventory accounts set up in Product Line Maintenance.

Product Line Maintenance

Product Line: NuYo

Description: NuLine

Taxable: ☐

Tax Class:

Default Sub-Account:

Default Cost Center:

Override: ☐

Override: ☐

Inventory Accounts

Inventory Acct: 1500

Inv Discrep Acct: 5900

Scrap Account: 5800

Cost Revalue Acct: 1550

SELECT CURRENT COST METHOD

Yo-Yo Company uses a Standard Cost method for the GL Cost Set, but it tracks its actual costs in the Current Cost Set. The method of updating the Current Cost Set is selected in Inventory Control. Yo-Yo Company uses the method “Last,” so that the last or most recent cost of an item becomes the current cost.

The screenshot shows the 'Inventory Control' window with the following settings:

- Inventory Count Parameters:**
 - Issue Days: 0
 - Tolerance From Qty On Hand or Annual Usage: Qoh
- Item Tolerances:**

Class	Tolerance	Value
Class A:	3.00%	300.00
Class B:	4.00%	400.00
Class C:	5.00%	500.00
All Others:	5.00%	500.00
- Accounting:**
 - Current Cost (AVG/LAST/NONE): last
 - Sum LL Costs Into Matl Cost: ☐
 - Current Cost from AP: ☒
 - Create GL Transactions: ☒
 - Transfer Clearing Acct: 5030
 - Summarized Journal: ☐
 - Journal Reference Method: 0
 - Mirror Accounting: ☐
 - Default Site: 9000

Current Cost from AP

Optionally, you can also update the current cost upon each AP voucher transaction for the item, which will use the supplier invoice amount to update the current cost.

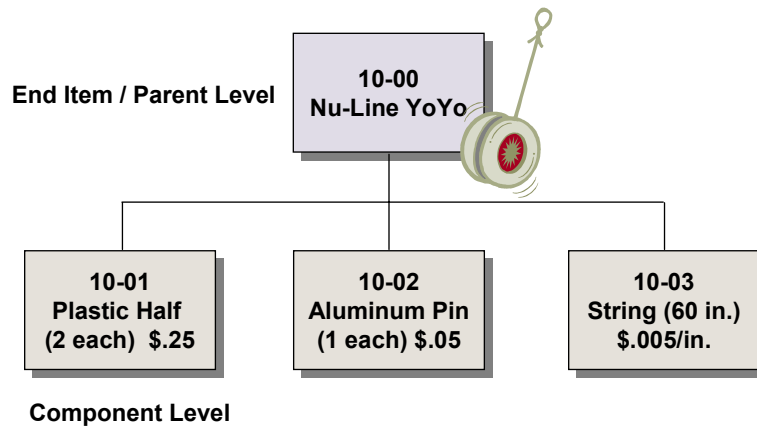
Additional Notes

Create GL Transactions

Create GL Transactions is set to Yes unless you are using the periodic method of inventory accounting. In periodic inventory accounting, the inventory is based on the cost of beginning inventory plus purchases minus sales. No GL entries need to be created if inventory is manually created.

ENTER ITEM INFORMATION

The product structure of the yo-yo is shown below. Although the product structure is actually set up in MFG/PRO later, it is useful to see the relationship between the parent item and its components now as item information is entered in MFG/PRO by Yo-Yo Company.



For our example, over the next few pages, we'll focus on setting up one of the component items—item 10-01, the plastic half.

Item Master Maintenance

Item Number: 10-01 Description: Plastic Half
Unit of Measure: EA

Item Data

Prod Line: NuYo Item Type: Drawing:
Added: 02/06/2003 Status: Revision:
Design Group: Group: Drawing Loc: Size:
Promo Group: Price Break Category:

Item Inventory Data

ABC Class: Average Interval: 90
Lot/Serial Control: Cycle Count Interval: 120
Site: 9000 Shelf Life:
Location: RawMat Allocate Single Lot: ☐
Location Type: Key Item: ☐
Auto Lot Numbers: ☐ PO Receipt Status: Active: ☐
Lot Group: WO Receipt Status: Active: ☐
Article Number:

Item Data and Inventory Frames

In Item Master Maintenance, the item number is entered (10-01), a description, and its unit of measure.

In the Item Data frame, the Product Line NuYo is entered. Remember, each item must be assigned to one and only one product line.

In the Item Inventory Data frame, site 9000 is entered; this will appear as the default site. In the Location field, RawMat is entered, which will appear as the default for all inventory transactions at any site.

Item Data Frame

Every item has some relatively static information that describes its general characteristics, regardless of how it is used. This includes the item's description, product line, and unit of measure.

Item Inventory Data Frame

In the inventory section, only the (default) site field is required. This site is usually the primary stocking location.

Additional Notes

Item Planning Data Frame

Item Master Maintenance

Item Number: 10-01 Description: Plastic Half
Unit of Measure: EA

Item Planning Data

Mstr Sched: ☒	Buyer/Planner:	Phantom: ☐
Plan Orders: ☒	Supplier:	Minimum Order:
Time Fence:	PO Site:	Maximum Order:
MRP Required: ☒	Purchase/Manufacture: 	Order Multiple:
Order Policy: 	Configuration Type:	Op Based Yield:
Order Qty:	Inspect: ☐	Yield Percent:
Batch Qty: 1.0	Ins LT:	Cum LT: 0 Run Time:
Order Period:	Mfg LT:	Pur LT: Setup Time:
Safety Stock:	ATP Enforcement:	EMT Type:
Safety Time:	Family ATP: ☐	Auto EMT Processing: ☐
Reorder Point:	Run Seq 1:	Network Code:
Revision:	2:	Routing Code:
Issue Policy: ☒		BOM/Formula:

Yo-Yo Company's Material Planning Department uses the Item Planning Data in this screen to determine how and when to replenish inventory. Let's look at a few of the fields and settings shown above.

The Planning Department wants to allow material requirements planning (MRP) to automatically create planned orders for this item, so the Plan Orders field has a checkmark. When Plan Orders is Yes and a value is specified in the Order Policy field, as it is in this example, MRP generates planned purchase and work orders to satisfy net requirements for this item.

The Order Policy determines the rules for planning orders. The ordering rule Yo-Yo Company applies to this item (10-01) is Period Order Quantity (POQ). This means that MRP calculates demand for this item over the number of calendar days specified as the Order Period (which is 7 in this example) and creates one order to satisfy this demand.

Another key field is the Purchase/Manufacture field. The plastic half (10-01) is a purchased part and that is indicated in this field by entering a "P." The purchasing lead time is 5 days, which is the number of days it takes to complete the purchasing cycle for this item, from the date the need for a purchase is recognized to the date the item is received.

Item Cost Data Frame

Item Master Maintenance

Item Number: 10-01 Description: Plastic Half
Unit of Measure: EA

Totals

Totals: 0.25 0.00 0.25 ☐ 02/06/03 ☐

Current Cost Data (Site: 9000 / Set: Current)

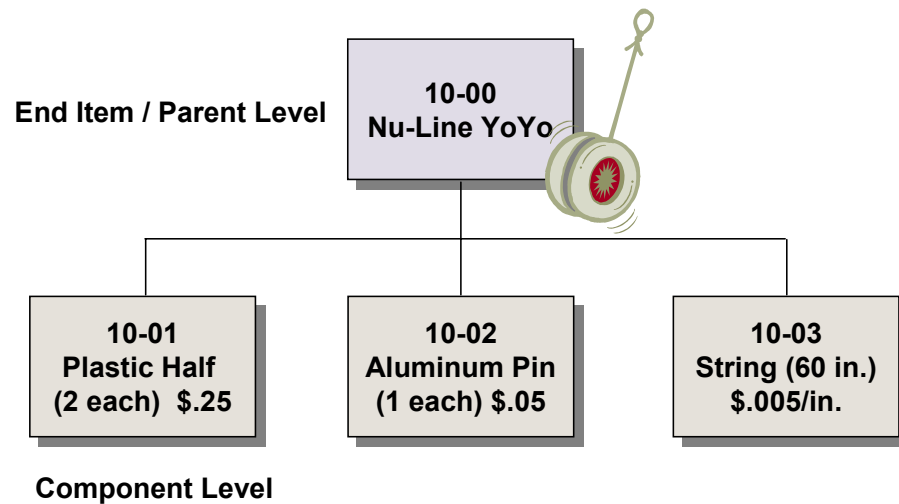
Element	This Level	Lower Level	Total	Pri	Category	A/O
Material	0.25	0.00	0.25	☒	Material	☐
Labor	0.00	0.00	0.00	☒	Labor	☐
Burden	0.00	0.00	0.00	☒	Burden	☐
Overhead	0.00	0.00	0.00	☒	Overhead	☐
Subcontr	0.00	0.00	0.00	☒	Subcontr	☐

The item cost section is divided into three sections: price, general ledger cost, and current cost. For this example, we're concerned with the Current Cost Data frame.

Referring back to the product structure on page 98, we know that one plastic half (10-01) costs \$0.25. That matches the information we see above in the Current Cost Data frame. It is a purchased part so it has no lower-level manufacturing related costs, only "this-level" costs.

SET UP PRODUCT STRUCTURE

Let's look at the product structure again for the yo-yo.



Notice that there is a parent item (10-00) and there are three component items (10-01, 10-02, 10-03). In this example, we'll see how Yo-Yo Company added the three component items to the parent, 10-00.

Product Structure Maintenance

Parent Item: 10-00
Description: Nu-Line Yo Yo

Component Item: 10-01 Plastic Half

Rev:
Reference:
Start Effective:
Quantity Per: 2.0 EA

End Effective:
Scrap: 0.00%
Lead Time Offset:
Operation: 10
Sequence Number:

Component Item: 10-02 Aluminum Pin

Rev:
Reference:
Start Effective:
Quantity Per: 1.0 EA

End Effective:
Scrap: 0.00%
Lead Time Offset:
Operation: 10
Sequence Number:

Structure Type:
Start Effective:
End Effective:
Remarks:

Component Item: 10-03 String

Rev:
Reference:
Start Effective:
Quantity Per: 60.0 IN

End Effective:
Scrap: 0.00%
Lead Time Offset:
Operation: 20
Sequence Number:
Forecast Percent: 100.00%
Option Group:
Process:

In Product Structure Maintenance, the parent item 10-00 (the yo-yo) is entered first. Each component item (10-01, 10-02, and 10-03) is then entered in the subsequent frames. For each component, such as the plastic half, the number required (Qty Per) to make one complete yo-yo is entered, which is two. In the Operation field, the routing operation number where the item will be consumed is entered. We'll look at routings in more detail later on page 117.

Effective Dates

The elements that make up a product structure have a range of effective dates so new components can be phased in and others phased out.

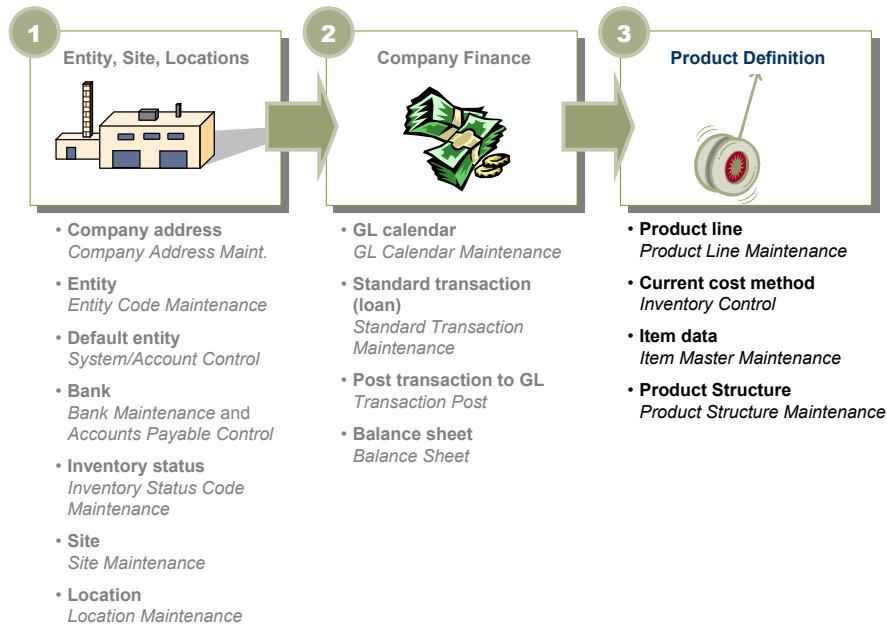
Additional Notes

Review product structure in Product Structure Inquiry

bmpsig.p b+		13.6 Product Structure Inquiry				02/06/03		
Parent Item/BOM Code: 10-00		Nu-Line Yo Yo		EA				
As Of: 02/06/03		Levels:		Rev:				
PCO Number:		ID:		Database:		Output: page		
Level	Component Item	Description	UM	Qty	Per	Ph	T	Iss
Parent	10-00	Nu-Line Yo Yo	EA					
1	10-01	Plastic Half	EA		2.0			
1	10-02	Aluminum Pin	EA		1.0			
1	10-03	String	IN		60.0			

Once the product structure is defined, it can be reviewed in Product Structure Inquiry, shown above. We see that the parent item (the finished yo-yo) is listed first, and the three component items are listed below it. You can quickly see key information, such as unit of measure for each item and the quantity required to make one complete yo-yo.

REVIEW



In this chapter, we saw how products are defined in MFG/PRO, specifically how:

- Product lines are set up in Product Line Maintenance. They provide inventory accounts for an item so that costs can be tracked.
- Current costs for items are calculated based on the setting in Inventory Control (Last, Average, None)
- Item data is entered by area—general, inventory, planning, and cost data
- Product structure is defined in Product Structure Maintenance (or Formula Maintenance) indicating the quantity per and routing operation

Activity

Set Up a Product Line

- 1 Create a new product line, NuYo, in Product Line Maintenance. This will be the product line for the Nu-Line Yo-Yo and all components associated with the yo-yo. Key fields to populate are:
 - Product Line = NuYo; press Go
 - Description = NuLine; press Go
- 2 Review the account numbers. Where did this default data come from? Accept the default accounts and update the record.

Modify Inventory Control

Use the defaults in Inventory Control, except the following:

- Current Cost = Last
- Default Site = 9000

Define End Item

Use Item Data Maintenance to add your end item to your database. Use the product line NuYo; the unit of measure should be EA.

- 1 Key fields to populate are:
 - Item Number = 10-00 (end item); press Go
 - Unit of Measure = EA
 - Description = Nu-Line Yo-Yo; press Go
 - Product Line = NuYo

Accept default values for all other fields.

- 2 Use Item Master Maintenance to define item inventory data for the end item. Key fields to populate are:
 - Item Number = 10-00; press Go
 - Site = 9000 (in Item Inventory Data frame)
 - Location = FinGood (in Item Inventory Data frame)
- 3 Define the planning data for the end item in the Item Planning Data frame (or use Item Planning Maintenance). Key fields to populate are:
 - Plan Order = Yes (check)
 - Order Policy = POQ
 - Purchase/Manufacture = M

Use default values for all other fields
- 4 Enter the price of the end item in the Item Price Data frame (or use Item Cost Maintenance).

Key fields to populate are:

 - Price = 10.00

Do not update any other fields

Define Component Items

Use Item Master Maintenance to add your component items to your database.

- 1 First component item: Key fields to populate are:
 - Item Number = 10-01 (component item); press Go
 - Unit of Measure = EA
 - Description = Plastic Half; press Go
 - Product Line = NuYo (in Item Data frame); press Go
 - Site = 9000 (in Item Inventory Data frame)
 - Location = RawMat; press Go
 - Plan Order = Yes (checked) (in Item Planning Data frame)
 - Order Policy = POQ
 - Purchase/Manufacture = P
 - Pur LT = 5; press Go
 - **Current** Cost Data: Material, This Level = 0.25 (in CURRENT Cost Data frame); press Go

- 2 Second component item: Key fields to populate are:
 - Item Number = 10-02 (component item); press Go
 - Unit of Measure = EA
 - Description = Aluminum Pin; press Go
 - Product Line = NuYo (in Item Data frame); press Go
 - Site = 9000 (in Item Inventory Data frame)
 - Location = RawMat; press Go
 - Plan Order = Yes (checked) (in Item Planning Data frame)
 - Order Policy = POQ
 - Purchase/Manufacture = P
 - Pur LT = 5; press Go
 - **Current** Cost Data: Material, This Level = 0.05 (in CURRENT Cost Data frame); press Go
- 3 Third component item: Key fields to populate are:
 - Item Number = 10-03 (component item); press Go
 - Unit of Measure = EA
 - Description = String; press Go
 - Product Line = NuYo (in Item Data frame); press Go
 - Site = 9000 (in Item Inventory Data frame)
 - Location = RawMat; press Go
 - Plan Order = Yes (checked) (in Item Planning Data frame)
 - Order Policy = POQ
 - Purchase/Manufacture = P
 - Pur LT = 5; press Go
 - **Current** Cost Data: Material, This Level = 0.005 (this is the price per inch; that is the stocking unit of measure) (in CURRENT Cost Data frame); press Go

Define Parent/Component Relationships for Items

In this activity you define parent/component relationships for your items.

- 1 Using Product Structure Maintenance, define the parent/component relationships for your product.

Key fields to populate are:

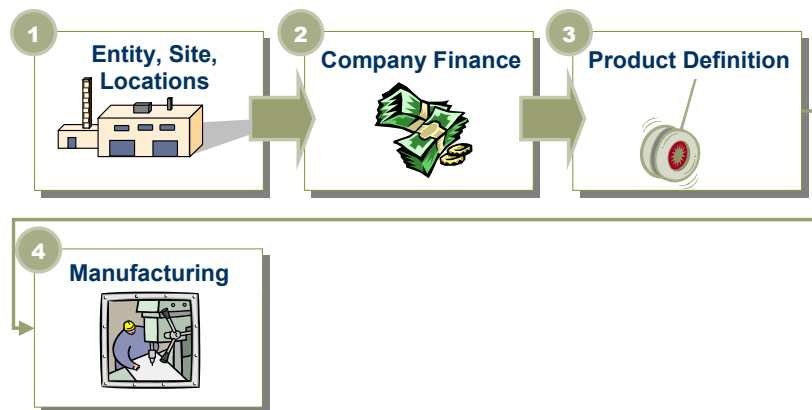
- Parent Item = 10-00 (Nu-Line Yo-Yo); press Go
 - Component Item = 10-01; press Go
 - Quantity Per = 2
 - Operation = 10; press Go
 - Component Item = 10-02; press Go
 - Quantity Per = 1
 - Operation 10; press Go
 - Component Item = 10-03; press Go
 - Quantity Per = 60
 - Operation = 20; press Go
- 2 Review the product structure in Product Structure Inquiry.

CHAPTER 5

Set Up Manufacturing Environment

Overview

Now that we have seen how you define a product in MFG/PRO, we will look at the manufacturing environment in which a product is built. Our topics in this chapter are the shop calendar, departments, work centers, machines, and routings.



Key Concepts

Shop Calendar

Departments and Work Centers / Machines

Routings

Example

Set Up Shop Calendar

Define Departments

Define Work Centers / Machines

Set Up Routings

Activities

Learning Objectives

When you finish this chapter, you should be able to:

- Describe the information provided by a department
- Describe the information provided by a work center
- Describe the information provided by a routing
- Set up a shop calendar, department, work center, and routing

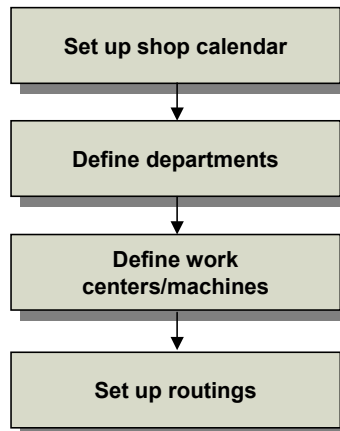
Key Concepts

Introduction Once you have set up your items in Item Master Maintenance, you need to identify where and how they are manufactured. This is done by:

- 1 Setting up manufacturing departments, work centers/machines
- 2 Then attaching manufacturing operations to each of the items

Shop calendars are also important. One calendar may apply to the whole company, or several may be set up by site, work center, and machine. The calendar is used by planning and scheduling.

On the following pages, we'll follow the order shown in the process flow below, so we'll discuss the shop calendar next.

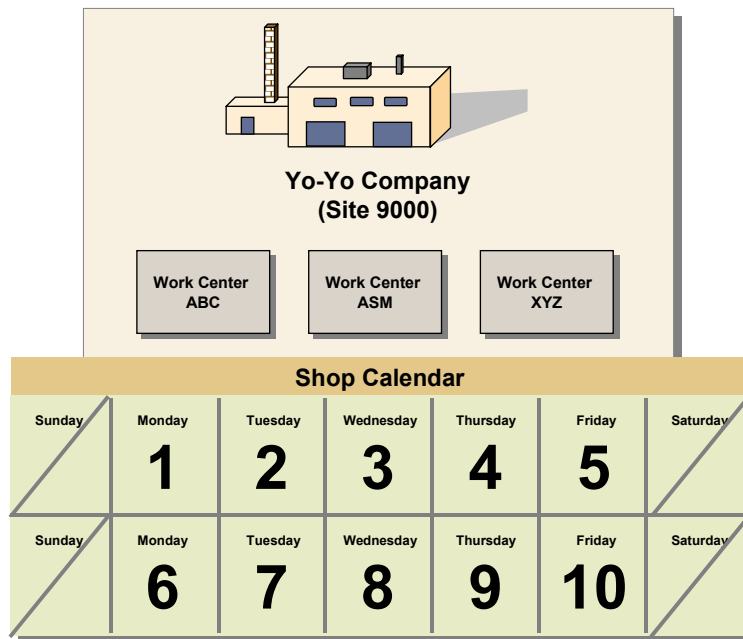


SHOP CALENDAR

The shop calendar is required for planning, manufacturing, and distribution modules. The calendar indicates what days the plant is open and how many hours are worked each day (see figure below). Work centers and operations work in conjunction with the shop calendar. This information is used to schedule:

- Start and due dates for MRP planned orders, master schedule orders, and work orders
- Operations for work orders and repetitive schedules
- The procurement or shipment of materials through association with suppliers and customers

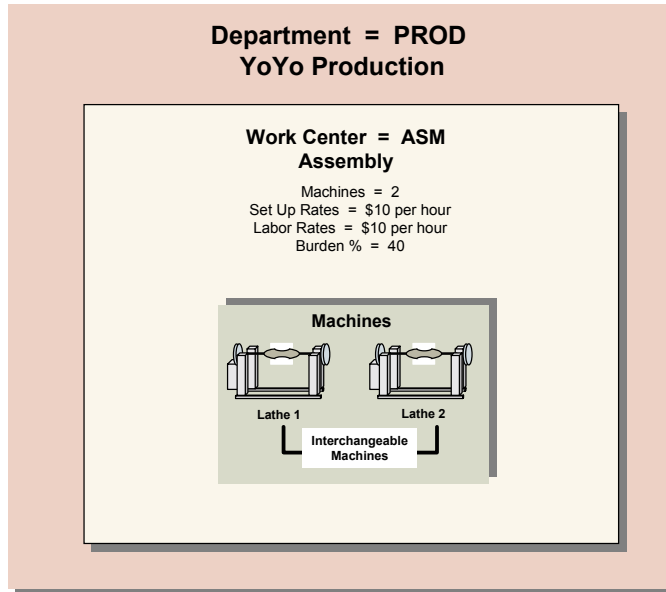
Use Calendar Maintenance and Holiday Maintenance to maintain the calendars.



In addition to the shop calendar and basic scheduling, the manufacturing environment is defined by its departments, work centers, and machines, which we will discuss next.

DEPARTMENTS AND WORK CENTERS / MACHINES

Let's look at how work areas in a manufacturing facility map onto the MFG/PRO concept of departments, work centers, and machines.



Departments A manufacturing facility is split into departments for control purposes. Each production unit (work center) must belong to one—and only one—department. This grouping is used primarily for capacity planning and accounting purposes. GL accounts are attached to each department. At least one department must be defined before you can enter work centers or routings.

Work Centers A work center is a specific production unit within a department consisting of one or more people and/or machines. In MFG/PRO, work centers are the most basic units used for operation scheduling, capacity requirements planning, and cost determinations for GL transactions. You must have at least one work center in order to set up routings and to report labor.

Machines In a work center with multiple machines, identify each one separately only if they are not completely interchangeable—for example, if work must be scheduled on a particular machine, or if cost or lead time is different on each machine. When there is more than one machine, you can specify the number of machines that can be used for each operation (parallel production).

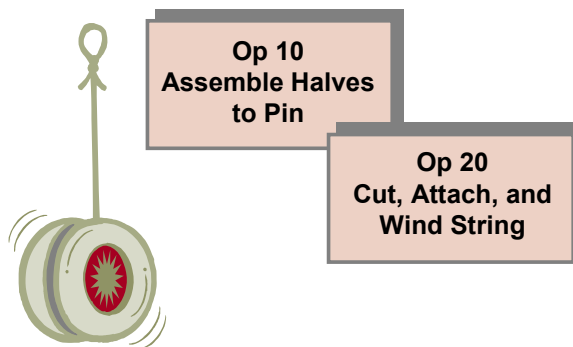
ROUTINGS

To manufacture an item or product, you must complete one or more activities or operations. The list of required operations is called a routing, which basically defines the process needed to make the item. If a product structure is the list of ingredients in a recipe, a routing is the directions.

The routing describes:

- The steps required to make the item (operations)
- Where the steps are performed (work center)
- How long they take (queue time, setup time, run time, wait time, and move time)
- The expected yield percentage at each operation (yield %)

For example, in manufacturing a yo-yo, there might be a routing with two operations with instructions to assemble halves to pin (operation 10), and to cut, attach, and wind string (operation 20).



The department and work center codes associated with routing operations link actual production results with capacity planning, cost accounting, and other programs.

Example

In this example, we'll see how Yo-Yo Company's Manufacturing Department sets up a:

- Shop calendar
- Department called PROD with a labor capacity of 8 hours/day
- Work center called ASM with setup and labor rates of \$10/hour and labor burden of 40%
- Routing with two operations: op 10 requires 1 hour setup time; additionally, per yo-yo, it requires 0.05 hr run time to assemble halves to pin
Op 20 requires no setup time, but it does require, per yo-yo, 0.0333 hr run time to cut, attach, and wind string

SET UP SHOP CALENDAR

The screenshot shows the 'Calendar Maintenance' window. At the top, there are fields for 'Site:' and 'Work Center:', both of which are blank. To the right of these is a 'Machine:' field, also blank. Below these fields is a table with two columns: 'Work Day' and 'Hours'. The table lists the days of the week from Sunday to Saturday. Sunday and Saturday have checkboxes that are unchecked and a value of 0.00 in the 'Hours' column. Monday through Friday have checkboxes that are checked and a value of 8.00 in the 'Hours' column. At the bottom of the window, there is a 'Reference:' section with 'Start:' and 'End:' fields, and a 'Daily Hours:' field. The window has standard OS controls (minimize, maximize, close) in the top right corner.

Work Day	Hours
Sunday: ☐	0.00
Monday: ☒	8.00
Tuesday: ☒	8.00
Wednesday: ☒	8.00
Thursday: ☒	8.00
Friday: ☒	8.00
Saturday: ☐	0.00

Reference:
Start: _____ End: _____ Daily Hours: _____

The shop calendar for Yo-Yo Company is set up in Calendar Maintenance. Because Yo-Yo Company has only one site and work center, it is not necessary to specify site and work center in Calendar Maintenance, so these have been left blank.

MFG/PRO allows separate shop calendars for each site/work center/machine that you create. Each can have its own work days and work-day duration entered in Calendar Maintenance. Holidays that affect all calendars can be entered in Holiday Maintenance, but work-center-specific holidays must be entered in Calendar Maintenance using the Reference field.

Additional Notes

DEFINE DEPARTMENTS

For yo-yo production, Yo-Yo Company has set up (in Department Maintenance) a department called PROD. As mentioned earlier, a department is used primarily for capacity planning and accounting purposes. In that regard, notice that Labor Capacity is entered here. It is 8 in this example, which means that this department has an 8-hour labor capacity per day Monday through Friday based on the Shop Calendar (more on Labor Capacity below). Also notice the accounts—all manufacturing related.

Additional Notes

Labor Capacity

Labor Capacity is the total number of hours of work that can be performed within a department per day. Yo-Yo Company defined day length in Calendar Maintenance (shop calendar) for its work center/machine. The department labor capacity is entered manually as the sum of the capacities of all work centers and machines in the department. Capacity Resource Planning (CRP) uses labor capacity to calculate capacity and load by department.

Department Accounts

Department account codes are used:

- When reporting labor and downtime in the Shop Floor Control and Repetitive modules
- When backflushing inventory and closing the accounting for completed work orders

DEFINE WORK CENTERS / MACHINES

The screenshot shows the 'Work Center Maintenance' window. The 'Work Center' field is set to 'ASM' and the 'Machine' field is empty. The 'Description' is 'Assembly' and the 'Department' is 'PROD'. The 'Queue Time' and 'Wait Time' are both 0.0. The 'Mach/Op' is 1. The 'Setup Crew' is 0.00, 'Run Crew' is 1.000, and 'Machines' is 1.000. The 'Mach Bdn Rate' is 0.00. The 'Setup Rate' is 10.00, 'Labor Rate' is 10.00, 'Labor Burden Rate' is 0.00, and 'Labor Bdn %' is 40.00%.

Yo-Yo Company has set up a work center called ASM. Because there is only one machine in this work center, Yo-Yo Company does not need to specify a machine in the Machine field so it is left blank. (If there were two or more machines and they could not be used interchangeably, then Yo-Yo Company would need to enter a machine code to specify machines.)

Notice that this work center belongs to the department PROD, which Yo-Yo Company set up in the previous step.

Other fields to note are Machines/Operation. This tells us the number of machines, at this work center, that can work simultaneously to process an operation. In this example, there is only one machine per operation. And, when we look at the Machines field, we see that there is only one machine in this work center.

Important information for cost calculations is the rate information. Machine Burden Rate, Setup Rate, Labor Rate, Labor Burden Rate, and Labor Burden Percent all enter into item cost calculations and labor feedback functions to determine actual costs and cost variances.

In a work center, either the number of machines or the number of people limits capacity. The Machines field contains the number of machines or people. Capacity is then calculated by multiplying total hours (from the work center calendar) by the number of machines.

Machines

Cost Calculations

Additional Notes

- Terminology**
- Machine Burden Rate.** The burden rate per hour applicable to machine run time and setup at this work center.
 - Setup Rate.** The average hourly rate paid to set up this work center.
 - Labor Rate.** The average rate paid per labor hour to run this work center.
 - Labor Burden Rate.** The labor burden rate per hour applicable to both setup and run time at this work center.
 - Labor Burden Percent.** The labor burden percentage applicable to the total labor cost at this work center.

SET UP ROUTINGS

Yo-Yo Company's Production Manager has set up the routing in Routing Maintenance. Notice that the routing code is the same as the item number for the completed yo-yo (10-00). This is usually the case.

In this example, there are two operations involved in assembling a yo-yo: first the two yo-yo halves are assembled to a pin and then string is cut, attached, and wrapped around the yo-yo (illustrated on page 117).

Setup and run times are given for each operation. For operation 10— assembling the two halves to the pin—it takes one hour to set up for this operation and then 0.05 hour to actually perform the operation (called run time). For operation 20—cutting, attaching, and winding the string around the yo-yo—there is no setup time involved and the run time is 0.0333 hour.

Setup and Run Times

The screenshot displays the 'Routing Maintenance' window for 'Nu-Line Yo Yo'. It shows two operations, 10 and 20, with their respective setup and run times. Red boxes highlight the 'Routing Code: 10-00', 'Operation: 10', 'Work Center: ASM', 'Setup Time: 1.0', 'Run Time: 0.05' for the first operation, and 'Routing Code: 10-00', 'Operation: 20', 'Work Center: ASM', 'Setup Time: 0.0', 'Run Time: 0.0333' for the second operation.

Operation	Routing Code	Work Center	Setup Time	Run Time
10	10-00	ASM	1.0	0.05
20	10-00	ASM	0.0	0.0333

Move Time. The time a work order is in transit from one operation to the next.

Terminology

Queue Time. The time work normally waits at a work center before the operation begins.

Run Time. The standard amount of time required to process a single unit of this item. It can be entered as the units per hour or run time per batch, but internally, this is converted to a run time per unit.

Set-Up Time. The time required to prepare the work center/machines for processing. This is independent of batch size.

Subcontract Lead Time. Number of calendar days it takes to process the standard order quantity at the subcontractor's site.

Wait Time. The time spent waiting after the operation is done. For example, drying, curing, cooling. This is based on a 24-hour clock, not the shop calendar.

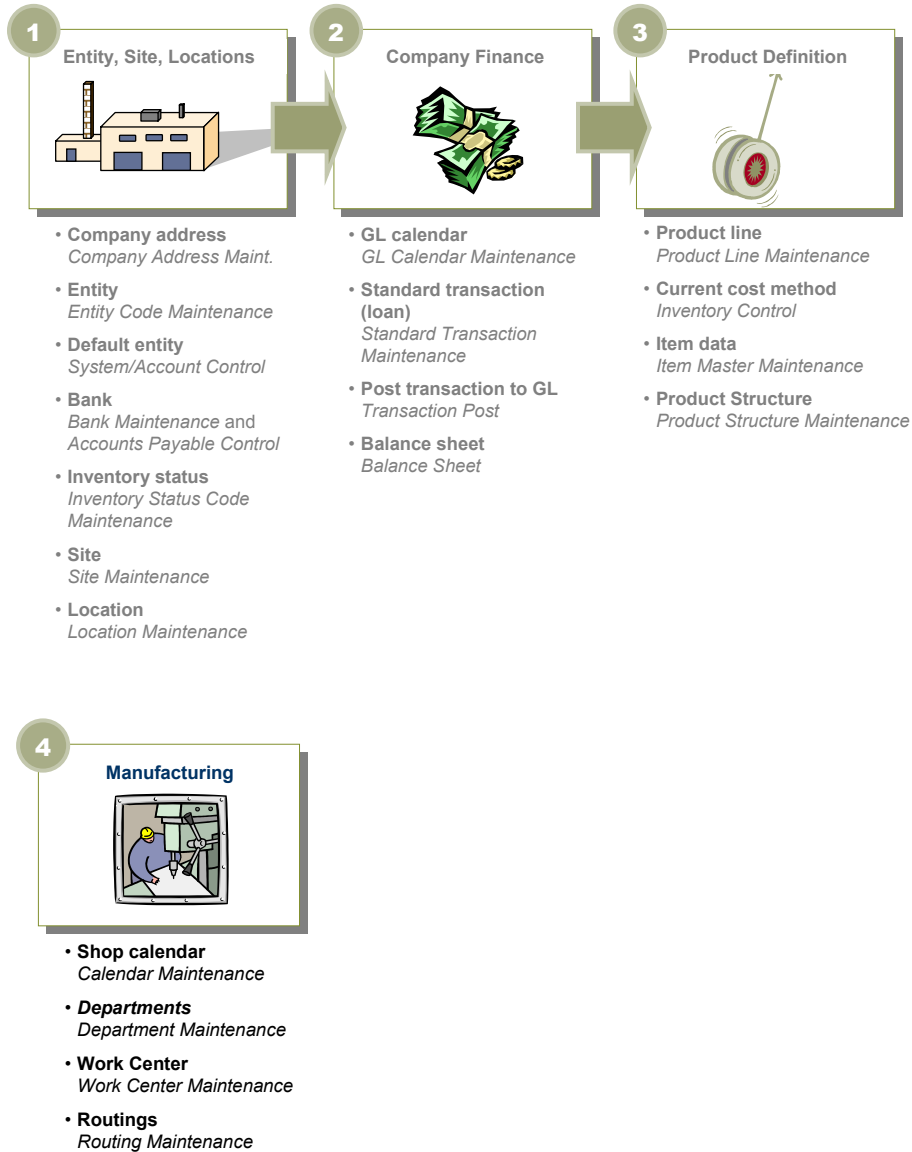
Yield Percent. The normal yield percentage for this operation. The percentage of any order expected to be in usable condition after this operation (used to calculate costs).

Review results in Routing Inquiry

rwroiq.p b+		14.13.3 Routing Inquiry				02/06/03
Routing Code: 10-00		Nu-Line Yo Yo				Output: page
Effective: 02/06/03						
Op	Work Center	Machine	Setup	Run Time	Move	Yield%
10	ASM Assembly		1.0	0.05	0.0	100.00%
	Assemble Halves to Pin					
20	ASM Assembly		0.0	0.0333	0.0	100.00%
Cut, Attach, Wind String						

The Production Planner reviews the routing in Routing Inquiry to ensure that the information is accurate.

REVIEW



In this chapter, we saw how key areas of the manufacturing environment are set up.

- Shop calendar, set up in Calendar Maintenance and Holiday Maintenance, indicates what days the plant is open and how many hours are worked each day
- Departments, set up in Department Maintenance, are used for capacity planning and accounting purposes
- Work centers and machines, set up in Work Center Maintenance, are used for operation scheduling, capacity requirements planning and cost determinations for GL transactions
- Routings, set up in Routing Maintenance, describe the steps required to make the item (operations), where the steps are performed (work center), how long they take, and the expected yield percentage at each operation

Activity

Add a Department Record

- 1 In Department Maintenance add a new department record, PROD, for yo-yo production. Key fields to populate are:
 - Department = PROD; press Go
 - Description = Yo-Yo production
 - Labor Capacity = 8
- 2 Accept the default account numbers and update the record. Where did these account numbers come from?

Add a Work Center Record

Add a work center record using Work Center Maintenance. Key fields to populate are:

- Work Center = ASM
- Machine = [blank]; press Go
- Description = Assembly
- Department = PROD
- Mach/Op = 1
- Machines = 1
- Setup Rate = 10
- Labor Rate = 10
- Labor Burden Rate = 0
- Labor Bdn % = 40%

Define a Routing or Process Definition

- 1 Use Routing Maintenance to add a routing code that is the same as the manufactured item number. Key fields to populate are:

- Routing Code = 10-00
- Operation = 10; press Go
 - Work Center = ASM
 - Machine = [blank]; press Go
 - Description = Assemble Halves to Pin
 - Setup Time = 1 (hour)
 - Run Time = 0.05 (3 minutes)

Accept remaining defaults

- 2 Enter the second operation run time. Update the record, and exit.

- Operation = 20; press Go
 - Work Center = ASM
 - Machine = [blank]; press Go
 - Description = Cut, Attach, Wind String
 - Setup Time = 0
 - Run Time = 0.0333 (2 minutes)

Accept remaining defaults

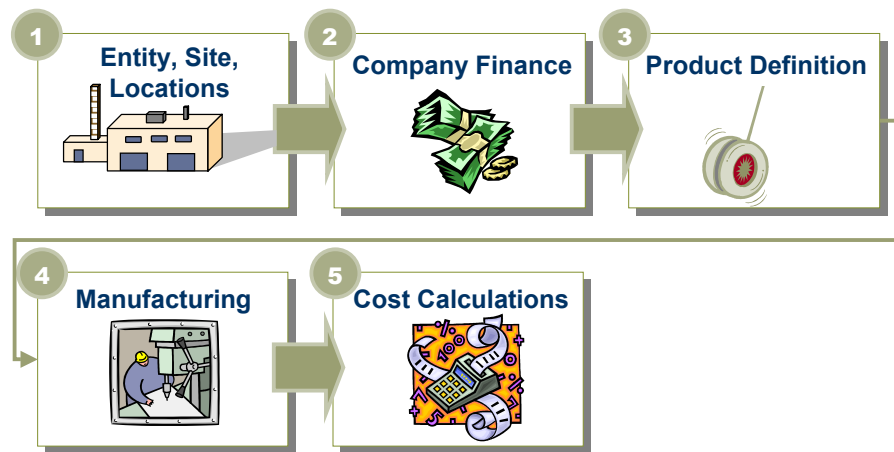
- 3 Review your routing in Routing Inquiry and make sure that both operations and the correct set-up and run times display.

CHAPTER 6

Cost Calculations

Overview

Based on information set up in product definition and manufacturing, item costs can be calculated. In this chapter, we will see how cost information contained in the routing and product structure is “rolled up” to calculate total cost. We will start by discussing routing and product structure cost roll-ups, followed by a discussion of updating the GL Cost Set by moving costs collected in the Current Cost Set to the GL Cost Set.



Key Concepts

Routing Cost Roll-Up

Product Structure Cost Roll-Up

Current Cost Set Move to GL Set

Example

Review Standard Order Quantity for Item

Roll Up Routing Costs

Roll Up Product Structure Costs

Move Current Cost Set to GL Set

Activities

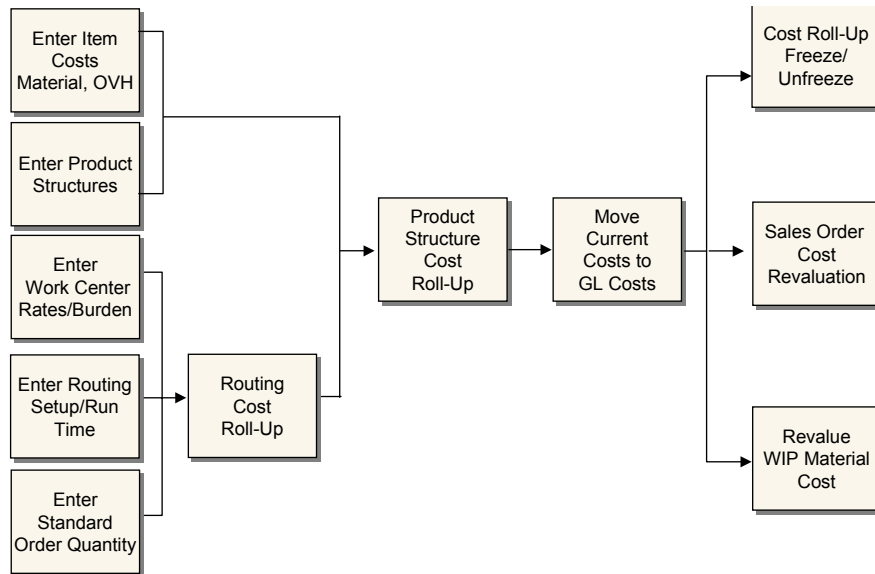
Learning Objectives

When you finish this chapter, you should be able to:

- Explain the information captured by a routing cost roll-up
- Explain the information captured by a product structure cost roll-up
- Explain the importance of the Order Quantity field (in Item Planning Maintenance) to the routing cost roll-up
- Roll up routing and product structure costs
- Copy and move current costs to the GL cost set

Key Concepts

Introduction

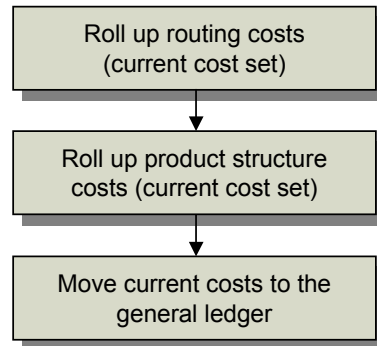


Sources of Cost

Product cost calculations are based on information from a variety of sources. Some of the key pieces are:

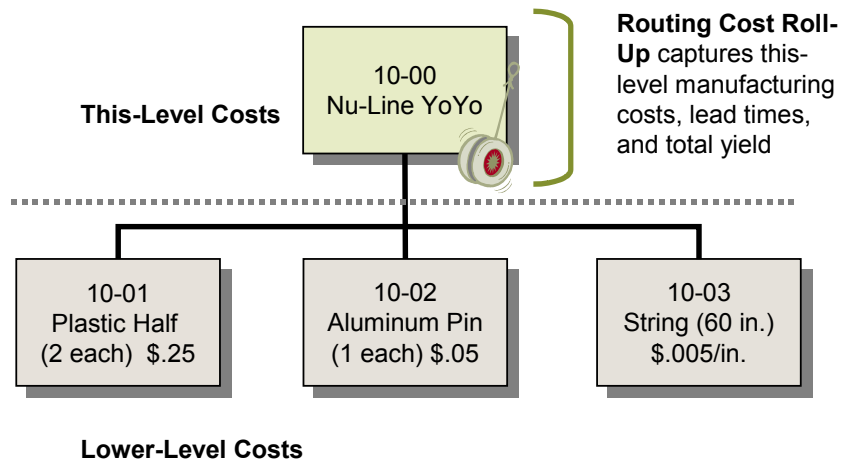
- Purchased material, overhead, and other costs entered manually in Item-Site Cost Maintenance for purchased items
- Component quantity per and scrap rates entered in the BOM
- Labor and set-up rates entered for each work center
- Variable burden at each work center
- Manufacturing setup and run times entered on each routing operation
- Yield at each operation
- Subcontract cost per unit entered on each subcontracted operation
- Item order quantity entered in Item Planning Maintenance
- BOM and routing code entered in Item Planning Maintenance

Most of this information we have already entered in the previous examples and activities, so our next steps are to roll up the routing and product structure costs, and move the current cost set to the general ledger cost set. We will cover those three steps on the following pages.



ROUTING COST ROLL-UP

Routing Cost Roll-Up calculates the manufacturing costs, lead times, and total yield for one or more items at a particular site. Costs are calculated for each operation after accessing the item master, work center, routing, and standard operation data.

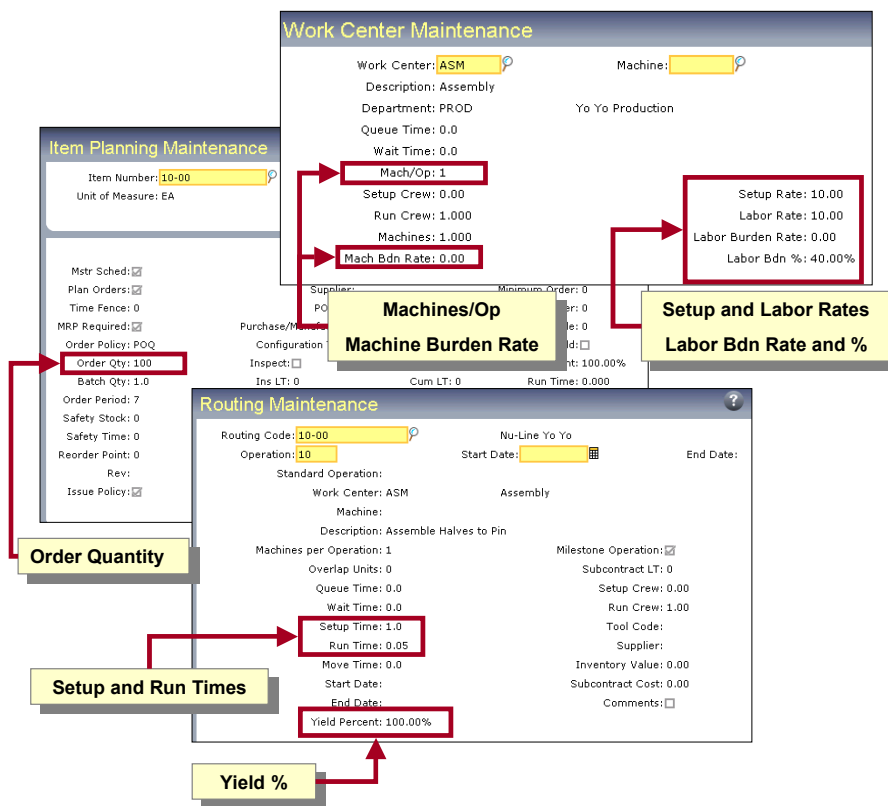


Standard Order Quantity

When manufacturing costs are calculated using Routing Cost Roll-Up, setup costs are divided by a standard order quantity. Setup and run times are based on this quantity, which is entered in Item Planning Maintenance.

What Routing Cost Roll-Up Calculations Are Based Upon

Routing cost calculations are based upon work center data for hourly rates for set-up and run labor. The work center also provides the burden rates as cost per hour for labor and machine burden, as well as labor burden percent. The routing records provide the set-up and run times, as well as the machines per operations and operation yield percent. The item planning record provides the order quantity value, which is used to amortize set-up costs over a standard or normal order size to obtain a realistic cost per unit value.

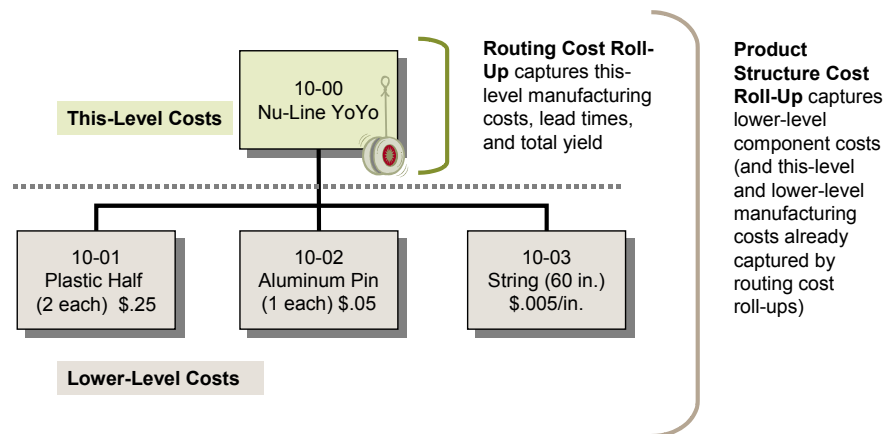


Next, we'll look at product structure cost roll-up.

PRODUCT STRUCTURE COST ROLL-UP

Product Structure Cost Roll-Up updates the costs of parent items based on the costs of their lower-level components.

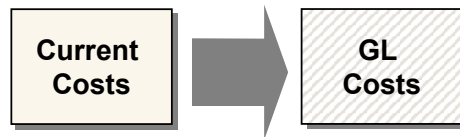
Components have information for the quantity required, expected scrap percentage, and the operation where they are required. Purchased items have material and overhead costs. Manufactured items also have labor, burden, and subcontract costs. Product Structure Cost Roll-Up uses these costs to calculate total cost by item, and lower-level run and setup times.



MOVE CURRENT COST SET TO GL SET

As discussed earlier, MFG/PRO maintains at least two cost sets for each item-site pair: Current, which reflects today's cost for an item, and GL, which is used for all general ledger transactions.

When costs change, you can update and verify the change in the Current cost set first, then use Current Cost Set Move to GL Set to reflect the change in the GL cost set. Current Cost Set Move to GL Set is most commonly used only at regular, widely spaced intervals; usually annually.



Example

In the following example, we'll see how Yo-Yo Company:

- Sets up a standard order quantity of 100 for item 10-00 (yo-yos)
- Rolls up costs for item 10-00 based on its routing
- Rolls up costs for item 10-00 based on its product structure
- Copies costs from its Current Cost Set to its GL Cost Set for items 10-00, 10-01, 10-02, and 10-03

REVIEW STANDARD ORDER QUANTITY FOR ITEM

Item Planning Maintenance

Item Number: 10-00 Description: Nu-Line Yo Yo
Unit of Measure: EA

Item Planning Data

Mstr Sched: ☒	Buyer/Planner:	Phantom: ☐
Plan Orders: ☒	Supplier:	Minimum Order: 0
Time Fence: 0	PO Site:	Maximum Order: 0
MRP Required: ☒	Purchase/Manufacture:	Order Multiple: 0
Order Policy: POQ	Configuration Type:	Op Based Yield: ☐
Order Qty: 100	Inspect: ☐	Yield Percent: 100.00%
Batch Qty: 1.0	Ins LT: 0	Cum LT: 0
Order Period: 7	Mfg LT: 0	Pur LT: 0
Safety Stock: 0		Run Time: 0.000
Safety Time: 0	ATP Enforcement: NONE	Setup Time: 0.000
Reorder Point: 0	Family ATP: ☐	EMT Type: NON-EMT
Rev:	Run Seq 1:	Auto EMT Processing: ☐
Issue Policy: ☒	2:	Network Code:
		Routing Code:
		BOM/Formula:

Review Standard Order Quantity

Yo-Yo Company has set up a standard order quantity of 100 for its yo-yo (10-00), which is used to amortize set-up costs. This information needs to be entered before rolling up the routing costs. The standard order quantity is entered in Item Planning Maintenance (or the Item Planning Data frame of Item Master Maintenance).

ROUTING COST ROLL-UP

Using Routing Cost Roll-Up, Yo-Yo Company is ready to roll up its routing costs for item 10-00 (plastic yo-yo) at site 9000. Notice that Yo-Yo Company is rolling up the Current Cost Set, not the GL Cost Set.

Additional Notes

You can roll up either Current or GL costs. The default is to roll up Current costs. Although you can roll up GL costs when they change, it is safer to roll up Current costs and then copy them to the GL.

After rolling up the routing costs, it is a good idea to verify that the roll-up was successful. This can be verified in Item-Site Cost Inquiry, which we will discuss next.

Item-Site Cost Inquiry

Item Number: 10-00 Description: Nu-Line Yo Yo
Unit of Measure: EA
Inventory Site: 9000 GL Cost Source Site: 9000 Output: terminal

ItemPriceData

Price: 10.00 Tax: No Tax Class:

Totals

Totals: 1.3062 0.00 1.3062 02/06/03

CurrentCostData(Site:9000/Set:Current)

Element	This Level	Lower Level	Total	Pri	Category	A/O
Material	0.00	0.00	0.00	yes	Material	no
Labor	0.933	0.00	0.933	yes	Labor	no
Burden	0.3732	0.00	0.3732	yes	Burden	no
Overhead	0.00	0.00	0.00	yes	Overhead	no
Subcontr	0.00	0.00	0.00	yes	Subcontr	no

**Verify Current
labor and
burden costs**

Using Item-Site Cost Inquiry, Yo-Yo Company verifies that the Current Cost Set routing costs (labor and burden) were rolled up for item 10-00 at site 9000.

To see details on how the labor and burden costs were calculated, see Appendix A.

After completing and verifying the routing cost roll-up, the product structure cost roll-up can be initiated.

PRODUCT STRUCTURE COST ROLL-UP

Product Structure Cost Roll-Up

Site: 9000
 Cost Set: Current
 Default Current Cost Set
 [last / CURR]

Item Number: 10-00 To: 10-00

Prod Line: To:
 Item Type: To:
 Group: To:

As of Date: 02/06/2003

Low Level Material: ☒
 Low Level Labor: ☒
 Low Level Burden: ☒
 Low Level Overhead: ☒
 Low Level Subcontract: ☒
 Low Level Labor Time: ☐
 Low Level Setup Time: ☐
 Print Audit Trail: ☒

Set Cost Update Field for
 All/Changed Only: All

Include Yield %: ☒

Output: page
 Batch ID:

Using Product Structure Cost Roll-Up, Yo-Yo Company rolls up its product structure costs for item 10-00 (plastic yo-yo) at site 9000. This includes the material costs for the lower-level components, such as the plastic halves, aluminum pin, and string.

Again notice that Yo-Yo Company is rolling up the Current Cost Set, not the GL Cost Set.

Verify costs

Item-Site Cost Inquiry

Item Number: 10-00 Description: Nu-Line Yo Yo
 Unit of Measure: EA
 Inventory Site: 9000 GL Cost Source Site: 9000 Output: terminal

ItemPriceData

Price: 10.00 Tax: No Tax Class:

Totals

Totals:	1.3062	0.85	2.1562	02/06/03

CurrentCostData(Site:9000/Set:Current)

Element	This Level	Lower Level	Total	Pri	Category	A/O
Material	0.00	0.85	0.85	yes	Material	no
Labor	0.933	0.00	0.933	yes	Labor	no
Burden	0.3732	0.00	0.3732	yes	Burden	no
Overhead	0.00	0.00	0.00	yes	Overhead	no
Subcontr	0.00	0.00	0.00	yes	Subcontr	no

Using Item-Site Cost Inquiry again, Yo-Yo Company verifies that the Current Cost Set product structure costs (lower-level components) were rolled up correctly for item 10-00 at site 9000.

Referring to the product structure diagram on page 136, we can see that the material cost of \$0.85 is based on the following:

$$\begin{aligned} \$0.85 = & \text{cost of 2 plastic halves} + \text{aluminum pin} + \text{60 inches of string} \\ & (2 \times 0.25) + (1 \times 0.05) + (60 \times 0.005) \end{aligned}$$

MOVE CURRENT COST SET TO GL SET

Site	Cost Set	Site	Cost Set
From: 9000	Current	To: 9000	Standard
Item Number: 10-00		To: 10-03	
Prod Line:		To:	
Item Type:		To:	
Group:		To:	
ABC Class:		To:	
Pur/Mfg:		To:	
Buyer/Planner:		To:	
Pct Change Allowed:-	?	To:+	?

☒ Copy Material Cost:
☒ Copy Labor Cost:
☒ Copy Burden Cost:
☒ Copy Overhead Cost:
☒ Copy Subcontract Cost:

Output:

Batch ID:

Yo-Yo Company now wants the general ledger to reflect the cost information it has entered in the Current Cost Set for items 10-00 through 10-03 at site 9000, so Yo-Yo Company is ready to copy and move Current costs into the GL using Current Cost Set Move to GL Set.

Additional Notes

Percent Change Allowed

This field restricts the cost movement to items whose GL costs would change only within the indicated range. To accept the movement of all costs regardless of the difference from the previous GL costs, enter a ? (question mark) in this field and its corresponding To field. You can look at the potential consequences before actually moving the current costs to GL costs. To do this, set Pct Change Allowed to 0%. The proposed changes will be displayed on the output device you have chosen, but not made to the GL costs.

Verify item costs in Current and GL cost sets

Item Number: 10-00
Unit of Measure: EA
Inventory Site: 9000

Description: Nu-Line Yo Yo
GL Cost Source Site: 9000
Output: terminal

ItemPriceData
Price: 10.00 Tax: No Tax Class:

Totals
Totals: 1.3062 0.85 2.1562 02/06/03

GLCostData(Site:9000/Set:Standard)

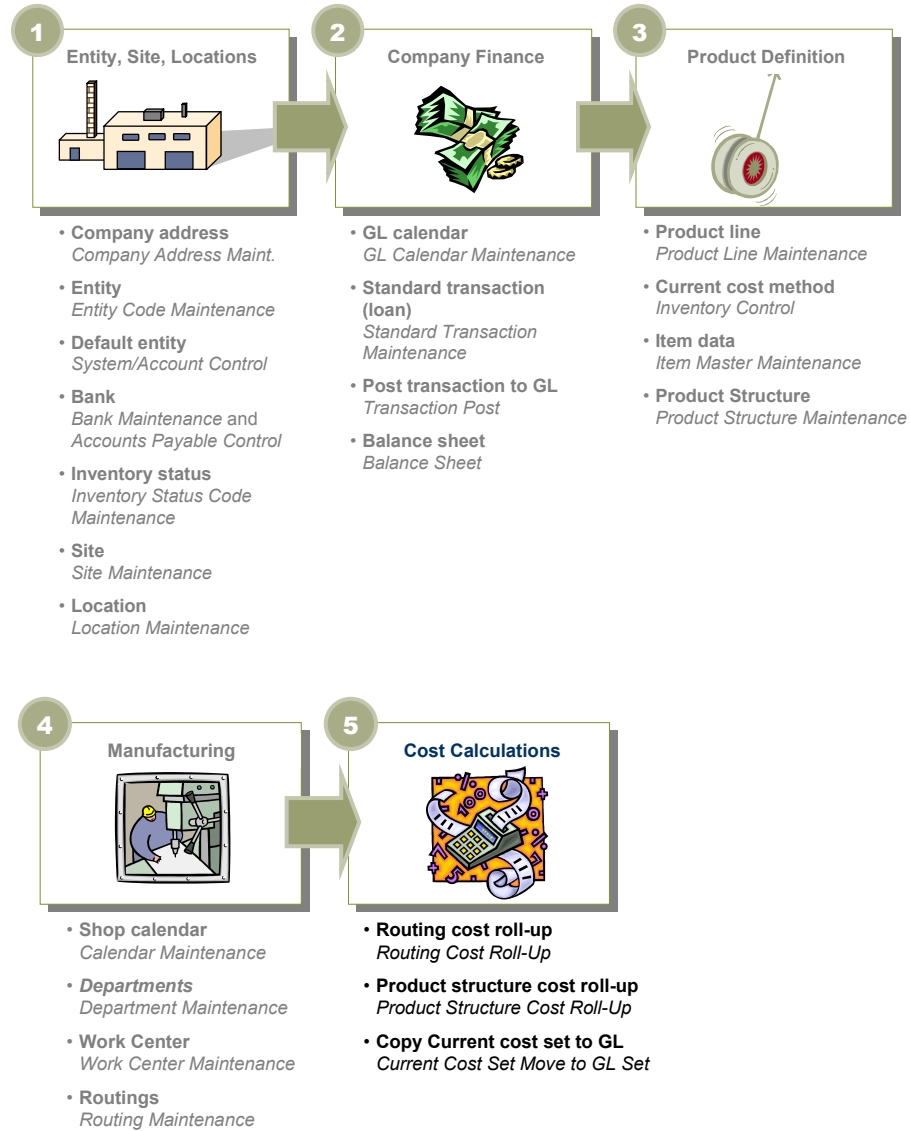
Element	This Level	Lower Level	Total	Pri	Category	A/O
Material	0.00	0.85	0.85	yes	Material	no
Labor	0.933	0.00	0.933	yes	Labor	no
Burden	0.3732	0.00	0.3732	yes	Burden	no
Overhead	0.00	0.00	0.00	yes	Overhead	no
Subcontr	0.00	0.00	0.00	yes	Subcontr	no

CurrentCostData(Site:9000/Set:Current)

Element	This Level	Lower Level	Total	Pri	Category	A/O
Material	0.00	0.85	0.85	yes	Material	no
Labor	0.933	0.00	0.933	yes	Labor	no
Burden	0.3732	0.00	0.3732	yes	Burden	no
Overhead	0.00	0.00	0.00	yes	Overhead	no
Subcontr	0.00	0.00	0.00	yes	Subcontr	no

Yo-Yo Company can use Item-Site Cost Inquiry again; this time to verify that the costs for item 10-00 now shown in the GL are as expected. That is, the GL costs should be the same as the Current costs, and they are.

REVIEW



In this chapter, we saw how product costs are developed using:

- Routing cost roll-ups, which capture this-level manufacturing costs, lead times, and total yield
- Product structure cost roll-ups, which capture lower-level component costs and all costs previously captured by routing cost roll-ups

We also saw how up-to-date costs reflected in the Current Cost Set can be moved to the GL Cost Set to update that cost set as appropriate.

What's Next

We have covered the basic steps in setting up MFG/PRO so that we are now ready to see how MFG/PRO handles a variety of order transactions such as purchase orders, work orders, and sales orders. Processing such transactions will be the topic of the next section.

Activity

Check Standard Order Quantity for Item

In the Item Planning Maintenance Order Qty field, add a standard order quantity of 100 to item 10-00. This is the number of units that the cost of set-up time is spread over.

Calculate Amount of Labor, Burden and Subcontract Costs for Manufactured Items

- 1 Select Routing Cost Roll-Up to roll up the routing cost. Key fields to populate are:
 - Site = 9000; press Go
 - Cost Set = Current; press Go
 - Item Number = 10-00 to 10-00; press Go
- 2 Use the default settings for all other fields and update.

Note: There is no output for this function.
- 3 In Item Routing Cost Report or Item-Site Cost Inquiry, check to see if your CURRENT costs were correctly calculated for labor and burden.
 - Labor should be 0.933
 - Burden should be 0.3732

Calculate Amount of Lower-level Material, Labor, Burden, and Subcontract Costs

- 1 Select Product Structure Cost Roll-Up to roll up the product structure.
Key fields to populate are:
 - Site = 9000; press Go
 - Cost Set = Current; press Go
 - Item Number = 10-00 to 10-00; press Go
- 2 In Item-Site Cost Inquiry, check to see if your CURRENT costs were correctly calculated for lower-level costs.
 - Total cost should be 2.1562
 - Material total should be 0.85
 - Labor total should be 0.933
 - Burden total should be 0.3732

Copy the Current Cost Set to the General Ledger Cost Set

- 1 Check the current cost set costs in the Product Structure Cost Report or Item-Site Cost Inquiry.
You should have lower-level material costs, and this-level labor and burden costs for your end item.
- 2 If you are satisfied, use Current Cost Set Move to GL Set to copy the data from your Current cost set to your GL (standard) cost set. Key fields to populate are:
 - From and To Site = 9000
 - Item Number = 10-00 to 10-03 (be sure to include all items)
 - Pct Change Allowed = ? (“From” and “To”)

The Pct Change Allowed fields set upper and lower limits for the percent of change between cost sets. To accept the movement of all costs regardless of the difference from the previous GL costs, enter a “?” (question mark) in the “from” and “to” fields.
- 3 Accept the default values for the remaining fields.

Checkpoint: Component items only have material costs. Check to be sure that their costs have been moved to the GL Cost Set. Use Item-Site Cost Inquiry to verify.

SECTION 3

Processing Transactions in MFG/PRO

Chapter 7

Purchasing

Overview

In this chapter, we will look at the procurement process from initial requisition to material receipt. We'll begin by discussing key concepts followed by an example that illustrates the purchasing flow.

Key Concepts

Supplier

Requisitions

Types of Purchase Orders

Order Receipt

Example

Add Supplier

Create Purchase Order

Receive Items and Create Receiver

Set Up Routings

Activities

Learning Objectives

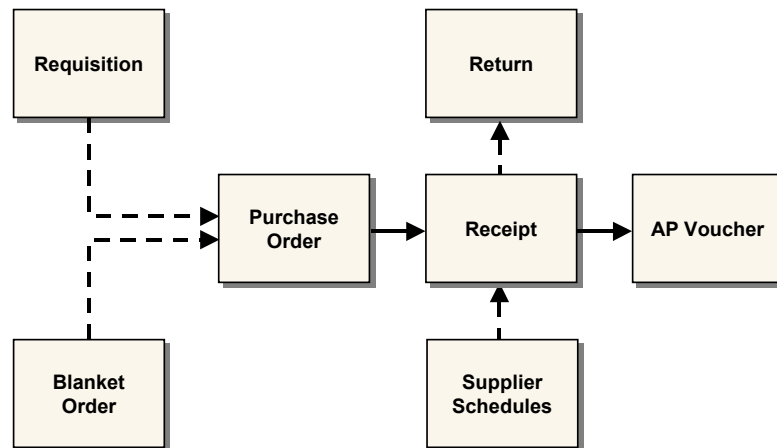
When you finish this chapter, you should be able to:

- Describe the purchase flow
- Explain how the system handles the different numbering systems that suppliers and customers use for the same item
- Explain how the system handles the different units of measure that suppliers and customers use for the same item
- Describe the purchase requisition flow
- Describe the three kinds of purchase orders that MFG/PRO supports
- Enter credit terms
- Enter a supplier
- Enter a unit of measure conversion
- Enter supplier item information

Key Concepts

Introduction Purchasing lets you manage all aspects of ordering and receiving materials and services—requisitions, approvals, purchase orders, receipts, and returns. It supports purchasing of products as well as non-product materials and services—such as subcontracting services—and gives you the means to support discrete, process, and just-in-time (JIT) manufacturing.

A purchase involves several steps. Often the first step is a requisition, which is the result of demands recognized by material requirements planning (MRP). An order is next, either a purchase order, a blanket order, or a supplier schedule. When the ordered goods arrive, a record is made called a receipt. If the goods are returned to the supplier, another record is made. The system keeps a record of each step.



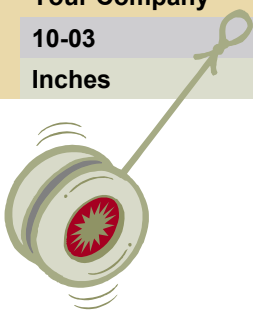
We'll look at several of these stages of the purchasing process in more detail on the following pages, but first we must have a supplier entered in the system before we can perform these purchasing functions. So we'll begin this chapter with a discussion about entering supplier information into the system.

SUPPLIER

Prior to using purchasing functions, you need to set up information for each of your suppliers. Supplier Maintenance is used to record the address to which all purchase orders are sent.

In addition to setting up basic address information, you may want to set up item number and unit of measure conversions for your suppliers (see figure below), and credit terms extended to you by your suppliers.

	Your Company	Supplier
Item	10-03	Yo-Yo String
UOM	Inches	Roll



Supplier Items

Supplier items are used to cross-reference your item number with your supplier's item number. Later, in Purchasing, you can reference the supplier's item number instead of your own, and the system will find your item number for you.

Unit of Measure

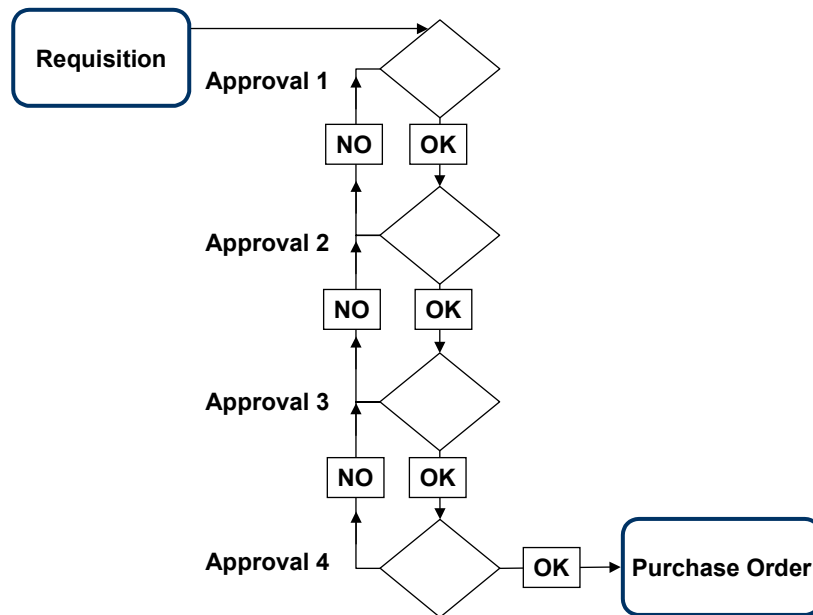
Unit of measure conversions can be set up so that a unit of measure for a purchase order line can be different than the item master unit of measure. Then, when the item is received, it is converted to the item master unit of measure.

What's Next

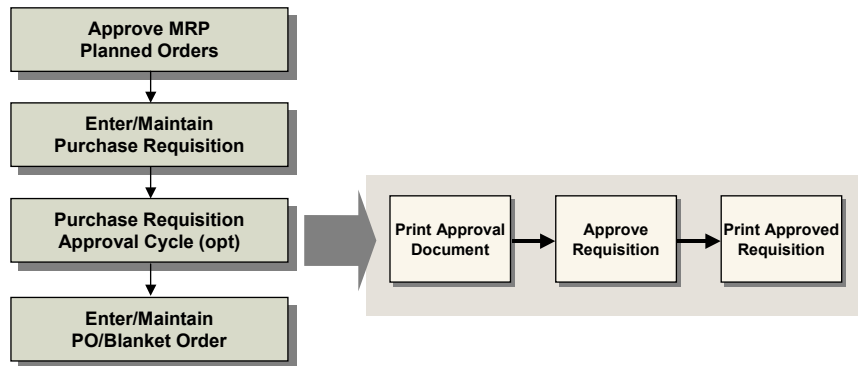
The purchasing process may optionally begin with a requisition, so requisitions will be our next topic of discussion.

REQUISITIONS

A requisition is a record stating that an item is needed. Requisitions specify quantity, date needed, and place to be delivered. A requisition is often the first step of a purchase, although you can issue a purchase order without it. Some companies also require multiple approvals before requisitions become orders. Once the requisition's information is transferred to a purchase order or a blanket order, it is deleted.



Requisition Process Flow



You can create standard requisitions manually with Purchase Requisition Maintenance or by approving an MRP planned order with Planned Purchase Order Approval. The system refers to requisitions by requisition number.

Approval Process

Companies using requisitions may choose to go through a requisition approval process. Approval levels can be defined to establish approval requirements by product line, site, requested by, and purchase expense account. Then, whenever a requisition is created, it is automatically assigned an approval code. This determines the approval level based on the requisition cost. The approval level indicates the person who must sign off on the requisition before the item can be purchased.

Multiple approval levels can be recorded on each requisition.

Example A \$50,000 purchase may need regional manager approval, but the purchasing manager and division manager must sign off first before it is sent to the regional manager.

Printed Requisitions

Requisition documents can be printed for each item, listing the approved requisitions for that item with the quantity and due date.

Supplier-item quotes can be printed on the requisition document. These are similar to manual “buy cards” (used in many purchasing departments) because they list the supplier options.

What's Next

Next, we'll look at the three types of purchase orders that MFG/PRO supports.

TYPES OF PURCHASE ORDERS

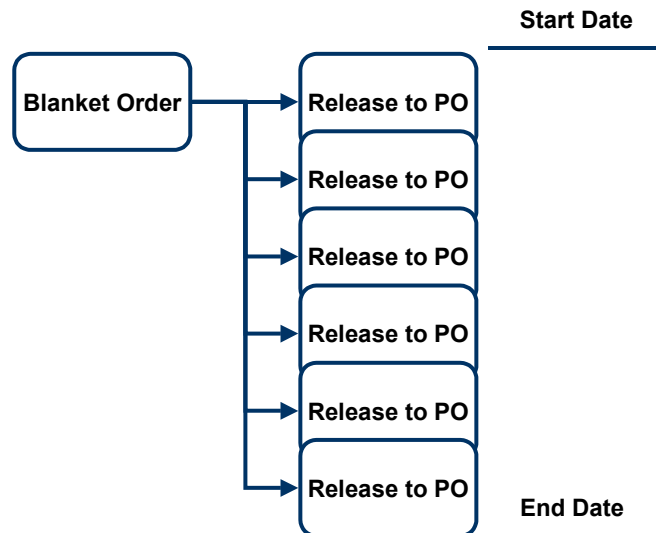
MFG/PRO supports three kinds of purchase orders:

- Blanket purchase orders
- Supplier schedules
- Discrete purchase orders

Although we discuss all three kinds of orders in this section, our emphasis will be on discrete purchase orders—the Example section on page 165 is based upon a discrete PO.

Blanket Orders

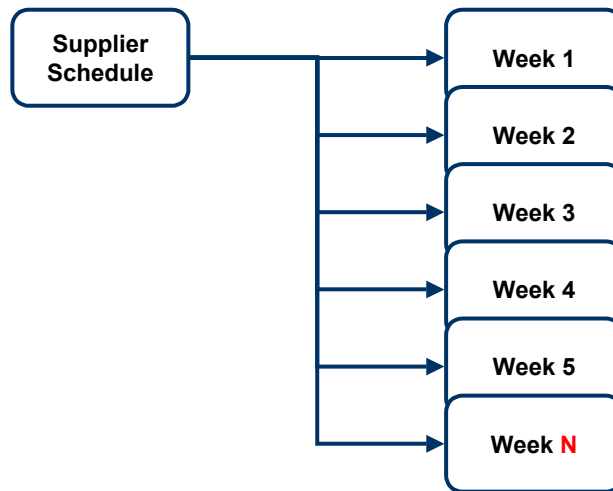
Use these for multiple deliveries of stock items, where an ongoing relationship with the supplier is assumed, but exact delivery dates are yet to be determined. Quantities and due dates can be entered up to the time when a blanket order becomes a purchase order. See figure below.



Example A manufacturer of circuit boards buys solder at irregular intervals, but always from the same supplier. A blanket order for 12 months is created. Each month an order for solder is released to the supplier, each order specifying a particular quantity.

Supplier Schedules

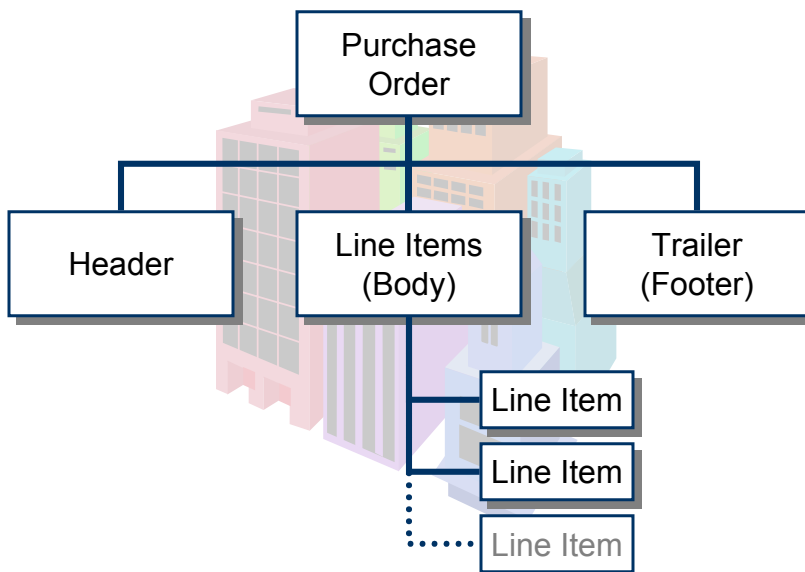
A supplier schedule is an agreement with a supplier that guarantees a specified order level. Supplier schedules specify dates and even hours of delivery for the near term, and inform MRP and the supplier about long-term plans. These are used for high-volume, repetitive purchasing. See figure below.



Example A manufacturer of circuit boards needs circuit board blanks supplied each week. The manufacturer knows its exact needs for the next four weeks and its approximate needs for the next 12 months. The supplier of the blanks uses the information in the supplier schedule to plan orders for raw materials and to plan production and deliveries.

Discrete Purchase Orders

Use discrete purchase orders for single transactions with a supplier, where there is no assumption that further transactions will occur. Purchase orders contain a single delivery date for each line item. MRP treats purchase order items as supply and assumes that ordered amounts will be available on the delivery date. Receipts can be processed against these purchase orders. We'll look at how to process a discrete PO in the Example section.



What's Next

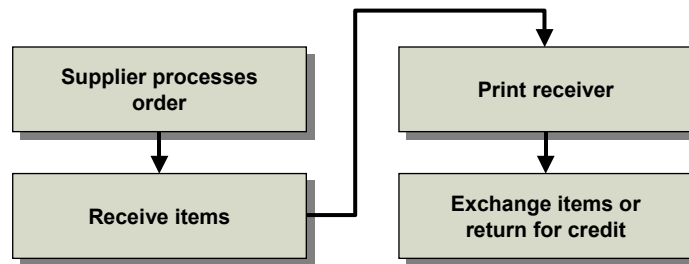
The next step in the purchasing process is to receive the goods from the supplier, so we'll discuss purchase order receipts in the next section.

ORDER RECEIPT

Purchase order receipt transactions are performed when material is received into inventory against an outstanding purchase order. When material is received, inventory is updated as well as the open order quantity on the PO.

All PO receipts and returns generate receivers for matching with supplier invoices in Accounts Payable. A receiver is a record that goods have been received into inventory. Receivers update inventory balances and allow Accounts Payable to verify quantities and prices before paying suppliers.

Receiving documents can be printed and attached to the items or routed to the Accounts Payable department. The order receipt flow is shown in the figure below.



Example

Let's now look at a simple example in which Yo-Yo Company sets up:

- Credit terms of Net30 in Credit Maintenance
- A supplier in Supplier Maintenance with credit terms of Net30
- A unit of measure conversion for the string (item 10-03) so the system will know that one roll (RL) is equal to 3,000 inches (IN)
- A supplier item so that the system will know that customer item "10-03" is the same as supplier item "yo-yo string." This is set up in Supplier Item Maintenance, which also has information about supplier lead time, quote price, and quote quantity. Based on the quote price, if Yo-Yo Company purchases string by the roll and buys at least one roll, then it will cost less.

Once everything is set up, Yo-Yo Company's Buyer creates a purchase order for the component items (10-01, 10-02, and 10-03) in sufficient quantities to build 100 yo-yos (item 10-00).

The items are received and the order is closed.

ADD SUPPLIER

In the process of adding a supplier, Yo-Yo Company has set up credit terms, supplier items, and unit of measure conversion.

Set Up Credit Terms

Credit Terms Maintenance

Terms Code: **Net30**
 Description: Payment Due in 30 Days

Multiple Due Dates: ☐

Disc Pct: 0.00%
 Disc Days: 0
 Disc Date From: 1
 Discount Date:

Due Days: **30**
 Minimum Due Days: 0
 Due Date From: **1**
 Due Date:

Base Date:
 Base Days: 0
 Grace Days: 0
 Terms Interest Pct: 0.00
 Daily Overdue Int Pct: 0.00

← →

Add Link

Yo-Yo Company's supplier, Yo-Yo Supplies, Inc., has arranged payment terms with Yo-Yo Company of net 30. That is, payment is due to Yo-Yo Supplies, Inc., within 30 days. The credit terms entered in Credit Terms Maintenance display as the default on all purchase orders for Yo-Yo Supplies.

Enter Supplier

Supplier Maintenance

Supplier Address

Supplier: 05000000 Temporary: ☐

Name: Yo Yo Supplies Inc.

Address: 123 State Street

Address:

City: Santa Barbara State: CA Post: 93101 Format: 0

Country: United States of America USA County: Santa Barbara

Attention: Johnathan Montgomery [2]: MaryJo Spencer

Telephone: (805) 555-1234 Ext: 1234 [2]: (805) 555-1234 Ext: 2345

Fax/Telex: (805) 555-2345 [2]: (805) 555-2345 Added: 02/07/2003

Supplier Data

Sort Name: Yo Yo Supplies Inc.

Type:

Pur Acct: 5100

AP Account: 2100

Ship Via:

Remarks:

Supplier Data

Bank: A

Currency: USD

Check Form: 1

Language:

Misc Creditor:

Purchase Contact:

AP Contact:

Promotion Group:

Supplier Terms Data

Cr Terms: Net30

Disc Pct: 0.00%

CoC Number:

Partial OK: ☐

Payment Hold: ☐

DB Number:

Taxable: ☐ Tax ID: TID Notice:

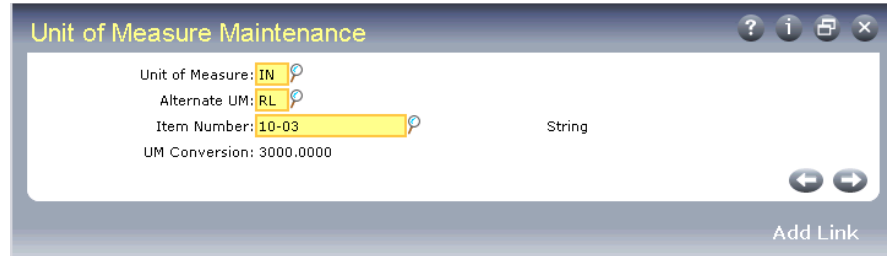
Prepayment Balance: 0.00

Debtor Number:

Tax Report: ☐

Pay Specification: ☐

In Supplier Maintenance, Yo-Yo Company's Buyer uses a system-generated supplier code for the yo-yo components' supplier (Yo-Yo Supplies, Inc.). The Buyer also enters Yo-Yo Supplies' address, Yo-Yo Company's bank (this is the bank that Yo-Yo Company will use to pay this supplier), and credit terms of Net30.

Set Up UOM ConversionA screenshot of the 'Unit of Measure Maintenance' window in MFG/PRO. The window has a title bar with standard icons (help, info, save, close). The main area contains four fields: 'Unit of Measure' with the value 'IN', 'Alternate UM' with the value 'RL', 'Item Number' with the value '10-03', and 'UM Conversion' with the value '3000.0000'. To the right of the 'Item Number' field is the text 'String'. At the bottom right of the window is an 'Add Link' button with left and right arrow icons.

In Unit of Measure Maintenance, Yo-Yo Company's Buyer enters a UOM conversion for the yo-yo string.

Yo-Yo Company's base unit of measure for the string (item 10-03) is the inch, yet the supplier sells string by the roll. So far, the system only knows the cost of the string by the inch (set up in Item Cost Maintenance, \$0.005/inch), not by the roll because the system does not yet know how many inches are in a roll of string.

In this step, the Buyer defines how many inches are in a roll of string for a specific item (item 10-03). Now the system knows that 3,000 inches equal one roll of string for this item.

Add Supplier Item

Yo-Yo Company's Buyer enters information obtained from the supplier about the string in Supplier Item Maintenance. Note that the supplier ID for the string is "Yo-Yo String," whereas Yo-Yo Company's internal ID for the string is 10-03. Normally this is the case; that is, suppliers do not use the same numbering scheme that their customers do. By entering the supplier item information in the system, the Buyer will be able to use either the supplier's item ID or Yo-Yo Company's item ID on purchase orders and the system will know it is for the same item.

Other things to note on this screen are:

- The supplier uses a unit of measure of RL (roll) for the string
- Yo-Yo Supplies not only sells string by the roll, it sells it for less when purchased by the roll.

Note the Quote Price field of \$10. Recalling that a roll of string equals 3,000 inches, this quote means that at \$10 per roll, the string costs \$0.003333 per inch instead of the standard \$0.005 per inch. This discount is based on purchase of one roll or more (Quote Quantity field equals 1).

To obtain this discount, Yo-Yo Company must enter on its purchase order: item 10-03 (or supplier item "yo-yo string"); supplier code for Yo-Yo Supplies, Inc.; a unit of measure of RL (roll); and a quantity of one or more.

- Supplier lead time of 5 days. This drives the purchase lead time entered in Item Master Maintenance for this item.

CREATE PURCHASE ORDER

Purchasing Control

Bill To: 9000
 Ship-To: 9000
 PO Prefix: PO
 Next Purchase Order: 00050003
 Receiver Prefix: PR
 Next Receiver: 00003005
 Sort PO By: Site
 Receive All: ☐
 Price Table Required: ☐
 Disc Table Required: ☐
 Apprvd Reqs for POs: ☐
 Inspection Location: inspect
 Receiver Type: 2
 Sequential Receiver: ☒
 Tolerance Percent: 10.00
 Tolerance Cost: 1,000.00

Ln Format S/M: Single
 PO Header Comments: ☐
 PO Line Comments: ☐
 Cancel Backorders: ☐
 Keep Booking History: ☒
 ERS Processing: ☐
 ERS Option: 1

Type: 0 - Do not print receivers
 1 - Print for each shipment
 2 - Print for each item/shipment
 (Acceptance Limit For Overshipments)

In Purchasing Control, Yo-Yo Company's Buyer enters site 9000 as the bill-to and ship-to location. Other default information for the purchase order is entered here, such as PO and receiver prefixes, and line format (which is "single" in this example). Tolerance Percent and Tolerance Cost pertain to overshipments

Additional Notes

Line Formats

Single entry lets you customize due dates, sites, tax statuses, and other information for each line item on a purchase order. Multiple entry lets you enter basic information such as item number, quantity, and price for several lines on a single screen. The default format is specified in Purchasing Control.

Enter Header Information

Purchase Order Maintenance

Purchase Order: PO50003 Supplier: 05000000 Ship-To: 9000

Supplier				Ship To			
Yo Yo Supplies Inc. 123 State Street				Yo Yo Co.			
Santa Barbara CA 93101				Carpinteria CA 93103			
United States of America				United States of America			

Order Date: 02/07/2003 Price Tbl: Confirming: ☒ Imp/Exp: ☐
 Due Date: 02/07/2003 Disc Tbl: Currency: USD Language:
 Buyer: Ln Disc: 0.00% Taxable: ☐ Consign: ☐
 Bill To: 9000 Site: 9000 Fixed Price: ☒ Credit Terms: Net30 0.00
 Sales/Job: Project: Entered By: qad Requested By:
 Contract:
 Contact:
 Remarks:

Tax Usage:
 Tax Environment: USA/USA
 Tax Class:
 Taxable: ☐
 Tax In: ☐

In Purchase Order Maintenance, Yo-Yo Company's Buyer enters a purchase order for the components required to build 100 yo-yos. We will look at each part of this purchase order.

The first part of the order has "header" information, such as supplier name (Yo-Yo Supplies), ship-to address (Yo-Yo Company's site 9000), credit terms of Net30, currency of USD, tax information, and order and due dates (default is today's date).

In this example, the system automatically generates the purchase order number.

Some of the information that Yo-Yo Company's Buyer set up in Supplier Maintenance and Purchasing Control is now seen in the Purchase Order Maintenance screen above.

Questions

- What default information came from the supplier record (Supplier Maintenance)?
- What effect do the purchasing control settings have?

**Enter Line 1
Data**

Purchase Order Maintenance

Purchase Order: P050003 Supplier: 05000000 Ln Format S/M:Single

Ln	Site	Req	Item Number	Qty Ordered	UM	Unit Cost	Disc%
1	9000		10-01	200.0	EA	0.25	0.00%

Qty Received: 0.0 Due Date: 02/07/2003 CRT Int: 0.00

Qty to Rel: 0.0 Pur Acct: 5100

Single Lot: Performance Date: Project: Type: Taxable: Inspect Req: Cmnts: UM Conversion: 1.0000

Location: RawMat Need Date: Supplier: Manufacturer: Stock UM Quantity: 200.0 EA

Revision: Sales/Job: Description: Plastic Half Update Avg/Last Cost: Extended Net Cost: 50.00

Status: Fixed Price: Item: Manufacturer: Stock UM Quantity: 200.0 EA

For line 1, Yo-Yo Company's Buyer enters an order for 200 plastic halves (item 10-01). The unit of measure and unit cost information default from the information entered earlier in Item Master Maintenance.

**Additional
Notes**

Each line specifies a particular item being ordered, its order quantity, and price. Line details include any exceptions to header information, such as a delivery date or receiving site, that apply to the line item only and not the whole order.

Questions

Look at some of the other default information. Where does the following default information come from:

- Location?
- Pur Acct?

**Enter Line 2
Data**

Purchase Order Maintenance

Purchase Order: PO50003 Supplier: 05000000 Ln Format S/M:Single

Ln	Site	Req	Item Number	Qty Ordered	UM	Unit Cost	Disc%
2	9000		10-02	100.0	EA	0.05	0.00%

Qty Received: 0.0 Due Date: 02/07/2003 CRT Int: 0.00

Qty to Rel: 0.0 Pur Acct: 5100

Single Lot: ☐ Performance Date: Project:

Location: RawMat Need Date: Type:

Revision: Sales/Job: Taxable: ☐

Status: ☐ Fixed Price: ☒ Inspect Req: ☐ Cmnts: ☐

Supplier: UM Conversion: 1.0000

Item:

Manufacturer: Stock UM Quantity: 100.0 EA

Description: Aluminum Pin Update Avg/Last Cost: ☒

Extended Net Cost: 5.00

For line 2, the Buyer enters an order for 100 aluminum pins (item 10-02). Again, the unit of measure and unit cost information default from the information entered earlier in Item Master Maintenance.

**Enter Line 3
Data**

Purchase Order Maintenance

Purchase Order: PO50003 Supplier: 05000000 Ln Format S/M:Single

Ln	Site	Req	Item Number	Qty Ordered	UM	Unit Cost	Disc%
3	9000		10-03	2.0	RL	10.00	0.00%

Qty Received: 0.0 Due Date: 02/07/2003 CRT Int: 0.00

Qty to Rel: 0.0 Pur Acct: 5100

Single Lot: ☐ Performance Date: Project:

Location: RawMat Need Date: Type:

Revision: Sales/Job: Taxable: ☐

Status: ☐ Fixed Price: ☒ Inspect Req: ☐ Cmnts:

Supplier: Yo Yo String

Item:

Manufacturer:

Description: String

UM Conversion: 3000.0000

Stock UM Quantity: 6000.0

Update Avg/Last Cost: ☒

Extended Net Cost: 20.00

For line 3, the Buyer enters an order for 2 rolls of string (item 10-03) at a per roll cost of \$10.

Questions What is the following information based upon:

- Unit Cost?
- UM Conversion?
- Stock UM Quantity?

Additional Notes **What is the effect of Update Avg/Last Cost?**

When these items are received, the current cost of the item will be updated to reflect a difference between our latest current cost value of 0.005 per inch and the 0.003 per inch. If we decide that we do not want this updated, we can uncheck this box and the current cost will not change.

Enter Trailer Information

Purchase Order Maintenance ? i x

Purchase Order: PO50003	Supplier: 05000000	Ship-To: 9000

Non-Taxable: 75.00	Currency: USD	Line Total: 75.00
Taxable: 0.00		Total Tax: 0.00
Tax Date: 02/07/2003		Total: 75.00
View/Edit Tax Detail:	☐	

Revision: 0	Amount Prepaid: 0.00
Print PO: ☒	Status:
EDI PO:	Close Date:
AP Account: 2100	FOB:
Deliver To:	Ship Via:

Navigation: < >

The last frame shows the “trailer” information, which contains tax, shipping, and order status information for all line items.

RECEIVE ITEMS AND CREATE RECEIVER

Review Packing Slip from Supplier

Ship-From Address		Supplier's Packing Slip # and Sales Order #	
Yo Yo Supplies Inc. 1234 State Street Santa Barbara, CA 93101 United States of America		PACKING LIST # 5551212 Order Number: 80010021 Page: 1 Order Date: 02/07/03 Print Date: 02/07/03	
Sold To: 00010000 Yo Yo Co. 123 Carpinteria Ave. Carpinteria, CA 93013 United States of America		Ship To: 00010000 Yo Yo Co. 123 Carpinteria Ave. Carpinteria, CA 93013 United States of America	
Salespersons: Credit Terms: 30 DUE 30 DAYS FROM INVOICE		Purchase Order: PO50003 Ship Via: FOB Point: Shipping Point	
Remarks:		Customer's Ship-To Address and PO #	
Items and Quantities Shipped			
Ln	Item Number	Site T Location Lot/Serial	Qty Open Qty to Ship UM Shipped
1	10-01	train	200.0 EA 0 2/08/03
	Plastic Half		
		100	200.0 (200)
2	10-02	train	100.0 EA 02/08/03
	Aluminum Pin		
		100	100.0 (100)
3	Yo Yo String	train	2.0 RL 02/08/03
	String for Yo Yos		
		100	2.0 (2)

PO Receipt Packing Slip Inquiry displays the first packing slip received from Yo-Yo Supplies, Inc. It should be used as a reference document to record receipt of goods ordered on the PO entered earlier.

The items and quantities shipped have been highlighted as have the PO number and Yo-Yo Supplies, Inc.'s, sales order number.

Purchase Order Receipts

Order: **PO50003** Supplier: 05000000 Status: Effective: 02/07/2003
 Packing Slip: 5551212 Move to Next Operation: ☒
 Receiver: Yo Yo Supplies Inc. Receive All: ☐
 Comments: ☐
 Ship Date: 02/08/2003

Order: PO50003 Supplier: 05000000 Status: Packing Slip: 5551212

Ln	Item Number	UM	Qty Open	UM	Receipt Qty	UM	Project	Due Date	T
1	10-01	EA	200.0	EA	0.0	EA		02/07/2003	
2	10-02	EA	100.0	EA	0.0	EA		02/07/2003	
3	10-03	IN	2.0	RL	0.0	RL		02/07/2003	

Line: 1 Unit of Measure: **EA** Site: **9000** Loc: **RawMat**
 Quantity: **200** ID: Lot/Ser:
 Packing Qty: **200** OP: 0 Reference:
 Cancel B/O: ☐ Supplier Lot:
 Item Number: 10-01 Multi Entry: ☐ Chg Attribute: ☐
 Supplier Item: Cmnts: ☐

Yo-Yo Supplies, Inc., has delivered all of the items ordered by Yo-Yo Company. Using Purchase Order Receipts, Yo-Yo Company's Receiving Department records the delivery by first entering the purchase order number, which identifies the line items and the quantity open (ordered but not received), and then by entering the packing slip number.

In subsequent frames, shown above, the Receiving Department enters both the actual quantity received for each line (Quantity field) and the quantity indicated on the packing slip (Packing Qty field). This step is especially important when there is a discrepancy between the quantity listed on the packing slip and the actual quantity received.

Where did the following default information come from:

- Supplier
- Location
- Site

Questions

If this had been a partial order, how would you handle that in MFG/PRO?

Purchase Order Receipts

Order: PO50003 Supplier: 05000000 Status: Packing Slip: 5551212

Ln	Item Number	Site	Location Ref	Lot/Serial Supplier Lot	Quantity
1	10-01	9000	RawMat		200.0
2	10-02	9000	RawMat		100.0
3	10-03	9000	RawMat		2.0

Is all information correct

yes no

Add Link

Purchase Order Receipts

Order: PO50003 Supplier: 05000000 Status: Packing Slip: 5551212

Non-Taxable: 20.00 Currency: USD Line Total: 20.00
 Taxable: 0.00 Total Tax: 0.00
 Tax Date: 02/07/2003 Total: 20.00
 View/Edit Tax Detail: ☐

In the final frames, the Receiving Department confirms that all information listed is correct and the system processes the order receipt.

Additional Notes

Several settings in Purchasing Control affect purchase receipts.

- The Receiver Type field determines whether receivers are created for each order or for each item on the order, or not printed at all.
- Tolerance Percent and Tolerance Cost determine how the system manages receipts that exceed the order quantity.

Review Inventory Levels

Inventory Detail by Item Browse

Item Number: To:

Site: To:

Qty On Hand - Inv Mstr: To:

Qty On Hand - Inv Detail: To:

Location: To:

Lot/Serial: To:

Reference: To:

Status: To:

Expire Date: To:

Date Created: To:

Sort By: Sort Order: ☒ Ascending

3.2 Inventory Detail by Item Browse (icbr002.p) 02/07/03 16:48

Item Number	Site	Qty On Hand - Inv Mstr	Qty On Hand - Inv Detail	Location	Lot/Serial	Reference	Status
10-01	9000	200	200	RawMat			OI-NO
10-02	9000	100	100	RawMat			OI-NO
10-03	9000	6000	6000	RawMat			OI-NO

Following receipt of the yo-yo components, Yo-Yo Company's Planner checks the inventory levels of these items. Using Inventory Detail by Item Browse, the Planner can quickly see the inventory level, location, and status of each item.

Review Transactions

```

Transaction: 2174                                     Output: page
Tran Nbr: 2174                                         Order: PO50003      PR3007
Trans Type: RCT-PO                                     Revision: 0
Date: 02/07/03                                         Item Number: 10-03
Time: 16:44                                           Description: String
Effective Date: 02/07/03                             Unit of Measure: IN
Remarks:                                             Address: 05000000
User ID: qad                                           Name: Yo Yo Supplies Inc.
Program: poporc.p                                     Sales/Job:
Currency: USD                                         Ship Type:
Qty Change: 6,000.0                                   Price: 0.00333
Shipper Number:                                       Inv Mov:
Ship Date: 02/08/03

Site: 9000                                           Inventory Data
Location: RawMat                                     Begin Balance: 0.0
Lot/Serial:                                           Quantity Change: 6,000.0
Inv Status: OI-NO                                    Qty Short: 0.0
Supplier Lot:                                         Begin Loc Bal: 0.0
Grade/Assay:                                         Loc Qty Change: 6,000.0
Reference:                                           Expire Date:
                                                    Batch:

Material: 0.005                                       Cost Data
Labor: 0.00                                           Overhead: 0.00
Burden: 0.00                                         Subcontract: 0.00
                                                    Cost Total: 0.005

Dr Acct: 1500                                         RCT-PO
Cr Account: 2200                                     GL Reference: IC030207000003
Amount: 30.00

Dr Acct: 5000                                         RCT-PO
Cr Account: 2200                                     GL Reference: IC030207000004
Amount: -10.00

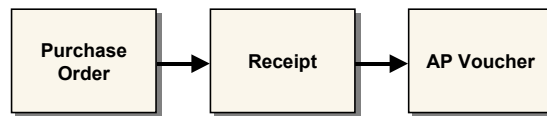
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Using Transactions Detail Inquiry, we can review one of the transactions created for the receipt of item 10-03 (string).

Notice at the bottom of the screen the related GL transactions. There are two GL transactions:

- In the first GL transaction, the inventory account (1500) is debited and the PO receipts account (2200) is credited \$30 because, based on information in Item Master Maintenance, the GL cost of the string is: ($\$0.005/\text{inch} \times 3,000 \text{ inches/roll} = \$15/\text{roll}$); $\$15 \text{ per roll} \times 2 \text{ rolls} = \$30$.
- In the second GL transaction, the purchase price variance account (5000) is debited and the PO receipts account is credited -\$10 because, based on the invoice, Yo-Yo Company was charged:
 $\$10 \text{ per roll} \times 2 \text{ rolls} = \$20$
 $\$30 \text{ GL cost} - \$20 \text{ invoiced} = \$10 \text{ purchase price variance.}$

REVIEW



Let's review some key points in the purchasing cycle that we have covered so far.

For inventory items that you buy for manufacturing, the starting point for payment processing is the purchase order. The purchase order is a contract that confirms your intent to buy. It lists items, quantities, and prices along with any related charges such as taxes and freight.

Upon receipt, your Receiving department issues a receiver to confirm the received items and quantities against the purchase order.

The supplier sends you an invoice to confirm your liability to pay for the items under the conditions specified on the purchase order. Before you can pay the invoice, you verify that the items you received are what you originally ordered and that the supplier has charged you the correct price. To do this, you record a voucher in Accounts Payable.

What's Next

We'll discuss vouchers in the next chapter

Activity

Credit Terms

- 1 Use Credit Terms Maintenance to set up credit terms due in 30 days after the invoice. Key fields to populate are:
 - Terms code = Net30; press Go
 - Description = Payment Due in 30 Days
 - Due Days = 30
 - Due Date From = 1
- 2 Update and exit.

Supplier Addresses

- 1 Use Supplier Maintenance to record the address of a supplier. Let the supplier code default from the control file.
 - Supplier = [system generated]; press Go
 - Name = Yo-Yo Supplies, Inc.
 - Address = [enter any address, but use city and state indicated below due to tax setup in the database]
 - City = Santa Barbara
 - State = CA
 - Country = USA; press Go
 - Bank = A (in Supplier Data frame)
 - Currency = USD; press Go
 - Cr Terms = Net30 (in Supplier Terms Data frame)
- 2 Update and exit. (Press End to exit the bank accounts frame.)

Unit of Measure Conversions

- 1 String will be purchased by the Roll. The string is stocked and consumed by the inch. Each roll contains 3,000 inches. Use Unit of Measure Maintenance to set up conversion information. Key fields to populate are:
 - Unit of Measure = IN
 - Alternate UM = RL
 - Item Number = 10-03; press Go
 - UM Conversion = 3000

Supplier Items

Supplier items are used to cross-reference your item number with your supplier's item number. You can also document the supplier's quoted price for the item. Later, in Purchasing, you can reference the supplier's item number instead of your own, and the system will find your item number for you.

- 1 Use Supplier Item Maintenance to create a record that cross-references your item number 10-03 to your supplier's item number "yo-yo string." Key fields to populate are:
 - Item Number = 10-03
 - Supplier = [enter the supplier number that was assigned when you entered the supplier "Yo-Yo Supplies, Inc." in an earlier activity]
 - Supplier Item = Yo-Yo String; press Go
 - Unit of Measure = RL
 - Supplier Lead Time = 5
 - Currency = USD
 - Quote Price = 10 (this will convert to \$0.0033333 per inch; this gives you a price reduction over the standard price of \$0.005 per inch in the item master)
 - Quote Qty = 1
- 2 Update and exit the record.

Purchasing Control

- 1 Go to Purchasing Control and update the record to have the following settings:
 - Bill To = 9000
 - Ship To = 9000
 - PO Prefix = PO
 - Receiver Prefix = PR
 - Ln Format S/M = Single
 - PO Header Comments = No (unchecked)
 - PO Line Comments = No (unchecked)
- 2 Let all other fields default. Update and exit.

Create Purchase Orders for Component Items

Place an order for all the components required to build 100 yo-yos. You will need:

- 200 EA of 10-01 (plastic half)
- 100 EA of 10-02 (aluminum pins)
- 6000 IN of 10-03 (string)

Order the string by the roll. That means you need to order two rolls of string from your supplier. Remember, we created a supplier item record for the string. Make sure that you get the price reduction of 0.003333 per inch.

- 1 Use Purchase Order Maintenance to enter a purchase order for your component items. Key fields to populate are:
 - Purchase Order = [leave the purchase order number blank to default to the next number from your control file]
 - Supplier = [select supplier ID for Yo-Yo Supplies, Inc.]; press Go
 - Order and Due Date will default to today's date
 - Site = 9000 (this will be used as a default for the line items)
 - Credit Terms = Net30 (this should default from supplier record); press Go

- 2 Go to the line item data.
- 3 In the line item information, set up purchase order lines for each component for the calculated amount. Key fields to populate are:

PO Line	Site	Item No.	Qty Ordered	UM	Unit Cost
Line 1	9000	10-01	200	EA	0.25
Line 2	9000	10-02	100	EA	0.05
Line 3	9000	10-03	2	RL	10

Since a supplier item record was entered for this item/supplier, the unit of measure RL defaulted. Also, check the UM Conversion field. Ensure that it says 3000. Also, check the Stock UM Quantity. You should see 6000 IN.

Notice the field Update Avg/Last Cost is checked. This indicates that when these items are received, the current cost of the item will be updated to reflect a difference between our latest current cost value of 0.005 per IN and the 0.003 per IN. If we decide we do not want this updated, we can uncheck this box and the current cost will not change.

- 4 Update and exit to the trailer. Accept all defaults.
- 5 Update, and exit.

Record Receipts Against a Purchase Order

- 1 The supplier has sent the material you ordered for your components. Receive the items into inventory using Purchase Order Receipts. Key fields to populate are:
 - Order = [PO number entered earlier]; press Go
 - Supplier = [your supplier shipping the goods; check the PO]
 - Packing Slip = [refer to your packing slip]
 - Receiver = [leave blank; the system will assign]
 - Ship Date = [leave blank]

- 2 Record receipt amount in the receipts frame. Key fields to populate are:

Line	Quantity	Packing Qty
1	200	200
2	100	100
3	2	2

Quantity and Packing Qty: It is very important to record both when there is a discrepancy between quantity on packing slip and the quantity actually received.

- 3 There are two more screens related to PO receipt. The next screen shows the items being received. Answer Yes if everything is correct. If you need to go back and fix something, answer No, and you will have the opportunity to go back and fix any problems.

The last screen shows the trailer section. Be sure to press Go, otherwise, your receipt will not be saved.

- 4 Review the inventory levels for your component items using Inventory Detail by Item Browse/Inquiry. Key fields to populate are:

- Site = 9000 to 9000

This selection criteria will display only the items we have entered into our site 9000. Are there enough items to build 100 yo-yos?

- 5 Review the transactions you created when you did the receipt using Transactions Detail Inquiry. Scroll through the records you created in these activities. Look at the transaction type to understand what created the transaction.

- 6 Look at the GL detail, and find the GL transaction number that was created for the last purchase order receipt. What accounts were debited and credited?

Chapter 8

Accounts Payable

Overview

This chapter focuses on managing supplier accounts, which involves verifying and approving cash disbursements through vouchering, and processing payments to suppliers. We'll first discuss some key concepts and then look at an example showing how the AP process works.

Key Concepts

AP Processing Flow

Vouchering

Processing Payments

Example

Create Voucher

Select vouchers for payment

Print check

Activities

Learning Objectives

When you finish this chapter, you should be able to:

- Describe the AP process flow
- Define a voucher
- Describe the payment flow
- Enter a voucher
- Select vouchers for payment
- Print checks

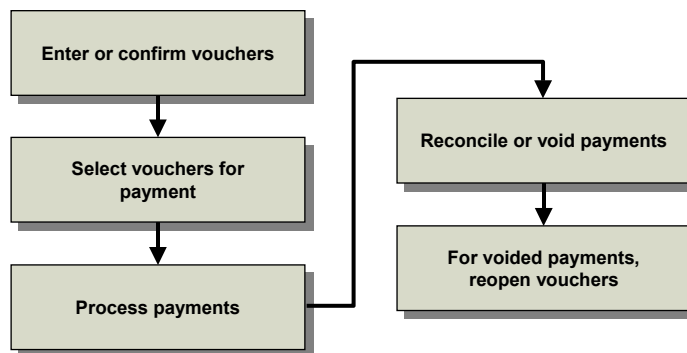
Key Concepts

Introduction The Accounts Payable department records amounts owed to vendors and processes and prints payments for those amounts. Often, an Accounts Payable department uses vouchers to document internal approval and help ensure the accuracy of invoices it receives.

A voucher is a document authorizing payment of an invoice. Vouchers are selected for payment, either by due date, discount date, or manually. Usually, you run an aging report to determine which balances are oldest. Then print the payment selection register to show the vouchers selected for payment and make needed corrections.

Once vouchers are selected, payments are processed by printing checks, recording manual checks, or creating a printed report or ASCII file for electronic funds transfer. The payment register is printed as a record of payments made. To confirm electronic funds transfers, you can print a payment specification report and send it to the supplier.

After payment, the supplier balance is decreased, but the payment is not immediately marked as closed. Both the payment and original vouchers remain in the system until the payment is cleared by the bank. If the payment does not clear or must be voided for any reason, the system automatically reopens the voucher. The Accounts Payable process flow is shown in the figure below.



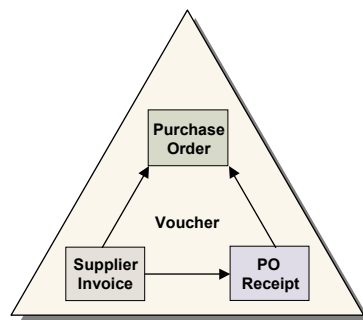
VOUCHERING

Vouchers convey authority to pay an invoice and record all relevant details on the nature of the liability and the payment.

As items are received into inventory, a supplier invoice for the items is typically received in Accounts Payable. Information from the invoice is recorded in a voucher. The voucher verifies invoiced items and quantities against the purchase order and receiving records before processing payment.

Three-Way Matching

After verifying that no discrepancies exist among the supplier invoice, the purchase order, and the PO receipt—which is called three-way matching—Accounts Payable approves the voucher for payment.



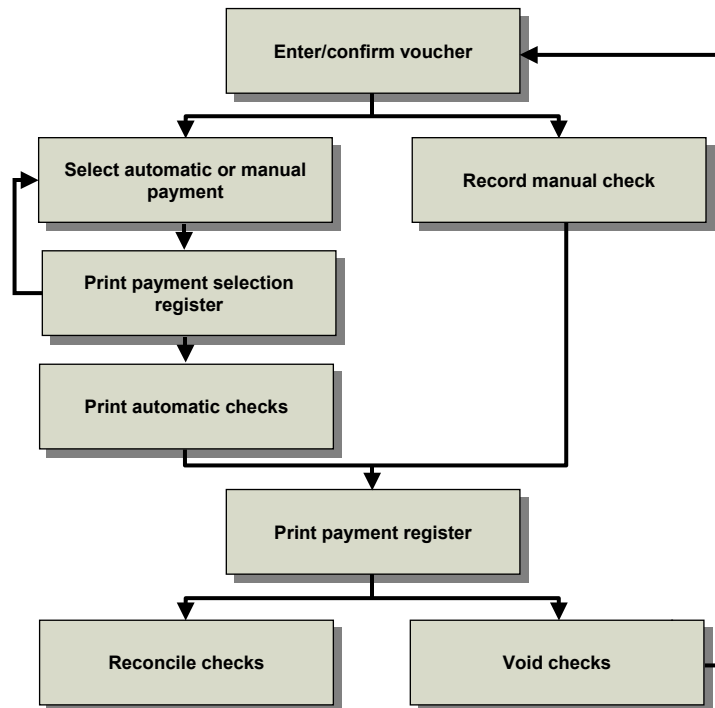
Next, we'll take a closer look at the work flow for processing payments.

PROCESSING PAYMENTS

The simplest case of payment processing is when you decide what to pay and then write a check or transfer money in person. Manual payments can be applied to one or more vouchers, marking them closed when they are fully paid.

A more complex situation is when you have the system determine which vouchers should be paid and then print checks for selected suppliers and amounts. Start by having the system automatically select most of the vouchers you intend to pay. After reviewing the report of selected vouchers, make any modifications needed. Before processing payments, print the Payment Selection Register—especially if you execute the automatic selection more than once.

You can print payments on standard check forms or to a file in the case of automatic bank transfers. The basic Accounts Payable flow is shown in the figure below.



What's Next

As we saw in the last example, Yo-Yo Company's Receiving department received components from Yo-Yo Supplies. Now Yo-Yo Company's Accounting department is ready to voucher Yo-Yo Supplies' invoice and print a check. We'll look at that process in the following example.

Example

In the following example:

- A voucher is created in Voucher Maintenance that references the purchase order for the yo-yo components (items 10-01, 10-02, and 10-03) and the invoice for \$75 from Yo-Yo Supplies, Inc.
- The system retrieves the receivers associated with the purchase order for matching with the invoice. For one of the items (10-03, the string), the invoice amount is less than the GL cost for that item. The system handles this as a purchase price variance.
- The voucher is confirmed
- In Payment Selection–Automatic, the open voucher is selected for payment
- Payment Selection Register is run just before printing the check to review voucher payment selections in case any changes or additions were made
- Using Payment–Automatic Checks, a check to Yo-Yo Supplies, Inc., for \$75 is printed

REVIEW INVOICE

Yo Yo Supplies Inc. 1234 State Street Santa Barbara, CA 93101 United States of America		I N V O I C E Invoice: IV-10004 Revision: 0 Invoice Date: 02/10/03 Page: 1 Print Date: 02/10/03	
Bill To: 00010000 Yo Yo Co. 123 Carpinteria Ave. Carpinteria, CA 93013 United States of America		Sold To: 00010000 Yo Yo Co. 123 Carpinteria Ave. Carpinteria, CA 93013 United States of America	
PO P050003		Ship Date: 02/07/03	
Sales Order: S0010019 Order Date: 02/07/03 Salesperson(s):		Ship-To: 00010000 Ship Via: Bill of Lading: FOB Point: Shipping Point	
Credit Terms: 30 DUE 30 DAYS FROM INVOICE Resale: Remarks:			

Item Number	UM	Shipped	Qty	B/O	Tax	Price	Extended Price
10-01	EA	200.0	0.0	no		0.25	50.00
Elastic Half							
10-02	EA	100.0	0.0	no		0.05	5.00
Aluminum Pin							
Yo Yo String	RL	2.0	0.0	no		10.00	20.00
String for Yo Yos							

Non-Taxable: 75.00	Currency: USD	Line Total:	75.00
Taxable: 0.00	0.00%	Discount:	0.00
Tax Date: 02/07/03	FREIGHT 10 :		0.00
Containers: 0.00	TAX-FREIGHT 11 :		0.00
Line Charges: 0.00	SERVICE 20 :		0.00
	Total Tax:		0.00
		Total:	75.00

This is the invoice that Yo-Yo Company's Accountant received from Yo-Yo Supplies for items 10-01, 10-02, and 10-03 in quantities to build 100 yo-yos.

The Accountant refers to this invoice to enter a voucher. Key information is delineated by boxes.

REVIEW RECEIVING HISTORY OF PO

PO Receipt Cost Browse

Purchase Order:

Supplier:

05000000

Item Number:

Receipt Quantity:

Receipt Type:

PO Cost:

Currency:

Receipt Date:

Receiver:

Site:

ERS Option:

ERS Price List Option:

Sort By:

Purchase Order*

To:

To:

05000000

To:

To:

To:

To:

To:

To:

To:

To:

To:

Sort Order

Ascending

Descending

5.13.3 PO Receipt Cost Browse (pobr005.p) 02/10/03 11:41

Purchase	Supplier	Item Number	Receipt Quantity	Receipt Type	PO Cost	Curre	Receipt Da	Receiver	Site	ERS Optio	ERS Price Li
PO50003	05000000	10-01	200		.25	USD	02/07/03	PR3005	9000	1	0
PO50003	05000000	10-02	100		.05	USD	02/07/03	PR3006	9000	1	0
PO50003	05000000	10-03	6000		.0033333333	USD	02/07/03	PR3007	9000	1	0

In PO Receipt Cost Browse, Yo-Yo Company’s Accountant reviews the receiving history of its POs.

The three component items are listed along with PO numbers, supplier, receipt quantities, costs, and so on. Notice the receiver numbers. All PO receipts and returns generate receivers for matching with supplier invoices in Accounts Payable.

 QAD

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Voucher Maintenance

Batch: 221

Control: 75.000

Total: 0.000

Voucher	Order
910024	PO50003

Control: 75.000

Effective: 02/10/2003

ERS: ☐

Total: 0.000

Tax Date: 02/10/2003

Supplier: 05000000

Yo Yo Supplies Inc.

123 State Street

Santa Barbara

CA

Remit-To: 05000000

Yo Yo Supplies Inc.

Ship-To: 9000

Yo Yo Co.

Currency: USD

Bank: a

Invoice: IV-10004

Date: 02/10/2003

Terms: Net30

Disc Date:

Due Date:

Expected:

Account: 2100

Discount Account: 5200

Entity: 100

Remark:

Supplier Bank:

Type:

Separate Ck: ☐

Check Form: 1

Yo-Yo Company's Accountant creates a voucher in Voucher Maintenance for the invoice from Yo-Yo Supplies. Based on this example, we'll look at a few key fields in Voucher Maintenance.

The Batch number is, in this example, a system-generated number for “a batch” of invoices. The number of invoice transactions you assign to this batch can vary from one to many. In the example above, only one invoice transaction comprises this batch (Batch 221).

In the screen above, you will notice that there are two Control fields. The first Control field at the top of the screen next to Batch is a control sum to verify against the *sum* of all voucher transactions in this batch (Batch 221). The Control field in the third frame is a control sum against the account distribution entered for *this* voucher transaction only. Since, in this example, there is a total of only one invoice transaction for Batch 221, both Control fields show the same amount: \$75. This is based on the amount shown on the invoice.

The Voucher and Order fields are key fields to note. The Voucher number is system generated. The Order number refers to Yo-Yo Company's PO number, which is listed on the invoice (or can be found by using the lookup feature).

The Effective Date is the date this transaction is to be applied to the general ledger (GL). Use this field to apply a transaction to a different GL period. The default is the system date.

In the bottom frame, Yo-Yo Company's Accountant enters the Invoice number from the invoice. The Date field indicates the date to use for aging this transaction. And the Terms field provides the credit terms code for this voucher. The Discount and Due dates default based on the terms code.

Use Selection Criteria to Select Receivers

Voucher Maintenance

Batch: 221
Control: 75.0000
Total: 0.000

Voucher

910024

Order

PO50003

Control: 75.00

Effective: 02/10/2003

ERS: ☐

Total: 0.00

Tax Date: 02/10/2003

Supplier: 05000000

Yo Yo Supplies Inc.

123 State Street

Santa Barbara

CA

Remit-To: 05000000

Yo Yo Supplies Inc.

Ship-To: 9000

Yo Yo Co.

Prepayment Amount: 0.00

Hold Amount: 0.00

Non-Disc Amt: 0.00

Daybook: SYSTEM

Voucher Logistics Charges: ☐

Include Blank Suppliers: ☐

Auto Select: ☒

Voucher Maintenance

Automatic Selection

Date:

To:

External Ref:

To:

Internal Ref:

To:

Order:

To:

Ship-From:

To:

Ship-To:

To:

Item Number:

To:

Buyer:

To:

Approved By:

To:

Voucher Open Qty/Amt: ☐

Select All (*): ☒

Logistics Charge Code:

Yo-Yo Company's Accountant chooses Auto Select, which brings up an Automatic Selection frame. Here, the Accountant could specify receivers by date, order, ship-from, ship-to, or item number ranges. In this example, the Accountant wants the system to select all receivers.

If you do not choose Auto Select, you bypass the automatic selection frame and continue to the Receiver Matching Detail frame, where you select receivers to voucher and record the actual invoice quantities and prices.

Additional Notes

Receiver Matching Detail

Voucher Maintenance

Voucher: 910024 Control: 75.00 Amount: 75.00

Sel	Order	Int Ref	Ln	Item Number	Supplier Item	UM	Open Quantity
*	PO50003	PR3005	1	10-01		EA	200.0
*	PO50003	PR3006	2	10-02		EA	100.0
*	PO50003	PR3007	3	10-03	Yo Yo String	RL	2.0

Description: Plastic Half Balance: 50.00

Voucher Maintenance

Voucher: 910024 USD Control: 75.00 Total: 0.00

Receiver	Ln	PO Nbr	Item Number	Supplier Item	Invoice Qty
PR3005	1	PO50003	10-01		0.0
PR3006	2	PO50003	10-02		0.0
PR3007	3	PO50003	10-03	Yo Yo String	0.0

Receiver Matching Maintenance

Receiver: PR3005 PO Line: 1 Tax: no Date: 02/07/2003 Project:

Item: 10-01 EA Type: Close Line: ☐

Open Qty: 200.0 PO Cost: 0.25 Ext Open: 50.00

Inv Qty: 200 Inv Cost: .25 Ext Inv: 0.00

Packing: 200.0 GL Cost: 0.25 Ext Rate Var: 0.00

Rcpt Qty: 200.0 Ext PPV: 0.00 Ext Usage Var: 0.00

The Receiver Selection Maintenance frame displays the receivers matching the selection criteria. Because Yo-Yo Company's Accountant specified Yes to Select All, an asterisk (*) appears next to each receiver in the Sel (selected) column.

Receiver Matching Detail consists of two frames. The top frame displays all the receivers Yo-Yo Company's Accountant selected in Receiver Selection Maintenance. In the bottom frame, the Accountant can edit data related to the selected receivers for this supplier. If receivers had not been selected in the previous frame, they would need to be added manually.

Purchase Price Variance for item 10-03

Voucher Maintenance

Voucher: 910024 USD Control: 75.00 Total: 50.00

Receiver	Ln	PO Nbr	Item Number	Supplier Item	Invoice Qty
PR3005	1	PO50003	10-01		200.0
PR3006	2	PO50003	10-02		0.0
PR3007	3	PO50003	10-03	Yo Yo String	0.0

Receiver Matching Maintenance

Receiver: PR3006 PO Line: 2 Tax: no Date: 02/07/2003 Project:

Item: 10-02 EA Type: Close Line: ☐

Open Qty: 100.0 PO Cost: 0.05 Ext Open: 5.00

Inv Qty: 100.0 Inv Cost: 0.05 Ext Inv: 0.00

Packing: 100.0 GL Cost: 0.05 Ext Rate Var: 0.00

Rcpt Qty: 100.0 Ext PPV: 0.00 Ext Usage Var: 0.00

Receiver Matching Maintenance

Receiver: PR3007 PO Line: 3 Tax: no Date: 02/07/2003 Project:

Item: 10-03 RL Yo Yo String Type: Close Line: ☐

Open Qty: 2.0 PO Cost: 9.9999999 Ext Open: 20.00

Inv Qty: 2.0 Inv Cost: 10.00 Ext Inv: 20.00

Packing: 2.0 GL Cost: 15.00 Ext Rate Var: 0.00

Rcpt Qty: 2.0 Ext PPV: -10.00 Ext Usage Var: 0.00

The remaining lines are vouchered.

A couple of key fields to note are the Invoice Quantity and Invoice Cost fields.

Information entered in these fields is based on the actual invoice. In some instances, this could vary from the quantity ordered or the price quoted, which would create variances. In this example, items 10-01 and 10-02 have no variances; item 10-03, though, does have a purchase price variance (PPV).

Notice that, for item 10-03, the Invoice Cost is \$10 per roll, but the GL Cost is \$15 per roll (based on 0.005/inch) so there is a variance of \$5 per roll. The extended purchase price variance (PPV) is \$10 because two rolls were ordered and received.

Voucher Maintenance

Batch / Voucher

Batch: 221 Batch Ctrl: 75.000 Tot: 75.000
 Voucher: 910024 USD Ctrl: 75.00 Total: 75.00

Distribution

Ln	Account	Sub-Acct	CC	Project	Enty	Tax	Description	Amount	T
1	2200				100		PO RECEI	75.00	R

Voucher Maintenance

Batch / Voucher

Batch: 221 Batch Ctrl: 75.000 Tot: 75.000
 Voucher: 910024 USD Ctrl: 75.00 Total: 75.00

Hold Amount: 0.00
 Confirmed: ☒
 Assigned-To:

Add Link

The system calculates and displays distribution amounts for the accrual accounts and purchase price variance. Distribution lines are recorded automatically based on the receiver quantities and the invoice cost. These system-calculated lines are marked as type R. Normally, they post to PO receipt and purchase price variance (PPV) accounts. These entries cannot be changed.

The voucher is confirmed and any amounts can be put on hold if necessary.

Additional Notes

The Hold Amount is typically an amount under dispute, such as an incorrect billing. Hold amount must be less than or equal to the voucher total.

Upon confirmation, vouchers update the general ledger and can be selected for payment. You can also record vouchers as unconfirmed.

REVIEW SUPPLIER'S ACCOUNT BALANCE

apvniq.p 2+ 28.13 Supplier Activity Inquiry 02/10/03

Supplier: 05000000 Yo Yo Supplies Inc. Open Only: No
 Balance: 75.00 Currency:
 Reporting Currency: USD Output: page

Date	Ref	T Invoice	Due Date C	Amount	Amount Open
02/10/03	910024	V IV-10004	03/12/03	75.00	75.00

To review the supplier's balance, Yo-Yo Company's Accountant uses Supplier Activity Inquiry. This shows that Yo-Yo Supplies Inc., has a balance of \$75.

SELECT VOUCHERS FOR PAYMENT

Payment Selection - Automatic

Due Date:	To:
Discount Date:	To:
Supplier: 05000000	To: 05000000
Supplier Type:	To:
Sort Name:	To:
Voucher:	To:
Voucher Type:	To:
Credit Terms:	To:
Bank:	To:
Entity:	To:
Batch:	To:
Check Form:	To:
Assigned Bank: a	Assigned Check Form: 1
Maximum Amount: 0.00	Overwrite old selection: ☒
Check Date: 02/10/2003	(used to calculate discounts)
Output: page	Batch ID:

Add Link

Yo-Yo Company's Accountant uses Payment Selection–Automatic to select open vouchers by supplier code. Based on this criteria, the system recommends which vouchers should be paid. The report, shown on the next page, lists all vouchers selected for payment and totals the amounts.

Notice that the Assigned Bank is Bank A. This is the bank account from which the selected vouchers will be paid.

Additional Notes

The standard printed check is Check Form [1]. Check Form [2] has slightly different line spacing print parameters. Either may be selected when printing checks.

Overwrite Old Selection specifies whether the current payment selection is to be overwritten with the new selection. If this flag is set to Yes, first the payment selection is removed from all of the vouchers that are currently selected for payment and then the new payment selections are made based on the selection criteria specified.

If this flag is set to No, the new payment selections are simply added to the old. Any vouchers which had been previously selected for payment remain selected.

28.9.4 Payment Selection - Automatic									
Date: 02/10/03									
Page: 1									
Time: 14:24:20									
Voucher	Invoice	PO Num	Bk	Eff Date	Due Date	Disc Date	Gross Amount	Disc to Take	Amount to Pay Cur
Supplier: 05000000 Yo Yo Supplies Inc.									
910024	IV-10004	R050003	a	02/10/03	03/12/03	02/10/03	75.00	0.00	75.00 USD
Supplier Totals:							75.00	0.00	75.00 USD
Report Totals:							75.00	0.00	75.00 USD

The report shows that one voucher has been selected for payment.

RUN PAYMENT SELECTION REGISTER

Payment Selection Register

Currency: USD
Bank: a USD Bank of Yo Yo Co.
Check Form: 1
Account Type: Prt
Print Remarks: ☒
Sort Vouchers by Amount: ☒
Check Date: 02/10/2003 (used for exchange rates)

Output:
Batch ID:

Add Link

Payment Selection Register lists all vouchers selected for payment and the total payments for each supplier, currency, and bank. It includes all vouchers that were automatically selected for payment and any changes/additions made in Payment Selection–Manual. Always run it before you print checks. Vouchers remain selected until they are paid.

PRINT CHECKS

Payment - Automatic Checks

Bank: a
 Check Form: 1
 Starting Check: 000001
 Check Date: 02/10/2003
 Effective Date: 02/10/2003
 Due Date:
 Print Audit Trail: ☒
 Print Voucher Remarks: ☒
 Print Test Check: ☐
 Batch:
 Daybook: SYSTEM
 Payment File:
 Output: printer

Payment - Automatic Checks

Audit Trail
 Batch ID:
 Output: page

Yo-Yo Company's Accountant uses Payment–Automatic Checks to pay Yo-Yo Supplies, Inc. The check is printed by bank code. The starting check number displays for the bank. In this example, it is 000001. It should match the first check number on Yo-Yo Company's printed check forms.

The Accountant can enter two dates—the payment date and the date when the cash transaction becomes effective in the general ledger. Typically, these default from the system date.

So that the system won't print the audit trail on the check forms, the Accountant has sent the audit trail output to a different printer

apvniq.p 2+28.13 Supplier Activity Inquiry02/10/03

Supplier: 05000000 Yo Yo Supplies Inc. Open Only: No

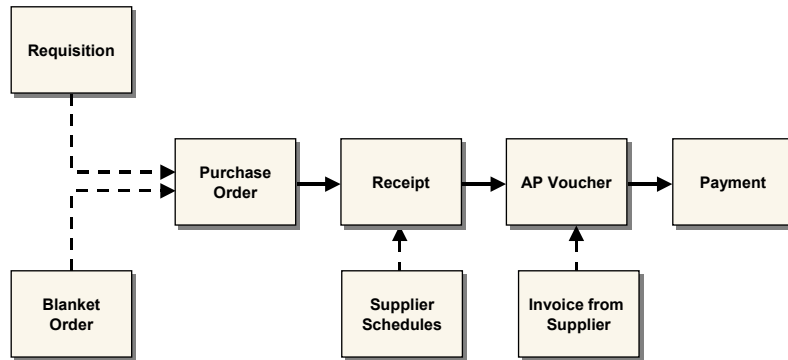
Balance: 0.00 Currency:

Reporting Currency: Output: page

Date	Ref	T Invoice	Due Date C	Amount	Amount Open
02/10/03	a 1	C		-75.00	
02/10/03	910024	V IV-10004	03/12/03	75.00	0.00 a 1

Earlier, we looked at this Supplier Activity Inquiry and saw that Yo-Yo Supplies, Inc., had a balance of \$75. Now when we review this inquiry, we see that the check from Bank A is listed as -\$75, which offsets the invoice amount of \$75, and we can see that the amount open is 0.

REVIEW



We'll review the highlights of the purchasing and accounts payable flow that we have covered in the last two chapters.

Purchase Order

In this case, the starting point for payment processing is the purchase order. The purchase order is a contract that confirms your intent to buy—it lists items, quantities, and prices, along with related charges such as taxes and freight. The order also states your billing and shipping addresses, and the credit terms you have negotiated with the supplier. Purchase orders may originate from requisitions or blanket orders.

PO Receipt

When the items are delivered to your Receiving department, a receiving document is recorded (PO receipt). The receiver confirms the received items and quantities against the purchase order. Receipts may be based on supplier scheduled orders.

Invoice

The supplier sends you an invoice to confirm your liability to pay for the items under the conditions specified on the purchase order.

Voucher

Before you can pay the invoice, you need to verify that the items you received are what you originally ordered and that the supplier has charged you the correct price. To do this, you record a voucher in Accounts Payable.

When you enter the voucher, you reference the purchase order and the invoice. The system then retrieves the receivers associated with the purchase order so that you can record invoice lines against them. If the invoiced items and quantities match the receiver, the receiver is closed.

Payment

Vouchers are then selected for payment, either by due date, discount date, or manually. Usually, an aging report is run to determine which balances are oldest. The payment selection register is printed to show the vouchers selected for payment, and corrections are made if necessary.

Once vouchers are selected, payments are processed by printing checks, recording manual checks, or creating a printed report or ASCII file for electronic funds transfer.

After payments are made, the supplier balance is decreased, but the payment is not immediately flagged as closed. Both the payment and original voucher remain on the system until the payment is reconciled (cleared by the bank).

Activity

Enter a Voucher

- 1 Use Supplier Activity Inquiry to review the supplier's account balance. (You will see that the supplier has a zero balance. They have shipped the goods, and you have received the goods, but, you have not yet recorded the invoice that was received from Yo-Yo Supplies, Inc.)
- 2 Use PO Receipt Cost Browse/Inquiry to review the receiving history for POs you have received.
- 3 Your supplier has sent an invoice for each PO. Use Voucher Maintenance to add a voucher for the invoice received. Use the information from the voucher in the previous step. Key fields to populate are:
 - Batch = Leave blank; the system will assign a number; press Go
 - Control = Enter total from invoice received or total of all invoices if more than one is being entered, which is not the case in this activity; press Go
 - Voucher = Leave blank; the system will assign a number
 - Order = Enter your PO number; it may be different than the invoice provided. You can use the lookup feature to locate the PO number.
 - Control = Enter the total for this invoice
 - Supplier and Ship-To = Use defaults from PO referenced
 - Effective Date = GL date for the transaction. Get this from the invoice. This will default to the system date, but it may be a different date. Press Go
 - Invoice = Enter the invoice number
 - Date = Enter the invoice date
 - Terms = Net30
 - Discount and Due Date will default based on the terms code. Leave blank.
 - Accept remaining default values

There will be a few more frames displayed. When you get to the frame with the Auto Select field, enter a checkmark for Auto Select.

- In the Automatic Selection frame, enter a checkmark for Select All.
 - In the Receiver Matching Maintenance frame:
 - Receiver = Choose from list in frame
 - PO Line = This will default
 - Inv Qty = Enter the quantity that appears on the invoice
 - Inv Cost = Enter the per item cost from the invoice
 - Confirm the voucher
- 4** Using Supplier Activity Inquiry, review the supplier's account balance.

Select Vouchers for Payment and Print Checks

- 1** Use Payment Selection—Automatic to select all the vouchers for your supplier for payment.
- Supplier: [enter the system-generated supplier ID]
To: [enter the system-generated supplier ID]
 - Assigned Bank = Bank A
 - Assigned Check Form = 1
 - Overwrite Old Selection = Enter checkmark (Yes)
- 2** Run Payment Selection Register.
- 3** Use Payment—Automatic Checks to print the check to pay your supplier.
- Bank = A
 - Check Form = 1
 - Accept defaults for remaining fields
 - Print check and audit trail to printer
- 4** Review Supplier Activity Inquiry and Voucher Inquiry to see how the payment is pegged to the original voucher.

Chapter 9

Work Orders

Overview

A work order is an authorization to produce a specific quantity of an item by a specific date. In this chapter, we'll further define what a work order is and look at typical stages of its life cycle. After discussing key concepts, we'll go over an example covering the work order life cycle from creation to close.

Key Concepts

Manufacturing Overview

Work Orders

WO Type and Status

WO Bill of Material and Routing

WO Life Cycle

WO Release and Issue of Components

Shop Floor Control

WO Receipt and Close

Variances

Example

Define Control Settings

Create and Release Work Order

Review Picklist and Routing

Issue Components

Report Labor

Receive and Close Work Order

Activities

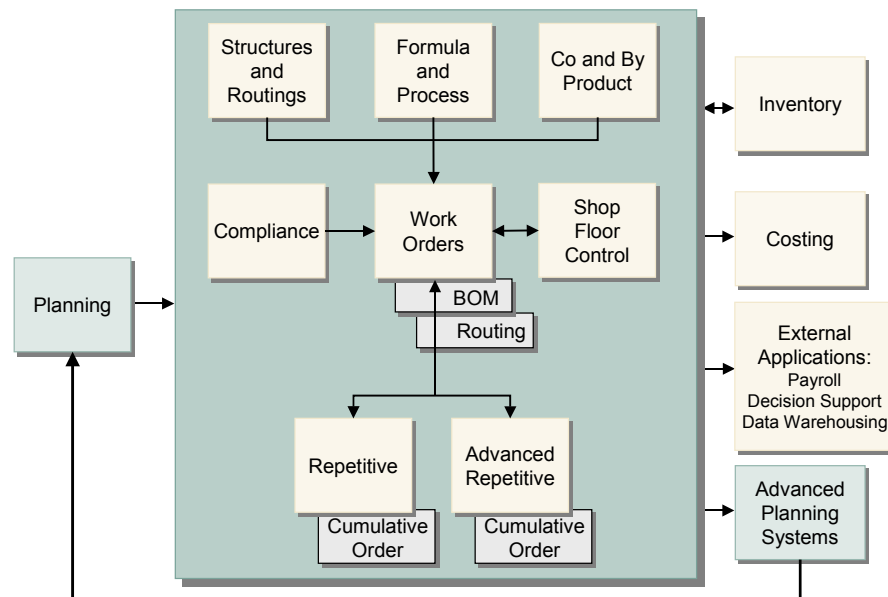
Learning Objectives

When you finish this chapter, you should be able to:

- List work order types
- List work order status codes
- Describe the work order process flow
- Provide examples of rate, usage, and method variances
- Enter and release a work order
- Issue components
- Record labor
- Receive and close a work order

Key Concepts

Introduction



Manufacturing Overview

MFG/PRO manufacturing modules handle internal supply and demand—material is moved out of inventory into production, or finished goods or components are moved from production into inventory. At the center of much of this activity is the Work Orders module, as shown in the figure above. In the process of using work orders you:

- Define bills of material and product structures in the Product Structures module
- Define routings and operations in the Routings/Work Centers module
- Create planned orders to fill demand with Material Requirements Planning
- Monitor and report on the progress in the Shop Floor Control module

Manufacturing Environments

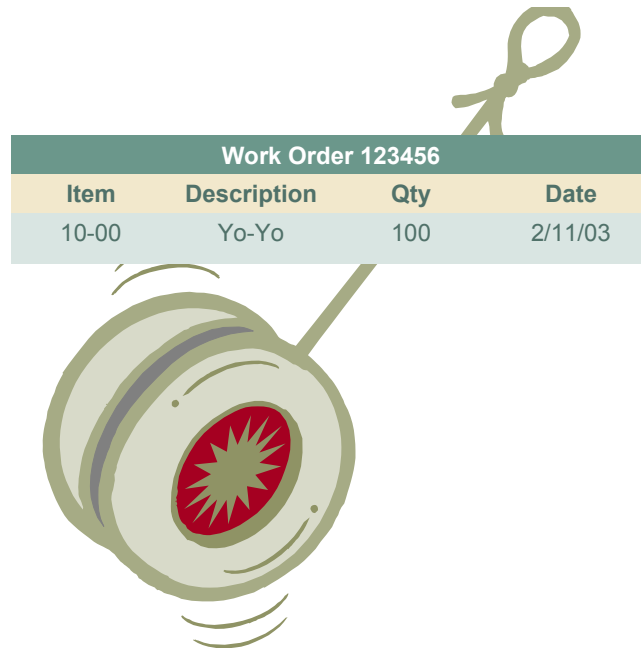
MFG/PRO provides features that support different manufacturing environments. The Work Orders and Shop Floor Control modules are typically used to manage job shop manufacturing. The Advanced Repetitive or Repetitive modules manage manufacturing in an assembly line environment.

In this class, we will focus on discrete work orders created in the Work Orders module.

What's Next

In the next section, we'll define a work order and look at four of its key elements.

WORK ORDER



A work order is an authorization to produce a specific quantity of an item for a specific date. A work order may represent a manufacturing production order, a repetitive schedule, or a sequenced production line.

Work orders are typically created in response to current or projected demand for an item. You can also use them to build up inventory in anticipation of future demand when there is unused manufacturing capacity.

Elements of a Work Order

Important elements of a work order include:

- The type, which identifies the source of the order and indicates how it should be processed
- The status, which determines where a work order is in its life cycle
- The bill of material (BOM), which lists the quantities of components required to fulfill an order
- The routing, which lists the operations required to complete the order

We will look at each of these elements on the following pages.

WORK ORDER TYPE

- **Blank** = Standard
- **F**inal Assembly
- **R**ework
- **E**xpense
- **S**cheduled
- **C**umulative
- **W** = Flow

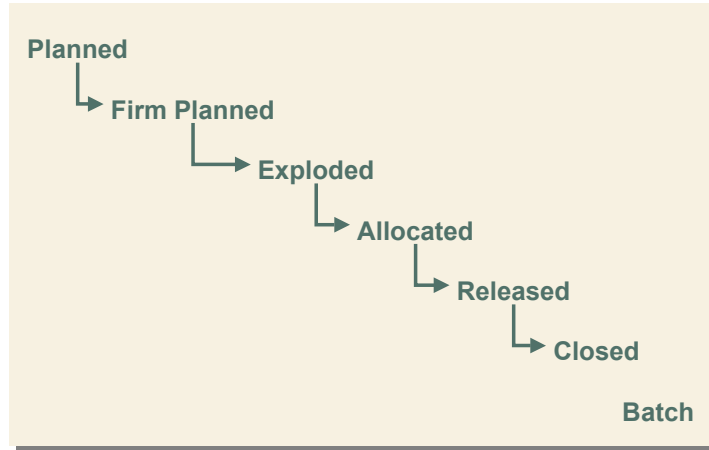
The work order type indicates how the work order will move through production and how it affects other modules, especially the financial modules.

Most work orders are entered with a blank type. These represent normal manufacturing orders with a standard product structure and routing. The other types indicate special kinds of work orders.

All work order types are similar in terms of planning, inventory, and accounting. They differ in their default bills, routings, and status codes.

WORK ORDER STATUS

Work order status codes correspond to stages in a work order's life cycle:



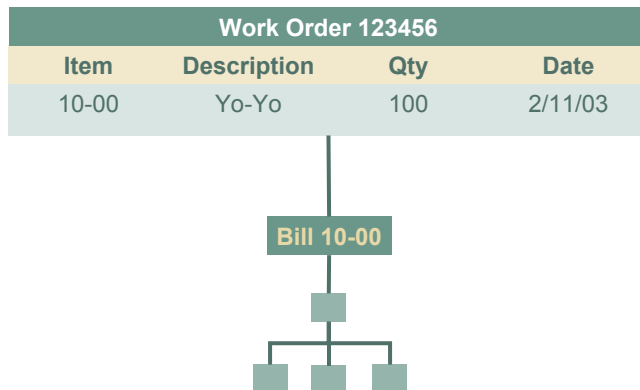
A standard work order is usually created initially by MRP, which treats the work order as a source of supply. At this point, the order is Planned. When someone reviews MRP's work and confirms the order, it is Firm Planned. The supply created by the work order also generates demand for component items; when that demand is calculated, the work order is Exploded. As yet, the demand represented by the order has not affected inventory; when inventory is set aside for the order it is Allocated. When work is ready to begin, the work order is Released. And when work is finished, it is Closed.

The status of a work order determines how much control you have over its bill, routing, inventory allocations, inventory transactions, and labor feedback.

- You cannot make any changes to orders with status Planned. These are managed by MRP.
- For orders with status Firm Planned, you can change the dates and quantities as needed, and specify an approved alternate bill or routing
- For orders with status Exploded, Allocated, or Released, bills and routings can be modified or alternate ones specified

A work order progresses from one status code to the next and, unless prematurely released, does not return to an earlier status.

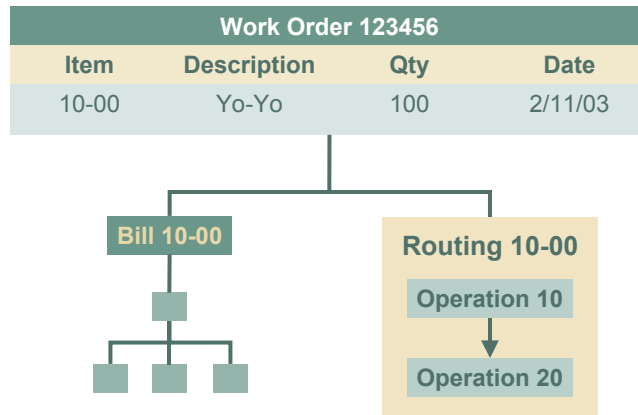
WORK ORDER BILL OF MATERIAL



As we saw earlier, the work order bill of material (BOM) is derived from the item's product structure, defined in Product Structure Maintenance (or Formula Maintenance) and the quantity ordered. Inventory allocations and issues are based on the bill. MRP uses the bill of materials to calculate component demand.

When a work order is created, the work order BOM is copied into it. As work progresses, required changes can be made to this copy using Work Order Bill Maintenance. This way, what actually happens can be compared to the standard.

WORK ORDER ROUTING



As mentioned earlier, work order routings, identified by routing codes, specify the operations, or steps, required to manufacture an item. You set up routings and operations using the Routings/Work Centers module. Routings are automatically linked if the item number and routing number are the same. Or, you can manually link them in Item Master Maintenance or Item Planning Maintenance.

When a work order is created, the standard routing is copied into it. As work progresses, required changes can be made to this copy using Work Order Routing Maintenance. This way, what actually happens can be compared to the standard. You can monitor work order operations using the Shop Floor Control module.

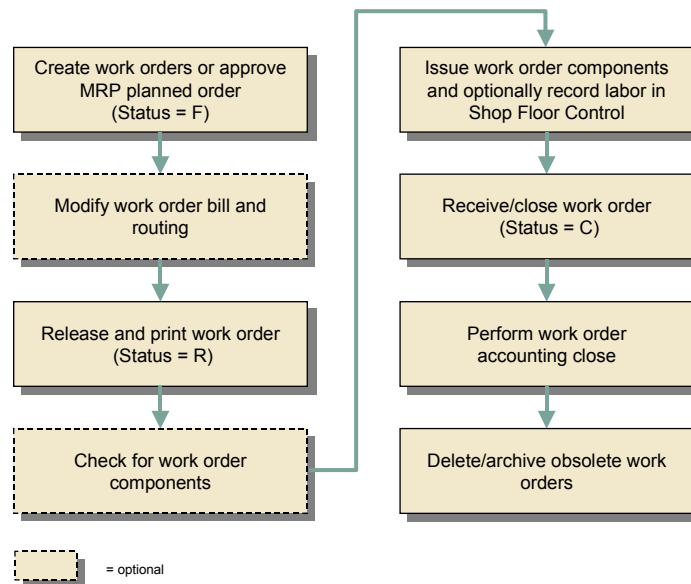
What's Next

Now that we have discussed the four key elements of a work order, we'll look at its typical life cycle from work order creation to work order close.

WORK ORDER LIFE CYCLE

Work orders are created manually (using Work Order Maintenance) or generated from MRP, repetitive, or configured sales orders. Work orders are also generated when another work order is split, or when one is released that requires a routable component.

In a standard sequence, once the work order has been created, it is released, materials are issued and received, the work order is closed, and the items are shipped. The work order flow is shown in the figure below.



On the next few pages, we will take a closer look at the following stages in the work order life cycle:

- release
- issue of components
- receipt
- close

RELEASE WORK ORDER

Inventory can only be issued or received against a released work order. You can release orders:

- One at a time using Work Order Release/Print
- At the same time using Multiple Work Order Release/Print
- In Work Order Maintenance by changing their status to Released. This method does not let you print a picklist or routing, but it still explodes phantom components and creates work orders for routable components.

Releasing a work order has the following effects:

- Items not previously allocated are detail allocated. The system uses the default picking logic defined in Inventory Control.
- The picklist is printed, showing the location and quantity of the material in Picked status for this order
- The first operation is moved to the queue status if Move First Operation is Yes in Work Order Control

Creating Picklists

After you release a work order, you can print its picklist. The picklist lists the component requirements and the sites, locations, lot/serial numbers, and reference numbers for the items to be issued. The system creates detail allocations when an order is released, regardless of whether or not you print a picklist. Detail allocations reserve specific quantities in inventory for a work order.

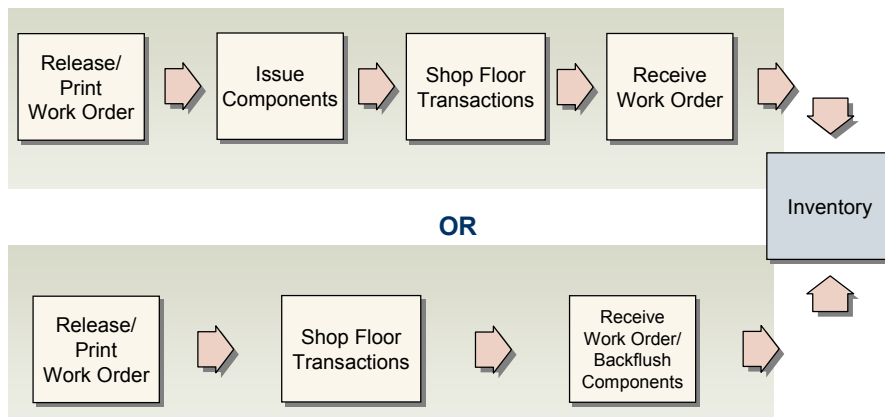
You can release an order without printing a picklist and routing, but you cannot print a picklist for an order without releasing it.

ISSUE COMPONENTS

Work order operations begin when a work order is released and its components issued.

There are three ways to issue inventory to a work order:

- Issue inventory directly with Work Order Component Issue (illustrated by the top row of the graphic below)
- Issue inventory as completed products are received with Work Order Receipt Backflush (illustrated by the bottom row of the graphic below)
- Issue inventory, report labor, and receive items with Work Order Operation Backflush (also illustrated by the bottom row of the graphic below)



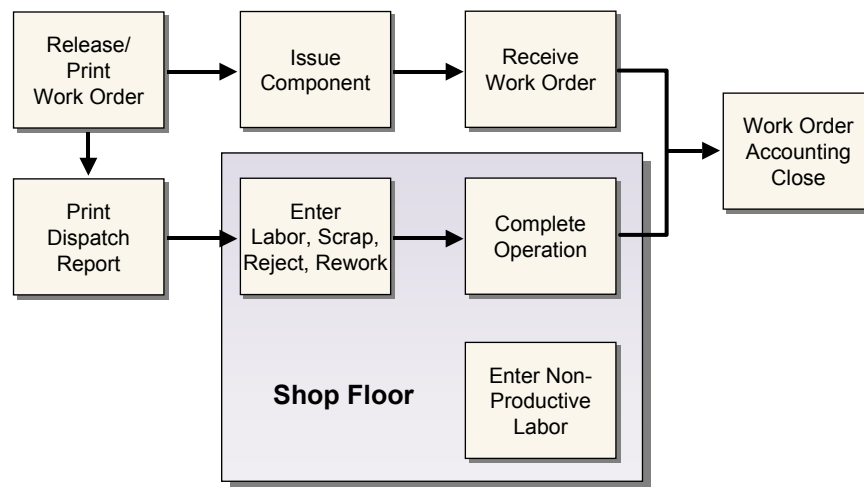
Inventory transactions occur at different points depending on which method you use. Component quantity on-hand is reduced at a later time using the backflush method.

Work Order Receipt Backflush combines the functions of Work Order Component Issue and Work Order Receipt. Either method keeps track of the inventory transactions used to issue components to a work order and excludes floor stock, which is issued using an unplanned issue transaction.

You can monitor work order operations using the Shop Floor Control module, which we will discuss next.

SHOP FLOOR CONTROL

Once a work order is released, its progress is tracked using shop floor functions to record labor and work order functions and to record material usage and completions. It requires that you set up at least one employee. The figure below shows the relationship between shop floor reporting and the work order process flow.



Operation Status

Labor feedback is done by work order, employee, or work center/machine. In all cases you must identify a released work order.

As labor is recorded, operation status is updated to either Setup, Running, or Complete. When work moves to the next operation, its status changes to Queue.

Labor Reporting

If labor is reported only at a few key operations, called milestones, the Operation Complete Transaction can be used to complete the current operation and the ones that have come before it.

If no labor has been reported against these previous operations, actual labor is set to the labor that should have occurred to make the quantity reported complete, referred to as earned labor.

Nonproductive Time

In order to account for all work hours, nonproductive time can also be recorded. This is time not spent working on a specific manufacturing order—clean-up time, downtime, meetings, breaks, or time spent waiting for work.

RECEIVING WORK ORDERS

When a work order is completed on the shop floor, the items are typically sent to the stockroom.

- Use Work Order Receipt to receive items, close the order, and backflush components of final assembly work orders
- If you did not issue items previously, issue them when completed products are received with Work Order Receipt Backflush
- Use Work Order Operation Backflush to issue items, report labor, and receive completed items at an operation

If you use the Shop Floor Control module, you can enter labor feedback and test results at receipt, and report individual operations as completed.

When a work order is received:

- Inventory increases by the amount of the receipt
- The open order quantity decreases by the amount of the receipt
- Any reject quantity is written off to the Scrap account and not placed in inventory

After the work order has been received, it is ready to close, which is discussed on the next page.

CLOSE WORK ORDER



- ...but labor reporting okay until operation closed in SFC or until Work Order Accounting Closed is run

Work orders are typically closed when the items are received. For most purposes, this ends the life cycle.

To close a work order:

- Change the order's status to Closed. You can do this by setting Close to Yes when completed units are received, or by using Work Order Maintenance.
- Run Work Order Accounting Close to post variances, clear WIP, and close outstanding operations. Execute this program regularly, at least at the end of each fiscal month, for completed orders.

The system prevents component issues and work order receipts for a closed work order. However, additional labor can be reported until either the operations are closed in Shop Floor Control, or Work Order Accounting Close is executed.

If you want to process inventory for a closed work order, you must change its status back to Released.

Work Order Accounting Close

Work Order Accounting Close:

- Completes open work order operations
- Calculates and posts work order variances for material, labor, burden, and subcontract costs
 - Calculates and posts usage variances when the labor quantity used differs from the standard.

For example, if it took six hours to complete an operation scheduled for five hours, a labor usage variance of one hour is posted.
 - Calculates and posts rate variances for material and subcontract when cost used differs from standard cost. If pay rates are defined in Actual Pay Rate Maintenance, rate variances are also calculated for labor.

For example, when the standard subcontract cost is \$10 and the PO cost is \$12, the subcontract rate variance is \$2.
- Reconciles the WIP account for closed work orders by calculating and posting method change variances for any residual variances. WIP balances cannot be changed after the work order variances are posted.
- Updates current labor and subcontract costs
- Posts floor stock amounts

VARIANCES

Variance	Calculated By
Labor Rate and Usage Variance Burden Rate and Usage Variance	Shop Floor or Repetitive Feedback (or at Work Order Receipt)
Material Rate Variance	Component Issue or Backflush
Subcontract Rate Variance	Subcontract Purchase Order Receipt
Applied Overhead	Work Order or Repetitive Receipt
Material Usage Variance Subcontract Usage Variance	Work Order Accounting Close
Floor Stock	
Method Variance	

One important aspect of the entire manufacturing process is the management of cost. In a standard cost system, each item has a standard cost calculated based on the standard bill and routing. But each time the item is made, the cost may be somewhat different. This is tracked as variances.

In MFG/PRO, variances are calculated and posted automatically throughout the manufacturing process. The illustration above lists the variances and when they are calculated.

Rate Variance

This reflects a difference between the standard cost and the price actually paid. The employee who did the work is paid more or less than the standard work center rate, the subcontractor charged more or less, or the material used had a different GL cost than the item listed on the work order bill. This last cause of variance may mean that a substitute item was used, or that materials were issued from another site with a different cost. It could also mean that the GL cost has changed since the work order bill was created.

Usage Variance

This reflects a difference between the standard quantity and the quantity actually used—more or fewer hours or more or less material.

Both are calculated based on the quantity of inputs that should have been used to get the quantity reported as received—referred to as earned hours or earned materials.

Method Variance

When a work order is completed, the Work Order Accounting Close is run to clear out any balance remaining in work in process.

After all other sources of costs and variances have been accounted for, any remaining amount in work in process is posted as a method variance.

Example

We'll look at a simple example in which:

- An employee record is created for employee "abc" (Employee Maintenance)
- Work order control settings are defined (Work Order Control)
- A work order to build 100 yo-yos (item 10-00) is created (Work Order Maintenance)
- The work order is released (Work Order Release/Print)
- Components 10-01, 10-02, and 10-03 are issued in quantities sufficient to build 100 yo-yos (Work Order Component Issue)
- Labor to assemble the yo-yos is recorded: it involves two operations (Labor Feedback by Work Order)
- The work order is received and closed (Work Order Receipt)

ADD EMPLOYEE RECORD

The screenshot shows a software window titled "Employee Maintenance" with a search bar containing "abc" and a magnifying glass icon. The window is divided into two main sections: "Employee Address" and "Employee Data".

Employee Address

Employee: abc		
Last Name: Carter		
First Name: Andrew		
Address 1: 123 State Street		
Address 2:		
Address 3:		
City: Carpinteria	State: CA	Postal: 93013
Country: United States of America	USA	
Home Phone: (805) 555-8888	Business Phone: (805) 555-1234	Ext: 6789
SSN: 123-12-1234	Birth Date: 01/10/1970	

Navigation arrows (left and right) are located at the bottom right of the "Employee Address" section.

Employee Data

Job Title: Assembler	Department: PROD
Date Employed: 01/02/2001	Default Project:
Date Terminated:	Employment Status: AC

Basic data about the employee who is manufacturing Yo-Yo Company's 100 yo-yos is shown above in Employee Maintenance.

Later, when we look at how labor is reported in the Labor Feedback by Work Order screen, this employee's ID is entered.

DEFINE CONTROL SETTINGS

Work Order Control

Auto W/O Numbers: ☒

Next W/O Nbr: 1001

Work Order Comments: ☐

Routing Comments: ☐

Move First Operation: ☒

Post variances at SFC: ☒

Qty Complete Mthd: SUM

SUMMARIZE

Add Link

Yo-Yo Company's Production Manager has set up the control settings so that:

- Work order ID numbers are automatically generated by the system
- The work order release function sets the status of the first operation to Queue (Move First Operation selected)
- Labor and burden variances are calculated and posted whenever shop floor labor feedback transactions are entered (Post Variances at SFC)

Move First Operation

This field is typically set to Yes. The released order then appears on the dispatch list for the specified work center and the Queue status indicates it is waiting to be started. If a lengthy picking effort is required, the work order may not be ready as soon as it is released. In that case, you would set this field to No, and use Operation Move to change the status later.

Additional Notes

Post Variances at SFC

Setting this field to No reduces the number of variance transactions posted to the general ledger, particularly if there are many shop floor labor transactions processed before material receipts are recorded.

If you have very long run times, you would set this field to No, suppressing variance calculations until finished product is received. If you have short run times, you would set this field to Yes.

CREATE WORK ORDER

Work Order Maintenance

Work Order: 1001 ID: 1
 Item Number: 10-00 Nu-Line Yo Yo
 Type:
 Site: 9000

Quantity Ordered: 100
 Quantity Completed: 0.0
 Qty Rejected: 0.0
 Work Order Status: F
 Sales/Job:
 Supplier:
 Yield Percent: 100.00%
 Remarks:
 Comments:

Order Date: 02/10/2003
 Release Date: 02/10/2003
 Due Date: 02/11/2003
 Site: 9000
 Routing Code:
 BOM/Formula Code:
 Post variances at SFC: ☒

Add Link

In Work Order Maintenance, notice that the work order number is 1001, based on the Work Order Control setting Yo-Yo Company's Production Manager defined in the previous step. Also notice that the Post Variances at SFC box has a checkmark, the default setting, again based on the setting in Work Order Control.

Type and Status

The work order type is "blank," which means that this is a normal manufacturing order with a standard product structure and routing (see Work Order Types, page 219).

This work order has a status of Firm Planned (F), so this order has been reviewed and confirmed (see Work Order Status, page 220).

Routing and BOM

The Routing and BOM fields have been left blank, so the system accesses the routing and BOM codes stored with a code equal to the item number on the work order. (The routing code was defined in Routing Maintenance and the BOM code was defined in Product Structure Maintenance.)

RELEASE WORK ORDER

Work Order Release/Print

Work Order: 1001
ID: 1
Batch:

Print Picklist: ☒
Print Routing: ☒
Print Co/By-Products: ☒
Item Number: 10-00
Nu-Line Yo Yo
Quantity Ordered: 100.0
Quantity Completed: 0.0
Sales/Job:
Remarks:

Deliver To:
Print Bar Code: ☐
Operation: ☒
Release Date: 02/10/2003
Work Order Due Date: 02/11/2003
Work Order Status: F
Supplier:

Output:
Batch ID:

Include zero required: ☒
Include zero open: ☐
Reprint picked quantities: ☐
Print floor stock items: ☒
Print Co/By-Products as First or Last Doc: First

Will change to R when Release/Print screen completed

Using Work Order Release/Print, Yo-Yo Company's Production Manager releases the work order for 100 yo-yos. Based on the selections above, a picklist of required component items and a route sheet listing operations are printed (shown on the following pages).

Once all entries in the Work Order Release/Print screen have been completed, the work order status of the order will change from F (firm planned) to R (released).

REVIEW PICKLIST

Work Order: 1001		Issue Date: 02/10/03	
ID: 1			
Batch:			
Item Number: 10-00	Rev:	Work Order Due Date: 02/11/03	
Nu-Line Yo Yo			
Remarks:		Sales/Job:	
Qty Ordered: 100.0	EA	Deliver To:	
Item Number	Rev	Site Location	Required Qty to Issue UM Issued
10-01		9000	200.0 EA
Plastic Half			
		RawMat	200.0 ()
10-02		9000	100.0 EA
Aluminum Pin			
		RawMat	100.0 ()
10-03		9000	6,000.0 IN
String			
		RawMat	6,000.0 ()

The printed picklist lists the yo-yo's component items, the quantities to issue and the site (9000) and location (RawMat) to pick from.

REVIEW ROUTING

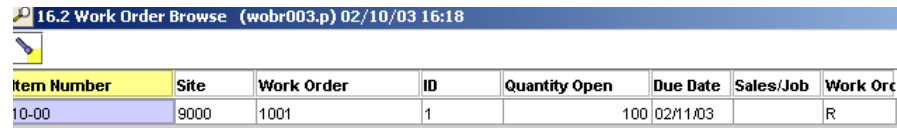
Work Order: 1001
 ID: 1
 Batch:
 Item Number: 10-00 Rev: Work Order Due Date: 02/11/03
 Nu-Line Yo Yo
 Remarks: Sales/Job:
 Qty Ordered: 100.0 EA Deliver To:

		Tooling	Setup Time		
Op	Work Center	Std Op	Supplier	Run Time	Actual By
10	ASM			1.0	()
	Assembly			5.0	()
	Assemble Halves to Pin				
20	ASM			0.0	()
	Assembly			3.33	()

Cut, Attach, Wind String

The printed routing sheet lists the operations (op 10 and op 20) and standard setup and run times to manufacture 100 yo-yos.

RELEASE WORK ORDER STATUS



The screenshot shows the '16.2 Work Order Browse' window. The title bar indicates the file is 'wobr003.p' and the date/time is '02/10/03 16:18'. Below the title bar is a toolbar with a magnifying glass icon. The main area contains a table with the following data:

Item Number	Site	Work Order	ID	Quantity Open	Due Date	Sales/Job	Work Ord
10-00	9000	1001	1	100	02/11/03		R

The Work Order Browse now shows that the work order status has indeed changed from F (firm planned) to R (released).

ISSUE COMPONENTS

Work Order Component Issue

Work Order: 1001 ID: 1 Op: Effective: 02/11/2003
 Item Number: 10-00 WO Stat: R Issue Alloc: ☐
 Nu-Line Yo Yo Issue Picked: ☒

Item Number	Qty Open	Qty Alloc	Qty Picked	Qty to Iss	Qty B/O
10-01	200.0	0.0	200.0	200.0	0.0
10-02	100.0	0.0	100.0	100.0	0.0
10-03	6000.0	0.0	6000.0	6000.0	0.0

Item Number: Op: Site: Loc:
 Description: Lot/Serial:
 Quantity:
 Substitute: ☐

Work Order Component Issue

Work Order: 1001 ID: 1 Op: Effective: 02/11/2003
 Item Number: 10-00 WO Stat: R Issue Alloc: ☐
 Nu-Line Yo Yo Issue Picked: ☒

Item Number	Site	Location	Lot/Serial	Ref	Quantity
10-01	9000	RawMat			200.0
10-02	9000	RawMat			100.0
10-03	9000	RawMat			6,000.0

Is all information correct

This frame shows
where items are
being shipped from.

The Production Manager issues components for item 10-00 (yo-yo) based on the bill of material that was defined in Product Structure Maintenance on page 102.

In this example, all components were picked from the locations printed on the work order picklist, so they can be issued automatically by setting Issue Picked to Yes. This reduces manual entry because it sets the default sites, locations, lot/serial numbers, references, and quantities from the detail allocations on the picklist.

Components issued to a work order are posted to WIP at GL cost.

RECORD LABOR

Labor Feedback by Work Order

Work Order: 1001
 Operation: 10
 Employee: abc
 Department: PROD
 Shift:

Assemble Halves to Pin
 Carter
 Work Center: ASM
 Machine:

ID: 1
 Op Status: QUEUE
 Pay Code: REG
 Time Ind: Decimal Hours
 Project:

Quantity Completed: 100.0
 Rejects: ☐
 Rework: ☐
 Start Setup: 0.000
 Elapsed/Stop Setup: 1
 Start Run: 0.000
 Elapsed/Stop Run: 5
 Comment:
 Down Time: 0.000

Effective Date: 02/11/2003
 Operation Complete: ☒
 Move to Next Operation: ☒
 Previous Ops Complete: ☒
 Elapsed Setup: 0.000
 Elapsed Run: 0.000
 Down Time Reason:

Employee “abc” uses Labor Feedback by Work Order to record labor for operation 10, assembling yo-yo halves to the pin.

In addition to the employee ID, other information included on this screen are the work order number, operation, and work center, which all labor feedback transactions must specify.

Based on the quantity of yo-yos completed (100) and operation 10’s routing (entered in Routing Maintenance on page 123), we would expect the setup time to be 1 hour and run time to be 5 hours (100 yo-yos × 0.05 hr/yo-yo). That is what has been entered here. If actual setup or run time had varied from these expected or “standard” times, then there would be usage variances.

Questions *What information is provided by the Department PROD?*

GL accounts for manufacturing costs are attached to the department in Department Maintenance.

What information is provided by the Work Center ASM?

Rates are specified at the work center level. These include the standard labor rates per hour for setup and run operations, and the variable burden rates that apply to all work done in the work center.

REVIEW LABOR TRANSACTIONS

```

sfopiq12.p b+      17.13.9 Operation Transaction Detail Inq      02/11/03

      Tran Nbr: 8                      Output: page
      Type: LABOR
Transaction Date: 02/11/03 12:03:00      Work Order: 1001
Effective Date: 02/11/03 Shift:          ID: 1      Op: 20
Employee: abc      Andrew Carter
Item Number: 10-00      Quantity Completed: 100.0
      Nu-Line Yo Yo      Qty Rejected: 0.0
      Site: 9000      Line:      Reject Reason:
Work Center: ASM      Machine:      Qty Rework: 0.0
Department: PROD      Rework Reason:
      Qty Scrapped: 0.0
Std Setup Time: 0.0      Actual Setup Time: 0.0
Std Run Time: 0.033      Actual Run Time: 3.33
Labor Cost Std: 33.30      Labor Cost: 33.30
Burden Cost Std: 13.32      Burden Cost: 13.32
Subcontract Std: 0.00      Subcontract Cost: 0.00

                        G/L Transactions
                        DR Acct  Sub-Acct CC  Project
GL Reference      Amount CR Acct  Sub-Acct CC  Project
W0030211000005      33.30 1600
                        6500
W0030211000006      13.32 1600
                        6400
  
```

The labor transactions created when labor was reported for operation 20 can be reviewed in Operation Transaction Detail Inquiry. This shows standard and actual setup and run times and the GL effects.

Accounts affected are Work in Process (1600), Labor Absorbed (6500), and Burden Absorbed

Calculations

Labor cost at operation 20 = 0.333/unit
 100 units (yo-yos) $\times$ 0.333 = 33.30

Burden cost at operation 20 = 0.1332/unit
 100 units (yo-yos) $\times$ 0.1332 = 13.32

To see how the per unit labor and burden costs were calculated, see Appendix A.

REPORT LABOR – OP 10

Work Order Routing Maintenance

Work Order: 1001 ID: 1
 Item Number: 10-00 Nu-Line Yo Yo
 Operation: 10

Standard Operation:
 Operation Description: Assemble Halves to Pin
 Work Center: ASM Machine: Assembly

Qty Ordered: 100.0
 Qty WIP: 0.0
 Run Complete: 100.0

Sub Complete: 0.0
 Qty Reject: 0.0
 Qty Rework: 0.0

Start Date: 02/10/2003
 Due Date: 02/11/2003

Std Setup Time: 1.0
 Std Run Time: 0.05
 Std Move Time: 0.0
 Queue: 0.0
 Wait Time: 0.0
 Subcontract Cost: 0.00
 Setup Crew: 0.00
 Run Crew: 1.00
 Overlap Units: 0
 Subcontract LT: 0

Act Setup Time: 1.0
 Act Run: 5.0
 Machines per Op: 1
 Op Status: C
 Tool Code:
 Supplier:
 Yield%: 100.0%
 Comments:

When Yo-Yo Company's Production Manager created work order 1001 in Work Order Maintenance, the system automatically generated a work order routing. This routing tracks the status of each operation and the quantities recorded complete at each operation. It also shows the actual setup and run times.

This screen shows that Operation 10 is complete (Status = Complete). There are no yo-yos in process at this operation (Qty WIP = 0), and 100 have been completed (Run Complete = 100).

REPORT LABOR – OP 20

Work Order Routing Maintenance

Work Order: 1001 ID: 1
 Item Number: 10-00 Nu-Line Yo Yo
 Operation: 20

Standard Operation:
 Operation Description: Cut, Attach, Wind String
 Work Center: ASM Machine: Assembly

Qty Ordered: 100.0
 Qty WIP: 100.0
 Run Complete: 100.0

Std Setup Time: 0.0 Act Setup Time: 0.0
 Std Run Time: 0.0333 Act Run: 3.33

Sub Complete: 0.0
 Qty Reject: 0.0
 Qty Rework: 0.0

Std Move Time: 0.0
 Queue: 0.0
 Wait Time: 0.0

Subcontract Cost: 0.00
 Setup Crew: 0.00
 Run Crew: 1.00
 Overlap Units: 0
 Subcontract LT: 0

Machines per Op: 1

Op Status: C

Start Date: 02/11/2003
 Due Date: 02/11/2003

Tool Code:
 Supplier:
 Yield%: 100.0%
 Comments:

Work Order Routing Maintenance shows that Operation 20 is also complete (Op Status field = [C]omplete and Run Complete field = 100). Notice, though, that the Qty WIP field still shows 100. This will get cleared out upon Work Order Accounting Close.

RECEIVE AND CLOSE WORK ORDER

Work Order Receipt

Work Order: 1001 ID: 1 Effective: 02/11/2003

Remarks: Batch:

Item Number: 10-00 Lot/Serial Control: UM: EA

Description: Nu-Line Yo Yo WO Stat: R

Open Quantity: 100.0 Automatic Lot Numbers: ☐

Quantity: 100.0 Site: 9000

UM: EA Location: FinGood

Conversion: 1.0000 Lot/Serial:

Scrapped Qty: 0.0 Reference:

UM: EA Multi Entry: ☐

UM Conversion: 1.0000 Set Attributes: ☐

Total Units: 100.0

Remarks:

☒ Close

Work Order Receipt

Work Order: 1001 ID: 1 Item Number: 10-00

Site	Location	Lot/Serial	Ref	Quantity
9000	FinGood			100.0

Add Link

Using Work Order Receipt, Yo-Yo Company receives the 100 yo-yos into its finished goods location (FinGood) and closes the order.

This increases (debits) the Inventory account and decreases (credits) the WIP account for the total standard GL cost.

There is an additional step in the work order life cycle that is usually taken at the end of each GL calendar period as part of the period-end closing process, and that is Work Order Accounting Close.

Additional Notes

REVIEW



In this chapter, we discussed work order types and status codes, and explained the variances that may occur in the work order cycle. We then saw how work orders flow through the system and learned that they are:

- Created in Work Order Maintenance
- Released in Work Order Release/Print
- Issued components by Work Order Component Issue
- Received and Closed in Work Order Receipt

We also saw how labor is recorded in Labor Feedback by Work Order.

Activity

In the following activity you:

- Add an employee
- Define control settings
- Manually add and release a work order
- Issue components to a work order
- Report labor to a work order and receive and close a work order

Add Employee Record

Use Employee Maintenance to add an employee. Key fields to populate are:

- Employee = abc; press Go
- Last Name = Carter
- First Name = Andrew
- Address 1 = [optional]
- City = Carpinteria
- State = CA
- Country = USA
- SSN = 123-12-1234
- Birth Date = 01/10/1970; press Go
- Job Title = Assembler
- Date Employed = 01/02/2001
- Department = PROD

Define Control Settings

- 1** Select Work Order Control and make sure that the settings are as follows:
 - Auto W/O numbers = Yes
 - Next W/O nbr = [default]
 - Work Order Comments = No (unchecked)
 - Routing Comments = No (unchecked)
 - Move First Operation = Yes (checked)
 - Post Variances at SFC = Yes (checked)
- 2** Update and exit.

Manually Add and Release a Work Order

- 1** Select Work Order Maintenance to add a new work order record.
- 2** Let the next work order number and ID number default from the control file. Press Go
- 3** Create a work order for 100 units of item 10-00 at site 9000. Work order status is F (firm planned).
- 4** Let the other field values default. Update.
- 5** Use Work Order Release/Print to release the work order. This function will also print the work order picklist and routing (also known as the shop paper). Accept all other default values.

Tip: Use lookup function to find your work order. Direct output to your printer. Save a hard copy of the picklist and routing.
- 6** Review picklist and routing.
- 7** Find the new status of the order using Work Order Browse/Inquiry. What is it?

Work Order Component Issue

- 1 Use Work Order Component Issue to issue components from your inventory to your work order. Set the Issue Picked flag to Yes to make your transaction more automatic.

By overriding the data in the transaction frame, you can change the quantity issues or the location from which the items are issued.

- 2 Update and exit.

Report Labor to a Work Order

Work Order Labor transactions are recorded in the Shop Floor Control Module.

- 1 Manually calculate how much labor for set-up and run time you need to complete all 100 yo-yos at each operation. (These numbers are on the routing that was printed for the work order.)
- 2 Assume the shop has now built the units, and use Labor Feedback by Work Order to report labor and units completed at each operation on your routing, based on your calculation above. Use employee “abc” set up earlier.
- 3 At each operation, report the yo-yos completed and the elapsed set-up and run times.
- 4 In Operation Transaction Detail Inquiry, look at the transactions created when you reported labor.
- 5 Select Work Order Routing Maintenance to review your work order routing. Check how many units have been completed at each operation and how much labor was used for each operation.

Receive and Close a Work Order

- 1 Use Work Order Receipt to receive all 100 yo-yos from the work order into inventory at site 9000, location FinGood. Enter 100 units as the quantity to complete and set Close = Yes.
- 2 Update and exit.

Chapter 10

Sales Orders / Invoices and Accounts Receivable

Overview

This chapter describes the various activities associated with getting a product to a customer. Typically the sales department is responsible for recording orders, processing shipments, and invoicing. We'll discuss each of these activities followed by an example to illustrate the process.

Key Concepts

Sales Order Work Flow

Document Layout

Allocation of Inventory

Picklists

Shipment

Invoice Management

Effective Date

Example

Create Customer Record

Define Control Settings

Enter Sales Order

Print Sales Order

Print Packing List

Ship Sales Order

Print and Post Invoice

Enter Payment

Activities

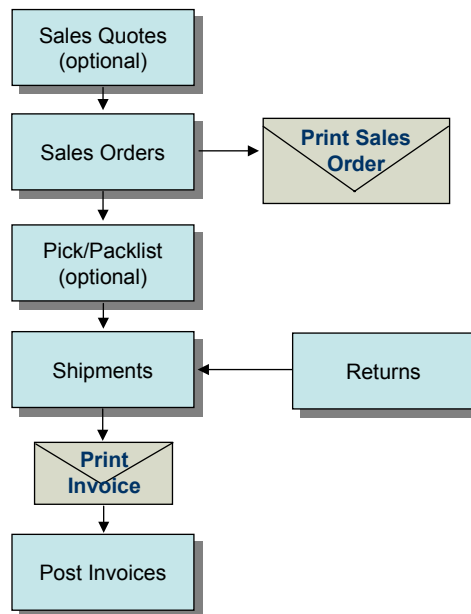
Learning Objectives

When you finish this chapter, you should be able to:

- Describe the basic sales order process flow
- Explain the different types of information contained in a sales order document's "header," "line item," and trailer sections
- Explain the differences between general and detail allocations
- Describe the basic invoice process flow
- Describe the basic payment process flow
- Enter, print, and ship a sales order
- Print and post an invoice
- Record payment

Key Concepts

Introduction



Sales Order Process Flow

A customer sale can begin as a sales order or a sales quote. Both represent offers to sell the customer certain items at a certain price at a certain time. The sales order also represents a commitment from the customer to purchase the items, but a sales quote does not. Consequently, sales quotes are not considered by MRP.

A hard copy document of the order can be printed and sent to the customer.

After a sales order has been entered and is ready to be shipped, a picklist can be printed. When the picklist is generated, any allocated quantities on the order are incremented as picked. The picklist document can be placed inside the shipping box as a packing list. Inventory is not incremented until a shipping transaction is performed.

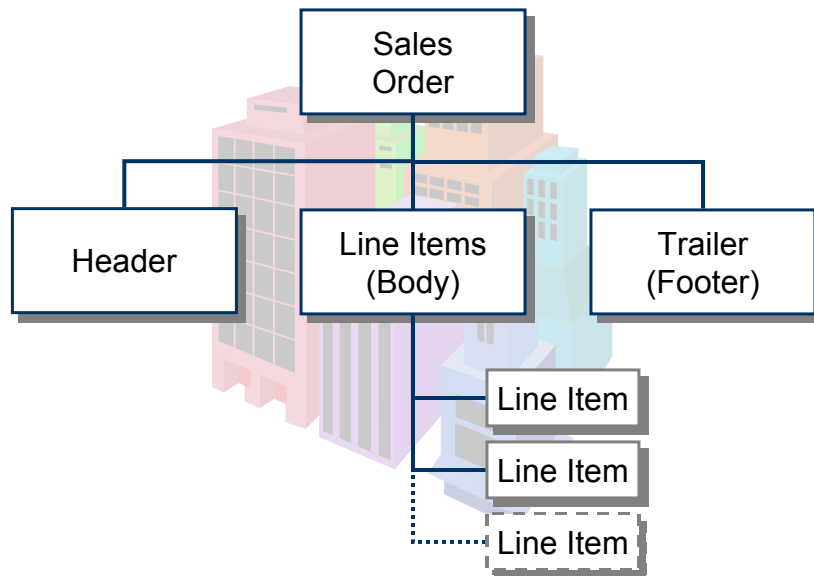
The shipment transaction creates a pending invoice that does not increment sales until the invoice is printed and is posted to Accounts Receivable.

Once invoices are posted, financial processing continues with accounts receivable functions.

What's Next

Next, we will look at the main parts of the sales order document.

SALES ORDER DOCUMENT LAYOUT



In MFG/PRO, a sales order document has three main parts:

- a header
- one or more line items
- a trailer

Order data is entered and printed in this sequence.

Header

Contains the general terms of the order, as well as default values for line items. Comments may follow, describing in more detail the terms or instructions associated with this order.

Line Item

Specifies a particular item being ordered, its order quantity, and price. Lists any exceptions to header information, such as a date or address that applies to only the line item and not the whole order. Comments may follow each line item, describing in more detail the item, its specifications, or packaging instructions.

Trailer

Contains tax, shipping, and order status information for all line items. Freight is calculated automatically on a bulk or unit basis. These charges are not subject to commission or discount, and may or may not be taxable.

Comments

Comments can be entered manually on each quote and order or copied from pre-existing master comments and modified as needed. Master comments are useful for storing standard information:

- Item specifications
- Quality requirements
- Item descriptions in other languages
- Export documentation
- Packaging instructions

Each master comment is identified by a reference code, type, language, and page number (up to 99 pages of text).

What's Next

In the next section, we will discuss inventory allocations for sales orders, which is how you can reserve inventory for a sales order.

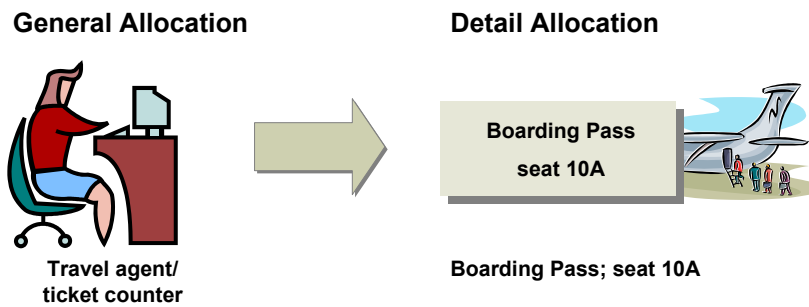
ALLOCATION OF INVENTORY

MFG/PRO uses allocations to reserve inventory. Particular quantities may be set aside or allocated to specific sales orders and work orders. For both sales orders and work orders, allocations help ensure that inventory is available when it is needed. For sales orders, allocations also enable the sales department to determine which items are shipped for specific orders.

General and Detail Allocations

When inventory is to be allocated, the system distinguishes between general allocation and detail allocation. A general allocation reserves inventory at a particular site, but it does not specify a specific location or lot/serial numbers.

Example When you buy an airline ticket, the airline allocates a seat for you. This is a general allocation—you have a seat but you do not know which one. See figure below.



Detail allocations enable you to reserve exact items of inventory at a specific location by specifying lot and/or serial numbers, expiration dates, sites and/or locations. Detail allocation is normally done automatically when the picklist is prepared, but it can be done during the order entry process.

Example In our airline example, this happens when you get a boarding pass—now you should know what seat you are in. It is detail allocated to you and no one else should be assigned to the same seat.

Automatic or Manual

Allocations can be done at several stages, automatically or manually. For sales orders, general allocations can be created during order entry, depending upon the setting in Sales Order Control. The system automatically converts general allocations to detail allocations when picklists are printed. You can also override the system by manually creating detail allocations during order entry.

What's Next

The sales order allocations are displayed on the picklist, which we will discuss in the next section.

PRINTING PICKLISTS

Once customer ordered items have been completed, or when stock items are available for shipment, sales personnel can initiate picklist printing for the sales order.

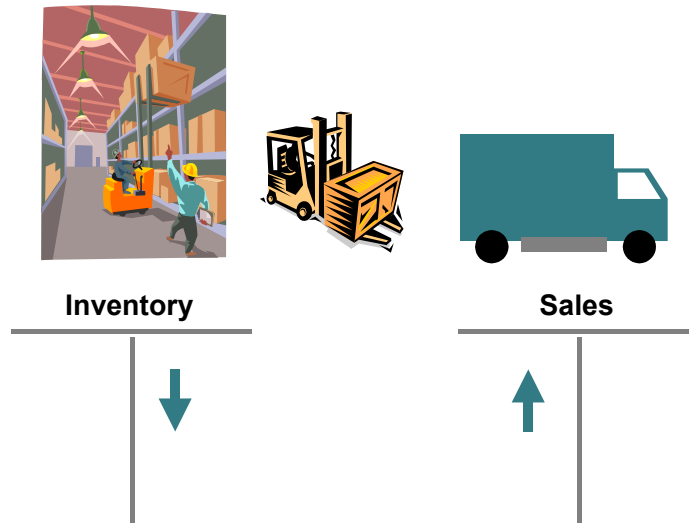
The picklist shows what items to pick to fill an order and what site or location to pick them from. If you created detailed allocations in Sales Order Maintenance—including lot/serial numbers and lot reference numbers—this information appears on the picklist. If you performed a general allocation for the sales order, the system automatically converts the general allocation to a detail allocation when it prints the picklist.

To print a picklist for a sales order, use Sales Order Packing List. You can only print picklists for sales orders not on credit hold. A sample picklist is shown below.

Yo Yo Co. Carpinteria, CA 93103 United States of America		P A C K I N G L I S T	
		Order Number: SO10020	Page: 1
		Order Date: 02/12/03	
		Print Date: 02/12/03	
Sold To: YoCust		Ship To: YoCust	
Yo Yo's R Us 123 Main Street Santa Barbara, CA 93101 United States of America		Yo Yo's R Us 123 Main Street Santa Barbara, CA 93101 United States of America	
Salespersons:		Purchase Order:	
Credit Terms: Net30		Ship Via:	
Payment Due in 30 Days		FOB Point: Shipping Point	
Remarks:			
Ln	Item Number	Site T Location Lot/Serial	Qty Open Qty to Ship UM Due Shipped
1	10-00	9000	100.0 EA 02/13/03
	Nu-Line Yo Yo	FinGood	100.0 ()

After printing the picklist, the system updates the values displayed in Sales Order Maintenance for the quantity allocated and quantity picked.

SHIPMENT



Once the items listed on the sales order picklist have been picked, the items are packed and shipping paperwork is prepared. Following actual shipment, the shipping transaction can be processed.

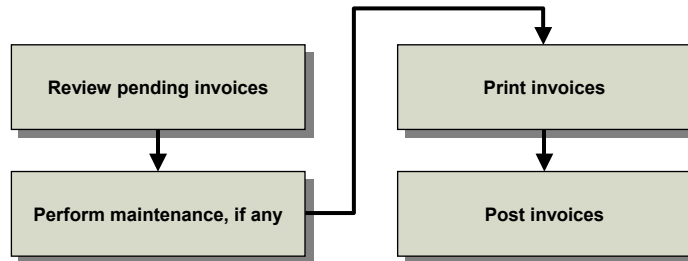
This physically decreases the quantity on hand for each of the items that were shipped, and generates a GL transaction to decrease (credit) inventory and increase (debit) cost of sales.

Shipping a sales order automatically flags it as ready for invoicing. Normally in MFG/PRO, an invoice document is generated for each shipment. You ship the items, print the invoice, and post it to Accounts Receivable. However, you can combine multiple shipments and sales orders on one invoice.

What's Next

The shipping/invoicing cycle is relatively simple. When items are shipped on a sales order, the quantity to invoice is increased by the quantity shipped and the order is flagged as ready for invoicing. The next step is to print and post the invoice.

INVOICE MANAGEMENT



A sales order shipment automatically creates a pending invoice with a system-assigned number. While in the pending status, maintenance can be performed on such things as credit terms, commission percentages, prices and discounts. Once pending invoices have been reviewed, they are ready to be invoiced.

Printing Invoices

Selection of invoices for printing may be by individual sales order number or range of sales order numbers or by shipping date or range of shipping dates. The date on the invoice will be the system date unless you change that date.

Posting Invoices

The post function generates an invoice in the Accounts Receivable module and updates the customer's open account balance. Posting an invoice also updates GL account balances for:

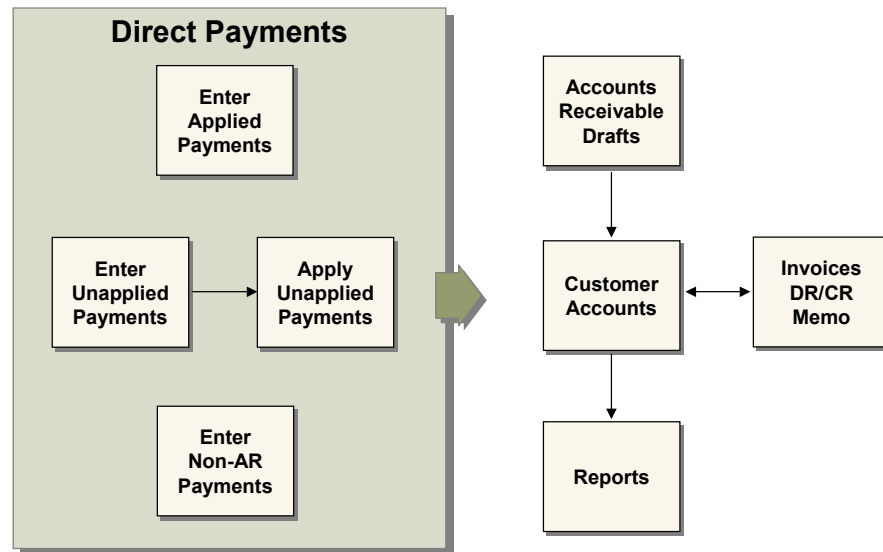
- Sales and AR
- Salesperson quota and commission history
- Sales tax journals
- Sales analysis history

The posting process also deletes sales orders that are complete.

Invoice History

Once posted, the invoice can be maintained in invoice history. This is useful for reviewing problems and configured product information, or reprinting lost invoices.

PROCESSING PAYMENT



All cash received from a customer should be recorded in Payment Maintenance (or Cash Book Maintenance). In MFG/PRO, payments may be recorded as:

- **Applied**
Cash received from the customer in payment of specific invoices, memos, finance charges, or open draft amounts
- **Unapplied**
Cash received from the customer that does not apply to specific invoices or memos, such as prepayments, deposits, or overpayments.
- **Non-AR**
Cash received that is not paying any invoice, memo, or finance charge. Examples include tax refunds and rebates.

Auto Apply

In most cases, customer payments apply to an open invoice or memo item. To make it easier, there is an Auto Apply option in Payment Maintenance that automatically applies the amount received to open balances, oldest first, calculating any discounts the customer was eligible for. (You can enter a range of reference numbers.)

This option recommends a selection, which you can then modify.

Apply Unapplied

Sometimes a payment is received that does not correspond to any open invoices or memos, a deposit or overpayment, for example.

These are recorded as unapplied. They decrease the customer's balance, but do not affect the open balance on any open invoice or memo. Later, when you find out what items the payment applies to, the payment can be applied.

Example

In the following example, Yo-Yo Company Company's Sales Department:

- Creates a customer record for Yo-Yos R Us in Customer Maintenance. Information entered includes the customer ID (YoCust), credit limit of 100,000, and credit terms of Net30.
- Defines sales order control settings in Sales Order Control
- Enters a sales order for 100 yo-yos sold to Yo-Yos R Us (YoCust) at \$10 per yo-yo with a due date of 2/12/2003
- Prints the sales order and packing list
- Ships 100 yo-yos to Yo-Yos R Us

The Accounts Receivable Department then:

- Prints and posts an invoice for this sale of 100 yo-yos. Total invoice amount is \$1,000 (based on quantity of 100 yo-yos $\times$ \$10/yo-yo).
- Receives check for \$1,000 and enters payment in Payment Maintenance

CREATE CUSTOMER RECORD

Customer Maintenance

Customer Address

Customer: YoCust
 Name: Yo Yo's R Us
 Address: 123 Main Street
 Address:
 Address:
 City: Santa Barbara State: CA Post: 93101 Format: 0
 Country: United States of America USA County:
 Attention: Jim Mackenzie [2]: Joan Alexander
 Telephone: (805) 555-8756 Ext: 3456 [2]: (805) 555-8756 Ext: 3555
 Fax/Telex: (805) 555-9756 [2]: (805) 555-9756 Added: 02/11/2003

Customer Data

Sort Name: Yo Yo's R Us Type:
 Salespsn1: Multiple: ☒ Region:
 Ship Via: Currency: USD
 AR Acct: 1200 Dual Pricing Cur:
 Resale: Site: 9000
 Remarks: Lang:

Customer Credit Data

Credit Limit: 100,000 Disc Pct: 0.00% Bill To:
 Terms: Net30 Finance Charge: ☐ Last Credit Review:
 Credit Hold: ☐ Statement: ☐ Last Credit Update: 02/11/2003
 Credit Rating: Statement Cycle: High Credit: 0
 DB Number: Dun Letter: ☐ High Date:
 PO Required: ☐ Last Payment: Last Sale:

Before Yo-Yo Company's Customer Service Representative (CSR) can enter a sales order, there must be a customer record in the system.

Yo-Yo's R Us is a customer of Yo-Yo Company. In addition to basic address information, Yo-Yo Company has entered customer credit data—a credit limit of 100,000 and terms of Net30.

DEFINE CONTROL SETTING

Sales Order Control

Use Which Calc for Qty Available to Allocate: **1**

Allocate Sales Order Lines Due in Days: **10** (0 for no allocations)

Limit Allocate to Avail Only: ☒

ATP Enforcement Enabled: ☐

Pick Only Allocated Lines: ☒

Are Sales Orders Printed: ☐

Keep Booking History: ☒

Shipping Lead Time: **1**

Company Address: **9000**

Sales Order Header Comments: ☐

Sales Order Line Comments: ☐

Print Only Lines to Invoice: ☐

Ln Format S/M: **Single**

Detail Allocations: ☐

ATP Horizon: **0**

Calculate Promise Date: ☐

Sales Order Prefix: **SO**

Next Sales Order: **10019**

Invoice Prefix: **IV**

Next Invoice: **10004**

Integrate with AR: ☒

Integrate with SA: ☒

Integrate with APM: ☐

Confirmed Orders: ☒

Fiscal Start Month: **1**

FOB: **Shipping Point**

In Sales Order Control, Yo-Yo Company has specified several standards and default settings pertaining to its sales orders.

- The default value for allocations in Sales Order Maintenance is “general,” since Detail Allocations is not selected
- All sales orders will have a prefix of SO and all invoices will have a prefix of IV
- Sales order data will be integrated with the Accounts Receivable and Sales Analysis modules (Integrate with AR and SA are selected)
- On new sales orders, the default value will be Confirmed for shipment (Confirmed Orders is selected)
- The default value for sales order line item entry will be Single (instead of Multiple), which lets Yo-Yo Company customize due dates, sites, tax status, and other information for each line item

Sales Order Control

Calculate Freight by Site: ☐

Comm on Margin not Sales: ☒

Hold Orders Over Credit Limit: ☐

SO Interest Accrued Acct: 4500

SO Interest Applied Account: 1280

Price Table Required: ☐

Disc Table Required: ☐

Vary Pricing Date by SO Line: ☒

Minimum Shipment Amount: 0

SO Edit ISB Defaults: ☐

SO Returns Update ISB: ☐

Forecast Consumption

Consume Forward: 0

Consume Back: 0

Check Customer Item Nbr First: ☐

Taxable Trailer Code 1: 10

Taxable Trailer Code 2: 11

Taxable Trailer Code 3: 21

Auto Batch Confirmation: ☐

Confirmation Batch ID:

Confirmation Printer:

Pending Inv Update ISB: ☐

Auto Batch Shipment: ☐

Shipment Batch ID:

Shipment Batch Printer:

Use SO Freight List Trailer Code: ☐

Nontaxable Trailer Code 1: 10

Nontaxable Trailer Code 2: 11

Nontaxable Trailer Code 3: 20

In the next frame, Yo-Yo Company has not selected Hold Orders Over Credit Limit, so it is still possible to process sales orders that have exceeded the credit limit set in Customer Maintenance.

ENTER SALES ORDER: HEADER INFORMATION

The screenshot shows the 'Sales Order Maintenance' window with the following header information:

- Order:** SO10020
- Sold-To:** YoCust
- Bill To:** YoCust
- Ship-To:** YoCust

Sold-To Address:

Yo Yo's R Us
123 Main Street

Santa Barbara CA 93101
United States of America

Ship-To Address:

Yo Yo's R Us
123 Main Street

Santa Barbara CA 93101
United States of America

Order Details:

- Order Date:** 02/12/2003
- Required Date:**
- Promise Date:**
- Due Date:** 02/13/2003
- Perform Date:**
- Pricing Date:**
- Purchase Order:**
- Remarks:**

Line Pricing: ☒ Manual: Site: 9000

Channel: **Project:**

Confirmed: ☒ **Currency:** USD **Language:**

Taxable: ☐ **Fixed Price:** ☒ **Credit Terms:** Net30

Credit Terms Interest %: 0.00 **Reprice:** ☐

Entered By: qad

A sales order entered by Yo-Yo Company's CSR is shown above. This order is for Yo-Yo's R Us (YoCust).

The CSR lets the system generate the sales order ID, which has a prefix of SO based on the Sales Order Control setting. Other information defaults from the Sales Order Control setting too, such as site 9000 and Confirmed for shipment (yes). The credit terms default from the customer record set up in Customer Maintenance.

Some header elements, such as some date fields, Site, and Confirmed, become default values for line items; these can be changed, though, during line item entry. We'll look at line item data next.

SALES ORDER: ENTER LINE INFORMATION

Sales Order Maintenance

Order: SO10020 Sold-To: YoCust Ln Format S/M:Single

Sales Order Line

Ln	Item Number	Qty Ordered	UM	List Price	Discount	Net Price
1	10-00	100.0	EA	10.00	0.0	10.00

Desc: Nu-Line Yo Yo Sales Account: 3000
 Loc: FinGood Site: 9000 Disc Acct: 3900
 USD Cost: 2.1562 Confirmed: ☒ Credit Terms Int: 0.00
 Lot/Serial: Required: Ship Type:
 Qty Allocated: 100.0 Promised: UM Conversion: 1.0000
 Qty Picked: 0.0 Due Date: 02/13/2003 Consume Fost: ☒
 Qty Shipped: 0.0 Perform Date: Detail Alloc:
 Qty to Invoice: 0.0 Pricing Date: 02/12/2003 Taxable:
 Salesperson 1: Multiple: ☐ Freight List:
 Commission 1: 0.00% Category: Fixed Price: ☒ Comments:

The CSR has entered an order for 100 yo-yos (item 10-00); the list price of \$10 defaults from information entered in Item Master Maintenance. The remaining information defaults from values previously entered in the sales order header, Sales Order Control, or Item Master Maintenance.

After completing line 1, the system automatically goes to line 2 (see figure below). Since only one line needed to be entered for this order, the CSR exited the next line by pressing End. The system then goes to the trailer frame, which we will discuss next.

Sales Order Line

Ln	Item Number	Qty Ordered	UM	List Price	Discount	Net Price
2		0.0		0.00	0.0	0.00

Click on this arrow to exit line entry

SALES ORDER: ENTER TRAILER INFORMATION

Sales Order Maintenance

Order: SO10020 Sold-To: YoCust Bill To: YoCust Ship-To: YoCust

Non-Taxable: 1,000.00 Currency: USD Line Total: 1,000.00
 Taxable: 0.00 0.00% Discount: 0.00
 Tax Date: FREIGHT 10 : 0.00
 Containers: 0.00 TAX-FREIGHT 11 : 0.00
 Line Charges: 0.00 SERVICE 20 : 0.00
 Total Tax: 0.00
 Total: 1,000.00

View/Edit Tax Detail: ☐

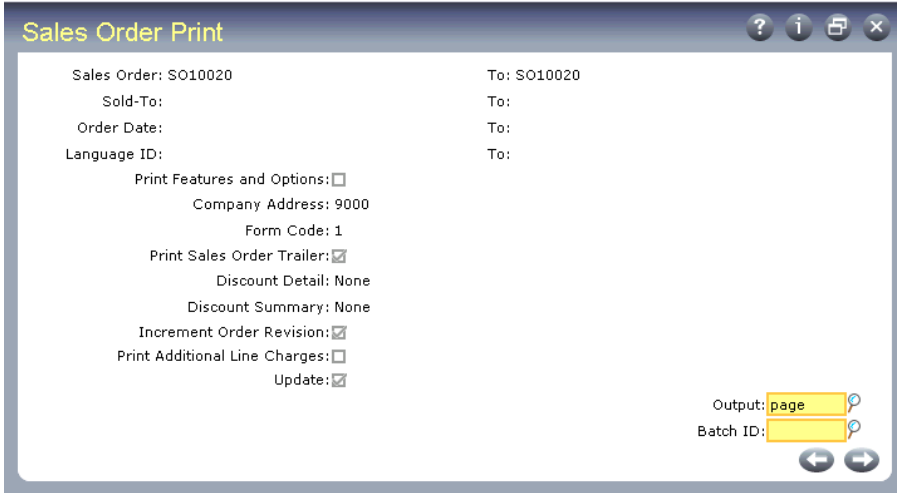
CR Initials: ☒ Print Sales Order: ☒
 Credit Card: ☒ Print Pack List: ☒
 Action Status: ☒ Print Inv Hist: ☒
 Revision: 0 ☐ EDI Inv Hist: ☐
 EDI PO Ack: ☐ ☒ Partial OK: ☒

AR Acct: 1200 Prepaid: 0.00
 FOB Point: Shipping Point
 Ship Via:
 BOL:

The CSR has selected all print options so that the sales order, pack list, and invoice history can be printed.

The Partial OK setting defaulted from Customer Maintenance indicating that the customer Yo-Yo's R Us will accept partial shipments.

PRINT SALES ORDER



The image shows a 'Sales Order Print' dialog box with a title bar containing a question mark, an information icon, a print icon, and a close button. The dialog is divided into two main sections. The left section contains the following fields: 'Sales Order: SO10020', 'Sold-To:', 'Order Date:', 'Language ID:', 'Print Features and Options: ☐', 'Company Address: 9000', 'Form Code: 1', 'Print Sales Order Trailer: ☒', 'Discount Detail: None', 'Discount Summary: None', 'Increment Order Revision: ☒', 'Print Additional Line Charges: ☐', and 'Update: ☒'. The right section contains three 'To:' labels. At the bottom right, there are two input fields: 'Output: page' and 'Batch ID:'. Below these fields are two navigation buttons, a left arrow and a right arrow.

Sales Order: SO10020	To: SO10020
Sold-To:	To:
Order Date:	To:
Language ID:	To:
Print Features and Options: ☐	
Company Address: 9000	
Form Code: 1	
Print Sales Order Trailer: ☒	
Discount Detail: None	
Discount Summary: None	
Increment Order Revision: ☒	
Print Additional Line Charges: ☐	
Update: ☒	

Output:

Batch ID:

Because the CSR selected Print Sales Order in Sales Order Maintenance, the sales order is available to print in Sales Order Print.

Yo Yo Co. Carpinteria, CA 93103 United States of America		S A L E S O R D E R			
		Order Number: S010020	Revision: 1		
		Order Date: 02/12/03	Page: 1		
		Print Date: 02/12/03			
Sold-To: YoCust		Ship-To: YoCust			
Yo Yo's R Us 123 Main Street Santa Barbara, CA 93101 United States of America		Yo Yo's R Us 123 Main Street Santa Barbara, CA 93101 United States of America			
Attention: Jim Mackenzie Telephone: (805) 555-8756		Attention: Jim Mackenzie Telephone: (805) 555-8756			
Salesperson(s):					
Credit Terms: Net30		Purchase Order:			
Payment Due in 30 Days		Ship Via:			
Resale:		FOB Point: Shipping Point			
Remarks:					
Ln	Item Number	Due Date	Qty Open UM	Price	Extended Price
1	10-00	02/13/03	100.0 EA	10.00	1,000.00
	Nu-Line Yo Yo				
USD Total:					1,000.00

A copy of the sales order is shown in this example.

**Additional
Notes**

After printing the sales order, the system sets Print Sales Order in Sales Order Maintenance to No. To reprint the order, set Print Sales Order to Yes and reprint using Sales Order Print.

SALES ORDER PACKING LIST

Sales Order Packing List

Due Date: _____ To: _____

Sales Order: SO10020 To: SO10020

Ship-To: _____ To: _____

Language ID: _____ To: _____

Site: _____ To: _____

Company Address: 9000

Print Only Lines to Pick: ☒

Override Partial OK Flag: ☐

Print Features and Options: ☐

Print Negative Quantities: ☐

Form Code: 1

Update: ☒

Note: Only orders with an action status of blank will print

Output:

Batch ID:

To print the packing list, the CSR uses Sales Order Packing List.

Because the CSR has selected Update, after printing the picklist, the system will update the values displayed in Sales Order Maintenance for the quantity allocated and quantity picked.

Set Update to No to print a simulated picklist for review without updating the database.

Additional Notes

Yo Yo Co. Carpinteria, CA 93103 United States of America		P A C K I N G L I S T	
		Order Number: S010020	Page: 1
		Order Date: 02/12/03	
		Print Date: 02/12/03	
Sold To: YoCust		Ship To: YoCust	
Yo Yo's R Us 123 Main Street Santa Barbara, CA 93101 United States of America		Yo Yo's R Us 123 Main Street Santa Barbara, CA 93101 United States of America	
Salespersons:		Purchase Order:	
Credit Terms: Net30		Ship Via:	
Payment Due in 30 Days		FOB Point: Shipping Point	
Remarks:			

Ln	Item Number	Site T Location Lot/Serial	Qty Open Qty to Ship	UM	Due Shipped
1	10-00	9000	100.0	EA	02/13/03
	Nu-Line Yo Yo	FinGood	100.0	()	

**Additional
Notes**

The picklist shows what items to pick to fill an order and what site or location to pick them from. If you created detailed allocations in Sales Order Maintenance—including lot/serial numbers and lot reference numbers—this information would appear on the picklist. If you performed a general allocation for the sales order, the system would automatically convert the general allocation to a detail allocation when it prints the picklist.

SALES ORDER SHIPPING

Sales Order Shipments

Order: SO10020 Ship Allocated: ☐ Sold-To: YoCust Site:
 Effective: 02/13/2003 Ship Picked: ☒ Yo Yo's R Us

Sales Order Line Items

Ln	Item Number	T	Qty Alloc	Qty Picked	To Ship	Backorder	Site
1	10-00		0.0	100.0	100.0	0.0	9000

Line: 1 Cancel B/O: ☐ Site: 9000 Loc: FinGood
 Quantity: 100.0 Lot/Serial: Reference: Multi Entry: ☐
 Item Number: 10-00 UM: EA
 Description: Nu-Line Yo Yo

Display sales order lines being shipped

This frame shows all open lines on this sales order

This pop-up window displays after line entry is complete

To record the shipment of the order, approve the order for invoicing, and reduce the quantity on hand for the 100 yo-yos shipped, the CSR uses Sales Order Shipments. Because Yo-Yo Company is using a picklist instead of detail allocations for this order, the CSR accepts the default for Ship Picked (yes).

The middle frame (Sales Order Line Items) shows all open orders on this sales order ready for shipment, which, in this example, is one line. If necessary, modifications can be made to this line in the bottom frame. For example, if the location had changed, the new location could be entered here.

Sales Order Shipments

Order: SO10020
Effective: 02/13/2003

Ship Allocated:
Ship Picked:

☐ Sold-To: YoCust
☒ Yo Yo's R Us

Site:

Ln	Item Number	Site	Location	Lot/Serial	Quantity	UM
1	10-00	9000	FinGood		100.0	EA

Is all information correct

yesno

Add Link

The system displays the sales order lines to be shipped for final review.

Additional Notes If the information is not correct, click No and the system returns to the previous frame where you can make corrections.

Sales Order Shipments

Order: SO10020
Effective: 02/13/2003

Ship Allocated:
Ship Picked:

☐ Sold-To: YoCust
☒ Yo Yo's R Us

Site:

Non-Taxable: 1,000.00
Taxable: 0.00
Tax Date: 02/13/2003
Containers: 0.00
Line Charges: 0.00

Currency: USD
0.00%
FREIGHT
TAX-FREIGHT
SERVICE

Line Total: 1,000.00
Discount: 0.00
10 : 0.00
11 : 0.00
20 : 0.00
Total Tax: 0.00
Total: 1,000.00

View/Edit Tax Detail: ☐

Ship Via:
Ship Date: 02/13/2003
BOL:
Remarks:

Invoice Number:
Ready to Invoice: ☒
Invoiced: ☐

The CSR selects Ready to Invoice, which completes the sales order shipment process.

The center frame is where you would record any additional charges that apply to the entire order, such as freight or handling.

Additional Notes

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 QAD

REVIEW INVENTORY DETAIL

Inventory Detail by Item Browse

Item Number: 10-00 To: 10-00
Site: 9000 To: 9000
Qty On Hand - Inv Mstr: To:
Qty On Hand - Inv Detail: To:
Location: To:
Lot/Serial: To:
Reference: To:
Status: To:
Expire Date: To:
Date Created: To:
Sort By: Item Number* Sort Order:
☒ Ascending
☐ Descending

Item Number	Site	Qty On Hand - Inv Mstr	Qty On Hand - Inv Detail	Location	Lot/Serial	Reference	Status	Expire D
10-00	9000	0	0	FinGood				

Using Inventory Detail by Item Browse, we can see how many yo-yos are remaining in inventory.

The next page shows the shipment transaction that removed the yo-yos from inventory.

ictriq.p C+		3.21.1 Transactions Detail Inquiry		02/19/03	
Transaction: 12			Output: page		
Tran Mbr: 12			Order: SO10020 7		
Trans Type: ISS-SO			Revision: 0		
Date: 02/19/03			Item Number: 10-00		
Time: 13:54			Description: Nu-Line Yo Yo		
Effective Date: 02/13/03			Unit of Measure: EA		
Remarks:			Address: YoCust		
User ID: mfg			Name: Yo Yo's R Us		
Program: sosois.p			Sales/Job: SO10020		
Currency: USD			Ship Type:		
Qty Change: -100.0			Price: 10.00		
Shipper Number:			Inv Mov:		
Ship Date: 02/13/03					
Site: 9000 Location: FinGood			Inventory Data Begin Balance: 100.0 Quantity Change: -100.0 Qty Short: 0.0 Begin Loc Bal: 100.0 Loc Qty Change: -100.0 Expire Date: Batch:		
Lot/Serial: Inv Status: Supplier Lot: Grade/Assay: Reference:			Cost Data Material: 0.85 Overhead: 0.00 Labor: 0.933 Subcontract: 0.00 Burden: 0.3732 Cost Total: 2.1562		

The transaction detail provides information on the transaction number and type (ISS-SO), the program that created the transaction (sosois.p), the user who created this transaction (mfg), and the source of the transaction (SO10020). Other key information is shown, such as site and location, inventory data, cost data, and so on.

GL Effects

ISS-SO			
Dr Acct: 6495	0100		
Cr Account: 1500	0100		
Amount: 0.00			GL Reference:
ISS-SO			
Dr Acct: 5070	0100		
Cr Account: 1500	0100		
Amount: 0.00			GL Reference:
ISS-SO			
Dr Acct: 5050	0100		
Cr Account: 1500	0100		
Amount: 85.00		Material amount	GL Reference:
IC030213000001			
ISS-SO			
Dr Acct: 6860	0100		
Cr Account: 1500	0100		
Amount: 93.30		Labor amount	GL Reference:
IC030213000002			
ISS-SO			
Dr Acct: 6480	0100		
Cr Account: 1500	0100		
Amount: 37.32		Burden amount	GL Reference:
IC030213000003			

All of the GL effects of the sales order shipment are also shown in the transaction detail inquiry. Notice that each of the GL transaction numbers start with the letters "IC." This indicates that these are inventory transactions.

REVIEW PENDING INVOICE

No invoice number yet because we have not printed the invoice

soivrp.p 2+ Page: 1		7.13.2 Pending Invoice Register Diane's Report Address		Date: 02/19/03 Time: 12:02:06			
Invoice	Bill To Name	Sold-To Name	Salesperson AR	Sub-Acct CC			
	YoCust Yo Yo's R Us	YoCust Yo Yo's R Us	1200				
		Tax Environment: USA/USA		Tax Usage:			
Sales Order: SO10020		Ship-To: YoCust Yo Yo's R Us	Order Date: 02/12/03 PO:				
Ln	Item Number	UM Sales	Sub-Acct CC	Invoiced Tax Backorder TaxUsage	Price	Extended Price	Extended Margin
1	10-00	EA	3000	100.0 no	10.00	1,000.00	784.38
Nu-Line Yo Yo							
Non-Taxable: 1,000.00		Currency: USD		Line Total:	1,000.00		
Taxable: 0.00		0.00%		Discount:	0.00		
Tax Date: 02/19/03		FREIGHT		10 :	0.00		
Containers: 0.00		TAX-FREIGHT		11 :	0.00		
Line Charges: 0.00		SERVICE		20 :	0.00		
		Total Tax:		0.00			
		Total:		1,000.00			
USD Report Totals:				1,000.00		1,000.00	784.38

When the sales order is shipped, the system automatically generates an invoice, known in MFG/PRO as a pending invoice.

Pending Invoice Register produces a printed list of all pending invoices, which in this example is just one. Notice that "Invoice" in the screen above is "blank." That is because the invoice number will be assigned using the Invoice Print function.

The Extended Margin of \$784.38, is the unit margin multiplied by the quantity shipped (7.8438×100 yo-yos shipped).

The invoice total of \$1,000 is calculated by multiplying the price per yo-yo (\$10) by the total quantity (100 yo-yos).

Additional Notes

PRINT INVOICE

Invoice Print

Sales Order: SO10020	To: SO10020
Ship Date:	To:
Sold-To:	To:
Bill To:	To:
Language ID:	To:
Invoice Date: 02/19/2003	Include Debit Invoices: ☒
Print Only Lines to Invoice: ☐	Include Credit Invoices: ☒
Print Lot/Serial Numbers Shipped: ☐	Print Call Invoice Detail: ☐
Print Features and Options: ☐	
Consolidate Invoices: ☐	
Company Address: 9000	
Form Code: 1	
Discount Detail: None	
Discount Summary: None	

Message:

Output:

Batch ID:

Yo-Yo Company's Accounts Receivable (AR) Administrator uses Invoice Print to produce an actual invoice from the pending invoice. The invoice number is assigned by the print function.

Yo Yo Co. Carpinteria, CA 93103 United States of America		I N V O I C E	
		Invoice: IV10004 Revision: 2 Invoice Date: 02/19/03 Page: 1 Print Date: 02/19/03	
Bill To: YoCust Yo Yo's R Us 123 Main Street Santa Barbara, CA 93101 United States of America		Sold To: YoCust Yo Yo's R Us 123 Main Street Santa Barbara, CA 93101 United States of America	
Sales Order: SO10020 Order Date: 02/12/03		Ship Date: 02/19/03 Purchase Order:	
Salesperson(s):		Ship-To: YoCust	
Credit Terms: Net30		Ship Via:	
Payment Due in 30 Days		Bill of Lading:	
Resale:		FOB Point: Shipping Point	
Remarks:			

Item Number	UM	Shipped	Qty	B/O	Tax	Price	Extended Price
10-00	EA	100.0	0.0	no		10.00	1,000.00
Nu-Line Yo Yo							

Non-Taxable: 1,000.00	Currency: USD	Line Total:	1,000.00
Taxable: 0.00	0.00%	Discount:	0.00
Tax Date: 02/19/03		FREIGHT 10 :	0.00
Containers: 0.00		TAX-FREIGHT 11 :	0.00
Line Charges: 0.00		SERVICE 20 :	0.00
		Total Tax:	0.00
		Total:	1,000.00

Here is a sample of the Invoice Print output. At this point, if there were an error, it could be fixed in Pending Invoice Maintenance.

POST INVOICE

Invoice Post

Invoice: IV10004

To: IV10004

Sold-To:

To:

Bill To:

To:

GL Effective Date: 02/19/2003

GL Consolidated or Detail: Detail

Print Lot/Serial Numbers Shipped:

Output:

Batch ID:

To post the printed invoice to the general ledger, Yo-Yo Company’s AR Administrator uses Invoice Post. The output is shown below.

soivpst.p 2+
Page: 1

7.13.4 Invoice Post
Diane's Report Address

Date: 02/19/03
Time: 13:07:11

Sales Journal Reference: S0030219000007 AR Batch: 1019

Invoice	Bill To	Name	Sold-To	Name	Slapan
IV10004	YoCust	Yo Yo's R Us	YoCust	Yo Yo's R Us	

Sales Order: S010020 Ship To: YoCust Yo Yo's R Us Order Date: 02/12/03 PO:

Ln	Item Number	UM	Sales Ac	Sub-Acct	CC	Invoiced Backorder	Tax	Price	Extended Price	Extended Margin
1	10-00	EA	3000			100.0	no	10.00	1,000.00	784.38
	Sub-Line Yo Yo					0.0				

Non-Taxable: 1,000.00 Currency: USD Line Total: 1,000.00
Taxable: 0.00 0.0% Discount: 0.00
Tax Date: 02/19/03 FREIGHT 10 : 0.00
Containers: 0.00 - TAX FREIGHT 11 : 0.00
Line Charges: 0.00 SERVICE 20 : 0.00
Total Tax: 0.00
Total: 1,000.00

USD Report Totals: 1,000.00 784.38

Sales Journal Reference: S0030219000007 AR Batch: 1019

Enty	Consolidated	Dr	Consolidated	Cr	
100 1200	02/19/03	1,000.00		.00	INVOICE IV10004
		1,000.00			
100 3000	02/19/03		.00	1,000.00	INVOICE IV10004
			1,000.00		
		1,000.00		1,000.00	

A summary of the GL transactions is printed at the end of the report. In this example, it shows that Accounts Receivable (1200) has been debited \$1,000 and that Sales (3000) has been credited \$1,000.

Additional Notes

The Invoice Post function generates a debit/credit memo in the Accounts Receivable module and updates the customer’s open account balance. Running Invoice Post also updates GL account balances for Sales and AR, salesperson quota and commission history, sales tax journals, and sales analysis history.

REVIEW CUSTOMER ACCOUNT

Customer Account Inquiry

Bill To: YoCust Open Only: ☐ Currency: USD Balance: 1,000.00
 Yo Yo's R Us Reporting Currency: USD Output: terminal

Date	Ref	T	Due Date	C	Amount	Amount Open	Check	Days
02/19/2003	IV10004	I	03/21/2003		1,000.00	1,000.00		

Notice that the Date of the invoice coincides with the effective date on the invoice post, whereas the Due Date is based on the credit terms specified in the invoice.

“Check” would show any checks that had been received and applied to the invoice; “Days” would show the number of days between the invoice date and the date the payment was applied to the invoice.

Additional Notes

RECEIVE PAYMENT

Yo Yo's R Us		010012		
Voucher	Invoice	Gross Amount	Discount	Net Amount
910025	IV10004	1,000.00	0.00	1,000.00
		1,000.00	0.00	1,000.00

010012

Pay to the order of:
Yo Yo Co.

02/19/03 USD *****1,000.00

One Thousand Dollars And No Cents

Yo Yo's R Us
 123 Main Street
 Santa Barbara, CA 93101
 United States of America

Signature

Here is a copy of the check Yo-Yo Company received from Yo-Yos R Us. Notice that it includes the invoice number.

The amount of the check is \$1,000, which pays the invoice in full. The check number is 010012.

PAYMENT MAINTENANCE

'. The right column contains: 'Bill To: YoCust', 'Yo Yo's R Us', 'Type: P', 'Amount: 0.00', 'Batch: 1020', 'Daybook: AR Pmt', 'Account: 1040' (with a search icon), 'Discount Account: 3910' (with a search icon), and 'Entity: 100' (with a search icon). At the bottom right, there are three buttons: a red 'X' (cancel), a left arrow, and a right arrow."/>

Payment Maintenance

Batch: 1020 Control: 1,000.000 Total: 0.000

Check: 010012	Bill To: YoCust	Yo Yo's R Us
Currency: USD	Type: P	
Check Control: 1,000.00	Amount: 0.00	
Date: 02/19/2003	Batch: 1020	
Effective: 02/19/2003	Daybook: AR Pmt	
Bank: a	Account: 1040	
Bank of Yo Yo Co.	Discount Account: 3910	
Remark:	Entity: 100	
Auto Apply: ☐		

Once the check arrives, Yo-Yo Company's AR Administrator can enter the payment into Payment Maintenance. Yo-Yo Company's AR Administrator has entered the check number (010012), bill-to ID for Yo-Yos R Us (YoCust), the total amount for this payment (\$1,000), the bank where the check will be deposited (bank "A"), and entity (entity "100," which should match the entity for the bank).

Payment Maintenance

Check: 010012

Check Control: 1,000.00

Amount: 0.00

Bill To: YoCust

Yo Yo's R Us

Unapplied: 1,000.00

Payment Application Detail

Payment Application Maintenance

Ref: IV10004

Type: I

Entity:

N/U Ref:

Amount to Apply: 1,000.00

Account: 1200

Cash Amount: 1,000.00

Tax:

Discount: 0.00

Payment Application Detail					
Reference	T	N/U Ref	Due Date	Balance	Cash Amount
IV10004	I		03/21/2003	0.000	1,000.000

In the Payment Application Maintenance frame, notice the invoice number (IV10004) under Reference and the transaction type (I = invoice) under T (for Type).

Once the Application Maintenance frame is completed, the Payment Application Detail frame is updated.

CUSTOMER ACCOUNT INQUIRY

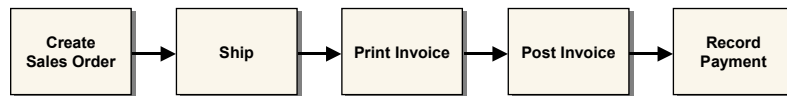
The screenshot shows the 'Customer Account Inquiry' window. At the top, there are search and filter fields: 'Bill To: YoCust', 'Open Only: [checkbox]', 'Currency: USD', and 'Balance: 0.00'. Below these are 'Yo Yo's R Us', 'Reporting Currency: USD', and 'Output: terminal'. A table of transactions is displayed with columns: Date, Ref, T, Due Date, C, Amount, Amount Open, Check, and Days. The table shows two entries: one for 02/19/2003 with Ref 010012, Type P, Amount -1,000.00, and Amount Open 0.00; and another for 02/19/2003 with Ref IV10004, Type I, Due Date 03/21/2003, Amount 1,000.00, Amount Open 0.00, and Check 010012. An 'Add Link' button is at the bottom right.

Date	Ref	T	Due Date	C	Amount	Amount Open	Check	Days
02/19/2003	010012	P			-1,000.00	0.00		
02/19/2003	IV10004	I	03/21/2003		1,000.00	0.00	010012	

After the payment has been entered (Type = P for payment), the Balance and Amount Open fields are zero, as shown above in the Customer Account Inquiry screen.

The Customer Account Inquiry screen shows that Yo-Yos R Us (YoCust) currently has a zero balance, and that it paid its previous balance of \$1,000 with check number 010012 per invoice IV10004.

REVIEW



In this chapter, we saw that the sales order records the customer's intent to buy, listing the items, quantities, price, sales tax and other charges, and shipping destination. For accounts receivable purposes, the order also records the remit-to address, credit terms, and whether the customer is approved for shipment.

Once the customer order is shipped, a sales invoice is generated. In MFG/PRO, an order that is flagged as ready for invoicing is called a pending invoice. The invoice communicates the customer's obligation to pay and is sent to the bill-to address on the sales order. Usually, the pending invoice register is reviewed and corrections are made before the invoices are printed and sent to customers. Invoices are posted on a regular basis.

When the customer sends the payment, it is recorded in the system.

Activity

In the following activity you:

- Modify Sales Order Control
- Add a sales order record
- Print a packing list, and ship the sales order
- Review customer balance
- Receive payment in full for outstanding invoice
- Review customer balance after payment

Modify Sales Order Control

1 Review Sales Order Control, and set the following fields:

- Detail Allocations = No
- Company Address = 9000
- Sales Order Header Comments = No
- Sales Order Line Comments = No
- Print Only Lines to Invoice = No
- Line Format = Single
- Sales Order Prefix = SO
- Invoice Prefix = IV
- Integrate with AR = Yes
- Integrate with SA = Yes
- Integrate with APM = No
- Confirmed Orders = Yes; press Go
- Hold Orders Over Credit Limit = No

2 Save your changes and exit.

Supplier and Customer Addresses

- 1** Use Customer Maintenance to record the address of a customer.
 - Customer Code = YoCust; press Go
 - Name = Yo-Yos R Us
 - City = Santa Barbara
 - State = CA
 - Country = USA
 - Site = 9000; press Go
 - Credit Limit = 100,000
 - Terms = Net30
- 2** Update and exit.

Add a Sales Order Record

- 1** Use Sales Order Maintenance to add a sales order.

Header information:

 - Order = [blank] system generated; press Go
 - Sold-To = YoCust; press Go
 - Bill-To and Ship-To = should default to YoCust; press Go
 - Order Date = default of today's date
 - Site = 9000
 - Credit Terms = Net30 (defaults from customer record)
 - Accept remaining default values

Line 1 information:

 - Item = 10-00
 - Site = 9000
 - Quantity Ordered = 100
 - List Price = 10.00 (defaults from item master)
 - Accept remaining default values

- Press Go to accept line 1. The system is now ready for you to enter information for line 2. We are not entering a second line, so, to escape this frame, press End. Press End again until you come to the trailer frames.

Trailer information:

- Print Sales Order = Yes
 - Accept remaining default values.
- 2 Print and review a copy of the sales order. Use Sales Order Print. Select "Print Sales Order Trailer."

Print a Packing List and Ship the Sales Order

- 1 Use Sales Order Packing List to print a packing list for your sales order. Select "Update."
- 2 Select Sales Order Shipments to record the shipment of the sales order. Ship Picked = Yes automatically updates the quantity to ship in the shipment display. You can then modify the quantity that is actually being shipped and the location from where the items were taken.

Frame 1:

- Line = 1
- Quantity = 100
- Site = 9000
- Loc = FinGood

Frame 2:

- Confirm that all information is correct

Frame 3:

- Ready to Invoice = Yes
- 3 Review your inventory using Inventory Detail by Item Browse/Inquiry. You should see that the inventory has decreased by the amount of the shipment.
 - 4 Review the inventory transaction in Transactions Detail Inquiry, and see which accounts were credited and which accounts were debited when you did the sales order shipment.

Review Pending Invoices and Print an Invoice for the Shipment

- 1 Use Pending Invoice Register to review the pending invoices outstanding. This report will show you the invoices that have not yet been printed and posted. You can also change the flags to show you invoices that have printed but not yet posted.
- 2 Print an invoice for your sales order using Invoice Print. This is a hard copy document that is normally sent to your customer.

Post the Invoice to Accounts Receivable

Post the invoice using Invoice Post, updating the customer account balance, generating unposted GL transactions debiting sales, and updating sales and invoice history.

Review a Customer Account and Apply a Payment

- 1 Use Customer Account Inquiry to see the customer's (YoCust) open account balance.
 - Notice the type is I for invoice and the reference is the invoice number.
- 2 Your customer has sent you a check (#010012), see page 290. Use Payment Maintenance to apply the payment to the invoice. The value in the check control field should be the amount of the check you have received.

Frame 1:

- Batch = [blank] system generated; press Go
- Control = 1,000.00 (total of all checks received; in this case, we are receiving only one check); press Go
- Check = 010012; press Go
- Bill-To = YoCust; press Go
- Check Control = 1,000.00 (total amount of this check)
- Bank = A (this is the bank where Yo-Yo Company deposits checks); press Go
- Entity = 100 (this should match the bank's)

Frame 2:

- Ref = [invoice number]
 - Amount to Apply = 1,000.00
 - Cash Amount = 1,000.00
 - Discount = 0.0
- 3** Review the Customer Account Inquiry. Notice the payment is type P and the payment is pegged to the invoice.

SECTION 4

Planning in MFG/PRO

Chapter 11

Planning

Overview

Planning ensures the timely, efficient and economic movement of material to the marketplace. Material is probably the most visible element that is planned, but material plans need to be linked to plans for sales, manufacturing and distribution operations, personnel, plant and equipment. When they are linked, all of these planning elements contribute to the balancing of supply, demand, and resources. In this chapter, we will see the interaction of some of these planning elements in the Example section—especially those among purchasing, manufacturing, and sales. First, though, we will look at the primary components of the planning system in the Key Concepts section.

Key Concepts

Production Planning

Forecasting

Master Schedule

MRP and Action Messages

Item Planning Parameters

Planned Orders

Example

Enter Forecast

Process Sales Order

Regenerate MRP

Process Purchase Order (approve planned orders)

Process Work Order (approve planned orders)

Post Transactions

Activities

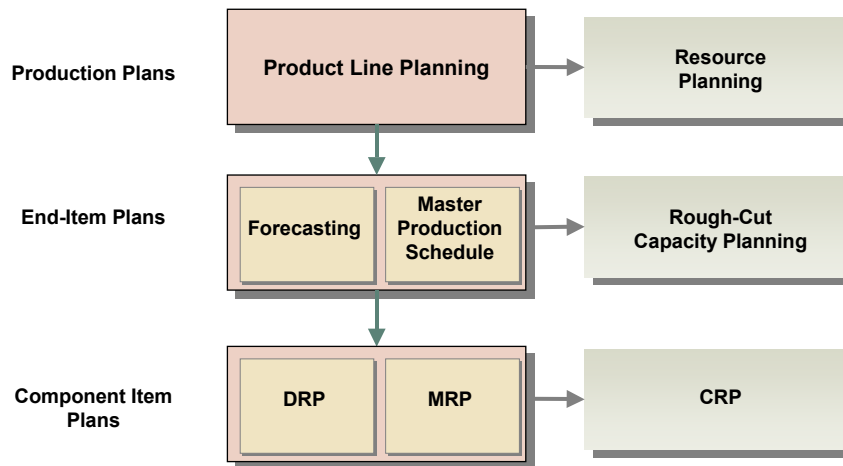
Learning Objectives

When you finish this chapter, you should be able to:

- Provide examples of production plans, end-item plans, and component item plans
- Name the key input to the Master Schedule
- Explain forecast consumption
- Describe forward and backward consumption
- Define the term Time Fence
- Explain how Order Policy and Order Period relate to one another
- Enter a forecast
- Read Master Schedule Summary and Detail Inquiries
- Read MRP Summary and Detail Inquiries
- Approve planned purchase orders and work orders

Key Concepts

Planning Overview



Within a corporation, planning is done at many levels by many different people. MFG/PRO provides an integrated set of planning tools that are useful at most of these levels. The primary components of the planning system are production planning, end-item planning, and component item planning, which are summarized below and discussed in more detail in this chapter.

Production Planning

At this level, product line planning functions are used to balance sales forecasts, production forecasts, and income forecasts for an entire product line, while meeting the profit goals established in the strategic plan. Often, these plans are created by different people; product line planning is where they are brought together. Resource planning is used to determine whether you have the resources to meet the plans.

End-Item Planning

Once established, the product line plan is broken down into individual item forecasts. Both actual and forecast demands are reviewed by the Master Scheduler, who sets production levels in response to these demands. Rough-Cut Capacity Planning (RCCP) determines whether you have enough critical resources to meet the master schedule.

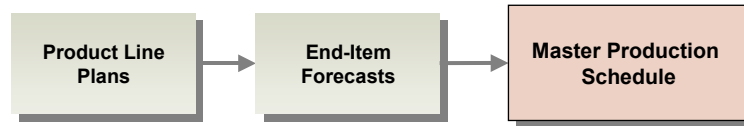
Component Item Planning

Material Requirements Planning (MRP) and Distribution Requirements Planning (DRP) both calculate the quantity of raw materials and components needed to support the master schedule. DRP generates planned orders for items to be transferred from another site. MRP generates planned orders for purchased and manufactured items. Capacity Requirements Planning (CRP) determines fairly precisely how this plan loads resources at your site.

What's Next

On the following pages, we'll take a closer look at each of these key planning areas—product line planning, end-item planning and component item planning.

PRODUCTION PLANNING: PRODUCT LINE PLAN



Product line plans generally cover 1 to 3 years, usually shown by months and quarters. They are composed of aggregate forecasts that are converted into end-item forecasts. These detailed forecasts provide input that the master scheduler uses to create a statement of production.

The purpose of a product line plan is to:

- Aggregate forecasts
- Establish aggregate production goals (aligned to corporate goals)
- Plan efficient and cost effective use of production resources, such as machines and manpower
- Outline the level of planned manufacturing output
- Convert demand into a master schedule and rough-cut capacity plan
- Balance sales forecasts, production forecasts, and income forecasts for an entire product line
- Determine whether there are enough resources, in aggregate, to meet the plan

What's Next

Product line plans are broken out into end items, planned in the master schedule, and exploded to component plans by MRP. So, next, we will discuss end-item planning and the master production schedule before turning to MRP.

END-ITEM PLANNING: INTRODUCTION



End-item planning starts with the master schedulers, who estimate the demand for a product and determine how many to produce. Usually their planning horizon is the cumulative lead time.

Inputs

The primary inputs to the master scheduling process are actual and forecast demands. Forecast demands are derived from the product line plans but are much more detailed. Unlike product line plans, which express forecasts in terms of thousands of dollars of production for a complete line of items by month, forecasts are expressed in terms of quantities for a specific item and site by week.

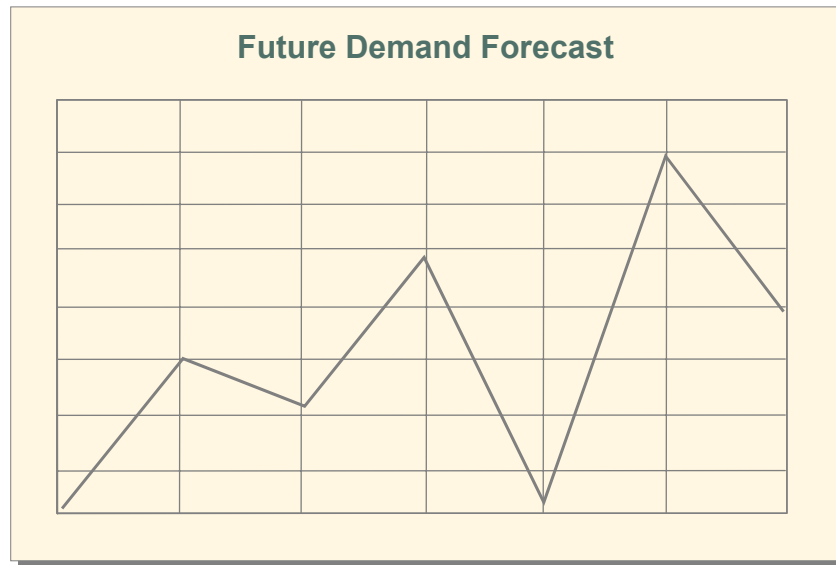
Products subject to seasonal demand can have forecasts that fluctuate widely from week to week. Seasonal build schedules are used to smooth these requirements; increasing production in advance of anticipated spikes in demand.

Output

The output of the master scheduling process is a detailed plan of the number of end items and the schedule for their production. The check on this plan is the availability of critical resources. If you want to make 50 items next week, but your fabricator only makes 25 in a week, you can't fulfill the plan. Detailed resource planning is done at this stage, looking at the actual schedule and its demands on resources as specified in Item Resource Bills. In many cases, only bottleneck resources are reviewed.

In MFG/PRO, end-item planning is done in the Forecast/Master Plan module. We'll look at forecasting next.

END-ITEM PLANNING: FORECASTING



The forecast is an estimate of future demand for an item at a particular site, stated in terms of quantity per week. It is the starting point for developing an executable plan. In MFG/PRO, this is a shipment forecast, or the quantity of an item to be shipped (not ordered) that week. Forecasts are normally entered for items subject to independent demand, from sales orders or spares. Dependent demand—for components and raw materials—is calculated from this.

The system keeps a running total of the actual quantity to be shipped each week, determined by the due date on the sales order line item or customer schedule.

In summary, forecasts:

- Estimate future demand for an item
- Are typically a sales function
- Can be an integral part of master scheduling
- Represent one point of input to the master schedule

- Source of independent demand can be created for any item, but is usually created for:
 - End items
 - Critical subassemblies
 - Service parts

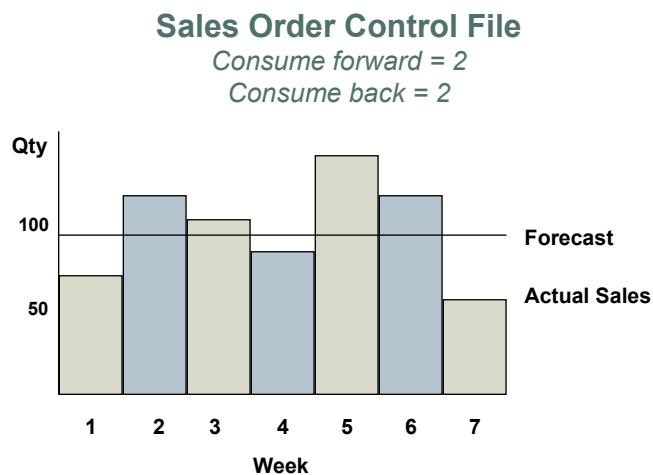
Abnormal Sales Demand. Some sales order demand cannot be anticipated by the forecast and is considered abnormal sales demand. These can be major new accounts or windfall orders. For example, orders for roofing materials after a hurricane. Since abnormal sales demand was not anticipated by the forecast, it does not consume the forecast. This effectively adds abnormal sales order demand directly on top of the net forecast. A sales order demand is classified as abnormal by using the Consume Forecast option in Sales Order Maintenance.

Terminology

Net Forecast. Net (remaining) Forecast is the amount of the forecast not sold in any given week. MRP always plans to make enough product to match actual orders (regular sales and abnormal), but it also plans production to satisfy any remaining forecast, since orders for this amount may still be expected.

Production Forecast. Production Forecast is calculated by the system based on the forecast of sales of another product. For example, sales of disk drives based on the forecast of computer sales. These are also planned by MRP.

END-ITEM PLANNING: FORECAST CONSUMPTION



Incoming sales orders and scheduled customer deliveries are netted against the forecast. The net (remaining) forecast is calculated as the original forecast less quantity sold (except abnormal sales). Planning sees total demand as actual sales (normal and abnormal), net forecast, and production forecast.

Forecast Consumption

The process of netting sales order quantities from the forecast is called forecast consumption.

As a rule, forecasts are more accurate in the long term rather than the short term. Since forecasts are entered for one-week periods, actual shipments seldom correspond to the forecast for a single one-week period. Shipments may be predicted with more accuracy over a month or a quarter.

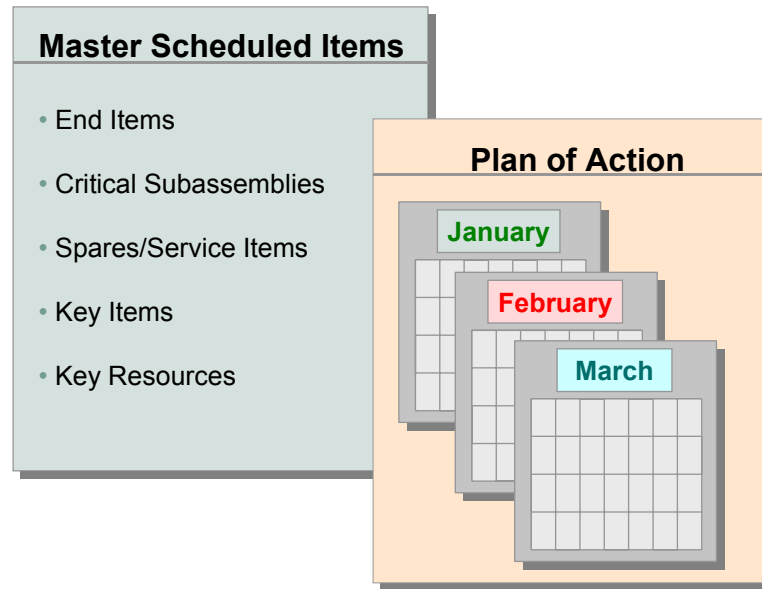
Consume Forward/Backward

One method of managing this type of fluctuation is to expand the forecast window by using forward and backward consumption. As you would expect, when sales orders are booked, they consume the forecast in the week they are due. But if there is no unconsumed forecast in that week, the system looks at a

specified number of weeks before and /or after it to check for unconsumed forecast. This method recognizes that there may be unsold forecast in other weeks that should be consumed.

The rules for forecast consumption are set up in Sales Order Control.

END-ITEM PLANNING: MASTER SCHEDULE



Developed by site and item, a master schedule is the key plan that provides primary input to MRP. A master schedule is a statement of production determining which items to schedule, when orders are needed, and how much to produce.

Master scheduling can be done to anticipate sales as entered in MFG/PRO and control production when no sales orders are used (in inventory replenishment or build-to-stock environments, for example).

Using master scheduling and MRP is an effective method to set production levels in response to actual and forecast demand (over a period roughly equivalent to the cumulative lead time), and determine in a rough way (RCCP) whether critical resources will constrain supply.

The master scheduler is responsible for providing manpower, materials, manufacturing capability, money (cash flow), and management of all logistical activities.

Rough-Cut Capacity Planning (RCCP)

The rough-cut capacity plan provides a tool for careful evaluation of changes to the master schedule and their impact on material and capacity; rough evaluation of potential capacity problems; proper balancing of customer needs and manufacturing needs; and effective stabilization of MRP.

Master Schedule and RCCP Uses

Normal uses of a master schedule include driving RCCP and MRP and planning future production.

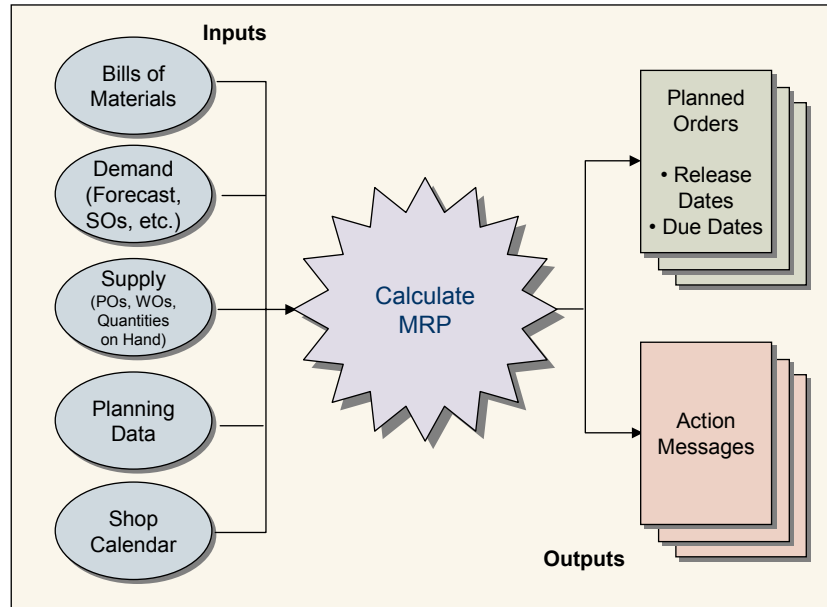
The production plan is broken down into buildable units with specific dates for completion. The production plan will be met if the master schedule is developed to support it.

RCCP provides a high-level planning process for key resources that may constrain the execution of the manufacturing plan.

What's Next

Master scheduling and RCCP should remove most of the capacity constraints before MRP is run. Next, we'll discuss MRP and component item planning.

COMPONENT ITEM PLANNING: MRP



The Master Schedule is a detailed schedule of production, but production can be achieved only if the component materials are available.

MRP and DRP explode the Master Schedule to calculate the demand for components based on the bill of materials (BOM). These components may be purchased, manufactured, or acquired internally from another site.

MRP inputs include:

- Sources of demand (forecast, production forecast, sales orders, gross requirements, seasonal build, safety stock)
- Sources of supply (nettable quantity on hand, purchase orders, work orders, repetitive schedules, quality orders)
- Item planning data
- Product structures/formulas
- Shop calendar

The primary outputs of MRP are planned orders and action messages. Within the time fence, you just get action messages. Planned orders are generated outside of the item's time fence. Usually the planner reviews and approves MRP planned orders as either work orders or requisitions.

In summary, MRP is a time-phased priority planning system that calculates material requirements using product structures, inventory status, the master schedule, and open order dates.

Supply is scheduled and rescheduled to meet changing demand and maintain valid due dates

MRP Options

The material requirements plan can be created using either net change or regenerative methods. Net change MRP replans items (for all sites) that have changed since the last MRP run. Regenerative MRP creates a completely new material plan starting at the top level, exploding new requirements, and continuing to lower-level components. One advantage of regenerative MRP is that it guarantees that all plans are in complete synchronization and that all priorities are valid. The primary advantage of net change MRP is that it often takes less time to process than regenerative.

Capacity Requirements Planning (CRP)

MRP component planning is checked against the capacity requirements plan (CRP). CRP determines how much labor and how many machine resources are required for production, and it calculates workload for a department, work center, or machine. It is used for medium-range capacity management to determine and provide the resources required to meet MRP's detailed item schedules.

Time Fence. A time fence is a policy or guideline established to note where various restrictions or changes in operating procedures take place. For example, changes to the master schedule can be accomplished easily beyond the cumulative lead time, while changes inside the cumulative lead time become increasingly more difficult (to a point where changes should be resisted). Time fences can be used to define these points.

Terminology

COMPONENT ITEM PLANNING: ITEM PLANNING PARAMETERS

Item Planning Maintenance	
Order Policies	Order Modifiers
LFL	Order Qty
POQ	Safety Stock Qty
FOQ	Min Order Qty
OTO	Max Order Qty
[Blank]	Order Qty Multiple

MFG/PRO uses item planning parameters to determine how items are planned by MRP. General item planning parameters may be defined in either Item Master Maintenance or Item Planning Maintenance. Site-specific parameters are entered in Item-Site Planning Maintenance. Any parameters not entered in Item-Site Planning Maintenance default from Item Master Maintenance or Item Planning Maintenance.

Order Policies

Order policy determines the rules for planning orders. Order policies are used together with order modifiers to determine order quantities. There are four types of policies:

Period Order Quantity (POQ). A lot sizing technique where lot size is equal to net requirements for a given item period (Order Period field); for example, a month's supply.

Fixed Order Quantity. A demand rate lot sizing rule where a fixed quantity (Order Quantity field) must be ordered.

Lot for Lot (LFL). A lot sizing technique in MRP where order quantity equals net requirement.

One Time Only (OTO). A lot-sizing technique that produces an order only once, based on the due date of the first item required. Used for projects such as creating an engineering drawing that occur only once in the manufacturing of a product.

A blank order policy is used to prevent MRP from planning an item.

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.

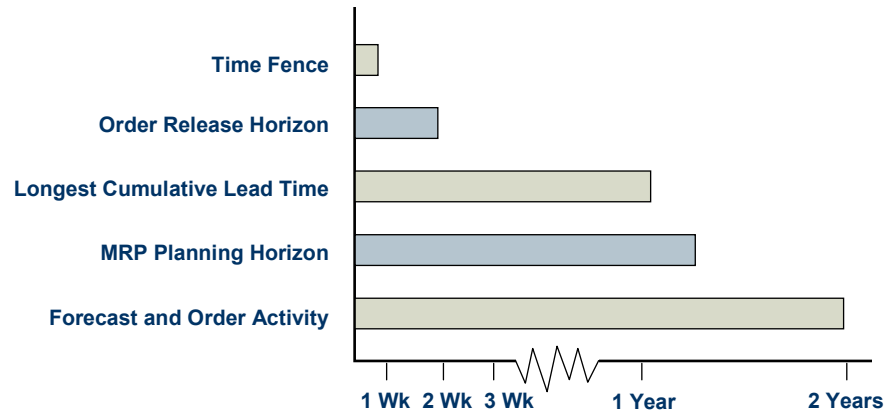
Maximum Order Quantity. MRP generates a warning message in the event a planned order quantity is larger than the specified maximum order quantity. Excessively large lot sizes may tie up a resource so that other orders may be delayed unnecessarily. Further, setting a quantity limit can uncover data entry errors (for example, 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, and so on. Order multiples are appropriate for multiple cavity molding applications, packaging, and so on.

Lead Time

Lead times determine when the orders are due—Manufacturing lead time for manufactured items, and Purchasing lead time plus Inspection lead time for purchased items. Safety inspection lead time can be added to both.

COMPONENT ITEM PLANNING: PLANNING TIME PERIODS



Planning Horizon

Before you run MRP, you set the MRP planning horizon. This specifies a period of time, in calendar days, over which MRP is to plan. MRP only processes material requirements within this horizon. The longer this horizon, the longer it takes MRP to plan. However, the planning horizon should be at least as long as the longest cumulative lead time, plus any associated preparation times. Usually, the Master Schedule also covers a time frame that is at least this long.

Cumulative Lead Time

Cumulative lead time represents the longest planned length of time to obtain an item, assuming that neither it nor any of its components (if any) are in stock. For a manufactured item, this includes the time it takes to acquire raw materials, inspect them, make any subassemblies or components, and assemble and inspect the finished product.

These times are entered in Item Planning Maintenance for each item in the fields Mfg LT, Pur LT, and Ins LT. Items acquired through DRP also have a Mfg LT value entered—this should include transit and order time. This time is

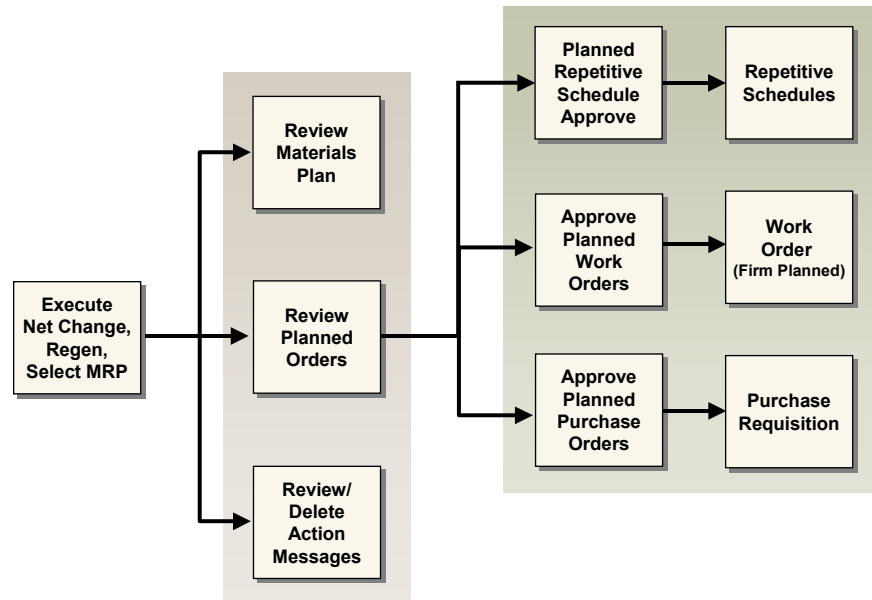
not used for planning DRP items; it is used only in cumulative lead time calculations.

Order Release Horizon

To provide visibility for what orders are due to be released, MRP generates Release Due action messages. Typically, you would like to see these in advance, not just on the day the order is due for release.

You can set the release horizon for any number of days. MRP generates Release Due messages only for orders due to be released within this number of days from today's date.

COMPONENT ITEM PLANNING: PLANNED ORDERS



MRP creates planned orders to satisfy net requirements if the parameter for order policy is not blank, and Plan Orders is set to Yes in Item Master Maintenance. The system will create planned work orders or planned purchase orders, depending on the Pur/Mfg code.

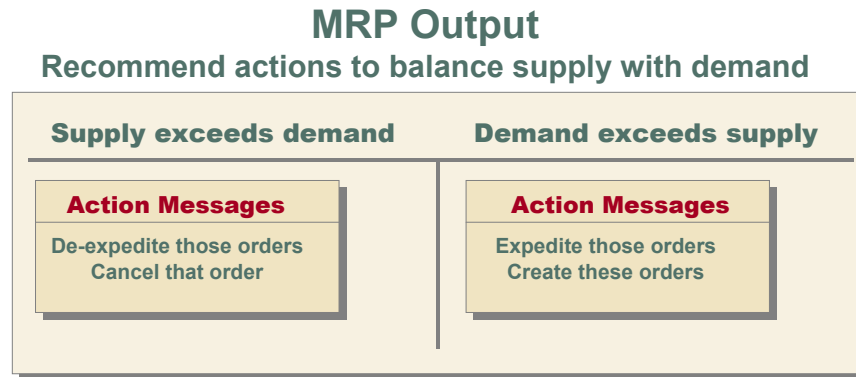
Internally, both planned work orders and planned purchase orders are stored as work orders with status Planned. The primary difference between them is that orders for purchased items are created without work order bills.

Planned Order Approval

The process of approving planned work orders changes the status of work orders from Planned to Firm Planned. While planned orders may be modified or deleted by each successive MRP run, firm planned orders have due dates and quantities that are fixed with respect to the MRP planning process. The due dates and quantities for firm planned orders can be changed manually in Work Order Maintenance.

The process of approving planned purchase orders deletes the planned purchase orders and creates purchase requisitions. Purchase requisitions represent a supply for an item at a particular site. They may be reviewed by buyers or purchasing agents and filled by purchase orders.

COMPONENT ITEM PLANNING: ACTION MESSAGES



To project inventory balances and calculate net requirements, MRP temporarily reschedules purchase orders, work orders, and repetitive schedules and plans all activity based on the revised schedule. When it does this, it also generates action messages to alert planners to actions that should be taken to execute the plan, such as rescheduling, canceling, and releasing orders.

Usually the first thing the planner does after running MRP is to look at the action messages. Action messages can be reviewed online and deleted as the required action is taken. They can also be printed along with the detailed plan.

Example

In this section, we'll look at an example to see how the planning process works. In this example, Yo-Yo Company:

- Enters a forecast for yo-yos
- Enters a sales order (where we can see how it consumes demand):
 - Line 1: normal SO, quantity = 300, due date = 2/26/2003
 - Line 2: abnormal SO, quantity = 500, due date = 3/12/2003
- Runs MRP
- Approves planned work orders
- Approves planned purchase orders
- Creates a purchase order using a requisition: Items 10-01, 10-02, and 10-03; purchase lead time = 5 days
- Builds work order items and puts the items into stock: Item 10-00, manufacturing lead time = 1 day
- Ships a sales order

In the process of reviewing the production schedule and MRP reports, we can see the effect of the manufacture and purchase lead times on release dates for the purchase orders and work orders in the example.

ENTER FORECAST: ITEM 10-00

Forecast Worksheet Maintenance ? i [icon] x

Item Number: 10-00 Site: 9000 Year: 2003

	Week	Forecast	Sales	Abnormal	Prod Fcst	Net Forecast
1	12/30/2002	0	0	0	0	0
2	01/06/2003	0	0	0	0	0
3	01/13/2003	0	0	0	0	0
4	01/20/2003	0	0	0	0	0
5	01/27/2003	0	0	0	0	0
6	02/03/2003	0	0	0	0	0
7	02/10/2003	0	100	0	0	0
8	02/17/2003	100	0	0	0	0
9	02/24/2003	200	0	0	0	0
10	03/03/2003	300	0	0	0	0
11	03/10/2003	400	0	0	0	0
12	03/17/2003	0	0	0	0	0
13	03/24/2003	0	0	0	0	0
Totals		0	100	0	0	0

[X] [←] [→]

In Forecast Worksheet Maintenance, Sales column, the system displays the actual sales booked for item 10-00 at site 9000 (Yo-Yo Company) in week 2/10/003, which is 100 yo-yos.

In the Forecast column, the Yo-Yo Company planner has entered forecasts for the number of yo-yos that he expects to ship each week for week 2/17/2003 through week 3/10/2003.

DEFINE CONTROL SETTINGS: FORECAST CONSUMPTION

Sales Order Control

Calculate Freight by Site: ☐

Comm on Margin not Sales: ☒

Hold Orders Over Credit Limit: ☐

SO Interest Accrued Acct: 4500

SO Interest Applied Account: 1280

Price Table Required: ☐

Disc Table Required: ☐

Vary Pricing Date by SO Line: ☒

Minimum Shipment Amount: 0

SO Edit ISB Defaults: ☐

SO Returns Update ISB: ☐

Forecast Consumption

Consume Forward: 2

Consume Back: 1

Check Customer Item Nbr First: ☐

Taxable Trailer Code 1: 10

Taxable Trailer Code 2: 11

Taxable Trailer Code 3: 21

Auto Batch Confirmation: ☐

Confirmation Batch ID:

Confirmation Printer:

Pending Inv Update ISB: ☐

Auto Batch Shipment: ☐

Shipment Batch ID:

Shipment Batch Printer:

Use SO Freight List Trailer Code: ☐

Nontaxable Trailer Code 1: 10

Nontaxable Trailer Code 2: 11

Nontaxable Trailer Code 3: 20

Add Link

In Sales Order Control, Yo-Yo Company's planner has set up rules for forecast consumption. In this example, whenever there are excess sales in a period, the system will consume the forecast, first by going back, then forward, one period from the original forecast period. It will then continue to search backward and forward until the specified number of previous periods (1) and future periods (2) have been examined or the entire sales order quantity has been applied.

ENTER SALES ORDER LINE: CONSUME FORECAST

Sales Order Maintenance

Order: SO10021 Sold-To: yoCust Ln Format S/M:Single

Sales Order Line

Ln	Item Number	Qty Ordered	UM	List Price	Discount	Net Price
1	10-00	300.0	EA	10.00	0.0	10.00

Desc: Nu-Line Yo Yo Sales Account: 3000 Disc Acct: 3900 Confirmed: ☒ Credit Terms Int: 0.00

Loc: FinGood Site: 9000 Required: Ship Type:

USD Cost: 2.1562 Promised: UM Conversion: 1.0000

Lot/Serial: Due Date: 02/26/2003 Consume Fcst: ☒

Qty Allocated: 0.0 Perform Date: Detail Alloc:

Qty Picked: 0.0 Pricing Date: 02/19/2003 Taxable: ☐

Qty Shipped: 0.0 Multiple: ☐ Freight List:

Salesperson 1: Category: Fixed Price: ☒ Comments:

Commission 1: 0.00%

PO Maint Add Link

In Sales Order Maintenance, Yo-Yo Company's customer service representative (CSR) has entered two sales order lines for its yo-yos (item 10-00),

Line 1 (shown above) is for an order of 300 yo-yos due 2/26/2003. This order, once confirmed, will consume forecast because the Consume Forecast box has been selected.

Let's look at line 2 on the next page.

ENTER SALES ORDER LINE: DO NOT CONSUME FORECAST

Ln	Item Number	Qty Ordered	UM	List Price	Discount	Net Price
2	10-00	500.0	EA	10.00	0.0	10.00

Desc: Nu-Line Yo Yo
Loc: **FinGood** Site: 9000
USD Cost: 2.1562
Lot/Serial:
Qty Allocated: 0.0
Qty Picked: 0.0
Qty Shipped: 0.0
Qty to Invoice: 0.0
Salesperson 1:
Commission 1: 0.00%

Sales Account: 3000
Disc Acct: 3900
Confirmed: ☒
Required: 03/12/2003
Promised:
Due Date: 03/12/2003
Perform Date: 03/12/2003
Pricing Date: 02/19/2003
Multiple: ☐
Category:

Credit Terms Int: 0.00
Ship Type:
UM Conversion: 1.0000
Consume Fcst: ☐
Detail Alloc: ☐
Taxable: ☐
Freight List:
Comments:

Line 2 (shown above) is for an order of 500 yo-yos due 3/12/2003. This order will not consume forecast because the Consume Forecast box has not been selected.

Consume Forecast is not selected when the order quantity is considered abnormal and is planned in addition to the forecast.

Additional Notes

REVIEW FORECAST WORKSHEET: ITEM 10-00

Item Number: 10-00		Site: 9000		Year: 2003		
	Week	Forecast	Sales	Abnormal	Prod Fcst	Net Forecast
1	12/30/2002	0	0	0	0	0
2	01/06/2003	0	0	0	0	0
3	01/13/2003	0	0	0	0	0
4	01/20/2003	0	0	0	0	0
5	01/27/2003	0	0	0	0	0
6	02/03/2003	0	0	0	0	0
7	02/10/2003	0	100	0	0	0
8	02/17/2003	100	0	0	0	0
9	02/24/2003	200	300	0	0	0
10	03/03/2003	300	0	0	0	200
11	03/10/2003	400	0	500	0	400
12	03/17/2003	0	0	0	0	0
13	03/24/2003	0	0	0	0	0
Totals		1,000	400	500	0	600

In Forecast Worksheet Maintenance, we can see the effect of the confirmed order: line 1 for 300, which consumes forecast, and line 2 for 500 yo-yos, which does not consume forecast.

Line 1 is a normal order and, accordingly, the sales order quantity of 300 is placed in the Sales column. Note, though, that only 200 yo-yos were forecast for that week, not 300. Based on the Sales Order Control setting for Forward/Backward Consumption, the excess sales of 100 (order quantity above 200) can consume the forecast in another period. First, the system looks at the preceding period, but the sales order demand in week 2/10/2003 will consume the 100 forecast for week 2/17/2003. So, for the order of 300 yo-yos due 2/26/2003, 200 of those yo-yos are consumed in week 2/24/2003; and 100 yo-yos are consumed from the next period, 3/3/2003.

This affects the Net Forecast column, which is calculated from the shipment forecast less quantity sold. The forecast for week 3/3/2003 has been adjusted to reflect the consumption of 100 yo-yos by the prior period (week 2/24/2003). Now, the total forecast quantity that will be used by MRP is 200.

Line 2 is an abnormal order and, accordingly, the order quantity of 500 is placed in the Abnormal column and does not consume forecast.

REVIEW MASTER SCHEDULE: ITEM 10-00

Master Schedule Summary Inquiry

Item Number	Site	Start Date	End Date	Bucket	Per/ Bkt	Neg ATP	Output
10-00	9000	02/17/03	/ /	W	1	no	

Master Schedule Summary Inquiry

Item Number: 10-00	Nu-Line Yo Yo	MRP Req: Yes
Site: 9000	Mfg LT: 1	Plan Orders: Yes
QOH: 0.0	EA Pur LT: 0	Order Qty: 100
Order Policy: POQ	Safety Stock: 0	Yield%: 100.00%
Order Period: 7	Safety Time: 0	Time Fence: 0
		Ord Mult: 0
		Pur/Mfg:
		Min Ord: 0
		Max Order: 0

Past	02/17/03	02/24/03	03/03/03	03/10/03	03/17/03	03/24/03
02/16/03	02/23/03	03/02/03	03/09/03	03/16/03	03/23/03	03/30/03
Prod Fcst	0	0	0	0	0	0
Forecast	0	0	0	200	400	0
Sales Orders	0	0	300	0	500	0
Gross Reqs	0	0	0	0	0	0
Mstr Sched	0	0	0	0	0	0
Projected QOH	0	0	-300	-500	-1400	-1400
Avail Promise	0	-800	0	0	0	0
Cumulative ATP	0	-800	-800	-800	-800	-800

In Master Schedule Summary Inquiry, Yo-Yo Company's master scheduler can review many of the planning related settings, such as lead times, order policy, order period, order quantity, and so on.

Most importantly, though, this screen also shows a summary of the master schedule for an item; in this example, item 10-00 (yo-yo).

The net forecast is provided in the Forecast row, and the sales order quantities are shown in the Sales Orders row. We already discussed this information on the previous page.

The Projected QOH (quantity on hand) is the calculated on hand balance at the end of each period. In this example, there are no yo-yos in stock or "on hand," so demand makes the Projected QOH number negative for each period. In week 2/24/2003, the confirmed sales order demand for 300 means that the Projected QOH is -300 (QOH - demand; $0 - 300 = -300$); in the next

week, the net forecast of 200 pushes the QOH lower to -500 [$0 - (300 + 200) = -500$]; and in week 3/10/2003, the net forecast of 400 combined with the abnormal order for 500 (a total of 900) pushes the QOH even lower, to -1400.

In this example, there is no inventory Available to Promise.

**Additional
Notes**

Notice that the MRP Required field = Yes, indicating that MRP should be run again because changes have occurred since it was last run. We will see the effect of running MRP when Yo-Yo Company's planner runs MRP later in this example.

ITEM PLANNING DATA: ITEM 10-00

Item Planning Maintenance

Item Number: 10-00 Description: Nu-Line Yo Yo
Unit of Measure: EA

Item Planning Data

Mstr Sched: ☒ Buyer/Planner: Phantom: ☐
Plan Orders: ☒ Supplier: Minimum Order: 0
Time Fence: 0 PO Site: Maximum Order: 0
MRP Required: ☒ Purchase/Manufacture: M Order Multiple: 0
Order Policy: POQ Configuration Type: Op Based Yield:
Order Qty: 100 Inspect: Yield Percent: 100.00%
Batch Qty: 1.0 Ins LT: 0 Cum LT: 0 Run Time: 0.0833
Order Period: 7 Mfg LT: 1 Pur LT: 0 Setup Time: 1.000
Safety Stock: 0 ATP Enforcement: NONE EMT Type: NON-EMT
Safety Time: 0 Family ATP: Auto EMT Processing: ☐
Reorder Point: 0 Run Seq 1: Network Code:
Rev: 2: Routing Code:
Issue Policy: ☒ BOM/Formula:

On the next few pages, we will look at some of the key planning related settings that Yo-Yo Company's planner has set up for the yo-yo and its components.

A few of the planning settings that item 10-00 (yo-yo) and its components have in common in Item Planning Maintenance are the following.

- Master Scheduled and Plan Orders enabled. This means that these items will be master scheduled and planned by MRP.
- Order Policy of POQ. MRP calculates demand for this item over the number of calendar days specified as the Order Period and creates one order to satisfy this demand. In this example, the order period is 7.

Now we will focus on the settings that are different between the parent item (10-00) and its components.

Item 10-00, the yo-yo, is a manufactured item, and it has a manufacturing lead time of 1 day, shown in the Mfg LT field in the screen above. Because it is a manufactured item, it also has setup time (1 hr) and run time (0.0833 hr).

ITEM PLANNING DATA: ITEM 10-01

Item Planning Maintenance

Item Number: 10-01 Description: Plastic Half
Unit of Measure: EA

Item Planning Data

Mstr Sched: ☒	Buyer/Planner:	Phantom: ☐
Plan Orders: ☒	Supplier:	Minimum Order:
Time Fence:	PO Site: 9000	Maximum Order:
MRP Required: ☒	Purchase/Manufacture: P	Order Multiple:
Order Policy: POQ	Configuration Type:	Op Based Yield:
Order Qty:	Inspect:	Yield Percent: 100.00%
Batch Qty: 1.0	Ins LT:	Cum LT: 0
Order Period: 7	Mfg LT:	Pur LT: 5
Safety Stock:	ATP Enforcement: NONE	Run Time: 0.000
Safety Time:	Family ATP: ☐	Setup Time: 0.000
Reorder Point:	Run Seq 1:	EMT Type: NON-EMT
Rev:	2:	Auto EMT Processing: ☐
Issue Policy: ☒		Network Code:
		Routing Code:
		BOM/Formula:

Item 10-01 (shown above) and items 10-02 and 10-03 are purchased items. This is indicated in the Purchase/Manufacture field by a P, as shown above. All of these component items also have purchase lead times of 5 days. So, based on the information entered above, the planner has indicated to MRP that there should be material on hand to cover an order period of 7 days (Order Period), and that a purchase order for this item should be entered five days before the item is needed (Pur LT). There is no setup or run time associated with purchased items.

ITEM PLANNING DATA: ITEM 10-03

Item Planning Maintenance

Item Number: 10-03 Description: String

Unit of Measure: IN

Item Planning Data

Mstr Sched: ☒	Buyer/Planner:	Phantom: ☐
Plan Orders: ☒	Supplier:	Minimum Order: 0
Time Fence: 0	PO Site: 9000	Maximum Order: 0
MRP Required: ☒	Purchase/Manufacture: P	Order Multiple: 3,000
Order Policy: POQ	Configuration Type:	Op Based Yield: ☐
Order Qty: 0	Inspect: ☐	Yield Percent: 100.00%
Batch Qty: 1.0	Ins LT: 0	Cum LT: 0 Run Time: 0.000
Order Period: 7	Mfg LT: 0	Pur LT: 5 Setup Time: 0.000
Safety Stock: 0	ATP Enforcement: NONE	EMT Type: NON-EMT
Safety Time: 0	Family ATP: ☐	Auto EMT Processing: ☐
Reorder Point: 0	Run Seq 1:	Network Code:
Rev:	2:	Routing Code:
Issue Policy: ☒		BOM/Formula:

The last component we will look at is item 10-03, the string. The field to note here is the Order Multiple field. When the order policy is POQ (or LFL), planned orders are created in multiples of this quantity. In this example, the order multiple is 3,000 inches (which is a roll), so planned orders are only created for quantities of 3,000, 6,000, 9,000, and so on.

REGENERATE MATERIALS PLAN

Regenerate Materials Plan

Site: 9000To: 9000

Synchronized Calculation:☒

Synchronization Code:

Number of AppServer Threads: 0

Output:
Batch ID:

←

→

Add Link

To recalculate demand and plan supply for all items at its site (9000), Yo-Yo Company’s planner runs Regenerate Materials Plan.

A copy of the Regenerate Materials Plan output for Yo-Yo Company is shown below.

mrmpup.p 2+Page: 1

23.2 Regenerate Materials PlanDiane's Report Address

Date: 02/20/03Time: 10:57:04

Site	Item Number	Description	Level	Order Count	Elapsed Time
Update MRP/DRP Flags					
(0)	*** SUBTOTAL ***		0	-4	0:00:00
(0)	*** SUBTOTAL ***		0	-3	0:00:00
(0)	*** SUBTOTAL ***		0	-2	0:00:00
1 9000	10-00	Nu-Line Yo Yo	-1	2	207
(1)	*** SUBTOTAL ***		2	-1	0:00:00
2 9000	10-01	Plastic Half	0	2	25
3 9000	10-02	Aluminum Pin	0	2	25
4 9000	10-03	String	0	2	25
(3)	*** SUBTOTAL ***		6	0	0:00:00
Planned Orders					
Elapsed Time					
Process Started Processed Processed Time Process Stopped					

02/20/03 10:57:04 AM	4	8	0:00:00	02/20/03 10:57:04 AM	

REVIEW MASTER SCHEDULE: ITEM 10-00

Master Schedule Summary Inquiry							
Item Number: 10-00	Nu-Line Yo Yo			MRP Req: No			
Site: 9000	Mfg LT: 1	Plan Orders: Yes		Pur/Mfg:			
QOH: 0.0	EA Pur LT: 0	Order Qty: 100		Min Ord: 0			
Order Policy: POQ	Safety Stock: 0	Yield%: 100.00%		Max Order: 0			
Order Period: 7	Safety Time: 0	Time Fence: 0		Ord Mult: 0			
Past	02/17/03	02/24/03	03/03/03	03/10/03	03/17/03	03/24/03	
	02/16/03	02/23/03	03/02/03	03/09/03	03/16/03	03/23/03	03/30/03
Prod Fcst	0	0	0	0	0	0	0
Forecast	0	0	0	200	400	0	0
Sales Orders	0	0	300	0	500	0	0
Gross Reqs	0	0	0	0	0	0	0
Mstr Sched	0	0	500	0	900	0	0
Projected QOH	0	0	200	0	0	0	0
Avail Promise	0	0	200	0	400	0	0
Cumulative ATP	0	0	200	200	600	600	600

Now that Yo-Yo Company has run MRP, which updated quantities, let's look at Yo-Yo Company's Master Schedule again for item 10-00.

Forecast and Sales Order

These are the quantities that are driving MRP. Yo-Yo Company needs 300 yo-yos in week 2/24/2003 and, in week 3/10/2003, it needs 900 yo-yos (400 to cover the forecast and 500 to cover the "abnormal" sales order, which does not consume forecast).

Master Scheduled

Week 2/24/2003 shows a master scheduled amount of 500. This includes 300 that are needed during week 2/24/2003 and 200 that are needed the following week. The 200 for the following week are included because, based on planning parameters set in Item Planning Maintenance, there is a one-day manufacturing lead time and also an order period of 7 days for this item, which pushes the order for 200 back into week 2/24/2003.

Available to Promise and Cumulative ATP

ATP is calculated as Master Scheduled Quantity minus Sales Order Quantity.

Yo-Yo Company master scheduled 500 for week 2/24/2003; a quantity of 300 of the scheduled 500 yo-yos is consumed by the sales order, leaving a balance of 200 yo-yos in that week, which is shown as Available to Promise.

In week 3/3/2003, the master scheduled quantity and sales order quantities are zero, so there are no yo-yos available to promise for that week.

In week 3/10/2003, Yo-Yo Company master scheduled 900. The sales order quantity is 500, which is subtracted from the master scheduled quantity ($900 - 500 = 400$) to equal the ATP for that week. This ATP is added to the preceding week's cumulative ATP to equal 600.

Terminology

Available-to-promise (ATP). ATP is the uncommitted portion of inventory or planned production. It equals the Master Schedule less customer orders due in the period and all subsequent periods before the next Master Schedule scheduled receipt.

REVIEW MASTER SCHEDULE DETAIL INQUIRY: ITEM 10-00

mmsisq01.p 2+

22.21 Master Schedule Detail Inquiry

02/20/03

Item Number: 10-00

Site: 9000

Start Date:

Nu-Line Yo Yo

Output: page

Item Number: 10-00

Qty on Hand: 0.0

Site: 9000

Nu-Line Yo Yo

UM: EA

Pur/Mfg:

Buyer/Planner:

Order Policy: POQ

Min Order: 0

Mfg LT: 1

Mstr Sched: Yes

Order Period: 7

Max Order: 0

Pur LT: 0

MRP Required: No

Time Fence: 0

Ord Mult: 0

Ins LT: 0

Plan Orders: Yes

Safety Time: 0

Order Qty: 100

Inspect: No

Issue Policy: Yes

Safety Stock: 0

Yield Percent: 100.00%

Cum LT: 0

Due Date	Gross Reqs	Mstr Sched	Proj QOH	Plan Ords	Details
			0		Beginning Available
02/26/03	300		-300		SO: SO10021 Line: 1
02/26/03			200	500	W/O: 02200001 ID: 10
					Release Date 02/25/03
03/03/03	200		0		Forecast
03/10/03	400		-400		Forecast
03/10/03			500	900	W/O: 02200002 ID: 11
					Release Date 03/07/03
03/12/03	500		0		SO: SO10021 Line: 2

List complete

Let's now look at the Master Schedule Detail Inquiry screen. As its name implies, it provides more detail than the Summary screen and the organization of data is different.

In the summary screen, the information is organized in general "buckets" of weeks. In the detail screen, the information is organized chronologically by specific due dates.

In this example, 2/26/2003 is the due date for 300 yo-yos based on sales order SO10021 line item 1. That demand is displayed in the Gross Requirements column. The demand is subtracted from the beginning available projected quantity on hand ($0 - 300 = -300$).

The next line in the detail screen shows that 2/26/2003 is also the due date for 500 yo-yos based on work order 02200001.

So, by due date 2/26/2003, 500 yo-yos are to be built and 300 yo-yos are to be consumed, which leaves a projected on-hand quantity of 200.

The next due date is 3/2/2003 for 200 yo-yos. The demand is based on a forecast. This consumes the projected quantity on hand of 200, leaving a projected quantity on hand of 0 ($200 \text{ available} - 200 \text{ forecast} = 0$).

The following due date is 3/10/2003 for 400 yo-yos. This demand is also based on a forecast. Because there is no projected quantity on hand to meet this demand, the projected quantity on hand becomes -400 ($0 - 400 = -400$).

A work order for 900 yo-yos also has the due date of 3/10/2003. This provides enough yo-yos to fulfill the demand (forecast) for 400 and leaves a projected quantity on hand of 500 ($900 - 400 = 500$).

Due on 3/12/2003 are 500 yo-yos based on sales order SO10021, line 2. This completely consumes the 500 projected quantity on hand so that the updated projected quantity on hand is 0.

REVIEW MRP SUMMARY INQUIRY: ITEM 10-00

mrmpiq.p b+				23.13 MRP Summary Inquiry			02/20/03	
Item Number	Site	Start Date	End Date	Bucket	#	Output		
10-00	9000	02/17/03		W	1	page		
Item Number: 10-00		Site: 9000		Nu-Line Yo Yo				
Qty on Hand: 0.0	UM: EA		Pur/Mfg:					
Buyer/Planner:	Ord Pol: POQ	Mfg LT: 1	Min Order: 0					
Mstr Sched: Yes	Order Period: 7	Purchase LT: 0	Max Order: 0					
MRP Required: No	Time Fence: 0	Ins LT: 0	Ord Mult: 0					
Plan Orders: Yes	Safety Time: 0	Inspect Req: No	Order Qty: 100					
Issue Policy: Yes	Safety Stock: 0	Cum LT: 0	Yield%: 100.00%					
Past		02/17/03	02/24/03	03/03/03	03/10/03	03/17/03	03/24/03	
		02/16/03	02/23/03	03/02/03	03/09/03	03/16/03	03/23/03	
		03/02/03	03/09/03	03/16/03	03/23/03	03/30/03		
Gross Reqs	0	0	300	200	900	0	0	
Sched Receipt	0	0	0	0	0	0	0	
Projected QOH	0	0	200	0	0	0	0	
Plan Ords Due	0	0	500	0	900	0	0	
Plan Ords Rel	0	0	500	900	0	0	0	

The information in MRP Summary Inquiry (above) is similar to that shown in Master Schedule Summary Inquiry, but the MRP summary includes information about planned orders, which are MRP calculated.

Planned Orders Due are calculated to satisfy demand from sales orders, forecasts, and so on.

Planned Orders Release indicates when the planned orders should be released to meet the due date. MRP calculates by backward scheduling from the due date, using the lead time and shop calendar information.

REVIEW MRP DETAIL INQUIRY: ITEM 10-00

mrmpiq01.p 2+23.16 MRP Detail Inquiry02/20/03

Item Number: 10-00Site: 9000Start Date:

Nu-Line Yo YoOutput: page

Item Number: 10-00Qty on Hand: 0.0Site: 9000

Nu-Line Yo YoUM: EAPur/Mfg:

Buyer/Planner:Ord Pol: POQMin Order: 0Mfg LT: 1

Mstr Sched: YesOrder Period: 7Max Order: 0Pur LT: 0

MRP Required: NoTime Fence: 0Ord Mult: 0Ins LT: 0

Plan Orders: YesSafety Time: 0Order Qty: 100Inspect: No

Issue Policy: YesSafety Stock: 0Yield%: 100.00%Cum LT: 0

Due DateGross ReqsSched RcptProj QOHPlan OrdsDetails

0Beginning Available

02/26/03300-300SO: SO10021 Line: 1

02/26/03200500W/O: 02200001 ID: 10

Release Date 02/25/03

03/03/032000Forecast

03/10/03400-400Forecast

03/10/03500900W/O: 02200002 ID: 11

Release Date 03/07/03

03/12/035000SO: SO10021 Line: 2

List complete

The MRP Detail Inquiry shows the same information as the Master Schedule Detail Inquiry, which we discussed on page 339.

REVIEW MRP SUMMARY INQUIRY: ITEM 10-01

mrmpiq.p b+23.13 MRP Summary Inquiry02/20/03

Item Number	Site	Start Date	End Date	Bucket	#	Output
10-01	9000	02/17/03		W	1	page
Item Number: 10-01Site: 9000Plastic Half						
Qty on Hand: 0.0UM: EAPur/Mfg: P						
Buyer/Planner: Ord Pol: POQMfg LT: 0Min Order: 0						
Mstr Sched: Yes Order Period: 7Purchase LT: 5Max Order: 0						
MRP Required: NoTime Fence: 0Ins LT: 0Ord Mult: 0						
Plan Orders: Yes Safety Time: 0Inspect Req: NoOrder Qty: 0						
Issue Policy: Yes Safety Stock: 0Cum LT: 0Yield%: 100.00%						
Past02/17/0302/24/0303/03/0303/10/0303/17/0303/24/03						
02/16/0302/23/0303/02/0303/09/0303/16/0303/23/0303/30/03						

Gross Reqs	0	0	1000	1800	0	00
Sched Receipt	0	0	0	0	0	00
Projected QOH	0	0	0	0	0	00
Plan Ords Due	0	0	1000	1800	0	00
Plan Ords Rel	0	1000	1800	0	0	00

Shown above is the MRP Summary Inquiry screen for component 10-01 (plastic halves). Why does Yo-Yo Company need 1,000 plastic halves in week 2/24/2003? Let's look at the MRP Detail Inquiry screen on the next page.

REVIEW MRP DETAIL INQUIRY: ITEM 10-01

mrmpiq01.p 2+ 23.16 MRP Detail Inquiry 02/20/03			
Item Number: 10-01 Plastic Half		Site: 9000	Start Date: Output: page
Item Number: 10-01	Qty on Hand: 0.0	Site: 9000	
Plastic Half	UM: EA	Pur/Mfg: P	
Buyer/Planner:	Ord Pol: POQ	Min Order: 0	Mfg LT: 0
Mstr Sched: Yes	Order Period: 7	Max Order: 0	Pur LT: 5
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 Stock: 0	Yield%: 100.00%	Cum LT: 0
Due Date Gross Reqs Sched Rcpt Proj QOH Plan Ords Details			

02/25/03	1,000	-1,000	Beginning Available
			W/O: 02200001 ID: 10
			Assy: 10-00
02/25/03		0	1,000 W/O: 02200003 ID: 12
			Release Date 02/20/03
03/07/03	1,800	-1,800	W/O: 02200002 ID: 11
			Assy: 10-00
03/07/03		0	1,800 W/O: 02200004 ID: 13
			Release Date 02/28/03
List complete			

Here we see a gross requirement of 1,000 plastic halves. This requirement was created by work order 02200001, which is the work order for the parent assembly, 10-00.

Recall that earlier we saw a requirement to build 500 yo-yos (see page 337). If Yo-Yo Company builds 500 yo-yos, it will need to purchase 1,000 plastic halves. In order to have the plastic halves in time for the work order, Yo-Yo Company needs to create a purchase order on 2/20/2003 (5-day purchase lead time) for 1,000 plastic halves. This order is shown above as work order 02200003. The reason the order is shown as a work order instead of a purchase order is because it is still a planned order and it has not been approved for release to a purchase order. That will occur later.

REVIEW MRP SUMMARY INQUIRY: ITEM 10-02

mrmpiq.p b+23.13 MRP Summary Inquiry02/20/03

Item Number	Site	Start Date	End Date	Bucket	#	Output
10-02	9000	02/17/03		W	1	page

Item Number: 10-02Site: 9000Aluminum Pin

Qty on Hand: 0.0UM: EAPur/Mfg: P

Buyer/Planner:Ord Pol: POQMfg LT: 0Min Order: 0

Mstr Sched: YesOrder Period: 7Purchase LT: 5Max Order: 0

MRP Required: NoTime Fence: 0Ins LT: 0Ord Mult: 0

Plan Orders: YesSafety Time: 0Inspect Req: NoOrder Qty: 0

Issue Policy: YesSafety Stock: 0Cum LT: 0Yield%: 100.00%

	Past	02/17/03	02/24/03	03/03/03	03/10/03	03/17/03	03/24/03
	02/16/03	02/23/03	03/02/03	03/09/03	03/16/03	03/23/03	03/30/03
	-----	-----	-----	-----	-----	-----	-----
Gross Reqs	0	0	500	900	0	0	0
Sched Receipt	0	0	0	0	0	0	0
Projected QOH	0	0	0	0	0	0	0
Plan Ords Due	0	0	500	900	0	0	0
Plan Ords Rel	0	500	900	0	0	0	0

The MRP Summary Inquiry above shows the requirements and order schedule for the aluminum pin (item 10-02). In the example above, to build 500 yo-yos (item 10-00) in week 2/24/2003, 500 aluminum pins (10-02) are needed. The MRP Detail Inquiry is shown on the next page.

REVIEW MRP DETAIL INQUIRY: ITEM 10-02

mrmpiq01.p 2+23.16 MRP Detail Inquiry02/20/03

Item Number: 10-02
Aluminum Pin

Site: 9000

Start Date:

Output: page

Item Number: 10-02
Aluminum Pin

Qty on Hand: 0.0
UM: EA

Site: 9000
Pur/Mfg: P

Buyer/Planner:

Ord Pol: POQ

Min Order: 0
Mfg LT: 0

Mstr Sched: Yes
Order Period: 7

Max Order: 0
Pur LT: 5

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 Stock: 0

Yield%: 100.00%
Cum LT: 0

Due Date

Gross

Reqs

Sched

Rcpt

Proj QOH

Plan Ords

Details

02/25/03

500

-500

0

Beginning Available
W/O: 02200001 ID: 10
Assy: 10-00

02/25/03

0

500

W/O: 02200005 ID: 14
Release Date 02/20/03

03/07/03

900

-900

W/O: 02200002 ID: 11
Assy: 10-00

03/07/03

0

900

W/O: 02200006 ID: 15
Release Date 02/28/03

List complete

The MRP Detail Inquiry above shows the gross requirements, projected on-hand quantities, and planned orders by due date.

Note that the release date for the order is 2/20/2003 because of the 5-day purchase lead time.

REVIEW MRP SUMMARY INQUIRY: ITEM 10-03

mrmpiq.p b+23.13 MRP Summary Inquiry02/20/03

Item Number	Site	Start Date	End Date	Bucket	#	Output page
10-03	9000	02/17/03		W	1	

Item Number: 10-03Site: 9000String

Qty on Hand: 0.0UM: INPur/Mfg: P

Buyer/Planner:Ord Pol: POQMfg LT: 0Min Order: 0

Mstr Sched: YesOrder Period: 7Purchase LT: 5Max Order: 0

MRP Required: NoTime Fence: 0Ins LT: 0Ord Mult: 3,000

Plan Orders: YesSafety Time: 0Inspect Req: NoOrder Qty: 0

Issue Policy: YesSafety Stock: 0Cum LT: 0Yield%: 100.00%

	Past	02/17/03	02/24/03	03/03/03	03/10/03	03/17/03	03/24/03
	02/16/03	02/23/03	03/02/03	03/09/03	03/16/03	03/23/03	03/30/03
Gross Reqs	0	0	30000	54000	0	0	0
Sched Receipt	0	0	0	0	0	0	0
Projected QOH	0	0	0	0	0	0	0
Plan Ords Due	0	0	30000	54000	0	0	0
Plan Ords Rel	0	30000	54000	0	0	0	0

The final component needed to build yo-yos is the string. The MRP Summary Inquiry for string (10-03) is shown above.

Yo-Yo Company needs 60 inches of string per yo-yo. In week 2/24/2003, Yo-Yo Company needs to build and ship 500 yo-yos. The string requirements, then, are 500 yo-yos × 60 inches per yo-yo or 30,000 inches.

Looking ahead to week 3/2/2003, Yo-Yo Company is scheduled to build 900 yo-yos. That quantity would require 900 × 60 or 54,000 inches of string. So MRP shows a planned order release in week 2/24/2003 for 54,000 inches of string.

These requirements (30,000 and 54,000) are multiples of 3,000 (the order multiple) so there is no need to add additional amounts to this order.

REVIEW MRP DETAIL INQUIRY: ITEM 10-03

mrmpiq01.p 2+		23.16 MRP Detail Inquiry		02/20/03	
Item Number: 10-03		Site: 9000		Start Date:	
String				Output: page	
Item Number: 10-03		Qty on Hand: 0.0		Site: 9000	
String		UM: IN		Pur/Mfg: P	
Buyer/Planner:		Ord Pol: POQ		Min Order: 0	
Mstr Sched: Yes		Order Period: 7		Max Order: 0	
MRP Required: No		Time Fence: 0		Ord Mult: 3,000	
Plan Orders: Yes		Safety Time: 0		Order Qty: 0	
Issue Policy: Yes		Safety Stock: 0		Yield%: 100.00%	
				Cum LT: 0	
Due Date	Gross Reqs	Sched Rcpt	Proj QOH	Plan Ords	Details
			0		Beginning Available
02/25/03	30,000	-30,000			W/O: 02200001 ID: 10
					Assy: 10-00
02/25/03			0	30,000	W/O: 02200007 ID: 16
					Release Date 02/20/03
03/07/03	54,000	-54,000			W/O: 02200002 ID: 11
					Assy: 10-00
03/07/03			0	54,000	W/O: 02200008 ID: 17
					Release Date 02/28/03
List complete					

The MRP Detail Inquiry for the string is shown above. Again, note that the release date for the order is 2/20/2003 due to the 5-day purchase lead time.

REVIEW MRP ACTION MESSAGES

mmprr02.p b+			23.7 Action Message Report			Date: 02/20/03		
Page: 1			Diane's Report Address			Time: 14:53:43		
Site: 9000								
Item Number								

P/M		Date	Action Message Detail		Order	Line/ID	Action Qty	Due Date

10-01		P	02/20/03	Release due for Planned Order	02200003	12	1,000.0	02/25/03
Plastic Half								
Buyer/Planner:								
10-02		P	02/20/03	Release due for Planned Order	02200005	14	500.0	02/25/03
Aluminum Pin								
Buyer/Planner:								
10-03		P	02/20/03	Release due for Planned Order	02200007	16	30,000.0	02/25/03
String								
Buyer/Planner:								
		#3	#2	#1				#4

Yo-Yo Company's planner reviews the Action Message Report, shown above. The message shown on this report is: Release due for Planned Order.

The recommended order in which to read this report is:

- 1 Check the action message
- 2 Check the date column. This is the date associated with the action message.
- 3 Check whether the item is a manufactured or purchased item. This indicates whether you need to approve a planned order as a work order or purchase requisition.
- 4 Check the due date.

In this example, Yo-Yo Company's planner responds to the action message by approving the planned orders to create purchase requisitions for the material needed to build yo-yos.

APPROVE PLANNED PURCHASE ORDERS

The screenshot shows the 'Planned Purchase Order Approval' window. It contains several input fields for search criteria: 'Item Number', 'To:', 'Site: 9000', 'To: 9000', 'Release Date', 'To: 02/20/2003', 'Default Approve: [checked]', 'Buyer/Planner:', 'Include Phantoms:', and 'Include Manufactured Items:'. There are navigation buttons at the bottom right, including 'Add Link'.

Yo-Yo Company's planner uses Planned Purchase Order Approval to approve MRP planned purchase orders. By approving the MRP planned purchase orders, the system converts these orders into purchase requisitions. The planner selects "default approve," so that all orders are selected for approval. A review screen displays next (shown below).

The screenshot shows the 'Planned Purchase Order Approval' window with a table of orders. The table has columns: Ln, Req, Item Number, Qty Ordered, Rel Date, Due Date, and Appr. Three orders are listed, all with the 'Appr' checkbox checked. Below the table is a summary row with 'Ln' 0 and 'Appr' unchecked.

Ln	Req	Item Number	Qty Ordered	Rel Date	Due Date	Appr
1	02200003	10-01	1,000.0	02/20/2003	02/25/2003	☒
2	02200005	10-02	500.0	02/20/2003	02/25/2003	☒
3	02200007	10-03	30,000.0	02/20/2003	02/25/2003	☒
0						☐

In this screen, Yo-Yo Company's planner can review the list of MRP planned orders selected for approval. These are the components required to build 500 yo-yos by 2/25/2003. After reviewing the list, Yo-Yo Company's planner approves the orders by pressing Go and selecting Yes in response to the pop-up confirmation window.

Additional Notes

If you see an order that you do not want approved, enter the line number in the second frame and remove the Approve checkmark.

REVIEW PURCHASE REQUISITIONS

Purchase Requisition Browse

Item Number: 10-01 To: 10-03

Requisition Number: To:

Quantity: To:

Release Date: To:

Need Date: To:

Requested By: To:

Approved: NO To: YES

Sort By: Item Number* Sort Order: ☒ Ascending ☐ Descending

5.1.5 Purchase Requisition Browse (pobr007.p) 02/20/03 15:24						
Item Number	Requisition	Quantity	Release Date	Need Date	Requested	Approved
10-01	02200003	1000	02/20/03	02/25/03		yes
10-02	02200005	500	02/20/03	02/25/03		yes
10-03	02200007	30000	02/20/03	02/25/03		yes

MFG/PRO has now converted the planned purchase orders into purchase requisitions, as shown above. Notice that there is a Release Date and a Need Date.

The Release Date is when the purchase order should to be created to ensure that the material will arrive when it is needed (Need Date). The Release Date takes into account the purchase lead time and any purchase inspection lead time.

CREATE PO

Purchase Order Maintenance

Purchase Order: PO50004 Supplier: 05000000 Ship-To: 9000

Supplier			Ship To		
Yo Yo Supplies Inc. 123 State Street			Yo Yo Co.		
Santa Barbara	CA	93101	Carpinteria	CA	93103
United States of America			United States of America		

Order Date: 02/20/2003	Price Tbl:	Confirming: ☒	Imp/Exp: ☐
Due Date: ?	Disc Tbl:	Currency: USD	Language:
Buyer:	Ln Disc: 0.00%	Taxable: ☐	Consign: ☐
Bill To: 9000	Site: 9000	Fixed Price: ☒	0.00
Sales/Job:	Project:	Credit Terms: Net30	
Contract:		Entered By: qad	
Contact:		Requested By:	
Remarks:		Comments:	

Yo-Yo Company's buyer enters an order to purchase the components for the 500 yo-yos that need to be manufactured by 2/25/2003.

The supplier for the components is Yo-Yo Supplies, Inc. The order date is 2/20/2003 based on the 5-day purchasing lead time for the components. The buyer enters a "?" in the Due Date field so that the due date will default from the requisition for each line item (see figure on next page).

Line 1: 10-01

Purchase Order Maintenance

Purchase Order: PO50004 Supplier: 05000000 Ln Format S/M:Single

Ln	Site	Req	Item Number	Qty Ordered	UM	Unit Cost	Disc%
1	9000	02200003	10-01	1,000.0	EA	0.25	0.00%

Qty Received: 0.0 Due Date: 02/25/2003 CRT Int: 0.00

Qty to Rel: 0.0 Pur Acct: 5100

Single Lot: ☐ Performance Date: Project: Type: Taxable: ☐ Cmnts: ☐

Location: RawMat Need Date: 02/25/2003

Revision: Sales/Job: Inspect Req: ☐ U Conversion: 1.0000

Status: Fixed Price: ☒ Stock UM Quantity: 1000.0 EA

Supplier Item: Update Avg/Last Cost: ☒ Extended Net Cost: 250.00

Manufacturer: Description: Plastic Half

Yo-Yo Company's buyer only needs to enter the requisition number for items 10-01 and 10-02 (using the lookup) and the remaining fields are populated based on those requisitions.

Line 1 for item 10-01 is shown above, and Line 2 for item 10-02 is shown on the following page.

Line 2: 10-02

Ln	Site	Req	Item Number	Qty Ordered	UM	Unit Cost	Disc%
2	9000	02200005	10-02	500.0	EA	0.05	0.00%

Qty Received: 0.0	Due Date: 02/25/2003	CRT Int: 0.00
Qty to Rel: 0.0	Pur Acct: 5100	
Single Lot: ☐	Performance Date:	Project:
Location: RawMat	Need Date: 02/25/2003	Type:
Revision:	Sales/Job:	Taxable: ☐
Status:	Fixed Price: ☒	Inspect Req: ☐
Supplier Item:	UM Conversion: 1.0000	Cmnts: ☐
Manufacturer:	Stock UM Quantity: 500.0	EA
Description: Aluminum Pin	Update Avg/Last Cost: ☒	
	Extended Net Cost: 25.00	

Line 3: 10-03

Purchase Order Maintenance

Purchase Order: PO50004 Supplier: 05000000 Ln Format S/M:Single

Ln	Site	Req	Item Number	Qty Ordered	UM	Unit Cost	Disc%
3	9000	02200007	10-03	30,000.0	RL	0.00333	0.00%

Convert quantity from stock units to purchased units

Qty Received: 0.0
 Qty to Rel: 0.0
 Single Lot: ☐
 Location: RawMat
 Revision:
 Status:
 Supplier Item: Yo Yo String
 Manufacturer:
 Description: String

Performance Date:
 Need Date: 02/25/2003
 Sales/Job:
 Fixed Price: ☒
 Project:
 Type:
 Taxable: ☐
 Inspect Req: ☐
 UM Conversion: 1.0000
 Stock UM Quantity: 30000.0
 Update Avg/Last Cost: ☒
 Extended Net Cost: 100.00

For Acc: 9100
 Cmnts: ☐ IN

For item 10-03, the string, Yo-Yo Company's buyer again just enters the requisition number to populate key fields. There is an additional step, though, because this item requires a unit of measure conversion.

The buyer changes the UM field from IN to RL, but does not change the Qty Ordered field and Unit Cost field defaults. A conversion confirmation pop-up window displays. The buyer selects Yes.

Ln	Site	Req	Item Number	Qty Ordered	UM	Unit Cost	Disc%
3	9000	02200007	10-03	10.0	RL	10.00	0.00%

Qty Received: 0.0
Qty to Rel: 0.0
Single Lot: ☐
Location:
Revision:
Status:

Due Date:
Performance Date:
Need Date:
Sales/Job:
Fixed Price: ☒

CRT Int: 0.00
Pur Acct:
Project:
Type:
Taxable: ☐
Inspect Req: ☐
Cmnts:

Supplier Item:
Manufacturer:
Description: String

UM Conversion:
Stock UM Quantity:
Update Avg/Last Cost: ☒
Extended Net Cost: 100.00

The system now makes the conversion so that the Qty Ordered is 10 (rolls) and the Unit Cost is \$10 (shown above). In the lower frame, the Stock UM Quantity shows this in inches (30,000).

Review How were the conversion and price set up?

- Item Master Maintenance: unit of measure = inches
- Unit of Measure Conversion: IN (stocking UOM) to RL for item 10-03; UOM conversion = 3,000 inches per roll
- Supplier Item Maintenance: when 1 or more rolls of string (10-03) are ordered the cost is \$10 per roll (or 0.003333 per inch)
- Item Planning Maintenance: Order multiple = 3,000 inches (size of roll)

RECEIVE ITEMS

Purchase Order Receipts

Order: PO50004

Supplier: 05000000

Status:

Effective: 02/20/2003

Packing Slip:

Receiver: Yo Yo Supplies Inc.

Move to Next Operation:

Receive All:

Comments:

Ship Date:

Ln	Item Number	UM	Qty Open	UM	Receipt Qty	UM	Project	Due Date	T
1	10-01	EA	1,000.0	EA	1,000.0	EA		02/25/2003	
2	10-02	EA	500.0	EA	500.0	EA		02/25/2003	
3	10-03	IN	10.0	RL	10.0	RL		02/25/2003	

Line:

Unit of Measure:

Site:

Loc:

Quantity:

ID:

Lot/Ser:

Packing Qty:

OP:

Reference:

Cancel B/O:

Supplier Lot:

Ln	Item Number	Site	Location Ref	Lot/Serial	Supplier Lot	Quantity
1	10-01	9000	RawMat			1,000.0
2	10-02	9000	RawMat			500.0
3	10-03	9000	RawMat			10.0

Is all information correct

yes no

Add Link

In Purchase Order Receipts, the buyer receives all of the ordered yo-yo components.

REVIEW PLANNED ORDER REPORT

Planned Order Report

Item Number: To:
 BOM/Formula Code: To:
 Site: 9000 To: 9000
 Order: To:
 Release Date: To:
 Due Date: To:
 Buyer/Planner:
 Purchase/Manufacture:
 Show Phantom Items: ☐
 Include Base Process Orders: ☒
 Include By-Product Orders: ☐
 Sort by Item Number or BOM/Formula: Item Number
 Output: page
 Batch ID:

mrworpl1.p b+ 23.12 Planned Order Report Date: 02/20/03
 Page: 1 Diane's Report Address Time: 15:54:41

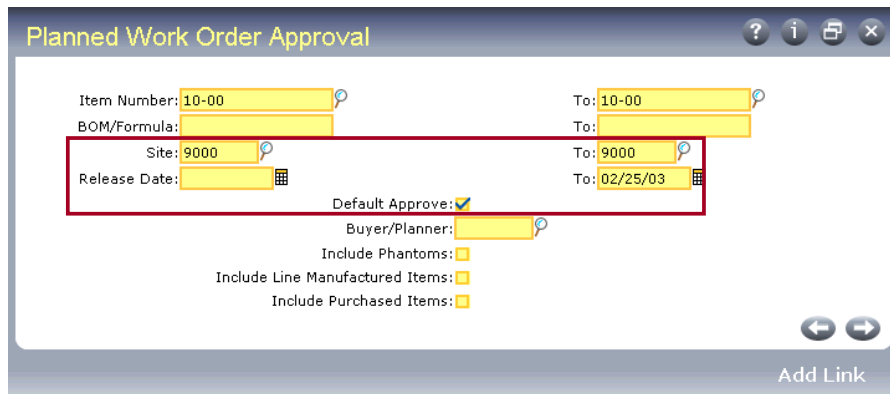
Item Number	BOM/Formula	Description	Site	Buy Pin	P/M Order	ID	Qty Ordered	UM	Rel Date	Due Date
10-00		Nu-Line Yo Yo	9000			02200001	10	500.0	EA	02/25/03 02/26/03
10-00		Nu-Line Yo Yo	9000			02200002	11	900.0	EA	03/07/03 03/10/03
10-01		Plastic Half	9000	P		02200004	13	1,800.0	EA	02/28/03 03/07/03
10-02		Aluminum Pin	9000	P		02200006	15	900.0	EA	02/28/03 03/07/03
10-03		String	9000	P		02200008	17	54,000.0	IN	02/28/03 03/07/03

Yo-Yo Company's planner and buyer have handled the planned purchase orders. Next, let's focus on the manufacturing orders.

Yo-Yo Company's production control planner checks the Planned Order Report to see a list of the orders that MRP has planned but that are not "firm planned" yet.

The planner sees two orders—both are for item 10-00, the yo-yos. One of the orders needs attention now because it has a release date of 2/25/2003. The other has a later release date. For that one, the planner will wait to approve it until the date is closer. By doing so, if there are changes to the plan, MRP will alter the planned orders instead of prompting the planner (by action messages) to make the changes.

APPROVE PLANNED WORK ORDERS



The dialog box titled "Planned Work Order Approval" contains the following fields and options:

- Item Number: 10-00
- To: 10-00
- BOM/Formula: (empty)
- To: (empty)
- Site: 9000
- To: 9000
- Release Date: (empty)
- To: 02/25/03
- Default Approve: ☒
- Buyer/Planner: (empty)
- Include Phantoms: ☐
- Include Line Manufactured Items: ☐
- Include Purchased Items: ☐

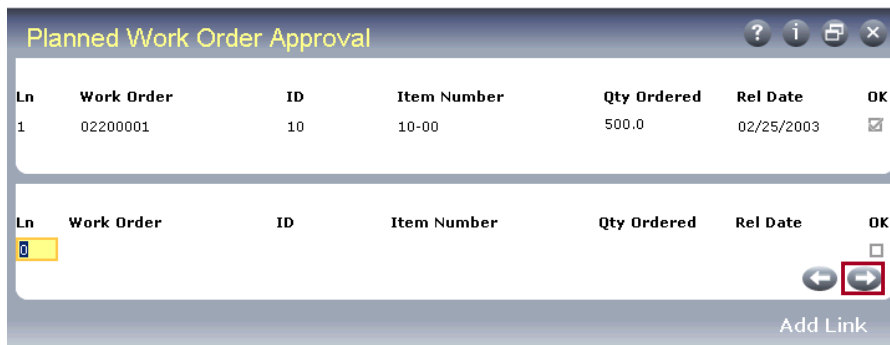
Navigation buttons: Previous, Next, Add Link.

The planner uses Planned Work Order Approval to approve the MRP planned order.

To only approve the first order, the planner leaves the Release Date blank and, in the To field, enters the Release Date of the planned order to be approved.

The planner has selected Default Approve.

Planned Work Order Approval: Line 1



The dialog box titled "Planned Work Order Approval" displays a table with the following data:

Ln	Work Order	ID	Item Number	Qty Ordered	Rel Date	OK
1	02200001	10	10-00	500.0	02/25/2003	☒

Below the table, there is a second table with the same headers, but the first row is empty and the OK checkbox is unchecked.

Navigation buttons: Previous, Next, Add Link.

Because Default Approve was selected in the preceding frame, the default for line 1 is OK (box checked). After reviewing the list, the planner approves the orders by pressing Go and selecting Yes in response to the pop-up confirmation window.

REVIEW WORK ORDERS

Work Order Browse

Item Number: To:

Site: To:

Work Order: To:

ID: To:

Quantity Open: To:

Due Date: To:

Sales/Job: To:

Work Order Status: To:

Sort By: **Item Number*** Sort Order: ☒ Ascending ☐ Descending

16.2 Work Order Browse (wobr003.p) 02/20/03 16:14

Item Number	Site	Work Order	ID	Quantity Open	Due Date	Sales/Job	Work Order Status
10-00	9000	02200001	10	500	02/26/03		F
10-00	9000	02200002	11	900	03/10/03		P
10-00	9000	1001	1	0	02/11/03		C
10-01	9000	02200004	13	1800	03/07/03		P
10-02	9000	02200006	15	900	03/07/03		P
10-03	9000	02200008	17	54000	03/07/03		P

In this example, the planner uses Work Order Browse to review all work orders for site 9000.

Several work orders display with various due dates and status codes. The planner notes that the order approved in the previous step (work order 02200001) now has a status code of F (firm planned). This means that it is no longer under MRP control.

VERIFY AVAILABILITY OF COMPONENTS

Inventory Detail by Site Browse

Site: 9000 To: 9000

Item Number: To:

Quantity On Hand: To:

Location: To:

Lot/Serial: To:

Reference: To:

Status: To:

Date Created: To:

Expire Date: To:

Total On Hand: To:

Sort By: Site* Sort Order: ☒ Ascending ☐ Descending

3.3 Inventory Detail by Site Browse (icbr004.p) 02/20/03 16:32

Site	Item Number	Quantity On Hand	Location	Lot/Serial	Reference	Status	Date Creat	Expire Date	Total On Hand
9000	10-00	0	FinGood				02/11/03		
9000	10-01	1000	RawMat			OI-NO	02/07/03		
9000	10-02	500	RawMat			OI-NO	02/07/03		
9000	10-03	30000	RawMat			OI-NO	02/07/03		

Yo-Yo Company's production activity control (PAC) manager uses Inventory Detail by Site Browse to verify the availability of components in inventory.

The yo-yo components are included in the listing, and the quantities in stock are as expected.

RELEASE WORK ORDER

Work Order Release/Print

?

i

□

×

Work Order: 02200001

ID: 10

Batch:

Print Picklist: ☒

Print Routing: ☒

Print Co/By-Products: ☒

Item Number: 10-00

Nu-Line Yo Yo

Quantity Ordered: 500.0

Quantity Completed: 0.0

Sales/Job:

Remarks:

Deliver To:

Print Bar Code: ☐

Operation: ☒

Release Date: 02/25/2003

Work Order Due Date: 02/26/2003

Work Order Status: F

Supplier:

Output:

Batch ID:

←

→

Add Link

The PAC manager releases the work order using Work Order Release/Print.

ISSUE WORK ORDER COMPONENTS

Work Order: 02200001

ID: 10

Op:

Effective: 02/20/2003

Item Number: 10-00

WO Stat: R

Issue Alloc: ☐

Issue Picked: ☒

Nu-Line Yo Yo

Item Number	Qty Open	Qty Alloc	Qty Picked	Qty to Iss	Qty B/O
10-01	1000.0	0.0	1000.0	1000.0	0.0
10-02	500.0	0.0	500.0	500.0	0.0
10-03	30000.0	0.0	30000.0	30000.0	0.0

Item Number:

Op:

Site:

Loc:

Description:

Lot/Serial:

Quantity:

UM:

Reference:

Substitute: ☐

Cancel B/O: ☐

Multi Entry: ☐

And the PAC manager issues the components using Work Order Component Issue.

REPORT LABOR

Labor Feedback by Work Order

Work Order: 02200001 ID: 10
 Operation: 10 Assemble Halves to Pin Op Status: QUEUE
 Employee: abc Carter Pay Code: REG
 Department: PROD Work Center: ASM Time Ind: Decimal
 Shift: Machine: Project: Hours

Quantity Completed: 500.0 Effective Date: 02/20/2003
 Rejects: ☐ Operation Complete: ☒
 Rework: ☐ Move to Next Operation: ☒
 Previous Ops Complete: ☒
 Start Setup: 0.000 Elapsed Setup: 0.000
 Elapsed/Stop Setup: 1.000
 Start Run: 0.000 Elapsed Run: 0.000
 Elapsed/Stop Run: 25.000
 Comment:
 Down Time: 0.000 Down Time Reason:

On the shop floor, labor to build the 500 yo-yos is reported by employee “abc.” Labor for operation 10 is shown above. Both setup and run times are standard. Recall that setup time is 1 hour, regardless of quantity, and run time is 0.05 hour per yo-yo. So a run time of 25 hours is standard to build 500 yo-yos (500×0.05).

Labor reported for operation 20 (not shown) is also standard. There is no setup time required for operation 20, and run time to build 500 yo-yos is 16.65 hours (500×0.0333 hr per yo-yo).

Review The standard setup and run times were entered in Routing Maintenance.

RECEIVE AND CLOSE WORK ORDER

Work Order Receipt

Work Order: 02200001 ID: 10 Effective: 02/20/2003

Remarks:

Item Number: 10-00 Lot/Serial Control: UM: EA

Description: Nu-Line Yo Yo WO Stat: R

Open Quantity: 500.0 Automatic Lot Numbers: ☐

Quantity: 500.0 Site: 9000

UM: EA Location: FinGood

Conversion: 1.0000 Lot/Serial:

Scrapped Qty: 0.0 Reference:

UM: EA Multi Entry: ☐

UM Conversion: 1.0000 Set Attributes: ☐

Total Units: 500.0

Remarks:

Close:

← →

Add Link

Using Work Order Receipt, the PAC manager receives and closes work order 02200001 for 500 yo-yos.

REVIEW MRP SUMMARY REPORT

MRP Summary Report

Item Number: To:

BOM/Formula Code: To:

Site: 9000 To: 9000

Buyer/Planner: To:

Product Line: To:

Group: To:

Item Type: To:

Supplier: To:

Purchase/Manufacture:

Details: ☒ Use Cost Plans: ☐

Print Action Messages: ☐ Include Base Process Orders: ☒

Print Substitute Items: ☐

Include Zero Requirements: ☐ Sort by Item or BOM/Formula:

Start Date: 02/17/2003 End Date:

Day/Week/Month: W Per Column: 1

Output: page

Batch ID:

Add Link

Yo-Yo Company's planner uses MRP Summary Report to review all items at site 9000. The planner checks Details so that both summary and detail information will display on the report, shown on the next page.

23.14 MRP Summary Report														Date: 02/20/03	
Diane's Report Address														Time: 17:03:45	
Item Number: 10-00		Nu-Line Yo Yo					Buyer/Planner:					Site: 9000			
Qty on Hand: 500.0		UM: EA		Time Fence: 0		Manufacturing Lead Time: 1					MRP Required: Yes				
Order Policy: POQ		Minimum Order: 0		Safety Time: 0		Pur/Mfg: Purchase LT: 0					Mstr Sched: Yes				
Order Period: 7		Maximum Order: 0		Safety Stk: 0		Inspect: No Inspect LT: 0					Plan Orders: Yes				
Order Qty: 100		Ord Mult: 0		Yield: 100.00%		Cumulative Lead Time: 0					Issue Policy: Yes				
BOM/Formula Code:															
Past		02/17/03	02/24/03	03/03/03	03/10/03	03/17/03	03/24/03	03/31/03	04/07/03	04/14/03	04/21/03	04/28/03	05/05/03		
02/16/03		02/23/03	03/02/03	03/09/03	03/16/03	03/23/03	03/30/03	04/06/03	04/13/03	04/20/03	04/27/03	05/04/03	05/11/03		
Gross Reqs		0	0	300	200	900	0	0	0	0	0	0	0	0	0
Sched Receipt		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Projected QOH		500	500	200	0	0	0	0	0	0	0	0	0	0	0
Plan Ords Due		0	0	0	0	900	0	0	0	0	0	0	0	0	0
Plan Ords Rel		0	0	0	900	0	0	0	0	0	0	0	0	0	0
Due Date		Gross Reqmt	Scheduled Receipt	Projected Qty OH	Planned Order (Due)	Details									
				500		Beginning Available									
02/26/03		300		200		SO: S010021 Line: 1									
03/03/03		200	0			Forecast									
03/10/03		400		-400		Forecast									
03/10/03				500	900	W/O: 02200002		ID: 11		Release 03/07/03					
03/12/03		500		0		SO: S010021 Line: 2									

The MRP Summary Report above displays information about item 10-00. Notice that for week 2/24/2003, the Planned Orders Due and Planned Orders Release are now zero. Work order 02200001 has taken care of these. Compare this report to the MRP Summary Inquiry on page 341.

SHIP SALES ORDER

Sales Order Shipments

Order: so10021

Ship Allocated:

☐ Sold-To: yoCust

Site:

Effective: 02/21/2003

Ship Picked:

☒ Yo Yo's R Us

Ln	Item Number	T	Qty Alloc	Qty Picked	To Ship	Backorder	Site
1	10-00		0.0	0.0	300.0	0.0	9000
2	10-00		0.0	0.0	0.0	500.0	9000

Line: 1

Quantity: 300.0

Item Number: 10-00

Description: Nu-Line Yo Yo

Cancel B/O: ☐

UM: EA

Site: 9000

Loc: FinGood

Lot/Serial:

Reference:

Multi Entry:

Add Link

Yo-Yo Company’s shipping clerk ships 300 yo-yos to YoCust (Yo-Yos R Us) based on line 1 of sales order SO10021. Only line 1 is shipped because it is due 2/26/2003; line 2 is not ready yet because it is due later, on 3/12/2003.

PRINT INVOICE

Yo Yo Co. Carpinteria, CA 93103 United States of America		I N V O I C E	
		Invoice: IV10005	Revision: 0
		Invoice Date: 02/21/03	Page: 1
		Print Date: 02/21/03	
Bill To: yoCust		Sold To: yoCust	
Yo Yo's R Us 123 Main Street Santa Barbara, CA 93101 United States of America		Yo Yo's R Us 123 Main Street Santa Barbara, CA 93101 United States of America	
Sales Order: S010021		Ship Date: 02/21/03	
Order Date: 02/19/03		Purchase Order:	
Salesperson(s):		Ship-To: yoCust	
		Ship Via:	
Credit Terms: Net30		Bill of Lading:	
Payment Due in 30 Days		FOB Point: Shipping Point	
Resale:			
Remarks:			

Item Number	UM	Shipped	Qty B/O Tax	Price	Extended Price
10-00	EA	300.0	0.0 no	10.00	3,000.00
Nu-Line Yo Yo					
10-00	EA	0.0	500.0 no	10.00	0.00
Nu-Line Yo Yo					

Non-Taxable: 3,000.00		Currency: USD	Line Total:	3,000.00
Taxable: 0.00		0.00%	Discount:	0.00
Tax Date: 02/21/03		FREIGHT	10 :	0.00
Containers: 0.00		TAX-FREIGHT	11 :	0.00
Line Charges: 0.00		SERVICE	20 :	0.00
		Total Tax:		0.00
		Total:		3,000.00

Using Invoice Print, the shipping clerk prints the invoice, shown above.
Notice the invoice number: IV10005.

POST INVOICE

Invoice Post

Invoice: IV10005

To: IV10005

Sold-To:

To:

Bill To:

To:

GL Effective Date: 02/21/2003

GL Consolidated or Detail: Consolidated

Print Lot/Serial Numbers Shipped:

Output:

Batch ID:

Add Link

The invoice is posted for invoice number IV10005. The output is shown below.

solvpst.p 2+

7.13.4 Invoice Post

Date: 02/21/03

Page: 1

Diane's Report Address

Time: 12:11:37

Sales Journal Reference: SO030221000008 AR Batch: 1021

Invoice	Bill To	Name	Sold-To	Name	Slspn
IV10005	yoCust	Yo Yo's R Us	yoCust	Yo Yo's R Us	

Sales Order: SO10021

Ship-To: yoCust

Yo Yo's R Us

Order Date: 02/19/03

PO:

Ln	Item Number	UM	Sales Ac	Sub-Acct	CC	Invoiced Backorder	Tax	Price	Extended Price	Extended Margin
1	10-00		EA	3000		300.0	no	10.00	3,000.00	2,353.14
Nu-Line Yo Yo						0.0				

Non-Taxable: 3,000.00

Currency: USD

Line Total: 3,000.00

Taxable: 0.00

0.00% Discount: 0.00

Tax Date: 02/21/03

FREIGHT 10 : 0.00

Containers: 0.00

TAX-FREIGHT 11 : 0.00

Line Charges: 0.00

SERVICE 20 : 0.00

Total Tax: 0.00

Total: 3,000.00

USD Report Totals:

3,000.00

2,353.14

Page: 2

Diane's Report Address

Time: 12:11:37

Sales Journal Reference: SO030221000008 AR Batch: 1021

Enty	Consolidated Dr	Consolidated Cr
100 1200	02/21/03 3,000.00	.00
100 3000	02/21/03 .00	3,000.00
	3,000.00	3,000.00

REVIEW CUSTOMER ACCOUNT

Customer Account Inquiry

Bill To: YoCust Yo Yo's R Us
 Open Only: ☐ Currency: USD
 Reporting Currency: USD Balance: 3,000.00
 Output: terminal

Date	Ref	T	Due Date	C	Amount	Amount Open	Check	Days
02/21/2003	IV10005	I	03/23/2003		3,000.00	3,000.00		
02/19/2003	010012	P			-1,000.00	0.00		
02/19/2003	IV10004	I	03/21/2003		1,000.00	0.00	010012	

Add Link

Customer Account Inquiry shows that the invoice (Transaction Type = I for invoice) was posted to the customer's account.

REVIEW GL TRANSACTIONS

Transaction Post

Yo Yo Co. Entity

Entity: 100 To: 100

Effective Date: 01/01/2003 To: 02/21/2003

Transaction Type:

Daybook:

Post Transactions:

Output: page

Batch ID:

← →

Add Link

To view the GL transactions that have been created, Yo-Yo Company's controller uses Transaction Post. The controller only wants to review the transactions at this point, so Post Transactions is not selected.

gltrpst.p C+ 25.13.7 Transaction Post									
GL Reference	Entered	User ID	Eff Date	Line	Account	Project	Enty Description	Amount	Cur Daybook
*1	AP030210000018	02/10/03	02/10/03	1	2100	100	AP Voucher	-75.00	USD SYSTEM
	qad	02/10/03	02/10/03	2	2200	100	PO RECEIPTS (AP HOLD	75.00	USD SYSTEM
								0.00	USD
	AP030210000019	02/10/03	02/10/03	1	1040	100	System Default Daybo	-75.00	USD SYSTEM
2	qad	02/10/03	02/10/03	2	2100	100	AP Payment	75.00	USD SYSTEM
								0.00	USD
	AR030219000018	02/19/03	02/19/03	1	1040	100	AR Payment	1,000.00	USD AR Pmt
	qad	02/19/03	02/19/03	2	1200	100	AR Payment	-1,000.00	USD AR Pmt
3								0.00	USD
	IC030207000001	02/07/03	02/07/03	1	1500	100	RCT-PO P050003	50.00	USD SYSTEM
	qad	02/07/03	02/07/03	2	2200	100	RCT-PO P050003	-50.00	USD SYSTEM
								0.00	USD
4	IC030211000001	02/11/03	02/11/03	1	1600	100	ISS-WO 1001	50.00	USD SYSTEM
	qad	02/11/03	02/11/03	2	1500	100	ISS-WO 1001	-50.00	USD SYSTEM
								0.00	USD
	IC030211000004	02/11/03	02/11/03	1	1500	100	RCT-WO 1001	215.62	USD SYSTEM
5	qad	02/11/03	02/11/03	2	1600	100	RCT-WO 1001	-215.62	USD SYSTEM
								0.00	USD

*Numbers correspond to numbers in training guide

How to read the GL Reference Number	=	Module	YYMMDD	Seq#
		AP	030210	000018

Let's look at each of these transactions.

In general, first notice that the GL reference number includes a two-character code for the transaction type, such as AP (accounts payable), AR (accounts receivable), and IC (inventory control). Also notice that the listing is arranged alphabetically by GL reference, not chronologically. Notice too that a minus sign before the transaction amount indicates that this is a credit; an amount without the minus sign is a debit.

- 1 The first two transactions, AP030210000018 and AP030210000019, are based on Yo-Yo Company purchasing supplies for 100 yo-yos from Yo-Yo Supplies, Inc., which we discussed on page 172 through page 175. The supplies cost \$75. The first transaction affects accounts 2100 (credit Accounts Payable) and 2200 (debit PO Receipts). The second transaction affects accounts 1040 (debit Cash) and 2100 (credit Accounts Payable).
- 2 These 100 yo-yos are sold to YoCust (Yo-Yos R Us) for \$1,000 based on the example on page 272 through page 274. The GL reference for this transaction is AR030219000018.

The accounts affected are 1040 (debit Cash) and 1200 (credit Accounts Receivable).

- 3 The components purchased from Yo-Yo Supplies are received and this generates an inventory control transaction. When the first item, 10-01, is received (IC030207000001), the accounts affected are 1500 (debit Inventory) and 2200 (credit PO Receipts) for \$50 (200 plastic halves received $\times$ 0.25 unit cost), see page 200.
- 4 When the work order is issued for 100 yo-yos, item 10-01 (plastic half) still has a value of \$50. The accounts affected are 1600 (debit Work in Process) and 1500 (credit Inventory).
- 5 The last transaction shown in this list is another inventory control transaction, IC030211000001 for work order receipt.

Upon work order receipt, the value of the yo-yos includes not only the cost of materials for the manufacture of 100 yo-yos (\$75), but also the labor involved in putting 100 yo-yos together.

By referring to Appendix A, you can add the labor and burden costs for operations 10 and 20 (\$1.3064), multiply that by 100 (number of yo-yos manufactured) to get a total of \$130.64. Now add this to the \$75 material cost and the total is \$205.64. Yet the amount shown on the Transaction Post output is \$215.64, not \$205.64. This is because the amount posted for work order receipt is the Standard GL amount, not the invoice amount.

Refer back to the Voucher Maintenance screen on page 201, which shows the discrepancy between the GL cost and the Invoice amount for item 10-03. Normally, a roll of string costs \$15 (\$0.005 per inch $\times$ 3,000 inches per roll), so the two rolls ordered would be \$30. But, the supplier gave Yo-Yo Company a discount when ordering string by the roll (\$0.003333 per inch $\times$ 3,000 inches = \$10). The two rolls with the price reduction are \$20. So there is a \$10 difference between what is “standard” and what is on the invoice.

The way the system handles this is that it posts the “standard” price, without the price reduction, which, including labor and burden, is \$215.64. And it treats the \$10 price reduction as a purchase price variance.

gltrpat.p C+ 25.13.7 Transaction Post									
GL Reference	User ID	Eff Date	Line	Account	Project	Enty	Description	Amount	Cur Daybook
6	IC030219000001	02/19/03	1	5050		100	ISS-SO SO10020.1	85.00	USD SYSTEM
		qad 02/19/03	2	1500		100	ISS-SO SO10020.1	-85.00	USD SYSTEM
								0.00	USD
	IC030219000002	02/19/03	1	6860		100	ISS-SO SO10020.1	93.30	USD SYSTEM
		qad 02/19/03	2	1500		100	ISS-SO SO10020.1	-93.30	USD SYSTEM
								0.00	USD
7	IC030219000003	02/19/03	1	6480		100	ISS-SO SO10020.1	37.32	USD SYSTEM
		qad 02/19/03	2	1500		100	ISS-SO SO10020.1	-37.32	USD SYSTEM
								0.00	USD
	W0030211000001	02/11/03	1	1600		100	LABOR 6	10.00	USD SYSTEM
		qad 02/11/03	2	6500		100	LABOR 6	-10.00	USD SYSTEM
								0.00	USD
8	W0030211000002	02/11/03	1	1600		100	LABOR 6	50.00	USD SYSTEM
		qad 02/11/03	2	6500		100	LABOR 6	-50.00	USD SYSTEM
								0.00	USD
	W0030211000003	02/11/03	1	1600		100	LABOR 6	4.00	USD SYSTEM
		qad 02/11/03	2	6400		100	LABOR 6	-4.00	USD SYSTEM
								0.00	USD
8	W0030211000004	02/11/03	1	1600		100	LABOR 6	20.00	USD SYSTEM
		qad 02/11/03	2	6400		100	LABOR 6	-20.00	USD SYSTEM
								0.00	USD

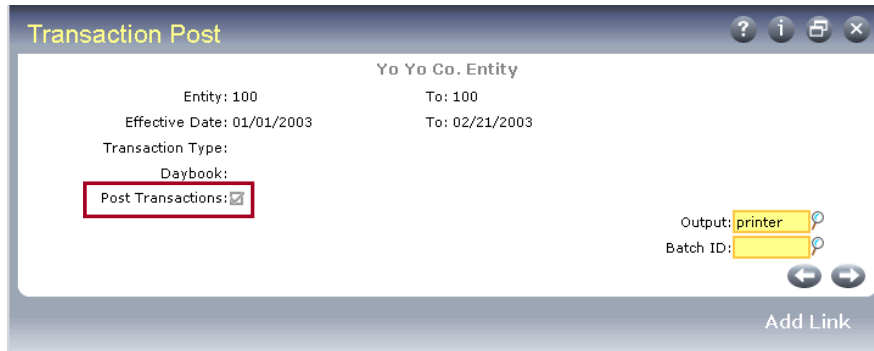
- 6 The amounts associated with the sales order transactions shown above are discussed on page 284. Account 5050 is for cost of goods sold (COGS); 1500 is an inventory account; 6860 is COGS labor; 6480 is COGS burden.
- 7 The next set of transactions pertain to operation 10 labor. Account 1600 is work in progress (WIP) and account 6500 is Labor Absorbed. The amounts are obtained from information in the Routing Maintenance (see page 245). For set up, the amount is \$10 because it takes 1 hour for set up and the labor charge is \$10 per hour ($1 \times \$10 = \$10$). For run time, the amount is \$50 because it takes 5 hours to manufacture 100 yo-yos (0.05 hr to manufacture one yo-yo multiplied by 100 yo-yos ordered and built). Taking into account the labor charge of \$10 per hour, the total then is \$50 ($5 \text{ hrs} \times \$10$).
- 8 The following set of transactions pertain to operation 10 burden. Account 1600 is WIP and account 6400 is Burden Absorbed. Refer to Work Center Maintenance on page 121 and Routing Maintenance on page 245.

For operation 10 setup, the formula for burden is

{set-up hrs/qty $\times$ [lbr bdn rate + (actual set-up rate $\times$ lbr bdn %)] + (mach/op $\times$ mach bdn rate)}. In this example, that would be:
 $\{1/100 \times [0 + (\$10 \times 40\%) + (1 \times 0)]\} = 0.04 \times \text{qty of } 100 = 4$.

For operation 10 run time, the formula for burden is
 $\{\text{run hours/unit} \times [\text{lbr burden rate} + (\text{actual lbs rate} \times \text{lbr burden \%}) + \text{mach burden rate}]\}$. In this example, that would be:
 $\{0.05 \times [0 + (\$10 \times 40\%) + 0]\} = 0.2 \times \text{qty of } 100 = 20$.

POST TRANSACTIONS



The image shows a software dialog box titled "Transaction Post". It contains several fields for transaction configuration. The "Post Transactions" checkbox is checked and highlighted with a red rectangle. Other fields include "Entity: 100", "Effective Date: 01/01/2003", "Transaction Type:", "Daybook:", "Yo Yo Co. Entity", "To: 100", "To: 02/21/2003", "Output: printer", and "Batch ID:". There are also navigation buttons at the bottom right.

Yo Yo Co. Entity	
Entity: 100	To: 100
Effective Date: 01/01/2003	To: 02/21/2003
Transaction Type:	
Daybook:	
Post Transactions: ☒	
Output: printer	
Batch ID:	

Navigation buttons: [Previous] [Next] [Add Link]

After reviewing the transactions, the controller runs transaction post again, this time with Post Transactions selected.

REVIEW BALANCE SHEET

Balance Sheet

Entity: 100 To: 100

Description: Yo Yo Co. Entity

Report Ending Date: 02/21/2003

Use Budgets: ☐ Budget Code:

Suppress Zero Amounts: ☐

Sub-Account: To:

Cost Center: To:

Level: 99

Summarize Sub-Accounts: ☐

Summarize Cost Centers: ☐

Suppress Account Numbers: ☒

Round to Nearest Thousand: ☐

Round to Nearest Whole Unit: ☐

Reporting Currency:

Output:

Batch ID:

Add Link

Next, the controller wants to view the balance sheet for entity 100. The output is shown on the following page.

glbsrp.p 2+		25.15.8 Balance Sheet
Yo Yo Co. Entity		Reporting Currency: USD Exchange Rate:
		Balance as of 02/21/03

ASSETS		
CURRENT ASSETS		
CASH		
CASH		10,925.00

TOTAL CASH - USD		10,925.00
CASH - FOREIGN		0.00

TOTAL CASH		10,925.00
RECEIVABLES		
ACCOUNTS RECEIVABLE		3,000.00

TOTAL ACCOUNTS RECEIVABLE		3,000.00
DRAFTS RECEIVABLE		0.00
INTERCOMPANY RECEIVABLES		0.00

TOTAL RECEIVABLES		3,000.00
INVENTORY		431.24
WORK IN PROCESS		(56.00)

TOTAL CURRENT ASSETS		14,300.24
FIXED ASSETS		0.00

TOTAL ASSETS		14,300.24
LIABILITIES & EQUITY		
LIABILITIES		
CURRENT LIABILITIES		
TAXES PAYABLE		0.00
PO RECEIPTS (AP HOLDING)		375.00

TOTAL CURRENT LIABILITIES		375.00
LONG TERM LIABILITIES		
LONG TERM DEBT		10,000.00

TOTAL LONG TERM LIABILITIES		10,000.00

TOTAL LIABILITIES		10,375.00
EQUITY		
YTD PROFIT (LOSS)		3,925.24

TOTAL EQUITY		3,925.24

TOTAL LIABILITIES & EQUITY		14,300.24

This report prints format headings based on the descriptions entered for format positions in the Format Position Maintenance function. Totals are given for each format position heading. Total assets should always equal total liabilities.

REVIEW INCOME STATEMENT

Income Statement

Entity: 100 To: 100

Description: Yo Yo Co. Entity

Beginning of Period: 01/01/2003 End of Period: 02/21/2003

Use Budgets: ☐ Budget Code:

Suppress Zero Amounts: ☒

Sub-Account: To:

Cost Center: To:

Level: 99

Summarize Sub-Accounts: ☐

Summarize Cost Centers: ☐

Suppress Account Numbers: ☒

Round to Nearest Thousand: ☐ Round to Nearest Whole Unit: ☐

Print Comments: ☐ Comment Type:

Master Comment Reference:

Reporting Currency: USD

Output: page

Batch ID:

Add Link

Using Income Statement, the controller prints an income statement for entity 100 for a specified period. Note that “Suppress Zero Amounts” has been selected so that GL accounts with zero balances are not printed. Also, for Level, the code 99 has been entered so that all account details are printed. This is the default setting.

The income statement is shown on the next page.

glinrp.p b+		25.15.13 Income Statement	
Yo Yo Co. Entity		Reporting Currency: USD Exchange Rate:	
		Activity 01/01/03 To 02/21/03	% OF Income
SALES			
SALES		4,000.00	100.0%
TOTAL SALES		4,000.00	100.0%
COST OF GOODS SOLD			
COGS - MATERIAL		340.00	8.5%
COGS MATERIAL			
TOTAL COGS - MATERIAL		340.00	8.5%
COGS BURDEN		149.28	3.7%
COGS LABOR		373.20	9.3%
TOTAL COST OF GOODS SOLD		862.48	21.6%
STANDARD GROSS MARGIN		0.00	0.0%
PRODUCTION VARIANCES			
MATERIAL VARIANCES			
PURCHASE PRICE VARIANCE		(60.00)	-1.5%
TOTAL MATERIAL VARIANCES		(60.00)	-1.5%
LABOR VARIANCES			
LABOR ABSORBED		(519.80)	-13.0%
TOTAL LABOR VARIANCES		(519.80)	-13.0%
BURDEN VARIANCES			
BURDEN ABSORBED		(207.92)	-5.2%
TOTAL BURDEN VARIANCES		(207.92)	-5.2%
OVERHEAD VARIANCES		0.00	0.0%
SUBCONTRACT VARIANCES		0.00	0.0%
VOLUME VARIANCES		0.00	0.0%
TOTAL PRODUCTION VARIANCES		(787.72)	-19.7%
TOTAL GROSS MARGIN		3,925.24	98.1%
OPERATING EXPENSES			
SALARIES & WAGES		0.00	0.0%
GENERAL EXPENSES		0.00	0.0%
TRAVEL & ENTERTAINMENT		0.00	0.0%
Service Expense		0.00	0.0%
TOTAL OPERATING EXPENSES		0.00	0.0%
TOTAL INCOME FROM OPERATIONS		3,925.24	98.1%
OTHER INCOME & EXPENSES			
EXCHANGE GAIN (LOSS)		0.00	0.0%
TOTAL OTHER INCOME & EXPENSES		0.00	0.0%
TOTAL PROFIT (LOSS) BEFORE TAX		3,925.24	98.1%
TAXES		0.00	0.0%
TOTAL NET PROFIT (LOSS)		3,925.24	98.1%

This report prints format headings based on the descriptions entered for format positions in the Format Position Maintenance function. The “% of income” column shows the percent of total income attributed to this account.

Activity

Balance and Order Quantity Values

Instructions: Use the accompanying table to determine in which periods orders are required and for what quantities. Assume there is no on-hand inventory. For example, looking at period 1 and its demand, the correct entry for LFL is 25. Looking at "POQ covering two periods," the correct entry is 55.

Order Policy and Modifier

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

Compare your answers with those on page 389.

Enter a Forecast for Parent Item

Use Forecast Worksheet Maintenance to enter a forecast for parent item 10-00 at site 9000 for the next four weeks.

- Item Number = 10-00
- Site = 9000
- Year = Current year
- Current week (CW) = 100
- CW +1 = 200
- CW +2 = 300
- CW +3 = 400

Be sure to continue through all the frames. Only 13 weeks are displayed at a time. The next few frames contain weeks 14 through 26, weeks 27 through 39, and weeks 40 through 52.

Define Control Setting for Forward/Back Forecast Consumption

Use Sales Order Control to enter Forecast Consumption.

- Consume Forward = 2
- Consume Back = 1

Enter a Sales Order

Enter a sales order containing two lines.

- Sold-To, Bill-To, and Ship-To = YoCust (Yo-Yos R Us)
- Line 1
 - Item = 10-00
 - Site = 9000
 - Quantity = 300
 - Due Date = [next week]
 - Consume Forecast = Yes

- Line 2
 - Item = 10-00
 - Site = 9000
 - Quantity = 500
 - Due Date = [current week +3]
 - Consume Forecast = No

Review Forecast

Review forecast in Forecast Worksheet Maintenance. Notice that sales of 300 in current week (CW) +1 consumes forecast of 200 in CW +1 and 100 in CW +2. Sales of 500 in CW +3 does not consume any forecast.

Review Master Schedule Summary

Review the Master Schedule Summary Inquiry for item 10-00 at site 9000.

- Item = 10-00
- Site = 9000
- Start Date = Monday of the current week
- Buckets = W (weekly)
- Per/Bkt = 1

The display screen has two sections. In the top section, locate the following fields and record the following values:

QOH (quantity on hand): _____

MRP required flag: Yes/No

Plan Orders flag: Yes/No

Order Policy flag: _____

Review the bottom frame. Notice forecast amounts, sales order amounts, projected QOH, available to promise (ATP), and cumulative ATP.

Review Planning Data and Run Net Change MRP

- 1 Use Item Planning Maintenance to review planning data for item 10-00 at site 9000 and add the following data if necessary:
 - Order Policy = POQ
 - Order Period = 7
 - Order Quantity = 100
 - Manufacturing Lead Time = 1 day
- 2 Use Item Planning Maintenance to review planning data for item 10-01 at site 9000 and add the following data if necessary:
 - Order Policy = POQ
 - Order Period = 7
 - Purchase Lead Time = 5days
- 3 Use Item Planning Maintenance to review planning data for item 10-03 at site 9000 and add the following data:
 - Order Multiple = 3,000

Run MRP to Calculate a Master Schedule for Parent Item

- 1 Run Regenerate Materials Plan for site 9000.
- 2 Review the Master Schedule Summary Inquiry for item 10-00 at site 9000—the master schedule meets the forecast demand of parent item 10-00.
- 3 Review the Master Schedule Detail Inquiry. What information does it provide that the Master Schedule Summary Inquiry did not provide?

Review Action Messages and Approve Planned Orders

- 1 Review the MRP Summary Inquiry and MRP Detail Inquiry for parent item 10-00 and component items 10-01, 10-02, and 10-03 at site 9000.
- 2 Review Action Message Report for each of the items.
- 3 Based on Action Message Report, approve any MRP-planned work orders using Planned Purchase Order Approval.

- Site = 9000 to 9000
- Release Date = [blank] to today's date or the end of the week
- Default Approve = Yes

Approve orders (pop-up confirmation window displays; enter Yes)

- 4** Check Purchase Requisition Browse/Inquiry for items 10-01, 10-02, and 10-03 to ensure that planned orders have been changed to purchase requisitions.

In the following activity we go through the basic processing functions and look at how they affect planning. During this activity you:

- Add purchase orders (POs) using purchase requisitions, and receive them
- Release MRP-approved work orders, issue components, report labor, receive and close work orders
- Add, ship, and invoice a sales order

Add and Receive Purchase Orders (Using Requisitions)

- 1** Use Purchase Order Maintenance to add a purchase order with each of the component items (10-01, 10-02, and 10-03) on a purchase order line.
 - Header information:
 - Purchase Order = Use default (system generated)
 - Supplier = Yo-Yo Supplies, Inc.
 - Due Date = Enter “?”
 - Line information for item 10-01 and 10-02
 - On the line, in the Req (requisition) field, use your look-up browse to select a requisition
 - Line information for item 10-03
 - On the line, in the Req (requisition) field, use your look-up browse to select a requisition
 - Change the unit of measure: UM = RL
 - Pop-up window displays: Convert quantity from stock units to purchased units? = Yes
 - Update and exit
- 2** Receive your purchase order using Purchase Order Receipts.

Approve Planned Work Orders

- 1 Run Planned Order Report to view MRP-planned orders that need your approval. Based on the report, there are two planned work orders for item 10-00. You will want to approve the first one at this time. Note the release date of this work order to be approved. You will need to enter that date in the next step.
- 2 Use Planned Work Order Approval to approve the work order you noted in the previous step.
 - Item Number = 10-00
 - Site = 9000
 - Release Date = [blank] to [release date of work order to approve based on information from Planned Order Report in previous step]
- 3 Go to Work Order Browse/Inquiry to see if the status of the planned order changed from P (Planned) to F (Firm Planned) when you did the approval.

Issue Components, Report Labor, Receive, and Close

- 1 Use Inventory Detail by Site Browse to verify the availability of components in inventory for site 9000.
- 2 Use Work Order Release/Print to release your firm-planned order. Locate the work order by using the lookup. Accept all default values.
- 3 Issue components to your work order using Work Order Component Issue.
- 4 Use Labor Feedback by Work Order to report labor against your work order:

Operation 10:

 - Work Order = use lookup to enter work order
 - Operation = 10
 - Employee = abc
 - Quantity Completed = 500
 - Elapse/Stop Setup = 0
 - Elapse/Stop Run = 16.65 (standard run time for 500 pieces)

Accept remaining default values.

Operation 20:

- Work Order = use lookup to enter work order
- Operation = 20
- Employee = abc
- Quantity Completed = 100
- Elapse/Stop Setup = 1 (standard setup time)
- Elapse/Stop Run = 25 (standard run time for 500 pieces)

These standard times can be viewed on the work order routing that was printed when the order was released.

- 5** Use Work Order Receipt to receive a quantity of 500 of item 10-00 into inventory and close the work order.
- 6** Check MRP Summary Inquiry for item 10-00.
Select Details so that both summary and detail information display on this report.
Re-run MRP and then run this report again. What changes do you see?

Add, Ship, and Invoice a Sales Order

- 1** Ship line 1 of your sales order using Sales Order Shipments. Do not ship line 2.
- 2** Print and post the invoice using Invoice Print and Invoice Post.
- 3** Use Customer Account Inquiry to review the customer's account (YoCust).

Review GL Transactions

- 1** Review the GL transactions that have been created by the transactions in the activities. Run Transaction Post.
 - Entity 100 to 100
 - Effective Date = through today's date
 - Post Transactions = No (we only want to review the transactions at this time)

- 2 After you have reviewed the GL transactions report, run Transaction Post again. This time, choose Post Transactions = Yes.
- 3 Run and review the balance sheet for entity 100
- 4 Run and review the income statement for entity 100

Answers to Order Policy and Modifier Activity on page 382

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

APPENDIX A

Cost Calculations

This-Level Labor Cost for 10-00 Work Center ASM, Op 10				
Set-up cost	=	(set-up hours/order quantity)	×	work center set-up rate
	=	(1/100)	×	\$10 = 0.1
Run cost	=	run hours	×	work center labor rate
	=	0.05	×	\$10 = 0.5
Labor cost, op 10	=	set-up cost, op 10	+	run cost, op 10 = 0.6

This-Level Labor Cost for 10-00 Work Center ASM, Op 20				
Set-up cost	=	(set-up hours/order quantity)	×	work center set-up rate
	=	(0/100)	×	\$10 = 0
Run cost	=	run hours	×	work center labor rate
	=	0.0333	×	\$10 = 0.333
Labor cost, op 10	=	set-up cost, op 10	+	run cost, op 10 = 0.333

This-Level Labor Cost for 10-00				
Labor cost, op 10				= 0.6
Labor cost, op 20				= 0.333
Total labor cost	=	labor cost, op 10	+	labor cost, op 20 = 0.933

Work Center ASM, Op 10 Set-up Calculations						
Labor burden rate	=	(set-up hours/order qty)	×	labor bdn rate		
	=	(1/100)	×	0		= 0
Labor burden %	=	(set-up hours/order qty)	×	set-up rate	×	labor bdn %
	=	(1/100)	×	\$10/hr	40%	= 0.04
Machine burden rate	=	(set-up hours/order qty)	×	mach/op	×	mach bdn rate
	=	(1/100)	×	1	0	= 0
Total set-up bdn, op 10	=	labor bdn rate	+	labor brn %	+	mach bdn rate = 0.04

Work Center 1020, Op 10 Run Calculations							
Labor burden rate	=	run hours	×	labor burden rate			
	=	0.05	×	\$0		=	0
Labor burden %	=	run hours	×	labor rate	×	labor bdn %	
	=	0.05	×	\$10	×	40%	= .2
Machine burden rate	=	run hours	×	mach bdn rate			
	=	0.05	×	0		=	0
Total run bdn, op 10	=	labor bdn rate	+	labor brn %	+	mach bdn rate	= 0.2

Work Center ASM, Op 10 Total Burden Calculations					
Set-up bdn, op 10		=	0.04		
Run bdn, op 10		=	0.2		
Total Burden, op 10	=	set-up bdn, op 10	+	run bdn, op 10	= 0.24

Work Center ASM, Op 20 Set-up Calculations						
Labor burden rate	=	(set-up hours/order qty)	×	labor bdn rate		
	=	(1/100)	×	0	=	0
Labor burden %	=	(set-up hours/order qty)	×	set-up rate	×	labor bdn %
	=	(1/100)	×	0	40%	= 0
Machine burden rate	=	(set-up hours/order qty)	×	mach/op	×	mach bdn rate
	=	(1/100)	×	1	0	= 0
Total set-up bdn, op 10	=	labor bdn rate	+	labor brn %	+	mach bdn rate = 0

Work Center 1020, Op 20 Run Calculations							
Labor burden rate	=	run hours	×	labor burden rate			
	=	0.0333	×	\$0		=	0
Labor burden %	=	run hours	×	labor rate	×	labor bdn %	
	=	0.0333	×	\$10	×	40%	= .1332
Machine burden rate	=	run hours	×	mach bdn rate			
	=	0.0333	×	0		=	0
Total run bdn, op 10	=	labor bdn rate	+	labor brn %	+	mach bdn rate	= 0.1332

Work Center ASM, Op 20 Total Burden Calculations					
Set-up bdn, op 20			=	0.0	
Run bdn, op 20			=	0.1332	
Total Burden, op 10	=	set-up bdn, op 10	+	run bdn, op 10	= 0.1332

Total Burden Calculations, Ops 10 and 20					
Burden bdn, op 10			=	0.24	
Burden bdn, op 20			=	0.1332	
Total Burden, ops 10 & 20	=	burden bdn, op 10	+	burden bdn, op 20	= 0.3732

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