QAD Enterprise Applications

Standard Edition

Training Guide

Quick Start: Standard Edition

70-2866A
QAD 2008 Standard Edition +
Database: Standard Edition
Domain: Training
June 2008

QAD Inc.
100 Innovation Place
Santa Barbara, California 93108
Phone (805) 684-6614
Fax (805) 684-1890
http://www.qad.com

Contents

About This Course

Course Description

This five-day course has been designed for those who do not need an introduction to the entire QAD Enterprise Application.

Quick Start is for those who want to “hit the ground running” with QAD Enterprise Applications. This accelerated course provides a focused introduction to the fundamentals, and demonstrates how to apply QAD Enterprise Applications functionality to critical business processes.

The format for this course is a combination of self study materials and hands-on activities that simulate how to use QAD Enterprise Applications to run a business.

Course Objectives

The overall objective of the course is for you to learn how to set up and process basic functions in the Standard Edition of QAD Enterprise Applications. Each chapter includes a specific list of learning objectives for those particular topics.

Audience

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

Prerequisites

An understanding of basic manufactruing principals is beneficial.

Course Credit

This course is valid for 60 credit hours.

This course is typically taught in 5 days.

Organization of Training Guide

There are four main sections in this training guide:

- Organization
- Setup
- Processing Transactions
- Planning

Organization provides an overview of the modules, programs, and types of data. Setup, Processing Transactions, and Planning focus on how to use the system in a practical manner. Each chapter in these sections contains three sub-sections; Key Concepts, an Example, and an 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 “Processing Flow” and “Vouchering.”

The Story

The Examples throughout the training guide are all based on the same simple scenario. A company that manufactures Yo-Yo’s, must purchase supplies to produce them, and then sell them to a customer. Using this example, we demonstrate how companies, customers, and suppliers are entered into the system; and we can see how the purchasing, sales, manufacturing, accounts payable, accounts receivable, and planning processes function. Each chapter ends with an Activities section based on the same scenario discussed in class.

QAD Resources

If you encounter questions or problems on QAD software that are not addressed in this book, several resources are available.

Product Help

All QAD products ship with integrated help systems. A properly installed QAD application will display help when you press the Help key (F1), or access it through the menu. The help covers the normal use of the product.

QAD Web Resources

The QAD website provides product and company overviews. The Print Solution option on the opening page provides a means of compiling desired content into a document specialized to your industry, business implementation, and needs.

http://www.qad.com/

From QAD's main site, you can access QAD's Learning or Support sites.

QAD Learning Portal for Training Opportunities

To view available training courses, locations, and materials, use the QAD Learning Portal. Choose Learning under the Global Services tab to access it.

QAD Support for Product Documentation and the QAD Knowledgebase

To access release notes, user guides, installation and conversion guides by product and release, visit the Support website. Support also offers an array of tools depending on your company's maintenance agreement with QAD. These include the Knowledgebase and direct links to QAD Support experts.

Choose Support under the Global Services tab.

Any QAD customer can register for a QAD web account by accessing the Support 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.

SECTION 1

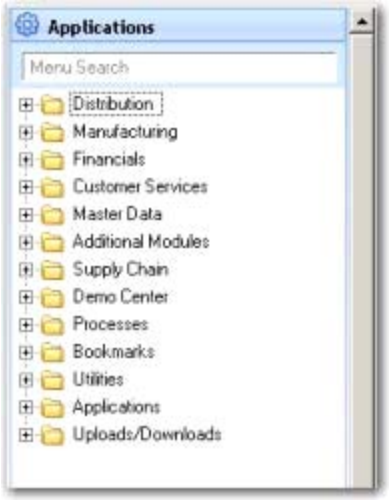
Organization of QAD Enterprise Applications

Chapter 1

Organization of QAD Enterprise Applications

Introduction

The main menu in QAD Enterprise Applications has seven application-related sections; Distribution, Manufacturing, Financials, Customer Services, Master Data, Additional Modules and Supply Chain.The figure below shows this top-level menu in the NETUI user interface. (Note: There are additional menu items not related to the applications).



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.

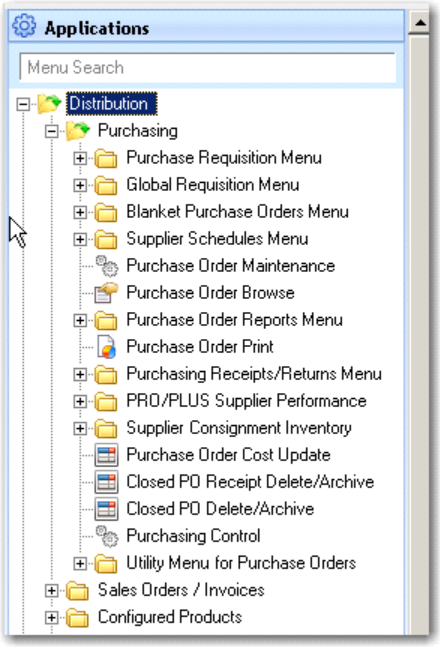
On the next few pages, we'll take a quick look at these seven main menus and the modules each contains. As we go through the menus and list of modules, it is important to note that we are covering a very small portion of the system functionality. In-depth, module-based training of that functionality is provided by other QAD classes; information and schedules can be accessed on the QAD web site.

The Process Editor found under Processes lets 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.

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

.NET UI menu Structure

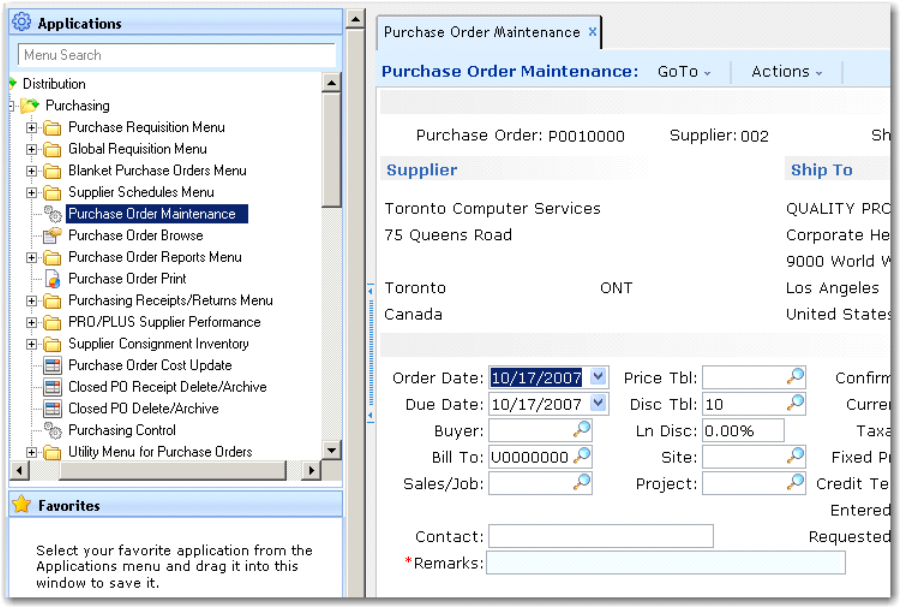
An example of the menu structure shows the indented format of sub-folders and items. Under the Distribution folder item we have the Purchasing Folder and within it other folders relating to the various functions required for purchasing.



There are also discreet functions such as Purchase Order Maintenance, Purchase Order Browse, Purchase Order Print, and Purchase Order Cost Update. The individual functions use unique icons to indicate maintenance functions, browse or inquiry functions, report print functions and update transactions.

Selecting Menu Items

Menu Items are selected with the mouse. Single clicking a plus or minus sign will toggle the folder open/close function. Alternately you can double click the folder icon itself to toggle the folder open/close function. Discreet functions, such as Purchase Order Maintenance shown here, are selected by double clicking the related icon. This opens the functional screen in the main window.



The window uses tabs and allows multiple functions to be open at one time. You can toggle between the functions by clicking on the tabs. Close a tab by mouse clicking on the X in the tab.

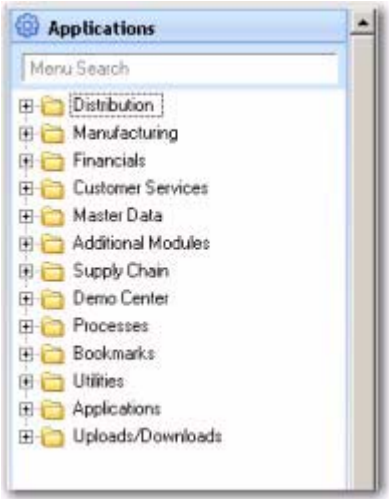
Note the favorites section below the menu window. As indicated you can create a unique menu of functions you use most often by dragging the icon image of the item from the main menu window into the favorites window.

Modules in Character Menus

Character Menu Example

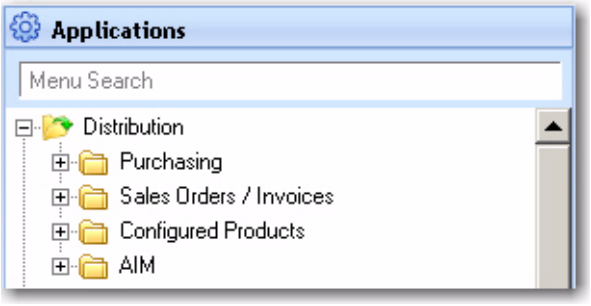
The main menu is divided into three areas, Distribution, Manufacturing and Financials. The underlying structure is the same in all menu styles. In the character menu the menu item is selected by entering the number of the menu item and pressing the go key. Each menu selection will bring up a screen with its submenu. If you know the menu sequence of the function you want it may be entered directly. For example the menu sequence for *Sales Order Maintenance* is *7.1.1*.

QAD Enterprise Applications Modules



This course will use NET UI menus. The main menu is shown here. In the.NET UI menu modules and transactions may be found by typing the function name into the Menu Search field.

Distribution



Distribution modules support two types of activity.

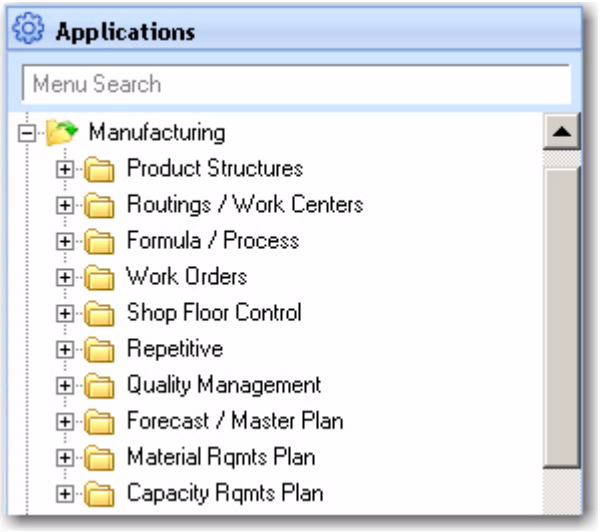
- Move material into inventory from external sources such as suppliers or other company sites.
- Move material out of inventory to satisfy external demand such as sales or intersite transfers.

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 under Distribution are: Purchasing, including Purchase Requisitions, Sales Orders/Invoices and Sales Quotations, Release Management, Configured Products, Sales Analysis, Advanced Inventory Management.

In this course, we cover the Purchasing, Purchase Requisitions, and Sales Orders/Invoices modules.



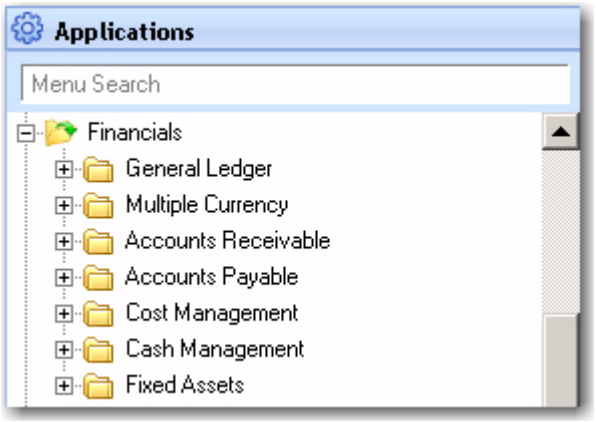
Manufacturing

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 which includes Flow Scheduling and 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

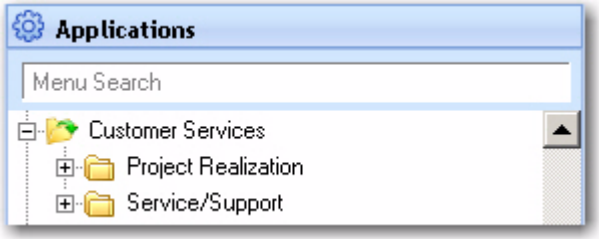
Modules in the Financials section are: General Ledger (GL), Multiple Currency, Accounts Receivable (AR), Accounts Payable (AP), Cost Management, Cash Management, and Fixed Assets.

In this course, we use the GL, AR, and AP modules.

Customer Services

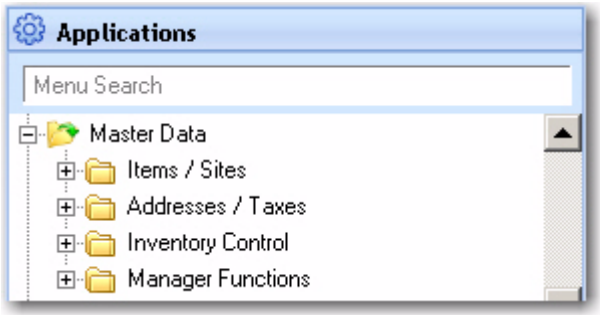
Customer Services currently consists of two modules:

- 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.

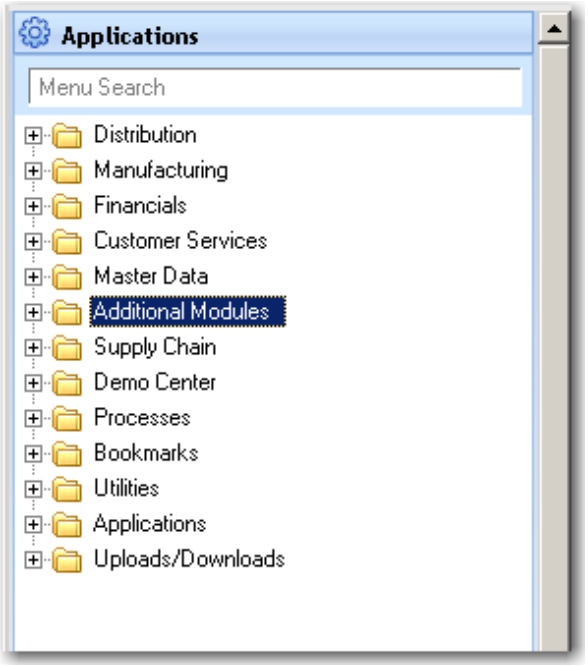


Master Data

The modules in Master Data are used to set up basic business information; item codes, address codes, site codes, and inventory control information. Master Data is also used to perform administrative functions pertaining to users, security, printers, and other administrative functions that apply throughout QAD Enterprise.

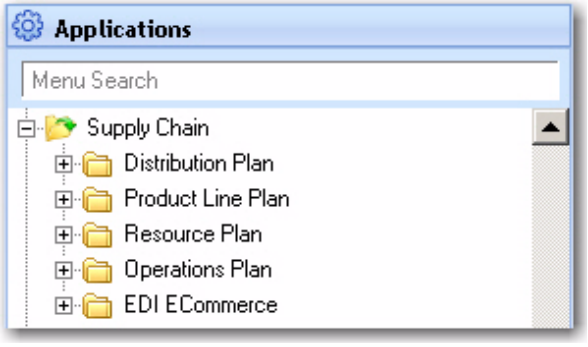
Master Data Modules

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.



Additional Modules

This section can be used for organizing miscellaneous applications and customized programs that your company creates and uses. These are not covered in this course.



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.

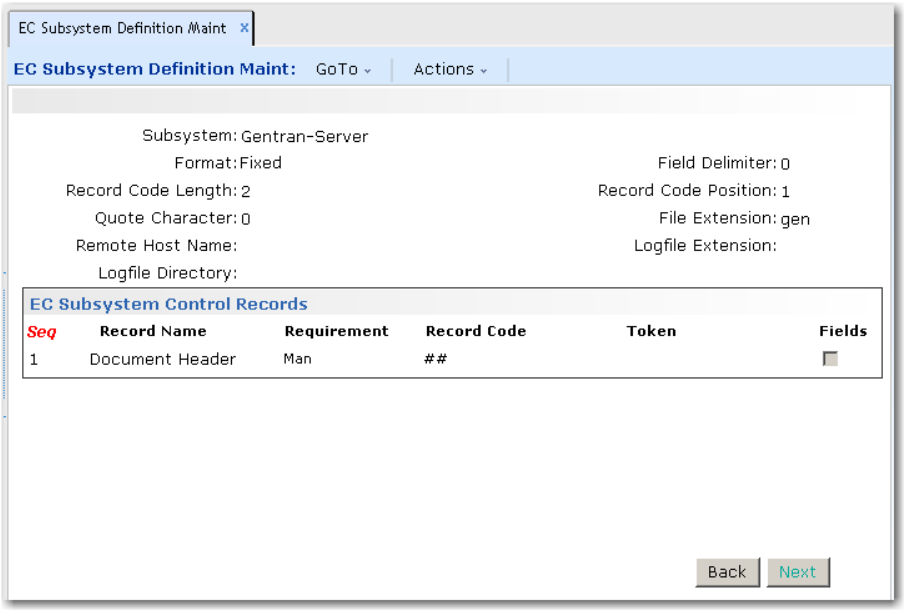
Supply Chain Management Modules

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

QAD Enterprise Applications features two user interfaces (UIs):

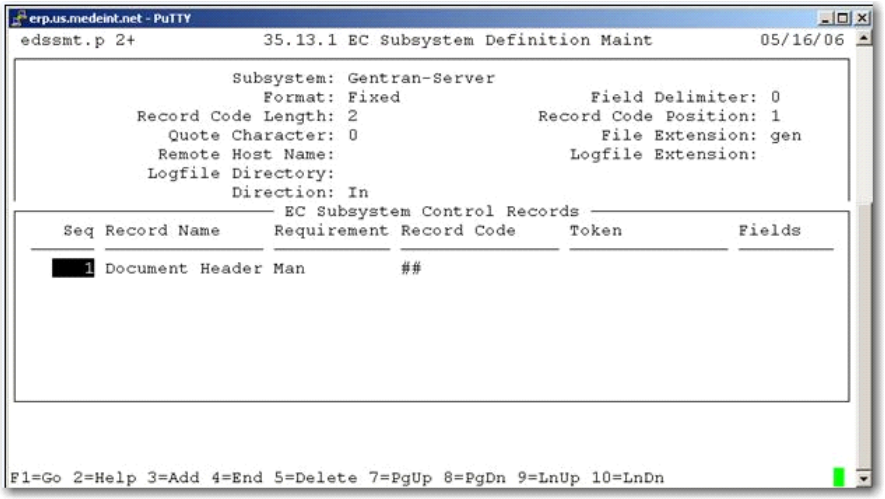
QAD .NET UI. This browser-based UI is designed for use over a company intranet or wide-area network. It features screens that display as HTML pages, full text search, multiple detached windows, and a Process Editor for creating work flows with active Uniform Resource Locator (URL) links.



The .NET UI screens have navigation buttons on the lower corner of the screen.

- Character Interface. This is the original user interface. It is primarily intended for UNIX-based environments with character clients.

The character screens are designed for function key navigation as shown in the horizontal menu at the bottom of the screen



The file labels, relative position and function are the same regardless of the interface.

Program Types

While each interface has unique display characteristics, both 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.

Inquiries are typically viewed online and reports are sent to a printer or file; you can however, print inquiries and view reports. 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.

The system provides 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

A QAD Enterprise Applications 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 QAD Enterprise Applications 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 QAD Enterprise Applications is the focus of the next section, which begins with a chapter on setting up entities, sites, and locations.

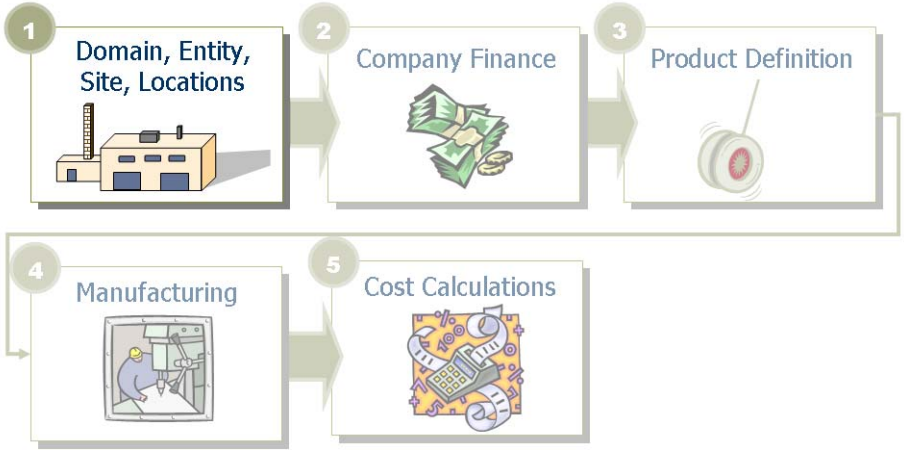
SECTION 2

Setup

CHAPTER 2

Set Up Domains, Entities, Sites and Locations

Set Up Domains, Entities, Sites, & Locations



In this chapter, the basic components representing a company in the system, domains, entities, sites, and locations will be discussed and set up as an exercise.

Key Concepts

- Databases
- Domains
- 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

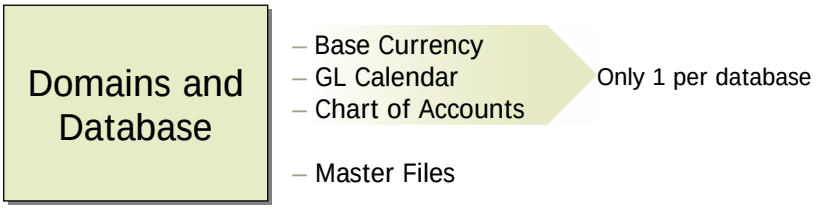
Introduction

In QAD Enterprise Applications, a company can be looked at 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, the most basic pieces that satisfy both kinds of requirements will be discussed. First, there is the environment itself; the database. To this are added:

- Domains, which may be thought of as templates for businesses that use the same base currency, chart of accounts and GL calendar.
- 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.

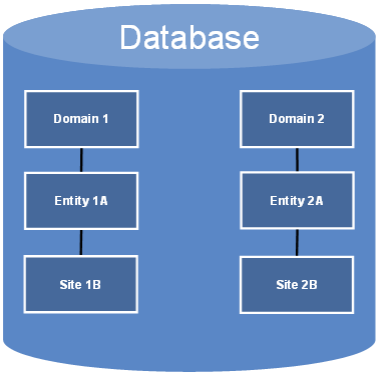
DATABASE AND DOMAINS



- Geography may determine how many databases are required

A Database is a logical collection of computer records. In QAD Enterprise Applications these are usually associated with a unique business. Separate databases are often used to deal with geographical limitations and security concerns.

- 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.
- When a multiple database environment is established, QAD Enterprise Applications has distributed functionality that allows planning and execution across the databases. Each user has a profile that determines which database, or databases, they can access.
- Every database must have one system domain, indicated by a domain type of SYSTEM. The initial system domain is created when the database is created, for either a new installation of QAD Enterprise Applications or a conversion.
- The system domain includes default data that is required to begin implementing QAD Enterprise Applications, such as control program settings, rounding methods, default accounts, and generalized codes.
- The system domain is used as a template for new domains. When you create a new domain associated with the current database, default data is copied from the system domain. Since the system domain is used as a template, you may want to add data to it or tailor defaults before creating new domains based on it.
- The system domain is not typically used for maintaining active transactions.



Domains

- Domains comprise business operations using a single base currency and chart of accounts.
- There may be multiple domains within a single database
  - Entities are assigned to Domains and are unique businesses with financial reporting responsibility. Financial reports, earnings statements and balance sheets, are organized by entity.
  - There may be multiple Entities in a Domain.
  - One entity must be identified as the primary Entity for each domain in your database. This is done in Entity Maintenance in general ledger setup.
  - Sites are assigned to Entities and are logical subsets of the business usually associated with a physical location such as a manufacturing plant, a distribution facility, or a warehouse. There may be multiple sites at a single physical location for internal control purposes.
  - There may be many sites assigned to an Entity.

ENTITIES

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:

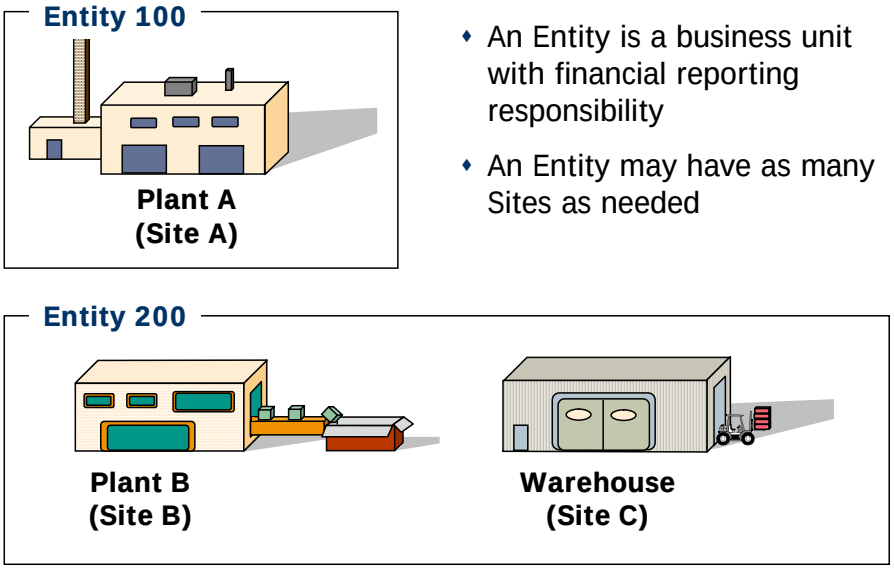
- Generates a separate balance sheet and income statement
- Plans budgets
- Is assessed for taxes

Entities assume the general ledger chart of accounts, the base currency and the general ledger calendar of the Domain they belong to.

All GL transactions are posted by entity. The primary entity is the default entity for GL transactions. Primary entity is setup in entity maintenance in general ledger setup. Default entity is setup in the Domain/Account Control.

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

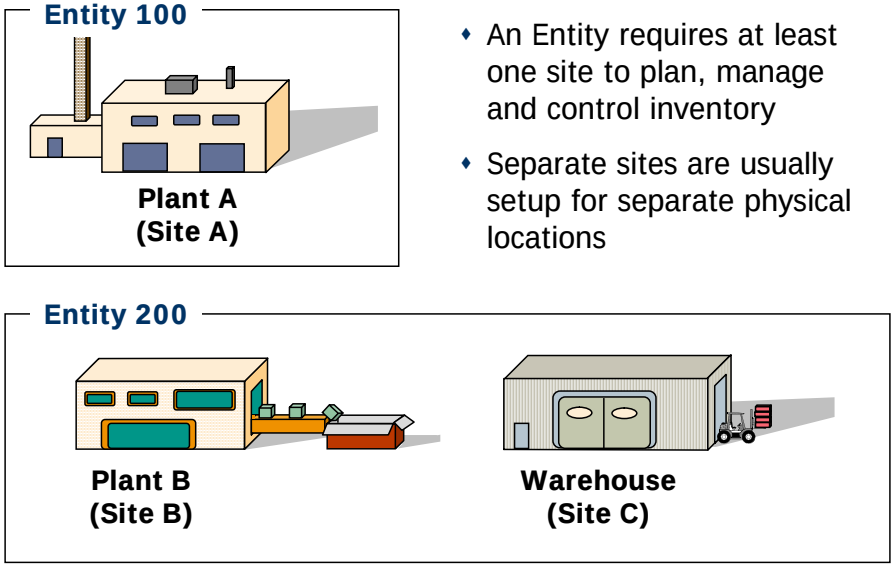


SITES

A site is an inventory and planning and control 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 planning and control functions work within one site. Manufacturing orders expect to find all their components at the same site (there are exceptions); MRP or DRP calculates requirements one site at a time. A few functions deal with multiple sites. Multi-site purchase or sales orders, distribution orders, and distributed inventory inquiries.



- An Entity requires at least one site to plan, manage and control inventory
- Separate sites are usually setup for separate physical locations

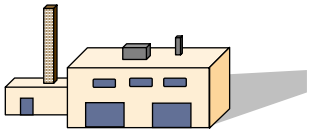
What's Next

Each site can have one or more associated inventory locations. Locations identify areas of a site where inventory is stored. Each time an inventory transaction is performed, such as an issue, receipt or transfer, both a site and a location must be specified.

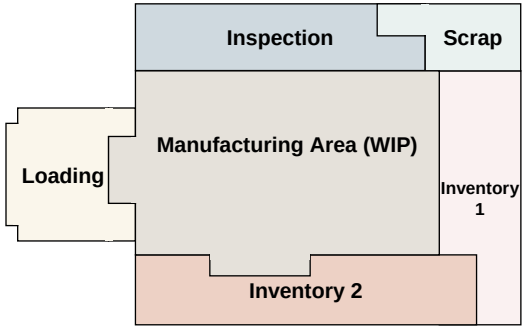
INVENTORY LOCATIONS

In QAD Enterprise Applications each site can have a variety of locations. These are simply the places where inventory is stored. Locations may include shelves, bins, tanks, silos, refrigerators, freezers, humidity and or temperature controlled rooms, segregated quarantine or material review areas, 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

Most businesses will have several predefined inventory locations. Raw material and or component inventory, finished goods inventory, and perhaps other locations such as: sales returns, scrap, quality control quarantine, material review board, etc. In general, the more carefully defined the locations are; a more accurate level of inventory control will be obtained.

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.) While useful in some

situations this offers a very low level of control as anyone with access to inventory transactions may create new locations, including those that are typos.

Inventory location attributes include:

- Description
- A default Inventory Status Code (available, nettable, over-issue)
- Whether it is permanent or not
- A Location Type Code (tank, silo, freezer, etc.)
- Restricted to single item (for example, liquid tanks are usually restricted to a single item)
- Restricted to a single lot of a single item (for example, lot controlled liquids)
- Certain items are assigned to certain locations (location type code freezer on item is matched to location type code freezer on location)

What's Next

Every location must have an inventory status code associated with it; inventory status codes will be discussed next.we'll discuss inventory status codes next.

Inventory Status Codes

Inventory status codes control the inventory and manage how that inventory is used. Think about any facility, scrap is certainly managed differently than finished goods inventory or spares. In QAD Enterprise Applications, these different types of inventory are identified by their status codes.

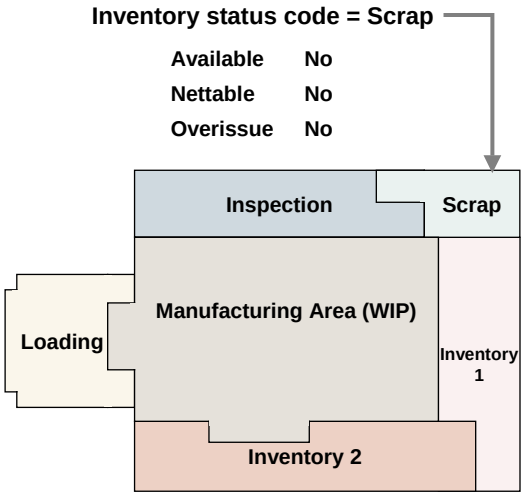
Generic Inventory Status Codes

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

Some general guidelines on how these codes may be used:

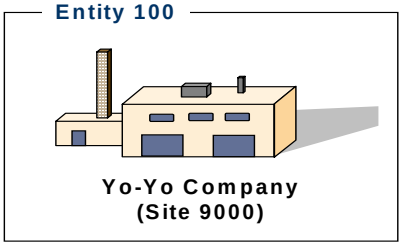
- Scrap inventory would not be available or nettable (see figure below)
- Material in receiving quarantine is usually not available but is nettable as it is expected to be good
- Material in material review board is usually not available but may be either nettable or not based on the likelihood of its being approved for use
- Consignment inventory being held for a specific customer would not normally be available
- As negative inventory balances are always errors they should not be allowed
- Note: Not allowing negative balances forces the user to fix the error at its source
- Inventory in transit is usually not available



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.

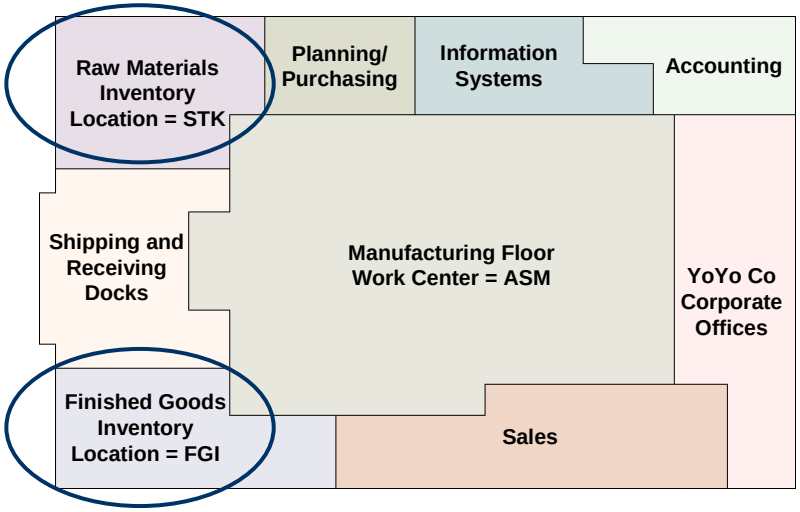
Whenever items are received into inventory, a status code is associated with that inventory; this defaults to the status code entered for the location but can be changed using Inventory Detail Maintenance. Whenever you attempt to do something with this inventory; allocate it, issue it, move it, the system 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 Santa Barbara, California, that includes the corporate office, and manufacturing and distribution areas (see figure above). The 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:

- Domain
- Entity
- Site
- Locations

SET UP ENTITY

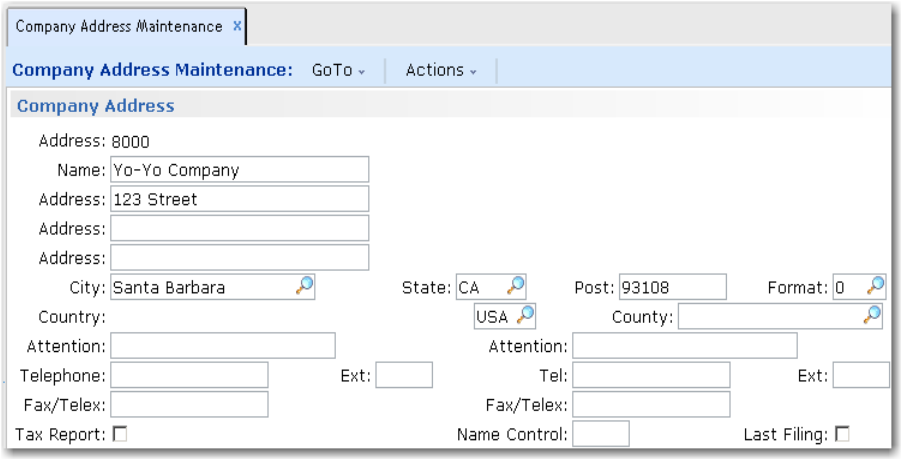
Prerequisites

Before Yo-Yo Company can set up an entity, and designate that as its primary entity, it must enter its address and reset the “primary entity” flag. For the purposes of this course we will be using a domain already setup with a base currency, general ledger chart of accounts and calendar.

For the purposes of this course we will be using a domain already setup with a base currency, general ledger chart of accounts and calendar.

Enter Company Address

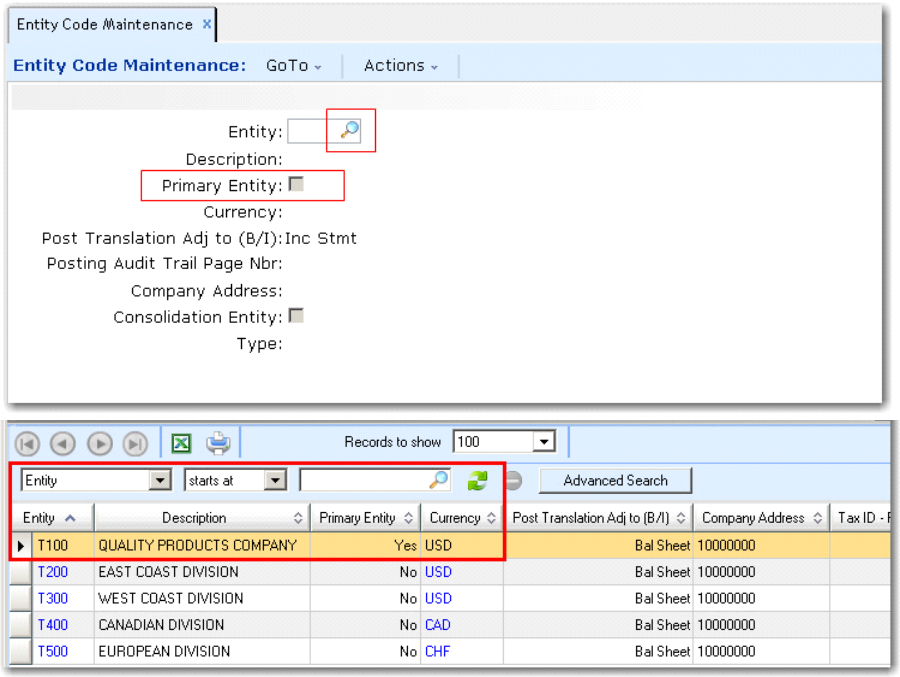
Using Company Address Maintenance, Yo-Yo Company’s Administrator enters an address code (8000) and basic address information.



The country code field is the only required field in address maintenance. Country codes need to be setup in Country Code Maintenance in Addresses and Taxes.

Find and change current “Primary Entity”

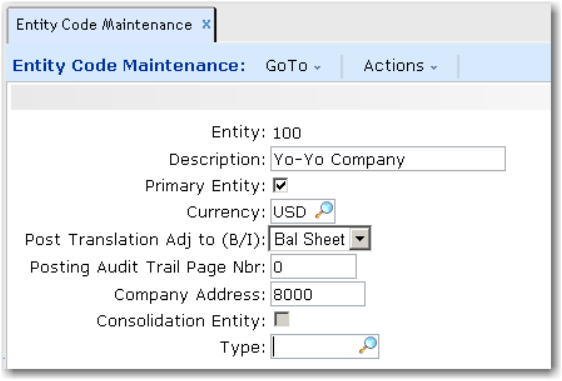
Yo-Yo Company's Administrator uses Entity Code Maintenance to identify the existing primary entity and deselect its Primary Entity flag.

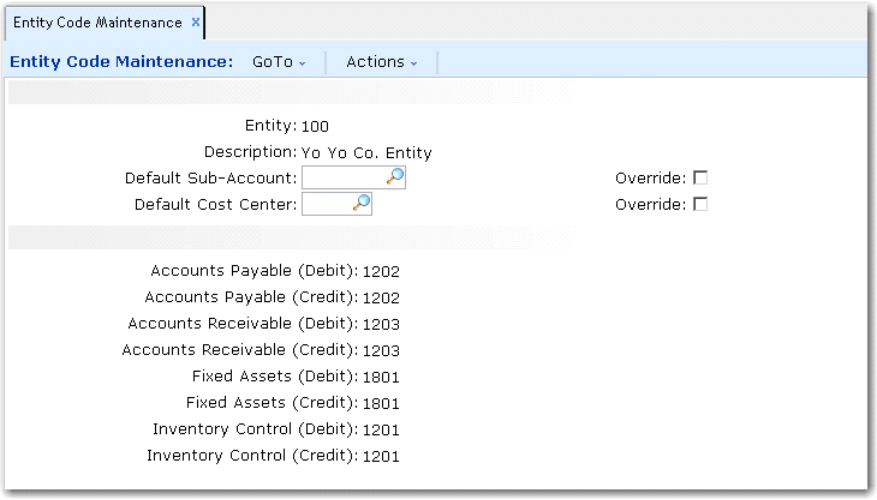


To find the current Primary Entity and deselect its Primary Entity flag, the Administrator does the following.

- Select the lookup icon next to the Entity field. In this example, the lookup screen shows that Quality Products Company is currently the primary entity.
- Select Quality Products Company and then, in the Entity Code Maintenance screen, deselects (mouse click the check mark) the Primary Entity flag

Enter entity for Yo-Yo Company



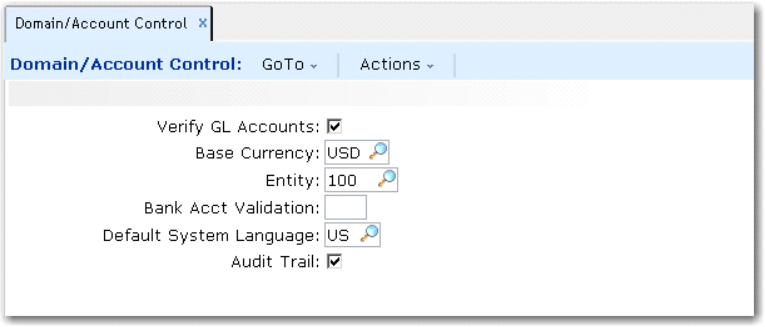


Advancing to the next frame we see the general ledger account codes defaulting in from the Domain/Account control file.

Tip

Be careful how the Entity codes are set up, because data can be printed for a range of entity codes. For example, there may be 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).

Enter settings for Verify GL Accounts



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

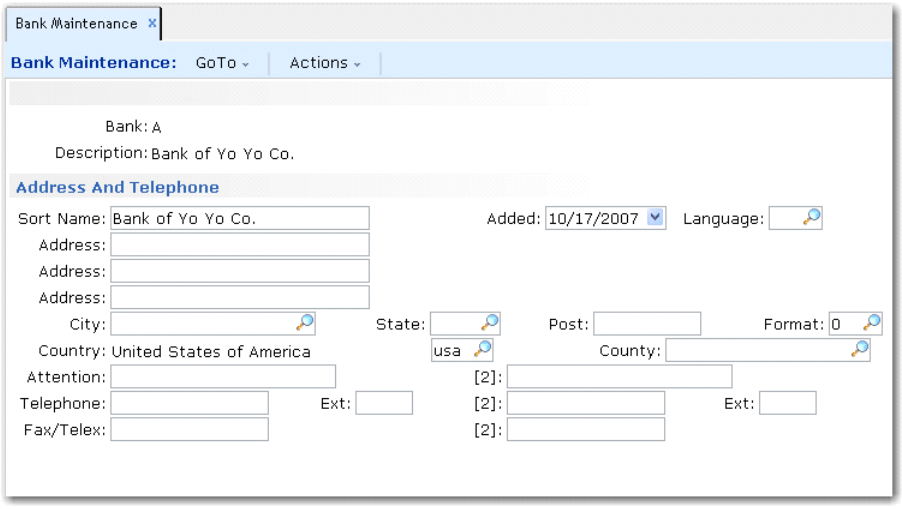
Additional Notes

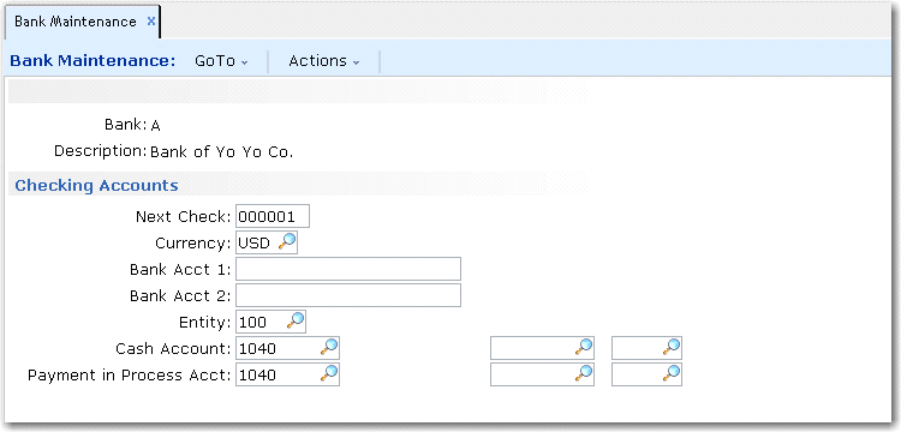
Notice the Verify GL Accounts field. Initially, upon implementation, the Verify GL Accounts flag may be set to No (or unchecked). But when the implementation is finished, this field would normally be reset to Yes. When set to Yes, the system verifies that codes entered for individual accounts, sub-accounts,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

Domain Entity vs Primary Entity

QAD Enterprise Applications distinguishes between the entity used for most database activities (the Domain 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 Domain Entity is set up in Domain/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 Domain Entity is often the same as the Primary Entity.

Enter bank information

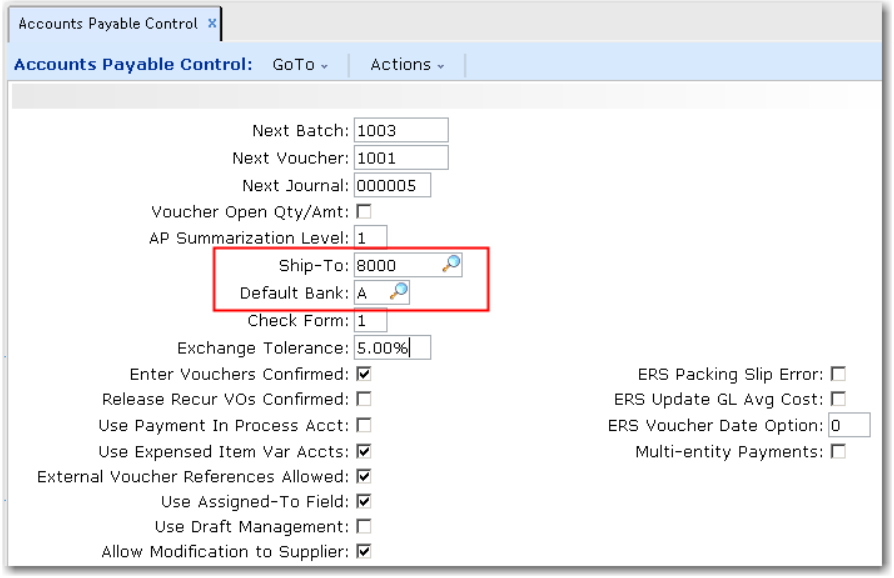




A bank code is needed by the system.

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

Specify default bank and ship-to address



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.

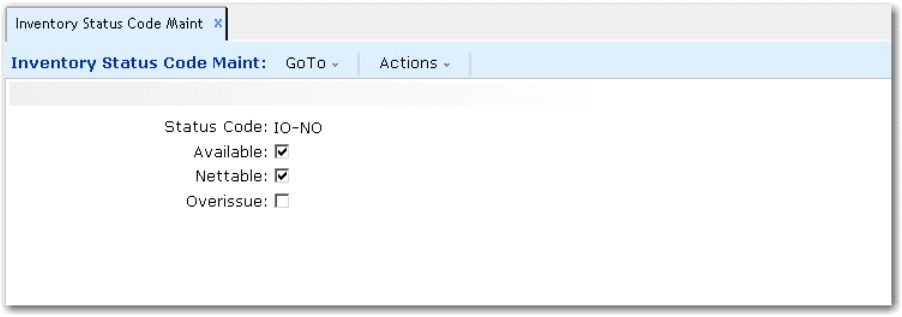
The Finance Administrator also enters site 8000 in the ship-to address field. This becomes Yo-Yo Company's default shipping address and is used when a voucher is entered that does not reference a purchase order number.

SET UP SITES

Prerequisites

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

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.

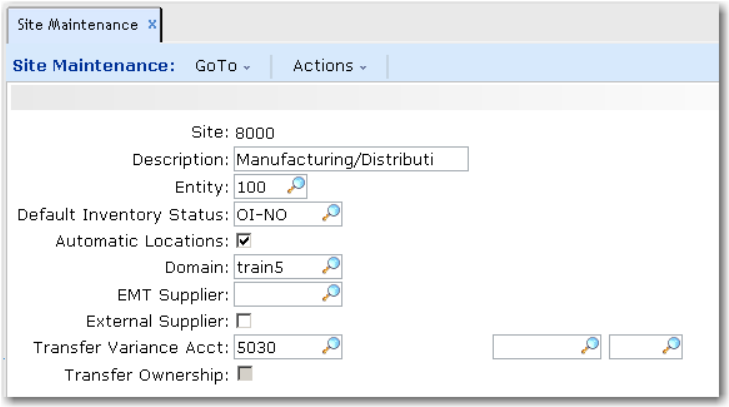
Yo-Yo Company defines a status code of OI-NO to indicate that overissues are not permitted from locations having this status code.

Additional Notes

If overissues are allowed, inventory is issued even if the current balance lacks enough quantity. This is always an error. Not allowing a transaction that will result in a negative balance forces the user to correct the source of the error before completing the transaction.

Note It is highly recommended to not use blank code fields. Codes should be meaningful. In this example, abbreviations that define the attributes of the code.

Set up site

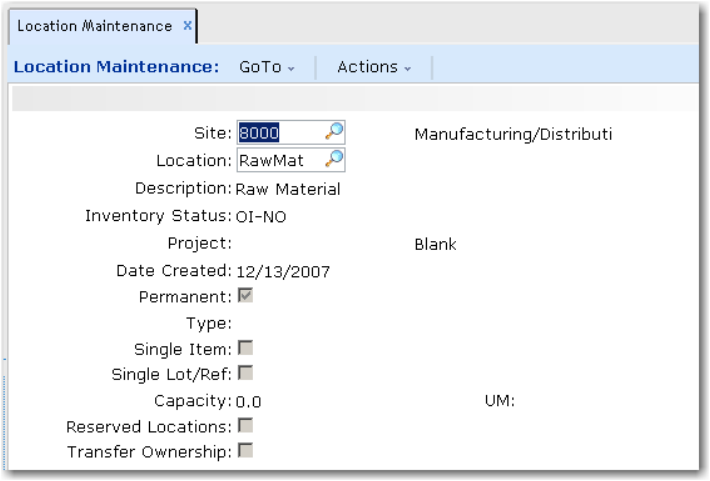


Yo-Yo Company has only one site–site 8000. In Site Maintenance, Yo-Yo Company's Production Manager associates this site with entity 100 and assigns to it an inventory status code of OI-NO, which was defined earlier.

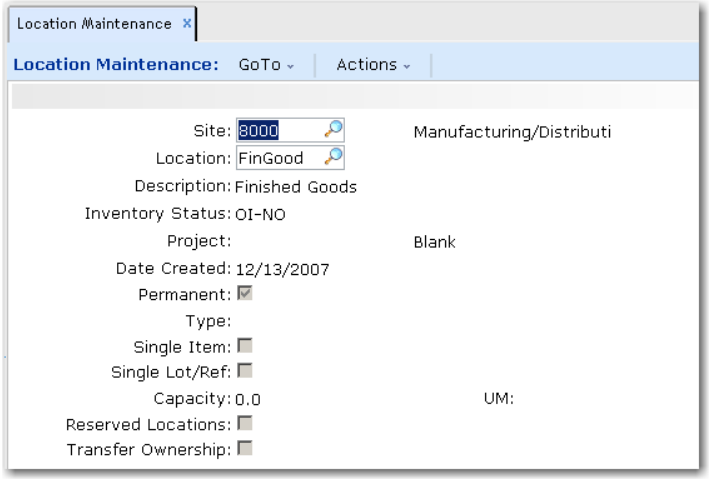
Note It will be most helpful if the site code is equal to the address code for the physical location. There are several places where the system can retrieve the street address for a site if the site code and the address code are the same. For example purchase orders where the system will retrieve the ship to address code from the line item site code. Site code equal to address code is required for global tax management.

Note Throughout this course various screen shots may display a different domain, entity or site code than mentioned in the text. The content of the transaction detail will be correct. In Activities always follow the printed text.

SET UP INVENTORY LOCATIONS



Note Define an inventory location for every place your business stores inventory items. If you store pallets, or drums of raw material in the parking lot, the parking lot needs to be a location. If the supervisor keeps a safety stock of small items in their desk drawer, the drawer needs to be an inventory location.



At Yo-Yo Company, there are two inventory locations, which are a subset of site 8000. 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. Check the permanent flag.

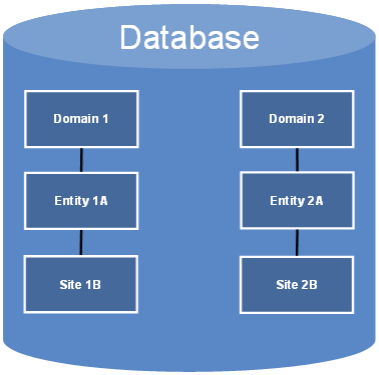
Additional Notes

An inventory status code must be associated with every location. By default, this is the inventory status from the site record.

For purposes of this course the other location attributes will be left blank.

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).



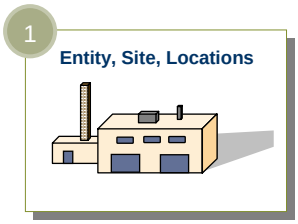
Domain A domain is a template for several entities that share the same base currency, general ledger chart of accounts and calendar. A system requires at least one entity.

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

Site A site is an inventory planning and control concept. All inventories are 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. If there is any inventory at least one site is required.

Location 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. If there is any inventory at least one location is required.

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 8000).

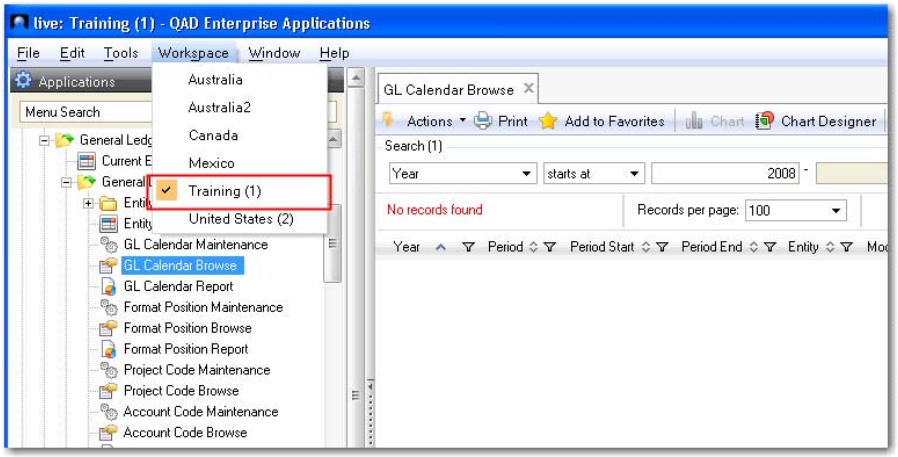
After defining the inventory status code, Yo-Yo Company set up site 8000 in Site Maintenance and set OI-NO as the default inventory status.

In the last step, using Location Maintenance, Yo-Yo Company set up two locations at site 8000-RawMat and FinGood. The inventory status codes (OI-NO) associated with these locations defaulted from site 8000.

Activity 1

Preliminary Setup

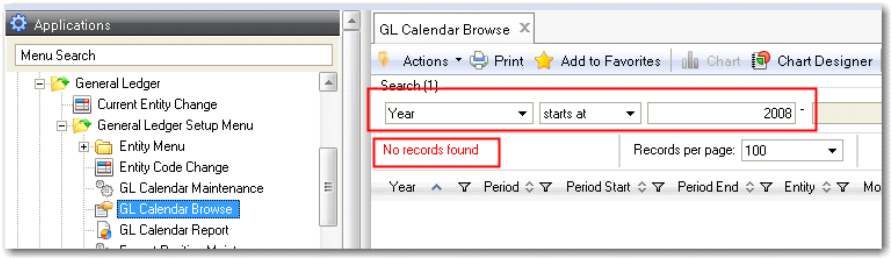
Core SE First Activity



First Activity for all 2008 SE Courseware

1 Verify Domain: From the workspace menu select Training.

   a Note the domain name appears in the top window frame.



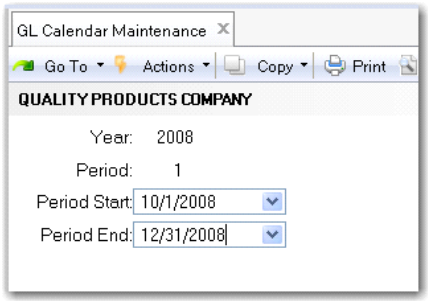
2 Verify GL Calendar Period

a Use *GL Calendar Browse (25.3.5)*

b Start search at current year

c You should see a list of months for the current year

d If you find "No Records" continue to step three.



3 Use *GL Calendar Maintenance (25.3.4)*

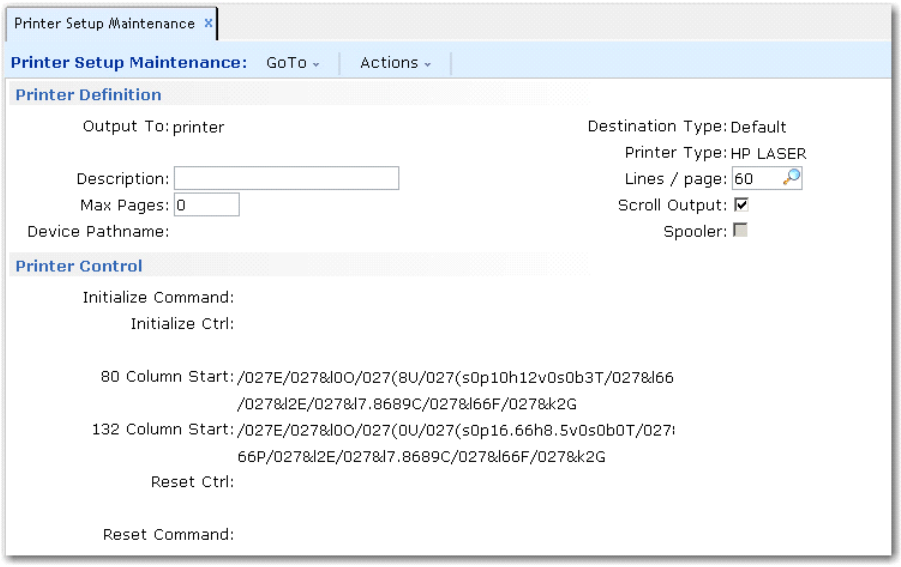
Enter the current year, then as a short cut, enter one period whose dates will cover the term of your training event.

Prerequisites to Activity

The first two setup steps on this page are optional for on-line self study. All of the activities can be completed without a printer and if there are not multiple users of the same printer there is no need to add your name to the report format.

Define Printer for Report Output

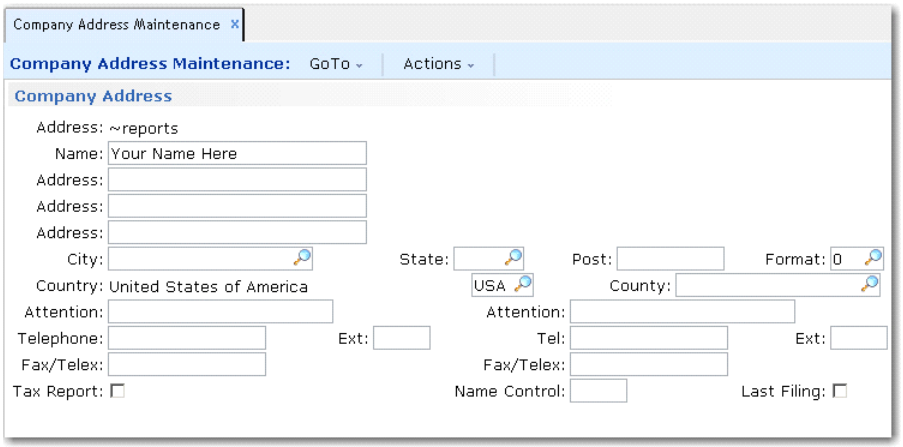
Note The printer setup activity shown here is intended for classroom use where the printer environment is known and the instructor can provide assistance if needed. In the case of self study, the printer setup will vary depending on your system configuration. If you wish to setup a printer for hard copy reports you may require the assistance of local technical staff.



Add Your Name to Reports

Note This activity where you add your name to the ~Reports frame in the Company Address Maintenance screen is also intended for classroom use where several students would be using a single printer.

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

Use *Company Address Maintenance, 2.12* to create records for your company.

Fields to populate are:

- Address (code) = 8000
- Name = Yo-Yo Company
- City = Santa Barbara
- State = CA
- Post = 93108
- Country = USA
- Click Next or use the Enter key
- Ignore the Address Tax Data window that pops up, click Next

With the cursor in the first field of Bank Accounts, click Back twice to update and exit.

Note The bank field in *Company Address Maintenance, 2.12* is used for electronic transfer payments and its use is beyond the scope of this course.

Enter an Entity

Use *Entity Code Maintenance, 25.3.1.1* to add a record for your entity.

Important Setup Step In the Entity field, use the lookup to scroll through the pre-existing records in *Entity Code Maintenance.* Select the entity that is flagged as the primary entity and uncheck the Primary Entity flag and click Next to save.

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; click Next or use the Enter key
- Name = Yo-Yo Company
- Primary Entity = Yes (or checked)
- Currency = USD
- Company Address Code = 8000; click Next

- The second frame displays inter-company accounts for transactions across entities. These default from Domain/Account Control. Accept these defaults. Click next until the cursor returns to the Entity field, this completes the task.

Set Entity as Default Entity for the Database

Use *Domain/Account Control, 36.1*. 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.

In a normal environment you would always have verify GL accounts checked yes. This insures that all transactions are posted to valid combinations of account, sub-account, cost center (and or project) cases in valid GL calendar periods. During training we leave this option unchecked to prevent students having their transactions stopped due to some error they have made.in the case of an improper account code setup.

There are several account frames after this. Advance through these frames to have an idea of all the account codes needed by the system. Accept the defaults. These account codes will default linto the neede fields throughout the system to ensure all transactions are accounted for.

Set Up a Bank for Your Entity

A new bank will do business with your business entity. Enter a record for it.

Use *Bank Maintenance, 27.6.1*. 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; click Next
- Description = Bank of Yo-Yo Company; click Next

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

- City = Santa Barbara
- State = CA
- Post = 930USA13
- Country = USA

Click Next and accept the defaults in the remaining frames until you return to the Bank field, then click Back to exit. (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.)

Accounts Payable Control

Use *Accounts Payable Control, 28.24* to set bank "A" as the default bank for this database.

- Default Bank = A
- Accept all other values at default and click Next to save.

Set Up Inventory Status Code

You need to set up an inventory status code, which will be used as the default inventory status for material at this site. Add a new status code.

Use *Inventory Status Code Maintenance, 1.1.1*

- Status Code = OI-NO (overissue No); click Next or press Enter
- Available = Yes
- Nettable = Yes
- Overissue = No; click Next

Click Next (or press Enter) until you come to the Restricted Transaction field, then click Back to complete the update transaction.

Set Up Sites

Use *Site Maintenance, 1.1.13* to set up your manufacturing/distribution site.

- Site Code = 8000; click Next
- Description = Manufacture/Distribution
- Entity = 100
- Default Inventory Status = OI-NO; click Next
- At the multi-domain processing pop-up, click Back.

Set Up Inventory Locations

Add two inventory locations–raw materials and finished goods–to site 8000. The inventory status code of OI-NO should default from site 8000.

Use *Location Maintenance, 1.1.18* to enter the information in the table below in the appropriate fields. Click Next to save.

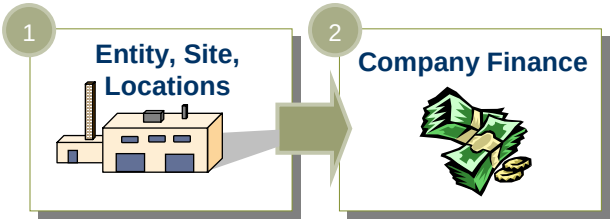
Site	Location Code	Description	Inventory Status
8000	RawMat	Raw Material	OI-NO
8000	FinGood	Finished Goods	OI-NO

CHAPTER 3

Set Up Basic Financial Structure

Overview

How to set up entities, sites, and locations has been examined. Next, setting up the basic financial structure for a company will be discussed. The first topics to be discussed are 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

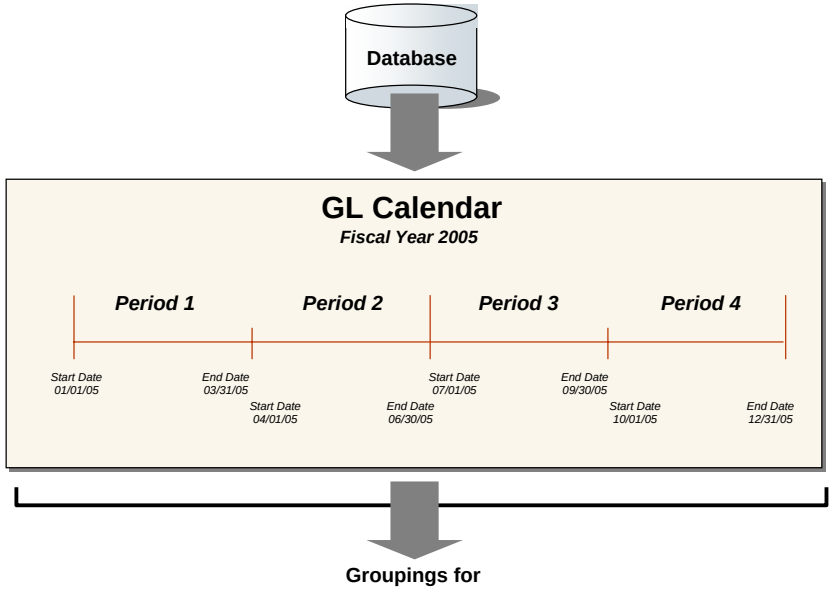
Key Concepts

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 domain 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.

In QAD Enterprise Applications calendar periods are user defined. You could have 12 periods per year, each equal to a calendar month, or you could have four quarters as shown in the figure.



Transactions-such as a sales order or work order transaction or other inventory transactions must find an open GL period that includes the date of the transaction in order to post to the general ledger (GL). The verify GL accounts flag in the Domain/Account Control verifies both a valid

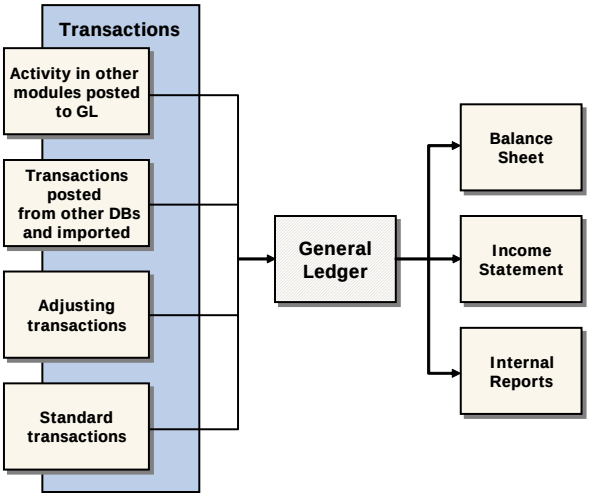
Account code and an open GL period for the date of the transactions. If the verification fails the system returns an error message and the transaction cannot be completed.

TRANSACTIONS AND THE GL

Each transaction is an individual event, for example, the sale or purchase of an item-reported to a computer system, where an application such as QAD Enterprise Applications creates records to track the financial effects of business activities. These transaction records enter the GL in one of four ways:

- Activities in other QAD 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.



Note These transactions are first "posted" before actually updating the accounts in the GL. Posting transactions is a separate event that should be under accounting procedure control.

TRANSACTION POST

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.

Note There are specific functions in the General Ledger Module for reviewing un-posted transactions.

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.

FINANCIAL REPORTS

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

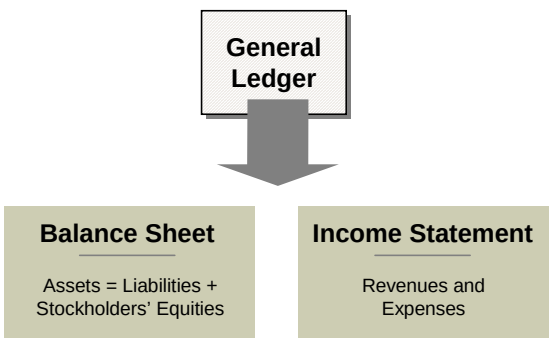
Periodically, this information is compiled on two primary financial statements: the balance sheet and income statement.

Balance Sheet

The balance sheet shows what resources the company has accumulated over time. Assets such as cash, inventory, fixed assets like buildings and machinery and accounts receivable. The balance sheet also shows liabilities like loans and accounts payable, and shows the difference between the assets and liabilities as equity. The balance sheet is a position statement as it shows the financial condition of a company as of a fixed point in time, say, year end.

Income Statement

The income statement shows the profit (or loss) that business activities have generated in a particular time period, for example, a calendar quarter. This is found by starting with total revenue and subtracting the various costs of doing business; such as materials purchased, labor, the overhead of the buildings and general and administrative expense.



The format and calculation of the balance sheet and income statement are controlled by Generally Accepted Accounting Practices, government regulations and industry standards, all of which vary widely around the globe. The accounting system offers the flexibility to accommodate many different environments, currencies, and local issues.

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.

As shown in GL Calendar Maintenance, Yo-Yo Company's fiscal year is divided into 12 periods beginning January 1, and an end date of December 31, of the current year.

Note The screen shot below shows a single GL period for the entire year. This is a common short cut for training purposes to save the student from spending the time required to add 12 periods should they encounter a database without a current calendar.

Additional Notes

The screen shot above shows a line of check boxes; AP for Accounts Payable, AR for Accounts Receivable, FA for Fixed Assets, WO IC for Work Order Inventory Control, SO for Sales Order, GL for General Ledger, and year closed. When checked these show that the corresponding module has been closed. Once all modules are closed the year may be closed. When a module has been closed, transactions cannot post to that module. The process of closing modules and periods should be controlled by accounting procedure.

Throughout the system, 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.

The Transaction Date defaults from the system date (normally today's date) as set by the system

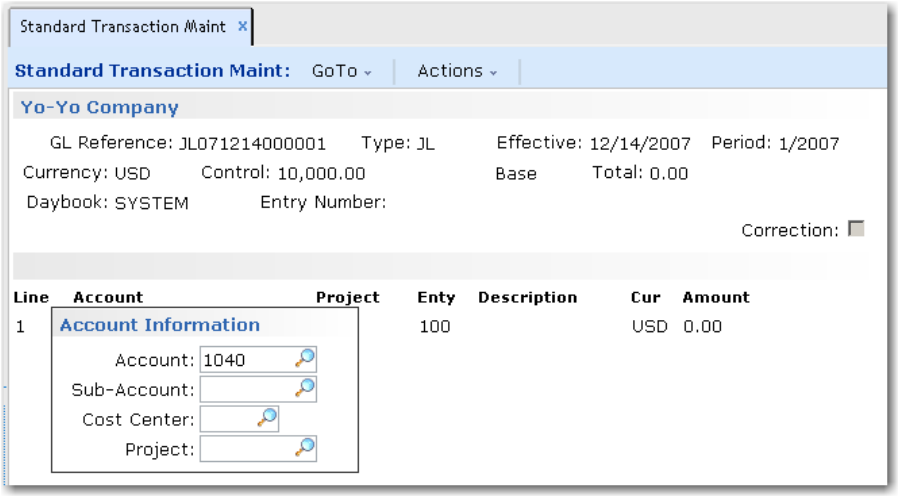
administrator. The user may set the GL effective date to a different date in special situations. Note that the system maintains both dates.

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.

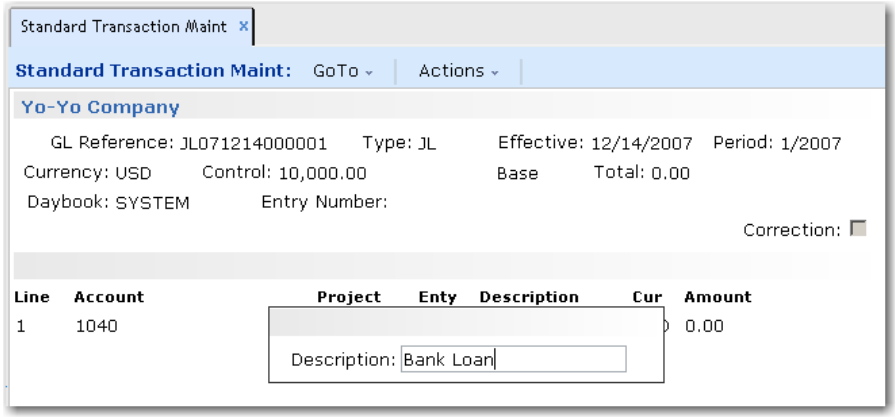
Fiscal years may correspond to a calendar year or they may span calendar years. For example, a fiscal year may begin July 1 and end June 30 of the following year.

Enter Start-Up GL Account Balance

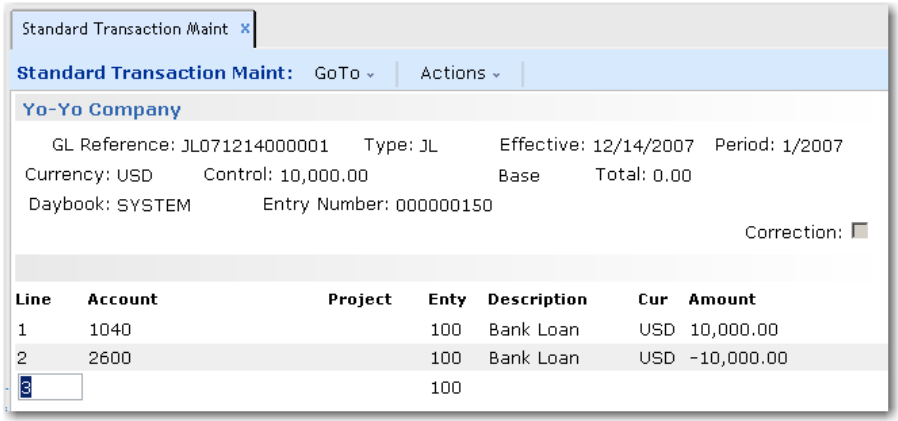
Yo-Yo Company has secured a loan of $10,000. Using Standard Transaction Maintenance, the Finance Department enters the $10,000 loan in a Cash account (asset account 1040) and makes a balancing entry of -$10,000 in a Long-Term Debt account (liability account 2600).



Note As the transaction is entered, a popup window will appear on the account field which shows the complete GL account structure of account code, sub-account, cost center and project. For this activity use the account code only.



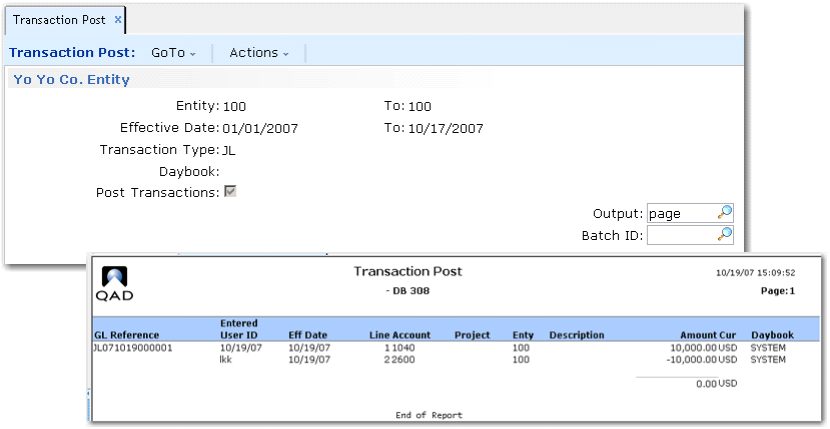
An additional pop up appears to entry a description of the transaction.



When the screen appears as above, click Next to advance to line three, and then click Back to complete the transaction.

POST TRANSACTION

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



Additional Notes

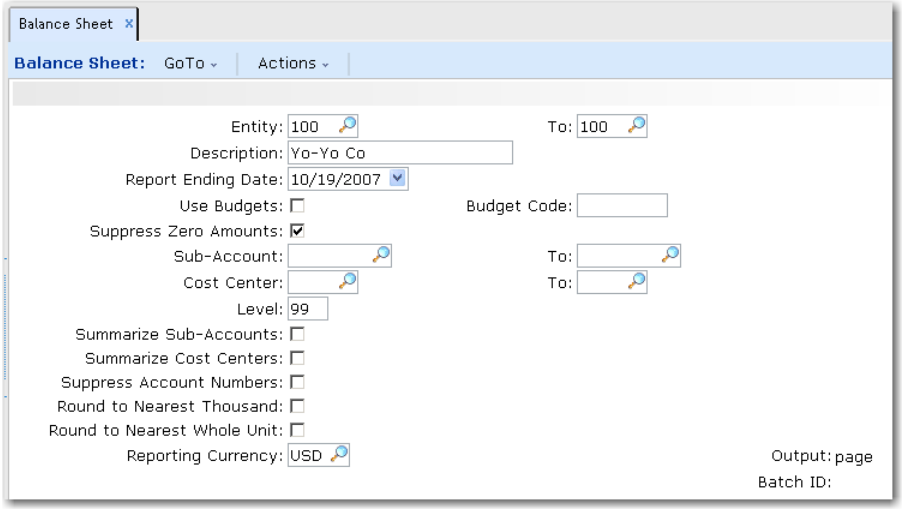
To be posted, transactions must be for active accounts, sub-accounts, cost centers, and projects; balanced (debits must equal credits); and for an open accounting period.

The output of the transaction post process is a report that you may print or view on your monitor screen. It should look like the image below. Your GL Reference number will be different. The reference number is system generated and is a date code; 071019 in the example below, prefixed with JL (Journal Ledger), and followed by a sequential number 000001, in this case, indicating this was the first JL reference of the day, on this system.

Note Some of the JL reference numbers and dates for transactions shown in these examples may be different as the screen shots were made at different points in time.

PRINT BALANCE SHEET

Using Balance Sheet, let's look at Yo-Yo Company's balance sheet as of today's date. Set the output field to page to view the report on your monitor.



The balance sheet print-out is shown below. Your balance sheet should look like this at the end of the activity.

QAD

Yo-Yo Co

Balance Sheet

Yo-Yo Co

Reporting Currency: USD
Exchange Rate:

		Balance as of 10/19/07
ASSETS		
CURRENT ASSETS		
CASH		
1040	CASH	10,000.00
TOTAL CASH - USD		10,000.00
CASH - FOREIGN		0.00
TOTAL CASH		10,000.00
RECEIVABLES		
ACCOUNTS RECEIVABLE		0.00
DRAFTS RECEIVABLE		0.00
INTERCOMPANY RECEIVABLES		0.00
TOTAL RECEIVABLES		0.00
TOTAL CURRENT ASSETS		10,000.00
FIXED ASSETS		0.00
TOTAL ASSETS		10,000.00
LIABILITIES & EQUITY		
LIABILITIES		
CURRENT LIABILITIES		
TAXES PAYABLE		0.00
TOTAL CURRENT LIABILITIES		0.00
LONG TERM LIABILITIES		
2600	LONG TERM DEBT	10,000.00
TOTAL LONG TERM LIABILITIES		10,000.00
TOTAL LIABILITIES		10,000.00
EQUITY		0.00
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 equity, and they do on this balance sheet.

How to Read

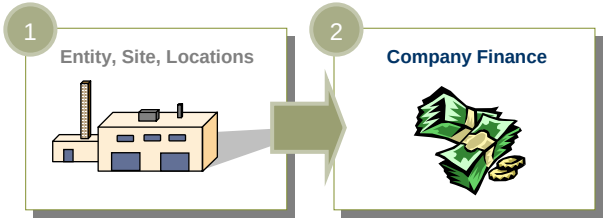
This report prints format headings based on the descriptions entered for format positions in the Format Position Maintenance function. Amounts are shown for all accounts at the appropriate level. Totals are given for each format position heading.

Format Positions on Income Statements and Balance Sheets

Format positions control the organization of the balance sheets and income statements. The field Level controls the amount of detail displayed on the resulting report. 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.

Note Setting up format position codes is beyond the scope of this course, however, it is important to know that the format or layout of the financial reports is completely user defined; it is not controlled by the account code, but by a separate format position code that has its own label and is linked to the account code. The user also controls which format positions sum into which other position codes.

REVIEW



- **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

- **GL calendar**
  GL Calendar Maintenance
- **Standard transaction (loan)**
  Standard Transaction Maintenance
- **Post transaction to GL**
  Transaction Post
- **Balance sheet**
  Balance Sheet

In this chapter, basic financial concepts have been covered and observed how those work in QAD Enterprise Applications. 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 2

Setup Company Finance in General Ledger

Note In processing your activities refer to the preceding example pages for the screen setup if you are unsure of the fields the various values go into.

Verify that the General Ledger has a current calendar.

Use *GL Calendar Maintenance, 25.3.4*

- Year = [current year]
- Period = [use up/down scroll arrows to verify valid dates for current month]

Note If you find your training database does not have a GL calendar for the current year, as a short cut for this course you could add one GL period that covers the entire year.

- Year = [current year]
- Period = [add 12 periods]; click Next
- Period Start = [first date of GL period being defined]
- Period End = [last date of GL period being defined]

Enter Bank Loan

Use *Standard Transaction Maintenance*, 25.13.1 to document the $10,000 loan received from the bank.

Key fields to populate are:

- GL Reference. click Next; the system will create number.
- Currency = USD; click Next
- Control: 10,000; click Next

Note Your GL Reference number will be different than the one shown in the previous example. The reference number is system generated and is a date code; 071019 in the example below, prefixed with JL (Journal Ledger), and followed by a sequential number 000001, in this case, indicating this was the first JL reference of the day, on this system.

Enter the information in the appropriate fields as show in the table below, clicking Next to progress through and save each line until you reach line 3, then click Back to save and exit.

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

Post Transaction to General Ledger

Use *Transaction Post, 25.19.16*

Key fields to populate are:

- Entity = 100 to 100
- Effective Date = (today's date to today's date)
- Transaction Type = JL
- Post = Yes (checked); click Next
- Output = page

Use *Balance Sheet, 25.15.8* to view a balance sheet for your entity with today as the ending date.

- Entity = 100 to 100
- Accept all other defaults; Click Next
- Output = page; Click Next

Note You do not need to print a hard copy of the balance sheet but you should verify that the data are correct before proceeding with the following activities. Your balance sheet should look like the one in the example.

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

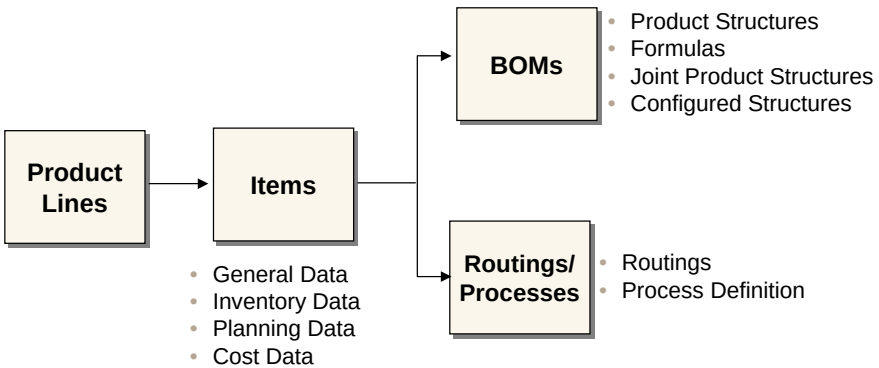
Key Concepts

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

In very common terms this is like a recipe. Most recipes have a list of ingredients (the bill of material) and a list of steps telling you how to combine the ingredients and how to process them (the routing).



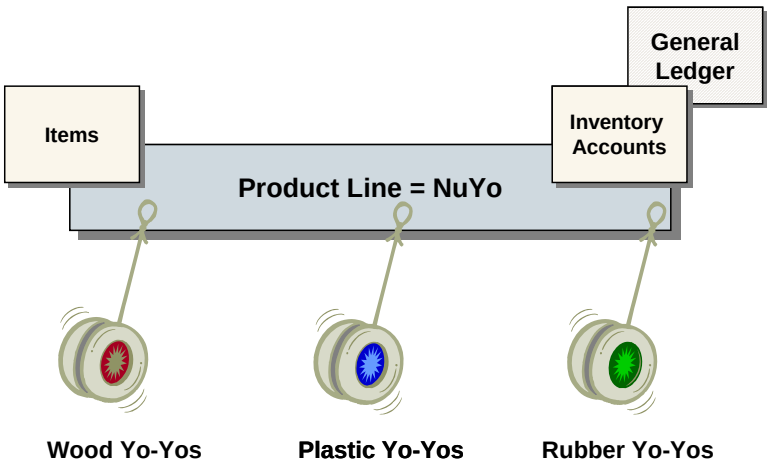
On the next few pages, we'll look at each step in the process flow shown in the figure above. We'll begin by looking at product lines, followed by items and bills of material (or product structures). Routings will be discussed in Set Up Routings in Set Up Manufacturing Environment.

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.

Note It is also worth noting that almost every browse, inquiry and report in the system can be sorted on product line.



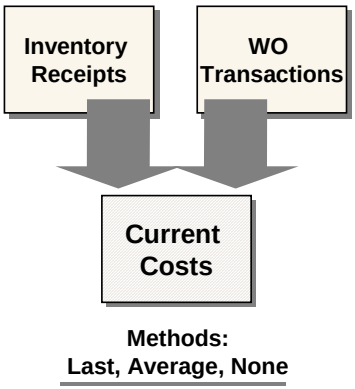
In this illustration we are showing three different types of Yo-Yo in one product line. This means that all costs and revenues for these items will be collected in the same set of GL accounts. Your company could decide that the nature of the materials and the manufacturing processes used are different enough that you would like three product lines based on the material the Yo Yo is made from. This would allow you to use different GL accounts, or sub-accounts, to track the costs and revenues.

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.

Current costs are the costs for producing your products based on inventory receipts and work order labor transactions. These reflect what you are currently paying your suppliers for purchased materials, and the current labor hours being consumed in producing the items at the work center labor rates.



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.

Cost Set

Identifies cost files in the system. The system 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.

Note The use of the term actual is a convention adopted by cost accountants and may not be an actual cost in the strict sense of the word. For example the labor cost of an item is the hours charged times the work center labor rate. The work center labor rate usually reflects an average rate for all workers in the work center, rather than the actual rate of the person who worked on a specific work order.

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. Standard costs are usually established once a year.

GL Cost Set.

The system keeps the standard cost in a cost set named the GL Cost Set; the name reflects the fact that these are costs used to value all inventory transactions in the general ledger.

Variance.

In a standard cost system the variance is the difference between the standard cost and the current cost. Variance is usually reported on a monthly basis

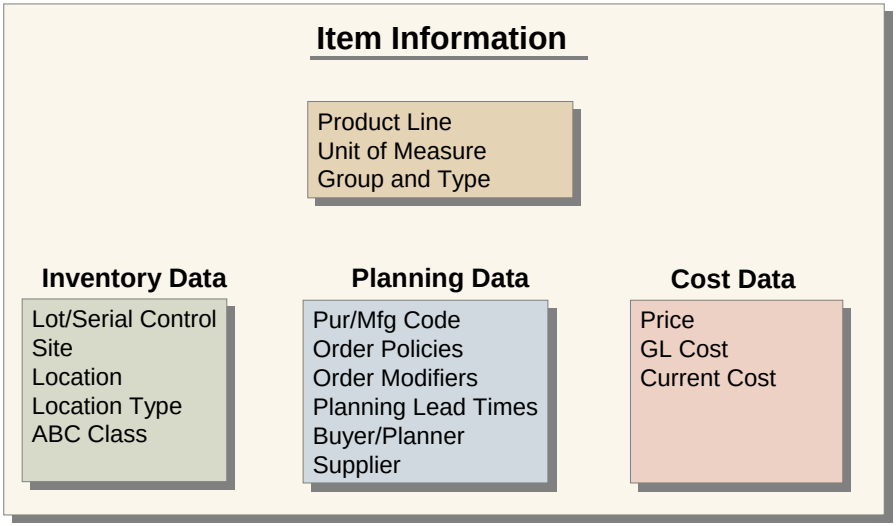
ITEM INFORMATION

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. Later we will see that much of the data for an item can be different at each site.

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 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. (There are also separate functions to add or maintain; item data, inventory data, planning data, and cost data). This allows different functional areas such as production planning and cost accounting to have update access to their data only.

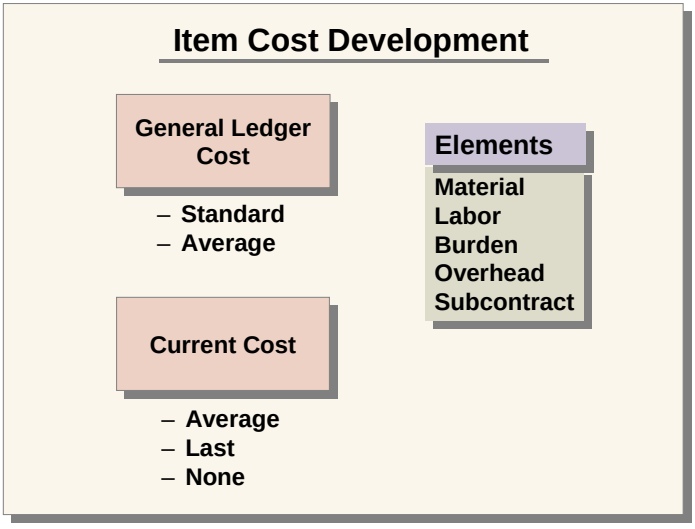


We'll take a closer look at the cost data next.

Item Cost Development

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.

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 the system.

Terminology

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.

Bill of Material (BOM)

The BOM is a listing of all sub-assemblies, components, and raw materials of a parent assembly; it shows the quantity of each required to make one parent assembly. The BOM can also be called a product structure or formula, and is 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 components and raw materials of manufactured products in the system.

Product Structures

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. Product structures are often referred to as bills of material.

Formulas

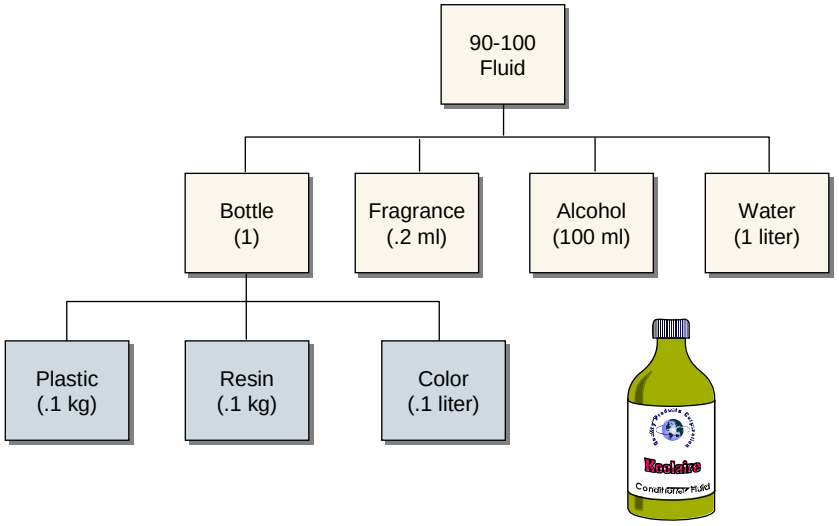
Formulas identify ingredient usage as a quantity per batch or percent of batch. These are vital to the planning process. These relationships are defined in either Product Structure Maintenance or Formula Maintenance. Formulas are often referred to as recipes.

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

Parent/ Component Relationships

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.



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.

Alternate Product Structure or Formula

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 BOM code uniquely identifies a product structure or formula.

Example

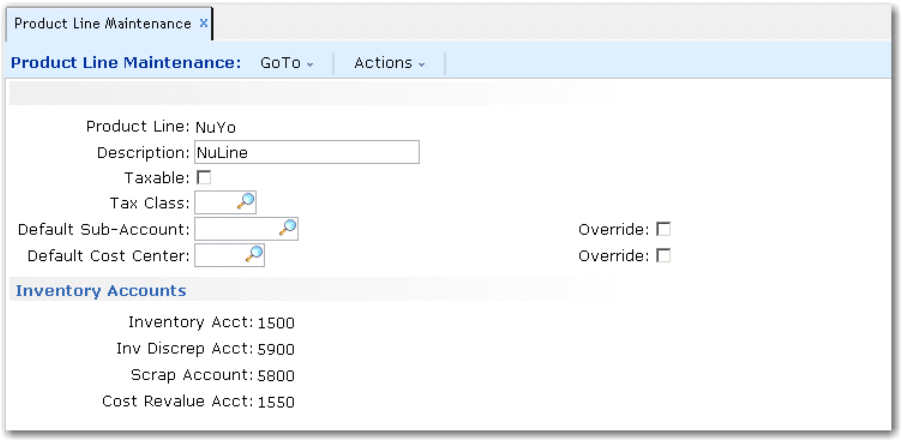
In this example, we'll see how Yo-Yo Company's Manufacturing Department:

- 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.

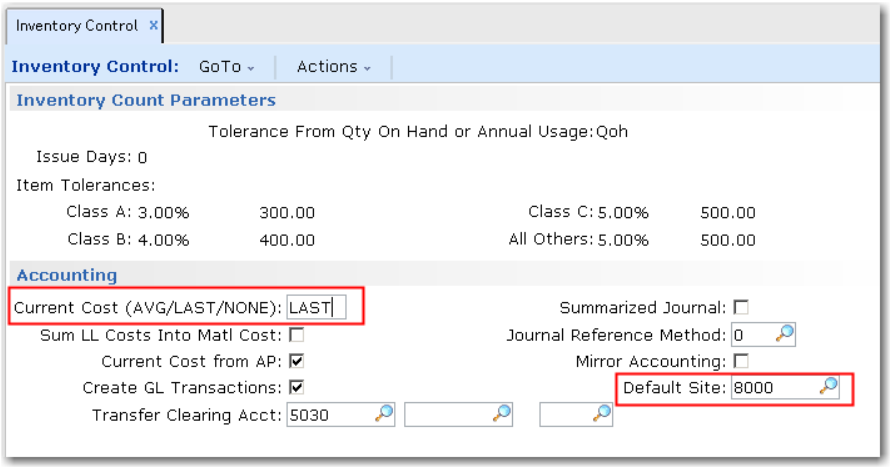


Note Once your cursor is in the bottom frame (Inventory Accounts) if you continue to click Next the system will take you through four more frames of account code structure. These accounts are defaulting from the Domain/ Account control and should be accepted as is.

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.

Set the default site to your site 8000. This will pre-fill the site field on many transactions saving you some effort.



Additional Notes

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.

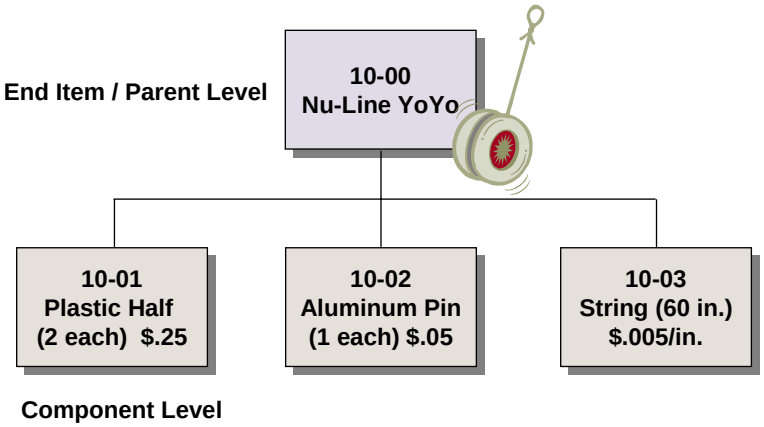
Create GL Transactions

Create GL Transactions is set to Yes unless you are using the periodic method of inventory accounting. In periodic inventory accounting, the period ending 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.

Note Periodic inventory accounting is essentially an obsolete concept. Only the smallest business could manage with this technique. This is a financial inventory method giving only the value of the inventory. If you wanted to know how much of what items you had on hand you would need to do a physical inventory count.

ENTER ITEM INFORMATION

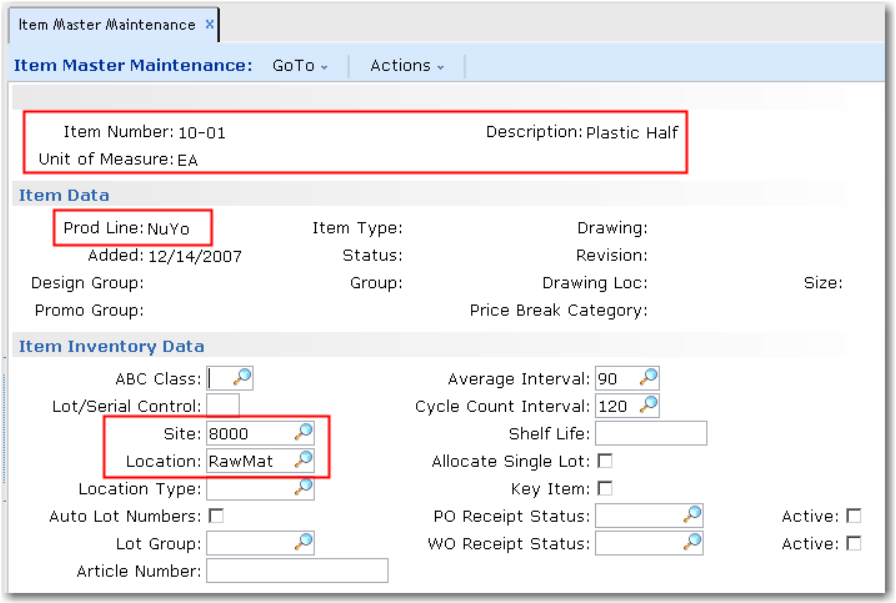
The product structure of the yo-yo is shown below. Although the product structure is actually set up in the system later, it is useful to see the relationship between the parent item and its components now as item information is entered in the system by Yo-Yo Company.



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.

Note In your activity you will need to setup all four item numbers. All the items belong to product line NuYo. All the items have the unit of measure of ea = each, except the string. The unit of measure for the string is in = inch.

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.

Note Unit of measure and product line are the only fields (besides the item number itself) that are required by the system. Units of measure are critical to both inventory control and costing. Careful consideration should be given to the units of measure you choose to use.

Note Item type, item status and Item group are optional and user defined. If you choose to use them plan carefully as codes offer additional capability in sorting browses, reports and inquires. Item status is designed to be used in conjunction with inventory status code to help control inventory aspects of product life cycle management. If you choose to use these codes their use can be made mandatory and a pop of window can be provided to allow users to select valid codes from a list.

In the Item Inventory Data frame, site 8000 is entered; this will appear as the default site. In the Location field, RawMat is entered, which will appear as the default inventory location for this item, for all inventory transactions at any site.

Note The default site and location can be over ridden on any transaction by the user by simply typing over the default value and entering the site and or location to be used for the current transaction.

Item Data Frame

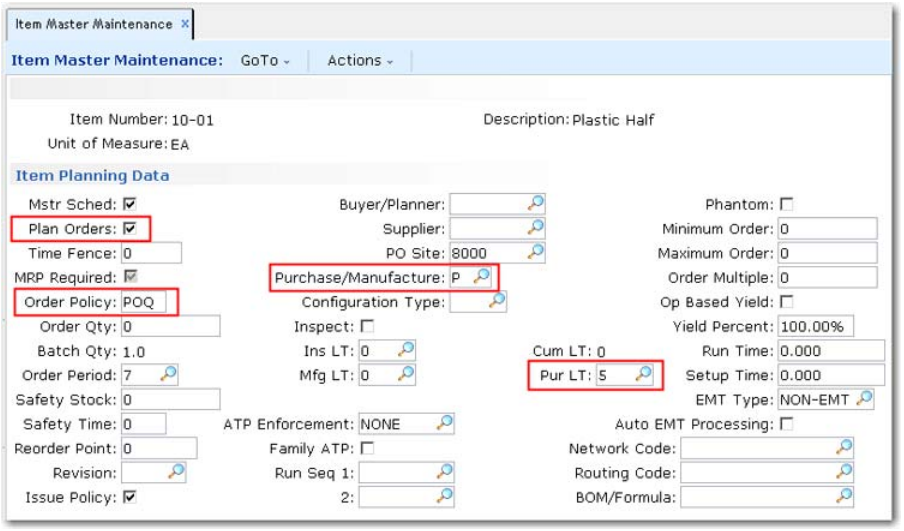
Additional Notes

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.

Item Planning Data Frame



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.

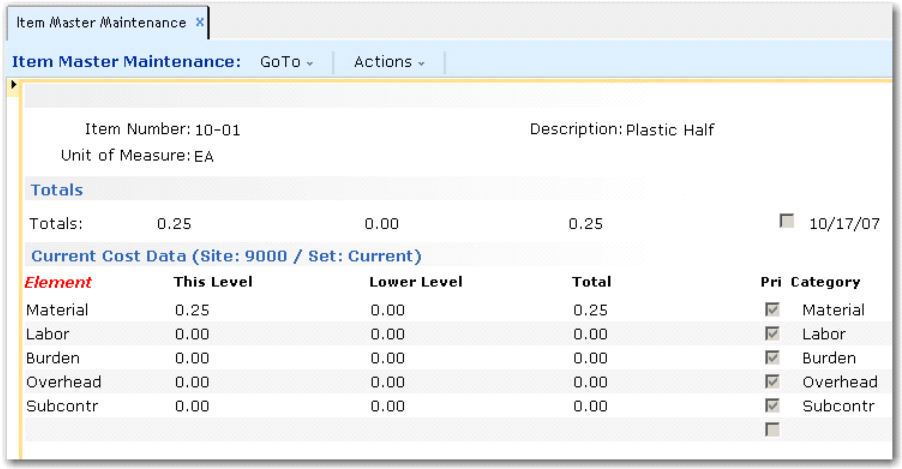
The Order Policy determines the rules for planning orders. The ordering rule Yo-Yo Company applies to this item (10-01) is Period Order Quantity (POQ). This means that MRP calculates demand for this item over the number of calendar days specified as the Order Period (which is 7 in this example) and creates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

Note Order policies and how they calculate order quantities are covered later in the course.

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.

Note More generically the Purchase/Manufacture field defines the source for this item at this site. Its other values and how they work are covered in more detail later in the course.

Item Cost Data Frame



The item cost section is divided into three sections: price, general ledger cost, and current cost. The three frames appear sequentially with repeated clicks of the Next button or use of the Enter key.

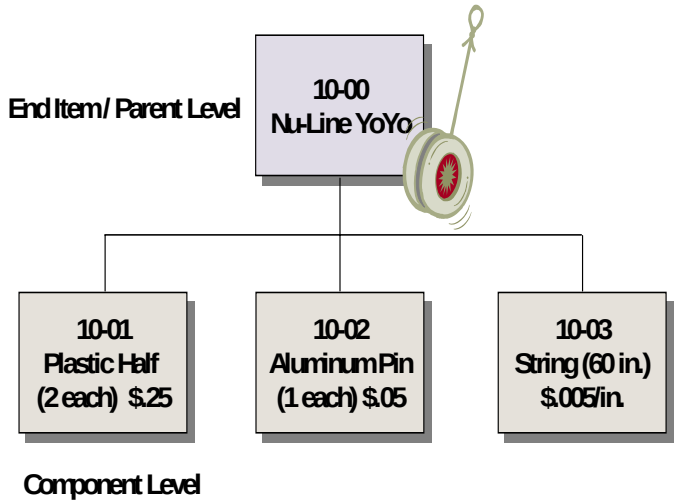
For this example, we're concerned with the Current Cost Data frame, which is the third frame.

Referring back to the product structure, 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.

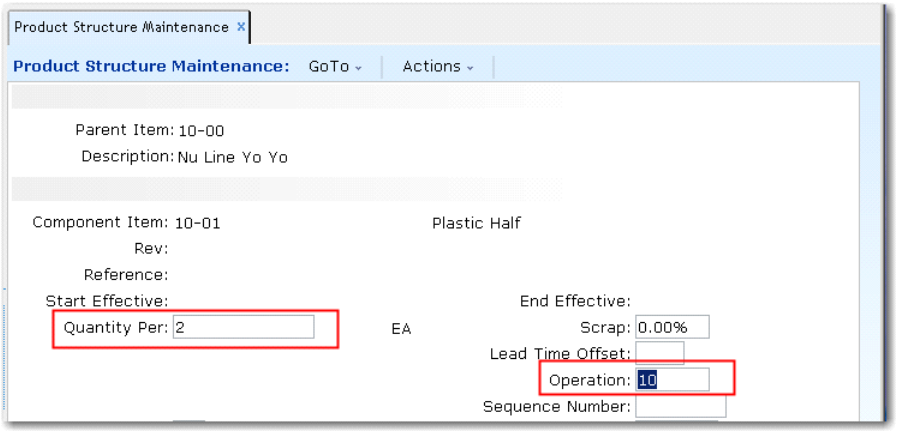
Note The same process is used to add the parent item Yo-Yo, 10-00, and the other components of the Yo-Yo.

SET UP PRODUCT STRUCTURE

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



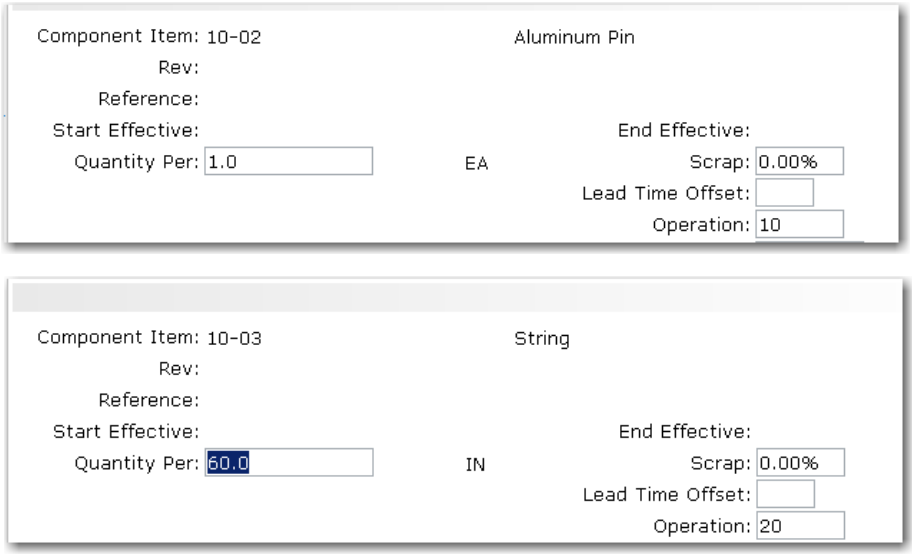
Notice that there is a parent item (10-00) and there are three component items (10-01, 10-02, 10-03). In this example, we'll see how Yo-Yo Company added the three component items to the parent, 10-00.



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 case of the plastic half. 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.

The second and third components of the Yo-Yo are added in the same way. Note the quantity per on the string.

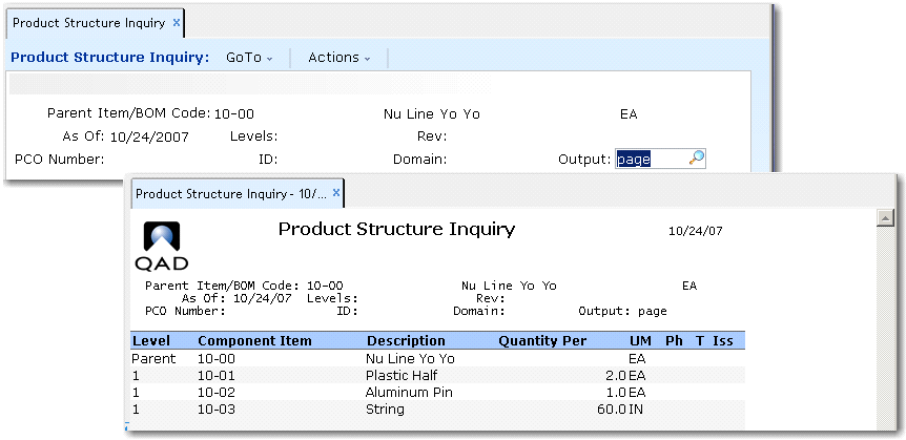


Effective Dates

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. The effective in date defaults to the system date. By leaving effective out date blank the item will be effective until that date is changed.

Additional Notes

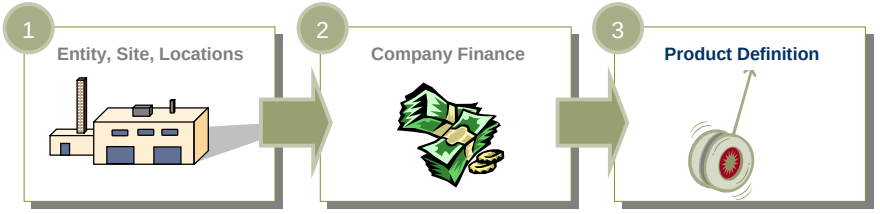
Review product structure in Product Structure Inquiry



Once the product structure is defined, it can be reviewed in Product Structure Inquiry. The screen above shows the request setup. The output to page in intended for display on your terminal screen. Depending on your system setup you can direct the output to printers, files, fax machines or e-mail.

.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



- **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*

- **GL calendar** *GL Calendar Maintenance*
- **Standard transaction (loan)** *Standard Transaction Maintenance*
- **Post transaction to GL** *Transaction Post*
- **Balance sheet** *Balance Sheet*

- **Product line** *Product Line Maintenance*
- **Current cost method** *Inventory Control*
- **Item data** *Item Master Maintenance*
- **Product Structure** *Product Structure Maintenance*

In this chapter, we saw how products are defined in the system, 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 3

Set Up a Product Line

Note Check the screen shots in the example if you are unsure how to fill in the data fields for these activities.

Use *Product Line Maintenance, 1.2.1* to create a new product line, NuYo.

This will be the product line for the Nu-Line Yo-Yo and all components associated with it.

Key fields to populate are:

- Product Line = NuYo; click Next
- Description = NuLine; click Next
- Accept all remaining defaults

Review the account numbers. Where did this default data come from? Accept the default accounts and update the record.

Modify Inventory Control

Use *Inventory Control, 3.24*.

- Accept defaults in the top frame; Click Next
- Current Cost = Last
- Default Site = 8000; click Next
- Pickinig Order = [default]; click Next

Define End Item

Use *Item Master Maintenance, 1.4.1*

Key fields to populate in Item frame are:

- Item Number = 10-00 (end item); click Next
- Unit of Measure = EA
- Description = Nu-Line Yo-Yo; click Next

Key fields to populate in Item Data frame are:

- Product Line = NuYo
- Accept default values for all other fields; click Next

Key fields to populate in Item Inventory Data frame are:

- Site = 8000 (in Item Inventory Data frame)
- Location = FinGood, click Next
- Click next at the Item Shipping Data frame

Key fields to populate in the Item Planning Data Frame are:

- Mstr Sched = Yes (check)
- Plan Orders = Yes (check)
- Order Policy = POQ
- Purchase/Manufacture = M
- Use default values for all other fields, click Next

Key fields to populate in the Item Price Data frame is:

- Price = 10.00
- Use default values for all other fields, click Next
- Click next three (3) times through the Cost Data frames.

Item cost will be calculate later.

Define Component Items

Use *Item Master Maintenance, 1.4.1* to add your component items to your database.

First component item: Key fields to populate are:

- Item Number = 10-01 (component item); click Next
- Unit of Measure = EA
- Description = Plastic Half; click Next
- Product Line = NuYo (in Item Data frame);click Next
- Site = 8000 (in Item Inventory Data frame)
- Location = RawMat; click Next twice

- Plan Orders = Yes (checked) (in Item Planning Data frame)
- Order Policy = POQ
- Purchase/Manufacture = P
- Pur LT = 5; click Next

Warning All cost data is entered in CURRENT Cost Data screens. Advance past the GL Cost Data frame to the Current Cost Data Frame

- Material; click on the word Material
- This Level = 0.25 (in CURRENT Cost Data frame); click Next

Second component item: Key fields to populate are:

- Item Nu10.0mber = 10-02 (component item); click Next
- Unit of Measure = EA
- Description = Aluminum Pin; click Next
- Product Line = NuYo (in Item Data frame);click Next
- Site = 8000 (in Item Inventory Data frame)
- Location = RawMat; click Next
- Plan Order = Yes (checked) (in Item Planning Data frame)
- Order Policy = POQ
- Purchase/Manufacture = P
- Pur LT = 5; click Next

Warning All cost data is entered in CURRENT Cost Data screens. Advance past the GL Cost Data frame to the Current Cost Data Frame

- Material; click on the word Material
- This Level = 0.05; click Next

Third component item: Key fields to populate are:

- Item Number = 10-03 (component item); click Next
- Unit of Measure = IN
- Description = String; click Next
- Product Line = NuYo (in Item Data frame); click Next
- Site = 8000 (in Item Inventory Data frame)

- Location = RawMat; click Next
- Plan Order = Yes (checked) (in Item Planning Data frame)
- Order Policy = POQ
- Purchase/Manufacture = P
- Pur LT = 5; click Next

Warning All cost data is entered in CURRENT Cost Data screens. Advance past the GL Cost Data frame to the Current Cost Data Frame

- Material; click on the word Material
- This Level = 0.005 (this is the price per inch; that is the stocking unit of measure); click Next

Define Parent/Component Relationships for Items

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

Use *Product Structure Maintenance, 13.5* to define the parent/component relationships for your product.

> ***Note*** Product Structure Maintenance has two interfaces. The instructions in his course covers the Desktop interface as opposed to the drag-and-drop interface

Select the *Product Structure Maintenance* item in the Applications menu.

- Right-click the menu item and select the Properties
- Select the “Program” tab.
- In the “Open With” dropdown menu, select “Desktop (Web Browser)”
- Click Apply, click OK, and Re-launch Product Structure Maintenance

Key fields to populate are:

- Parent Item = 10-00 (Nu-Line Yo-Yo); click Next
- Component Item = 10-01; click Next
- Quantity Per = 2
- Operation = 10; click Next
- Component Item = 10-02; click Next
- Quantity Per = 1
- Operation 10; click Next
- Component Item = 10-03; press Go
- Quantity Per = 60
- Operation = 20; click Next

Use *Product Structure Inquiry, 13.6* to reivew the product strucutre.

- Parent Item/BOM Code = 10-00
- Output = page

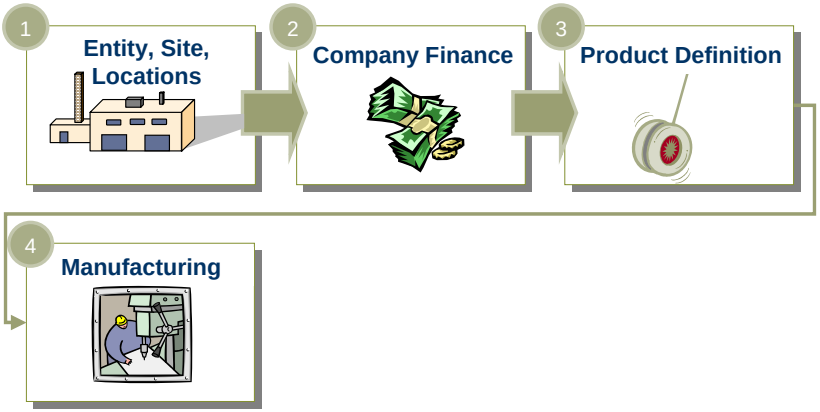
Note The operations will be setup in the next section. When new items are created in manufacturing the product structure and the route are usually developed together, so all the information is available to the person entering item data.

CHAPTER 5

Set Up Manufacturing Environment

Overview

The manufacturing environment in which a product is built will now be examined. The 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

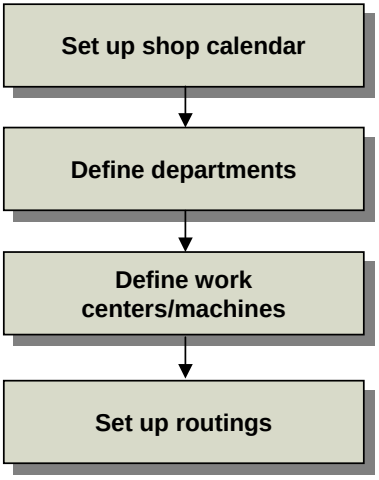
Introduction

Once the items in Item Master Maintenance have been set up, they must be identified as to where they are and how they are manufactured.

This is done by:

- Setting up shop calendars
- Setting up manufacturing departments, work centers/machines
- Defining the manufacturing operations required to produce each of the items

The following pages follow the order shown in the process flow below. The shop calendar will be examined.



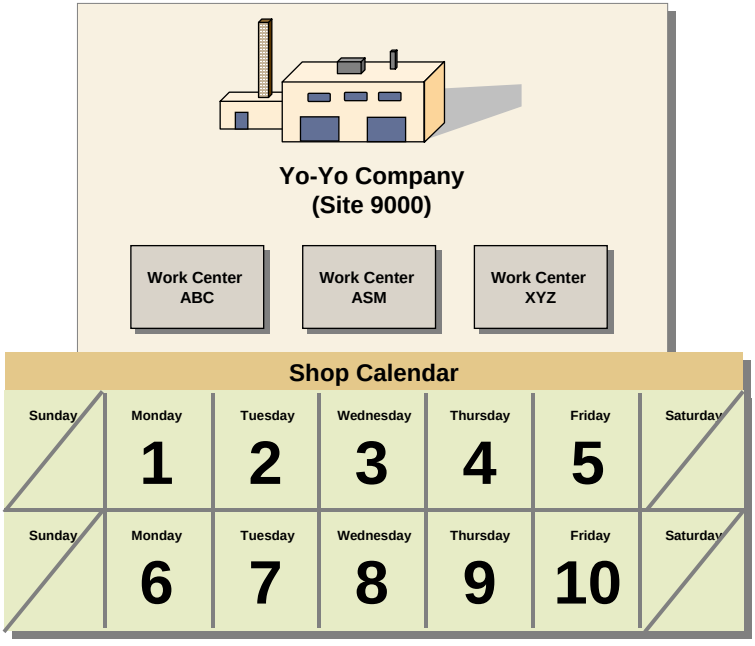
SHOP CALENDAR

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). The calendar determines the hours a work center is available to do work. This information is also used by capacity requirements planning.

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

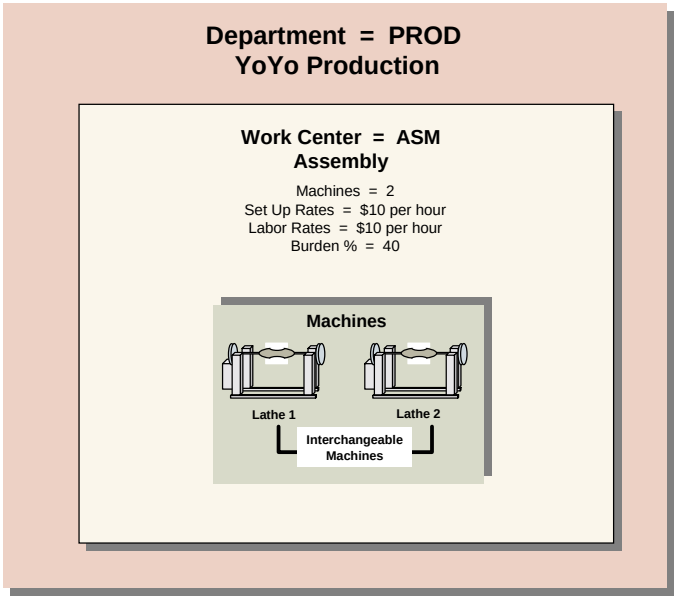
Use Calendar Maintenance and Holiday Maintenance to maintain the calendars.



Calendar maintenance is used to setup a default calendar for all sites. Then calendars are defined for work centers that are different than the default calendar. Then any machines within a work center that have different calendars. A calendar defines whether a day is a work day or not and how many hours per day are available for work.

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

The QAD Enterprise Applications approach to the concept of departments, work centers, and machines is shown below.



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 the system, 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 identical machines the choose can be made to define one work center with multiple machines. In this case the machine (code or number) field is left blank, and the number of machines is entered in the Machines field. When there is more than one identical machines in a work center, the number of machines that can be used for each operation can be specified (parallel production) in the route operation.

If the machines are not completely interchangeable identify each one separately. For example, there are multiple similar machines but they run at different rates. Or perhaps an older machine has a higher rate of rejects. In this case each machine will have a unique machine code. The combination of the work center and the machine will identify a specific machine.

Note While defining unique work center machine combinations allows more precise costing and scheduling, it does limit the ability of the work center supervisor to decide which machines to schedule work on without generating method variances.

ROUTINGS

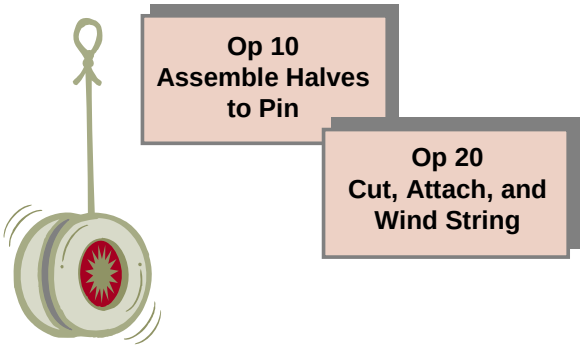
To manufacture an item or product, one or more activities or operations must be completed. The list of required operations is called a routing, which basically defines the process needed to make the item. If a product structure is the list of ingredients in a recipe, a routing is the directions or instructions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

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%)

Note Queue time, setup time, run time, wait time, and move time are all elements of lead time. These will be discussed in the section on routes.

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).



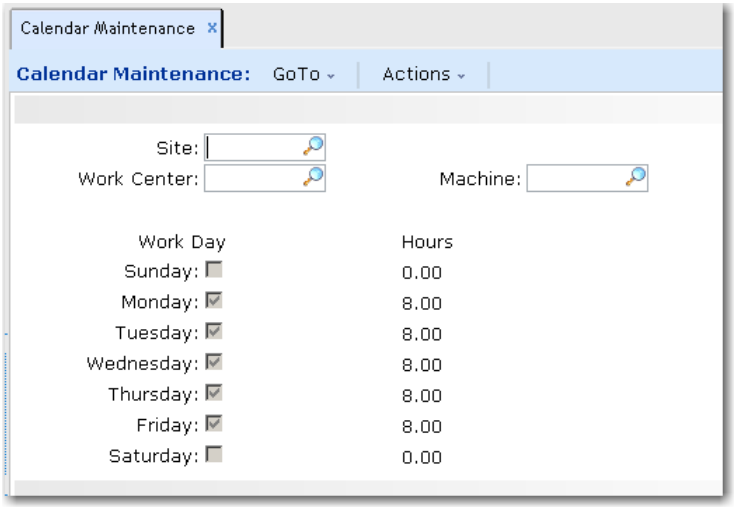
The department and work center codes associated with routing operations link actual production results with capacity planning, cost accounting, and other programs.

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

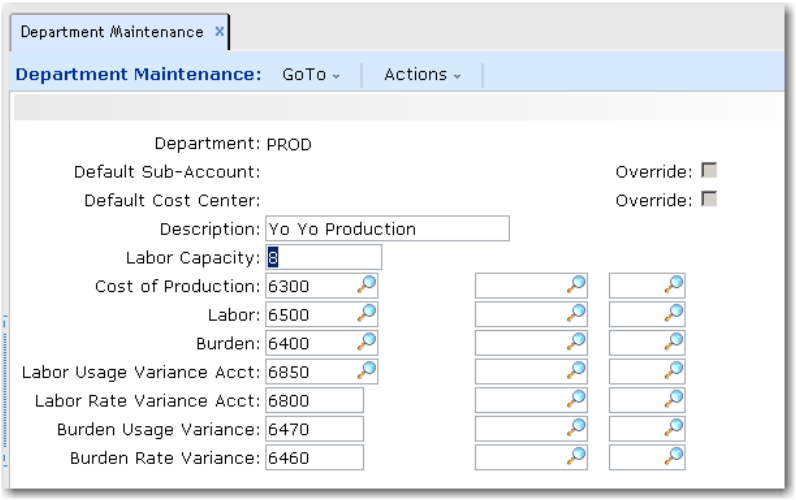


The shop calendar for Yo-Yo Company is set up in Calendar Maintenance. This calendar shows a five day week, Monday - Friday, with eight hours available for fork each day. Because Yo-Yo Company has only one site and work center, it is not necessary to specify site and work center in Calendar Maintenance, so these have been left blank. If additional sites and or work centers are created they will pick up this calendar as a default, but could then be changed to site or work center/machine specific calendars.

Additional Notes

The system 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.

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). This implies that there is only one person in this department. If there were five people in the department we would enter 40 in this field.

Also notice the account codes defaulting from the Domain/Account control - all are manufacturing related.

Note If it is decided a given work center requires cost of production to be booked to a different account or sub-account then a new department must be set up.

Labor Capacity

Additional Notes

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 Requirements Planning (CRP) uses labor capacity to calculate capacity and load by department.

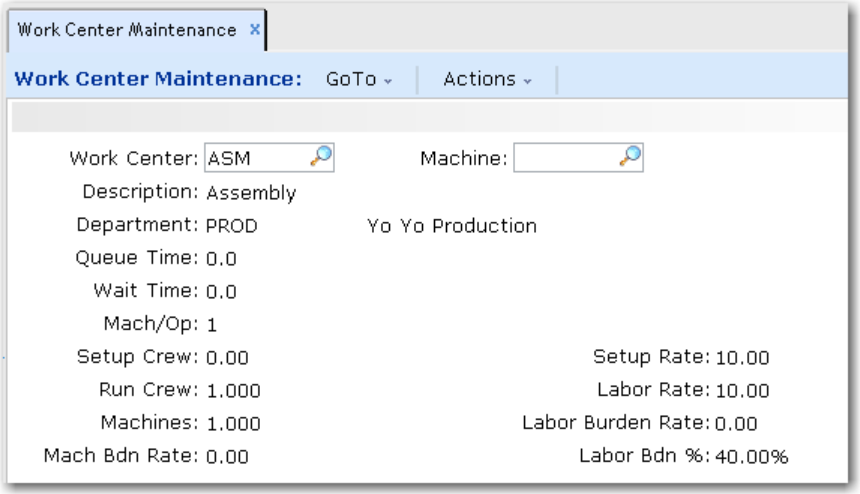
Note Care should be used in setting the department labor capacity value as the system assumes all labor in the department can be used in any work center in the department. This is seldom the case.

Department Accounts

Department account codes are used:

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

DEFINE WORK CENTERS / MACHINES



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.

Machines

Other fields to note are Machines/Operation. This field shows 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

Cost Calculations

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.

Additional Notes

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.

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.

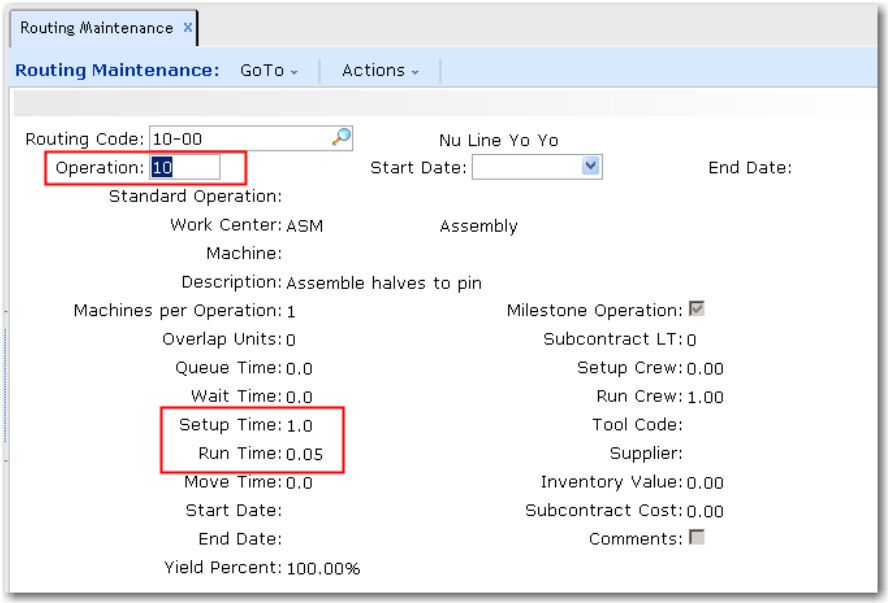
SET UP ROUTINGS

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.

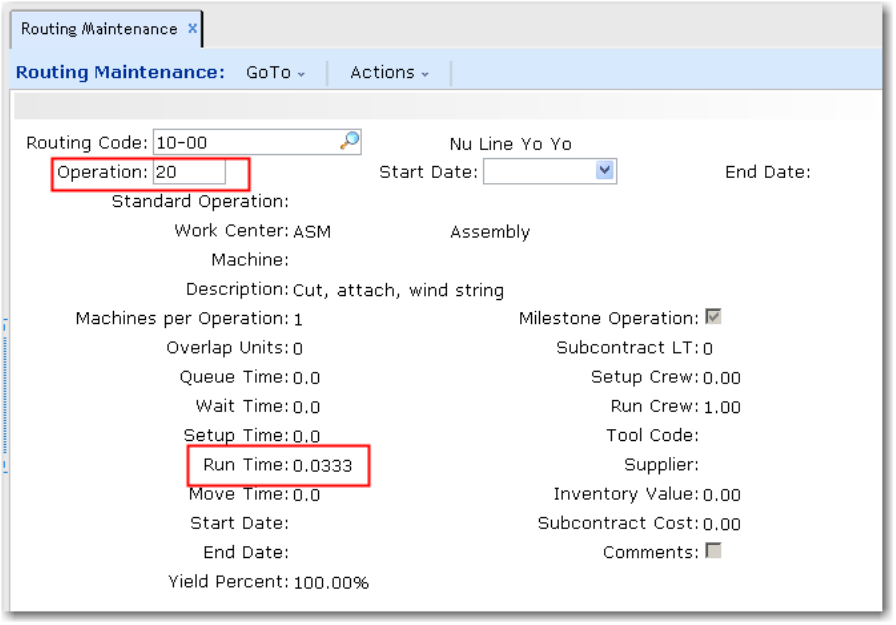
Setup and Run Times

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).



Terminology

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.



Move Time

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

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

A routing operation can be a task preformed by an outside vendor or sub-contractor. In that case this is the number of calendar days it takes to process the standard order quantity at the subcontractor's site. This includes any transit time.

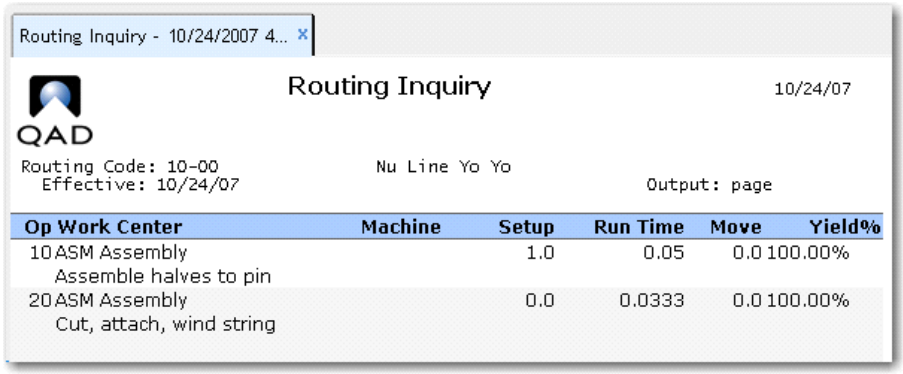
Wait Time

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).

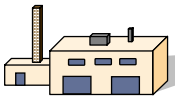
Review results in Routing Inquiry



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

REVIEW

1 **Entity, Site, Locations**



- **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

2 **Company Finance**

- **GL calendar**
  GL Calendar Maintenance
- **Standard transaction (loan)**
  Standard Transaction Maintenance
- **Post transaction to GL**
  Transaction Post
- **Balance sheet**
  Balance Sheet

3 **Product Definition**

- **Product line**
  Product Line Maintenance
- **Current cost method**
  Inventory Control
- **Item data**
  Item Master Maintenance
- **Product Structure**
  Product Structure Maintenance

4 **Manufacturing**

- **Shop calendar**
  Calendar Maintenance
- ***Departments***
  Department Maintenance
- **Work Center**
  Work Center Maintenance
- **Routings**
  Routing Maintenance

In this chapter, it was explained 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 4

Add a Department Record

Use *Department Maintenance, 14.1 to* add a new department record.

Key fields to populate are:

- Department = PROD; click Next
- Description = Yo-Yo production
- Labor Capacity = 8
- Accept the default account numbers and update the record. Where did these account numbers come from?

Add a Work Center Record

Use *Work Center Maintenance, 14.5* to add a work center record.

Key fields to populate are:

- Work Center = ASM
- Machine = [blank]; click Next
- 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

Use *Routing Maintenance, 14.13.1* 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; click Nexto
- Skip Standard Operation; Click Next
- Work Center = ASM
- Machine = [blank]; click Next
- Description = Assemble Halves to Pin
- Setup Time = 1 (hour)
- Run Time = 0.05 (3 minutes)

Accept remaining defaults; Click Next at the WIP Item pop-up

- Enter the second operation run time. Update the record, and exit.
- Operation = 20; click Next
- Work Center = ASM
- Machine = [blank]; click Next
- Description = Cut, Attach, Wind String
- Setup Time = 0
- Run Time = 0.0333 (2 minutes)

Accept remaining defaults; Click Next at the WIP Item pop-up

Use *Routing Inquiry, 14.13.3* to make sure that both operations and the correct set-up and run times display.

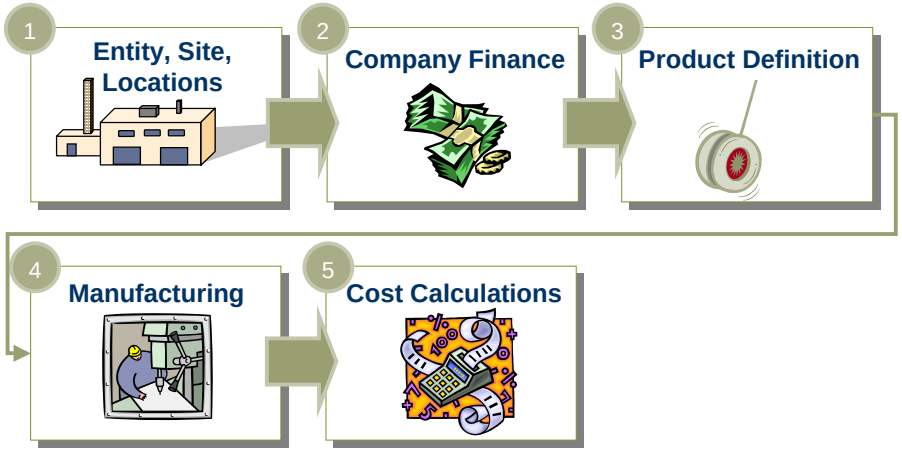
- Routing Code = 10-00
- Output = page

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

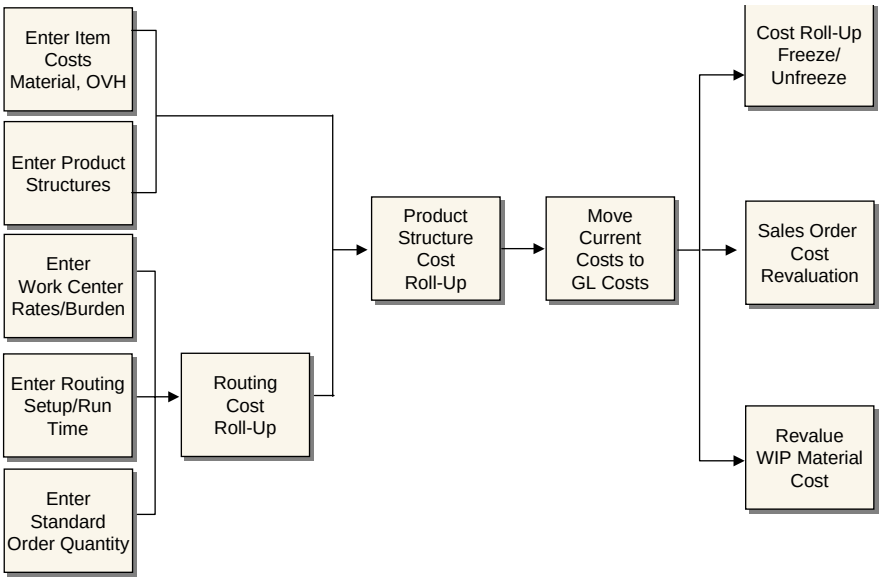
Learning Objectives

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



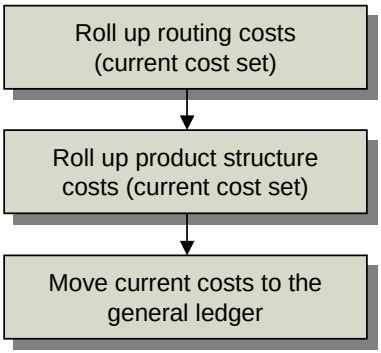
Sources of Cost

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

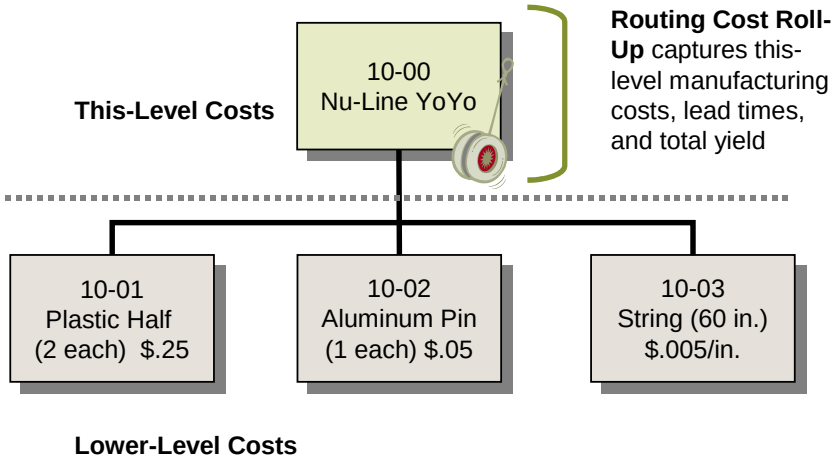
- Component quantity per and scrap rates entered in the Product structure (BOM)
- Labor and set-up rates entered for each work center
- Variable burden at each work center
- Manufacturing setup and run times entered on each routing operation
- Yield at each operation
- Subcontract cost per unit entered 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.



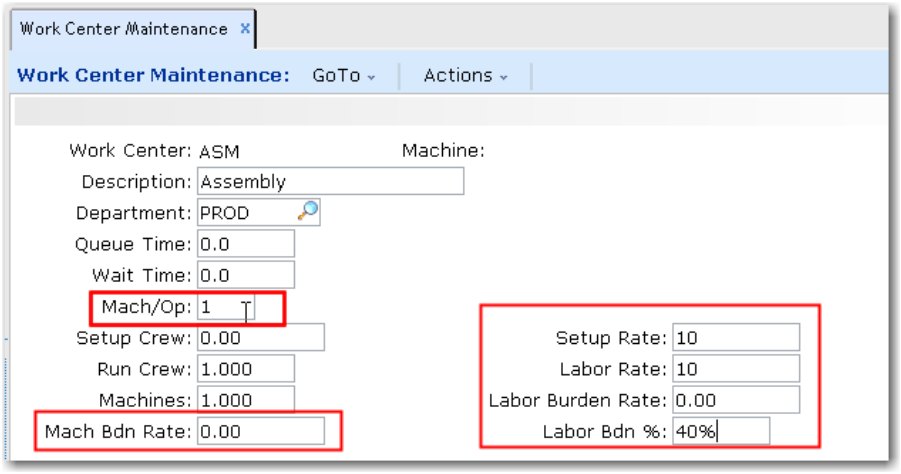
Standard Order Quantity

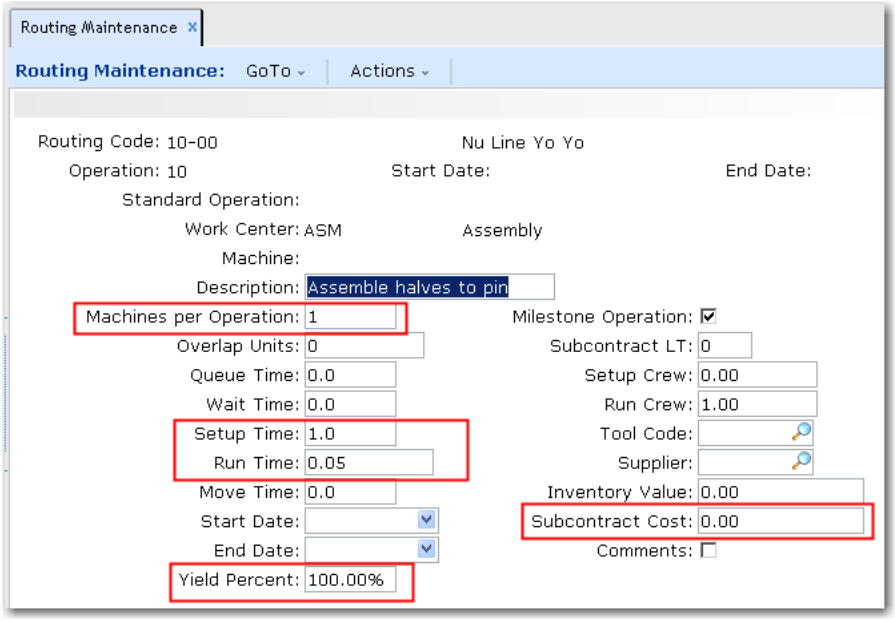
When manufacturing costs are calculated using Routing Cost Roll-Up, setup costs are divided by a standard order quantity. Setup and run times are based on this quantity, which is entered in Item Planning Maintenance.

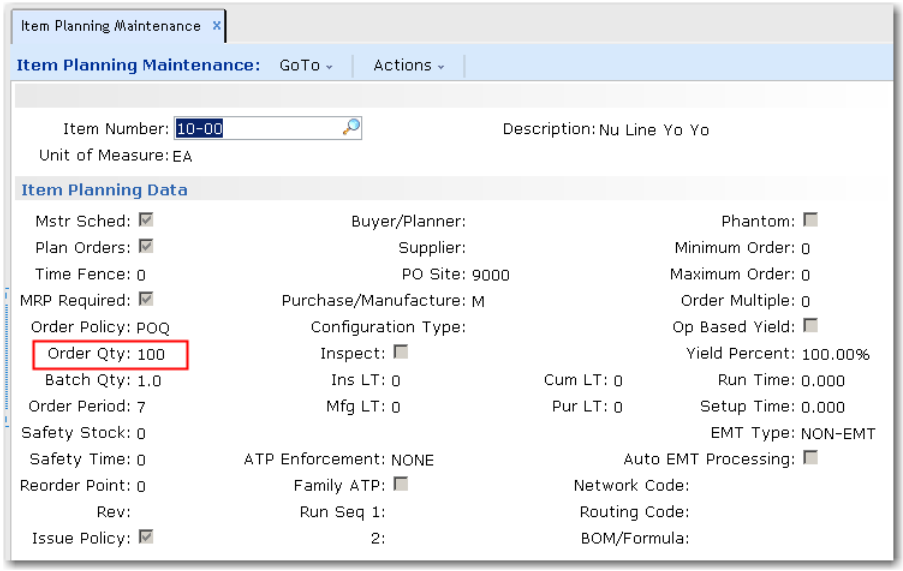
Routing Cost Roll-Up Calculations

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. in the case of a sub-contract operation the route provides the per item cost of the outside processing. 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.







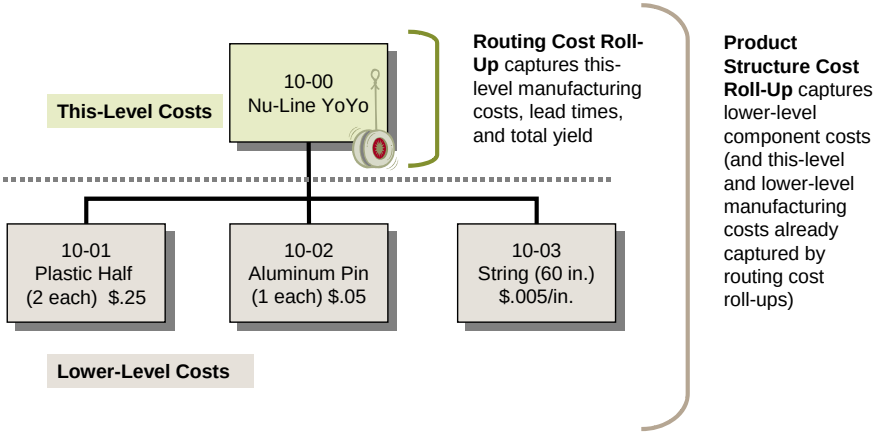
Note The routing and product structure roll ups are initiated by the user. Some business have only one or the other hence don't need both. However, in the case where you do have both (the normal situation for manufacturers) it is very important to do the route roll up first, then the product structure roll up. If there are operation yields in the route, these need to be accounted for before determining the materials required from the product structure.

Next, product structure cost roll-up will be examined.

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.

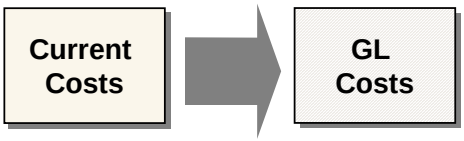
Components have information for the quantity required, expected scrap percentage, and the operation where they are required. Purchased items have material and overhead costs. Manufactured items also have labor, burden, and subcontract costs. Product Structure Cost Roll-Up uses these costs to calculate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



Move Current Cost Set to GL Set

As discussed earlier, the system 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.

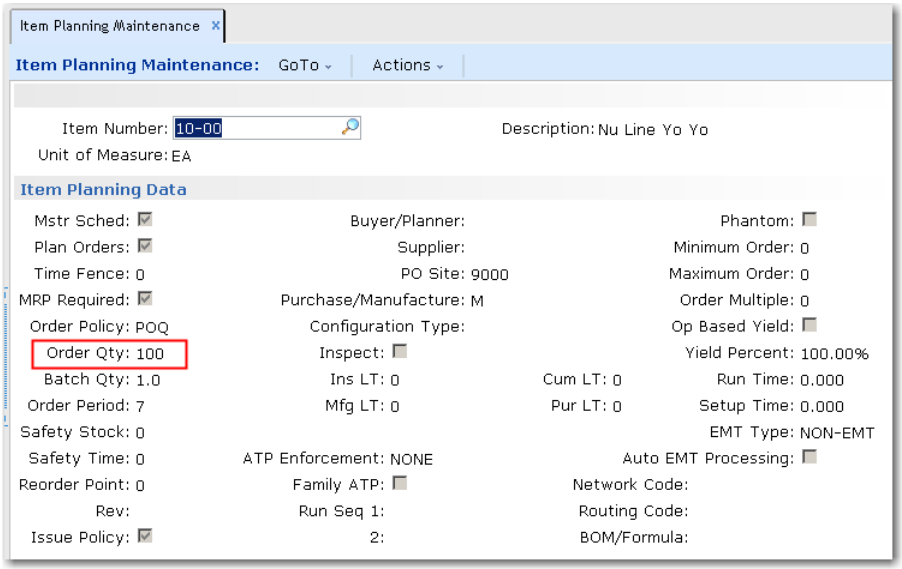


Example

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

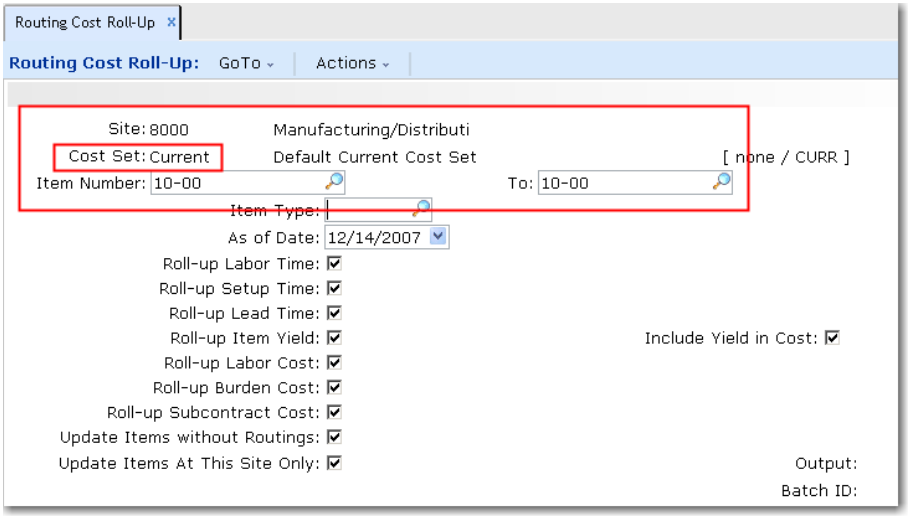


Review Standard Order Quantity

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).

It is important that the standard order quantity be what you will normally produce in a single lot, batch or work order. In this case the setup cost will be spread over the production of 100 units. If we only make 50 at a time the setup cost per unit will double.

ROUTING COST ROLL-UP



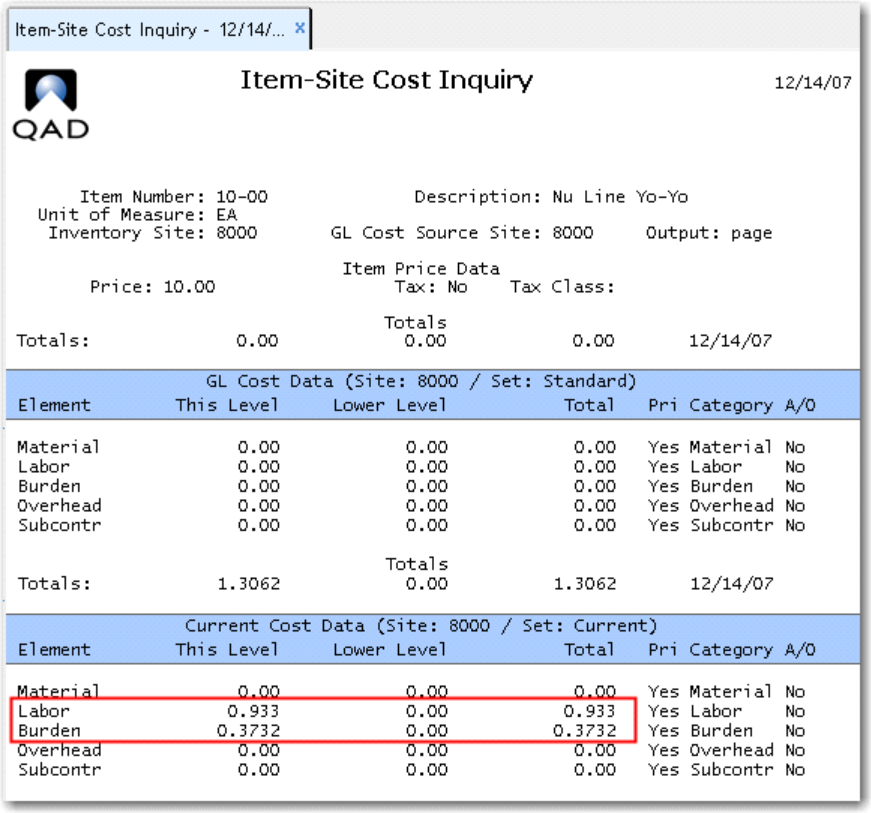
Using Routing Cost Roll-Up, Yo-Yo Company is ready to roll up its routing costs for item 10-00 (plastic yo-yo) at site 8000. Notice that Yo-Yo Company is rolling up the Current Cost Set, not the GL Cost Set.

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.

Verify Current labor and burden costs



Item-Site Cost Inquiry - 12/14/...

QAD

Item-Site Cost Inquiry 12/14/07

Item Number: 10-00 Description: Nu Line Yo-Yo
Unit of Measure: EA
Inventory Site: 8000 GL Cost Source Site: 8000 Output: page

Item Price Data
Price: 10.00 Tax: No Tax Class:

		Totals		
Totals:	0.00	0.00	0.00	12/14/07

GL Cost Data (Site: 8000 / Set: Standard)

Element	This Level	Lower Level	Total	Pri	Category	A/O
Material	0.00	0.00	0.00	Yes	Material	No
Labor	0.00	0.00	0.00	Yes	Labor	No
Burden	0.00	0.00	0.00	Yes	Burden	No
Overhead	0.00	0.00	0.00	Yes	Overhead	No
Subcontr	0.00	0.00	0.00	Yes	Subcontr	No
Totals:	1.3062	Totals 0.00	1.3062		12/14/07	

Current Cost Data (Site: 8000 / 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

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 8000.

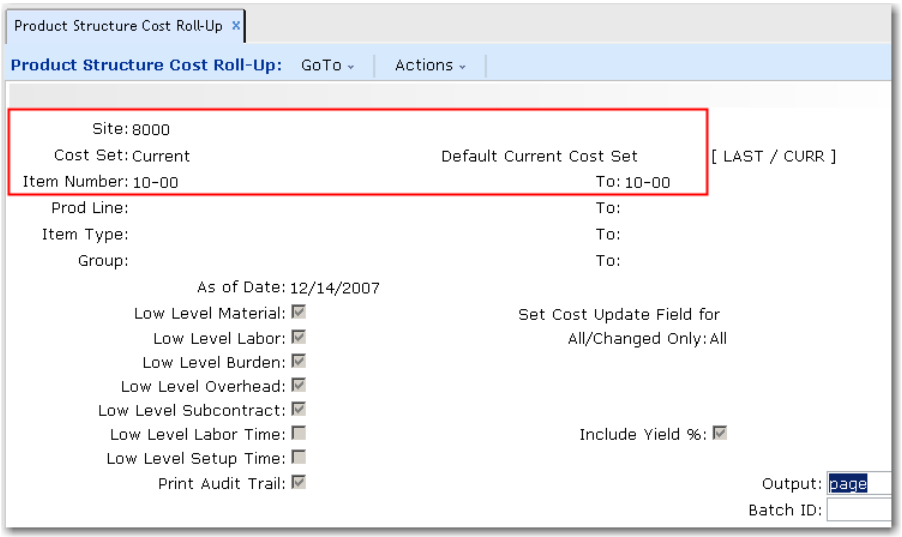
Note The columns on the cost screens total up, that is the total cost for labor and burden in this example 1.3062 is displayed above the column.

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

Note Note there are no material costs as we have not yet rolled up the product structure. There are also no GL costs as yet.

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

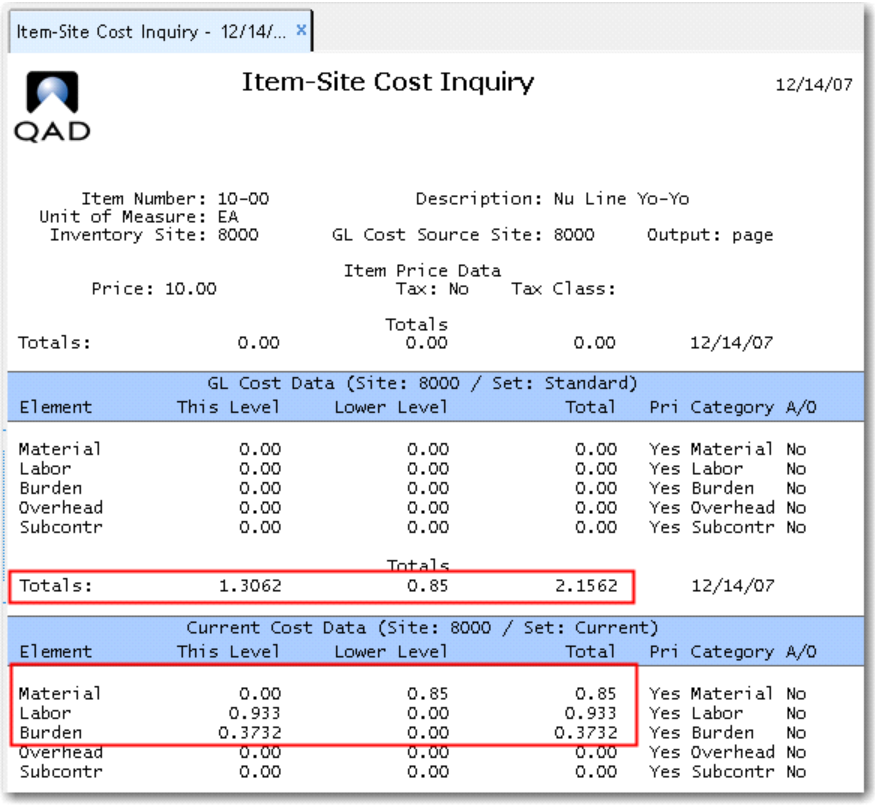
PRODUCT STRUCTURE COST ROLL-UP



Using Product Structure Cost Roll-Up, Yo-Yo Company rolls up its product structure costs for item 10-00 (plastic yo-yo) at site 8000. 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 - 12/14/...

Item-Site Cost Inquiry 12/14/07

QAD

Item Number: 10-00 Description: Nu Line Yo-Yo
Unit of Measure: EA
Inventory Site: 8000 GL Cost Source Site: 8000 Output: page

Item Price Data
Price: 10.00 Tax: No Tax Class:

		Totals		
Totals:	0.00	0.00	0.00	12/14/07

GL Cost Data (Site: 8000 / Set: Standard)

Element	This Level	Lower Level	Total	Pri	Category	A/O
Material	0.00	0.00	0.00	Yes	Material	No
Labor	0.00	0.00	0.00	Yes	Labor	No
Burden	0.00	0.00	0.00	Yes	Burden	No
Overhead	0.00	0.00	0.00	Yes	Overhead	No
Subcontr	0.00	0.00	0.00	Yes	Subcontr	No
Totals:	1.3062	Totals 0.85	2.1562		12/14/07	

Current Cost Data (Site: 8000 / 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 8000.

Material Cost

Referring to the product structure diagram on Product Structure Cost Roll-Up, we can see that the material cost of $0.85 is based on the following:

$0.85 = cost of 2 plastic halves + aluminum pin + 60 inches of string

$(2 \times 0.25) + (1 \times 0.05) + (60 \times 0.005)$

Labor Cost

The labor cost from the route and work center records (both setup and run labor are 10.00 per hour) is figured as follows:

Setup One hour at $10/hr/100 yo yos = $0.10 per yo-yo

Operation 10 at 0.05 hrs @ $10/hr = $0.50 per yo-yo

Operation 20 at 0.00333 hrs @ $10/hr = $0.333 per yo-yo

Total labor per yo-yo = $0.933

Burden Cost

Burden is set at 40% of the labor cost

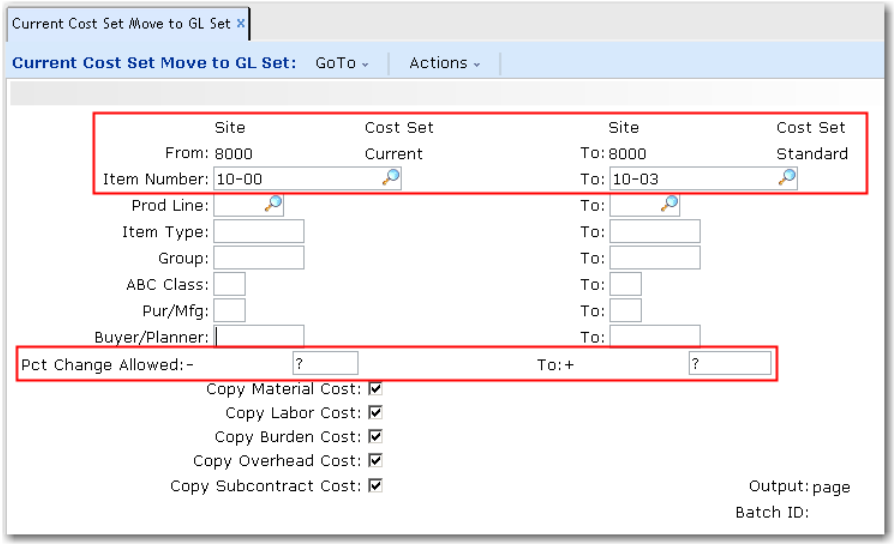
Burden is $0.933 X 0.40 = $0.3732

Total Cost

Material + Labor + Burden

$0.85 + $0.933 + $0.3732 = $2.1562

MOVE CURRENT COST SET TO GL SET



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 8000, so Yo-Yo Company is ready to copy and move Current costs into the GL using Current Cost Set Move to GL Set.

Percent Change Allowed

Additional Notes

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 the “From” 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.

Note When first establishing costs for new items (or in a new system) the present GL cost would be zero. The percent change from nothing to something is mathematically undefined as it would require division by zero.

Verify item costs in Current and GL cost sets

Item-Site Cost Inquiry - 12/14/...

QAD

Item-Site Cost Inquiry 12/14/07

Item Number: 10-00 Description: Nu Line Yo-Yo
Unit of Measure: EA
Inventory Site: 8000 GL Cost Source Site: 8000 Output: page

Item Price Data
Price: 10.00 Tax: No Tax Class:

Totals

Totals:	1.3062	0.85	2.1562	12/14/07

GL Cost Data (Site: 8000 / 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

Totals

Totals:	1.3062	0.85	2.1562	12/14/07

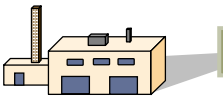
Current Cost Data (Site: 8000 / Set: Current)

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 are the same as the Current costs.

REVIEW

1 **Entity, Site, Locations**



- **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

2 **Company Finance**

- **GL calendar**
  GL Calendar Maintenance
- **Standard transaction (loan)**
  Standard Transaction Maintenance
- **Post transaction to GL**
  Transaction Post
- **Balance sheet**
  Balance Sheet

3 **Product Definition**

- **Product line**
  Product Line Maintenance
- **Current cost method**
  Inventory Control
- **Item data**
  Item Master Maintenance
- **Product Structure**
  Product Structure Maintenance

4 **Manufacturing**

- **Shop calendar**
  Calendar Maintenance
- ***Departments***
  Department Maintenance
- **Work Center**
  Work Center Maintenance
- **Routings**
  Routing Maintenance

5 **Cost Calculations**

- **Routing cost roll-up**
  Routing Cost Roll-Up
- **Product structure cost roll-up**
  Product Structure Cost Roll-Up
- **Copy Current cost set to GL**
  Current Cost Set Move to GL Set

In this chapter, it was explained 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

It was also explained 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

The basic steps have been covered in setting up the system so that we are now ready to see how it 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 5

Enter Standard Order Quantity for Item

Use *Item Planning Maintenance, 1.4.7*.

- Item Number = 10-00
- Order Qty = 100

This is the number of units that the cost of set-up time is spread over.

Calculate Labor and Burden Costs for Manufactured Items

Use *Routing Cost Roll-Up, 14.13.13* to roll up the routing cost.

Key fields to populate are:

- Site = 8000; click Next or press the Enter key
- Cost Set = Current; click Next
- Item Number = 10-00 to 10-00; click Next
- Use the default settings for all other fields and update.

Note There is no output for this function.

Use *Item-Site Cost Inquiry, 1.4.10* to 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 Lower-level Material, Labor, and Burden Costs

Use *Product Structure Cost Roll-Up, 13.12.13* to roll up the product structure.

Key fields to populate are:

- Site = 8000; click Next
- Cost Set = Current;click Next
- Item Number = 10-00 to 10-00;click Next

Review Cost Report to vefify the following values

- Total cost should be 2.1562
- Material total should be 0.85
- Labor total should be 0.933
- Burden total should be 0.3732

Cost could also be verified using *Item Site Cost Inquiry, 1.4.10*.

Copy the Current Cost Set to the General Ledger Cost Set

Use *Current Cost Set Move to GL Set, 1.4.22* to copy the data from your Current cost set to your GL (standard) cost set.

Key fields to populate are:

- From and To Site = 8000
- Item Number = 10-00 to 10-03 (be sure to include all items)
- Pct Change Allowed = ? (“From” and “To”)

Note If a “?” is not allowed by your environment, enter all “9”s in both the “From” and “To” fields.

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.

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

Chapter 7

Purchasing

Overview

In this chapter the procurement process, from initial requisition to material receipt will be examined. Key concepts will be discussed, 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

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 QAD Enterprise Applications supports
- Enter credit terms
- Enter a supplier
- Enter a unit of measure conversion
- Enter supplier item information

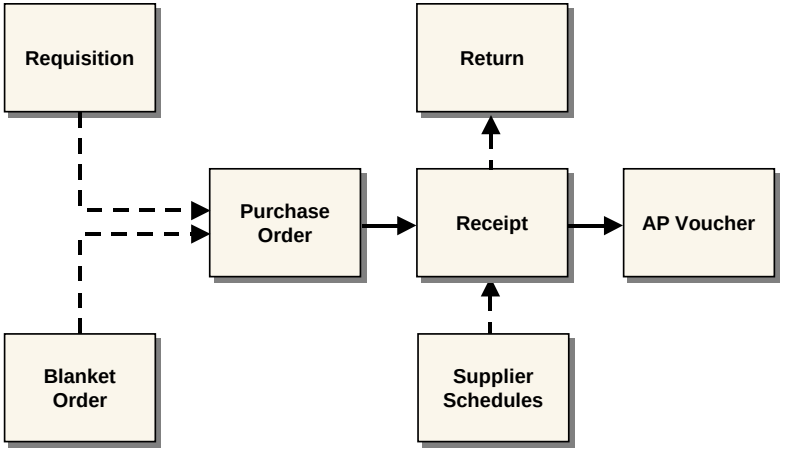
Key Concepts

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.

Note While purchasing supports the acquisition of everything, from office supplies to capital equipment, this course will limit the example to purchasing direct material for 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 receiver. If the goods are returned to the supplier, another record is made. The system keeps a record of each step.



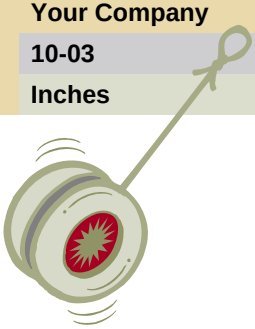
We'll look at several of these stages of the purchasing process in more detail on the following pages, but first we must have a supplier entered in the system before we can perform these purchasing functions. So we'll begin this chapter with a discussion about entering supplier information into the system.

SUPPLIER

. Supplier Maintenance is used to record the address to which all purchase orders are sent. Every supplier must be entered into Supplier Maintenance prior to using the purchasing functions.

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

	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

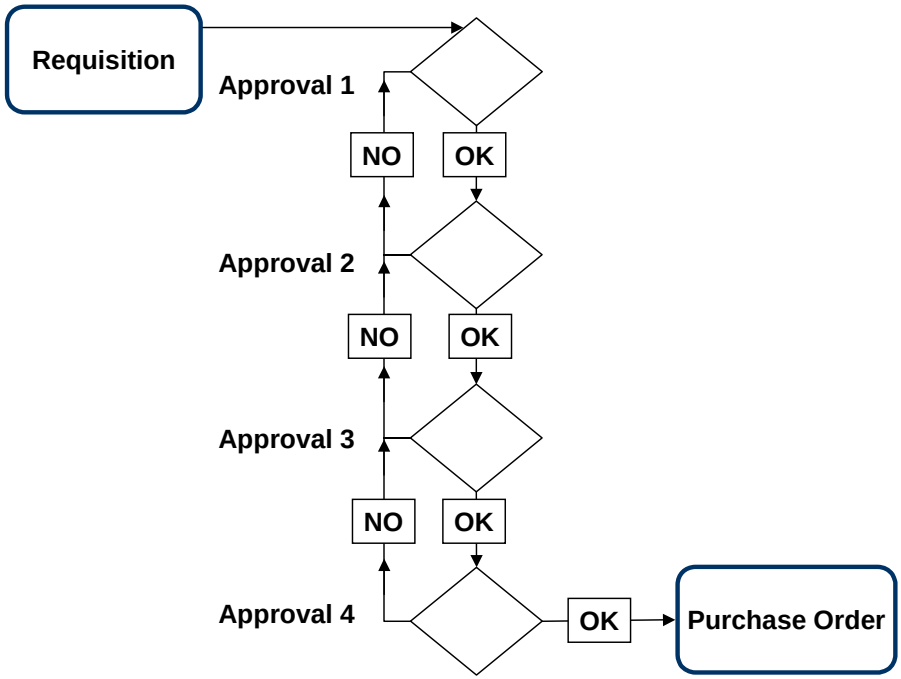
Unit of measure conversions can be set up so that a unit of measure for a purchase order line can be different than the item master unit of measure. Then, when the item is received, it is converted to the item master unit of measure.

What's Next

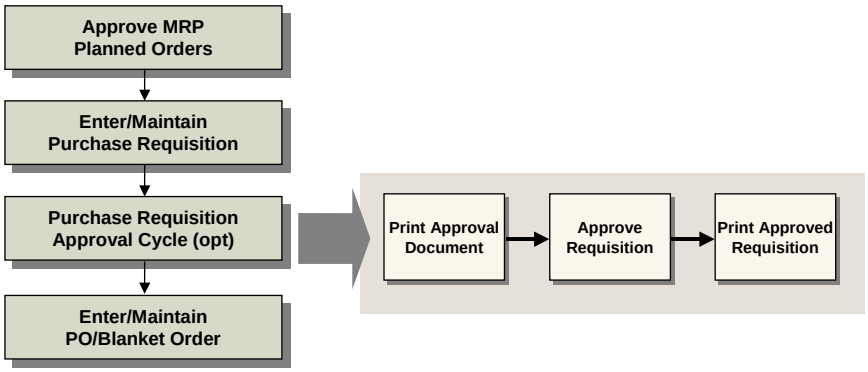
The purchasing process may optionally begin with a requisition, so requisitions will be the next topic of discussion.

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



Standard requisitions can be created 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.

Note QAD Enterprise Applications offers two requisition modules. The modules are labeled Purchase Requisitions and Global Purchase Requisitions. Both are located in the Distribution module. Global Requisitions offer considerably more functionality (with more complexity). You should have a

clear understanding of the differences between the two before making an implementation decision. Only one or the other requisition modules may be used at a time, and there are consequences associated with changing. This course discusses only Purchase Requisitions.

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, the three types of purchase orders that the system supports will be examined.

TYPES OF PURCHASE ORDERS

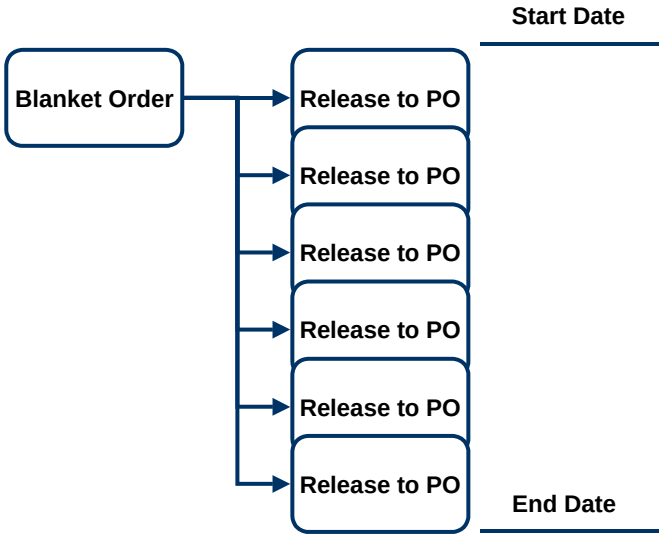
QAD Enterprise Applications supports three kinds of purchase orders:

- 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 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.

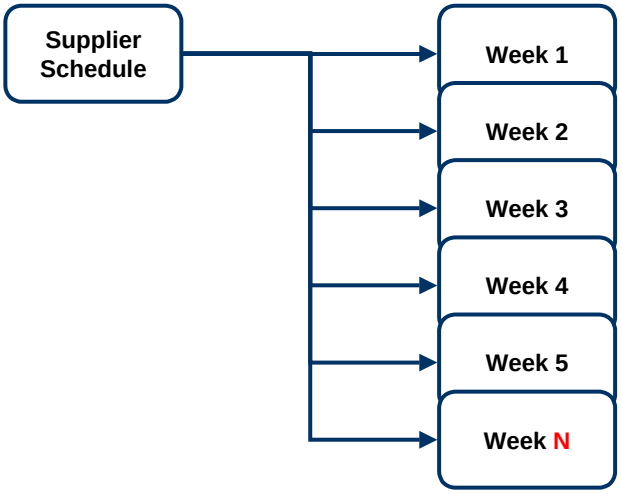


Example A manufacturer of circuit boards buys solder at irregular intervals, but always from the same supplier. A blanket order for 12 months is created. Each month an order for solder is released to the supplier, each order specifying a particular quantity.

Each monthly release becomes a discreet purchase order that is managed like any other. The blanket order keeps track of totals order to date.

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, often in a JIT environment. See figure below.

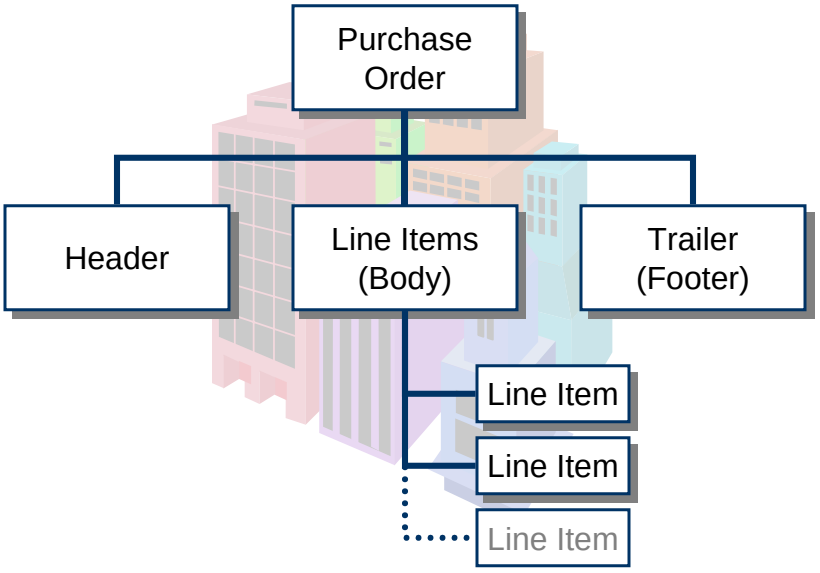


Example A manufacturer of circuit boards needs circuit board blanks supplied each week. The manufacturer knows its exact needs for the next four weeks and its approximate needs for the next 12 months. The supplier of the blanks uses the information in the supplier schedule to plan orders for raw materials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

Supplier schedules are designed for use with EDI (Electronic Data Interchange) and as such eliminate most of the paperwork associated with the purchasing process.

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

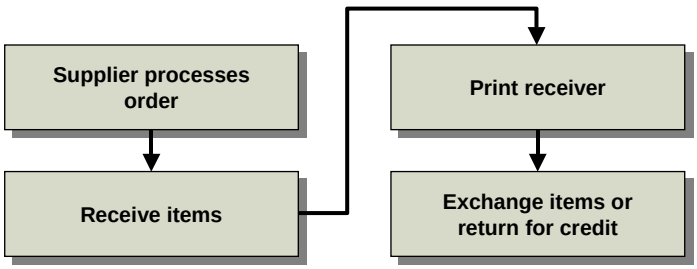
The next step in the purchasing process is to receive the goods from the supplier.

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 to match 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

A simple example in which Yo-Yo Company sets up the following:

- 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 is created that identifies 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.

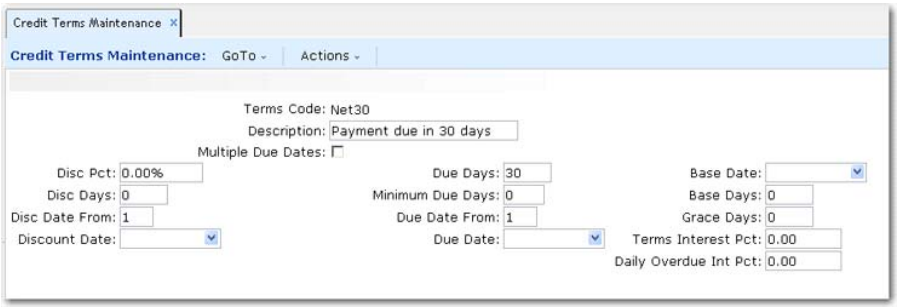
Once everything is set up, Yo-Yo Company’s Buyer creates a purchase order for the component items (10-01, 10-02, and 10-03) in sufficient quantities to build 100 yo-yos (item 10-00).

The items are received and the order is closed.

ADD SUPPLIER DATA - CREDIT TERMS

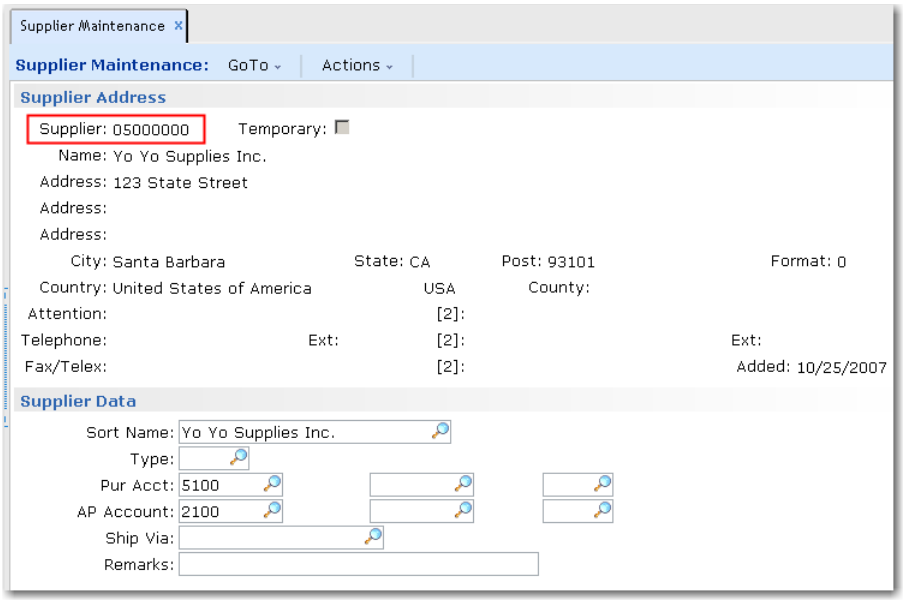
In the process of adding a supplier, Yo-Yo Company has set up credit terms, supplier items, and unit of measure conversion.

Set Up Credit Terms

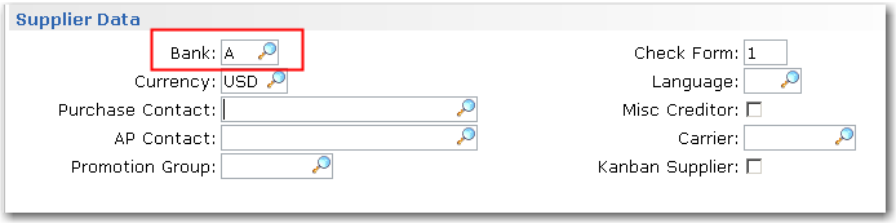


Yo-Yo Company's supplier, Yo-Yo Supplies, Inc., has arranged payment terms with Yo-Yo Company of net 30. That is, payment is due to Yo-Yo Supplies, Inc., within 30 days. The credit terms entered in Credit Terms Maintenance display as the default on all purchase orders for Yo-Yo Supplies.

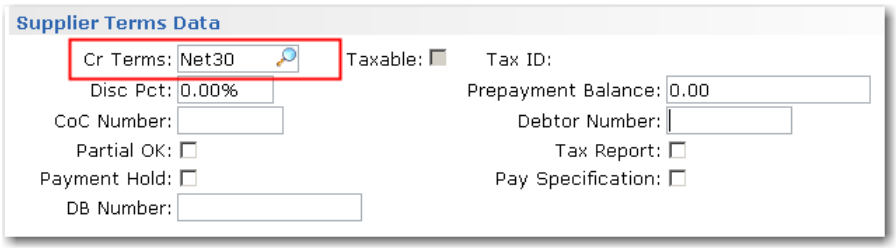
Enter Supplier



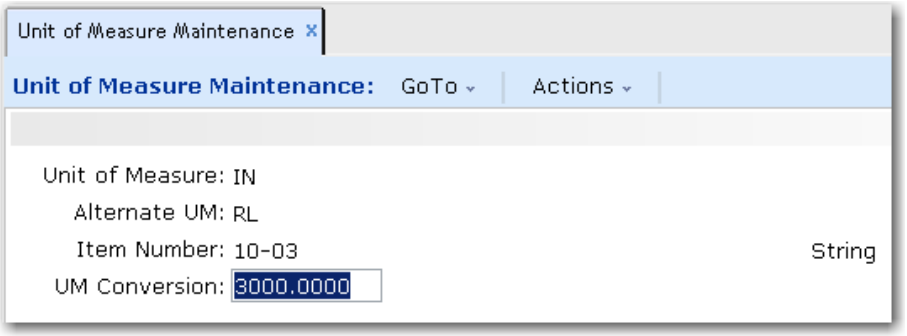
In Supplier Maintenance, Yo-Yo Company's Buyer uses a system-generated supplier code for the yo-yo components' supplier (Yo-Yo Supplies, Inc.).



Yo-Yo Company's bank (this is the bank that Yo-Yo Company will use to pay this supplier) is entered in Supplier Data.



The credit terms of Net30 are entered in Supplier Terms Data.



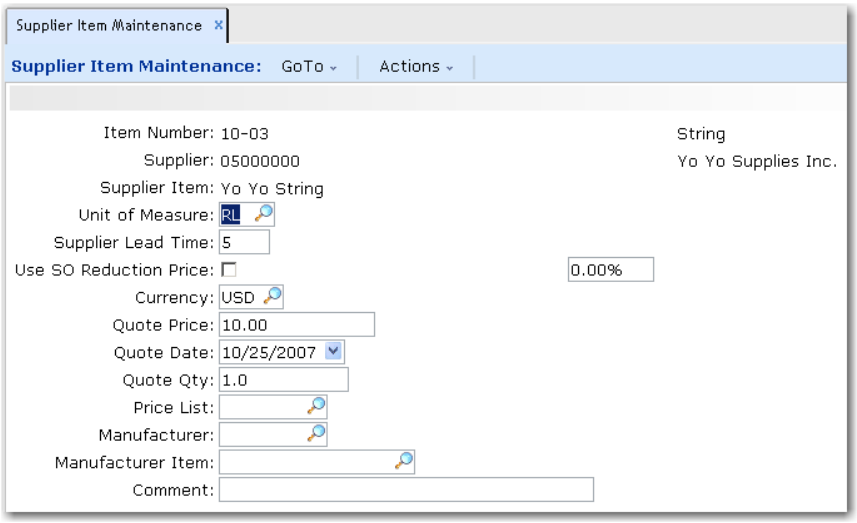
In Unit of Measure Maintenance, Yo-Yo Company's Buyer enters a UOM conversion for the yo-yo string.

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.

Note This is an item specific unit of measure of conversion. It applies only to the 10-03 string. If we wanted a generic conversion say from Inch to Centimeter we could enter IN in Unit of Measure, CM in Alternate UM and leave Item Number blank, and enter 2.54 in the UM conversion field. The system can then convert anything measured in centimeters into inches.

Add Supplier Item

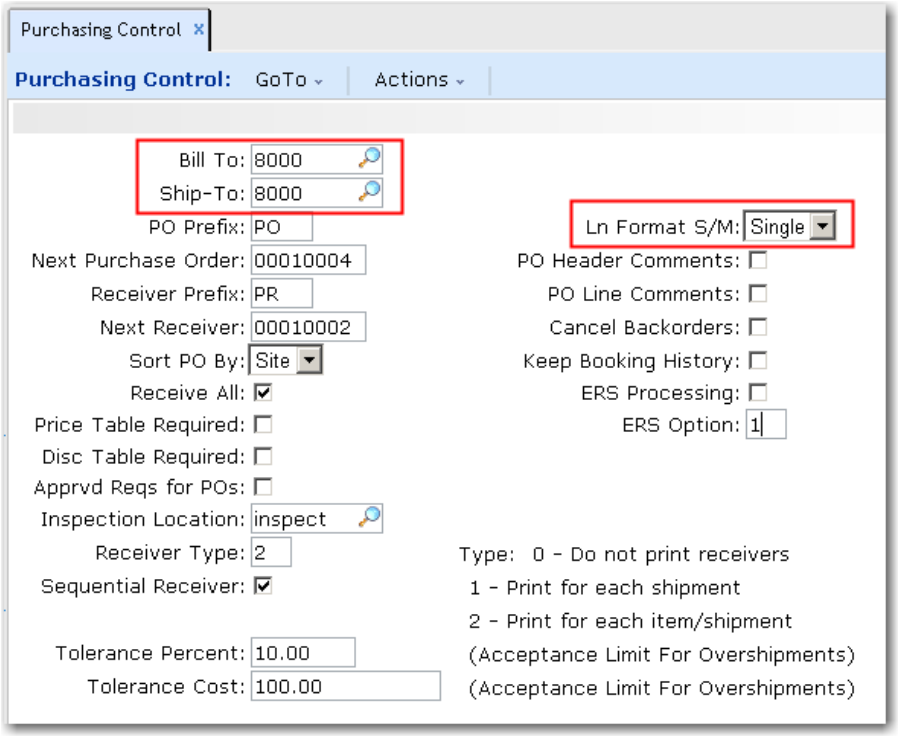


Yo-Yo Company's Buyer enters information obtained from the supplier about the string in Supplier Item Maintenance. Note that the supplier ID for the string is “Yo-Yo String,” whereas Yo-Yo Company's internal ID for the string is 10-03. Normally this is the case; that is, suppliers do not use the same 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 of more.
- Supplier lead time of 5 days. This drives the purchase lead time entered in Item Master Maintenance for this item.

CREATE PURCHASE ORDER



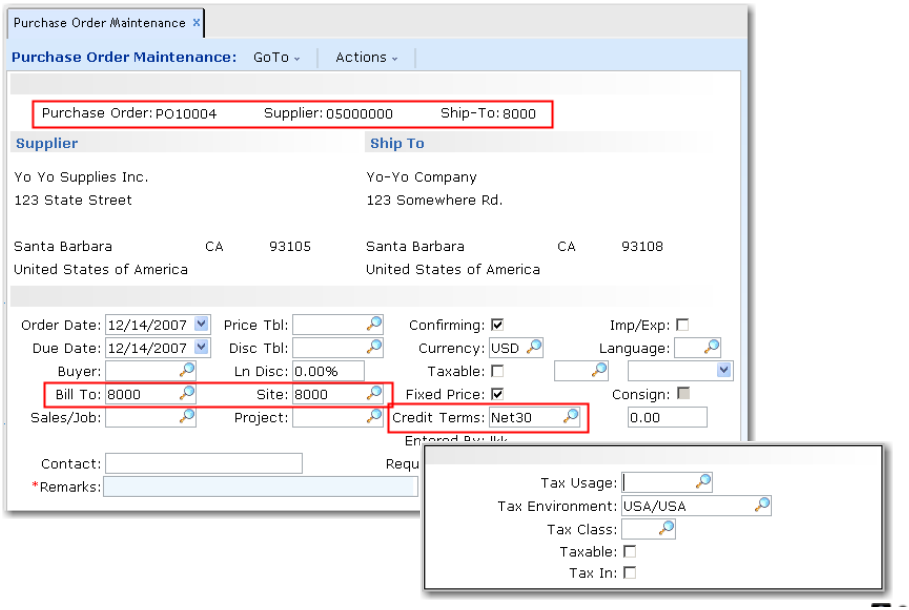
In Purchasing Control, Yo-Yo Company's Buyer enters site 8000 as the bill-to and ship-to location. Other default information for the purchase order is entered here, such as PO and receiver prefixes, and line format (which is “single” in this example). Tolerance Percent and Tolerance Cost pertain to overshipments

Line Formats

Additional Notes

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



In Purchase Order Maintenance, Yo-Yo Company's Buyer enters a purchase order for the components required to build 100 yo-yos.

The first part of the order has “header” information, such as supplier name (Yo-Yo Supplies), ship-to address (Yo-Yo Company's site 8000), credit terms of Net30, currency of USD, tax information, and order and due dates (default is today's date).

Note The Tax information pops up in a separate window when you click Next or press Enter after completing the header screen. This data defaults from Global Tax Management is not normally modified in purchase order maintenance. Accept the defaults and click Next to advance.

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

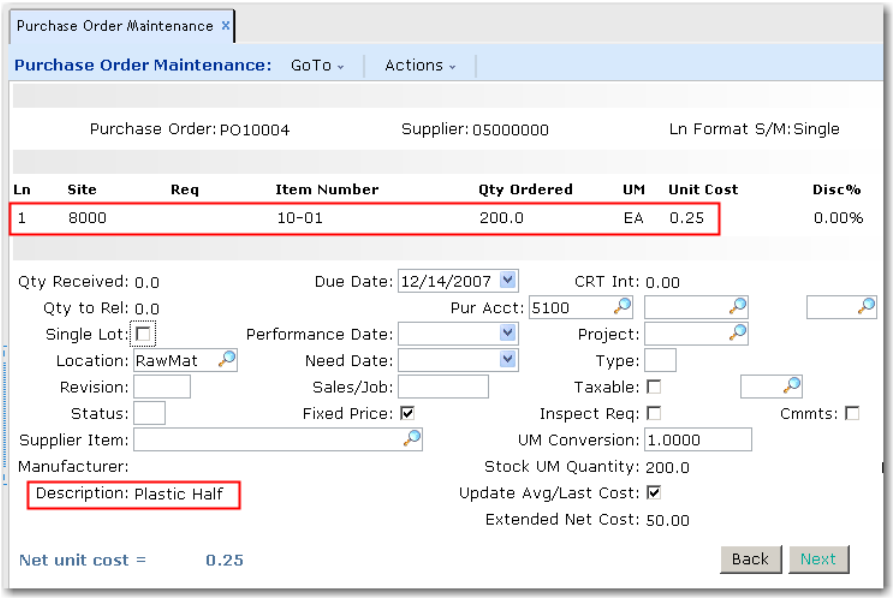
Questions

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.

- What default information came from the supplier record (Supplier Maintenance)?

- What effect do the purchasing control settings have?

Enter Line 1 Data



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

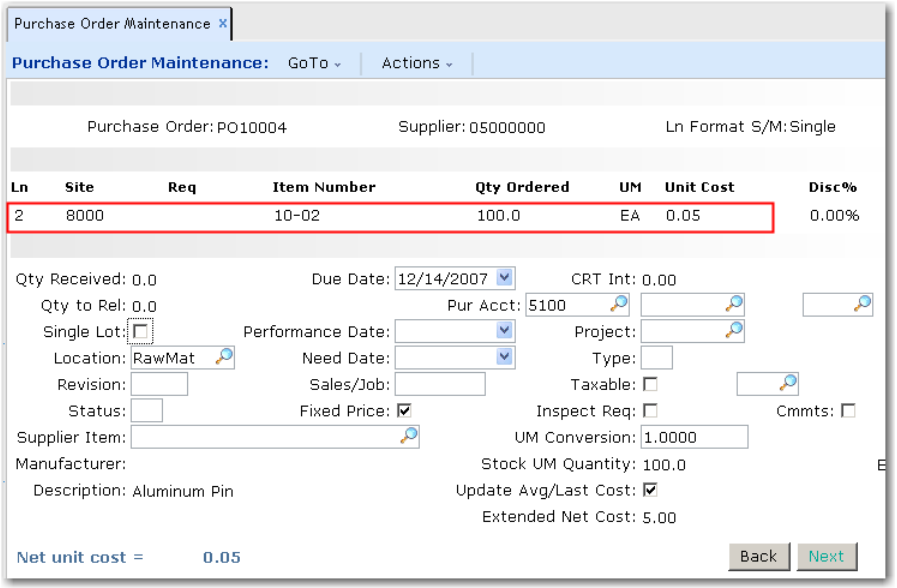
Each line specifies a particular item being ordered, its order quantity, and price. Line details include any exceptions to header information, such as a delivery date or receiving site, that apply to the line item only and not the whole order.

Questions

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

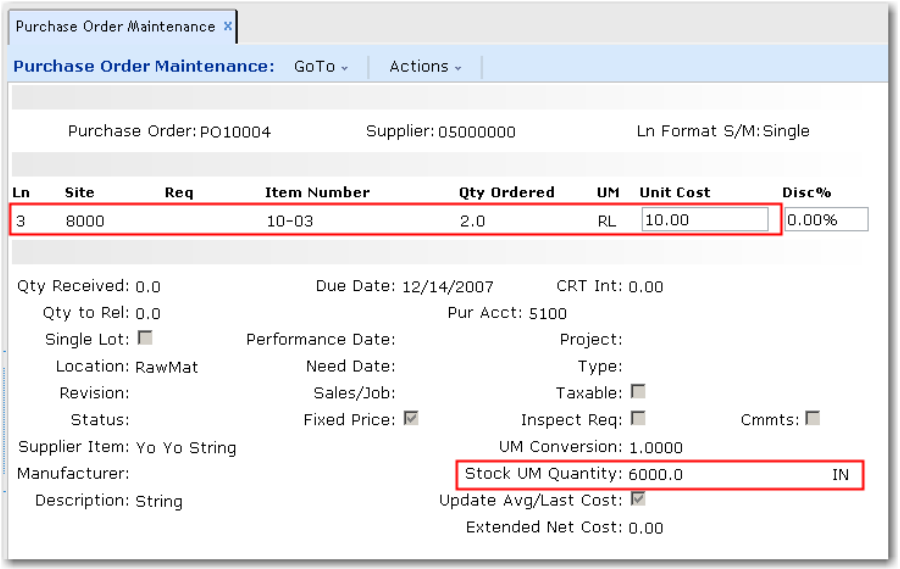
- Location
- Pur Acct

Enter Line 2 Data



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



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?

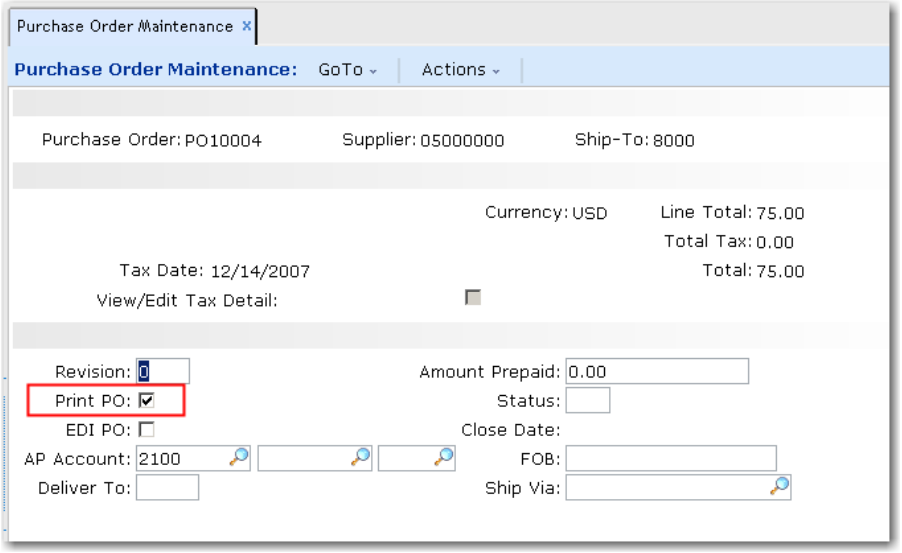
- Unit Cost
- UM Conversion
- Stock UM Quantity

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

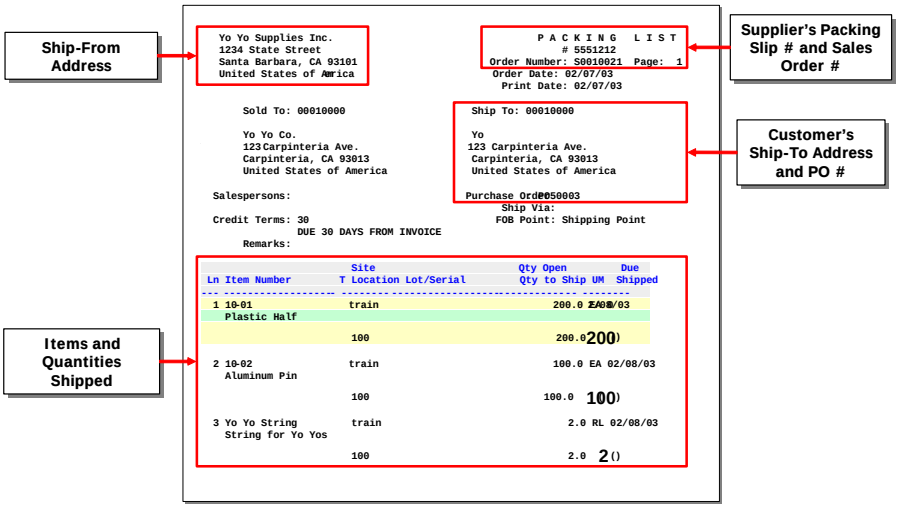


The last frame shows the “trailer” information, which contains tax, shipping, and order status information for all line items.

Note The trailer frame is where freight charges, special handling or other miscellaneous charges as well as taxes are added if required.

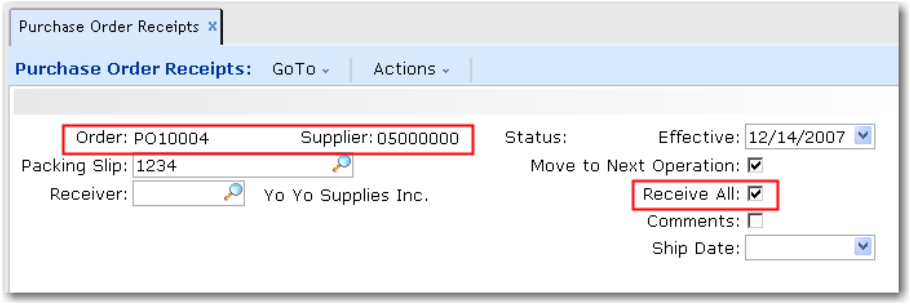
RECEIVE ITEMS AND CREATE RECEIVER

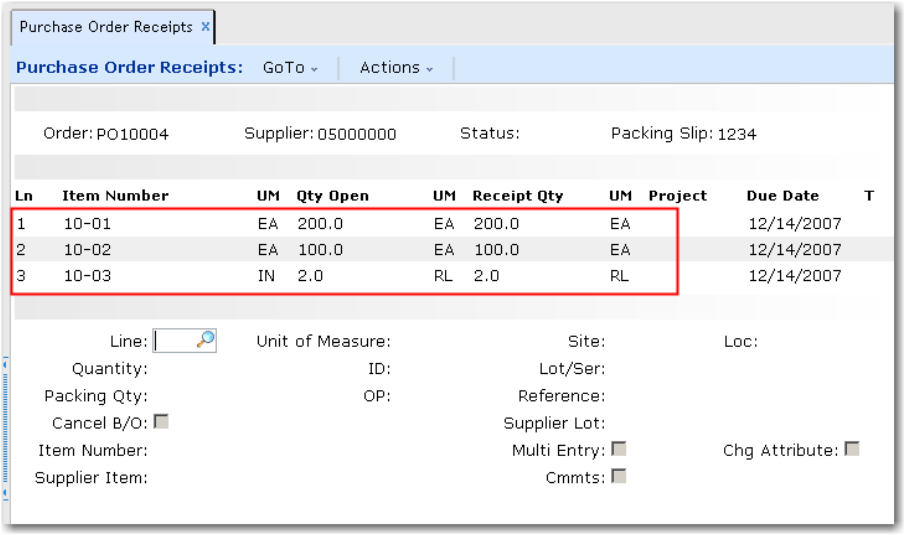
Review Packing Slip from Supplier



Yo-Yo Supplies, Inc. the supplier, includes a packing list with the shipment. This document includes your purchase order number, their sales order number, your ship to address, their ship from address, items and quantities ordered, items and quantities shipped, and other information, such as any back orders.

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

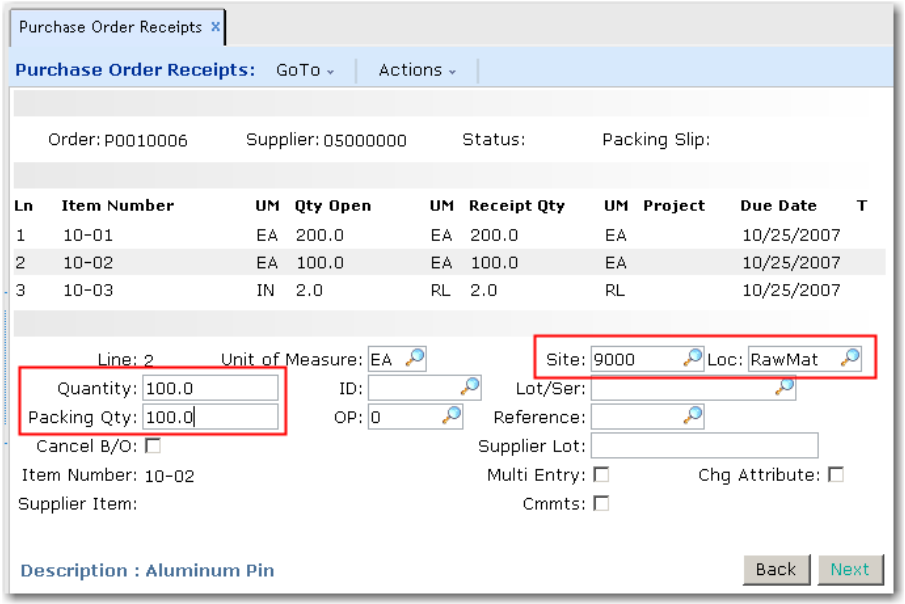




Yo-Yo Supplies, Inc. has delivered all of the items ordered by Yo-Yo Company. Using Purchase Order Receipts, Yo-Yo Company's Receiving Department records the delivery by first entering the purchase order number, which identifies the line items and the quantity open (ordered but not received), and then by entering the packing slip number. As the packing list indicates order has been shipped complete we can save a few steps by checking Receive All. This pre-fills the transaction frame with all the information needed to process the receipt.

In subsequent frames, shown below, 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. The line detail frame can also be used to indicate inventory location the material is put away in, if it is different than the default.

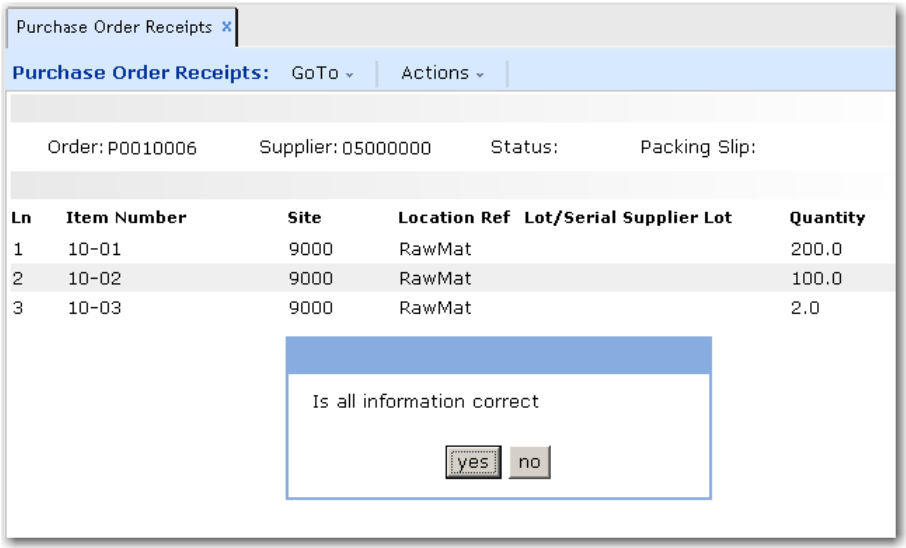


Questions

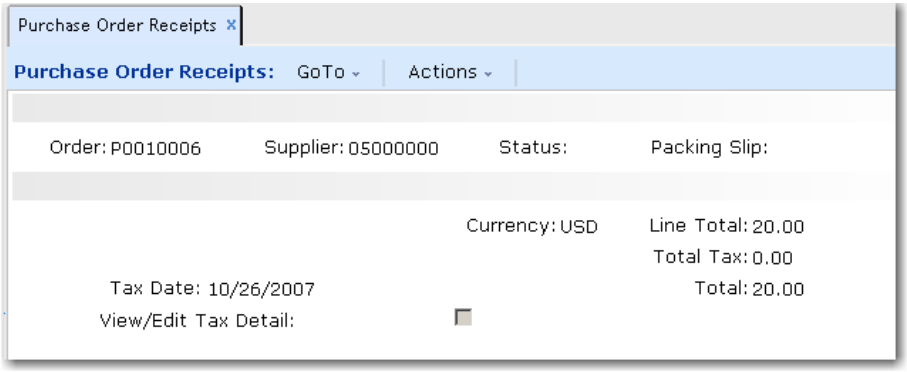
Where did the following default information come from?

- Supplier
- Location
- Site

If this had been a partial order, how would you handle that in the system?



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

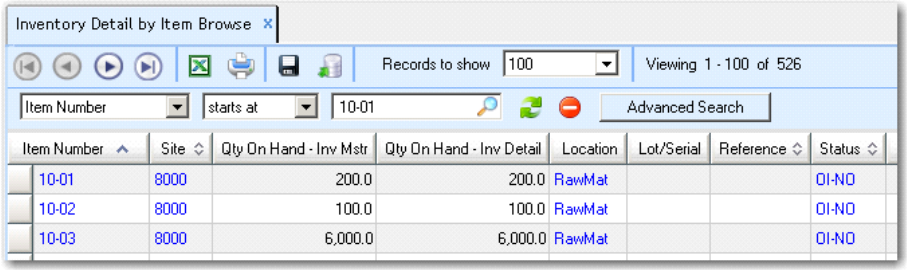


Additional Notes

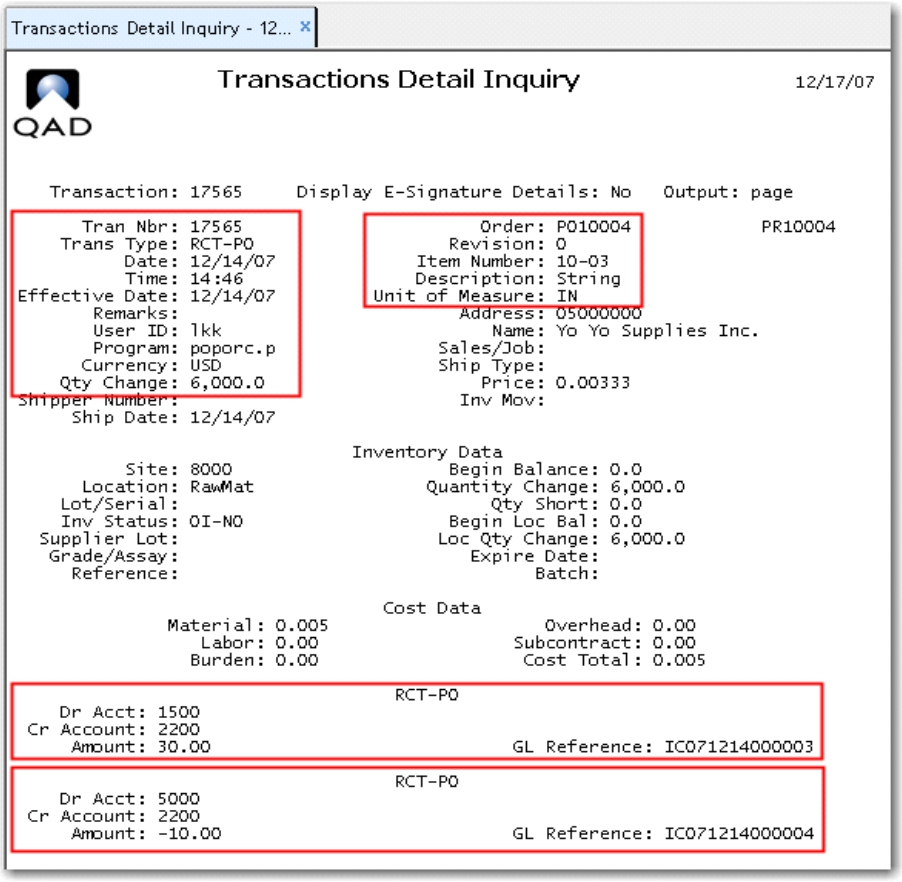
Several settings in Purchasing Control affect purchase receipts.

- 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



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. Note also that the 2 rolls of string have been converted into 6,000 inches of string.



Review Transactions

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

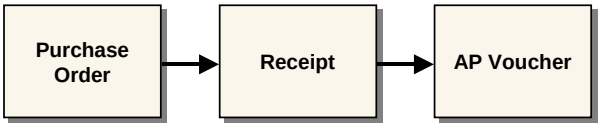
Notice at the bottom of the screen the related GL transactions. There are two GL transactions:

- 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/inch × 3,000 inches/roll = $15/roll); $15 per roll × 2 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 per roll × 2 rolls = $20

  $30 GL cost - $20 invoiced = $10 purchase price variance.

REVIEW



A review of some key points in the purchasing cycle that we have covered so far.

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

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

The supplier sends an invoice to confirm the manufactures liability to pay for the items under the conditions specified on the purchase order. Before the invoice can be paid, it must be verified that the items received are what had been originally ordered and that the supplier has charged the correct price. To do this, a voucher in Accounts Payable is recorded.

What's Next

Vouchers will be discussed in the next chapter.

Activity 6

Credit Terms

Use *Credit Terms Maintenance, 2.19.1* to set up credit terms due in 30 days after the invoice.

Key fields to populate are:

- Terms code = Net30; click Next
- Description = Payment Due in 30 Days
- Due Days = 30
- Due Date From = 1
- Click Next to update and exit.

Supplier Addresses

Use *Supplier Maintenance, 2.3.1* to record the address of a supplier. Let the supplier code default from the control file.

- Supplier = [system generated]; click Next
- 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; click Next
- Bank = A (in Supplier Data frame)
- Currency = USD; click Next
- Cr Terms = Net30 (in Supplier Terms Data frame)
- Update and exit. (click Back to exit the bank accounts frame.)

Unit of Measure Conversions

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, 1.13* to set up conversion information.

Key fields to populate are:

- Unit of Measure = IN
- Alternate UM = RL
- Item Number = 10-03; click Next
- UM Conversion = 3000

Supplier Items

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

Use *Supplier Item Maintenance, 1.19* to create a record that cross-references the item number 10-03 to the supplier's item number “yo-yo string.”

Key fields to populate are:

- Item Number = 10-03
- Supplier = [enter the supplier number that was assigned to “Yo-Yo Supplies, Inc.” in an earlier activity.]
- Supplier Item = Yo-Yo String; click Next
- 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
- Update and exit the record.

Purchasing Control

Use *Purchasing Control, 5.24* to update the record to have the following settings:

- Bill To = 8000
- Ship To = 8000
- PO Prefix = PO
- Receiver Prefix = PR
- Ln Format S/M = Single
- PO Header Comments = No (unchecked)
- PO Line Comments = No (unchecked)
- 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.

Use *Purchase Order Maintenance, 5.7* to enter a purchase order for the component items.

Key fields to populate are:

- Purchase Order = [leave blank, to default to the next number from the control file]
- Supplier = [select supplier ID for Yo-Yo Supplies, Inc.]; click Next
- Order and Due Date will default to today's date
- Site = 8000 (this will be used as a default for the line items)
- Credit Terms = Net30 (this should default from supplier record); Click Next

- Go to the line item data. Enter line items according to the table below

PO Line	Site	Item No.	Qty Ordered	UM	Unit Cost
Line 1	8000	10-01	200	EA	0.25
Line 2	8000	10-02	100	EA	0.05
Line 3	8000	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.

- When you are done with the PO lines (you will be on line four) click End Lines
- This takes you to the Line format S/M selection
- Click Trailer, accept all defaults.
- Update, and click Next to advance to the beginning of the PO process.

Record Receipts against a Purchase Order

The supplier has sent the materials ordered.

Use *Purchase Order Receipts, 5.13.1*.

Key fields to populate are:

- Order = [PO number entered earlier]

Note You can use the down arrow to default in your PO and Supplier numbers.

- Packing Slip = [any number; not needed for this activity]
- Receiver = [leave blank; the system will assign]
- Recieve all = Yes (checked)
- Ship Date = [leave blank]

Record receipt amount in the Receipts frame.

Key fields to populate are (all values should default from PO):

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

- If the data are correct click Next;
- Display lines being recieved? Click Yes, then click Next
- Is all information correct? Click Yes, then click Next

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

Note 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.

Review the inventory levels for your component items

Use *Inventory Detail by Site Browse, 3.3* for Site 8000

This selection criteria will display only the items we have entered into our site 8000. Are there enough items to build 100 yo-yos?

- 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.
- 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.

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

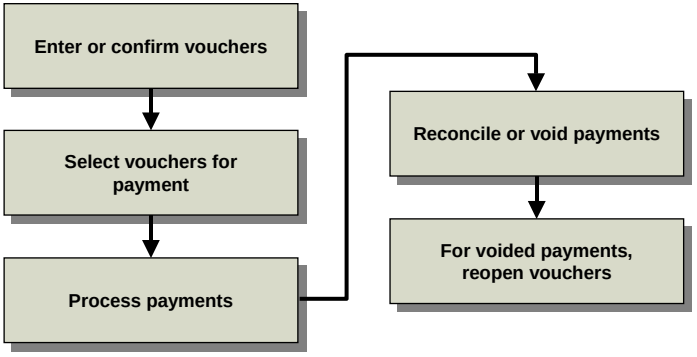
Introduction

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, an aging report is run to determine which balances are oldest. Then the payment selection register is printed 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.



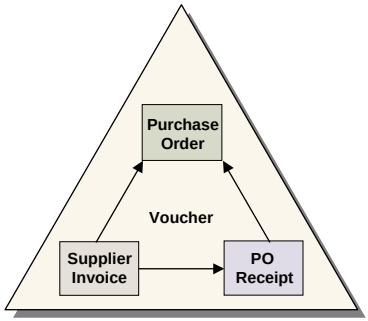
VOUCHERING

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.



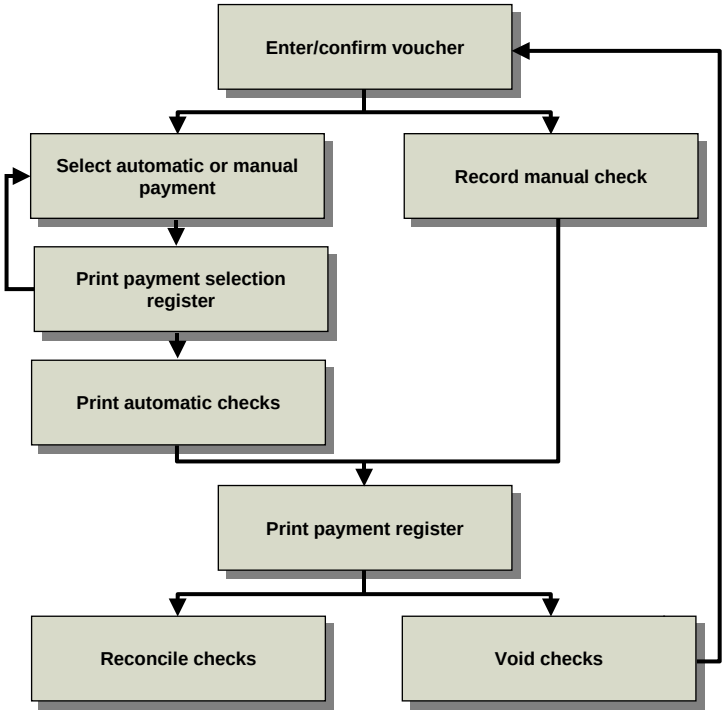
Next, a closer look at the work flow for processing payments.

PROCESSING PAYMENTS

The simplest case of payment processing is when the decision is made what to pay and then write a check or transfer funds 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. Have the system automatically select the vouchers intended for payment. After reviewing the report of selected vouchers, make any modifications needed. Before processing payments, print the Payment Selection Register, especially if the automatic selection has been executed more than once.

Payments can be printed 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

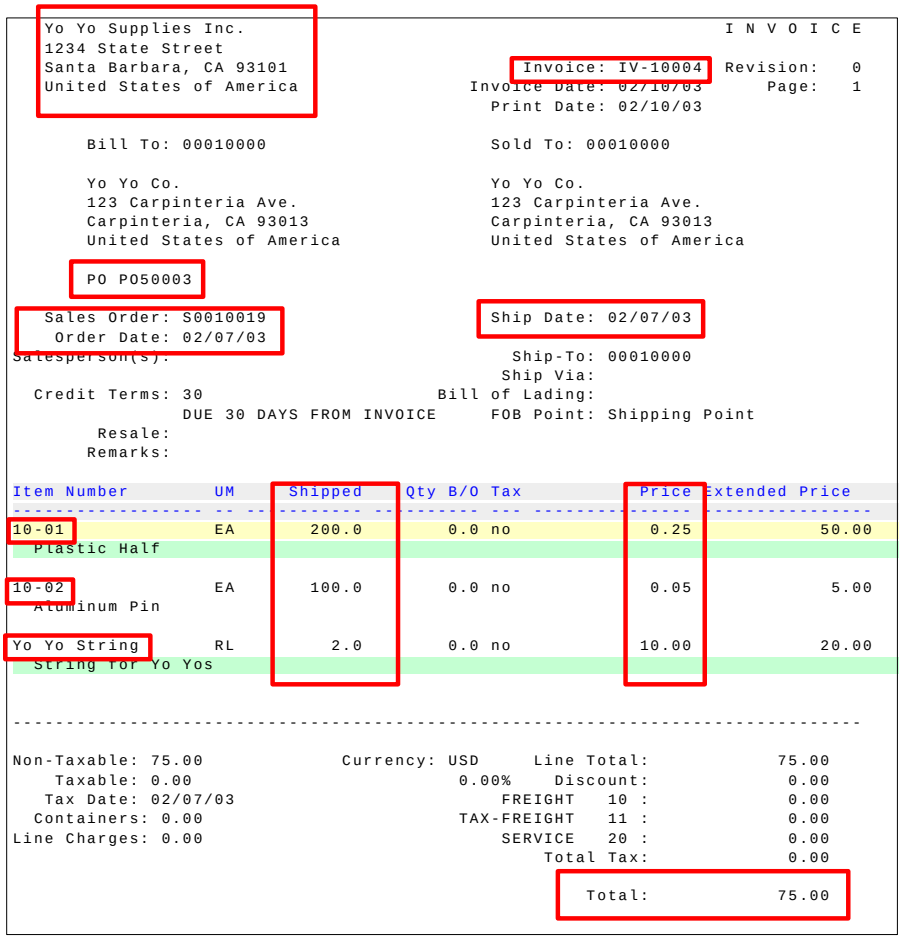
Yo-Yo Company's Receiving department received components from Yo-Yo Supplies. Now Yo-Yo Company's Accounting department is ready to voucher Yo-Yo Supplies' invoice and print a check. That process will be examined in the following example.

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

Sold To: 00010000

Yo Yo Co.
123 Carpinteria Ave.
Carpinteria, CA 93013
United States of America

Yo Yo Co.
123 Carpinteria Ave.
Carpinteria, CA 93013
United States of America

PO PO50003

Sales Order: S0010019
Order Date: 02/07/03

Ship Date: 02/07/03

Salesperson(s):
Ship-To: 00010000
Ship Via:
Credit Terms: 30
DUE 30 DAYS FROM INVOICE
Bill of Lading:
FOB Point: Shipping Point
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
Plastic 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
Taxable: 0.00
Tax Date: 02/07/03
Containers: 0.00
Line Charges: 0.00

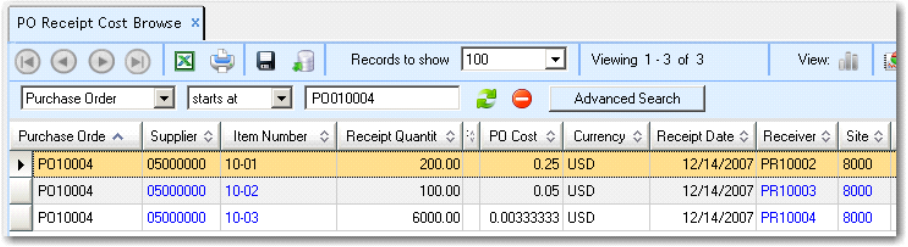
Currency: USD
Line Total: 75.00
0.00% Discount: 0.00
FREIGHT 10 : 0.00
TAX-FREIGHT 11 : 0.00
SERVICE 20 : 0.00
Total Tax: 0.00

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.

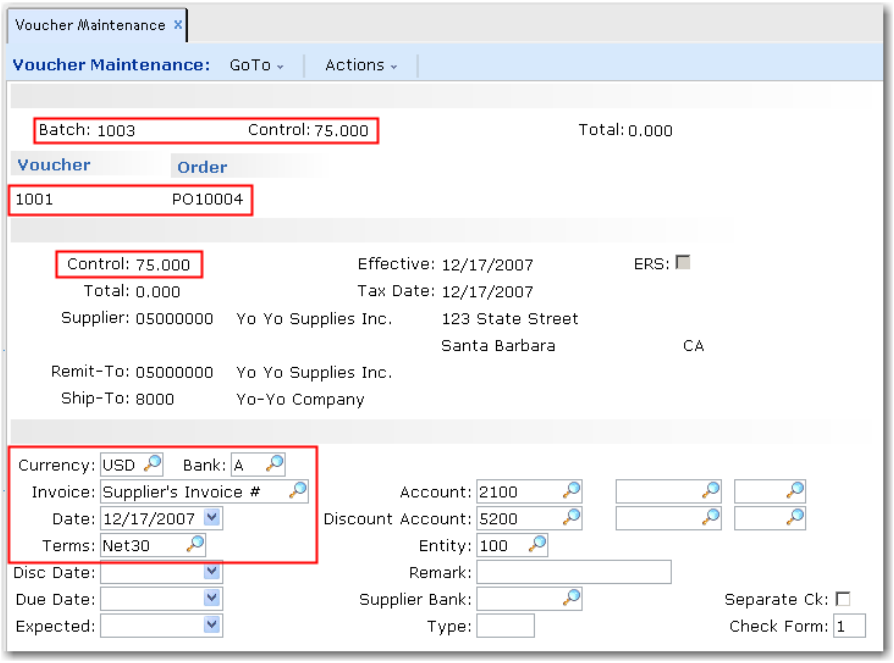
REVIEW RECEIVING HISTORY OF PO



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.

ADD VOUCHER



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 1003).

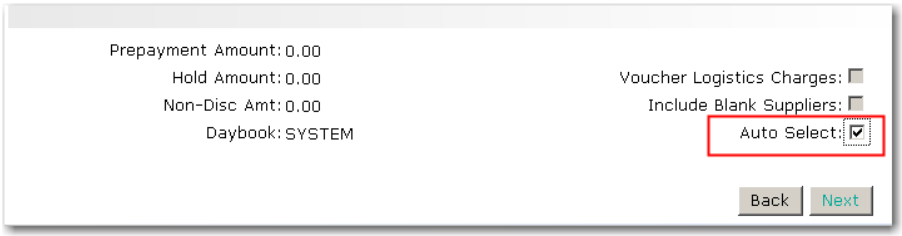
In the screen above, you will notice that there are two Control fields. The first Control field at the top of the screen next to Batch is a control sum to verify against the sum of all voucher transactions in this batch (Batch 1003). The Control field in the third frame is a control sum against the account distribution entered for this voucher transaction only. Since, in this example, there is a total of only one invoice transaction for Batch 1003, 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).

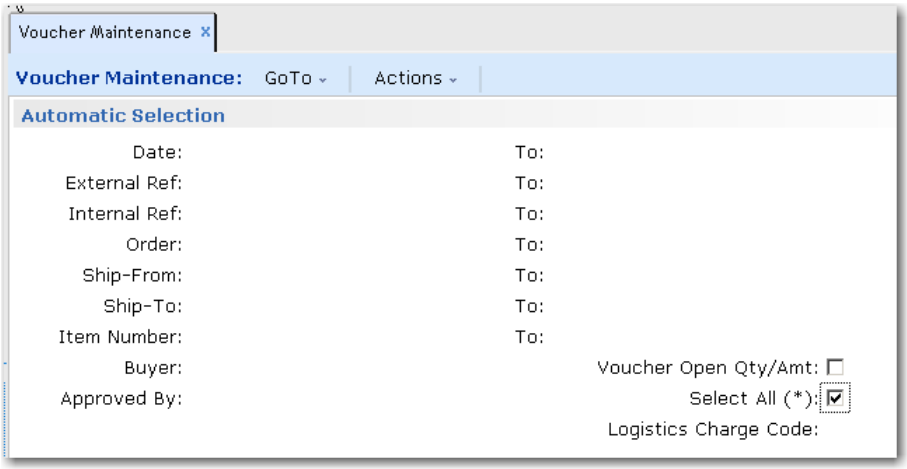
The Effective Date is the date this transaction is to be applied to the general ledger (GL). Use this field to apply a transaction to a different GL period. The default is the system date.

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



Yo-Yo Company's Accountant chooses Auto Select, which brings up an Automatic Selection frame.

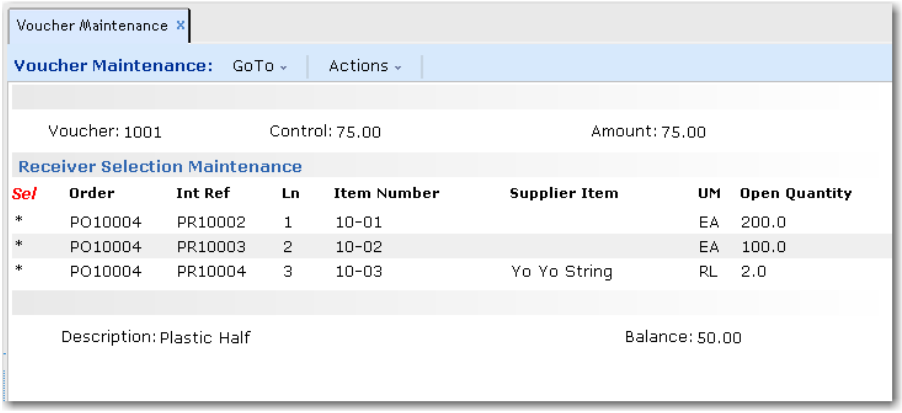


Here, the Accountant could specify receivers by date, order, ship-from, ship-to, or item number ranges. In this example, the Accountant wants the system to select all receivers.

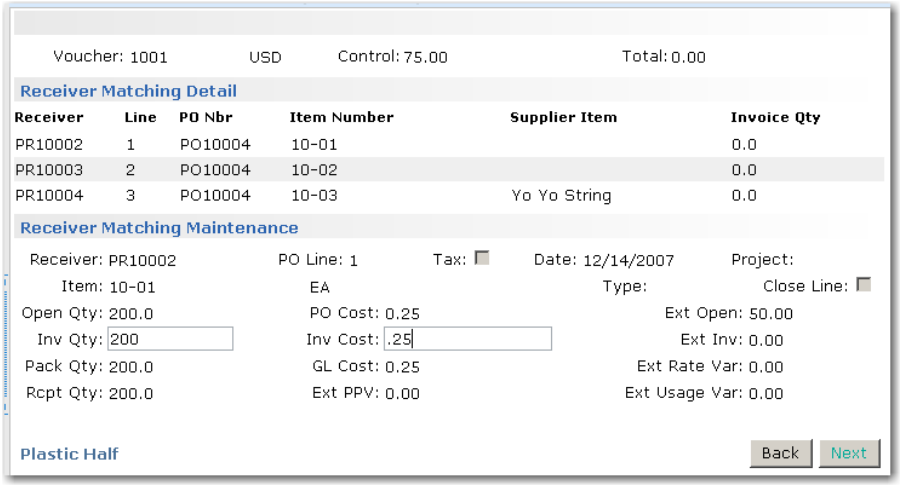
Additional Notes

If Auto Select is not chosen, bypass the automatic selection frame and continue to the Receiver Matching Detail frame, where receivers to voucher are selected, and record the actual invoice quantities and prices.

Receiver Matching Detail

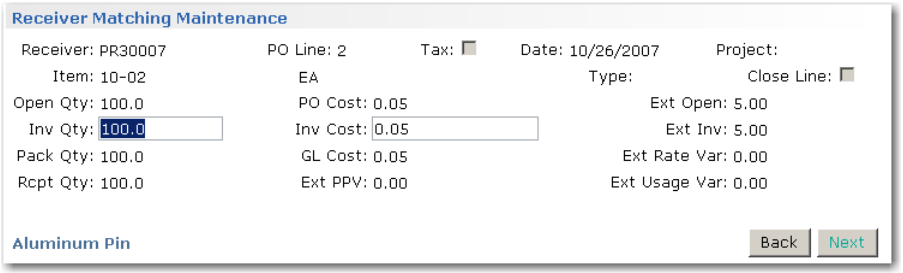


The Receiver Selection Maintenance frame displays the receivers matching the selection criteria. Because Yo-Yo Company's Accountant specified Yes to Select All, an asterisk (*) appears next to each receiver in the Sel (selected) column.



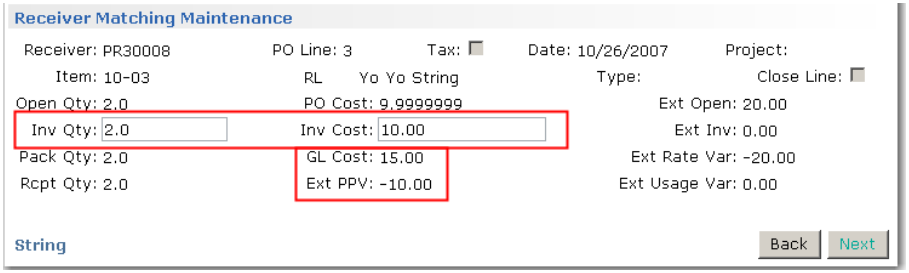
Receiver Matching Detail consists of two frames. The top frame displays all the receivers Yo-Yo Company's Accountant selected in Receiver Selection Maintenance. In the bottom frame, the Accountant can edit data related to the selected receivers for this supplier. If receivers had not been selected in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

Purchase Price Variance for item 10-02 and 10-03



The remaining lines are vouchered.

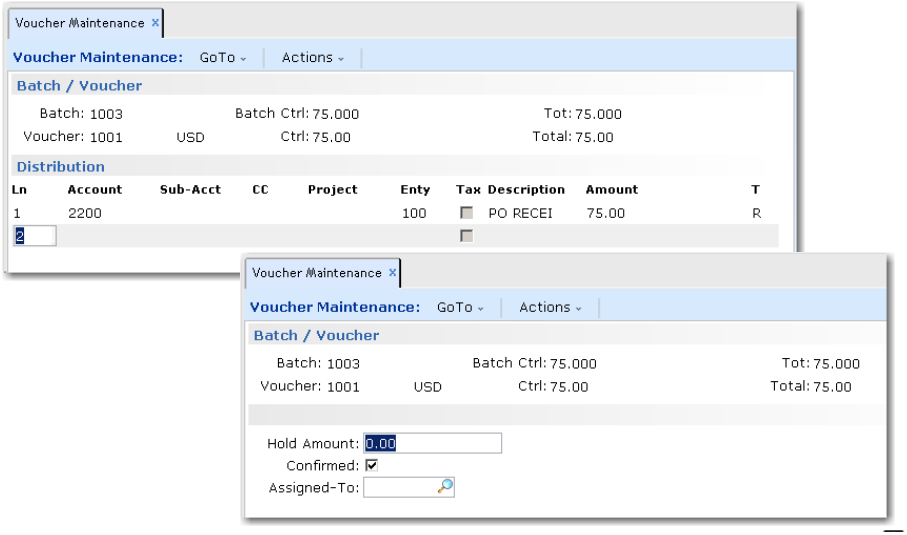
A couple of key fields to note are the Invoice Quantity and Invoice Cost fields.



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.

Note A negative purchase price is favorable. It reflects a reduction from standard cost in the price.



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.

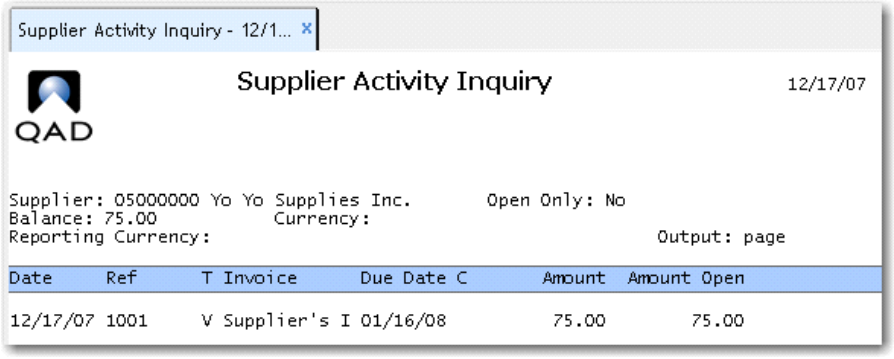
Additional Notes

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.

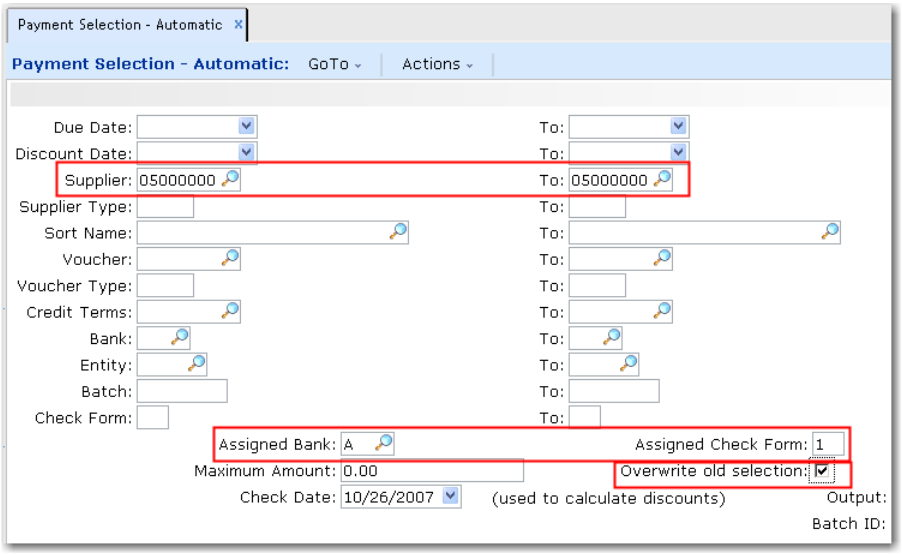
Note Unconfirmed vouchers may be confirmed in batch mode using Voucher Confirmation - Automatic, or one at a time using Voucher Confirmation - Manual.

REVIEW SUPPLIER'S ACCOUNT BALANCE



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 $75.00 associated with Voucher 1001 for Invoice Supplier's I(nvoice).

SELECT VOUCHERS FOR PAYMENT



Yo-Yo Company's Accountant uses Payment Selection-Automatic to select open vouchers by supplier code. Based on these criteria, the system recommends which vouchers should be paid. The report, shown below, 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.

Payment Selection - Automatic...

QAD

Payment Selection - Automatic

QAD Enterprise Applications

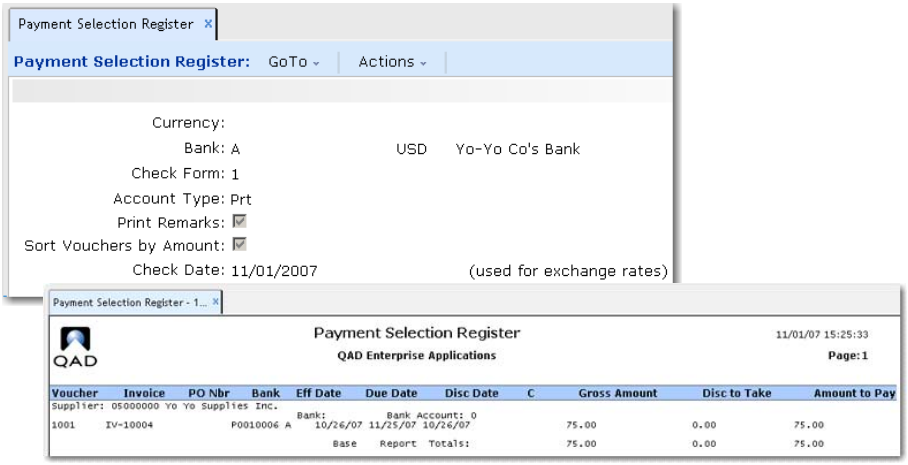
11/01/07 15:13:51

Page: 1

Voucher	Invoice	PO Nbr	Bk	Eff Date	Due Date	Disc Date	Gross Amount	Disc to Take	Amount to Pay Cur
Supplier: 05000000 Yo Yo Supplies Inc.									
1001	IV-10004	P0010006	A	10/26/07	11/25/07	10/26/07	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

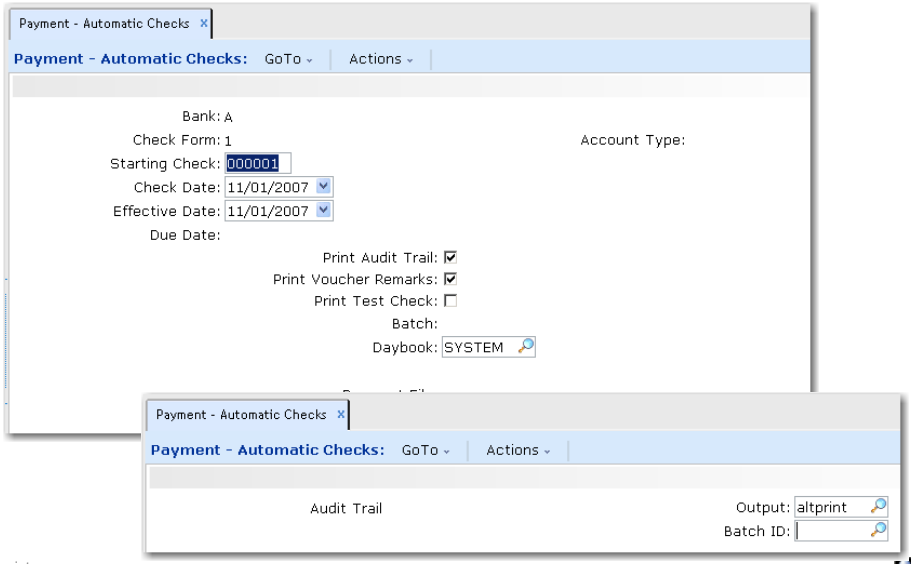
The report shows that one voucher has been selected for payment.

RUN PAYMENT SELECTION REGISTER



Payment Selection Register 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 checks are printed. Vouchers remain selected until they are paid.

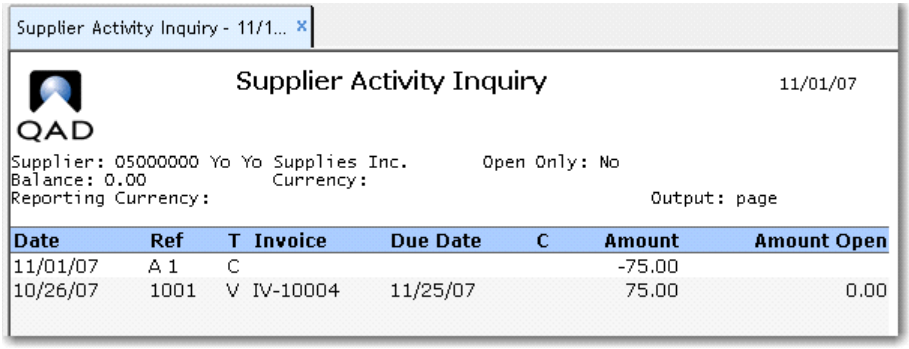
PRINT CHECKS



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.

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


Supplier Activity Inquiry - 11/1...

QAD

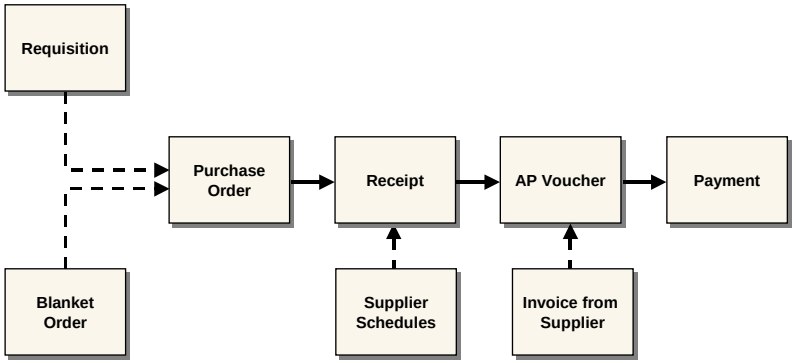
Supplier Activity Inquiry 11/01/07

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
11/01/07	A 1	C				-75.00	
10/26/07	1001	V	IV-10004	11/25/07		75.00	0.00

Before the payment was applied, Supplier Activity Inquiry Yo-Yo Supplies, Inc., had a balance of $75. Now when Supplier Activity Inquiry is reviewed, the check from Bank A is listed as -$75, which offsets the invoice amount of $75, the amount open is $0.

REVIEW



A review of the highlights of the Purchasing and Accounts Payable flow that have been 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 an invoice to confirm your liability to pay for the items under the conditions specified on the purchase order.

Voucher

Before the invoice can be paid, it must be verified that the items received are what had originally ordered and that the supplier has charged the correct price. To do this, a voucher in Accounts Payable is recorded.

When the voucher is entered, reference the purchase order and the invoice. The system then retrieves the receivers associated with the purchase order so that the invoice lines against them can be recorded. 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 7 (optional)

Enter a Voucher

Use *Supplier Activity Inquiry, 28.13* to review the supplier's account balance.

- Supplier = [use your supplier number for Yo-Yo Supplies]
- Verify that the account balance is zero(0)

(They have shipped the goods, and you have received the goods, but, you have not yet recorded the invoice)

Use *Purchase Receipt Report, 5.13.5* to review the receiving history.

- No data is required in the selection screen
- Output = page
- This report shows the detail of your receipts
- Note total extended PO Cost should be $75

Your supplier has sent an invoice for the PO.

Use *Voucher Maintenance, 28.1* to add a voucher for the invoice received.

Key fields to populate are:

- Batch = Leave blank; the system will assign a number
- Control = Enter total from invoice (75)
- Voucher = Leave blank; the system will assign a number
- Order = Enter your PO number; You can use the lookup feature to locate the PO number; click Back to continue
- Control = Enter the total for this invoice
- Supplier and Ship-To = Use defaults from PO referenced
- Effective Date = GL date for the transaction.This will default to the system date.
- Invoice = Enter the invoice number (for the purposes of this exercise, any or no invoice number is acceptable)
- Date = Enter the invoice date (use default)
- Terms = Net30 (should default from PO)

- Discount and Due Date will default based on the terms code. Leave blank.
- Accept remaining default values

When you get to the frame with the Auto Select field, enter a checkmark (Yes) for Auto Select.

- In the Automatic Selection frame, no data is required except to check Yes (checked) for the Select All field checkbox.
- 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

Using Supplier Activity Inquiry (28.13), review the supplier's account balance.

Select Vouchers for Payment and Print Checks

Use Payment Selection–Automatic (28.9.4) 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)

Run Payment Selection Register.

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

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

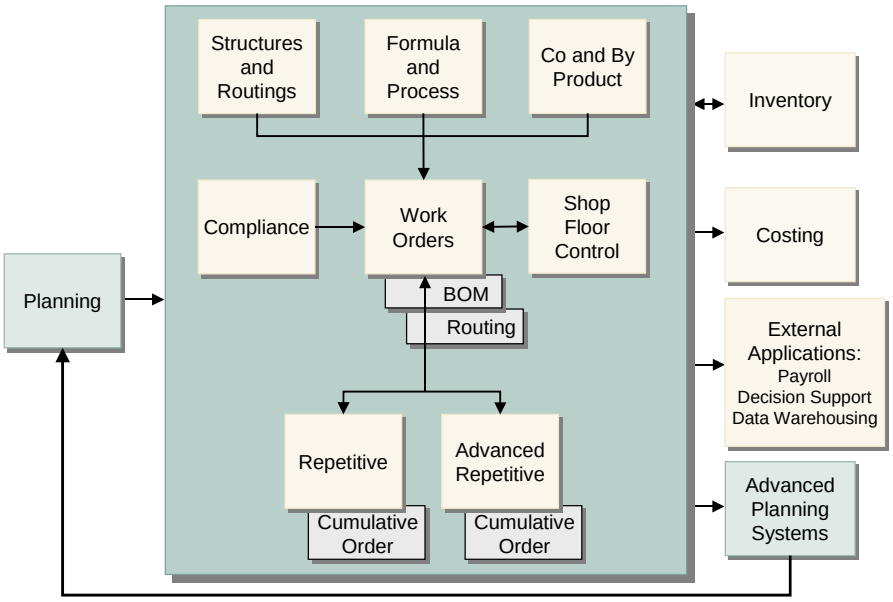
Learning Objectives

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

QAD Enterprise Applications' 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.

The process of using work orders:

- 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

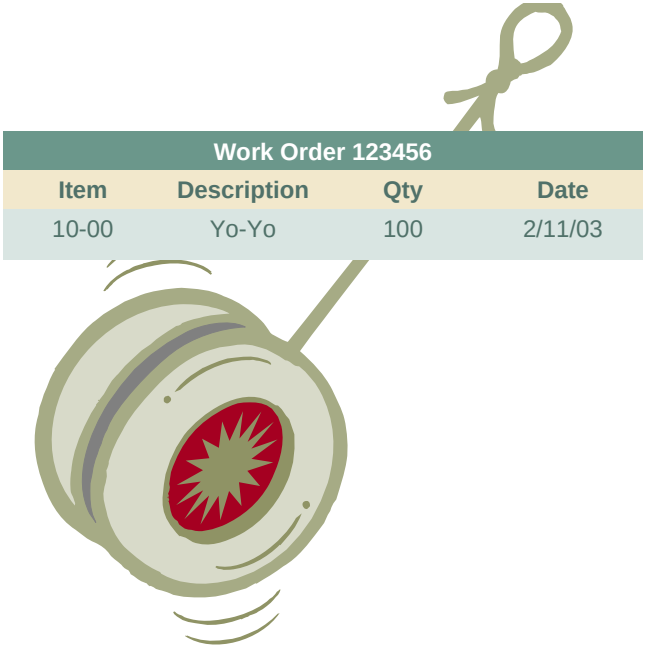
The system provides features that support different manufacturing environments. The Work Orders and Shop Floor Control modules are typically used to manage job shop manufacturing. The Advanced Repetitive or Repetitive modules manage manufacturing in an assembly line environment.

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. Work Orders can also be used to build up inventory in anticipation of future demand when there is unused manufacturing capacity.

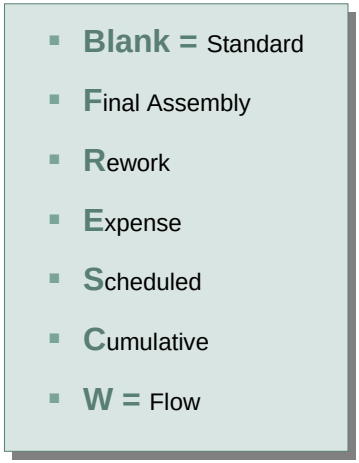
Elements of a Work Order

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

These elements will be examined on the following pages.

WORK ORDER TYPE



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.

Joint order sets are a special case associated with Co/By Product orders. Joint order sets can be created for regular work orders that are type code blank. See the related training materials on Joint Products for detailed information. Rework and Expense work orders can share the same work order number as a joint order set, but are not considered part of the joint order set. As an example, a work order for co-product or by-product can be reworked using the original work order number. The type code must be blank for a base process work order.

Note Each work order is uniquely identified by the combination of the work order number and the work order ID number. In the case where the work order number is the same, as in a scheduled order, where every schedule for the same item has the item number as the work order number, the work order ID becomes the unique identifier.

Some other special types are available:

E (Expense). Expense work orders are used for non-inventory jobs, such as engineering prototypes or design projects. They are tracked by a work order so costs can be accumulated. Usually a special GL account and project code is entered. Expense work orders do not have any routing operations or components. These are added manually.

R (Rework). Rework work orders are used for products needing repair or reworking. This type of order is created with no routing and only one component--the product being reworked. Rework expenses can be tracked separately by entering a different GL account and project code.

Expense and Rework orders are always created by users.

S (Scheduled). Scheduled Orders are generated by the system when a Repetitive schedule is entered. The work order number is the item number scheduled for production. Scheduled orders can be tracked using Repetitive feedback functions or released to create work orders. To release it, change the status field from exploded to allocated or to released. The system will automatically change the Type to blank and will treat it like a normal work order. The system will also update the repetitive schedule to exclude the order.

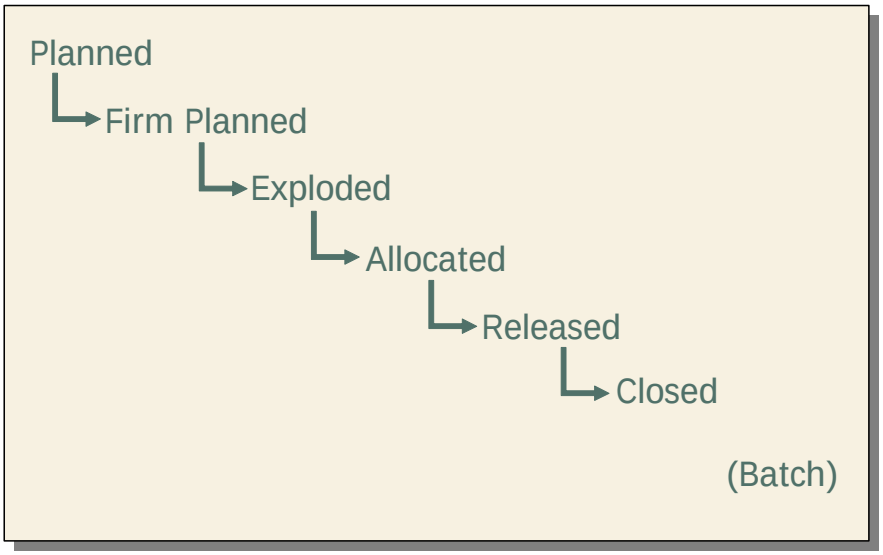
C (Cumulative) Cumulative Orders are generated by the system to track repetitive production costs. These cannot be processed by work order functions. Cumulative orders are associated with both regular and sequenced repetitive line schedules.

F (Final Assembly) Final Assembly is generated when a sales order for a configured product is released to manufacturing. The work order number will be the sales order number. It uses the standard routing for the item, but the product structure contains only the items chosen on the sales order configuration. These orders are released and processed as regular work orders. You must specify Type as F in Multiple WO Release/Print to release the work order, however.

W (Flow) A Flow is generated when you use Flow Schedule Maintenance to create a flow scheduled order that does not reference an existing work order. These cannot be processed by work order functions.

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.

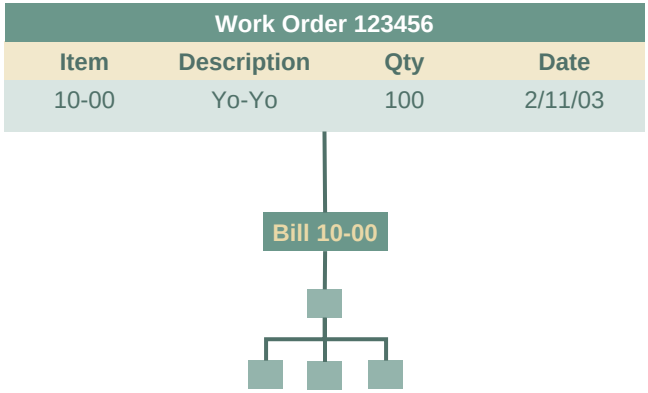
The status of a work order determines how much control you have over its bill, routing, inventory allocations, inventory transactions, and labor feedback.

- Changes cannot be made 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. Most orders will progress from status firm planned to released in one step using a function work order release and print.

Note Manually exploding a work order is a special case usually done to capture the current bill of material before an impending engineering change. Manually allocating a work order is often done to consume the last of a component item that is being phased out. In this case the inventory of the component would be allocated for that specific order.

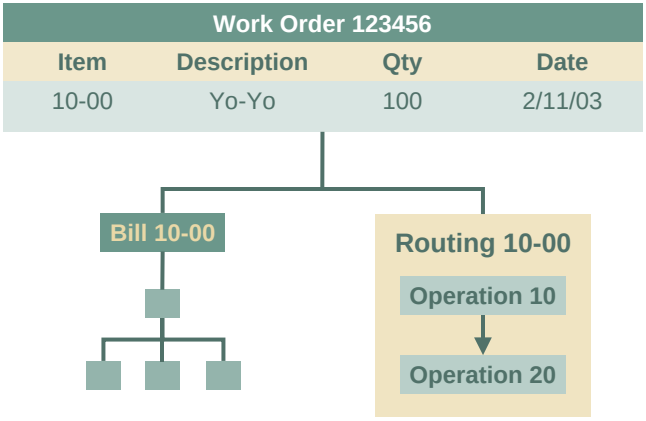
WORK ORDER BILL OF MATERIAL



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. Particularly in the case where many substitute items are available for assembly this feature allows for what is often called “as built” documentation.

WORK ORDER ROUTING



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. Work order operations can be monitored using the Shop Floor Control module.

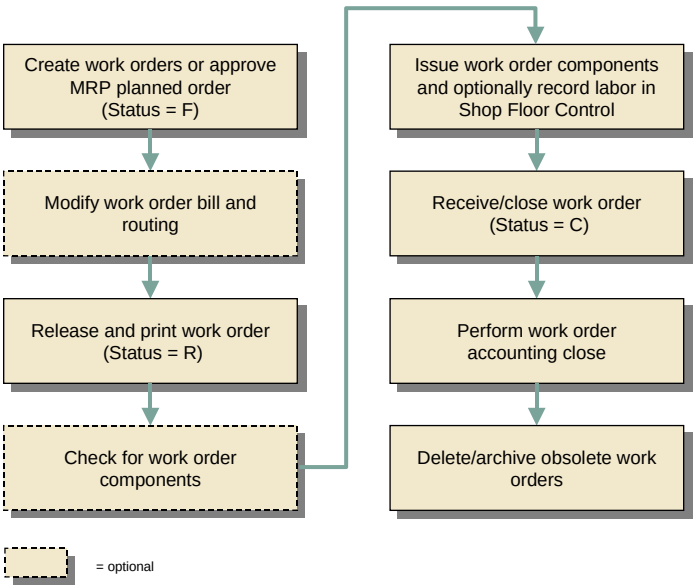
What's Next

Now that the four key elements of a work order have been discussed, its typical life cycle from work order creation to work order close will be examined.

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, the following stages in the work order life cycle will be examined in detail:

- release
- issue of components
- receipt
- close

RELEASE WORK ORDER

Inventory can only be issued or received against a released work order. Orders can be released:

- 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 allow a picklist or routing to be printed, 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 a work order is released, its picklist can be printed. 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. Detail allocations reserve specific quantities in inventory for a work order

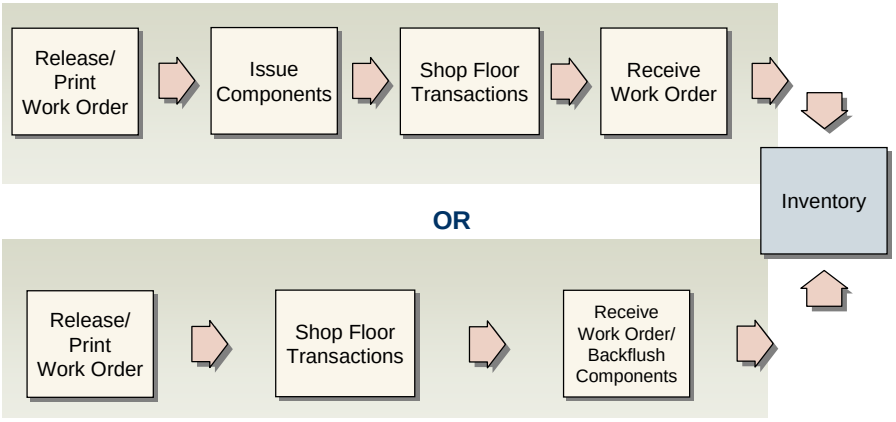
An order can be released without printing a picklist and routing, but a picklist cannot be printed without releasing the order.

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)



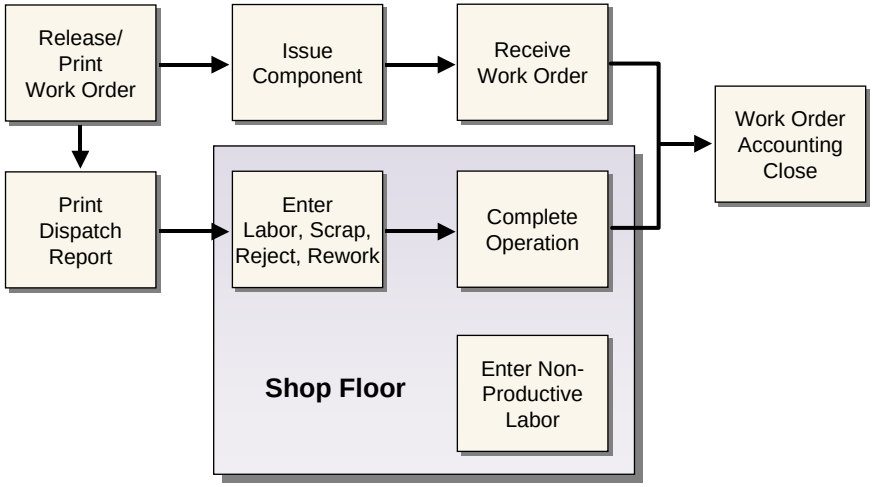
Inventory transactions occur at different points depending on which method you use. Component quantity on-hand is reduced at a later time using the backflush method.

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.

Work order operations can be monitored using the Shop Floor Control module, which will be discussed 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. At least one employee must be set up. 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 a released work order must be identified. 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 items were not issued 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.

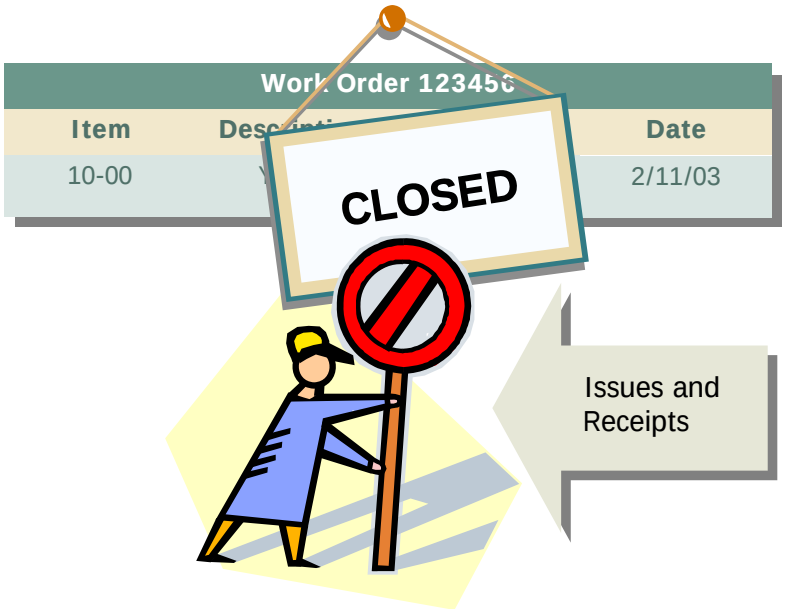
If the Shop Floor Control module is used, labor feedback and test results at receipt can be entered, and report individual operations as completed.

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.

In order to process inventory for a closed work order, its status must be changed 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.

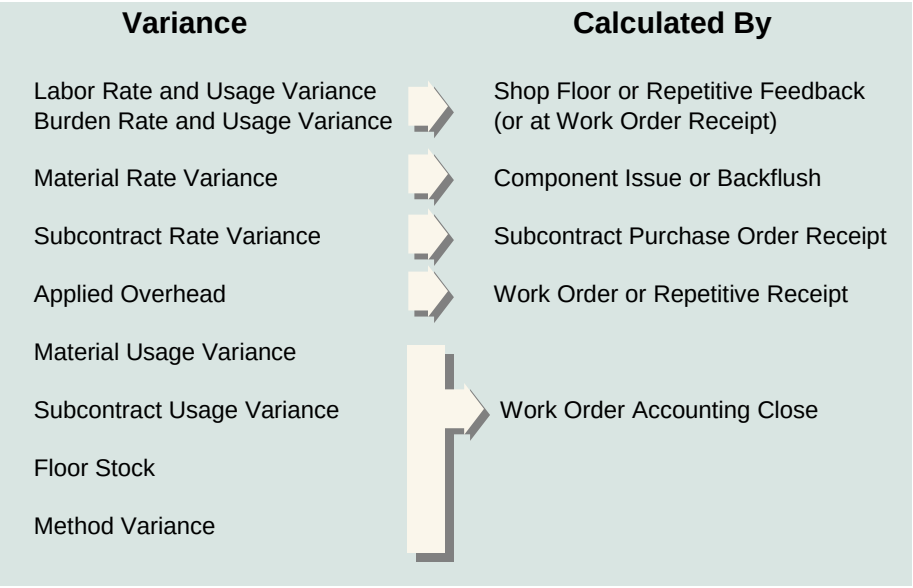
For example, if it took six hours to complete an operation scheduled for five hours, a labor usage variance of one hour is posted.

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



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 the system, 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.

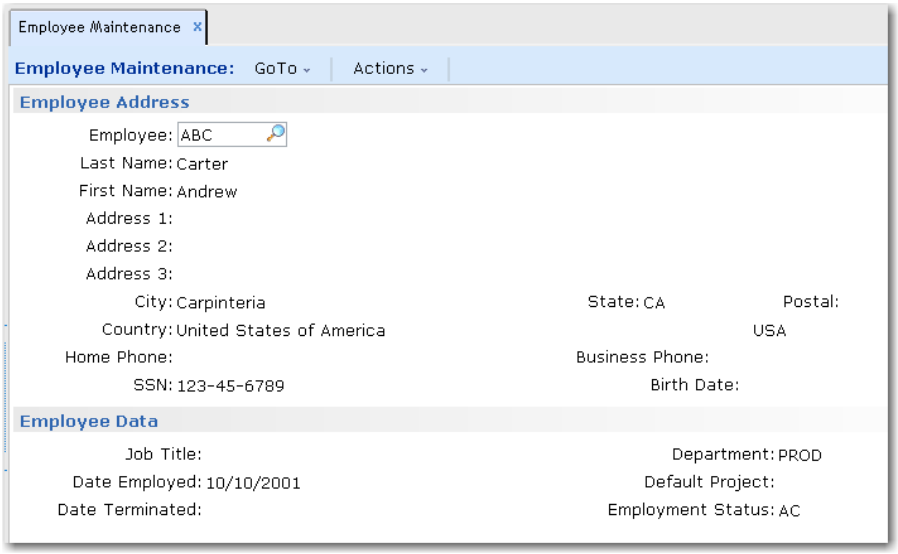
After all other sources of costs and variances have been accounted for, any remaining amount in work in process is posted as a method variance.

Example

Examine 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)

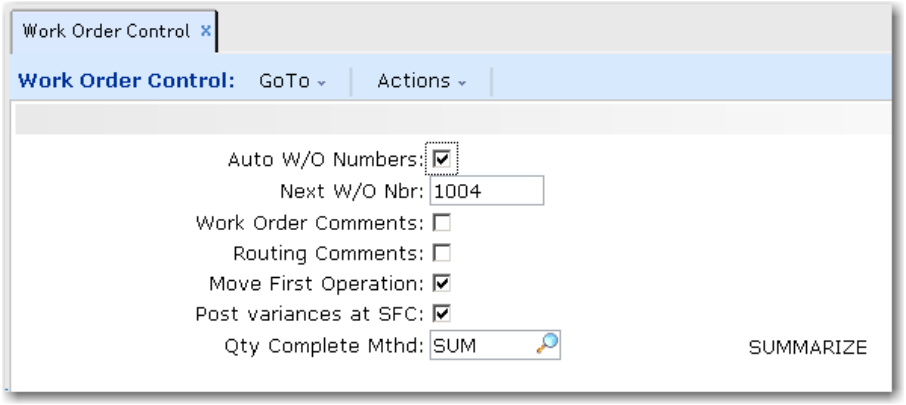
ADD EMPLOYEE RECORD



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

The employee's ID is entered in the Labor Feedback by Work Order screen.

DEFINE CONTROL SETTINGS



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)

Additional Notes

Move First Operation

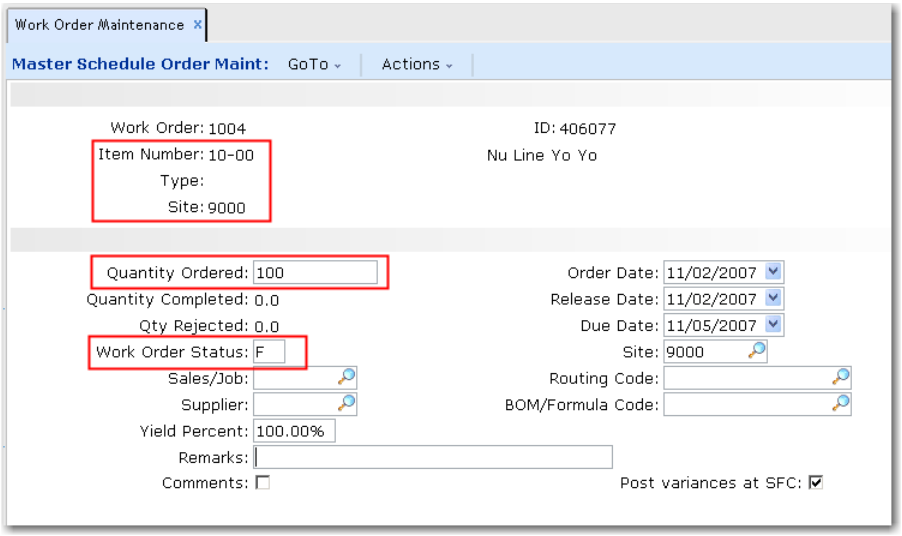
This field is typically set to Yes. The released order then appears on the dispatch list for the specified work center and the Queue status indicates it is waiting to be started. If a lengthy picking effort is required, the work order may not be ready as soon as it is released. In that case, this field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

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

CREATE WORK ORDER



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

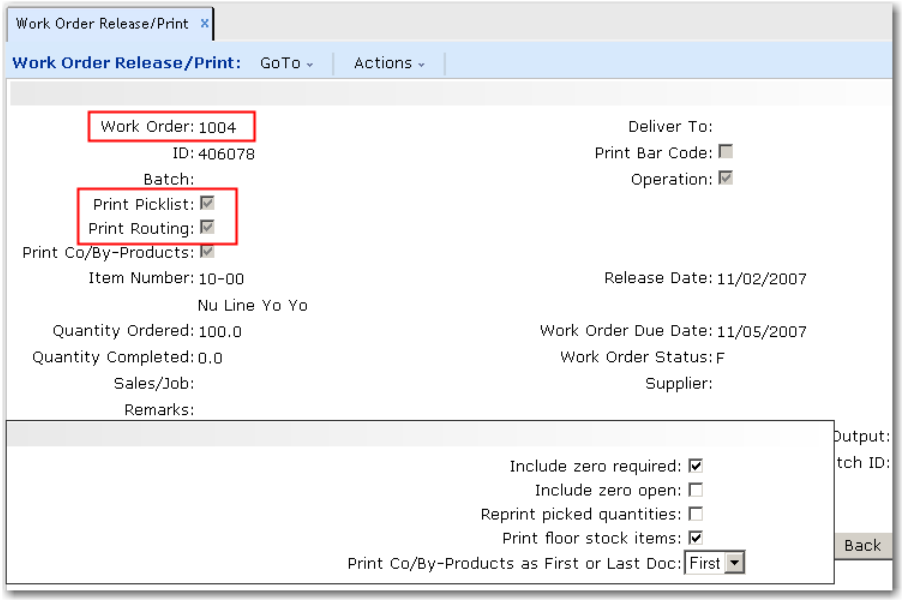
The work order type is “blank,” which means that this is a normal manufacturing order with a standard product structure and routing.

This work order has a status of Firm Planned (F), so this order has been reviewed and confirmed.

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.)

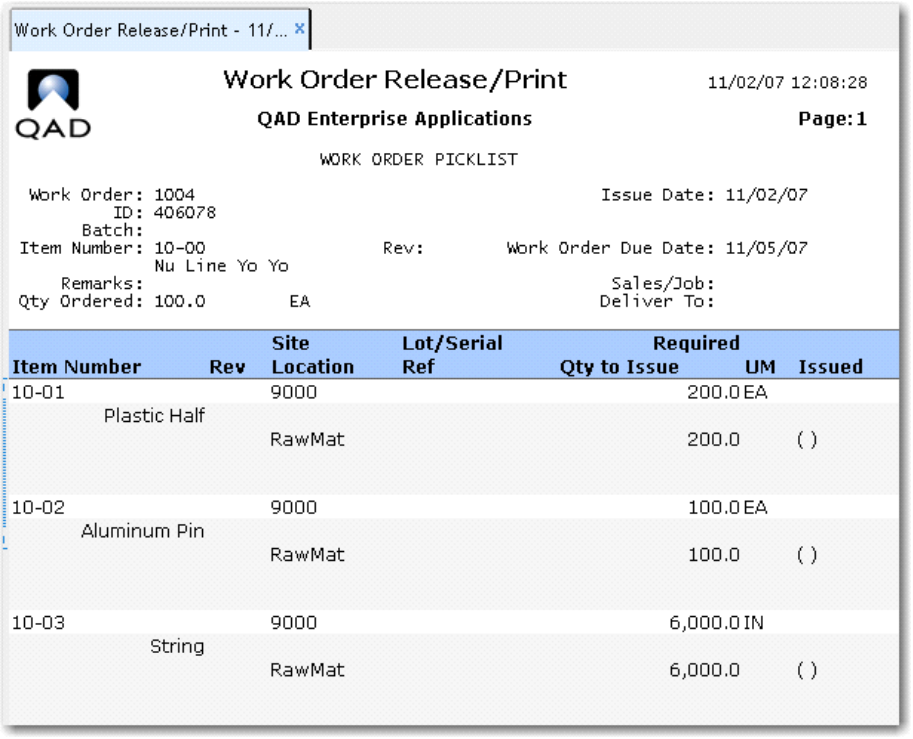
RELEASE WORK ORDER



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). During this process the work order has been exploded and allocated, then released in one step.

REVIEW PICKLIST



Work Order Release/Print - 11/...

QAD

Work Order Release/Print 11/02/07 12:08:28

QAD Enterprise Applications Page: 1

WORK ORDER PICKLIST

Work Order: 1004 Issue Date: 11/02/07
ID: 406078
Batch:
Item Number: 10-00 Rev: Work Order Due Date: 11/05/07
Nu Line Yo Yo
Remarks: Sales/Job:
Qty Ordered: 100.0 EA Deliver To:

Item Number	Rev	Site Location	Lot/Serial Ref	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 (8000) and location (RawMat) to pick from.

REVIEW ROUTING

QAD

Work Order Release/Print 11/02/07 12:08:28

QAD Enterprise Applications Page:2

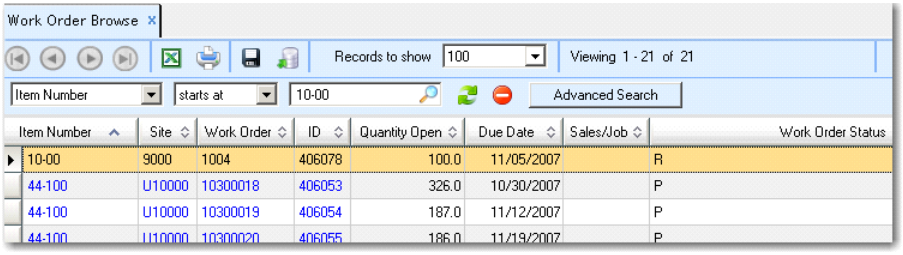
Work Order Routing

Work Order: 1004
ID: 406078
Batch:
Item Number: 10-00 Rev: Work Order Due Date: 11/05/07
Nu Line Yo Yo
Remarks: Sales/Job:
Qty Ordered: 100.0 EA Deliver To:

Op	Work Center	Std Op	Tooling Supplier	Setup Time / 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

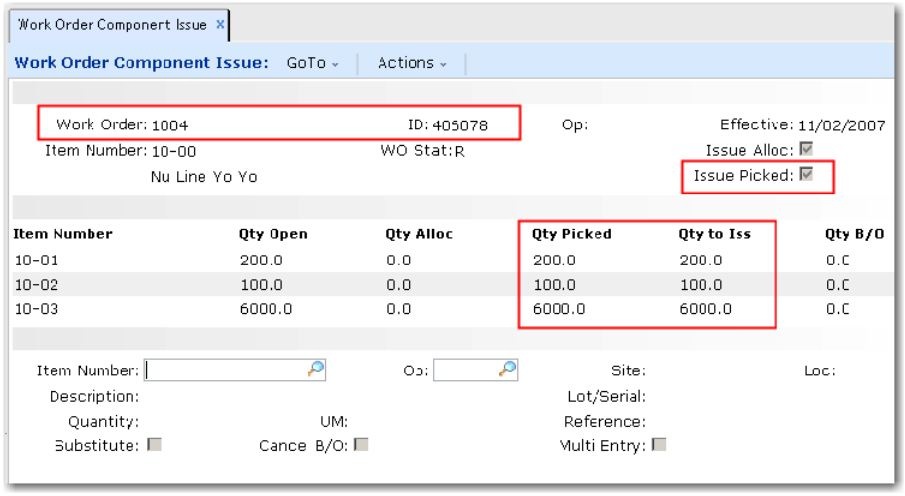


The Work Order Browse now shows that the work order status has indeed changed from F (firm planned) to R (released).

In the process of releasing the order, the work order bill of material was exploded and allocated. Thus background processing changed its status from Firm to Exploded to Allocated to Released in what was for the user just one step.

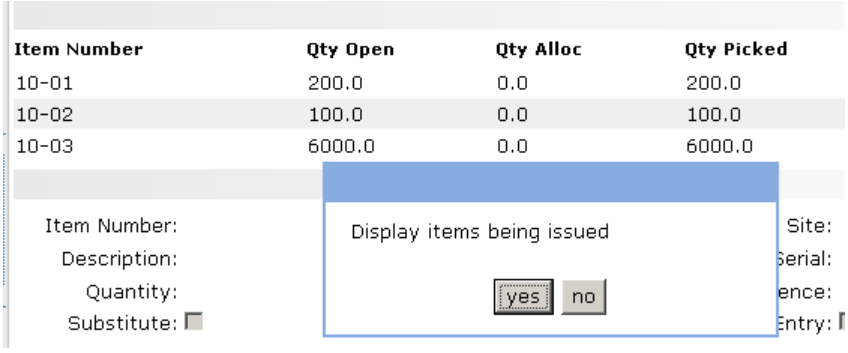
In work order control the flag for “Move First Operation” was checked yes, so the in addition to the order status released, the operation status for the first operation has been changed to status “Queue.”

ISSUE COMPONENTS

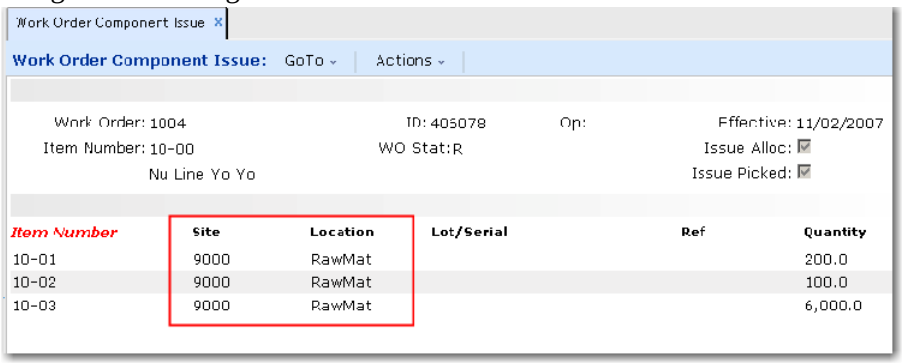


The Production Manager issues components for item 10-00 (yo-yo) based on the bill of material that was defined in Product Structure Maintenance.

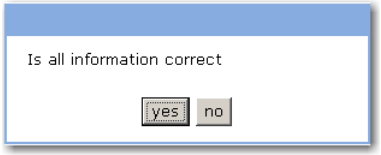
In this example, all components were picked from the locations printed on the work order picklist, so they can be issued automatically by setting Issue Picked to Yes. This reduces manual entry because it sets the default sites, locations, lot/serial numbers, references, and quantities from the detail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



When advancing from the first screen a pop appears, select yes to see a detail listing of items being issued.



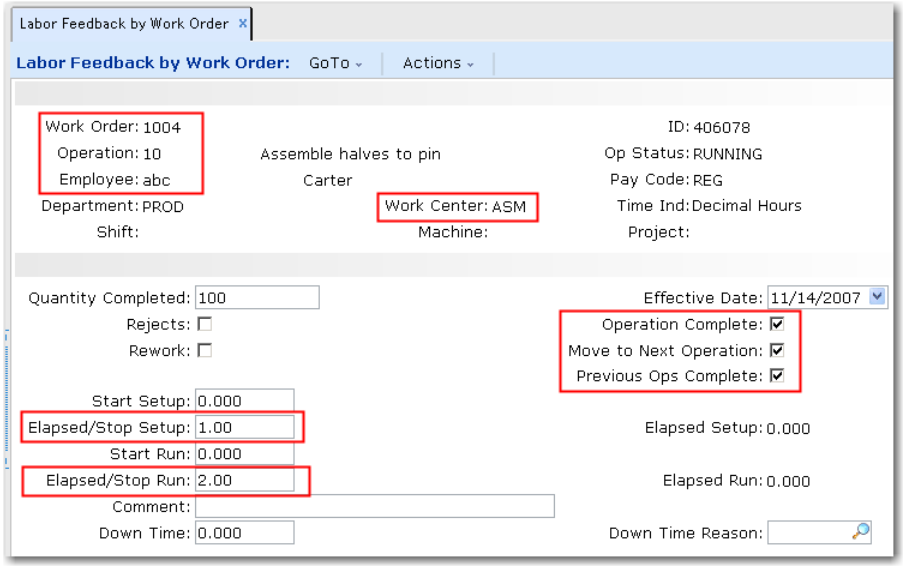
This view shows the components, quantities and the location they are being issued from. Verify that all information is correct. A another pop up will appear.



Select Yes to complete the transaction. Click no to return to the transaction window to make corrections.

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

RECORD LABOR



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), 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

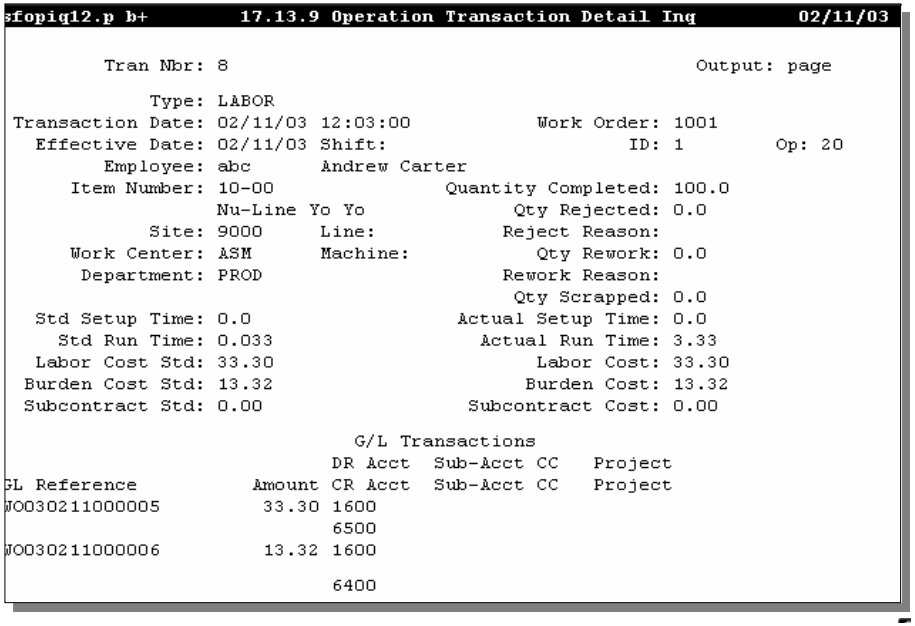
What information is provided by the Department PROD?

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
WO030211000005         33.30 1600
                             6500
WO030211000006         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.

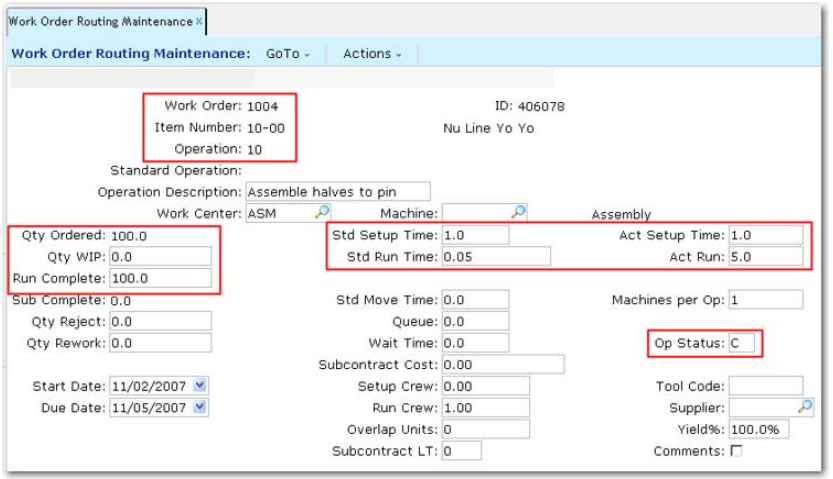
Calculations

Labor cost at operation 20 = 0.333/unit
100 units (yo-yos) × 0.333 = 33.30

Burden cost at operation 20 = 0.1332/unit
100 units (yo-yos) × 0.1332 = 13.32

To see how the per unit labor and burden costs were calculated, see Appendix A.

REVIEW WORK ORDER ROUTE OPERATION STATUS



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.

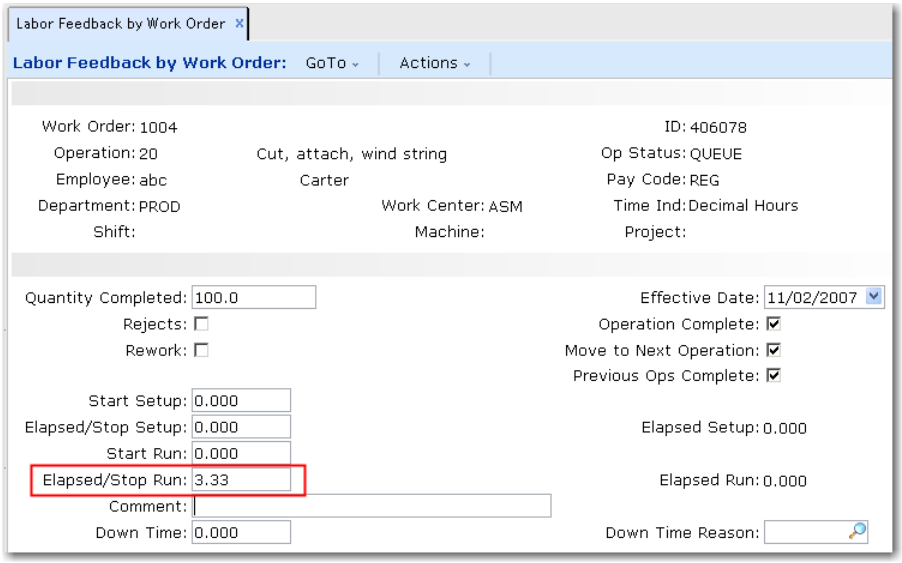
This screen shows that Operation 10 is complete (Op Status = Complete). There are no yo-yos in process at this operation (Qty WIP = 0), and 100 have been completed (Run Complete = 100).

Operation 20 now shows that its status has been changed to Queue.

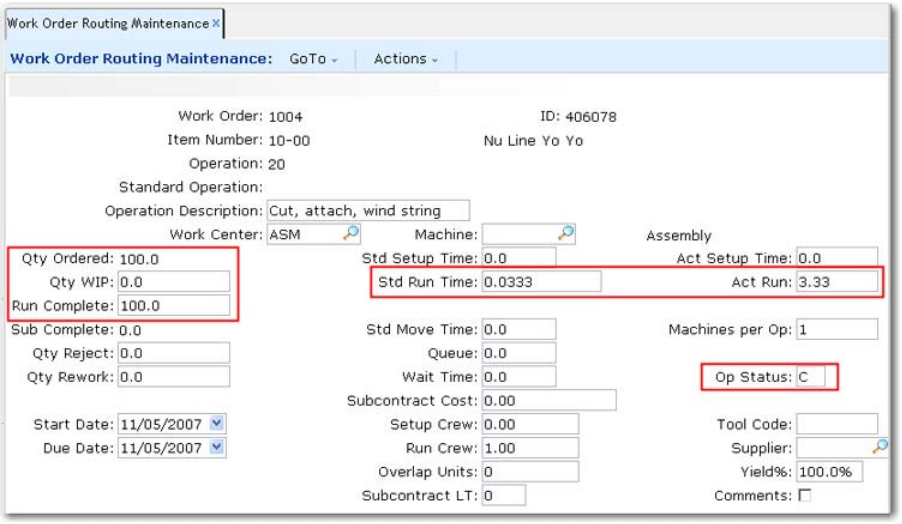
If the need were found to make changes to operation 10 reporting, Work Order Routing Maintenance can be used to change the operation status from “C” closed to “R” Running; this allows additional labor reporting to be done.

REPORT LABOR – OP 20

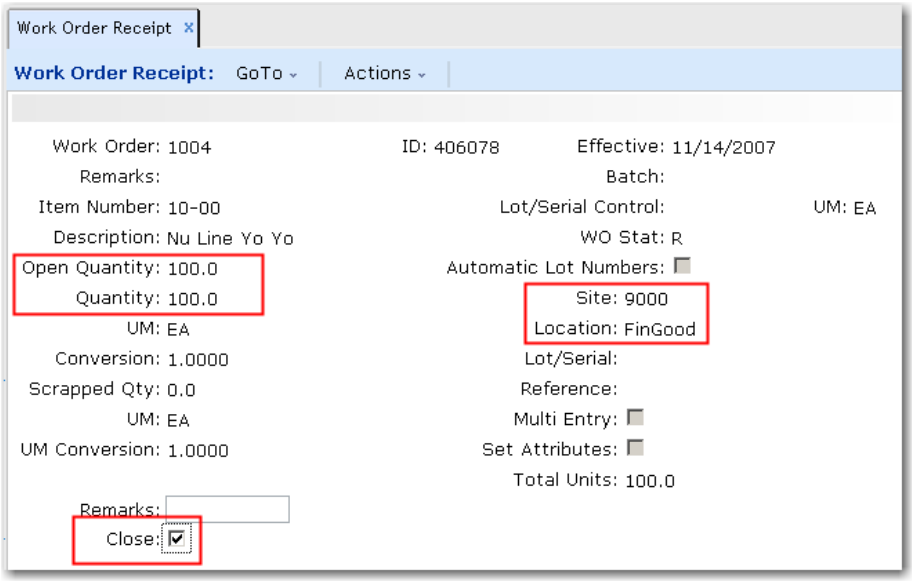
Quantities and times are reported for operation 20 in the same manner.



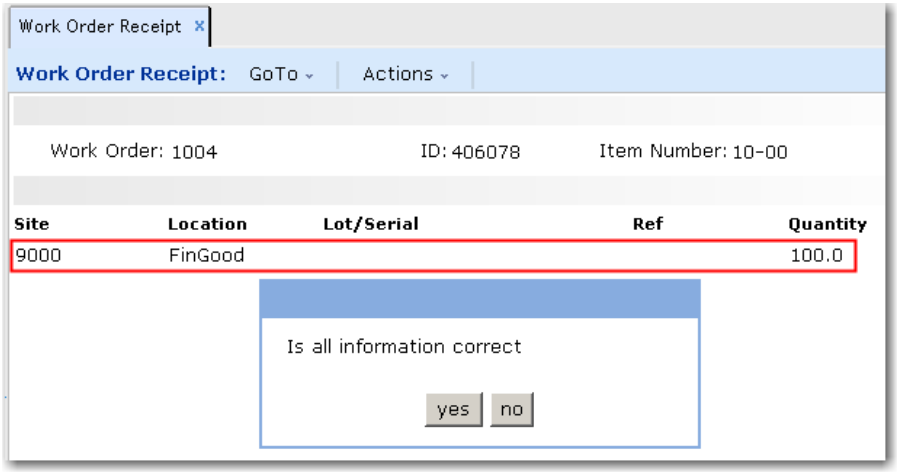
Work Order Routing Maintenance shows that Operation 20 is also complete (Op Status field = [C]omplete and Run Complete field = 100).



RECEIVE AND CLOSE WORK ORDER



Using Work Order Receipt, Yo-Yo Company receives the 100 yo-yos into its finished goods location (FinGood) and closes the order.



A Pop up window displays the transaction about to be processed and asks for confirmation that all is correct.

This increases (debits) the Inventory account and decreases (credits) the WIP account for the total standard GL cost.

Additional Notes

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.

REVIEW

In this chapter, work order types and status codes were discussed, and the variances that may occur in the work order cycle were explained. Work orders flow was then followed 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
- Labor is recorded in Labor Feedback by Work Order.

Activity 8

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, 2.7.1* to add an employee.

Key fields to populate are:

- Employee = [leave blank; system will assign]; click Next
- Last Name = [enter your last name]
- First Name = [
- Address 1 = [optional]
- City = Santa Barbara[optional]
- State = CA[optional]
- Country = USA
- SSN = 123-12-1234[optional]
- Birth Date = 01/10/1970[optional]; click Next
- Job Title = Assembler[optional]
- Date Employed = [today]
- Department = PROD[optional]

Define Control Settings

Use *Work Order Control, 16.24* to 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)
- Qty Complete Mthd = [default]
- Update and exit.

Manually Add and Release a Work Order

Use *Work Order Maintenance, 16.1* to add a new work order record.

- Let the next work order number and ID number default from the control file.
- Item Nuber = 10-00
- Site = 8000
- Quantity Ordered = 100
- Let the other field values default. Update.
- Click next until the system returns you to the Work Order field, then click back to update and exit.

Use *Work Order Release/Print, 16.6* 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.

- Work Order= [Use lookup function to find your work order.
- Accept all other values at default.
- Output = page
- Review picklist and routing.

Work Order Component Issue

Use *Work Order Component Issue, 16.10* to issue components from your inventory to your work order.

- Use the lookup to find your Work Order
- Set the Issue Picked flag to Yes (checked); click Next
- Display items being issued? Yes
- Is all information correct? Yes

By overriding the data in the transaction frame, you can change the quantity issues or the location from which the items are issued.

- Update and exit.

Report Labor to a Work Order

Use *Labor Feedback by Work Order, 17.1*

- Use the lookup to find your Work Order
- Enter your employee number
- Quantity Completed = 100
- Setup Time should be 1hr
- Run time should be 5hrs
- Operation 20
- Run Time should be 3.33hrs

Use *Operation Transaction Detail Inquiry, 17.13.13* to review the transactions created when you reported labor.

Use *Work Order Routing Maintenance, 16.13.13* to review your work order routing.

Receive and Close a Work Order

Use *Work Order Receipt, 16.11*

- Receive all 100 yo-yos into location FinGood at site 8000.
- Close = Yes(checked)
- 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. Each of these activities will be discussed, followed by an example to illustrate the process.

Key Concepts

- Sales Order Work Flow
- Document Layout
- Allocation of Inventory
- Picklists
- Shipment
- Invoice Management

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

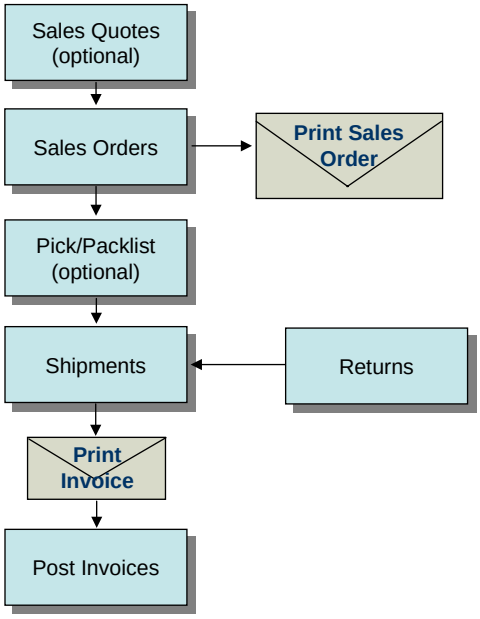
Learning Objectives

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.

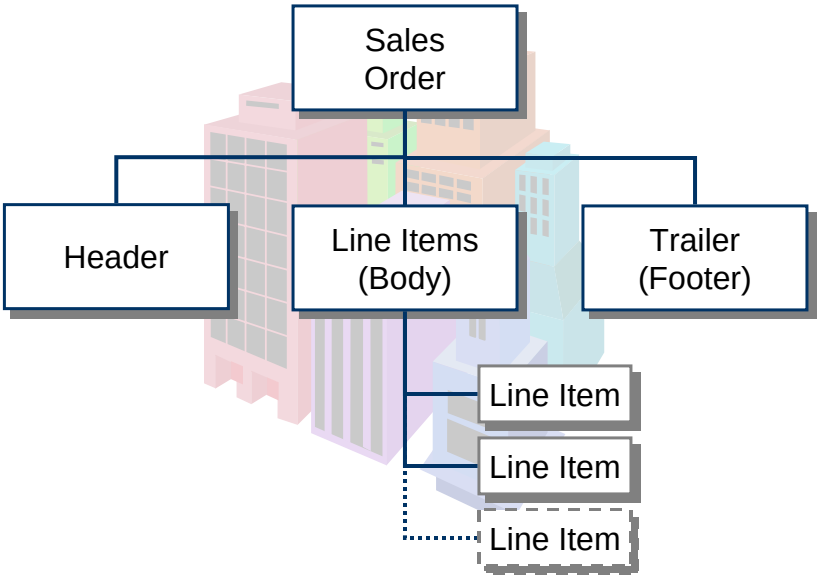
The shipment transaction creates a pending invoice that does not increment sales until the invoice is printed and is posted to Accounts Receivable.

Once invoices are posted, financial processing continues with accounts receivable functions.

What's Next

The main parts of the sales order document will be examined.

SALES ORDER DOCUMENT LAYOUT



In QAD Enterprise Applications, 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

The 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

The Line Item specifies a particular item being ordered, its order quantity, price, and 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

The 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

Inventory allocations for sales orders, or reserving inventory for a sales order will now be examined.

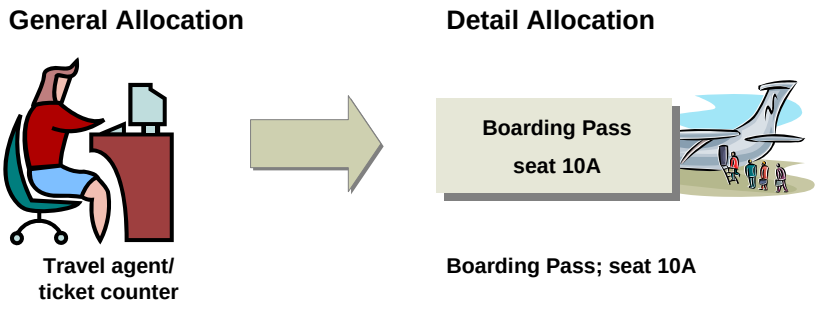
ALLOCATION OF INVENTORY

The system 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 an airline ticket is purchased, the airline allocates a seat. This is a general allocation, a seat has been reserved, but the seat number is an unknown. 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.

In our airline example, this happens when you get a boarding pass; now you 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 will be discussed 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.

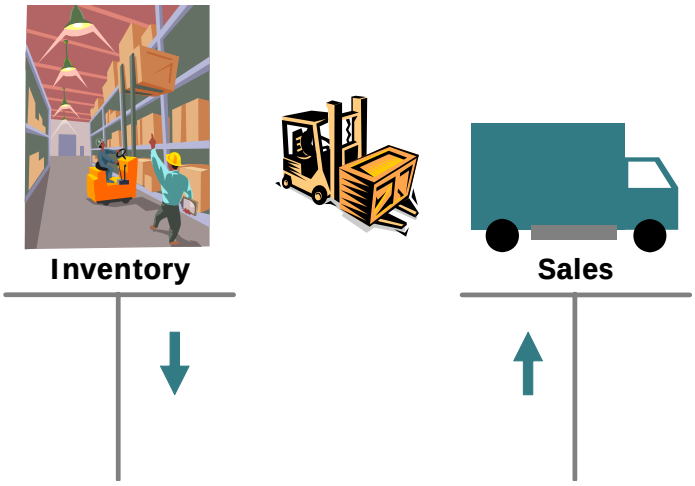
The picklist shows what items to pick to fill an order and what site or location to pick them from. If a detailed allocations in Sales Order Maintenance is created, including lot/serial numbers and lot reference numbers; the information appears on the picklist. If a general allocation for the sales order is performed, 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. Picklists for sales orders can only be printed for those orders not on credit hold. A sample picklist is shown below.

```
  Yo Yo Co.                                          P A C K I N G   L I S T
  Carpinteria, CA 93103
  United States of America                    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                             Yo Yo's R Us
      123 Main Street                          123 Main Street
      Santa Barbara, CA 93101                  Santa Barbara, CA 93101
      United States of America                 United States of America




  Salespersons:                               Purchase Order:
                                                    Ship Via:
  Credit Terms: Net30                           FOB Point: Shipping Point
                Payment Due in 30 Days
       Remarks:


                         Site                          Qty Open         Due
 Ln Item Number        T Location Lot/Serial         Qty to Ship UM  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.

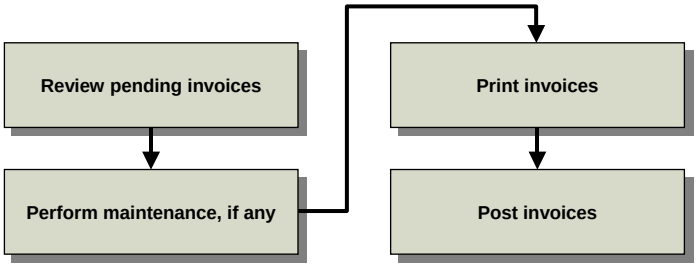
This physically decreases the quantity on hand for each of the items that were shipped, and generates a GL transaction to decrease (credit) inventory and increase (debit) cost of sales.

Shipping a sales order automatically flags it as ready for invoicing. Normally in the system, an invoice document is generated for each shipment. However, multiple shipments and sales orders can be combined 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:

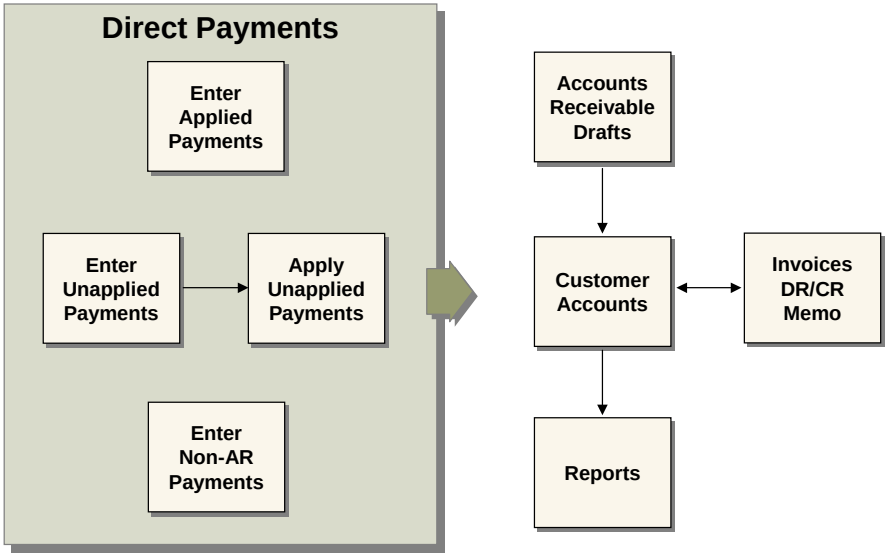
- Sales and AR
- Salesperson quota and commission history
- Sales tax journals
- Sales analysis history

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). Payments may be recorded in the system 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

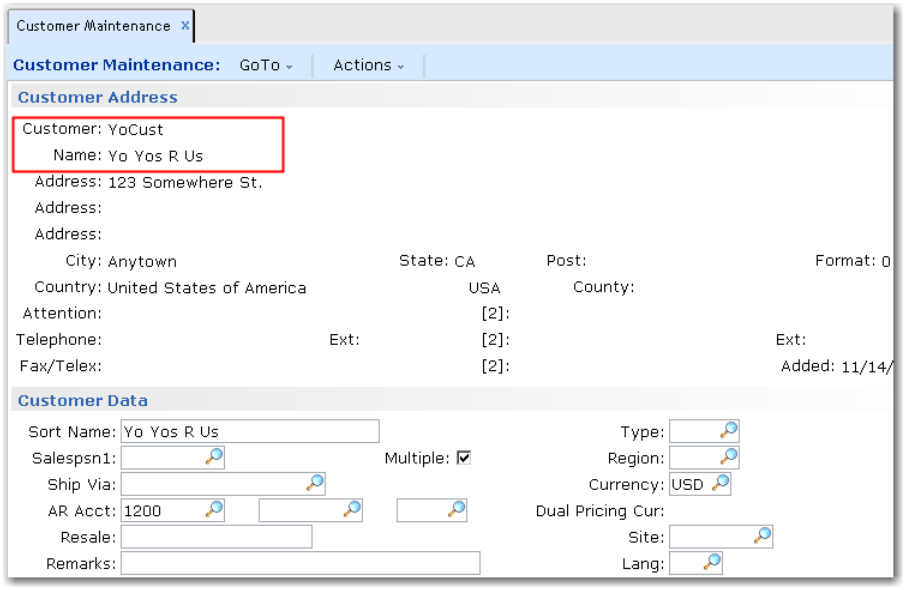
In the following example, Yo-Yo Company Company's Sales Department:

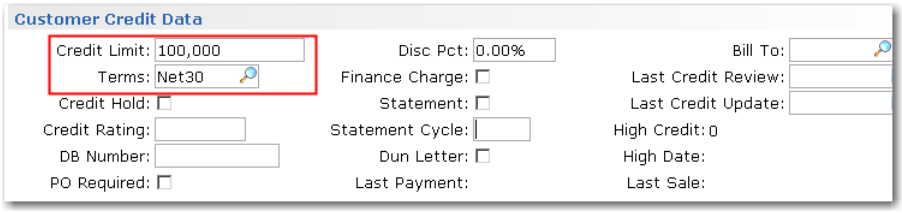
- Creates a customer record for Yo-Yos R Us in Customer Maintenance. Information entered includes the customer ID (YoCust), credit limit of 100,000, and credit terms of Net30.
- Defines sales order control settings in Sales Order Control
- Enters a sales order for 100 yo-yos sold to Yo-Yos R Us (YoCust) 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 × $10/yo-yo).
- Receives check for $1,000 and enters payment in Payment Maintenance

CREATE CUSTOMER RECORD

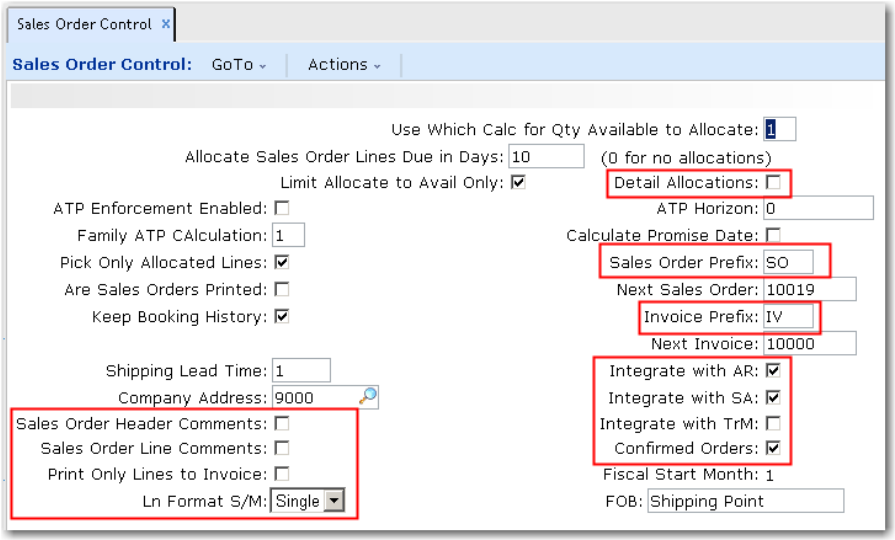




Before Yo-Yo Company's Customer Service Representative (CSR) can enter a sales order, there must be a customer record in the system.

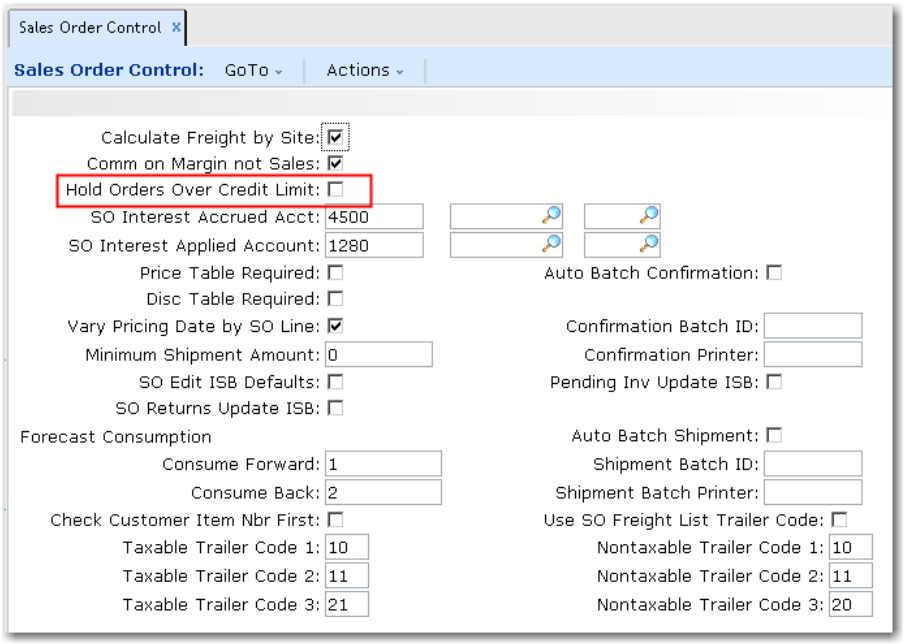
Yo-Yo's R Us is a customer of Yo-Yo Company. In addition to basic address information, Yo-Yo Company has entered customer credit data, a credit limit of 100,000, and terms of Net30.

DEFINE CONTROL SETTING



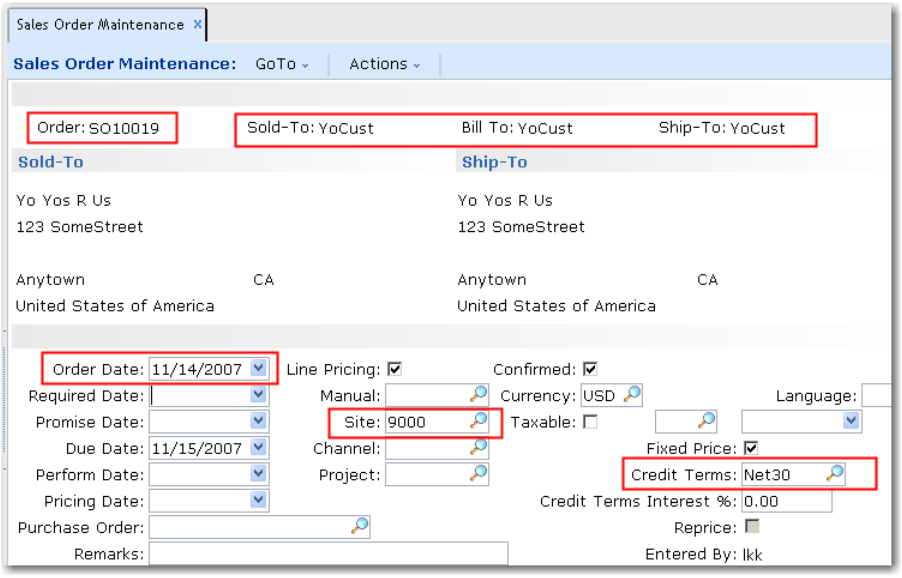
In Sales Order Control, Yo-Yo Company has specified several standards and default settings pertaining to its sales orders.

- 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



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

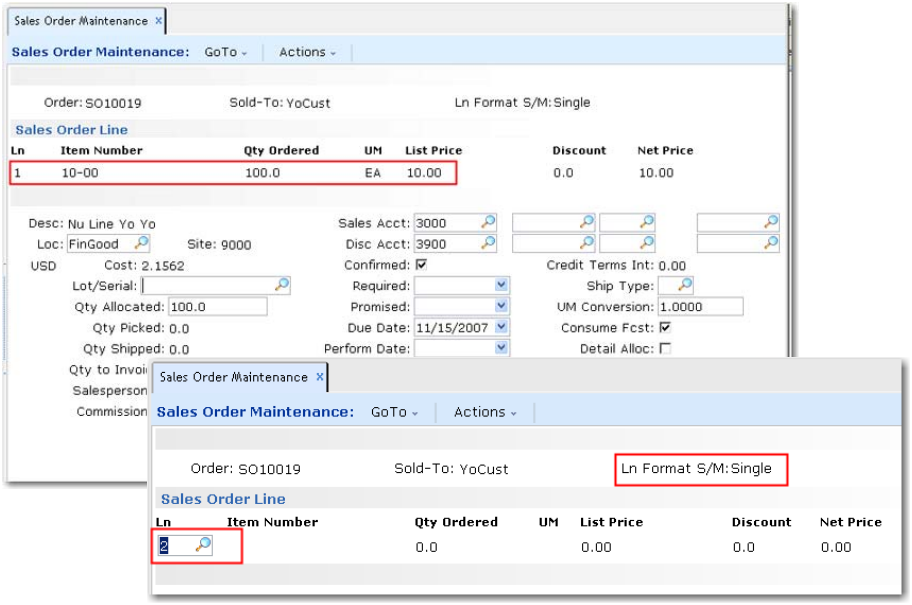


A sales order entered by Yo-Yo Company's CSR is shown above. This order is for Yo-Yo's R Us (YoCust).

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 8000 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. Line item data will be examined next.

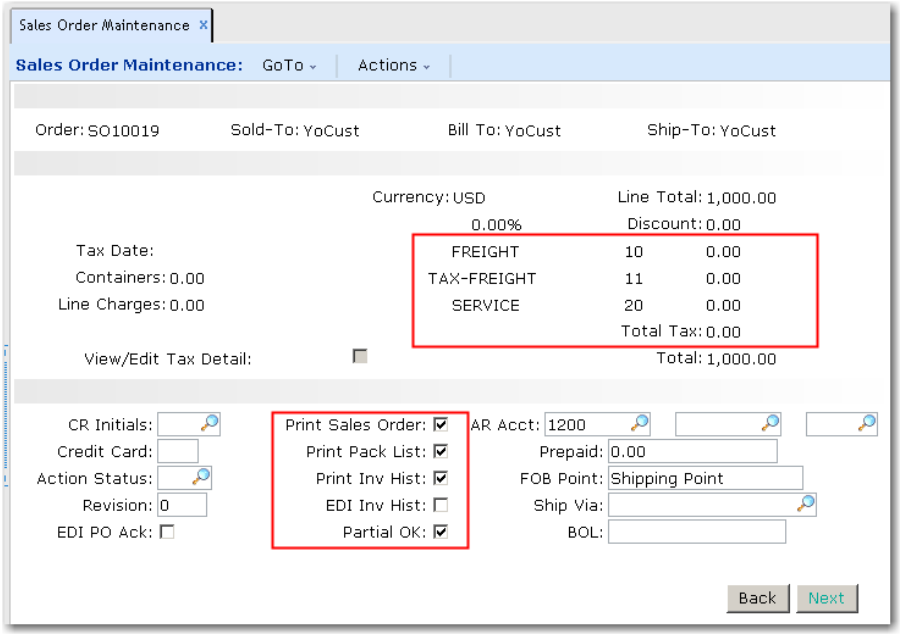
SALES ORDER: ENTER LINE INFORMATION



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. Since only one line needed to be entered for this order, the CSR exited the next line by clicking Back. The system then goes to the line format window (Ln Format S/M:) Clicking Back again takes the system to the trailer frame, which we will discuss next.

SALES ORDER: ENTER TRAILER INFORMATION

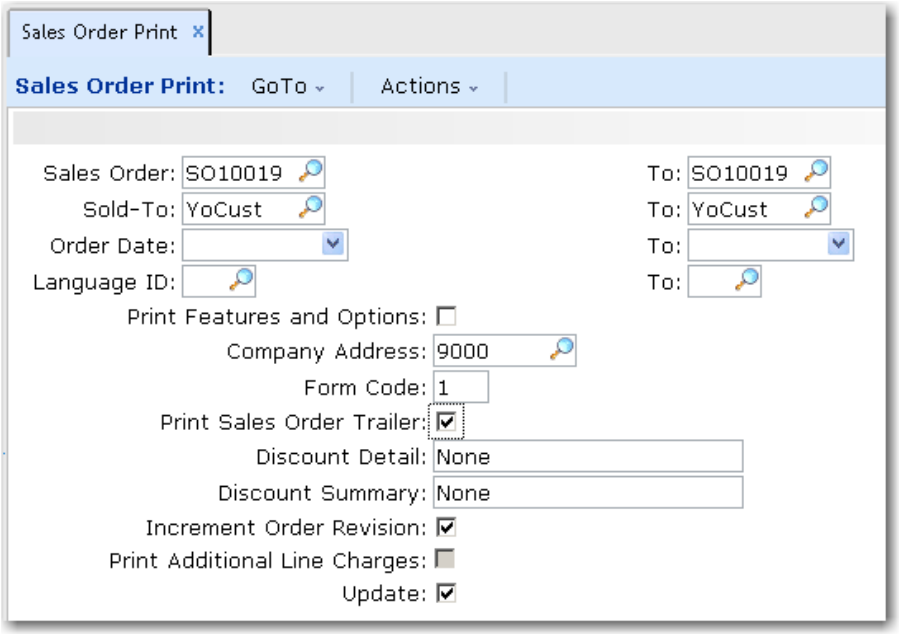


The trailer frame calculates taxes and freight based on data setup in the tax and freight modules. Any additional charges may also be added. Trailer codes are setup in the Addresses and Taxes module. The default codes are specified in Sales Control. For this example we will ignore shipping and taxes.

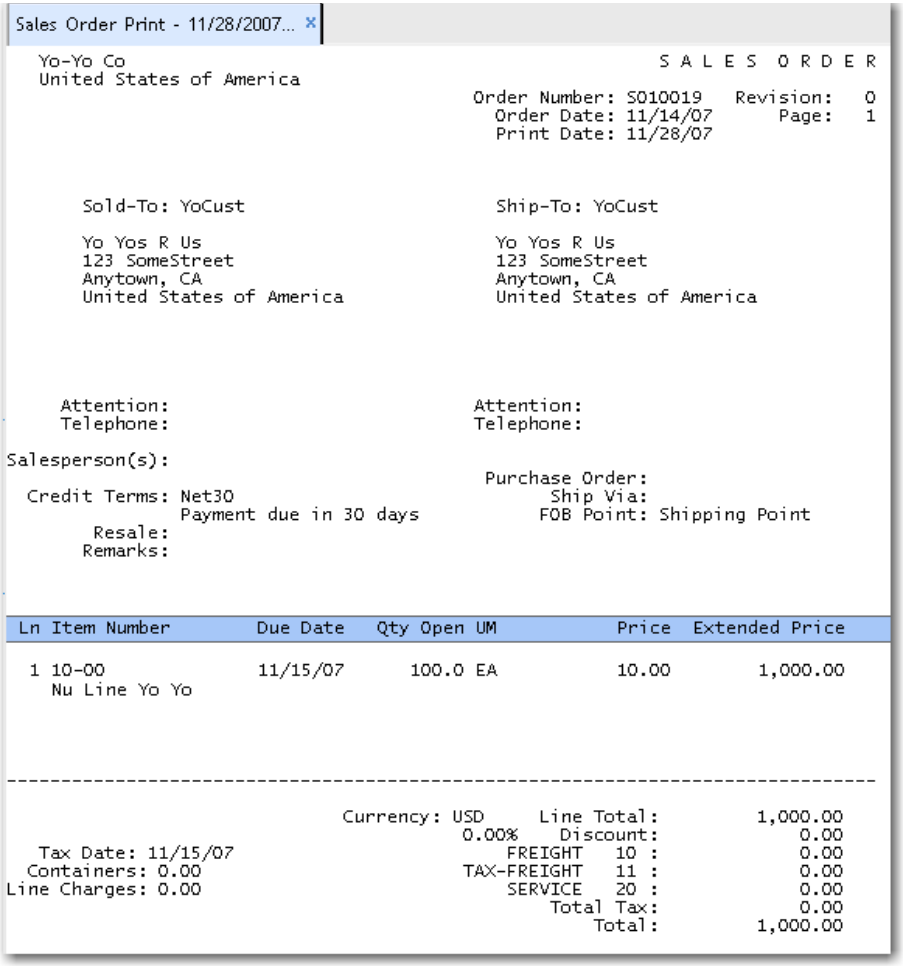
The CSR has selected all print options so that the sales order, pack list, and invoice history can be printed.

The Partial OK setting defaulted from Customer Maintenance indicating that the customer Yo-Yo's R Us will accept partial shipments.

PRINT SALES ORDER



Because the CSR selected Print Sales Order in Sales Order Maintenance, the sales order is available to print in Sales Order Print.



Sales Order Print - 11/28/2007...

Yo-Yo Co
United States of America

S A L E S O R D E R

Order Number: SO10019 Revision: 0
Order Date: 11/14/07 Page: 1
Print Date: 11/28/07

Sold-To: YoCust

Yo Yos R Us
123 SomeStreet
Anytown, CA
United States of America

Ship-To: YoCust

Yo Yos R Us
123 SomeStreet
Anytown, CA
United States of America

Attention:
Telephone:

Attention:
Telephone:

Salesperson(s):

Purchase Order:
Credit Terms: Net30
Payment due in 30 days
Ship Via:
FOB Point: Shipping Point
Resale:
Remarks:

Ln	Item Number	Due Date	Qty Open	UM	Price	Extended Price
1	10-00 Nu Line Yo Yo	11/15/07	100.0	EA	10.00	1,000.00

Currency: USD Line Total: 1,000.00
0.00% Discount: 0.00
FREIGHT 10 : 0.00
TAX-FREIGHT 11 : 0.00
SERVICE 20 : 0.00
Total Tax: 0.00
Total: 1,000.00

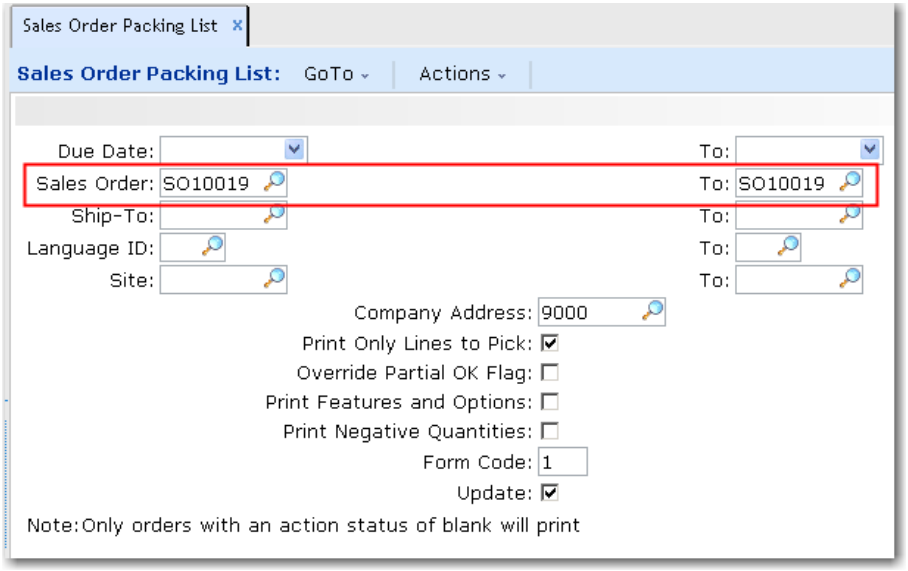
Tax Date: 11/15/07
Containers: 0.00
Line Charges: 0.00

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



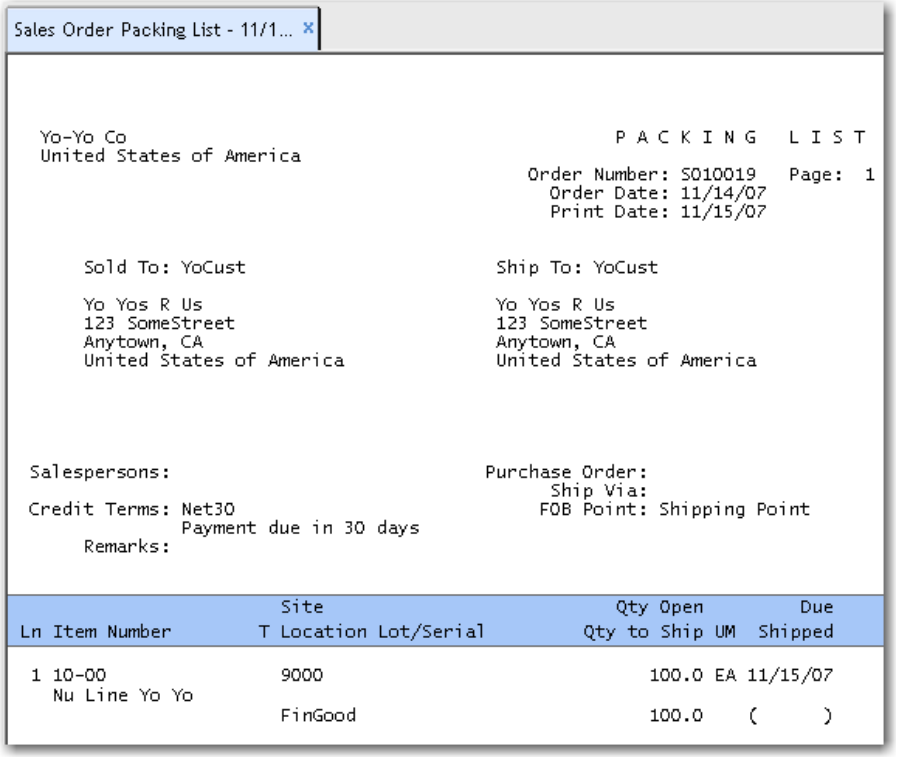
To print the packing list, the CSR uses Sales Order Packing List.

Note The terms packing list and pick list are used interchangeably. The pick list can be used to pick the items from inventory for shipment and then included with the shipment as a packing list. Alternatively two copies of the packing list can be used if it is desired to keep a hard copy for internal purposes.

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.

Additional Notes

Set Update to No to print a simulated picklist for review without updating the database.


Sales Order Packing List - 11/1...

Yo-Yo Co
United States of America

P A C K I N G L I S T

Order Number: SO10019 Page: 1
Order Date: 11/14/07
Print Date: 11/15/07

Sold To: YoCust

Yo Yos R Us
123 SomeStreet
Anytown, CA
United States of America

Ship To: YoCust

Yo Yos R Us
123 SomeStreet
Anytown, CA
United States of America

Salespersons:

Purchase Order:
Ship Via:
FOB Point: Shipping Point

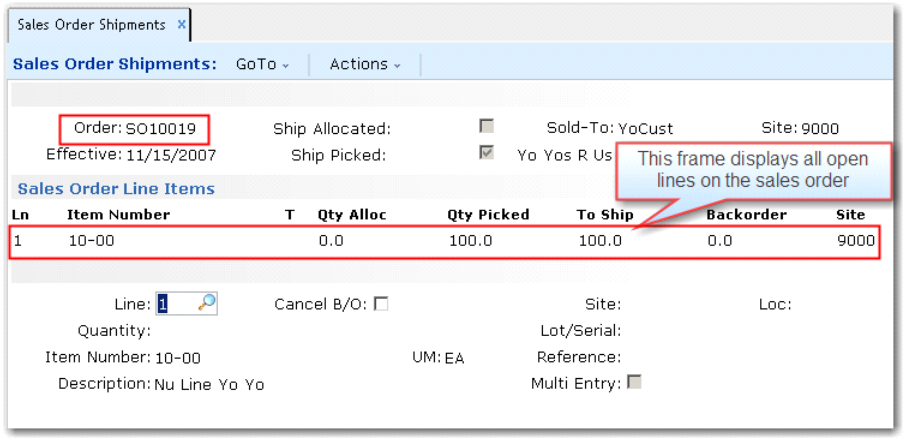
Credit Terms: Net30
Payment due in 30 days
Remarks:

Ln	Item Number	T	Site Location	Lot/Serial	Qty Open Qty to Ship	UM	Due Shipped
1	10-00		9000		100.0	EA	11/15/07
	Nu Line Yo Yo						
			FinGood		100.0	( )	

Additional Notes

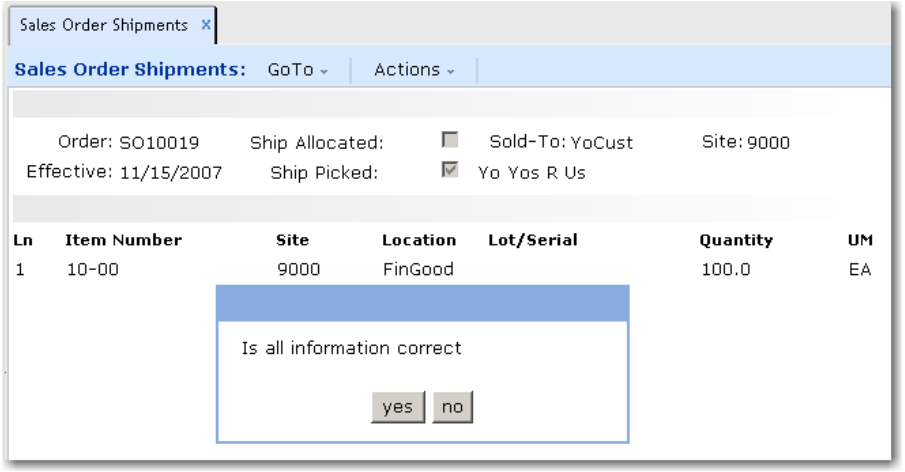
The picklist shows what items to pick to fill an order and what site or location to pick them from. If detailed allocations in Sales Order Maintenance are created, including lot/serial numbers and lot reference numbers; the information would appear on the picklist. If a general allocation is performed for the sales order, the system would automatically convert the general allocation to a detail allocation when it prints the picklist.

SALES ORDER SHIPPING



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).

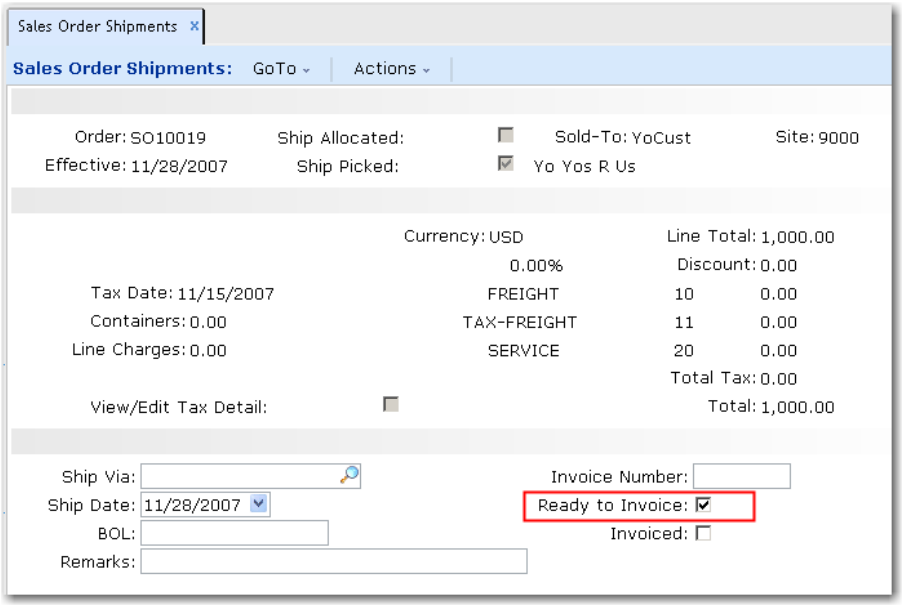
The middle frame (Sales Order Line Items) shows all open orders on this sales order ready for shipment, which, in this example, is one line. If necessary, modifications can be made to this line in the bottom frame. For example, if the location had changed, the new location could be entered here.



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.



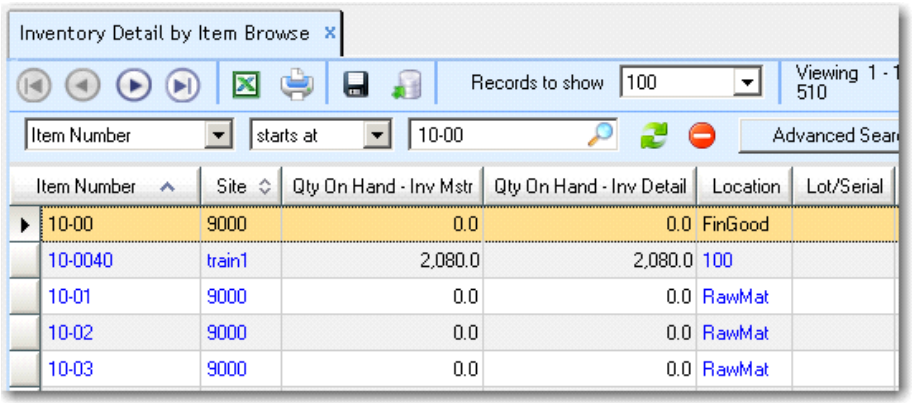
Trailer Frame

When you exit the line items frame the system brings up the trailer frame for taxes, freight or other charges that apply to the entire order.

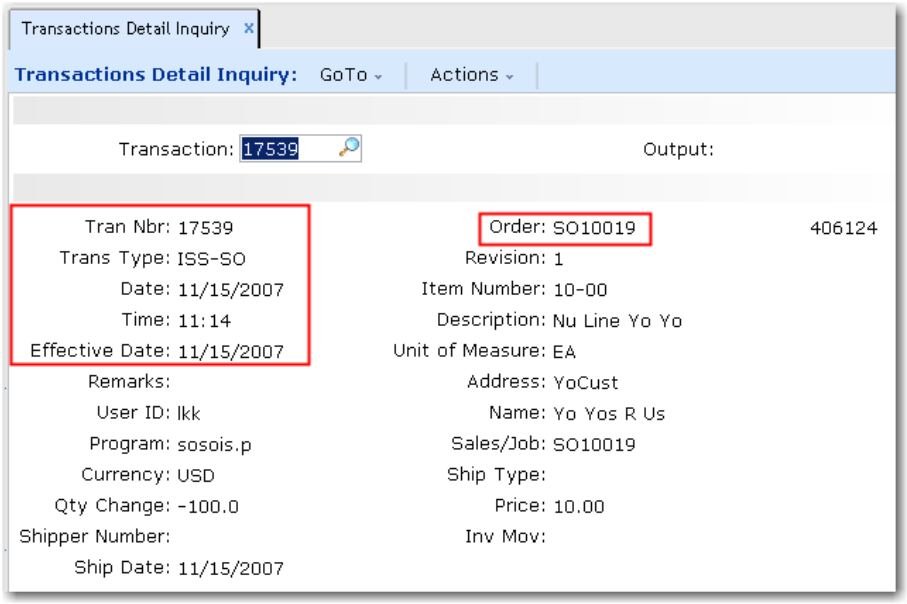
Note Taxes, freight and other logistics charges can be calculated by the system if the appropriate setup has been done the Global Tax Management module, the Freight Charges module and the Logistics Accounting module.

The CSR selects Ready to Invoice, which completes the sales order shipment process.

REVIEW INVENTORY DETAIL



Using Inventory Detail by Item Browse, how many yo-yos are remaining in inventory can be determined. In this case, there are no yo-yos left in the FinGood location at site 8000, and that all of the components we purchased to build the yo-yos are consumed.

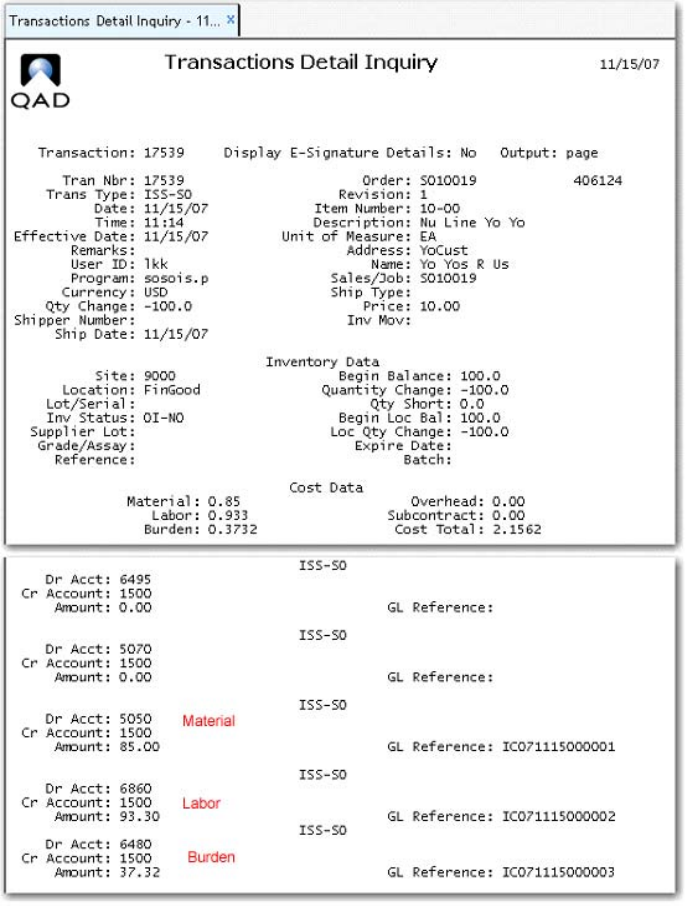


The transaction detail provides information on the transaction number and type (ISS-SO), the program that created the transaction (sosois.p), the user who created this transaction, and the source of the transaction (SO10020). Other key information is shown, such as site and location, inventory data, cost data, and so on.

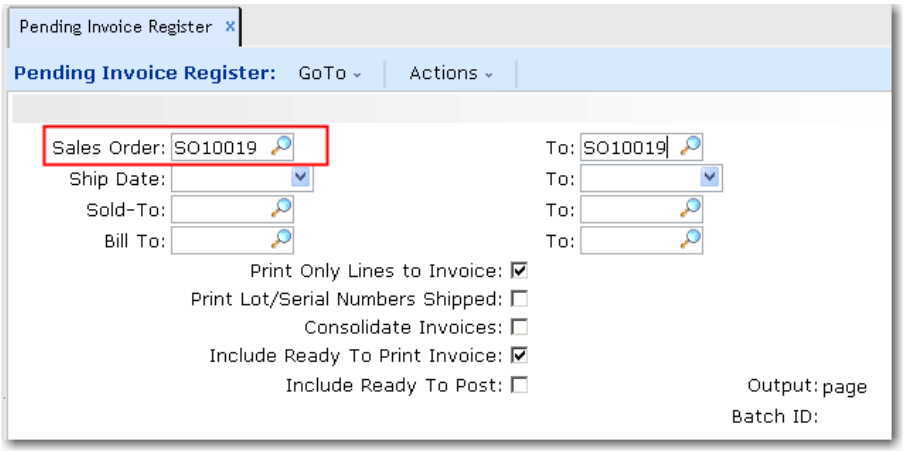
Selecting Next from this frame brings up a screen with additional detail including the GL transactions.

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.

GL Effects

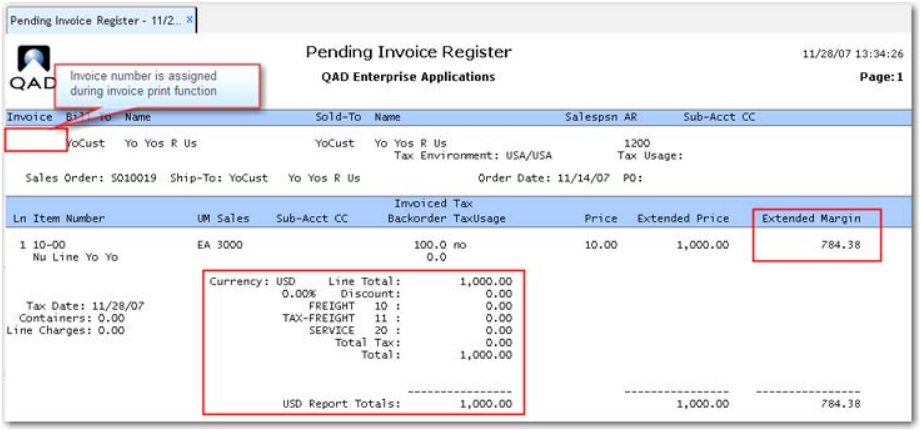


GL Effects Review Pending Invoice



When the sales order is shipped, the system automatically generates the information for an invoice, referred to 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 below is “blank.” That is because the invoice number will be assigned using the Invoice Print function.

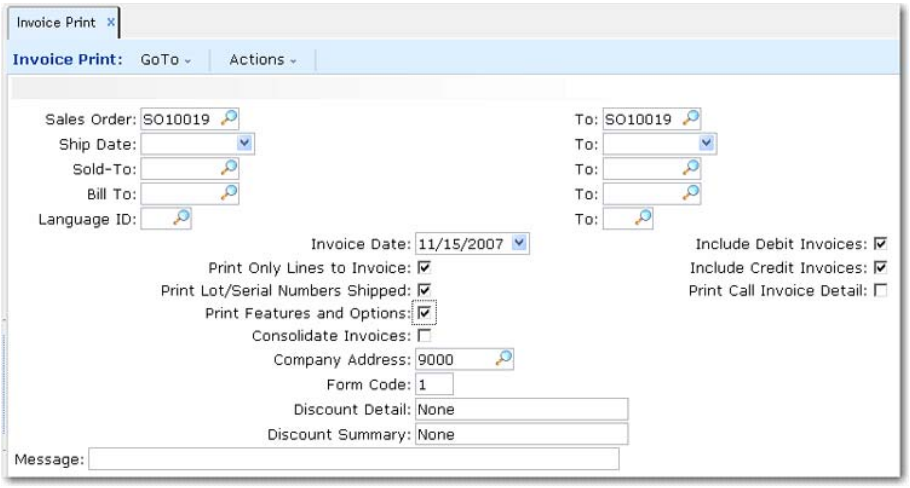


The Extended Margin of $784.38, is the unit margin multiplied by the quantity shipped (7.8438 × 100 yo-yos shipped).

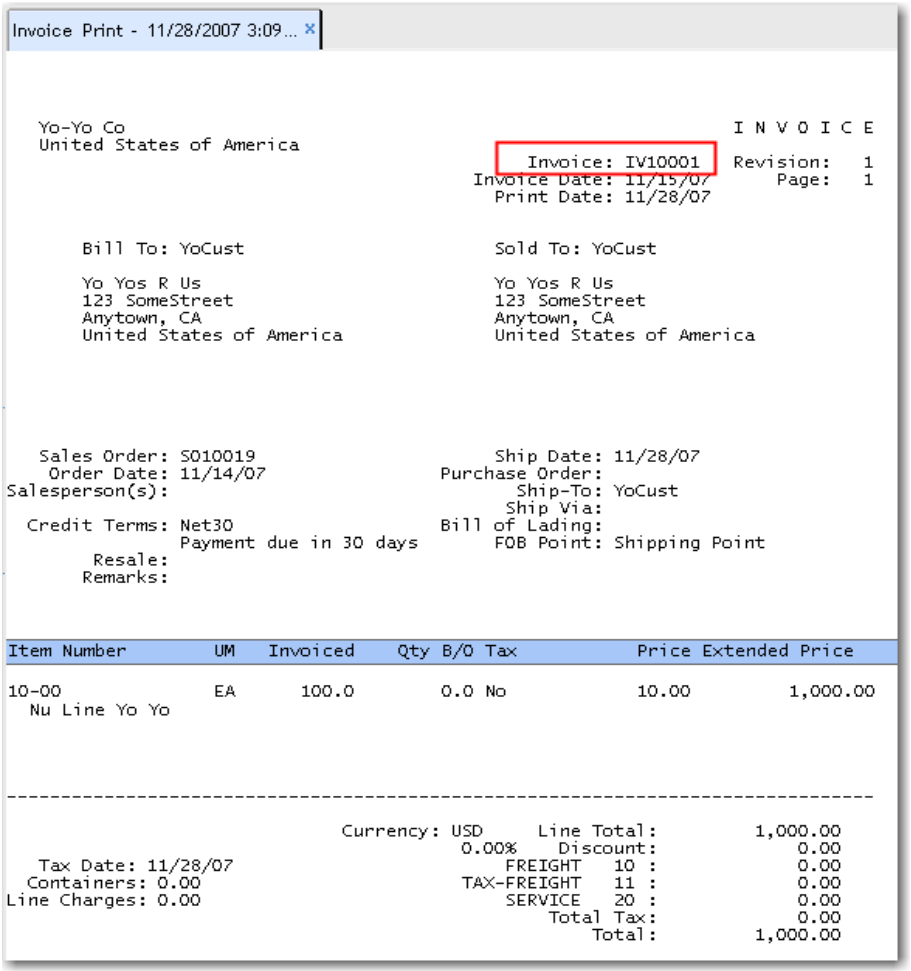
Additional Notes

The invoice total of $1,000.00 is calculated by multiplying the price per yo-yo ($10) by the total quantity (100 yo-yos) and adding the trailer charges, if any.

PRINT INVOICE



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.



Invoice Print - 11/28/2007 3:09...

Yo-Yo Co
United States of America

I N V O I C E

Invoice: IV10001 Revision: 1
Invoice Date: 11/15/07 Page: 1
Print Date: 11/28/07

Bill To: YoCust

Yo Yos R Us
123 SomeStreet
Anytown, CA
United States of America

Sold To: YoCust

Yo Yos R Us
123 SomeStreet
Anytown, CA
United States of America

Sales Order: SO10019
Order Date: 11/14/07
Salesperson(s):
Credit Terms: Net30
Payment due in 30 days
Resale:
Remarks:

Ship Date: 11/28/07
Purchase Order:
Ship-To: YoCust
Ship Via:
Bill of Lading:
FOB Point: Shipping Point

Item Number	UM	Invoiced	Qty B/O	Tax	Price	Extended Price
10-00 Nu Line Yo Yo	EA	100.0	0.0	No	10.00	1,000.00

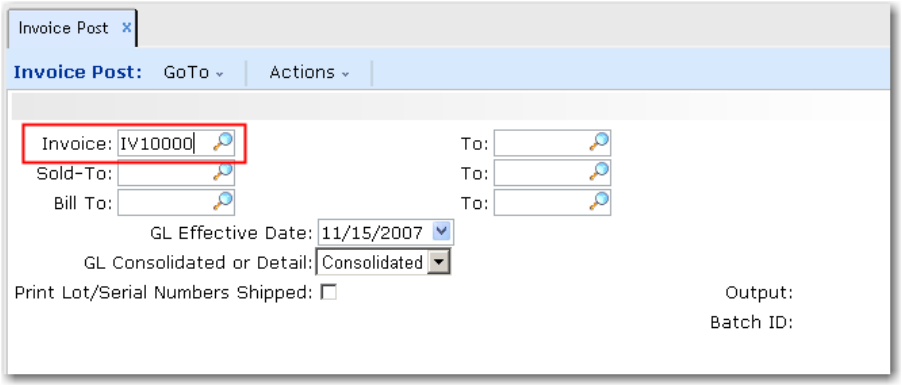
Currency: USD Line Total: 1,000.00
0.00% Discount: 0.00
FREIGHT 10 : 0.00
TAX-FREIGHT 11 : 0.00
SERVICE 20 : 0.00
Total Tax: 0.00
Total: 1,000.00

Tax Date: 11/28/07
Containers: 0.00
Line Charges: 0.00

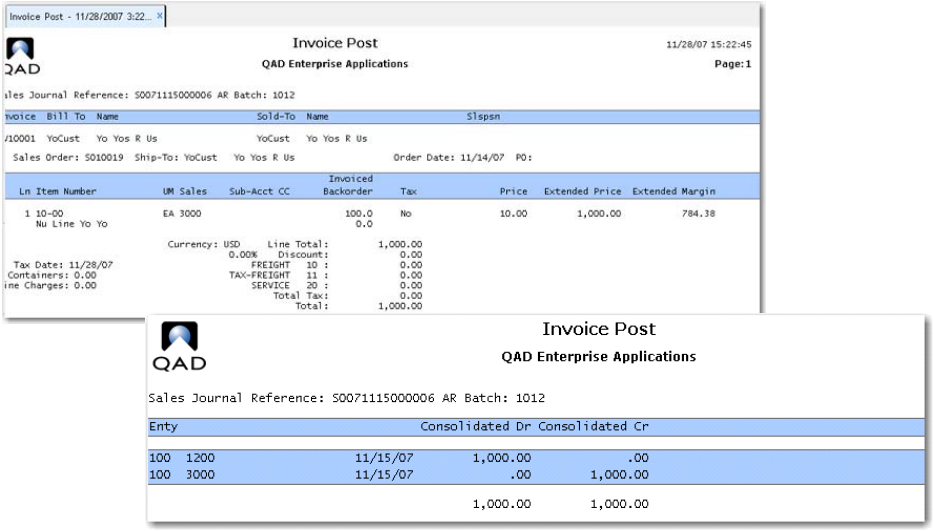
Here is a sample of the Invoice Print output. Note that an invoice number has now been assigned by the system.

At this point, if there were an error, it could be fixed in Pending Invoice Maintenance.

POST INVOICE



To post the printed invoice to the general ledger, Yo-Yo Company's AR Administrator uses Invoice Post. The output is shown below.

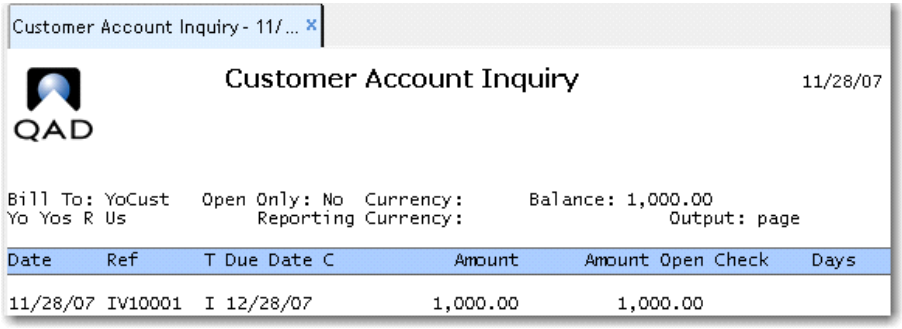


Additional Notes

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 $1,000.00 and that Sales (3000) has been credited $1,000.

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

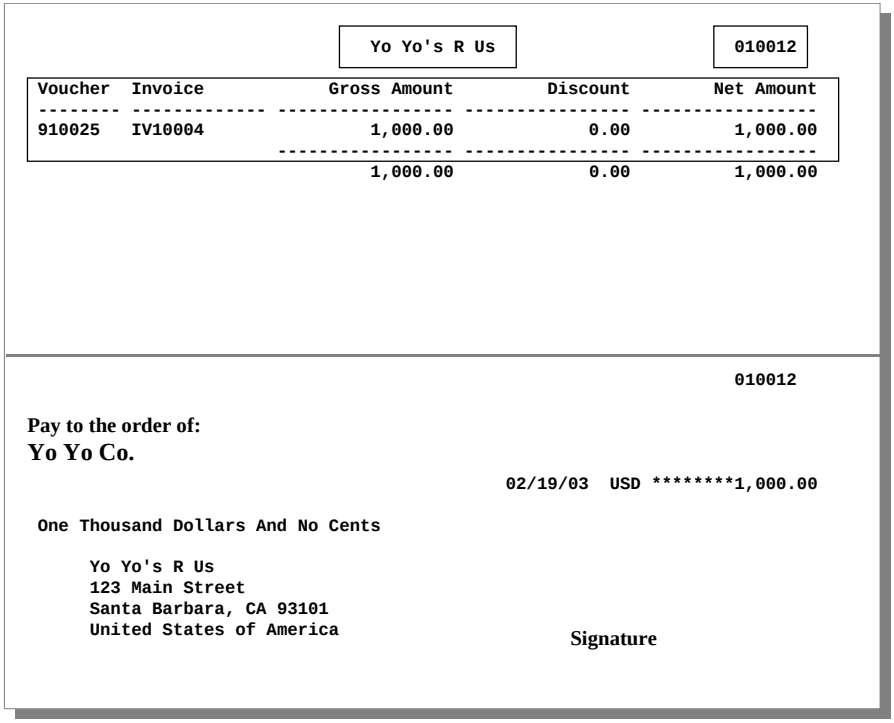


Notice that the Date of the invoice coincides with the effective date on the invoice post, whereas the Due Date is based on the credit terms specified in the invoice, which defaults from the sales order.

Additional Notes

The column “Check” would show any checks that had been received and applied to the invoice; the column “Days” would show the number of days between the invoice date and the date the payment was applied to the invoice.

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

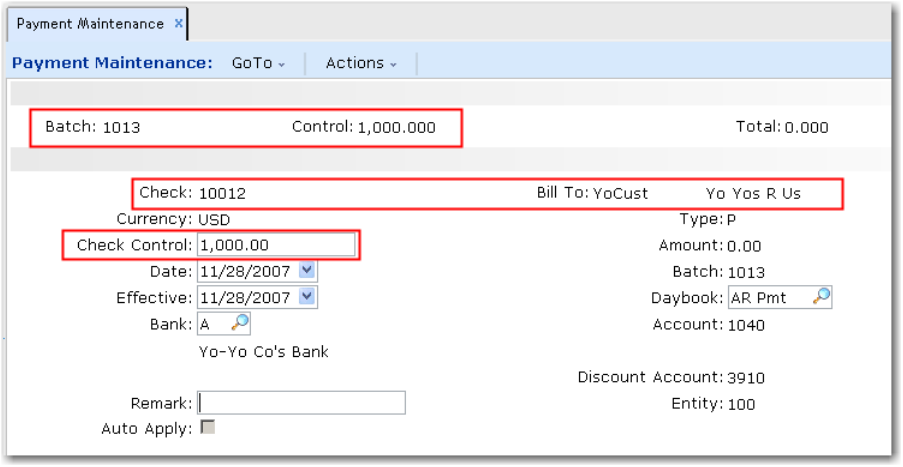
Yo Yo's R Us
123 Main Street
Santa Barbara, CA 93101
United States of America

Signature

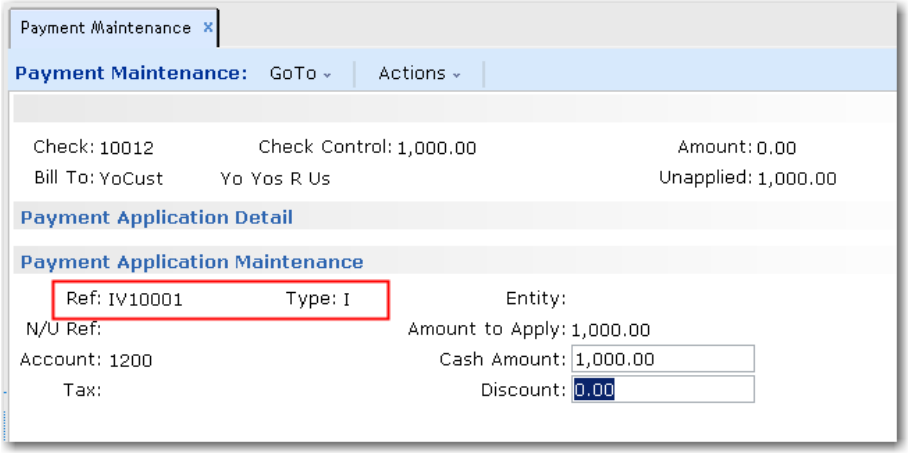
Yo-Yo Company has received a check from Yo-Yos R Us. The check number is 010012 and includes a reference to invoice number IV10004.

The amount of the check is $1,000.00, which pays the invoice in full.

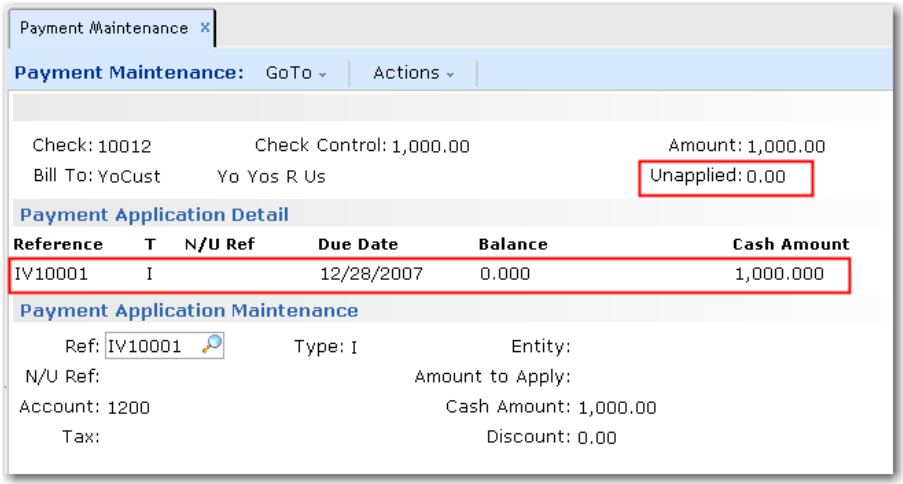
PAYMENT MAINTENANCE



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).

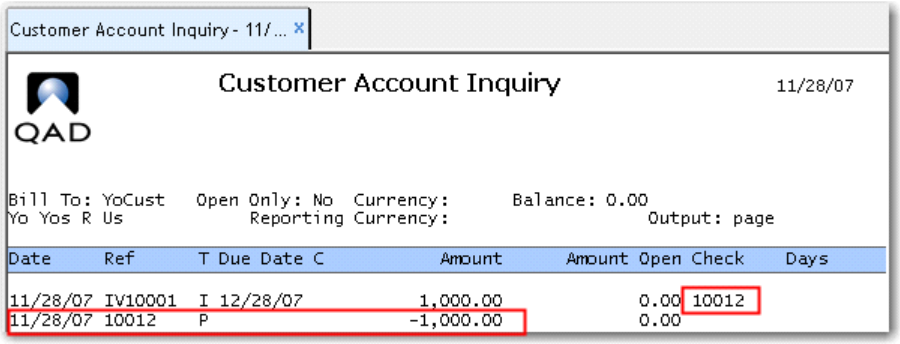


In the Payment Application Maintenance frame, notice the invoice number IV10001 as Reference and the transaction Type I = invoice.



Once the Application Maintenance frame is completed, the Payment Application Detail frame is updated. Note the unapplied amount is now zero as the entire amount has been 'applied' to a specific invoice.

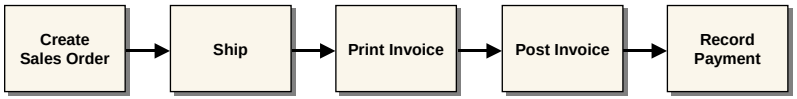
CUSTOMER ACCOUNT INQUIRY



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 $1,000.00 with check number 010012 per invoice IV10001.

After the payment has been entered the Balance and Amount Open fields are zero, as shown above. The payment (Type = P for payment), is shown with the check number as the reference. As the check was applied to a specific invoice the system has also put the check number on the line with the invoice. This is very useful when one check pays many invoices.

REVIEW



In this chapter, the customer's intent to buy was shown in the sales order records, 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. 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 9

In the following activity you

- Add a customer:
- 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

Add a Customer Record

Use Customer Maintenance, 2.1.1 to create a customer record for Yo-Yos R Us

- Customer Code = YoCust; click Next
- Name = Yo-Yos R Us
- City = Santa Barbara
- State = CA
- Country = USA; click Next
- Site = 8000; click Next until you reach Credit Limit
- Credit Limit = 100,000
- Terms = Net30; click Next
- Bank Accounts = [none]; click Back to update
- Exit.

Modify Sales Order Control

Use *Sales Order Control, 7.1.24* to set the following fields:

- Detail Allocations = No
- Company Address = 8000
- 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 TrM = No
- Confirmed Orders = Yes; click Next
- Hold Orders Over Credit Limit = No
- Save your changes and exit.

Add a Sales Order Record

Use *Sales Order Maintenance, 7.1.1* to add a sales order.

Header information:

- Order = [blank] system generated; click Next
- Sold-To = YoCust; click Next
- Bill-To and Ship-To = should default to YoCust; click Next
- Order Date = Today's Date [default]
- Site = 8000
- Credit Terms = Net30 (defaults from customer record)
- Accept remaining default values

Line 1 information:

- Item = 10-00
- Site = 8000
- Quantity Ordered = 100
- List Price = 10.00 (defaults from item master)
- Accept remaining default values
- Press next 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 Lines. Press Trailer again until you come to the trailer frames.

Trailer information:

- Print Sales Order = Yes
- Accept remaining default values.

Use *Sales Order Print*, 7.1.3 to print and review a copy of the sales order.

- Sales Order = [use the lookup]
- Output = page

Print a Packing List and Ship the Sales Order

Use *Sales Order Packing List, 7.9.13* to print a packing list for your sales order.

- Select yoru Sales Order number
- Update = Yes (checked)
- Output = page

Use *Sales Order Shipments, 7.9.15* to record the shipment of the sales order.

- Ship Picked = Yes (checked) [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 = 8000
- Loc = FinGood

Frame 2:

- Confirm that all information is correct

Frame 3:

- Ready to Invoice = Yes

Use *Item Detail by Site Browse 3.3* to review your inventory. You should see that the inventory has decreased by the amount of the shipment.

Use *Transactions Detail Inquiry, 3.21.1* to review the inventory transaction 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

Use *Pending Invoice Register, 7.13.2* 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.

Use *Invoice Print, 7.13.3* to print an invoice for your sales order. Print to page. Update? Yes.

Post the Invoice to Accounts Receivable

Use *Invoice Post, 7.13.4* to post the invoice and update the customer account balance, generate un-posted GL transactions debiting sales, and update sales and invoice history.

Review a Customer Account and Apply a Payment

Use *Customer Account Inquiry, 27.13* to see the customer's (YoCust) open account balance.

Notice the type is I for invoice and the reference is the invoice number.

Your customer has sent you a check (#010012).

Use *Payment Maintenance*, 27.6.4 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; click Next
- Control = 1,000.00 (total of all checks received; in this case, we are receiving only one check); click Next
- Check = 010012; click Next

- 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
- Review the Customer Account Inquiry. Notice the payment is type P and the payment is pegged to the invoice

SECTION 4

Planning in QAD Enterprise Applications

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, the interaction of some of these planning elements in the Example section-especially those among purchasing, manufacturing, and sales will be examined. First, the primary components of the planning system in the Key Concepts section will be discussed.

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

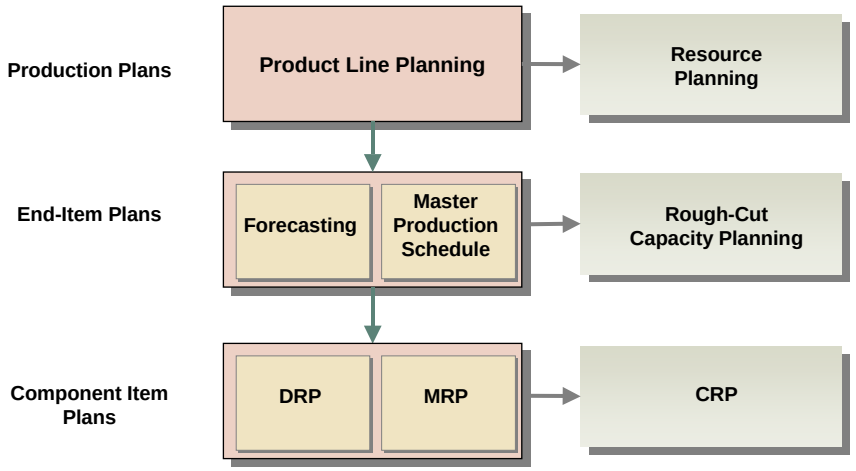
Learning Objectives

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. QAD Enterprise Applications 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 there are sufficient 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

Each of these key planning areas; product line planning, end-item planning, and component item planning will be examined.

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. Next, end-item planning and the master production schedule will be discussed 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. The master schedulers planning horizon should be at least equal to the longest cumulative lead time in the system. Many companies like to plan and forecast 12 to 18 months into the future to insure adequate resource planning.

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.

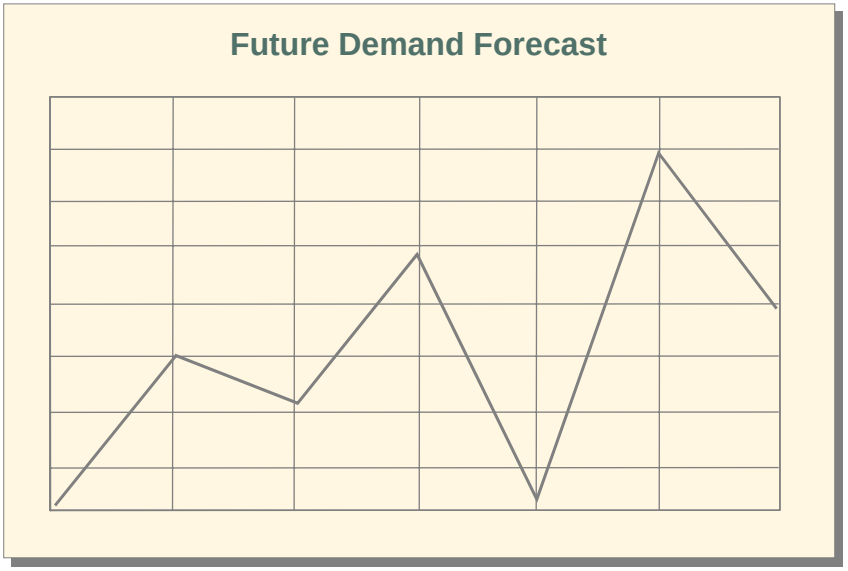
Products subject to seasonal demand can have forecasts that fluctuate widely from week to week. Seasonal build schedules are used to smooth these requirements; increasing production in advance of anticipated spikes in demand.

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 the system, 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 QAD Enterprise Applications, 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

Terminology

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.

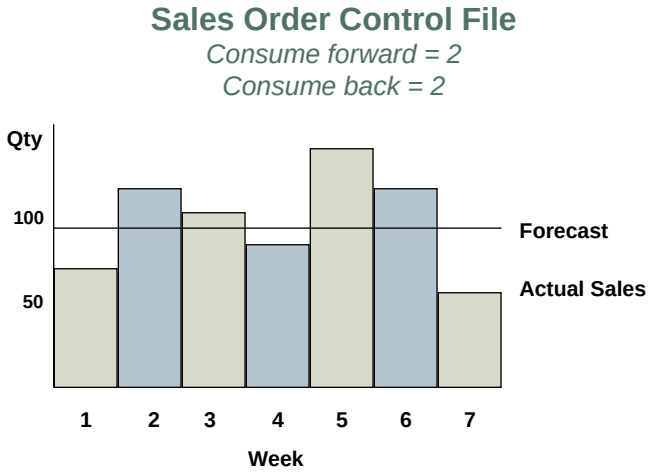
Net Forecast

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.

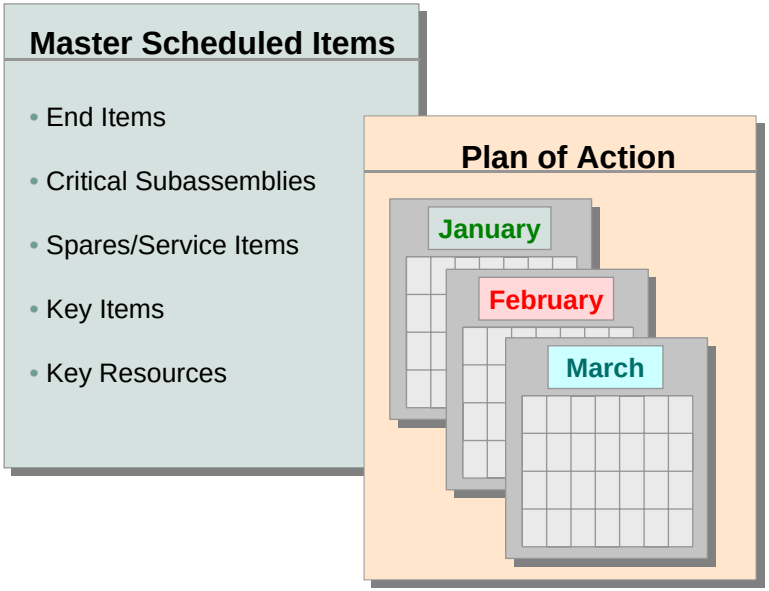
Consume Forward/Backward

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 the system 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.

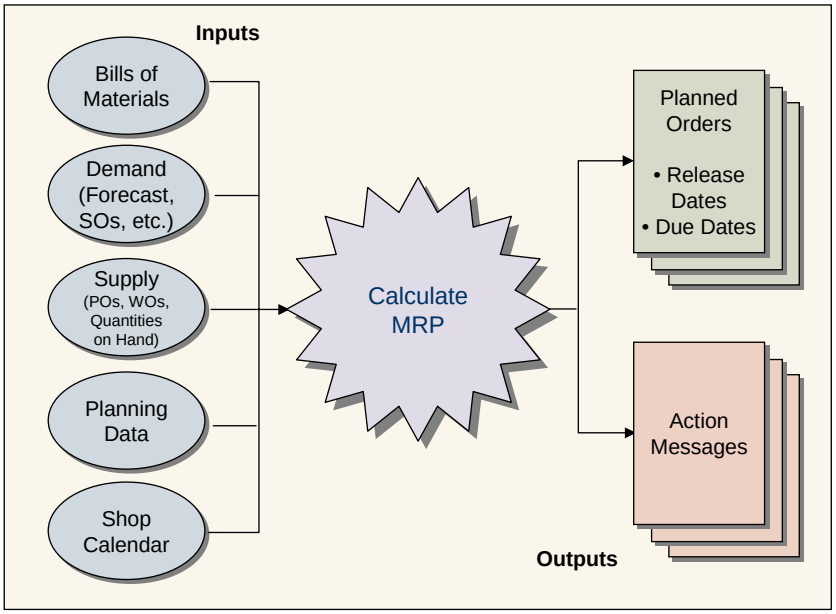
RCCP provides a high-level planning process for key resources that may constrain the execution of the manufacturing plan.

Master scheduling and RCCP should remove most of the capacity constraints before MRP is run.

What's Next

MRP and component item planning will be examined.

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:

- 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, regenerative or selective methods.

Net Change

Net change MRP re-plans items (for all selected sites) that have changed since the last MRP run. The primary advantage of net change MRP is that it often should take less time to process then regenerative. A net change MRP run processed after correctly acting on action messages should yield the same result as a regenerative MRP.

Regenerative MRP

Regenerative MRP creates a completely new material plan (for all selected sites) starting at the top level, exploding new requirements, and continuing to lower-level components. (Remember each site is a separate MRP plan. Only DRP passes requirements between sites.) One advantage of regenerative MRP is that it guarantees that all plans are in complete synchronization and that all priorities due dates are valid.

Selective MRP

Selective MRP is a special case situation and processes a limited set of user defined items, and could be used for what if analysis.

Capacity Requirements Planning (CRP)

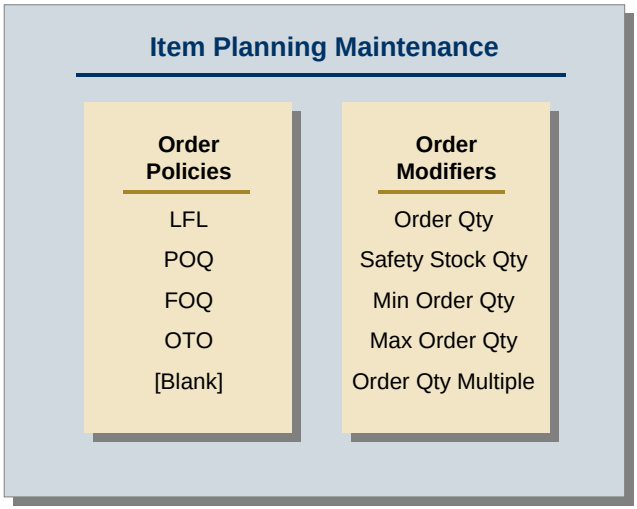
MRP component planning is checked against the capacity requirements plan (CRP). CRP determines how much labor and how many machine resources are required for production, and it calculates workload for a department, work center, or machine. It is used for medium-range capacity management to determine and provide the resources required to meet MRP's detailed item schedules.

Terminology

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.

COMPONENT ITEM PLANNING: ITEM PLANNING PARAMETERS



The system uses item planning parameters to determine how items are planned by MRP. General item planning parameters may be defined in either Item Master Maintenance (1.4.1) or Item Planning Maintenance (1.4.7). Site-specific parameters are entered in Item-Site Planning Maintenance (1.4.17). 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 time period expressed in days (Order Period field); for example, a 30 day order period would create one planned order for all requirements for the next 30 days. The calculation of the period does not begin until the first statement of demand. For

example if MRP is run today for an item with a 30 day period but the first demand order is five days in the future, the system will then count 30 days from five days from now to create the 30 day period bucket.

Fixed Order Quantity (FOQ)

FOQ is a lot sizing technique where lot size is equal to net requirements for a given time period expressed in days (Order Period field); for example, a 30 day order period would create one planned order for all requirements for the next 30 days. The calculation of the period does not begin until the first statement of demand. For example if MRP is run today for an item with a 30 day period but the first demand order is five days in the future, the system will then count 30 days from five days from now to create the 30 day period bucket.

Lot for Lot (LFL)

LFL is a lot sizing technique where MRP plans a separate supply order for each demand order. For example there are sales orders for the same item with quantities of 5, 10, 15, and 20. MRP will plan four orders for; 5, 10, 15 and 20 units.

One Time Only (OTO)

OTO is 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.

Order Policy Blank

A blank order policy is used to prevent MRP from planning an item.

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.

Order Modifiers

Order modifiers change planned order quantities. Minimum, maximum and multiple are order modifiers.

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).

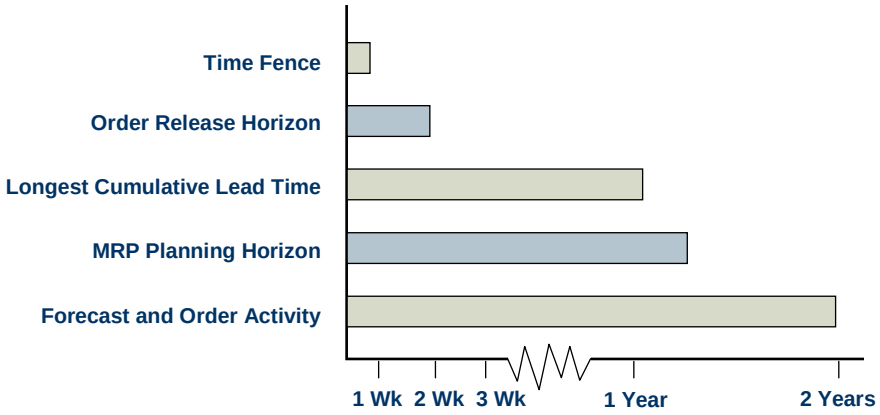
Order Quantity Multiple

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 orders should be released to be available on their due date. It is the sum of Manufacturing lead time for manufactured items, Purchasing lead time and Inspection lead time for purchased items. Safety lead time can be added to all. Lead time is calculated by the system using the operation times in the route and the standard order quantity for manufactured items. The lead time for purchased items is entered by the planner.

COMPONENT ITEM PLANNING: PLANNING TIME PERIODS



Planning Horizon

Before running MRP, 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 sub-assemblies 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

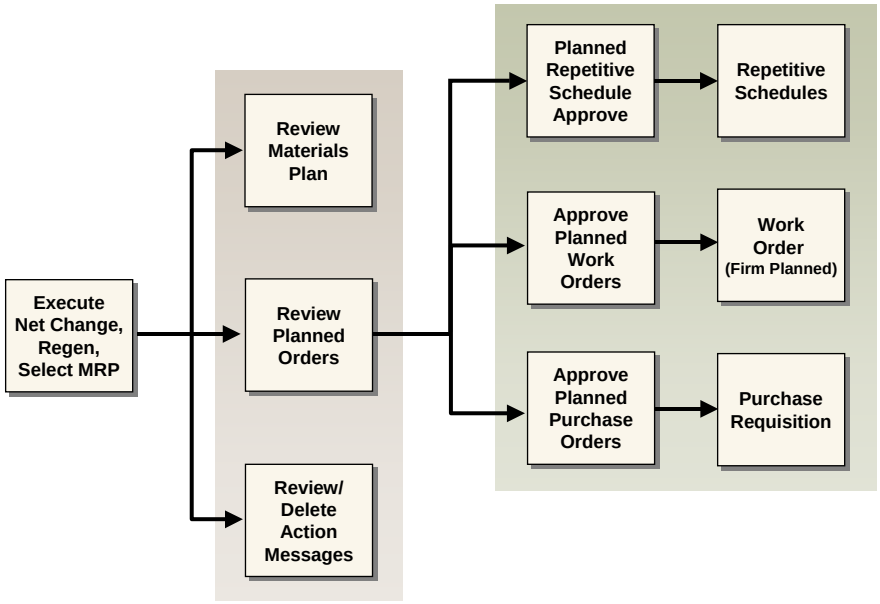
not used for planning DRP items; it is used only in cumulative lead time calculations.

Order Release Horizon

To provide visibility for which 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.

The release horizon can be set 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.

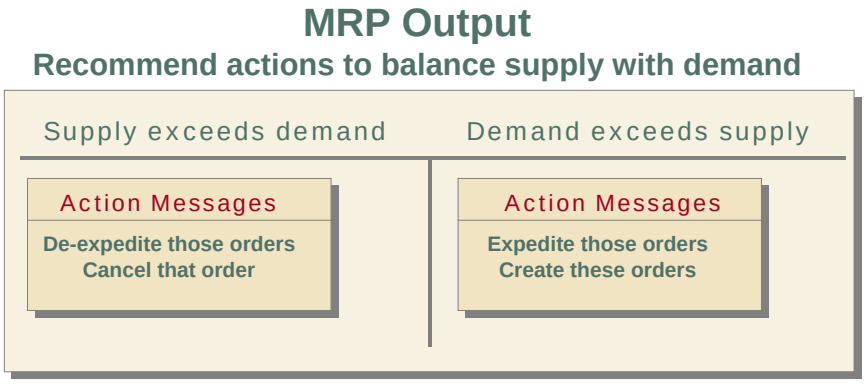
Internally, both planned work orders and planned purchase orders are stored as work orders with status Planned. The primary difference between them is that orders for purchased items are created without work order bills.

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 may be reviewed by buyers or purchasing agents and filled by purchase orders. Once the purchase order is released it becomes supply for the item at that site.

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

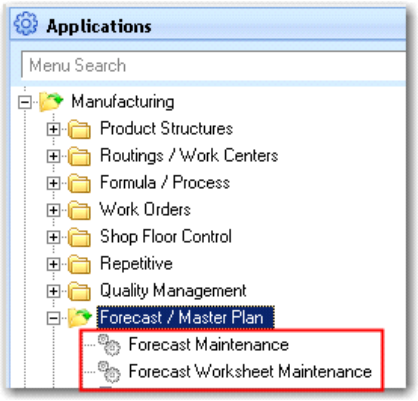
How the planning process works.

In this example, Yo-Yo Company:

- Enters a forecast for yo-yos
- Enters a sales order (where we can see how it consumes demand):
  - Line1: 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



The system offers two screens for entering forecast data. Forecast Maintenance (22.1) and Forecast Worksheet Maintenance (22.2).

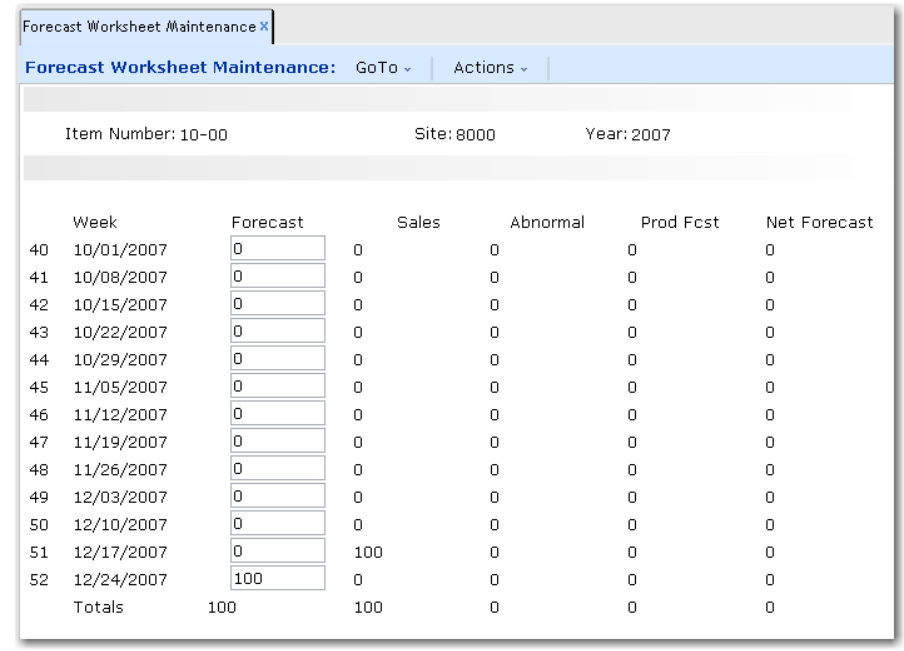
Forecast Maintenance

Forecast Maintenance: GoTo Actions

Item Number: 10-00 Site: 9000 Year: 2008

Week	Forecast	Week	Forecast	Week	Forecast	Week	Forecast
12/31/2007	100	03/31/2008	600	06/30/2008	0	09/29/2008	0
01/07/2008	200	04/07/2008	600	07/07/2008	0	10/06/2008	0
01/14/2008	300	04/14/2008	600	07/14/2008	0	10/13/2008	0
01/21/2008	400	04/21/2008	600	07/21/2008	0	10/20/2008	0
01/28/2008	400	04/28/2008	0	07/28/2008	0	10/27/2008	0
02/04/2008	400	05/05/2008	0	08/04/2008	0	11/03/2008	0
02/11/2008	400	05/12/2008	0	08/11/2008	0	11/10/2008	0
02/18/2008	500	05/19/2008	0	08/18/2008	0	11/17/2008	0
02/25/2008	500	05/26/2008	0	08/25/2008	0	11/24/2008	0
03/03/2008	500	06/02/2008	0	09/01/2008	0	12/01/2008	0
03/10/2008	500	06/09/2008	0	09/08/2008	0	12/08/2008	0
03/17/2008	500	06/16/2008	0	09/15/2008	0	12/15/2008	0
03/24/2008	600	06/23/2008	0	09/22/2008	0	12/22/2008	0
Total	0	Total	0	Total	0	Total	0

In Forecast Maintenance (22.1) there are 52 weekly buckets so an entire years forecast for a given item and site can be entered in one screen. If forecast simulation is being used, this screen will be populated automatically with data from the forecast simulation calculation.

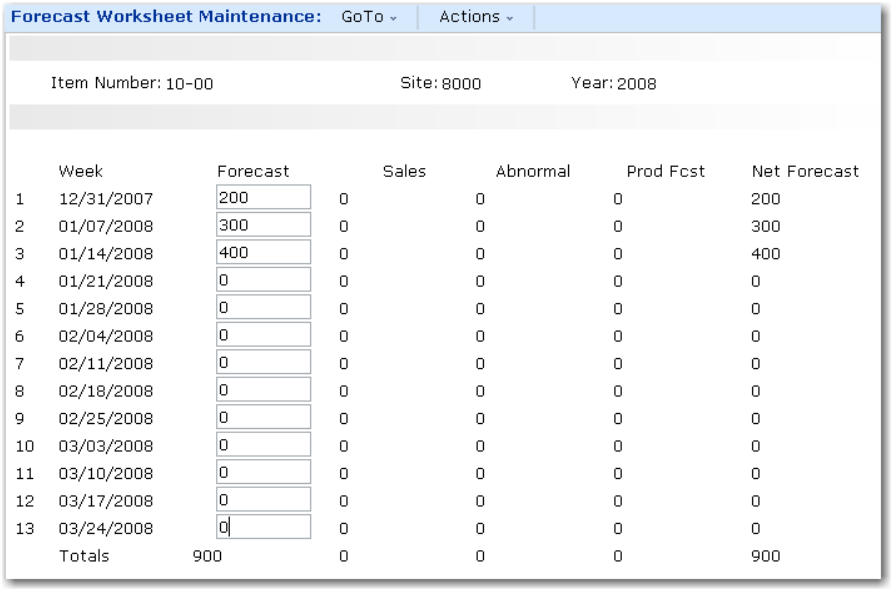


	Week	Forecast	Sales	Abnormal	Prod Fcst	Net Forecast
40	10/01/2007	0	0	0	0	0
41	10/08/2007	0	0	0	0	0
42	10/15/2007	0	0	0	0	0
43	10/22/2007	0	0	0	0	0
44	10/29/2007	0	0	0	0	0
45	11/05/2007	0	0	0	0	0
46	11/12/2007	0	0	0	0	0
47	11/19/2007	0	0	0	0	0
48	11/26/2007	0	0	0	0	0
49	12/03/2007	0	0	0	0	0
50	12/10/2007	0	0	0	0	0
51	12/17/2007	0	100	0	0	0
52	12/24/2007	100	0	0	0	0
	Totals	100	100	0	0	0

In Forecast Worksheet Maintenance (22.2), the system displays 13 weeks of forecast buckets at a time. Clicking Next will advance to successive calendar quarters. In addition this screen displays actual sales orders, abnormal sales orders, production forecasts and net forecast.

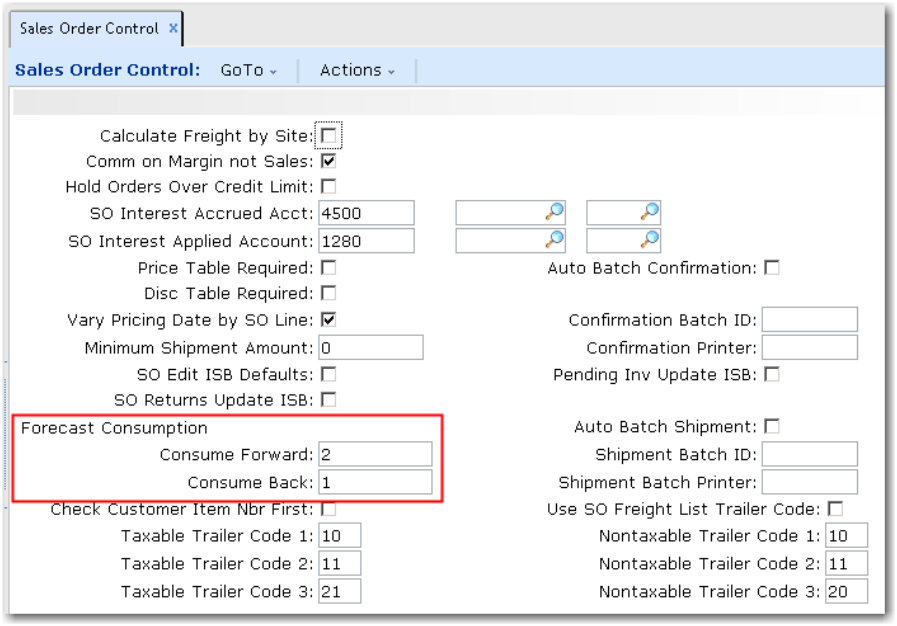
Using the Forecast Worksheet Maintenance the Yo-Yo Company planner has entered forecasts for the number of yo-yos that he expects to ship each week for the next four weeks. Note that in a prior week the system is showing sales

orders for 100 units, which were the sales order shipped in the last section of the course. As the screen is near the end of the year we advance to the next screen by adding the new year.



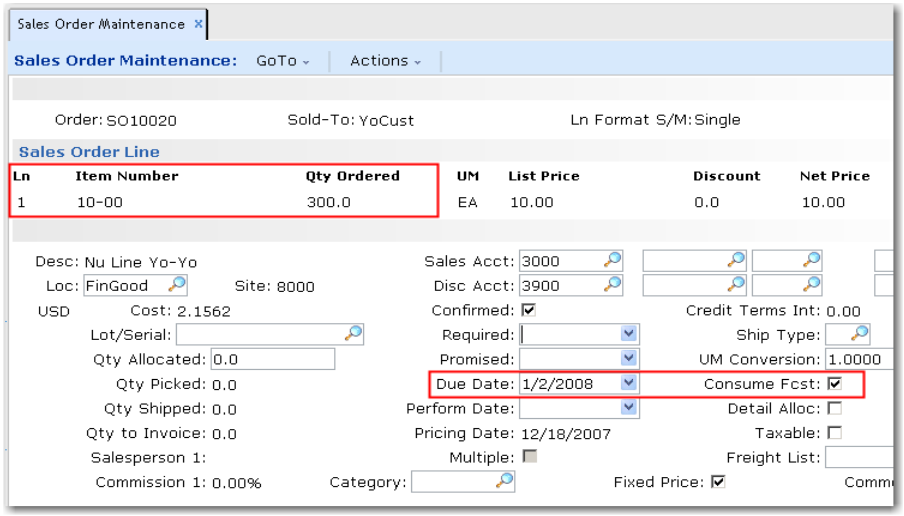
	Week	Forecast	Sales	Abnormal	Prod Fcst	Net Forecast
1	12/31/2007	200	0	0	0	200
2	01/07/2008	300	0	0	0	300
3	01/14/2008	400	0	0	0	400
4	01/21/2008	0	0	0	0	0
5	01/28/2008	0	0	0	0	0
6	02/04/2008	0	0	0	0	0
7	02/11/2008	0	0	0	0	0
8	02/18/2008	0	0	0	0	0
9	02/25/2008	0	0	0	0	0
10	03/03/2008	0	0	0	0	0
11	03/10/2008	0	0	0	0	0
12	03/17/2008	0	0	0	0	0
13	03/24/2008	0	0	0	0	0
	Totals	900	0	0	0	900

DEFINE CONTROL SETTINGS: FORECAST CONSUMPTION



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.

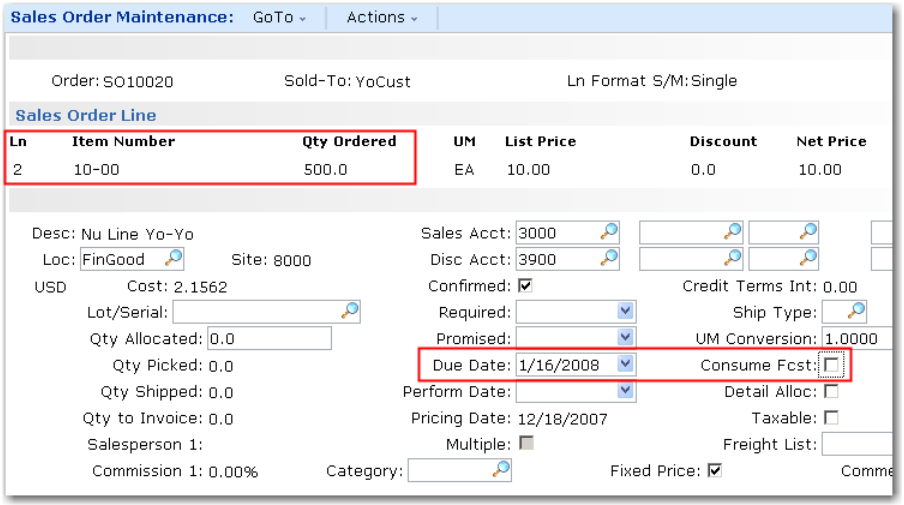
ENTER SALES ORDER LINE: CONSUME FORECAST



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 1/2/2008. This order, once confirmed, will consume forecast because the Consume Forecast box has been selected.

Examine line 2 on the next page.

ENTER SALES ORDER LINE: DO NOT CONSUME FORECAST

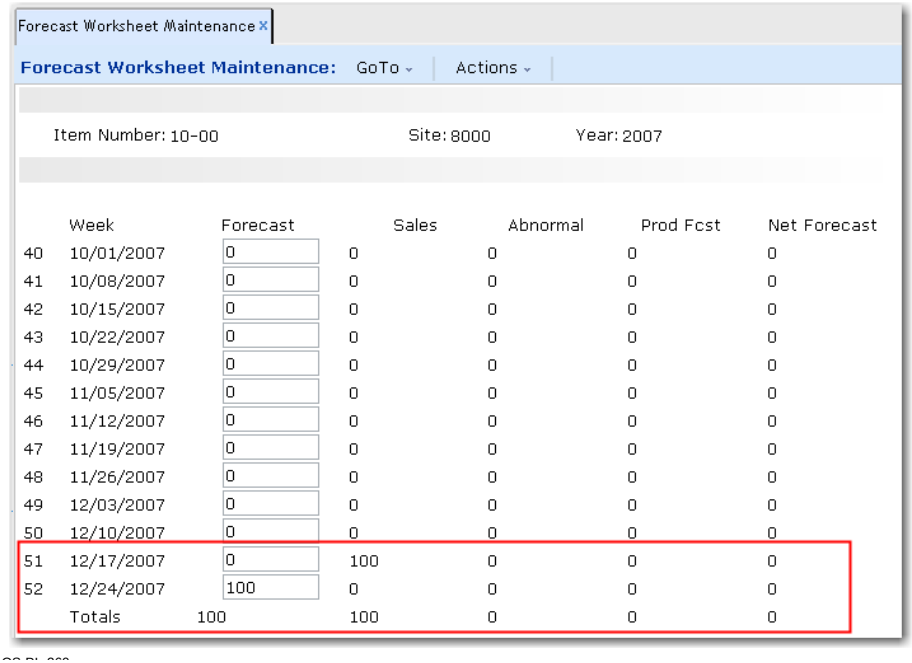


Line 2 (shown above) is for an order of 500 yo-yos due 1/16/2008. This order will not consume forecast because the Consume Forecast box has not been selected.

Additional Notes

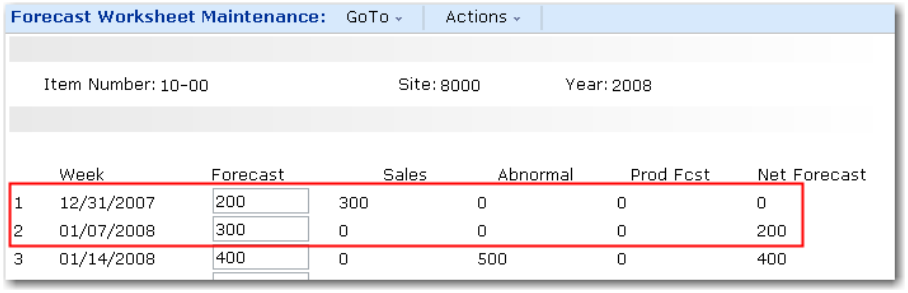
Consume Forecast is not selected (un-checked) when the order quantity is considered abnormal and is planned in addition to the forecast. Perhaps the best definitions of abnormal sales are those that were not anticipated in the forecast; often new customers, new markets, or a current customer significantly increase their volume. Businesses should establish their own rules and guidelines for sales order entry as to when an order is flagged abnormal.

REVIEW FORECAST WORKSHEET: ITEM 10-00



	Week	Forecast	Sales	Abnormal	Prod Fcst	Net Forecast
40	10/01/2007	0	0	0	0	0
41	10/08/2007	0	0	0	0	0
42	10/15/2007	0	0	0	0	0
43	10/22/2007	0	0	0	0	0
44	10/29/2007	0	0	0	0	0
45	11/05/2007	0	0	0	0	0
46	11/12/2007	0	0	0	0	0
47	11/19/2007	0	0	0	0	0
48	11/26/2007	0	0	0	0	0
49	12/03/2007	0	0	0	0	0
50	12/10/2007	0	0	0	0	0
51	12/17/2007	0	100	0	0	0
52	12/24/2007	100	0	0	0	0
	Totals	100	100	0	0	0

In Forecast Worksheet Maintenance, we can see the effect of the confirmed order on the net forecast: line 1 for 300 yo-yos in week 1, which consumes forecast, and line 2 for 500 yo-yos in week 51, which does not consume forecast.



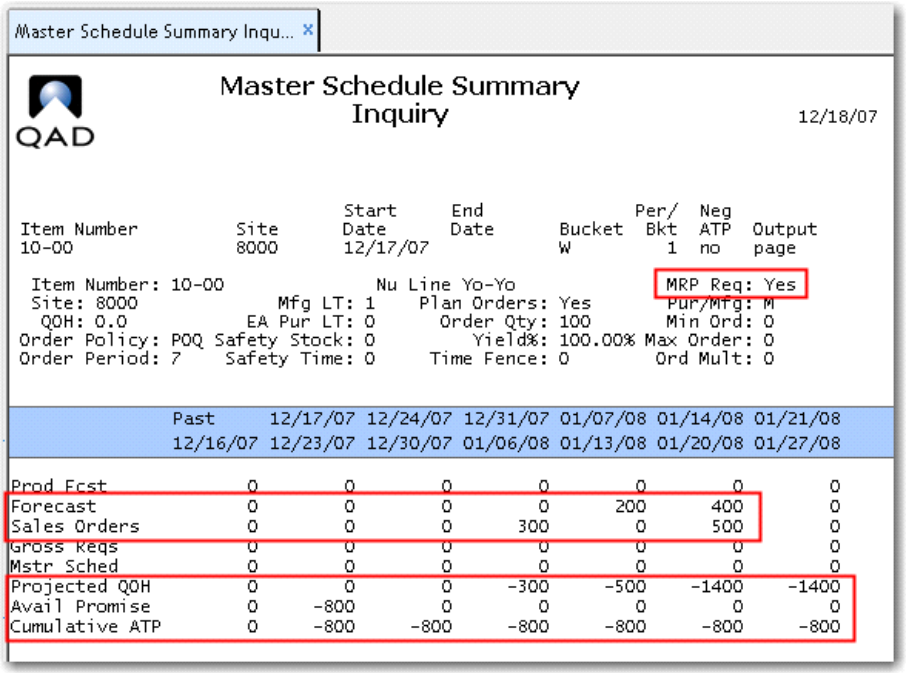
	Week	Forecast	Sales	Abnormal	Prod Fcst	Net Forecast
1	12/31/2007	200	300	0	0	0
2	01/07/2008	300	0	0	0	200
3	01/14/2008	400	0	500	0	400

Line 1 is a normal order and, accordingly, the sales order quantity of 300 is placed in the Sales column for week one. Note, though, that only 200 yo-yos were forecast for that week, not 300. This consumes the entire forecast leaving a net forecast of 0 in week one. 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 finds the forecast of 100 units in week 52 was consumed by the sales order of 100 in the preceding week. The system then looks to a future period and will consume the forecast in week 2 to satisfy the current period demand. This affects the Net Forecast column, which is calculated from the shipment forecast less quantity sold. This leaves a net forecast of 200 in week 2.

Line 2 is an abnormal order (consumption flag un-checked) and, accordingly, the order quantity of 500 is placed in the Abnormal column for week 3 and does not consume forecast. So for week 3 MRP will plan for the forecast of 400 and the 500 required for the sales order. In general, MRP will always plan for total demand when it exceeds forecast.

REVIEW MASTER SCHEDULE: ITEM 10-00



Master Schedule Summary Inqu...

QAD

Master Schedule Summary Inquiry

12/18/07

Item Number	Site	Start Date	End Date	Bucket	Per/ Bkt	Neg ATP	Output
10-00	8000	12/17/07		W	1	no	page

Item Number: 10-00 Nu Line Yo-Yo MRP Req: Yes
Site: 8000 Mfg LT: 1 Plan Orders: Yes Pur/Mfg: M
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	12/17/07	12/24/07	12/31/07	01/07/08	01/14/08	01/21/08
	12/16/07	12/23/07	12/30/07	01/06/08	01/13/08	01/20/08	01/27/08
Prod Fcst	0	0	0	0	0	0	0
Forecast	0	0	0	0	200	400	0
Sales Orders	0	0	0	300	0	500	0
Gross Reqs	0	0	0	0	0	0	0
Mstr Sched	0	0	0	0	0	0	0
Projected QOH	0	0	0	-300	-500	-1400	-1400
Avail Promise	0	-800	0	0	0	0	0
Cumulative ATP	0	-800	-800	-800	-800	-800	-800

In Master Schedule Summary Inquiry, Yo-Yo Company's master scheduler can observe the planning data for the item at this site, such as lead times, order policy, order period, order quantity, whether the item is purchased or manufactured, and the current quantity on hand.

Note Note the display defaults to a period length of week. The user may select periods of days, weeks, months or GL calendar periods. It is also possible to display multiple periods in each column.

Most importantly, though, this screen shows a summary of the master schedule demands for an item; in this example, item 10-00 (yo-yo) and the current plan to satisfy those demands.

The net forecast is provided in the Forecast row, and the total of the sales order quantities are shown in the Sales Orders row. We discussed this information on the previous page.

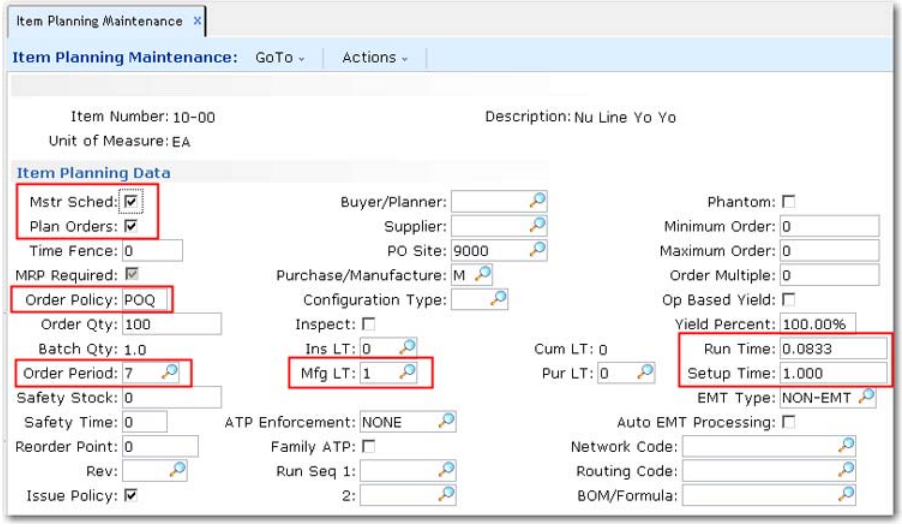
The Projected QOH (quantity on hand) is the calculated on hand balance at the end of each period. In this example, there are no yo-yos in stock or “on hand,” so demand makes the Projected QOH number negative for each period. In week beginning 12/31/2007, the confirmed sales order demand for 300 means 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 1/14/2008, 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



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.

As the Yo-Yo is the end item subject to independent demand it is Master Scheduled and we want the system to plan orders for us so Plan Orders is enabled (checked). This means that these items will be master scheduled (forecasted in our example), and planned orders created by MRP.

Note MRP processes requirements the same whether the master schedule box is checked or not. However, most reports and inquires in the system may be selected for master scheduled items only. This is very useful for the master scheduler as they may select only their items for review.

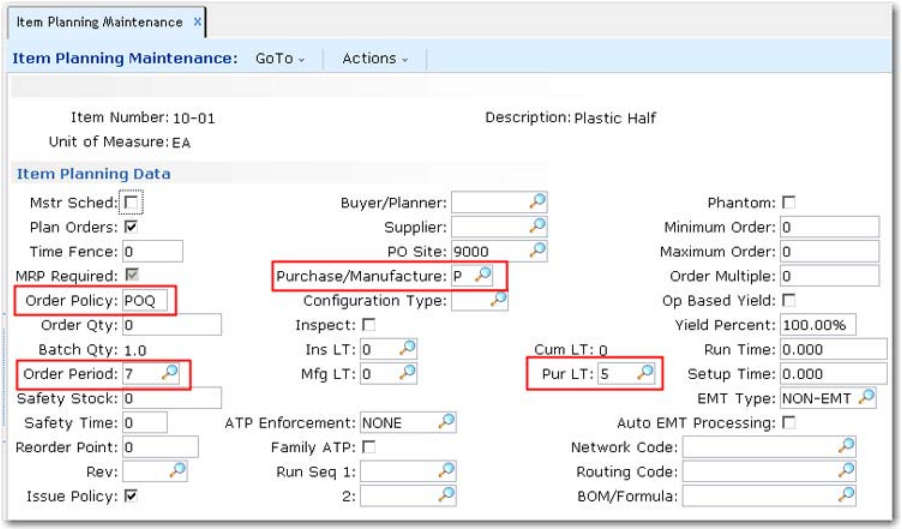
A few of the planning settings that item 10-00 (yo-yo) and its components have in common in Item Planning Maintenance are the following:

- Order Policy of POQ (Period Order Quantity). 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.

- 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).

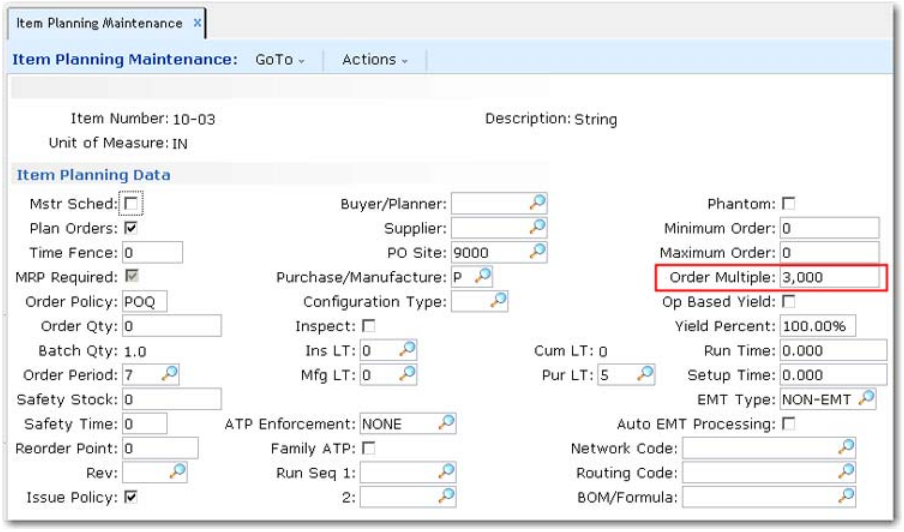
Note For more detailed information on planning data and MRP refer the courses “MRP and CRP” and the course “Master Scheduling and RCCP”.

ITEM PLANNING DATA: ITEM 10-01



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 here. All of these component items also have purchase lead times of 5 days. Based on the information entered above, the planner has indicated to MRP that these materials should be ordered in quantities to cover demand during an order period of 7 days (Order Period), and that a purchase order for this item should be released five days before the item is needed (Pur LT). There is no setup or run time associated with purchased items.

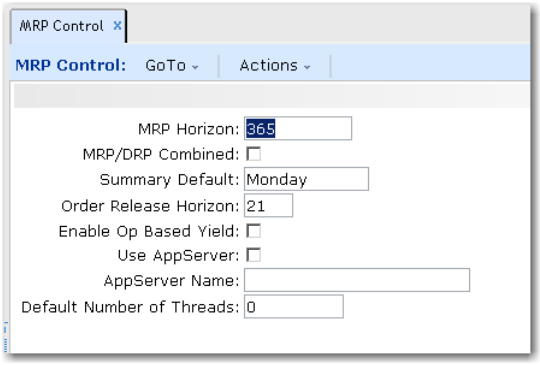
ITEM PLANNING DATA: ITEM 10-03



The last component we will look at is item 10-03, the string. The field to note here is the Order Multiple field. Some purchased items must be ordered in multiples, in this case the amount of string on a roll, which our vendor has told us is 3,000 inches. In this example, the order multiple is 3,000 (inches) so planned orders are only created for whole rolls, or in our unit of measure quantities of 3,000, 6,000, 9,000, inches, etc.

REVIEW MRP CONTROL

Review the MRP Control settings.



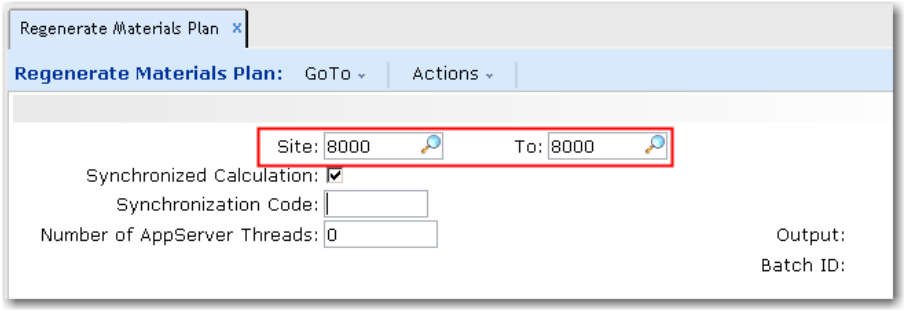
The MRP horizon is the number of days into the future MRP will plan. This needs to be at least one day longer than the longest cumulative lead time in your system. For purposes of this course 60 days would be enough.

The Summary Default is the day of the week MRP and MPS summary inquires should start on.

The Order Release Horizon is the number of days into the future the system should look to find an order release date. This is very important for MRP action messages. For example as set at 21 shown here, the system will flag all planned orders due to be released in the next 21 days as “due for release.” If you have many planned orders and review them daily you may want this set to one or two days.

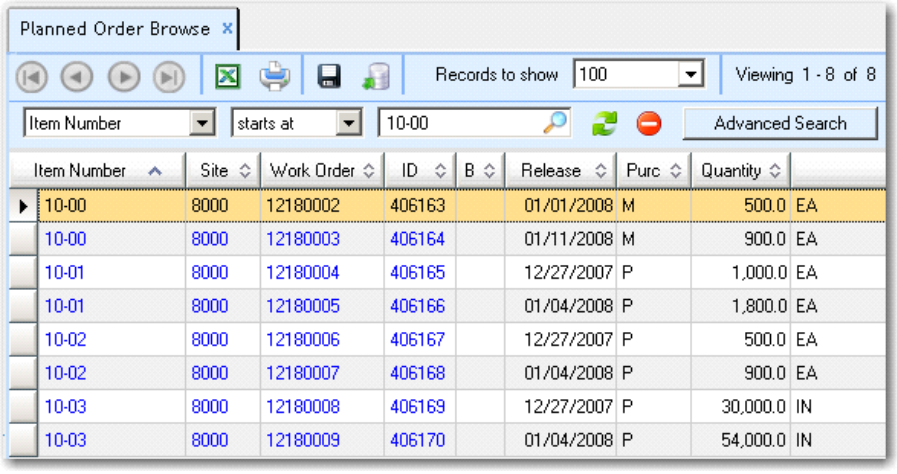
For purposes of this course 14 or 21 days will work fine.

REGENERATE MATERIALS PLAN



To recalculate demand and plan supply for all items at its site (8000), Yo-Yo Company's planner runs Regenerate Materials Plan.

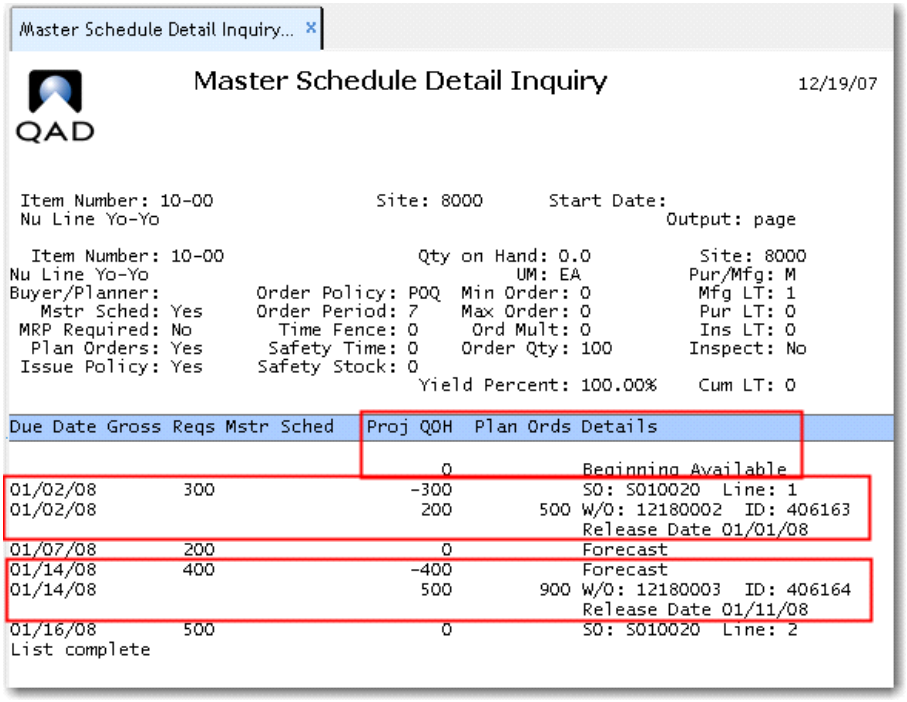
An image of the Planned Order Browse for the MRP run just completed is shown below. These are the planned orders MRP created based on the net forecast and sales orders for the end item Yo-Yo and its components based on the product structure.



Item Number	Site	Work Order	ID	B	Release	Purc	Quantity	
10-00	8000	12180002	406163		01/01/2008	M	500.0	EA
10-00	8000	12180003	406164		01/11/2008	M	900.0	EA
10-01	8000	12180004	406165		12/27/2007	P	1,000.0	EA
10-01	8000	12180005	406166		01/04/2008	P	1,800.0	EA
10-02	8000	12180006	406167		12/27/2007	P	500.0	EA
10-02	8000	12180007	406168		01/04/2008	P	900.0	EA
10-03	8000	12180008	406169		12/27/2007	P	30,000.0	IN
10-03	8000	12180009	406170		01/04/2008	P	54,000.0	IN

Note this display shows the MRP planned Order number and WO ID and the release date, as well as the purchase/manufacture code M or P.

REVIEW MASTER SCHEDULE DETAIL INQUIRY: ITEM 10-00



Examine 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, showing only dates that have a transaction.

In this example, 1/02/2008 is the due date for 300 yo-yos based on sales order SO10020 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 1/02/2008 is also the due date for 500 yo-yos based on work order 12180002.

So, by due date 1/02/2008, 500 yo-yos are to be built and 300 yo-yos are to be consumed, which leaves a projected on-hand quantity of 200.

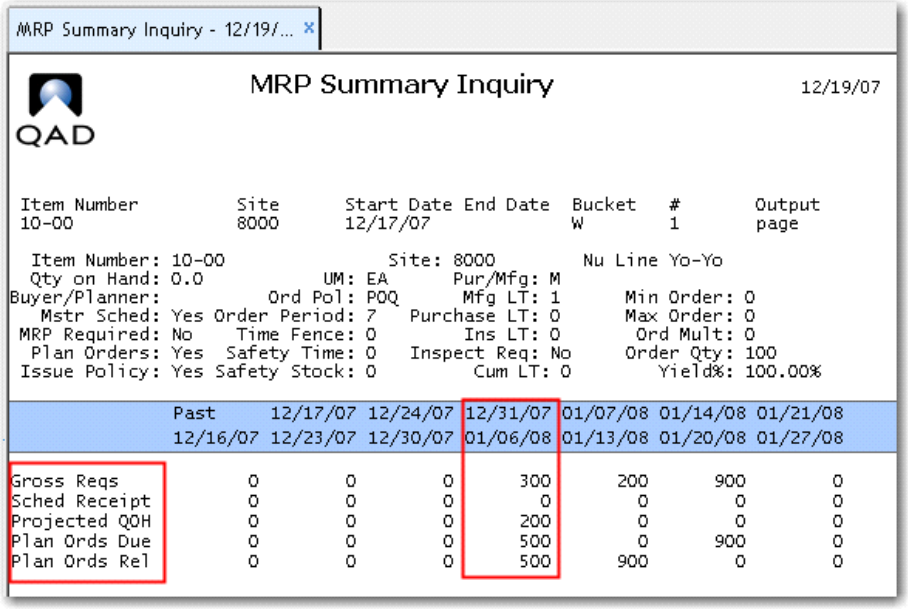
The next demand date is 1/07/2008 for 200 yo-yos. The demand is based on a forecast. This consumes the projected quantity on hand of 200, leaving a projected quantity on hand of 0 (200 available - 200 forecast = 0).

The following demand date is 1/14/2008 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 1/14/2008. 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 1/16/2008 are 500 yo-yos based on sales order SO10020, 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



MRP Summary Inquiry - 12/19/...

QAD

MRP Summary Inquiry 12/19/07

Item Number	Site	Start Date	End Date	Bucket	#	Output
10-00	8000	12/17/07		W	1	page

Item Number: 10-00 Site: 8000 Nu Line Yo-Yo
Qty on Hand: 0.0 UM: EA Pur/Mfg: M
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%

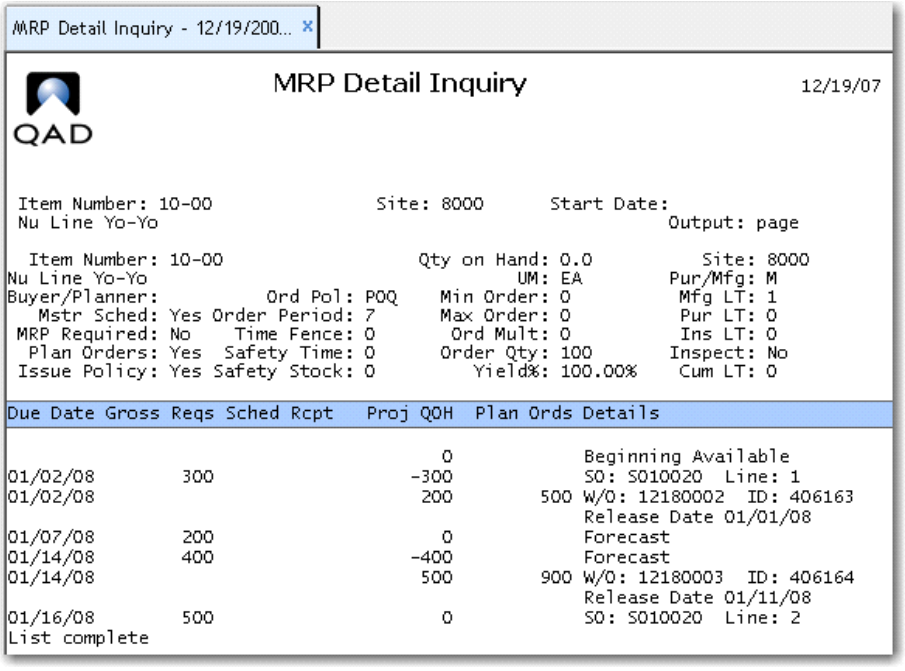
	Past	12/17/07	12/24/07	12/31/07	01/07/08	01/14/08	01/21/08
	12/16/07	12/23/07	12/30/07	01/06/08	01/13/08	01/20/08	01/27/08
Gross Reqs	0	0	0	300	200	900	0
Sched Receipt	0	0	0	0	0	0	0
Projected QOH	0	0	0	200	0	0	0
Plan Ords Due	0	0	0	500	0	900	0
Plan Ords Rel	0	0	0	500	900	0	0

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. In general the Master Schedule Summary Inquiry deals in more detail with demand, forecasts and sales orders, and MRP Summary Inquiry deals more with the supply orders.

Planned Orders Due are calculated to satisfy demand from sales orders, and forecasts.

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



MRP Detail Inquiry - 12/19/200...

MRP Detail Inquiry 12/19/07

QAD

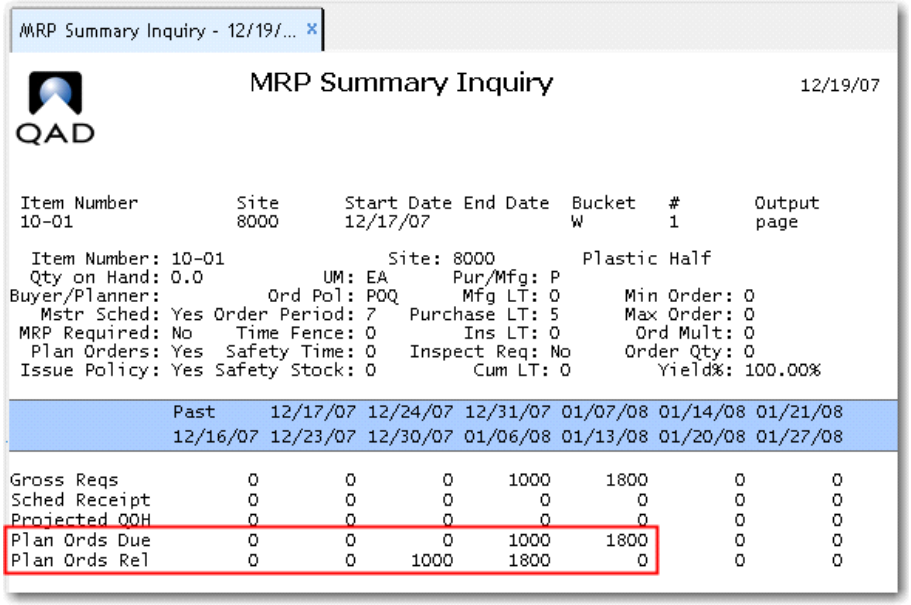
```
 Item Number: 10-00              Site: 8000      Start Date:
 Nu Line Yo-Yo                                           Output: page

  Item Number: 10-00                  Qty on Hand: 0.0          Site: 8000
Nu Line Yo-Yo                                UM: EA         Pur/Mfg: M
Buyer/Planner:          Ord Pol: 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%: 100.00%    Cum LT: 0
```

Due Date	Gross Reqs	Sched Rcpt	Proj QOH	Plan Ords	Details
			0		Beginning Available
01/02/08	300		-300		SO: SO10020 Line: 1
01/02/08			200	500	W/O: 12180002 ID: 406163
					Release Date 01/01/08
01/07/08	200		0		Forecast
01/14/08	400		-400		Forecast
01/14/08			500	900	W/O: 12180003 ID: 406164
					Release Date 01/11/08
01/16/08	500		0		SO: SO10020 Line: 2

List complete

The MRP Detail Inquiry shows the same information as the Master Schedule Detail Inquiry.

REVIEW MRP SUMMARY INQUIRY: ITEM 10-01


MRP Summary Inquiry - 12/19/...

MRP Summary Inquiry

12/19/07

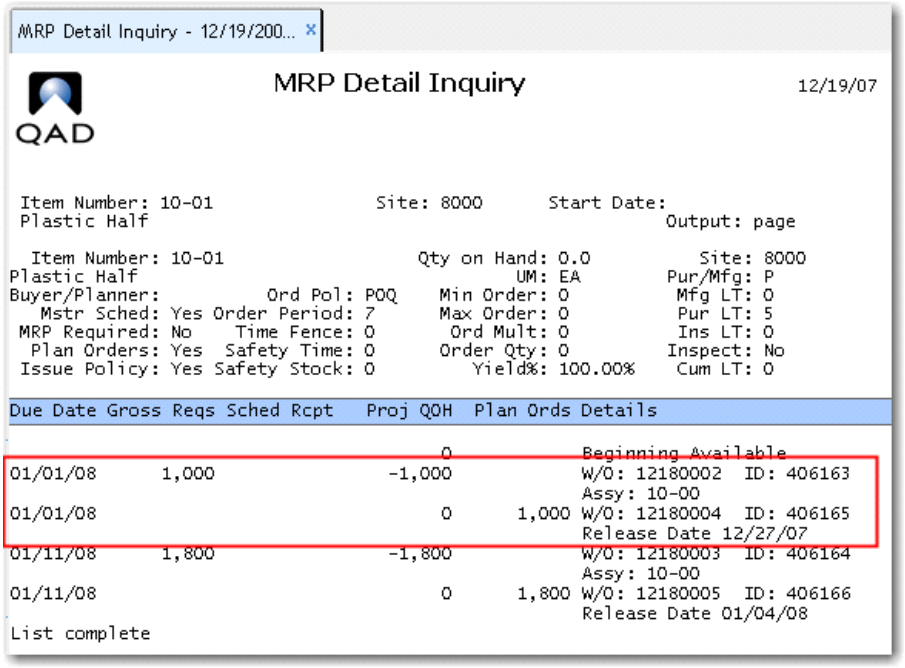
Item Number	Site	Start Date	End Date	Bucket	#	Output
10-01	8000	12/17/07		W	1	page

Item Number: 10-01 Site: 8000 Plastic Half
Qty on Hand: 0.0 UM: EA Pur/Mfg: P
Buyer/Planner: Ord Pol: POQ Mfg LT: 0 Min Order: 0
Mstr Sched: Yes Order Period: 7 Purchase LT: 5 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: 0
Issue Policy: Yes Safety Stock: 0 Cum LT: 0 Yield%: 100.00%

	Past	12/17/07	12/24/07	12/31/07	01/07/08	01/14/08	01/21/08
	12/16/07	12/23/07	12/30/07	01/06/08	01/13/08	01/20/08	01/27/08
Gross Reqs	0	0	0	1000	1800	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	0	1000	1800	0	0
Plan Ords Rel	0	0	1000	1800	0	0	0

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 12/31/2007? Examine the MRP Detail Inquiry screen on the next page.

REVIEW MRP DETAIL INQUIRY: ITEM 10-01



MRP Detail Inquiry - 12/19/200...

MRP Detail Inquiry 12/19/07

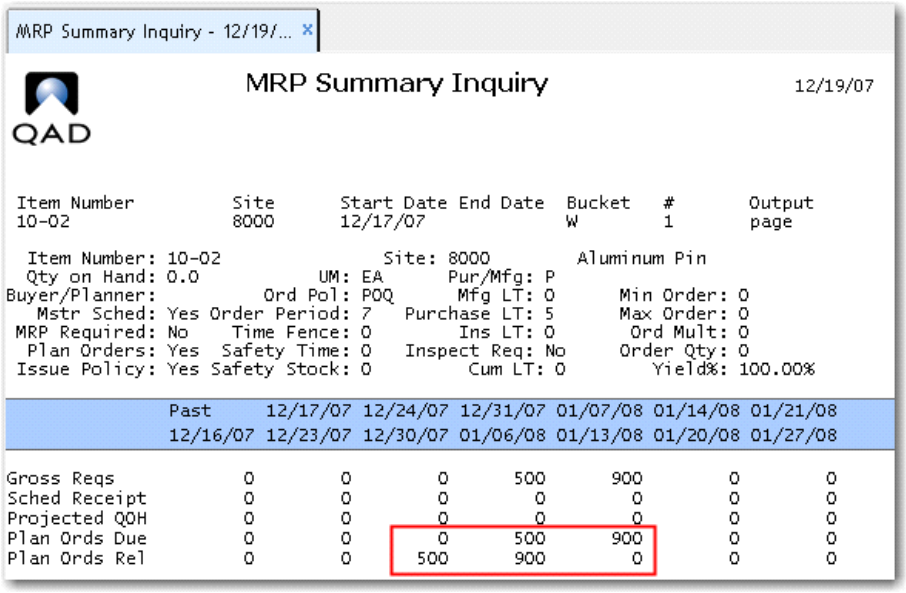
QAD

```
Item Number: 10-01                Site: 8000      Start Date:
Plastic Half                                              Output: page

  Item Number: 10-01                    Qty on Hand: 0.0          Site: 8000
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

                                        0            Beginning Available
01/01/08      1,000                -1,000            W/O: 12180002  ID: 406163
                                                     Assy: 10-00
01/01/08                               0      1,000 W/O: 12180004  ID: 406165
                                                     Release Date 12/27/07
01/11/08      1,800                -1,800            W/O: 12180003  ID: 406164
                                                     Assy: 10-00
01/11/08                               0      1,800 W/O: 12180005  ID: 406166
                                                     Release Date 01/04/08

List complete
```

Here is the gross requirement of 1,000 plastic halves. This requirement was created by work order 12180002, which is the work order for 500 of the parent assembly, 10-00.

When 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 release a purchase order on 12/27/2007 (5-day purchase lead time) for 1,000 plastic halves. This order is shown above as work order 12180004. 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



MRP Summary Inquiry - 12/19/...

QAD

MRP Summary Inquiry 12/19/07

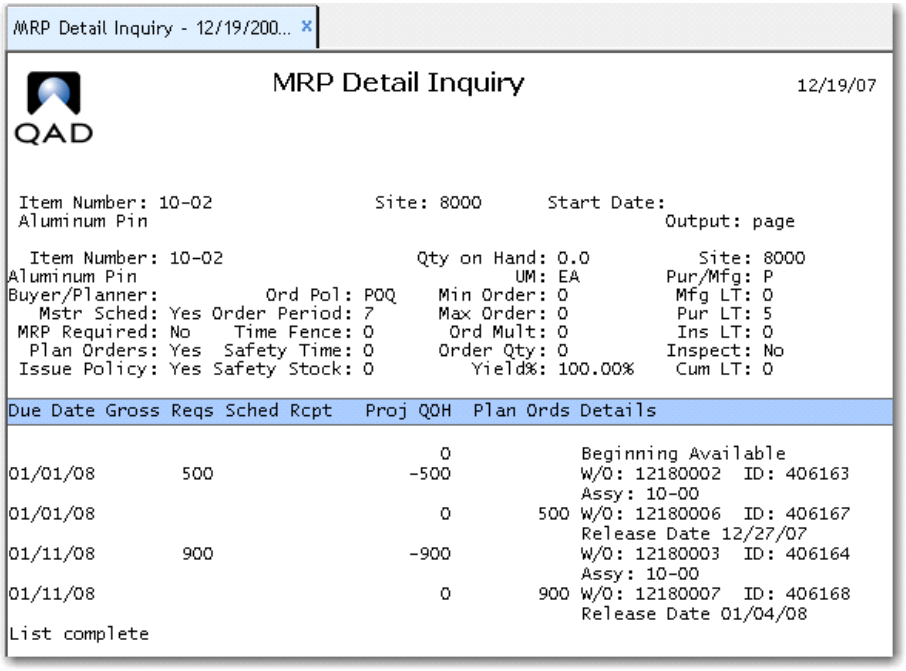
Item Number	Site	Start Date	End Date	Bucket	#	Output
10-02	8000	12/17/07		W	1	page

Item Number: 10-02 Site: 8000 Aluminum Pin
Qty on Hand: 0.0 UM: EA Pur/Mfg: P
Buyer/Planner: Ord Pol: POQ Mfg LT: 0 Min Order: 0
Mstr Sched: Yes Order Period: 7 Purchase LT: 5 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: 0
Issue Policy: Yes Safety Stock: 0 Cum LT: 0 Yield%: 100.00%

	Past	12/17/07	12/24/07	12/31/07	01/07/08	01/14/08	01/21/08
	12/16/07	12/23/07	12/30/07	01/06/08	01/13/08	01/20/08	01/27/08
Gross Reqs	0	0	0	500	900	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	0	500	900	0	0
Plan Ords Rel	0	0	500	900	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 12/31/2007, 500 aluminum pins (10-02) are needed. Note the one week offset between the planned order due date and the planned order release date to accommodate for the lead time. The MRP Detail Inquiry is shown on the next page.

REVIEW MRP DETAIL INQUIRY: ITEM 10-02



MRP Detail Inquiry - 12/19/200...

QAD

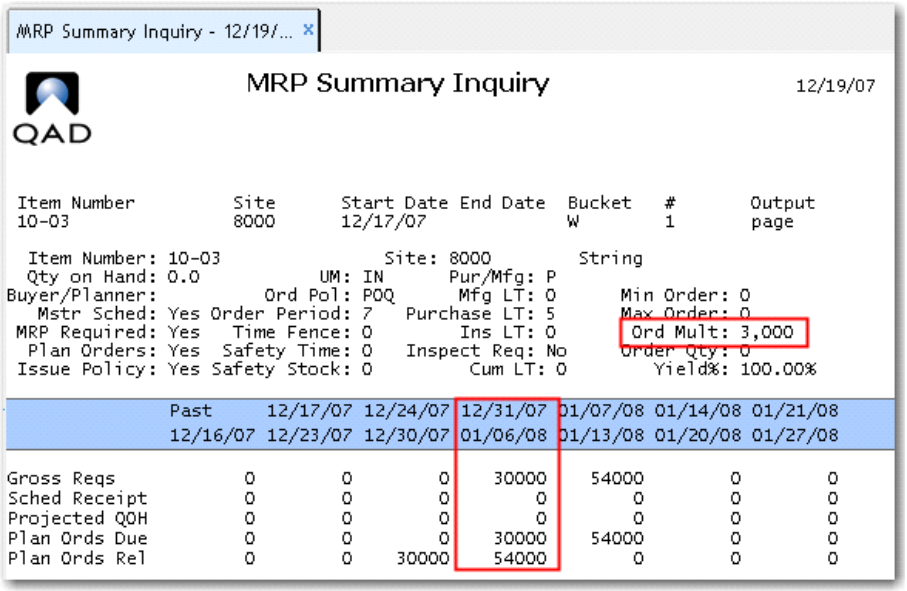
MRP Detail Inquiry 12/19/07

```
Item Number: 10-02              Site: 8000      Start Date:
Aluminum Pin                                            Output: page

  Item Number: 10-02                Qty on Hand: 0.0          Site: 8000
Aluminum Pin                                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

                                        0            Beginning Available
01/01/08        500                  -500            W/O: 12180002  ID: 406163
                                                     Assy: 10-00
01/01/08                               0        500 W/O: 12180006  ID: 406167
                                                     Release Date 12/27/07
01/11/08        900                  -900            W/O: 12180003  ID: 406164
                                                     Assy: 10-00
01/11/08                               0        900 W/O: 12180007  ID: 406168
                                                     Release Date 01/04/08
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 first order is 12/27/2007 because of the 5-day purchase lead time.

REVIEW MRP SUMMARY INQUIRY: ITEM 10-03



MRP Summary Inquiry - 12/19/...

QAD

MRP Summary Inquiry 12/19/07

Item Number	Site	Start Date	End Date	Bucket	#	Output
10-03	8000	12/17/07		W	1	page

Item Number: 10-03 Site: 8000 String
Qty on Hand: 0.0 UM: IN Pur/Mfg: P
Buyer/Planner: Ord Pol: POQ Mfg LT: 0 Min Order: 0
Mstr Sched: Yes Order Period: 7 Purchase LT: 5 Max Order: 0
MRP Required: Yes Time Fence: 0 Ins LT: 0 Ord Mult: 3,000
Plan Orders: Yes Safety Time: 0 Inspect Req: No Order Qty: 0
Issue Policy: Yes Safety Stock: 0 Cum LT: 0 Yield%: 100.00%

	Past	12/17/07	12/24/07	12/31/07	01/07/08	01/14/08	01/21/08
	12/16/07	12/23/07	12/30/07	01/06/08	01/13/08	01/20/08	01/27/08
Gross Reqs	0	0	0	30000	54000	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	0	30000	54000	0	0
Plan Ords Rel	0	0	30000	54000	0	0	0

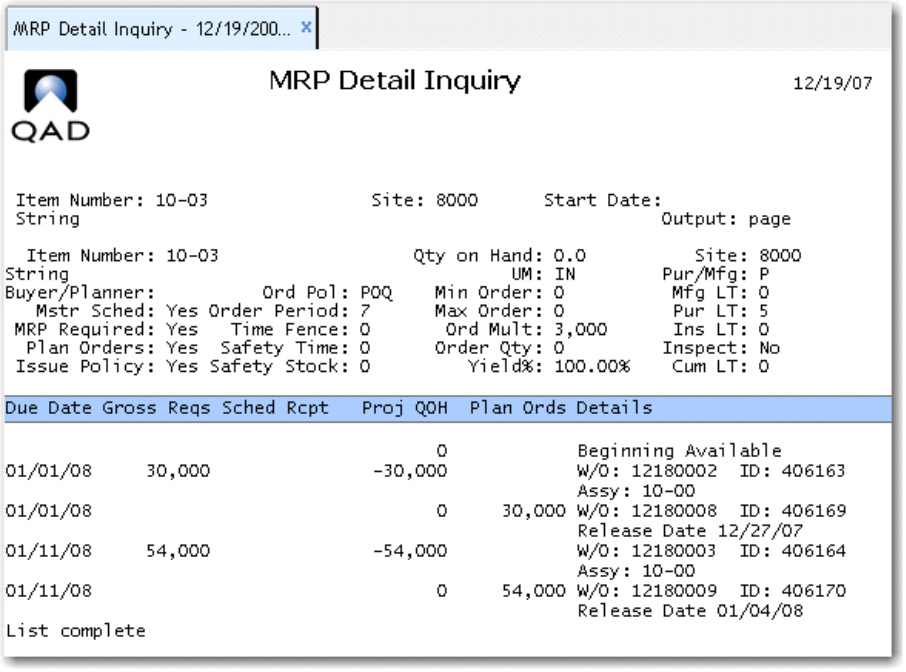
The final component needed to build yo-yos is the string. The MRP Summary Inquiry for string (10-03) is shown above.

Yo-Yo Company needs 60 inches of string per yo-yo. In week12/31/2007, 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 1/07/2008, 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 12/31/2007 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



MRP Detail Inquiry - 12/19/200...

QAD

MRP Detail Inquiry 12/19/07

Item Number: 10-03 Site: 8000 Start Date:
String Output: page

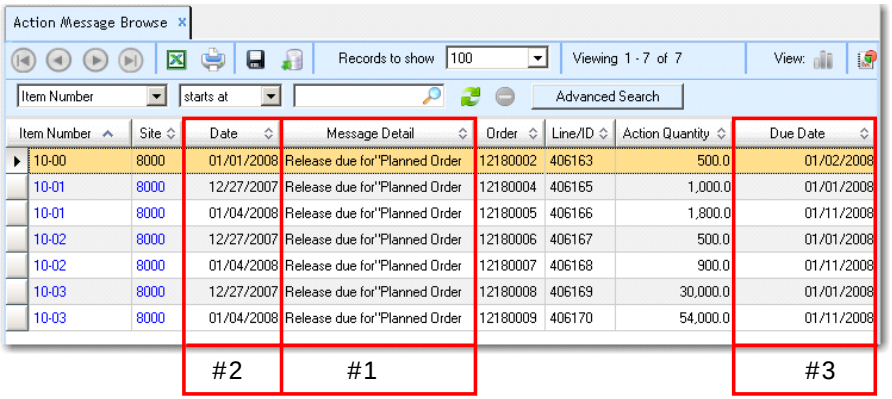
Item Number: 10-03 Qty on Hand: 0.0 Site: 8000
String UM: IN Pur/Mfg: P
Buyer/Planner: Ord Pol: POQ Min Order: 0 Mfg LT: 0
Mstr Sched: Yes Order Period: 7 Max Order: 0 Pur LT: 5
MRP Required: Yes Time Fence: 0 Ord Mult: 3,000 Ins LT: 0
Plan Orders: Yes Safety Time: 0 Order Qty: 0 Inspect: No
Issue Policy: Yes Safety Stock: 0 Yield%: 100.00% Cum LT: 0

Due Date	Gross Reqs	Sched Rcpt	Proj QOH	Plan Ords	Details
			0		Beginning Available
01/01/08	30,000		-30,000		W/O: 12180002 ID: 406163 Assy: 10-00
01/01/08			0	30,000	W/O: 12180008 ID: 406169 Release Date 12/27/07
01/11/08	54,000		-54,000		W/O: 12180003 ID: 406164 Assy: 10-00
01/11/08			0	54,000	W/O: 12180009 ID: 406170 Release Date 01/04/08

List complete

The MRP Detail Inquiry for the string is shown above. Again, note that the release date for the order is 12/27/2007 due to the 5-day purchase lead time.

REVIEW MRP ACTION MESSAGES



1 Check Action Message

2 Check the Date column

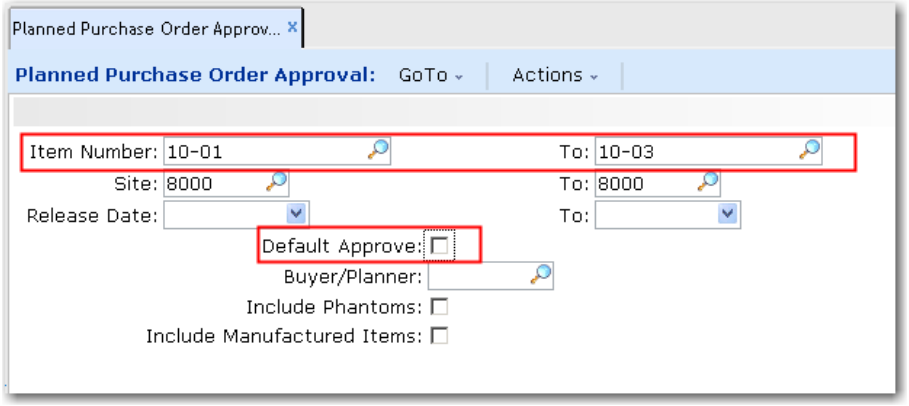
3 Check the Due Date

Yo-Yo Company's planner reviews the Action Message Browse, shown above. The message shown on this report is: Release due for Planned Order. The first date column is the planned order release date. The order due date is shown in the last field.

- The recommended order in which to read this report is:
- Check the action message
- Check the date column. This is the date associated with the action message.
- 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.
- 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 as these have the closest release dates.

APPROVE PLANNED PURCHASE ORDERS



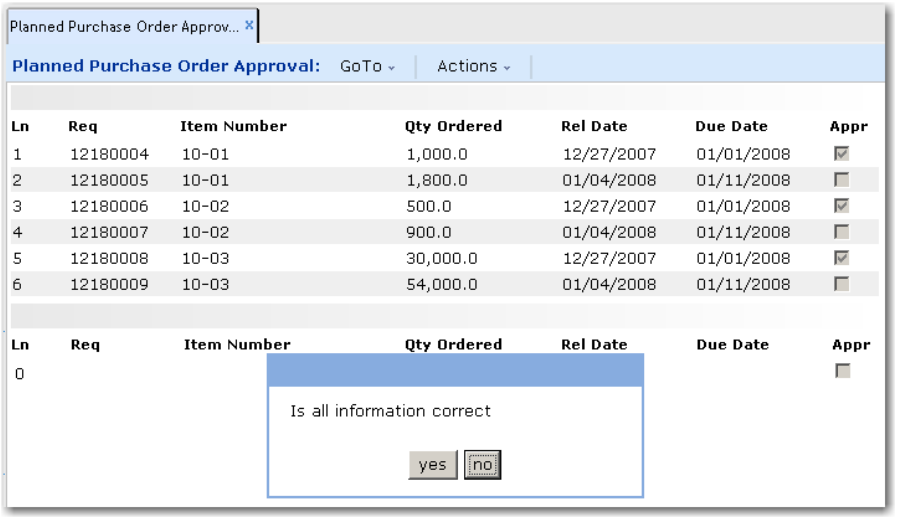
Yo-Yo Company's planner uses Planned Purchase Order Approval to approve MRP planned purchase orders. By approving the MRP planned purchase orders, the system converts these orders into purchase requisitions. The planner de-selects (un-checks) “default approve,” so that while all planned orders will display they are selected for approval individually. As there are several weeks of planned orders on the system we only want to approve those needed for current release. A review screen displays next (shown below).

In this screen, Yo-Yo Company's planner can review the list of MRP planned orders available for approval. These are the components required to build 500 yo-yos by 12/31/07 and 900 yo-yos by the week of 1/01/08. After reviewing

the list, Yo-Yo Company's planner approves the orders for the first requirement entering the line number in the lower frame which displays the order, then clicking next and checking the Approval box and clicking next again.

Continue this process until all the orders you wish to approval are selected as shown in the sequence of screen shots that follow. As orders are approved in the lower frame the check mark is displayed in the upper frame.

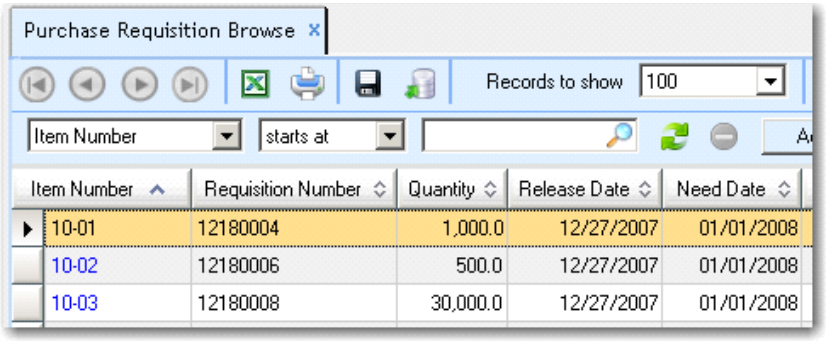
When all orders are selected for approval click back and a verification pop up appears.



Verify that all required orders are checked in the upper frame and click Yes. This converts the planned orders into approved purchase requisitions.

Note Had default approve been selected in the selection screen, the process would be reversed, that is un-checking the orders you did not want approved.

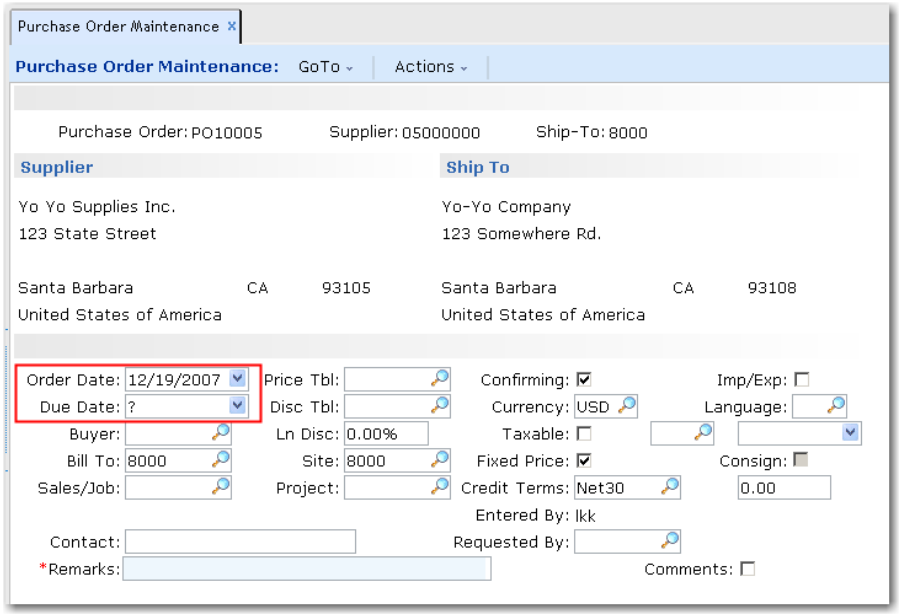
REVIEW PURCHASE REQUISITIONS



The system 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 and released to the vendor 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 internal purchase inspection lead time. The purchase lead time is determined in consultation with the vendor and makes allowance for transport time.

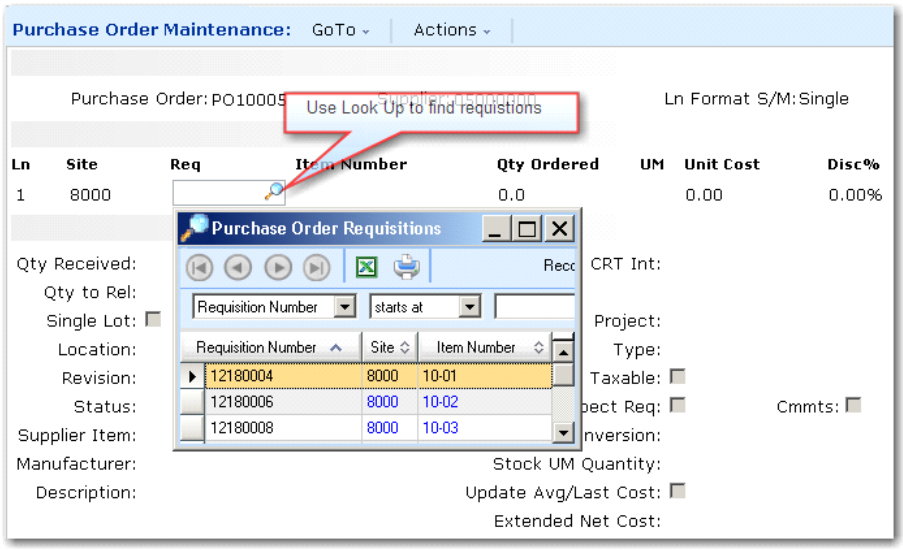
CREATE PURCHASE ORDER



Yo-Yo Company's buyer enters an order to purchase the components for the 500 yo-yos that need to be manufactured by the week of 12/31/2007.

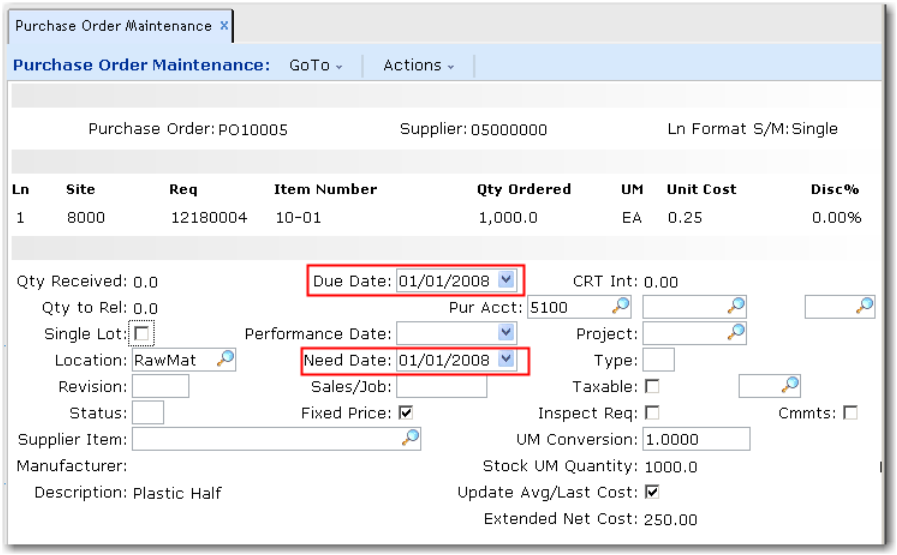
The supplier for the components is Yo-Yo Supplies, Inc. The order date is today's date but must be at least 5-days before the need date based on the purchasing lead time for the components. The buyer enters a “?” in the Due Date field on the PO header so that the line item due dates will default from the requisition for each line item (see figure below).

Line 1: 10-01



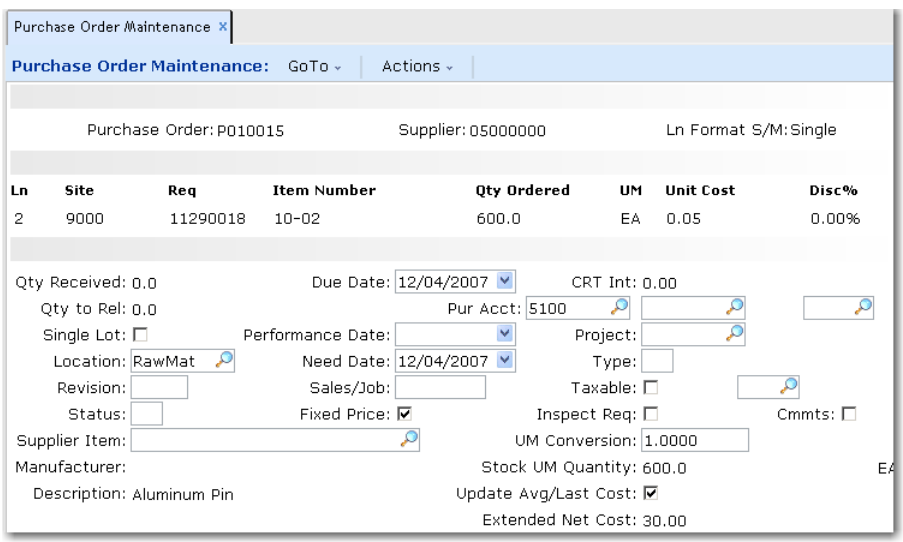
Yo-Yo Company's buyer only needs to enter the requisition number for items 10-01 and 10-02 (using the look-up) and the remaining fields are populated based on those requisitions. Use the requisition look-up and double click the requisition number to add it to the PO.

Note Once requisitions are added to a PO they are deleted from the requisition file. They now exist only as purchase order line items.

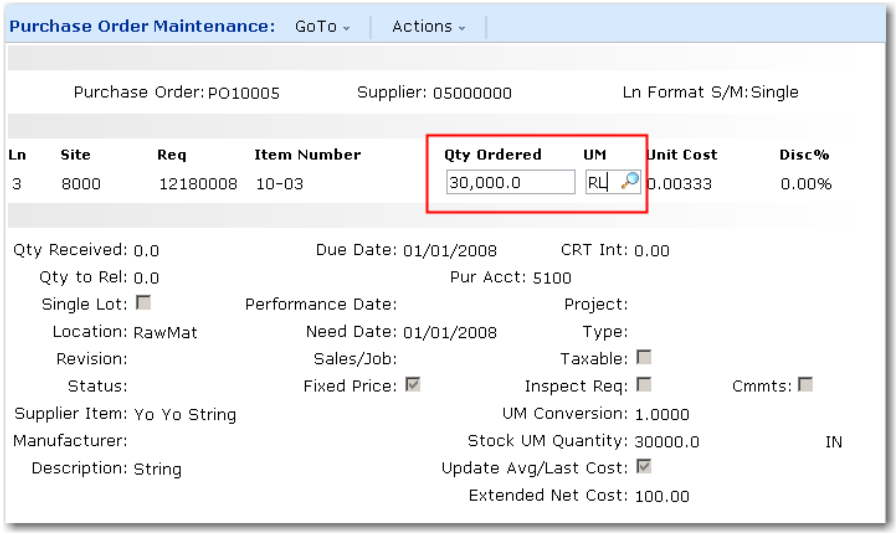


Line 1 for item 10-01 is shown above, and Line 2 for item 10-02 is shown on the following page.

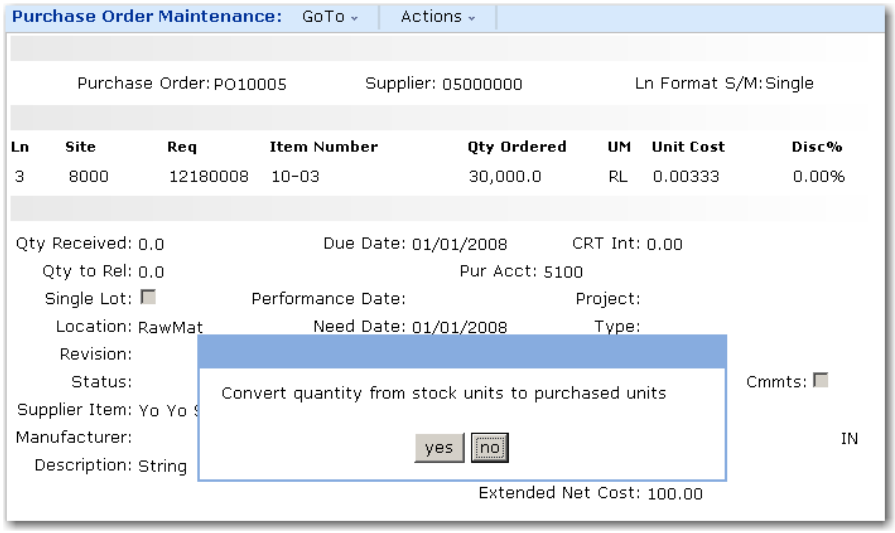
Line 2: 10-02



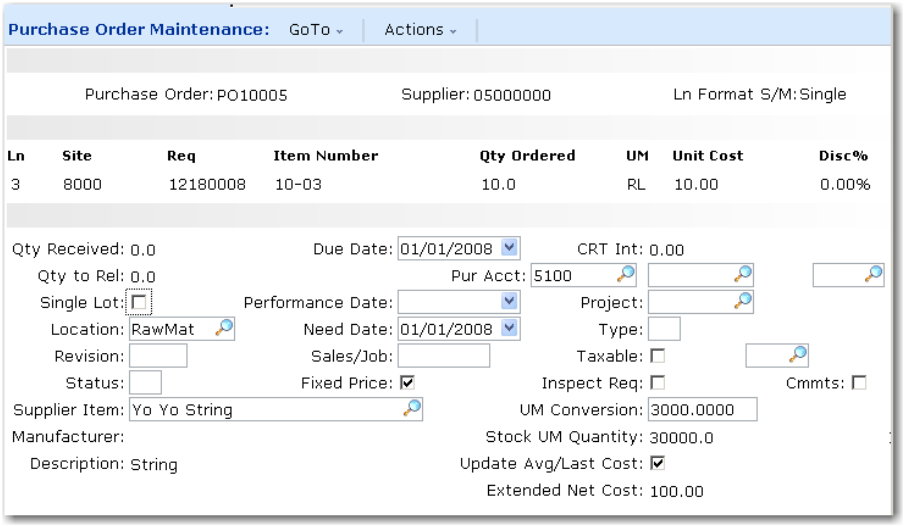
Line 3: 10-03



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.



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 unit of measure conversion is shown as 3000 and the Stock UM Quantity displays as 30,000 inches. This is the quantity that will be placed into inventory when the PO line item is received.

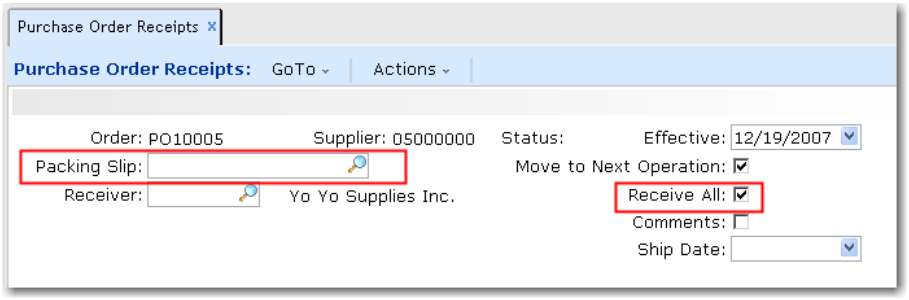


How were the conversion and price set up?

Review

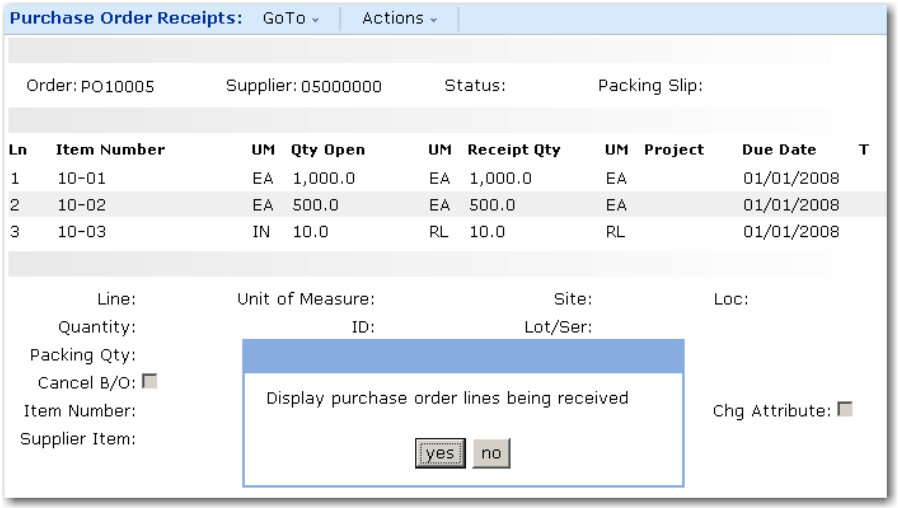
- Item Master Maintenance: unit of measure = inches
- Unit of Measure Conversion: IN (stocking UOM) to RL for item 10-03; UOM conversion = 3,000 inches per roll
- Supplier Item Maintenance: when 1 or more rolls of string (10-03) are ordered the cost is $10 per roll (or 0.003333 per inch)
- Item Planning Maintenance: Order multiple = 3,000 inches (size of roll)

RECEIVE ITEMS

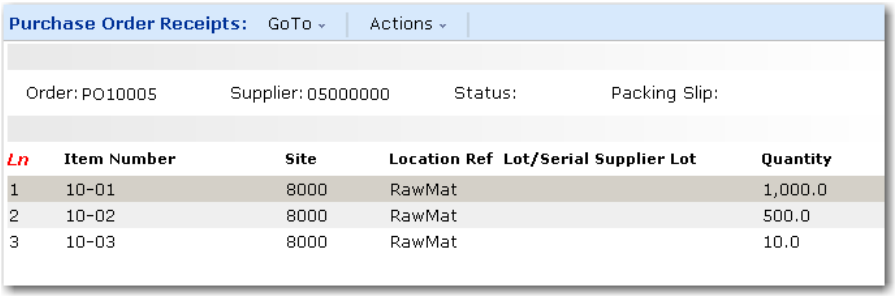


In Purchase Order Receipts, the receiving clerk checks receive all as the purchase order has been shipped complete. This will set up the receipt for simplified processing. If the vendor has provided a packing slip with a reference number that can be entered.

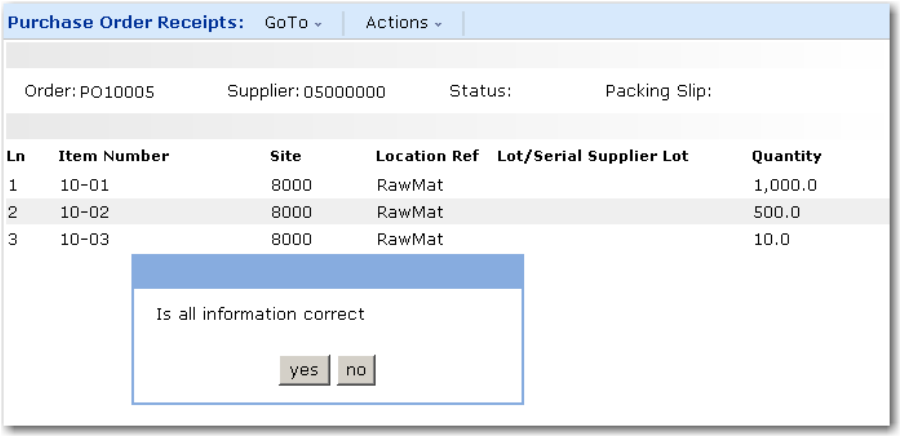
This brings up a screen with all the receiving data pre-filled. By clicking next a dialog box pops up. The unit of measure for the 10-03 will be converted into the stock unit of measure when the receiving transaction is complete. The receiving clerk selects yes to display the receiving transaction.



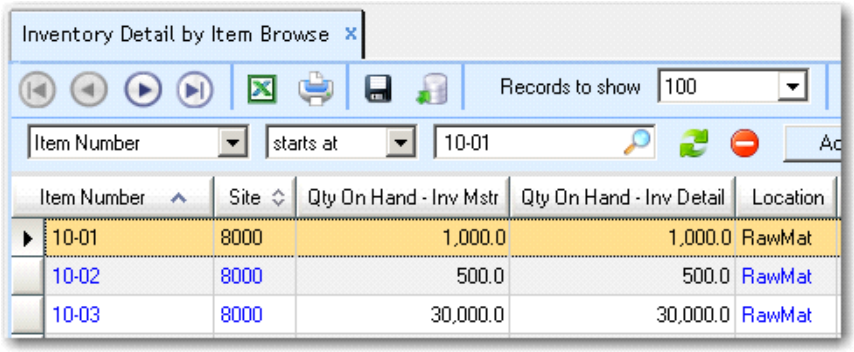
Clicking yes brings up a screen reviewing the transaction detail about to be completed including the default inventory location the system expects the material to be placed in. If all is correct click next.



If you need to change the location code or quantity for an item, check No when prompted “is all information correct” this will return you to the line item detail frame where you can specify an alternate location or change the quantity. Otherwise select yes to complete the transaction.



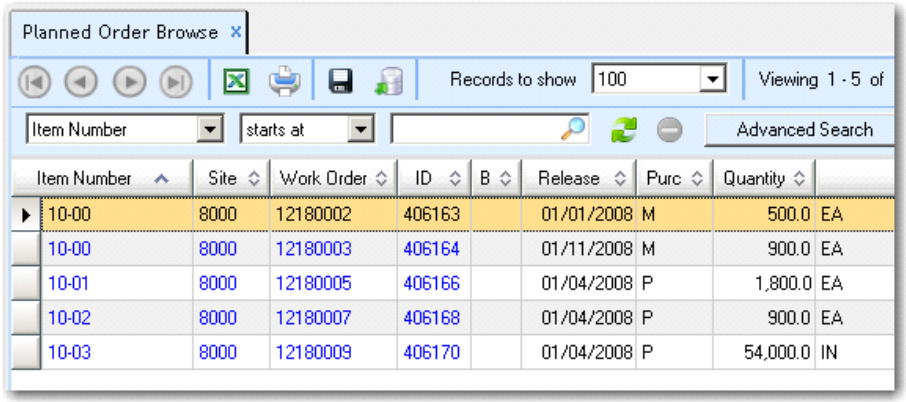
You can verify the unit of measure conversion by using Inventory Detail by Item Browse where you can see that the 10 rolls of string have been put into inventory as 30,000 inches of string.



REVIEW PLANNED ORDER REPORT OR BROWSE

Yo-Yo Company's planner and buyer have handled the planned purchase orders. Next, let's focus on the manufacturing orders.

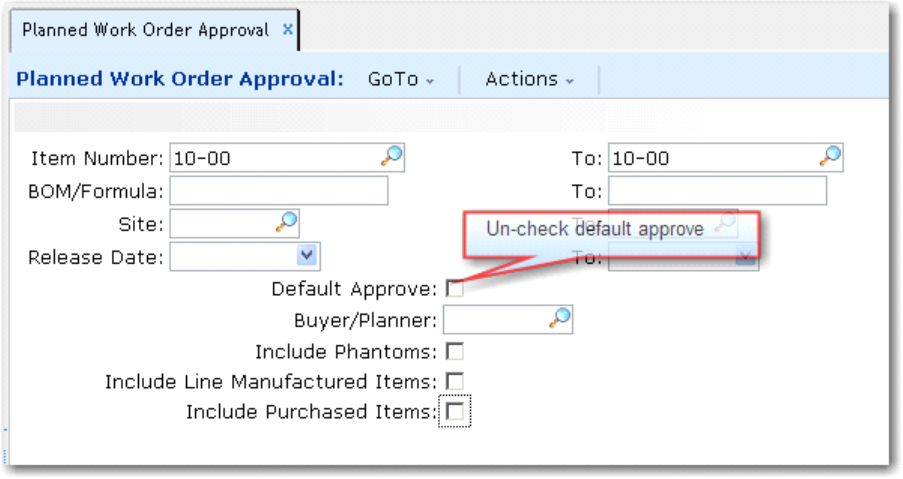
Yo-Yo Company's production control planner checks the Planned Order Report or Browse to see a list of the orders that MRP has planned but that are not “firm planned” yet.



Item Number	Site	Work Order	ID	B	Release	Purc	Quantity	
10-00	8000	12180002	406163		01/01/2008	M	500.0	EA
10-00	8000	12180003	406164		01/11/2008	M	900.0	EA
10-01	8000	12180005	406166		01/04/2008	P	1,800.0	EA
10-02	8000	12180007	406168		01/04/2008	P	900.0	EA
10-03	8000	12180009	406170		01/04/2008	P	54,000.0	IN

The planner sees two orders for item 10-00, the yo-yos. One of the orders needs attention now because it has a release date of 1/01/08. 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

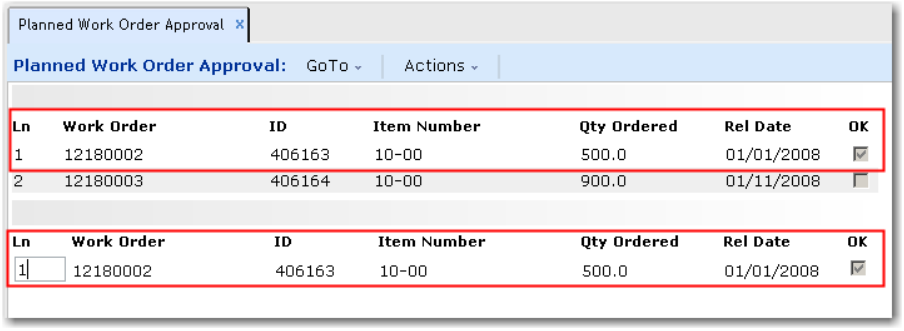


The planner uses Planned Work Order Approval to approve the MRP planned order.

The planner has de-selected Default Approve and entered the item number to limit the screen to only planned orders for 10-00.

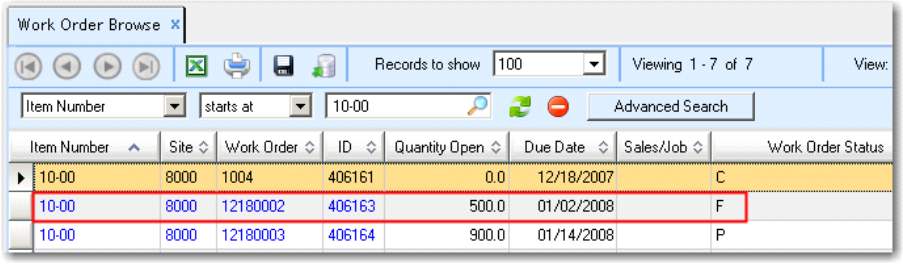
Note This selection screen can also be accessed by Planner code or release date to further limit the items displayed.

Planned Work Order Approval: Line 1



Because Default Approve was un-checked in the preceding frame, the default for all lines is OK blank (box un-checked). After reviewing the list, the planner approves the orders wanted by their line number in the first window of the lower frame, clicking next and checking OK by clicking the cursor in the box.

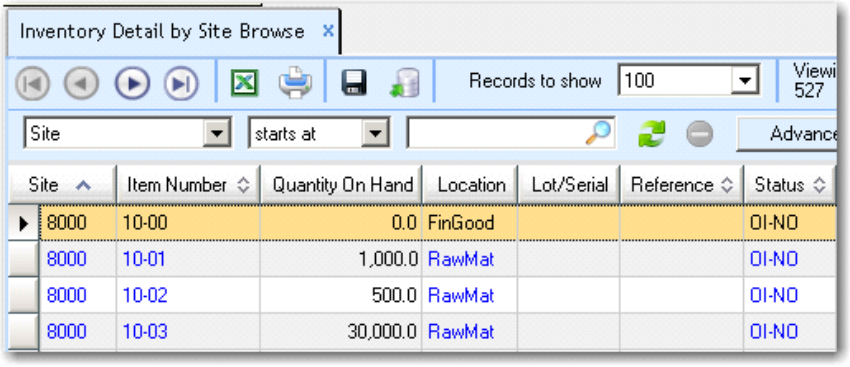
REVIEW WORK ORDERS



In this example, the planner uses Work Order Browse to review all work orders for site 10-00.

Several work orders display with various due dates and status codes. The planner notes that the order approved in the previous step (work order 12180002) now has a status code of F (firm planned). This means that it is no longer under MRP control. We also see a previously closed work order (status C) and a status P (planned) order for 10-00.

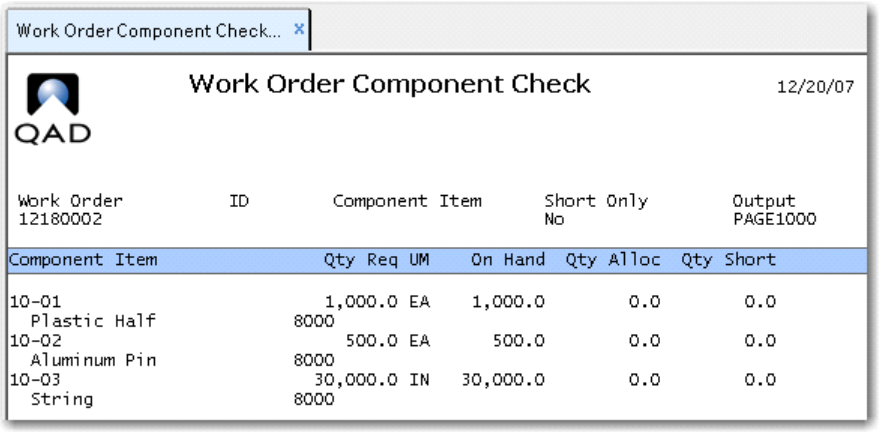
VERIFY AVAILABILITY OF COMPONENTS



Yo-Yo Company's production activity control (PAC) manager uses Inventory Detail by Site Browse to verify the availability of components in inventory.

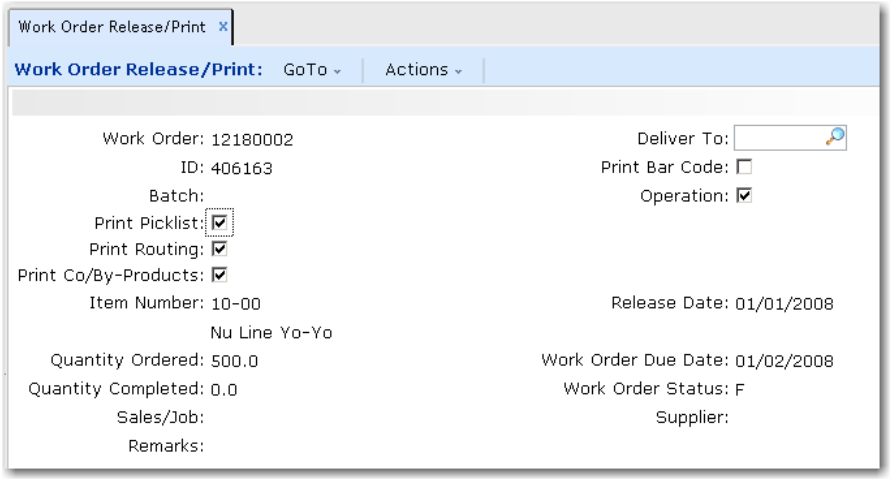
The yo-yo components are included in the listing, and the quantities in stock are as expected.

Another way to verify the inventory of components for a work order is with Work Order Component Check.

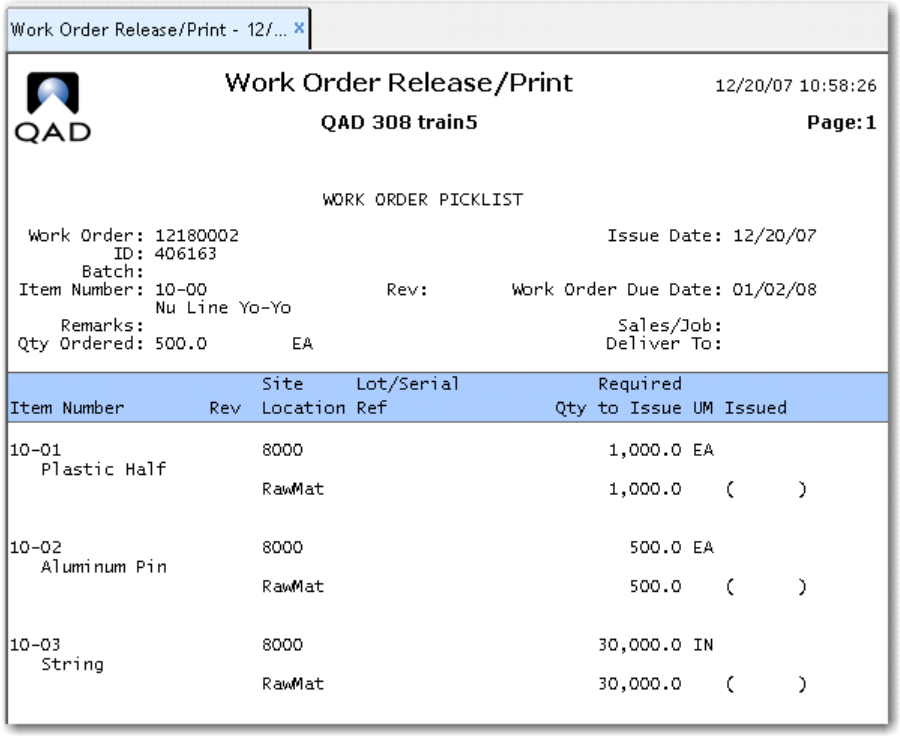


In the selection screen you enter the specific work order in question. If you un-check the Short Only box you will see the display pictured above. The specific quantities required for this order and the quantity on hand. In this case there is exactly the right amount of each component.

RELEASE WORK ORDER



The PAC manager releases the work order using Work Order Release/Print. Note the print selection options that have been selected.



Work Order Release/Print - 12/...

QAD

Work Order Release/Print 12/20/07 10:58:26

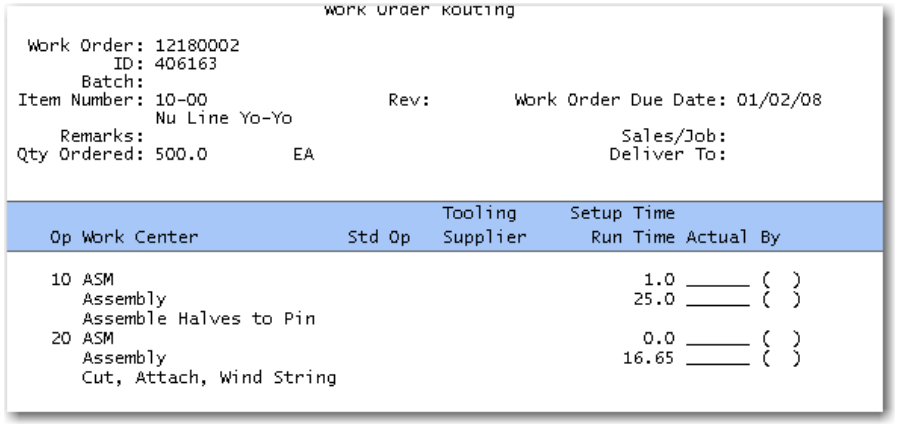
QAD 308 train5 **Page: 1**

WORK ORDER PICKLIST

Work Order: 12180002 Issue Date: 12/20/07
ID: 406163
Batch:
Item Number: 10-00 Rev: Work Order Due Date: 01/02/08
Nu Line Yo-Yo
Remarks: Sales/Job:
Qty Ordered: 500.0 EA Deliver To:

Item Number	Rev	Site Location	Lot/Serial Ref	Required Qty to Issue	UM	Issued
10-01 Plastic Half		8000		1,000.0	EA	
		RawMat		1,000.0		( )
10-02 Aluminum Pin		8000		500.0	EA	
		RawMat		500.0		( )
10-03 String		8000		30,000.0	IN	
		RawMat		30,000.0		( )

This is an image of the hard copy Work Order Pick List.



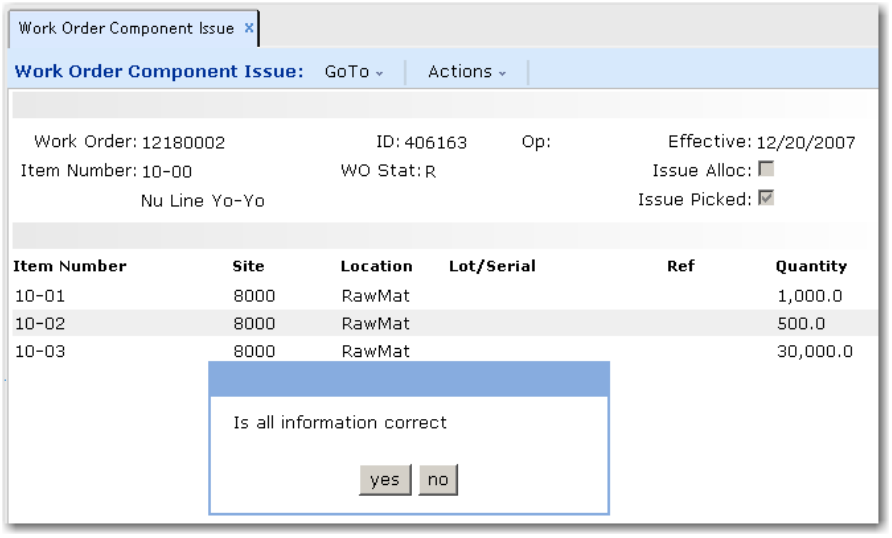
Work Order Routing

Work Order: 12180002
ID: 406163
Batch:
Item Number: 10-00 Rev: Work Order Due Date: 01/02/08
Nu Line Yo-Yo
Remarks: Sales/Job:
Qty Ordered: 500.0 EA Deliver To:

Op	Work Center	Std Op	Tooling Supplier	Setup Time / Run Time	Actual	By
10	ASM			1.0	_____	( )
	Assembly			25.0	_____	( )
	Assemble Halves to Pin					
20	ASM			0.0	_____	( )
	Assembly			16.65	_____	( )
	Cut, Attach, Wind String					

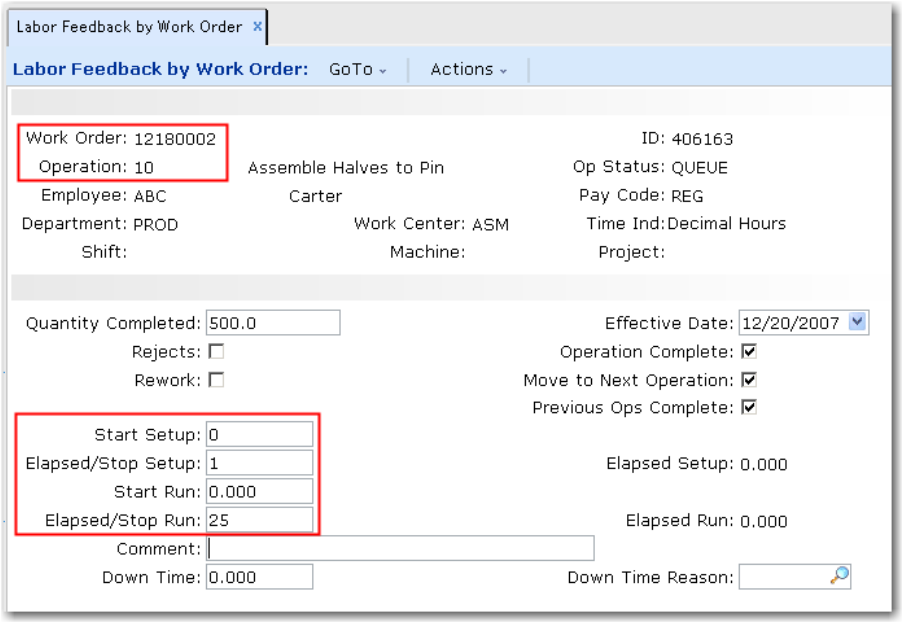
This is an image of the hard copy Work Order Routing.

ISSUE WORK ORDER COMPONENTS



The PAC manager issues the components using Work Order Component Issue. By checking Issue Picked in the header frame the system pre-fills the transaction fields with the information from the Work Order Pick List created in the previous step.

REPORT LABOR



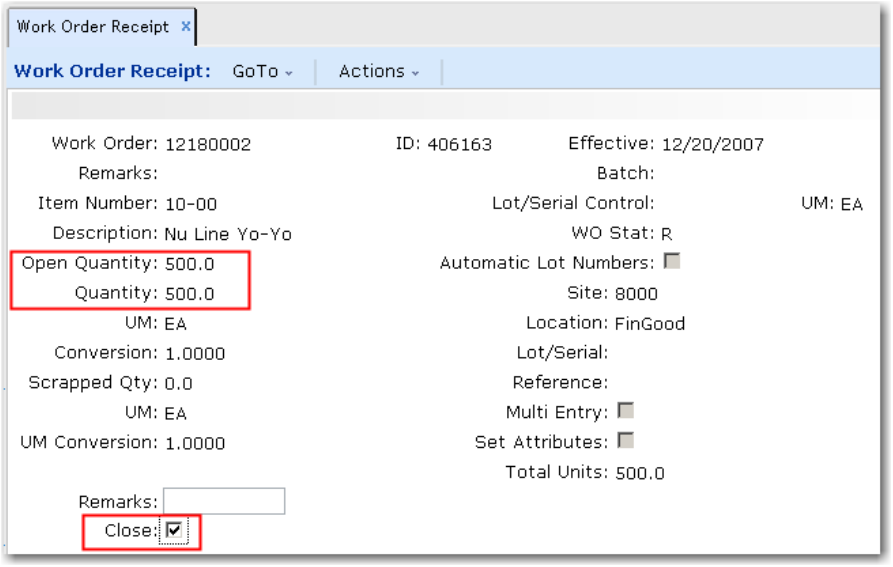
On the shop floor, labor to build the 500 yo-yos is reported by employee "ABC." Labor for operation 10 is shown above. Both setup and run times are standard. Recall that setup time is 1 hour, regardless of quantity, and run time is 0.05 hour per yo-yo. So a run time of 25 hours is standard to build 500 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).

The standard setup and run times were entered in Routing Maintenance.

Review

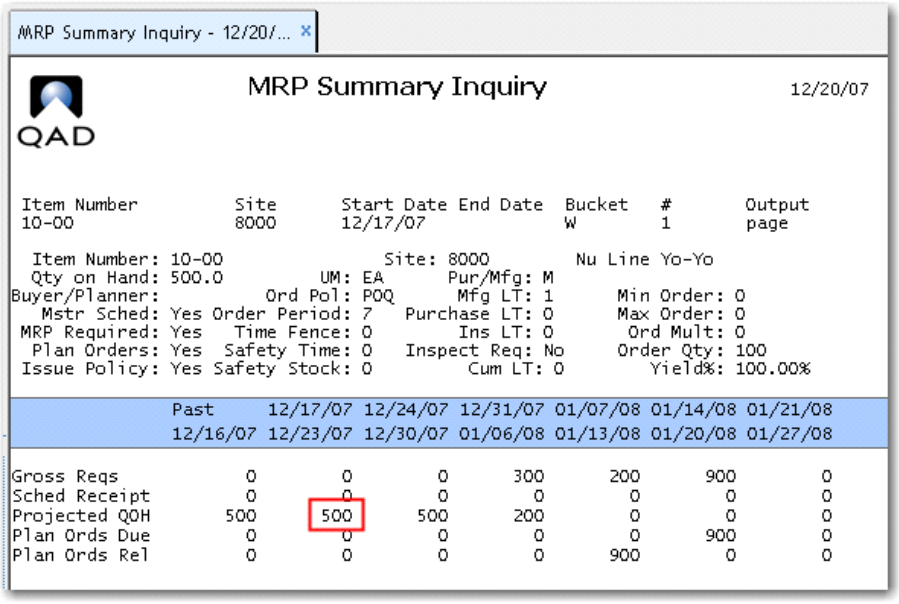
RECEIVE AND CLOSE WORK ORDER



Using Work Order Receipt, the PAC manager receives and closes work order 12180002 for 500 yo-yos.

Note Note the check mark in the close box. This indicates the work order is complete and closed from a manufacturing standpoint. To do a partial receipt, enter the quantity being received into inventory and leave the close box unchecked. This leaves the work order status as “R” running and open to receive the balance of the items at a latter time.

REVIEW MRP SUMMARY



MRP Summary Inquiry - 12/20/...

QAD

MRP Summary Inquiry 12/20/07

Item Number	Site	Start Date	End Date	Bucket	#	Output
10-00	8000	12/17/07		W	1	page

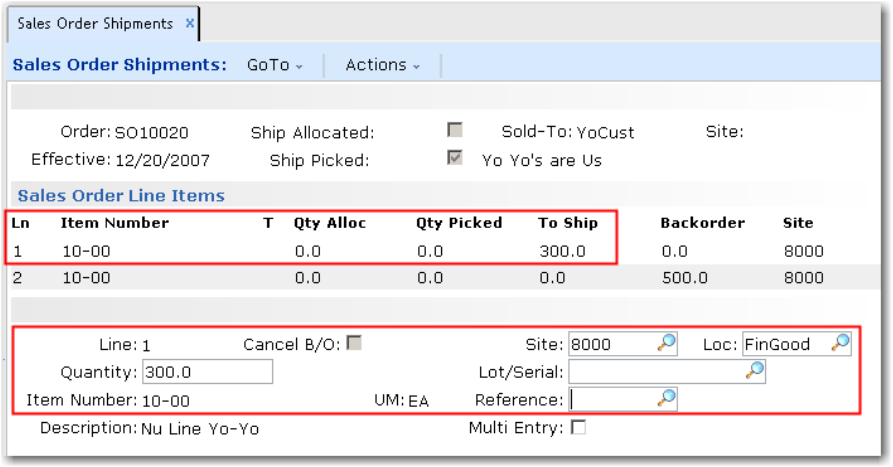
Item Number: 10-00 Site: 8000 Nu Line Yo-Yo
Qty on Hand: 500.0 UM: EA Pur/Mfg: M
Buyer/Planner: Ord Pol: POQ Mfg LT: 1 Min Order: 0
Mstr Sched: Yes Order Period: 7 Purchase LT: 0 Max Order: 0
MRP Required: Yes Time Fence: 0 Ins LT: 0 Ord Mult: 0
Plan Orders: Yes Safety Time: 0 Inspect Req: No Order Qty: 100
Issue Policy: Yes Safety Stock: 0 Cum LT: 0 Yield%: 100.00%

	Past	12/17/07	12/24/07	12/31/07	01/07/08	01/14/08	01/21/08
	12/16/07	12/23/07	12/30/07	01/06/08	01/13/08	01/20/08	01/27/08
Gross Reqs	0	0	0	300	200	900	0
Sched Receipt	0	0	0	0	0	0	0
Projected QOH	500	500	500	200	0	0	0
Plan Ords Due	0	0	0	0	0	900	0
Plan Ords Rel	0	0	0	0	900	0	0

Yo-Yo Company's planner uses MRP Summary Inquiry to review the status of the 10-00 after the close of the work order.

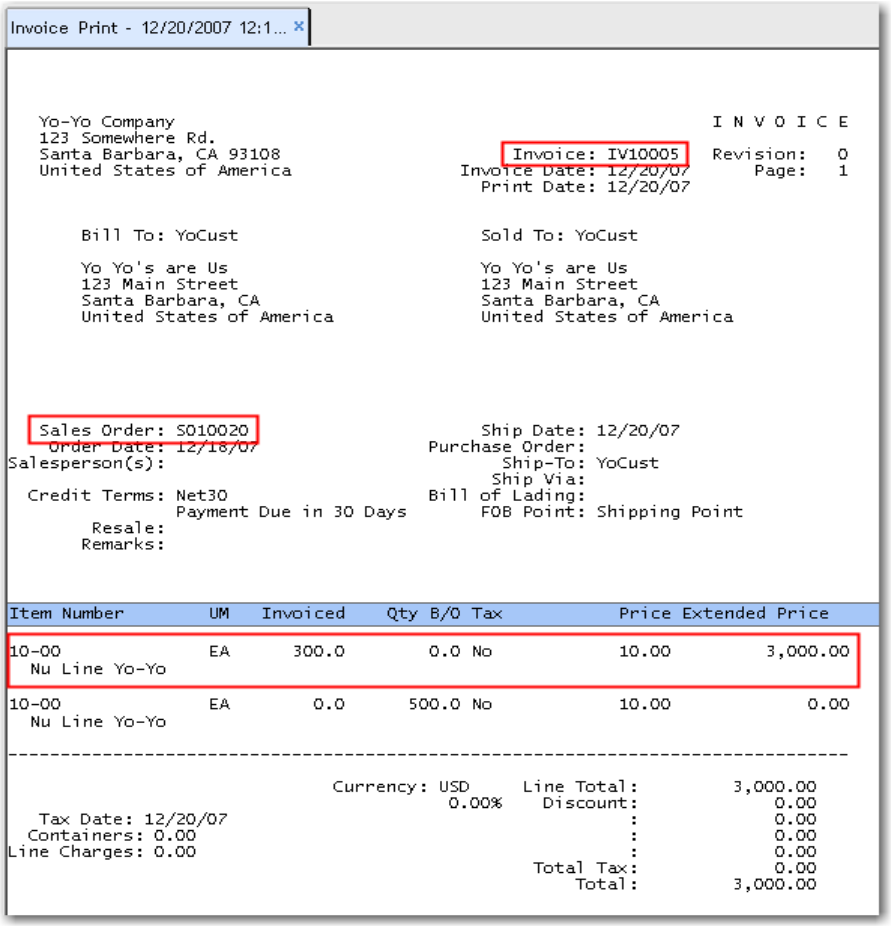
The 500 on hand will satisfy the requirement for 300 in week 12/31/07. An additional order planned for week 1/07/08 will be needed to satisfy the requirement in week 1/14/08.

SHIP SALES ORDER



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



Invoice Print - 12/20/2007 12:1...

Yo-Yo Company
123 Somewhere Rd.
Santa Barbara, CA 93108
United States of America

I N V O I C E

Invoice: IV10005 Revision: 0
Invoice Date: 12/20/07 Page: 1
Print Date: 12/20/07

Bill To: YoCust

Yo Yo's are Us
123 Main Street
Santa Barbara, CA
United States of America

Sold To: YoCust

Yo Yo's are Us
123 Main Street
Santa Barbara, CA
United States of America

Sales Order: SO10020
Order Date: 12/18/07
Salesperson(s):
Credit Terms: Net30
Payment Due in 30 Days
Resale:
Remarks:

Ship Date: 12/20/07
Purchase Order:
Ship-To: YoCust
Ship Via:
Bill of Lading:
FOB Point: Shipping Point

Item Number	UM	Invoiced	Qty B/O	Tax	Price	Extended Price
10-00 Nu Line Yo-Yo	EA	300.0	0.0	No	10.00	3,000.00
10-00 Nu Line Yo-Yo	EA	0.0	500.0	No	10.00	0.00

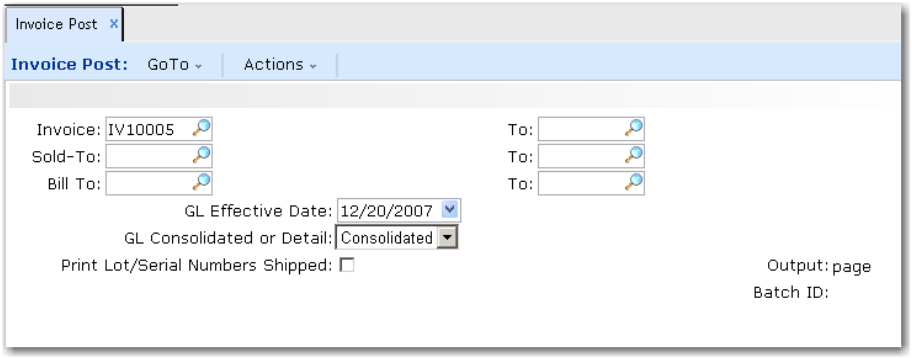
Currency: USD
0.00%

Tax Date: 12/20/07
Containers: 0.00
Line Charges: 0.00

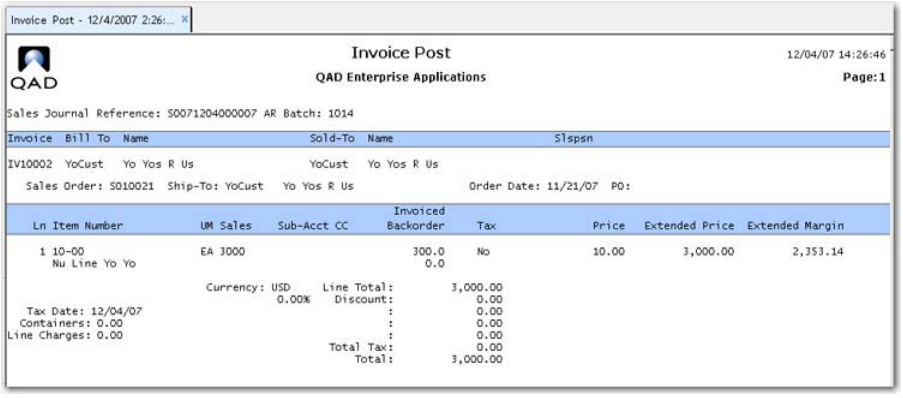
Line Total:	3,000.00
Discount:	0.00
:	0.00
:	0.00
:	0.00
Total Tax:	0.00
Total:	3,000.00

Using Invoice Print, the shipping clerk prints the invoice, shown above. Notice the invoice number: IV10005.

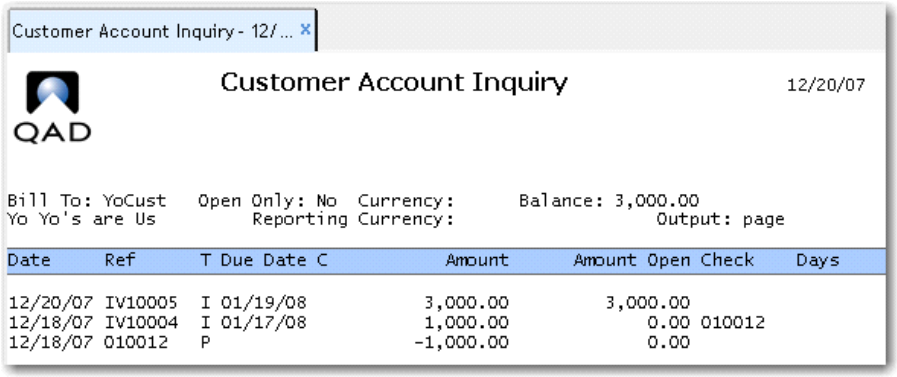
POST INVOICE



The invoice is posted for invoice number IV10005. The output is shown below.



REVIEW CUSTOMER ACCOUNT


Customer Account Inquiry - 12/...

QAD

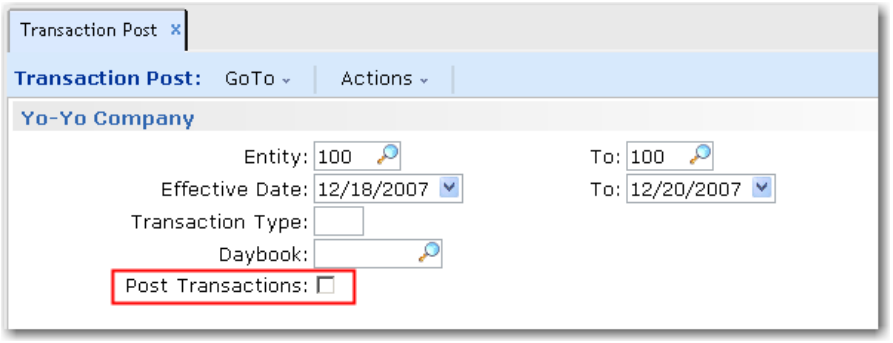
Customer Account Inquiry 12/20/07

Bill To: YoCust Open Only: No Currency: Balance: 3,000.00
Yo Yo's are Us Reporting Currency: Output: page

Date	Ref	T	Due Date	C	Amount	Amount Open	Check	Days
12/20/07	IV10005	I	01/19/08		3,000.00	3,000.00		
12/18/07	IV10004	I	01/17/08		1,000.00	0.00	010012	
12/18/07	010012	P			-1,000.00	0.00		

Customer Account Inquiry shows that the invoice (Transaction Type = I for invoice) was posted to the customer's account.

REVIEW GL TRANSACTIONS



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.

GL Reference	Entered User ID	Eff Date	Line	Account	Project	Enty	Description	Amount	Cur	Daybook
AP071217000005	12/17/07 lkk	12/17/07 12/17/07	1 2	2100 2200		100 100	AP Voucher PO RECEIPTS (AP HOLD	-75.00 75.00	USD USD	SYSTEM SYSTEM
								0.00	USD	
AP071217000006	12/17/07 lkk	12/17/07 12/17/07	1 2	1040 2100		100 100	System Default Daybo AP Payment	-75.00 75.00	USD USD	SYSTEM SYSTEM
								0.00	USD	
AR071218000009	12/18/07 lkk	12/18/07 12/18/07	1 2	1040 1200		100 100	AR Payment AR Payment	1,000.00 -1,000.00	USD USD	AR Pmt AR Pmt
								0.00	USD	
IC071217000001	12/17/07 lkk	12/17/07 12/17/07	1 2	1600 1500		100 100	ISS-WO 1004 ISS-WO 1004	50.00 -50.00	USD USD	SYSTEM SYSTEM
								0.00	USD	
IC071217000002	12/17/07 lkk	12/17/07 12/17/07	1 2	1600 1500		100 100	ISS-WO 1004 ISS-WO 1004	5.00 -5.00	USD USD	SYSTEM SYSTEM
								0.00	USD	
IC071217000003	12/17/07 lkk	12/17/07 12/17/07	1 2	1600 1500		100 100	ISS-WO 1004 ISS-WO 1004	30.00 -30.00	USD USD	SYSTEM SYSTEM
								0.00	USD	
IC071217000004	12/17/07 lkk	12/17/07 12/17/07	1 2	1500 1600		100 100	RCT-WO 1004 RCT-WO 1004	215.62 -215.62	USD USD	SYSTEM SYSTEM
								0.00	USD	
IC071218000001	12/18/07 lkk	12/18/07 12/18/07	1 2	5050 1500		100 100	ISS-SO SO10019.1 ISS-SO SO10019.1	85.00 -85.00	USD USD	SYSTEM SYSTEM
								0.00	USD	
IC071218000002	12/18/07 lkk	12/18/07 12/18/07	1 2	6860 1500		100 100	ISS-SO SO10019.1 ISS-SO SO10019.1	93.30 -93.30	USD USD	SYSTEM SYSTEM
								0.00	USD	
IC071218000003	12/18/07 lkk	12/18/07 12/18/07	1 2	6480 1500		100 100	ISS-SO SO10019.1 ISS-SO SO10019.1	37.32 -37.32	USD USD	SYSTEM SYSTEM

How to read the GL Reference Number =

Module	YYMMDD	Seq#
AP	030210	000018

Note This is an extract of the report. The complete report has several more pages.

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. Each transaction has balanced debits and credits.

- The first two transactions are based on Yo-Yo Company purchasing supplies for 100 yo-yos from Yo-Yo Supplies, Inc., which were part of the first example. 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).
- These 100 yo-yos are sold to YoCust (Yo-Yos R Us) for $1,000. The AR payment for these is the third transaction shown in the report. The accounts affected are 1040 (debit Cash) and 1200 (credit Accounts Receivable). The accounts affected are 1040 (debit Cash) and 1200 (credit Accounts Receivable).
- The next three transactions are the components purchased from Yo-Yo Supplies being issued to the work order. 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).
- The next transaction shown in this list is another inventory control transaction, for the 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 ($1.3062), multiply that by 100 (number of yo-yos manufactured) to get a total of $130.62. Now add this to the $75 material cost and the total is $205.62. Yet the amount shown on the Transaction Post output is $215.62, not $205.62. 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, 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 × 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 × 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.

The way the system handles this is that it posts the “standard” price, without the price reduction, which, including labor and burden, is $215.62. And it treats the $10 price reduction as a purchase price variance.

When completed with the review, the controller runs the transaction post report again with the “Post Transactions” flag checked.

REVIEW BALANCE SHEET

```
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
```

Next, the controller wants to view the balance sheet for entity 100. The output is shown on the following page.

REVIEW INCOME STATEMENT

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		
COGS MATERIAL	340.00	8.5%
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 10

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										

Enter a Forecast for Parent Item

Use *Forecast Worksheet Maintenance, 22.2* to enter a forecast for parent item 10-00 at site 8000 for the next four weeks.

- Item Number = 10-00
- Site = 8000
- Year = Current year
- Current week (CW) = 100
- CW +1 = 200
- CW +2 = 300
- CW +3 = 400

Note Be sure to click Next 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, 7.1.24* to enter Forecast Consumption. On the third frame:

- Consume Forward = 2
- Consume Back = 1

Enter a Sales Order

Use *Sales Order Maintenance, 7.1.1* to enter a sales order containing two lines.

- Order = [blank; system generated]
- Sold-To, Bill-To, and Ship-To = YoCust (Yo-Yos R Us)
- Line 1
- Item = 10-00
- Site = 8000
- Quantity = 300
- Due Date = [next week]
- Consume Forecast = Yes

- Line 2
- Item = 10-00
- Site = 8000
- Quantity = 500
- Due Date = [current week +3]
- Consume Forecast = No
- Click End Lines, then Trailer, then Next until you return to the firs frame

Review Forecast

Use *Forecast Worksheet Maintenance, 22.2*. 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 (22.18) for item 10-00 at site 8000.

- Item = 10-00
- Site = 8000
- 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

Use *Item Planning Maintenance, 1.4.7* to review planning data for item 10-00 at site 8000 and add the following data if necessary:

- Order Policy = POQ
- Order Period = 7
- Order Quantity = 100
- Manufacturing Lead Time = 1 day

Use *Item Planning Maintenance ,1.4.7* to review planning data for item 10-01 at site 8000 and add the following data if necessary:

- Order Policy = POQ
- Order Period = 7
- Purchase Lead Time = 5days

Use *Item Planning Maintenance, 1.4.7* to review planning data for item 10-03 at site 8000 and add the following data:

- Order Multiple = 3,000

Review MRP Control

Use *MRP Control, 23.24*

- Order Release Horizon = 21 [days]

Run MRP to Calculate a Master Schedule for Parent Item

Use *Regenerate Materials Plan, 23.2* for site 8000.

Note This program will not print to page so you must either print to a printer, or enter a filename for the system to save it as.

- Set Output = .prn

Use *Master Schedule Summary Inquiry, 22.18* to make sure the master schedule meets the forecast demand of the parent item

- Item= 10-00
- Site 8000--the master schedule meets the forecast demand of parent item

Use *Master Schedule Detail Inquiry, 22.21* to compare the information it provides that the *Master Schedule Summary Inquiry* did not provide?

Review Action Messages and Approve Planned Orders

Use *MRP Summary Inquiry, 23.13* and *MRP Detail Inquiry, 23.16* to review the information for parent item 10-00 and component items 10-01, 10-02, and 10-03 at site 8000.

Use *Action Message Browse, 23.6* to review the information for each of the items.

Use *Planned Purchase Order Approval, 23.11*. Based on Action Message Browse, approve any MRP-planned work orders.

- Site = 8000 to 8000
- Release Date = [blank] to today's date or the end of the week
- Default Approve = Yes
- Approve orders [pop-up confirmation window displays; click Yes]

Use *Purchase Requisition Browse, 5.1.5* to check 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)

Use *Purchase Order Maintenance, 5.7* 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 t
- he 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

Use *Purchase Order Receipts, 5.13.1* to receive your purchase order.

Approve Planned Work Orders

Use *Planned Order Browse, 23.9* 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.

Use *Planned Work Order Approval, 23.10* to approve the work order you noted in the previous step.

- Item Number = 10-00
- Site = 8000
- Release Date = [blank] to [release date of work order to approve based on information from *Planned Order Browse* in previous step)

Go to *Work Order Browse, 16.2* 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

Use *Inventory Detail by Site Browse, 3.3* to verify the availability of components in inventory for site 8000.

Note Simulate Picklist, 13.8.17 can also be used

Use *Work Order Release/Print, 16.6* to release your firm-planned order. Locate the work order by using the lookup. Accept all default values.

Use *Work Order Component Issue, 16.10* to issue components to your work order.

Use *Labor Feedback by Work Order, 17.1* to report labor against your work order

Operation 10:

- Work Order = use lookup to enter work order
- Operation = 10
- Employee = [yourself]
- Quantity Completed = 500
- Elapse/Stop Setup = 1
- Elapse/Stop Run = 25 (standard run time for 500 pieces)

Accept remaining default values.

Operation 20:

- Work Order = use lookup to enter work order
- Operation = 20
- Employee = [yourself]
- Quantity Completed = 500
- Elapse/Stop Setup = 0 (standard setup time)
- Elapse/Stop Run = 16.65 (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.

Use *Work Order Receipt, 16.11* to receive a quantity of 500 of item 10-00 into inventory and close the work order[(checkbox = yes]

Use *MRP Summary Inquiry, 23.13* to check 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?

Ship and Invoice a Sales Order

Use *Sales Order Shipments, 7.9.15* to ship line 1 of your sales order. Do not ship line 2.

Use *Invoice Print and Invoice Post, 7.13.3* to print and post the invoice.

Use *Customer Account Inquiry, 27.13* to review the customer's account (YoCust).

Review GL Transactions

Use *Transaction Post, 25.13.7*. Review the GL transactions that have been created by the transactions in the activities.

- Entity 100 to 100
- Effective Date = through today's date
- Post Transactions = No (we only want to review the transactions at this time)

Use *Transaction Post, 25.13.7* again after you have reviewed the GL transactions report. This time, choose Post Transactions = Yes.

Use *Balance Sheet, 25.15.8* to review the for entity 100

Use *Income Statement, 25.15.13* to run and review the income statement for entity 100

Answers: Order policy

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**

Course Evaluation

During classroom training sessions, an evaluation form is distributed at the end of the course. If, for any reason, you are evaluating this course outside of the classroom setting, please follow this link and complete the course evaluation on-line:

http://www.surveymonkey.com/s.aspx?sm=EyuOF1cbaGCO9CrHKIOB5g_3d_3d/

The course name appears on the title page of this document.

Index