

PeopleSoft®

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EnterpriseOne JDE5  
Product Data Management  
PeopleBook

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**May 2002**



EnterpriseOne JDE5  
Product Data Management PeopleBook  
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## Overviews

### Overviews

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The Product Data Management system allows you to integrate all aspects of product data with the rest of your business operations.

This section provides overview information about the product data management industry, as well as information about how the Product Data Management system operates.

#### Topics

- Industry Overview
- Product Data Management Overview

### Industry Overview

To understand the critical role that Product Data Management plays in your business, you must understand the ways by which product data affect businesses, and how businesses can more efficiently track, manage, and maintain product data.

This section introduces you to industry concepts related to Product Data Management. In addition, this section outlines several problems inherent in a manufacturing environment, as well as J.D. Edwards solutions through Idea to Action.

#### Topics

- Industry Environment and Concepts for Product Data Management
- Idea to Action: The Competitive Advantage

### Industry Environment and Concepts for Product Data Management

#### The Industry

Today's customers want specialized products and short leadtimes from order to delivery of a product. Manufacturers want to respond to the pressure and opportunities presented by their customers' needs.

The industry currently struggles with manual paperwork, slow response times, lack of systems integration, and product volume versus complexity. Manufacturers need the agility to provide specialized products at competitive prices.

To be agile, manufacturers require a method of creating and maintaining critical product information. Manufacturers must then communicate this critical information to the rest of the organization. A company's sales, manufacturing, and service organizations need a fast, accurate, and reliable system.

Much of the information that manufacturer's require to build their product includes the management of specific product data. In the manufacturing industry this is termed "product data management."

A Product Data Management system lets you track the fundamental information required to manufacture components, subassemblies, and end item products. Product data management is easily integrated with other systems such as accounting and manufacturing. In general, product data management includes bills of material, routings, work centers, and engineering change management.

### **What is a Bill of Material?**

The bill of material is the primary method for defining and communicating the structure of the product. Although there is no single correct way to structure the bill of material for a product, there are some general industry guidelines that you can follow. These guidelines assist you in determining and developing the levels within the bill, creating part numbers, defining phantoms, and setting up other bill of material issues.

The bill of material was traditionally created, maintained, and used only by the engineering department. However, as bills of material take on new and increasingly important roles within a company, remember to create bills of material that support the needs of all departments. This eliminates the need to create several different versions of bills of material to support the various needs within the company.

### **What is a Routing?**

A routing lists the operations, in sequence, required to manufacture a product. Each operation within the routing identifies specific information such as the work center and time standards for setup, machine run, and labor hours. Routing operations may also include additional information such as required tools and inspections. Each part in a bill of material can be linked to a routing operation to identify the specific routing operation where a part should be issued from inventory and consumed by the product.

### **What is a Work Center?**

Work centers are the specific, physical locations on the shop floor where routing operations occur. A work center defines basic information such as the machines and number of people employed at the work center. Additional information can include work center rates for labor, machines, and setup; work center capacity; and machine efficiency.

### **What is Engineering Change Management?**

Engineering change management is a general term for the engineering change request (ECR) and engineering change order (ECO) processes. Engineering change management is sometimes called engineering change notification (ECN).

The ECR process defines and tracks requested product changes. An ECR is created, reviewed, and approved. It then becomes an engineering change order.

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#### **Note**

It is important to note that companies do not generally use the ECR process. It is a preliminary step used by companies that want to screen requests and accept them before entering the requested change into the ECO process.

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You use engineering change management to create, plan, review, approve and implement product changes. New designs or products may be included in the ECO process or may go through a similar process called engineering creation order. ECOs usually include changes or

enhancements to existing products. ECOs may also include process specifications. For example, the engineering department may specify a product assembly method that must be followed. Changes are generally made to products to resolve quality and safety issues or to improve product performance.

### **Uses of Product Data Throughout the Organization**

Bills of material, routings, work center information, and engineering change management are used throughout an organization. Although the manufacturing facility is the primary user of routings and work centers and the bill of material was originally intended for engineering purposes, they are now critical inputs to other areas of an organization. Engineering change management is a tool used throughout the organization to communicate changes to product data.

Manufacturing engineers use bills of material to develop and communicate manufacturing requirements and to indicate how and in what order the product should be built. Work centers are defined and manufacturing routings are then developed. To enhance planning and decrease leadtimes, components on a bill of material, which is attached to a routing operation, identify where specific material should be issued and consumed in the manufacturing sequence of the product.

Accounting uses bills of material and routings to run a cost rollup. From the cost rollup you can determine the cost of the product and then determine the product price.

If you sell configured items, you use the bills of material created for features and options to create an overall bill of material and routing for the final configured item. The ECO notifies you of changes to product features and options. If significant changes are applicable, the customer can be notified about any changes to the features and options of the final product.

Material planners, who usually drive planning and control within the company, use bills of material to determine what manufactured and purchased items are required. Routings are used with the bills of material to determine when, where, and in what quantities parts are required, and what resources and work centers are required to complete the work orders.

When a work order is created, the engineering bill of material becomes the parts list on the work order. The stockroom uses this parts list to pull parts for the work order. Components are issued for the work order and then backflushed so that inventory is relieved.

After the work order and parts list are issued to the manufacturing floor, the product is manufactured or assembled. There may also be a bill of material listed on the engineering drawing issued with the work order. Building the product while cross-referencing the bill of material on the drawing and the parts list attached to the work order accomplishes two things. First, it ensures that the part is manufactured to engineering specifications. Second, it verifies the accuracy of the bill of material.

The service department uses the parent/component relationships in bills of material to determine what parts need to be stocked for warranty and replacement parts.

### **Importance of Product Data Accuracy**

With today's integrated systems, product data management is crucial throughout the organization. It is important to create product data that meet the needs of various groups within the organization, as well as ensure data accuracy. Accuracy of bills of material, routings, and work center information is essential to the system's overall integrity.

Accuracy can be increased and maintained by cross-functional teams if they review new products, product changes, and process changes, as well as bills of material, routings, work center information, and the engineering change management process.

## Idea to Action: The Competitive Advantage

The following problems are typical in the manufacturing industry. The business activator resolves each problem and states the return on investment and the industries that are affected by each problem.

**When we create work orders, we have no way of knowing which parts are required at each operation on the routing.**

The system integrates bills of materials and routings by matching the operation sequence number for each part on the bill of material to the operation sequence number on the routing.

The system integration between bills of material and routings improves data integrity and supports better decision making about the quantity of parts and when they are needed. Also, component requirements are affected by yield percentages on the routing. Leadtimes are decreased because the system knows exactly where and when a part is required in the manufacturing process.

**We need to use one system to manage our various manufacturing methods.**

OneWorld provides an integrated system that accommodates different manufacturing environments. The system is capable of discrete, repetitive, and process manufacturing. Standard, rework, master, and alternate routings are all supported within this integrated system. You can work with batch, percent, process, and repetitive bills of material. All of these structures can be set up, planned, and executed in the system.

A single system manages all your product and manufacturing data, increasing the effectiveness of the set up, planning, and execution for the manufacture of products.

**We have multiple sites in multiple countries and we do not have systems that reflect all of these sites. We manually plan across all sites; the plans are inaccurate and time consuming.**

Multiple site planning allows you to define bills of material and routings for each facility for the same item. The system manages material, bills of material, and routings for all defined business units. Current work in progress (WIP), inventory, and current bills of material and routings allow you to accurately plan across multiple sites.

System integration ensures accurate and efficient planning. Other benefits include a reduction in the number of item numbers and less WIP, which results in cost savings for material utilization, increased inventory accuracy, and reductions in leadtimes. All of these factors enhance customer service.

**How do I know if my company is operating at a profit or a loss?**

Product costing and various accounting functions throughout OneWorld enable complete costing/accounting visibility at each level of the organization. The system allows single ledger record compilation regardless of where a cost record was generated. In addition, you can report and sort costing/accounting information by summary or detail.

Features of product costing and cost components (simulated and frozen) allow you to use predefined cost components and user defined cost extras to accurately account for costs and identify areas for improvement.

You have continuous visibility of product costs and accounting records generated from associated functions throughout your enterprise. Continuous visibility results in better-informed decision making by managers.

**All businesses are interested in knowing where costs are derived.**

Product costing by item, hours and quantities, and manufacturing accounting are all integrated. An item's cost can be broken down to each specific element influencing its cost. The system allows single ledger record compilation regardless of where the cost record was generated. In addition, you can report and sort costing/accounting information by summary or detail.

You can enter time spent working on specific work orders and compare this to the standard. Through manufacturing accounting, you can identify variances. More accurate and visible cost information results in better-informed management decisions. This information contributes to increased accuracy in determining costs to customers.

**We issue items in one unit of measure and purchase in a different unit of measure.**

You can define unit of measure conversions by item. Using different units of measure and conversions, items can be purchased, consumed, and produced in the appropriate units of measure. Inventory remains accurate because the system performs the conversions. Each item can have up to eight different units of measure defined.

Your company can purchase, consume, and manufacture products while the system maintains accurate inventory.

**Interoperability**

OneWorld has interoperability with third-party systems such as Manugistics, Synquest, and i2. OneWorld users can use the Shop Floor Management system or a compatible third-party system.

Companies have more choices and capabilities in defining how the business will be run and what systems support the business processes.

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## Leadtimes

### **Product Data Management Overview**

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The Product Data Management system lets you organize and maintain information about each item that you manufacture. Use the Product Data Management system to define the relationships among inventory items (and other purchased or nonstock items) and how they can be combined to manufacture a saleable product.

This system provides basic data for other manufacturing systems. You should verify that your product data is accurate to ensure the efficiency of associated systems, such as Shop Floor Management and Master Production Schedule.

#### **Topics**

- System integration
- Types of manufacturing
- Features
- Tables used by Product Data Management
- Menu overview

## **System Integration**

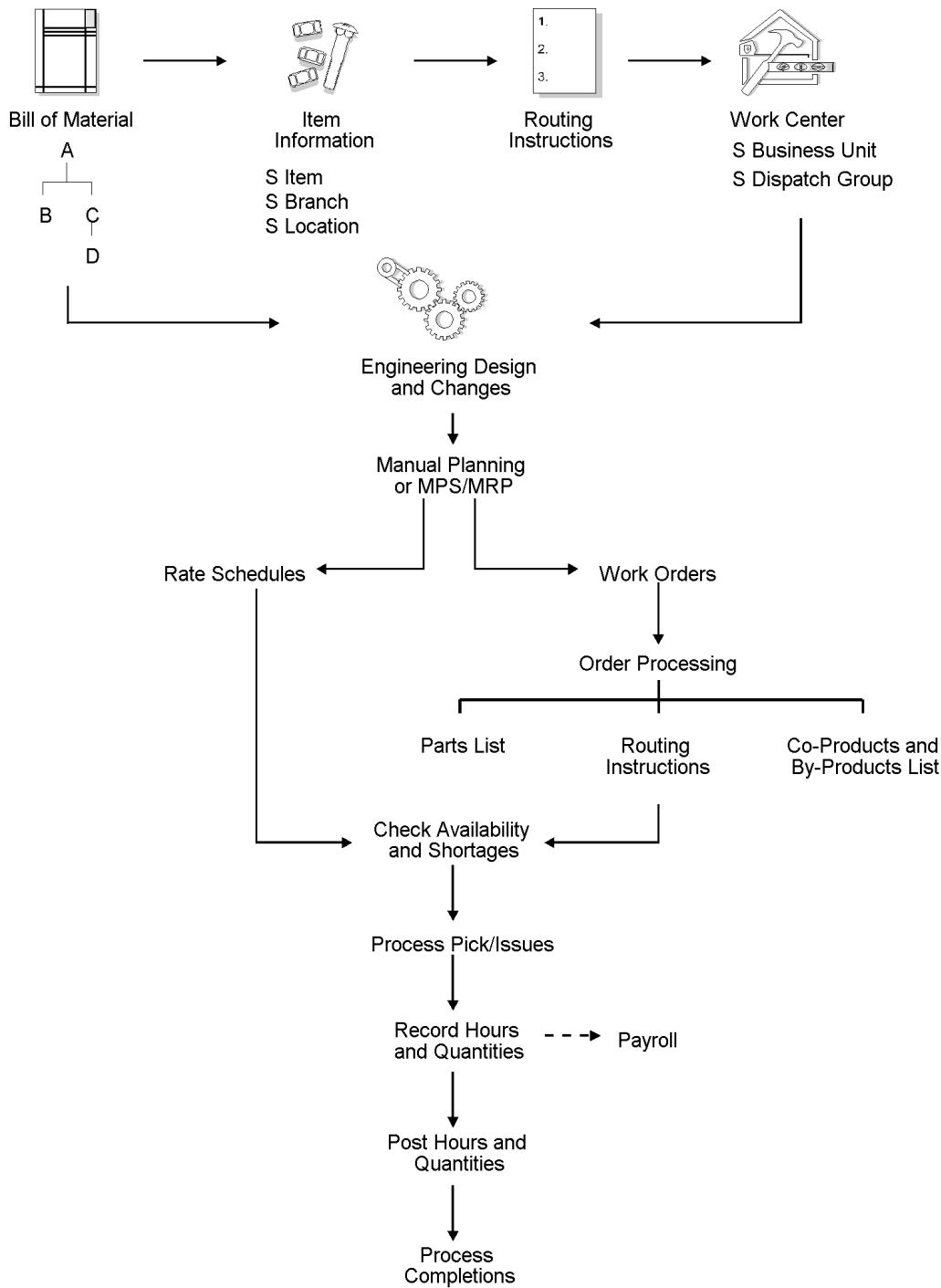
Product Data Management integrates with the following systems:

<b>Inventory Management</b>	Supplies the basic information about each item (or ingredient), such as part number, description, unit of measure, stocking type, and location.  Activates flash messaging to warn of a pending engineering change order (ECO).
<b>Shop Floor Management</b>	Uses bills of material and routing instructions to process work orders and schedule work activity within the plant.
<b>Procurement</b>	Activates flash messaging to warn of a pending ECO.  Uses bills of material for kit processing.
<b>Manufacturing and Distribution Planning</b>	Uses the Product Data Management information to plan finished goods and the raw material and purchased parts required to manufacture them.  Uses sales orders and forecasts to pass demand for items down through the bills of material to the components.  Uses the bills of material to determine component requirements for planned orders and work orders without a parts list.

<b>Product Costing and Manufacturing Accounting</b>	Uses bills of material, routing instructions, and work center information to calculate total material, labor, machine, and overhead costs for each primary unit of the parent item.  Uses bills of material during a cost rollup to determine the material cost for the parent.
<b>Sales Order Management</b>	Uses bills of material for kit processing.
<b>Resource Requirements Planning</b>	Retrieves a multilevel bill of material for a master-scheduled item and selects the routing instructions for the components.  Activates flash messaging to warn of a pending ECO.
<b>Master Production Schedule</b>	Uses the effective dates established by ECOs to plan and introduce products.

## Process Flow

The following graphic is an example of a typical manufacturing process:



## Types of Manufacturing

Depending on the type of product being produced, almost all manufacturing can be defined in one of the following three ways:

- Discrete

- Process
- Repetitive

Discrete, process, and repetitive manufacturing all use bills of material and routing instructions. The bills of material contain individual parts, components, or ingredients such as a nut, bolt, wire, plastic, or metal part of a fixed or variable quantity. Products can be broken down into subassemblies that go into various larger assemblies. The routing instructions include the operations to be performed, their sequence, the various work centers involved, and the standards for setup and run.

You can use ultimode manufacturing and combine production methods within each production facility. For example, you can use discrete, process, and repetitive manufacturing in combination or separately for each product that you manufacture.

Throughout the manufacturing systems, the following information applies:

<b>Units of measure</b>	<p>Not all items are planned, scheduled, or produced in their primary unit of measure. To accommodate this, full unit of measure capabilities are allowed throughout the J.D. Edwards manufacturing applications.</p> <p>Most entry programs have a unit of measure next to the quantity fields, and the unit of measure is stored in the database tables along with the quantities. The system uses the following three fields in the Item Master table as default values in entry forms:</p> <ul style="list-style-type: none"> <li>• Component Unit of Measure</li> <li>• Production Unit of Measure</li> <li>• Primary Unit of Measure</li> </ul> <p>The Primary Unit of Measure value must be the smallest of the three units of measure.</p> <p>See <i>Defining Default Units of Measure for Bulk Items</i> in the <i>Bulk Stock Management Guide</i>.</p>
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## Discrete Manufacturing

Discrete manufacturing is characterized by the following:

- Work orders produce a specific quantity of a single item for a specific completion date.
- Routing instructions are a series of independent operations.
- The total quantity of the work order is completed at each operation before the order moves to the next operation.
- Components are most often manually issued with the release of the work order, backflushed at the completion of the work order, or both.

Discrete manufacturing is most often used in the following manufacturing environments:

- Make-to-stock, using either a highly repetitive or process order-based system
- Any of the "to-order" strategies, such as make-to-order, assemble-to-order, or engineer-to-order
- The one-off or job shop environment

Discrete manufacturing is used to produce items such as the following:

- Cars

- Furniture
- Electronics
- Airplanes

## **Process Manufacturing**

Process manufacturing is characterized by the following:

- Work orders produce multiple items, both simultaneously and sequentially.
- Routing instructions are a series of dependent operations that work together continuously.
- Products are often produced in batches or with a continuous process.
- Components or ingredients are often stated in terms of a recipe or formula.
- The quantities of components or ingredients can vary according to grade or potency.
- Components or ingredients are most often issued by preflushing with the release of the work order or backflushed at the completion of the work order.

Process manufacturing is most often used to produce the following:

- Pharmaceuticals
- Foods and beverages
- Raw materials, such as lumber, metals, and fluids

The different types of processing in process manufacturing consist of the following:

<b>Batch processing</b>	In batch processing, a product is usually made in a standard run or lot size determined by vessel size, line rate, or standard run length. Items made this way are typically scheduled in short production runs due to the life cycle of the product after its completion. Typical items might be pharmaceuticals, foods, inks, glues, oil or chemical products, and paints. A co-products and by-products list might be generated during batch processing.
<b>Continuous processing</b>	In the continuous (or flow) environment, production is typically of an extended period, using dedicated equipment that produces one product or product line with slight variations. This method of manufacturing is characterized by the difficulty of planning and controlling quantity and quality yield variances. Typical items might be petroleum-based products or distilled sea water. Co-products and by-products are generally more prevalent in continuous processing than in batch processing.

In addition, strategies similar to discrete manufacturing, such as repetitive or any of the "to-orders" (for example, make-to-order, assemble-to-order, or engineer-to-order) might be employed to drive the process. Batch and continuous processing methods usually require accurate recording of quality and tolerance values during the process and strict adherence to lot tracing and tracking. Lot tracing is the display of items assigned to a lot. Lot tracking is the display of items removed from a lot.

## **Repetitive Manufacturing**

Repetitive manufacturing is characterized by the following:

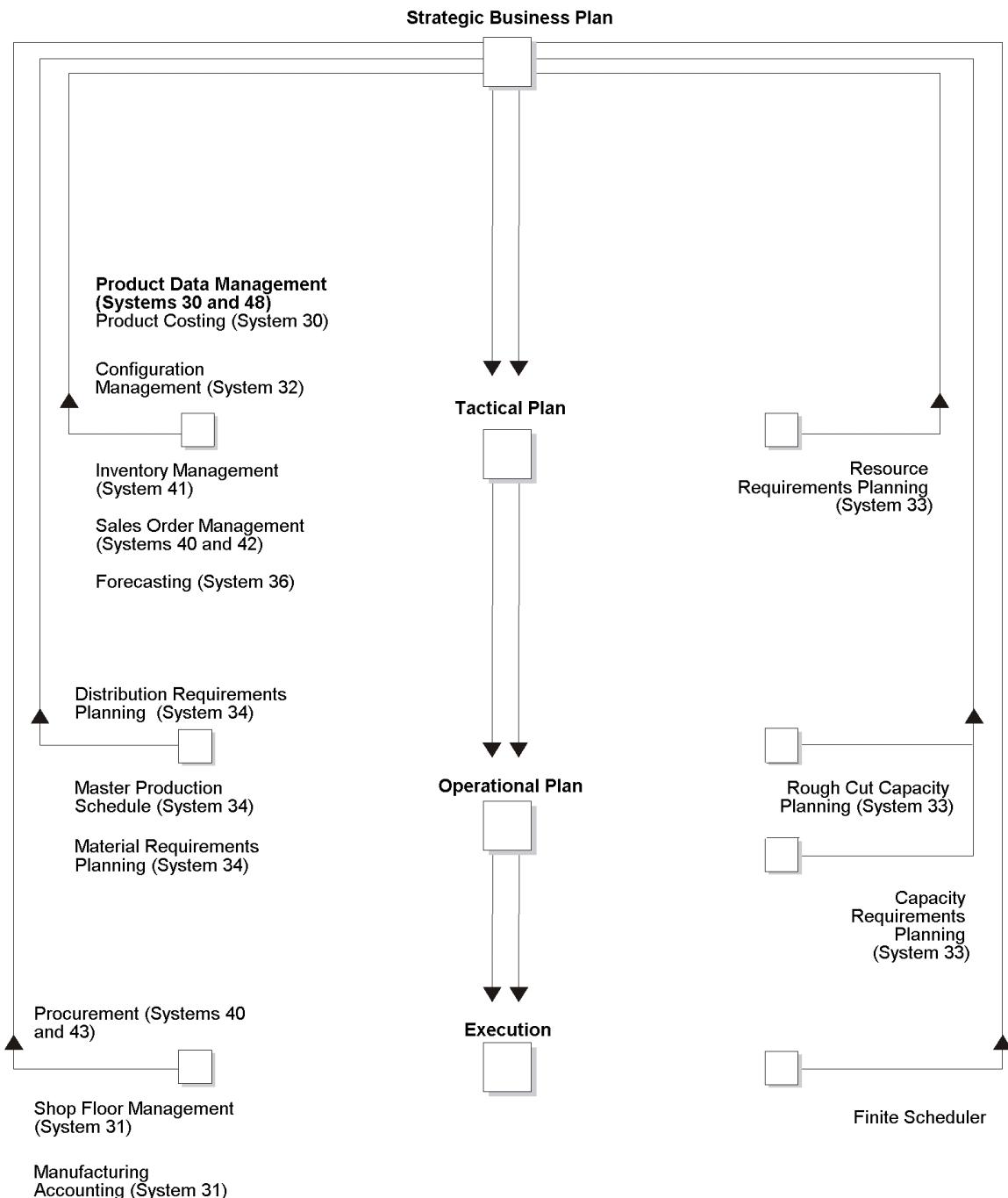
- Entire production lines are dedicated to a product family.
- Product families share similar components and routing instructions.
- Products are often manufactured in a continuous process, which requires less inventory movement to and from the production line.
- Work center setup and changeover times between related products are minimized.
- Production is defined in terms of units per hour. The time spent at the operational level might or might not be important. Therefore, the ability to set up line capacity and define routing instructions in units per hour at the line level is necessary. The fundamental basis for backscheduling and capacity planning is hours. To view information in units, the system uses a conversion factor defined at the work center level.
- Material movement may be controlled by visual cues called kanbans. Kanbans are predetermined quantities of components at specified locations on the production line. They are designed to minimize work-in-process inventories.

## **Enterprise Requirements Planning and Execution Review**

Product Data Management is one of several systems within the Enterprise Requirements Planning and Execution (ERPx) system. Use the ERPx system to coordinate your inventory and labor resources to deliver products according to a managed schedule. It is a closed-loop manufacturing system that formalizes company and operations planning, and the implementation of those plans.

The following make up the J.D. Edwards ERPx product group:

**ERPx**  
**Enterprise Requirements Planning and Execution**



## Features

The Product Data Management system includes the following features:

<b>Bills of material</b>	Use bills of material to:
	<ul style="list-style-type: none"> <li>• Enter multiple bills of material to maintain many arrangements for an item without creating additional part numbers.</li> <li>• Access items online using the item description as search criteria.</li> <li>• Define quantities of intermediate products in any unit of measure as they progress through the manufacturing process.</li> <li>• Enter similar items by copying bills of material, routing instructions, and processes, and changing only the information that is unique to each item.</li> </ul>
<b>Work centers</b>	Use work centers to:
	<ul style="list-style-type: none"> <li>• Define work center number, description, and link to business unit.</li> <li>• Define queue and move times.</li> <li>• Define operator, machine, and capacity by hours per day.</li> <li>• Define rates for setup, labor, machine, and overhead.</li> <li>• Define information for Capacity Planning.</li> <li>• Define where an item is produced.</li> </ul>
<b>Routing instructions</b>	Use routing instructions to:
	<ul style="list-style-type: none"> <li>• Define each step of the manufacturing process with allowances for anticipated yield and scrap for each operation.</li> <li>• Add alternate operations to routing instructions.</li> </ul>
<b>Engineering Change Management</b>	Use engineering change orders to:
	<ul style="list-style-type: none"> <li>• Control item changes from a single source.</li> <li>• Incorporate approved changes to bills of material automatically.</li> </ul>

## Tables Used by Product Data Management

<b>Business Unit Master (F0006)</b>	Identifies branch, plant, warehouse, work center and business unit information, such as company, description (name), and assigned category codes.
<b>Work Day Calendar (F0007)</b>	Contains work day types for month, year, century, and shift of each branch/plant.
<b>Address Book Master (F0101)</b>	Stores all address information pertaining to customers, vendors, employees, and prospects.
<b>Work Center Master (F30006)</b>	Contains labor, machine, and overhead rates for each work center.

<b>Work Center Rates (F30008)</b>	Stores work center rate information, such as simulated and frozen costs for labor and machines.
<b>Bill of Material Master (F3002)</b>	Defines plant-level warehouse information about bills of material, such as quantities of components, features, options, and levels of detail.
<b>Routing Master (F3003)</b>	Contains information describing how an item is manufactured, such as operation numbers, work centers, labor and machine hours, and outside operations.
<b>Work Center Resource Units (F3007)</b>	Contains capacity information for work centers; for example, business unit, month, shift, and efficiency.
<b>Job Shop Manufacturing Constants (F3009)</b>	Contains constants for maintaining bills of material, including the maximum number of levels in the bills and whether to write changes to the bills, or to the history file, or to perform online validation.
<b>Bill of Materials Change (F3011)</b>	Stores all changes to any bill of material, including dates, ECO reasons, and effective dates.
<b>ECO Parts List Detail (F3013)</b>	Lists the parts affected by the ECO.
<b>Component Locator (F3015)</b>	Stores the location of a component that you define within a subassembly.
<b>Kanban Master (F3016)</b>	Contains the set of kanban cards associated with an item. Each kanban defines the supplying location, consuming location, quantity, and unit of measure. The system uses next numbers to control the kanban identification number. If the system pulls the item from an external source, it includes the supplier's number.
<b>Kanban Card Detail (F30161)</b>	Contains information related to the kanban, for example, status, transaction quantity, and date updated.

**Work Order Routing  
(F3112)** Contains the routing steps for work order or ECO implementation.

**Item Master (F4101)** Stores basic information about each defined inventory item, such as item numbers, descriptions, category codes, and units of measure.

**Line Type Control  
Constants (F40205)** Stores constants for maintaining line types, such as general ledger classification, order type, and record variance.

**Item Manufacturing  
Data (F4101M)** Stores manufacturing data for each item, such as leadtime, document type, and issue type code.

**Item Branch (F4102)** Defines and maintains plant-level information and branch-level category codes.

**Item Location  
(F41021)** Defines plant-level information, such as quantities and physical location.

**Item Balance Tag  
(F4102J)** Contains item information such as net change flag and pay on consumption.

**Item Cross-  
Reference (F4104)** Stores information about item numbers that are related for a specific purpose. You can establish your own codes that define relationships.

**Work Order Master  
(F4801)** Stores the ECOs and the manufacturing work orders.

**Order Routing  
Approval Master  
(F4808)** Contains the address book numbers for the people responsible for approving ECOs and the order in which they should be notified.

**WO Supplemental** Stores additional information about ECOs, such as implementation costs.  
**DB User Defined**  
**(F48092)**

**Order Approval** Contains the approval history of an ECO.  
**Audit (F4818)**

## Menu Overview

J.D. Edwards systems are menu-driven. System functions are organized according to their function and frequency of use. Access the Product Data Management system menus from the Manufacturing Systems menu (G3).

The Product Data Management system provides two different environments performing your activities:

- Discrete Manufacturing (G3011, G3021)
- Process Manufacturing (G3012, G3022)

The Discrete environment is designed to accommodate the production of distinct items, each with a unique list of materials and production instructions. The Process environment is designed to accommodate the production of multiple items from a common list of ingredients and production instructions.

Many activities are common to both environments. However, the menus and forms are set up differently to accommodate each environment's processes and procedures. The environment you use depends on your organization. Some organizations might use both environments, while other organizations might use only one environment.

## **Product Data Management (G30)**



### **Daily Processing (G3010)**

- S Daily PDM Discrete (G3011)
- S Daily PDM Process (G3012)
- S Engineering Change Management (G3013)
- S Daily Product Costing (G3014)
- S Engineering Change Request (G3015)



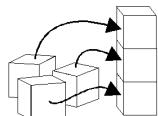
### **Periodic Processing (G3020)**

- S Periodic PDM Discrete (G3021)
- S Periodic PDM Process (G3022)



### **Advanced Product Data Management (G3031)**

- S Product Data Interoperability (G30311)



### **Product Data Management Setup (G3041)**

- S Inventory Setup (G4141)
- S Product Costing Setup (G3042)

## **Fast Path Commands**

You can use the following fast path commands to access Product Data Management menus.

### **Fast Path Menu Title**

PDM	G30	Product Data Management
DPDD	G3011	Daily PDM Discrete
PDMM	G3011	Daily PDM Discrete
DPDP	G3012	Daily PDM Process
DEC	G3013	Engineering Change Management

COST	G3014 Daily Product Costing
COSTI	G3014 Daily Product Costing
COSTM	G3014 Daily Product Costing
DPC	G3014 Daily Product Costing
PDMR	G3021 Periodic PDM Discrete
PPDD	G3021 Periodic PDM Discrete
PPDP	G3022 Periodic PDM Process
APD	G3031 Advanced Product Data Management
PDMS	G3041 Product Data Management Setup
SPD	G3041 Product Data Management Setup
COSTS	G3042 Product Costing Setup
SPC	G3042 Product Costing Setup

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# Setup

## Product Data Management Setup

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Prior to using the Product Data Management you must set up the following:

- User defined codes and generic message/rate types for your bills of material
- Manufacturing constants and decimal settings that are unique to your branch/plants
- Your company work days by month and year

### Before You Begin

- Define your items in the Inventory Management system. See *Entering Item Master Information* in the *Inventory Management Guide*.

## Setting Up Bill of Material and Routing Information

You need to define certain user defined codes and generic message/rate types for your bill of materials and routing instructions.

### Topics

- Setting up user defined codes
- Setting up generic message/rate types

## Setting Up User Defined Codes

User defined codes are stored in tables by system and code type. For example, system 30, type TB represents Product Data Management (system 30) and time basis code (TB). To set up time basis codes for machine or labor hours, use the User Defined Codes form to identify the codes that you want to use. If you enter a time basis code on a form and do not identify it as a time basis code on the User Defined Codes form, the system displays an error message. For example, you can only enter codes in the time basis code field that exist in the user defined code table for system 30 and type TB.

The following user defined codes are primary to the Product Data Management system:

- Bills of material type (40/TB)
- Time basis code (30/TB)
- Make/buy table (41/I)
- Routing types (40/TR)
- Day Type (00/TD)

### See Also

- About User Defined Codes* in the *OneWorld Foundation Guide* for detailed information about setting up user defined codes

### **Bills of Material Type (40/TB)**

Bills of material type (40/TB) indicate the type of bill of material, such as manufacturing bill, rework bill, and spare parts bill. Regardless of the other bill of material types that you define, only the standard manufacturing bill (M) is planned and costed. A planned bill of material facilitates the master scheduling of material planning and forecasting. A costed bill of material extends the quantity per amount of every component by the cost of the components.

### **Time Basis Code (30/TB)**

Time basis code (30/TB) indicates the rate used for machine or labor hours as you enter a routing instruction. The following program and systems use the value of the time basis code to determine run time per unit:

- Leadtime Rollup program
- Product Costing system
- Capacity Requirements Planning system
- Shop Floor Management system

### **Make/Buy Table (41/I)**

Make/buy table (41/I) maintains stocking type codes that indicate whether an item is purchased or manufactured. For example, you can define types such as subassemblies and purchased raw materials.

M (manufactured) and P (purchased) are hard-coded and appear as the first character in the Description 02 field on the User Defined Codes form. You can use any other letter to define additional make and buy values.

### **Routing Types (40/TR)**

Routing types (40/TR) indicate the type of routing instruction, such as alternate routing instruction, standard manufacturing routing instruction, rush routing instruction, and rework routing instruction. Regardless of the other routing types that you define, only the standard manufacturing routing (M) is planned and costed.

### **Day Type (00/TD)**

Day types (00/TD) identify the type of day on the shop floor calendar. Day type W is hard-coded for work day. Set up all codes to identify non-work days.

## **Setting Up Generic Message/Rate Types**

You can set up generic messages (48/SN) that represent procedural or message text for your company. Use them to describe a standard procedure for each step in the routing instructions.

You set up generic message/rate types to represent standard procedures for your company. For each code, you define message text that is standard to your business.

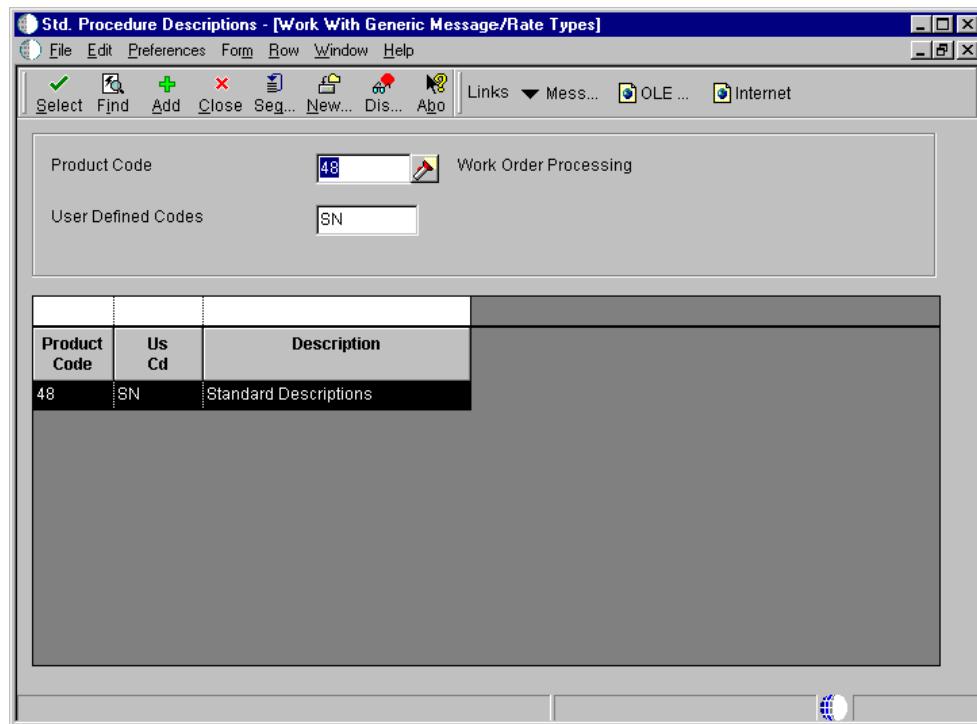
After you define standard procedure codes, you can enter them in the Standard Description field on the Enter/Change Routing program to indicate the procedure to use for each operation in the routing instructions.

The description that you define for the code appears on shop floor documents and in online inquiries that access data from the Enter/Change Routing program.

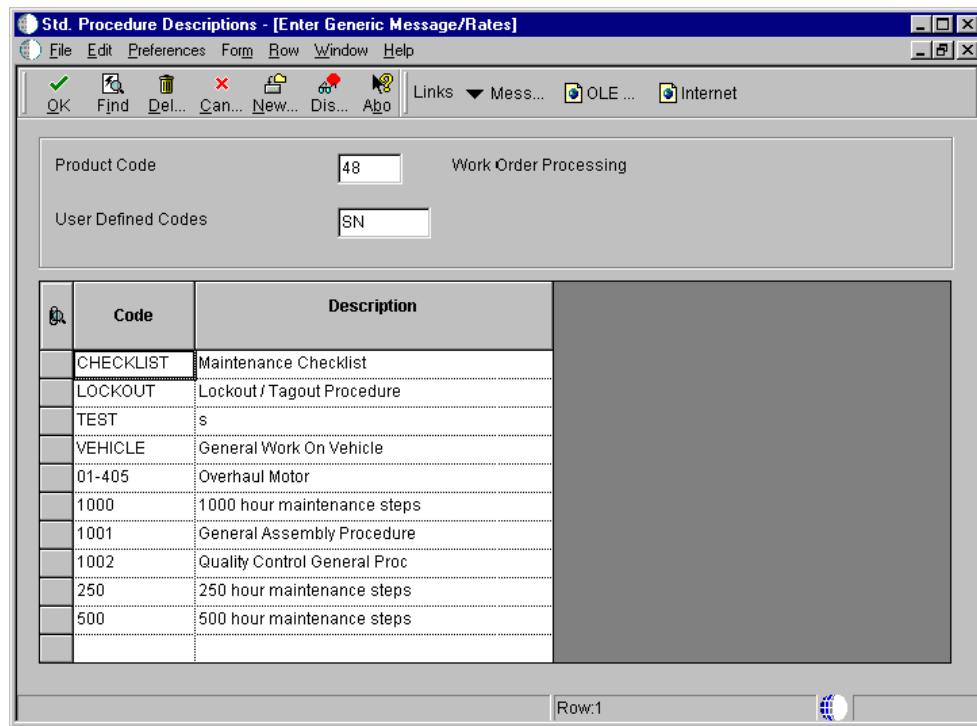
#### ► To set up generic message/rate types

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*From the Product Data Management Setup menu (G3041), choose Standard Procedure Descriptions.*



1. On Work With Generic Message/Rate Types, click Add.



2. On Enter Generic Message/Rates, complete the following field:
  - Code
3. Type the message that you want to define each code in the following field:
  - Description
4. Choose the row that you entered, and then choose General Message from the Row menu.
5. On General Message, type the actual procedure in the following field:
  - Description6
6. Click OK.
7. On Enter Generic Message/Rates, click OK.

#### **Processing Options for Generic Message/Rates Records (P00191)**

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##### Defaults

1. Enter the desired System Code.

##### System Code

2. Enter the desired Record Type.

##### Tax Authority 5

##### Record Type

##### Display

1. Enter a '1' to display Rate Text or a '2' to display Message Text.

##### Text Type

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2. Enter a '1' for 60 column display or a '2' for 80 column display.  
Text Column Display

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## Setting Up Manufacturing Information

You need to set up manufacturing information that is necessary for the Product Data Management system. This information includes decimal placement for quantities, manufacturing constants, and calendars. If you want the system to display quantities with the decimal set to something other than zero, you must change the decimal setting. You can change the manufacturing constants to record bill of material changes, perform online component and parent validation, and retrieve information from the master routing when attaching the routing instructions. You define workdays for your branch/plants by month and year using the shop floor calendar.

### Topics

- Converting quantity decimal places
- Setting up manufacturing constants
- Setting up a shop floor calendar

## Converting Quantity Decimal Places

*From the Advanced Product Data Management menu (G3031), choose QNTY Decimal Conversion.*

The following tables in the Manufacturing system maintain the Quantity (QNTY) data item:

- Bill of Material Master (F3002)
- Bill of Materials Change (F3011)
- ECO Parts List Detail (F3013)
- Work Order LSN (F3105)
- Rules Table Detail (F3283)
- Assembly Inclusion Rules (F3293)
- Configurator Level/Sequence File (F3296)

J.D. Edwards ships the QNTY data item in the data dictionary with the display decimals set to zero. You may want to change the decimals on this data item to a value other than zero. If you change the display decimals, the system displays any data already entered into the tables incorrectly on forms and reports. To prevent decimal displays from being incorrect, run the QNTY Decimal Conversion program before anyone enters any new data using the new display decimals.

Use the QNTY Decimal Conversion program to convert the QNTY data items on all affected tables from a specified number of decimal places to a new number of decimal places. You use the processing options to identify these numbers. If you enter 0 as the *display decimals from* value and 2 as the *display decimals to* value, the system adds two decimal places to the existing QNTY value. For example, the system converts 1 to 100, and displays it as 1.00. If you convert from two decimals to zero decimals, the system removes two decimal places. For example, the system converts 100 (displayed as 1.00) to 1.

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### Note

The system first rounds the value before adding or removing decimal places. If you convert from two decimals to zero decimals and the display quantity is 1.51, the system rounds the quantity to 2.00 and then converts 200 to 2.

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You should run this program only if you have changed the Quantity field to display decimal places. You can run this program in proof mode and final mode. Proof mode displays the changes you made to the decimal placement but does not update any tables. Final mode displays the changes and updates the tables.

The system performs special processing for the following conditions:

- Prints a warning message when rounding a co-product or by-product quantity on the Bill of Material Master table or the Bills of Material Change table.
  - Prints a warning message when rounding a percent bill quantity on the Bill of Material Master table or the Bill of Material Change table.
  - Prints an error message and does not convert the quantity when you are increasing the number of decimals and the quantity value is too large, such as adding decimal positions that would cause an overflow on the nondecimal portion of the quantity.
  - Converts only P and Q type records on the Rules Table Detail table and the Assembly Inclusion Rules table.
- 

### Caution

You should understand the changes that this program will make to your system and your existing data before you run this program. Because of the way the system stores numeric values in Access databases, you should not run this program against any Microsoft Access tables.

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## Processing Options for QNTY Decimal Conversion (R30QNTY)

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### Process

1. Enter a '1' to run this program in Final mode (update and report). If left blank, the program will run in Proof mode (report only).

### Proof or Final Mode

2. Enter the number of display decimals you are converting from.

### Display Decimals From

3. Enter the number of display decimals you are converting to.

### Display Decimals To

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## Setting Up Manufacturing Constants

Set up manufacturing constants to establish information that is unique to your branch/plants. The Enterprise requirements Planning and Execution (ERPx) systems use manufacturing constants to determine the following:

- How to allocate, commit, and backflush inventory
- How to calculate overhead costs

- Whether to consider work center efficiency when calculating direct labor and overhead
- Whether an audit trail tracks all changes to bills of material
- Whether to validate bills of material online as you enter them
- If a branch/plant has multiple shifts

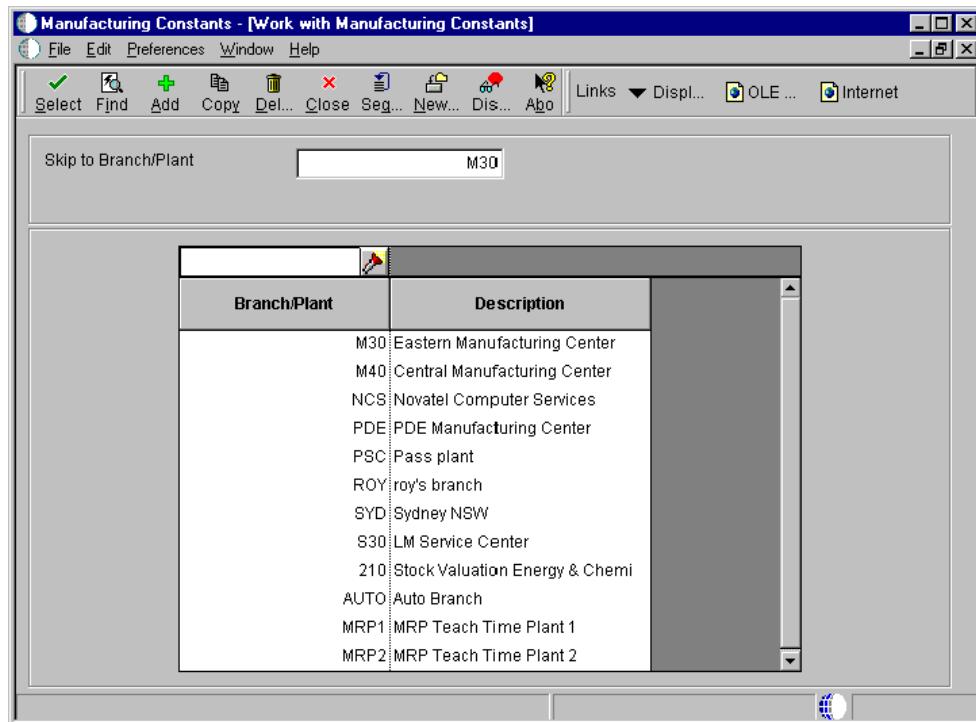
## Topics

- Setting up bill of material and routing information
- Setting up manufacturing information

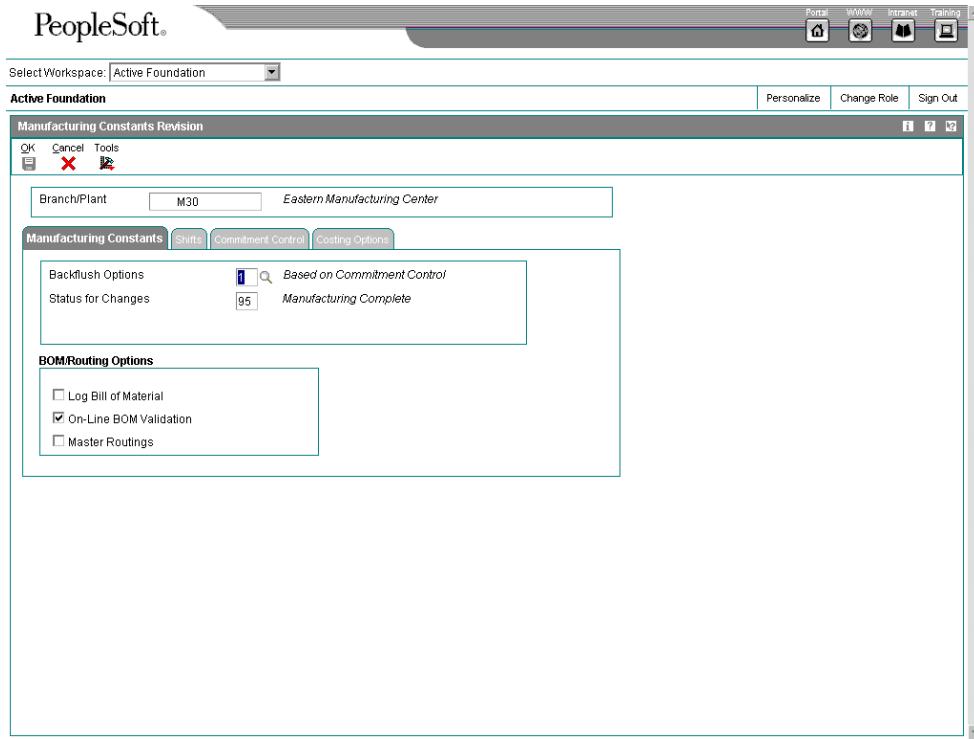
### ► To set up manufacturing constants

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*From the Product Data Management Setup menu (G3041), choose Manufacturing Constants.*



1. On Work with Manufacturing Constants, type the branch/plant number in the Skip to Branch/Plant field and click Find:
2. Choose the branch/plant and click Select.



3. On Manufacturing Constants Revision, click the Manufacturing Constants tab and click any of the following options:
  - Log Bill of Material
  - On-Line BOM Validation
  - Master Routings
4. Click OK.

## Setting Up a Shop Floor Calendar

Use the shop floor calendar to define work days by month and year for all branch/plants. The system uses this calendar to determine the following information:

- Manufacturing schedules
- Start dates for work orders
- Start and complete dates for work order routing instructions

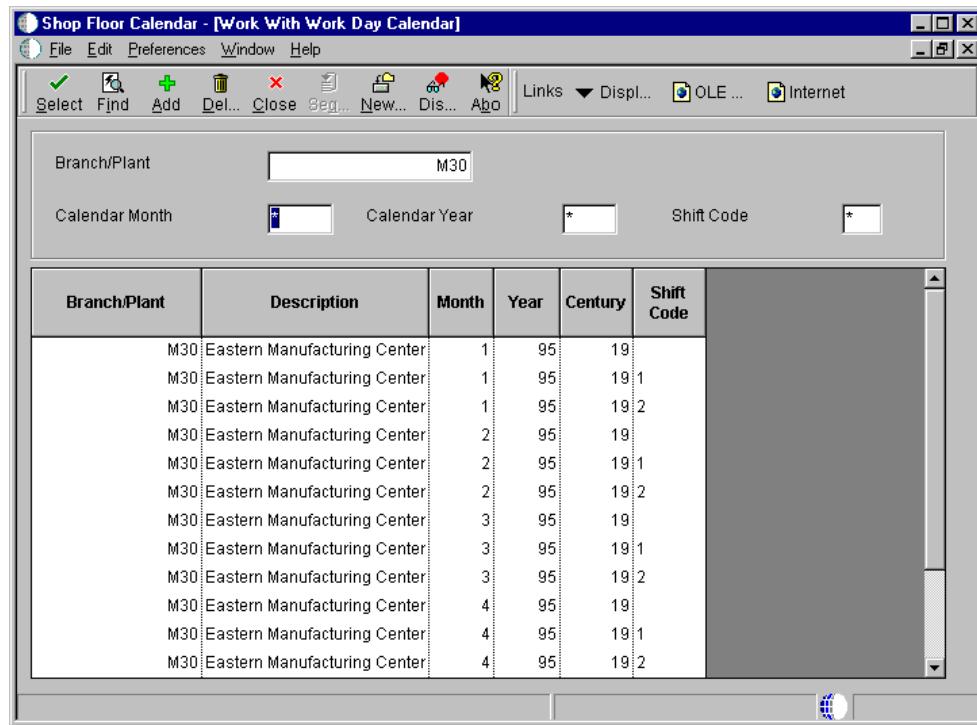
### Before You Begin

- Verify that the UDC 00/TC are set up to identify the workdays and the nonworking days for each branch/plant.

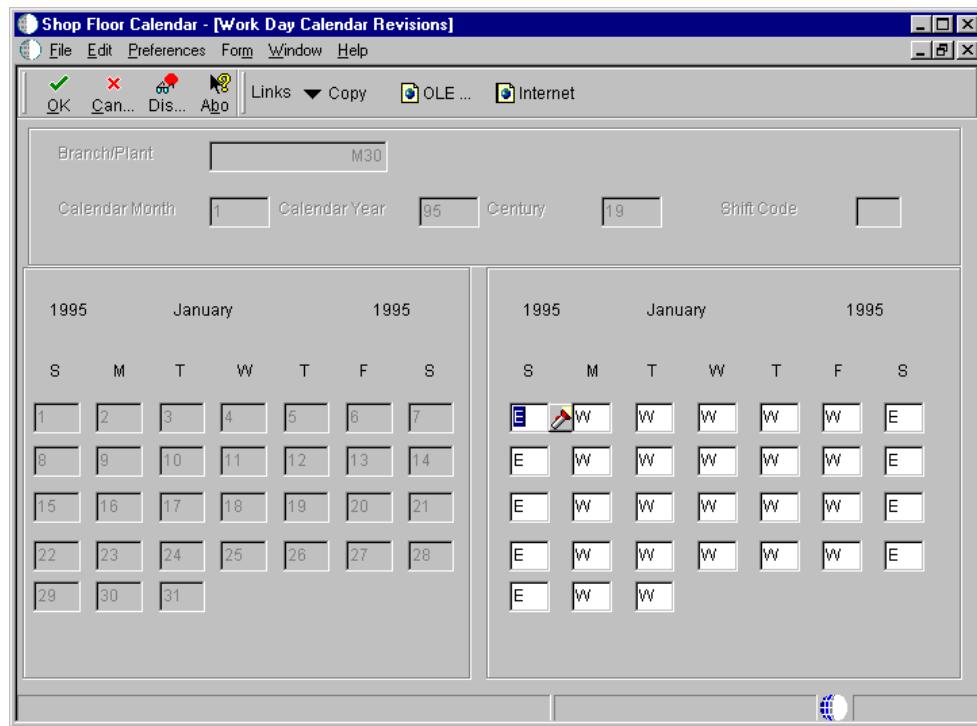
► **To set up a shop floor calendar**

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*From the Product Data Management Setup menu (G3041), choose Shop Floor Calendar.*



1. On Work With Work Day Calendar, complete the following fields and click Add:
  - Branch/Plant
  - Calendar Month
  - Calendar Year



2. On Work Day Calendar Revisions, complete each day field with a valid day type code and click OK.

The calendar on the left displays the calendar days for the month and year. The calendar on the right displays the defined work days.

Day types are stored in UDC table 00/TD. Day type W is hard-coded as a working day. You must set up non-working days in UDC table 00/TD.

#### **Processing Options for Work Day Calendar (P00071)**

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##### Interop

1. Enter the transaction type for the interoperability transaction. If left blank, outbound interoperability processing will not be performed.

##### Type - Transaction

2. Enter a '1' to write before images for outbound change transactions. If left blank, only after images will be written.

##### Before Image Processing

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## **Bills of Material**

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A bill of material identifies the manufacture of finished products (end items), subassemblies, and components. Before you create a bill of material, you must first understand the types of bills of material and how they are used. Then you can create a bill of material; define its components; and enter reference, grade, and potency information and substitute item information as necessary. After you have entered bills of material, you can review them to plan and research engineering change orders, view the results of a pending product change,

determine the effect of an item shortage, or evaluate capacity, manpower, equipment needs, and other resources.

Use a bill of material to accomplish the following:

- Detail specific items and quantities used to assemble the parent item.
- Define items as parents or components in the assembly.
- Provide the foundation for Product Costing and Master Production Schedule programs.

#### Topics

- Understanding bills of material
- Entering bills of material
- Reviewing bills of material

## Understanding Bills of Material

### Bills of Material

Use a bill of material to detail the specific items and quantities used to assemble the parent item, define items as parents or components in the assembly, and provide the foundation for Product Costing and Master Production Schedule programs. A bill of material is the basis for creating a parts list for a work order in the Shop Floor Management system.

Bills of material consists of the following topics:

- Types of bills of material
- Bill of material terminology

The features and functionality associated with bills of material enable you to do the following:

- Replace all occurrences of one component with another.
- Plan for component scrap in the Product Costing and Shop Floor Management systems.
- Substitute one component for another.
- View the producible quantity of an end item for the amount of the component that you enter.
- Print complete bill of material information.
- Copy an existing bill of material and make changes for a new item.
- Offset the required date of a component in a work order from the order start date.
- Locate all bills of material that use a specified part.
- Create multiple versions of your bills of material to present information in formats tailored to the needs of different departments.
- Track the status of all bill of material changes.
- Define where a component is located within a specific assembly.
- Check an item's low-level codes.

- Inquire on a bill of material using a single-level or multilevel format.

Using bills of material in a multiple-plant environment allows you to define different manufacturing data, such as order policy or lot size, for an item used in different branches.

You can specify the effective dates for component parts on a bill of material and nonstock, bulk, and expense items. You can also add notes describing tool requirements.

A properly structured bill of material does the following:

- Supports the Product Costing system.
- Allows for efficient storage and maintenance of bill of material information.
- Reflects material flow and how the product is built.
- Permits easy order entry.
- Allows the system to display the master schedule in the fewest end items possible.
- Allows for forecasting of optional product features.

An inaccurate bill of material might result in the following:

- Poor material planning
- Material shortages
- Inaccurate product costing
- Increased production costs
- Delayed shipments
- Excess and obsolete inventory
- Poor specification control
- Increased product liability

The system uses a bill of material as a master list when generating parts lists for work orders, cost rollups, leadtime rollups, MPS/MRP/DRP generation, and kit processing for sales orders.

## **Types of Bills of Material**

Depending on your business requirements, the Product Data Management system provides several types of bills of material. For example:

- Planning bill of material
- Batch bill of material
- Percent bill of material
- Manufacturing bill of material

## **Planning Bill of Material**

Use a planning bill of material to facilitate master scheduling and material planning by categorizing product features or options. This bill includes the ratio of each item as determined from revision history. The planning bill of material is also known as any of the following:

- Super bill of material

- Modular bill of material
- Transient bill of material
- Aggregate bill of material

### **Batch Bill of Material**

Use a batch bill of material to accommodate physical constraints, such as ovens or vats, in industries where products are produced in fixed quantities.

The Material Requirements Planning (MRP) system plans orders to fill net requirements by using one or multiple batch quantities. If the system does not find a batch quantity for the net requirement, it uses the next larger batch size. If larger batch size does not exist, MRP uses the closest smaller batch size until the requested amount is supplied.

#### **Example: MRP Orders**

The MRP system functions differently when you have defined more than one batch bill of material. When only one batch bill exists, the MRP system uses the batch quantity as a:

- Multiple if the net requirements are greater than the batch quantity
- Minimum if the net requirements are less than the batch quantity.

The following table shows the resulting MRP planned order for one batch bill of material:

Batch Quantity	MRP Requirement	Resulting MRP Planned Order
1000	1500	1000
		1000
1000	967	1000

If multiple batch bills of material exist and the net requirement is greater than all of the batch quantities, then the system uses the largest batch quantity in combination with any of the others to satisfy the requirement.

The following table shows the resulting MRP planned order for multiple batch bills of material:

Batch Quantity	MRP Requirement	Resulting MRP Planned Order
400	1500	1000
600		600
800		
1000		
400	3000	1000
600		1000

800		1000
1000		

If multiple batch bills exist and the net requirement does not match but is less than the largest batch quantity, then the system uses the smallest batch bill that satisfies the requirements.

The following table shows the resulting MRP planned order for multiple batch bills of material with requirements that are less than the largest batch quantity:

Batch Quantity	MRP Requirement	Resulting MRP Planned Order
400	780	800
600		
800		
1000		

### Percent Bill of Material

A percent bill of material enables you to express component quantities as a percent of the parent item or process batch quantity. The system converts the batch quantity to the primary unit of measure for the parent item or process.

The system stores quantities for components as follows:

- Calculates a percentage for the component in relation to the batch size.
- Converts the batch unit of measure to the component unit of measure and stores the quantity for the component.

### Example: Percent Bill

The parent item is Soft Drink and its batch quantity is 300 GA.

The following table shows the components of the parent item along with the component quantity, unit of measure, and whether the component is a fixed quantity, variable quantity, or expressed as a percentage:

Component	Quantity	Unit of Measure	Fixed/Variable
Vanilla	50	GA	%
Water	40	QT	%
Concentrate	10	LT	%

The system calculates the following:

<b>% Calculation and Conversion to Batch Unit of Measure Storage</b>			
Vanilla	= .5 X 300	= 150 GA	150 GA
Water	= .4 X 300	= 120 GA	480 QT
Concentrate	= .1 X 300	= 30 GA	114 LT

The system uses the component unit of measure in the percent bill to convert the number of gallons that correspond to the percent for each component. In this example, the system calculates the water and concentrate components to be 120 GA and 30 GA of the batch size. The system converts the unit of measure to the component unit of measure and stores them as 480 QT and 114 LT.

You must set up the unit of measure conversion for percent bills to work properly. Verify that all components can convert to the batch quantity unit of measure.

### **Manufacturing Bill of Material**

Use a manufacturing bill of material to document and track components. This type of bill is also known as any of the following:

- As-built bill of material
- Customer order configured bill of material
- Frozen bill of material

### **Bill of Material Terminology**

The following topics describe terminology with which you should be familiar before working with bills of material:

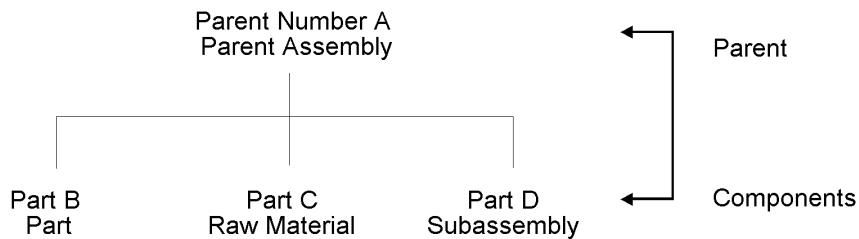
- Parent and component relationship
- Phantom item
- Substitute item
- Component locator
- Nonstock item
- Tools
- Bulk item
- Part replacement

### **Parent and Component Relationship**

A parent and component relationship defines the association between a parent item and the components that you use to produce it. Parent and component relationships are used in engineering change orders to define the proposed item change.

### **Example: Relationships in a Single-Level Bill of Material**

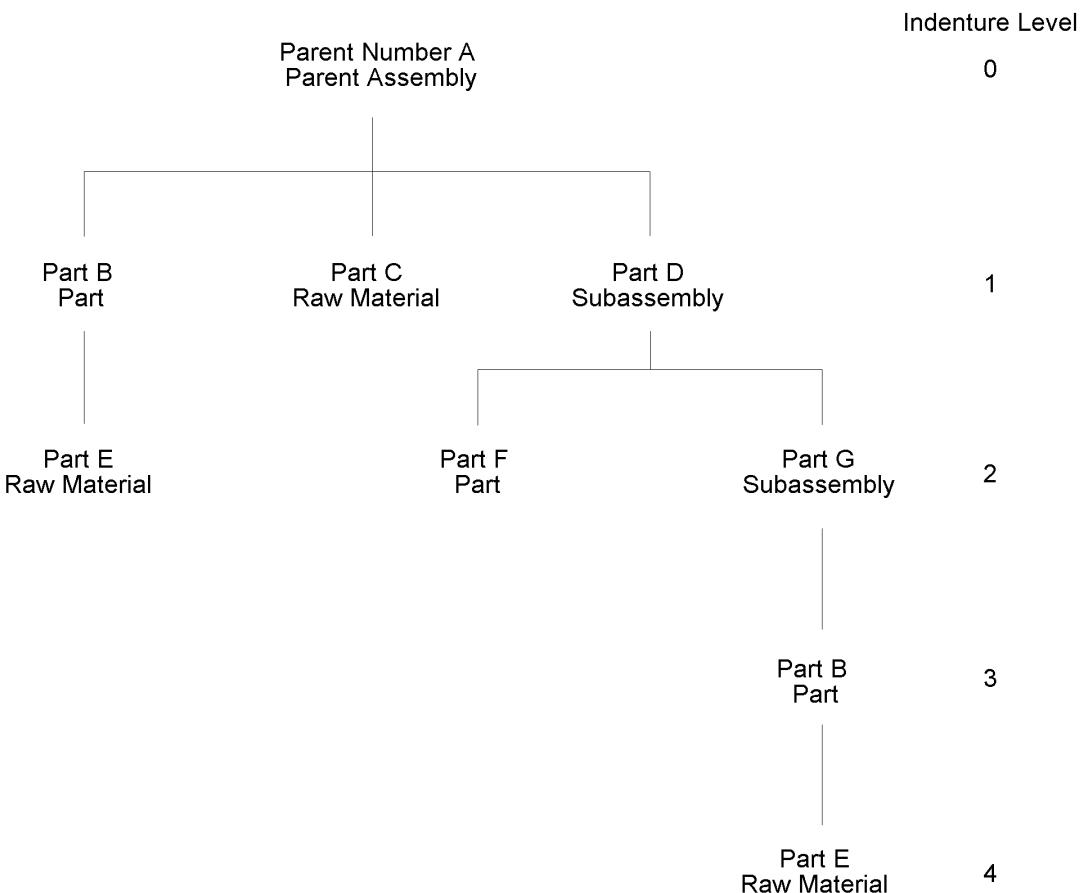
The following example shows the relationship of a parent item to components in a single-level bill of material that includes parts, raw materials, and subassemblies.



Part #	Description	Make/Buy	Unit of Measure	Quantity
A	Parent Assembly	M	EA	
B	Part	M	EA	1.0
C	Raw Material	B	EA	3.0
D	Subassembly	M	EA	.25

### **Example: Relationships in an Indented Bill of Material**

The following example shows a complex relationship of a parent item to its components. Part B is both an independent part and part of the subassembly that makes up Part G.



### Phantom Item

A phantom is an individual item that can exist anywhere in the bill of material. The term *phantom* has many aliases throughout the manufacturing industry, such as the following:

- Transient
- Module
- Blow-through
- Nonstocked subassembly
- Self-consumed
- Partial list

### Example: Phantom Item

An example of a phantom item, in this case a spray pump nozzle, occurs during automated assembly. The spray pump nozzle consists of a button, tubing, and an insert. The first operation specifies placing the button and inserting items in an automated assembly machine. The machine combines them into a phantom part called a button unit. This unit goes directly to the next operation. After the next operation attaches the tubing, the spray pump nozzle is complete. The button unit, as with all phantom items, is never stocked.

## **Substitute Item**

You can define a substitute item for components within your parent item. You might need to do this for several reasons: quality concerns, inventory shortages, or supplier delivery problems.

### **See Also**

- Entering Bills of Material* to review how to enter substitute items

## **Component Locator**

A component locator indicates the specific location of a component within a subassembly. Component locators are common features in the electronics industry. For example, the printed key pads that cover the keys on your computer keyboard must be placed in a specific sequence. Use a component locator to indicate the location of each key pad cover to ensure that each is correctly placed during production.

### **See Also**

- Entering Component Locators* to review how to enter locators

## **Nonstock Item**

You can add a nonstock item to the bill of material. Nonstock items include drawings, tools, bulk items, or reference materials. The system does not plan for nonstock items, but they appear on the bill of material and parts list for shop floor personnel.

You can enter drawing numbers on your bills of material as nonstock items so that they print on the shop paperwork. If your drawing numbers differ for each branch/plant, enter the drawing number as a component.

## **Tools**

If a tool is needed to create the parent item and is located on the shop floor and reused as needed, you can indicate that it is a necessary component item required for the parent item. Enter reusable tools as text lines or nonstock items in the bill of material.

You enter expendable tools (that is, tools used one time) on the bill of material like any other component item. The manufacturing process commits and consumes expendable tools in the same way as other components. Paint roller pads are an example of an expendable tool.

## **Bulk Item**

You use bulk items on the shop floor. Bulk items are not closely tracked, but are ordered in large quantities as they are needed. Examples include tape, rubber bands, lubricants, cleaning fluid, rivets, and nails. You must enter bulk items in the Item/Branch Plant Information form.

### **See Also**

- Entering Item Branch/Plant Manufacturing* in the *Inventory Management Guide*

## **Part Replacement**

You might need to replace one part with another in the bill of material. You can either scrap the old part or deplete the inventory. Use the following guidelines to specify a replacement part:

- Leadtime must be set to 0 (zero).
- Order policy code in the branch/plant record must be set to lot-for-lot.
- Bill of material must be entered so that the new part is a component of the old part.
- Stocking type must be set appropriately.

As the Material Requirements Planning system uses up the quantity of the old part, the quantity reaches zero. Since there are still requirements, the system generates a planned order release. This planned order becomes the requirement for the new item in the same period (because the leadtime of the old part is zero). MRP then plans the new part, which alerts the material planner to change the bill of material by removing the old part.

## **Entering Bills of Material**

A bill of material defines an item as a parent or component in the assembly. It details the specific components and quantities that are used to assemble the parent item and provides the foundation for costing and planning activities.

As you define a bill of material, you combine information from the Job Shop Manufacturing Constants, Item Master, and Item Branch tables. The resulting bill of material is stored in the Bill of Material table. Changes are stored in the Bill of Materials Change table.

When you delete a parent item's bill of material, the item's lower level components and subassemblies are not affected.

### **Topics**

- Entering a bill of material
- Entering planning bill and kit information (optional)
- Entering production information
- Entering component locators (optional)

### **Before You Begin**

- If you are using batch bills of material, define a bill of material for batch bills, define routing instructions that correspond to the batch sizes, and set the processing options for Enter/Change Bill and Work Order Entry to activate batch functions. See *Setting Up User Defined Codes* and *Entering Routing Instructions*.

## **Entering a Bill of Material**

A parent item is the end result of a bill of material. After you enter a parent item, you can define the specific location, components, and quantities that are used to assemble the parent item.

### **Topics**

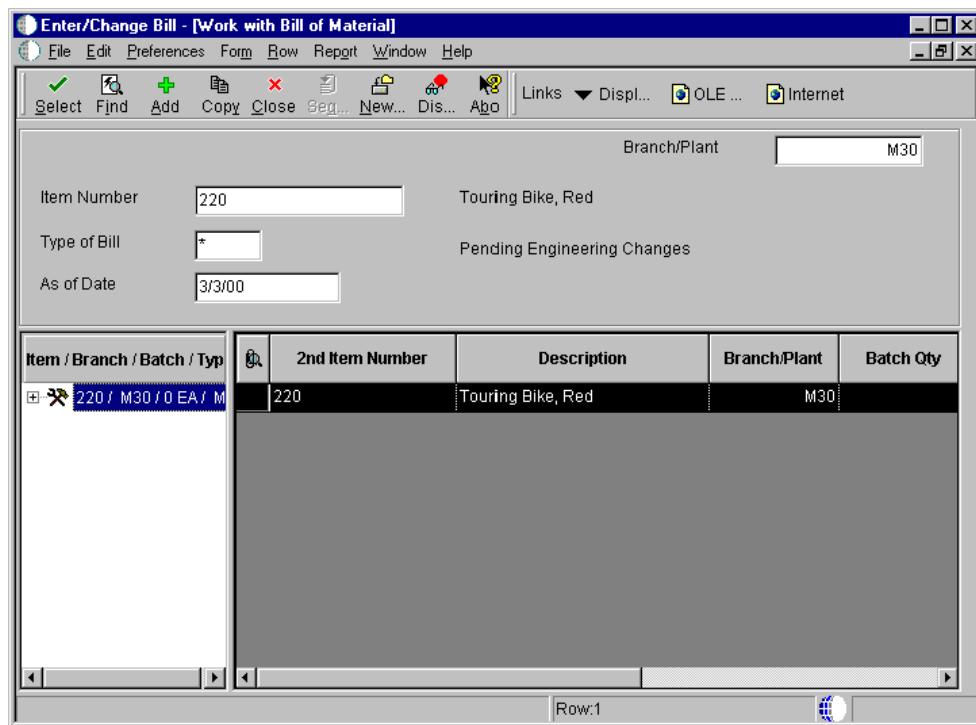
- Entering basic bill of material information

- Entering reference information
- Entering grade and potency information
- Entering a substitute item

#### ► To enter basic bill of material information

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*From the Daily PDM Discrete menu (G3011), choose Enter/Change Bill.*



1. On Work with Bill of Material, complete the following fields and click Add:
  - Branch/Plant
  - Item Number
  - As of Date

PeopleSoft®

The screenshot shows the 'Enter Bill of Material Information' window in the PeopleSoft application. At the top, there are buttons for OK, Find, Delete, Cancel, Form, Row, Report, and Tools. Below that, there are fields for Parent Item (220), Branch/Plant (M30), Batch Quantity (EA), As of Date (08/27/03), Type of Bill (M), Drawing # (200T), and other parameters. The main area displays a grid of items:

Item Number	Description	Quantity	UM	Active Ingr. Flag	F V	Is Cd	Sing Typ	Line Ty	Line No.	Open Seq#	Eff From
2001	Cro-Moly Frame, Red	1	EA		V	U	M	S	10.00	10.00	04/
2006	Touring Fork	1	EA		V	U	P	S	20.00	20.00	
2007	Bottom Bracket	1	EA		V	U	P	S	30.00	30.00	
2008	Head Set	1	EA		V	U	P	S	40.00	40.00	
2009	Crank	2	EA		V	U	P	S	50.00	50.00	
2010	Chain Rings	1	EA		V	U	P	S	60.00	60.00	
2011	Chain, Std	1	EA		V	U	P	S	70.00	60.00	
2013	Shift Kit	1	EA		V	U	P	S	80.00	30.00	
2014	Brake Kit	1	EA		V	U	P	S	90.00	40.00	
2015	Wheel Set, Front	1	EA		V	U	P	S	100.00	60.00	

2. On Enter Bill of Material Information, complete the following fields and click OK.

- Batch Quantity
- Type of Bill
- Item Number
- Quantity
- UM
- F V
- Is Cd
- Effective From
- Effective Thru
- Percent Scrap

If you want to enter bills of material for the same parent item but multiple branch/plants, you can copy the original bill of material. Locate the existing bill, select Copy, and enter the new branch/plant.

After you enter a parent item, you can define batch information.

## ► To enter reference information

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Use the Enter Bill of Material Information form to add reference information to specific items

*From the Daily PDM Discrete menu (G3011), choose Enter/Change Bill.*

1. On Work with Bill of Material, complete the following fields and click Find:

- Branch/Plant
- Item Number

2. Choose the item and click Select.

3. On Enter Bill of Material Information, complete the following fields:

- Bubble Seq No
- Ln Ty
- Remarks

The following fields display stocking information:

- Stkg Typ
- Drawing Number

4. Click OK.

## ► To enter grade and potency information

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*From the Daily PDM Discrete menu (G3011), choose Enter/Change Bill.*

Use the Enter Bill of Material Information form to enter grade and potency information for a specific item. You can define either grade or potency information, but not both.

1. On Work with Bill of Material, complete the following fields and click Find:

- Branch/Plant
- Item Number

2. Choose the item and click Select.

3. On Enter Bill of Material Information, complete the following fields to define grade information:

- Frm Grd
- Thr Grd

4. To define potency information, complete the following fields:

- From Potency
- Thru Potency

5. Click OK.

## ► To enter a substitute item

Enter a substitute item for components within your parent item. You can use substitute items if you encounter quality issues, inventory shortages, or supplier delivery problems with the original component. From the Daily PDM Discrete menu (G3011), choose Enter/Change Bill.

To enter a substitute item for all your parent items, use item cross-references. See *Setting Up Item Cross-Reference* in the *Inventory Management Guide* for more information about item cross-references.

1. On Work with Bill of Material, complete the following fields and click Find:
  - Branch/Plant
  - Item Number
2. Choose the item and click Select.
3. On Enter Bill of Material Information, choose a component, and then choose Substitutes from the Row menu.

The system displays Enter Component Substitutes and highlights a component's item description to indicate a substitution.

The screenshot shows the PeopleSoft Enter Component Substitutes window. At the top, there are buttons for OK, Delete, Cancel, Row, Tools, and a toolbar with icons for copy, paste, and search. Below this is a header bar with 'Active Foundation' and other navigation links. The main area has input fields for 'Component Item' (2001), 'Component Branch' (M30), 'Oper Sequence' (10.00 Assembly), 'Quantity Per' (1 EA), and 'Component Line #' (10.00). A grid table below shows one row of data:

Substitute Item	Description	Quantity	UM	S	Active Ingr. Flag	Is Cd	Effective From	Effective Thru
1	Cro-Moly Frame, Red	10.00	EA					

4. On Enter Component Substitutes, complete the following fields and click OK.
  - Substitute Item

- Sub Item Sequence
- Quantity
- UM
- Effective From
- Effective Thru
- Percent Scrap
- F V
- Frm Grd
- Thr Grd
- From Potency
- Thru Potency

5. Click OK.

## **Entering Planning Bill and Kit Information**

Use planning bills and kits to produce items in which components are features and might not be listed as separate inventory items. When you enter these components as parts of kits, the system places them in the planning and manufacturing processes.

---

### **► To enter planning bill and kit information**

After you have added components, you can enter planning bill and kit information.

*From the Daily PDM Discrete menu (G3011), choose Enter/Change Bill. .*

1. On Work with Bill of Material, complete the following fields and click Find:
  - Branch/Plant
  - Item Number
2. Choose the item and click Select.
3. On Enter Bill of Material Information, complete the following fields in the detail area and click OK.
  - Feat Plan %
  - Feat Cost %
  - Unit Price
  - Unit Cost

- Opt (S/O/F)
- R
- D C

#### **See Also**

- *Entering Item Master Information* in the *Inventory Management Guide*

### **Entering Production Information**

Use production information to identify how the system issues each component from stock and how many days the component is needed before or after the start date of the work order. For each component, enter an issue code and the number of days for leadtime. The Shop Floor Management system uses this production information when processing work orders.

#### **► To enter production information**

---

*From the Daily PDM Discrete menu (G3011), choose Enter/Change Bill.*

1. On Work with Bill of Material, complete the following fields and click Find:
  - Branch/Plant
  - Item Number
2. Choose the item and click Select.
3. On Enter Bill of Material Information, complete the following fields in the detail area and click OK.
  - Is Cd
  - Leadtime Offset

### **Processing Options: Bill of Material Revisions (P3002)**

#### **Defaults Tab**

Use these processing options to specify the default values for the parent branch, the bill of material type, and the current date. The system uses the default values when processing a bill of material. You can also sort the information by component line number or by operation sequence number.

---

## **1. Component Branch**

Use this processing option to specify whether the system uses the parent branch as the default value in the bill of material records when you copy the bill of material to add a new bill of material. Valid values are:

- Blank The system uses the component branch when you copy the bill of material.
- 1 The system uses the parent branch when you copy the bill of material.

## **2. Bill of Material Type**

Use this processing option to specify the type of bill of material for the system to use as the default value in the Type of Bill fields. Bill of material type is a user defined code (40/TB) that designates the type of bill of material. Enter the bill of material type to use or choose it from the Select User Define Code form. If you leave this processing option blank, the system uses M.

## **3. As of Date**

Use this processing option to specify whether the system uses the current date as the default value in the As Of Date field in the header area of the Work with Bill of Material form. Enter the date to use or choose it from the Calendar. Additional valid values are:

- Blank The system uses \* as the default value, which allows the system to select all dates.
- 1 The system uses the current date as the default value.

---

## **4. Display Sequence**

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Use this processing option to specify how the system sorts the information on the Enter Bill of Material Information form. You can choose whether to sequence the data by component line number or by operation sequence number. The component line number indicates the sequence of the components on a bill of material. The operation sequence number indicates the sequence of the fabrication or assembly steps in the manufacture of an item. Valid values are:

- Blank The system sorts by component line number.
- 1 The system sorts by component line number.
- 2 The system sorts by operation sequence number.

---

#### **Display Tab**

Use these processing options to specify whether the system displays the Bill Type and Batch Quantity fields. The Bill Type field appears in the header area on the Work With Bill of Material and the Enter Bill of Material Information forms. The Batch Quantity field only appears in the header area on the Enter Bill of Material Information form. If you leave these processing options blank, the system does not display the fields.

---

## **1. Bill Type**

Use this processing option to activate the Bill Type field in the header area of both the Work With Bill of Material and Enter Bill of Material Information forms. Bill of material type is a user defined code (40/TB) that designates the type of bill of material. Valid values are:

Blank The system does not display the Bill Type field.

1 The system displays the Bill Type field.

## **2. Batch Quantity**

Use this processing option to specify whether the system activates the Batch Quantity field in the header area of the Enter Bill of Material Information form. Batch quantity is the quantity of finished units that you expect a specific bill of material to produce. Valid values are:

Blank The system does not display the Batch Quantity field.

1 The system displays the Batch Quantity field.

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## **Versions Tab**

Use these processing options to specify which versions of the following programs that the system uses when processing a bill of material. If you leave a processing option blank, the system uses the ZJDE0001 version of that program.

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## **1. Single Level BOM Print (R30460)**

Use this processing option to specify the version of the Single Level Bill of Material Print program that the system uses. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Single Level Bill of Material program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

## **2. Multi Level BOM Print (R30460)**

Use this processing option to specify the version of the Multi Level Bill of Material Print program that the system uses. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Multi Level Bill of Material program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

## **3. ECO Workbench (P30225)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the ECO Workbench form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the ECO Workbench program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

## **4. Component Maintenance (P3015)**

Use this processing option to specify the version that the system uses when

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you choose the Row exit to the Component Maintenance form. If you leave this processing option blank, the system uses the ZJDE0001 version. Versions control how the Component Maintenance program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

## **5. ECO Header [P30BREV]**

Use this processing option to specify the version that the system uses when you choose the Row exit to the ECO Header form. If you leave this processing option blank, the system uses the ZJDE0001 version. Versions control how the ECO Header program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

## **6. Bill of Material Where Used (P30201)**

Use this processing option to specify the version of the Bill of Material Where Used program that the system uses. If you leave this processing option blank, the system uses the ZJDE0001 version. Versions control how the Bill of Material Where Used program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

## **7. Item Master (P4101B)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Item Master program. If you leave this processing option blank, the system uses the ZJDE0001 version. Versions control how the Item Master program displays information. Therefore, you might need to set the processing option to a specific version to meet your

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needs.

## **8. Co/By- Products Inquiry (P30211)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Co/By-Products Inquiry program. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Co/By-Products Inquiry program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

## **9. Bill of Material Inquiry (P30200)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Bill of Material Inquiry program. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Bill of Material Inquiry program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

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### **Edit Tab**

Use this processing option to specify whether the system verifies that an item branch record exists in the Item Branch table (F4102).

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## **1. Item Branch Validation**

Use this processing option to specify whether the system checks for a component's existing item branch record in the Item Branch table (F4102).

Valid values are:

Blank The system does not check to see if the item branch is valid.

1 The system checks for a valid item branch record.

---

## **Interoperability Tab**

Use these processing options to specify the transaction type that the system uses for export processing, the version of the Interoperability Outbound Subsystem report (R00460), and whether you want the system to write the before or after image for a changed transaction.

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### **1. Transaction Type**

Use this processing option to specify the transaction type that the system uses for export processing. Transaction type is a user defined code (00/TT) that identifies the type of transaction for the work order. Enter the transaction type to use as the default value or choose it from the Select User Define Codes form. If you leave this processing option blank, the system does not use export processing.

### **2. Write Image for a Change Transaction**

Use this processing option to specify whether the system writes the before or after image for a change transaction. The images are written to the Bill of Material Transaction Revisions table (F3002Z1) from the Bill of Material Master table (F3002). Valid values are:

Blank The system stores the after image.

1 The system stores the before image.

### **3. Interoperability Outbound (R00460)**

Use this processing option to specify the version of the Interoperability Outbound Subsystem program that the system uses for export processing. If you leave this processing option blank, the system uses the ZJDE0001 version. Versions control how the Interoperability Outbound Subsystem program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

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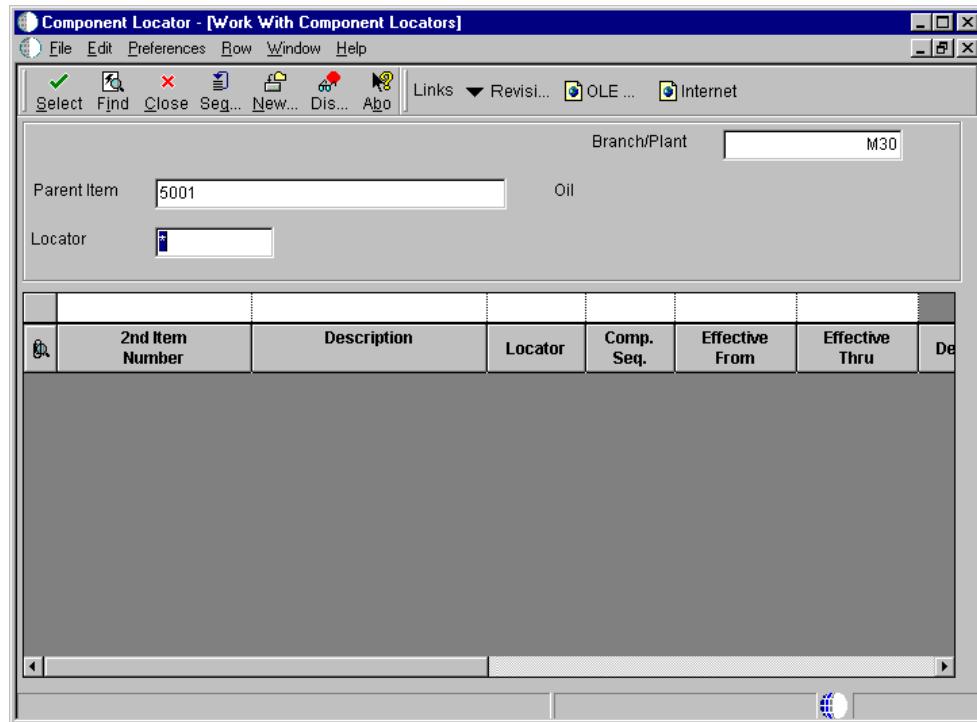
## **Entering Component Locators**

Use component locators to indicate the specific location of a component within a subassembly. You can define locations with any combination of characters, but the number of locations must equal the quantity per assembly.

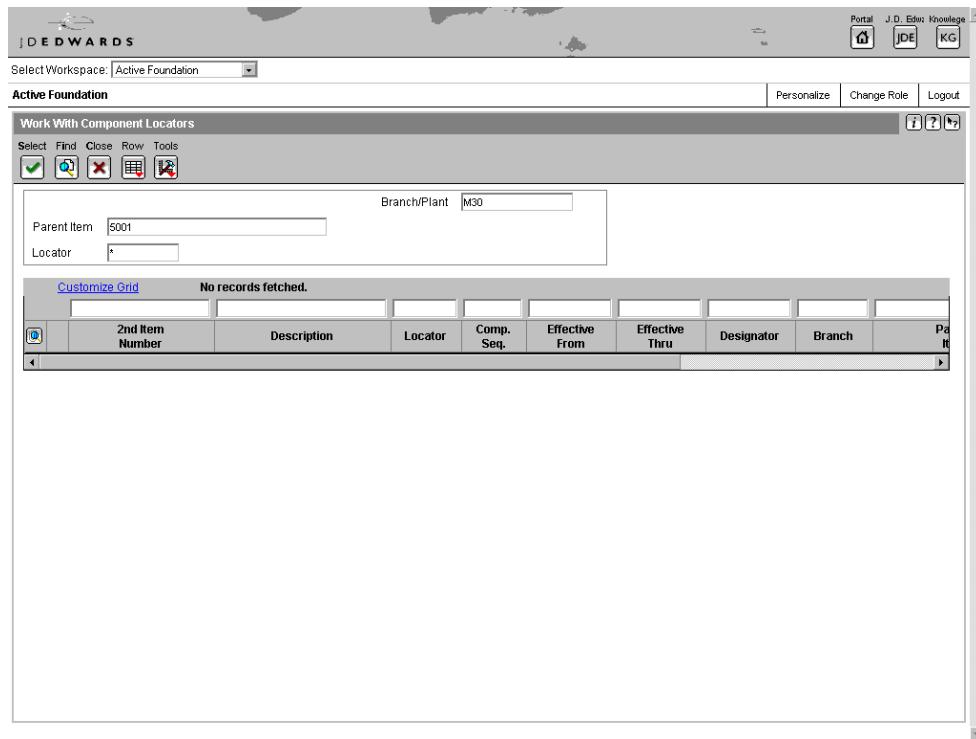
### ► To enter component locators

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*From the Daily PDM Discrete menu (G3011), choose Component Locator.*



1. On Work With Component Locators, complete the following fields and click Find:
  - Branch/Plant
  - Parent Item
2. Choose the row and click Select.



3. On Component Locator Revisions, complete the following field in the detail area and click OK.
  - 1

### **Processing Options for Component Locator Rev (P3015)**

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#### **Defaults**

1. Enter the date to be used as the Effective From date. If left blank, the current date will be used.

#### **Effective From Date**

2. Enter the Sales or Purchasing Category Code that will be used as the Designator (e.g. S1 = Sales Category Code 1, P1 = Purchasing Category Code 1, etc.)

#### **Designator**

#### **Versions**

1. Enter the version to use for each application listed. If left blank, version "ZJDE0001" will be used.

#### **Bill of Materials (P3002)**

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## **Reviewing Bills of Material**

You can review bills of material to:

- Plan and research engineering change orders.
- View the results of a pending product change.
- Determine the effect of an item shortage.
- Evaluate capacity, manpower, equipment needs, and other resources.

## Topics

- Verifying bills of material
- Locating bills of material
- Comparing bills of material
- Printing bill of material information
- Changing multiple bills of material

## Verifying Bills of Material

*From the Advanced Product Data Management menu (G3031), choose Integrity Analysis.*

To check your bills of material for low-level codes and product structure errors, such as when a parent item is listed as a component of itself, use the Integrity Analysis program.

This program generates a report that identifies any bills of material that you need to correct. If the report indicates errors, you should correct the bills of material and run the Integrity Analysis program again. When the program does not find errors in the bills of material, it updates the low-level codes in both the Item Master and the Item Branch tables (F4101 and F4102).

J.D. Edwards recommends that you run the Integrity Analysis program immediately after a data conversion, such as system startup, and then periodically, such as two or four times a year. You should also run the Integrity Analysis program before running the Simulated Cost Rollup or DRP/MPS/MRP Generation programs to prevent the system from updating tables with incorrect product structures.

---

### Note

As an alternative to running Integrity Analysis, you can activate online validation, whereby the system validates the items as you enter them. In this procedure, the system does not allow you to enter recursive components. An error message displays, and you are not able to enter a parent item as a component of itself.

---

## See Also

- Setting Up Manufacturing Constants*

## Locating Bills of Material

Several forms display bill of material information. Depending on the information that you want to see, you can review a parent item and its components, the subassemblies of components, a graphical tree structure of a bill of material, and where a component is used.

## Topics

- Locating a single-level bill of material
- Locating a multilevel bill of material
- Locating a bill of material graphically
- Locating where a component is used in a single-level bill of material

## Locating a Single-Level Bill of Material

Use Single Level Bill Inquiry to find and view the components of a bill of material. You can also use Single Level Bill Inquiry to view parts availability and leadtime information.

You can use processing options to select which bill of material components appear. For example, you can do the following:

- Choose to view phantom items or only components of the phantom items.
- Choose to view subassemblies or only components of the subassemblies.
- Consolidate entries with the same component branch, component item, and fixed and variable information into one component record. You can also consolidate across a single level or multiple levels.
- Choose to view processes or discrete bills of material.
- Adjust the quantity of parent or component items based on shrink information from the Item Branch table (F4102) and scrap and yield information from the bill of material.

### ► To locate a single-level bill of material

*From the Daily PDM Discrete menu (G3011), choose Single Level Bill Inquiry.*

The screenshot shows the PeopleSoft Bill of Material Inquiry - Single Level interface. At the top, there are tabs for 'BOM Inquiry', 'Parts Availability', and 'Leadtime Inquiry'. The 'BOM Inquiry' tab is selected. Below the tabs, there are fields for 'Branch' (M30), 'Parent Item' (220, Touring Bike, Red), 'Requested Quantity' (1 EA), 'Drawing Number' (200T), and 'Type of Bill' (M). There are also fields for 'Revision Level' and 'As of Date' (08/27/03). A 'Skip to Line' button is present. The main area displays a grid of 15 records, each with a checkbox for 'Level', '2nd Item Number', 'Description', 'Quantity', 'UM', 'F', 'V', 'Issue Code', 'Active Ingr.', 'Oper Seq#', 'Stocking Type', and 'Line No.'. The 12th record, 'Chain, Std', is highlighted with a gray background. The grid has a header row and 10 data rows below it. A 'Customize Grid' link is located at the bottom right of the grid area.

Level	2nd Item Number	Description	Quantity	UM	F	V	Issue Code	Active Ingr.	Oper Seq#	Stocking Type	Line No.
□ 1	2001	Cro-Moly Frame, Red	1 EA	V	U					10.00 M	
□ 1	2006	Touring Fork	1 EA	V	U					20.00 P	
□ 1	2007	Bottom Bracket	1 EA	V	U					30.00 P	
□ 1	2008	Head Set	1 EA	V	U					40.00 P	
□ 1	2009	Crank	2 EA	V	U					50.00 P	
□ 1	2010	Chain Rings	1 EA	V	U					60.00 P	
□ 1	2011	Chain, Std	1 EA	V	U					60.00 P	
□ 1	2013	Shift Kit	1 EA	V	U					30.00 P	
□ 1	2014	Brake Kit	1 EA	V	U					40.00 P	
□ 1	2015	Wheel Set, Front	1 EA	V	U					60.00 P	1

1. On Bill of Material Inquiry - Single Level, click the BOM Inquiry tab, complete the following fields, and then click Find:

- Branch

- Parent Item
- Requested Quantity
- Type of Bill
- As of Date

2. From the View menu, you can change how the system displays the bill of material.

### **Locating a Multilevel Bill of Material**

Use Multi Level Bill Inquiry to find and view the components of a bill of material. You can also use Multi Level Bill Inquiry to view parts availability and leadtime information.

You can use processing options to select which bill of material components appear. For example, you can do the following:

- Choose to view phantom items, or only the components of the phantom items.
- Choose to view subassemblies, or only the components of the subassemblies.
- Consolidate entries that have the same component branch, component item, and fixed and variable information into one component record.
- Adjust the quantity of parent or component items based on shrink information from the Item Branch table (F4102), and scrap and yield information from the bill of material.

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#### **► To locate a multilevel bill of material**

*From the Daily PDM Discrete menu (G3011), choose Multi Level Bill Inquiry.*

1. On Bill of Material Inquiry - Multi Level Indented, click the BOM Inquiry tab, complete the following fields, and then click Find:
  - Branch
  - Parent Item
  - Requested Quantity
  - Type of Bill
  - As of Date
2. From the View menu, you can change how the system displays the bill of material.

### **Locating a Bill of Material Graphically**

Use the Graphical Bill Inquiry form to review each parent item and its components organized in a tree structure. You can change the inquiry type and display sequence based on the options you choose. For example, you can view a single-level, multilevel, or indented bill of material, and you can view the bill sequenced by line number, operation sequence number, or item number.

#### **► To locate a bill of material graphically**

*From the Daily PDM Discrete menu (G3011), choose Graphical Bill Inquiry.*

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Item Number	Description	Extended Quantity	Active	Stocking Type	Line No.	Component	Effective From	Effective Thru	Rev Sh Level
2001	Cro-Moly Frame, Red	1		M	10.00 S	M30	04/04/97	12/31/10	60
2004	Cro-Moly Frame	1	EA V I	M	10.00 S	M30	04/04/97	12/31/10	60
9011	Paint, Red	225	225 ML V B	P	20.00 S	M30	04/04/97	12/31/10	60
9031	Primer	225	225 ML V B	P	30.00 S	M30	04/04/97	12/31/10	61
9026	Acid	3	3 LP F I	P	40.00 S	M30	04/04/97	12/31/10	61
2005	Chain Stay	2	2 EA V B	M	50.00 S	M30	06/13/00	12/31/10	60
2001		1	EA V U		10.00 S	M30	04/04/97	12/31/10	60
2006		1	EA V U		20.00 S	M30	04/04/97	12/31/10	60
2007		1	EA V U		30.00 S	M30	04/04/97	12/31/10	60
2008		1	EA V U		40.00 S	M30	04/04/97	12/31/10	60
2009		2	EA V U		50.00 S	M30	04/04/97	12/31/10	60
2010		1	EA V U		60.00 S	M30	04/04/97	12/31/10	60

- On Work With Bill of Material - Tree View, complete the following fields and then click Find.
  - Branch/Plant
  - Parent Item
  - Requested Quantity
  - Type of Bill
  - As of Date
- From the View menu, choose Options to change the inquiry type and display sequence.

### Processing Options for Bill of Material Inquiry (P30200)

#### Defaults Tab

Use these processing options to specify the default mode of processing, mode of inquiry, type of bill of material, and how the system sequences detail information. You choose one of three modes of processing: simple inquiry, parts availability, or leadtime inquiry. You choose one of three modes of inquiry: single level, multilevel, or multilevel indented. You define the bill of material type by specifying the appropriate user defined code. In addition, you choose whether to allow the system to display the detail information by component line number or by operation sequence number. The system uses these default values when processing the bill of material inquiry.

---

## **1. Processing Mode**

Use this processing option to specify how the system displays the information on which you inquiry. Choose from the following processing modes: simple inquiry, parts availability, or leadtime inquiry.

The simple inquiry mode displays the components of a bill of material.

The parts availability mode displays the components of a bill of material and the available quantities for those components. If you use this mode, specify whether you want the system to subtract safety stock from the quantity on hand and whether to display negative quantities using the Safety Stock and Negative Items processing options under the Select tab.

The leadtime inquiry mode displays actual and calculated leadtimes for an item. Actual leadtimes are derived from the leadtimes as updated in the Item Branch table by the Leadtime Rollup program. Calculated leadtimes are the number of days that you must start to manufacture a part prior to the date that the parent needs it. You can use this mode of processing to define leadtimes for an item at each routing instruction step or to compare the actual and calculated leadtimes. If you use this mode, specify whether you want the system to display the actual or calculated leadtimes in the Leadtime Values processing option under the Select tab.

Valid values are:

- 1 The system displays the simple inquiry mode.
- 2 The system displays the parts availability mode.
- 3 The system displays the leadtime inquiry mode.

If you leave this processing option blank, the system displays the simple inquiry mode.

## **2. Inquiry Mode**

Use this processing option to specify the level of detail that you want the

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system to display. The single level mode displays the parent item and its components. The multilevel mode displays the parent item, its components, and the subassemblies of the components. The multilevel indented mode displays the parent item, its components, and the subassemblies of the components. In addition, it indents the subassemblies. Valid values are:

- 1 The system displays the single level mode.
- 2 The system displays the multilevel mode.
- 3 The system displays the multilevel indented mode.

If you leave this processing option blank, the system displays the multilevel indented mode.

### **3. Bill of Material Type**

Use this processing option to specify the type of bill of material that the system uses as the default value in the Type of Bill field on the Work With Bill of Material form. Bill of material type is a user defined code (40/TB) that designates the type of bill of material. Enter the bill of material type to use or choose it from the Select User Define Code form. If you leave this processing option blank, the system uses M for manufacturing bill of material.

### **4. Display Sequence**

Use this processing option to specify how you want the system to sort information on the Work With Bill of Material form. You can choose to sequence the data by component line number or by operation sequence number. The component line number indicates the sequence of the components on a bill of material. The operation sequence number indicates the sequence of the fabrication or assembly steps in the manufacture of an item. Valid values are:

- 1 The system sorts by component line number.
- 2 The system sorts by operation sequence number.

If you leave this processing option blank, the system sorts the data by

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component line number.

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### **Versions Tab**

Use these processing options to specify which versions of the following programs the system uses to process a bill of material. If you leave any of these processing options blank, the system uses the ZJDE0001 version of that program.

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#### **1. Bill Of Material Print (R30460)**

Use this processing option to specify the version of the Bill of Material Print report that the system uses. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Bill of Material Print report displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

#### **2. ECO Workbench (P30225)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the ECO Workbench program from the Work With Bill of Material form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the ECO Workbench program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

#### **3. ECO Header (P48020)**

Use this processing option to specify the version of the ECO Header program that the system uses when you choose the Form exit to the Bill of Material Revisions program from the Work With Bill of Material. If you leave this processing option blank, the system uses the ZJDE0001 version.

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Versions control how the ECO Header program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

#### **4. Bill of Material Revisions (P3002)**

Use this processing option to specify the version that the system uses when you choose the Form exit to the Bill of Material Revisions program from the Work With Bill of Material form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Bill of Material Revisions program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

#### **5. Item Master (P4101B)**

Use this processing option to specify the version that the system uses when you choose the Form exit to the Item Master program from the Work With Bill of material form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Item Master program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

#### **6. Process Inquiry (P30240)**

Use this processing option to specify the version that the system uses when you choose the Form exit to the Process Inquiry program from the Work With Bill of Material form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Process Inquiry program displays information. Therefore, you might need to set the processing option to a specific version

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to meet your needs.

### **7. Work With Routing Master (P3003)**

Use this processing option to specify the version of the Work With Routing Master program that the system uses. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Work With Routing Master program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

### **8. Item Availability (P41202)**

Use this processing option to specify the version of the Item Availability program that the system uses. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Item Availability program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

### **9. Item Cross Reference (P4104)**

Use this processing option to specify the version of the Item Cross Reference program that the system uses. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Item Cross Reference program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

### **10. Item Search (P41200)**

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Use this processing option to specify the version of the Item Search program

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that the system uses. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Item Search program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

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### Select Tab

Use these processing options to specify whether to subtract the safety stock from the quantity on hand, to display only negative availability of items, and whether to display the calculated or the actual leadtimes.

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#### 1. Safety Stock

Use this processing option to specify whether the system subtracts the safety stock from the quantity on hand. Use this processing option in conjunction with the Parts Availability mode in the Processing Mode processing option under the Defaults tab. Valid values are:

Blank The system does not subtract safety stock from the quantity on hand.

1 The system subtracts safety stock from the quantity on hand.

#### 2. Negative Quantities

Use this processing option to specify whether the system displays negative amounts for the component quantities. Use this processing option in conjunction with the Parts Availability mode in the Processing Mode processing option under the Defaults tab. Valid values are:

Blank The system displays all amounts.

1 The system displays only negative amounts.

#### 3. Leadtime Values

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Use this processing option to specify whether the system displays the actual or calculated leadtime values. Use this processing option in conjunction with the Leadtime Inquiry mode in the Processing Mode processing option under the Defaults tab. Valid values are:

Blank The system displays the actual leadtime values from the Item Branch table (F4102).

1 The system displays the calculated leadtime values.

---

### **Process Tab**

Use these processing options to specify whether the system displays phantom items, process items, text lines, consolidated component rows, subassemblies, and purchased items. If you leave any of these processing options blank, the system excludes them from the inquiry. In addition, these processing options specify how the system adjusts the requested quantity for shrinkage and whether the system adjusts the extended quantity for scrap and for yield.

---

## **1. Phantom Items**

Use this processing option to specify whether the system explodes the phantoms to the next level and omits the display of the phantom. A phantom is normally defined for engineering or manufacturing purposes. Phantoms allow common parts, that may or may not be assembled, to be grouped in a bill of material structure. When viewing the bill of material, you may want to display only the subassemblies and raw material. Valid values are:

Blank The system omits the phantom items from the inquiry and displays only the subassemblies and raw material.

1 The system includes phantom items in the inquiry.

## **2. Process Items**

Use this processing option to specify whether the system displays the process items. Process items include the process, co-products, by-products, and ingredients. A discrete bill may contain a component that is produced from a process. You use this processing option when you combine discrete and process manufacturing to display a complete structure of the requirements. Valid values are:

Blank The system excludes process items from the inquiry.

1 The system includes process items in the inquiry.

## **3. Text Lines**

Use this processing option to specify whether the system displays the text lines. Valid values are:

Blank The system excludes text lines from the inquiry.

1 The system includes text lines in the inquiry.

---

#### **4. Consolidate Component Items**

Use this processing option to specify whether the system consolidates duplicate components. The same component may be listed in the bill of material several times, either on different subassemblies or on the same subassembly at different operations. When you use this processing option with the Subassemblies processing option, the system consolidates components at the subassembly level or for all levels of the bill of material. When viewing the consolidated components, the quantity required is accumulated for duplicate components. Valid values are:

Blank The system displays individual occurrences of duplicate components in the inquiry.

1 The system consolidates duplicate components in the inquiry.

#### **5. Subassemblies**

Use this processing option to specify whether the system displays the subassemblies. A subassembly is an assembly that is used at a higher level to make up another assembly. Valid values are:

Blank The system excludes subassemblies from the inquiry.

1 The system includes subassemblies in the inquiry.

#### **6. Shrink**

Use this processing option to specify whether the system adjusts the requested quantity for shrinkage. Shrinkage is the planned loss of a parent item caused by factors such as breakage, theft, deterioration, and evaporation. Valid values are:

Blank The system does not adjust the requested quantity.

1 The system adjusts the requested quantity for shrinkage.

---

## **7. Scrap**

Use this processing option to specify whether the system adjusts the extended quantity for scrap. Scrap is unusable material that results from the production process. It is material outside of specifications and of such characteristics that rework is impractical. Valid values are:

- Blank The system does not adjust the extended quantity.
- 1 The system adjusts the extended quantity for scrap.

## **8. Yield**

Use this processing option to specify whether the system adjusts the extended quantity for yield. Yield is the ratio of usable output from a process to its input. Valid values are:

- Blank The system does not adjust the extended quantity.
- 1 The system adjusts the extended quantity for yield.

## **9. Purchased Items**

Use this processing option to specify whether the system explodes to the next level of purchased items in the bill of material report. Valid values are:

- Blank The system excludes lower-level purchased items from the report.
- 1 The system includes lower-level purchased items in the report.

---

## **Locating Where a Component is Used in a Single-Level Bill of Material**

### **Locating Where a Component is Used in a Single-Level Bill of Material**

*From the Daily PDM Discrete menu (G3011), choose Single Level Where Used.*

Use Single Level Where Used to review components in single-level bills of material. When you enter a component number, the system displays all of its parent items.

3. On Work With Bill of Material Where Used, complete the following fields and click Find:

- Component Branch / Plant
- Component Number
- Parent Quantity
- As of Date

4. From the View menu, you can change how the system displays the bill of material.

#### See Also

□ [Reviewing Leadtimes](#) for more information about leadtimes

#### ► **To locate where a component is used in a multilevel bill of material**

---

*From the Daily PDM Discrete menu (G3011), choose Multi Level Where Used.*

Use Multi Level Where Used to review components in multilevel bills of material. When you enter a component number, the system displays all of its parent items and subassemblies.

Level	2nd Item Number	Description	Batch Quantity	UM	Extended Quantity	Quantity Per	UM	T	Frm Grd	Thru Grd	From Potency	Thru Potency
.2	2005	Chain Stay	0 EA		406		203 CM	M				
1	2099	Frame, bike, aluminum	0 EA		2		2 EA	M				
.3	2005	Chain Stay	0 EA		406		203 CM	M				
.2	2002	Cro-Moly Frame, Two Tone	0 EA		2		2 EA	P				
1	221	Touring Bike, Blue	0 EA		1		1 EA	M				
.3	2005	Chain Stay	0 EA		406		203 CM	M				
.2	2003	Cro-Moly Frame, Green	0 EA		2		2 EA	P				
1	222	Touring Bike, Green	0 EA		1		1 EA	M				
.3	2005	Chain Stay	0 EA		406		203 CM	M				
.2	2001	Cro-Moly Frame, Red	0 EA		2		2 EA	M				

1. On Work With Bill of Material Where Used, complete the following fields and click Find:

- Component Branch / Plant

- Component Number
  - Parent Quantity
  - As of Date
2. From the View menu, you can change how the system displays the bill of material.

## **Locating Where a Component is Used in a Multilevel Bill of Material**

### **Processing Options for Bill of Material Where Used (P30201)**

---

#### Defaults

1. Enter the Screen Default type: '1' Single Level, '2' Multi-Level, '3' Multi-Level Indented Mode - Processing
2. Enter the default Bill Type to be used. If left blank, 'M' will be used for all Bill Types

#### Default Type Bill of Material

#### Versions

1. Enter the version to execute of the following programs. If left blank, the "ZJDE0001" will execute.

Item Search (P41200)

Material Where Used Print (R30420)

Item Master (P4101B)

Where Used Inquiy (P13226)

Manufacturing Work Order Processing (P48013)

Bill of Material Inquiry (P30200)

---

## **Comparing Bills of Material**

Use Bill of Material Comparison to compare bills of material. Based on the view mode that you select, the system displays all the components of both bills or only those components of the two that are different.

### **► To compare bills of material**

---

*From the Daily PDM Discrete menu (G3011), choose Bill of Material Comparison.*

PeopleSoft®

Select Workspace: Active Foundation

Active Foundation

Work With Comparisons

BOM to BOM Comparison All

**BOM Comparison 1**

Item	221	Branch/Plant	M30
Touring Bike, Blue		Bill Type	M
Batch Quantity		Requested Quantity	1
As of Date	*		

**BOM Comparison 2**

Item	220	Branch/Plant	M30
		Bill Type	M
Batch Quantity		Requested Quantity	1
As of Date	*		

1. Complete the following fields under the BOM Comparison 2 heading:
  - Item
  - Branch/Plant
2. On Work With Comparisons, complete the following fields under the BOM Comparison 1 heading:
  - Item
  - Branch/Plant
3. From the View menu, choose Mode. You will have two options, All or Difference. Only one option is displayed at a time. You can toggle between All and Difference to specify the data comparison view.
4. Click Find, to view the comparison.

The screenshot shows a PeopleSoft application window titled "Active Foundation". The main content area is titled "Display Comparisons" and contains a grid titled "BOM Comparison". The grid has a header row with columns: Work Center, 2nd Item Number, Quantity Item 1, UOM Item1, Stocking Type Item1, Quantity Item 2, UOM Item2, Stocking Type Item2, and Short Item No. Below the header, there are 10 data rows, each corresponding to a work center from 2001 to 2011. The data is as follows:

Work Center	2nd Item Number	Quantity Item 1	UOM Item1	Stocking Type Item1	Quantity Item 2	UOM Item2	Stocking Type Item2	Short Item No
2001	0				1 EA	M		6006
2002	1 EA	P			0			6007
2004	0				1 EA	M		6009
2005	2 EA	M			2 EA	M		6010
2006	1 EA	P			1 EA	P		6011
2007	1 EA	P			1 EA	P		6012
2008	1 EA	P			1 EA	P		6013
2009	2 EA	P			2 EA	P		6014
2010	1 EA	P			1 EA	P		6015
2011	1 EA	P			1 EA	P		6016

5. On Display Comparisons, for each row review the differences between the information in the following fields:
  - Quantity Item 1
  - Quantity Item 2

## Processing Options for Bill of Material Comparison (P30204)

### Defaults Tab

Use this processing option to specify the default value for the type of bill of material. The system uses the default value when processing a bill of material.

---

## **1. Bill of Material Type**

Use this processing option to specify the type of bill of material that the system uses as the default value in the Bill Type fields. Bill of material type is a user defined code (40/TB) that designates the type of bill of material. Enter the bill of material type to use or choose it from the Select User Define Code form. If you leave this processing option blank, the system uses M (manufacturing bill of material).

---

## **Display Tab**

Use these processing options to specify whether the system displays the information in a single-level or multilevel comparison, and the mode in which the system displays the information. You choose from three comparison modes: bill of material comparison, parts list comparison, or parts list to bill of material comparison.

---

## **1. Single Level or Multilevel Comparison**

Use this processing option to specify whether the system displays the information in a single level or multilevel comparison. The single level comparison shows the item's first-level components; the multilevel comparison shows the subassemblies and components for an item. Valid values are:

- 1 The system displays a single level comparison.
- 2 The system displays a multilevel comparison.

If you leave this processing option blank, the system displays a single level comparison.

## **2. View Mode**

Use this processing option to specify the mode in which the system displays the information. The bill of material mode compares two bills of material, the parts list mode compares two parts lists, and the parts list to bill of material mode compares a parts list to a bill of material. Valid values are:

- 1 The system uses the bill of material mode.
- 2 The system uses the parts list mode.
- 3 The system uses the parts list to bill of material mode.

If you leave this processing option blank, the system uses the bill of material mode.

---

## **Process Tab**

Use these processing options to specify:

- Whether the system displays all components or only those components that are different between the two bills of material or parts lists
- Whether the system sorts the information by work center or by item number
- If the system includes subassemblies and phantom items

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### **1. Include Different Records**

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Use this processing option to specify whether the system displays all components or only those components that are different between the two bills of material or parts lists. Valid values are:

- D The system displays the component that are different between the two bills of material or parts lists.
- A The system displays all the components of the two bills of material or parts lists.

If you leave this processing option blank, the system displays the components that are different between the two bills of material or parts lists.

## 2. Work Center or Item Summary

Use this processing option to specify whether the system sorts the information by work center or by item number. Valid values are:

- 1 The system sorts the information by work center.
- 2 The system sorts the information by item number.

If you leave this processing option blank, the system sorts the information by item number.

## 3. Subassemblies

Use this processing option to specify whether the system displays the subassemblies. A subassembly is an assembly that is used at a higher level to make up another assembly. Valid values are:

- Blank The system excludes subassemblies from the inquiry.
- 1 The system includes subassemblies in the inquiry.

## 4. Phantom Items

Use this processing option to specify whether the system explodes the phantom to the next level and omits the display of the phantom. A phantom is normally

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defined for engineering or manufacturing purposes. Phantoms allow common parts, that may or may not be assembled, to be grouped in a bill of material structure. When viewing the bill of material, you may want to display only the subassemblies and raw material. Valid values are:

Blank The system omits the phantom items from the inquiry and displays only the subassemblies and raw material.

1 The system includes phantom items in the inquiry.

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## Printing Bill of Material Information

You can generate several reports to review bill of material information.

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### Caution

J.D. Edwards recommends that you do not change the first two data sequences from the settings in the DEMO version of these reports.

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### Topics

- Single-level bill of material report
- Multilevel bill of material report
- Where used item report

### Single-Level Bill of Material Report

*From the Periodic PDM Discrete menu (G3021), choose Single Level Bill of Material Report.*

Single Level Bill Report displays an item's first-level components. Use the processing options to print additional information such as the following:

- Phantom items
- Process items
- Subassemblies
- Component locators
- Details
- Text lines

The system retrieves the data for this report from the Bill of Material Master table (F3002).

#### **See Also**

- R30460, Single Level Bill of Material* in the *Reports Guide* for a report sample

#### **Processing Options for Bill of Material Print (R30460)**

##### **Display Tab**

Use these processing options to specify the format in which the system displays information (single level, multilevel, or multilevel indented), to define the default values that the system uses for the As Of Date and Bill of Material Type fields, and to specify whether the system sequences the information by line number or operation sequence number.

---

### **1. Inquiry Mode**

Use this processing option to specify whether the system displays the information in single level or multilevel format. The single level format shows the item's first-level components, the multilevel format shows the subassemblies and components for an item, and the multilevel indented format shows the subassemblies indented. Valid values are:

- 1 The system displays the single level format.
- 2 The system displays the multilevel format.
- 3 The system displays the multilevel indented format.

If you leave this processing option blank, the system displays the multilevel indented format.

### **4. Display Sequence**

Use this processing option to specify whether the system sequences the information by component line number or by operation sequence number. The component line number indicates the sequence of components on a bill of material. The operation sequence number indicates the number that designates the routing step in the fabrication or assembly process that requires a specified component part. Valid values are:

- 1 The system sequences by component line number.
- 2 The system sequences by operation sequence number.

If you leave this processing option blank, the system sequences by component line number.

### **3. Type Bill of Material**

Use this processing option to specify the type of bill of material that the system uses as the default value. Bill of material type is a user defined code

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(40/TB) that designates the type of bill of material. Enter the bill of material type to use or choose it from the Select User Define Code form. If you leave this processing option blank, the system uses M (manufacturing bill of material).

#### **4. Display Sequence**

Use this processing option to specify whether the system sequences the information by component line number or by operation sequence number. The component line number indicates the sequence of components on a bill of material. The operation sequence number indicates the number that designates the routing step in the fabrication or assembly process that requires a specified component part. Valid values are:

- 1 The system sequences by component line number.
- 2 The system sequences by operation sequence number.

If you leave this processing option blank, the system sequences by component line number.

---

#### **Print Tab**

Use these processing options to specify whether the system prints a second line of detail for each item, the component locations, and a detail line for the parent item.

---

### **1. Detail Line**

Use this processing option to specify whether the system prints a second line of detail for each item. This second line of detail includes data such as leadtime level and bill revision level. Valid values are:

- Blank The system prints only one line of detail for each item.
- 1 The system prints a second line of detail for each item.

### **2. Component Locators**

Use this processing option to specify whether the system prints the component locations. The component location is the specific location of a component in the assembly of an item, for example, the location of a part on a circuit board. Valid values are:

- Blank The system does not print component locations.
- 1 The system prints component locations.

### **3. Parent Item Detail Line**

Use this processing option to specify whether the system prints a line of detail for the parent item. This detail line includes data such as the drawing number. Valid values are:

- Blank The system does not print a line of detail for the parent item.
- 1 The system prints a line of detail for the parent item.

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### **Process Tab**

Use these processing options to specify if the system displays phantom items, process items, subassemblies, text lines, and purchased items; if the system consolidates component rows and calculates shrink, scrap, and yield; and the requested quantity and unit of measure as input.

If you leave any of these processing options blank, the system excludes them from the report.

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### 1. Phantom Items

Use this processing option to specify whether the system explodes the phantoms to the next level and omits the display of the phantom. A phantom is normally defined for engineering or manufacturing purposes. Phantoms allow common parts, that may or may not be assembled, to be grouped in a bill of material structure. When viewing the bill of material, you may want to display only the subassemblies and raw material. Valid values are:

- Blank The system omits the phantom items from the inquiry and displays only the subassemblies and raw material.
- 1 The system includes phantom items in the inquiry.

### 2. Process Items

Use this processing option to specify whether the system displays process items. Process items include the process, co-products, by-products, and ingredients. A discrete bill may contain a component that is produced from a process. You use this processing option when you combine discrete and process manufacturing to display a complete structure of the requirements. Valid values are:

- Blank The system excludes process items.
- 1 The system includes process items.

### 3. Subassemblies

Use this processing option to specify whether the system displays subassemblies. A subassembly is an assembly that is used at a higher level to make up another assembly. Valid values are:

- Blank The system excludes subassemblies.
- 1 The system includes subassemblies.

---

#### 4. Text Lines

Use this processing option to specify whether the system displays text lines.

Valid values are:

Blank The system excludes text lines.

1 The system includes text lines.

#### 5. Consolidate Component Items

Use this processing option to specify whether the system consolidates duplicate components. The same component may be listed in the bill of material several times, either on different subassemblies or on the same subassembly at different operations. When you use this processing option with the Subassemblies processing option, the system consolidates components at the subassembly level or for all levels of the bill of material. When viewing the consolidated components, the quantity required is accumulated for duplicate components. Valid values are:

Blank The system displays individual occurrences of duplicate components.

1 The system consolidates duplicate components.

#### 6. Purchased Item

Use this processing option to specify whether the system explodes to the next level of purchased items in the bill of material report. Valid values are:

Blank The system excludes lower-level purchased items.

1 The system includes lower-level purchased items.

#### 7. Shrinkage

Use this processing option to specify whether the system adjusts the requested quantity for shrinkage. Shrinkage is the planned loss of a parent item caused

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by factors such as breakage, theft, deterioration, and evaporation. Valid values are:

Blank The system does not adjust the requested quantity for shrinkage.

1 The system adjusts the requested quantity for shrinkage.

#### 8. Scrap

Use this processing option to specify whether the system adjusts the extended quantity for scrap. Scrap is unusable material that results from the production process. It is material outside of specifications and of such characteristics that rework is impractical. Valid values are:

Blank The system does not adjust the extended quantity for scrap.

1 The system adjusts the extended quantity for scrap.

#### 9. Yield

Use this processing option to specify whether the system adjusts the extended quantity for yield. Yield is the ratio of usable output from a process to its input. Valid values are:

Blank The system does not adjust the extended quantity for yield.

1 The system adjusts the extended quantity for yield.

### **11. Unit of Measure as Input**

Use this processing option to specify the unit of measure of the parent item in which the requested quantity is entered.

### **10. Requested Quantity**

Use this processing option to specify the required quantity of the parent item in the bill of material inquiry.

## Multilevel Bill of Material Report

*From the Periodic PDM Discrete menu (G3021), choose Multi Level Bill of Material Report.*

The Multi Level Bill of Material Report lists all the levels of an item's components. Run this report if you want to view all subassemblies of the components for an item. Use the processing options to print additional information such as the following:

- Phantom items
- Process items
- Subassemblies
- Component locators
- Details
- Text lines

The system retrieves the data for this report from the Bill of Material Master table (F3002).

### See Also

- Single-Level Bill of Material Report* to review the processing options

## Where Used Item Report

*From the Periodic PDM Discrete menu (G3021), choose Where Used Item Report.*

The Where Used Item report lists the parent assemblies that contain a specific component. Run this report if you want to view all the subassemblies of the components for an item, and the indented level of these subassemblies. Use the processing options to display the data by single level, multilevel, or indented, and to specify whether to include the second line of detail.

The system retrieves the data for this report from the Bill of Material Master table (F3002).

## Processing Options for Material Where Used List (R30420)

---

### Format Option

1. Select the Mode or Style of report to be created: 1 = Single Level; 2 = Multi- Level; 3=Multi-Level Indented

### Mode of Report

2. Enter a '1' to print a second line of detail on the report. If left blank, only one line of detail will be printed.

### Print Line of Detail

---

## Changing Multiple Bills of Material

*From the Advanced Product Data Management menu (G3031), choose Where Used Update.*

You change multiple bills of material by running the Where Used Update program. You can use this program to perform mass updates to information such as the following:

- Replacing one component item with another
- Deleting an item

- Changing effective dates for an item
- Changing the quantity per assembly for an item
- Changing the issue type code
- Changing the unit of measure

You use Data Selection to specify the items that you want to change. You then use processing options to define the change. The system locates all occurrences of the item (as a component) and updates the bills of material. You can also update a component with past or future effective dates.

If you want to make changes to a bill of material and remove the old records, run the program twice. First run the program to create the new records, and then run it again to delete the old ones.

The system stores changes in the Bill of Material Master table (F3002). The existing parts lists, MRP calculations, and costing information are not automatically updated.

In addition, the program updates the following fields in other tables:

- Low Level Code (in the Item Master table, F4101)
- Net Change Flag (in the Item Balance Tag table, F4102J)

You can run this program in either proof or final mode. In proof mode, the system generates a report of the proposed changes for your review but does not update the data. In final mode, the system updates the data and generates a report identifying the changes.

---

### **Caution**

You can potentially change many bills of material in your system if you run this program. J.D. Edwards recommends that you run this program in proof mode first to verify your choices before running it in final mode to change the data. You might want to restrict access to this program.

---

### **Before You Begin**

- ❑ Review your bills of material to verify that the item that you are updating is active (within the effective dates) and appears in at least one bill of material. See *Locating Bills of Material*.

### **Topics**

- ❑ Features
- ❑ Master routing instruction
- ❑ Batch routing instruction
- ❑ Alternate operation

### **See Also**

- ❑ *R30520, Where Used Update* in the *Reports Guide* for a report sample

## **Processing Options for Where Used Bill of Material Update (R30520)**

---

### **Defaults 1**

1. Enter the Branch/Plant location to select for Bill of Material changes. This is a required field; if left blank, no processing will be performed.

### **Branch/Plant**

2. Enter the new Component Item number. If left blank, no change will be made to the Component Item number.

### **New Component Item Number**

3. Enter the new Quantity Per amount. If left blank, no change will be made to the Quantity Per amount.

### **New Quantity Per**

4. Enter the new Quantity Per Unit of Measure. If left blank, no change will be made to the Quantity Per Unit of Measure.

### **New Unit of Measure**

### **Defaults 2**

1. Enter the new Effective From Date. If left blank, today's date will be used.

### **New Effective From**

2. Enter the new Effective Thru Date. If left blank, no change will be made to the Effective Thru Date.

### **New Effective Thru Date**

3. Enter the new Issue Type Code. If left blank, no change will be made to the Issue Type Code.

### **New Issue Type Code**

### **Process**

1. Enter a "1" if this is to be run in Final Mode. If left blank, the program will be run in Proof Mode.

### **Final Mode**

2. Enter a "1" to DELETE the existing record(s) from the BOM file. No updating will be performed when Delete is selected.

### **Delete Mode**

### **Edits**

1. Enter a "1" to validate the new component against the Item Branch file (F4102). If left blank, the new item will not be validated.

### **Item Branch Validation**

---

---

# Work Centers and Routing Instructions

## Work Centers and Routing Instructions

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After you have defined an item's components using a bill of material, you must specify where each operation occurs and the sequence of operations that is necessary to manufacture the item. Work centers consist of people and machines where routing operations occur. Routing instructions define the operations that are required to produce an item, and the leadtime for an item at each routing instruction step.

### Topics

- Working with work centers
- Working with routing instructions
- Working with leadtimes

## Work Centers

A work center consists of people and machines. It is a specific production facility on the shop floor where the routing instruction operations occur. For each work center, you can define the following:

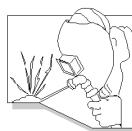
- Number, description, and associated business unit
- Queue and move times
- Operator, machine, and hours-per-day capacity
- Rates for setup, labor, machine, and overhead

Examples of work centers include lathe, drill, heat treat, mill, and cut-off.

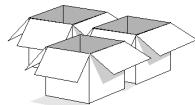
### Work Center (Where you build the item)



Operation 1



Operation 2



Operation 3

A work center enables you to do the following:

- Set up a dispatch group for departments that perform similar operations.
- Specify if an operation is a reporting point for material, or labor, or both.
- Define crew size per work center.

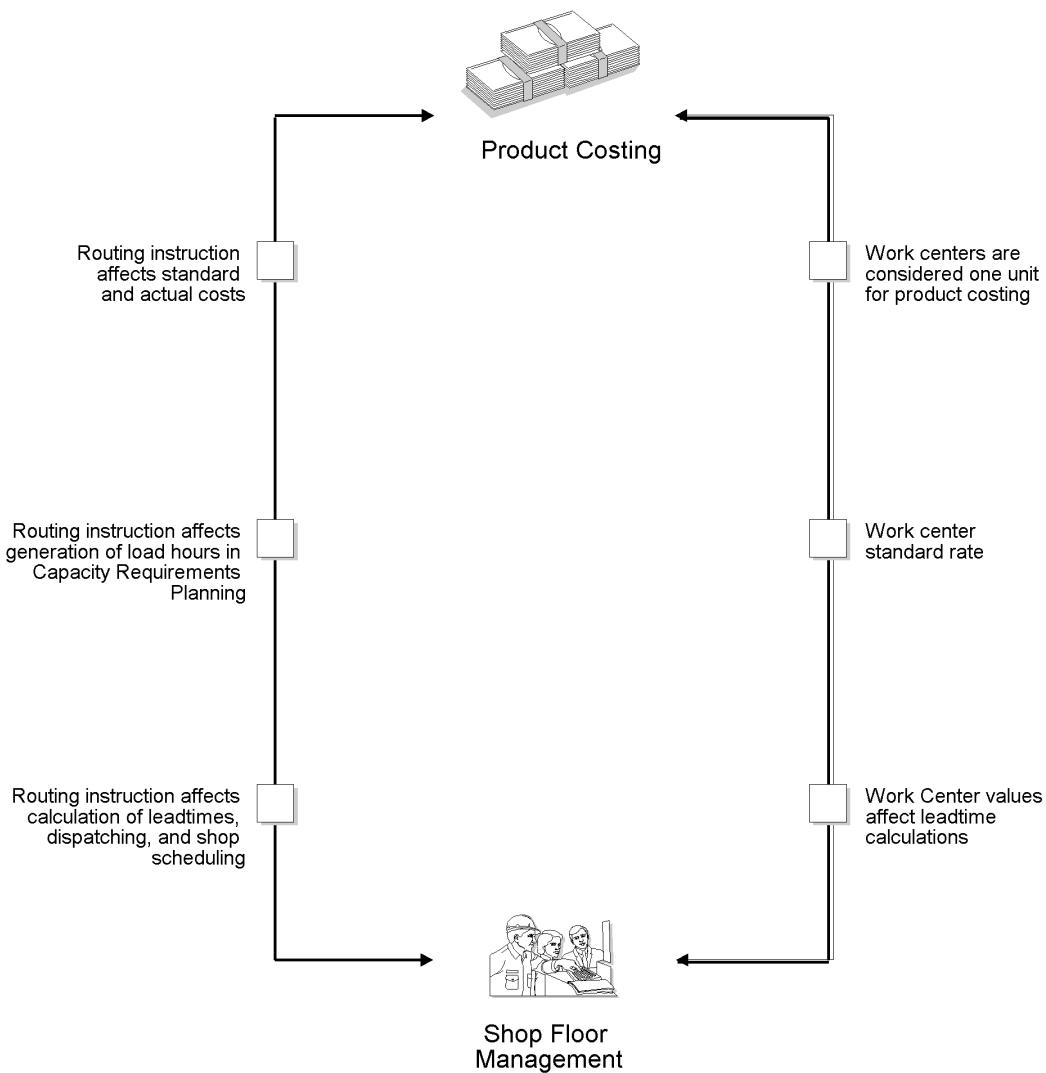
- Specify the work center efficiency for Product Costing.
- Define work center labor, machine, and setup rates.

### Topics

- Work center system integration
- Work center arrangement

## Work Center System Integration

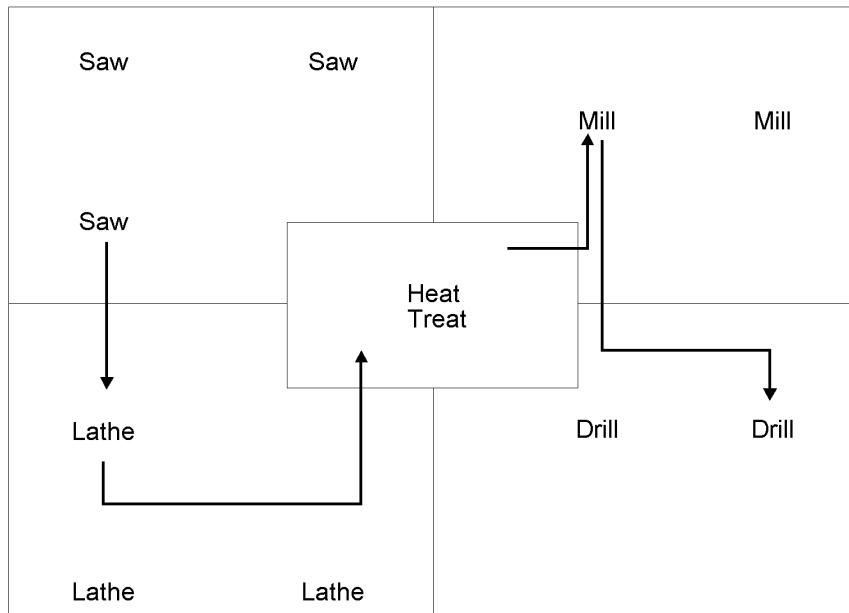
The following graphic illustrates how work centers in the Product Data Management system are integrated with other manufacturing systems.



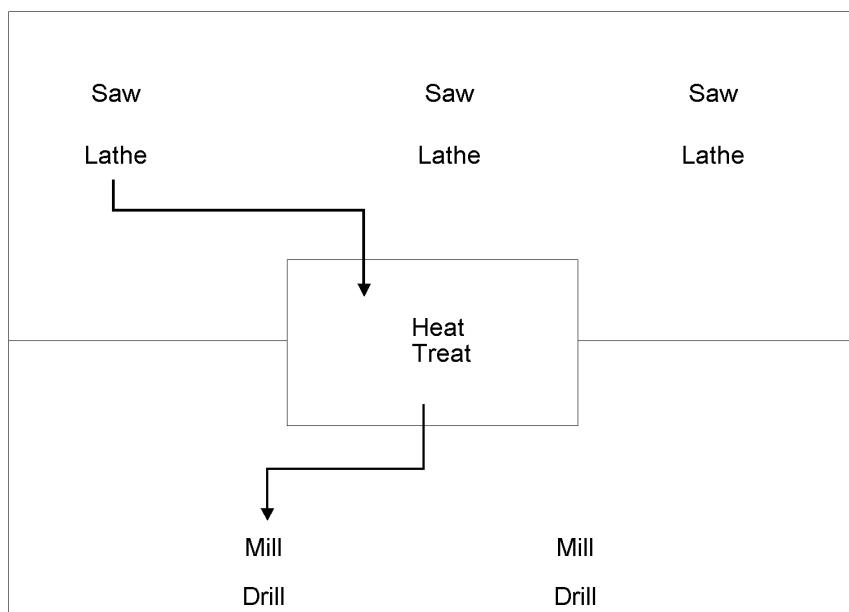
## Work Center Arrangement

You should arrange your work centers so that work in process moves efficiently from one area to the next.

In the following example, the same types of equipment are located in the same areas. This functional layout provides an indirect path that might produce bottlenecks in the workflow.



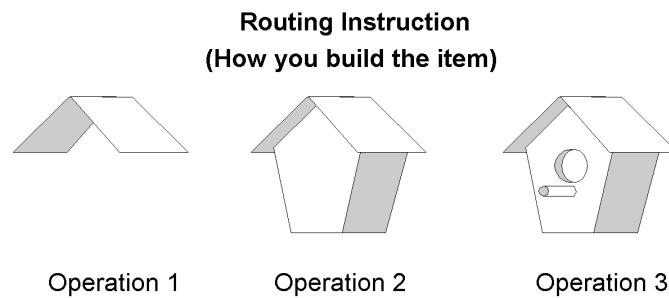
In the following example, equipment is grouped by operation. This structured flow layout provides a direct path and ensures efficient workflow.



## **Routing Instructions**

After you have defined the item's components (bill of material) and where each operation occurs on the factory floor (work center), you must define the sequence of operations that is necessary to manufacture the item (routing instructions).

Routing instructions are critical for the Shop Floor Management, Capacity Requirements Planning, and Product Costing systems and for measuring production efficiency.



For each item, you define routing instructions that include the following information:

- Production process
- Tool requirements
- Operator skill level
- Inspection criteria
- Operations
- Sequence
- Applicable work centers
- Standards for setup, machine, and labor times

## **Features**

Specific routing instruction features enable you to do the following:

- Use the effective from and thru dates to enter and date routing instruction changes as they occur.
- For multiplant environments, set up identical or different routing instructions for an item by plant.
- Define the sequence of operations.
- Add multiline descriptions for each operation.

- Record a tool identification number for each operation.
- Attach descriptive text to an operation.
- Define outside operations.
- Use master routing instructions to create one routing instruction for parts that use the same manufacturing steps.
- Use batch routing instructions for products that are commonly made in batch quantities.

## **Master Routing Instruction**

The master routing instruction allows you to create one routing instruction for many parts that use the same manufacturing steps, which eliminates duplicate routing instructions. For example, during the manufacture of furniture, the frame and fabric might change, but the routing instruction is the same.

Product Data Management uses the master routing instruction for an item in the following situations:

- You chose Master Routing on Manufacturing Constants for the branch/plant where the item will be manufactured.
- You set up the master routing instruction as an item.
- You defined a cross-reference for the item using the master routing instruction.
- You defined an item routing instruction for the item of the master routing instruction.

## **Batch Routing Instruction**

Batch routing instructions are useful in industries such as pharmaceuticals, foods, or petroleum, where products are manufactured in fixed quantities or batches. You can create different batch routing instructions for the same item by branch, type, batch quantity produced, or a combination of these items.

## **Alternate Operation**

You can define an alternate routing instruction operation to be performed, such as using drill B if drill A is not operational. An alternate routing instruction operation is information for shop floor personnel. The system ignores it during product costing and backscheduling.

## **Reviewing Operations by Work Center**

You can review operations by work center to:

- Plan capacity, resource, and manpower.
- Evaluate equipment needs.
- Display which items include routing instruction operations at the work center.

## Working with Work Centers

You use work centers to define each production facility on the shop floor where routing instruction operations occur. Once you set up the work centers, you can enter costing and accounting information so that you can generate reports and journal entries.

The system stores work center information in the Work Center Master table (F30006).

### Topics

- Entering work centers
- Entering costing and accounting information
- Reviewing operations by work center (optional)

### Before You Begin

- Define all work centers as business units. See *Creating Business Unit Structures* in the *General Accounting Guide*.

### See Also

- Generating Resource Units Automatically* in the *Manufacturing and Distribution Planning Guide* for information about refreshing resource units for work centers

## Entering Work Centers

Enter work center information that corresponds to the facilities on your shop floor, such as dispatch group, pay point, crew size, and queue, move, and replenishment hours.

If you are using the J.D. Edwards Enterprise Asset Management system, you enter work center information that corresponds to your maintenance labor groups.

### ► To enter work centers

---

*From the Daily PDM Discrete menu (G3011), choose Enter/Change Work Center.*

*Alternatively, for Enterprise Asset Management, from the Planning Setup menu (G1346), choose Work Center Revision.*

Work Center	Description	Dispatch Group	Description	Location Branch	Critical WC

1. On Work With Work Centers, click Add.

Work Center	200-101	Weld
Work Center Master	Capacity & Shifts	Hours & Efficiency
Dispatch Group	200-100	Welding
Location - Issue		
Location Branch		
Work Center Type	0	Crew Size 1.0
Pay Point	0	Not a backflush work center
Prime Load	B	Run Labor plus Setup Labor
Critical W/C	3	Critical W/C in RRP & RCCP/CRP
		Resource Offset

2. On Work Center Master Revisions, complete the following field in the header area:
  - Work Center
3. On Work Center Master Revisions, click the Work Center Master tab, and complete the following fields:
  - Dispatch Group
  - Location - Issue
  - Location Branch
  - Work Center Type
  - Pay Point
  - Prime Load
  - Critical W/C
  - Crew Size
  - Number of Machines
  - Number of Employees
  - Resource Offset
4. Click the Hours & Efficiency tab, complete the following fields, and then click OK.
  - Queue Hours
  - Move Hours
  - Replen. Hrs.
  - Efficiency
  - Utilization

### **Processing Options for Work Center Revision (P3006)**

---

#### **Interop**

1. Enter the transaction type for the interoperability transaction. If left blank, outbound interoperability processing will not be performed.

#### **Type - Transaction**

2. Enter a '1' to write before images for Outbound change transactions. If left blank, only after images will be written.

#### **Before Image Processing**

#### **Versions**

Manufacturing Constants (P3009)

Business Units (P0006)

---

## Entering Costing and Accounting Information

After you enter a work center, you can enter simulated rates for machine and labor hours. The Product Costing and Manufacturing Accounting systems use these values to generate reports, cost rollups, and journal entries. The Cost Rollup program uses all of these values to calculate the simulated cost.

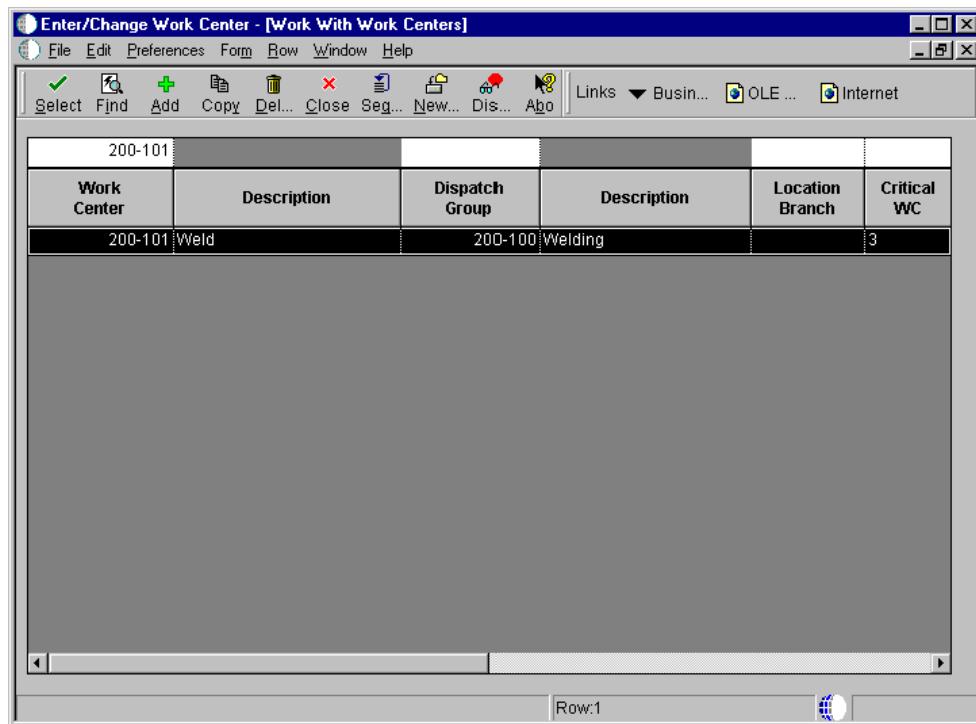
You can update the simulated rates but not the frozen values. The system updates frozen values when you run Frozen Update.

### ► To enter costing and accounting information

---

*From the Daily PDM Discrete menu (G3011), choose Enter/Change Work Center.*

*Alternatively, for Enterprise Asset Management, from the Planning Setup menu (G1346), choose Work Center Revision.*



1. On Work With Work Centers, complete the following field and click Find:
  - Work Center
2. Choose the work center, and then choose Rates from the Row menu.

J D EDWARDS

Select Workspace: Active Foundation

Active Foundation

Work With Work Center Rates

Select Find Add Copy Delete Close Row Tools

Work Center	Branch/Plant
200-101	D30

Customize Grid

Branch/Plant	Work Center	Description	Cost Method	Description
D30	200-101 Weld	07	Standard	

3. On Work With Work Center Rates, click Add.

J D Edwards

Select Workspace: Active Foundation

Active Foundation

Work Center Rate Revisions

OK Cancel Tools

Work Center	Branch/Plant
200-101	D30

Cost Method
07

Dispatch Group
200-100

	Simulated	Frozen
Direct Labor	12.00	12.00
Setup Labor	12.00	12.00
Labor Variable O/H	25.00	25.00
Labor Fixed O/H	25.00	25.00
Machine Run	10.00	10.00
Machine Variable O/H	10.00	10.00
Machine Fixed O/H	10.00	10.00

\* O/H values are shown in percents

4. On Work Center Rate Revisions, complete the following fields and click OK:

- Cost Method
- Direct Labor
- Setup Labor
- Labor Variable O/H
- Labor Fixed O/H
- Machine Run
- Machine Variable O/H
- Machine Fixed O/H

5. Click Cancel.

6. On Work Center Rates, click Find to confirm the new information.

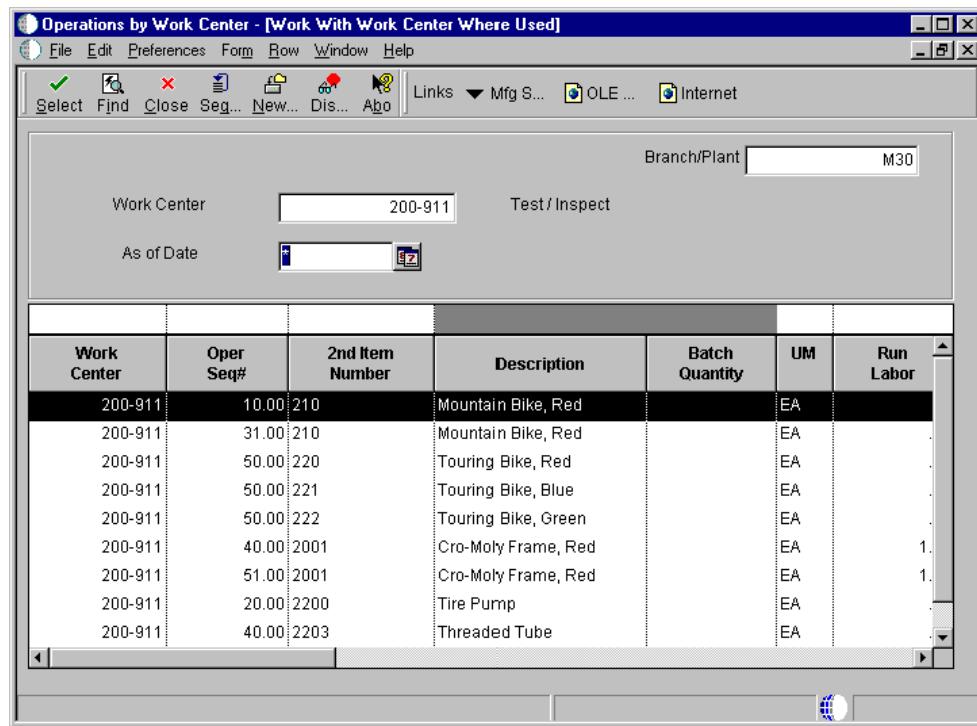
#### See Also

- Updating Frozen Costs in the Product Costing and Manufacturing Accounting Guide* for more information about updating frozen amounts
- Entering Work Centers* to review the processing options for Enter/Change Work Center

#### ► To review operations by work center

---

*From the Daily PDM Discrete menu (G3011), choose Operations by Work Center.*



1. On Work With Work Center Where Used, complete the following fields and click Find:
  - Branch/Plant
  - Work Center
2. Choose a work center and click Select.

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Work Center	Oper Seq#	Description	Run Labor	Run Machine	Setup Labor	Cons Prod	Queue Hours	Move Hours	Line/Cell	Effective From
200-901	10.00	Assembly	0.50	0.00	0.00	Cons	0.00			04/04/97
200-901	20.00	Assembly	0.25	0.00	0.00	Cons	0.00			04/04/97
200-901	30.00	Assembly	1.00	0.00	0.00	Cons	0.00			04/04/97
200-901	40.00	Assembly	1.00	0.00	0.00	Cons	0.00			04/04/97
200-911	50.00	Test/ Inspect	0.25	0.00	0.00	Cons	0.00			04/04/97
200-920	60.00	Package	0.25	0.00	0.00	Cons	0.00			04/04/97

3. On Enter Routing Information, review the following fields that display work hour information:
  - Run Labor
  - Run Machine

## Working With Routing Instructions

Use routing instructions to define the sequence of operations necessary to manufacture an item.

Routing instruction information is stored in the Routing Master table (F3003).

### Topics

- Entering routing instructions
- Entering outside operations (optional)
- Updating component scrap (optional)
- Reviewing routing instruction information (optional)
- Printing routing instruction information (optional)

## Before You Begin

- ❑ If you use batch routing instructions, define your routing types and set the processing options for the Work Order Entry and Enter/Change Routing programs to activate routing batch and type functions.

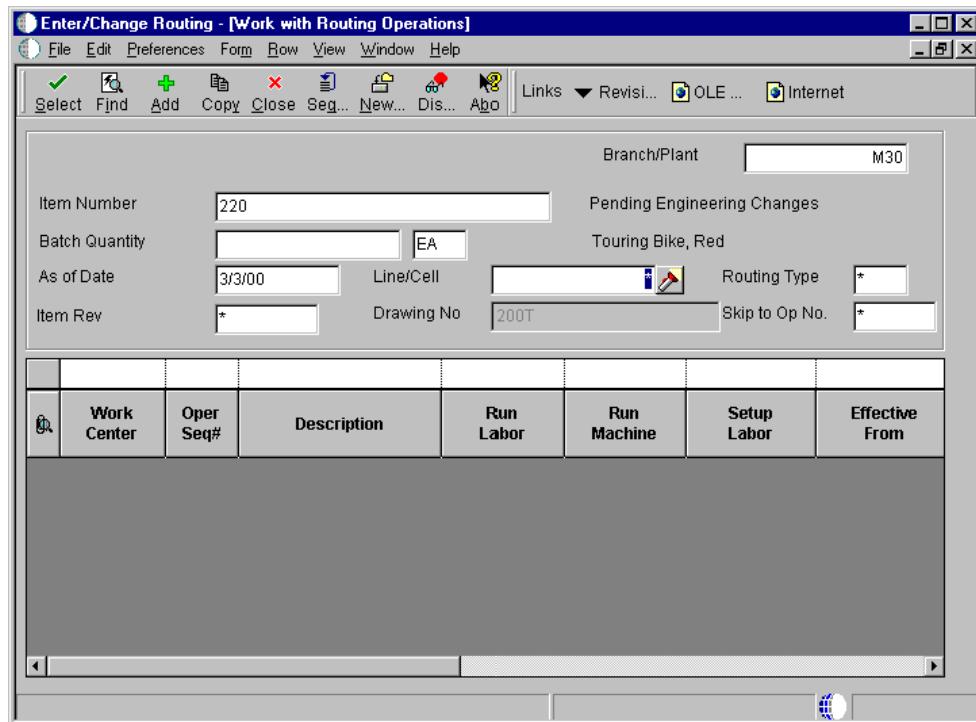
## Entering Routing Instructions

After you enter a bill of material, you must define the routing instruction information for each item and for each branch/plant.

### ► To enter routing instructions

---

*From the Daily PDM Discrete menu (G3011), choose Enter/Change Routing.*



### 1. On Work with Routing Operations, complete the following fields:

- Branch/Plant
  - Item Number
  - Line/Cell
  - Routing Type
  - Item Rev
  - Batch Quantity
2. Click Add.

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Work Center	Oper Seq#	Description	Run Labor	Run Machine	Setup Labor	Cons Prod	Queue Hours	Move Hours	Line/Cell	Effective From

3. On Enter Routing Information, complete the following field:

- Work Center

4. Complete the following optional fields:

- Oper. Seq.
- Description
- Run Labor
- Run Machine
- Setup Labor
- Move Hours
- Cons Prod
- Queue Hours
- Effective From
- Effective Thru
- Crew Size

- Supplier
- Cost Type
- Type Oper
- Equip No
- Standard Desc.
- P C
- Craft Code
- PO (Y/N)
- Next Oper
- Yield %
- Cum Yield %
- Percent of Overlap
- Time Basis
- Consuming Location
- Resource Units
- Capacity UOM

5. Click OK.

### **Processing Options for Work With Routing Master (P3003)**

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#### **Display**

1. Enter a '1' next to the following fields to activate the field on the form.

#### **Line/Cell**

#### **Routing Type**

#### **Batch Quantity**

#### **Defaults**

1. Enter the values to preload to the screen at initial inquiry.

#### **Type of Routing**

#### **Process**

1. Select the screen mode ('0' = Inquiry, '1' = Revise).

#### **Mode - Processing**

2. Enter a '1' to update the component operation scrap percent in the Bill of Material for the components on the operation and the Cumulative Yield Percent on the Routing, when updating the operation yield percent.

#### **Update**

#### **Interop**

1. Enter the transaction type for the interoperability transaction. If left blank, outbound interoperability processing will not be performed.

#### **Transaction Type**

2. Enter the version of "Process Outbound Routings" (R3003Z1O). If left blank, ZJDE0001 will be used.

#### **Outbound Processing Version**

2 Enter a '1' to write the before image for a change transaction. If left blank, no before image will be

---

written.

#### Before Image Processing

##### Versions

Enter the version for each program. If left blank, version ZJDE0001 will be used.

1. Bill of Material Revision (P3002)
  2. Work With Assets (P1204)
  3. Work With Item Master (P4101)
- 

## Entering Outside Operations

You can define an outside routing operation for an operation that is to be performed on an item by an external supplier.

If you manually link the routing instruction to a work order, the system includes alternate routing instruction steps with the work order routing instructions. If the Process Work Orders program links the routing instruction, then the system does not include the routing instruction steps.

### See Also

- Entering Routing Instructions* to review the processing options for Enter/Change Routing

### ► To enter outside operations

---

*From the Daily PDM Discrete menu (G3011), choose Enter/Change Routing.*

1. On Work with Routing Operations, complete the following fields and click Find:
  - Branch/Plant
  - Item Number
  - Line/Cell
  - Routing Type
2. Choose an item and click Select.
3. On Enter Routing Information, complete the following fields for the outside operation:
  - Supplier
  - PO (Y/N)
  - Cost Type
4. Click OK.

## Updating Component Scrap

*From Advanced Product Data Management (G3031), choose Planned Yield Update.*

During manufacturing, material loss often occurs at operations. Examples of loss include evaporation or items damaged during move time. You can update the amount of materials and labor hours to account for operation loss by running Planned Yield Update.

For the operations that you choose, this program uses the operational planned yield percent to update the cumulative percent for the routing instruction, and the operation scrap percent for the bill of material.

You enter the operational planned yield percent value on the routing instruction. This value represents the planned output yield percent for a step. The system uses this value to adjust the operation scrap percent for the components at that step. Then Material Requirements Planning uses the step scrap percent along with the existing component scrap percent to plan component demand.

The system updates the cumulative planned yield percent on the routing instruction. This value represents the item quantity that an operation is expected to produce. It is the ratio of usable output to input quantity. This value can be less than 100 percent due to loss at one or more operations. The system uses this value to increase the labor hours in order to make up for loss within the operation, or to decrease labor hours if the cumulative planned yield percent is higher than 100 percent.

The system updates operation scrap percent on the bill of material. The operation scrap percent represents the expected amount of scrap material created at each operation. The system calculates this value by compounding the yield percentages from the last operation to the first operation. The system uses this value to increase or decrease the amount of materials to account for loss within the operation.

#### **Example: Component Scrap**

Step	Operational Planned Yield %	Cumulative Planned Yield %	Operation Scrap %
40	80	80%	$(100/80) - 100 = 25\%$
30	90	$.80 \times .90 \times 100 = 72\%$	$(100/72) - 100 = 39\%$
20	100	$.72 \times 100 = 72\%$	$(100/72) - 100 = 39\%$
10	95	$.72 \times .95 \times 100 = 68\%$	$(100/68) - 100 = 47\%$

#### **Processing Options for Planned Yield Update (R3093)**

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##### Defaults

Enter the "As of" date for the Planned Yield Update. If left blank the current date will be used.

Date 01

---

#### **Reviewing Routing Instruction Information**

Use Routing Inquiry to verify operations, labor, and setup hours of a routing instruction.

When you have defined more than one routing instruction for an item, the system displays the Routing Selection Inquiry form, on which you can select a routing to work with.

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##### **► To review routing instruction information**

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*From the Daily PDM Discrete menu (G3011), choose Routing Inquiry.*

**Routing Inquiry - [Work with Routing Operations]**

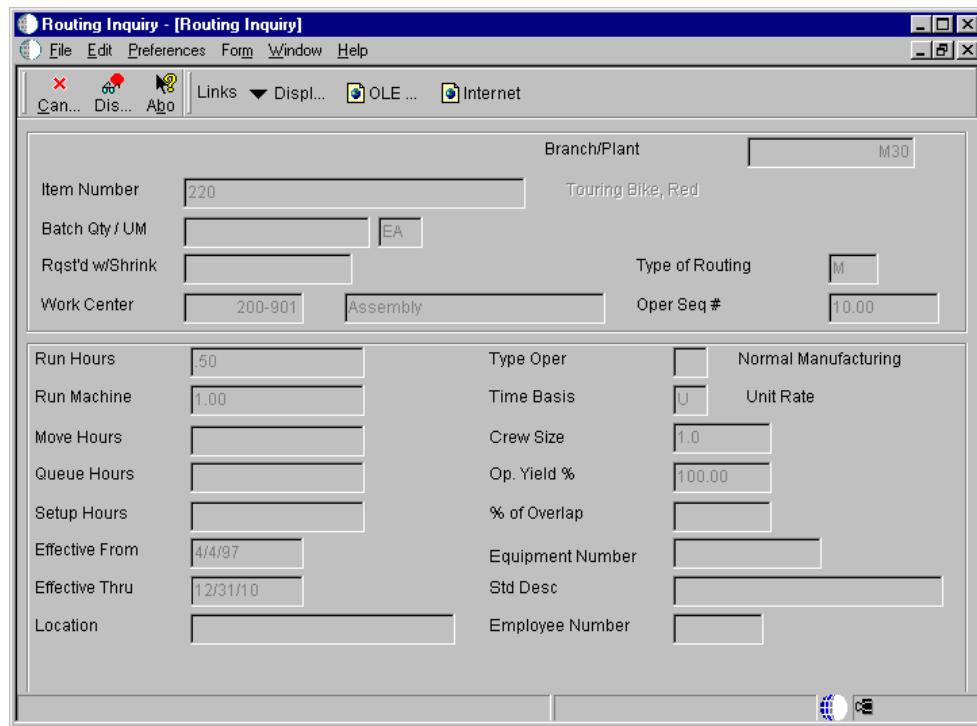
File Edit Preferences Form Row View Window Help

Select Find Add Copy Close Seg... New... Dis... Abo Links Revisi... OLE... Internet

Item Number	220	Pending Engineering Changes
Requested Qty	EA	Touring Bike, Red
As of Date	3/3/00	Line/Cell
Requested w/Shrink	Drawing No	200T
	Skip to Op No.	*

	Work Center	Oper Seq#	Description	Calculated Run Labor	Calculated Run Machine	Setup Labor	Eff Fi
	200-901	10.00	Assembly	.50	1.00		
	200-901	20.00	Assembly	.25			
	200-901	30.00	Assembly	1.00			
	200-901	40.00	Assembly	1.00			
	200-911	50.00	Test / Inspect	.25			
	200-920	60.00	Package	.50			
	200-201	61.00	Filter				

1. On Work with Routing Operations, complete the following fields and click Find:
  - Branch/Plant
  - Item Number
2. Choose an operation, and then choose Inquiry from the Row menu.



3. On Routing Inquiry, the following fields display leadtime information:

- Run Hours
- Run Machine
- Setup Hours

#### See Also

- *Entering Routing Instructions* to review the processing options for Routing Inquiry

#### Printing Routing Instruction Information

*From the Periodic PDM Discrete menu (G3021), choose Routing Instructions Report.*

Use the Routing Instructions report to print all routing instruction operations for an item.

The system retrieves the data for this report from the Routing Master table (F3003).

---

#### Caution

J.D. Edwards recommends that you do not change the order of the first three data selections.

---

## **Working with Leadtimes**

Determining leadtime is an essential part of any manufacturing or scheduling process. For any product that you purchase or manufacture, you encounter a time lag between when you order or start the item and when you receive or finish it. To account for the lag, you must estimate the extra time and allow for it in your planning.

Actual leadtimes display the leadtimes as updated in the Item Branch table by the Leadtime Rollup program. Calculated leadtimes display how many days you must start to manufacture a part prior to the need date of the parent.

First, define leadtimes for an item at each routing instruction step, then run the Leadtime Rollup program to update leadtime information in the Item Manufacturing Data table.

The system stores leadtime information in the Bill of Material Master table (F3002).

### **Topics**

- Reviewing leadtimes
- Generating leadtimes

### **See Also**

- Leadtimes*

## **Reviewing Leadtimes**

You can review leadtimes to compare both actual and calculated leadtimes for an item.

### **► To review leadtimes**

---

*From the Daily PDM Discrete menu (G3011), choose Leadtime Inquiry.*

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Level	2nd Item Number	Description	Actual Level	Actual Mfg	Actual Cum	Quantity	UM	F	V	Issue Code
1	2001	Cro-Moly Frame, Red	8	8	8	1 EA	V	U		
2	2004	Cro-Moly Frame	6			1 EA	V	I		
..3	9001	25 mm Cro-Moly Tubing	25			152 CM	V	B		
..3	9002	50 mm Cro-Moly Tubing	25			112 CM	V	B		
..3	9004	50 mm Cro-Moly Bar	25			10 CM	V	B		
2	9011	Paint, Red	4			225 ML	V	B		
2	9031	Primer	4			225 ML	V	B		
2	9026	Acid	2			3 LP	F	I		
2	2005	Chain Stay	2		2	2 EA	V	B		
..3	9003	16 mm Cro-Moly	25			203 CM	V	B		

- On Leadtime Inquiry - Multi Level Indented, click the Leadtime Inquiry tab, complete the following fields, and then click Find:
  - Branch
  - Item Number
- Review the following fields in the header area:
  - Level
  - Manufacturing
  - Cumulative
  - Type of Bill
- From the View menu, you can change how the system displays the bill of material:
  - Single Level
  - Multi Level
  - Multi Level Indented

#### See Also

- Locating Bills of Material to review the processing options for Leadtime Inquiry

## **Generating Leadtimes**

*From the Advanced PDM menu (G3031), choose Leadtime Rollup.*

You must generate leadtimes for the Material Requirements Planning and Capacity Requirements Planning systems. The Leadtime Rollup program calculates planned level leadtimes for manufactured items and updates them on Item Manufacturing Data in the Item Branch table (F4102). This program calculates the following:

- Queue and setup hours
- Leadtime per unit
- Level, manufactured, and cumulative leadtimes for selected items

---

### **Caution**

You cannot run this program in proof mode. It updates the records according to the processing options you choose. Changes to leadtimes will affect the Materials Requirements Planning and Capacity Requirements Planning systems. Run this program without any data selection and with no changes to data sequencing.

---

---

## **Processing Options for Leadtime Rollup (P30822)**

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### Defaults

1. Enter the Branch/Plant to be processed or leave it blank for all Branches.

### Branch

2. Enter date for routing effectivity. Blanks will default to today's date.

### As of Date

3. Calculate Leadtime Level Queue Hours

Blank - Use Work Center Hours

1 - Use Work Hours per Day

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## Setup

### **Repetitive Manufacturing Setup**

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Repetitive (or rate-based) manufacturing of discrete products uses manufacturing techniques that are associated with achieving just-in-time or flow line production. The fundamental paradigm shift is in terms of the continuous production of a mix of similar items on a specialized flow line rather than the traditional work order with its fixed quantity and due date of a single item. Repetitive manufacturing is usually the preferred method with families of products that have minor variation among products with a constant, high-volume demand, such as cameras and electronics.

Repetitive manufacturing dedicates entire production lines to a family of products. These product families share similar components and routing instructions. Generally, these products are manufactured in a continuous process, which requires less inventory movement to and from the production line. Work center setup and changeover times among related products are minimized.

Equipment and work centers are designed to manufacture a family of products and allow quick setup changes. Repetitive environments define production in terms of units per hour. The capacity for the line is determined by one constraining operation. You define the constraining operation as the slowest cell in the line. Scheduling this line requires the tools to schedule, sequence, and balance production. It is very important to balance the line so that the workload is distributed evenly along the production line and you can produce a mix of products with different constraining operations. This product mix, when properly sequenced, allows the production line to operate consistently and efficiently.

The product mix is typically not a large batch of one item. Instead, the mix is the integration of different variances within the product family members through the production line in an order that optimizes the production line. For example, when manufacturing cameras, the cast body remains the same while certain components vary, such as top and bottom covers. The production line can be mixed by ordering the production of cameras as follows: 3 black, 2 silver, 1 black with silver trim, 3 black, 2 silver, 1 black with silver trim, and so forth. This product mix meets production demand.

To supply the product line, inventory can be pulled from stock or another work center and delivered as needed to the consuming operation or delivered directly to the line by external suppliers. While requirements for material are driven by demand, movement is controlled by visual cues called kanbans. The kanban authorization to produce is generated by actual demand.

Repetitive manufacturing has the following benefits:

- Decreases work-in-process inventory
- Increases responsiveness to the customer's requirements
- Reduces leadtime
- Ties inventory consumption to production completion
- Ties frequent supplier deliveries to actual production demand
- Minimizes non-value-added activities

---

### **Caution**

All items that are produced in a repetitive manufacturing environment must have an Order Policy Code value of 5 on the Manufacturing Data program. This value defines the item as a rate scheduled item.

---

### **Topics**

- Setting up shift information
- Setting up kanbans

### **Example: Manufacturing Bicycle Frames**

The following table illustrates a production line operating in a repetitive manufacturing environment. This production line manufactures three aluminum bicycle frames for three different bicycles.

Consuming Location	Material	Operation Number	Work Center	Description
LA.10	50mm aluminum tubing	10	R-112	Cut to length
		20	R-121	Mill ends
		30	R-122	Drill mounting holes and pin
LA.10	Rear assembly, touring	40	R-112	Cut to length
		50	R-121	Mill ends
		60	R-134	Form rear assembly
LA.70	Head tube light Bottom tube	70	R-101	Weld frame
LA.80	Front fork, touring	80	R-103	Inspect welds

### **Repetitive Terminology**

The following topics describe terminology with which you should be familiar before working with repetitive manufacturing:

- Production line
- Bill of material
- Routing instruction

- Kanban
- Item-to-line relationship

## Production Line

A production line is a sequence of operations arranged to produce a family of products. The production line is defined as a work center. The operations that make up the production line may or may not be work centers. You defined these in the routing instruction. The capacity of the production line is determined by the constraining operation within the production line.

## Bill of Material

For items produced in a repetitive manufacturing environment, the operation sequence number on the bill of material is crucial to ensure that the components are delivered to the production line at the operations for which they are needed. Because the line is setup to run in a continuous fashion, components typically are set up to be consumed through backflushing, at a specific paypoint, or upon completion.

Item Number	Description	Quantity	UM	F V	Is Cd	Stkg Typ	Ln Ty
2001	Cro-Moly Frame, Red	999	EA	V	U	M	S
2006	Touring Fork	1	EA	V	U	P	S
2008	Head Set	2	EA	V	U	P	S
2009	Crank	2	EA	V	U	P	S
2002	Cro-Moly Frame, Two Tone	1	EA	V	U	P	S
2011	Chain, Std	1	EA	V	U	P	S
16780-100	MD96 Test Mfg comp	1	EA	V	U	M	S
2013	Shift Kit	1	EA	V	U	P	S

## Routing Instruction

The relationship between the production line and the operations or work centers that the line contains are defined in the routing instructions for the parent item. Each operation is tied to its production line by the line or cell number in the Line/Cell field on the routing instruction. The consuming location is the inventory location from which the production line pulls components necessary to produce the parent at a particular operation. The consuming location must be identified in the routing instruction to ensure inventory is always available to the line. When the system backflushes and relieves inventory from the consuming location, it triggers the kanban, a visual cue, to replenish inventory as materials are consumed.

**Enter/Change Routing - [Enter Routing Information]**

File Edit Preferences Form Row View Window Help

OK Del... Can... New... Dis... Abo Links Comp... OLE... Internet

Item Number	220	Branch/Plant	M30				
Batch Quantity		Touring Bike, Red					
As of Date	3/3/00	Line/Cell	*				
Item Rev.		Drawing No	200T				
Work Center	Oper Seq#	Description	Run Labor	Run Machine	Setup Labor	Cons Prod	Que Hou
200-901	10.00	Assembly	.50	1.00	0.00	Cons	
200-901	20.00	Assembly	.25	0.00	0.00	Cons	
200-901	30.00	Assembly	1.00	0.00	0.00	Cons	
200-901	40.00	Assembly	1.00	0.00	0.00	Cons	
200-911	50.00	Test / Inspect	.25	0.00	0.00	Cons	
200-920	60.00	Package	.25	0.00	0.00	Cons	
200-201	61.00	Filter	0.00	0.00	0.00		
200-999	62.00	Outside Operation	0.00	0.00	0.00		
	0.00		0.00	0.00	0.00		

## Kanban

Kanban is a method of just-in-time production that uses standard containers or lot sizes. It is a pull system in which work centers or locations signal that they wish to withdraw parts from feeding work centers, inventory locations, or suppliers. This signal alerts manufacturing to build, or suppliers to furnish, the required part in the standard lot size that is defined by the Kanban Master table (F3016).

## Item to Line Relationship

"Item-to-line" defines the relationship between an item produced in a repetitive manufacturing environment and the production line or lines the item is produced on. Each relationship defines the number of resource units required by the line to produce one end product.

## See Also

- MRP* in the *Manufacturing and Distribution Planning Guide* for information about Material Requirements Planning
- EDI Document Processing* in the *Data Interface for Electronic Data Interchange Guide* for information about Electronic Data Interchange transactions
- Purchase Order Entry* in the *Procurement Guide* for information about purchase orders

## Setting Up Shift Information

You need to identify specific shift information for repetitive manufacturing in three places: manufacturing constants, work centers, and shop floor calendars.

You set up information in manufacturing constants to identify the usual number of work hours by shift that the plant operates in one day.

You also set up resource unit information that indicates the capacity of a work center on a given day for a specified shift.

You must define shop floor calendars by shift so that the system can use the calendars to schedule and sequence lines by shift. To increase plant capacity, you can run production lines for more than one shift, as well as run different lines of production on different days of the week. You specify these shifts and lines on the shop floor calendar.

### Topics

- Setting up shifts in manufacturing constants
- Setting up shift calendars
- Setting up shifts for work centers
- Setting up resource units for shifts

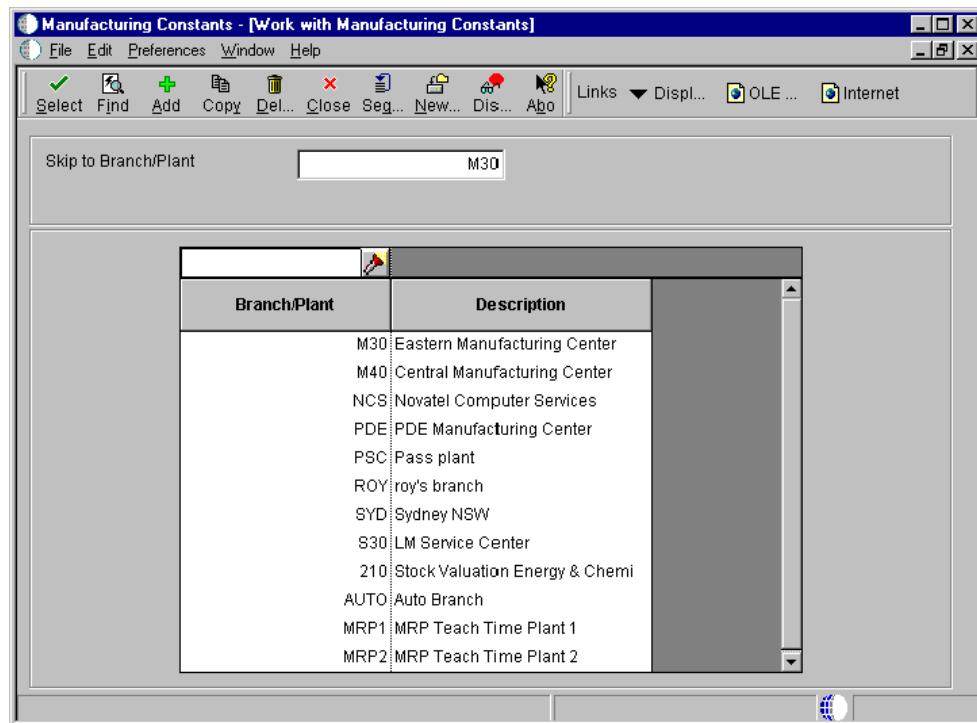
## Setting Up Shifts in Manufacturing Constants

Use Manufacturing Constants to establish shifts that are unique to your branch/plants. You can identify up to six shifts for a 24-hour period. However, the work hours per day is calculated only from the first three shifts listed.

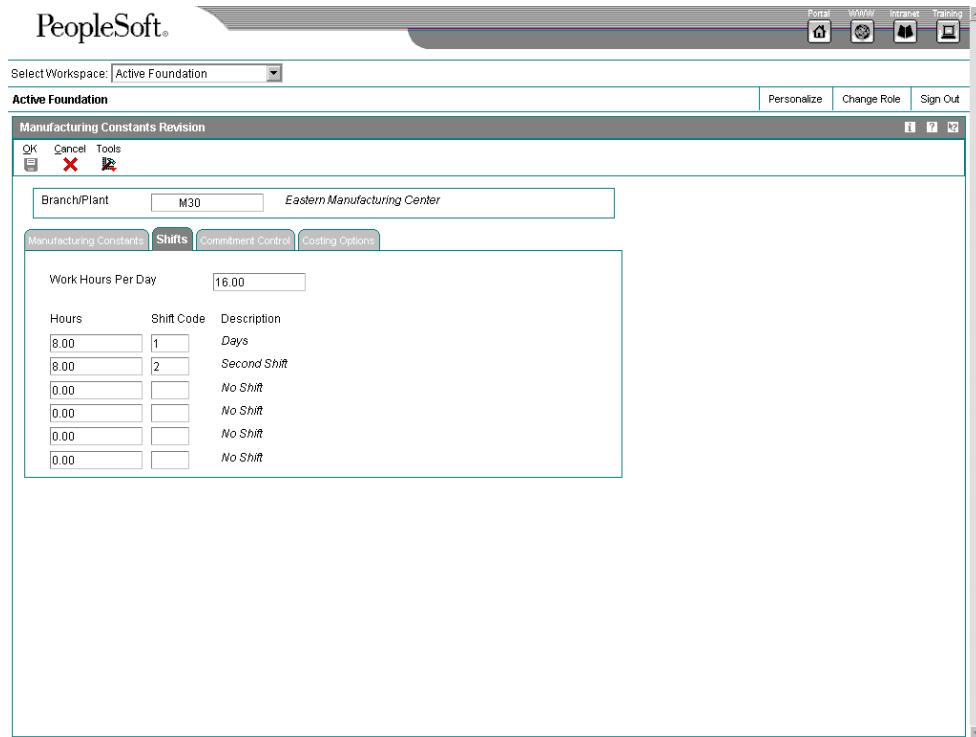
### ► To set up shifts in manufacturing constants

---

*From the Product Data Management Setup menu (G3041), choose Manufacturing Constants.*



1. On Work with Manufacturing Constants, complete the following field and click Find:
  - Skip to Branch/Plant
2. Choose a branch/plant and click Select.



3. Click the Shifts tab and complete the following fields for all the shifts you want set up:
  - Work Hours
  - Shift Code

You can enter hours for up to six different shifts. However, the Work Hours Per Day field is the total of only the first three shift hours entries.
4. Click OK.

## Setting Up Shift Calendars

You can define the workdays by month and year for each branch or for all branches in your system in the Shop Floor Calendar. The system uses this calendar to determine manufacturing schedules.

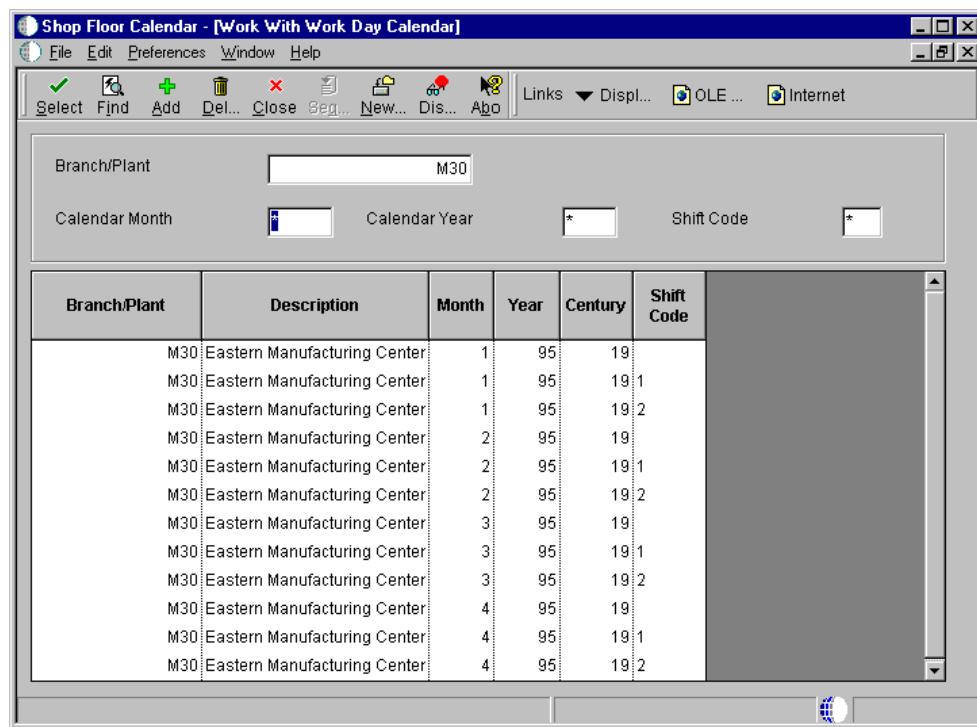
You can also define calendars by shift. The system uses these calendars for line sequencing by shift in repetitive manufacturing. Shift calendars are not used for Distribution Requirements Planning, Master Production Schedule, and Material Requirements Planning.

To increase plant capacity, manufacturers run production lines for more than one shift, as well as run different lines of production on different days of the week. You specify these shifts and lines on the Shop Floor Calendar.

If you locate a month and year that does not exist, it appears with default values for workdays (Monday through Friday) and weekends (Saturday and Sunday). Holidays are always user defined.

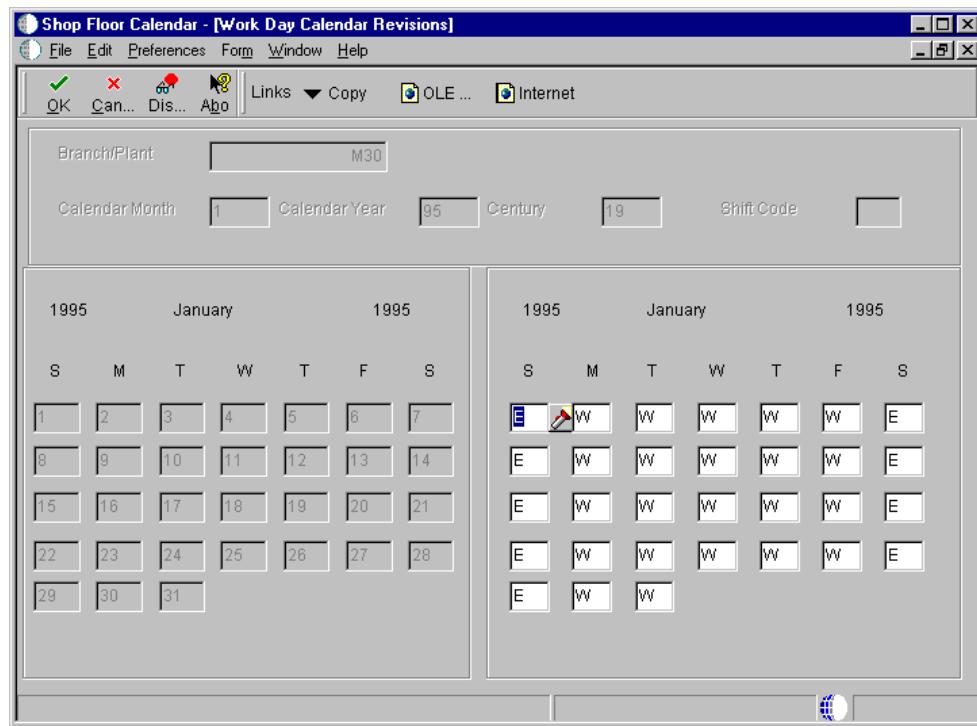
### ► To set up shift calendars

*From the Product Data Management Setup menu (G3041), choose Shop Floor Calendar.*



1. On Work With Work Day Calendar, complete the following fields and click Add:

- Branch/Plant
- Calendar Month
- Calendar Year
- Shift Code



2. On Work Day Calendar Revisions, enter W for each workday.

The calendar on the left shows the actual calendar days for the month and year that you requested. The calendar on the right shows the workdays and non-work days that you define.

3. Click OK.

#### **See Also**

- *Setting Up a Shop Floor Calendar* to review the processing options for Work Day Calendar

### **Setting Up Shifts for Work Centers**

Enter production line information that corresponds to the facilities on your shop floor. Any work hours per shift that you enter here override all of the hours per shift information that are located in the Job Shop Manufacturing Constants table (F3009).

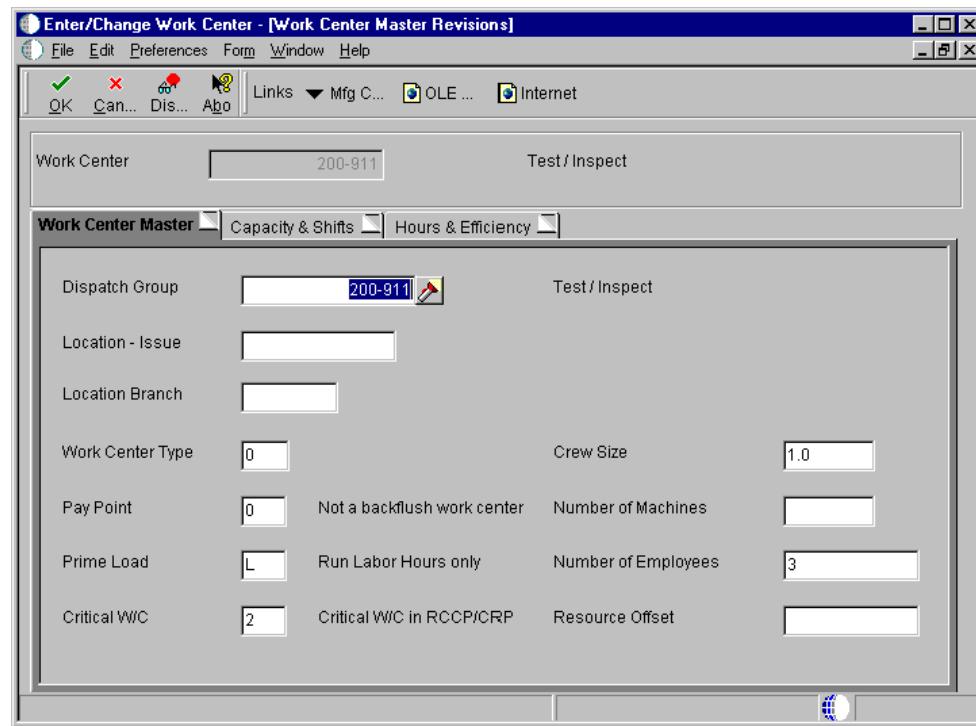
#### **► To set up shifts for work centers**

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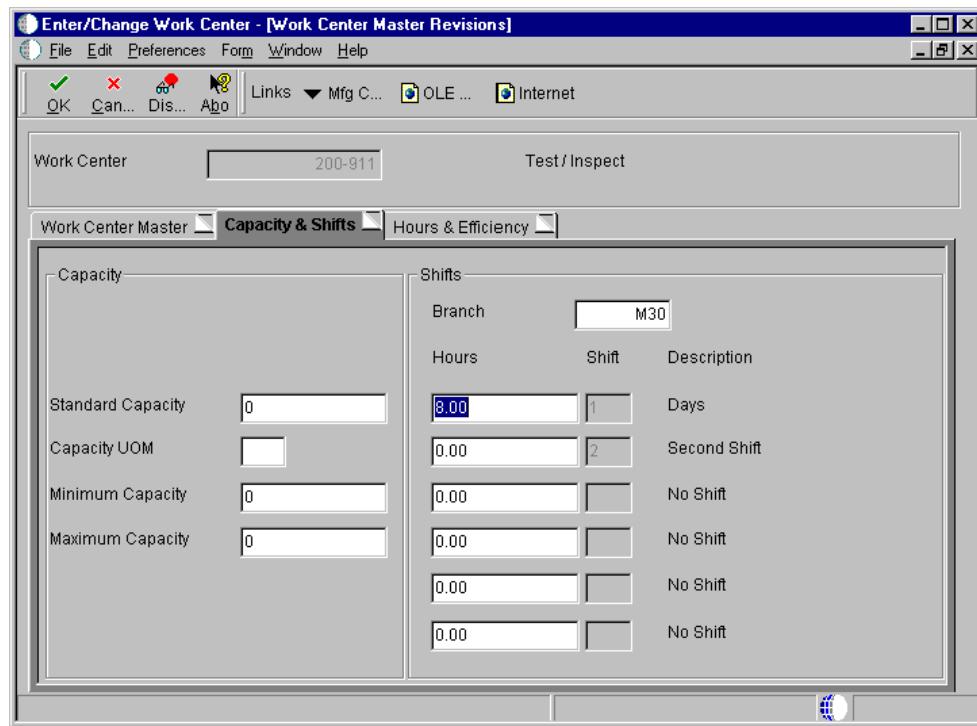
*From the Daily PDM Discrete menu (G3011), choose Enter/Change Work Center.*

1. On Work With Work Centers, complete the following field and click Add:

- Work Center



2. On Work Center Master Revisions, click the Work Center Master tab and complete the following fields:
  - Dispatch Group
  - Location - Issue
  - Location Branch
  - Work Center Type
  - Pay Point
  - Prime Load
  - Critical W/C
  - Crew Size
  - Number of Machines
  - Number of Employees
  - Resource Offset



3. Click the Capacity & Shifts tab and complete the following fields:

- Standard Capacity
- Capacity UOM
- Minimum Capacity
- Maximum Capacity
- Location Branch

4. Complete the following optional field:

- Work Hours

---

#### Note

If you specify any of the hours on the Capacity & Shifts tab to be an amount other than zero, the system updates that amount in the Job Shop Manufacturing Constants table (F3009). If all hours are identified as zero, the system retrieves the hours from the Job Shop Manufacturing Constants table.

---

5. Click OK.

## See Also

- Entering Work Centers* to review the processing options for Enter/Change Work Center

## Setting Up Resource Units for Shifts

Use the Work with Resource Units program to identify additional shifts for your work centers.

---

### Note

When you add resource units for a shift, the system also adds a blank shift that represents the total of all shifts.

---

### Before You Begin

- Set up your shifts in manufacturing constants for your branch/plants. See *Setting Up Shifts in Manufacturing Constants*.
- Set up your calendars for each shift needed. See *Setting Up Shift Calendars*.
- Verify that all of your work centers identify the branch/plant for the shift on the Capacity & Shifts tab of the Work Center Master Revisions form.

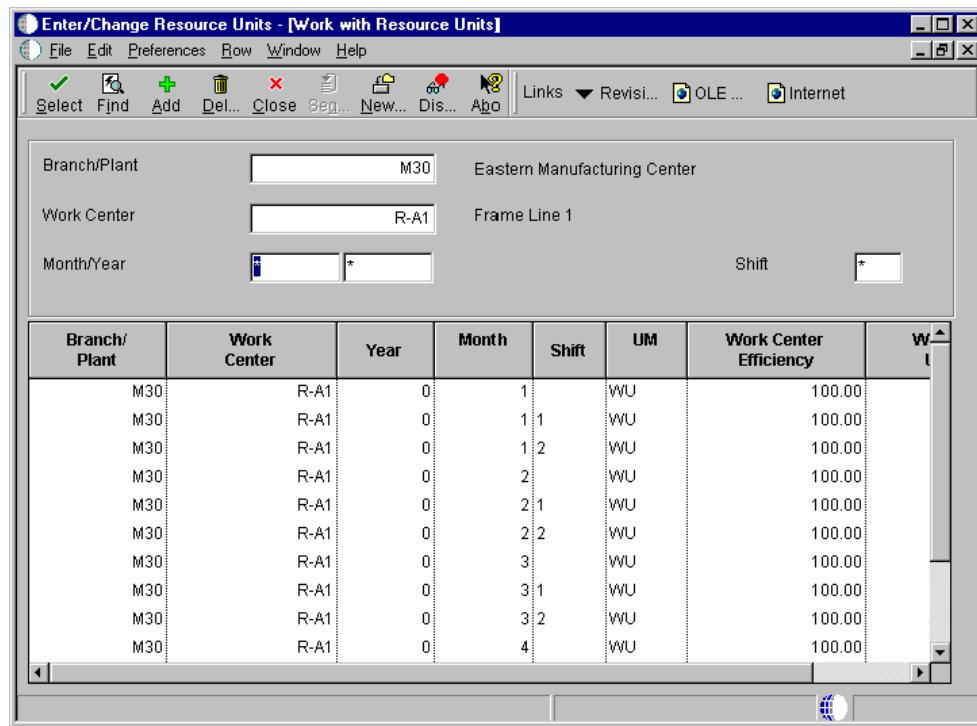
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### ► To set up resource units

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*From the Shop Floor Management Setup menu (G3141), choose Enter/Change Resource Units.*

For each workday in the specified month, the Work with Resource Units form shows the work hours during which a work center is available.



1. On Work with Resource Units, complete the following fields:
  - Branch/Plant
  - Work Center
  - Month
  - Year
2. To specify a specific shift, complete the following field and click Find:
  - Shift
3. Choose an appropriate branch/plant and click Select.

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Select Workspace: Active Foundation

Active Foundation

Personalize Change Role Sign Out

Work Center Resource Unit Revision

Cancel Form Tools

X

Work Center	R-A1	Frame Line 1	Branch/Plant	M30			
Month/Year	1	0	Century	20	Unit of Measure	WU	Shift
Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Efficiency
2	3	4	5	6	7	1	100.00
9	10	11	12	13	14	8	
16	17	18	19	20	21	15	
23	24	25	26	27	28	22	
30	31					29	
							Utilization
							100.00
							Total Resource Units
							3,024.00

4. On Work Center Resource Unit Revision, complete the following field for each day:
    - Total Resource Units
  5. Complete the following optional fields:
    - Efficiency
    - Utilization
  6. Click OK.
  7. Review the following field:
    - Shift

---

## Note

You cannot manually change the values if the value in the Shift field is blank. A blank value in the Shift field represents the sum of all shifts for a work center for a specific period of time.

8. Click OK.

#### See Also

- #### *Setting Up the Shop Floor Calendar*

- Generating Resource Units Automatically in the *Manufacturing and Distribution Planning* documentation for information about refreshing resource units for work centers

### Processing Options for Work Center Resource Units (P3007)

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#### Defaults

1. Enter the Default Unit of Measure for Work Center Resource Units. If left blank, HR will be used as the default Unit of Measure.

#### Unit of Measure as Input

Work Day Calender (P00071)

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## Setting Up Kanbans

Kanbans support the concept of just-in-time manufacturing but are not used exclusively with repetitive manufacturing. They can also be used effectively in a discrete manufacturing environment.

Kanbans can be used as an alternative to Material Requirements Planning (MRP) because kanban is a pull system, rather than a push system, and is based on the rate of production. However, MRP can still be run to generate overall general requirements.

If you want to control the movement of material using visual cues called kanbans, you must first identify the items, and then you must generate and print the kanban cards. These tasks are designed to minimize work-in-process inventories.

Kanbans allow you to pull material from three sources:

- Work center
- Inventory
- Supplier

In kanban processing, when a consuming workcenter signals for more parts, the system finds or creates a work order. An inventory material pull creates an inventory transfer. A consuming location that requires a supplied material either finds a purchase order or creates a new one.

Kanbans provide automated background transactions that eliminate much of the required paperwork and data entry. OneWorld kanbans are designed to include pay on consumption for vendor-supplied items. Pay on consumption is a process in which the payment to a vendor is delayed until a defined operation in the line. When this checkpoint occurs, transactions initiate payment to the supplier.

#### Topics

- Setting up kanban controlled items
- Generating kanbans

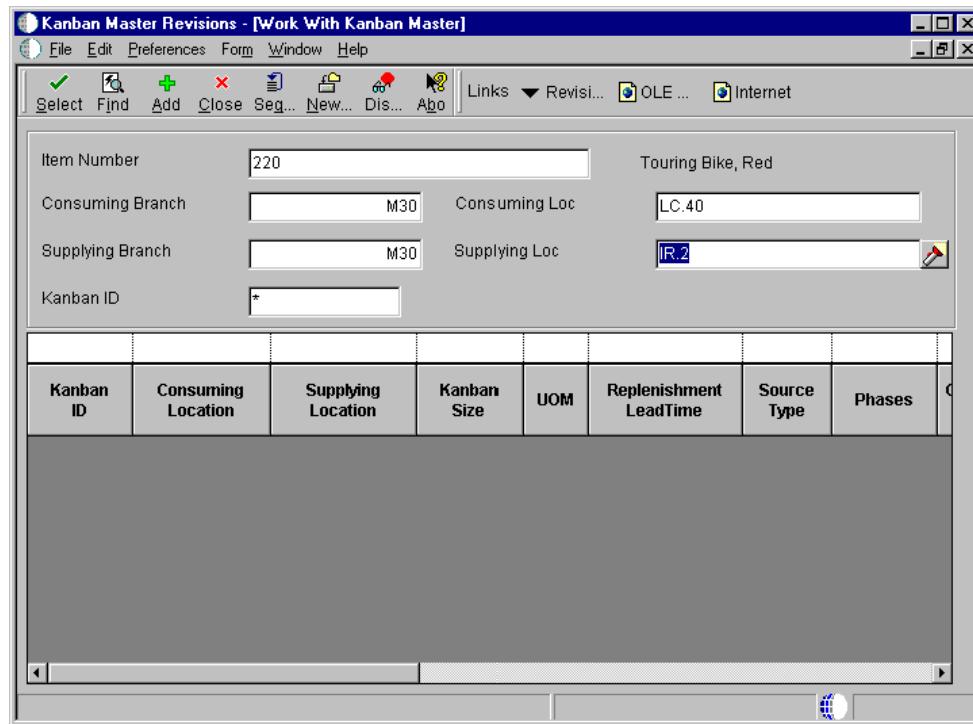
## Setting Up Kanban-Controlled Items

Kanbans are predetermined quantities of components at specified locations on the production line. You define kanbans at the item, branch/plant, consuming location, and supplying location level. You must set up an item on the Kanban Master Revisions program before it is kanban-controlled. After you define kanban-controlled items, use Kanban Calculation to size the kanban, depending on the demand for the item.

► To set up kanban-controlled items

---

From the Product Data Management Setup menu (G3041), choose Kanban Master Revisions.



1. On Work With Kanban Master, complete the following fields and click Add:

- Short Item No
- Consuming Branch
- Consuming Location
- Supplying Branch
- Supplying Loc

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Kanban ID	Supplying Location BP	Kanban Size	UM	Replenishment Lead Time	Source Type	Phase	Supplier	Line/Cell Identifier	Container Size
560	M30	100	EA	16.00	2	1			100
599	M30	100 EA		16.00	2	1			100

2. On Kanban Master Revisions, choose Add Row from the Form menu.
  3. Complete the following fields:
    - Supplying Loc
    - Source Type
    - Container Size
  4. Complete the following optional fields and click OK:
    - Kanban Size
    - UM
    - Replenishment Lead Time
    - Phase
    - Supplier
    - Line/Cell Identifier
    - Override
- If you activate the override flag, the system does not update the record when you run the calculation program.

- Receipts
- Number of Cards

## Generating Kanbans

*From the Product Data Management Setup menu (G3041), choose Kanban Size Calculation.*

After you set up the item on Kanban Master Revisions, you can use the Kanban Size Calculation program to calculate the size of a kanban. You can activate the override flag for Kanban Master Revisions to prevent the system from updating the Kanban Master table.

When you generate kanbans, you:

- Specify whether the program runs in proof or final mode
- Print kanban cards
- Print the calculation report
- Update the Kanban Master table if running in final mode
- Specify a safety stock other than what is defined in the Item Branch table (F4102)
- Control the percentage that the system can change the size of the kanban
- Specify the source for the demand, such as MRP/MPS demands or time fence rules
- Specify a user defined program to calculate kanban size

## Processing Options for Kanban Size Calculation (R30450)

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Process 1

Processing Control:

1. Enter a '1' to calculate Kanban Sizes.

2. Mode

Blank = Proof Mode

1 = Final Mode

3. Enter a '1' to print Kanban cards.

4. Enter a '1' to print Kanban Exception Report.

Process 2

5. Enter the desired safety stock expressed as a percentage of daily production. ('15' = 15%)

Safety Stock

6. Enter the range, expressed as a percentage, above or below which the Kanban should not be changed.

('15' = plus or minus 15%)

Filter Control

Process 3

7. Kanban Average Daily Demand:

Enter a '1' to select summation of the MPS/MRP demands desired, or enter a '2' to select greater of MPS/MRP demands desired. If no demands are selected, the Planning Time Fence Rule for the item will be used.

Forecasts

Sales Orders

Firm Work Orders

Planned Orders

Rate Schedule

Process 4

8. Enter number of hours equivalent to one day. (Default is 8)

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**Hours - Work Hours Per Day**

9. Enter the date range to use for the average daily demand calculation.

Beginning Date (Required)

Ending Date (Required)

10. Enter the program name of the Kanban size calculation program.

User Defined Program

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# Process Manufacturing

## Process Manufacturing

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Process manufacturing produces products such as liquids, fibers, powders, or gases. Pharmaceuticals, foodstuffs, and beverages are typical examples of process products and represent a significant share of the manufacturing market. Products such as these items are usually manufactured by the following two-step process:

- Mixing or blending
- Filling or packaging

Intermediate steps, such as curing, baking, or additional preparation, can also occur. Intermediates allow you to track the quantity of output of any operation in a work center at a specific time. You can define intermediates in different units of measure, by item, or by quantity. You can set up one intermediate per operation, but you cannot define an intermediate for the last operation in a routing instruction.

Process manufacturing uses recipes or formulas, and resources or ingredients. Resources can either be consumed or produced during the manufacturing process. Products that the process produces are called co-products and by-products. In a process recipe or formula, the quantity of a component can vary according to its grade or potency.

The different types of processing in process manufacturing are as follows:

<b>Batch processing</b>	In batch processing, a product is usually made in a standard run or lot size determined by vessel size, line rates, or standard run length. Items made this way are typically scheduled in short production runs due to the life cycle of the product after its completion. Typical items are pharmaceuticals, foods, inks, glues, oil or chemical products, and paints. Co-products and by-products might be generated during batch processing.
<b>Continuous processing</b>	In continuous processing, production typically occurs over an extended period using dedicated equipment that produces one product or product line with only slight variations. This method of manufacturing is characterized by the difficulty of planning and controlling quantity and quality yield variances. Typical items are petroleum-based products or distilled seawater. Co-products and by-products are generally more prevalent in continuous processing than in batch processing.

In addition, strategies similar to those in discrete manufacturing, such as repetitive or "to-orders" (for example, make-to-order, assemble-to-order, or engineer-to-order) might drive the process. Usually, both batch and continuous processing methods require extensive record keeping on quality and tolerance values during the process, as well as strict adherence to lot tracing and tracking.

Not all process are planned, scheduled, or produced in their primary unit of measure. To accommodate this situation, full unit of measure capabilities are allowed throughout the Shop Floor Management system.

Most entry programs have a unit of measure next to the quantity fields, and the unit of measure is stored in the database tables along with the quantities. The system uses the following three fields in the Item Master table throughout shop floor as default values in entry forms:

- Component Unit of Measure
- Production Unit of Measure
- Primary Unit of Measure

The Primary Unit of Measure value must be the smallest of the three units of measure. If intermediates exist for an operation, the intermediate can be any valid unit of measure as long as the conversion is set up.

### Topics

- Process manufacturing
- Working with processes
- Reviewing processes

### See Also

- R30450, Kanban Size Calculation* in the *Reports Guide* for a report sample
- Defining Default Units of Measure for Bulk Items* in the *Bulk Stock Management Guide*

## Process Manufacturing

Process manufacturing companies must cost, plan, and schedule the products that they produce. Processes use formulas or recipes to add value to ingredients in either batch or continuous processing. The following activities can occur in a process:

- Mixing ingredients
- Separating ingredients
- Forming ingredients
- Performing chemical reactions on ingredients

Processes provide the basis for creating a parts list for a work order in the Shop Floor Management system. Processes include an ingredient relationship and routing instruction. The ingredient relationship defines information about the ingredients, including effectiveness dates, fixed and variable quantities, and queue and move times.

You define a process item with ingredient relationships on the Enter/Change Process form. Relationships also determine information about co-products, by-products, intermediates, and substitutions.

You define the steps that are required to produce a manufactured item with process routing instructions. Routing instructions define work centers and labor standards. Process routing instructions are critical for the Capacity Planning and Product Costing systems, and for measuring production efficiency.

## Process Terminology

You should be familiar with the following process manufacturing terms before using process manufacturing.

### Topics

- Co-products

- By-products
- Ingredients
- Intermediates
- Process routing instructions
- Substitutes
- Alternate operations
- Batch processes
- Percent bills of material

## **Co-Products**

Many process steps create more than one output. A co-product is produced by process steps that are defined for specific ingredients. Co-products are usually the main products that companies sell to customers. For example, a graphite lubricant process creates two co-products - household and graphite lubricants. Material Requirements Planning plans for co-product demand.

## **By-Products**

A by-product is produced as a residual or incidental item that results from the process steps. Companies can recycle, sell, or use by-products for other purposes. For example, a graphite lubricant process creates one by-product - sludge. Material Requirements Planning does not plan for by-product demand.

## **Ingredients**

An ingredient is the raw material or item that is combined during process manufacturing to produce the end item. Typically, raw materials are purchased.

## **Intermediates**

Intermediates allow you to track the quantity of output of any operation in a work center at a specific time. You can define intermediates in different units of measure, by item, or by quantity. You can set up one intermediate per operation, but you cannot define an intermediate for the last operation in a routing. You can manually attach intermediates. Intermediates are not stocked in inventory, sold to customers, or planned by MRP.

Fermented liquid is an example of an intermediate. The liquid ferments for an extended period of time before being distilled. The resulting liquid is not a finished product, but it proceeds to the next operation.

## **Process Routing Instructions**

A process routing instruction details the method of manufacture for a specific process item. It includes operations and operation sequence, work centers, and standards for setup and run. You can also define operator skill levels, inspection operations, and testing requirements.

## **Substitutes**

A substitute item is an alternate item that the system uses in production when the primary item is not available. You can define substitutes for a single ingredient within your process.

You might need to do so for several reasons, such as quality concerns, inventory shortages, or supplier delivery problems.

### **Alternate Operations**

An alternate operation is a replacement for a normal operation for an item in the manufacturing process. You can define an alternate operation to be performed only as required, such as using oven B if oven A is unavailable. This information assists shop floor personnel, but it is not used by the Product Costing or the planning and execution systems.

### **Batch Processes**

In batch processing, items are produced in fixed quantities, or batches. Food, petroleum, and pharmaceutical industries use batch processing. The batch process feature allows you to define different processes for items based on quantity or batch size, since processes vary by quantity.

#### **Percent Bills of Material**

Percent bills of material enable you to define processes with ingredient quantities that are expressed as a percent of the process batch quantity.

The system processes percent information as follows:

- Multiplies the ingredient percentage times the batch quantity to obtain ingredient quantities expressed in the batch quantity unit of measure
- Converts the ingredient quantities from the batch unit of measure to the ingredient unit of measure

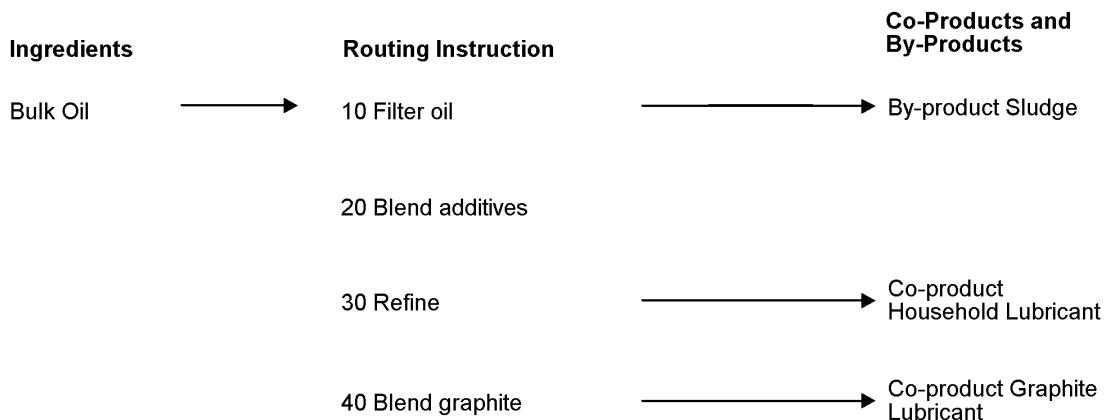
The system stores quantities for ingredients as follows:

- Calculates a percentage for the ingredient in relation to the batch size
- Converts the batch unit of measure to the ingredient unit of measure and stores the quantity for the ingredient

You must set up unit of measure conversions for percent bills of material to work properly. You must also verify that all components can convert to the batch quantity unit of measure.

#### **Example: Graphite Lubricant Batch Process**

The following illustration shows the ingredients, routing instructions in operation number sequence, and the co-products and by-products that the graphite lubricant batch process produces:



### Example: Percent Process

In the following example, the parent item is Soft Drink and its batch quantity is 300 GA.

Components	Quantity	Unit of Measure	Fixed or Variable
Vanilla	50	GA	%
Water	40	QT	%
Concentrate	10	LT	%

The system calculates the following:

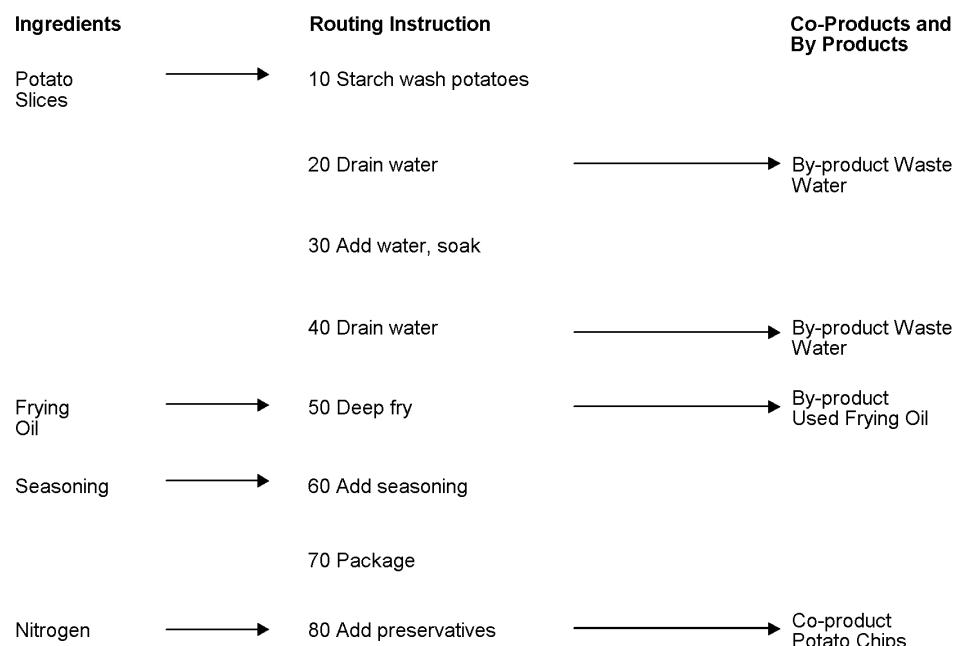
% Calculation and Conversion to Batch Unit of Measure		Storage		
Vanilla	= .5 X 300	= 150	GA	150 GA
Water	= .4 X 300	= 120	GA	480 QT
Concentrate	= .1 X 300	= 30	GA	114 LT

The system uses the ingredient unit of measure in the percent process to convert the number of gallons that correspond to the percent for each ingredient. In this example, the system calculates the ingredients water and concentrate to be 120 GA and 30 GA of the batch size.

The system converts the unit to ingredient unit of measure and stores them as 480 QT and 114 LT.

### Example: Potato Chip Continuous Process

The following illustration shows the ingredients, routing instructions in operation number sequence, and the co-products and by-products that the potato chip continuous process produces:



### Entering Process Ingredients

After you define operations for each process, you must enter the ingredients. These are the raw materials or items that are combined during operations to produce the process item. To enter process ingredients, you must identify the following:

- Ingredients for each operation
- Minimum and maximum grade or potency ranges that apply to the ingredients
- Substitute ingredients that the system uses when the primary ingredient is not available
- Percentages of applicable ingredients that the system uses

## Working With Processes

Processes allow process manufacturing companies to cost, plan, and schedule the products that they produce. Processes use a formula or recipe that includes an ingredient relationship and a routing instruction.

When you define a process, you combine information from the following tables:

- Job Shop Manufacturing Constants table (F3009)
- Item Master table (F4101)
- Work Order Routing table (F3112)
- Item Branch table (F4102)

The resulting process is stored in the Bill of Material Master table (F3002) and changes are stored in the Bill of Materials Change table (F3011).

### Before You Begin

- To use batch processing, set the processing options for Enter/Change Process and Enter/Change Order to activate batch and type functions. See [\*Entering Routing Instructions\*](#) to review the processing options for Enter/Change Routing.
- Define routing instructions that correspond to your process types and batch sizes. See [\*Entering Routing Instructions\*](#) to review the processing options for Enter/Change Routing.

## Entering Processes

You use the Enter/Change Process program to enter a process. You define a process item with ingredient relationships. Relationships also determine information about co-products, by-products, intermediates, and substitutions. You can also enter batch information, batch quantity and unit of measure, for the process.

### ► To enter processes

---

*From the Daily PDM Process menu (G3012), choose Enter/Change Process.*

**Enter/Change Process - [Work with Routing Operations]**

File Edit Preferences Form Row View Window Help

Select Find Add Copy Close Seg... New... Dis... Abo Links Revisi... OLE... Internet

Branch/Plant: M30

Item Number: 5000 Lubricant Process

Batch Quantity: EA

As of Date: 4/11/00 Line/Cell: \* Routing Type: M

Item Rev: \* Drawing No: Skip to Op No: \*

Work Center	Oper Seq#	Description	Run Labor	Run Machine	Setup Labor	Effective From	Eff.

1. On Work with Routing Operations, complete the following fields and click Add:
  - Branch/Plant
  - Item Number

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2. On Enter Process Information, complete the following optional fields:
  - Routing Type
  - Line/Cell
3. To enter batch information, complete the following fields and click OK:
  - Batch Quantity
  - Unit of Measure
4. The new process now displays on the Work with Process form.

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	Work Center	Oper Seq#	Description	Run Labor	Run Machine	Setup Labor	Effective From	Effective Thru	Typ Rtg	Ty Cd	Mo Ho
<input checked="" type="radio"/>	200-201	10.00	Filter bulk oil	1.00	0.25	0.25	04/15/97	12/31/10 M	M		
<input type="radio"/>	200-202	20.00	Blend additives		0.25		04/15/97	12/31/10 M			
<input type="radio"/>	200-203	30.00	Refine	2.00		0.25	04/15/97	12/31/10 M			
<input type="radio"/>	200-202	40.00	Blend graphite		0.25		04/15/97	12/31/10 M			

## See Also

- *Entering Routing Instructions* to review the processing options for Enter/Change Routing

## ► To enter outside operations

---

*From the Daily PDM Process menu (G3012), choose Enter/Change Process.*

1. On Work With Routing Operations, complete the following fields for the process for which you want to enter outside operations and then click Find:
  - Branch/Plant
  - Item Number
2. Choose the work center and click Select.
3. On Enter Process, complete the following fields and click OK:
  - Supplier
  - PO (Y/N)
  - Cost Type

## Entering Process Operations

After you enter a process, you must enter the process operations. Operations define the work centers and labor standards that are required to manufacture the process item. To enter the process operations, you must identify the following:

- Work center and operation sequence for the process
- Suppliers of any outside operations in the process
- Hours for any machine, labor, setup, move, and queue time that you might incur

### Topics

- ❑ Entering an ingredient
- ❑ Entering grade or potency information
- ❑ Entering a substitute ingredient
- ❑ Entering ingredients as percentages

### ► To enter operations

---

*From the Daily PDM Process menu (G3012), choose Enter/Change Process.*

1. On Work With Routing Operations, complete the following fields for the process for which you want to enter an operation and then click Add:
  - Branch/Plant
  - Item Number
2. On Enter Routing Information, complete the following fields:
  - Work Center
  - Oper. Seq.
3. Complete the following optional fields and click OK:
  - Description
  - Effective From
  - Effective Thru
  - Next Oper
  - Yield %
  - Type Oper
  - P C
  - Craft Code
  - Percent of Overlap

- Equipment Number
- Standard Desc.
- Crew Size
- Time Basis
- Line/Cell

## ► To enter work center hours

---

*From the Daily PDM Process menu (G3012), choose Enter/Change Process.*

1. On Work With Routing Operations, complete the following fields for the process for which you want to enter work center hours, and then click Find:
  - Branch/Plant
  - Item Number
2. Choose the work center and click Select.
3. On Enter Process, complete the following fields and click OK:
  - Run Machine
  - Run Labor
  - Setup Labor
  - Queue Hours
  - Move Hours

## See Also

- *Entering Routing Instructions* to review the processing options for Enter/Change Routing

## ► To enter an ingredient

---

*From the Daily PDM Process menu (G3012), choose Enter/Change Process.*

1. On Work With Routing Operations, complete the following fields for the process for which you want to enter an ingredient and then click Find:
  - Branch/Plant
  - Item Number
2. Choose the work center and click Select.
3. On Enter Process Information, choose an operation and then choose Ingredients from the Row menu.

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Item Number	Description	Quantity	UM	Active Ingr. Flag	F V	Is Cd	Strg Typ	Ln Ty	Line No.	Open Seq#	Eff From
5001	Oil	50	GA		V	I	P	S	10.00	10.00	04/

4. On Enter Ingredients, complete the following fields and click OK:

- Item Number
- Quantity
- UM
- Effective From
- Effective Thru
- Branch/Plant
- Line No.
- Oper Seq#
- Percent Scrap
- P
- Ln Ty
- Remarks

## ► To enter grade or potency information

---

You can enter either grade or potency information, but not both.

*From the Daily PDM Process menu (G3012), choose Enter/Change Process.*

1. On Work With Routing Operations, complete the following fields for the process for which you want to enter grade or potency information and then click Find:
  - Branch/Plant
  - Item Number
2. Choose the work center and click Select.
3. On Enter Process Information, choose an operation, and then choose Ingredients from the Row menu.
4. On Enter Ingredients, complete the following fields to enter grade information:
  - Frm Grd
  - Thr Grd
5. To enter potency information, complete the following fields and click OK:
  - From Potency
  - Thru Potency

## ► To enter a substitute ingredient

---

*From the Daily PDM Process menu (G3012), choose Enter/Change Process.*

You can enter substitute ingredients for components within your parent item. You can use substitute items if you encounter quality issues, inventory shortages, or supplier problems with the original component. The system highlights an ingredient's item description to indicate a substitution. Specify ingredient substitution for a specific process. Use item cross references for global substitutions. For more information about item cross references, see [Setting Up Item Cross References](#) in the *Inventory Management Guide*.

1. On Work With Routing Operations, complete the following fields for the process for which you want to enter a substitute ingredient and then click Find:
  - Branch/Plant
  - Item Number
2. Choose the work center and click Select.
3. On Enter Process Information, choose an operation and then choose Ingredients from the Row menu.
4. On Enter Ingredients, choose an ingredient and then choose Substitutes from the Row menu.

5. On Enter Component Substitutes, complete the following fields and click OK:
  - Substitute Item
  - Sub Item Sequence

#### ► To enter ingredients as percentages

---

*From the Daily PDM Process menu (G3012), choose Enter/Change Process.*

You can enter as many ingredients in the form of percentages as necessary, but the sum of the percentages must equal 100 percent. The system uses the batch size to calculate percentages of the process for each ingredient. You should verify that each ingredient can convert to the process unit of measure either by using the item unit of measure conversion or the standard unit of measure conversion. See [Setting Up Standard Units of Measure](#) in the *Inventory Management Guide* for information about these conversions.

1. On Work With Routing Operations, complete the following fields for the process for which you want to enter ingredients as percentages and then click Find:
  - Branch/Plant
  - Item Number
2. Choose the work center and click Select.
3. On Enter Process Information, choose an operation and then choose Ingredients from the Row menu.

4. On Enter Ingredients, complete the following field for each ingredient and click OK:
  - F V

#### See Also

- Entering Routing Instructions* to review the processing options for Enter/Change Routing

## Entering Production Information

You can enter production and cost information based on demand for a specified feature. You specify an issue type code that identifies how the system issues each component from stock. You identify how many days before or after the start of the process that a component is needed. And you identify the percentage of demand for a specified feature and the percentage that is used to calculate the cost of the feature.

### ► To enter production information

---

*From the Daily PDM Process menu (G3012), choose Enter/Change Process.*

1. On Work With Routing Operations, complete the following fields for the process for which you want to enter production information, and then click Find:
  - Branch/Plant
  - Item Number
2. Choose the work center and click Select.
3. On Enter Process Information, choose an operation, and then choose Ingredients from the Row menu.
4. On Enter Ingredients, complete the following fields for each ingredient and click OK:
  - Is Cd
  - Leadtime Offset
  - Feat Plan %
  - Feat Cost %

#### See Also

- Entering Routing Instructions* to review the processing options for Enter/Change Routing

## Entering a Co-Products and By-Products List

Many process steps create more than one output. You can enter co-products, which are usually the main products that companies sell to customers, or by-products, which are produced as a residual item to the process steps.

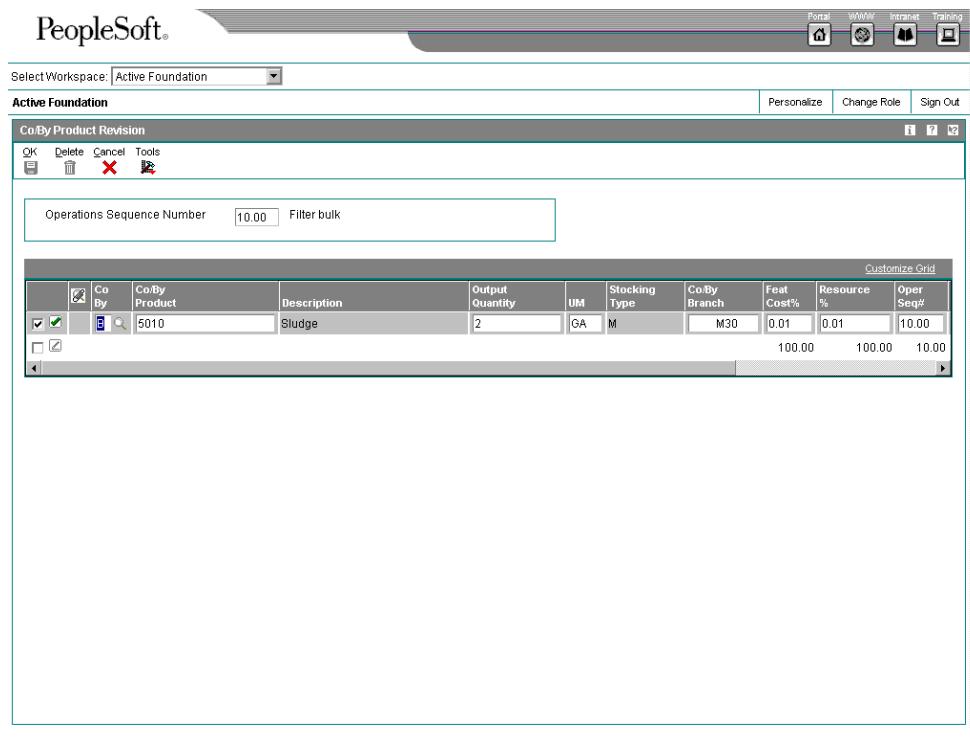
### Note

If you are entering a co-products and by-products list for a batch process, verify that the ratio of the co-products and by-products is the same for each batch quantity. For example, if a batch process with a batch quantity of 10 produces 10 each of a co-product and by-product, then a batch quantity of 20 must produce 20 each of the co-product and by-product.

### ► To enter a co-products and by-products list

*From the Daily PDM Process menu (G3012), choose Enter/Change Process.*

1. On Work With Routing Operations, complete the following fields for the process for which you want to enter co-products and by-products, and then click Find:
  - Branch/Plant
  - Item Number
2. Choose the work center and click Select.
3. On Enter Process Information, choose a process operation, and then choose Co/By Revision from the Row menu.



4. On Co/By Product Revision, complete the following fields and click OK:
  - Co By

- Co/By Product
- Output Quantity
- UM
- Co/By Branch
- Feat Cost%
- Resource %
- Oper Seq#
- Remark

#### **See Also**

- Entering Routing Instructions* to review the processing options for Enter/Change Routing

### **Entering Intermediates**

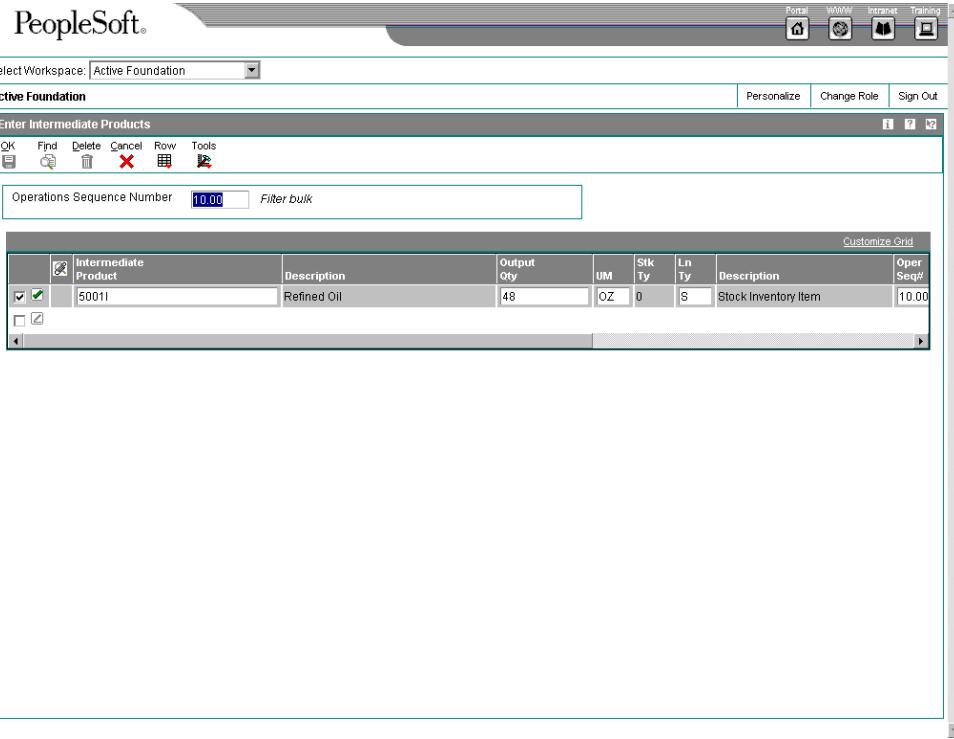
Intermediates are products that are produced from ingredients in the process. Intermediates are not a finished product, but they do proceed to the next operation in the process. Intermediates allow you to track the quantity of output of any operation in a work center at a specific time. You can define intermediates in different units of measure, by item, or by quantity. You can set up one intermediate per operation, but you cannot define an intermediate for the last operation in the routing instruction.

---

#### **► To enter intermediates**

*From the Daily PDM Process menu (G3012), choose Enter/Change Process.*

1. On Work With Routing Operations, complete the following fields for the process for which you want to enter intermediates, and then click Find:
  - Branch/Plant
  - Item Number
2. Choose the work center and click Select.
3. On Enter Process Information, choose a process operation, and then choose Intermediates from the Row menu.



4. On Enter Intermediate Products, complete the following fields and click OK:

- Intermediate Product
- Output Qty
- UM
- Ln Ty
- Oper Seq#
- Effective From
- Effective Thru
- F V
- Remark

#### See Also

- ❑ *Entering Routing Instructions* to review the processing options for Enter/Change Routing

## Updating Component Scrap

From the Advanced Product Data Management menu (G3031), choose Planned Yield Update.

During manufacturing, material loss often occurs during operations. Examples of loss include evaporation or items that are damaged during move time. You can update the amount of materials and labor hours to account for operation loss by using Planned Yield Update.

For the operations you choose, this program uses the value of the operational planned yield percent to update the cumulative percent for the bill of material, and the percent of operation scrap on the routing instruction. The following table shows the percent of operation scrap for each step:

Step	Operational Planned Yield Percent	Cumulative Planned Yield Percent	Operation Scrap Percent
40	80%	80%	$(100\% / 80\%) - 100\% = 25\%$
30	90%	$80\% \times 90\% = 72\%$	$(100\% / 72\%) - 100\% = 39\%$
20	100%	$72\% \times 100\% = 72\%$	$(100\% / 72\%) - 100\% = 39\%$
10	95%	$72\% \times 95\% = 68\%$	$(100\% / 68\%) - 100\% = 47\%$

<b>Operational Planned Yield Percent</b>	This value represents the percent of planned output yield for a step. You enter this value on Enter/Change Routing. The system uses this value to adjust the operation scrap percent for the components at that step. This adjustment enables the MRP system to use the step scrap percent along with the existing component scrap percent to plan component demand.
<b>Cumulative Planned Yield Percent</b>	This value represents the item quantity that an operation is expected to produce. The system updates this value on Enter/Change Bill of Material. It is the ratio of usable output to input quantity. This value can be less than 100 percent due to loss at one or more operations. The system uses this value to increase or decrease the amount of labor hours needed to make up for loss within the operation.
<b>Operation Scrap Percent</b>	This value represents the expected scrap at each operation. The system updates this value on Enter/Change Routing. The system calculates this value by compounding the yield percentages from the last operation to the first operation. The system uses this value to increase or decrease the amount of materials to account for loss within the operation.

### Processing Options for Planned Yield Update (R3093)

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#### Defaults

Enter the "As of" date for the Planned Yield Update. If left blank the current date will be used.  
Date 01

---

## Changing Multiple Processes

*From the Advanced Product Data Management menu (G3031), choose Where Used Update.*

Use the Where Used Update program to change multiple processes, for example, to replace an old ingredient with a new one. When you run this program, you can review the report to verify changes. You can use this program to perform mass updates such as the following:

- Replacing one ingredient with another
- Deleting a process item
- Changing effectivity dates for a process item
- Changing the quantity per assembly value for a process item
- Changing the issue type code
- Changing the unit of measure

Use data selection to specify the process items that you want to change. Use processing options to define the change. This program finds all occurrences of the item (as an ingredient) in the Bill of Material table and updates the process. You can also update an ingredient that has past or future effectivity dates.

You can run this program in either proof or final mode. In proof mode, the system generates a report of the proposed changes for your review, but it does not update the data. In final mode, the system generates a report that lists the changes and updates the data according to your choices.

---

### Caution

This program can potentially change many processes in your system at the same time. J.D. Edwards recommends that you first run it in proof mode to verify your choices, and then run it in final mode to change the data. You might want to restrict access to this program.

---

If you want to make changes to a process and remove the old records, run the program twice. First, create the new records and then delete the old ones.

The system stores yours changes in the Bill of Material table only. Existing parts lists, Material Requirements Planning calculations, and costing information are not automatically updated. The program updates the following information:

- Low Level Code field in the Item Master table (F4101)
- Net Change Flag in the Item Balance Tag table (F4102J)

The system retrieves data for this report from the Item Master table (F4101).

### Before You Begin

- Review your process to verify that the item that you are updating is active (within the effective dates) and appears in at least one process. See *Reviewing Processes*.

### See Also

- R30520, *Where Used Update* in the *Reports Guide* for a report sample

## **Processing Options for Where Used Bill of Material Update (R30520)**

---

### **Defaults 1**

1. Enter the Branch/Plant location to select for Bill of Material changes. This is a required field; if left blank, no processing will be performed.

### **Branch/Plant**

2. Enter the new Component Item number. If left blank, no change will be made to the Component Item number.

### **New Component Item Number**

3. Enter the new Quantity Per amount. If left blank, no change will be made to the Quantity Per amount.

### **New Quantity Per**

4. Enter the new Quantity Per Unit of Measure. If left blank, no change will be made to the Quantity Per Unit of Measure.

### **New Unit of Measure**

### **Defaults 2**

1. Enter the new Effective From Date. If left blank, today's date will be used.

### **New Effective From**

2. Enter the new Effective Thru Date. If left blank, no change will be made to the Effective Thru Date.

### **New Effective Thru Date**

3. Enter the new Issue Type Code. If left blank, no change will be made to the Issue Type Code.

### **New Issue Type Code**

### **Process**

1. Enter a "1" if this is to be run in Final Mode. If left blank, the program will be run in Proof Mode.

### **Final Mode**

2. Enter a "1" to DELETE the existing record(s) from the BOM file. No updating will be performed when Delete is selected.

### **Delete Mode**

### **Edits**

1. Enter a "1" to validate the new component against the Item Branch file (F4102). If left blank, the new item will not be validated.

### **Item Branch Validation**

---

## **Reviewing Processes**

You can check your processes for low-level codes and product structure errors (where a process item is listed as an ingredient of itself), by using the Integrity Analysis program.

You can also review the processes for which to plan and research engineering change orders (ECOs); view the results of a pending product change; determine the effect of an item shortage; or evaluate capacity, manpower, equipment needs, and resources.

### **Topics**

- Verifying processes
- Reviewing process information
- Printing process information

## **Verifying Processes**

*From the Advanced Product Data Management menu (G3031), choose Integrity Analysis.*

The integrity program generates a report that identifies any processes that you need to correct. If the report indicates errors, you should correct the processes and run the Integrity Analysis program again. When the program does not find errors in the processes, it updates the low-level codes in both the Item Master and the Item Branch tables.

---

### Note

J.D. Edwards recommends that you run the Integrity Analysis program immediately after a data conversion, such as a system startup, and then on a periodic basis, such as two or four times a year. You should also run the Integrity Analysis program before running the Simulated Cost Rollup or DRP/MPS/MRP Generation programs.

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Instead of running the Integrity Analysis report, you can use online validation so that the system validates process items as you enter them. When you use online validation, the system does not allow you to enter recursive ingredients. For example, an error message displays if you attempt to enter a parent process item as an ingredient of itself.

The system retrieves the data for this report from the Bill of Material Structure Analysis Work table (F30UI002).

### See Also

- *Setting Up Manufacturing Constants* to verify that you have set up manufacturing constants appropriately

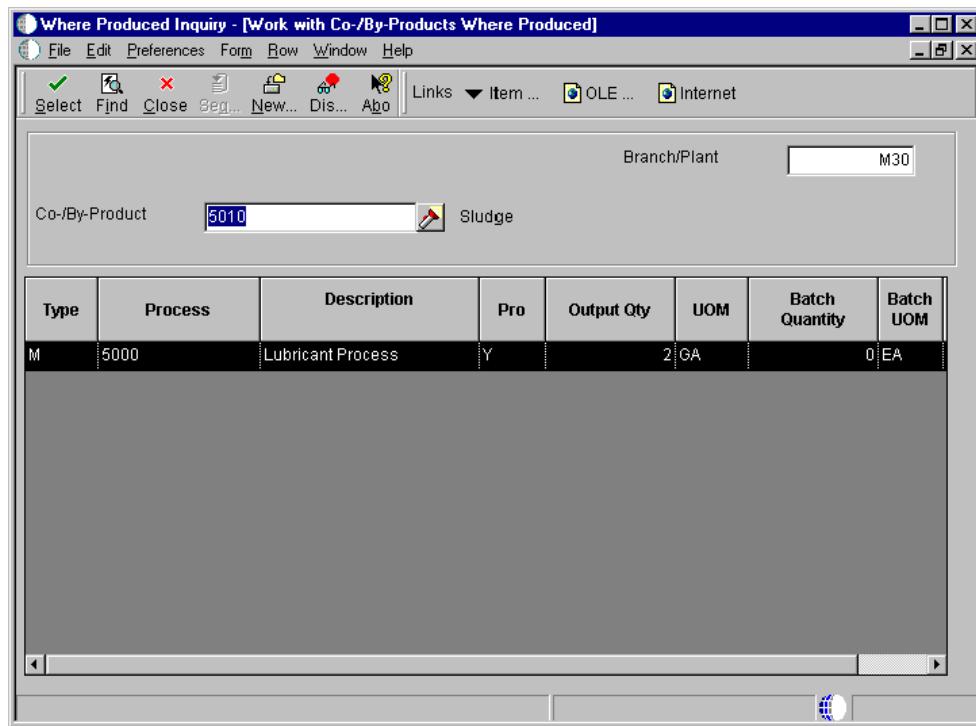
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### ► To review where co-products and by-products are produced

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*From the Daily PDM Process menu (G3012), choose Where Produced Inquiry.*

Use the Where Produced Inquiry program to review the processes that include a specific co-product or by-product.



1. On Work With Co-/By-Products Where Produced, complete the following fields and click Find:
  - Branch/Plant
  - Co-/By-Product
2. Review the co-product and by-product information.

## Reviewing Process Information

You can review process information from several programs, depending on the information that you want to review. For example, you can review:

- Ingredients
- Co-products and by-products
- Resources
- Routing instructions

### Topics

- Reviewing ingredients
- Reviewing where an ingredient is used
- Reviewing co-products and by-products
- Reviewing where co-products and by-products are produced
- Reviewing resources
- Reviewing process instructions

#### ► To review ingredients

---

*From the Daily PDM Process menu (G3012), choose Ingredients Inquiry.*

Use the Ingredients Inquiry program to review the ingredients of a process.

The screenshot shows the PeopleSoft Active Foundation application interface. The title bar says "PeopleSoft." and the workspace is set to "Active Foundation". The main window is titled "Parts Availability - Multi Level Indented". At the top, there are menu options: Select, Find, Close, Form, Report, View, Row, Tools. Below the menu is a toolbar with icons for search, refresh, and other functions. The main area has tabs: BOM Inquiry, Parts Availability (which is selected), and Leadtime Inquiry. The search criteria include: Branch (M30), Parent Item (5000), Requested Quantity (1 EA), and Type of Bill (M). Below the search area is a table titled "Records 1 - 4" with the following data:

Level	2nd Item Number	Description	Quantity	Quantity On Hand	Quantity Available	U/M	F/V	Issue Code	Active Ingr. Flag
1	5001	Oil		50	-50	GA	V	I	
1	5002	Rust Inhibitor		1	-1	GA	V	B	
1	5003	Graphite		38	-38	OZ	V	B	
1	5004	Thinner		1	-1	GA	V	B	

1. On Parts Availability - Multi Level Indented, click the Parts Availability tab. Complete the following fields and click Find:
  - Branch
  - Parent Item
  - Requested Quantity
  - As of Date
  - Rev Lev
  - Skip to Line
2. From the View menu, you can change how the system displays the bill of material.
  - Single Level
  - Multi Level
  - Multi Level Indented

Single level displays only those components that are directly used in the parent item. Multilevel displays all the components used in the parent item. Multilevel indented displays all the components and shows the level of the component indented.

## See Also

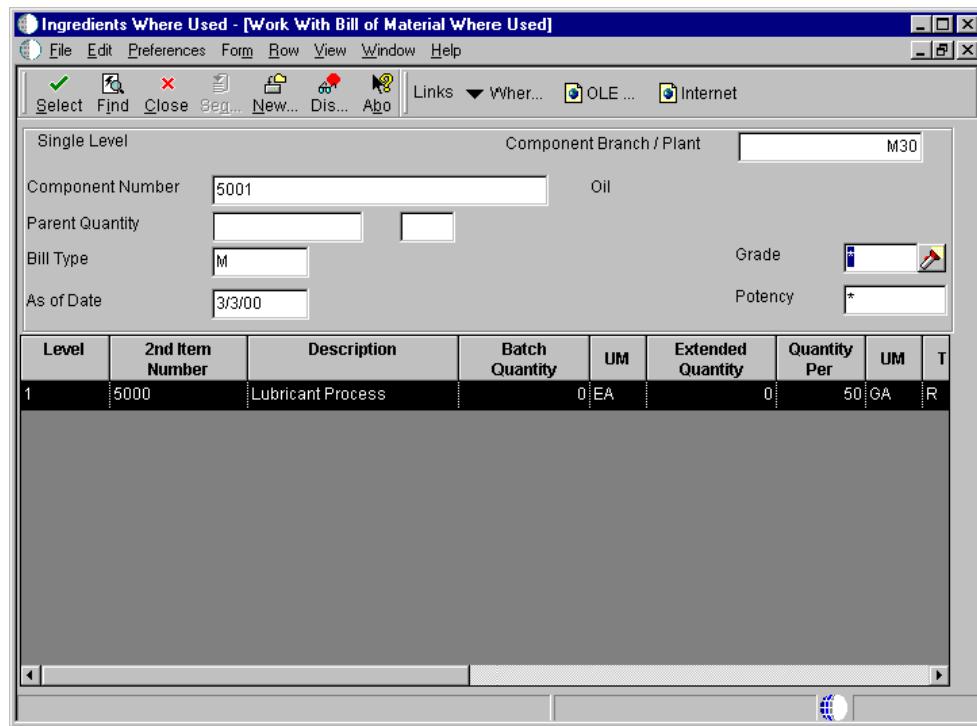
- [Locating Bills of Material](#) to review the processing options for Ingredients Inquiry

► **To review where an ingredient is used**

---

*From the Daily PDM Process menu (G3012), choose Ingredients Where Used.*

Use the Ingredients Where Used program to review the processes that include a specific component.



1. On Work With Bill of Material Where Used, complete the following fields:
  - Component Branch / Plant
  - Parent Item No
2. Complete the following optional fields and click Find:
  - As of Date
  - Bill Type
  - Batch Quantity
  - Grade
  - Potency
3. From the View menu, choose one of the following options to change the display:
  - Single Level
  - Multi Level

- Multi Level Indented

Single level displays only those components that are directly used in the parent item. Multilevel displays all the components used in the parent item. Multilevel indented displays all the components and shows the level of the component indented.

#### See Also

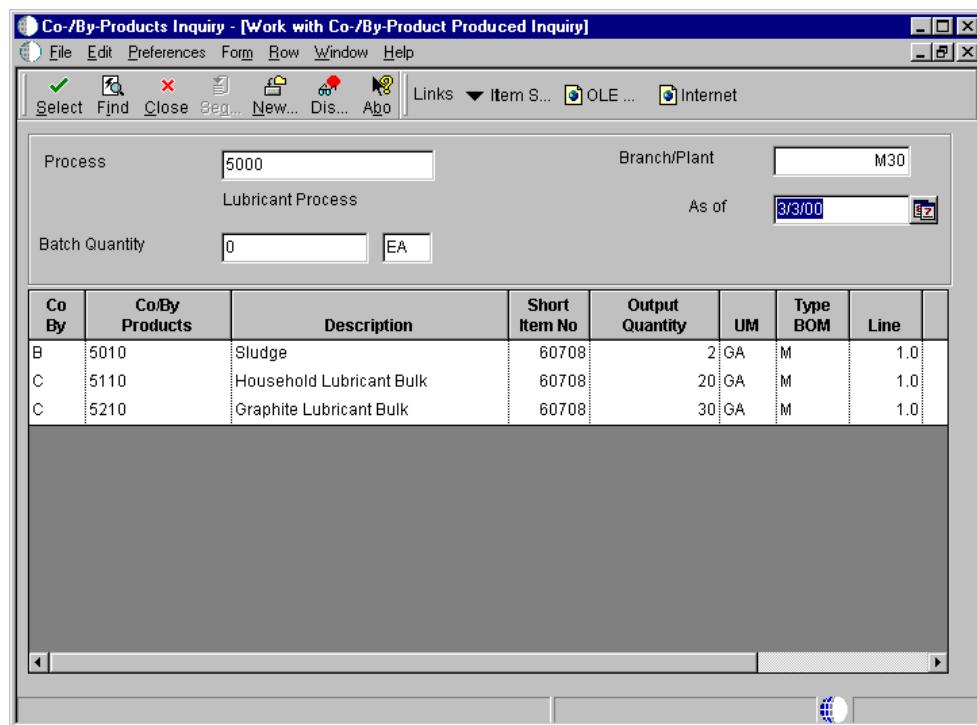
- *Locating Bills of Material* to review the processing options for Ingredients Where Used

#### ► To review co-products and by-products

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*From the Daily PDM Process menu (G3012), choose Co-/By-Products Inquiry.*

Use the Co-/By-Products Inquiry program to review all the co-products and by-products of a specific process.



The screenshot shows the 'Co-/By-Products Inquiry - [Work with Co-/By-Product Produced Inquiry]' window. The window has a toolbar with icons for Select, Find, Close, New, Dis..., and Abo. Below the toolbar are fields for Process (5000), Branch/Plant (M30), Lubricant Process, As of (3/3/00), and Batch Quantity (0 EA). The main area contains a table with the following data:

Co By	Co/By Products	Description	Short Item No	Output Quantity	UM	Type BOM	Line
B	5010	Sludge	60708	2	GA	M	1.0
C	5110	Household Lubricant Bulk	60708	20	GA	M	1.0
C	5210	Graphite Lubricant Bulk	60708	30	GA	M	1.0

1. On Work With Co-/By-Product Produced Inquiry, complete the following fields and click Find:
  - Process
  - Branch/Plant
2. Review the co-product and by-product information.

## Processing Options for Co By Product Where Produced (P30210)

### Versions

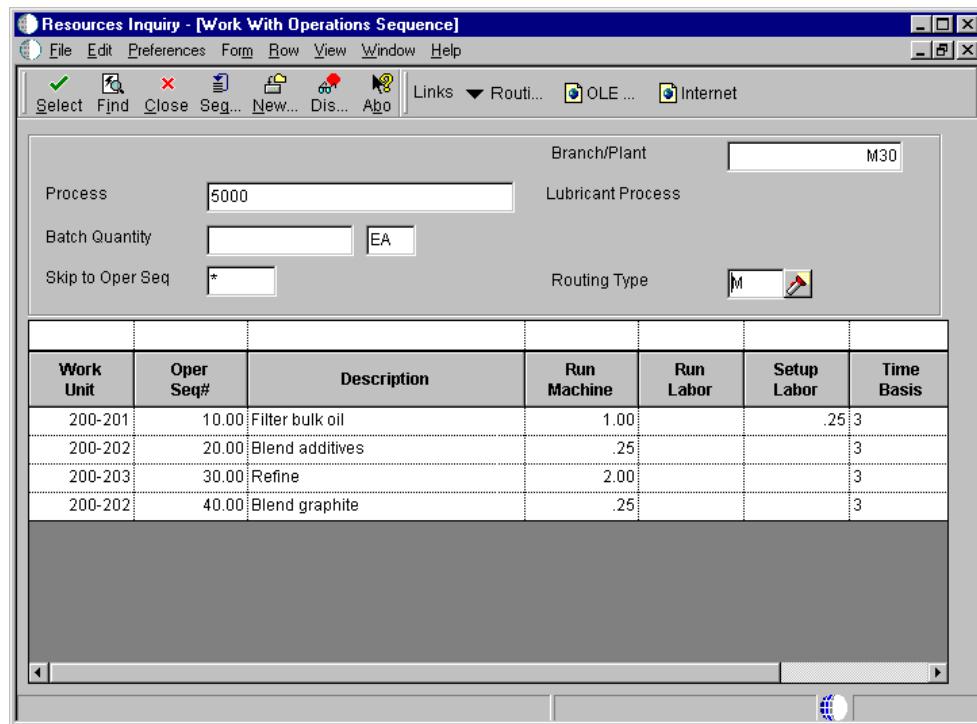
Enter the version for each program. If left blank, version ZJDE0001 will be used.

1. Item Master (P4101B)
2. ECO Workbench (P30225)
3. Bill of Material Revisions (P3002)
4. Single Level BOM Report (R30410)

### ► To review resources

*From the Daily PDM Process menu (G3012), choose Resources Inquiry.*

Use the Resources Inquiry program to review the resources of the process-- for example, the operations of the process and at which work center they are processed.



On Work With Operations Sequence, complete the following fields and click Find:

- Branch/ Plant
- Process

### ► To review process instructions

*From the Daily PDM Process menu (G3012), choose Instructions Inquiry.*

Use the Instruction Inquiry program to review the hours for machine, labor, and setup in the instructions for a specific process.

**Instructions Inquiry - [Work with Process]**

File Edit Preferences Form Row View Window Help

Select Find Add Copy Close Seg... New... Dis... Abo Links Revisi... OLE... Internet

Process Information								
Process	5000	Lubricant Process						
Batch Quantity		EA						
As of Date	3/3/00	Line/Cell		Routing Type	M			
Item Rev	*	Drawing No		Skip to Op No.	*			
Work Center	Oper Seq#	Description		Run Labor	Run Machine	Setup Labor	Effective From	
200-201	10.00	Filter bulk oil			1.00	.25	4/1/9	
200-202	20.00	Blend additives			.25		4/1/9	
200-203	30.00	Refine			2.00		4/1/9	
200-202	40.00	Blend graphite			.25		4/1/9	

1. On Work With Routing Operations, complete the following fields and click Find:
  - Branch/Plant
  - Item Number
2. Choose a process operation, and then choose Inquiry from the Row menu.

The screenshot shows the PeopleSoft Process Inquiry interface. At the top, there's a navigation bar with links for Portal, Home, Intranet, and Training. Below that is a toolbar with icons for Cancel, Form, Tools, and Help. The main area is titled "Process Inquiry". It contains several groups of input fields:

- Process:** Branch/Plant (M30), Process (5000), Batch Qty / UM (EA), Rstd w/Shrink, Work Center (200-201), Filter bulk oil.
- Run Hours:** Run Machine (1.00), Move Hours, Queue Hours, Setup Hours (0.25), Effective From (04/15/97), Effective Thru (12/31/10), Location.
- Type Oper:** Time Basis (3), Crew Size (1.0), Op. Yield % (100.00), % of Overlap, Equipment Number.
- Employee Information:** Std Desc, Employee Number.

3. On Process Inquiry, review the following fields that display leadtime information:
  - Run Hours
  - Run Machine
  - Setup Hours

#### See Also

- Entering Routing Instructions* to review the processing options for Enter/Change Routing

#### Printing Process Information

You can print process information in single level, multilevel, and multilevel indented formats. Single level prints parent item and its components. Multilevel prints parent item and its components and subassemblies. Indented indicates the level of the components and subassemblies. You can specify a process and print the ingredients for that process. If there is more than one process, for example, in the case of different batch sizes, the program prints each process separately.

#### Topics

- Single level ingredient report
- Multilevel ingredient report
- Ingredient where used report

- Process report
- Instructions report

### **Single Level Ingredient Report**

*From the Periodic PDM Process menu (G3022), choose Single Level Ingredient.*

Use the Single Level Ingredient report to print information about a parent item and its components. Use the processing options to specify a time frame and print detail information.

#### **Processing Options for Single Level Ingredient Report (P30410)**

---

##### Defaults

1. Enter the "As of" date for the Bill of Material. If left blank, the current date will be used.

##### As of Date

##### Print

1. Enter a '1' to print a second line of detail for items appearing on the report. If left blank, only one line of detail will be printed.

##### Print Detail Flag

---

### **Multilevel Ingredient Report**

*From the Periodic PDM Process menu (G3022), choose Multi Level Ingredient.*

Use the Multi Level Ingredient report to print information about a parent item, its components and subassemblies. Use the processing options to specify a time frame and to print detail information, component locators, and an indented bill of material.

#### **Processing Options for Multi Level Ingredient Report (P30415)**

---

##### Defaults

1. Enter the "As of" date for the Bill of Material. If left blank, the current date will be used.

##### As of Date

##### Print

1. Enter a '1' to print an indented Bill of Material.

##### Tax Authority

##### Indented Bill

2. Enter '1' to print a second line of detail, for items appearing on the report. If left blank, only one line of detail will be printed.

##### Detail Line

3. Enter a '1' to print the component locations.

##### Component Locators

---

### **Ingredient Where Used Report**

*From the Periodic PDM Process menu (G3022), choose Where Used Ingredient.*

The Where Used Ingredient report shows all processes that use a specific ingredient. Use the processing options to print detail information and to specify whether you want a single level, multilevel, or indented bill of material style of report.

#### **Processing Options for Ingredient Where Used Report (P30420)**

---

##### Format Option

1. Select the Mode or Style of report to be created: 1 = Single Level; 2 = Multi- Level; 3=Multi-Level

##### Indented

##### Mode of Report

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---

2. Enter a '1' to print a second line of detail on the report. If left blank, only one line of detail will be printed.

Print Line of Detail

---

### **Process Report**

*From the Periodic PDM Process menu (G3022), choose Process Report.*

Use the Process report to print the process operations of all processes.

The system retrieves the data for this report from the Routing Master table (F3003).

### **Instructions Report**

*From the Periodic PDM Process menu (G3022), choose Instructions Report.*

Use the Instructions report to print the instructions for all processes.

The system retrieves the data for this report from the Routing Master table (F3003).

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# **Engineering Change Management**

## **Engineering Change Management**

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Manufacturers must respond quickly with engineering changes to maintain and increase market share. Engineering changes might be necessary to respond to market demand, governmental requirements, safety issues, service requirements, or for other functional or competitive reasons.

Use the Engineering Change Management system to create, plan, review, approve, and implement engineering change orders and engineering change requests.

### **Topics**

- Setting up engineering change orders
- Working with engineering change orders
- Reviewing engineering change orders
- Approving engineering change orders
- Creating an engineering change order from a request

### **What is an Engineering Change Order?**

Engineering change orders (ECOs) are numbered documents that you use to track product changes within the Engineering Change Management system. After you have tested and approved an ECO, you can implement it and modify your standard product or process.

Product or process changes can affect many areas within your company, including the following:

- Customer service
- Tooling
- Standards
- Suppliers
- Master production schedule
- Product cost
- Service parts
- Inventory
- Plant layout

The procedures for ECOs are the same as the procedures for engineering change requests. However, you must use order type EN when setting up, reviewing, or approving ECOs.

### **What is an Engineering Change Request?**

Engineering change requests (ECRs) are numbered documents that you use to track requested product changes within the Engineering Change Management system. After you

have tested and approved an ECR, you can convert it to an ECO and implement it using your ECO processes.

The procedures for ECRs are the same as the procedures for ECOs. However, you must use order type EG when setting up, reviewing, or approving ECRs.

## Features

You can do the following with ECOs:

- |  |  |
|--|--|
| <b>Define who approves the ECO</b>                   | Defining ECO approvers enables you to do the following: <ul style="list-style-type: none"><li>• Establish levels of approval so that each member of the first review group must approve the ECO before the next group receives notification</li><li>• Locate the status of an ECO and review who has approved it and who has yet to approve it</li><li>• Use electronic mail to notify and approve ECOs</li><li>• Create and maintain bill of material data that is associated with the change</li><li>• Notify reviewers during the approval process</li><li>• Limit access to the approval records</li></ul> |
| <b>Define which items to change</b>                  | Defining which items to change enables you to do the following: <ul style="list-style-type: none"><li>• Describe the change</li><li>• Define the parts and processes that are necessary to implement the ECO</li><li>• Include multiple parent item or component relationships on the same change order</li></ul>  |
| <b>Define the change to the routing instructions</b> | Defining the change to the routing instructions enables you to itemize the steps required to make the change.  |
| <b>Define additional detail</b>                      | Defining additional detail enables you to do the following: <ul style="list-style-type: none"><li>• Enter supporting data, such as costs, dates, reasons, status, affected work and purchase orders, approval history, and implementation steps into a centralized database</li><li>• Identify the originator of and reason for the change</li><li>• Set up user defined codes to define the reason, status, and disposition of the change order</li><li>• Attach supplemental information</li></ul>   |

## System Integration

ECOs integrate with the following systems:

<b>Shop Floor Management</b>	Uses the revision level maintained by ECOs to retrieve the appropriate bill of material for a work order.  You can create a work order from a prior ECO revision level.
<b>Inventory Management</b>	Updates the Item Master revision level.

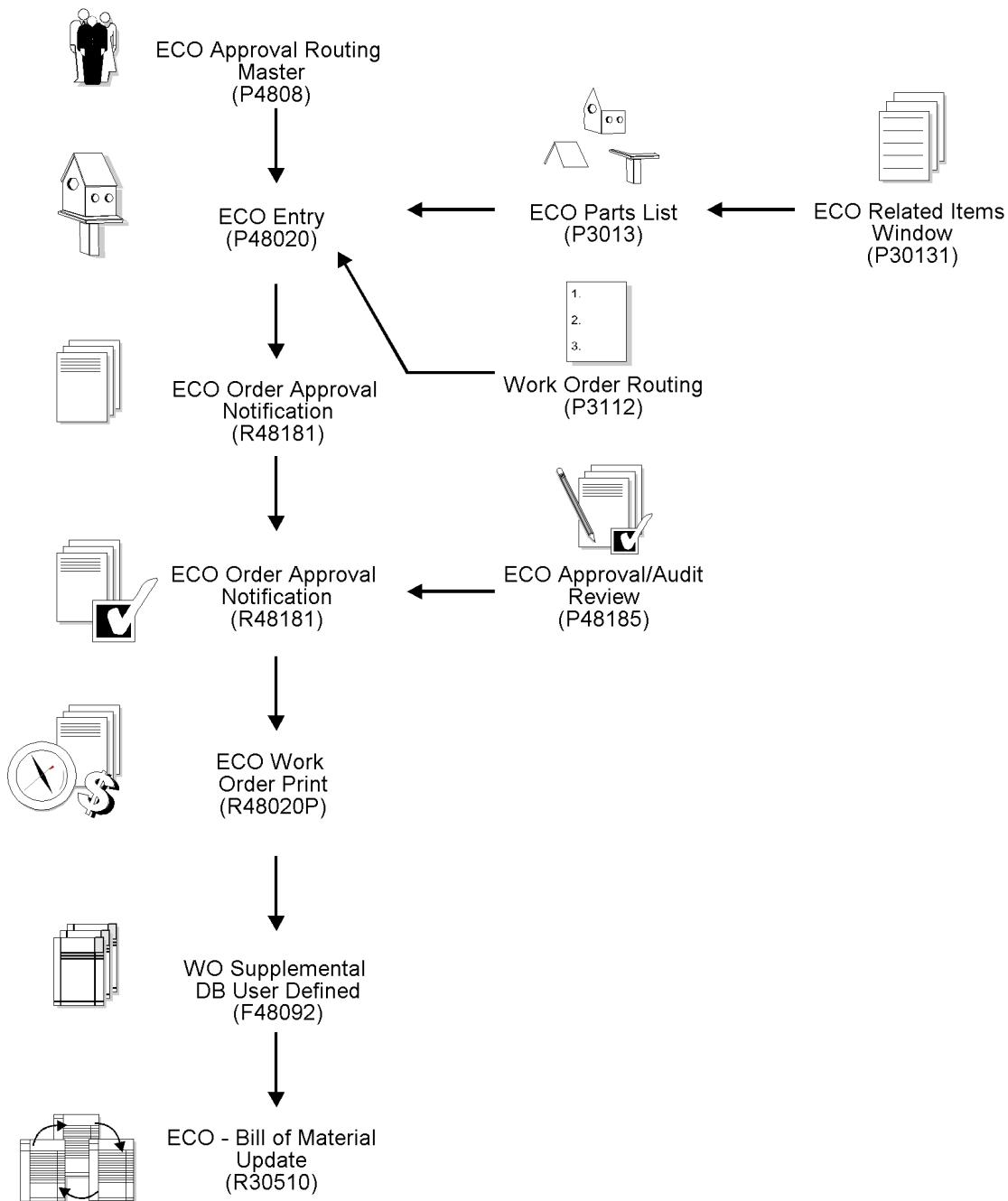
## Who is Involved in the Engineering Change Order Process?

The ECO process involves the following personnel:

- The administrator, who sets up the ECO by doing the following:
  - Setting up the approval routing master
  - Reviewing and modifying the ECO codes
  - Setting up next numbers
- The coordinator, who creates the ECO by doing the following:
  - Verifying that no prior ECO or ECR exists for this change
  - Entering the ECO
  - Defining the change with a list of affected parent and component items
  - Establishing the new routing instruction operations to implement the ECO
  - Maintaining supplemental details
  - Running the notification program
- The reviewer, who approves or rejects the ECO by doing the following:
  - Reviewing the ECO after system notification
  - Running reports to obtain information for an individual ECO or a list of open ECOs
  - Periodically checking for outstanding ECOs
- The coordinator, who implements the ECO by running the Engineering Change Population program (P30510)

## Engineering Change Order Process

The following graphic illustrates the engineering change order process:



## What Kinds of Changes Can You Define?

You can define the engineering change order by determining the type of change to make and identifying parent and component items. For example, you can determine whether to do the following:

- Add a new part
- Change an existing part

- Replace an old part with a new part
- Remove an existing item

## Engineering Change Order Revision Levels

A revision level is an alphanumeric character that represents the number of times that an item has been changed. This value usually indicates a permanent change to an item's form, fit, or function. For efficient tracking of changes with revision levels, the revision levels for an item's bill of material and its routing instruction should match. You can use an ECO to update an item's revision level and a drawing's revision level.

Use ECOs to manage revision-level information. For example, you can do the following:

- Assign the next revision levels (30/NR) for ECOs.
- Load parent revision levels for a component that is being added or modified.
- Locate the revision levels of an ECO.
- Assign ECO revision levels automatically.
- Maintain drawing revision levels for each item that is changed by an ECO, and update the drawing revision in either the Bill of Material or Item Master tables.

## Setting Up Engineering Change Orders

Before you use the Engineering Change Management system, you need to set up codes, next numbers, and the approval routing master for engineering change orders (ECOs). The codes you must set up are user defined and specify the type, priority, and status of the ECO. The user defined codes also include what the system should do with existing items affected by the ECO and the reasons for the ECO. You must also set up next numbers to automatically number ECOs according to your specifications. You can activate the system to route the ECO information to specified reviewers for their approval before it is processed. To do so, you must identify an ECO approval routing.

### Topics

- Setting up user defined codes
- Setting up next numbers
- Setting up approval routings

### Before You Begin

- Define your work centers. See *Entering Work Centers*.
- Define your items in the Inventory Management system. See *Entering Item Master Information* in the *Inventory Management Guide*.

## Setting Up User Defined Codes

User defined codes are stored in tables by system and code type. For example, system 30, type TB represents Product Data Management and user defined code time basis code. To set up time basis codes for machine or labor hours, identify all the codes you want to use to identify the different time basis codes using the User Defined Codes form. If you enter a time basis code on another form that you did not identify as a time basis code on the User Defined Codes form, the system displays an error message. For example, you can only enter codes

in the time basis code field that exist in the user defined code table for system 30 and type TB.

#### See Also

- *User Defined Codes in the OneWorld Foundation Guide for detailed information about user defined codes*

#### Topics

- Type Code (00/TY)
- Priority Code (00/PR)
- Status Code (00/SS)
- Phase In Code (40/PH)
- Existing Disposition Code (40/ED)
- Reason Code (40/CR)
- Next Revision Level (30/NR)

#### Type Code (00/TY)

Type code (00/TY) indicates the type of engineering change order, such as G for government change and R for rework.

#### Priority Code (00/PR)

Priority code (00/PR) indicates the priority of the engineering change order, such as H for high priority and 3 for normal priority.

#### Status Code (00/SS)

Status code (00/SS) indicates the status of the engineering change order, such as EM for emergency and A for approved.

#### Phase In Code (40/PH)

Phase in code (40/PH) indicates how to phase in engineering change orders, such as IMD for immediate and AVL for as available.

#### Existing Disposition Code (40/ED)

Existing disposition code (40/ED) indicates what to do with existing items that are affected by the engineering change order, such as CNL for cancel, RWK for rework, UAI for use as is, and SCP for scrap.

#### Reason Code (40/CR)

Reason code (40/CR) indicates the reasons for defined engineering change orders, such as CC for customer change and RF for federal requirements.

#### Next Revision Level (30/NR)

Next revision level (30/NR) indicates the sequence of revision levels that are assigned to engineering change order transactions.

## **Setting Up System Next Numbers**

When you enter a document, such as an invoice, a voucher, a work order, or a journal entry, you can assign a document number or let the Next Numbers program assign one. Next numbers is an automatic numbering feature. The Next Numbers program assigns numbers to documents using either or both of the following types of numbers:

- Standard next numbers. The system finds the next available number in the Next Numbers - Automatic table (F0002) and assigns that number to the document.
- Next numbers by company and fiscal year. The system finds the next available number by company and fiscal year, or by company only, in the Next Numbers by Company/Fiscal Year - Automatic table (F00021).

Next numbers work in conjunction with the data dictionary. Each data dictionary item that uses next numbers contains a next numbering index value that corresponds to the line number containing the next number value for that data item.

J.D. Edwards makes several important recommendations to set up next numbers. J.D. Edwards recommends that you:

- Do not change a next number. Changing the numbers can result in duplicates as well as the inability to locate previously added numbers. If you must change a next number, change it to a greater value only.
- Do not delete next number values. If you delete a next number value, you might get unexpected results.
- Do not change the sequence of the next numbers in the table. Each next number must remain on its current line because programs reference a specific line in the table. For example, in the General Accounting system, the next number for journal entries must be on the second line. .
- Do not use blank as a next number value.

You can have the system assign check digits for any set of standard next numbers. Check digits prevent errors caused by transposition during data entry. For example, activating check digits in the address book for suppliers prevents a voucher from being assigned to the wrong supplier if digits are transposed during voucher entry.

J.D. Edwards recommends that you use check digits for next numbers only if a transposition during data entry is likely to create errors.

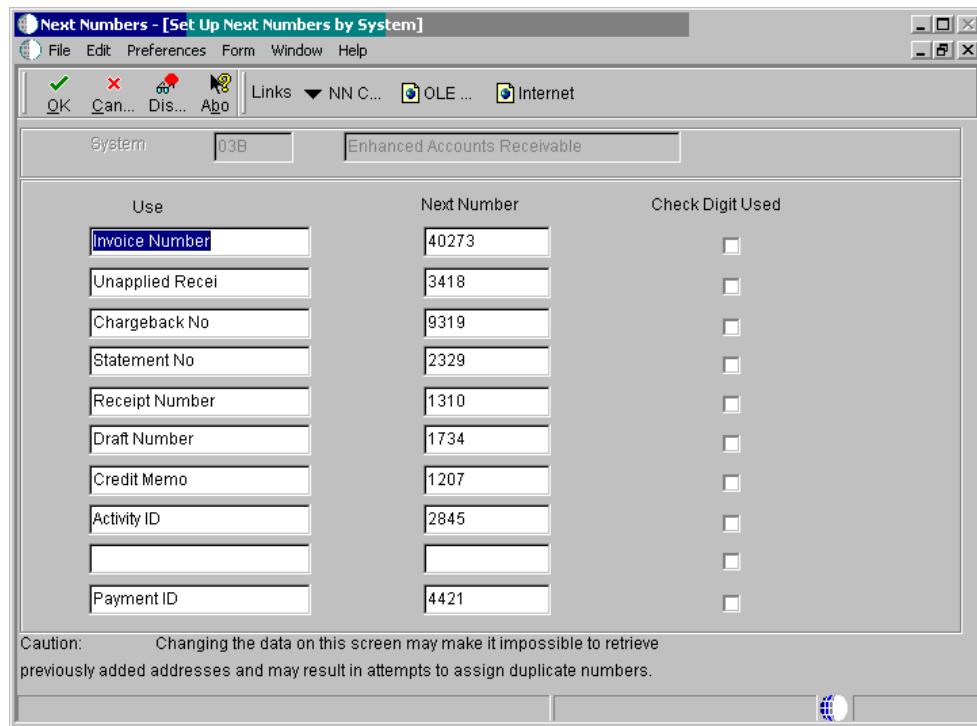
### **► To review next numbers**

---

*From the General Systems menu (G00), choose Next Numbers.*

You can review the next numbers that the system assigns to invoices and other documents. You can also have the system assign check digits for any set of standard next numbers. Check digits prevent errors caused by transposition during data entry.

1. On Work With Next Numbers, scroll down to find the system that you want to review, or use the following query by example field to find the system:
  - System
2. Choose the system that you want to review and click Select.



3. On Set Up Next Numbers by System, verify information in the following field:
  - Next Number Range 1
4. Choose the Check Digits Used option for each number that you want to activate check digits.

---

#### Note

J.D. Edwards recommends that you use check digits for next numbers only if a transposition during data entry is likely to create errors.

---

5. Click OK.

## Setting Up Approval Routings

Use an approval routing to maintain a list of reviewers who should receive an electronic mail notification of pending ECOs.

You can set up two types of approval routing:

- Approval routing master
- Order-specific approval routing

The approval routing master applies to a specific branch/plant and order type combination. Order-specific approval routing applies to a specific ECO. After you set up an approval routing master for your branch/plant, you can customize the routing for a specific ECO.

The system notifies all of the reviewers in a group at the same time. The system notifies the groups in the order that they are defined within the user defined code. The codes do not have to be numeric. The system waits to send notification to a group until all of the members in the prior group have approved the ECO.

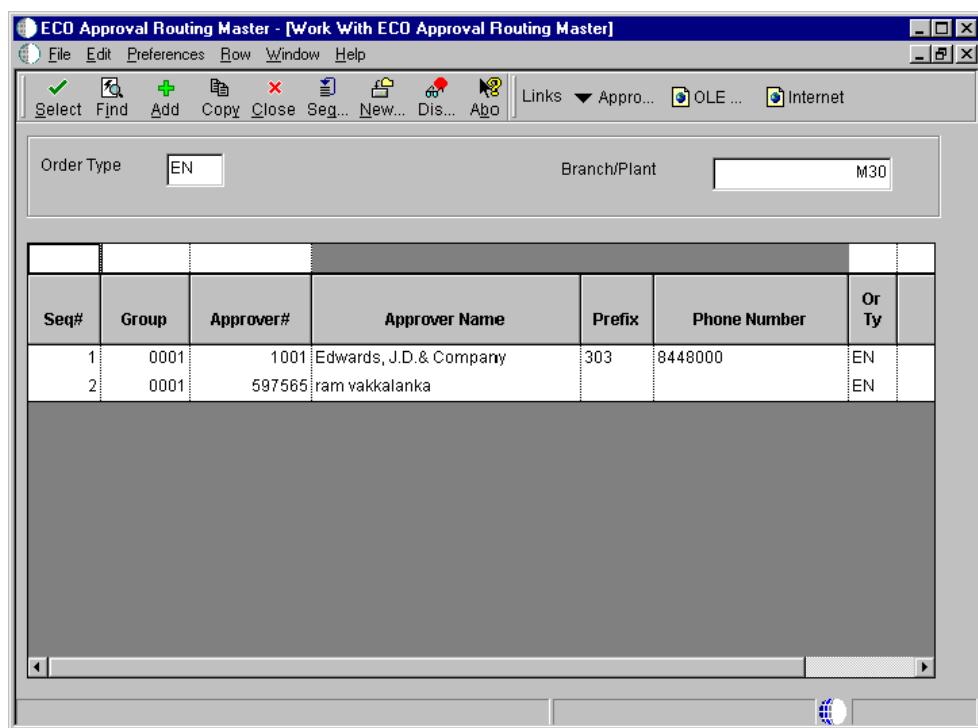
### Topics

- Setting up an approval routing master
- Setting up an order-specific approval routing (optional)

#### ► To set up an approval routing master

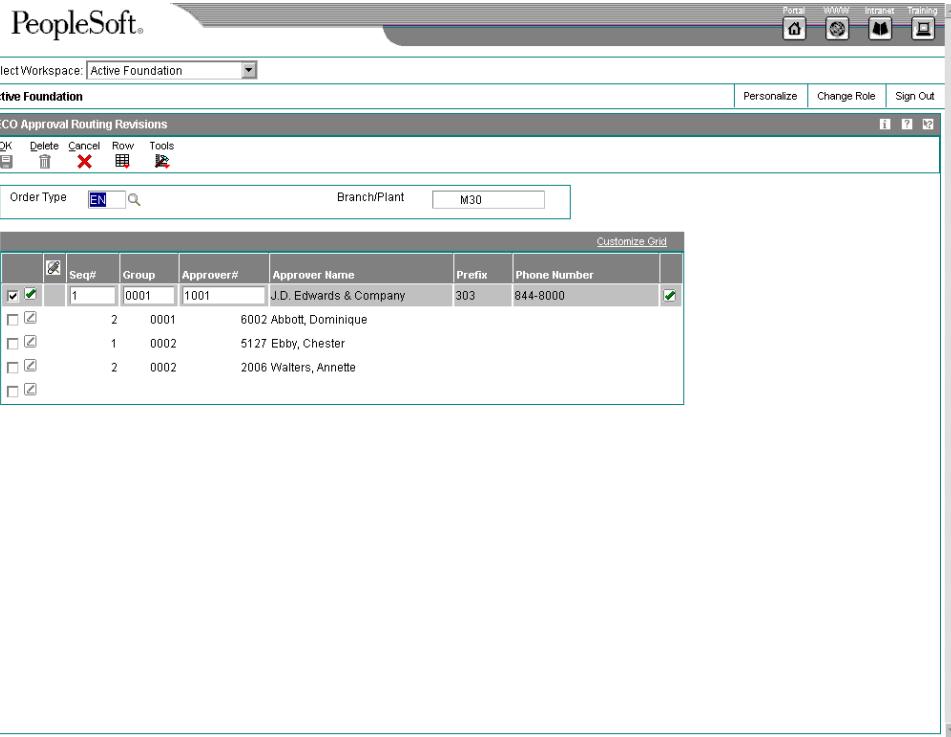
---

*From the Engineering Change Management menu (G3013), choose ECO Approval Routing Master.*



1. On Work With ECO Approval Routing Master, type EN in the following field:

- Order Type



2. On ECO Approval Routing Revisions, complete the following fields and click OK:
- Seq#
  - Group
  - Approver#

#### Processing Options for ECO Approval Routing Master (P4808)

---

##### Defaults

Enter the default search order type. If left blank, 'EN' will be used.

##### Order Type

##### Versions

Address Book (P0101)

---

► **To set up an order-specific approval routing**

*From the Engineering Change Management menu (G3013), choose ECO Order Specific Routing Approval.*

The screenshot shows the PeopleSoft Order Specific Routing Approval Revisions screen. At the top, there are buttons for OK, Find, Delete, Cancel, Form, Row, and Tools. Below that, there are fields for Branch/Plant (M30), Order Type (EN), and Order Number (20001). The main area contains a grid with columns: Sequence No., Grouping No., Approver No., Approver Name, Prefix, Phone Number, Approval Status, Date Approved, and Approver ID. The first row has a checked checkbox in the Approver No. column. The second row has an unchecked checkbox in the Approver No. column.

	Sequence No.	Grouping No.	Approver No.	Approver Name	Prefix	Phone Number	Approval Status	Date Approved	Approver ID
<input checked="" type="checkbox"/>	1	0001	1001	J.D. Edwards & Company	303	844-8000			DEMO
<input type="checkbox"/>	2	0001		6002 Abbott, Dominique					DEMO
<input type="checkbox"/>							P		

- On Order Specific Routing Approval Revisions, complete the following field and click Find:
  - Order Number
- For each approver, complete the following fields and click OK:
  - Sequence No.
  - Grouping No.
  - Approver No.

## Working With Engineering Change Orders

Use engineering change orders (ECOs) to plan, approve, and implement product changes. The creator of the ECO typically performs several tasks, such as setting up the approval routing master, reviewing and modifying the user defined codes, and setting up next numbers.

### Topics

- Locating existing engineering change orders (optional)
- Entering engineering change orders
- Defining routing instructions for engineering change orders
- Defining changes

- Reviewing pending orders
- Notifying reviewers of engineering change orders

## Locating Existing Engineering Change Orders

Before you create an ECO, you might want to verify that one does not exist for the change. Use the ECO Workbench to view and manage ECO information, and check the progress of an ECO.

### ► To locate existing engineering change orders

---

*From the Engineering Change Management menu (G3013), choose ECO Workbench.*

Status	Order Number	Or Ty	Description	2nd Item Number	Originator	Reason	Phase In	Type	Priority

1. On Work With ECO Workbench by Item, complete the following fields and click Find:
  - Branch/Plant
  - Item Number
2. To limit your search, use the selection criteria on this form, or click the Additional Selection tab and complete any of the fields.
3. Review the following fields that display ECO information:
  - Status
  - Order Number

- Or Ty
- Description
- Originator
- Reason
- Phase In
- Priority
- Target Incorp
- Actual

## Processing Options for ECO Workbench (P30225)

---

### Versions

Enter the version for each program. If left blank, version ZJDE0001 will be used.

1. Enter/Change Order (P48020)
2. WO Details \*ZJDE0001 (P480200)
3. Pending PO's \*ZJDE0002 (P480200)
4. Parts List (P3013)
5. Approval Audit/Review (P48185)
6. Address Book Master Search (P0101S)
7. Work Order Routing (P3112)

### Defaults 1

1. Enter the values to preload to the screen at initial inquiry. If left blank, no value will be preloaded.

### Reason Code

### Phase Code

### Work Order Type

### Priority

### Originator

### Defaults 2

1. Enter the values to preload to the screen at initial inquiry. If left blank, no value will be preloaded.

### From Status

### Thru Status

### Item Number

### Document Type

### Phase

---

## Entering Engineering Change Orders

You must first define the ECO number and codes that determine its priority, status, effective dates, and so on. Later, you must define the routing instruction, parts list, and detail information. If you specify a parent work order number on the ECO, you can retrieve related work orders and review the history of a product.

To delete an ECO, you must first delete the ECO parts list and then delete the ECO.

---

### ► To enter engineering change orders

*From the Engineering Change Management menu (G3013), choose Enter/Change ECO.*

1. On Work With ECO Work Order Entry, click Add.

2. On ECO Work Order Entry Revisions, complete the following fields:

- Branch/Plant
- ECO Number
- ECO Description

3. Click the ECO Entry tab, and complete the following optional fields:

- Charge to Cost Center
- Cost Code
- Parent Work Order
- Search X-Ref
- Standard Desc
- W.O. Flash Message
  - Drawing Change
  - BOM Change
  - Routing Change
  - New Part Number

4. Click the Type tab and complete the following optional fields:

- Type
- Priority
- Status
- Phase In
- Existing Disp
- Reason

5. Click the Names tab and complete the following optional fields:

- Originator
- Coordinator
- Customer
- Supervisor
- Manager

6. Click the Dates tab and complete the following optional fields under the Target Dates heading:

- Design
- Engineering
- Incorporated

7. On the Dates tab, complete the following optional fields under the Actual Dates heading:

- Design
- Engineering
- Incorporated

8. Click the Category Codes tab and complete the following optional fields, and click OK:

- Phase
- Category 02
- Category 03
- Category 04

- Category 05
- Experience Level
- Service Type
- Skill Type
- Status
- Category 10

9. Click OK.

### **Processing Options for ECO Entry (P48020)**

---

#### Defaults

1. Enter the default value for Document Type. If left blank, "EN" will be used.

#### Document Type

2. Enter the default value for Order Status. If no value is entered, then blank will be used as the default status.

#### Status

#### Process

1. Enter the document type created when creating an engineering change order from an engineering change request. If left blank, type 'EN' will default.

#### ECO Order Type

#### Versions

1. Enter the version to use for each program listed. If left blank, version ZJDE0001 will be used.

WO Details \*ZJDE0001 (P480200)

Parts List (P3013)

Workbench (P30225)

Pending PO's \*ZJDE0002 (P480200)

Approval Notification (R48181)

Approval Audit/Review (P48185)

Instruction/Disposition (P4802)

Work Order Routing (P3112)

Work Order Record (P48217)

### **Defining Routing Instructions for Engineering Change Orders**

After you enter the ECO, you can define a routing instruction that indicates the steps that are necessary to implement the ECO. For example, the engineering department might request that you test a new manufacturing process before it is implemented.

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#### **Note**

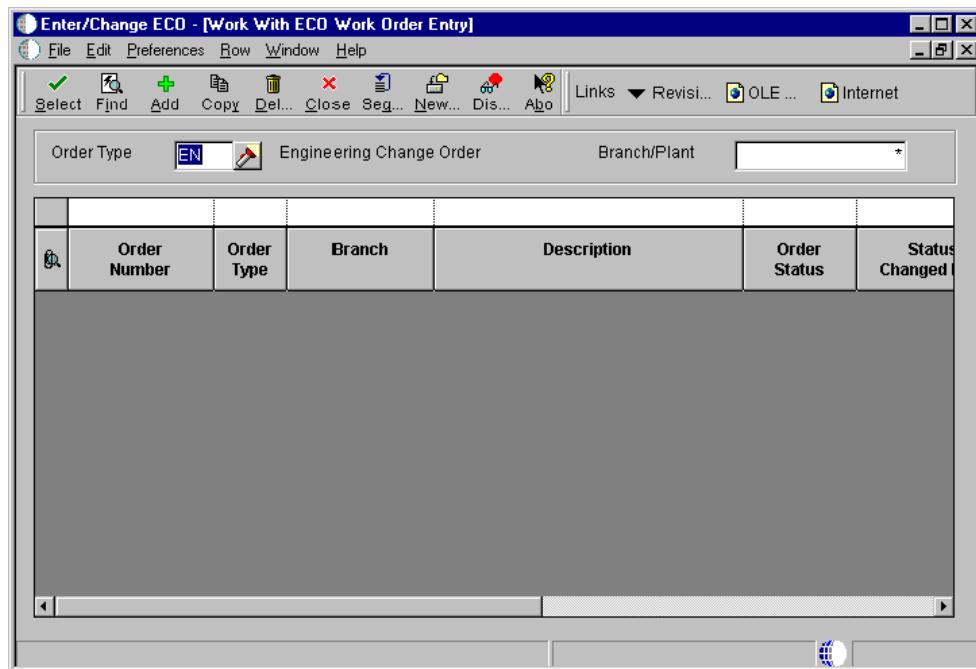
You cannot use this program to change production routing instructions.

---

---

#### **► To define routing instructions for engineering change orders**

*From the Engineering Change Management menu (G3013), choose Enter/Change ECO.*



1. On Work With ECO Work Order Entry, complete the following field and click Find.
  - Branch/Plant
2. Choose the record and then choose Routing from the Row menu.

Work Center	Operation Sequence	R/A	Operation Status	Operation Description	Labor Run Hours	Run Labor	Start Date	Request Date
MECHEN	10.00	0		Complete Design	24.00			
PRODEN	20.00	0		Review Manufacturing Impact	40.00			
PRODCO	30.00	0		Update Standard Cost Amounts	2.00			
PRODEN	40.00	0		Implement Change	1.00			

3. On Work Order Routing, complete the following fields and click OK:

- Work Center
- Operation Sequence
- Operation Description
- Start Date
- Request Date

#### See Also

*Entering Engineering Change Orders* to review the processing options for ECO Entry

#### ► To define affected items

---

*From the Engineering Change Management menu (G3013), choose ECO Parts List.*

You can only update an ECO with the next revision level if there are no pending ECOs for the item. If there are pending ECOs, the system displays an error message and does not update the revision level.

The Engineering Change Order system automatically selects related items based on the change type and parent and child relationship values. You can delete the related items for which you do not want to implement the change.

Use effective dates to phase in and out any product or process changes. Effective dates might not require an ECO process and are for smaller, short-term or low-impact changes.

You can maintain the drawing revision level for each item. The Engineering Change Population program can update the drawing revision level in both the Bill of Material Master table (F3002) and the Item Master table (F4101).

ECO Parts List - [Work With ECO Parts List]							
File Edit Preferences Row Window Help                         Select Find Close Seg... New... Dis... Abo Links ▾ Attach... OLE... Internet							
Order Type			EN	Branch/Plant		M30	
#	Order Number	Order Type	Description	Branch/Plant	ECO Status	Status Changed Date	Originator Number
	2503	EN	testing	M30			5808543
	2507	EN	Copy Replacement	M30			6002
	2515	EN	Testing for NN3	M30	E1		5842186
	2516	EN	Testing for NN4	M30	E1		5842186
	2517	EN	Testing for NN5	M30	E1		5842186
	20001	EN	Replace Seat Post	M30	30		6002
	159874	EN	Autopilot Test	M30	E1		6068938
	159875	EN	Autopilot Test	M30	E1		5989911
	159876	EN	Autopilot Test	M30	E1		5989911
	159877	EN	Autopilot Test	M30	E1		5989911
	159878	EN	Autopilot Test	M30	E1		5989911
	159879	EN	Autopilot Test	M30	E1		5989911
	159881	EN	Autopilot Test	M30	E1		5989911
	159888	EN	Autopilot Test	M30	E1		5989911

1. On Work With ECO Parts List, complete the following field and click Find:
  - Branch/Plant
2. Choose the row that contains the ECO for which you want to define affected items and click Select.

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Chg Type	P/C Rel	Item Number	Item Description	Item Branch/Plant	Frm Rev	To Rev	Effective From	Effective Thru
<input checked="" type="checkbox"/>	C	2018	Seat Post, AA	M30	AA	07/01/05	07/01/05	12/31/10

3. On ECO Parts List Entry, complete the following fields and click OK:
  - Chg Type
  - P/C Rel
  - Item Number
  - Frm Rev
  - To Rev
  - Effective From
  - Effective Thru
  - Batch Qty
  - UM
  - Bill Type
  - Swap to Item
  - Swp Rev

## Topics

- Defining affected items

- Defining engineering changes

## Defining Changes

After you have created the ECO and defined the routing instruction, you must define the change and identify the affected items. For all engineering change types except swap parent, you must enter information about the change for other items on the ECO Related Items List form.

You can use the user defined code Next Revision Levels (30/NR) to automatically update revision levels based on the sequence that you define. Revision levels usually require an ECO and are for permanent, long-term changes. Revision levels include changes to form, fit, or function; and should match on a bill of material and routing instruction for the item. You can track changes in a bill of material with revision levels. Use the Revision Level field to display a revision history of the bill. These revision levels are user defined and for reference only.

The values that you enter in the Change Type and Parent/Component Relationship fields on the ECO Parts List Entry form define the changes and determine how the Engineering Change Population program updates the bill of material for the item.

You can use the following values in the Change Type and Parent/Component Relationship fields:

**Change Type field** N - add new part

C - change existing part

S - swap old part with new part

R - remove existing part

**Parent/Component Relationship field** P - parent item

C - component item

The Change Type and Parent/Child Relationship fields allow eight possible combinations. These combinations are as follows:

Change	ECO Parts List form					Related Items form	
	Change Type	P/C Rel	Enter the following:	Revision Level	Enter the following:	Revision Level	
Add a new bill	N	P	New parent item for the new bill	New parent revision	Components for the new parent	Revision level of added components	
Change a bill	C	P	Current parent item	Current parent revision	Updated parent information	New revision	
Swap a parent item	S	P	Swap to parent information	Swap to parent revision in fold	Not allowed	Not allowed	
			Swap from parent	Revision of swap from parent			

Remove a bill	R	P	Current parent information	Current revision	Not allowed	Not allowed
Add a new component	N	C	New component	New component revision	Parent bills using component (where used)	Revision of new components' parent
Change a component	C	C	The component to change	New revision of component	Parent bills that will have component changes	Parent of new component revision
Swap a component	S	C	Swap to component	Revision of swap to component	Parent bill having components swapped	Revision of parent having component swapped
			Swap from component	Revision of swap from component		
Remove a component	R	C	Component to remove	Revision of component to remove	Parent bills have component removed (where used)	Revision of parent having component removed

► **To define engineering changes**

---

*From the Engineering Change Management menu (G3013), choose ECO Parts List.*

Defining changes does not update the work order parts list for the item. You can update your bills of material with engineering change information manually, or by using either the Where Used Update program or the Engineering Change Population program. However, you cannot delete or change the parts on the ECO parts list after you have run the Engineering Change Population program.

1. On Work With ECO Parts List, complete the following field and click Find:
  - Branch/Plant
2. Choose the row that contains the ECO with which you want to work and click Select.
3. On ECO Parts List Entry, choose a row, and then choose Related Items from the Row menu.

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Item Number	Description	Item Branch/Plant	Frm Rev	To Rev	Effective From	Effective Thru	Batch Quantity	UOM	Typ BOM
220	Touring Bike, Red	M30 AA	AB	07/01/05	12/31/10		0 EA	M	
221	Touring Bike, Blue	M30 AA	AB	07/01/05	12/31/10		0 EA	M	
222	Touring Bike, Green	M30 AA	AB	07/01/05	12/31/10		0 EA	M	

4. On ECO Related Items, complete the following fields for each related item and click OK:
  - Frm Rev
  - To Rev
  - Effective From
  - Effective Thru
  - Batch Quantity
  - UOM
  - Typ BOM
  - Item Number
  - Curr Rev
  - Line No.
  - Quantity
  - Oper Seq#
  - F V

5. On ECO Related Items, choose the row, click Delete, and then click OK to remove one of the items.
6. On ECO Related Items, choose Where Used SS from the Form menu to choose other parent items.

The screenshot shows the PeopleSoft BOM Where Used Search & Select interface. At the top, there's a toolbar with icons for Portal, WWW, Intranet, Training, Home, Help, Personalize, Change Role, and Sign Out. Below the toolbar, the title bar says "BOM Where Used Search & Select". The main area has tabs for Select, Find, Close, and Tools. A search bar at the top right contains "Component Branch" and a dropdown menu. Below the search bar, there are fields for "2nd Item Number" (set to 2018) and "Seat Post, A4". The main content area is a grid titled "Records 1 - 10" with 10 rows. The columns are: Parent 2nd Item, Parent Branch, Description, Batch Quantity, UOM, Typ BOM, Oper Seq#, Line No., Is Cd, F V, Co By, and Qua. The data in the grid is as follows:

Parent 2nd Item	Parent Branch	Description	Batch Quantity	UOM	Typ BOM	Oper Seq#	Line No.	Is Cd	F V	Co By	Qua
220		D30 Touring Bike, Red	0 EA	M	60.00	130.00	U	V			
220		M30 Touring Bike, Red	0 EA	M	60.00	130.00	U	V			
221		D30 Touring Bike, Blue	0 EA	M	60.00	130.00	U	V			
221		M30 Touring Bike, Blue	0 EA	M	60.00	130.00	U	V			
222		M30 Touring Bike, Green	0 EA	M	60.00	130.00	U	V			
225		M40 Road Bike, Red	0 EA	M	60.00	130.00	U	V			
226		M40 Road Bike, Blue	0 EA	M	60.00	130.00	U	V			
227		M40 Road Bike, Green	0 EA	M	60.00	130.00	U	V			
250		D30 Prototype Racing Bike	0 EA	M	60.00	130.00	U	V			
255		D30 Prototype Racing Bike	0 EA	M	60.00	130.00	U	V			

7. On the BOM Where Used Search & Select, choose the parent items and click Select.

The system populates the grid on the ECO Related Items List program with the additional parent items.

#### Note

The name of this form varies depending on the Change Type and Parent/Child Relationship values.

### Processing Options for ECO Parts List (P3013)

#### Defaults Tab

Use this processing option to specify the type of document on which you want the system to search.

---

## **1. Order Type**

Use this processing option to specify the type of document on which you want the system to search. Order type is a user defined code (00/DT) that identifies the type of document, such as an order or an invoice. Enter an order type to use as the default value or choose it from the Search User Define Code form. If you leave this processing option blank, the system uses EN for engineering change order.

---

## **Versions Tab**

Use these processing options to specify which versions of the following programs that the system uses when processing an ECO parts list. If you leave a processing option blank, the system uses the ZJDE0001 version of that program.

- Item Master Revisions
- Item Inquiry With Word Search
- Supply and Demand Inquiry
- Bill of Material Inquiry
- Where Used Inquiry
- Item Branch
- Work Order Scheduling Workbench
- Enter/Change Order
- Work Order Routing
- ECO Related Item
- Purchase Order
- Work Order Details
- Pending Purchase Orders (ZJDE0002)

---

### **1. Item Master Revisions (P4101B)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Item Master Revisions program from the ECO Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Item Master Revisions program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

### **2. Item Inquiry With Word Search (P41200)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Item Inquiry With Word Search program from the ECO Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Item Inquiry With Word Search program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

### **3. Supply and Demand Inquiry (P4021)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Supply and Demand Inquiry program from the ECO Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Supply and Demand Inquiry program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

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#### **4. Bill of Material Inquiry (P30200)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Bill of Material Inquiry program from the ECO Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Bill of Material Inquiry program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

#### **5. Where Used Inquiry (P30201)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Where Used Inquiry program from the ECO Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Where Used Inquiry program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

#### **6. Item Branch (P41026B)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Item Branch program from the ECO Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Item Branch program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

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#### **7. WO Scheduling Workbench (P31225)**

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Use this processing option to specify the version that the system uses when you choose the Row exit to the Work Order Scheduling Workbench program from the ECO Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Work Order Scheduling Workbench program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

## **8. Enter/Change Order (P48020)**

Use this processing option to specify the version that the system uses when you choose the Form exit to the Enter/Change Order program from the Work With ECO Parts List form or from the ECO Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Enter/Change Order program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

## **9. Work Order Routing (P3112)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Work Order Routing program from the Work With ECO Parts List form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Work Order Routing program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

## **10. ECO Related Item (P30131)**

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Use this processing option to specify the version that the system uses when you choose the Row exit to the ECO Related Item program from the ECO Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the ECO Related Item program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

### **11. Purchase Order (P4310)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Purchase Order program from the ECO Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Purchase Order program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

### **12. WO Details (P480200)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Work Order Detail program from the ECO Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0001 version.

Versions control how the Work Order Detail program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

### **13. Pending PO (P480200)**

Use this processing option to specify the version that the system uses when you choose the Row exit to the Pending Purchase Orders program from the ECO

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Parts List Entry form. If you leave this processing option blank, the system uses the ZJDE0002 version.

Versions control how the Pending Purchase Orders program displays information.

Therefore, you might need to set the processing option to a specific version to meet your needs.

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### **Process Tab**

Use these processing options to specify information pertaining to pending engineering change orders. First, specify the version of the Supply/Demand Inclusion Rules to use when adding orders to the ECO Pending Orders Detail program. Second, specify whether the system uses the value in the To Revision field from the next revision when no pending engineering change orders exist. And third, specify the user defined code table of the ECO Next Revision Level.

When you set the To Revision Field processing option to update the item revision to the next revision level, the system updates the revision level for the change types as follows:

- |                         |   |
|-------------------------|---|
| <b>New parent (N/P)</b> | <ul style="list-style-type: none"><li>• For new parent information on the Parts List form, the revision level is updated.</li><li>• For component information on the Related Items form, the revision level is not updated.</li></ul> |
|-------------------------|---|

- |                            |  |
|----------------------------|--|
| <b>Change parent (C/P)</b> | <ul style="list-style-type: none"><li>• For parent information on the Parts List form, the revision level is not updated.</li><li>• For revised parent information on the Related Items form, the revision level is updated.</li></ul> |
|----------------------------|--|

- |                          |  |
|--------------------------|--|
| <b>Swap parent (S/P)</b> | <ul style="list-style-type: none"><li>• For swap-out parent information on the Parts List form, the revision level is not updated.</li><li>• For new parent information on the Parts List form, the revision level is updated.</li></ul> |
|--------------------------|--|

#### **Note**

Related Item records do not exist for this transaction type.

---

- |                            |   |
|----------------------------|---|
| <b>Remove parent (R/P)</b> | <ul style="list-style-type: none"><li>• For parent to remove information on the Parts List form, the revision level is not updated.</li></ul> |
|----------------------------|---|

#### **Note**

Related Item records do not exist for this transaction type.

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- |                            |   |
|----------------------------|---|
| <b>New component (N/C)</b> | <ul style="list-style-type: none"><li>• For new component information on the Parts List form, the revision level is not updated.</li><li>• For parent information on the Related Items form, the revision level is updated.</li></ul> |
|----------------------------|---|

- |                         |   |
|-------------------------|---|
| <b>Change component</b> | <ul style="list-style-type: none"><li>• For component information on the Parts List form. the revision level is</li></ul> |
|-------------------------|---|

<b>(C/C)</b>	updated. <ul style="list-style-type: none"><li>For parent information on the Related Items form, the revision level is updated.</li></ul>
<b>Swap component (S/C)</b>	<ul style="list-style-type: none"><li>For component to swap information on the Parts List form, the revision level is not updated.</li><li>For new component information on the Parts List form, the revision level is not updated.</li><li>For parent information on the Related Items form, the revision level is updated.</li></ul>
<b>Remove component (R/C)</b>	<ul style="list-style-type: none"><li>For component to remove information on the Parts List form, the revision level is not updated.</li><li>For parent information on the Related Items form, the revision level is updated.</li></ul>

---

## **1. Supply/Demand Inclusion Rules**

Use this processing option to specify the version of the Supply/Demand Inclusion Rules that the system uses. The system uses this version to add orders to the ECO Pending Orders Detail program. If you leave this processing option blank, the system does not add any orders.

Versions control how the Supply/Demand Inclusion Rules program displays information. Therefore, you might need to set the processing option to a specific version to meet your needs.

## **2. To Revision Field**

Use this processing option to specify whether the system uses the default value in the To Revision field from the next revision level UDC table when no pending engineering change orders exist.

When you set this processing option to update the item revision to the next revision level, the system updates the revision level for the change types as shown in the Tab level help.

Valid values are:

Blank The system uses a default value of the current revision level in the To Revision field.

1 The system uses a default value of the next revision level in the To Revision field.

## **3. UDC Product Code**

Use this processing option to specify the product code of the user defined code table from which the system retrieves the next revision level. If you leave this processing option and the UDC Code Type processing option blank, the system uses 30.

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#### 4. UDC Code Type

Use this processing option to specify code type of the user defined code table from which the system retrieves the next revision level. If you leave this processing option and the UDC Product Code processing option blank, the system uses NR.

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### Reviewing Pending Orders

After you process existing work orders and purchase orders, you can review pending orders for items affected by the ECO. Use pending orders to:

- Enter a quantity and cost estimate for incorporating the ECO into the work order or part on the purchase order
- Work with existing work orders or purchase orders
- Work with open work orders or purchase orders

The system displays the orders that are based on the supply and demand inclusion rules which you specify in the processing options.

#### Topics

- Reviewing purchase orders
- Reviewing work orders
- Loading purchase orders into supplemental data
- Loading work orders into supplemental data

#### See Also

- Defining Changes* to review the processing options for this program

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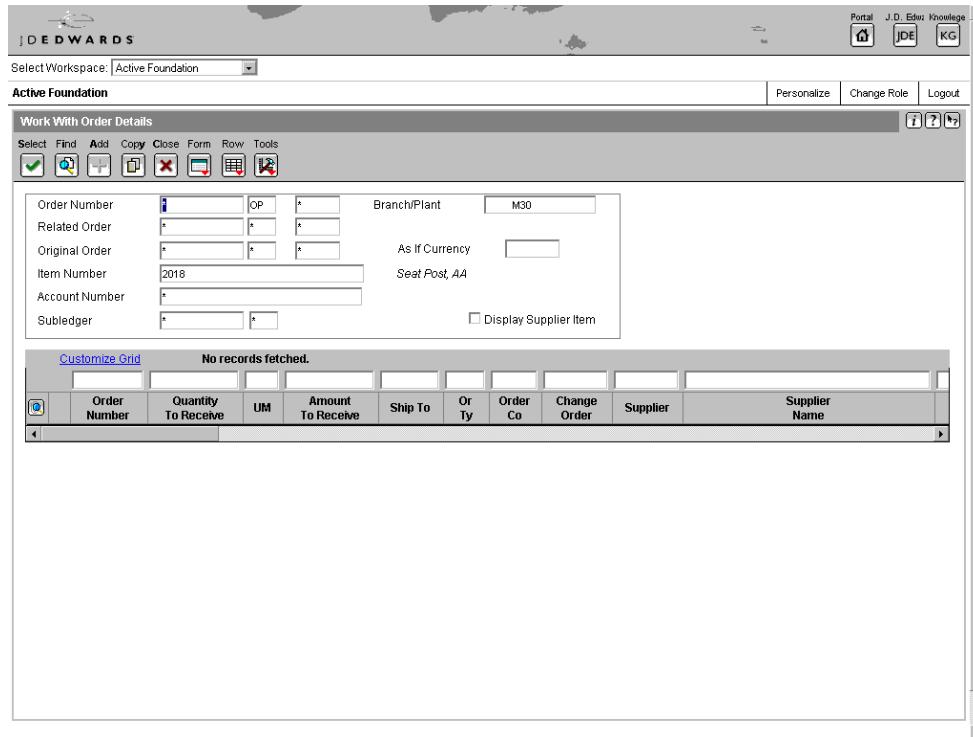
#### ► To review purchase orders

*From the Engineering Change Management menu (G3013), choose ECO Parts List.*

Use Work With ECO Parts List to review the items on pending purchase orders that are affected by an ECO.

1. On Work With ECO Parts List, complete the following field and click Find:
  - Branch/Plant
2. Choose the row and click Select.

3. On ECO Parts List Entry, choose a record and then choose Open POs from the Row menu.



4. On Work With Order Details, review the following fields that display ECO information:

- Order Number
- Or Ty

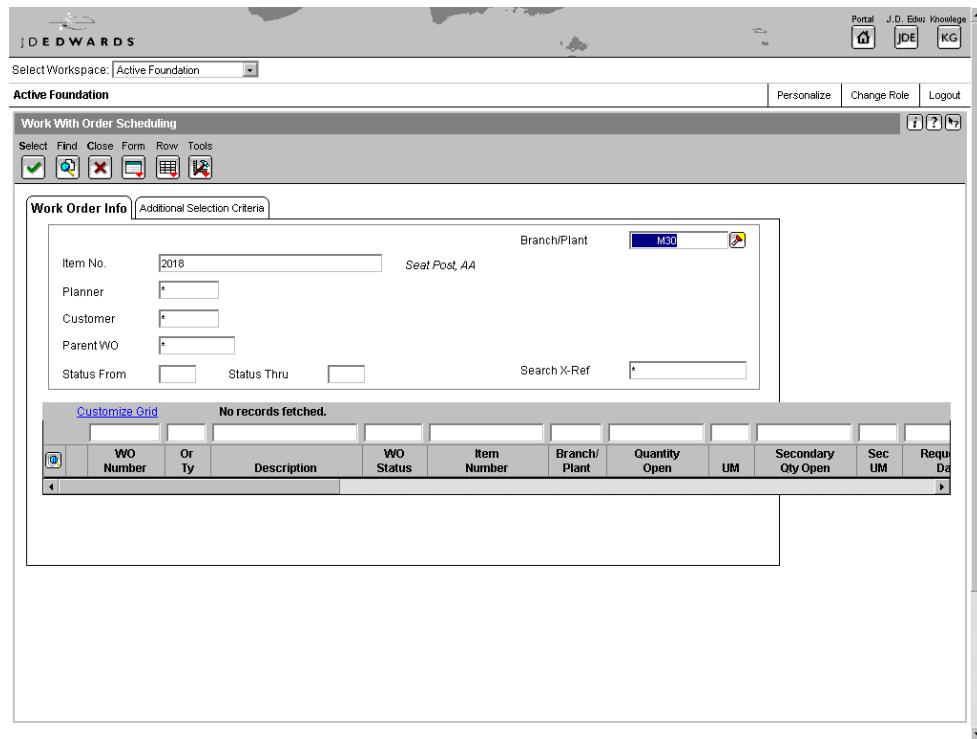
#### ► To review work orders

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*From the Engineering Change Management menu (G3013), choose ECO Parts List.*

Use Work With ECO Parts List to review the items on pending work orders that are affected by an ECO.

1. On Work With ECO Parts List, complete the following field and click Find:
  - Branch/Plant
2. Choose the row and click Select.
3. On ECO Parts List Entry, choose the row and then choose Open WOs from the Row menu.



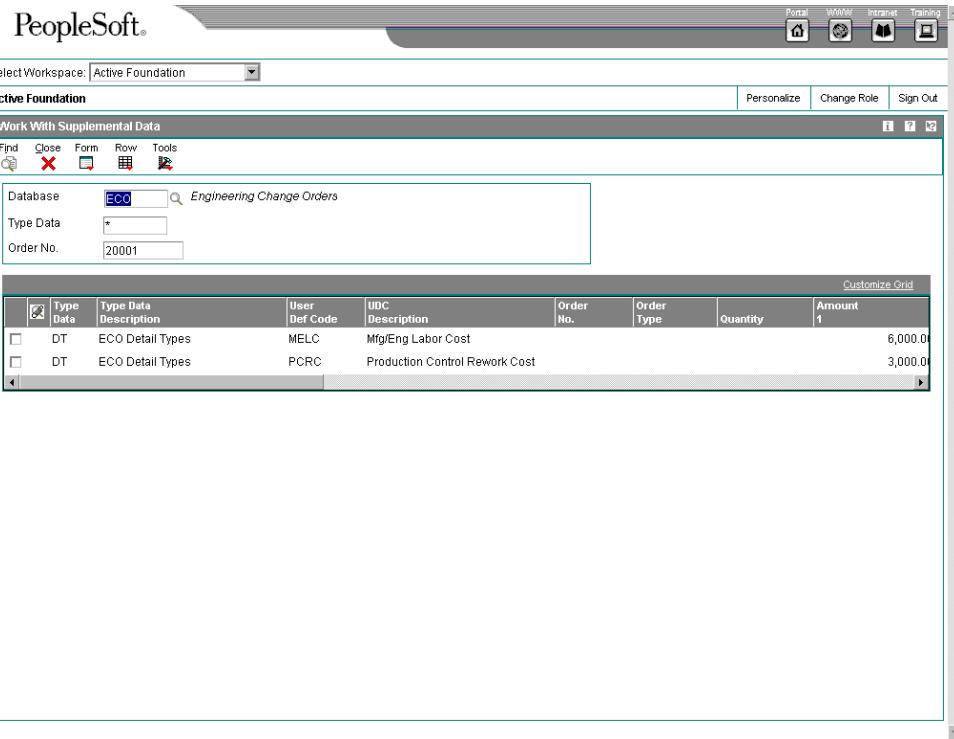
4. On Work With Order Scheduling, review the following fields that display ECO information:
  - WO Number
  - Or Ty
  - Quantity Open
  - Requested Date

**► To load purchase orders into supplemental data**

---

*From the Engineering Change Management menu (G3013), choose ECO Parts List.*

1. On Work With ECO Parts List, complete the following field and click Find:
  - Branch/Plant
2. Choose the row and click Select.
3. On ECO Parts List Entry, choose the row, and then choose Load Supp POs from the Row menu to load the pending purchase orders into supplemental data.



- On Work With Supplemental Data, review the fields and click Select.

#### ► To load work orders into supplemental data

*From the Engineering Change Management menu (G3013), choose ECO Parts List.*

- On Work With ECO Parts List, complete the following field and click Find:
  - Branch/Plant
- Choose the row and click Select.
- On ECO Parts List Entry, choose the row and then choose Load Supp WOs from the Row menu to load the pending work orders into supplemental data.
- On Work With Supplemental Data, review the fields and click Select.

#### See Also

- Defining Changes to review the processing options for ECO Parts List

#### Notifying Reviewers of Engineering Change Orders

*From the Engineering Change Management menu (G3013), choose ECO Notification.*

After you define an ECO and its routing instructions and parts list, use the ECO Notification program to send notices to the reviewers that you defined in the approval routing master. To generate notifications, you must have an address book record established. You can run ECO Notification in two ways:

- To process several ECOs, use the data selection in ECO Notification.
- To process a single ECO, run ECO Notification from the Enter/Change ECO program.

You run this program once. After all of the reviewers in the first review group have reviewed the ECO, the system sends notification to the next review group.

You can set a processing option to activate flash messages for the item that is affected by the ECO. You can then view the flash message from inquiry programs. The system deactivates the flash message when you run the Engineering Change Population program to update the bill of material for the item.

### **Processing Options for ECO Order Approval Notification (P48184)**

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#### **Process**

1. Enter the Flash Message to activate. If left blank, the Flash Message will not be updated.  
Item Flash Message
- 

## **Reviewing Engineering Change Orders**

Both reviewers and coordinators review engineering change order (ECO) information. You can review ECOs and check outstanding ECOs awaiting approval. An ECO coordinator can review ECO information to do the following:

- Check work orders and purchase orders for affected items.
- Determine if anyone has rejected an ECO.
- Check the progress of an ECO.
- Plan and schedule work.
- Determine who is in the process of reviewing an ECO.
- Determine who is pending notification.

#### **Topics**

- Locating engineering change order information
- Printing engineering change order information

## **Locating Engineering Change Order Information**

For an ECO, you can locate all the revision-level changes made to the item. To view the most current revision information, you should run the Engineering Change Population program daily.

You can review the approval status of an ECO to see which reviewers approved it, are in the process of reviewing it, and who is pending notification.

You can locate an ECO by requested dates, start dates, and labor hours by operation to help you plan and schedule work.

#### **Topics**

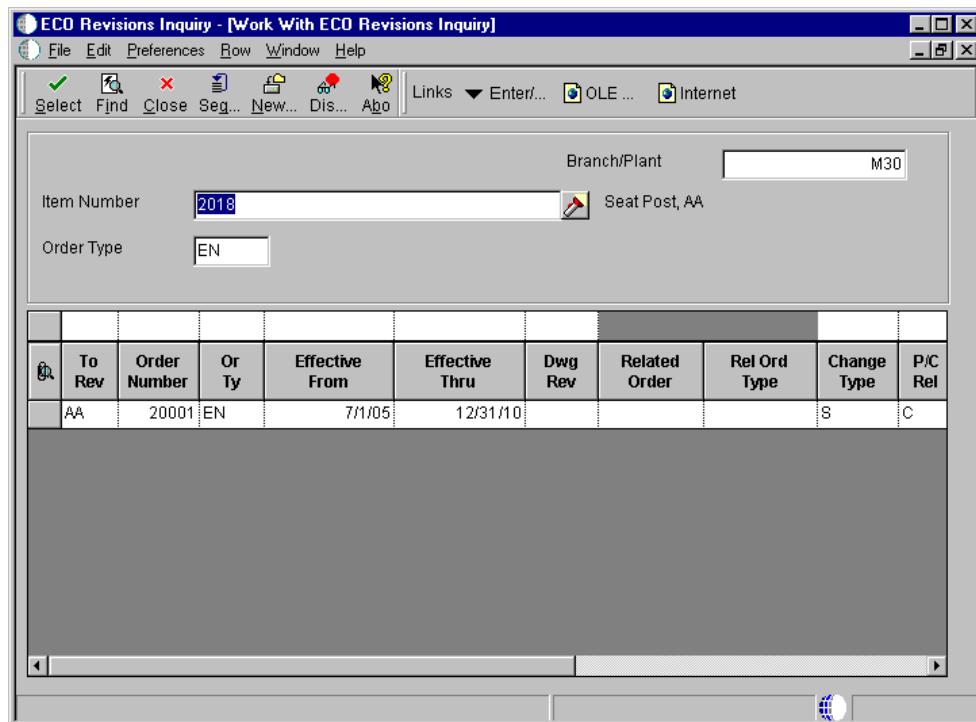
- Locating revision information

- Locating approval audit information
- Locating open tasks

► **To locate revision information**

---

*From the Engineering Change Management menu (G3013), choose ECO Revisions Inquiry.*



1. On Work With ECO Revisions Inquiry, complete the following fields and click Find:
  - Branch/Plant
  - Item Number
2. Choose an ECO and click Select.

PeopleSoft®

Select Workspace: Active Foundation

Active Foundation

Work With ECO Approval/Audit Review

Approver Name	Status	Planned Complete	Date Approved	Seq No.	Group No.	Note	Address Number

3. On Work With ECO Approval/Audit Review, review the following fields that display ECO information:
  - Approver Name
  - Status
  - Planned Complete
  - Date Approved
  - Seq No.
  - Group No.
  - Note

### **Processing Options for ECO Revisions Inquiry**

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#### Versions

Enter the version to use for each program listed. If left blank, ZJDE0001 will be used.

1. Enter/Change Order (P48020)
2. BOM Revisions (P3002)

#### Defaults

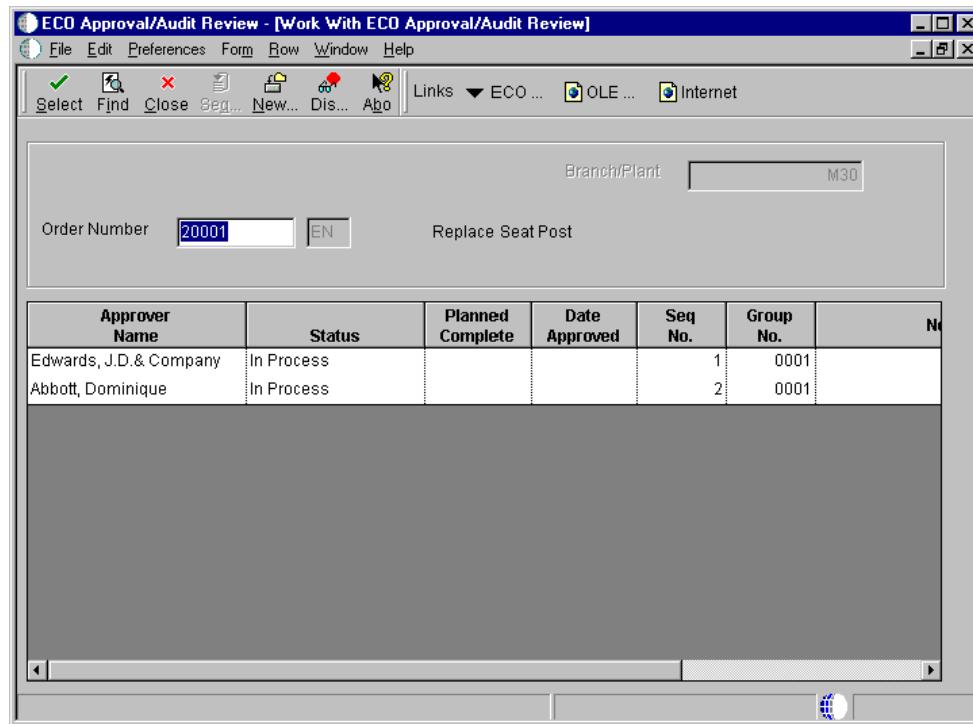
1. Enter the default Order Type. If blank, order type 'EN' will default.

#### Order Type

► **To locate approval audit information**

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*From the Engineering Change Management menu (G3013), choose ECO Approval/Audit Review.*



1. On Work With ECO Approval/Audit Review, complete the following field and click Find:
  - Order Number
2. Choose an approver name and click Select.

PeopleSoft®

S T	ECO Number	Or Ty	ECO Description	Branch/ Plant	Note	Target Date	Date Approved
<input checked="" type="checkbox"/>	20001	EN	Replace Seat Post	M30			<input checked="" type="checkbox"/>

3. On ECO Approval Revisions, review the following fields that contain ECO information:
  - S T
  - ECO Number
  - Or Ty
  - ECO Description
  - Branch/ Plant
  - Note
  - Target Date
  - Date Approved

#### Processing Options for ECO Approval/Audit Review (P48185)

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##### Versions

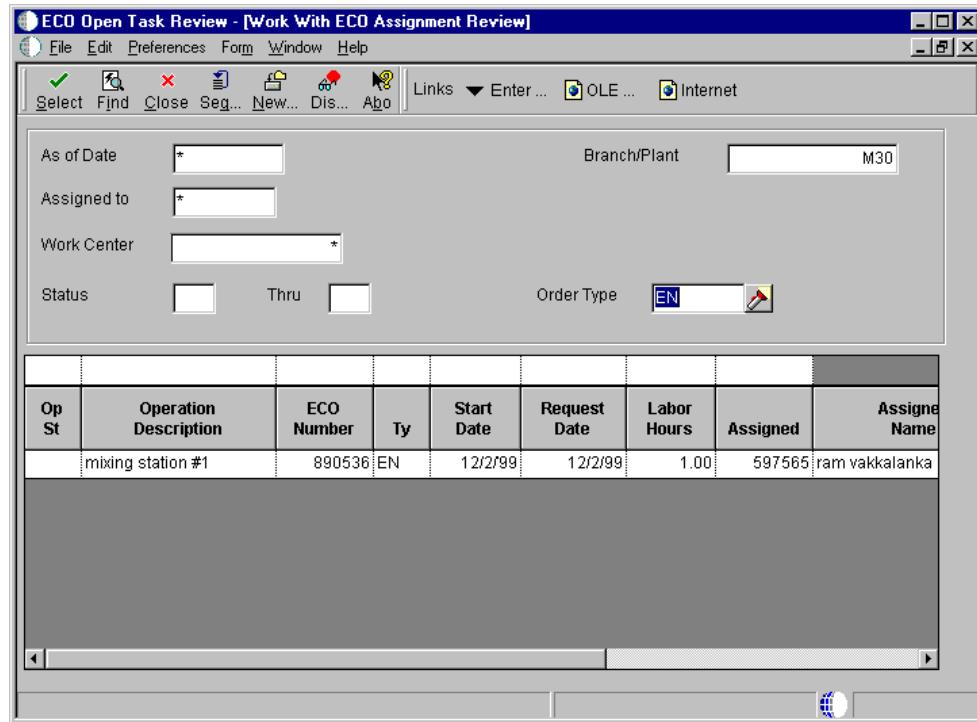
Enter the version to use for each program listed. If left blank, version 'ZJDE0001' will be used.

1. Approval (P4818)
  2. Enter/Change Order (P48020)
-

► **To locate open tasks**

---

*From the Engineering Change Management menu (G3013), choose ECO Open Task Review.*



1. On Work With ECO Assignment Review, complete the following fields and click Find:
  - Branch/Plant
  - Work Center
  - Status
  - Thru
2. Choose an operation and click Select.

PeopleSoft®

Op St	Operation Description	ECO Number	Ty	Start Date	Request Date	Labor Hours	Assigned	Assigned Name	Work Center	Work Des
<input checked="" type="checkbox"/>	Update Standard Cost Amount	20001	EN			2.00			PRODCO	Prod
<input type="radio"/>	Review Manufacturing Impact	20001	EN			40.00			PRODEN	Prod
<input type="radio"/>	Implement Change	20001	EN			1.00			PRODEN	Prod
<input type="radio"/>	Complete Design	20001	EN			24.00			MECHENG	Mech

3. On Enter ECO Assignments, review the following fields that display ECO information:
  - Op St
  - Operation Description
  - ECO Number
  - Work Center
  - Oper Seq#

### Processing Options for ECO – Assignment Review Inquiry (P30220)

#### Defaults

1. Enter the default document type to be used. If left blank, '\*' will load all document types.

#### Order Type

2. Enter the default value for From Status.

#### Operation Status - From

3. Enter the default value for Thru Status.

#### Operation Status - Thru

#### Versions

Enter the version to use for each program listed. If no version is entered, ZJDE0001 will be used.

1. Enter/Change Order (P48020)

2. Parts List (P3013)

3. Work Order Routing (P3112)

## Printing Engineering Change Order Information

You can print a variety of engineering change order (ECO) information to help you manage the ECOs that you create.

### Topics

- Printing the ECO details report
- Printing the open ECOs report

### Printing the ECO Details Report

*From the Engineering Change Management menu (G3013), choose ECO Details.*

You can generate the ECO Details report to list all details for a specific ECO. You can set the processing options to specify the amount and type of information in the report.

The system retrieves the data for this report from the Bill of Material Master table (F3002).

### Processing Options for ECO Work Order Print (R48020P)

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#### Print

Enter a '1' to print any of the following details:

1. Notes:
2. Parts List:
3. Routing:

#### Defaults

Enter the default note type that will be printed. If left blank, note type 'A' will be used.

#### Record Type

---

### Printing the Open ECOs Report

*From the Engineering Change Management menu (G3013), choose Open ECOs.*

Use the Open ECOs report to list the ECOs that are currently in the approval process or as a basis for running the Engineering Change Population program.

You can set up the report by the following types of information:

- Document type and status code
- Category code and product family
- Status code for pending approval
- Status code for ECOs that have been approved

The system retrieves the data for this report from the Work Order Master table (F4801).

## Approving Engineering Change Orders

After you locate an engineering change order (ECO) for review, you must indicate your approval or rejection. The reviewer typically performs this task. After the last person in the approval routing has approved the ECO, the system updates the status code with the value that you specify in a processing option.

## Topics

- ❑ Reviewing engineering change orders for approval
- ❑ Updating bills of material (optional)

## Before You Begin

- ❑ Locate the ECOs assigned for your review. You can either have the system notify you automatically or you can locate open ECOs using ECO Approval/Audit Review. See [Reviewing Engineering Change Orders](#).

## Reviewing Engineering Change Orders for Approval

You locate the ECO that awaits your approval, and then indicate your approval or rejection. You can also enter text to provide more information regarding your approval.

To reject an ECO, use status code R to stop the notification process. After a reviewer rejects an ECO, the creator of the ECO must redefine the ECO and restart the notification process.

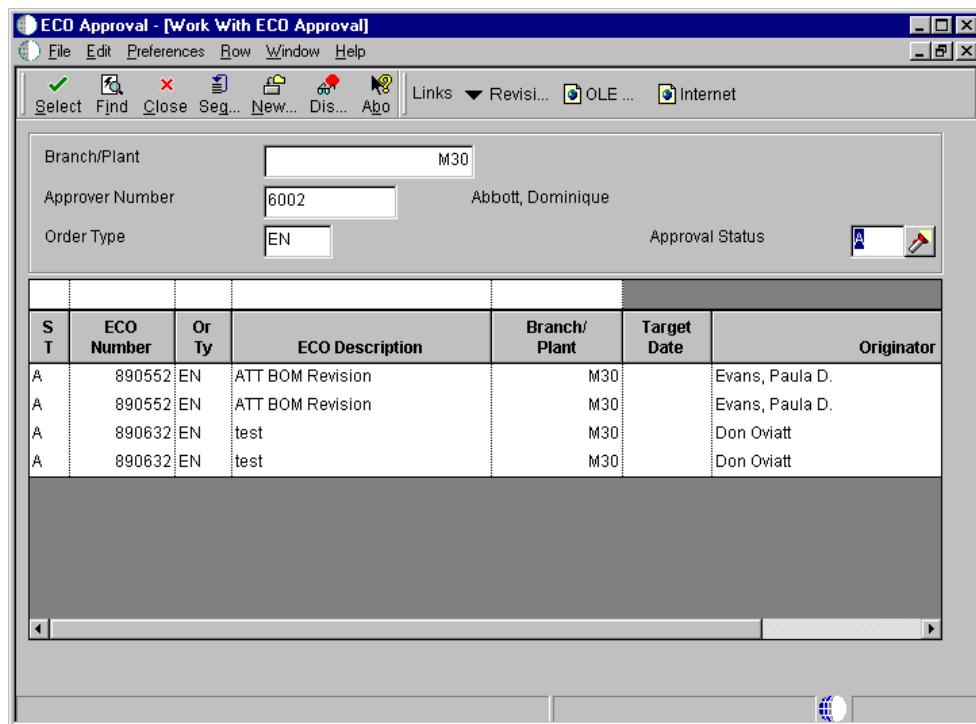
You can set a processing option to protect the approval field so that only the current user can change approval status.

Approval status codes are stored in user defined code table 30/ST. Approval status code A is hard-coded and is the only value that initiates the notification of other review groups. You can define additional approval status codes.

### ► To review engineering change orders for approval

---

*From Engineering Change Management (G3013), choose ECO Approval.*



1. On Work With ECO Approval, complete the following fields and click Find:

- Branch/ Plant
- Approver Number

2. Choose an ECO record and click Select.

The screenshot shows the 'ECO Approval Revisions' window in PeopleSoft. At the top, there are buttons for OK, Cancel, Form, Row, and Tools. Below that is a toolbar with icons for Print, Copy, Paste, and others. The main area contains a grid of ECO records. One record is selected, and its details are displayed in a form at the top: Branch/Plant (M30), Order Number (20001), Approver Number (6002, with name Abbott, Dominique), Order Type (EN), and ECO Description (Replace Seat Post). The 'S' checkbox in the grid is checked, indicating it is selected for approval.

3. On ECO Approval Revisions, complete the following field to indicate your approval or rejection, and then click OK:

- S T

### Processing Options for ECO Approval Audit (P4818)

#### Defaults

Enter the default search order type. If left blank, all order types will be used.

##### 1. Order Type

Enter the default search approval status. If left blank, then blank will be used.

##### 2. Approval Status

Enter the ECO status code to update the ECO order master (F4801) when approval routing is complete.  
If left blank, no ECO status update will occur.

##### 3. Status Code W.O.

#### Versions

Enter the version to execute for the programs listed below. If left blank ZJDE0001 will be used.

##### 1. Enter/Change Order (P48020)

##### 2. Approval Notification (R48181)

## Updating Bills of Material

*From the Engineering Change Management menu (G3013), choose Engineering Change Population.*

For engineering change orders (ECOs) with attached parts lists, you can process the ECO parts list and related items list to update the Bill of Material Master table (F3002) with the requested changes.

The Engineering Change Population program:

- Processes ECOs
- Updates the bills of material for the items on the ECO
- Creates a report in proof or final mode that describes the requested changes
- Updates ECO-related information in the Item Branch table
- Updates the Item Master table for item flash messages based on other outstanding ECOs
- Validates the ECO for full approval before accepting the requested changes
- Updates the effectivity dates
- Updates the drawing revision level
- Copies substitute items from the old component to the new component
- Updates the parent or component revision level

---

### Caution

J.D. Edwards recommends that you first run this program in proof mode. In proof mode, the report lists all requested changes without actually changing any records. Review the report and then run the program in final mode to update records. After you run this program and update the Bills of Material table, you cannot change the parts list and run the program again.

---

The Engineering Change Population program only updates the bill of material. You must update the routing instruction to include the same item revision level as the bill of material if you want to synchronize them.

### Before You Begin

- Verify that the ECO was approved by all reviewers.
- Verify that the ECO parts list contains the correct change type and relationship values.
- Verify that the ECO-related items list contains the items that you want to include in the change.

## **Processing Options for Engineering Change Population (P30510)**

### **Mode Tab**

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#### **Mode**

**Blank = Proof Mode**

**1 = Final Mode**

Use this processing option to specify whether the system runs the Engineering Change Population program (P30510) in proof or final mode. J.D. Edwards recommends that you first run this program in proof mode. The proof report lists all requested changes without actually changing any data. Review the report and then run the program in final mode to update the data in the Bill of Materials Change table (F3011). After you run this program in final mode, you cannot change the parts list and run the program again. Valid values are:

Blank The system runs in proof mode.

1 The system runs in final mode.

---

### **Edits Tab**

Use this processing option to specify whether the system uses engineering change order verification for the Engineering Change Population program (R30510).

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### **ECO Approval Validation**

**Blank = No approval validation**

**1 = Approval Validation**

Use this processing option to specify whether the system uses engineering change order verification for the Engineering Change Population program (P30510). ECO approval verification lets you update the ECO in final mode only if everyone on the ECO approval list has approved the ECO. If you leave this field blank, it is possible that an ECO can be fully incorporated without any approval. Valid values are:

Blank The system does not verify that the ECO is fully approved before allowing the final mode update.

1 The system verifies that the ECO is fully approved before allowing the final mode update.

---

### **Process Tab**

Use these processing options to specify the following:

- If the system updates the actual incorporation date, order status, revision level, revision information, and drawing revision level
  - Which item flash message the system uses
  - Whether to copy a component's substitute items to the new bill of material
- 

#### **Update Actual Incorporation Date**

**Blank = No Date Update**

**1 = Update w/ today's date**

Use this processing option to specify whether the system updates the actual incorporation date of the engineering change order to the system date. Valid values are:

Blank The system does not update the date.

1 The system updates the date of the ECO.

---

#### Status Code

Blank = No Status Change

Use this processing option to specify the default status code for the engineering change order. Status code is a user defined code (00/SS) that identifies the status of the engineering change order. Enter the status code to use as the default value or choose it from the Select User Define Code form. If you leave this field blank, the system does not change the status.

#### Update Revision Level

Blank = No Update

1 = Update Revision Level

Use this processing option to specify whether the system updates the revision level in the Item Branch table (F4102) when the bill of material revision level is updated for a corresponding parent item. The item revision level appears on the Manufacturing Data form in the Inventory Management system.

Valid values are:

Blank The system does not update the revision level.

1 The system automatically updates the revision level in the Item Branch table.

#### Update Item Balance Revision Info

Blank = No Update

1 = Update Revision Info

Use this processing option to specify whether the system updates the engineering change order item balance revision level information in the Item Branch table (F4102). Item balance revision level information appears on the Manufacturing Data form in the Inventory Management system. Valid values are:

Blank The system does not update the item balance revision level

---

information.

- 1 The system automatically updates the item balance revision level information in the Item Branch table.

#### Item Flash Message

Blank = No Flash Message

Use this processing option to specify the message that the system uses when resetting the flash message due to other outstanding engineering change orders. Item flash message is a user defined code (40/FL) that identifies the item message. Enter the status code to use as the default value or select it from the Select User Define Code form. If you leave this field blank, the system does not display the item flash message.

#### Update Drawing Revision Level

Blank = Manually Update Drawing Revision

1 = Automatic Update Drawing Revision

Use this processing option to specify whether the system updates the drawing revision level in the Item Master table (F4101) when a change is made to the drawing revision level for items defined in the engineering change order (ECO) parts list and related item list. The drawing revision level appears on the Manufacturing Data form in the Inventory Management system. Valid values are:

Blank The system does not update the drawing revision level.

- 1 The system automatically updates the drawing revision level in the Item Master table.

#### Copy Substitutes Items

Blank = Manually Copy Substitute Items

1 = Automatically Copy Substitute Items

---

Use this processing option to specify whether the system copies a component's substitute items to the new component or bill of material during a swap or change. Valid values are:

- Blank The system does not copy a component's substitute items.
  - 1 The system automatically copies a component's substitute items to the new component or bill of material.
- 

### **Defaults Tab**

Use this processing option to specify the default engineering change order type that the system uses.

---

### **Order Type**

#### **Blank = Select All**

Use this processing option to specify the order type that the system uses when running the Order Change Population program (P30510). Order type is a user defined code (00/DT) that identifies the type of the engineering change order.

Enter the order type to use as the default value or choose it from the Select User Define Code form. If you leave this field blank, the system includes all order types.

---

## **Creating an Engineering Change Order from a Request**

Engineering Change Requests (ECRs) are numbered documents that you use to track requested product changes within the Engineering Change Management system. When used with engineering change orders (ECOs), ECRs allow you to create two change request processes with separate reviewers and approvers. For example, your shop floor employees can use ECRs to request that your design engineering staff make a change to a product. Once the ECR is reviewed and approved, you can use your ECO processes to implement the change.

The procedures for ECRs are the same as the procedures for ECOs. Use order type EG when setting up, reviewing, or approving ECRs.

► **To create an engineering change order from a request**

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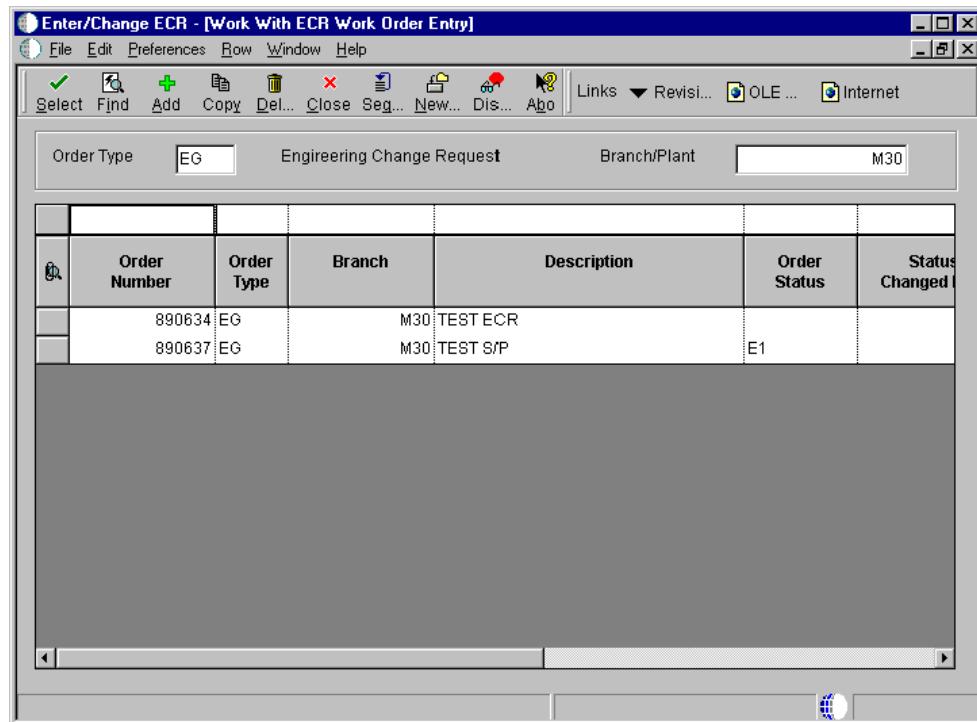
*From the Engineering Change Request menu (G3015), choose Enter/Change ECR.*

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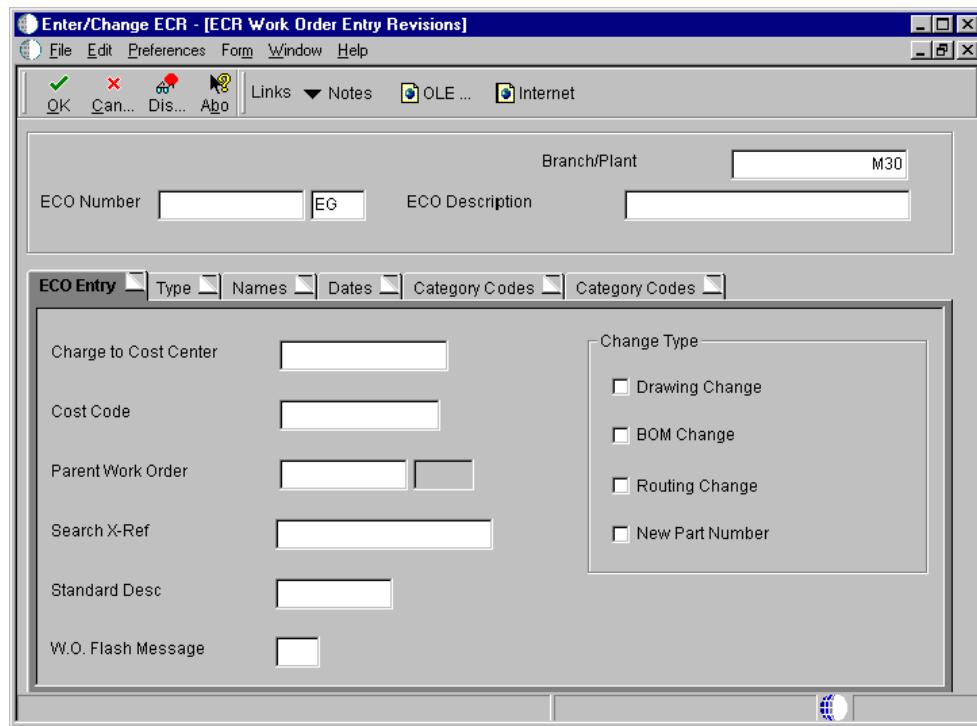
**Caution:**

If you create additional document types for ECRs, you must specify handling type R.

---



1. On Work With ECR Work Order Entry, complete the following fields and click Find to locate the ECR:
  - Order Type
  - Branch/Plant
2. Choose the row that contains the ECR and choose Create ECO from the Row menu.



3. On ECO Work Order Entry Revisions, click the ECO Entry tab and complete the following optional fields:
  - Charge to Cost Center
  - Cost Code
  - Parent Work Order
  - Search X-Ref
  - Standard Desc
  - W.O. Flash Message
4. Click the following options:
  - Drawing Change
  - BOM Change
  - Routing Change
  - New Part Number
5. Choose the Type tab and complete the following optional fields:
  - Type

- Priority
- Status
- Phase In
- Existing Disp
- Reason

6. Choose the Names tab and complete the following optional fields:

- Originator
- Coordinator
- Customer
- Supervisor
- Manager

7. Choose the Dates tab and complete the following optional fields under the Target Dates heading:

- Design
- Incorporated

8. On the Dates tab, complete the following optional fields under the Actual Dates heading:

- Design
- Engineering
- Incorporated

9. Choose the Category Codes tab and complete the following optional fields, and then click OK:

- Phase
- Category 02
- Category 03
- Category 04
- Category 05
- Experience Level
- Service Type

- Skill Type
- Status
- Category 10

**See Also**

- *Entering Engineering Change Orders* to review the processing options for ECO Entry

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# Interoperability

## Working With Interoperability

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To fully cover the information requirements of an enterprise, companies sometimes use products from different software and hardware providers. Interoperability among products is key to successfully implementing the enterprise solution. Full interoperability among systems results in a flow of data among products that is seamless to the user. The OneWorld Interoperability function provides an interface that facilitates exchanging transactions with external systems. These transactions include both inbound and outbound.

External systems send information to the interface tables, either using an external program or using flat files and the Inbound Flat File Conversion program. The sending party is responsible for conforming to format and other requirements for the interface tables.

You run a transaction process (a batch program) that validates the data, updates valid data to the J.D. Edwards application tables, and sends action messages to the Employee Work Center about any invalid data.

You use an inquiry function to interactively review the data for correctness, and then run the transaction process again. You repeat this process if necessary.

You set a processing option to specify the transaction type for the outbound transaction. The system uses the master business function for the type of transaction, creates a copy of the transaction, and places it in the interface table where external systems can access it.

You use the purge function to remove obsolete and unnecessary data from interface tables. Your system is more efficient when you keep these tables as small as possible.

### Topics

- Converting flat files to the interface tables
- Receiving transactions from external systems
- Reviewing and revising inbound transactions
- Sending transactions to external systems

## Interoperability Programs

The interoperability programs for the Product Data Management system are as follows:

### Inbound Flat File Conversion Programs (R47002C)

The Inbound Flat File Conversion consists of programs for the following:

- Work Center
- Work Day Calendar
- Bill of Material
- Routing

### **Inbound Transaction Programs**

The Inbound Transaction program consists of the following:

- Process Inbound Work Center Transactions (R30006Z1I)
- Process Inbound Work Day Calendar Transactions (R0007Z1I)
- Process Inbound Bill of Material Transactions (R3002Z1I)
- Process Inbound Routing Transactions (R3003Z1I)

### **Inbound Inquiry Programs**

The Inbound Inquiry program consists of the following:

- Work Center Transaction Revisions (P30006Z1)
- Work Day Calendar Transaction Revisions (P0007Z1)
- Bill of Material Transaction Revisions (P3002Z1)
- Routing Transaction Revisions (P3003Z1)

### **Purge Programs**

The Purge program consists of the following:

- Purge Work Center Transactions (R30006Z1P)
- Purge Work Day Calendar Transactions (R0007Z1P)
- Purge Bill of Material Transactions (R3002Z1P)
- Purge Routing Transactions (R3003Z1P)

## **Converting Flat Files to Interface Tables**

You can use a variety of methods to send data from external systems to the interoperability interface tables. One method is to enter the data in a flat file. If you use this method, the system converts the flat file to the interface table.

You can set a processing option to start the transaction process when the conversion completes successfully.

### **Before You Begin**

- Ensure that the flat file is a comma-delimited ASCII text file that is stored on the hard drive of your personal computer.
- Ensure that the data conforms to the specified format. See *Converting Data from Flat Files into EDI Interface Tables* in the *Data Interface for Electronic Data Interchange* documentation for information about formatting requirements.

## **Setting Up the Flat File Cross-Reference**

Before you can convert a flat file, you must provide a cross-reference from the flat file fields to the interface table fields. When you exchange data between OneWorld and an external system, you use flat file cross-reference information for the following conditions:

- For inbound transactions for which the external system cannot write data to the interface tables in the required format for OneWorld. In this case, the external system can write the data to a specific flat file for each transaction and record type.

- For outbound transactions for which OneWorld cannot write data to the interface tables in the format required by the external system. In this case, OneWorld can write the data to a specific flat file for each transaction and record type.

## See Also

- ❑ *Converting Data from Flat Files into EDI Interface Tables* in the *Data Interface for Electronic Data Interchange* documentation for more information about this process. The process for setting up flat file cross-references for Interoperability is identical to that for EDI interface tables.

## Before You Begin

- ❑ On the appropriate drives on your computer or network, set up the folders for the flat files.

### ► To set up the flat file cross-reference

---

Use one of the following navigations:

*From the Forecast Interoperability menu (G36301), choose Flat File Cross-Reference.*

*From the Sales Interoperability menu (G42A313), choose Flat File Cross-Reference.*

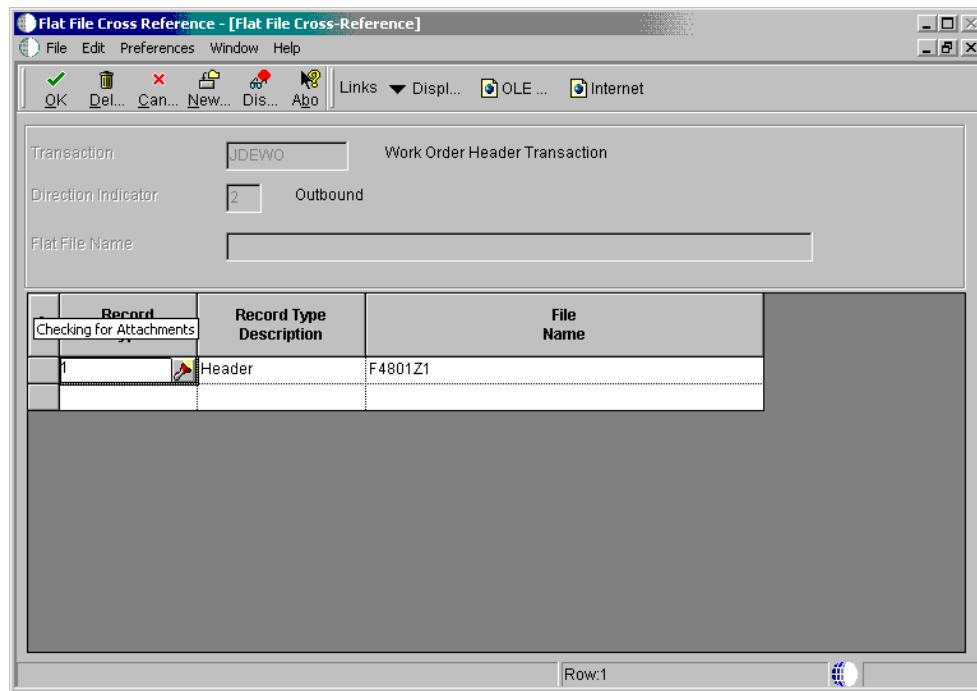
*From the Inventory Interoperability menu (G41313), choose Flat File Cross-Reference.*

*From the Product Data Interoperability menu (G30311), choose Flat File Cross-Reference.*

*From the Purchasing Interoperability menu (G43A313), choose Flat File Cross-Reference.*

*From the Shop Floor Management Interoperability menu (G31311), choose Flat File Cross-Reference.*

1. On Work With Flat File Cross-Reference, click Add.



2. On Flat File Cross-Reference, to specify the transaction type, such as receipts, complete the following field:
  - Transaction
3. To indicate whether this transaction type is Inbound (1), or Outbound (2), complete the following field:
  - Direction Indicator
4. To indicate the information source, complete the following field:
  - Record Type
5. Enter the specific file name in the following field:
  - File Name

The file name refers to the application table from which the system exchanges information, as defined by the record type.
6. Click OK.

## Running the Conversion Program

Use one of the following navigations:

*From the Forecast Interoperability menu (G36301), choose Inbound Flat File Conversions*

*From the Sales Interoperability menu (G42A313), choose Inbound Flat File Conversion.*

*From the Inventory Interoperability menu (G41313), choose Inbound Flat File Conversion.*

*From the Product Data Interoperability menu (G30311), choose the applicable Inbound Flat File Conversion.*

*From the Purchasing Interoperability menu (G43A313), choose Inbound Flat File Conversion.*

*From the Shop Floor Management Interoperability menu (G31311), choose the applicable Inbound XX Flat File Conversion, where XX is the process that the conversion completes, such as Inbound Completion Flat File Conversion.*

You use the Inbound Flat File Conversion program (R47002C) to import flat files into J.D. Edwards interface tables. You can create a separate version of the Inbound Flat File Conversion program for each interface table. This program recognizes both the flat file from which it reads and the record types (UDC 00/RD) within the flat file. Each flat file contains records of differing lengths, based on the interface table record to which they correspond. The Inbound Flat File Conversion program uses the Flat File Cross-Reference Table (F47002) to convert the flat file into the interface tables. The Flat File Cross-Reference Table indicates to the conversion program which flat file to read from, based on the transaction type that you are receiving.

The conversion program reads each record in the flat file and maps the record data into each field of the interface tables, based on the text qualifiers and field delimiters that are specified in the flat file.

The conversion program inserts the field data as one complete record in the interface table. If the conversion program encounters an error while converting data, it withholds the data in error and continues processing the conversion. If the data is successfully converted, the system automatically starts the transaction process for that interface table, provided that you set the processing options in the conversion program to do so. For more information about error checking, see *Checking for Errors* in the *Interoperability Guide*.

## See Also

- Receiving Transactions from External Systems* for information about the transaction process programs

## Receiving Transactions from External Systems

*From the Product Data Interoperability menu (G30311), choose Process Inbound Work Center Transactions, Process Inbound Work Day Calendar Transactions, Process Inbound BOM, or Process Inbound Routing.*

When an external system sends inbound transactions, the system stores the data in interface tables. These tables contain unedited transactions. The next step is to run the appropriate transaction process to edit the transactions and update the application tables. For example, if you receive transactions in the F3002Z1 interface table, you run Process Inbound BOM (R3002Z1I) to update the Bill of Material Master table (F3002).

---

### Note

When you run the Inbound Flat File Conversion program and it completes successfully, the system automatically starts the transaction process if specified in the processing option for the conversion.

---

To be received in the interface tables, data from an external system must conform to the minimum field requirements specified for the interface table.

The transaction process:

- Validates the data in the interface table (for example, F3002Z1) to ensure that it is correct and conforms to the format defined for the Product Data Management system
- Updates the associated application table (for example, F3002) with validated data
- Produces a report that lists invalid transactions and sends an action message for each invalid transaction to the employee work center
- Marks in the interface tables those transactions that are successfully updated to the application tables

If the report indicates errors, access the Employee Work Center program from the Workflow Management menu (G02) and review the messages in the message center. Then use the associated inquiry function to review and revise the transactions and rerun the transaction process.

Before you run any of the inbound transaction programs, specify the appropriate values for processing in the processing options.

### See Also

- Reviewing and Revising Inbound Transactions* for more information about using the Inquiry function

## Processing Options for Routing Transaction Revisions (P3003Z1)

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### Versions

1. Enter the version of "Enter/ Change Routing" to retrieve processing option values for updates. If left blank, ZJDE0001 will be used.

### Version

---

## Reviewing and Revising Inbound Transactions

Running one of the transaction processes, such as the Work Center Transaction Revisions, often identifies one or more inbound transactions that contain invalid transactions. For example, a work center might have an invalid branch. In that case, the program cannot add that work center to the Work Center Master table (F30006). Instead, the program sends an error message to the Employee Work Center indicating the transaction number for the transaction in error.

Use the inquiry menu selections to review and revise inbound transactions. Use the inquiry menu selections to add, change, or delete transactions containing errors. Then run the transaction process again. Continue to make corrections and rerun the transaction process until the program runs without errors.

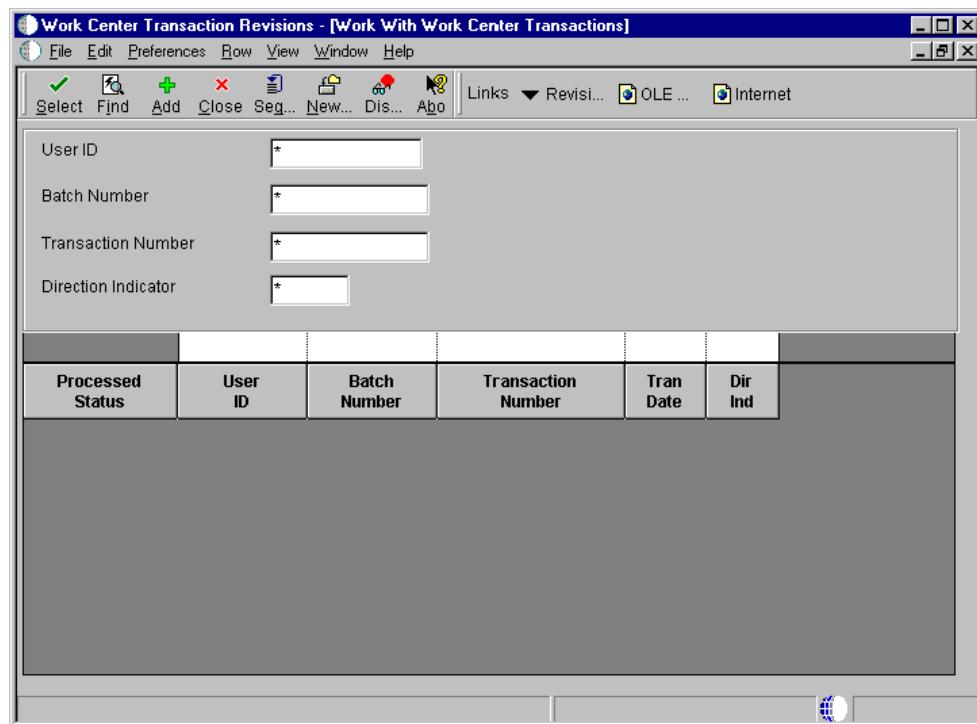
The Product Data Management inquiry menu selections are as follows:

- Work Center Transaction Revisions
- Work Day Calendar Transaction Revisions
- Bill of Material Transaction Revisions
- Routing Transaction Revisions

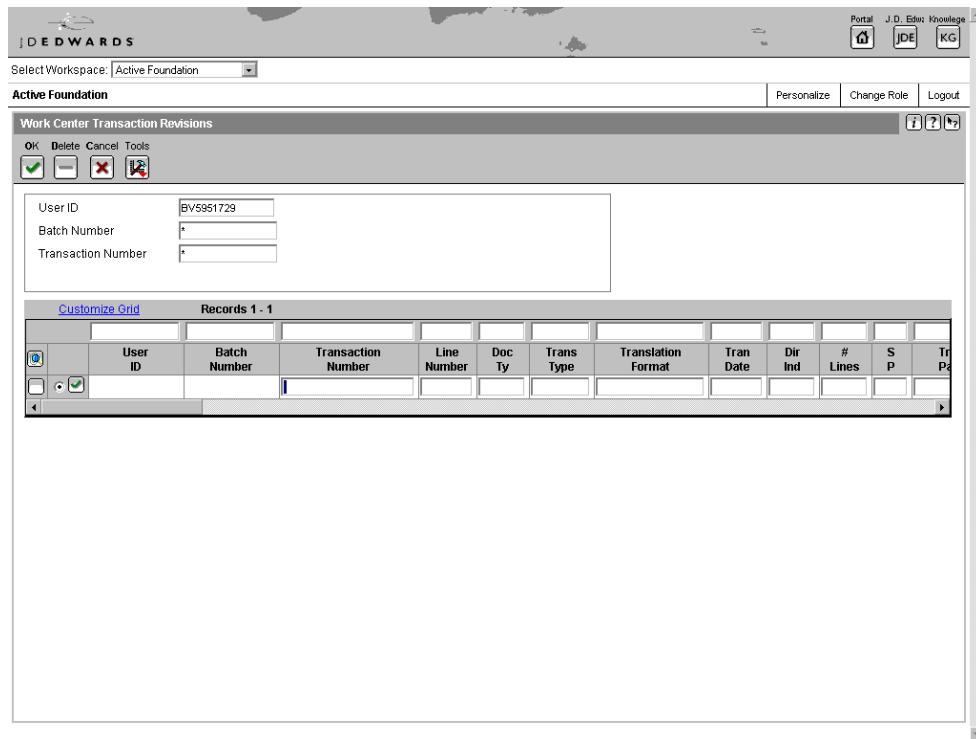
#### ► To review and revise inbound transactions

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*From the Product Data Interoperability menu (G30311), choose Work Center Transaction Revisions.*



1. On Work With Work Center Transactions, the following fields and click Find to limit the search to specific transactions:
  - User ID
  - Batch Number
  - Transaction Number
2. Choose the transaction to review and revise and click Select.



3. On Work Center Transaction Revisions, review and revise as needed, and then click OK.

After you correct the errors identified by the Inbound Work Order Processor, run the transaction process again. If other errors are identified, correct them and run the transaction process again.

#### See Also

- EDI Document Inquiry and Revision* in the *Data Interface for Electronic Data Interchange Guide* for information about reviewing and revising inbound product activity data transactions
- Working with Messages* in the *OneWorld Foundation Guide* for more information about the Employee Work Center

## Processing Options for Work Center Transaction Revisions (P30006Z1)

#### Display

1. Enter a '1' to inquire at the batch level, blank to inquire at the transaction level.

#### Level of Inquiry

2. Default View: Enter a '1' for Processed, a '2' for Unprocessed, or blank for both.

#### Processed Status

3. Default View: Enter a '1' for Inbound, a '2' for Outbound, or blank for both.

#### Direction

## **Processing Options for Work Day Calendar Transaction Revisions (P0007Z1)**

---

### **Display**

1. Enter a '1' to inquire at the Batch level, blank to inquire at the Transaction level.

### **Level of Inquiry**

2. Default View: Enter a '1' for Processed, a '2' for Unprocessed, or blank for both.

### **Processed Status**

3. Default View: Enter a '1' for Inbound, a '2' for Outbound, or blank for both.

### **Direction**

---

## **Processing Options for Revise Bill of Material Transactions (P3002Z1)**

---

### **Display**

Level of Inquiry: Enter a "1" to inquire at the Batch Level, Or Blank to inquire at the transaction level.

Processed View: Enter a "1" for Processed, a "2" for Unprocessed, Or Blank for both.

Direction: Enter a "1" for Inbound, a "2" for outbound, Or Blank for both.

### **Versions**

Default Version: Enter the version for "Processed Inbound Bill of Material" to submit. If left blank, ZJDE0001 will be used.

---

## **Processing Options for Routing Transactions Revisions (P3003Z1)**

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### **Display**

1. Enter a '1' to inquire at the Batch level, blank to inquire at the Transaction level.

### **Level of Inquiry**

2. Default View: Enter a '1' for Processed, a '2' for Unprocessed, or blank for both.

### **Processed Status**

3. Default View: Enter a '1' for Inbound, a '2' for Outbound, or blank for both.

### **Direction**

---

## **Sending Transactions to External Systems**

You might send transactions you create or change in the Product Data Management system to another system. For example, if your organization uses hand-held scanning devices, you can use interoperability transactions to update the database used by the scanning devices.

The default outbound transaction is a copy of a data transaction after you created or changed it (an *after image*). With interoperability, you can also send a copy of each transaction as it was before you changed it (a *before image*). Creating and sending before images requires additional processing time. To control the type of image, you set a processing option in the application programs that create transactions.

You can send transactions to an external system from the following programs in the Product Data Management system:

- Enter/Change Work Center (P3006)
- Work Day Calendar (P0007Z1)
- Enter/Change Bill (P3002)
- Enter/Change Routing (P3003)

To create outbound transactions, specify the appropriate transaction type in the related processing option. The system places a copy of the transaction in the interface table for that type of transaction. For example, when you run Enter/Change Work Center with the interoperability processing option turned on, the system places a copy of updated work center data in the F30006Z1 interface table. The data is then available for an external system to use.

The system creates the outbound transaction in EDI format. External systems can process the transactions using standard EDI processing, including extraction.

### **Before You Begin**

- Define the data export controls for the type of outbound transaction. The system uses data export controls to determine the batch programs or business processes that third parties supply for use in processing transactions.

### **See Also**

- Entering Work Centers* for information about entering information for work centers
- Setting Up a Shop Floor Calendar* for information about setting up the calendar
- Entering Bills of Material* for information about entering a bill of material
- Entering Routing Instructions* for information about entering a routing

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## Appendices

### Leadtimes

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Determining leadtime is an essential part of any manufacturing or scheduling process. For any product that you purchase or manufacture, you encounter a time lag between when you order or start it, and when you receive or finish it. To account for the lag, you must estimate the extra time (leadtime) and allow for it in your planning.

Cumulative leadtime is the total amount of time that is required to produce a product. The Shop Floor Management system uses the requested date of the order and, based on the methods used to define the level leadtime (leadtime per unit) for the product, calculates the appropriate order start date.

Many factors can influence your company's leadtime policy, including the following:

- Manufacturing environment (assemble-to-order, make-to-order)
- Fixed or variable quantities
- Serial or overlap operations
- Fixed or variable time
- Number of shifts and operators
- Factoring by efficiency
- Protection

Whether your company uses fixed or variable leadtime depends on whether you have consistent work order quantities for a manufactured item. If your work order quantities vary significantly, you use variable leadtime. A significant variation is any amount that requires more or less leadtime. Items with short leadtimes can have larger fluctuations than items with long leadtimes. You specify fixed or variable leadtime on the Plant Manufacturing Data form for Item Branch.

For any manufactured product, the system calculates the following four types of leadtime:

<b>Level leadtime</b>	The number of workdays required to complete the product after all items are available.  See <i>Level Leadtime</i> for more information and the associated calculation.
<b>Manufacturing leadtime</b>	The total number of workdays required to complete a product--from its lowest-level components to the final item, assuming that all purchased items are in-house.  See <i>Manufacturing Leadtime</i> for more information and the associated calculation.
<b>Cumulative leadtime</b>	The number of workdays required to acquire items and complete a product--from its lowest-level components to the final item. Cumulative leadtime is the level leadtime for a product plus the longest cumulative leadtime of any of its components.  See <i>Cumulative Leadtime</i> for more information and the associated calculation.

<b>Per unit leadtime</b>	The sum of the run times, as defined by the prime load codes for the work centers, factored by the routing time basis and converted to the leadtime per unit.
--------------------------	---

See *Per Unit Leadtime* for more information and the associated calculation.

The Shop Floor Management system uses the following information in its calculation of leadtimes:

- Serial or overlap operations
- Fixed or variable leadtime indicator
- Routing labor, setup, queue, move, and machine run hours
- Work center prime load code
- Number of employees or machines per work center
- Hours per work day

To calculate leadtimes, the system does the following:

- Uses the information that you set up for each item on Plant Manufacturing Data in the Inventory Management system
- Coordinates the information with routing instructions and work center information that you enter in the Product Data Management system
- Determines leadtimes for all parent and component items

At any point in your planning and scheduling process, you can change leadtime values manually through Manufacturing Data.

You can use fixed or variable leadtimes for ingredients. The system subtracts fixed leadtimes directly from the requested date on the work request to calculate the start date of production. Fixed leadtime remains the same, regardless of the quantity produced. However, variable leadtime adjusts according to the quantity produced.

## Topics

- Leadtime Concepts
- Work order start dates
- Operation start and due dates
- Overlapping operations
- Overlapping and concurrent operations
- Calculating leadtimes

## **Leadtime Concepts**

---

The following table explains important leadtime terms and concepts that you need to understand:

<b>Machine hours</b>	The number of machine hours that is required to produce the amount from the time basis code.
<b>Labor hours</b>	The number of labor hours that is required to produce the amount from the time basis code.
<b>Setup hours</b>	The number of hours required to prepare machinery to produce a specific item, regardless of quantity.
<b>Move hours</b>	The number of hours that a manufacturing work order is in transit from the completion of one operation to the beginning of the next.
<b>Queue hours</b>	The number of hours that a job waits at a work center before setup or work is performed on it.
<b>Total queue and move hours</b>	The sum of the move hours and the queue hours.
<b>Time basis code</b>	A user defined code (30/TB) that indicates how machine or labor hours are expressed for a product. Time basis codes identify the time basis or rate to be used for machine or labor hours entered for every step in the routing instructions-- for example, 25 hours per 1,000 pieces. You maintain the time basis codes in Time Basis Codes.
<b>Resource units</b>	Shows the available amount of capacity in a work center for the months in the calendar. As the system calculates the operation start and due dates, it uses the available hours to calculate the operation start dates. You maintain the resource units in Work Center Resource Units.
<b>Prime load code</b>	Determines whether a work center is labor-intensive or machine-intensive. The prime load code also determines whether the system uses the number of employees or the number of machines to determine the daily resource units in the Resource Units table. You maintain the prime load codes in Work Center Revisions. For calculating leadtimes, the following prime load code values are valid: <ul style="list-style-type: none"> <li>• L = run labor hours</li> <li>• M = machine labor hours</li> <li>• B = run and setup hours</li> <li>• C = machine and setup hours</li> </ul>
<b>Purchased parts</b>	A part bought from a supplier. For any purchased part, you specify the level leadtime, which is equal to the cumulative leadtime. By default, the manufacturing leadtime, leadtime per unit, total queue and move hours, and setup times for purchased parts are zero.

## Work Order Start Dates

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The system uses the level leadtime or leadtime per unit for an item defined on the Manufacturing Data form. The start date of a work order is based on the due date of the order.

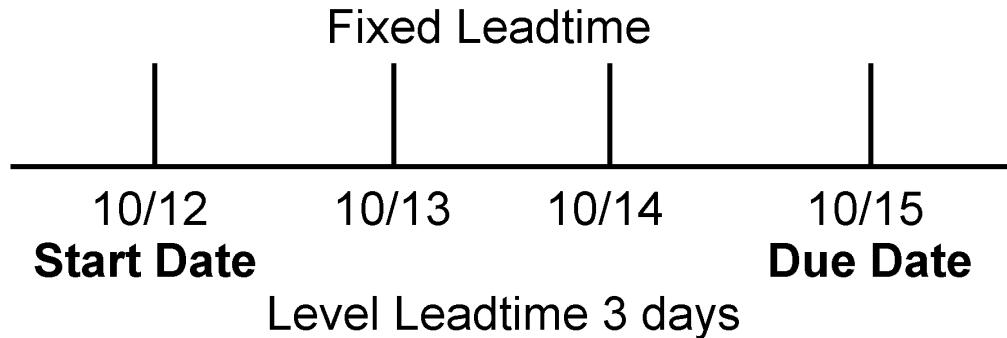
### Topics

- Fixed Leadtime
- Variable Leadtime

### Fixed Leadtime

When an item has a fixed leadtime, the system uses the item's level leadtime value to backschedule the work order start date.

For example, the system generates a planned order for product 101 with a requested due date of 10/15. The level leadtime is three days for this product, so the system calculates the start date by counting back three working days on the shop floor calendar from (but not including) the requested date. The system assigns the order a start date of 10/12.



### Variable Leadtime

When an item has a variable leadtime, the system uses the following calculation to determine the leadtime days:

$$\frac{(\text{Leadtime per unit} \times \text{order quantity} / \text{TBC}^*) + \text{setup} + \text{total queue/move}}{\text{Work hours per day}}$$

---

\* The system reads the Time Basis Code (TBC) from the Item Branch table (F4102).

When an item has a variable leadtime, the system uses the following calculation to determine the leadtime days: (Leadtime per unit x order quantity / TIMB (item balance)) + setup + queue

For example, to determine the start date, the system counts back the leadtime days from the due date of planned orders. The system backschedules the due date, 10/15, two days to determine the start date of 10/13.

$$\begin{aligned}(32 \times 1000 / 10,000) + 1 + 9) / 8 \\ (3.2 + 10) / 8 = 2 \text{ days}\end{aligned}$$

The following table shows the values used in this example:

Due date	10/15
Leadtime per unit	32 hours
Order quantity	1,000
Setup	1 hour
Total queue/move	9 hours
Work hours per day	8 hours

---

#### Note

Leadtime per unit does not use crew size to calculate leadtime for an item with a labor-based work center. However, leadtime per unit does use the number of employees in the work center to calculate leadtime.

---

## Operation Start and Due Dates

The system calculates the operation start and due dates with the average number of hours per operation.

### Topics

- Fixed Leadtime
- Variable Leadtime

### Fixed Leadtime

The system calculates the operation hours for a fixed leadtime using the following information:

- Level leadtime
- Hours per work day
- Number of employees per machine
- Number of operations

You must schedule the hours per operation according to the resource units within the entire level leadtime to ensure that the start date of the first operation is the same as the start date of the work order. When the job moves to a different work center in the same day, the system decreases the resource units available by the percentage of the work day remaining. The system does not use resource units on the due date of the work order. Instead, it assumes that the order was completed at the end of the previous day.

For each operation, the system then schedules this average time into the appropriate work center based on the available hours from the Work Center Resource Units table (F3007). The system schedules the last operation due date on the day before the work order due date.

### **Calculation**

The system uses the following formula to calculate average time per operation:

$$\frac{\text{leadtime level days} \times \text{work hours per day}^* \times \text{employees or machine}}{\text{number of operation sequences (blank operation sequence codes only)}} = \text{average time per operation}$$

\* Work hours per day are retrieved from the Job Shop Manufacturing Constants table (F3009).

The following table shows the values used in this calculation.

Work order due date	05/01/05		
Average time per operation	25 hours		
Operations in the routing instructions	OP40	WC 200-204	due 4/30 start 4/27
	OP30	WC 200-101	due 4/27 start 4/24
	OP20	WC 200-204	due 4/24 start 4/21
	OP10	WC 200-101	due 4/21 start 4/17
WC Resource Units 200-204	8		
WC Resource Units 200-101	8		

### **Variable Leadtime**

To determine variable leadtimes, the system schedules the actual hours from the work order routing instructions according to the same resource units rules used for variable leadtime.

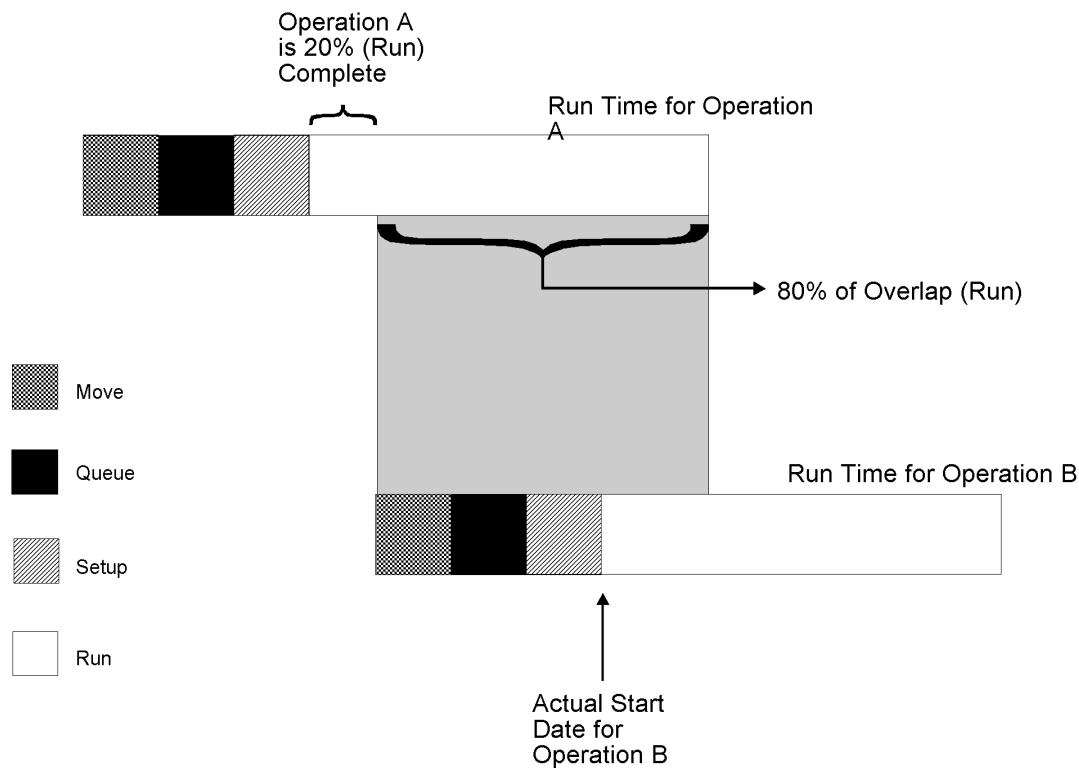
The system uses the prime load code to determine the hours to use. The hours are then applied to the resource units table, similar to fixed leadtime. The system applies queue time from the work order routing instructions at the beginning of an operation, and applies move time at the end of an operation.

## Overlapping Operations

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To compress leadtimes, operations can be overlapped. Overlapping operations occur when two or more operations in a routing instruction run at the same time. The percent of overlap is the amount of time that these operations can run concurrently. You can define the point when the second operation can begin before the first operation is complete. Because of setup, move, and queue times, the actual overlap in run time might be less than the percent of overlap that you defined.

In the following example, Operation B has an 80 percent overlap, so Operation B can begin when 80 percent of Operation A remains to be finished, or when Operation A is 20 percent complete. Operations A and B are both active as they overlap.



If the percent of overlap causes an operation to end later than the last operation in the routing instructions, the system issues an error message, and enters the work order start and requested dates into each operation.

## Overlapping and Concurrent Operations

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If a percent of overlap is specified in the routing instructions, the work order routing instruction includes specified operations that overlap. For example, an overlap percentage of 80 percent for an operation means that the next operation can start when 20 percent of the previous operation is complete.

Work order complete date	05/01
Last operation 20	24 hours
First operation 10	24 hours
Resource hours per day, per work center	8 hours
Operation overlap on 20	75%

	Without Overlap	With Overlap
Operation 10		
start	04/27	04/27
complete	04/29	04/29
Operation 20		
start	04/30	04/27
complete	05/02	04/30

Using data from the above tables, the system advances the complete date of the previous operation by 75 percent of 24 hours, or 18 hours. The system then recalculates the start date using normal backscheduling rules. As a result, operations 10 and 20 overlap and will take 24 hours to complete. The following diagram illustrates this concept.

Date	4/27	4/28	4/29	4/30	5/1	5/2
Resource hours	8	8	8	8	8	8
OP 10 (24 hrs) (w/o overlap)	<----	-----	----->			
OP 20 (24 hrs) (w/o overlap)				<----	----->	

OP 10 (w/ overlap)	<--		-->			
OP 20 (w/ overlap)	<-		--	-->		

## Calculating Leadtimes

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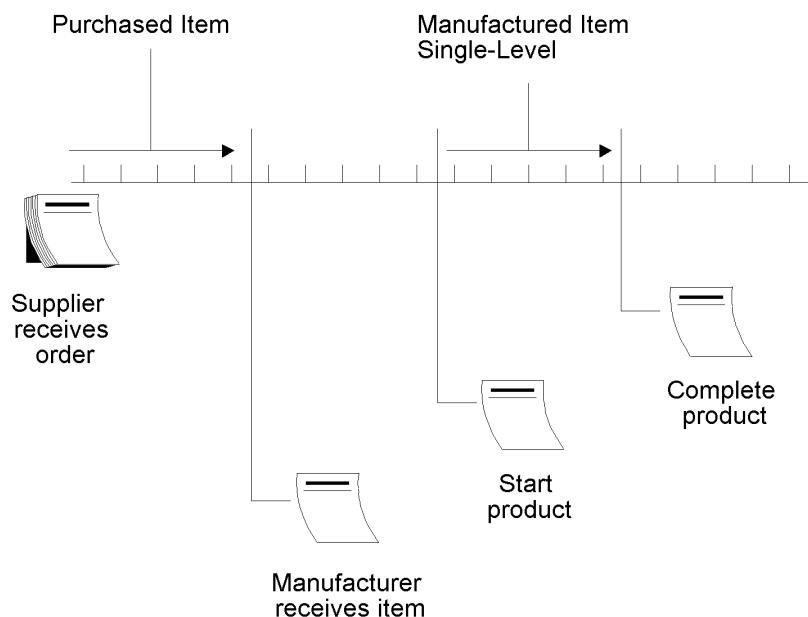
The calculation from the Leadtime Rollup program updates the following values within the Plant Manufacturing Data program:

- Level leadtime (if using manufacturing leadtime quantity)
- Manufacturing leadtime
- Cumulative leadtime
- Per unit leadtime
- Total queue and move hours
- Setup hours

Each of these values is described in detail in the topics that follow.

### Level Leadtime

For a manufactured product, level leadtime is the number of workdays that are required to complete the product once all of the items are available. Level leadtime for a purchased item is the number of calendar days that are required for you to receive the item after the supplier receives your purchase order. The following example shows you where the level leadtimes occur for a manufactured item and a purchased item:



## Calculation

The system uses the following formula to calculate level leadtime.

$$R = \frac{( \{ (M \text{ or } L) / (E \text{ or } M) \} \times MLQ )}{TBC^*} + \text{setup} + \text{total queue/move hours}$$

Work hours per day from Constants table

\* The system reads the Time Basis Code from the Routing Master file (F3003).

The following table defines the values used in the formula.

M or L	Machine or labor hours based on the prime load code
L or B	Labor hours
M or C	Machine hours
SUM	Sum of all operations
TBC	Time basis code
MLQ	Manufacturing leadtime quantity
E	Number of employees in the work center
M	Number of machines in the work center

For example:

$$\frac{(8)/(1) \times 2,000}{10,000} + \frac{\{(12)/(1)\} \times 2,000}{10,000} + \frac{\{(12)/(1)\} \times 2,000}{10,000} = 8 + 12 + 12 = 32$$

$$(1.6 + 2.4 + 2.4 + 1 + 9) / 8 = 16.4 / 8 =$$

3 days level leadtime

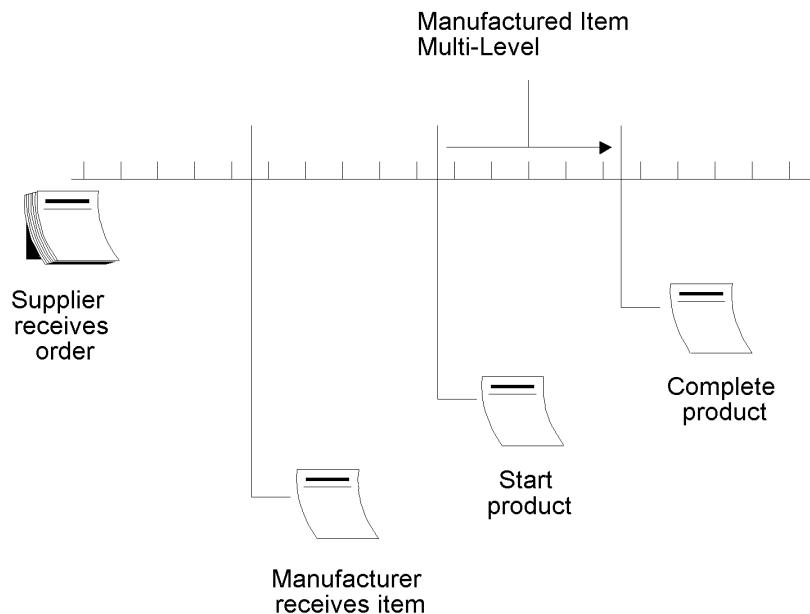
## Manufacturing Leadtime

Manufacturing leadtime is the total number of workdays required to complete a product, from its lowest-level components to the final item, assuming that all purchased items are in-house. Manufacturing leadtime includes the following:

- Order preparation time
- Queue time
- Setup time
- Run time
- Move time
- Inspection time
- Putaway time

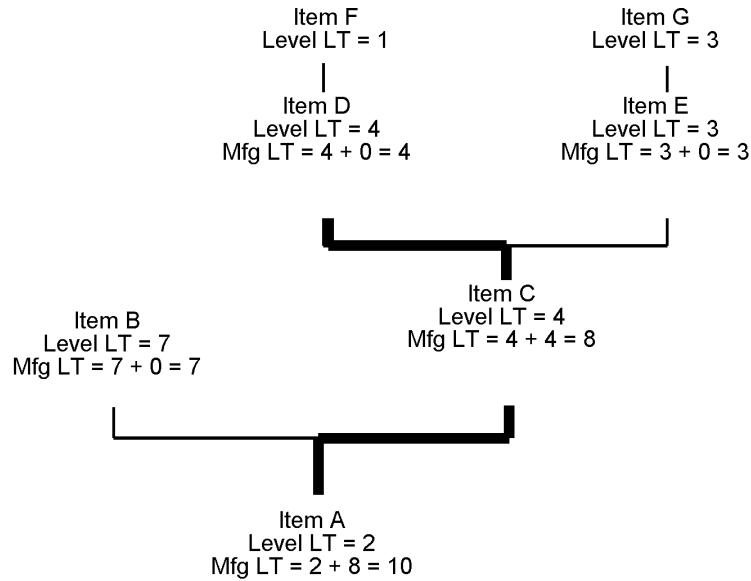
Manufacturing leadtime is the total of the level leadtime for an item plus the longest manufacturing leadtime for any of its components.

Leadtime for purchased items is not included in manufacturing leadtime calculations. The following example shows you where the manufacturing leadtime occurs in the process for a manufactured item:



## Calculation

The following flow depicts the calculation for manufacturing leadtime.



Bold line = Longest manufacturing leadtime of any of the product's items.

Items A, B, C, D, and E are manufactured items.

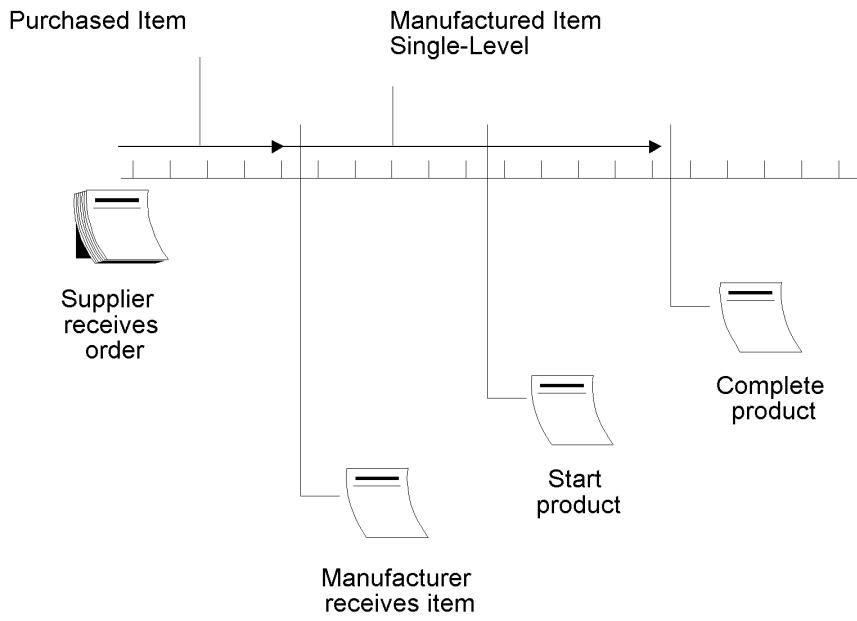
Items F and G are purchased items.

### Cumulative Leadtime

Unlike manufacturing leadtime, cumulative leadtime includes the leadtimes for purchased items. It covers both the time to acquire purchased items and the time to complete the product.

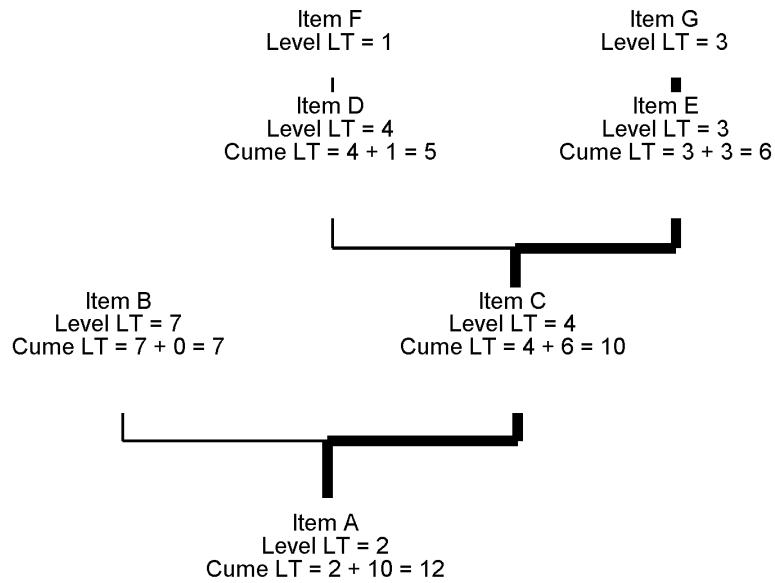
Cumulative leadtime is the number of workdays that are required to acquire items and complete a product, from its lowest-level components to the final item. Cumulative leadtime is the level leadtime for a product plus the longest cumulative leadtime of any of its components.

The cumulative leadtime for a purchased item is its level leadtime. The following example shows you where in the process the cumulative leadtimes occur for a manufactured item and a purchased item:



### Calculation

The following flow chart depicts the calculation for cumulative leadtime.



**Bold line** = Longest manufacturing leadtime of any of the product's items.

Items A, B, C, D, and E are manufactured items.

Items F and G are purchased items.

## Per Unit Leadtime

Per unit leadtime is the sum of the run times, as defined by the prime load codes for the work centers, factored by the routing time basis and converted to the leadtime per unit. The per unit leadtime sets valid start dates for orders planned in other than normal planned order quantity. When you run the leadtime rollup program, the system measures the per unit leadtime in hours.

### Calculation

The system uses the following formula to calculate per unit leadtime.

$$R = \frac{((M \text{ or } L) / (E \text{ or } M)) \times TBC \text{ 1}}{TBC \text{ 2}}$$

For example:

$$\frac{(8 / 1) \times 10.000}{10,000} + \frac{(12 / 1) \times 10.000}{10,000} + \frac{(12 / 1) \times 10.000}{10,000} = \\ 8 + 12 + 12 =$$

32 hours per unit leadtime

- 1 The system reads the Time Basis Code from the Item Branch table (F4102).
- 2 The system reads the Time Basis Code from the Routing Master table (F3003).

The following table defines the values used in the formula.

M or L	Machine or labor hours based on the prime load code
L or B	Labor hours
M or C	Machine hours
SUM	Sum of all operations
TBC	Time basis code
E	Number of employees in the work center
M	Number of machines in work center

### Total Queue and Move Hours

Queue hours indicate the time that a manufacturing work order is idle at a work center before setup or work begins. Move hours indicate the time that a manufacturing work order is moving from the completion of one operation to the start of the next operation. To calculate the total queue and move hours, add the move hours per routing and the queue hours per routing.

In the following example, the total queue and move hours is nine hours..

$$\begin{array}{lll} \text{OP 30} & \text{OP 60} & \text{OP 80} \\ (1 + 2) & (2 + 4) & (0 + 0) \\ \end{array} = 9$$

### Setup Hours

Setup hours indicate the time that is required to prepare the machinery to run a specific item. To calculate setup hours, divide the setup by the number of employees or machines for each routing, and then add the values together. This formula ensures consistency during the backscheduling routing because the resource units for the work center are created based on those numbers.

In the following example, the setup hours equals 6:

$$\frac{\text{Setup}}{\text{Employees or machines}} = \frac{1}{1} + \frac{2}{1} + \frac{6}{2} = 6 \text{ setup hours}$$

OP 30    OP 60    OP 80