



Affordable, Adaptable ERP Software



## *Manufacturing Data Training Guide*

Version 5.40

Fitrix™

***Manufacturing Data ♦ Training Guide***  
***Version 5.40***  
***Revised 07/31/2015***

## ***Fitrix Manufacturing Course Workbook***

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Fourth Generation Software Solutions  
100 Galleria Parkway, Suite 1020  
Atlanta, GA 30339

Corporate: (770) 432-7623  
Fax: (770) 432-3448  
E-mail: [sales@fitrix.com](mailto:sales@fitrix.com)

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# **Chapter 1 – Bill of Material**

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## **Learning Objectives**

To learn the type of information that is maintained in Bill of Material

To learn the steps involved in setting up Bill of Material.

To learn the tasks that are performed in Bill of Material and the steps involved in completing them.

To learn the data entry screens where bill of material information is maintained.

To learn how to use the parent-level and component-level inquiries and reports.

To learn how to use the Item Availability inquiry to determine material requirements for a proposed item

## **Bill of Material Overview**

### **What type of Information is maintained in Bill of Material?**

The Bill of Material module maintains information about the component item make-up of manufactured items. It retains information including:

An ordered list of component items that are used to make a parent item

The component quantity required to make one unit of a parent item

The starting and ending dates for which a component is to be used

The method by which a component is to be issued from inventory when it is used

### **What tasks or Activities are performed in Bill of Material?**

One or more bills of material are defined for each manufactured item which consumes other items (components) as part of its manufacture.

A default bill of material is identified in the Inventory Information Master and in each item/warehouse where the item will be manufactured.

### **The major tasks completed in Bill of Material:**

Items used in Bill of Material, both components and parent items, are first defined in the Inventory Information master, on the Inventory Control module.

Additional manufacturing-related information is also maintained for each component and parent item in the Inventory Information Master and in the Inventory Control module

### **The major tasks completed in Bill of Material:**

Additional reference tables are maintained

Bills of Material are maintained

Component Usages are analyzed, when determining if a component should be replaced or substituted

Item availability can be analyzed, when determining if the required materials are available to manufacture an item

### **What Relation does Bill of Material have to Other Fitrix Modules?**

Bill of Material is most closely related to Inventory Control, Production Order Processing and Material Planning.

**Inventory Control** provides the items used by bills of material to define the relationships between parent items and their components.

**Production Order Processing** uses bills of material when creating production orders, to manufacture a parent item from its components.

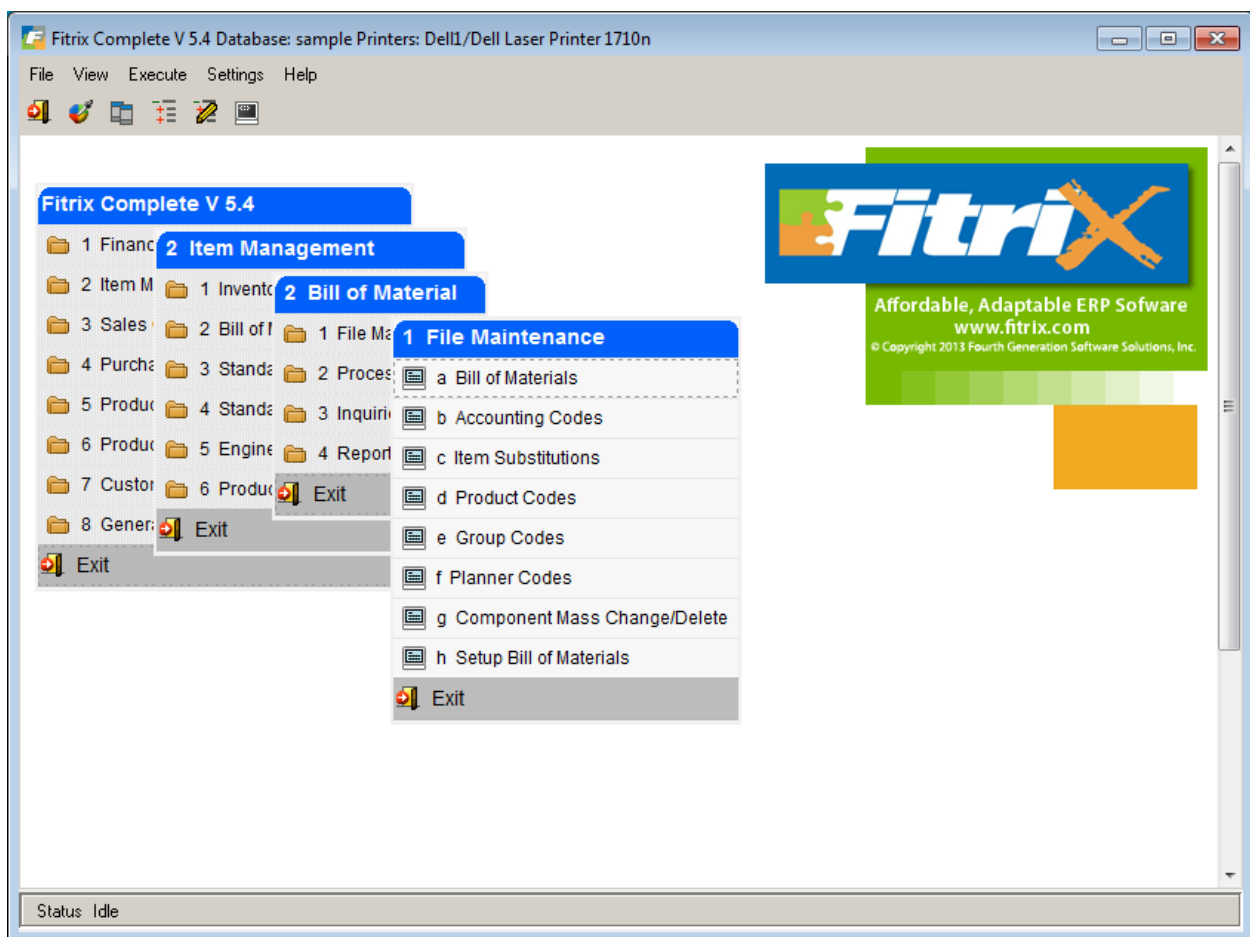
**Material Planning** uses bills of material when planning component requirement production and purchases from parent item demand.

## Bill of Material Set Up

Steps to set up the Bill of Material module include the following options from the File Maintenance submenu:

- Setup Bill of Material
- Accounting Codes
- Item Substitutions
- Product Codes
- Group Codes
- Planner Codes

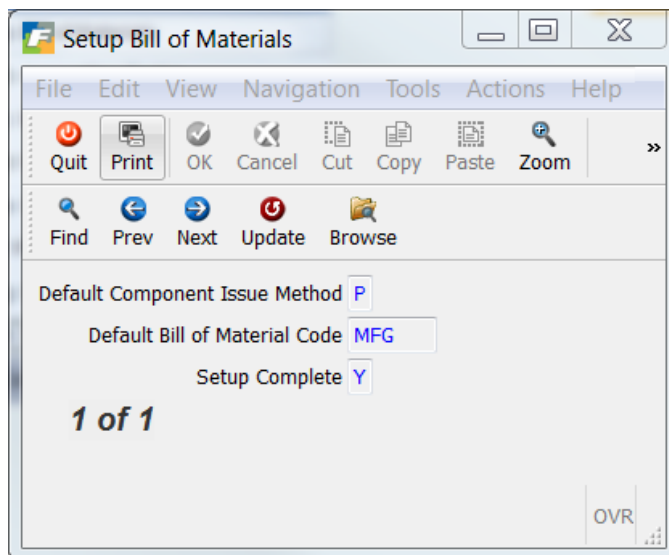
The options on this menu allow you to setup the initial Bill of Material default settings, and the reference files used in other sections of the Bill of Material module.



## **Setup Bill of Materials**

Use this option to set up the default values used by other programs.

To view this screen select option h from the File Maintenance menu.



The data in the Setup Bill of Material file is unique to each database (i.e. company). The file contains only one record and therefore, the commands on the command prompt, with the exception of Update and Quit, have been disabled.

When you enter items and bills of material, the system automatically fills in default values to some of the information fields, from values entered on this screen. By automatically filling the field with default data, the system saves the user from retyping the same information for each new item or bill.

The user can overwrite default values when the transaction is entered by typing over the default.

Both the sample database and the standard database of the Bill of Material module come with data already entered into the default fields. You should modify this data to fit your company's application.

Below is a description of each field in the Bill of Material Defaults section:

Field	Description
Default Component Issue Method	<p>Each component in a bill of material has a Component Issue Method. It controls how the component is to be issued from inventory when it is used on a Production Order. This value defines the default issue method to be displayed whenever a new component is added to a parent item. The possible values are:</p> <ul style="list-style-type: none"><li>• C – Issue via the Component Issue program. This method is used for orders requiring a longer lead time to produce. It allows components to be issued when they are physically used, giving a more accurate view of work in process.</li><li>• P – Issue via the Production Receipt program. This method is used when orders have a shorter lead time to produce. It allows components to be issued from the same screen which records receipt of the parent item into inventory.</li><li>• O – Issue via the Operation Complete program. This method is used when components need to be issued relative to the completion of a production order routing step.</li><li>• N – Do not issue from inventory. Components can be identified on a bill of material, for reference purposes, that are not to be issued from inventory.</li></ul>
Default Bill of Material Code	<p>A parent item can have more than one bill of material, and each bill must have a unique bill of material code. When a new bill is entered for a parent item, this default value will automatically display. NOTE: the code is not validated against any master file. It is only checked to make sure it is unique for the parent item.</p>
Setup Complete	<p>Set this value to Y when you are ready to begin using bills of material.</p>



## **Accounting Codes**

You use this option to set up and maintain the Accounting Codes file.

To view this screen, select option b from the File Maintenance menu.

The screenshot shows a software window titled "Accounting Codes". It has a menu bar with "File", "Edit", "View", "Navigation", "Tools", "Actions", and "Help". Below the menu bar is a toolbar with icons for "Quit", "Print", "OK", "Cancel", "Cut", "Copy", "Paste", "Zoom", "Notes", "Attachments", "U Fields", "To Do", "Technical status", and "Help". Another row of icons includes "Find", "Prev", "Next", "Add", "Update", "Delete", and "Browse". The main area contains the following fields:

- Accounting Code:
- Account Type: - Description:
- Account Number: - Date Added:
- Date Last Changed:

Below these fields, it says "1 of 6". In the bottom right corner, there is a button labeled "OVR".

Each entry represents a combination of an Accounting Code and Type used to cross-reference to an account number to be posted to for costs related to manufacturing transactions. Each production order needs an accounting code to determine how transactions for the order are to be posted to the General Ledger module.

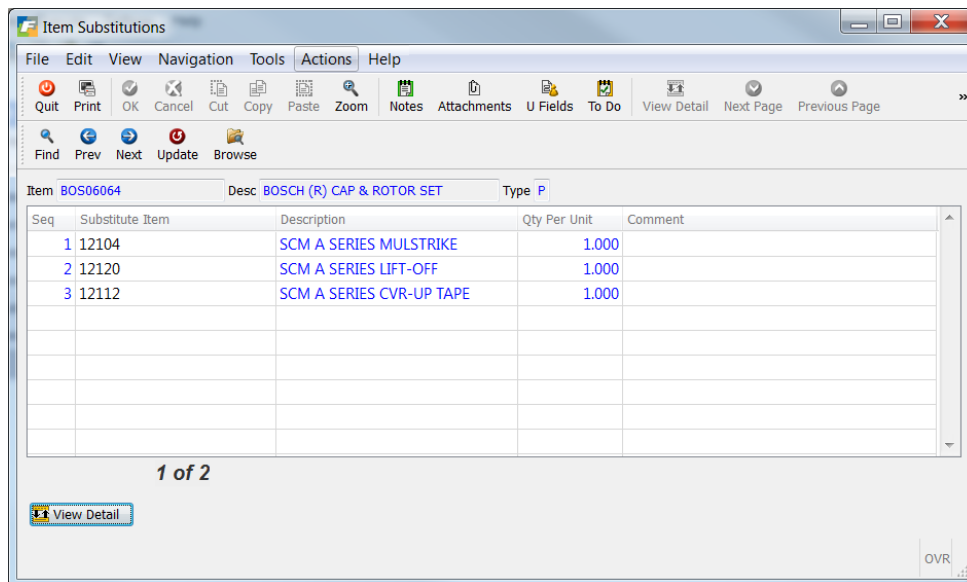
The Accounting Code screen contains the following fields:

Field	Description
Accounting Code	This is a unique 13-character alphanumeric code that identifies the particular accounting code.
Account Type	One of the following values: <ul style="list-style-type: none"><li>• STK – used when stock component items are issued to a production order via Component Issue</li><li>• NON – used when non-stock component items are issued to a production order via Component Issue</li><li>• WIP RECEIPT – used when the end item on a production order is received via Production Receipt</li><li>• LABOR – used when run labor is posted to a routing step on a production order.</li><li>• SETUP – used when setup labor is posted to a routing step on a production order</li><li>• OVERHEAD – used when overhead costs are posted to a routing step on a production order</li><li>• OUTSIDE PROCESS – used when units are reported complete on an outside process routing step on a production order</li></ul>
Description	The description of the Accounting Code/Type combination.
Account Number	The G/L account number for which production transactions are to be posted.
Dated Added	Maintained by the program.
Date Last Changed	Maintained by the program.

## ***Item Substitutions***

Use this menu option to set up and maintain one or more substitute items which can be used to replace a component, on a production order.

Select option c to see the following screen:



## Item Substitutions Header

The following fields can be entered:

Field	Description
Item	The item for which substitutes are to be entered
Desc:	The item's description. This field is for reference only
Type:	P=purchased, M=manufactured. This field is for reference only.

## Item Substitutions Detail

Enter one or more substituting items.

Field	Description
Seq	The sort sequence for the substitute item. During Production Order entry, if the 'Substitutes' window is requested, substitutes will display in order by this sequence.
Substitute Item	The item code of the substituting item
Description	The substitute item's description. This field is for reference only.
Qty Per Unit:	The quantity relationship of this item to the item it is replacing. For example, if the original item has a stocking unit of measure of 'feet' and the substituting item is stocked in 'inches', the qty per unit would be 12.
Comment	Enter free form text for any special instructions relating to how the substitute should be used.

## Product Codes

Use this option to set up and maintain the Product Code information. Items can be assigned to Product Codes for Inquiry and Reporting purposes. Items are assigned to Product codes in the 'Update Inventory Information' option, via the 'Mfg-Base' button.

To view this screen, select **(option d)**.

The screenshot shows a software window titled "Product Codes". It has a menu bar with "File", "Edit", "View", "Navigation", "Tools", "Actions", and "Help". Below the menu is a toolbar with icons for "Quit", "Print", "OK", "Cancel", "Cut", "Copy", "Paste", "Zoom", "Find", "Prev", "Next", "Add", "Update", "Delete", and "Browse". The main area contains four input fields: "Product Code" with the value "WND", "Description" with the value "WINDOWS", "Date Added" with the value "02/29/2012", and "Date Last Changed" with the value "02/29/2012". Below these fields, it says "1 of 1". In the bottom right corner, there is a button labeled "OVR".

The following fields can be entered:

Field	Description
Product Code	Enter a unique 3-character product code
Description	The product code description
Date Added	Maintained by program
Date Last Changed	Maintained by program

## Group Codes

Use this option to set up and maintain the Group Code information. Items can be assigned to Group Codes for Inquiry and Reporting purposes. Items are assigned to Group Codes in the 'Update Inventory Information' option, via the 'Mfg-Base' button.

To view this screen, select **(option e)**.

The following fields can be entered:

Field	Description
Group Code	Enter a unique 3-character group code
Description	The group code description
Date Added	Maintained by program
Date Last Changed	Maintained by program

## Planner Codes

Use this option to set up and maintain the Planner Code information. Items can be assigned to Planner Codes for Inquiry and Reporting purposes. Items are assigned to Planner Codes in the 'Update Inventory Information' option, via the 'Mfg-Base' button.

To view this screen, select **(option f)**.

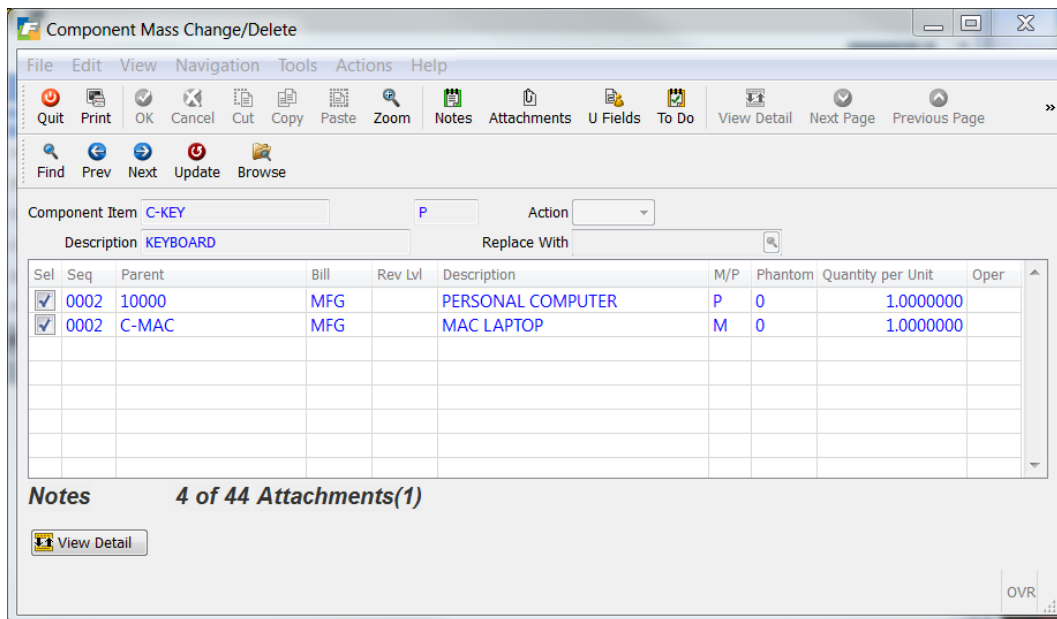
The following fields can be entered:

Field	Description
Planner Code	Enter a unique 5-character planning code. The code could represent a specific product line, type of inventory, or individual person.
Description	The planner code description
Manufacture/Purchase	P=purchased, M=manufactured
Date Added	Maintained by program
Date Last Changed	Maintained by program

## Component Mass Change/Delete

Through this menu option, you can change or delete component usages in multiple bills of material simultaneously..

To view this screen, select **(option g)**.




### Component Mass Change/Delete - Header

Use the 'Find' option to select the component item to be replaced. Then select update to decide which parent items should be affected.

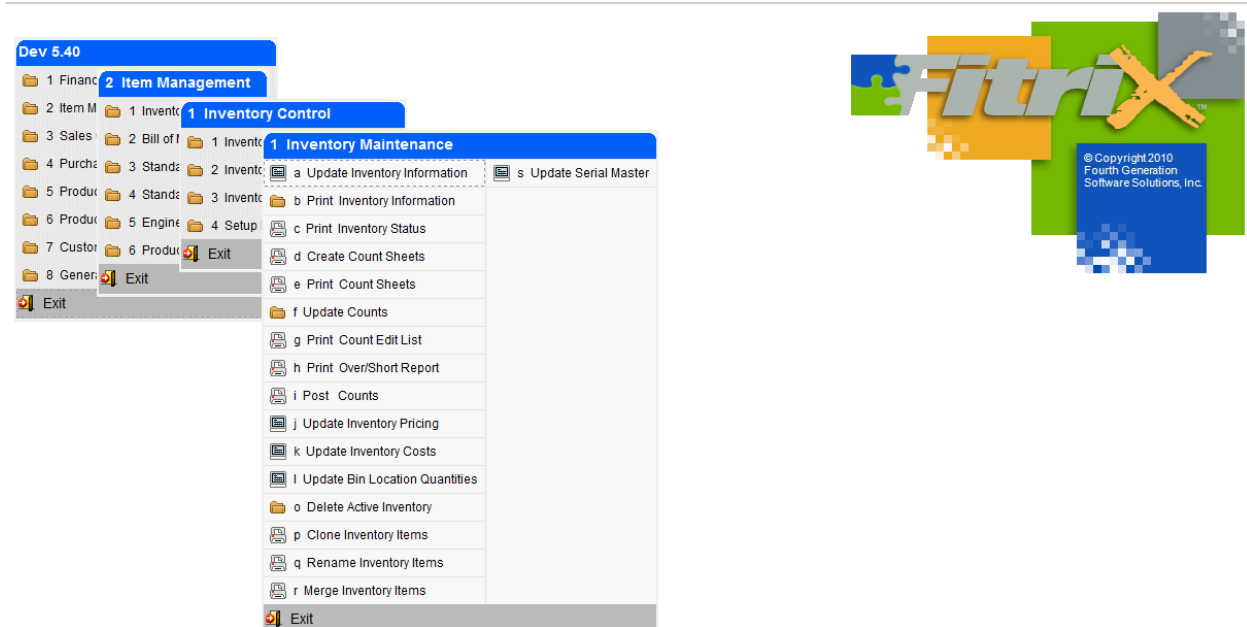
Field	Description
Component Item	The component item for which mass change/delete is to be performed
Description	The component item's description
Type:	P=purchased, M=manufactured
Action	Replace=replace component item with 'Replace With' item Delete=delete component from selected parent items
Replace With	If Action is 'Replace', the replacing component item

### Component Mass Change/Delete - Detail

The Parent Items are listed on the bottom section of the screen. Each item will be checked by default. If there are specific parents you ignore for a change or delete, click the  **Detail** button, and uncheck the parents to be ignored.

## Setting up Items

The Bill of Material programs assume that parent and component items have already been set up in the Inventory Master. This step is performed in the Inventory Control module, accessed from Item Management on the Fitrix Main Menu. When you select Inventory Maintenance (**option 1**) from the Inventory Control menu the following menu displays:





## Update Inventory Information

This selection takes you into the Maintain Inventory Item Screen. You can select items to view current inventory information, add new inventory items, delete old and inactive inventory items, or browse through the Inventory file.

Choose **(option a)** to view the following screen.

## Maintain Inventory Item Header

After you select Update Inventory Information, the system returns the Maintain Inventory Item Screen. You use this screen to enter, update, or display basic information about an inventory item.

The header section of the Maintain Inventory Item screen contains the following fields:

Field	Description
Item Code:	Inventory Item Code. This is a required field that stores a unique item code set up to identify each item in inventory. You can enter an item code up to 20 characters. Zoom is available to select from existing item codes.

Field	Description
Commodity Code:	This field is freeform where you can enter any code (up to 20 characters). It is designed for those businesses that use codes set forth by the Federal government to classify and identify all types of commodities, but its function is simply reference and classification.
Description:	Item Description. There are two lines (up to 30 characters each) for the description. These fields are free form, so you can enter any information you need.
Item Class:	Item Classification. You can enter a code in this field, up to three characters, used to categorize an inventory item. All items to which you assign the same code are in the same class. You must have defined the code in the Item Class file, which is maintained via Update Item Classifications ( <b>option 4-d</b> ). Zoom is available allowing you to select a valid Item Classification.
Special Order Item:	<p>When entering sales orders, the user needs to be aware of when the item is a special order item so they can advise their customer of this and the fact that it is not carried and will be backordered.</p> <p>If this field is checked:</p> <ol style="list-style-type: none"> <li>When user enters a sales order they get this message: <p align="center">“This is a special order item that will be backordered. Continue Y/N?”</p> </li> <li>When user enters a vendor purchase order they get this message: <p align="center">“This is a special order item. Continue Y/N?”</p> </li> <li>The inventory replenishment programs will ignore these special order items since <p align="center">the items are not ordered on a regular basis.</p> </li> </ol>
Price Group:	<p>Price Group Code. You can enter a code so that the system groups this item with other items that have the same price group code. On a customer order, the system combines the quantities of items that have the same price group, which helps achieve volume quotas for price breaks.</p> <p>For example, you give a 3% discount if 1,000 or more widgets are ordered. Customer orders 600 blue widgets and 400 red widgets. If they both have the same price group, the customer will receive the 3% discount.</p>
Market Price:	<p>In this field, enter Y or N depending on whether or not the item’s price is subject to change based on the market value.</p> <p>If set to Y, you can change the price right up to the point of invoicing.</p> <p>If set to N, price may not be changed in the Update Invoice program.</p>
UPC Code	Enter UPC Code.

Field	Description
Special Handling Charge	This is the special handling fee that will be added to the sales order for this item. The total amount charged will be this fee multiplied by the quantity ordered
UOM List:	If a UOM List code is entered, the Stocking Unit, Selling Unit and Purchasing Units must be defined for the UOM List. In addition, the Sell Unit must have a Type of Sell or Both for both sell and purchase and the Purchase Unit must have a Type of Purchase or Both. If a UOM List code is entered, the related Factor and Increment fields are skipped. The Factor field is looked up using UOM List code. The Increment fields are left blank.
Stocking Unit:	<p>Stock unit of stock keeping unit (sku). Enter a two-character abbreviation for the unit in which you stock the item (EA for each, BX for boxes, PT for pallets, etc.)</p> <p><b>Weight</b> – Inventory item weight. You can enter the weight of 1 sku of this item up to 99999.999. You can also specify weight unit (unmarked field).</p> <p><b>Volume</b> – Volume of Inventory Item. You can enter the volume of one sku of this item up to 99999.99.</p> <p><b>Selling Unit</b> – Enter a two-character designation for the unit of measure in which you sell this item (EA, CS, BX, etc.)</p> <p><i>Note:</i> For serialized items, all the conversion factors are 1, which is the default.</p>
Conversion Factor:	<p>Sell conversion factor. You can enter the decimal conversion factor that converts stock units to sell units.</p> <p>For example, if you stock an item in eaches and sell the item in cases and there are 6 stocking units per case, the sell conversion factor is 6. When you sell 1 case inventory on hand will be decreased by 6.</p> <p><i>Note:</i> The system is capable of calculating the decimal equivalents of reciprocals such as 1/6. Enter a -6 in the Conversion factor and the system will calculate .166667, enter -2 to get .500000, just as an example.</p>
Purchasing Unit	Purchase unit of measure. Enter the two-character designation for the unit of measure in which you purchase this item (CS, TN, PT).
Conversion Factor:	Purchase conversion factor. This is the numeric conversion factor that converts the purchase units to stock units. For example, if you purchase by the case, stock individually, and the quantity per case is 24, the conversion factor will be 24. When you receive one case, inventory on hand will be increased by 24.
Inventory Acct:	Inventory account number. The Inventory account is where the system posts financial transactions involving inventory items. The field is required and it defaults to the Inventory Account number set up in Inventory Defaults.
Cost of Goods Acct.:	Cost of goods account number. The Cost of Goods account is the where the system posts the amounts of costs for inventory purchased. This field is required and it defaults to the Cost of Goods Account number set up in Inventory Defaults.
Sales Acct.:	The Sales account is where the system posts sales of inventory items. This field is required and it defaults to the Sales Account number set up in Inventory Defaults.
Sell Unit Increment:	For items that you must sell in increments of 2 or more, use this field to set your incremental quantity. The Update Customer Order program has been modified so that the item quantity entered must be in line with this value.
Purchase Unit Increment	For items that you must purchase in increments of 2 or more, use this field to set your incremental quantity. The Update Purchase Order program has been modified so that the item quantity entered must be in line with this value.
Extended Description	Enter up to a 256 character extended description for the item.

Field	Description
Price Levels	Use these levels to determine the price to charge your customer if you do not have prices set up in the special price file (See Order Entry chapter). You then enter this discount level in the customer master. Using the example above any customer that has a discount level of 1 will be charged 25% off list for this item.
Warehouse	The warehouse in which the item is received and stored.
Location	The bin location in the warehouse where the item is stored.
Vendor	Primary vendor code that item is purchased from. Information purposes only.
Qty on Hand	The amount currently on hand
Available	The amount currently available (on hand quantity less quantity committed to open sales orders and production work orders).
Costs	Average, Purchase, and Standard costs per stocking unit.
Price	List price per unit. Please note that this should be the list price based on stocking unit not selling unit. For example, you stock in eaches, sell in cases, and they are 6 eaches in a case. The list price per each is \$60 and when you sell a case the list price will be multiplied by the sell conversion factor of 6 to come up with a case price of \$320 (\$60 x 6 eaches).

## ***Modify Warehouse Detail***

From the detail section of the screen click on the Whse Dtl icon. When you select this option, the system returns the Item Warehouse Detail screen where you enter detail information about an inventory item.

The information on this screen pertains to a single warehouse. You can have multiple warehouses, and therefore, multiple sets of this information for each inventory item. **All quantities, costs and prices entered are entered in stock units.**

The top section contains

Field	Description
Item:	This is the item code .
Warehouse:	The current warehouse displays. You can zoom from this field to select a different distribution warehouse..

The next section holds Cost and Price Information. This section shows the cost detail for a given item at the warehouse level. All quantities and costs are in stock units.

Field	Description
Purchase Cost:	Enter or update the standard purchase cost of one stock unit. If your customer pricing is based on a markup from cost, it is this cost that will be used.
Last Cost:	This cost is recorded automatically during receiving/purchasing.
Qty:	Last quantity received
Average Cost:	You can enter an average cost for items you have on hand when you initially set up an item in a warehouse. After set up is complete the system will automatically calculate the average cost based on purchases/receipts.
Last Date:	This field stores the date this item was last received into inventory. It is automatically maintained by the system.
Standard Cost	Enter the standard cost if you are using Standard Costing. See the <i>Standard Cost User Guide</i> for more information on standard cost tracking and analysis.
Price:	List price. This is the price your customer will be charged unless you have set up special pricing for them.
Sold Date:	This field represents the date of the most recent shipment of this item. It is automatically maintained by the system.

The next section is Location and Count Information.

Field	Description
Primary and Secondary Locations:	<p>The primary bin location entered should be the bin location this item is typically picked from for outbound shipments. The secondary bin location should be the bulk location of the item. Entry of these values is optional.</p> <p>Please note that if the location controlled value for the warehouse is N you will not be able to enter primary and secondary bin locations but you will be able to enter a static location. Conversely if the location controlled value for the warehouse is Y you will be able to enter a primary and secondary bin location but not a static location.</p>
Location Aisle:	Aisle (up to four characters), Row (up to three characters), Bin (up to three characters). These are three separate fields that hold the alphanumeric references for the physical location of the item in this particular warehouse.
Row:	Row the inventory item is located in.
Bin:	The shelf/floor location of the inventory.
Count Cycle Code:	Leave null if you always count all items at the same time. You can enter a code for an item so that the system will group it with other items that have the same code. It groups them when you create count sheets and you use count cycle codes to select items to go on a count sheet. Count cycle codes can be any single character (A-Z, 0-9). You can accept the default cycle count code you set up in the Defaults file.
Last Count:	The system maintains this field and updates it when a count including this item is posted.

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Field	Description
On Hand:	You cannot change the On Hand quantity in this field during normal date entry; you can only change the quantity during inventory set up. After that, it can only be changed by receiving, shipping, transferring, or adjusting this inventory item.

The Vendor Information section contains the following fields:

Field	Description
Vendor:	You can enter the code for the primary vendor from whom you purchase a particular item. If the Accounts Payable module is installed you should have vendor codes set up in the Accounts Payable Vendor file. Other vendors you purchase this item from can be set up in the Item Catalog program along with this one.
Vendor Item:	This field is to reference the vendor's item code if it is different than yours. You can enter a code of up to fifteen characters.  <i>Note:</i> This information is also maintained in the vendor item catalog program in the Purchasing Module. If a vendor item is entered it will print along side your item code on your vendor purchase orders.

The last section of the Warehouse Detail screen is labeled Selling Information, which pertains to Order Entry. All these fields have defaults that should be set up in the Inventory Defaults file:

Field	Description
Minimum Sell Qty:	You can enter this number up to seven digits, which indicates the minimum quantity (in stock units) that a customer must purchase on a single order line.
Allow Backorder:	Enter Y or N as to whether you allow this item to be backordered or not.
Taxable:	Controls taxation of the item. Enter Y or N.
Subject to Terms Disc.:	Another Y or N field entry is required here based on your choice.  Enter Y if you want this item to be included in the calculation of terms discount.  Enter N if it should not be.
Subject to Trade Disc.:	The same as above applies here.
Req Profit %:	The lowest percentage of profit allowed. This affects the Order Entry module. If the price entered is below this required profit percent, the user will be notified during order entry.
Commission Code:	Type of Commission. Enter a commission code that applies to the item.

## Modify Reorder Detail

Click on Reorder Detail icon.

Use this option to add, update or view information pertaining to reorder and system information. The top portion of the screen contains the item code, item description, warehouse code, and warehouse description that appear on most of the screens available on the Warehouse Detail Zoom men. You cannot modify this information.

The screenshot shows a software window titled "Reorder Information". It has a menu bar with "File", "Edit", "View", "Tools", and "Help". Below the menu is a toolbar with various icons. The main area is divided into two sections. The top section, "Item Warehouse Detail", contains four text boxes: "Item:" with "C-MON", "24" MONITOR", "Warehouse:" with "MIAMI", and "MIAMI WHSE". The bottom section, "Reorder and System Information", contains several fields and checkboxes. "Obsolete?:" is a checkbox with "N". "Seasonal:" and "ABC Class:" are checkboxes. "Last Activity Date:" is a date field with "11/05/2012". "On Hand:" is a numeric field with "259.00". "Reorder Quantity:", "Reorder Point:", "Safety Stock:", "Safety Factor:", "Out of Stock Date:", "Average Lead Time:" (with "17.50"), "Last Lead Time:" (with "35"), and "Next to Last Lead Time:" (with "0") are all numeric fields. "Freeze Flag:" is a checkbox. "Freeze Date:" and "Freeze Expiration Date:" are date fields. An "OK" button with a green checkmark is at the bottom left. An "OVR" button is at the bottom right.

Item Warehouse Detail	
Item:	C-MON 24" MONITOR
Warehouse:	MIAMI MIAMI WHSE

Reorder and System Information	
Obsolete?:	<input checked="" type="checkbox"/> N
Seasonal:	<input type="checkbox"/>
ABC Class:	<input type="checkbox"/>
Last Activity Date:	11/05/2012
On Hand:	259.00
Reorder Quantity:	
Reorder Point:	
Safety Stock:	
Safety Factor:	
Out of Stock Date:	
Average Lead Time:	17.50
Last Lead Time:	35
Next to Last Lead Time:	0
Freeze Flag:	<input type="checkbox"/>
Freeze Date:	
Freeze Expiration Date:	

OK OVR

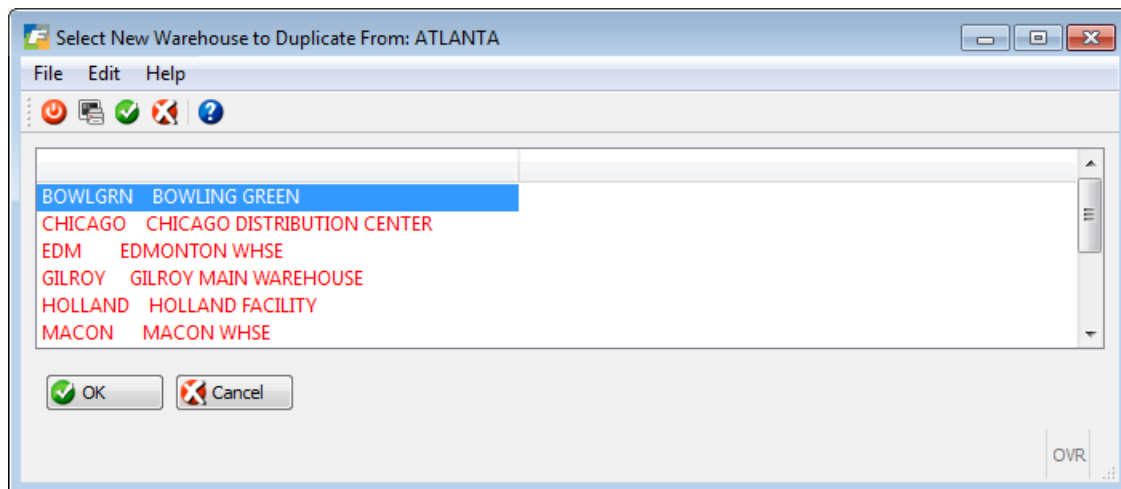


Field	Description
Obsolete?	Enter Y if the item is obsolete or N if it is not. If marked Y, purchase orders cannot be entered for the item.
Seasonal	This field is currently a reference only field.
ABC Class	ABC Classification. You can enter the class this item based on the ABC classifications set up in the Inventory Control Defaults file. <i>Note:</i> This value is only used if the Replenishment Module is installed.
Last Activity Date	The system maintains this transaction date for the inventory item (non-entry).
On Hand	Item Quantity on Hand (non-entry).
Reorder Qty	Enter the quantity of the item (in stock units) you want to reorder when inventory drops to the reorder point. The amount you reorder is usually based on usage rate, lead-time, and safety allowance. You must calculate the reorder point manually. If the replenishment module is in use, the reorder point will be calculated for you automatically and stored in the Replenishment Data table.
Reorder Point	Enter the quantity (in stock units) at which the system flags the item for reorder. Items appear on the Reorder Advice report when the quantity on hand reaches or drops below this point. If the replenishment module is in use, the reorder point will be calculated for you automatically and stored in the Replenishment Data table.
Safety Stock	Enter the safety stock level (in stock units). Safety stock is the quantity below which you do not want inventory to fall for a particular item. This safety stock is your “pad” against variations in usage rates and lead times that might otherwise cause you to run out of an item. <b>Note: This value is only used if the replenishment module is installed.</b>
Safety Factor	This is a percentage of the total order that is added to the order and will be the safety stock. It is calculated based on usage. <b>Note: This value is only used if the replenishment module is installed.</b>
Out of Stock Date	This is the date that the item ran out.
Average Lead-Time	The system calculates the average lead-time once you begin purchasing inventory. It is calculated as the average of the past two lead time performances. The system calculates lead times based on the request date (or the PO date if no request date) and subtracts that from the receive date.
Last Lead-Time	This field is automatically updated by the system and holds the last lead-time, in days.
Next to Last Lead-Time	This field is automatically updated by the system and records the next to last lead-time.
Freeze Flag	Reserved for future use with the replenishment module.
Freeze Date	Reserved for future use with the replenishment module.
Freeze Expiration Date	Reserved for future use with the replenishment module.

## ***Copy Warehouse to Another***

Click on the Copy Whse icon.

This option allows you to copy information about this inventory item from an existing warehouse, and set the item up in another warehouse with all the same warehouse detail information. The only exception is the quantity on hand field which must be entered. The screen will list any warehouse codes that do not have this item code.



## ***View Usage History***

Click on the Usage History icon.

The screenshot shows the 'View Purchase/Sales History' window. The 'Transaction History' section displays the following information:

- Item: C-MON
- Warehouse: MIAMI
- Total sold last 12 months: 0.00
- Average sold per month: 0.00
- Last sold date: 07/04/2012

Below this information is a table with the following columns: Month, Year, \$ Cost, \$ Sales, Cost Qty, and Sales Qty. The data is as follows:

Month	Year	\$ Cost	\$ Sales	Cost Qty	Sales Qty
11	2012	1176.320	0.000	15.000	0.000
7	2012	132.400	0.000	2.000	0.000
3	2011	12923.400	319.980	202.000	2.000
12	2010	0.000	0.000	0.000	0.000
11	2010	0.000	159.990	0.000	1.000
10	2010	1500.000	0.000	20.000	0.000

At the bottom of the window, there are 'OK' and 'Cancel' buttons, and a status bar with 'OVR'.

The top portion of this screen has the item code and warehouse code. Inventory items can have year, cost, sales, and quantity. You can zoom to see the detail that makes up the totals on the screen pictured above.

The screenshot shows the 'View Purchase/Sales History' window with a detailed transaction selected. The table below shows the transaction details:

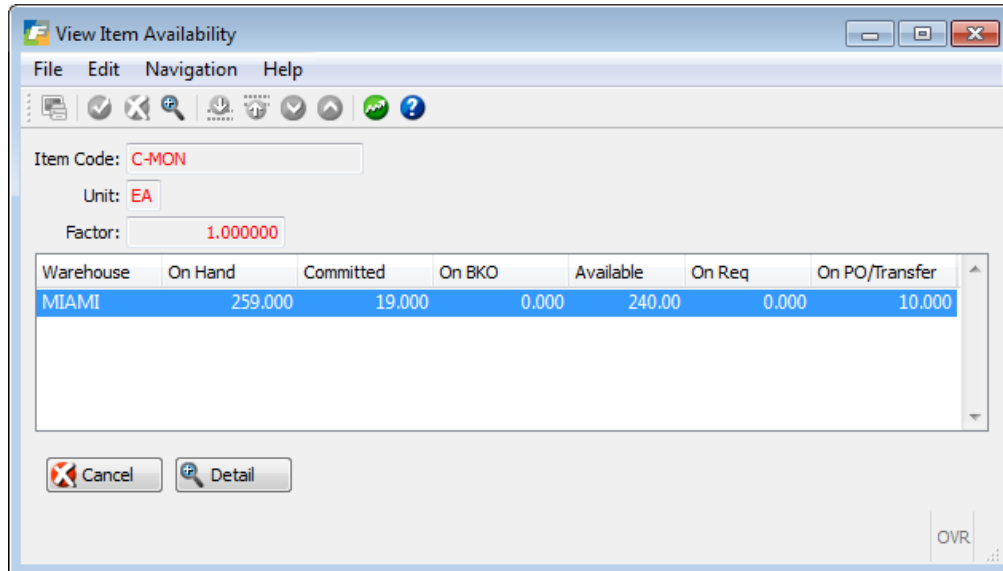
Document	Date	OJ	Type	Who	Business Name	Qty	Stats	Unit Cost	Unit Price
697	11/05/2012	PR	PU	123457	CHAMPION INC	15.00	Y	78.42	

At the bottom of the window, there are 'OK' and 'Cancel' buttons, and a status bar with 'OVR'.

## **View Item Status**

Click on the status icon.

The Item Status screen allows you to view the status of an item in multiple warehouses, whereas the Maintain Inventory Item screen stores limited status information about an item only for one warehouse.



The 'View Item Availability' window displays the following information:

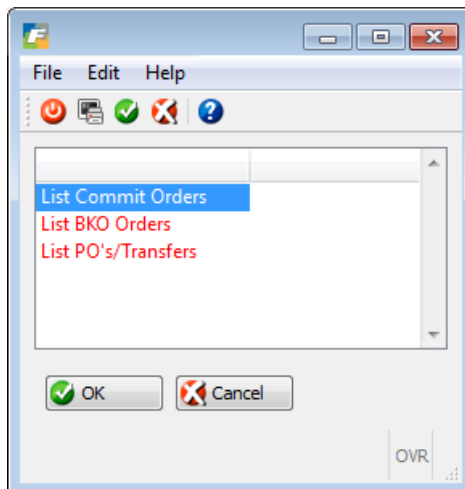
Item Code: C-MON  
Unit: EA  
Factor: 1.000000

Warehouse	On Hand	Committed	On BKO	Available	On Req	On PO/Transfer
MIAMI	259.000	19.000	0.000	240.00	0.000	10.000

Buttons: Cancel, Detail

OVR

You can zoom in further to see the details that make up the various quantities.



The detail window shows the following options:

- List Commit Orders
- List BKO Orders
- List PO's/Transfers

Buttons: OK, Cancel

OVR

## Serial/Lot Numbers

Click on the Serial/Lot icon.

If an item is either serial or lot number controlled you will use this screen to set up the serial or lot number during Inventory Set Up. Once inventory is set up, this information is view only.

PO No	Rec Doc	Recpt Date	Bin Location	Lot Number	Expiry Date	Serial Number	Recvd Qty	Cost	On Hand
811	697	11/05/2012	A1			FGS4557	1.00	78.4210	1.000
811	697	11/05/2012	A1			FGS4558	1.00	78.4210	1.000
811	697	11/05/2012	A1			FGS4559	1.00	78.4210	1.000
811	697	11/05/2012	A1			FGS4560	1.00	78.4210	1.000
811	697	11/05/2012	A1			FGS4561	1.00	78.4210	1.000
811	697	11/05/2012	A1			FGS4562	1.00	78.4210	1.000
811	697	11/05/2012	A1			FGS4563	1.00	78.4210	1.000
811	697	11/05/2012	A1			FGS4564	1.00	78.4210	1.000
811	697	11/05/2012	A1			FGS4565	1.00	78.4210	1.000
811	697	11/05/2012	A1			FGS4566	1.00	78.4210	1.000

## Variable Commission Rates

Click on the Commission Rates icon. You can use this screen program to set up variable commission percentages based on sales price rather than one flat rate on the warehouse detail screen discussed above. If the item is sold below the lowest begin price no commission is earned. If sold above the highest end price the commission percent is the same as the highest percent. These commission levels can also be overridden at the individual customer level using the Update Customer Information screen.

Begin Price	End Price	Commission %
85.0000	100.0000	5.00
100.0001	125.0000	7.00
125.0001	140.0000	9.00
140.0001	170.0000	12.00
170.0001	200.0000	15.00

## ***Alternate Items***

Click on the Alternate Items icon to set up alternate or substitute items for your item. This screen program can also be accessed from the Setup Inventory menu as discussed above.

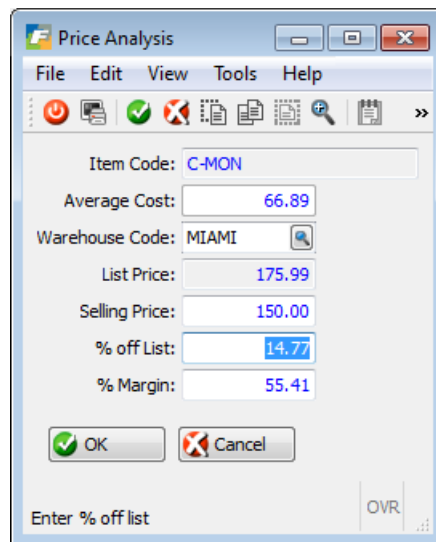
## ***Cross Sells***

Click on the Cross Sells icon to set up cross sell items for your item. This screen program can also be accessed from the Setup Inventory menu as discussed above.

## ***Price Analysis***

Click on the Price Analysis icon.

This screen program can be used determine sales price based on a % discount off list and what the profit margin will be. You can also enter a sales price and the % off list and profit margin will be calculated for you.



The image shows a software window titled "Price Analysis". It has a menu bar with "File", "Edit", "View", "Tools", and "Help". Below the menu bar is a toolbar with various icons. The main area contains the following fields:

- Item Code: C-MON
- Average Cost: 66.89
- Warehouse Code: MIAMI
- List Price: 175.99
- Selling Price: 150.00
- % off List: 14.77
- % Margin: 55.41

At the bottom, there are "OK" and "Cancel" buttons. Below the buttons, there is a label "Enter % off list" and a small "OVR" label.


## Maintaining Items

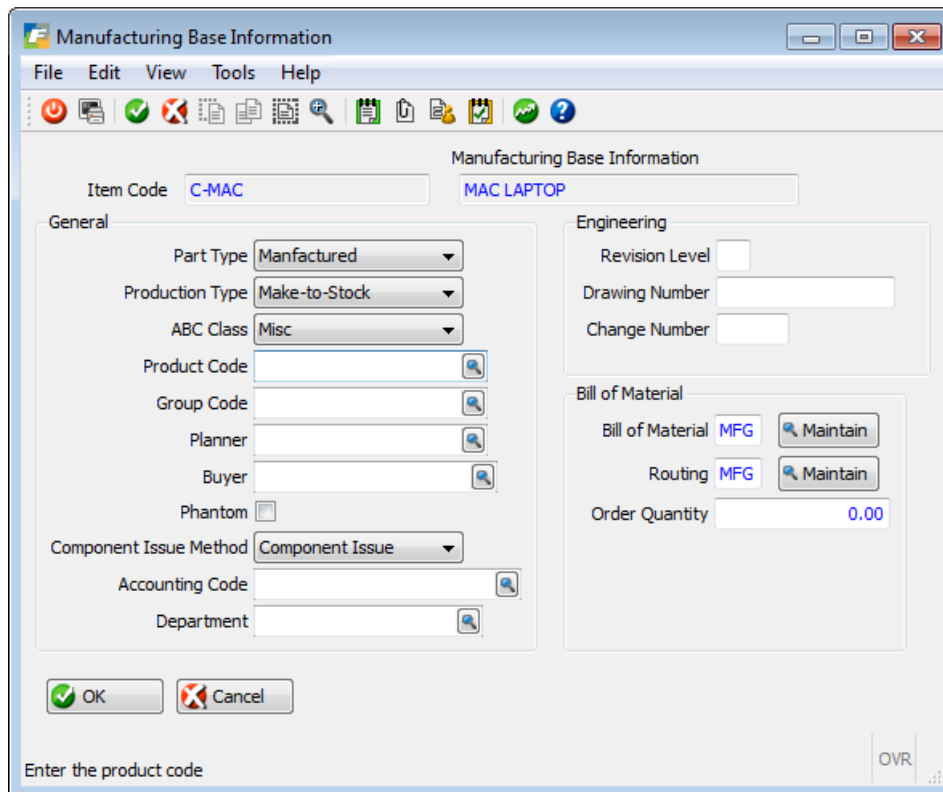
Bills of Material consist of multiple items and their relationships to each other in a production environment. A bill of material defines the items (components) and their respective quantities required to produce another item (parents).

### Maintaining Item Manufacturing Information

Items are defined in the Inventory Control module, in Inventory Maintenance/Update Inventory Information.

To access the manufacturing-related fields for component and/or parent items, update an item in

Inventory Control/Inventory Maintenance/Update Inventory Information, then select the  button. The following window displays:



The screenshot shows the 'Manufacturing Base Information' window. It has a menu bar (File, Edit, View, Tools, Help) and a toolbar with various icons. The window is divided into several sections:

- Item Code:** C-MAC (left) and MAC LAPTOP (right).
- General:**
  - Part Type: Manufactured (dropdown)
  - Production Type: Make-to-Stock (dropdown)
  - ABC Class: Misc (dropdown)
  - Product Code: (text field with search icon)
  - Group Code: (text field with search icon)
  - Planner: (text field with search icon)
  - Buyer: (text field with search icon)
  - Phantom: ☐
  - Component Issue Method: Component Issue (dropdown)
  - Accounting Code: (text field with search icon)
  - Department: (text field with search icon)
- Engineering:**
  - Revision Level: (text field)
  - Drawing Number: (text field)
  - Change Number: (text field)
- Bill of Material:**
  - Bill of Material: MFG (text field) and Maintain (button)
  - Routing: MFG (text field) and Maintain (button)
  - Order Quantity: 0.00 (text field)

At the bottom, there are OK and Cancel buttons, and a status bar with the text 'Enter the product code' and 'OVR'.

The following fields are available:

Field	Description
Item Code:	Inventory Item Code
Description:	Item Description
Part Type	Manufactured or Purchased. This determines how the Planning applications are to plan for either production or purchase of an item. In addition, if a manufactured part is placed on a purchase order to buy, or if a purchased item is entered on a work order to be produced, warning messages will be displayed.  Parent items are manufactured and component items are purchased.
Production Type	Valid values are Assemble to Order or Make to Stock
ABC Class	An optional classification to be used in reports. It rates an item in comparison to other items as an extension of its cost x usage.
Product Code	You may optionally assign this item to a pre-defined Product Code. Reports in other modules allow you to select items within specific product codes
Group Code	You may optionally assign this item to a pre-defined Group Code. Reports in other modules allow you to select items within specific group codes
Planner	You may optionally assign this item to pre-defined Planners. Reports in other modules allow you to select items within specific planner codes
Buyer	You may optionally assign this item to pre-defined Buyers. Reports in other modules allow you to select items within specific buyer codes
Phantom:	Phantoms are a convenience for defining a collection of components which are used together in multiple parent items. The components can be defined once under a 'Phantom parent item' and then this item is entered as a component in the parent items that use the collection. A phantom is typically never directly produced or stocked in inventory. You may, however, decide to stock phantom items. In this case, whenever a parent item has a phantom in its bill of material, a production order for the parent will test inventory availability for the phantom before 'exploding' its components. Whatever inventory is available is used directly; any shortages will trigger an explosion to the component items in the collection.
Component Issue Method	For items which are to be used as components in a bill of material, choose one of the following values: <ul style="list-style-type: none"> <li>• Component Issue – Issue this item via the Component Issue transaction in the Production Order Processing module</li> <li>• Production Receipt – Issue this item via the Production Receipt transaction in the Production Order Processing module. These components will be issued at the same time the parent item is being received to inventory. This is often referred to as 'back flushing'.</li> <li>• Operation Complete – Issue this item via the Operation Completion transaction in the Production Order Processing module.</li> <li>• Not Issued – this item is never issued to a production order. Non-production materials such as drawings, containers, and tooling are used in this way.</li> </ul>
Accounting Code	Select from the list of predefined accounting codes
Department	Select from the list of predefined departments



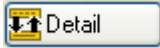

Field	Description
Engineering Revision Level	Enter an optional value to indicate the current revision level for the item. This is useful where items with extensive and/or frequent configuration changes must be managed.
Engineering Drawing Number	Enter an optional drawing number that could be cross-referenced to a physical drawing or electronic document
Engineering Change Number	In cases where Revision Levels are used, this can further reference an engineering department change number that advanced the item to its current revision level.
Bill of Material	Enter the identifier for the default bill of material for the item. Items are allowed to have more than one bill of material (for example: engineering, production, and service), and each bill has its own unique identifier. This value indicates the default bill of material identifier to be used when entering production orders and performing material planning.
Routing	Enter the identifier for the default routing for the item. Items are allowed to have more than one routing (for example: engineering, production, and service), and each routing has its own unique identifier. This value indicates the default routing identifier to be used when entering production orders and performing material planning.
Order Quantity	Enter an optional default standard ordering quantity for the item, whenever it is produced or purchased.

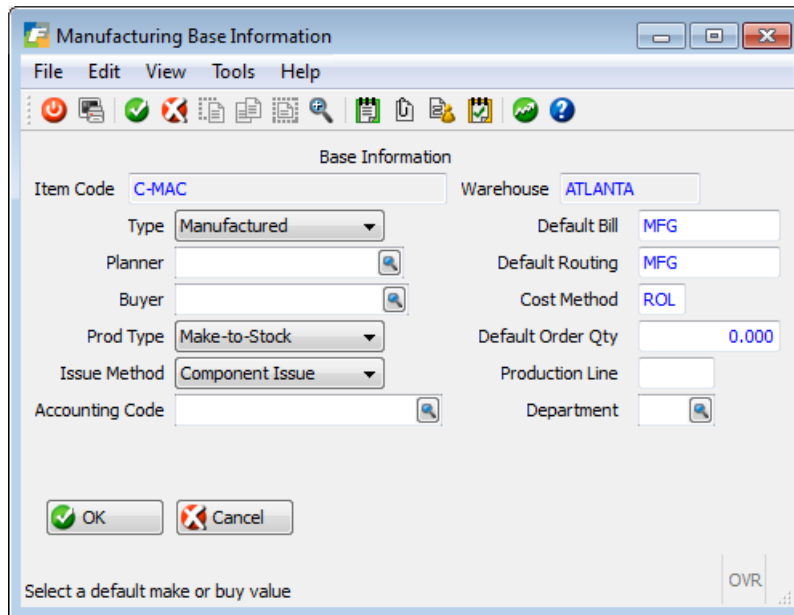
## Maintain Inventory Item Detail

Additional information about the inventory item is stored at the warehouse level and the use of warehouse allows you to have multiple sets of this information for a single item, depending on the warehouse in which it is used.

## Maintaining Item/Warehouse Manufacturing Information

From the detail section of the Update Inventory Information window, you can access manufacturing information that is specific to an item in an individual warehouse.

To access the manufacturing-related fields, select the  button, move the cursor to the  button. The following window will display.



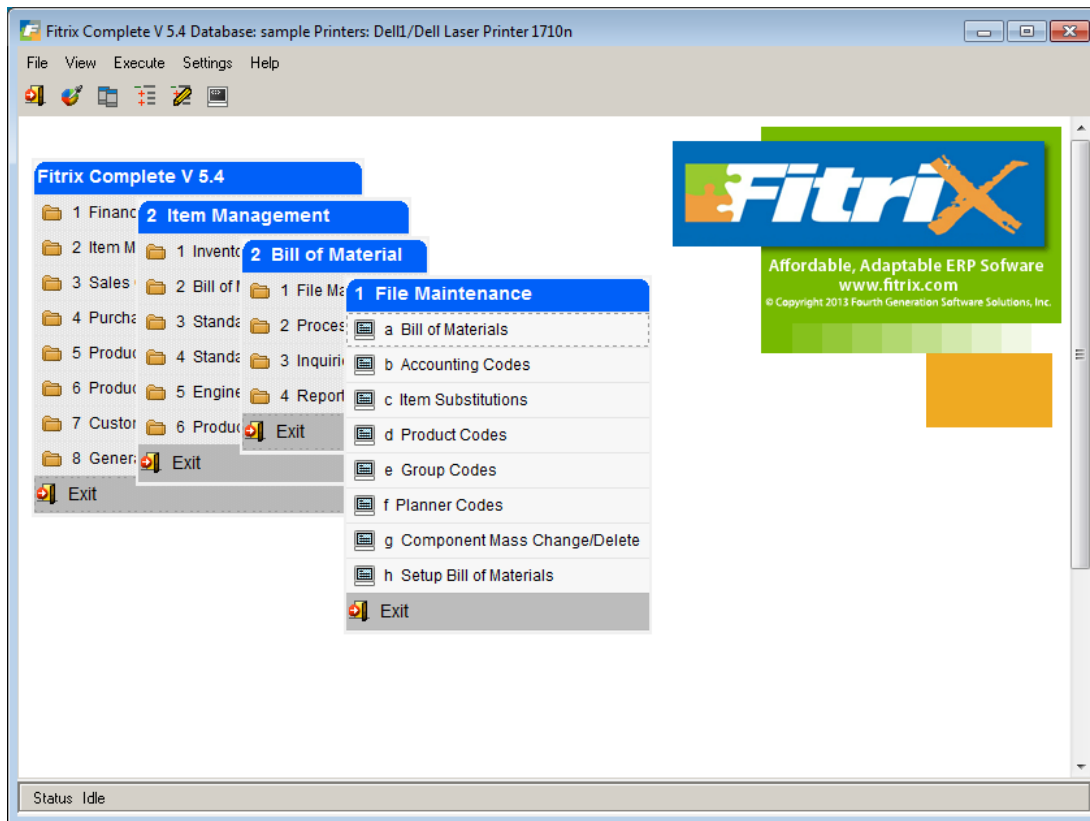
Many of the fields in this window are the same as the Mfg-Base window described above. These values at the Item/Warehouse level allow you to override characteristics or behavior of an item depending on the warehouse in which it exists. For example an item might be produced in one facility (warehouse) and consumed in another facility, within the same enterprise. In this case, the item can have a Type of Manufactured in one warehouse, and Purchased in another.

Field	Description
Item Code:	Inventory Item Code
Warehouse	Warehouse Identifier
Type	Manufactured or Purchased. This determines how the Planning applications are to plan for either production or purchase of an item. In addition, if a manufactured part is placed on a purchase order to buy, or if a purchased item is entered as an item to be produced, warning messages will be displayed.
Planner	You may optionally assign this item to pre-defined Planners. Reports in other modules allow you to select items within specific planner codes
Buyer	You may optionally assign this item to pre-defined Buyers. Reports in other modules allow you to select items within specific buyer codes
Prod Type	Assemble to Order or Make to Stock

Field	Description
Issue Method	<p>For items which are to be used as components in a bill of material, one of the following values:</p> <ul style="list-style-type: none"> <li>• Component Issue – Issue this item via the Component Issue transaction in the Production Order Processing module</li> <li>• Production Receipt – Issue this item via the Production Receipt transaction in the Production Order Processing module. These components will be issued at the same time the parent item is being received to inventory. This is often referred to as 'back flushing'.</li> <li>• Operation Complete – Issue this item via the Operation Completion transaction in the Production Order Processing module.</li> <li>• Not Issued – this item is never issued to a production order. Non-production materials such as drawings, containers, and tooling are used in this way.</li> </ul>
Accounting Code	Select from a list of valid codes
Default Bill	Enter the identifier for the default bill of material for the item. Items are allowed to have more than one bill of material (for example: engineering, production, and service), and each bill has its own unique identifier. This value indicates the default bill of material identifier to be used when entering production orders and performing material planning.
Default Routing	Enter the identifier for the default routing for the item. Items are allowed to have more than one routing (for example: engineering, production, and service), and each routing has its own unique identifier. This value indicates the default routing identifier to be used when entering production orders and performing material planning.
Cost Method	Select from a list of valid codes
Default Order Quantity	Enter an option default standard ordering quantity for the item, whenever it is produced or purchased.
Production Line	This field is reserved for future use
Department	Select from a list of departments

## Maintaining Bills of Material

Bills of Material are maintained from the File Maintenance menu.



## Bill of Material Maintenance

Use menu option 'a' from the File Maintenance menu to work with bills of material.

When you select the option, the following screen displays:

### Bill of Materials - Header

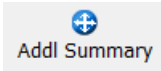
Field	Description
Item Code	The parent item
Desc:	The parent item's description
Type:	P=purchased, M=manufactured
Bill of Material	The unique identifier for this bill of material, for this parent item. A parent item can have more than one bill of material
Revision Level	The optional current engineering revision level for the bill of material
Eng Change	The optional change number which activated the current revision level

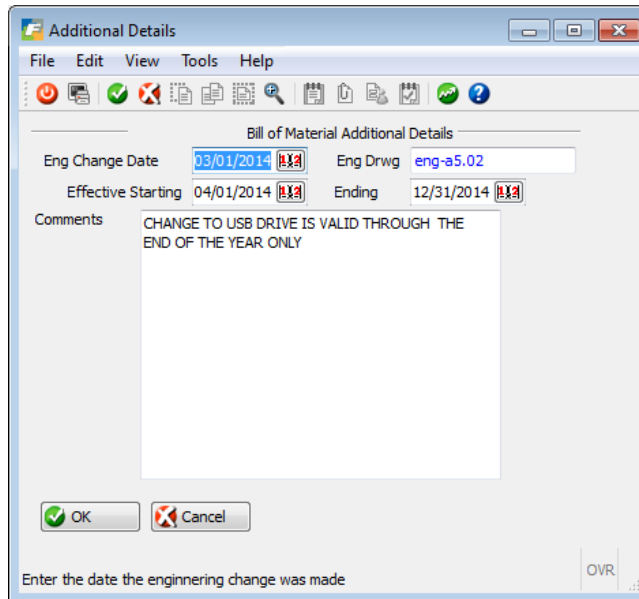
### Bill of Materials - Detail

Enter one or more component items. The combination of the sequence and component item must be unique within the bill. This implies that the same component item can be entered more than once, as long as the sequence is different. This can be useful when a specific component is used throughout the bill, but would be more clearly defined by showing specific points of use (for example, nuts and bolts)

Field	Description
Sequence	The sort and display sequence for the component item. The sequence can be up to 10 characters, and allows for characters and numbers
Component Item	The component item code
Rv Lvl	The component item's revision level from the Inventory Master is automatically displayed
Desc:	The component item's description
Qty Per Unit:	The quantity of the component item required to product one unit of the parent item. This numeric value can have up to 7 digits to the left, and 7 digits to the right, of the decimal point.
Op Used	Enter an optional routing step from the Standard Routing where this component item is used. This field would not be used if Standard Routings are not being used also. Production Scrap transactions in the Production Order Processing module use this field to determine which components were consumed when a parent items is scrapped.

## Additional Summary

To display the summary window from the Bill of Material Header section, select the  button. The following window is displayed:



**Additional Details**

File Edit View Tools Help

Bill of Material Additional Details

Eng Change Date: 03/01/2014 Eng Drwg: eng-a5.02

Effective Starting: 04/01/2014 Ending: 12/31/2014

Comments: CHANGE TO USB DRIVE IS VALID THROUGH THE END OF THE YEAR ONLY


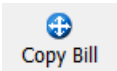
OK Cancel

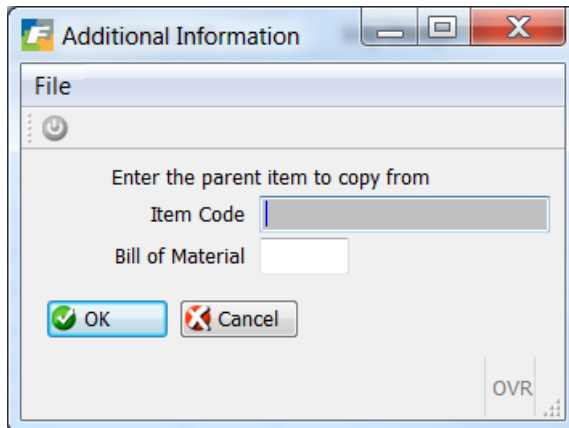
Enter the date the engineering change was made

You can enter in the following fields:

Field	Description
Eng Change Date	Enter an optional date of last Engineering Change
Eng Drwg	Enter an optional drawing number
Effective Starting	This field is reserved for future use
Effective Ending	This field is reserved for future use
Comments	Enter optional comment text


## ***Copy Bill***

To copy an existing bill of material to a new bill, select the  button, enter the new Item Code and Bill of Material, then select the  button. The following window displays:




Enter the Item Code and Bill of Material to copy from, and click OK.

## ***Routing***

To activate the Routing Maintenance programs for the current item, select the  button. See the Standard Routing module for more information regarding this program.

## ***Detail***

To display the details window from the Bill of Material Detail section, move the cursor to the desired component, and select the  button. The following window is displayed:

You can enter into the following fields:

Field	Description
Component Sequence	The component's sequence in the bill of material
Component Item	The component item code
Operation Where-Used	The optional routing step in the standard routing where this component is used.
Quantity Per Unit	The quantity of the component item required to produce one unit of the parent item. This numeric value can have up to 7 digits to the left and 7 digits to the right of the decimal point.
Start Offset Days	The number of days after the start of production for the parent item that the component is needed. If no value is entered, production and planning assume that the component is needed at the time the order starts production. This value can be used to defer the component requirement to a day more consistent with when it is actually needed, usually for longer lead time parent items.
Effective Starting	The starting date for the component to be used. If no date is entered, this component will always be used
Effective Ending	The ending date for this component to be used. If no date is entered, this component will always be used.
Parent Eng Change	The parent item's engineering change which added this component to the bill of material.



Field	Description
Supply to Vendor	This field is reserved for future use
Shrinkage Factor	If the component usage has a predictable amount of loss, enter a decimal value indicating the loss. For example a value of .10 would indicate, if a quantity per unit of 1 was entered, the actual value consumed would be $1/(1 - 0.10)$ , or 1.1111
Issue Method	One of the following values: <ul style="list-style-type: none"><li>• C - Component Issue – Issue this item via the Component Issue transaction in the Transaction Processing submenu</li><li>• P - Production Receipt – Issue this item via the Production Receipt transaction in the Transaction Processing submenu. These components will be issued at the same time the parent items is being received to inventory. This is often referred to as 'back-flushing'.</li><li>• O - Operation Complete – this option is reserved for future use.</li><li>• N- Not Issued – this item is never issued to a production order. Non-production materials such as drawings, containers, and tooling are used in this way.</li><li>• V- reserved for future use to handle components issued to vendors for outside processes.</li></ul>
Issue Type	This field is reserved for future use
Print on Packet	Y = print this component on the Production Packet document N = do not print this component on the document
User Field 1,2 3	Enter any optional additional data for this component.  NOTE: Any information entered in these fields will automatically be copied to the same used fields on a production order component.

## Reference Designators



This screen displays when you are in update mode and click the **Ref Desig** button.

Reference designators provide a clear indication of component placement on an electrical schematic or a printed circuit board. They are usually identified by a combination of a single letter and a 1 or 2-digit number. They are especially useful when multiple usages of a component are called for.

Add on detail bm10604

File Edit Navigation Help

Sequence 1

Component C-MON

Quantity 1

Designator

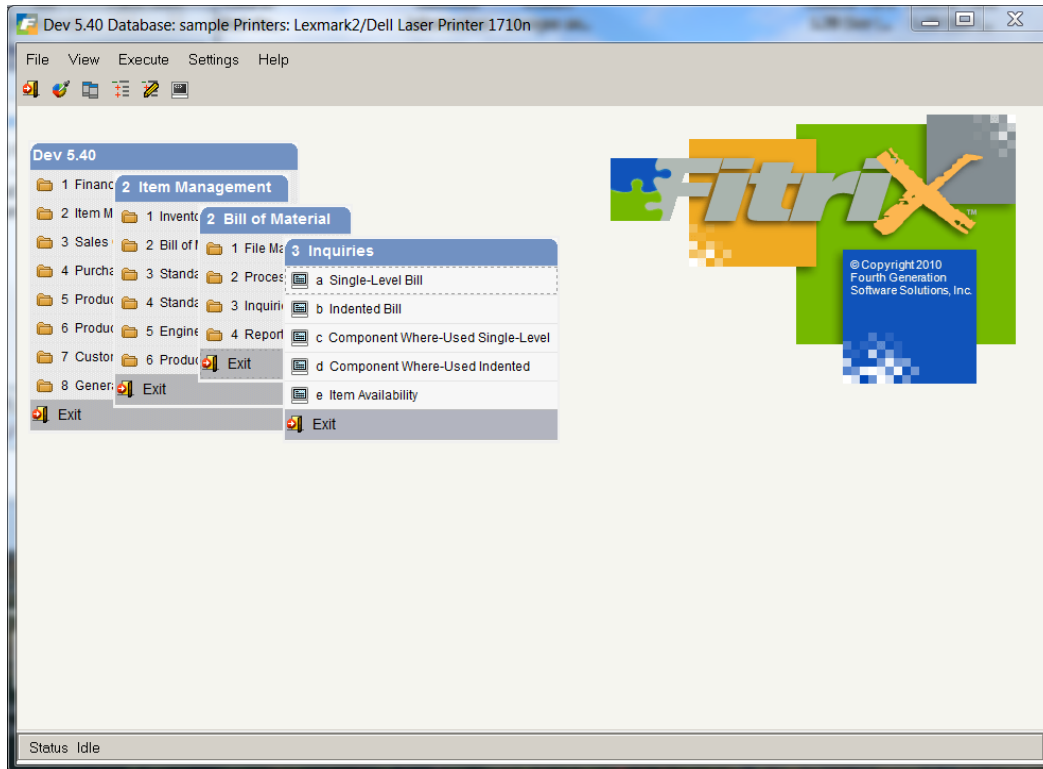
- R26
- R27
- R28
- R34

OK Cancel

Enter the reference designator OVR

## Inquiries

The options on the Inquiries allows you to view bills of material by parent or by component, in multiple formats



Single-Level Bill

Use this option to review the immediate components list for a parent item.

Select option a from the Inquiries menu. The following window displays:

The screenshot shows a software window titled "Indented Bill". It has a menu bar (File, Edit, View, Navigation, Tools, Actions, Options, Help) and a toolbar with various icons. Below the toolbar is a "Details" section with icons for Find, Prev, Next, Details, and Browse. The main area displays a table for Item Code "C-MAC" and Description "MAC LAPTOP". The table has columns for Level, Bill, Sequence, Component, Rev Lvl, Description, M/F, P, Quantity Per Unit, Reference Designators, User 1, and User 2. The data shows four components: C-MON (24" MONITOR), C-KEY (KEYBOARD), C-MOUSE (MOUSE), and C-DISK (HARD DISK). At the bottom, it says "1 of 1" and there is a "View Detail" button.

Level	Bill	Sequence	Component	Rev Lvl	Description	M/F	P	Quantity Per Unit	Reference Designators	User 1	User 2
1	MFG	1	C-MON		24" MONITOR	P	0	1.0000000	R26, R27, R28, R34, R67		
1		2	C-KEY		KEYBOARD		0	1.0000000			
1		3	C-MOUSE		MOUSE		0	1.0000000			
1		4	C-DISK		HARD DISK		0	1.0000000	L1, L15, L34, L5		

The fields displayed have already been defined earlier in the workbook

## Indented Bill

Use this option to review a multi-level bill of material for a parent item.

Select option b from the Inquiries menu. The following window displays:

The screenshot shows a software window titled 'Indented Bill'. It has a menu bar (File, Edit, View, Navigation, Tools, Actions, Options, Help) and a toolbar with various icons. Below the toolbar is a 'Details' section with buttons for Find, Prev, Next, Details, and Browse. The main area displays a table with columns: Level, Bill, Sequence, Component, Rev Lvl, Description, M/F, Phr, Quantity Per Unit, User 1, and User 2. The table shows a hierarchical list of components for a 'PERSONAL COMPUTER' (Item Code 10000). The components are indented based on their level relative to the parent item. The table is currently on page 4 of 736.

Level	Bill	Sequence	Component	Rev Lvl	Description	M/F	Phr	Quantity Per Unit	User 1	User 2
1	MFG	0001	C-DISK		HARD DRIVE	P	0	1.0000000		
1	MFG	0002	C-KEY		KEYBOARD	P	0	1.0000000		
1	MFG	0003	C-MOUSE		MOUSE	P	0	1.0000000		
1	MFG	0004	C-USB	002	USB FLASH DRIVE	M	0	2.0000000		
..2	MFG	1	12104		SCM A SERIES MULSTRIKE	P	0	2.0000000		
..3	MFG	0001	12112		SCM A SERIES CVR-UP TAPE	P	0	2.0000000		
..2	MFG	2	12120		SCM A SERIES LIFT-OFF	M	0	2.0000000		
..3	MFG	0001	12195		SCM A SERIES NYLON	P	0	2.0000000		
1	MFG	0005	C-USBCA		USB CABLE	P	0	1.0000000		
1	MFG	0006	C-MON		24" MONITOR	P	0	1.0000000		

The 'Level' column indicates the current level relative to the parent item. For each component that has its own bill of material, the level is incremented and indented, showing the components. The other fields displayed have already been defined earlier in the workbook

## Component Where-Used Single Level

Use this option to review the immediate parents list for a component item.

Select option c from the Inquiries menu. The following window displays:

The screenshot shows a software window titled "Component Where-Used Single-Level". It has a menu bar with File, Edit, View, Navigation, Tools, Actions, and Help. Below the menu is a toolbar with icons for Quit, Print, OK, Cancel, Cut, Copy, Paste, Zoom, Notes, Attachments, U Fields, To Do, View Detail, and Next Page. A secondary toolbar contains Find, Prev, Next, and Browse. The main area has input fields for Item Code (C-US8), Description (USB FLASH DRIVE), M/P (M), and Bill (MFG). Below these is a section titled "Parent Items" containing a table.

Sequence	Parent	Rev Lvl	Description	M/P	Phr	Quantity per Unit	Oper
0004	10000		PERSONAL COMPUTER	P	0	2.00000000	
0004	C-MAC		MAC LAPTOP	M	0	2.00000000	

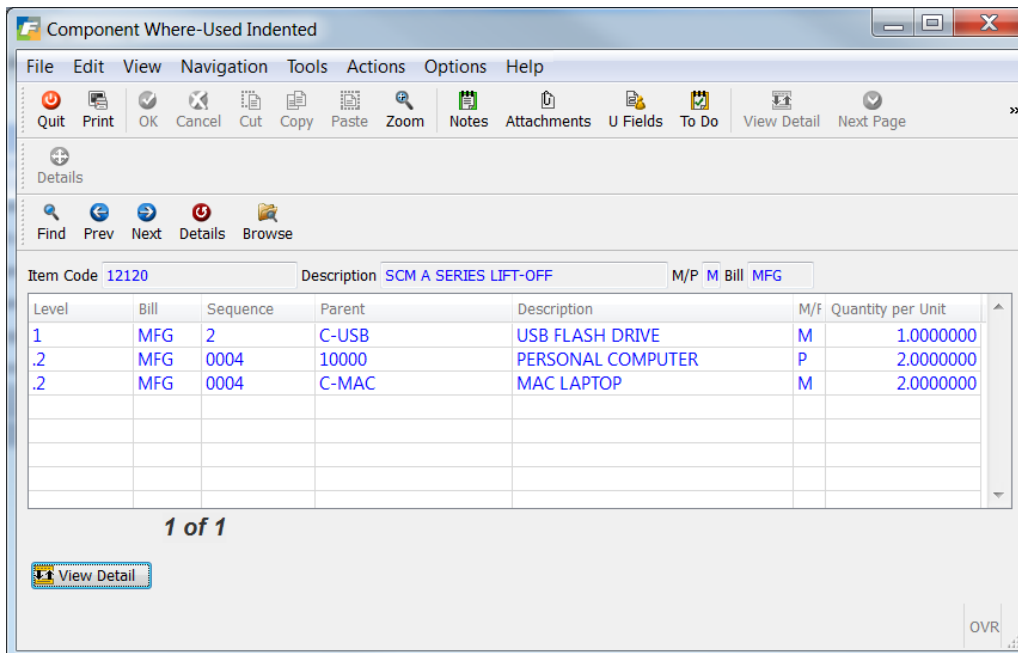
Below the table, it says "705 of 736". At the bottom left is a "View Detail" button, and at the bottom right is an "OVR" button.

The fields displayed have already been defined earlier in the workbook

## Component Where-Used Indented

Use this option to review an inverted multi-level bill of material for a component item.

Select option d from the Inquiries menu. The following window displays:



The screenshot shows a software window titled "Component Where-Used Indented". It has a menu bar (File, Edit, View, Navigation, Tools, Actions, Options, Help) and a toolbar with icons for Quit, Print, OK, Cancel, Cut, Copy, Paste, Zoom, Notes, Attachments, U Fields, To Do, View Detail, and Next Page. Below the toolbar is a "Details" section with icons for Find, Prev, Next, Details, and Browse. The main area displays a table for Item Code 12120, Description SCM A SERIES LIFT-OFF, with tabs for M/P, M, Bill, and MFG. The table has columns for Level, Bill, Sequence, Parent, Description, M/F, and Quantity per Unit. It shows three levels of components: Level 1 (MFG, Sequence 2, Parent C-USB, Description USB FLASH DRIVE, M/F M, Quantity 1.0000000), Level 2 (MFG, Sequence 0004, Parent 10000, Description PERSONAL COMPUTER, M/F P, Quantity 2.0000000), and Level 2 (MFG, Sequence 0004, Parent C-MAC, Description MAC LAPTOP, M/F M, Quantity 2.0000000). Below the table, it says "1 of 1" and there is a "View Detail" button. The bottom right corner shows "OVR".

Level	Bill	Sequence	Parent	Description	M/F	Quantity per Unit
1	MFG	2	C-USB	USB FLASH DRIVE	M	1.0000000
.2	MFG	0004	10000	PERSONAL COMPUTER	P	2.0000000
.2	MFG	0004	C-MAC	MAC LAPTOP	M	2.0000000

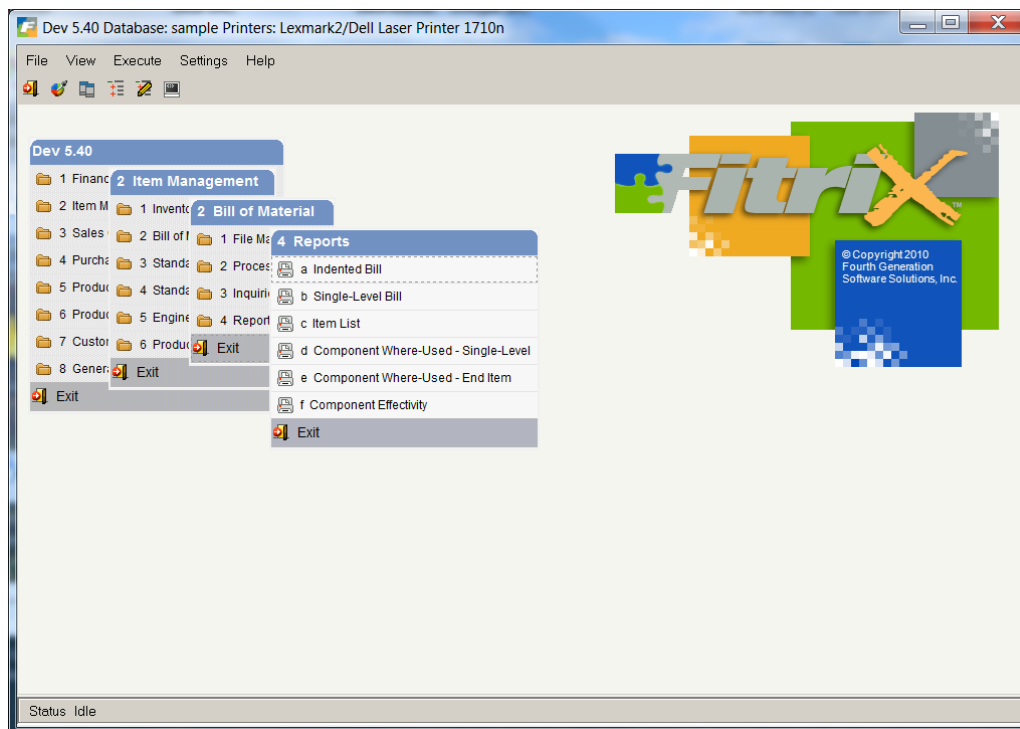
The 'Level' column indicates the current level relative to the component item. For each component that has its own list of parent items, the level is incremented and indented, showing the parent items. The other fields displayed have already been defined earlier in the workbook





## Reports

The options on the Reports menu allow you to view and print bills of material by parent or by component, in multiple formats:



### ***Indented Bill***

This report prints a single-level list of components for selected parent items, similar to the Single-Level Inquiry already described

### ***Single-Level Bill***

This report prints a single-level list of components for selected parent items, similar to the Single-Level Inquiry already described

### ***Component Where-Used - Single-Level***

This report prints a single level list of parents for selected component items, similar to the Component Where-Used Single-Level Inquiry already described

### ***Component Where-Used – End Item***

This report prints a list of top-level items which use the selected component items. It provides a quick view of all top-level items (usually saleable items) that could be affected by a change in a component.

## ***Component Effectivity***

This report prints a list of components where effectivity dates have been entered. It provides a view into components which may be about to go out of use, or start being used.

## **Section Summary**

Bill of Material maintains information about items, both produced and purchased, and their relationships in a production environment.

Setting up Bill of Material includes:

Defining Accounting Codes

Defining Product, Group and Planner Codes

Completing the Bill of Material Setup option and setting the Setup Complete flag to "Y".

The main tasks which are performed in Bill of Material include:

Maintaining Item Manufacturing Information, and Item/Warehouse Manufacturing Information

Maintaining Bills of Material

Performing Component Mass Change/Delete

There are two main data entry screens for maintaining item information: the manufacturing base window, (from the main information window), and the warehouse manufacturing base window (from the warehouse detail window).

There are two menu options for maintaining bills of material: the bill of material maintenance option (to add, create and copy bills of material), and the component mass change/delete option (to perform mass maintenance on commonly used components)

## Lab Exercise a: Bill of Material Set up Tasks

In this lab you will be setting up bill of material defaults and reference files and adding to the Database.

### Set up Default accounting codes (option b on File Maintenance menu):

#### 1. Set up new accounting codes:

Accounting Code	Type	Description	Account Number
DEFAULT	MATERIAL	Component Issue to Work in Process	Select an account from the assets section of the chart of accounts. You may choose to setup a new group of account numbers to represent work in process.
DEFAULT	WIP RECEIPT	Production Receipt from Work in Process	Select an account from the assets section of the chart of accounts. You may choose to setup a new group of account numbers to represent work in process.

### Define Group Codes, Product Codes, Planner Codes:

Decide if you want to use any of the above reference tables for later reporting or inquiries. If you do, enter one or two codes for each of the reference fields you want to use. You will later assign these to the items in the Inventory Information table.

## Lab Exercise b: Inventory Maintenance

This exercise will set up an item to be manufactured, and multiple component items to used to assemble/fabricate the manufactured item. We will produce a simple fixed-window assembly as a standard product, and assume we will use:

- Metal framing material
- Glass panes
- Rubber stripping as insulation
- Latches to lock the window
- Nuts and Bolts

### Update Inventory Items (option a on the Inventory Maintenance menu):

#### 1. Item Code: create an item to be assembled - WINASSY

Enter the new item with:

Description: Window assembly – 24 by 36 inches.

Assign the item to a classification already set-up.

It is not a serialized item

The item type is Manufactured

It is not a phantom

The stocking unit, selling unit and the purchasing unit is each. The GL Inventory should be assigned for inventory Cost of Goods Sold, and Sales.

This item will be in the main stocking warehouse.

The standard order quantity is 1

#### 2. Item Code: create the components to be consumed

Item	Description	Stock UOM
WOFRAME	ENCLOSURE FRAME	IN - Inches
WOGLOSS	GLASS	SQ – Square Inches
WORUBBER	RUBBER INSULATION	IN – INCHES
WOLATCH	WINDOW LATCH	EA – Each
WOHDWRE	WINDOW HARDWARE	EA – Each
BOLTS	MISC BOLTS	EA – Each
NUTS	MISC NUTS	EA – Each

These items should be the component parts to be assembled or fabricated to complete an assembly.

Assign the item to a classification already set-up.

They are not serialized items

The item types are Purchased

Make all items, except WOHDWRE, non-phantoms. WOHDWRE will be a phantom.

The stocking unit, selling unit and the purchasing units are each for non-fabricated and non-cut pieces. Cut or fabricated items should be set up with units that reflect how they are measured (for example, inches, feet, centimeters). The GL Inventory should be assigned for inventory Cost of Goods Sold, and Sales.

These items will be in the warehouse you identify as your main stocking warehouse.

The standard order quantity is 1.

## Lab Exercise c: Bill of Material Maintenance and Inquiry

### Enter Bill of Material Information

1. Enter a new bill of material for the WINASSY item code to be assembled. Use a Bill of Material code of 'MFG'.

Component Seq	Component Item	Qty Per unit	Issue Method
0001	WOFRAME	120	IN - Inches
0002	WOGLOSS	864	SQ – Square Inches
0003	WORUBBER	122	IN – INCHES
0004	WOLATCH	1	EA – Each
0005	WOHDWRE	1	EA – Each

2. Enter a bill of material for the component item WOHDWRE as well.

Component Seq	Component Item	Qty Per unit	Issue Method
0005A	BOLTS	10	EA – Each
0005B	NUTS	10	EA – Each

### Review Bill of Material with Single Level and Indented Inquiries

### Review the Component Where-Used Inquiries

## **Chapter 2 – Standard Routing**

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## **Learning Objectives**

To learn the type of information that is maintained in Standard Routing

To learn the steps involved in setting up Standard Routing.

To learn the tasks that are performed in Standard Routing and the steps involved in completing them.

To learn the data entry screens where bill of material information is maintained.

To learn how to use the parent-level and component-level inquiries and reports.

To learn how to use the Item Availability inquiry to determine material requirements for a proposed item

## Standard Routing Overview

### What type of Information is maintained in Standard Routing?

The Standard Routing module maintains information about the operations required to manufacture an item, and the resources needed to perform the operations. It retains information including:

An ordered list of routing steps that are performed to produce a parent item

The time required to make one unit of a parent item

The resources to be used when performing a routing step. These can include people, teams, machines, work centers and departments.

### What tasks or Activities are performed in Standard Routing?

One or more routings are defined for each manufactured item which requires that distinct operations be defined to produce.

A default routing is identified in the Inventory Information Master, and in each item/warehouse where the item will be manufactured.

### The major setup tasks completed in Standard Routing:

Resources used in Standard Routings, are first defined in the Standard Routing File Maintenance menu, Additional manufacturing-related information is also maintained for each component and parent item, in the Inventory Information Master, in the Inventory Control module

### The major tasks completed in Standard Routing:

Routings are maintained

Routing and Operation Usages are analyzed, when determining if a standard operation should be replaced or substituted

### What Relation does Standard Routing have to Other Fitrix Modules?

Standard Routing is most closely related to Production Order Processing, where routings are copied into Production Orders as they are created. It also interfaces with Production Scheduling and Capacity Planning.

**Production Order Processing** receives a copy of the standard routing when creating production orders, to schedule the needed resources and track the progress of an order.

**Production Scheduling** uses routings on production orders to determine capacity versus load on company resources, for open production orders.

**Capacity Planning** uses standard routing when planning resource requirements from open and planned production orders.

## **Standard Routing Implementation Checklist**

The following steps are recommended in order to implement the Standard Routing application.

**1. Setup Standard Routing (Required)**

Enter the following: Default Routing Step Type

- L = Labor-based
- M = Machine-based

This code will be the default when routing steps are added to an item. If a routing step is labor-based, the open labor hours are used for scheduling. If a routing step is machine based, the open machine hours are used for scheduling.

**2. Work Center Maintenance (Required)**

Enter one or more work centers. Work centers can be treated as subsets of departments. Scheduling and capacity analysis can be performed by work center. Work centers also carry standard rates for labor and overhead costs.

**3. Machine Maintenance (Optional)**

Enter one or more machines. Machines can be treated as subsets of work centers. Scheduling and capacity analysis can be performed by machine.

**4. Department Maintenance (Optional)**

Enter one or more departments. Departments in Standard Routing are not directly related to G/L Departments in Fitrix. Standard Routing departments support scheduling and capacity analysis at a departmental level.

**5. Team Maintenance (Optional)**

Enter one or more teams. Teams are typically collections of workers performing a task or group of tasks together. Scheduling and capacity analysis can be performed by team.

**6. Operation Maintenance (Optional)**

Enter one or more standard operations. Operations are frequently performed processes (i.e. the same work center, machine, setup hours, run hours) which can be established once, then 'pulled into' routing steps for an item, during Routing Maintenance.

**7. Routing Maintenance (Required)**

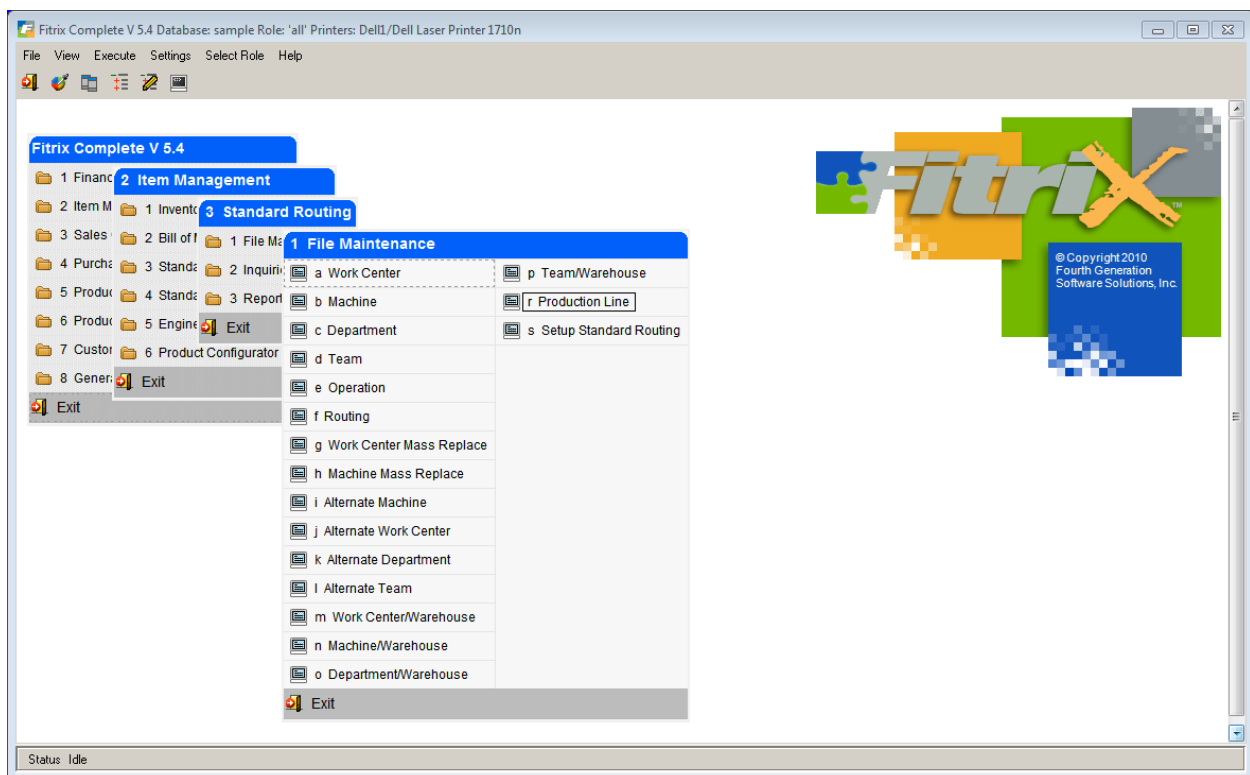
Enter one or more routing steps for each item for which a standard routing is needed.

## Standard Routing Set Up

Steps to set up the Standard Routing module include the following options from the File Maintenance submenu:

- Setup Standard Routing
- Work Center Maintenance
- Machine Maintenance
- Department Maintenance
- Team Maintenance
- Operation Maintenance
- Alternate Machine Maintenance
- Alternate Work Center Maintenance
- Alternate Department Maintenance
- Alternate Team Maintenance
- Work Center/Warehouse Maintenance
- Machine/Warehouse Maintenance
- Department/Warehouse Maintenance
- Team/Warehouse Maintenance
- Production Line

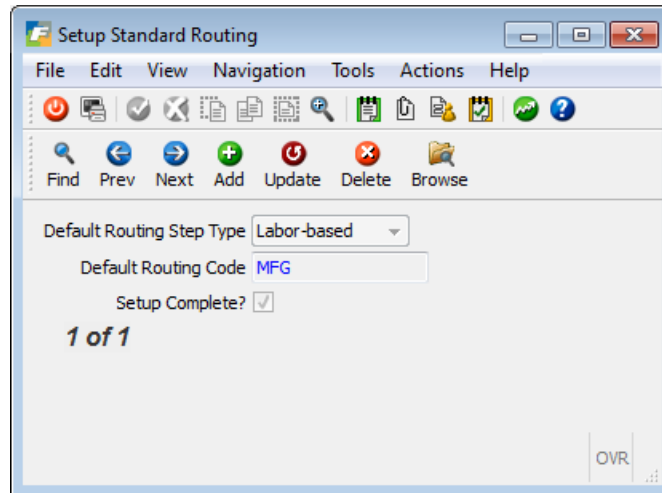
The options on this menu allow you to setup the initial Standard Routing default settings, and the reference files used in other sections of the Standard Routing module.



## **Setup Standard Routing**

Use this option to set up the default values used by other programs.

To view this screen select option 's' from the File Maintenance menu.



The data in the Setup Standard Routing file is unique to each database (i.e. company). The file contains only one record and therefore, the commands on the command prompt, with the exception of Update and Quit, have been disabled.

When you enter routing steps, the system automatically fills in default values to some of the information fields, from values entered on this screen. By automatically filling the field with default data, the system saves the user from retyping the same information for each new routing.

The user can overwrite default values when the transaction is entered by typing over the default.

Both the sample database and the standard database of the Standard Routing module come with data already entered into the default fields. You should modify this data to fit your company's application.

Below is a description of each field in the Bill of Material Defaults section:

Field	Description
Default Routing Step Type	<p>Each step in s routing has a Type. It controls how the resources used at the step are to be scheduled:</p> <ul style="list-style-type: none"><li>• Labor-Based – resources should be scheduled based on the labor hours required to complete the operation. Each step allows the user to enter the required labor hours and/or machine hours to complete.</li><li>• Machine-Based - resources should be scheduled based on the machine hours required to complete the operation. Each step allows the user to enter the required labor hours and/or machine hours to complete.</li></ul>
Default Routing Code	<p>A manufactured item can have more than one standard routing, and each routing must have a unique routing code. When a new routing is entered for an item, this default value will automatically display. NOTE: the code is not validated against any master file. It is only checked to make sure it is unique for the item.</p>
Setup Complete	<p>Set this value to Y when you are ready to begin using the other standard routing options</p>

## Work Center

You use this option to set up and maintain entries in the Work Center file. Work centers are used to:

- Define a resource with capacity available to do production work.
- Define hourly standard rates for labor and overhead, to assign cost elements to the manufacture of an item.

To view this screen, select option a from the File Maintenance menu.

The Work Center screen contains the following fields:

Field	Description
Work Center	This is a unique 4-character alphanumeric code that is used to identify the work center.
Status	One of the following values: <ul style="list-style-type: none"> <li>• Active – used when stock component items are issued to a production order via Component Issue</li> <li>• Inactive – used when non-stock component items are issued to a production order via Component Issue</li> </ul>

Field	Description
Description	The description of the Work Center.
Department	If you want this work center to also be associated with a production department, select or enter one here.
Type	This field is reserved for future use
Number of Machines	If this Work Center is a collection of machines with the same characteristics, enter the number of machines in the work center.
Number of Workers	If this Work Center is a collection of workers, enter the number of workers in the work center.
Rough-Cut Resource	This field is reserved for future use
Rough-Cut Conversion	This field is reserved for future use
Shift 1,2,3 Capacity	Enter the capacity in hours for each shift that this work center is available for work
Standard Queue Hours	This field is reserved for future use
Average Queue Hours	This field is reserved for future use
Labor Rate	The standard rate per hour for direct labor. This rate is used when calculating a standard cost for an item using this work center in one or more routing steps.
OverheadRate	The standard rate per hour for indirect costs. This rate is used when calculating a standard cost for an item using this work center in one or more routing steps.
Add Date	The date the row was added to the database
Change Date	The date the row was last changed in the database
Last Activity Date	This field is reserved for future use



## Machine

You use this option to set up and maintain entries in the Machine file. Machine entries are used to define a machine within a production facility with capacity available to do production work.

Select option b to see the following screen:

The Machine screen contains the following fields:

Field	Description
Machine	This is a unique 4-character alphanumeric code that is used to identify the machine.
Status	One of the following values: <ul style="list-style-type: none"> <li>Active – used when stock component items are issued to a production order via Component Issue</li> <li>Inactive – used when non-stock component items are issued to a production order via Component Issue</li> </ul>
Description	The description of the machine.

Field	Description
Work Center	If you want this machine to also be associated with a work center, select or enter one here.
Department	If you want this machine to also be associated with a production department, select or enter one here.
Acquired Date	The date this machine was placed into operation
Vendor	The vendor from which this machine was acquired
Purchase Order	The vendor's purchase order
Cost Amount	The purchase cost of the machine
Minimum Service Interval	The minimum number of working days allowed between minor service for this machine
Major Service Interval	The number of working days allowed between major service for this machine
Expected Life in Years	The number of years of useful life
Total Hours Used	This field is reserved for future use
YTD Hours Used	This field is reserved for future use
Cumulative Maintenance Cost	The total cost expended to service the machine
Last Maintenance Type	This field is reserved for future use
Standard Queue Hours	This field is reserved for future use
Average Queue Hours	This field is reserved for future use
Shift 1,2,3 Capacity	Enter the capacity in hours for each shift that this machine is available for work
Rough-Cut Resource	This field is reserved for future use
Rough-Cut Conversion	This field is reserved for future use
Last Repair Date	Date of the last repair
Last Activity Date	This field is reserved for future use
Add Date	The date the row was added to the database
Change Date	The date the row was last changed in the database

## Department

You use this option to set up and maintain entries in the Production Department file. Departments:

- Are used to define a high-level resource within a production facility with capacity available to do production work. Work centers are often consolidated into departments, to provide a hierarchical structure to manage and analyze production capacities.
- Should not be confused with GL departments. The two types of departments are unrelated.

To view this screen, select option 'c' from the File Maintenance menu.

The Department screen contains the following fields:

Field	Description
Department	This is a unique 3-character alphanumeric code that is used to identify the department.
Status	One of the following values: <ul style="list-style-type: none"> <li>• Active – used when stock component items are issued to a production order via Component Issue</li> <li>• Inactive – used when non-stock component items are issued to a production order via Component Issue</li> </ul>
Description	The description of the department.

Field	Description
Shift 1,2,3 Capacity	Enter the capacity in hours for each shift that this department is available for work
Rough-Cut Resource	This field is reserved for future use
Rough-Cut Conversion	This field is reserved for future use
Accounting Code	This field is reserved for future use
Add Date	The date the row was added to the database
Change Date	The date the row was last changed in the database
Last Activity Date	This field is reserved for future use
Period-To-Date Costs	This field is reserved for future use
Year-To-Date Costs	This field is reserved for future use

## Teams

You use this option to set up and maintain Production Teams. Teams are typically groups of workers which perform together to complete production tasks. Teams can be assigned a capacity which is usually the sum of the hours for each of the workers in the team.

To view this screen, select option 'd' from the File Maintenance menu.

The Team screen contains the following fields:

Field	Description
Team	This is a unique 4-character alphanumeric code that is used to identify the team.
Description	The description of the team.
Shift 1,2,3 Capacity	Enter the capacity in hours for each shift that this team is available for work
Rough-Cut Resource	This field is reserved for future use
Rough-Cut Conversion	This field is reserved for future use
Accounting Code	This field is reserved for future use
Date Added	The date the row was added to the database
Date Changed	The date the row was last changed in the database

## Operations

Use this option to set up and maintain Standard Operation. Operations define frequently used production operations where a consistent description and combination of resources is used. When performing Routing Maintenance, the user can enter a new routing step and reference an Operation from this table to pre-fill the remaining information for the step.

To view this screen, select option 'e' from file Maintenance Menu.

The Operation screen contains the following fields:

Field	Description
Operation	This is a unique 4-character alphanumeric code that is used to identify the operation.
Description	The description of the Work Center.
Hours Type	One of the following values: <ul style="list-style-type: none"> <li>Labor-Based – This operation will be scheduled based on Labor Hours needed, used, and remaining</li> <li>Machine-Based – This operation will be schedule based on Machine Hours needed, used, and remaining</li> </ul>

Field	Description
Work Center	The default Work Center associated with this operation
Machine	The default Machine associated with this operation
Job Class	The default Job Class associated with this operation
Department	The default Department associated with this operation
Team	The default Team associated with this operation
Tool Number	An optional identifier for a tool or collection of tools needed for this operation. Tools are typically stored and dispatched from a central tool crib or cage.
Current Setup Hours	Enter the number of hours required to prepare this operation for start. Minutes can be entered as a decimal equivalent (1 hour and 25 minutes would be entered as 1.41666 hours)
Current Labor Hours	Enter the number of hours required to produce this item. See Basis Code below for an understanding of how this number should be entered.
Labor Basis Code	One of the following values: <ul style="list-style-type: none"><li>• Hours per piece – The value in Current Labor hours in the number of hours required to product one unit of this item. Minutes can be entered as a decimal equivalent (1 hour and 25 minutes would be entered as 1.41666 hours)</li><li>• Pieces per Hour – The value in Current Labor hours in the number of units of the item which is produced in one hour.</li></ul>
Average Move Time	This field is reserved for future use.
Standard Move Time	This field is reserved for future use.
Date Last Changed	The date the row was last changed in the database
Add Date	The date the row was added to the database

## Alternate Machine

Use this menu option to define machines which can act as alternates or substitutes for a base machine. These alternates are accessible when maintaining routing steps in a production order. If a given machine is unavailable or over-committed, an alternate can be selected.

To view this screen, select option 'i' from the File Maintenance menu.

### Alternate Machine - Header

Use the 'Find' and 'Update' options to select a machine to be replaced. Enter the following fields:

Field	Description
Machine	Enter the machine
Description	Displays the machine description

### Alternate Machine - Detail

This section of the window allows you to enter one or more alternate machines

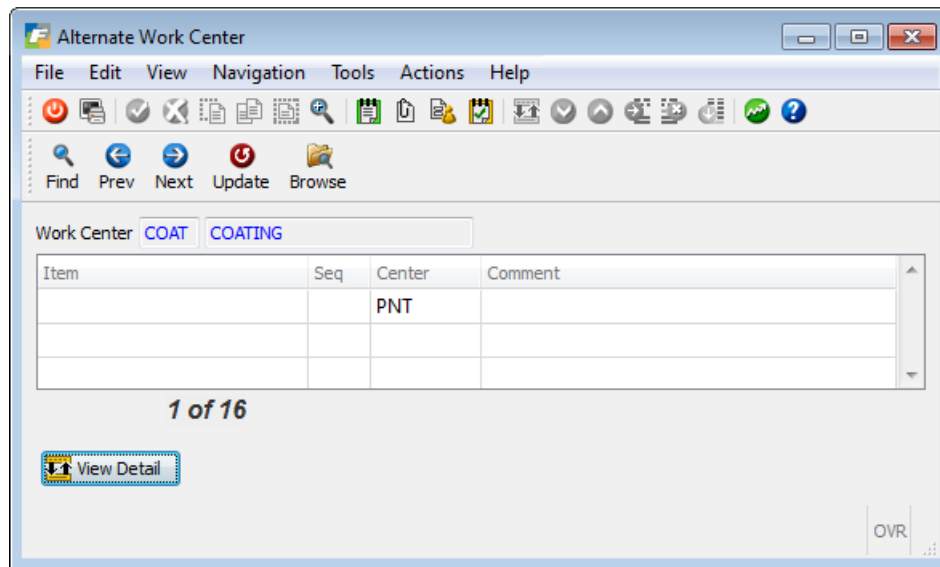
Field	Description
Item	Enter the item which has a routing step that uses the machine
Seq	Enter the routing step for the item that uses the machine
Alt Machine	Enter the alternate machine, or zoom for a list
Comment	Enter an optional free-form comment that might be helpful when using this alternate machine.



## Alternate Work Center

Use this menu option to define work centers which can act as alternates or substitutes for a base work center. These alternates are accessible when maintaining routing steps in a production order. If a given work center is unavailable or over-committed, an alternate can be selected.

To view this screen, select option 'j' from the File Maintenance menu.



### Alternate Work Center - Header

Use the 'Find' and 'Update' options to select a work center to be replaced. Enter the following fields:

Field	Description
Work Center	Enter the work center
Description	Displays the work center description

### Alternate Work Center - Detail

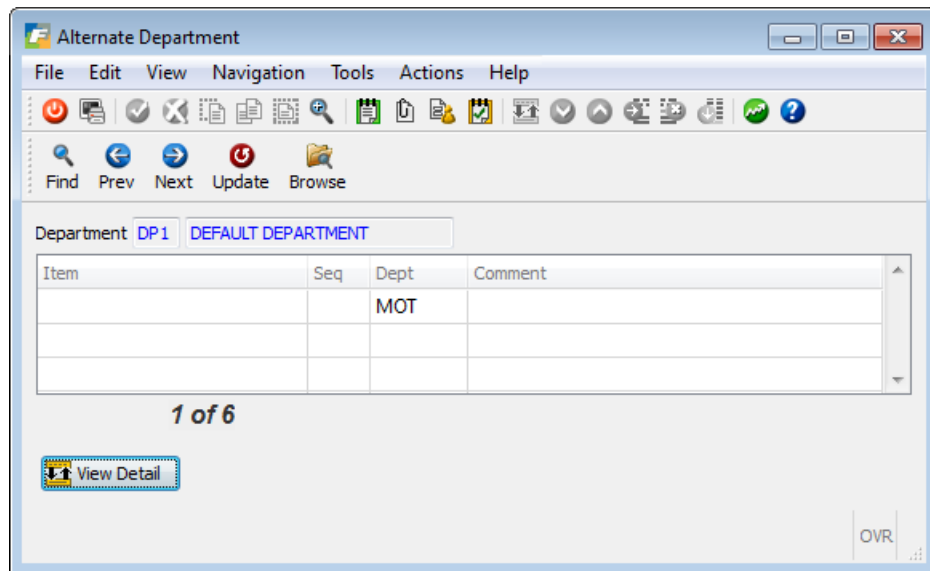
This section of the window allows you to enter one or more alternate work centers

Field	Description
Item	Enter the item which has a routing step that uses the work center
Seq	Enter the routing step for the item that uses the work center
Alt Work Center	Enter the alternate work center, or zoom for a list
Comment	Enter an optional free-form comment that might be helpful when using this alternate work center.

## Alternate Department

Use this menu option to define departments which can act as alternates or substitutes for a base department. These alternates are accessible when maintaining routing steps in a production order. If a given department is unavailable or over-committed, an alternate can be selected.

To view this screen, select option 'k' from the File Maintenance menu.



### Alternate Department - Header

Use the 'Find' and 'Update' options to select a department to be replaced. Enter the following fields:

Field	Description
Department	Enter the department
Description	Displays the department description

### Alternate Department - Detail

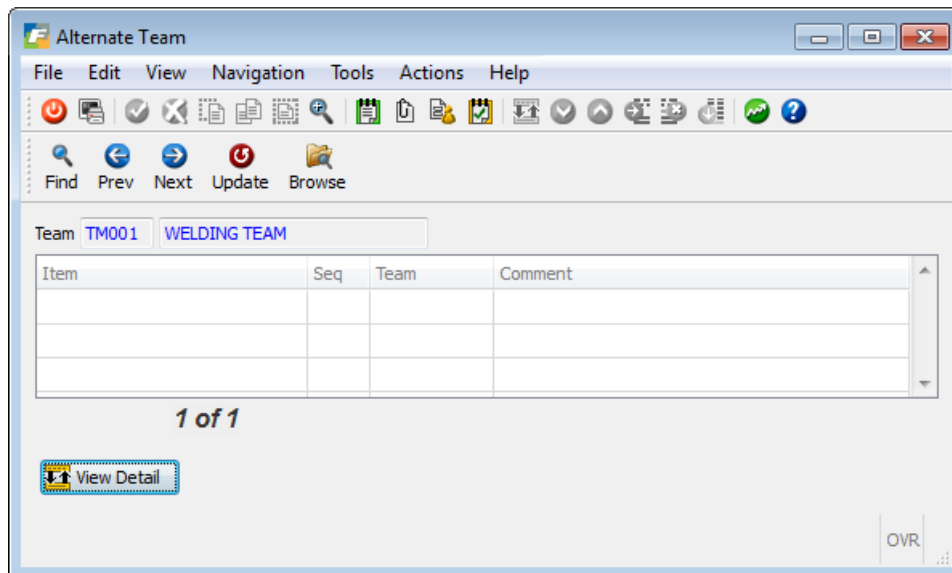
This section of the window allows you to enter one or more alternate departments

Field	Description
Item	Enter the item which has a routing step that uses the department
Seq	Enter the routing step for the item that uses the department
Alt Department	Enter the alternate department, or zoom for a list
Comment	Enter an optional free-form comment that might be helpful when using this alternate department.

## Alternate Team

Use this menu option to define teams which can act as alternates or substitutes for a base team. These alternates are accessible when maintaining routing steps in a production order. If a given team is unavailable or over-committed, an alternate can be selected.

To view this screen, select option 'I' from the File Maintenance menu.



### Alternate Team - Header

Use the 'Find' and 'Update' options to select a team to be replaced. Enter the following fields:

Field	Description
Team	Enter the team
Description	Displays the team description

### Alternate Team - Detail

This section of the window allows you to enter one or more alternate teams

Field	Description
Item	Enter the item which has a routine step that uses the team
Seq	Enter the routing step for the item that uses the team
Alt Team	Enter the alternate team, or zoom for a list
Comment	Enter an optional free-form comment that might be helpful when using this alternate team.

## Work Center/Warehouse

You use this option to set up and maintain entries in the Work Center/Warehouse file. Work center/Warehouse entries must be set up for each production facility (warehouse) which will be using the work center in production. Production orders are entered to produce an item in a specific production facility (warehouse), and the work centers used in the item's routing to produce it must exist in the same facility.

To view this screen, select option 'm' from the File Maintenance menu.

Work Center/Warehouse

File Edit View Navigation Tools Actions Help

Find Prev Next Add Update Delete Browse

Work Center

Warehouse

Status

Description

Department

Type

Number of Machines

Standard Queue Time

Number of Workers

Average Queue Time

Shift 1 Capacity

Current Labor Rate

Shift 2 Capacity

Current Overhead Rate

Shift 3 Capacity

Unit Price

Rough-Cut Resource

Add Date

Conversion

Change Date

(No Documents Selected)

OVR

Select Add to enter a new Work Center/Warehouse. When you enter the Work Center, the remaining values on the screen are filled in with default information from the Work Center table. You can accept these values, or change them for the Work Center/Warehouse combination. Any changes you make are stored separately from the values in the Work Center table.

The Work Center/Warehouse screen contains the following fields:

Field	Description
Work Center	This is a unique 4-character alphanumeric code that is used to identify the work center.
Warehouse	Enter the identifier of the Production Facility where the Work Center will be used.
Status	One of the following values: <ul style="list-style-type: none"><li>• Active – used when stock component items are issued to a production order via Component Issue</li><li>• Inactive – used when non-stock component items are issued to a production order via Component Issue</li></ul>
Description	The description of the Work Center.
Department	If you want this work center to also be associated with a production department, select or enter one here.
Type	This field is reserved for future use
Number of Machines	If this Work Center is a collection of machines with the same characteristics, enter the number of machines in the work center.
Number of Workers	If this Work Center is a collection of workers, enter the number of workers in the work center.
Rough-Cut Resource	This field is reserved for future use
Rough-Cut Conversion	This field is reserved for future use
Shift 1,2,3 Capacity	Enter the capacity in hours for each shift that this work center is available for work
Standard Queue Hours	This field is reserved for future use
Average Queue Hours	This field is reserved for future use
Labor Rate	The standard rate per hour for direct labor. This rate is used when calculating a standard cost for an item using this work center in one or more routing steps.
Overhead Rate	The standard rate per hour for indirect costs. This rate is used when calculating a standard cost for an item using this work center in one or more routing steps.
Add Date	The date the row was added to the database
Change Date	The date the row was last changed in the database
Last Activity Date	The last date that activity was posted to this work center

## Machine/Warehouse

You use this option to set up and maintain entries in the Machine/Warehouse file. Machine/Warehouse entries must be set up for each production facility (warehouse) which will be using the machine in production. Production orders are entered to produce an item in a specific production facility (warehouse), and the machines used in the item's routing to produce it must exist in the same facility.

To view this screen, select option 'n' from the File Maintenance menu.

Machine/Warehouse

File Edit View Navigation Tools Actions Help

Find Prev Next Add Update Delete Browse

Machine SCR 1

Warehouse MIAMI Status Active

Description SCREEN PRINT 1

Work Center SCR1

Department DP1

Acquired Date 09/27/2010

Vendor 123457

Purchase Order 0291

Cost Amount \$5000.00

Minimum Service Int 0

Major Service Int 0

Expected Life Years 8.00

Total Hours Used 0.00

YTD Hours Used 0.00

Cuml Maintenance Cost \$0.00

Standard Queue Time 1.0000

Average Queue Time 1.0000

Shift 1 Capacity 8.00

Shift 2 Capacity 8.00

Shift 3 Capacity 0.00

Last Repair Date 09/27/2010

Last Activity Date

Rough\_Cut Resource

Conversion

Add Date 09/27/2010

Change Date 03/01/2013

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OVR

Select Add to enter a new Machine/Warehouse. When you enter the Machine, the remaining values on the screen are filled in with default information from the Machine table. You can accept these values, or change them for the Machine/Warehouse combination. Any changes you make are stored separately from the values in the Machine table.

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The Machine/Warehouse screen contains the following fields:

Field	Description
Machine	This is a unique 4-character alphanumeric code that is used to identify the machine.
Warehouse	Enter the identifier of the Production Facility where the machine will be used.
Status	One of the following values: <ul style="list-style-type: none"><li>• Active – used when stock component items are issued to a production order via Component Issue</li><li>• Inactive – used when non-stock component items are issued to a production order via Component Issue</li></ul>
Description	The description of the Work Center.
Work Center	If you want this machine to also be associated with a work center, select or enter one here.
Department	If you want this machine to also be associated with a production department, select or enter one here.
Acquired Date	The date this machine was placed into operation
Vendor	The vendor from which this machine was acquired
Purchase Order	The vendor's purchase order
Cost Amount	The purchase cost of the machine
Minimum Service Interval	The minimum number of working days allowed between minor service for this machine
Major Service Interval	The number of working days allowed between major service for this machine
Expected Life in Years	The number of years of useful life
Total Hours Used	This field is reserved for future use
YTD Hours Used	This field is reserved for future use
Cumulative Maintenance Cost	The total cost expended to service the machine
Last Maintenance Type	This field is reserved for future use
Standard Queue Hours	This field is reserved for future use
Average Queue Hours	This field is reserved for future use
Shift 1,2,3 Capacity	Enter the capacity in hours for each shift that this machine is available for work
Rough-Cut Resource	This field is reserved for future use
Rough-Cut Conversion	This field is reserved for future use

Field	Description
Last Repair Date	Date of the last repair
Last Activity Date	This field is reserved for future use
Add Date	The date the row was added to the database
Change Date	The date the row was last changed in the database



## Department/Warehouse

You use this option to set up and maintain entries in the Department/Warehouse file.

Department/Warehouse entries must be set up for each production facility (warehouse) which will be using the department in production. Production orders are entered to produce an item in a specific production facility (warehouse), and the departments used in the item's routing to produce it must exist in the same facility.

To view this screen, select option 'o' from the File Maintenance menu.

The screenshot shows the 'Department/Warehouse' window with a menu bar (File, Edit, View, Navigation, Tools, Actions, Help) and a toolbar with icons for Find, Prev, Next, Add, Update, Delete, and Browse. The form contains the following fields:

- Department: [Text Box]
- Warehouse: [Text Box]
- Status: [Dropdown Menu]
- Description: [Text Box]
- Accounting Code: [Text Box]
- Shift 1 Capacity: [Text Box]
- Shift 2 Capacity: [Text Box]
- Shift 3 Capacity: [Text Box]
- Rough-Cut Resource: [Text Box]
- Conversion: [Text Box]
- Add Date: [Text Box]
- Change Date: [Text Box]
- Last Activity Date: [Text Box]
- Period-to-Date Costs:
  - Actual Labor: [Text Box]
  - Standard Labor: [Text Box]
  - Standard Overhead: [Text Box]
- Year-to-Date Costs:
  - Actual Labor: [Text Box]
  - Standard Labor: [Text Box]
  - Standard Overhead: [Text Box]

At the bottom, it says **(No Documents Selected)** and has a status bar with 'OVR'.

Select Add to enter a new Department/Warehouse. When you enter the Department, the remaining values on the screen are filled in with default information from the Department table. You can accept these values, or change them for the Department/Warehouse combination. Any changes you make are stored separately from the values in the Department table.

The Department/Warehouse screen contains the following fields:

Field	Description
Department	This is a unique 3-character alphanumeric code that is used to identify the department.
Warehouse	Enter the identifier of the Production Facility where the department will be used.

Field	Description
Status	One of the following values: <ul style="list-style-type: none"><li>• Active – used when stock component items are issued to a production order via Component Issue</li><li>• Inactive – used when non-stock component items are issued to a production order via Component Issue</li></ul>
Description	The description of the Work Center.
Shift 1,2,3 Capacity	Enter the capacity in hours for each shift that this department is available for work
Rough-Cut Resource	This field is reserved for future use
Rough-Cut Conversion	This field is reserved for future use
Accounting Code	A code to assign general ledger account numbers to a department. The account code references a table that contains the general ledger account numbers. To view a list of account codes, click on the magnifying glass.
Add Date	The date the row was added to the database.
Change Date	The date the row was last changed in the database.
Last Activity Date	Date of last activity for this department.
Period-To-Date Costs	Actual costs for this department for the current period
Year-To-Date Costs	Actual costs for this department for the current year.

## Team/Warehouse

You use this option to set up and maintain entries in the Team/Warehouse file. Team/Warehouse entries must be set up for each production facility (warehouse) which will be using the team in production. Production orders are entered to produce an item in a specific production facility (warehouse), and the teams used in the item's routing to produce it must exist in the same facility.

To view this screen, select option 'p' from the File Maintenance menu.

Select Add to enter a new Team/Warehouse. When you enter the Team, the remaining values on the screen are filled in with default information from the Team table. You can accept these values, or change them for the Team/Warehouse combination. Any changes you make are stored separately from the values in the Team table.

The Team/Warehouse screen contains the following fields:

Field	Description
Team	This is a unique 4-character alphanumeric code that is used to identify the team.
Warehouse	Enter the identifier of the Production Facility where the team will be used.
Description	The description of the team.
Shift 1,2,3 Capacity	Enter the capacity in hours for each shift that this team is available for work
Rough-Cut Resource	This field is reserved for future use

Field	Description
Rough-Cut Conversion	This field is reserved for future use
Accounting Code	This field is reserved for future use
Date Added	The date the row was added to the database
Date Changed	The date the row was last changed in the database

## ***Production Line***

Use this program to set up production lines that will then be associated with Bills of Material using the Item/Production Line program found on the Inventory Maintenance submenu.

Production Line

File Edit View Navigation Tools Actions >>

Find Prev Next Add Update Delete Browse

Production Line

Warehouse

Description

Type

Date Added

Date Changed

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## Setting up Routing Steps

Steps to maintain the Standard Routing include the following options from the File Maintenance submenu:

Routing Maintenance  
Work Center Mass Replace  
Machine Mass Replace

These options allow you to add or maintain Standard Routings and work with resources used by the routings.

## Routing

Use this menu option to define a routing for a produced item. A routing consists of one or more routing steps, which are typically performed in a sequential order. Each step identifies:

- Optional time required to setup a step to begin production
- The labor time required to complete the step for an item, expressed as either hours per piece, or pieces per hour
- The machine time required to complete the step for an item.
- The resources required to process the step. These resources can be departments, work centers, machines, teams or workers.

To view this screen, select option 'f' from the File Maintenance menu.

The screenshot shows the 'Routing' window with the following details:

- Item Code:** 400-100HBTGV
- Desc:** 17-400 WETSUIT SPRAY GUN
- M/P:** Manufactured
- Routing:** MFG
- Revision Level:**
- Eng Change:**

Step	Std Opr	Description	Type	Work Ctr	Dept	Machine	Setup Hr	Run Labor	Piece
0001	0010	STANDARD ASSEMBLY		WC01			0.00000	0.5000000	Hours per piece
0002	0030	INSPECTION		WC01			0.00000	0.1000000	Hours per piece
0003	0040	PACKAGING		WC01			0.00000	0.2500000	Hours per piece

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View Detail

OVR

## Routing - Header

Use the 'Find' and 'Update' options to select an item identifier and routing code to maintain, or use 'Add' to enter a new routing for an existing item. Enter into the following fields:

Field	Description
Item Code	The identifier for the item being produced
Description	Displays the item description
M/P	Displays P=purchased, or M=manufactured
Routing	The unique identifier for this routing, for this item. An item can have more than one bill of material. See the Update Inventory Information screen reference for a description of the 'Default Routing' for an item, and how it is used.
Revision Level	Enter an optional engineering revision level for the routing
Eng Change	Enter an optional engineering code associated with the current Revision Level

## Routing - Detail

This section of the window allows you to enter one or more routing steps for the item. For each routing step, you can enter the following values:

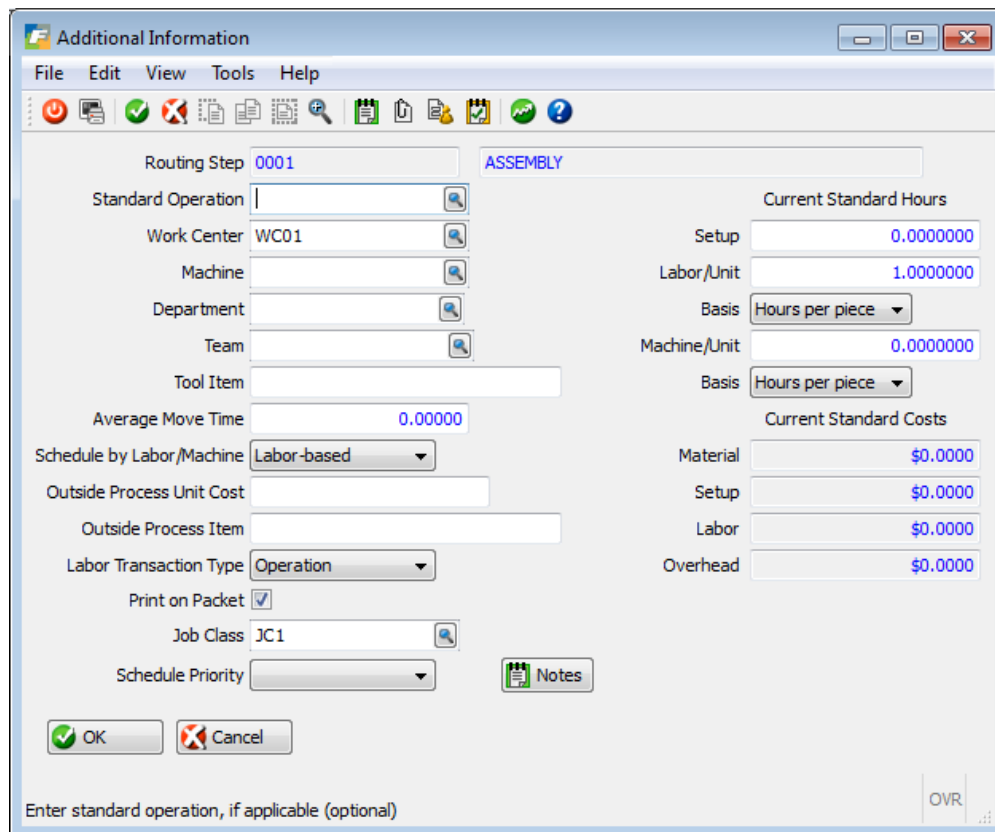
Field	Description
Step	Enter a unique value for this step. It is common practice to enter a sequential value, starting at 0001, but you may enter a combination of letters and characters. The routing steps will display and print in the order of this column.
Std Oper (Standard Operation)	Enter an Operation code which was previously set up in the Operation table. If you do not enter a value here, you must enter the remaining columns for the step yourself.
Description	Enter up to 30 characters of descriptive text for the step.
Type	Select one of the following values: <ul style="list-style-type: none"> <li>• Inside – this operation is to be performed in the production facility</li> <li>• Outside- this operation is to be performed by a third party vendor or contractor</li> </ul>
Work Center	Enter or select an optional Work Center to be used for this step.
Dept	Enter or select an optional Department to be used for this step.
Machine	Enter or select an optional Machine to be used for this step.
Setup Hr	Enter an optional hours required to setup the step before production begins. Minutes can be entered as a decimal equivalent (1 hour and 25 minutes would be entered as 1.41666 hours)
Run Labor	Enter the number of hours required to produce this item. See Basis Code below for an understanding of how this number should be entered.

Field	Description
Piece (Labor Basis Code)	<p>One of the following values:</p> <ul style="list-style-type: none"> <li>Hours per piece – The value in Current Labor hours in the number of hours required to product one unit of this item. Minutes can be entered as a decimal equivalent (1 hour and 25 minutes would be entered as 1.41666 hours)</li> <li>Pieces per Hour – The value in Current Labor hours in the number of units of the item which is produced in one hour.</li> </ul>

## Routing Details Window

This window displays when you position the cursor on a specific step and select the  button.

The following window displays:



The screenshot shows the 'Additional Information' window with the following fields and values:

- Routing Step: 0001
- ASSEMBLY
- Standard Operation: (empty)
- Work Center: WC01
- Machine: (empty)
- Department: (empty)
- Team: (empty)
- Tool Item: (empty)
- Average Move Time: 0.00000
- Schedule by Labor/Machine: Labor-based
- Outside Process Unit Cost: (empty)
- Outside Process Item: (empty)
- Labor Transaction Type: Operation
- Print on Packet: ☒
- Job Class: JC1
- Schedule Priority: (empty)
- Notes: (empty)
- Current Standard Hours:
  - Setup: 0.000000
  - Labor/Unit: 1.000000
  - Basis: Hours per piece
  - Machine/Unit: 0.000000
  - Basis: Hours per piece
- Current Standard Costs:
  - Material: \$0.0000
  - Setup: \$0.0000
  - Labor: \$0.0000
  - Overhead: \$0.0000

Buttons: OK, Cancel

Footer: Enter standard operation, if applicable (optional) OVR



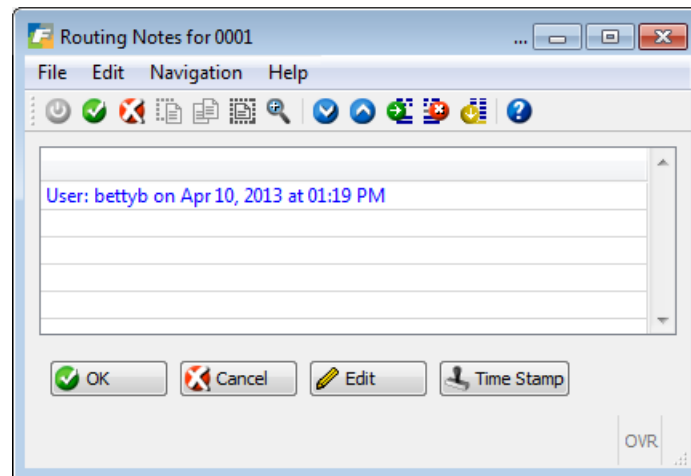
Field	Description
Routing Step	This is the value from the main screen and cannot be changed in this window
Standard Operation	Enter or select an Operation code which was previously set up in the Operation table. If you do not enter a value here, you must enter the remaining columns for the step yourself.
Work Center	Enter or select an optional Work Center to be used for this step.
Department	Enter or select an optional Department to be used for this step.
Team	Enter or select an optional Machine to be used for this step.
Tool Item	An optional identifier for a tool or collection of tools needed for this operation. Tools are typically stored and dispatched from a central tool crib or cage.
Average Move Time	This field is reserved for future use
Schedule by Labor/Machine	One of the following values: <ul style="list-style-type: none"> <li>• Labor-Based – This operation will be scheduled based on Labor Hours needed, used, and remaining</li> <li>• Machine-Based – This operation will be schedule based on Machine Hours needed, used, and remaining</li> </ul>
Outside Process Unit Cost	When the step has a Type of 'Outside', enter the cost per unit from the outside process source to perform this step.
Outside Process Item	When the step has a Type of 'Outside', enter the item number to be generated on a Purchase Order to the vendor for this step.
Labor Transaction Type	This field is reserved for future use.
Print on Packet	Check this box if you want the step to be print on a Production Packet for the item.
Job Class	This field is reserved for future use.
Current Standard Hours - Setup	Enter an optional hours required to setup the step before production begins. Minutes can be entered as a decimal equivalent (1 hour and 25 minutes would be entered as 1.41666 hours)
Current Standard Hours – Labor/Unit	Enter the number of labor hours required to produce this item. See Basis Code below for an understanding of how this number should be entered.
Current Standard Hours – Labor/Unit Basis	One of the following values: <ul style="list-style-type: none"> <li>• Hours per piece – The value in Current Labor hours in the number of hours required to product one unit of this item. Minutes can be entered as a decimal equivalent (1 hour and 25 minutes would be entered as 1.41666 hours)</li> <li>• Pieces per Hour – The value in Current Labor hours in the number of units of the item which is produced in one hour.</li> </ul>
Current Standard Hours – Machine/Unit	Enter the number of machine hours required to produce this item. See Basis Code below for an understanding of how this number should be entered.

Field	Description
Current Standard Hours – Machine/Unit Basis	One of the following values: <ul style="list-style-type: none"><li>• Hours per piece – The value in Current Machine hours in the number of hours required to product one unit of this item. Minutes can be entered as a decimal equivalent (1 hour and 25 minutes would be entered as 1.41666 hours)</li><li>• Pieces per Hour – The value in Current Machine hours in the number of units of the item which is produced in one hour.</li></ul>
Current Standard Costs	These fields are reserved for future use.
Schedule Priority	If Finite Scheduling is being used in the Production Scheduling module, this indicates which resource should be considered the constraint. Only one of Work Center, Department, Machine or Team can be selected.'

## ***Routing Notes Window***

This window displays when you position the cursor on a specific step and select the  **Notes** button.

The following window displays:



You may enter one or more lines of text for the routing step. The notes will be copied to any production orders created for the item, and will be printed with the routing step on the Production Packet.

## Work Center Mass Replace

Use this menu option to replace one work center with another, in the routing steps in which it is used. This is useful in cases where a work center is being obsoleted or substituted for another center.

To view this screen, select option 'g' from the File Maintenance menu.

Replace	Item	Routing	Seq	Oper	Description
<input type="checkbox"/>	12120U	MFG	0001		ASSEMBLY
<input type="checkbox"/>	12120	MFG	0001		ASSEMBLY
<input type="checkbox"/>	400-100HBTGV	MFG	0001	0010	STANDARD ASSEMBLY
<input type="checkbox"/>	AUTOMATED SAFETY	MFG	0001		ASSEMBLY
<input type="checkbox"/>	C-MAC	MFG	0001		ASSEMBLY
<input type="checkbox"/>	AC1121A	MFG	0001		ASSEMBLY
<input type="checkbox"/>	ALP7292	MFG	0001		GENERAL ASSEMBLY
<input type="checkbox"/>	AC1121A	MFG	0002		TEST
<input type="checkbox"/>	C-MAC	MFG	0002		TEST
<input type="checkbox"/>	400-100HBTGV	MFG	0002	0030	INSPECTION
<input type="checkbox"/>	400-100HBTGV	MFG	0003	0040	PACKAGING
<input type="checkbox"/>	C-MAC	MFG	0003		ANTI-VIRUS SCAN

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View Detail

OVR

## Work Center Mass Replace - Header

Use the 'Find' and 'Update' options to select a work center to be replaced. Enter the following fields:

Field	Description
Replace with Work Center	Enter the replacing work center, or zoom for a list
Description	Displays the work center description

## Work Center Mass Replace - Detail

This section of the window allows you to select one or more routing steps for which the mass replace should be executed.

Field	Description
Replace	All routing steps where this work center is used are automatically displayed and checked. You may leave them checked to replace the work center, or uncheck to skip replacement for the routing step.

Click OK for the replacement to be executed.

## Machine Mass Replace

Use this menu option to replace one machine with another, in the routing steps in which it is used. This is useful in cases where a machine is being obsoleted or substituted for another machine.

To view this screen, select option 'h' from the File Maintenance menu.

## Machine Mass Replace - Header

Use the 'Find' and 'Update' options to select a machine to be replaced. Enter the following fields:

Field	Description
Replace with Machine	Enter the replacing machine, or zoom for a list
Description	Displays the machine description

## **Machine Mass Replace - Detail**

This section of the window allows you to select one or more routing steps for which the mass replace should be executed.

Field	Description
Replace	All routing steps where this machine is used are automatically displayed and checked. You may leave them checked to replace the machine, or uncheck to skip replacement for the routing step.

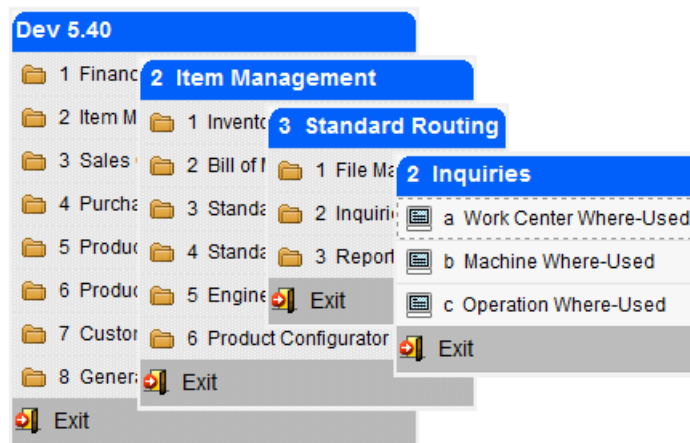
Click OK for the replacement to be executed.

## Standard Routing Inquiries

Steps to review Standard Routing module information include the following options from the Inquiries submenu:

Work Center Where-Used  
Machine Where-Used  
Operation Where-Used

The options on this menu allow you to review the usage of resources within routings.



## Work Center Where-Used

Use this menu option to review a list of routing steps which use a given work center.

To view this screen, select option 'a' from the Inquiries menu.

Center	Description	Type
EXTR	EXTERIOR	D

Item	Routing	Seq	Oper	Description	Machine
SB-226 HULL AND DECK	MFG	0003		EXTERIOR INSTALL	

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View Detail

OVR

### Work Center Where-Used - Header

Use the 'Find' to select a work center to review. Enter the following fields:

Field	Description
Center	Enter the work center to review
Description	Enter an optional description to search for
Type	This field is reserved for future use

### Work Center Where-Used - Detail

This section of the window allows you to display the routing steps which use the work center.

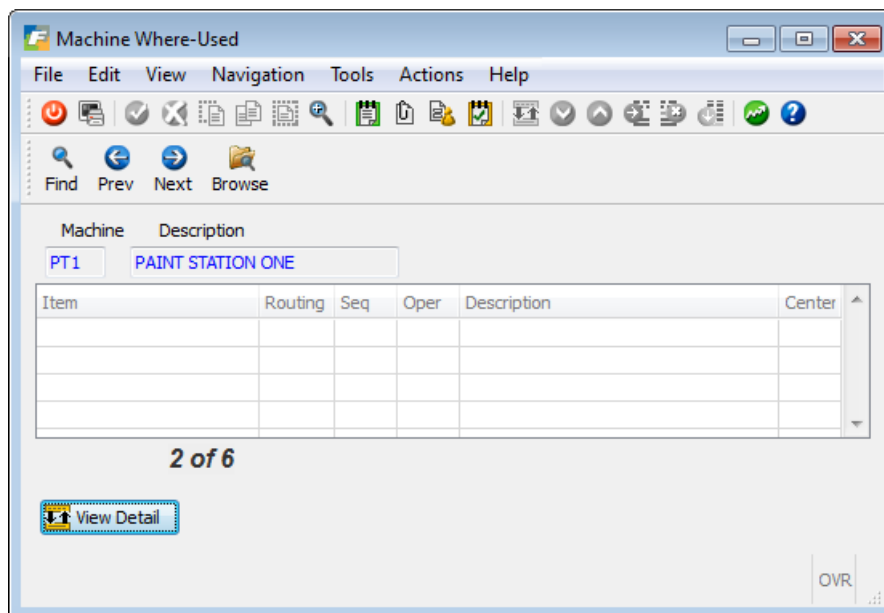
Field	Description
Item	The produced item
Routing	The routing code for the produced item's routing
Seq	The routing step
Oper	The standard operation for the routing step
Description	The descriptive text for the routing step
Machine	The optional machine for the step



## Machine Where-Used

Use this menu option to review a list of routing steps which use a given machine.

To view this screen, select option 'b' from the Inquiries menu.



### Machine Where-Used - Header

Use the 'Find' to select a machine to review. Enter the following fields:

Field	Description
Machine	Enter the machine to review
Description	Enter an optional description to search for

### Machine Where-Used - Detail

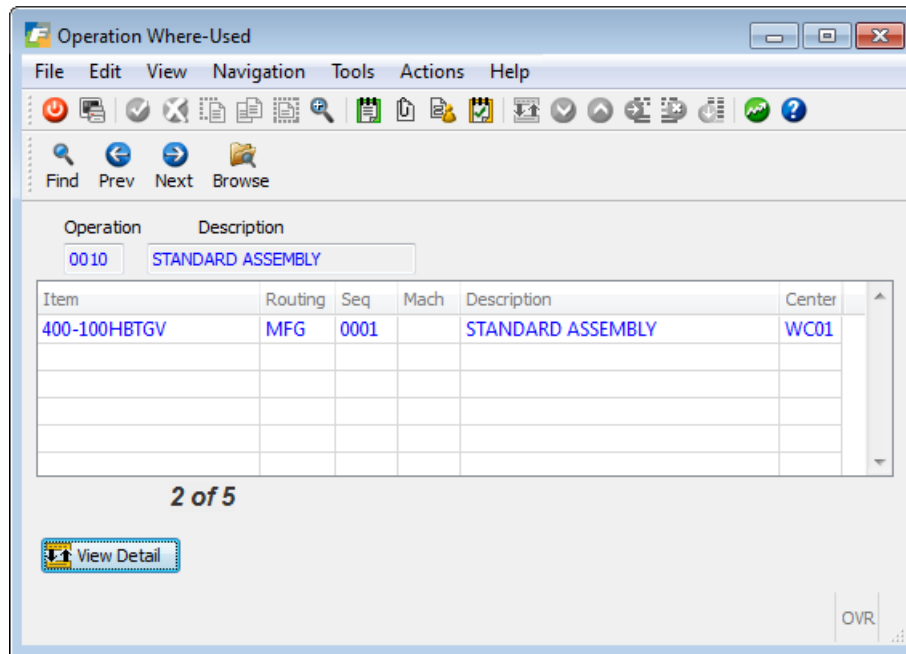
This section of the window allows you to display the routing steps which use the work center.

Field	Description
Item	The produced item
Routing	The routing code for the produced item's routing
Seq	The routing step
Oper	The standard operation for the routing step
Description	The descriptive text for the routing step
Work Center	The optional work center for the step

## Operation Where-Used

Use this menu option to review a list of routing steps which use a given standard operation.

To view this screen, select option 'c' from the INQUIRIES menu.



### Operation Where-Used - Header

Use the 'Find' to select an operation to review. Enter the following fields:

Field	Description
Operation	Enter the operation to review
Description	Enter an optional description to search for

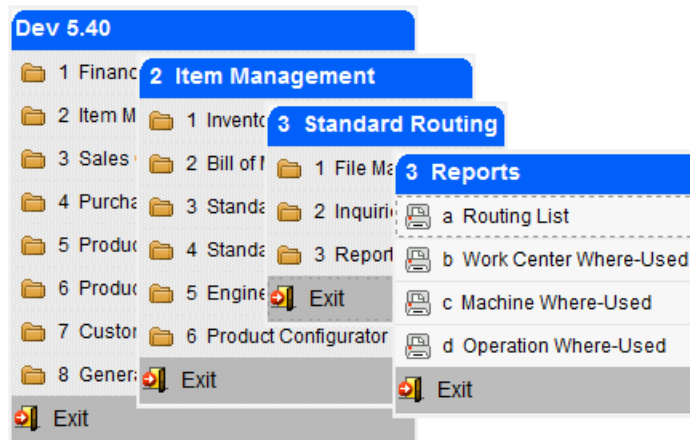
### Operation Where-Used - Detail

This section of the window allows you to display the routing steps which use the work center.

Field	Description
Item	The produced item
Routing	The routing code for the produced item's routing
Seq	The routing step
Mach	The optional machine for the routing step
Description	The descriptive text for the routing step
Work Center	The optional work center for the step

## Reports

The options on the Reports menu allow you to view and print Standard Routings and resource usages.



### ***Routing List***

This report prints the routing steps for a given produced item or range of items, and routing code

### ***Work Center Where-Used***

This report prints a list of routing steps that use a selected work center or range of work centers

### ***Machine Where-Used***

This report prints a list of routing steps that use a selected machine or range of machines

### ***Operation Where-Used***

This report prints a list of routing steps that use a selected standard operation or range of operations

## **Section Summary**

Standard Routing maintains information about how items are produced, and the resources required to produce them.

Setting up Standard Routing includes:

Defining Work Centers, Machines, Departments, Teams, Operations

Defining the production facilities in which the above resources will be used

Defining alternates for Work Centers, Machines, Departments and Teams

The main tasks which are performed in Standard Routing include:

Maintaining routings for produced items

Maintaining work center and machine usage via Mass Replace

## Lab Exercise a: Standard Routing Set up Tasks

In this lab you will be setting up resources used by routings.

### Set up Work Centers (option a on File Maintenance menu):

1. **Set up Work Centers – except where indicated, accept the default values for all other fields:**

Work Center	Description	Labor Rate	Overhead Rate
CUT	Cutting and Fab	Enter a reasonable standard labor rate per hour to assign any routing step using time at this work center	Enter a reasonable standard overhead rate per hour (if applicable) to assign any routing step using time at this work center. If no overhead cost is to be assigned, enter zero.
ASSY	Assembly Time	Enter a reasonable standard labor rate per hour to assign any routing step using time at this work center	Enter a reasonable standard overhead rate per hour (if applicable) to assign any routing step using time at this work center. If no overhead cost is to be assigned, enter zero.

## Lab Exercise b: Routing Maintenance

Update Routing (option f on the File Maintenance menu):

2. Add a new routing for the window assemble from the Bill of Materials chapter- WINASSY

### Header

Routing Code – use 'MFG'

### Detail

Select a type of 'Inside'

Leave machine blank

Seq	Description	Work Center	Department	Setup Hrs	Run Hrs
0001	Cutting	CUT	DP1	0.25	0.5
0002	Assembly	ASSY	DP1	0	0.75