

# **MIE ROUTERS 2010.1**

## **USER GUIDE**

Read MIE

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# Introduction

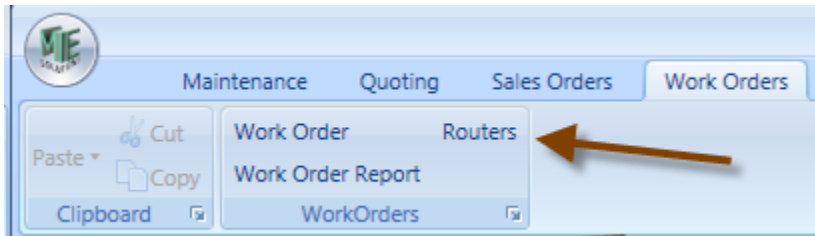
MIE Trak routers is where you setup a template describing the manufacturing instructions to build an item. Each item master can have 1 or more routers describing how to produce the item. You may have different routers based on your desire to change the manufacturing steps and bill of material based on the quantity you are producing.

1. Item Maintenance
2. Routers

# MIE Routers Ribbon Bar

## DESCRIPTION

The MIE Router is accessed through MIE Trak by going to the MIE Work Orders drop down menu which will bring up the Work Orders ribbon bar. On the work orders ribbon bar you can access the Router module.



- 1) Work Order – This module is used to create production work orders.
- 2) Work Order Report – This module is used to query and report on all the work order information for backlog reporting, costing and work in process reporting.
- 3) Routers – This module is the router module which allows you to create router templates for manufacturing describing the work orders and bill of material items.

# Getting Started

## INITIAL SETUP

MIE Router requires some prerequisite information to be entered which is shown below.

## ITEM SETUP

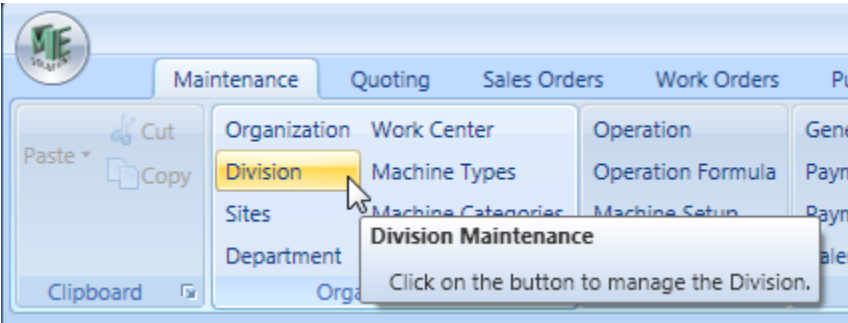
Item	Unit of Measure Set
Item Class	Catalog
Item Number	Catalog Category
Unit of Measure	Location

## WORKCENTER SETUP

Work Centers  
Operations

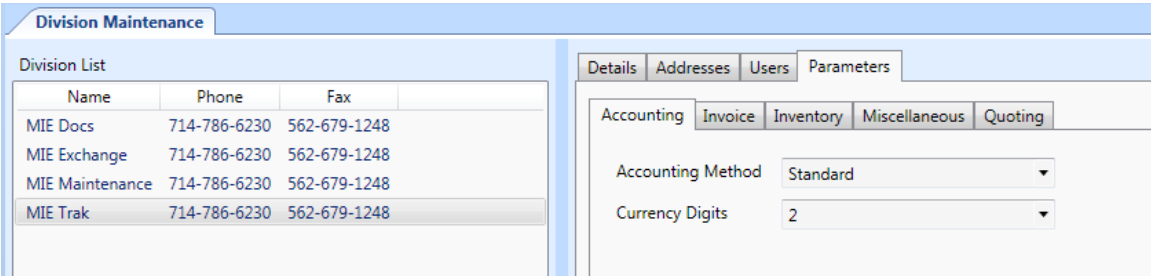
**DIVISION PARAMETERS TAB**

Parameters are set for each division and are defaults and settings for inventory items. To access the division parameters from the main ribbon bar click on Division has highlighted in the next screen shot



**SELECT AN APPROPRIATE DIVISION**

Each division has its own unique set of parameters which must be set according to your company preferences.



INVENTORY TAB

Accounting Invoice **Inventory** Miscellaneous Quoting

Location

Location R1 - S2 - B2

Allow Negative Inventory

Delete locations with zero inventory

Item

Expect Release Days

Hardware - On Dock Days

Material - On Dock Days

Product Days

Projected Days

KEY FIELDS

Expected Release Days

This is the default expected release days of an item. If a purchase order arrives the system will calculate the expected release date based on the due date minus the expected release days.

Hardware On Dock Days

This is the default hardware on dock days for an item. If an item is being manufactured the hardware on dock is the due date minus the hardware on dock days.

Material On Dock Days

This is the default material on dock days for an item. If an item is being manufactured the material on dock is the due date minus the material on dock days.

Product On Dock Days

This is the default product (sub assembly) on dock days for an item. If an item is being manufactured the product on dock is the due date minus the product on dock days.

# Router

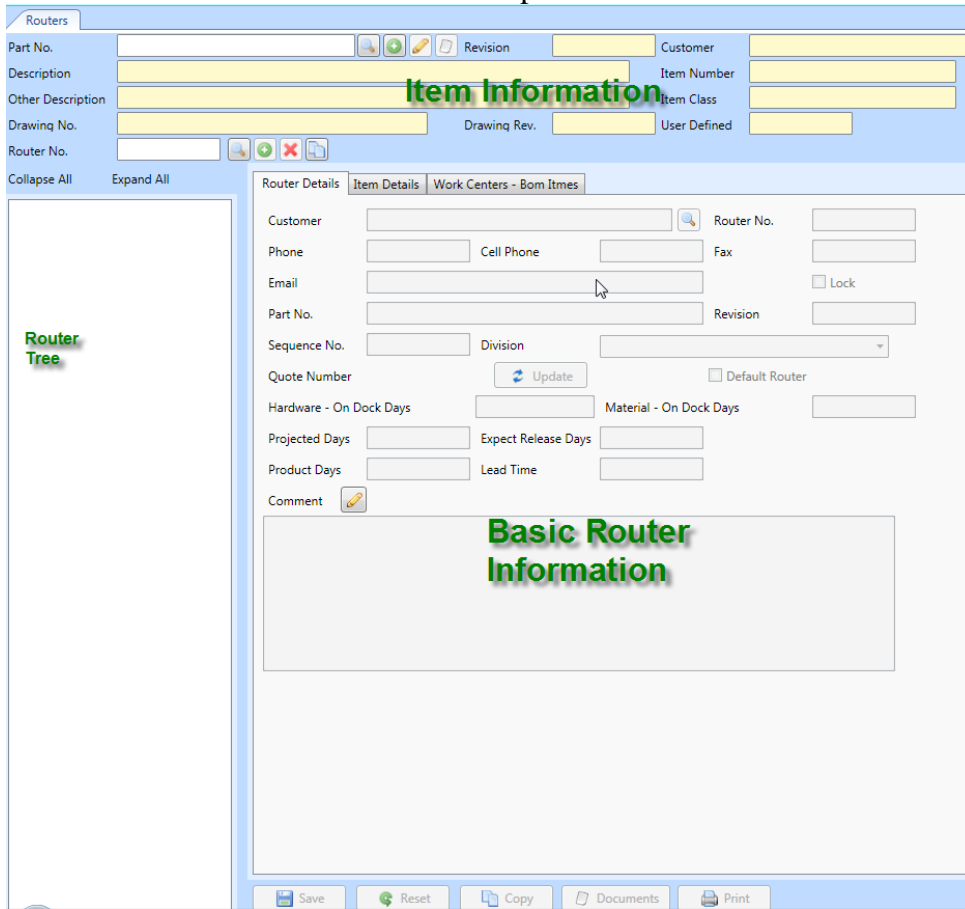
## Introduction

MIE Trak routers is where you setup a template describing the manufacturing instructions to build an item. Each item master can have 1 or more routers describing how to produce the item. You may have different routers based on your desire to change the manufacturing steps and bill of material based on the quantity you are producing.

### MAIN SCREEN LAYOUT

The router screen is broken into 3 parts

1. Item Information - Item information describes the item that that you will create a router template.
2. Basic Router Information – This describes the header information of the router which is applied to the item. You can have multiple routers per item and each router is unique.
3. Router Tree – This area shows the router tree showing sub routers of the parent router.



# Creating Your First Router


The first step in creating a router is you need an item in the item master table. The item is described by part number, revision, description, inventory, etc. In order to manufacture an item you must create a router describing the basic steps or building blocks required to manufacture the item. Under most circumstances you do not want to have duplicate item masters because your inventory will not be managed correctly. There may be situations that you would want to have multiple item masters when you manufacture different revisions of the same item and keep the inventory separate.

## SELECTING AN ITEM


The highlighted area shows buttons which give you the capability to search for an existing item, create a new item, edit an existing item or copy an existing item.

The screenshot shows a software interface with a light blue header and a white body. The form contains the following fields and controls:

- Part No.:** A text input field with a toolbar to its right containing four icons: a magnifying glass, a green plus sign, a pencil, and a document icon. The text "Revis" is partially visible to the right of the toolbar.
- Description:** A yellow-highlighted text input field.
- Other Description:** A yellow-highlighted text input field.
- Drawing No.:** A yellow-highlighted text input field with the text "Draw" to its right.
- Router No.:** A text input field with a toolbar to its right containing four icons: a magnifying glass, a green plus sign, a red X, and a document icon.

1. If the item does not exist you can create an item by clicking on the  button. A dialog will be displayed which lets you create a new item. NOTE : This is not creating a router, only a new item master. The key fields are shown highlighted in the picture below.

2. If the item has already been created you can begin typing the part number into the part number text area and hit enter. If a matching item is found the item will load onto your router screen.

If the part number matches multiple entries a second dialog will be displayed in order for you to do a detailed search. You can also click on the  button to bring up the detailed search window.

**Item Advance Search**

Search Type: All  Include Archived Items  
Search By: Part Number  Include All Divisions  
Search At: Beginning  
Search Value: W  
Item List:

**Search Options**

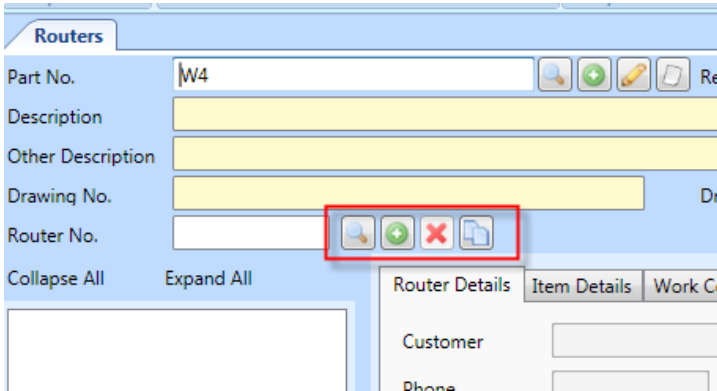
Part No.	Description
W2	
W3 GOOD	
W4	
WIDGET 1	
WIDGET 1	TOM
Widget 145	
WIDGET 2 (PARTY PRICE)	
WIDGET A	





**Multiple Matching**

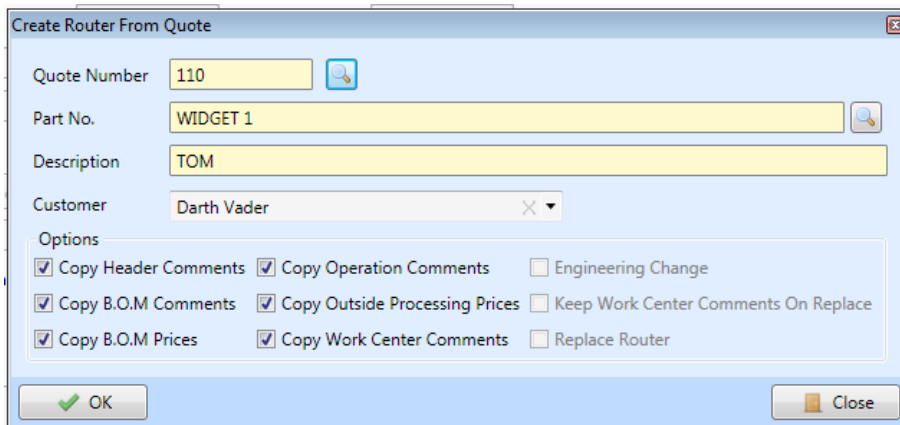
Select

**SELECTING A ROUTER**

MIE Trak gives you the ability to have multiple routers for every item master. Once an item is selected the default router will be displayed. You can use the menu items and/or type in a router number in order to modify and maintain your router.



1. Clicking on the add button  will ask you to create a new router. When a new router is created the part number, description, revision and other data is copied from the item master to the router
2. Clicking on the search button  will display and allow you to select all the available routers for the item master.
3. Clicking on the delete button  will let you delete a router. If the router is being used you will not be able to delete it.
4. Clicking on the create router from quote button  you will be able to copy the process steps from an existing quote to a new router or overwrite an existing router. Select the quote and click ok to copy the quotation to a router.



# Modifying A Router

## ROUTER DETAIL TAB

A router can have its part number changed but this should not be done under normal situations. Changing the part number on the router will keep the router associated to its parent item. When a router is created the parent items part number, description, revision are copied to the router.

Router Details		Item Details		Work Centers - Bom Itmes	
Customer	<input type="text" value="Darth Vader"/>		Router No.	<input type="text" value="531"/>	
Phone	<input type="text" value="6667770000"/>	Cell Phone	<input type="text" value="4807072496"/>	Fax	<input type="text" value="666-777-0000"/>
Email	<input type="text" value="darth@yankees.com"/>			<input type="checkbox"/>	Lock
Part No.	<input type="text" value="WIDGET 1"/>	Revision	<input type="text"/>		
Sequence No.	<input type="text"/>	Division	MIE Solutions - Garden Grove <span>▼</span>		
Quote Number	<input type="button" value="Update"/>		<input type="checkbox"/>	Default Router	
Hardware - On Dock Days	<input type="text" value="7"/>	Material - On Dock Days	<input type="text" value="14"/>		
Projected Days	<input type="text" value="25"/>	Expect Release Days	<input type="text" value="24"/>		
Product Days	<input type="text" value="23"/>	Lead Time	<input type="text" value="5"/>		
Comment					
<div style="border: 1px solid gray; height: 100px;"></div>					

Expected Release Days

This is the default expected release days of an item. If a purchase order arrives the system will calculate the expected release date based on the due date minus the expected release days.

Hardware On Dock Days

This is the default hardware on dock days for an item. If an item is being manufactured the hardware on dock is the due date minus the hardware on dock days.

**Material On Dock Days** This is the default material on dock days for an item. If an item is being manufactured the material on dock is the due date minus the material on dock days.

**Product On Dock Days** This is the default product (sub assembly) on dock days for an item. If an item is being manufactured the product on dock is the due date minus the product on dock days.

**Lead Time** This is the default time in days which is required for purchasing this item.

**ITEM DETAILS TAB**


The item detail tab gives information regarding the current router that has been selected in the router tree. If this is only a single level router the information would be identical to the first tab. If a sub component router is selected this shows the information from the sub router.

Router Details	Item Details	Work Centers - Bom Itmes
Description	TOM	
Other Description		
Part Number	WIDGET 1	Revision
Drawing No.		Drawing Rev.
User Defined		


**WORK CENTER BOM ITEMS TAB**

A router is made up of work centers and bill of material items. Work centers describe the steps required to manufacture the item and the bill of material describes the raw materials required to make the item.

Router Details | Item Details | **Work Centers - Bom Itmes**


Work Center  Edit

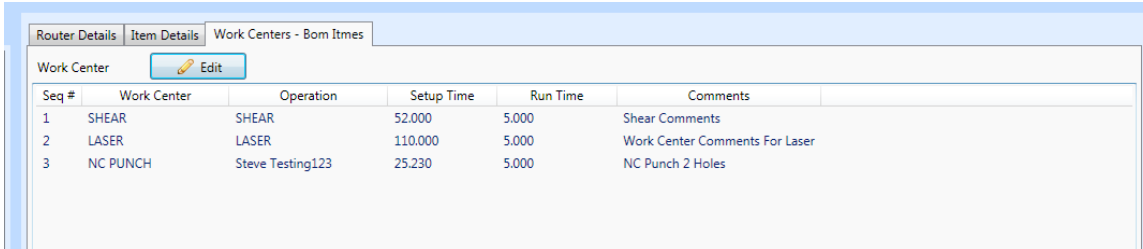
Seq #	Work Center	Operation	Setup Time	Run Time	Comments
1	SHEAR	SHEAR	52.000	3.000	Shear Comments
2	LASER	LASER	110.000	5.000	Work Center Comments For Laser

BOM 

Seq #	Router Number	Number	Description	Qty Required	Seq #	Vendor
1		CRS 16 GAGE [48.000 x 120.000]		1.000	1.000	

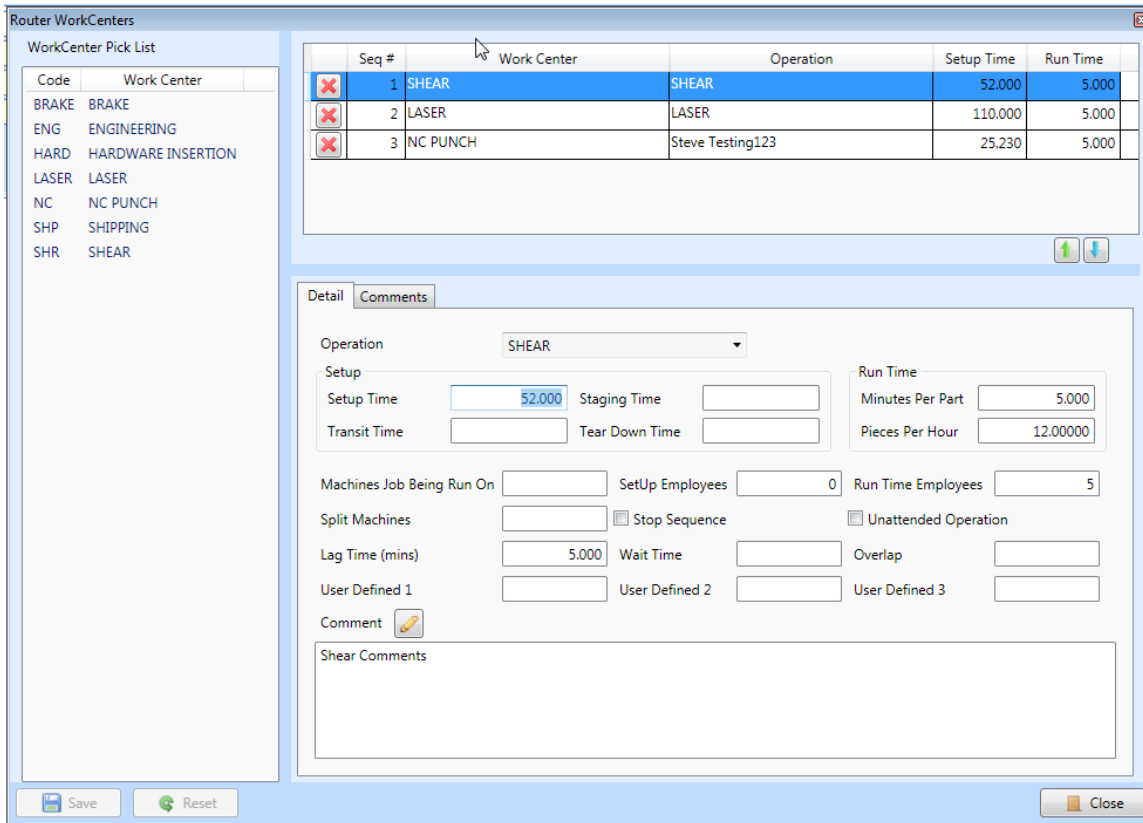
**SETTING WORKCENTERS ON A ROUTER**

A router is made up of work centers and bill of material items. Work centers describe the steps required to manufacture the item and the bill of material describes the raw materials required to make the item. Click the  button to edit the work centers for the router.



Seq #	Work Center	Operation	Setup Time	Run Time	Comments
1	SHEAR	SHEAR	52.000	5.000	Shear Comments
2	LASER	LASER	110.000	5.000	Work Center Comments For Laser
3	NC PUNCH	Steve Testing123	25.230	5.000	NC Punch 2 Holes

The detailed work center screen allows adding, deleting and modifying the workcenters which are used to manufacturer this item. This includes in house workcenters and outside processing. Until you hit save no changes that have made are saved.



**Router WorkCenters**

WorkCenter Pick List

Code	Work Center
BRAKE	BRAKE
ENG	ENGINEERING
HARD	HARDWARE INSERTION
LASER	LASER
NC	NC PUNCH
SHP	SHIPPING
SHR	SHEAR

Seq #	Work Center	Operation	Setup Time	Run Time
1	SHEAR	SHEAR	52.000	5.000
2	LASER	LASER	110.000	5.000
3	NC PUNCH	Steve Testing123	25.230	5.000

**Detail** | Comments

Operation: SHEAR

Setup: Setup Time: 52.000, Staging Time: [ ], Transit Time: [ ], Tear Down Time: [ ]

Run Time: Minutes Per Part: 5.000, Pieces Per Hour: 12.00000

Machines Job Being Run On: [ ], SetUp Employees: 0, Run Time Employees: 5

Split Machines: [ ] Stop Sequence: [ ] Unattended Operation: [ ]



Lag Time (mins): 5.000, Wait Time: [ ], Overlap: [ ]

User Defined 1: [ ], User Defined 2: [ ], User Defined 3: [ ]

Comment: Shear Comments

Buttons: Save, Reset, Close

## Add, Delete and Modify Workcenters

Add Workcenters	You can add workcenters to the router by double clicking the workcenter on the left hande side of the screen. Until you hit save no changes that have made are saved.
Delete Workcenters	You can delete a workcenter by clicking on the  button next to the chosen workcenters. Until you hit save no changes that have made are saved.
Modify Workcenters	You can modify any of the fields on the screen as you see fit. Until you hit save no changes that have made are saved.
Moving Workcenters	You can change the order of workcenters by clicking on the up and down buttons 

## Workcenters Field Definitions

Workcenters are groups of machines while operations are specific operations performed on machines. You can select an operation to be performed on a workcenter by the operation drop down menu. Many of the data points on the workcenter screen are used in scheduling and will be brought over directly when you use the MIE Trak quoting application.

Setup Time	Number of minutes to setup the machine..
Transit Time	Number of minutes that are required for the part to move to the next sequence.
Staging Time	Number of minutes required to stage all the equipment for the workcenter prior to do the setup.
Tear Down Time	Number of minutes required to tear down the machine, clean, remove tooling, etc.
Minutes Per Part	The number of minutes to manufactured the part.

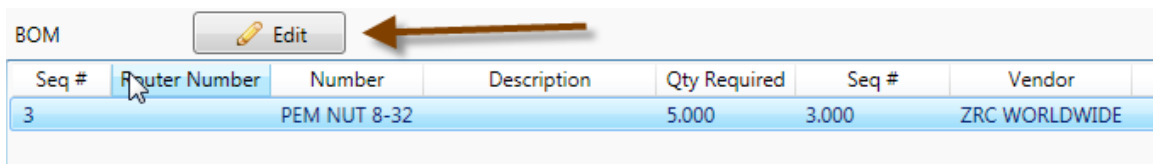
Pieces Per Hour	The number of pieces that can be manufactured in an hour.
Machines Job Being Run On	The number of machines the job is run on. This affects scheduling because the setup will be duplicated to each machine. Scheduling will try to split the work between multiple machines.
Setup Employees	The number of employees that will be required to setup the machine.
Run Employees	The number of employees that is required to run a single machine.
Split Machines	Similar to machines job being run on but the scheduling to try to put the parts on multiple machines.
Stop Sequence	A sequence where a supervisor has to scan in/out in order for the job to continue to the next sequence.
Unattended Operation	A sequence that does not require an employee to run.
Lag Time	The time in minutes between this sequence and the next sequence in line.
Wait Time	The time in minutes after the prior sequence that the sequence must wait prior to scheduling.
Overlap Percentage	The amount the sequence has to complete before the next sequence can start. By default this is 0 which does no overlapping.
Comment	Standard comment that will print on the work order.
Tooling Comment	A comment regarding the tooling
Instructions	An instructional comment.



**SETTING BILL OF MATERIALS ON A ROUTER**


The bill of material of a router describe each of the different purchased and even manufactured items which make up the router. Bill of material is broken into four basic categories

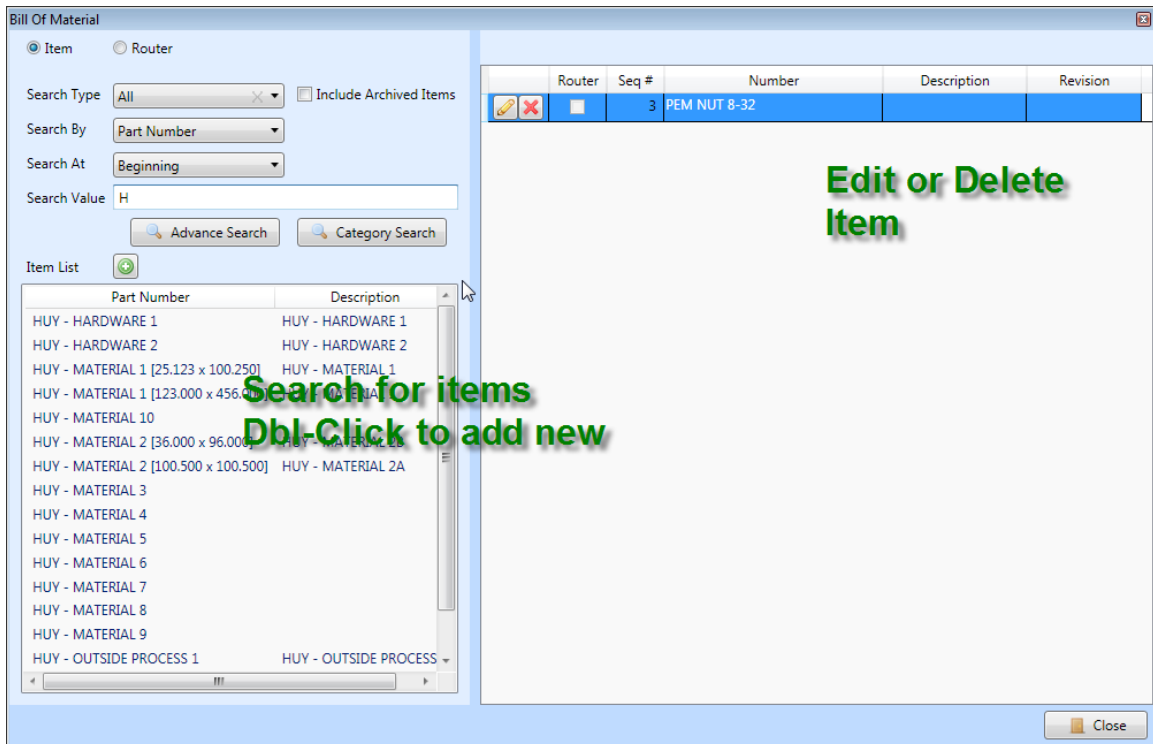
- Raw Material
- Hardware
- Outside Processing
- Manufactured Item (Router)

You can click on the edit button to modify the bill of material items



Use the search screen to find new items to add to the bill of material of the router. Click on the  button to edit an existing item and the  to delete the bill of material item.

Clicking on the  button creates a new item if the item that is required does not exist in the dabase.




## Adding A Raw Material Item


Raw materials consists of items which are used to make the parent part. This consists of sheets, plates, wood, bar, etc.

### REQUIRED FIELDS

Blank Size (width x length)

Enter the blank width and length. The Blank Size Calculator can be accessed by clicking on the  (*Blank Size Calculator*) button.

Stock Size (width x length)

The system automatically populates these fields with the stock size selected from the Item List. The user can select a different stock size from the Bill Of Material Detail screen by clicking on the  (*Search*) button

Parts/Blank

Enter the number of parts nested on the blank size. By using the Blank Size Calculator the system will calculate the parts per blank and enter the value in the field.

OPTIONAL FIELDS

Parts Required	<p>The system defaults to the value of 1, however the user can enter a multiplier to add additional material to the quote.</p> <p>Example: The user might want to add into the material requirements an additional 5% material, by entering 1.05 in the Parts Required field the system will add an additional 5% of material required for this item. For small quantities there usually isn't an issue, however, large quantities there might be an issue.</p>
Safety Stock Size (width x length)	<p>Safety stock fields are used to deduct available material from the dimensions on material stock sizes.</p> <p>Example: If a saw clamp uses 8 inches of material to feed a saw a length of material then the system will calculate on a 120 inch length of material that there is only available 112 inches so if a part is 12 inches long instead of getting 10 parts out of a length the system will calculate only getting 9 parts.</p>
Overage Percentage	<p>If an overage percent is enter it will be applied to each quantity being quoted.</p>
Days Out	<p>Days out is used by the system to identify the length of time the part is estimated to be at an outside process vendor.</p>
Lead Time	<p>Lead time is the amount of time in days that it takes to procure material or hardware.</p>
Unit Of Measure Set	<p>Specifies the Unit Of Measure</p>
Sequence	<p>The sequence that the bill of material item will be consumed in.</p>
Supplier	<p>The default supplier where the item should be purchased</p>
Certifications Required	<p>Specifies if certifications are required on the purchased item.</p>

Comment	This is where general textual information could be entered about the item, handling, etc.
Against Grain	Specifies how the blank is rotated on the sheet. This may affect the sheet yeild.
Nestable	Flags this material requirement as being available for nesting on a work order. This is reference only because you will be able to have nest parts regardless if this flag is set
Pull	Flags this material to be pulled from inventory and not purchased by default. When a work order is released the bill of materials requirement is created for purchasing. If this flag is set the requirement is set to pull which tells purchasing to use existing inventory versus purchasing the material. This would be set for common materials that you hold inventory for.
Use Exact Material Calculation	Figure exact material calculation determines how much the requirements will be when a work order is released for the given material. Normally the requirements will be in increments of the blank size, but if you use figure requiements exact the system will create requirements based on exact part size. This is used on expensive material.  Please refer to the Figure Exact Calculation tutorial guide for a more in depth description.

BLANK SIZE CALCULATOR

The Blank Size Calculator is used to help calculate the number of parts that can be nested on a blank.

REQUIRED FIELDS



**Machine** Select the machine from the list that the blank is to be nested for. The system will automatically fill in the five fields below the list.

**Width List** Highlight the width that is closest to the blank size width that is to be used for the blank but that does not exceed the width of the stock size being used.

**Length List** Highlight the length that is closest to the blank size length that is to be used for the blank but that does not exceed the length of the stock size being used.

STOCK SIZE SELECTOR

The stock size selector is opened by clicking on the following search button.

Part No.	CRS 16 GAGE [36.000 x 96.000]	
Description		
Part Size	10.00000	x 10.00000
Blank Size	24.00000	x 24.00000 
Parts/Blank	4	
Stock Size	36.00000	x 96.00000 
Safety Stock Size		x

This stock size selector will display all the stock sizes available that match the part number. You can then select the appropriate stock size.

Get Stock Size

CRS 16 GAGE

Stock Size List

Stock Width	Stock Length	Vendor Unit	Stock Pieces Wit	Scrap Percentage	Stock Pieces Wit	Scrap Perce
36.00000	96.00000	1.00000000			0	
48.00000	120.00000	99.66664000			0	

Select Close

### Adding A Hardware Item

Hardware items are those items which are purchased including nuts, bolts, screws, sandpaper, etc. Paint would also be included as a hardware item because of its not a raw material item but is consumed item.

The screenshot shows a software window titled "Router Bill Of Material Detail". It contains several input fields and sections:

- Part No.:** A text field containing "PEM NUT 8-32".
- Description:** An empty text field.
- Qty Required:** A text field containing "5".
- Qty Per (Inverse):** A text field containing "1".
- Overage Percentage:** An empty text field.
- Days Out:** An empty text field.
- Unit Of Measure Set:** A dropdown menu with "EACH" selected.
- Sequence No.:** A dropdown menu with "3 - NC PUNCH" selected.
- Item Information:** A section with several fields: "On Hand" (0), "Standard Cost" (0), "Demand" (0), "Average Cost" (0), "Ordered" (0), "Last Cost" (0), and "WIP" (0).
- Supplier:** A dropdown menu with "ZRC WORLDWIDE" selected.
- Certifications Required:** A checked checkbox.
- Comment:** A large empty text area.

At the bottom of the window, there are three buttons: "Save", "Reset", and "Close".

Quantity Required	The quantity required of the item to produce a single parent. For example, you may need 8 Lug Nuts per tire on a vehicle. The tire is the parent and 8 Lug Nuts are required.
Qty Per (Inverse)	This is a special situation when the parent only requires a part of the whole item. For example, a 5 gallon drum of paint would be the inventory item. This 5 gallon drum of paint may actually paint 100 items. The quantity per inverse in this situation would be 100.
Overage Percentage	Enter the percentage that the system will add to the requirement when manufacturing. You could think of this as a scrap percentage.
Days Out	The specific lead time required during for purchasing
Unit Of Measure Set	Specifies the Unit Of Measure
Sequence	The sequence that the bill of material item will be consumed in.
Supplier	The default supplier where the item should be purchased
Certifications Required	Specifies if certifications are required on the purchased item.
Comment	This is where general textual information could be entered about the item, handling, etc.

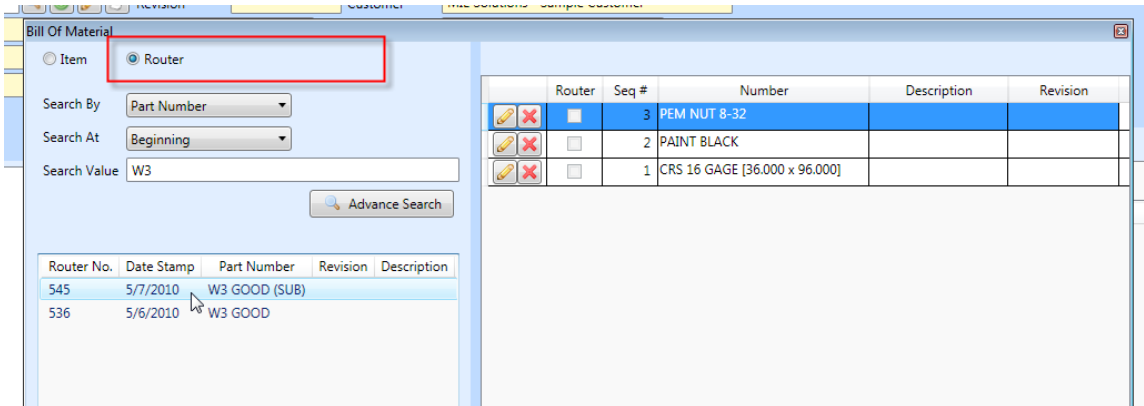


Part Size	The part size can be entered for the outside processing operation. This is used as a reference and would normally come from the quoting package.
Sq In/Lbs Estimate	This is used as a reference and would normally come from the quoting package.
Overage Percentage	Enter the percentage that the system will add to the requirement when manufacturing. You could think of this as a scrap percentage.
Days Out	The specific lead time required during for purchasing
Unit Of Measure Set	Specifies the Unit Of Measure
Sequence	The sequence that the bill of material item will be consumed in.
Supplier	The default supplier where the item should be purchased
Certifications Required	Specifies if certifications are required on the purchased item.
Double Sided	Flags the item as being processed on both sides versus a one sided part.
Comment	This is where general textual information could be entered about the item, handling, etc.

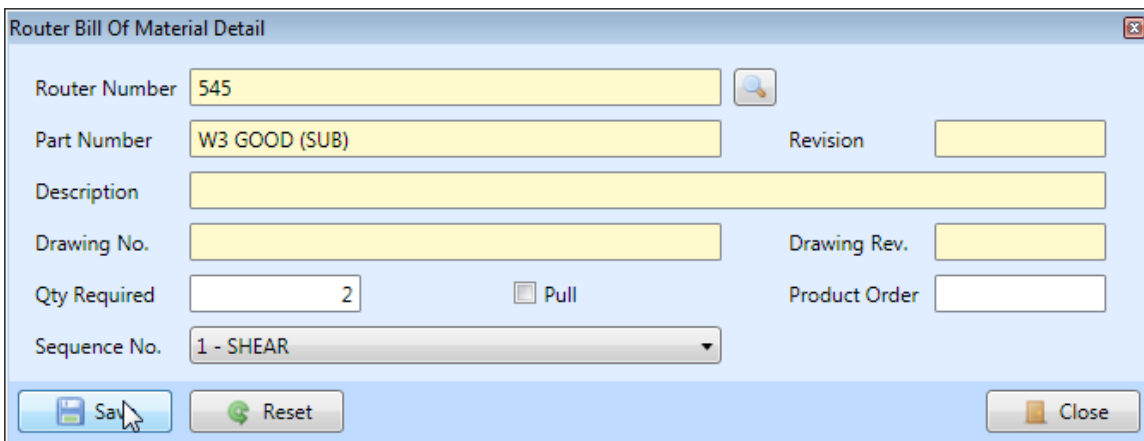
### Adding A Manufactured Item

A manufactured item is actually another router. A router can have child routers and those routers can have other child routers. As shown below you must select the Router radio button in order to add a manufactured part. These manufactured parts can actually be added as regular hardware items which are purchased by select the radio button Item.

**Important Note :** Manufactured items must have routers.



Once the router has been selected you can fill in the details of how many of the item are required to make one parent.



REQUIRED FIELDS

Qty Required	The quantity of this router required to make a single parent.
Pull	Default setting to pull the router from stock or actually manufacture the item. When a work order is created the pull quantity will be set to the fabrication quantity if the pull flag is set else the pull quantity will be zero.
Product Order	The product order defines the order in the screen the item will appear. This is useful if there you want the items displayed in a specific order.


# Copy Quote To Router

MIE Trak allows you to copy quotes to make routers. There are two buttons that copy a quote to a router.

The screenshot shows the 'Router Details' form in the MIE Trak application. The form is divided into several sections: 'Router Details', 'Item Details', and 'Work Centers - Bom Items'. The 'Router Details' section contains the following fields and controls:

- Customer: MIE Solutions - Sample Customer
- Router No.: 536
- Phone: [Empty] Cell Phone: [Empty] Fax: [Empty]
- Email: [Empty] Lock:
- Part No.: W3 GOOD Revision: [Empty]
- Division: MIE Solutions - Garden Grove
- Quote Number: [Empty] Update: [Button]
- Default Router:
- Hardware - On Dock Days: 7 Projected Days: 0
- Material - On Dock Days: 14 Product Days: 0
- Expect Release Days: 0 Lead Time: 0
- Comment: [Empty]

The 'Update' button is highlighted with a red box. The 'Quote Number' field is also highlighted with a red box.

Clicking on the  button will copy an existing quote and create a router. The following screen is displayed during the copy process.

The screenshot shows the 'Create Router From Quote' dialog box. The dialog box contains the following fields and controls:


- Quote Number: 119
- Part No.: TEST1
- Description: [Empty]
- Customer: AARONS REPAIR & SUPPLY
- Options:
  - Copy Header Comments
  - Copy Operation Comments
  - Engineering Change
  - Copy B.O.M Comments
  - Copy Outside Processing Prices
  - Keep Work Center Comments On Replace
  - Copy B.O.M Prices
  - Copy Work Center Comments
  - Replace Router

The dialog box has 'OK' and 'Close' buttons at the bottom.

Important Note : The router will be attached to the part number or item listed. You can switch the item and copy a quote from widget 1 to a widget 2 item if you desire.

REQUIRED FIELDS

Customer	The customer.
Copy Header Comments	This option will copy the quote header comment to the router header comment.
Copy B.O.M. Comments	This option copies the bill of material comments from the quote to the bill of material items on the router.
Copy Operation Comments	Copy the operation comments to the workcenters.
Copy Workcenter Comments	Copy the comments from workcenter maintenance to the workcenter.
Engineering Change	Flags the router as being an engineering change.
Keep Workcenter Comments On Replace	Keeps the existing workcenter comments on the router and does not replace them on an update
Replace Router	Updates the existing router with the quote.

Clicking the  button will allow you to update the existing router. If you click on the replace router the router that you are currently on will be replaced only if it is a different quote. If you are updating the same quote do not select Replace Router. If you click replace and you select a different item the system will act as if this was a standard copy.

# Creating Assemblies

An assembly is created by attaching routers to a other routers. As you attach routers to parent router a bill of material tree is created. An assembly may have 1000's of manufactured items which all get rolled up into the main assembly.

The screenshot displays the MIE Router software interface. On the left, a tree view shows a parent assembly '536 [W3 GOOD]' and a sub-assembly '545 [W3 GOOD (SUB)]'. A blue arrow points from the BOM table below to the sub-assembly '545 [W3 GOOD (SUB)]' in the tree.

The main window is titled 'Work Centers - Bom Items' and contains two tables:

**Work Center Table:**

Seq #	Work Center	Operation	Setup Time	Run Time	Comments
1	SHEAR	SHEAR	52.000	5.000	Shear Comments
2	LASER	LASER	110.000	10.000	Work Center Comments For Laser
3	NC PUNCH	NC Punching	25.230	5.000	NC Punch 2 Holes

**BOM Table:**

Seq #	Router Number	Number	Description	Qty Required	Seq #	Vendor
1		CRS 16 GAGE [36.000 x 96.000]		1.000	1.000	
2		PAINT BLACK		1.000	2.000	AARONS REPAIR & ...
3		PEM NUT 8-32		5.000	3.000	ZRC WORLDWIDE
1	545	W3 GOOD (SUB)		2.000	1.000	