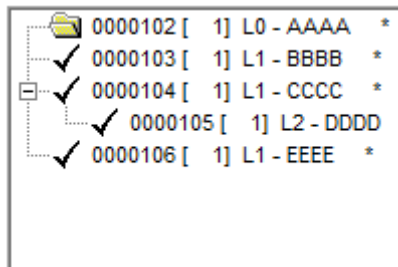


## How To : MRP Reporting

The scenario is based on creating a sales order for an assembly part. The assembly part will be produced on multiple work orders because these components are potentially shared among other parts in the your system

### *Scenario*

An assembly router is shown below. This router is made up of a 0 sheet, 3 level ones, and 1 level two. Make sure the system parameter 'Pull' is set in system parameter so all the assembly components are pulls.



## The Sales Order

Create a sales order for 100 pieces of part number 'L0 – AAAA' This will result in an initial MRP requirements report showing the following information. You can see that each part of the assembly is shown with some requirements.

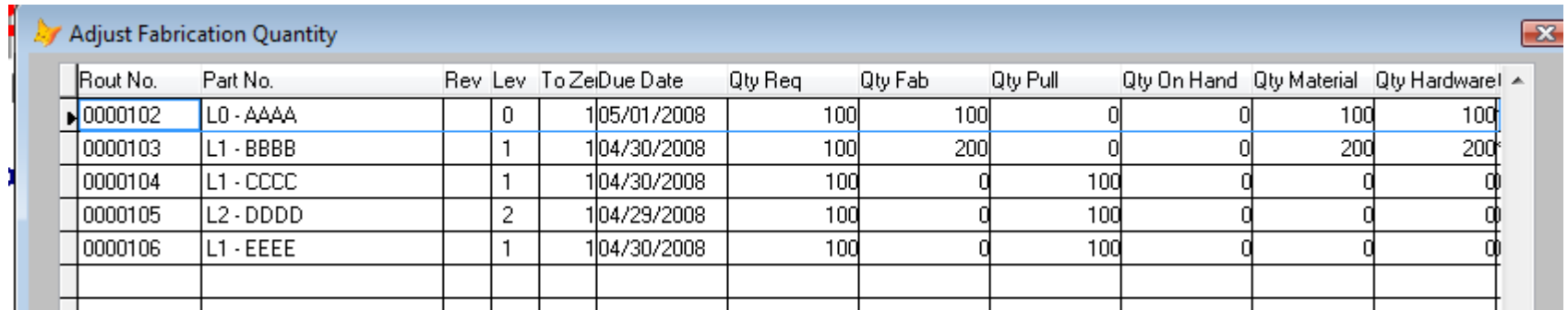
Start Date is subtracting projected days.  
 Needed Date is subtracting expected release days.

<b>Part # : L0 - AAAA</b>		<b>Router #0000102</b>	<b>On Hand</b>	0	<b>Allocated</b>	100	<b>W.I.P.</b>	0	<b>Reorder Pt.</b>	0	<b>EOQ :</b>	0			
<u>Part No.</u>	<u>Job No. / Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	<u>Net On Hand</u>	<u>Qty Needed</u>
	00000116 1	05/01/2008									100	05/01/2008	05/01/2008	-100	100
<b>Part # : L1 - BBBB</b>		<b>Router #0000103</b>	<b>On Hand</b>	0	<b>Allocated</b>	0	<b>W.I.P.</b>	0	<b>Reorder Pt.</b>	0	<b>EOQ :</b>	0			
<u>Part No.</u>	<u>Job No. / Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	<u>Net On Hand</u>	<u>Qty Needed</u>
L0 - AAAA	00000116 1	05/01/2008									100	04/30/2008	04/30/2008	-100	100 <b>Sub-D</b>
<b>Part # : L1 - CCCC</b>		<b>Router #0000104</b>	<b>On Hand</b>	0	<b>Allocated</b>	0	<b>W.I.P.</b>	0	<b>Reorder Pt.</b>	0	<b>EOQ :</b>	0			
<u>Part No.</u>	<u>Job No. / Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	<u>Net On Hand</u>	<u>Qty Needed</u>
L0 - AAAA	00000116 1	05/01/2008									100	04/30/2008	04/30/2008	-100	100 <b>Sub-D</b>
<b>Part # : L1 - EEEE</b>		<b>Router #0000106</b>	<b>On Hand</b>	0	<b>Allocated</b>	0	<b>W.I.P.</b>	0	<b>Reorder Pt.</b>	0	<b>EOQ :</b>	0			
<u>Part No.</u>	<u>Job No. / Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	<u>Net On Hand</u>	<u>Qty Needed</u>
L0 - AAAA	00000116 1	05/01/2008									100	04/30/2008	04/30/2008	-100	100 <b>Sub-D</b>
<b>Part # : L2 - DDDD</b>		<b>Router #0000105</b>	<b>On Hand</b>	0	<b>Allocated</b>	0	<b>W.I.P.</b>	0	<b>Reorder Pt.</b>	0	<b>EOQ :</b>	0			
<u>Part No.</u>	<u>Job No. / Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	<u>Net On Hand</u>	<u>Qty Needed</u>
L1 - CCCC	00000116 1	05/01/2008									100	04/29/2008	04/29/2008	-100	100 <b>Sub-D</b>

## The 1st Work Order

### CREATE AND RELEASE WORK ORDER

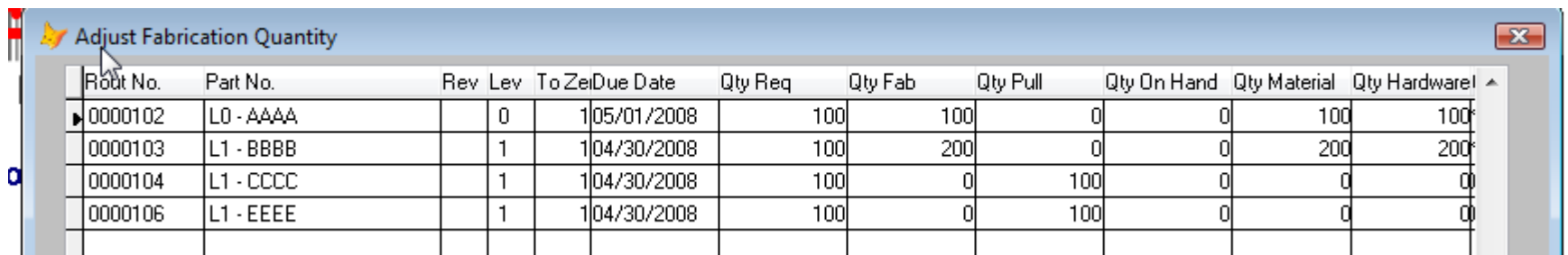
Create a work order for the 100 pieces for the sales order. When you create a work order for 100 pieces you can see below how the assembly quantity fabricates and pulls are shown. Also, part L1 – BBBB we are going to overproduce 100 pieces.



Rout No.	Part No.	Rev	Lev	To Zel Due Date	Qty Req	Qty Fab	Qty Pull	Qty On Hand	Qty Material	Qty Hardware
0000102	L0 - AAAA		0	105/01/2008	100	100	0	0	100	100
0000103	L1 - BBBB		1	104/30/2008	100	200	0	0	200	200
0000104	L1 - CCCC		1	104/30/2008	100	0	100	0	0	0
0000105	L2 - DDDD		2	104/29/2008	100	0	100	0	0	0
0000106	L1 - EEEE		1	104/30/2008	100	0	100	0	0	0

### PRUNING ASSEMBLY TREE

Looking at part L2 – DDDD you can see that this is a level 2 part that we are pulling 100 pieces. If you take a closer look you will see the parent part L1 – DDDD is a pull also. In this situation we need to click on the 'PRUNE' button in order to remove the L2 – DDDD requirement from the work order. The reason we do this is part L1 – CCCC is being pulled there is actually no demand for the L2 – DDDD part because its already contained in the L1 – CCCC part. The rule goes as follows, whenever a part is a pull and its immediate parent is a pull those parts should be pruned because their requirement is fulfilled by the parent. Therefore, after pruning the released work order would look like



Rout No.	Part No.	Rev	Lev	To Zel Due Date	Qty Req	Qty Fab	Qty Pull	Qty On Hand	Qty Material	Qty Hardware
0000102	L0 - AAAA		0	105/01/2008	100	100	0	0	100	100
0000103	L1 - BBBB		1	104/30/2008	100	200	0	0	200	200
0000104	L1 - CCCC		1	104/30/2008	100	0	100	0	0	0
0000106	L1 - EEEE		1	104/30/2008	100	0	100	0	0	0

## The 2<sup>nd</sup> MRP Report

You can see for the top level router L0 – AAAA, that the system says that the work order 233 says that there will be 100 on hand at the completion of the work order. The next line shows that sales order 116 will pull those parts out of inventory. This top level router does not need any more work done because we have no quantity needed. All the subcomponents for the original sales order demand are removed from the MRP report. These are removed because by us fulfilling the top level work order there is no demand for the components. This is why you do not see a “Jobno” associated with the lower level components. The demand for the lower level components now come from work order 233 which was created to fulfill Jobno 116 demand for 100 pieces. So we satisfied the demand for the top level and now we have demand for the lower levels because we are doing pull’s of the lower levels. Part L1-BBBB is showing fabrication of 200 and demand for 100 because the workorder requires 100 pieces but we are fabricating 200. This leaves us with 100 pieces in hand and once this work order is closed and therefore no quantity needed.

Start Date is subtracting projected days.

Needed Date is subtracting expected release days.

<b>Part # : L0 - AAAA</b>		<b>Router #0000102</b>	<b>On Hand</b>	<b>0</b>	<b>Allocated</b>	<b>100</b>	<b>W.I.P.</b>	<b>150</b>	<b>Reorder Pt.</b>	<b>0</b>	<b>EOQ :</b>	<b>0</b>			
<u>Part No.</u>	<u>Job No. / Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	Net On Hand	Qty Needed
	00000116 1	05/01/2008	00000233	05/01/2008	100	0	100	0	05/01/2008	05/01/2008	100	//	//	100	0
														0	0
<b>Part # : L1 - BBBB</b>		<b>Router #0000103</b>	<b>On Hand</b>	<b>0</b>	<b>Allocated</b>	<b>0</b>	<b>W.I.P.</b>	<b>200</b>	<b>Reorder Pt.</b>	<b>0</b>	<b>EOQ :</b>	<b>0</b>			
<u>Part No.</u>	<u>Job No. / Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	Net On Hand	Qty Needed
			00000233	05/01/2008	200	0	100	0	04/30/2008	04/30/2008				100	0
<b>Part # : L1 - CCCC</b>		<b>Router #0000104</b>	<b>On Hand</b>	<b>0</b>	<b>Allocated</b>	<b>0</b>	<b>W.I.P.</b>	<b>0</b>	<b>Reorder Pt.</b>	<b>0</b>	<b>EOQ :</b>	<b>0</b>			
<u>Part No.</u>	<u>Job No. / Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	Net On Hand	Qty Needed
			00000233	05/01/2008	0	100	100	0	04/30/2008	04/30/2008				-100	100
<b>Part # : L1 - EEEE</b>		<b>Router #0000106</b>	<b>On Hand</b>	<b>0</b>	<b>Allocated</b>	<b>0</b>	<b>W.I.P.</b>	<b>0</b>	<b>Reorder Pt.</b>	<b>0</b>	<b>EOQ :</b>	<b>0</b>			
<u>Part No.</u>	<u>Job No. / Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	Net On Hand	Qty Needed
			00000233	05/01/2008	0	100	100	0	04/30/2008	04/30/2008				-100	100

## The 2<sup>nd</sup> Work Order

Looking at the MRP report we could filter by just those parts that are required. This would show two parts L1 –CCCC and L1 – EEEE. We are going to create a work order for L1 – EEEE for 110 pieces. After creating and releasing this work order you will see the updated MRP requirements report as shown below. If you look at part L1 – EEEE below you will see that work order 234 produced 110 parts and put 110 on inventory resulting in a net on hand of 110. Next, work order 233 required 100 of these pieces so the system changed the net on hand to 10 after 100 pieces were pulled from inventory.

Start Date is subtracting projected days.  
 Needed Date is subtracting expected release days.

<b>Part # : L0 - AAAA</b>		<b>Router #0000102</b>	<b>On Hand</b>	0	<b>Allocated</b>	100	<b>W.I.P.</b>	150	<b>Reorder Pt.</b>	0	<b>EOQ :</b>	0			
<u>Part No.</u>	<u>Job No./Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	<u>Net On Hand</u>	<u>Qty Needed</u>
			00000233	05/01/2008	100	0	100	0	05/01/2008	05/01/2008				100	0
	00000116 1	05/01/2008									100	//	//	0	0
<b>Part # : L1 - BBBB</b>		<b>Router #0000103</b>	<b>On Hand</b>	0	<b>Allocated</b>	0	<b>W.I.P.</b>	400	<b>Reorder Pt.</b>	0	<b>EOQ :</b>	0			
<u>Part No.</u>	<u>Job No./Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	<u>Net On Hand</u>	<u>Qty Needed</u>
			00000233	05/01/2008	200	0	100	0	04/30/2008	04/30/2008				100	0 Sub-D
<b>Part # : L1 - CCCC</b>		<b>Router #0000104</b>	<b>On Hand</b>	0	<b>Allocated</b>	0	<b>W.I.P.</b>	0	<b>Reorder Pt.</b>	0	<b>EOQ :</b>	0			
<u>Part No.</u>	<u>Job No./Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	<u>Net On Hand</u>	<u>Qty Needed</u>
			00000233	05/01/2008	0	100	100	0	04/30/2008	04/30/2008				-100	100
<b>Part # : L1 - EEEE</b>		<b>Router #0000106</b>	<b>On Hand</b>	0	<b>Allocated</b>	0	<b>W.I.P.</b>	110	<b>Reorder Pt.</b>	0	<b>EOQ :</b>	0			
<u>Part No.</u>	<u>Job No./Lot</u>	<u>Due Date</u>	<u>W.O.</u>	<u>W.O. Due</u>	Fab	Pull	Demand	Shipped	Part Start Date	Part Due Date	<u>Qty Due</u>	<u>Start Date</u>	<u>Completion</u>	<u>Net On Hand</u>	<u>Qty Needed</u>
			00000234	03/14/2008	110	0	110	0	03/14/2008	03/14/2008				110	0
			00000233	05/01/2008	0	100	100	0	04/30/2008	04/30/2008				10	0 Sub-D



## *Date Calculations*

The MRP Report has a few dates fields which are calculated during the running of the MRP report.

### PART START DATE

The part start date is calculated two different ways. The reason we add one to the subassembly component part start date is this makes the day 1 prior to the start of the parent.

Is the row representing a sales order (jobno is not blank)

If this is a zero level the part start date = due date – product days

If this is a subassembly component the part start date = the parent part due date – product days + 1

Is the row representing a work order (work order is not blank)

If this is a zero level the part start date = due date – expected release days

If this is a subassembly component the part start date = the parent part due date – expected release days + 1

### PART DUE DATE AND REQUIRED DATE

The part due date is calculated two different ways

Is the row representing a sales order (jobno is not blank)

If this is a zero level the part due date = due date

If this is a subassembly component the part due date = the parent part due date – product days + 1

Is the row representing a work order (work order is not blank)

If this is a zero level the part due date = due date – expected release days

If this is a subassembly component the part due date = the parent part due date – expected release days + 1

## *Quantity Needed and Running Inventory*

The quantity needed and running quantity are two keys to using the MRP report. When the quantity needed is less than zero the system is telling you that all requirements are fulfilled at that point by either enough parts in inventory or current WIP inventory will fulfill the demand. The calculation is shown below

Running Inventory is set initially to quantity on hand.

If Quantity Fab > 0 and Quantity Required is > 0 and this is a Subcomponent

$$\text{Running Inventory} = \text{Running Inventory} + (\text{Quantity Fab} - \text{Quantity Required})$$

If Quantity Fab > 0 and Quantity Required > 0

$$\text{Running Inventory} = \text{Running Inventory} - (\text{Quantity Fab} + \text{Quantity Pull})$$

Else

$$\text{Running Inventory} = \text{Running Inventory} - \text{Quantity Pull} - \text{Quantity Issued} - \text{Balance Due}$$

Quantity Needed turns out to be the absolute value of the running inventory