

SOP RUNNING MRP FOR
MANUFACTURERS AND PURCHASE
PLANNING

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SOP RUNNING MRP FOR MANUFACTURERS AND PURCHASE PLANNING

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AIM

To set up and run the Material Requirements Planning and Purchase Planning programs.

WORKING ASSUMPTIONS

- Inventory is properly defined and maintained.
- Issue types are properly defined and assigned to the appropriate parts.
- Sales and forecast orders have been defined for participation in MRP, where appropriate.

PROCEDURE

STAGE ONE: SETUPS

1. Make sure that the system manager has defined MRP for Manufacturers as the system's default planning method (i.e., the value of the ProdPlan constant in the Planning Constants form should be 0).
2. Make sure that any warehouses whose inventory should not be taken into account during MRP calculations (e.g., Rejects Warehouse) are assigned a W in the Type column of the Warehouses form.
3. Make sure that any inventory statuses signifying inventory that should be taken into account by MRP are flagged in the Available Inventory column in the Inventory Statuses form.
4. Make sure that all parts relevant to MRP planning are flagged in the Inv. Control column of the Part Catalogue form.
5. Make sure each manufactured part is assigned a routing defined with factory production operations (in the Routing column of the Parts form), and not a routing such as "Assemb" or "Issue". For TOP parts, leave the default "Assembly" routing.
6. Enter the Assign WO/Lot Templates to Parts form.
7. If you want MRP to automatically open work orders for a given part, flag the Open Automatically column.
8. In the Wk/Ord Lot Template column, link a work order template to the part so that work orders will be automatically opened with the proper number.
9. Enter the Purchase/MRP Parameters for Parts form to define part parameters.
 - a. In the General tab, assign a Replenishment Type to each part (both buy parts and make parts):
 - R: Parts whose required quantities are planned according to open sales orders and work orders
 - B: Parts whose required quantities are constant at defined intervals (for such parts, also define Production Quantity and Production Days; see below).
 - b. In the Preferred Vendor column, specify the vendor from which the part is usually purchased.
 - c. Fill in the following parameters:
 - Safety Stock (Planning Quantities tab) - The minimum quantity of the part that must be available in inventory at any given time. The system takes this value into account when opening work orders/purchase orders for the part.

- Min for Order/W.Ord (Planning Quantities tab) - The minimum quantity that must be included in every work order or purchase order opened for the part. If this quantity exceeds demand for the part, an order will be opened for the minimum quantity.
- Increment for Ord/WO (Planning Quantities tab) - The increment (beyond the minimum quantity) by which work orders/purchase orders can be opened for the part. If the required quantity of parts is not a multiple of the increment value, it will be "rounded" up to the nearest increment. For example, if the increment is 100 units and the demand is for 105 units, an order will be opened for 200 units.
- Max for Work Order (Planning Quantities tab) - The maximum quantity that can be included in a single work order for the part. If demand exceeds this quantity, additional work orders will be opened until the demand is met. For example, if the maximum is 100 units and the demand is for 105 units, two work orders will be opened: one for 100 units and another for 5 units.
- Qty to NotOpen WkOrd (MRP Definitions tab) - The minimum quantity for which a work order will be opened. If the demand for processed parts is less than this quantity, the demand will be ignored, and no work order will be opened.
- Purchase Lead Time (Planning Time tab) - The average number of days that pass before purchased parts are shipped. You can also define the average number of Shipping Days and Testing Days.
- Demand Range (Planning Quantities tab) - The number of days for which part demand is unified into one work order/purchase requisition. For example, if the demand range is 30 days, and a lack is anticipated on day X and again 15 days later, a single purchase requisition is opened for the earlier of the two dates for the combined quantity of parts.

10. Define production timing parameters. Such parameters can be defined at three different levels:

a. Per part: In the Purchase/MRP Parameters for Parts form, click the MRP Definitions tab and define the following values:

- Production Quantity and Production Days for each processed part - If the part's production rate is defined for the entire production process, independently of the individual operations in the part's routing, record the number of production days and the quantity produced during that period.

Note: If you define the production rate manually in these columns, you cannot run MRP to open work orders according to an optimized work plan or calculate projected workloads. By default, the production time defined for a part is continuously updated by operation timing parameters (after the operation data has been recorded in a part routing).

- If production is managed in batches, flag the Time per Batch column. This indicates that the production rate recorded in the Production Quantity and Production Days columns refers to an entire batch; that is, the amount of time required to produce an entire batch of parts is equal to the amount of time required to produce a lesser quantity. For example, if it takes 10 days to produce 10 parts and a work order is opened for 2 parts, the required production time is 10 days and not 2 days.

b. Per operation: When you define production timing parameters at this level, any new part routing that includes the operation in question automatically inherits the

defined values, regardless of the part being produced. Then, if necessary, you can revise the operation parameters for that specific routing. To define production timing parameters for the operation itself, enter the Operations form and define the following values:

- MRP-Production Qty and MRP-Production Time - The operation's duration (in minutes) and the quantity of parts on which the operation is performed during that period. For example, if you record a production quantity of 100 units and production time of 100 minutes, the production time required to perform this operation on 120 units is 120 minutes.
 - MRP %Overlap w/Child - The percentage of the operation's production time during which the current operation may be performed in parallel with the preceding one. The working assumption is that most operations are performed serially (you cannot begin any operation until the previous one in the routing is completed). If it is possible to begin an operation when the previous one is still only partially completed, this value represents the time remaining to complete the previous operation at which point the current operation may begin.
- c. Per part routing: To define production timing parameters for the operation in a specific part routing, enter the Routings form, retrieve the desired routing and enter the Operations in Routing sub-level form. Define the same values listed in step 10 b above.

RESULT

The data infrastructure required to run the Material Requirements Planning and Purchase Planning programs is in place.

STAGE TWO: FLAGGING ORDER ITEMS FOR MRP

MRP takes into account parts with a defined safety stock, as well as designated sales and forecast orders. To prepare orders for consideration by MRP:

1. To automatically flag order items for participation in MRP, run the Retrieve Sales Orders - MRP program. In the program's input, you can choose to automatically flag all relevant order items by due date or choose the Selected Orders option to manually select the items to be flagged. In the latter case, a form will open in which to retrieve orders for inclusion in MRP. You can retrieve orders by a variety of different parameters (e.g., status, customer, date).
2. When the program is completed, enter the Release Orders for Planning form and make sure that the lines defined for participation in MRP meet your needs. You can remove the "Y" from any lines (in the MRP column) and add a "Y" to lines that are not so defined.

STAGE THREE: RUNNING MRP FOR MANUFACTURERS

- Run the Material Requirements Planning program. This program receives a number of parameters as input, such as:
 - Type of Planning - Choose whether to run a Simulation or run the program in Real mode. In Real mode, the program opens actual work orders with the initial status (e.g., Draft).

- Combine into Wk Ords - Choose whether to aggregate required quantities into work orders By Demand Range (i.e., within the period defined for the part in the Purchase/MRP Parameters for Parts form) or On Monthly Basis (i.e., the program will create one work order per month).
- Create Issues - Choose the strategy used to create the issues plan: Each WO Separately; By Month per Parent; or Monthly.
- Run for - Choose whether to run MRP for all (flagged) sales order items (All Orders) or New Orders Only.
- Consider Work Ords - Choose whether MRP takes released open work orders into account when calculating part demand.
- Revise Forecast Ords - Choose whether MRP will reduce demand resulting from forecast orders in keeping with existing inventory.
- Consider Packed Inv - Choose whether MRP will take into account inventory that has already been packaged for a specific customer when calculating part demand.
- Work Plan - Choose whether MRP will create a detailed work plan for the opened work orders.
- Consider Flr Stock - Choose whether MRP takes existing floor inventory into account when calculating part demand.
- To Date - Specify the end date of the planning period. This cannot be any earlier than the date of the last flagged order.

RESULTS

- Work orders have been opened for processed parts.
- The Analysis of MRP Results (ATP) report is available.
- An issues plan has been created for raw material demands.

STAGE FOUR: ANALYZING MRP RESULTS

- Run the Analysis of MRP Results (ATP) report to view the work orders opened by MRP.
- Enter the MRP Analysis - Processed Parts form (sub-level of the Purchase/MRP Parameters for Part form) to view MRP results for processed parts.
- Enter the MRP Analysis - Raw Materials form (sub-level of the Purchase/MRP Parameters for Part form) to view MRP results for raw materials Note: You can also enter the Use of Open Work Orders-Details sub-level of that form to view open work orders for turnkey parts, as well as the parallel Use of Alternate Stock-Details sub-level form, to view inventory of alternate parts that was taken into account.
- If you chose to create a Work Plan when running MRP, you can:
 - view this work plan by running the Work Plan report or the MRP Gantt Chart;
 - run period load reports.

STAGE FIVE: RELEASING WORK ORDERS

1. Enter the Work Orders form and retrieve the work orders opened by MRP. Tip: Retrieve those with a check mark in the Opened Auto column and the MRP run date in the Date Opened column.
2. Flag the Release column in each work order.

RESULT

The work orders generated by MRP are now released for production.

STAGE SIX: RUNNING PURCHASE PLANNING

The Purchase Planning program uses the issues plan prepared by MRP, as well as additional data defined in the Purchase/MRP Parameters for Part form (see Stage I above).

1. Run the Purchase Planning program.
2. The date of the last run of MRP is displayed. To guarantee the most up-to-date results, this should be today's date. Click OK to proceed.
3. In the input screen that opens, choose the Create Purch. Demand option. In the To Date column, specify the end date of the planning period.

RESULTS

- Purchase requisitions have been opened for type R parts. Continue to the next stage to view and handle these purchase requisitions.
- For type P parts whose production routing includes operations performed by a subcontractor, purchase requisitions have been opened and linked to a work order.

STAGE SEVEN: ANALYZING PURCHASE PLANNING RESULTS

- To view the purchase requisitions opened by the Purchase Planning program:
 - Enter the Purchase Demands form and retrieve the new purchase demand document that was opened. Tip: Retrieve by today's Date.
 - Enter the Itemized Purchase Requisitions sub-level form to view recommended items, quantities and demand dates. Tip: To open purchase orders from these purchase requisitions, see the relevant SOP.
- To view the system's recommendations for handling existing purchase orders, run the Purchase Recommendations report.
- To view projected balances of purchased parts:
 - Enter the relevant projected balances form (sub-level of the Part Catalogue, Purchase Demands and Purchase/MRP Parameters for Part forms).
 - Run projected balances reports.