

# New Purchasing Module

## Overview

This is a complete overhaul of the current suggested order logic in an attempt to provide the user with more of a table driven utility while at the same time making the underlying logic that determines the order quantities more transparent. In addition, the demand cleansing or smoothing will become more granular by the use of weekly versus monthly demand.

The fundamental changes include the adoption of a weekly sales bucket (Current plus the last 104 weeks), an ABC ranking based on Annual Sales \$'s or Units and the introduction of an automatic reorder point based on a dynamic lead time (Last x receiving's) and a parameterized safety stock factor by sales rank.

There is a corporate version of the ABC ranking table as well as one for each branch, carrying different values that will support inter branch versus corporate replenishment.

The vendor profile is also expanded to support the rules for pre-paid freight shipment. This will be used to determine when a corporate suggested order could have one or more PO's produced because one or more branches meet the free shipment criteria. This requires user confirmation that split PO's are desired on any given SO.

The PO receiving process is also enhanced to allow a recalculation of the branch split if the order was a corporate PO. In addition, a prorated calculation is performed for partial shipments, with an option to receive any partial shipment into the DC only.

## Basic functionality

1. ABC ranking: A new weekly process will calculate the annual sales in \$'s at cost or Unit's, based on which method is being used, for each part number. This value will be compared to a table that carries up to twenty ranges, 100 - 1000, 1001 - 5000, etc. Each range will be associated with an ABC ranking which in turn will carry the number of required inventory turns as well as the safety stock %. The number of weeks used in the sales ranking is determined by the user, 1 - 104.
2. Re-order Point: Will replace or become the current Minimum Qty field on the item master. There is also be a new field that controls whether or not the re-order point is recalculated weekly or is locked for the number of weeks entered manually into this field. If the Re-

order point is to be permanently locked a value of 99 is used in the Auto Lock field. The weekly process will decrement this field by one until it reaches zero. Zero will be considered as indicating the item is on automatic re-order point calculation. NOTE: the manual change of the Auto Lock forces entry into the Re-order point field to enter the quantity manually. New product will default to a standard parameter for the Auto Lock weeks and a Re-order point will need to be entered manually.

3. Re-order Point calculation: This will be done on a weekly boundary based on the items lead time (Average of last xx number of receiving's) and the safety stock associated with the items ABC ranking. The lead time in days would be multiplied by the daily use rate and the result of this multiplied again by the safety stock. EXAMPLE: Item A123 is classified as a "C" ranking (25% safety stock), has a lead time of 20 days and a daily use rate of 2 units. The re-order point qty therefore would be (40 times 1.25 or 50 units).
4. Re-Order Quantity: This new value for the Vendor and DC replenishment is calculated based on the Sales Ranking of the product and the required Turns setup in the sales ranking table. The annual sales are divided by the required number of turns to determine the Re-order Quantity.
5. Rounding: Parameters are available to control the rounding characteristics of both the Re-order Point and the Re-order Quantity, round up, round at 0.5 or round down.
6. Suggested Order Calculation: Would be calculated as the total annual units sold divided by the number of required turns for the items ABC ranking plus the difference between On-hand and the Re-order point qty. EXAMPLE: Item A123 from above has 35 units On-hand, sells 1200 units a year and is classified as a C ranking, which calls for 4 turns. This would result in the suggested order qty being calculated as 1200 (annual unit sales) divided by 4 (required turns for "C" ranking) plus 15 (Re-order qty - On-hand) or 315 units.

## Inventory Enhancements

- An Auto Lock field to stop calculation of the Reorder Point for xx number of weeks. The new weekly routine will decrement this field until zero, at which point the part number will qualify to have a reorder point calculated. The decrement process is run before the reorder point calculation so as to catch items coming off a locked condition. A manual entry of 99 in the lock field means to not attempt a decrement and not to recalculate the reorder point. This is the equivalent of a manually set Min qty.
- When adding new product the Auto Lock field is set to a parameterized value and the Re-order point needs to be set to ensure the product is ordered.
- A field to carry the branch ABC part ranking based on the branch only sales.
- A field to carry the corporate ABC ranking based on corporate sales for the part.
- Two fields that will contain trends for both branch and corporate. (For Future Use)
- A field to carry the Reorder Qty both Vendor and DC replenishment to be used when On-hand is  $\leq$  Re-order point.

# Supplier Enhancements

- Hold a Buyers Initials to be used as a filter when listing the new overnight suggested orders/transfers. There will be two fields, one for SO's and a second for ST's in case different people are responsible for branch replenishment. The Buyer can also be assigned to a specific category.
- A field that Determines the frequency with which this vendor will be purchased from, expressed in terms of Daily, Weekly, Monthly
- A field tied to the frequency that allows the Day of the week or month to be stipulated.
- A field to indicate the number of receiving's to be used in the lead time calculation.

## Weekly Demand

A new WEEKSALES data has been created to include the RAW sales total as well as the smoothed or normalized total. This will then allow the potential for a refresh if the smoothing parameters are changed. The daily average sales for the week is also stored to avoid having to calculate this number on the fly. The need to perform a weighted average in regards the daily sales qty will no longer be required as all xx weeks (Number of weeks to be considered in calculations) will be added and then averaged. The demand smoothing and calculation of average daily sales is done on a weekly boundary.

## Sales Ranking

The sales ranking is recalculated on a weekly basis after the demand smoothing is completed along with the Vendor and DC replenishment Re-order quantities.

## Lead Time and Safety Stock

- The lead time is calculated based on the number of receiving's specified on the Supplier for the product.
- The Re-order point is calculated using the average daily sales \* lead time + safety stock from the sales ranking parameters.

## Branch replenishment

The current replenishment logic has been changed to look at the branch ABC ranking table to determine what the correct stocking levels for a branch would be. For a DC replenishment the re-order point (lead time and safety stock) would be driven from a parameterized setting by branch. For a vendor purchase the corporate lead time and safety stock

would be used. In both cases the Suggested Order Qty would be based on the branch ABC ranking of the item and whatever turns and safety stock are contained in the sales ranking table.

## Seasonal Profiling (In Development)

Revisions are being made to the Seasonal profiling to support User Defined seasons.

This will include up to 4 seasons indicating the start and end month for each season and the % of annual sales required in the season to mark the part as a seasonal item.

The calculation of Re-order Point and Re-order Quantity will use the movement from the previous season when buying in season and the movement from the previous off-season when buying out of season.

The intent is to use the lead time of the product to determine if the purchase is going into or out of season.

The seasonal flag will be visible on the suggested order detail.

## Suggested Order

The SO routine has been modified to remove the need for user input, taking instead a series of default arguments in how the program will function. This will allow for easier management and more consistency in what the buyers use as criteria. In addition, the system will maintain a perpetual pending order status by creating a SO for every vendor every night, adding or changing the status of an item based upon the previous day's activity.

The buyers will now be offered a Buyers Focus screen with a number of filters that will control the view, and therefore the amount of data they will have to look at. This includes those vendors where there is a schedule, daily, weekly, monthly. In addition, the concept of a buyer being assigned a vendor will be introduced that will further filter the current data overload as well as support monitoring of a buyers habits and/or performance.

- A new nightly background process that will look at each part and determine which product is at or below the reorder point. The various arguments for the routine to be drawn from a default parameter file. This will create a Supplier suggested order for products where the DC available quantity is  $\leq$  the Vendor Re-Order Point. The suggested order will be named bbbb-vvvvvv where bbbb is the Buyer ID and vvvvvv is the Supplier number
- Where a branch is below its reorder point, but the DC is not, the system will create a ST (Suggested Transfer) instead. These suggested transfers will be named bbbb-BRnn where bbbb is the buyer ID and nn is the Branch number. The rules for branch replenishment from the DC location are as follows:
  - A new parameter is available to determine how the program is to react when the DC available quantity reaches the Re-order point, B=allow reduction below both safety stock and lead time qty, S=below safety stock but not below lead time qty, N=not below either safety stock or lead time qty.

- The suggested buy quantity will be the calculated Re-Order Quantity based on the required turns plus the available quantity – Re-Order Point.
- Revised SO maintenance routine to:
  - Filter by the buyer ID, input on entering the program, and list both SO's and ST's. The ST file would have the branch number as its name and the SO would include the Vendor number in the name both preceded by the Buyer ID.
  - A second filter, entered immediately after the buyer ID, that would provide the ability for the user to determine the content of the screen display list:
    - (S) SO's only meeting pre-paid limits
    - (T) ST's only meeting \$ thresholds
    - (B) Both SO's and ST's meeting \$ thresholds
    - (E) SO's containing an emergency condition (Stock outs) but not reaching the pre-paid limit
    - (D) Scheduled SO's based on Supplier settings
    - (A) All vendors with SO content
  - The summary listing to display, for a SO, the order total and the prepaid order value from the vendor record and for the branch transfer the minimum \$ value set for transfers, if any.
  - Suggested order item detail is available by clicking on the buy quantity. This will display a web page containing the following details per branch:
    - Category
    - Part Number
    - Description
    - Part Remarks
    - Order Quantity
    - Supplier Remarks
    - Sales Rank
    - Required Turns
    - Cost
    - On Hand
    - On Order
    - Committed
    - Auto Lock
    - Re-order Point
    - Re-order Quantity (EOQ)
    - Buy Quantity
    - Weeks Use
    - Daily Use Rate
    - 12 Month Demand
  - New fields to track the original SO Qty versus the Order Qty. These are used to prevent over writing work done and perhaps not complete before the next nightly run.
  - A flag to indicate if the SO has been changed and thereby avoiding looking at each line item. Suggested Orders that have not been modified will be replaced each night.

If a suggested order has been modified only parts that have not been looked at will be amended during the nightly run.

- Upon PO or ST creation the SO and/or ST file to be moved off to a new file name referenced by either PO or ST number. This will support later analysis of a buyer's habits / performance such as the % of items where SO Qty is overridden, number of lines processed, etc.

## Receiving Enhancements

Calculation of the Xdocking requirements for the branches are made upon the receipt of the product at the DC. Stock Transfers can be automatically created when the PO is updated for Xdock product.

The receipt of product either by the use of bar code scanning or entry against the purchase order data itself.

## Reporting

- An extract of all inventory items is available on a daily basis with all of the same information that is included on the Item Detail HTML.
- Ranking Parameters example by \$'s:
- Ranking Parameters example based on Unit's

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Revision #1

Created 9 January 2019 12:18:02 by Jim

Updated 15 September 2021 23:56:01 by Jim