Inventory Requirements Calculations (EOQ)

On the Edit Item>Ordering tab Reorder by can be set to Min/Max or EOQ. Though Min/Max is the recommended and favored choice by virtually all companies on Titan, an individual item can be set to EOQ instead. “EOQ” is a somewhat simplified application of the “order point/line point” method of inventory management. (Despite the label, this method can be used without an EOQ calculation.) This method is not generally recommended for small companies because of the management time required to monitor it and make corrections and adjustments. Any of a variety of the parameters used to calculate suggested order quantities could be incorrect and suggest inappropriate and costly order quantities. It is strongly recommended that a user planning to use this method for an item consult BCR support first.

# Determine Lead Time

Lead time for a product is maintained by item average and by vendor when the product is sometimes ordered from more than one vendor. It is automatically adjusted each time product receiving is posted. The lead time can be manually overridden. If the Auto Update Leadtimes option (System Defaults>IP>EOQ) is checked then manually entered lead times will be overwritten when a new lead time is calculated for an item.

Lead Time = Item’s lead time

If Vendor has a lead time for this item then

Lead Time = Vendor’s lead time for item

# Determine Review Days

This is the historical average number of days between orders from a vendor. The Review Days can be manually overridden.

If Vendor review days = 0 and Vendor’s minimum order cost > $0, Review Days = total Vendor purchases for year and divide by the Vendor’s minimum order cost. Otherwise default Review days = 7.

# Determine Safety Stock Days

If Lead Time <= 15 days then add 7 days to lead time.

If Lead Time > 15 days then Lead Time = (Lead Time / 2) + 15 days

# Determine Average Demand

If sold 25 times or more in last 3 months, use last 3 months.

If sold more than 25 times in past year, use the months required to represent 25 hits.

If sold <= 25 times in past year, use 12 months.

Units sold during demand period / Number of months used = Average Monthly Demand

# Determine Service Factor

The service factor is calculated from Service Level setting (default is 50%) using reverse cumulative normal distribution. This is an asymptotic function that results in a large factor value as the service level approaches 100%. A 50% Service level results in a Service Factor of 1.0, 80% yields 1.852, 90% yields 2.282, 99% yields 3.298, and 20% yields 0.158. This factor is used in the next step to adjust the Safety Stock Days which in turn affects the Order Point calculation.

Safety Stock Days are adjusted again by the Service Factor if sales quantity average 1 or more per month.

# Adjust Review Days

If Review Days > Safety Stock Days + Lead Time then Review Days = Review Days – (Safety Stock Days + Lead Time).

If Review Days <= Safety Stock Days + Lead Time then Review Days = 0.

# Calculate Line Point

Line Point is the “order up to” stocking level that will result in an order being placed and stock received prior to stock reaching the minimum acceptable level (safety stock) plus the amount required to satisfy demand during the Vendor’s Review Days cycle.

Average Daily Usage \* (Lead Time + Safety Stock Days + Review Days) [rounded up]

# CALCULATE ECONOMIC ORDER QUANTITY (EOQ)

The Cost Per PO Line is the cost of processing a PO and receiving stock (default is $2.) Carrying Cost is the percent of the cost of the item that is costs to warehouse the item for one year (default is .25.) The EOQ calculation is zero and not used if the Purchase Order Cost Per Line and Carrying Cost % (System Defaults>IP>EOQ) are set to .00. Many inventory management experts do not recommend the use of EOQ because the parameters are to broad to accurately manage individual items.

EOQ = $Sqrt(\frac{24\*Average Monthly Usage\*System Cost Per PO Line}{System Carrying Cost\*Cost Per Unit})$ [rounded up]

# Calculate Order Point

The Order Point is the minimum stocking level that will result in an order being placed and stock received prior to stock reaching the minimum acceptable level (safety stock.)

Order Point = (Lead Time + Safety Stock Days) \* Average Daily Usage [rounded up]

# Calculate order Quantity

If Available Stock < Line Point then Order Quantity = Line Point – Available Stock.

If that result is < EOQ the Order Quantity is set to the EOQ quantity. If EOQ is zero (see Calculate EOQ above) it is not used.