



EPDS and FDS - Purchasing Advice – Theory of Operation

Overview

EPDS/FDS incorporates a technique to assist in making better replenishment purchasing decisions for your stock items. Based upon the principles discussed in Gordon Graham's book "Distribution Inventory Management", EPDS/FDS can help you to increase customer service while reducing your inventory levels.

Determine Average Monthly Usage

The first step in determining what to buy is to look at past sales and usage trends. For most companies, determining average monthly usage for most stock items is simple. Just look at historical sales and usage information and calculate the average monthly usage. This is useful information when trying to predict future sales and usage requirements.

However, when sales activity is unusual, average monthly usage should be "adjusted" so that it will be meaningful in determining future sales and usage. EPDS/FDS provides various tools to assist you in identifying items that have unusual activity in a particular period and a method for adjusting the monthly usage that is used in the calculation of average monthly usage.

The following are the functions and features provided by EPDS/FDS to assist you in determining meaningful average monthly usage.

Record Actual Monthly Usage

At the end of each month, EPDS/FDS will automatically calculate an item's total sales and usage for the month. This is performed on a warehouse by warehouse basis.

Compute Actual Average Monthly Usage

The system will calculate the item's average monthly usage over the last six months. (This is a simple average, not a weighted average. The number of months used in the average can be set in the System Control File.)

Stock Out Report

The Stock Out Report may be printed to show which items may have been stocked out during the period. For each item that was stocked out during the period, the system will indicate how many days during the period that the item was stocked out. This information can then be used to adjust the monthly usage for the period.

For example, assume that an item has an average monthly usage of 50 pieces per month. Also, in a month of 30 days, assume that the item was stocked out for 15 days. Therefore,

for half the time of the month, the item was not available to ship because it was stocked out. You have the option of reviewing the item's actual sales and usage for the month and adjusting upward the sales and usage amount to account for the fact that you couldn't ship the item because it was unavailable..

Unusual Inventory Activity Report

The Unusual Inventory Activity Report may be printed to show: 1) items with unusually large one time sales activity, 2) items purchased predominately by one customer, and 3) items with very low sales activity. Each of these conditions may result in situations where the computed monthly usage may need to be adjusted for the purposes of predicting future sales and usage activity.

Item Usage Maintenance

This screen allows you adjust the various data elements that control how the system calculates average monthly usage and determines how the system computes the quantity to buy and when to buy.

On the main tab (Warehouses Tab), for each warehouse you can maintain the following:

- Stock Flag: This flag determines if an item is a stock item. This process for inventory control and purchasing only applies to stock items. Items that are not stock items will not appear on the Stock Out Report, Unusual Inventory Activity Report, or the Frozen Inventory Report. Also, the system will not compute monthly usage for non-stock items.
- Freeze Code: This code determines if the average monthly usage for an item is Frozen, either Permanently or Temporarily. The user may set the average usage manually and freeze it so that the system will not re-compute the average usage and overwrite the frozen value. The usage may be frozen indefinitely until it is changed or unfrozen, or may be frozen temporarily for a period of time until it is automatically unfrozen.
- Freeze Until: This date only applies when an item is Temporarily Frozen. This date is the date when usage is unfrozen and will be recalculated by the system. Often times, the usage for a new item will be set manually and temporarily frozen for a number of months until some history is developed for the item.
- Average Usage: Each month, for stock, non-frozen items, the system will recalculate this amount. Also, the user may manually override the system and enter an adjusted amount which may or may not be frozen.
- Class: Each stocked item is placed into a class automatically may the system. Class is similar to class using ABC analysis, where "A" items are the most active, high value items and "C" items are the least activity, low value items. In EPDS/FDS, the system divides stocked items into 13 classes. Class "1" is equivalent to "A" items, and class "12" is equivalent to "C" items. Class "13" are dead items and should not be considered for purchasing new stock.

- Qty To Buy: This quantity is the quantity to purchase when placing a stock purchase order. This quantity is computed by the system based upon the item's average monthly usage and class.
- Min To Buy: This is the minimum quantity to purchase which is manually set based upon the vendor's purchasing requirements.
- Safety: This is the safety amount used for the purposes of computing an item's Order Point. (It is not the item's safety level or minimum stocking level.). The Order Point is computed as follows:
 - $\text{Order Point} = \text{Average Monthly Usage} \times \text{Lead Time in Months} + \text{Safety}$

On the Detail Tab, for the warehouse selected, the following information is presented:

- Year
- Month
- Actual Usage: This is the raw actual usage for the month and year. Usage includes sales and consumption of an item in production orders. This figure may not be changed by the user.
- Adjusted Usage: This amount is initially set by the user to be equal to the Actual Usage but may be adjusted by the user based upon stock out occurrences and other unusual inventory activity.

Frozen Inventory Report

The Frozen Inventory Report presents the items where the Adjusted Average Monthly Usage is frozen.

Compute How Many To Buy

As an alternative to the calculation of an Economic Order Quantity, the EPDS/FDS uses an item class method to determine how much of a given item to buy.

Based upon an item's Class, Average Monthly Usage, and the Minimum To Buy, the system will determine how many to buy.

The system uses the following procedure to determine the class of each stocking item:

1. Compute the Annual Dollar Value
 - $\text{Average Monthly Usage} \times \text{Unit Cost} \times 12$
2. Sort items in descending order by Annual Dollar Value
3. Remove dead items. A dead item is an item where the Annual Dollar Value is below the Dead Inventory Dollar Cutoff that you specify in the System Control File. Dead items are placed into Class 13.

4. Classify each of the remaining items according to the following table:

	Percent of Stock Items	Class
Top	7.5%	1
Next	7.5%	2
Next	10.0%	3
Next	10.0%	4
Next	8.0%	5
Next	8.0%	6
Next	8.0%	7
Next	8.0%	8
Next	8.0%	9
Next	8.0%	10
Next	8.0%	11
Next	9.0%	12
		13 (dead)

The percentages are of the total number of stock items that are not dead. For example, if there were 5000 stock items that are not dead, then Class 1 would consist of the top 7.5% of the items or the top 375 items.

5. Compute Quantity To Buy = Average Monthly Usage X Class

Decide When To Buy - Purchasing Advice Report

The Purchasing Report may be run periodically to assist in determining which items to purchase. The system will review each stocked item to determine if it is a candidate for replenishment. To accomplish this, the system computes two statistics: Order Point and Line Point.

- Order Point = Average Monthly Usage * Vendor Lead Time + Safety Amount
- Line Point = Order Point + Usage During Review Cycle

Where the Usage During Review Cycle = Average Monthly Usage * Review Cycle in Months

The Review Cycle is the period of time in between stock replenishments. The review cycle is stated in months or fraction of months. Typically, the review cycle may vary by product line or vendor. The review cycle is specified when the purchasing report is run.

Items where the Quantity Available is less than the Line Point will appear on the Purchasing Report and in the Purchase Order Generator. Any items below the Order Point should be purchased. Any items below the Line Point may be considered for purchase. The closer an item is to the Order Point the more consideration it should be given for purchase.