Pulse Dashboard & Reporting Software Definitions

(Updated 5-20)

Please call our PULSE support desk us with questions and comments at (513) 723-8095 or
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Customer Service/ Shipping Module

What types of customer orders need to be managed?

Three sets of customer orders need to be managed to maximize your on-time delivery:
- Orders to be shipped today.
- Orders to be shipped from tomorrow through the end of this month
- Orders that need to be shipped in subsequent months.

PULSE focuses your attention on the orders to be shipped each day to help you achieve a higher on-time delivery percentage as well as higher sales.

What categories of customer orders need to be managed?

- <u>Backorders</u> - When one or more order lines have been partially invoiced, the remaining order line items are given a status of 'backorder'.
- <u>Shortages</u> – When an order line is keyed and the quantity available to ship is less than the quantity ordered, the order line is given as status of 'shortage'.
- <u>On hold</u> – These orders are on customer credit hold.
- <u>Past due</u> – These order lines contain a request date that is equal to or prior to today's date.
- <u>Available to ship</u> – An order is assigned to this category when all lines on the order have the 'quantity available to ship' equal to the 'quantity ordered'.
    - o It is a common (incorrect) practice to manually force the 'quantity to ship' amount to be equal to the 'quantity ordered'. When this occurs, both your Macola® software and PULSE will not be able to determine if the order is really available to ship. The correct method is to allow your Macola® software to automatically populate the 'quantity to ship' field.
- <u>Shipped/Not Posted</u> – This category also includes any unposted invoices.

It is important to note there is <u>no</u> overlap between any of the above categories. They are mutually exclusive.

How is the cut-off date defined?

- The customer order line 'request date' is used as the default cut-off date. PULSE gives you the option of choosing to use the 'promise date' or 'order header ship date'.
- The 'required ship date' field on the order line screen cannot be used as the cut-off date.

Items causing customer service shortages and backorders

The PULSE Customer Service module pinpoints shortages by item in the "Items Causing B/O and Shortages" box. Here the logic is based on TIME PHASING the 'on-hand quantity' in the item/location file, unshipped customer order demand, purchase order replenishments and POP order replenishments. Users can drilldown to see the chronological sequence of all demands and replenishments to see when the item goes short as well as a final on-hand quantity.

Inventory Module

The PULSE Dashboard Reporting software uses your Macola®® inventory transaction history file to calculate inventory usage and inventory turns. Increasing inventory turns is one way of reducing your on-hand inventory and associated carrying costs.

How are inventory dates calculated?

Item Loc	Months O/H	Avg Month Usage	Usage 12 Month	Last IM Activity Dt	Last Usage Dt	Last Purch Dt	Last Mfg Dt	Last Sale Dt	Last Count Dt
CIN	12.0	0.7	8	07/18/08	07/17/08		07/18/08	07/17/08	
CIN	0.0	1.8	21	07/14/08	07/14/08		07/14/08	07/14/08	
CIN	3.0	0.3	4	06/19/08	06/19/08		05/21/08	06/19/08	
CIN	1.7	2.4	29	07/18/08	07/18/08		06/30/08	07/18/08	
CIN	0.0	0.2	2	05/08/08	05/08/08		05/08/08	05/08/08	
CIN	0.4	2.8	33	07/14/08	07/14/08		07/14/08	07/14/08	
CIN	8.8	8.8	11	06/27/08	06/27/08		06/27/08	06/27/08	

Inventory dates in PULSE are recalculated at least once per day, via our nightly Inventory Stored Procedure and are based on a review of individual transactions in your Inventory Transaction file. PULSE uses the transaction date, not the document date.

The following combinations of transactions in your inventory transaction file are used:
- **Date of last purchase receipt**
    - Purchase order receipts

- **Date of last manufacturing**
    - Reported production

- **Date of last usage**
    - Customer sales & returns
    - Production component issues & returns
    - POP Production negative issues
    - Manual inventory issues & receipts

- **Date of last sale**
    - Customer sales and returns

- **Date of last inventory activity**
    - Customer sales & returns
    - Purchase order receipts
    - Production component issues & returns
    - Production reporting
    - POP Production negative issues
    - Manual inventory issues & returns
    - Inventory transfers are NOT included

- **Date of last count**
    - This is obtained from the item/location file.

Note that the Inventory Aging screen is based ONLY on usage, per the above definition. Note that the aging screen may be misleading for brand new parts that have no usage.

What is the definition of 'inventory usage' and 'average monthly usage?

The following combinations of transactions will be used:
- Customer sales & returns
- Production order or shop order component issues & returns
- POP Production negative issues
- Manual inventory issues & receipts

Average monthly usage is calculated for the prior 365 days.

The field called 3-month, 6-month and 12-month usage are real-time as of yesterday.
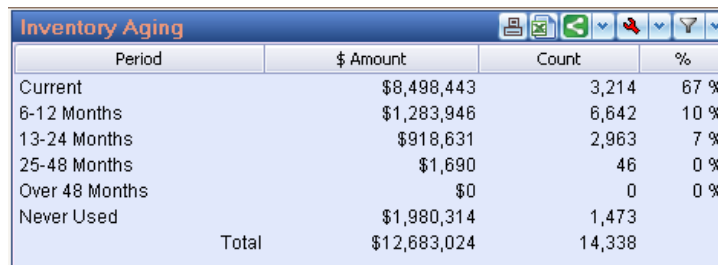
How are inventory adjustment quantities calculated?

The following combinations of transactions will be used:
- Inventory manual quantity adjustments
- Physical / cycle count quantity adjustments

How is inventory aging calculated?

The inventory aging screen is designed to allow you to pinpoint dead inventory items based on the 'date of last usage'. It is not to be confused with having excess inventory.

Inventory Aging			
Period	$ Amount	Count	%
Current	$8,498,443	3,214	67 %
6-12 Months	$1,283,946	6,642	10 %
13-24 Months	$918,631	2,963	7 %
25-48 Months	$1,690	46	0 %
Over 48 Months	$0	0	0 %
Never Used	$1,980,314	1,473	
Total	$12,683,024	14,338	

How is 'months on-hand' calculated?

Months of inventory on-hand is calculated by dividing the on-hand quantity by the average monthly usage for the past 365 days. If an item has an on-hand quantity, but has never been used, we set the value to '9,999'

How are ABC classes calculated?

Per APICS recommendations, the "A" class is defined as items that make up of 80% of your prior year's dollar usage. The "B" class is made up of 15% of dollar usage and the "C" items make up of 5% of dollar usage. The PULSE ABC Generator module allows you to optionally choose other different percentages as well as assigning a fourth class. We recommend that you choose the option to make your ABC classes uniform across all locations (i.e. if the item is an 'A' item at your main location, it should be an 'A' item across all other locations).

## How are inventory turns calculated and graphed?

NOTE: This subject is very complex. Feel free to contact us with any questions or comments.

The IMINVTRX file is the only file used to calculate inventory turns. Each night, a PULSE stored procedure reads this file and creates a summary database containing inventory usage and turns for each of the past 24 months. This allows PULSE to display inventory information instantly.

We are now including the current month in the calculation of turns (even if you are only at the beginning of the month). Previously, we were not including the current month. If you are in the early days of a month (the 2nd of the month, for example) and you have selected 3 trailing months on the graph, it is important to know that the graph will not reflect a full 3 months of data. In the early days of a month, you may want to select 4 months instead. Remember that both static and trailing months now include the current month.

These are new rules for inventory turns calculation in the graph:
1. The user can choose to calculate turns based on Item, Item/Location or Item Location Grouping.
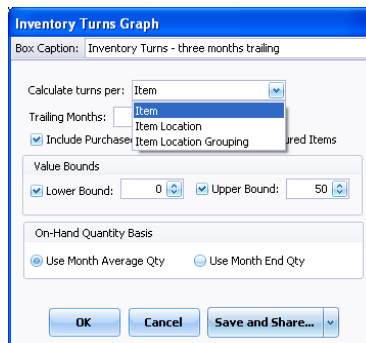
The software will aggregate on-hand and usage quantities per the user selection. For example, if the user chooses to calculate turns per Item, then the usage quantity and on-hand balances for all locations for each item will be added together to generate monthly turn information. Filters will be applied during this step, if present. So, if the user had chosen to calculate turn per item, but decided to exclude location "001", then Pulse will calculate turns for each item adding up quantities all locations except "001".

2. Once the individual turns for a month have been generated the Value Bounds settings will be applied, when necessary. Each time the turns for a particular month fall outside the bounds, it will be nullified and excluded from the next calculation step.

3. After the Value Bounds validation is complete, Pulse will proceed to calculate averages including values for each month that was NOT nullified during step 2. For example, let's say that we calculated turns for three items, and the July turns were 3, 5 and NULL. The resulting turns average for July will be (3 + 5) / 2 because only two values were valid. So, July's turn will be displayed as 4. If, in the same graph in August, the values were 3, 5 and 7 then the calculation for august will be (3 + 5 + 7) / 3 = 5. If a particular month does not have any valid values, then the graph will not display a point for that period (it will not be displayed as 0).

The default settings are: Calculate Turns = Per Item, Lower Bound = 0 & Upper Bound = 100

This is the formula for calculating inventory turns for each item number for each location:

$$\frac{(\text{Usage for month1} + \text{month2} + \text{month3} + \ldots + \text{month12})}{((\text{Average on-hand quantity for month1} + \text{average on-hand qty for month2} + \ldots\ldots\text{average on-hand qty for month12}) / 12)}$$

Note: This formula is most accurate when there are several transactions in each month from which to calculate average on-hand quantities. Also, this is a 12-month moving average. PULSE allows the user to choose the number of trailing months (between 1 and 12).

Note: Only the Transaction Date and Time fields are used. The Document Date field cannot be used since there is no associated time field for it. Transactions are sorted by date and time to reconstruct the usage and end-of-month quantities for each item number. You should always avoid the practice of backdating transactions as your end-of-month on-hand quantities may not be accurate.

When calculating inventory turns, how is on-hand quantity calculated? There are two categories: 'average' on-hand for each month and 'end of month' on-hand.
-   APICS suggests using 'average' on-hand quantity for each month, but some customers may prefer to use 'end of month' on-hand so we offer this as an option.
-   Our stored procedure includes fields for both quantities.
-   For document types of "I": On-hand quantity = 'Old quantity' - 'Quantity'
-   For document types of "R": On-hand quantity = 'Old Quantity' + 'Quantity'

The following transactions are not relevant when calculating inventory turns:

- Records with a quantity of zero
- Allocations
- On order records
- Cost adjustments
- Adjustments
- LIFO/FIFO adjustments

- Purchase order receipts
- Beginning balances
- Bin adjustments
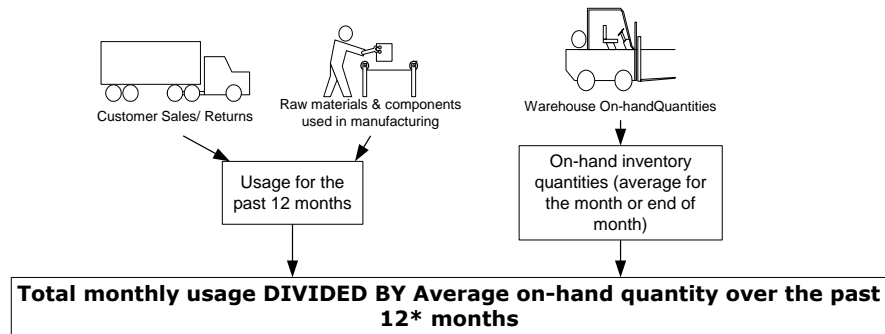- Physical counts
- Production reporting

What is inventory turns, why are they important and how do I measure them?

What are inventory turns and why are they so important?

An item whose inventory turns four times a year has much higher holding cost than one that turns over eight, twelve or fifteen times in the same time period. The purpose of trying to increase inventory turns is to:

- Reduce inventory.
- Increase profits - increasing inventory turns reduces monthly carrying costs. Carrying costs are typically 20-30% of the value of the on-hand inventory and consist of personnel costs, rent, utilities, insurance and other costs of maintaining extra inventory.
- Higher inventory turns allow increased responsiveness to changes in customer requirements while allowing the replacement of obsolete items. However high turns may indicate that the inventory is too low, which can result in stock shortages.

How are inventory turns calculated?

Customer Sales/ Returns

Raw materials & components used in manufacturing

Warehouse On-handQuantities

Usage for the past 12 months

On-hand inventory quantities (average for the month or end of month)

Total monthly usage DIVIDED BY Average on-hand quantity over the past 12* months

Example: Item # 123456

	5/10	4/10	3/10	2/10	1/10	12/09	11/09	10/09	9/09	8/09	7/09	6/09	Total	Avg. on hand	Turns
Usage	166	249	307	158	252	273	264	219	355	172	424	731	3,570		
On-hand	226	111	216	361	422	457	445	345	215	345	13	149	3,305	275	13.0

*Note: Since inventory turnes are so tedious to calculate per item number, most companies will only calculate them on the basis of the prior trailing twelve months. To really determine if your inventory turns are increasing or decreasing, you will need to review them on the basis of the prior trailing three or six months.

What are ABC inventory classes and why are they important?

Assigning ABC codes is a way of categorizing and tracking your inventory based on dollar usage over the prior 12 months:

- "A" items account for 80% of total dollar usage for the past 12 months or 20% of all items.
- "B" items account for 15% of total dollar usage for the past 12 months or 30% of all items.
- "C" items account for the remaining 5% of total dollar usage for the past 12 months.

ABC classes are assigned to allow you to focus the majority of your resources on managing the "A" class items. For example, at one customer wiith over 5,000 inventory items, less than 110 items are in the "A" class.

What data is contained within the PULSE Inventory database?

The following PULSE data is updated at least once per day, usually overnight. This database is available for including in your custom Crystal reports, Excel queries or SQL queries. The names of the two files are: InventoryUsage_Weekly (contains data for the past 52 weeks) and InventoryUsage_Monthly (contains data for the past 26 months).

This data is stored for both months and weeks:	
Field Description	**Field Name**
Item number	item_no
Location code	loc
ABC class	inv_class
Product category	prod_cat
Controlled flag	controlled_fg
Date of last purchase	date_of_last_purchase
Date of last sale	date_of_last_sale
Date of last inventory activity	date_of_last_IMactivity
Date of last usage	date_of_last_usage
Avg. mon. usage for past 365 days	avg_qty_year
Inventory turns - past 356 days	turn_year
Usage qty YTD	usg_qty_YTD
Usage qty for past 365 days	usg_qty_12_month
Months of inventory on -hand	months_on_hand
This data is stored, by month, for the past 25 months (month 00 is the current month)**:**	
Usage $	usg_amt_00 to 24
Usage quantity	usg_qty_00 to 24
Beginning on-hand qty	beg_qty_00 to 24
Beginning on-hand $	beg_amt_00 to 24
Ending on-hand $	end_amt_00 to 24
Average on-hand $	avg_amt_00 to 24
Average on-hand qty	avg_qty_00 to 24
Inventory turns	turn_00 to 24
Purchased quantity	purch_units_00 to 24
Purchased $	purch_amt_00 to 24
Transfer in quantity	transfers_in_units_00 to 24
Transfer in $	transfers_in_amt_00 to 24
Transfer out $	transfers_out_amt_00 to 24
Production $	production_amt_00 to 24
Inventory adjustment qty	qty_adj_00 to 24
This data is stored, by week, for the past 53 weeks (week 00 is the current week)**:**	
Usage amount $	usg_amt_00 to 52
Usage quantity	usg_qty_00 to 52
Sold amount $	sold_amt_00 to 52
Sold quantity	sold_units_00 to 52

Production Module

What is the difference between the 'Items On Customer Orders Causing Shortages" and the "Components Shortages for Production Orders due" screens?

Within the Customer Service/Shipping module, the Shortages screen tells you what customer shipments cannot be shipped on time. That is, the customer requested that you ship their order by a certain date and you will not be able to meet that date because it will not be on-hand. The program is not looking at the components or the item, only the item number scheduled for shipping. It determines if the item will be available based on the current on-hand quantity AND pending production orders or purchase orders.

Within the Production module, the program examines each component in the captured bill of material to determine if each component will be available based on the current on-hand quantity AND pending production orders or purchase orders.

In both programs, you can set the number of days into the future that you want this visibility. For example, if today is Monday and you want to view shortages for this week and next week, set the number of days to be 14.

Note that the accuracy of this data is dependent on accurate on-hand quantities, accurate purchase order due dates, accurate production order due dates as well as accurate customer requested ship dates.

Component Shortages - main screen definitions (see copy of screen below)

This the top level screen that shows the components that are needed over the next X days to fill open production orders. Using the 'red wrench' set-up button, you specify the number of days into the future that you want to analyze (ex. 14 days). As you work with this screen, keep in mind that there may be multiple production orders that require the component or multiple purchase orders or multiple production orders that will replenish the item. Also, keep in mind that a production order can create demand for an component AND production orders can also serve to replenish a component that is needed in a higher level bill of material.

Column definitions:

Earliest Replenish – this is the earliest date that this component will be repenished by a production order or a purchase order (among one or more orders).

Earliest Demand – this is the earliest date that this component is needed (among one or more orders).

Net Qty – This is the net quantity that will be on-hand at the end of the X day planning period.

POP/PO Orders Count (Replenish) – this is the number of repenishment production or purchase orders during the X day planning period.

Replenish On Time? – Typically, you would set the filter to only display items that cannot be replenished on time.

Component shortages for production orders due in next 14 days

Drag a column header here to group by that column

Item Loc	Item #	Item Description 1	Earliest Demand	Qty O/H (Group)	Qty O/H (All Loc)	Qty On-Ord (All Loc)	Qty On-Ord (Group) ▽	Net Qty
CIN	FRAM...	FRAMES	4/22/08	0	0	416	416	303
CIN	POLY ...	BUSHING	7/3/08	0	0	300	300	-651
CIN	FRAM...	FRAMES	4/18/08	0	0	192	192	131
CIN	POLY ...	BUSHING	6/30/08	0	0	20	20	-16
CIN	POLY ...	BUSHING	6/30/08	0	0	13	13	-39

Component Shortages – drill-down screen definitions (see copy of screen below)

This the screen the is displayed when you click on any of top rows in the top level screen. The purpose of this screen it to display the demand and replenishment items sorted by

Column definitions:

Order Type – This column shows you the type of order (ex. production order, customer order or purchase order), if the order is for demand or replenishment AND if the order is creating a shortage situation.

Demand/Replenish Date – The orders on the screen are sorted by this date. This sorting sequence allows you to see on what date the component will become available or become short. By negotiating a revised production due date or purchase order delivery date, you may be able to meet the customer's promise date.

Qty Demand/Replenish – This is the quantity on the customer order, production order or purchase order.

New Qty On-Hand – this is the calculated on-hand quantity on each date. If this quantity falls to zero or negative, you have a shortage situation on that date. This is the column to look at.

Ord Type ▽	Ord Date	Ord #	Vend #	New Qty On-Hand (Loc)	Qty Demand/Replenish	Demand/Replenish Date
Production (Demand)	4/22/08	00204629		-1	-1	4/18/08
Production (Demand)	4/29/08	00205933		-4	-3	4/25/08
Production (Demand)	5/9/08	00207937		-5	-1	5/3/08
Production (Demand)	5/14/08	00208732		-6	-1	5/10/08
Production (Demand)	5/27/08	00210626		-7	-1	5/23/08
Purchase (Replenishment)	7/1/08	01706400		43	50	7/1/08
Production (Demand)	6/12/08	00214424		29	-9	7/1/08
Production (Demand)	6/12/08	00214423		38	-3	7/1/08
Production (Demand)	6/12/08	00214422		41	-2	7/1/08
Purchase (Replenishment)	4/30/08	01619600		171	142	7/10/08
Production (Demand)	6/27/08	00216596		157	-2	7/22/08
Production (Demand)	6/27/08	00216595		159	-6	7/22/08

Material Requirements Module

The PULSE MRP module greatly simplifies your ability to determine inventory shortages within any time period. There are two MRP tables that are updated overnight each day:
-   MRP Weekly file
-   MRP Detail file – this file contains weekly demand, replenishment or forecast quantities for customer orders (demand), normal purchase orders (replenishment), blanket purchase orders (forecast), POP production orders (demand or replenishment), and SFC production orders (demand or replenishment).

Record Type	Demand or Replenishment		Description	Quantity
COD	D (demand)		Customer orders	Unshipped qty
POR	R (replenishment)		Purchase order normal & blanket order releases	Unreceived qty
POB	F (forecast)		Blanket Purchase orders	Unreleased qty
PPD	D (demand)		POP orders	Unreported qty
PPR	R (replenishment)		POP orders	Unreported qty
SFD	D (demand)		Shop Floor Control orders	Unreported qty
SFR	R (replenishment)		Shop Floor Control orders	Unreported qty
FOR (future feature)	F (forecast)		Into the future, we will be able to import/maintain your sales forecasts and/or inventory forecasts in PULSE.	

What data is contained within the PULSE Material Requirements database?

The following data is stored within the PULSE 'MRP_WeeklyDetails' and 'MRP_WeeklySummaryl'. They are updated overnight. This database is available for including in custom Crystal reports, Excel queries or SQL queries, but at not used by PULSE (PULSE regenerations are computed real-time).

This data is stored in the MRP Weekly Detail file:	
Field Description	**Field Name**
Date of last PULSE MRP regeneration	date_last_run
Demand or Repl. Code	demand_or_replenish
Customer or vendor num.	cus_or_vend_no
Order status	ord_status
Parent order number	par_ord_no
Original order number	org_ord_no
Order number	ord_no
Line number	line_no
Item number	item_no
Location code	Loc
item description	item_desc_1
Purchased or manufactured code	pur_or_mfg
ABC inventory class	inv_class
Item master file user field 5	im_user_def_fld_5
Planning lead time	planning_lead_tm
Buyer/planner code	byr_plnr
Demand or replenishment date	demand_replenish_dt
Demand or replenishment qty	demand_replenish_qty
Past due demand/repl. quantity	past_due_qty
Separate demand/repl. qty for next 25 wks.	week_qty_00 to 25
Demand or repl. qty after week 25	week_qty_after_25
This data is stored in the MRP Weekly Summary file:	
Date of last MRP regeneration	date_last_run
Item number	item_no
Location code	loc
Purchased or manufactured code	pur_ord_mfg
Product category	prod_cat
Stocked flag	stocked_fg
Controlled flag	controlled_fg
Buyer/planner code	byr_plnr
ABC inventory class	inv_class
Vendor number	vend_no
Vendor phone number	vend_phone_no
2-week usage buffer	buffer_qty_2_weeks
Avg. mon. usage - past 3 months	usg_weekly_avg_qty_3_mth
Usage quantity YTD	usg_qty_ytd
Usage quantity - past 356 days	usg_qty_12_month
Usage quantity - prior year	usg_qty_prevyear
Past due demand quantity	past_due_demand_qty
Separate demand qty for next 25 wks.	week_demand_qty_00 to 25
Demand qty after week 25	week_demand_qty_after_25
Past due replenishment quantity	past_due_replenish_qty
Separate repl. qty for next 25 wks.	week_replenish_qty_00 to 25
Replenishment qty after week 25	week_replenish_qty_after_25
Past due net quantity on-hand	past_due_net_qty
Separate net on-hand qty next 25 weeks	week_net_qty_00 to 25
Net on-hand qty after week 25	week_net_qty_after_25

Please call our PULSE support desk us with questions and comments at
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