



QAD Enterprise Applications
Enterprise Edition

Training Guide **QAD Average Costing**

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QAD Average Costing Change Summary

The following table summarizes significant differences between this document and the last published version.

Date/Version	Description	Reference
January 2018/v2017 EE Rev 1	Updated some screenshots and exercises	--
April 2017/v2017 EE	Rebranded for QAD 2017 EE	--
April 2016/v2016 EE	Rebranded for QAD 2016 EE. added link to Preface	--
April 2015/v2015 EE	Rebranded for QAD 2015 EE	--
March 2014/v2014 EE	Rebranded for QAD 2014 EE	--
September 2013/v2013.1 EE	Rebranded for QAD 2013.1 EE	--
March 2013/v2013 EE	Rebranded for QAD 2013 EE	--
September 2012/v2012.1 EE	Rebranded for QAD 2012.1 EE; Consistency edit	--
March 2012/v2012 EE	Rebranded for QAD 2012 EE	--
September 2011/v2011.1 EE	Rebranded for QAD 2011.1 EE	--

About this Course

Course Description

This QAD Average Costing training guide offers detailed instruction on setting up and using a General Ledger cost set that uses average costing.

This guide can be taught individually or as a part of the Product Costing and Cost Management course set, which consists of an introductory class, a class covering general setup topics, and a set of classes on specialized costing topics. Most students will benefit from taking the first two classes and then selecting the additional courses that apply to their business implementation. The complete list of classes is:

- Introduction to Product Costing
- Product Costing
- Advanced Repetitive Costing
- Average Costing
- Co/By-Product Costing
- Cost Management, including Simulation and Planning
- Purchase Costing
- Work Order Costing

Course Objectives

Provides the detailed instruction necessary to set up a General Ledger cost set that uses average costing.

Course Benefits

Allows a general ledger cost set to use cost averaging.

Audience

Finance personnel who will be responsible for setting up an average cost system.

Prerequisites

- *Training Guide: Introduction to Costing*
- *Training Guide: Product Costing*
- Familiarity with the .NET UI

Course Credit and Scheduling

This course is valid for 3 credit hours and is typically taught in one half-day.

Virtual Environment Information

The hands-on exercises in this book should be used with the latest Enterprise Edition learning environment in the 10USA > 10USACO workspace. When prompted to log in, specify *demo* for user ID and *qad* for password.

Additional Resources

If you encounter questions on QAD software that are not addressed in this book, several resources are available. The QAD corporate Web site provides product and company overviews. From the main site, you can access the QAD Learning or Support site and the QAD Document Library. Access to some portions of these sites depends on having a registered account.

<http://www.qad.com/>

QAD Learning Center

To view available training courses, locations, and materials, use the QAD Learning Center. Choose Education under the Services tab to access this resource. In the Learning Center, you can reserve a learning environment if you want to perform self-study and follow a training guide on your own.

QAD Document Library

To access release notes, user guides, training guides, and installation and conversion guides by product and release, visit the QAD Document Library. Choose Document Library under the Support tab. In the QAD Document Library, you can view HTML pages online, print specific pages, or download a PDF of an entire book.

For more information, see *QAD Costing User Guide*.

To find a resource, you can use the navigation tree on the left or use a powerful cross-document search, which finds all documents with your search terms and lets you refine the search by book type, product suite or module, and date published.

QAD Support

Support also offers an array of tools depending on your company's maintenance agreement with QAD. These include the Knowledgebase and QAD Forums, where you can post questions and search for topics of interest. To access these, choose Visit Online Support Center under the Support tab.

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Chapter 1

Average Costing

Introduction

Average Costing (Weighted Average)

- Timing/procedure of transactions critical

Each time an item is received, the average cost is recalculated as:

$$\frac{(\text{Old Qty On-hand} \times \text{Old Avg Cost}) + (\text{Qty Received} \times \text{Received Cost})}{(\text{Old Qty On-hand} + \text{Qty Received})}$$



PC-AC-010

What Is Average Costing?

Average costing simply keeps a running average of what an item is costing. This is much different than standard costing, which predicts what an item should cost. With the average cost method, the average cost of the goods available for sale is not predefined by you; rather it is computed and the units in both cost of goods sold and ending inventory are costed at this average cost. It is a weighted average: Each unit cost is weighted by the number of units with that cost (see figure above). In QAD Enterprise Applications, a new average unit cost is calculated after each receipt and optionally by AP supplier invoices.

How to Set Up Average Costing

Use QAD Enterprise Applications Cost Management to set the GL cost set to have a costing method of Average Cost. To create a cost set type GL with its method set to Average, it is necessary to create a new cost set by using Cost Set Maintenance (30.1) because you cannot modify the default GL Standard cost set. You can only set the cost set type when adding a new cost set. When you have created the new cost set of the type GL with the method Average, you can populate it with data, if you choose, by copying another cost set using Cost Set Copy to Cost Set (30.3). This new GL Average cost set can now be assigned to the appropriate sites by using Cost Set to Site Assignment (30.9).

Average Cost Considerations

In order to successfully use average costing, you need to maintain perpetual inventory balances, both in terms of quantity and for accounting purposes. The system assumes that the following is true.

- You must maintain physical inventory on a perpetual basis. When items are issued from inventory, the on-hand quantity is immediately decreased. When items are received on purchase orders or manufacturing orders, the on-hand quantity is immediately increased. The timing of transaction entry is absolutely vital. Because averaging is done based on quantity on-hand, these quantities must be accurate. Also, if you are using Cost by Operation Report, all components should be issued for the entire work order quantity prior to moving work to the next operation; otherwise costs will be misstated on this report.
- You must maintain accounting inventory on a perpetual basis. When items are issued from inventory, the Inventory account is immediately credited and the WIP or COGS accounts are debited. When items are received on purchase orders or manufacturing orders, the Inventory account is immediately debited and the WIP or PO Receipts account is immediately credited.
- You must not allow negative inventory balances. Use Inventory Status Codes to prevent overissuing. As you can see from the calculation a negative balance times the old average cost will yield a negative cost which when averaged with the new items at their cost will result in an answer that does not make sense. To prevent this in the case of a negative on-hand the system uses the current receipt cost.

Once again, timing is important. If GL transactions are not generated immediately, they will not pick up the correct cost because cost changes each time a receipt is processed.

The accounting balance for inventory should at all times be equal to the quantity in inventory multiplied by today's average cost for the item. This ensures that the Inventory subsidiary ledger always balances to the general ledger.

Why Use Average Costing?

Why Use Average Costing?

- Hyperinflation / legal requirement
- Radical fluctuation or unpredictability of cost components (commodity prices)
- Business practice (philosophy)

Requires more attention to detail and procedures



PC-AC-020

Average costing is primarily used in two situations:

- Hyperinflationary economies (where it might be a legal requirement)
- Commodity-based manufacturing environments

In both of these situations, it is almost impossible to predict what item costs should be (standard cost). In a hyperinflationary economy, prices rise explosively with inflation. In a commodity-based environment, commodity prices can fluctuate wildly. This is the case for many process manufacturers.

Example A food processing company whose major ingredient is sugar can choose not to use standard costing because sugar prices normally cannot be predicted very accurately from one day to the next. Yet the company still needs to track sugar's actual price to accurately cost products and determine revenues.

In these types of environments, average costs are used. They track the movement of costs, on average, and provide a more realistic view of what inventory values and cost of sales actually are.

Note Be aware that, as with any actual costing technique, average costing requires much more reporting detail than standard costing and requires much stricter procedural controls.

Example: Standard vs Average

	Standard Costing		Average Costing	
	Standard Cost	Inventory Value	Average Cost	Inventory Value
Qty on Hand 5,000	10.00	50,000.00	10.00	50,000.00
Purchase 3,000 (@20.00)	10.00	80,000.00	13.75	110,000.00
Use 4,000	10.00	40,000.00	13.75	55,000.00

Differences posted to variances

Costs chosen reflect actual

PPV = 30,000

$$\frac{(5,000 \times 10.00) + (3,000 \times 20.00)}{(5,000 + 3,000)} = 13.75$$



PC-AC-030

Example A company has an initial inventory of 5,000 items that cost 10.00 each for an on-hand value of 50,000.00. This is a commodity item whose purchase price varies widely. The company wants to compare the difference affects of standard versus average costing. The beginning balance of 50,000.00 is the same for either method.

If the company uses standard costing, with the standard set at 10.00 and purchases an addition 3,000 units at a cost of 20.00 each the value of inventory is 80,000.00, that is 8,000 units at the standard cost of 10.00. There is a purchase price variance of 30,000.00.

The cost of manufacturing would be understated (and revenue would be overstated).

Under an average cost system, the cost is re-averaged at the time of receipt.

$$[(5,000 * 10.00) + (3,000 * 20.00)] / (5,000 + 3,000) = 13.75$$

The new value in inventory would be (13.75 * 8,000) or 110,000.00; a more accurate reflection of its cost.

Issues from inventory do not change the average value of the items just the total value on-hand.

Standard costs can be used in an inflationary or commodity-based environment, but it is necessary to change standards very frequently (perhaps weekly or monthly).

Average Costs for Purchased Items

Average Cost for Purchased Items

The system calculates the average cost for materials by using the equation:

$$\frac{[(\text{Receipt Qty} \times \text{Receipt Cost}) + (\text{Item Qty On-hand} \times \text{Current Material Cost})]}{\text{New Qty On-hand}}$$



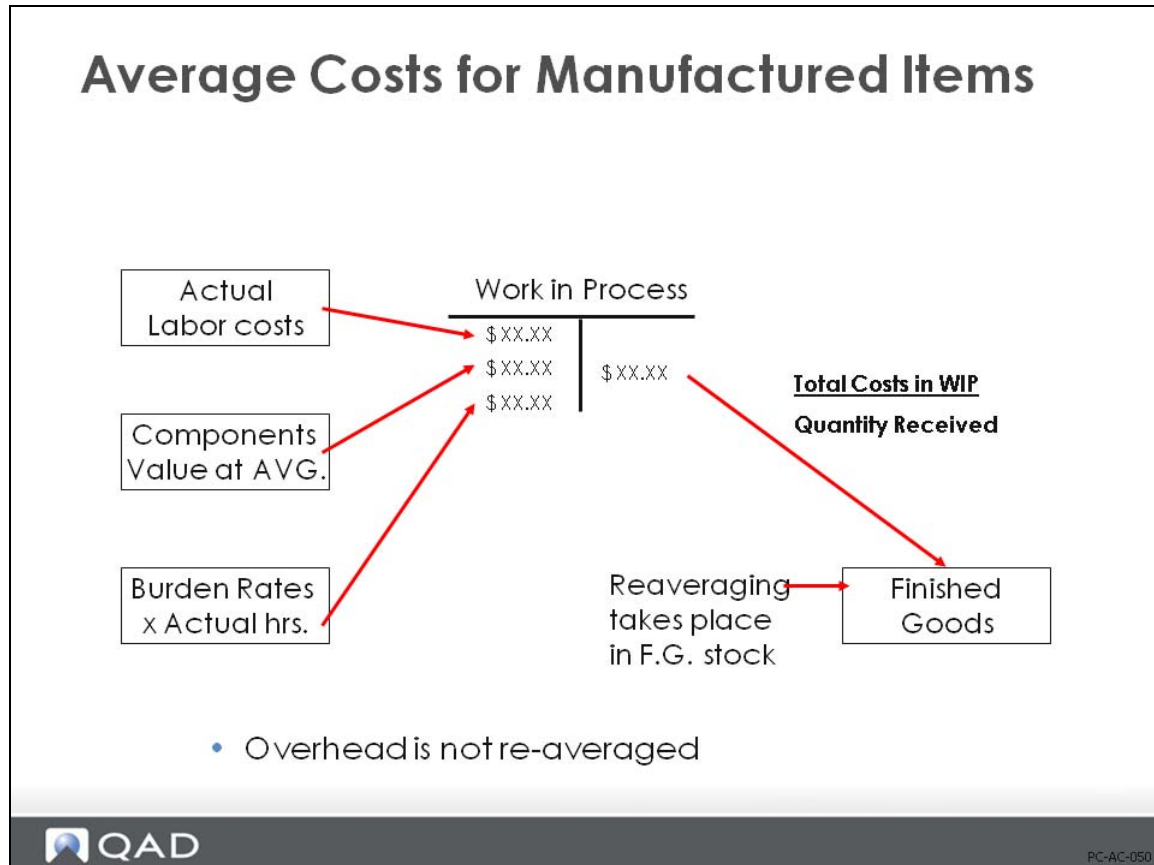
PC-AC-040

For purchased items, the quantity received is multiplied by the purchase order price and added to the quantity on-hand multiplied by the current average material cost. This sum is divided by the new quantity on-hand to determine the new average material cost. The value of inventory is adjusted to reflect this new average cost.

To calculate average costs for materials, the following equation is used:

$$\frac{[(\text{Receipt Qty} * \text{Receipt Cost}) + (\text{Item Qty On-hand} * \text{Current Material Cost})]}{\text{New Qty On-hand}}$$

Average Costs for Manufactured Items



For manufactured items, the averaging process is more complex. When finished items are received, the average cost is calculated for the work order using the actual amounts that have been recorded in WIP. This average work order cost is used to calculate a new average cost for the item.

Average Cost Calculation

Average work order cost is calculated for material, labor, burden, and subcontract. Overhead is not included in the average cost calculation; it is considered a fixed cost.

To calculate average costs for manufactured items, the following equation is used:

$$\left(\frac{\text{Item Qty Received}}{\text{Cumulative Qty Completed at the Operation}} \right) * \text{Operation's Cumulative WIP Cost}$$

Example Assembly A has three components: Comp1, Comp2, and Comp3.

- 1 A quantity of 20 is received for an Assembly A work order. First, the labor, burden, and subcontract cost categories are calculated. The table below uses Labor as an example.

Operation	Cum Qty Completed	Cum WIP Labor Cost, \$	WO Receipt Cost Calculation, \$
10	100	100	$20 / 100 * 100 = 20$
20	75	150	$20 / 75 * 150 = 40$
30	50	20	$20 / 50 * 20 = 8$

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Operation	Cum Qty Completed	Cum WIP Labor Cost, \$	WO Receipt Cost Calculation, \$
40	40	50	$20 / 40 * 50 = 25$
Total labor cost for 20 units:			93

- 2 Next material cost is calculated for the three components used as shown below.

Qty Per Component Assembly	Qty Per Assembly	Unit Cost	WO Receipt Cost Calculation, \$
Comp1	1	5	$(20 \times 1) * 5 = 100$
Comp2	1	1	$(20 \times 1) * 1 = 20$
Comp3	2	1	$(20 \times 2) * 1 = 40$
Total material cost for 20 units:			160

- 3 Finally, the work order receipt is re-averaged. There are 10 units in stock at an average unit cost of \$12 each.

$$\text{Cost for 20 units received} = (\$93 + 160) / 20 = \$12.65$$

New average cost will be:

$$(10 * \$12) + (20 * \$12.65) / (10 + 20) = \$12.43$$

PO Receipts: Standard vs. Average Costing

PO Receipts: Standard vs Average

Standard Cost

- GL transactions at standard
- Overhead is applied
- Variances calculated

Average Cost

- GL transactions at actual
- Overhead is applied (not re-averaged)
- No variance calculated
- Receipt re-averages GL cost (& adjusts inventory value)
- AP variances optionally re-average GL cost & inventory



PC-AC-060

Earlier, we saw how Purchasing and Accounts Payable functions operate in a standard costing environment: All amounts are posted to the GL at standard and any difference between actual and standard costs are posted as variances. In an average costing environment, this is not the case. All amounts are posted to the GL at the actual cost. If the PO cost is different than the GL cost, the GL cost is simply re-averaged.

Example An item has a GL Material cost of \$20 and a GL Overhead cost of \$3. With a beginning inventory of zero, you receive one unit at a PO cost of \$25. The result is that the GL cost is re-averaged; now the GL Material cost will be \$25. (GL Overhead cost is unchanged.)

The following equation is used (which calculates average costs for materials):

$$[(Receipt Qty \times Receipt Cost) + (Item Qty On-hand \times Current Material Cost)] / New Qty On-hand$$

$$[(1 \times \$25) + (0 \times \$20)] / 1 = \$25$$

The PO receipt created the following GL transactions:

DR	Inventory	\$25	CR	PO Receipts	\$25
DR	Inventory	\$3	CR	Applied Ovh	\$3

As with any other inventory type transaction, the GL transaction type is IC, but the transaction description is RCT-AVG po #. This indicates that this receipt caused the cost to be re-averaged.

Note Reaveraging only happens if the PO specifies Update Avg/Last = Yes. If set to No, the standard costing algorithms apply, even if the GL costs are Average. PO returns are considered issues, not receipts and do not re-average cost.

If this PO is vouchered at a cost of \$30 at the time of entry, you have the option of posting the extra \$5 to a variance account or to inventory. If you choose variance, the \$5 is posted to the AP Rate Variance account. If you choose Inventory, the \$5 is posted to Inventory and the cost is re-averaged (from \$25 to \$30).

Work Order Receipts: Standard vs. Average Cost

WO Receipts: Standard vs Average

Standard Cost

- GL transactions at standard
- Overhead is applied
- Variances calculated

Average Cost

- GL transactions at actual
- Overhead is applied (not re-averaged)
- No variance calculated
- Receipt re-averages GL cost (& adjusts inventory value)



PC-AC-070

In a standard costing environment, all amounts are posted at standard and variances track differences between actual and standard. In an average costing environment, this is not the case. Everything posts at actual costs. If these are different than the GL cost, the cost is re-averaged. This ensures that all work order costs are reflected in inventory.

GL and current cost is re-averaged by the Work Order Receipt function by the following rules:

- Only Lower-Level Material cost is re-averaged. This-Level Material cost is not.
- Overhead is considered fixed. It is not re-averaged.
- Costs are always recalculated on a category-by-category basis, even when the totals are the same, in order to cover the situation when items that are usually purchased are made in-house (or when items that are usually made in-house are purchased).
- Subcontract cost for an item is normally not re-averaged until Work Order Receipt. However, if the PO receipt does not specify a valid work order and operation, subcontract cost for the item will be re-averaged at that time.
- Average cost calculations include only costs that have been reported before the work order receipt is processed. Costs posted after the receipt are included in the averaging calculation done by the next receipt.
- The Operation Completion transaction will post operation costs at standard if none are reported. Be sure to run this before you process receipts. Unlike under standard costing, the accounting close does not complete unreported operations at standard.

Average Cost Calculations

Example: WO Receipts

On Hand = 3 Average Cost = \$2.50
 WO Qty. = 10 WIP Cost (Mat + Labor) = \$3

Note: The three examples below are independent, not cumulative.

1. Receive 10 units complete

$$\frac{\text{Avg} = (3 \times 2.50) + (10 \times 3.00)}{13} = \$2.89$$

Reject posted to
Scrap account

2. Receive 9 units complete, reject 1, close WO

$$\frac{\text{Avg} = (3 \times 2.50) + (9 \times 3.00)}{12} = \$2.88$$

In-process loss

3. Receive 9 units complete, close WO

$$\frac{\text{Avg} = (3 \times 2.50) + (9 \times 3.33)}{12} = \$3.12$$



PC-AC-080

We will first look at a simple example, followed by more complicated situations.

Example There are three units in stock with a total GL cost of \$2.50 each. We have a work order for 10 units: \$10 of material is issued to this work order and \$20 of labor. A work order receipt is processed for all 10 units.

The new average cost is calculated as follows:

The unit cost of the items in WIP = \$30 / 10 units = \$3

The new average cost = [(3 units * \$2.50) + (10 units * \$3)] / 13 units = \$2.89

Rejects

How do rejects get factored into average costs? As in a standard costing environment, it depends upon how you report them; as rejects or as in-process losses.

- Rejects are reported on the Work Order Receipt. For example, if we received 9 units, rejected 1 unit, and closed the work order, the result would be:

The unit cost of the items in WIP = \$30 / 10 units = \$3

The new average cost = [(3 units * \$2.50) + (9 units * \$3)] / 12 units = \$2.88

- In-process losses are not reported as rejects. On the work order receipt, you would receive 9 units and close the work order. The result:

The unit cost of the items in WIP = \$30 / 9 units = \$3.33

The new average cost = [(3 units * \$2.50) + (9 units * \$3.33)] / 12 units = \$3.12

Partial WO Receipts

Partial WO Receipts

Amount to apply to inventory equals:

$$\text{Sum} \sum (\text{op}) \text{ Remaining Cost} \times \left[\frac{\text{Qty being Received}}{\text{Qty Remaining}} \right]$$

where Qty Remaining = Op. Qty Complete - Qty Already Received

Example: On-hand = 3 Average Cost = \$2.50
 WO Qty. = 10 WIP Cost (Mat + Labor) = \$30

1. Receive 1 unit complete

$$\text{Avg} = \frac{(3 \times 2.50) + (1 \times 3.00)}{4} = \$2.63$$

2. Add \$10 to WIP and receive another unit

$$\text{Avg} = \frac{(4 \times 2.63) + (1 \times 4.11)}{5} = \$2.93$$



PC-AC-090

Because QAD Enterprise Applications allows partial receipts, average cost calculations use a modified process costing algorithm. In a process cost system, costs are not identified with specific units; instead, all costs are accumulated and divided by the total number of units produced to arrive at an average cost. Because partial receipts might have included some of the cost, the amount to apply to inventory equals the sum of:

*[remaining cost * (qty being received / remaining qty)] at each operation*

- 1 We will use the same example of the work order for 10 units. The WIP cost of \$30 represents work at a single operation for all 10 units. No receipts have been processed. Now, process a receipt for one finished unit. Because we received only one of the 10 items manufactured at that operation, it seems logical that only one-tenth of the WIP cost will be used to re-average the cost.

The unit cost of the items in WIP = \$30 / 10 units = \$3

The new average cost = [(3 units * \$2.50) + (1 unit * \$3)] / 4 units = \$2.63

- 2 Now add another \$10 of Labor to WIP. Total WIP cost is \$40. But some of this has already been averaged into inventory. When you receive additional units on this work order, this must be factored in before you can re-average cost.

WIP cost remaining to be averaged = \$10 + [(9 / 10) * \$30] = \$37

The unit cost of items in WIP = \$37 / 9 units = \$4.11

The new average cost = [(4 units * \$2.63) + (1 unit * \$4.11)] / 5 units = \$2.93

Note Because work order quantity can be changed, it is not used in these calculations. The system uses only quantity completed at each operation and work order receipt quantity.

Work Order Accounting Close

Work Order Accounting Close

- On Receipt: Excess posts to Inventory and Re-averaged
- On WO Close: Costs posted after WO is closed; also re-averaged unless QOH < Receipt Qty. (Part of cost is re-averaged; the rest is Inventory Discrepancy)

Example:

1. Transfer 100 units from WO123 to FG @ This-Level Labor = \$2
2. Sell 25 of these units from FG @TL Labor \$2
3. Before WO Accounting Close, add further \$250 Labor to WO123
4. WO Accounting Close recognizes QOH 75 < Receipt Qty 100, so averages $75/100 \times \$250 = \187.50 over 75 in stock; new Labor Cost = $((75 \times \$2) + \$187.50)/75 = \$4.50$; and posts Inventory Discrepancy of $25/100 \times \$250 = \62.50



PC-AC-100

Generally, when a work order has been fully received, all work order costs are posted to inventory. However, this cannot happen if:

- More units have been completed at an operation than have been received
- More materials have been issued than needed for the quantity received
- Additional labor is reported or material issued after work order has been fully received

If you show the work order as closed when processing the final Work Order Receipt, excess labor and material costs are simply averaged into Inventory.

If you close the work order by setting the status to [C] (Closed) in Work Order Maintenance or if additional labor and material are reported after work order receipt, then the resulting balance in WIP at accounting close is handled as follows:

- If quantity on-hand at work order site is not less than work order quantity received, then excess is added to Inventory and the average cost recalculated.
- If the quantity on-hand at the work order site is less than the work order quantity, then only part of the work order quantity can be averaged into Inventory. The remainder is posted as an Inventory Discrepancy.

Example You receive 100 units into stock. You post another \$250 of labor cost against this order. If there are only 75 units left in stock when you process the Work Order Accounting Close, only 75/100 of the \$250 can be averaged into inventory (\$187.50). If the This-Level Labor was \$2, the new This-Level Labor cost would be: $[(75 \text{ units} * \$2) + 187.50] / 75 \text{ Units} = \4.50 . The remaining \$62.50 ($\$250 - \187.50) would be posted to Inventory Discrepancy.

Information Sources

Average Cost Accounting Report (3.21.17)

Reports physical inventory transactions (receipts) that impact average GL costs. Selected according to user-specified parameters. Quantity, unit cost, and inventory value data is shown for the beginning balance data, the change data, and the ending balance data for each item number in sequence. The report also shows Site ID, Type of transaction, Transaction number, GL reference ID, and Credit account number.

Multi-Site Transfers: Standard to Average

Multi-Site Transfers

Standard to Standard or Average to Standard

Any difference in total standard cost is posted to the Transfer Variance Account at receiving site

Standard to Average

Any difference in Material, Labor, Burden, or Subcontract cost causes the Average cost at the receiving site to be re-averaged. Only Overhead cost posts to the Transfer Variance Account



PC-AC-110

Accounting for inventory transfers that take place between two sites using different costing methods looks the same from a GL perspective. The same debits and credits are created, for the same accounts. The only difference is the amounts and how they are determined.

For example, we have two sites, A and B. Both have a beginning on-hand quantity of 10 units. Site A is a standard cost site. The standard cost for Material is \$5 and Overhead \$2 (total standard cost = \$7). Site B is an average cost site. At this time the average material cost is \$10. There is no overhead cost.

If we transfer all 10 units from site A to site B, we will get the following GL transactions:

- 1 Issue the units from inventory at site A

DR Inventory \$70 CR Inventory \$70

- 2 Transfer the units to site B

DR Transfer Variance \$70 CR Intercompany \$70

- 3 Process the receipt at site B. First, average cost is re-averaged:

Cost Re-average = $[(10 \text{ units} * \$10) + (10 \text{ units} * \$5)] / 20 \text{ units} = \7.50

Note Average cost calculations do not include Overhead amounts. Overhead is assumed to be fixed and is not re-averaged.

- 4 Update inventory to reflect the items received

After the receipt of 10 units, the new value of inventory will be \$150 (20 units at \$7.50 each). Right now the inventory value is only \$100 (10 units at \$10 each). In order to bring inventory up to the correct value, the system creates the following GL transaction:

DR Inventory \$50 CR Transfer Variance \$50

The result of this process is a new average cost of \$7.50, an inventory value of \$150, and a transfer variance of \$50. Because the difference in material costs was simply absorbed into inventory, the transfer variance reflects only the Overhead amount. If there had been no Overhead cost, you would have seen only one GL transaction at the receiving site.

DR Inventory \$50 CR Intercompany \$50

Exercise 1: Setting up Average Costing

In this exercise you will create a new cost set and implement it as the GL (general ledger) cost set for average costing.

- 1 Use Cost Set Maintenance (30.1) to create a new cost set. The cost set name or code is not important, nor is the description, but ensure the Cost Set Type is GL and the Costing method is AVG.

The screenshot shows the 'Cost Set Maintenance' window. The title bar includes 'Cost Set Maintenance' and a close button. The menu bar contains 'Go To', 'Actions', 'Copy', and 'Print'. The main content area displays the following information:

- Cost Set: 2010AVG
- Description: 2010 Average Cost
- Cost Set Type: GL
- Costing Method: AVG

- 2 Create a new site 10-110 using Site Maintenance (1.1.13). Set the default inventory status to Y-Y-N to prevent over-issues. You cannot change the costing method of a site that has open work orders.

The screenshot shows the 'Site Maintenance' window. The title bar includes 'Site Maintenance', 'Item-Site Cost Maintenance', and 'Cost'. The menu bar contains 'Go To', 'Actions', 'Copy', 'Print', and 'Pr'. The main content area displays the following information:

- Site: 10-110
- Description: Test Avg
- Domain: 10USA
- Entity: 10USACO
- Declarant:
- Default Inventory Status: Y-Y-N
- Automatic Locations:
- Inspection Location: 030

- 3 Use Cost Set to Site Assignment (30.9) to assign the new cost set to the new site. Leave the current cost set field blank for the system default set.

Cost Set to Site Assignment

Go To Actions Copy Print Preview Attach

Site:10-110 Site:10-110 GL

Site: 10-110
Description: Test Avg

GL Cost Set: 2010AVG Costing Method: AVG
Current Cost Set: Costing Method: AVG

Use blank for system default cost set

- 4 Use Cost Set Copy to Cost Set, (30.3) to copy some data into the new cost set. You will use a limited number of items from the training database for this exercise.

Copy from site 10-100 - standard to site 10-110 - 2010AVG, use items 60001 - 60004.

Cost Set Copy to Cost Set Cost Set Copy to Cost Set - 10... Item-Site Cost Maintenance

Go To Actions Copy Print Preview Attach

Item:60001 From:10-100 :Standard To:10-110

From: Site: 10-100 Cost Set: Standard To: Site: 10-110 Cost Set: 2010AVG
Item Number: 60001 To: 60004
Prod Line: To:
Item Type: To:

Review the report the copy function generates.

QAD		Cost Set Copy to Cost Set					10/
		10USA					
Item Number	UM	Material	Labor	Burden	Overhead	Subcontract	
Cost Total							
60001	EA Standard	127.00	0.00	0.00	0.00	0.00	
127.00							
Durable Plastic Ho	2010AVG	0.00	0.00	0.00	0.00	0.00	
0.00							
127.00	New Cost	127.00	0.00	0.00	0.00	0.00	
100,000+ %	% Change	100,000+ %	0.0%	0.0%	0.0%	0.0%	
127.00	GL Amt Chg	127.00	0.00	0.00	0.00	0.00	
60002	EA Standard	122.00	0.00	0.00	0.00	0.00	
122.00							
Display / Readout	2010AVG	0.00	0.00	0.00	0.00	0.00	
0.00							
122.00	New Cost	122.00	0.00	0.00	0.00	0.00	
100,000+ %	% Change	100,000+ %	0.0%	0.0%	0.0%	0.0%	
122.00	GL Amt Chg	122.00	0.00	0.00	0.00	0.00	
60003	EA Standard	55.00	0.00	0.00	0.00	0.00	
55.00							
Keyboard	2010AVG	0.00	0.00	0.00	0.00	0.00	
0.00							
55.00	New Cost	55.00	0.00	0.00	0.00	0.00	
100,000+ %	% Change	100,000+ %	0.0%	0.0%	0.0%	0.0%	
55.00	GL Amt Chg	55.00	0.00	0.00	0.00	0.00	
60004	EA Standard	15.00	0.00	0.00	0.00	0.00	
15.00							
Transducer - 10 Mh	2010AVG	0.00	0.00	0.00	0.00	0.00	
0.00							
15.00	New Cost	15.00	0.00	0.00	0.00	0.00	
100,000+ %	% Change	100,000+ %	0.0%	0.0%	0.0%	0.0%	
15.00	GL Amt Chg	15.00	0.00	0.00	0.00	0.00	

This report shows the GL cost of the items copied. The item was in a standard cost site, it is now in an average cost site.

5 Use Item-Site Cost Maintenance (1.4.18) to review these costs.

Item-Site Cost Maintenance

Item: 60001 Item Number: 60001 Inventory Site: 10-110

Item Number: 60001 Description: Durable Plastic Housing
 Unit of Measure: EA GL Cost Source Site: 10-110
 Inventory Site: 10-110

Totals:

Totals:	127.00	0.00	127.00	<input type="checkbox"/>	10/07/10	<input type="checkbox"/>
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GL Cost Data (GL Cost Source Site: 10-110 / Set: 2010AVG)

Element	This Level	Lower Level	Total	Pri	Category	A/O
Material	127.00	0.00	127.00	<input checked="" type="checkbox"/>	Material	<input type="checkbox"/>
Labor	0.00000	0.00	0.00	<input checked="" type="checkbox"/>	Labor	<input type="checkbox"/>
Burden	0.00	0.00	0.00	<input checked="" type="checkbox"/>	Burden	<input type="checkbox"/>
Overhead	0.00	0.00	0.00	<input checked="" type="checkbox"/>	Overhead	<input type="checkbox"/>
Subcontr	0.00	0.00	0.00	<input checked="" type="checkbox"/>	Subcontr	<input type="checkbox"/>

6 Use Inventory Detail by Item Browse (3.2) starting with item 60001. You should have inventory of the 60001, 60002, and 60003 at site 10-100.

7 Use Transfer - Single Item to transfer 10 each of the 60001, 60002, and 60003 from site 10-100 to site 10-110. Click Yes on the pop-up “Use To Status.” Electronic signatures are implemented in this database, when prompted for user ID enter qmi or the user ID you used to log onto the system. For the reason code use Active.

8 Use inventory valuation report (3.6.13) for site 10-110.

Inventory Valuation Report 10/08/10 11:11

QAD 10USA Page

Product Line:	20	Purchased-Ext	Supplier	Cost Set:	GL	Cost Set:	Current	
Item Number	Site	Qty On Hand	UM	GL Cost	Extended Cost	Cost	Extended Cost	Var Pct
60001	10-110	10.0	EA	127.00	1,270.00	127.00	1,270.00	0.0%
				Item Total:	1,270.00		1,270.00	0.0%
60002	10-110	10.0	EA	122.00	1,220.00	122.00	1,220.00	0.0%
				Item Total:	1,220.00		1,220.00	0.0%
60003	10-110	10.0	EA	55.00	550.00	55.00	550.00	0.0%
				Item Total:	550.00		550.00	0.0%
				Prod Line Total:	3,040.00		3,040.00	0.0%
				Report Total:	3,040.00		3,040.00	0.0%

This is your total inventory and its cost and value for site 10-110 at this time.

- 9 Use Purchase Order Maintenance (5.7) to create a purchase order for these three items, 60001 - 60003. Let the system assign the PO number, use supplier code 10S1002, Bridgeville Industries. In the lower frame of the header enter site 10-110 in the site field. Advance to the line item screen. Note the PO number.

On line 1, use the enter key to get to the item number field, enter 60001, order 10 of them. Note the price field defaults to the cost in the system. Change the price to 150.00.

Use the enter key accepting the default values until you return to line 2. Buy 10 EA of the 60002 at a price of 140.00.

On line 3, buy 10 EA of item 60003 at a price of 75.00. When you are back at line 4, click the button End Lines, then click Trailer. At the trailer click next until the PO is complete.

- 10 Receive the PO complete. In the header check the box “Receive All” complete the receipt transaction by clicking through the screens.
- 11 Run the inventory valuation report for site 10-110 again. You will see that the inventory of units has doubled and the cost has been re-averaged and the total value updated to reflect the current average cost.

Inventory Valuation Report									
10USA									
10/08/10 11:31									
Pag									
Product Line:	20	Purchased-Ext	Supplier	Cost Set:	GL	Cost Set:	Current		
Item Number	Site	Qty	On Hand	UM	GL Cost	Extended Cost	Cost	Extended Cost	Var Pct
60001	10-110	20.0			144.125	2,882.50	144.125	2,882.50	0.0%
Durable Plastic Housing			EA						
Item Total:						2,882.50		2,882.50	0.0%
60002	10-110	20.0			131.00	2,620.00	131.00	2,620.00	0.0%
Display / Readout			EA						
Item Total:						2,620.00		2,620.00	0.0%
60003	10-110	20.0			65.00	1,300.00	65.00	1,300.00	0.0%
Keyboard			EA						
Item Total:						1,300.00		1,300.00	0.0%
Prod Line Total:						6,802.50		6,802.50	0.0%
Report Total:						6,802.50		6,802.50	0.0%

You have created an average cost site, and seen how the system re-averages the GL cost whenever a new receipt occurs.

Average Cost Exceptions

Average Costing Exceptions

- *Beginning quantity less than zero (negative inventory)
- *Receipt quantity less than zero, resulting in a negative ending quantity on-hand
- Cost of items returned to a supplier is large enough to result in a negative cost

Must make a manual
adjusting entry to correct or
resolve

*New average will be receipt cost



PC-AC-120

When you understand how average costs are calculated, it should be apparent that you would get undesirable results in the following cases.

- Beginning quantity is less than zero
- Receipt quantity is less than zero, resulting in an ending quantity less than zero
- The cost of the items returned to the supplier results in a negative cost

To account for such situations, QAD Enterprise Applications average costing does the following:

- 1 If the ending quantity is less than zero, the system assumes that the new average cost is the same as the new unit receipt cost. To account for this, the amount of:

*(New Average Cost - Old Average Cost) * (Old Qty On-hand)*

is debited to Inventory and credited to the Discrepancy account before the receipt is posted. The new average cost will be the new unit receipt cost.

- 2 If a receipt (positive or negative) will result in a large distortion in average cost, it is considered an exception condition and is handled as noted above.

Example The quantity to be received is less than zero and the ending quantity is less than or equal to zero.

In both of these situations, the discrepancy is created so that you can manually manage it by making an adjusting entry. Average cost will not correct previously entered transactions. That is why the sequence is so important.

Appendix A

Variances and Components Reference

Purchase-Related Variances

Variance	Calculation Method
<p>Purchase Price</p> <p>Calculated at:</p> <p>PO Receipts (5.13.1)</p> <p>Reports:</p> <p>Transaction Receipts Report (5.9.14)</p> <p>Transactions Detail Inquiry (3.21.1)</p>	$[\text{PO Unit Cost} - (\text{GL Unit Cost} - \text{OH})] * \text{PO Qty Received}$
<p>AP Rate</p> <p>Calculated at:</p> <p>Supplier Invoice Create (28.1.1.1)</p> <p>Reports:</p> <p>Matching Variance Report (28.2.7)</p> <p>Transactions Detail Inquiry (3.21.1)</p>	$(\text{Invoice Unit Cost} - \text{PO Unit Cost}) * \text{Invoice Qty}$
<p>AP Usage</p> <p>Calculated at:</p> <p>Supplier Invoice Create (28.1.1.1)</p> <p>Reports:</p> <p>Matching Variance Report (28.2.7)</p> <p>Transactions Detail Inquiry (3.21.1)</p>	$(\text{Invoice Qty} - \text{PO Receipt Qty}) * \text{PO Unit Cost}$

Manufacturing-Related Variances

Variance	Calculation Method
<p>Material Rate</p> <p>Calculated at:</p> <ul style="list-style-type: none"> WO Component Issue (16.10) WO Receipt Backflush (16.12) Repetitive Backflush (18.22.13) <p>Reports:</p> <ul style="list-style-type: none"> Work Order Cost Report (16.3.4) Transactions Detail Inquiry (3.21.1) 	$\frac{(\text{WO BOM Unit Cost at Issue} - \text{GL Unit Cost}) * \text{Actual Qty Issued}}{\text{Actual Qty Issued}}$
<p>Material Usage</p> <p>Calculated at:</p> <ul style="list-style-type: none"> WO Accounting Close (16.21) Cumulative Order Close (18.22.10) Post Accumulated Usage Variances (18.22.9) <p>Reports:</p> <ul style="list-style-type: none"> Work Order Cost Report (16.3.4) Transactions Detail Inquiry (3.21.1) Rep Operations Accounting Report (18.22.4.9) 	$\{ \text{Actual Qty Issued} - [\text{qty per} * (\text{qty completed} + \text{qty rejected})] \} * \text{GL Unit Cost}$
<p>Labor Rate</p> <p>Calculated at:</p> <ul style="list-style-type: none"> SFC Feedback (16.20.1), (16.20.2), (16.20.3) <p>Can be deferred until:</p> <ul style="list-style-type: none"> WO Receipt (16.11), (16.12) Repetitive Backflush (18.22.13) <p>Reports:</p> <ul style="list-style-type: none"> Work Order Cost Report (16.3.4) Operations Accounting Report (16.20.13.10) Rep Operations Accounting Report (18.22.4.9) 	<p>Per Operation:</p> $[(\text{Actual Setup Rate} - \text{Std Setup Rate}) * \text{Actual Setup Hrs}] + [(\text{Actual Run Rate} - \text{Std Run Rate}) * \text{Actual Run Hrs}]$ <p>Setup and run rates are equal to the payroll rate (defined in 14.13.21) or the work center rate if payroll is not set up.</p> <p>No variances if no labor reporting</p>
<p>Labor Usage</p> <p>Calculated at:</p> <ul style="list-style-type: none"> SFC Feedback (16.20.1), (16.20.2), (16.20.3) <p>Can be deferred until:</p> <ul style="list-style-type: none"> WO Receipt (16.11), (16.12) Post Accumulated Usage Variances (18.22.9) Cumulative Accounting Close (18.22.10) <p>Reports:</p> <ul style="list-style-type: none"> WO Cost Report (16.3.4) Operations Accounting Report (16.20.13.10) Rep Operations Accounting Report (18.22.4.9) 	<p>Per Operation:</p> $[(\text{Actual Setup Hrs} - \text{Std Setup Hrs}) * \text{Std Setup Rate}] + [(\text{Actual Run Hrs} - \text{Std Run Hrs}) * \text{Std Run Rate}]$ <p>Std Run Hrs = $\text{Std Run Hrs} * (\text{Qty Completed} + \text{Qty Rejected})$</p>

Variance	Calculation Method
<p>Burden Rate</p> <p>Calculated at:</p> <ul style="list-style-type: none"> SFC Feedback (16.20.1), (16.20.2), (16.20.3) WO Receipt (16.11), (16.12) Repetitive Backflush (18.22.13) <p>Reports:</p> <ul style="list-style-type: none"> WO Cost Report (16.3.4) Operations Accounting Report (16.20.13.10) Rep Operations Accounting Report (18.22.4.9) 	<p>Per Operation:</p> $[(\text{Actual Setup Bdn} - \text{Std Setup Bdn}) * \text{Actual Setup Hrs}] + [(\text{Actual Run Bdn} - \text{Std Run Bdn}) * \text{Actual Run Hrs}]$ $\text{Actual Setup Bdn} = (\text{Actual Setup Rate} * \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + (\text{Mach Bdn Rate} * \text{Mach/Op})$ $\text{Std Setup Bdn} = (\text{Std Setup Rate} * \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + (\text{Mach Bdn Rate} * \text{Mach/Op})$ $\text{Actual Run Bdn} = (\text{Actual Run Rate} * \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + \text{Mach Bdn Rate}$ $\text{Std Run Bdn} = (\text{Std Run Rate} * \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + \text{Mach Bdn Rate}$
<p>Burden Usage</p> <p>Calculated at:</p> <ul style="list-style-type: none"> SFC Feedback (16.20.1), (16.20.2), (16.20.3) <p>Can be deferred until:</p> <ul style="list-style-type: none"> WO Receipt (16.11), (16.12) Post Accumulated Usage Variance (18.22.9) Cumulative Order Close (18.22.10) <p>Reports:</p> <ul style="list-style-type: none"> WO Cost Report (16.3.4) Operations Accounting Report (16.20.13.10) Rep Operations Accounting Report (18.22.4.9) 	<p>Per Operation:</p> $[(\text{Act Setup Hrs} - \text{Std Setup Hrs}) * \text{Std Setup Bdn}] + [(\text{Act Run Hrs} - \text{Std Run Hrs}) * \text{Std Run Bdn}]$ $\text{Std Setup Bdn} = (\text{Std Setup Rate} * \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + (\text{Mach Bdn Rate} * \text{Mach/Op})$ $\text{Std Run Bdn} = (\text{Std Run Rate} * \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + \text{Mach Bdn Rate}$
<p>Subcontract Rate</p> <p>Calculated at:</p> <ul style="list-style-type: none"> PO Receipt (5.13.1) 	$(\text{Subcontract PO Unit Cost} - \text{Subcontract Unit Cost from Routing}) * \text{Qty Received}$
<p>Subcontract Usage</p> <p>Calculated at:</p> <ul style="list-style-type: none"> WO Accounting Close (16.21) Post Accumulated Usage Variance (18.22.9) Cumulative Order Close (18.22.10) 	$[\text{Qty Received} - (\text{Op Qty Completed} + \text{Op Qty Rejected})] * \text{Subcontract Unit Cost from Routing}$
<p>Method</p> <p>Calculated at:</p> <ul style="list-style-type: none"> WO Accounting Close (16.21) Cumulative Accounting Close (18.22.10) 	<p>Balance of WO/ID value remaining</p>
<p>Mix (Co/By-Products)</p> <p>Calculated at:</p> <ul style="list-style-type: none"> WO Accounting Close (16.21) 	$[\text{Order Qty} - (\text{Receipt Qty} + \text{Scrap Qty})] * \text{GL Unit Cost}$

Variance by Transaction Flow

Variance by Transaction Flow
<p>PO Receipts</p> <p>Purchase Price Variance $[PO \text{ Unit Cost} - (GL \text{ Unit Cost} - OH)] * PO \text{ Qty Received}$</p> <p>Subcontract Rate Variance $(Subcontract \text{ PO Unit Cost} - Subcontract \text{ Unit Cost from Routing}) * Qty \text{ Received}$</p>
<p>Receiver Matching</p> <p>Accounts Payable Rate Variance $(Invoice \text{ Unit Cost} - PO \text{ Unit Cost}) * Invoice \text{ Quantity}$</p> <p>Accounts Payable Usage Variance $(Invoice \text{ Qty} - PO \text{ Receipt Qty}) * PO \text{ Unit Cost}$</p>
<p>Work Order Component Issue</p> <p>Material Rate Variance $(WO \text{ BOM Unit Cost at Issue} - GL \text{ Unit Cost}) * Actual \text{ Qty Issued}$</p>
<p>Labor Feedback</p> <p>Labor Rate Variance $[(Actual \text{ Setup Rate} - Std \text{ Setup Rate}) * Actual \text{ Setup Hrs}] + [(Actual \text{ Run Rate} - Std \text{ Run Rate}) * Actual \text{ Run Hrs}]$</p> <p>Labor Usage Variance $[(Actual \text{ Setup Hrs} - Std \text{ Setup Hrs}) * Std \text{ Setup Rate}] + [(Actual \text{ Run Hrs} - Std \text{ Run Hrs}) * Std \text{ Run Rate}]$ $*Std \text{ Run Hrs} = Std \text{ Run Hrs} * (Qty \text{ Completed} + Qty \text{ Rejected})$</p> <p>Burden Rate Variance $[(Actual \text{ Setup Bdn} - Std \text{ Setup Bdn}) * Actual \text{ Setup Hrs}] + [(Actual \text{ Run Bdn} - Std \text{ Run Bdn}) * Actual \text{ Run Hrs}]$</p> <p>Burden Usage Variance $[(Act \text{ Setup Hrs} - Std \text{ Setup Hrs}) * Setup \text{ Bdn}] + [(Act \text{ Run Hrs} - Std \text{ Run Hrs}) * Run \text{ Bdn}]$</p>
<p>Work Order Accounting Close</p> <p>Subcontract Usage Variance $[Qty \text{ Received} - (Op \text{ Qty Completed} + Op \text{ Qty Rejected})] * Subcontract \text{ Unit Cost from Routing}$</p> <p>Material Usage Variance $\{Actual \text{ Qty Issued} - [qty \text{ per} * (qty \text{ completed} + qty \text{ rejected})]\} * GL \text{ Unit Cost}$</p> <p>Method Variance</p>

Components of Item Cost

Components of Item Cost	
<p>Material</p> <p><i>Dependent On</i></p> <p>Material/Purchase Price</p> <p>Quantity Per</p> <p>Scrap %</p> <p>Phantom</p> <p>Pur/Mfg</p> <p>Structure Type</p> <p>Yield %</p>	<p><i>Defined In</i></p> <p>Item Master Maintenance (1.4.1), (1.4.9), (1.4.18)</p> <p>Product Structure Maintenance (13.5), (15.5)</p> <p>Product Structure Maintenance (13.5), (15.5)</p> <p>Item Master Maintenance (1.4.1), (1.4.7), (1.4.17)</p> <p>Item Master Maintenance (1.4.1), (1.4.7), (1.4.17)</p> <p>Product Structure Maintenance (13.5)</p> <p>Routing Maintenance (14.13.1)</p>
<p>Labor</p> <p><i>Dependent On</i></p> <p>Work Center Labor Rates</p> <p>Work Center Setup Rates</p> <p>Run Time per Unit</p> <p>Setup Time per Lot</p> <p>Order Quantity</p> <p>Subcontract Cost</p>	<p><i>Defined In</i></p> <p>Work Center Maintenance (14.5)</p> <p>Work Center Maintenance (14.5)</p> <p>Routing Maintenance (14.13.1), (14.13.2)</p> <p>Routing Maintenance (14.13.1), (14.13.2)</p> <p>Item Master Maintenance (1.4.1)</p> <p>Routing Maintenance (14.13.1)</p>
<p>Burden</p> <p><i>Dependent On</i></p> <p>Work Center Labor Burden Rates</p> <p>Work Center Labor Burden Percent</p> <p>Work Center Machine Burden Rate</p> <p>Machines/Operation</p> <p>All of the items under Labor (above)</p>	<p><i>Defined In</i></p> <p>Work Center Maintenance (14.5)</p> <p>Work Center Maintenance (14.5)</p> <p>Work Center Maintenance (14.5)</p> <p>Work Center Maintenance (14.5)</p>

Product Information Resources

QAD offers a number of online resources to help you get more information about using QAD products.

[QAD Forums \(community.qad.com\)](https://community.qad.com)

Ask questions and share information with other members of the user community, including QAD experts.

[QAD Knowledgebase \(knowledgebase.qad.com\)*](https://knowledgebase.qad.com)

Search for answers, tips, or solutions related to any QAD product or topic.

[QAD Document Library \(documentlibrary.qad.com\)](https://documentlibrary.qad.com)

Get browser-based access to user guides, release notes, training guides, and so on; use powerful search features to find the document you want, then read online, or download and print PDF.

[QAD Learning Center \(learning.qad.com\)*](https://learning.qad.com)

Visit QAD's one-stop destination for all courses and training materials.

*Log-in required

