



# Training Guide

# QAD Product Costing

70-3223-2021  
QAD Cloud ERP with Web UI 2021  
September 2021

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# Change Summary

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

<b>Date/Version</b>	<b>Description</b>	<b>Reference</b>
September 2021/v2021 Adaptive UX	Updated based on Adaptive UX 2021 <ul style="list-style-type: none"><li>• Combined Work Order and Advanced Repetitive chapters to Production Orders chapter.</li><li>• Updated all screenshots to Adaptive UX 2021.</li><li>• Rewrote all exercises based on Adaptive UX 2021.</li><li>• Added three mastery questions for each chapter.</li><li>• Added the mastery question answers in the last page.</li></ul>	--
January 2018/v2017EE Rev 1	Updated some slides	
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 course provides a framework for setting up an effective product cost accounting system in QAD application by defining the cost processes available and demonstrating how they can be used to maintain and monitor cost information for internal and external reporting requirements. Additionally, the course covers cost management functionality, which includes cost simulation for “what-if” scenarios and the creation of multiple cost sets; for example, historical costs, projected costs, budgeted costs, and so on. A combination of lecture and hands-on activities illustrates how to establish initial data for a standard cost-based system. Topics will be presented and then practiced with hands-on exercises. On the last day, students will have the opportunity to test their understanding and knowledge by working on an extended exercise covering most of the topics discussed during the class.

## Course Objectives

This training course provides

- The background and structural framework necessary for the more detailed coursework in all of the individual costing courses.
- The structural framework and knowledge necessary to enter data and roll up product costs, and to understand the causes of variances.
- The structural framework and knowledge necessary to track purchase costs and explain purchase variances.
- The details necessary to track and explain costs and variances in a production order environment. Includes details on subcontract manufacturing in a production order environment.
- The detailed instruction necessary to manage multiple costs sets both for simulation and long range planning.

## Audience

This class is intended for QAD users who have the knowledge of QAD Adaptive UX and would like to detail understand QAD costing in the QAD Adaptive UX system, include QAD customers, partners, as well as QAD R&D and Services and Support personnel.

## Prerequisites

In order to obtain maximum benefit from this class, an understanding of QAD Enterprise Edition is required.

## Course Credit and Scheduling

This course provides 18 credit units. It is designed to be taught in 3 days.

## Virtual Environment Information

The hands-on exercises in this book should be used with the latest QAD Adaptive ERP with Adaptive UX learning environment.

When prompted to log in, specify demo@qad.com for user ID and qad for password. In general, students are more comfortable with static data they are familiar with such as currencies and addresses. However, it is up to the instructor to decide which exercise set to use, depending on the audience.

## 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

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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

# Introduction to Product Costing





# Introduction to Product Costing



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## Facilities

### Facilities



Telephone/Fax



Class Hours



Emergency



Messages



Breaks



Restrooms



Parking



Smoking

## Product Costing Courses

Introduction to Product Costing

### **Product Costing Courses**

- Introduction to Product Costing
- Product Costing
- Purchase Order Costing
- Production Order Costing
- Cost Management
- Average Costing
- Co/By-Product Costing

## Overview

Introduction to Product Costing

### Overview

- Introduction
  - Concepts and Definitions
  - Purpose of Costing
  - Cost Flows
- Cost Methods
  - Standard Cost
  - Average Cost
  - Period Cost
- Cost Screens
  - Cost Sets
  - Cost Categories/Elements
  - Cost Levels
- Account Structures
  - Product Line Accounts
  - Department Accounts
  - Site Accounts

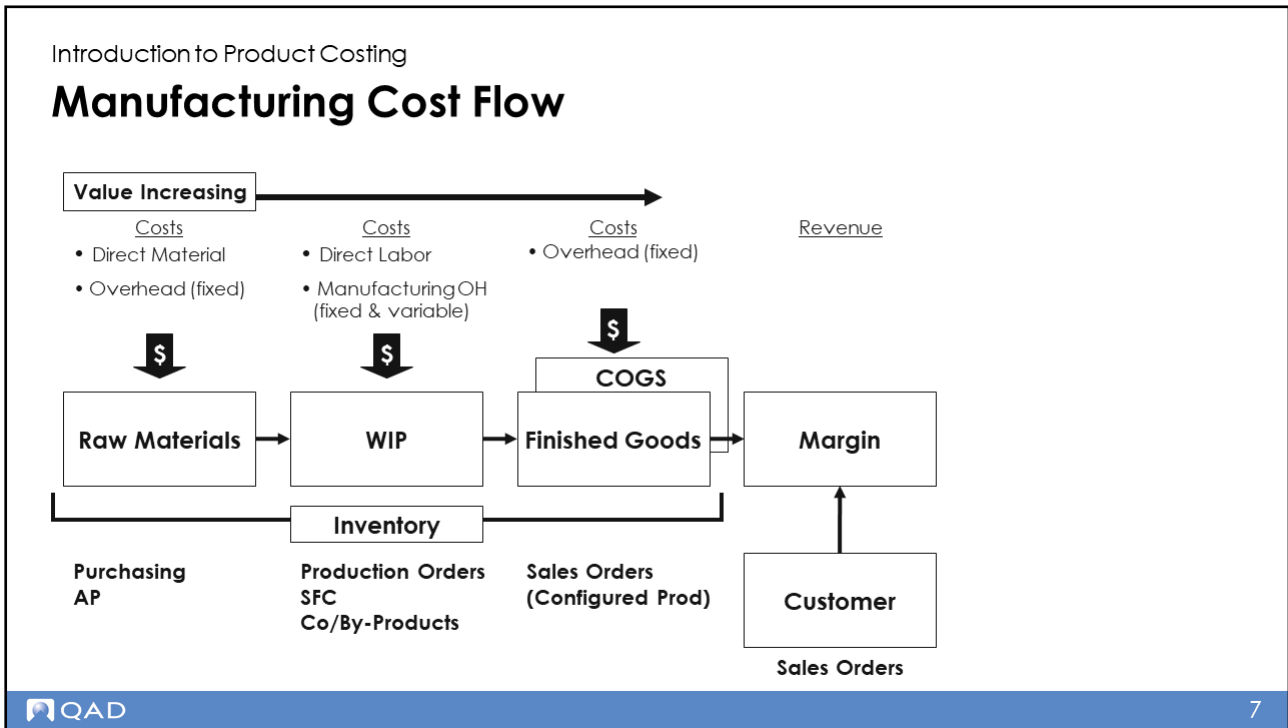
## Purpose of Cost Accounting

Introduction to Product Costing

### **Purpose of Cost Accounting**

- Determination of product costs for
  - Inventory valuation
  - COGS
  - Cost-plus product pricing models
- Determination of costs for other units of activity
  - Departments
  - Sales territories
  - Customer/industry groups
  - Distribution channels
- Internal performance measurement
- Control and planning

## Manufacturing Cost Flow



### Study Questions

What are the two primary uses of a standard cost?

If you take an item out of finished goods inventory, issue it to WIP, disassemble it, and put the components back into inventory, what are the cost impacts?

## QAD Enterprise Applications Costing Methods

Introduction to Product Costing

### QAD Enterprise Applications Costing Methods

- Standard
  - Costs are pre-established and all transactions valued at that cost.
  - Deviations reported as variances.
- Average
  - Costs are re-calculated (averaged) as they occur
  - No variances
- Period
  - Uses values of incoming and outgoing GL transactions from AP and changes to inventory balances between periods
  - Differences written off as change in inventory value
- Periodic
  - Calculates periodic costs using WAVG, FIFO



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Below is a summary of the QAD Enterprise Applications costing methods. Each method is described in more detail on the pages that follow this summary.

#### Standard

Costs are pre-established and all transactions valued at that cost. Deviations between base settings and actuals transacted are reported as variances.

#### Average

Costs are recalculated as they occur. The costs associated with a transaction are weighted with the existing costs to provide a new average cost. The average cost can be used for valuation as a GL cost for information only as a current cost.

#### Period

This costing method omits the valuation of inventory type transactions and uses the values of the incoming GL transaction from Accounts Payable functions, along with changes to inventory balances between accounting periods. This can be set in Inventory Control.

#### Periodic Costing

Periodic Costing is a cost method for inventory valuation that calculates item unit costs based on inventory and shop floor transactions.

Periodic Costing does not substitute for, overlap with, or conflict with current costing methods in QAD solutions such as standard costing or average costing. The goal of Periodic Costing is to use the actual costs



from the actual transactions, invoices, BOM, routings, purchase prices, expenses, labor costs, and other actual costs.

Periodic Costing does not use the concept of variances because it always calculates based on actual values; that is, because costs are recalculated for each period, and a new actual cost is defined according to what happened during that period, all value is posted to inventory and WIP accounts. Periodic Costing calculations take into consideration transactions that affect the value of inventory and WIP.

Periodic Costing uses the following cost-calculation formulas: Weighted Average (WAVG), First In First Out (FIFO).

Periodic Costing is discussed in separated training guide.

## Standard Costing: Example

Introduction to Product Costing

### Standard Costing: Example

- Comparison of Standard and Average Costing Methods

	Standard Cost	Inventory Value
Qty on hand = 5 units	10 / unit	50 $5 \times 10 = 50$
Purchase 3 units at cost of 20/unit	10 / unit	80 $(5 + 3) \times 10 = 80$
Use 4 units	10 / unit	40 $(8 - 4) \times 10 = 40$

**This would cause a Purchase Price Variance in this example:**  
 (Standard Material Cost - PO Cost) x Quantity Received  
 $(10 - 20) \times 3 = 30$  unfavorable variance



A standard cost for a product consists of a price standard (price for material; rate for labor and manufacturing burden) and a quantity standard (quantity for material; time for labor; quantity or volume for manufacturing burden). The combination of price and quantity yields what is planned or expected for a specific interval of time and set of conditions. Cost for Overhead and Subcontract costs are set up and included in the Inventory value.

- Setting standards for price and quantity involves management judgements, industrial engineering studies, work measurement studies, vendor analyses, as well as a number of other techniques

Once set, the standard cost of an item is used as the basis for all accounting entries for inventory related transactions (see figure above). Standard costs cover a specific period, usually a year. They can be evaluated and changed at any time.

## Standard Rate & Usage Variances

Introduction to Product Costing

### Standard Rate & Usage Variances

Purchase Costs Incurred	Manufacturing Cost Incurred @ Std.	Standard Cost
Actual cost 9	Standard cost 10	Standard cost 10
X	X	X
Actual quantity 11	Actual quantity 11	Standard quantity 10
99 — 110	110 — 100	
Mat'l Rate Variance 11 F	Mat'l Usage Variance 10 U	
Total Materials Variance 1 F		

- **Mat'l Rate Var** = Actual Qty Used x (Actual Price - Std Price) = 11 x (9 - 10) = 11 F
- **Mat'l Usage Var** = Std Price x (Actual Qty - Std Qty) = 10 x (11 - 10) = 10 U

*F = Favorable; U = Unfavorable*

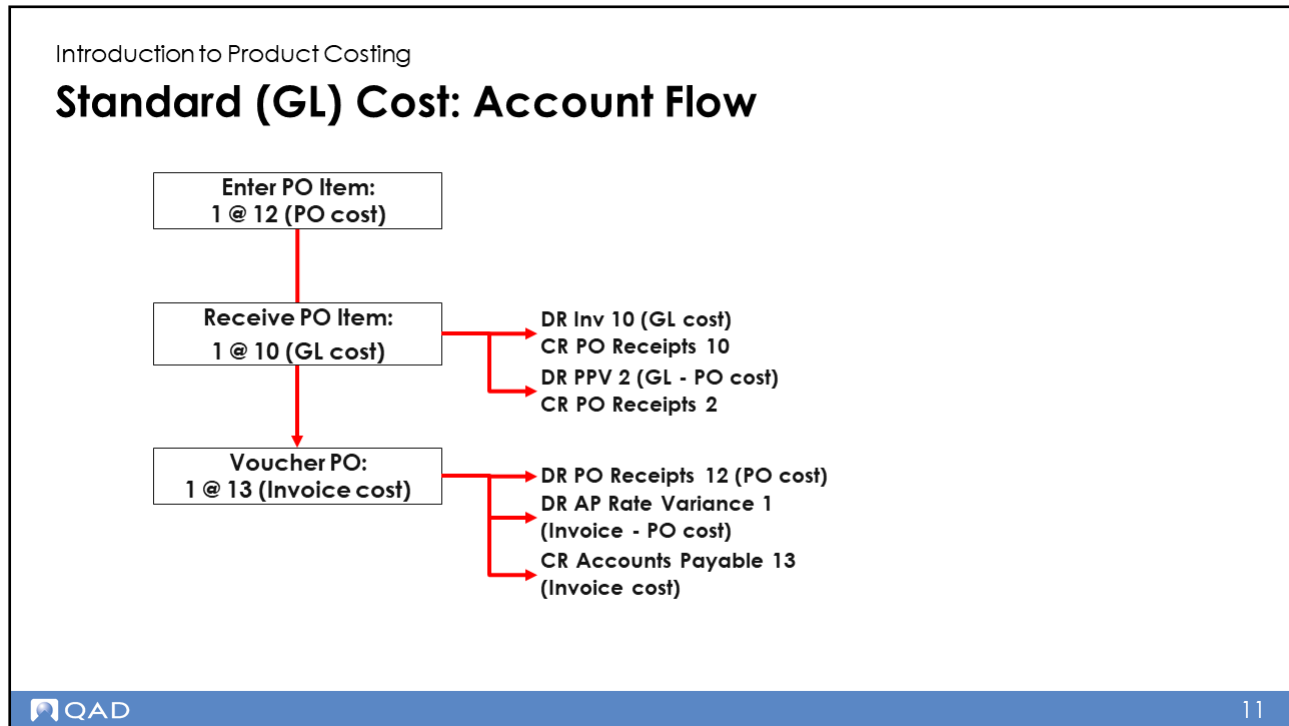
10

Because the standard is only a target or estimate of what an item will cost, the costs incurred rarely match the standard exactly. In order to account for the difference between standard costs and actual costs, variances are calculated and recorded.

- Variances are calculated as the difference between Standard and Actual costs and are defined as Total Variance. Total Variance can be subdivided into Price and Efficiency components called Rate and Usage in QAD Enterprise Applications (see figure above).
- Price or rate variance occurs when the actual purchase cost of a resource differs from the standard rate and is calculated based on the actual quantity purchased.
- Usage or efficiency variance occurs when the actual quantity transacted is different than the standard quantity that was defined and calculated using the standard cost. For example, if quantities of components issued are different than those defined and calculated using the standard BOM, or additional non-standard components are issued.

**Note** An adverse variance is not necessarily an indication of underachievement. For example, a corporation can make allowances in its operating budget for unfavorable variances if standard costs cover a long period of time. Conversely, a purchasing department can be sent a budgeted favorable price variance to achieve when operating in a “cost down” environment with its customers and suppliers.

## Standard (GL) Cost: Account Flow



### Example

The example in the figure above shows how the general ledger uses variances to balance standard and actual costs. An item has a GL cost of 10. A purchase order is issued to purchase one for 12; its PO cost. When the invoice arrives, the supplier has charged 13.

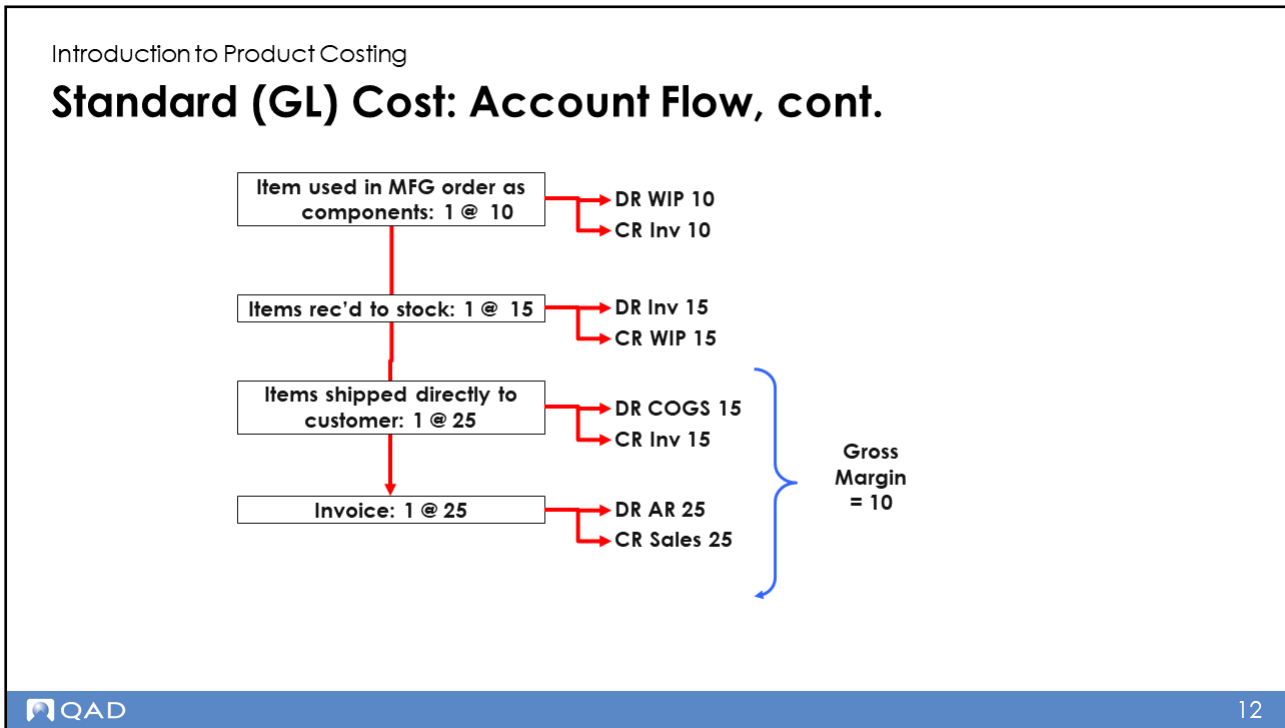
#### • PO Receipt

When the item arrives, the Inventory account is debited for the 10 GL cost and the PO Receipts account is credited 10. The Purchase Price Variance account is debited 2 (the difference between the item's PO cost and its GL cost) and the PO Receipts account is credited 2.

#### • Supplier Invoice Maintenance

An invoice is received and the supplier has charged 13 (1 over the PO cost) for the item. If it is decided to accept this increase and continue vouchering, the PO Receipts account is debited 12 (PO cost). The Accounts Payable account is credited 13 (invoice cost) and the Accounts Payable Rate Variance account is debited 1 (the difference between the PO cost and invoice cost).

## Standard (GL) Cost: Account Flow, cont.



When items are taken from inventory and issued to manufacturing or shipped to a customer, the value of inventory is decreased at GL cost. Let's see what happens when the purchased pens are issued.

- Manufacturing

The item is issued to the production order. Inventory is credited 10 (issued to the production order). Work in Process (WIP) is debited 10. The cost of the process of 5 is added to component cost so that the end item cost is 15. WIP is debited and a recovery account (Labor/Burden/Overhead Absorption) is credited with 5. Inventory is debited and WIP is credited 15 at Production Order receipt time.

- Sales shipment

Items shipped from stock decrease (credit) the inventory value by 15. Cost of goods is debited 15. The actual selling price of 25 is not recorded until the invoice is created. The difference of 10 is the gross margin.

- Invoice

When you print and then post the invoice, you debit Accounts Receivable 25 and credit Sales 25.

## Average Costing: Example

Introduction to Product Costing

### Average Costing: Example

- Comparison of Standard and Average Costing Methods

	Value	Total Units	Total Value	Average Cost
<b>Purchase 5 at cost of 10/unit</b>	<b>50</b> (10 x 5)	<b>5</b>	<b>50</b>	<b>10</b> (50, 5)
<b>Purchase 3 at cost of 20/unit</b>	<b>60</b> (20 x 3)	<b>8</b> (5 + 3)	<b>110</b> (50 + 60)	<b>13.75</b> (110, 8)
<b>Use 4 at cost of 13.75/unit</b>	<b>55</b> (13.75 x 4)	<b>4</b> (8 - 4)	<b>55</b> (110 - 55)	<b>13.75</b> (55, 4)

$$* \text{Average Cost} = \frac{(\text{opening qty on hand} \times \text{opening avg cost}) + (\text{qty rec'd} \times \text{rec'd cost})}{(\text{opening qty on hand} + \text{qty rec'd})}$$



The average cost method simply keeps a running average of what an item is costing rather than estimate what an item should cost as standard costing does.

### Average Costing Defined

With the average costing method, the average cost of goods available for sale is not predefined by you; rather it is computed and the units in both the cost of goods sold and ending inventory are costed at this average cost. It is a weighted average. That is, each unit cost is weighted by the number of units with that cost. In QAD Enterprise Applications, a new average unit cost is calculated after each receipt and optionally during supplier invoicing.

**Note** Only receipts update the average cost.

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. (See example in figure.)

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

$$[(\text{opening qty on-hand} * \text{opening avg cost}) + (\text{qty rec'd} * \text{rec'd cost})] / (\text{opening qty on-hand} + \text{qty rec'd})$$

**Note** If you use the average costing method for GL costs, you must use the Cost Management module. Average Costing is described in more detail in chapter: Average Costing.



## Period Costing

Introduction to Product Costing

### Period Costing

- Costs are expensed in period incurred
- Perpetual inventory not used
- Inventory valuation by transactions is turned off by setting Create GL Transactions to No in Inventory Control
- Valuation of inventory and Costs of Goods Sold calculated from physical inventory counts and from purchase transactions

Period costs are determined by tracking the beginning inventory balance, adding purchased material and value added to inventory (labor costs), and then deducting the ending inventory. No perpetual inventory records are maintained; the GL handles tracking and reporting. Accounting records are updated periodically.

To use QAD Enterprise Applications for period costing, all inventory-related transactions are turned off in the Inventory Control, so that all issues, transfers, and receipt transactions do not create GL transactions. The valuation of inventory and cost of goods sold is calculated from physical inventory counts, and purchase and sales transactions from Accounts Payable. Period costing is a method usually not used by QAD Enterprise Applications customers for financial valuation.

## Periodic Costing

Introduction to Product Costing

### Periodic Costing

- Calculates inventory valuation based on
  - Inventory transactions
  - Shop floor transactions
- Calculations include
  - WAVG – Weighted average
  - FIFO – First in first out

Periodic costing is a cost method for inventory valuation that calculates periodic item unit costs based on inventory and shop floor transactions. Periodic costing uses cost-calculation formulas such as weighted average (WAVG), and first in first out (FIFO) that support:

- Local legal requirements for certain countries
- International financial Reporting Standards (IFRS) guidelines
- Business practices in corporations with regards to inventory valuations

Periodic Costing menu programs optionally calculate the cost of an item based on recorded data, such as inventory transactions, BOMs, routings, purchase prices, and labor/burden expenses over a certain user-defined period. The period can be any length, up to an entire GL period. Under most circumstances, periodic costing considers the beginning balance of the item while it is performing calculations. It then batch generates GL transactions based on the calculations.

### Study Questions

What are the two cost methods supported by QAD?

What is a major difference between standard average costing and periodic weighted average?

## Terminology and Basic Concepts

Introduction to Product Costing

### Terminology and Basic Concepts

- Reading the cost screens
- Cost Sets
- Cost Categories
- Cost Elements
- Level Codes
- Phantom Structures
- Sites and Entities
- Product Line
- Direct vs. Indirect
- Fixed vs. Variable
- Burden vs. Overhead
- Absorbed vs. Applied

A few key terms are defined and concepts described in this section.

## Reading the Screen

Introduction to Product Costing

# Reading the Screen

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Items | Default View | + New | Delete | Actions | More

01010 Item | 10 Product Line | Medical Ultrasound Description 1 | ACTIVE Item Status

Main | Site | Item Aliases | Intranat Item | Production Scheduling | Picking | Service

GL Cost

GL Cost Source Site 10-100 | This Level Total 579.27275  
 Cost Set Standard | Lower Level Total 1,227.49882  
 Date Updated 12/16/2015 | Cost Total 1,806.77157

Category	Element	This Level	Lower Level	Total	Primary	A/O
Burden	Burden	1.77275	0.08882	1.86157	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Labor	Labor	577.50	6.17	583.67	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Material	Duty	0.00	1.00	1.00	<input type="checkbox"/>	<input type="checkbox"/>
Material	Freight		3.00		<input type="checkbox"/>	<input type="checkbox"/>

Annotations:

- Red box around summary totals: **Totals**
- Red arrow pointing to 'Total' column header: **Add up columns Total cost by level**
- Red arrow pointing to 'Total' column values: **Add across rows Total cost by element**

QAD | 17

The figure above provides a quick orientation to reading the cost information in item maintenance screens: Items.

**Note** The A/O (Add On) column is not currently in use. It is a placeholder for future costing enhancements.

## GL Cost Set

Introduction to Product Costing

# GL Cost Set

QAD Cost Accounting Manager

Items | Default View | + New | Delete | Actions | More

01010 Item | 10 Product Line | Medical Ultrasound Description 1 | ACTIVE Item Status

Main | Site | Item Aliases | Intranat Item | Production Scheduling | Picking | Service

GL Cost

GL Cost Source Site 10-100  
Cost Set Standard  
Date Updated 12/16/2015

GL Cost Set

- Valuation of inventory
- Standard or Average

This Level Total 579,27275  
Lower Level Total 1,227,49882  
Cost Total 1,806,77157

Category	Element	This Level	Lower Level	Total	Primary	A/O
Burden	Burden	1.77275	0.08882	1.86157	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Labor	Labor	577.50	6.17	583.67	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Material	Duty	0.00	1.00	1.00	<input type="checkbox"/>	<input type="checkbox"/>
Material	Freight	0.00	3.00	3.00	<input type="checkbox"/>	<input type="checkbox"/>

Save Cancel

18

The term cost set is used to identify cost records in the system. QAD Enterprise Applications has two default cost sets—GL and Current—that are available for each site, but it can have additional cost sets, too. Cost sets have multiple uses.

### Maintain General Ledger Item Costs (GL Cost Set)

GL cost is a term that distinguishes costs used for valuing inventory and for determining cost of goods sold from other costs such as current costs. GL costs can be based on either a standard or an average cost method.

### Maintain Historical Item Costs

Historical costs (standard or current) are costs from prior periods that are used for comparison purposes. These costs are stored in one of the additional cost sets of the Cost Management module.

### Develop Simulated Item Costs

Simulated costs are costs used for planning purposes to evaluate the effects of differing scenarios of, for example, material price inflation, or batch size, labor and burden rate changes. These costs are stored in one of the additional cost sets of the Cost Management module.

### Maintain Frozen Standard Costs

Once standard costs are established, you can freeze them to prevent costs from being recalculated. Any cost set can be frozen. Running the Cost Roll-Up Freeze/Unfreeze (13.12.1) marks item costs for this cost set and site as frozen. When QAD Enterprise Applications routing and product structure cost roll-up functions see that an item cost has been frozen, the roll-up simply uses the existing frozen cost; it does not recalculate it.

**Note** Only one set of GL and Current costs are allowed per site.

## Current Cost Set

Introduction to Product Costing

# Current Cost Set

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Items | Default View | + New | Delete | Actions | More

01010 Item | 10 Product Line | Medical Ultrasound Description 1 | ACTIVE Item Status

Main | Site | Item Aliases | Intrastat Item | Production Scheduling | Picking | Service

**Current Cost**

Cost Set Current  
Date Updated 4/14/2017

**Current Cost Set**  
• Tracking and comparison  
• Maintained as Avg, Last or None

This Level Total 639,51163  
Lower Level Total 1,222,61428  
Cost Total 1,862,12591

Category #1	Element	This Level	Lower Level	Total	Primary	A/O
Burden	Burden	2.00004	0.00	2.00004	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Labor	Labor	637.51159	0.00	637.51159	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Material	Material	0.00	1,222.61428	1,222.61428	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Overhead	Overhead	0.00	0.00	0.00	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Save Cancel

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### Maintain Current Item Costs (Current Cost Set)

The current cost of an item is normally based upon recent production and/or purchases. Current costs are the actual costs from inventory receipts and production order labor transactions.

- When the method used for the GL cost set is standard costing, the current cost set can be used to track the running average or last cost for use in determining next year's standard cost or for providing a record of recent actual costs
- Methods that can be used with current are Last, Average or None

**Last:** Each receipt sets the current cost to the last cost of that item. In the case of purchased material, this is the purchase or invoice price.

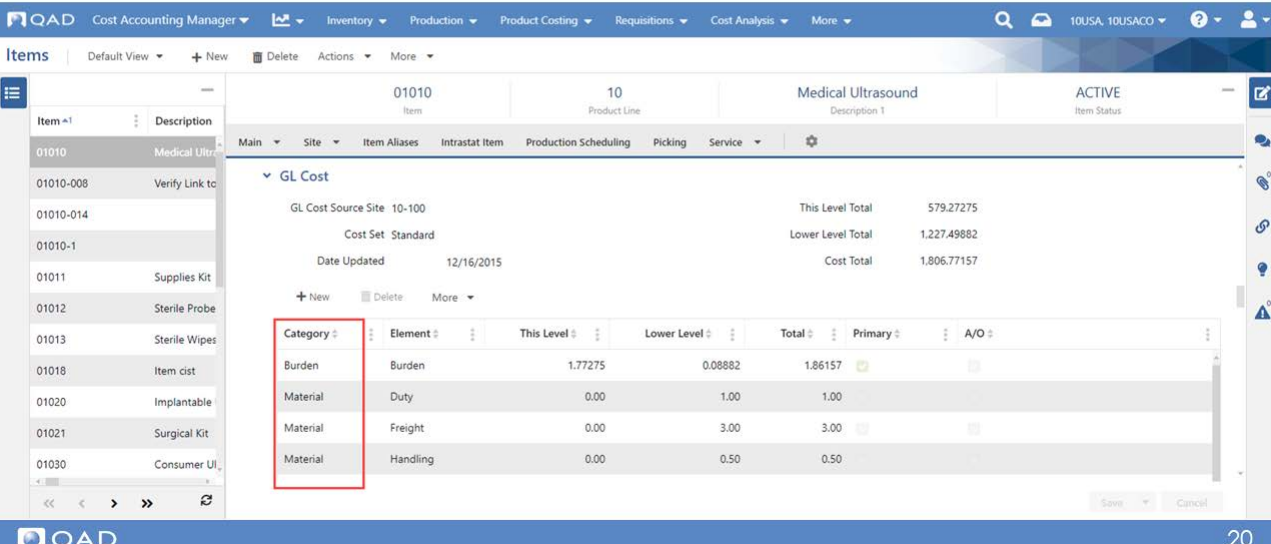
**Average:** Whenever an item is received, the new average cost is calculated and stored in the cost set

**None:** Current costs are maintained manually in the system or not used.

## Cost Categories

Introduction to Product Costing

# Cost Categories



The screenshot shows the QAD Cost Accounting Manager interface. The main window displays the 'GL Cost' screen for item 01010. The table below shows the cost categories and their associated values.

Category	Element	This Level	Lower Level	Total	Primary	A/O
Burden	Burden	1.77275	0.08882	1.86157		
Material	Duty	0.00	1.00	1.00		
Material	Freight	0.00	3.00	3.00		
Material	Handling	0.00	0.50	0.50		

There are five categories of costs tracked for each cost set. These categories, described below, are tracked for both this-level and lower-level costs in QAD Enterprise Applications and contain cost elements that, by default, have the same name as the category. (“This level” refers to costs incurred at the level at which you define the item; “lower level” refers to costs associated with the item’s components or manufactured items in the BOM.)

### Material

Represents the cost of purchased materials.

For purchased items, the material cost is maintained in the This Level Material field by manually entering the data in the item cost maintenance screens: Items, or Item Site Costs.

For manufactured items, the material cost is maintained in the Lower Level Material field by rolling up the product structure costs using Product Structure Cost Roll-Up.

### Labor

Represents the direct labor cost applied to this product, including setup labor. Labor cost is calculated from labor rates and run/setup hours at each operation in a product’s routing.

It is updated at This Level by running a Routing Cost Roll-Up and updated for Lower Levels by running a Product Structure Cost Roll Up. You would not expect to have labor costs for purchased items

### Burden

Represents the variable overhead cost applied to this product, based on labor and/or machine burden rates.

As with labor, burden cost is maintained for This Level through Routing Cost Roll-Up. Burden cost is updated for Lower Levels by running a Product Structure Cost Roll- Up. You would not expect to have burden costs for purchased items. Burden costs can also be updated by using Item-Element Cost Calculation.

#### Overhead

Represents the fixed overhead cost for this item - for example, utilities. Another example would be the expense of operating purchase or supplier logistics functions, which could be recovered as fixed overhead on all purchased items based on a percentage of their cost. This is often a better solution than the arbitrary addition of such costs to general burden.

Overhead cost is maintained manually for each item in item cost maintenance screens: Items or Item Site Costs. Or it can be maintained by assigning it as a percentage of other cost categories in Item-Element Cost Calculation.

For purchased materials, you would normally see only This Level overhead costs, but for manufactured items, you might have both This Level and Lower Level overhead costs. Overhead cost is updated for lower levels by running a Product Structure Cost Roll-Up.

#### Subcontract

Represents the cost of outside processing as entered in each routing operation for manufactured items in Routings.

Subcontract cost is updated by Routing Cost Roll-Up for This Level, and Product Structure Cost Roll-Up for Lower Level costs.



## Cost Elements

Introduction to Product Costing

# Cost Elements

QAD Cost Accounting Manager

Items | Default View | + New | Delete | Actions | More

Item #1 | Description

01010 | Medical Ultra

01010-008 | Verify Link to

01010-014

01010-1

01011 | Supplies Kit

01012 | Sterile Probe

01013 | Sterile Wipes

01018 | Item cist

01020 | Implantable

01021 | Surgical Kit

01030 | Consumer UL

01010 | Item | 10 | Product Line | Medical Ultrasound | Description 1 | ACTIVE | Item Status

Main | Site | Item Aliases | Intranat Item | Production Scheduling | Picking | Service

GL Cost

GL Cost Source Site 10-100 | This Level Total 579.27275

Cost Set Standard | Lower Level Total 1,227.49882

Date Updated 12/16/2015 | Cost Total 1,806.77157

+ New | Delete | More

Category	Element	This Level	Lower Level	Total	Primary	A/O
Burden	Burden	1.77275	0.08882	1.86157		
Material	Duty	0.00	1.00	1.00		
Material	Freight	0.00	3.00	3.00		
Material	Handling	0.00	0.50	0.50		

Save | Cancel

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Cost elements group different types of costs within a single cost category.

- All costs are associated with a cost category: material, labor, burden, overhead, or subcontract. When item costs are rolled up, totals are maintained for each category. Each cost category must have at least one cost element.
- The default cost elements - material, labor, burden, overhead, and subcontract - are created whenever costs are copied from a current or GL cost set

**Note** Other cost elements can be added by using the Cost Management module. The additional cost elements can record different types of costs or further subdivide these categories. For example, if material costs include purchasing unit cost, purchase overhead, and transportation charges, a separate cost element can be set up for transportation charges, allowing you to track costs and simulate the effect of changes. (See Cost Management Course.) These new cost elements still belong to one of the five cost categories, which control posting to the GL.

### Study Questions

What are the five cost categories in QAD applications?

What are the two default cost set names in QAD applications?

What is the point of the two cost sets in a standard cost system?

If you want to retain a cost set reflecting the prior years ending cost what module would you use?

## Levels

Introduction to Product Costing

# Levels

The screenshot displays the QAD Cost Accounting Manager interface for item 01010 (Medical Ultrasound). The 'GL Cost' section shows a table with the following data:

Category	Element	This Level	Lower Level	Total	Primary	A/O
Burden	Burden	1.77275	0.08882	1.86157	<input checked="" type="checkbox"/>	
Material	Duty	0.00	1.00	1.00	<input type="checkbox"/>	
Material	Freight	0.00	3.00	3.00	<input type="checkbox"/>	
Material	Handling	0.00	0.50	0.50	<input type="checkbox"/>	

Summary statistics shown in the interface:

- GL Cost Source Site: 10-100
- Cost Set: Standard
- Date Updated: 12/16/2015
- This Level Total: 579.27275
- Lower Level Total: 1,227.49882
- Cost Total: 1,806.77157

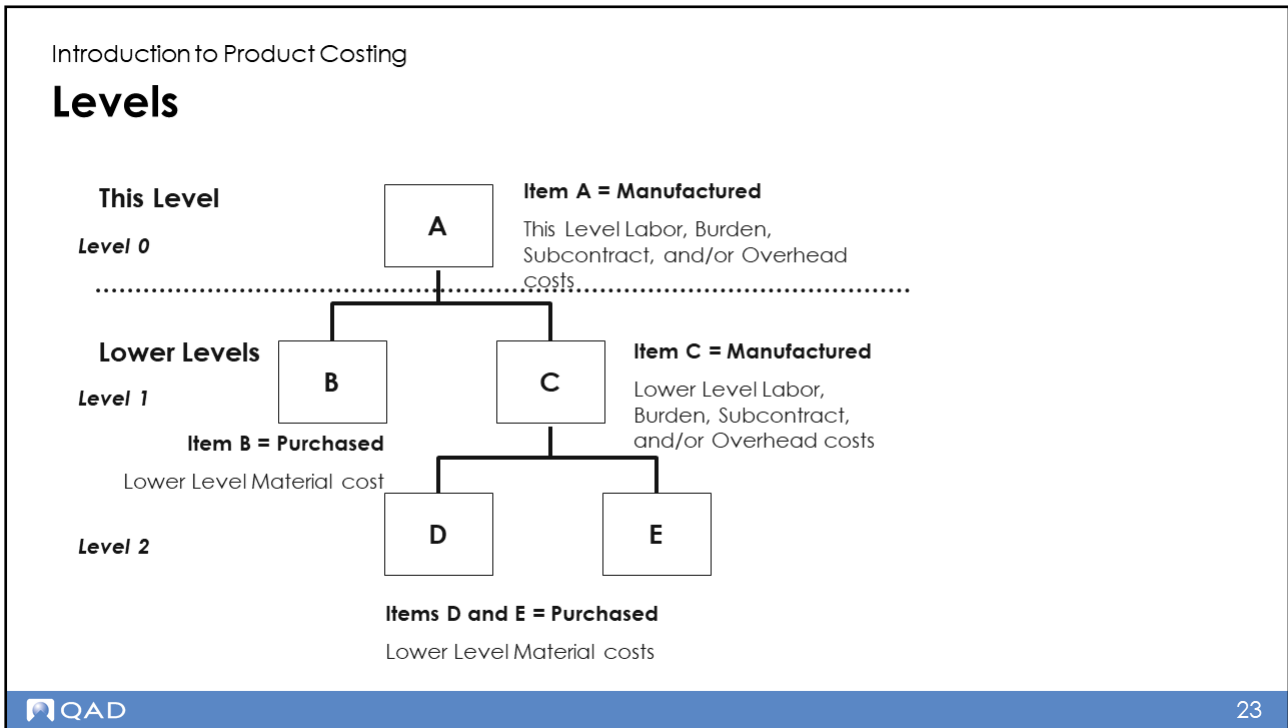
Annotations in the screenshot:

- A red box highlights the 'This Level' and 'Lower Level' columns.
- An arrow points from the 'Duty' row to the 'This Level' column with the text: "Costs added at this stage of manufacturing".
- An arrow points from the 'Duty' row to the 'Lower Level' column with the text: "Costs added at prior stages of manufacturing".

Costs added at the current stage of manufacturing are called This Level costs (level 0); costs added at prior stages of manufacturing are called Lower Level costs (levels 1 through 99). These are discussed in more detail on the following page.



## Levels



### This Level

This Level costs are the costs to either obtain or produce an item. Thus, a purchased item has This Level material (and optionally material overhead) cost, but it has no Lower Level costs. Likewise, a manufactured part has This Level labor, subcontract, burden, and overhead cost, but normally no This Level material cost. The manufactured item will, however, have Lower Level material cost for components and possibly Lower Level labor, material, subcontract, burden and overhead if the structure has more than two levels.

### Lower Level

Lower Level costs represent costs that are added at prior stages of manufacturing. Lower Level material costs are the costs of all purchased materials used in the final manufactured product and any subassemblies. Lower Level labor, burden, and subcontract costs are developed from the cost of making any lower-level subassemblies.

## Phantom Structures

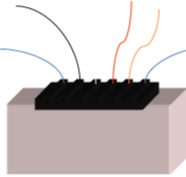
Introduction to Product Costing

### Phantom Structures

**Phantom: A non-stocked sub-assembly**

**What?**

**Example 1**  
A wire harness that exists only briefly on the assembly line as a separate sub-assembly



Also called

- Pseudo Part
- Transient Part
- Blow-Through Part

**Why?**

1. Engineering needs to isolate this sub-assembly in their plans
2. The service department may need to issue work orders to make some for repairs

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Phantom items are used in manufacturing to define items that are made and consumed in the production process without being inventoried. They represent a method of defining bills of material and formulas to satisfy design/engineering, cost, and production. They can be set as Local phantoms, Global phantoms, or both.

### Global Phantoms

Global Phantoms are defined in Items and identify this item as a phantom on all bills of material.

### Local Phantoms

Local phantoms are defined by a Phantom in the Structure Type field in Product Structures & Formulas for each bill of material where this item is to be considered a phantom. Local phantoms can cause manufacturing variances if they have This Level costs.

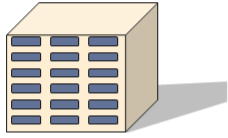
Phantoms are discussed in more detail later in the course.

## Domain, Sites, Entities, and Locations

Introduction to Product Costing

### Domain, Sites, Entities, and Locations

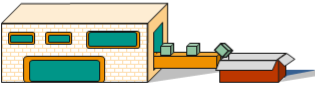
USA Domain 10USA



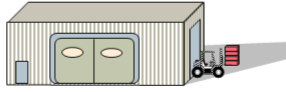
USA Division

- A *domain* is business unit that may have several entities
- An *entity* is a business that publishes financial statements and files tax returns
- A *site* is a unit used for inventory planning and control
- A *location* is a specific inventory area


USA Entity 10USACO



Site = 10-100  
Ultrasound Equipment



Location = 010  
Finished Goods

 QAD

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**Domain.** A domain is a high-level corporate structure that can have many entities. It can be used to provide an accounting template for the entities.

**Entity.** An entity is an independent unit for financial reporting purposes, a separate balance sheet and income statement are generated by entity, budgets are planned by entity, and taxes are assessed by entity. All GL transactions are posted by entity.

**Site.** A site is an inventory and planning concept. All inventory is stored by site and all planning is done by site. Each site belongs to one and only one entity, but each entity can have more than one site. Site 10-100 is an examples of a site.

Because each site is attached to an entity, the site on any transaction is used to determine which entity to post the inventory transaction to in the GL.

**Location.** A location is a specific inventory storage area. Each site can have as many locations as needed. Location 010 is an example

**Note** Balance sheets cannot be produced by site, only by entity unless you have a single entity for each site in the system. However, you can use sub-accounts or cost centers to get profit/loss statements and activity reports by site. If you have multiple sites in a single entity, you cannot generate a balance sheet by site, because retained earnings and year-to-date profit/loss are only maintained in aggregate by entity.

## Product Lines

Introduction to Product Costing

### Product Lines

- Product lines group items by similarities in manufacture or application
- Items must belong to only one product line
- Product lines identify which GL accounts will be used for sales, inventory, purchasing, work orders, or service transactions

Product lines group items for reporting, planning, and accounting purposes:

- Reports can be selected and sorted by product line
- Product Line Planning and MRP/DRP can plan by product line
- You can track sales, costs, inventory values and variances in the general ledger by product line

Every item belongs to only one product line. The item's product line determines whether it is included on a report, or in calculations, and which GL accounts to post to. (Some GL accounts can be taken from the product line or further specified by site, location, or customer type.)

Different departments can have different criteria for grouping items; marketing might want product lines to reflect target markets, manufacturing to reflect production method. Or you might want to establish different product lines for not easily grouped items like raw materials or common components to separate them from finished goods.

See Chapter 2, "Account Structures" for more details on product lines.

## Direct and Indirect Costs

Introduction to Product Costing

### Direct and Indirect Costs

- Direct costs are those costs that can be attributed to a single unit of production
- Indirect costs, or overhead, are production costs that cannot or will not be directly traced to a single unit of production

The terms “direct” and “indirect” relate to the traceability of costs. Conceptually, any cost that can be traced to a single product is a direct cost of that product. This includes the cost of all material and labor that goes into making the product, as well as the cost of any subcontract operations. All production costs other than direct costs are considered indirect, or an overhead.

## Fixed and Variable Costs

Introduction to Product Costing

### Fixed and Variable Costs

- Variable costs tend to vary in direct proportion to the level of activity
  - Labor is an example
- Fixed costs do not vary in relation to the level of activity
  - Rent is an example

The terms “fixed” and “variable” relate to the behavior of costs as production volume fluctuates. Variable costs increase directly with increase in volume. Fixed costs, such as rent and utilities costs, do not change, at least in the short term. For example, you still have to pay to heat and light your factory, regardless of the volume of production.

## Absorbed vs. Applied Amounts

Introduction to Product Costing

### Absorbed vs. Applied Amounts

- Burden is absorbed based on activity on the shop floor
- Overhead is applied based on the number of units received through manufacturing or purchasing

As production is reported, burden costs are absorbed; that is, the standard per unit costs are credited to the burden absorption account based on actual shop floor activity.

When finished items are received, the standard per unit overhead cost is credited to the Applied Overhead account.

When predetermined burden and overhead rates are used, the actual amount absorbed to production in a given month is likely to differ from the total amount of overhead cost actually incurred. This is because production volumes vary from the volume estimates used to determine these rates.

## Burden vs. Overhead (1 of 2)

Introduction to Product Costing

### Burden vs. Overhead (1 of 2)

- Overhead, as it is used in QAD system, is split into two parts:
  - Burden (variable overhead)
  - Overhead (fixed overhead)
    - Fixed overhead set manually or as a percentage of some other cost category



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Burden is the variable portion of overhead cost. In a standard cost system, standard burden per unit is usually calculated based on predetermined burden rates, typically based on labor or machine hours and/or labor cost.

Overhead is the fixed portion of overhead cost. In a standard cost system, a portion of fixed overhead cost per unit is usually allocated to each item, either manually or as a percentage of some other cost category. For example, fixed overhead can be set to a percentage of material cost.

Characteristics of fixed overhead:

- Fixed amount within a relevant product output range
- Manually calculated by dividing the annual expected overhead costs by the annual expected number of units to be produced. Because total overhead is fixed, as output increases, the cost per unit must decrease.
- Management-level decision on incurrence starts at executive level vs. operating supervisors

**Example** Depreciation, rent, insurance, real property taxes, patent amortization, wages for production executives, watchmen, firemen, janitors, maintenance and repairs, insurance, rent

Characteristics of variable overhead:

- Variable amount in direct proportion to output
- Calculated by QAD Enterprise Applications by multiplying the actual number of units produced by a predetermined burden rate. Because total burden is variable, as output increases, cost per unit is constant.
- Easily assignable to operating departments



- Incurrence decision rests at department level

**Example** Supplies, fuel, power, small tools, spoilage/salvage/reclamation expense, receiving costs, royalties, factory travel costs.

## Burden vs Overhead (2 of 2)

Introduction to Product Costing

### Burden vs Overhead (2 of 2)

- Burden\*
  - Direct
  - Variable
  - Absorbed
- Overhead\*
  - Indirect
  - Fixed
  - Applied

\* As used throughout this course and as it pertains to QAD Enterprise Applications

A summary of key differences between Burden and Overhead is shown in the figure above.

### Study Questions

What are some examples of an indirect fixed cost?

Is the maintenance cost of a machine that must be serviced every 5,000 parts, burden or overhead? Fixed or variable?

## Business Issues

Introduction to Product Costing

### **Business Issues**

- Costing method
- Multiple sites/entities
- Work order or repetitive environment
- Discreet or process production
- Product changes
- Configured products
- Overhead and burden
- Scrap and yield

## Review

Introduction to Product Costing

### Review

- Introduction
  - Concepts and Definitions
  - Purpose of Costing
  - Cost Flows
- Cost Methods
  - Standard Cost
  - Average Cost
  - Period Cost
- Cost Screens
  - Cost Sets
  - Cost Categories/Elements
  - Cost Levels
- Account Structures
  - Product Line Accounts
  - Department Accounts
  - Site Accounts

**Mastery Question – All That Apply**

Introduction to Product Costing

**Mastery Question – All That Apply**

1. What of following costing method can be applied to the current cost set?
  - A. Average
  - B. Last
  - C. None
  - D. FIFO

## Mastery Question – True False

Introduction to Product Costing

### Mastery Question – True False

2. Phantom items are used in manufacturing to define items that are made and consumed in the production process. But they are not stocked.
  - A. True
  - B. False

**Mastery Question – Multiple Choice**

Introduction to Product Costing

**Mastery Question – Multiple Choice**

3. What of following statement is incorrect?
- A. Purchased item has This Level material (and optionally material overhead) cost, but it has no Lower Level costs
  - B. Overhead cost can be attributed to a single unit of production
  - C. Variable costs tend to vary in direct proportion to the level of activity
  - D. Burden is absorbed based on activity on the shop floor

## Exercise: Introduction to Product Costing

Introduction to Product Costing

### Exercise: Introduction to Product Costing



## Introduction to Product Costing

### A. Material and Labor Variance Calculations

Review the material and labor variances on the following pages to ensure your understanding of how variances are calculated. The variances are based on the data below.

Later in the costing class, you will see material and labor variances on reports. Learning how those variances are calculated in this activity will help your understanding in those later activities.

#### Background Information

Based on an average production rate of 5500 units per month using 3300 standard hours, the standards for the year are:

Direct materials (1 kg @ \$2)	\$2
Direct labor (*0.6 hr @ \$10/hr)	\$6
Standard cost per unit	\$8
*(3300 / 5500 = 0.60 hr)	

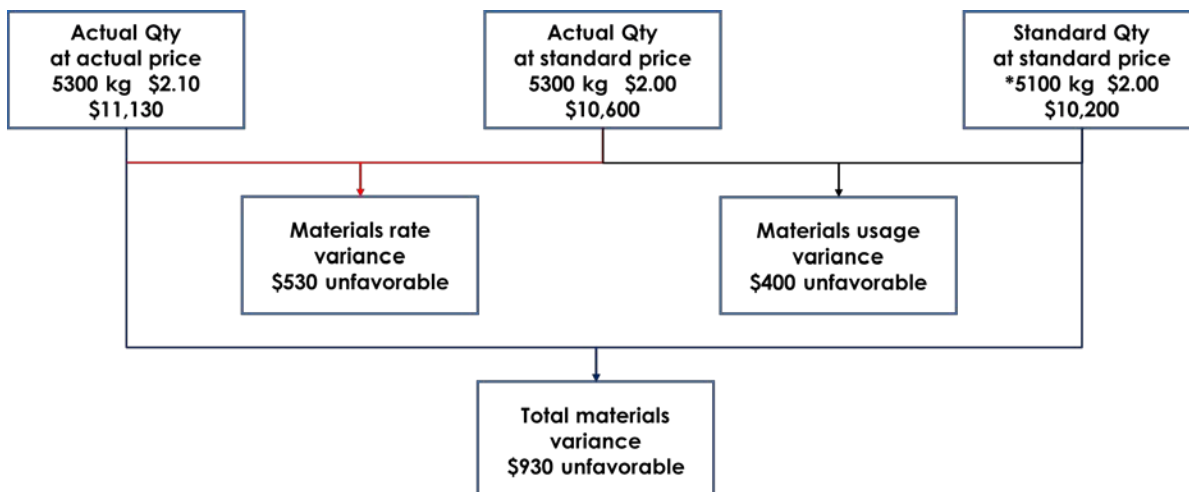
Results for January of this year are:

5100 units produced	
Direct materials (5300 kg @ \$2.10)	\$11,130
Direct labor (3200 hrs @ \$10.20/hr)	\$32,640
Total manufacturing costs for January	\$43,770

Net cost variance for the month:

Actual costs	\$43,770
Standard cost for producing 5100 units	
(5100 \$8/unit)	\$40,800
Net unfavorable cost variance	\$ 2,970

### B. Materials Price and Quantity Variance

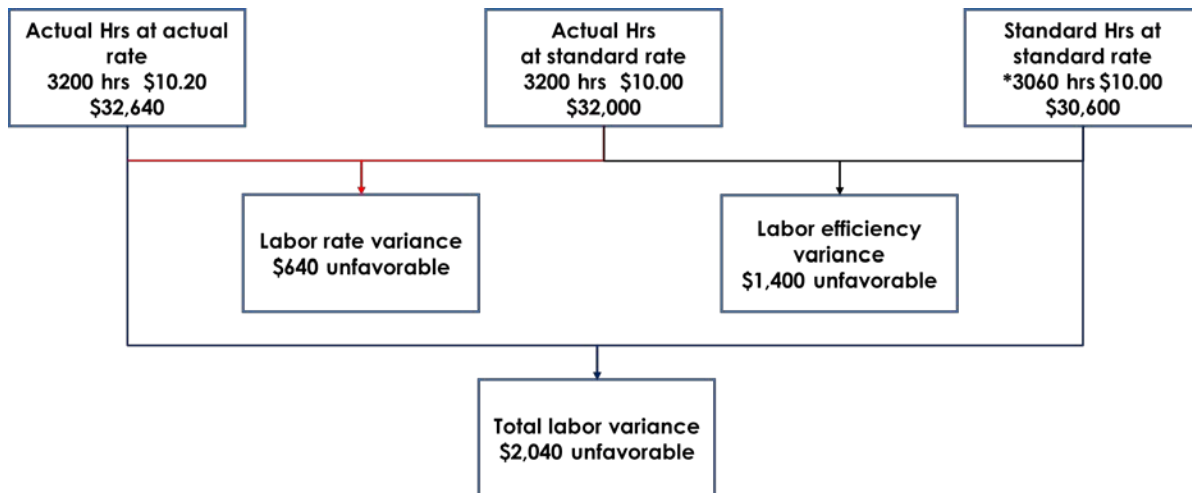


Materials rate var = actual qty used (actual price - std price)  
 = 5300 (\$2.10 - \$2)  
 = \$530 unfavorable variance

Materials usage var = std price (actual quantity - std quantity)  
 = \$2 (5300 - 5100)  
 = \$400 unfavorable variance

\*Std Qty at Std Price = (5100 units 1 kg / unit) \$2 = 10,200

**C. Labor Rate and Labor Efficiency Variance**



Labor rate variance = actual hrs (actual hourly rate - std hourly rate)  
 = 3200 (\$10.20 - \$10)  
 = \$640 unfavorable variance

Labor efficiency var = std hourly rate (actual hours - std hours)  
 = \$10 (3200 - 3060)  
 = \$1400 unfavorable variance

\*Std Hrs at Std Rate = (5100 units 0.6 hr / unit) \$10 = \$30,600

**D. Summary:**

Net Material Variance = \$930 unfavorable

Net Labor Variance = \$2040 unfavorable

Total Variance = \$2970 unfavorable



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CHAPTER 2

# Costing Accounts





# Costing Accounts



## Overview

Costing Accounts

### Overview

- GL Accounting Structure
  - Entity, Account, Sub-account, Cost Center, Project
- GL Reference
  - GL Reference
  - GL Posting Lines
  - GL Account Setup Flow
- GL Accounts
  - Product Line Accounts
  - Department Accounts
  - Site Accounts

## GL Accounting Structure

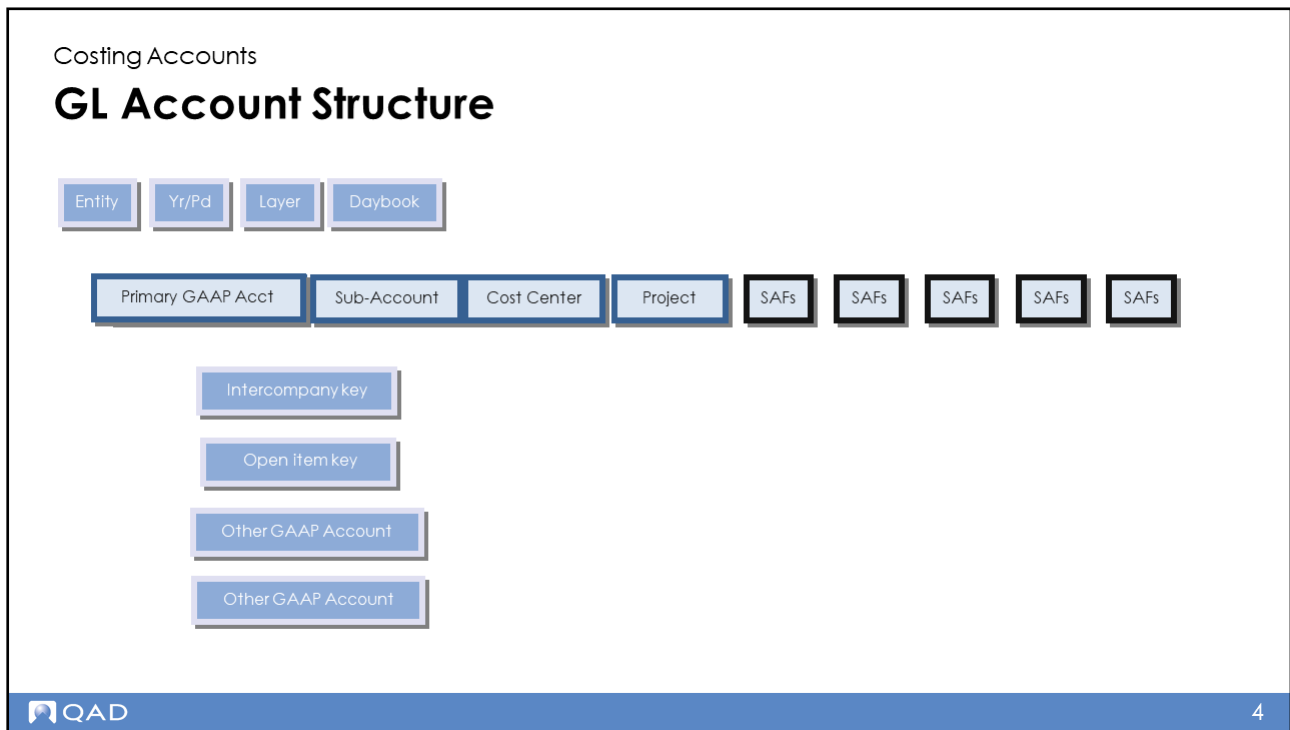
Costing Accounts

### GL Accounting Structure

- Entity
- Account
- Sub-account
- Cost Center
- Project

The components of the accounting structure —entity, account, sub-account, cost center, and project—are discussed in this section.

## GL Account Structure



To support different types of reporting and analysis, some GL accounts can be used in combination with sub-accounts, cost centers, projects, and SAFs. These elements provide greater granularity in financial reporting. Balances in sub-accounts and cost centers can be listed separately or summarized under account codes.

SAFs provide additional analytical reporting on transactions. SAFs can be used to provide costing on a particular service before you create a purchase order for the service.

## GL Reference

Costing Accounts

### GL Reference

- GL Reference
- GL Posting Lines
- GL Account Setup Flow

In this section, we will look at how to read the GL Reference and GL Posting lines, followed by a discussion of account defaults and where accounts are set up.

## GL Reference Number

Costing Accounts

# GL Reference Number

The screenshot displays a table of unposted transactions. A callout box highlights the GL Reference Number 'IC21041200TN40' and breaks it down into its components: Transaction Type (IC), Effective Date (2104), and Transaction Number (200TN40).

Entity	Eff Date	Entered	Reference ID	Line	Account	Sub-Account	CC	Project	Cur	Description	Amount
10USACO	4/12/2021	4/12/2021	IC21041200TN40	1	1500	Mech			USD	RCT-UNP	250.00
10USACO	4/12/2021	4/12/2021	IC21041200TN40	2	6610	Mech	ADM		USD	RCT-UNP	-250.00
10USACO	4/12/2021	4/12/2021	IC21041200TN4P	1	1500	Mech			USD	RCT-UNP	15,000.00
10USACO	4/12/2021	4/12/2021	IC21041200TN4P				ADM		USD	RCT-UNP	-15,000.00
10USACO	3/21/2021	3/21/2021	WO21032100TN3E						USD	LABOR 1006	10.00
10USACO	3/21/2021	3/21/2021	WO21032100TN3E				mfg		USD	LABOR 1006	-10.00
10USACO	3/21/2021	3/21/2021	WO21032100TN3F	1	1550	Mech			USD	LABOR 1006	10.00
10USACO	3/21/2021	3/21/2021	WO21032100TN3F	2	5220	Mech			USD	LABOR 1006	-10.00
10USACO	3/21/2021	3/21/2021	WO21032100TN3G	1	1550	Mech			USD	SETUP 1006	10.00
10USACO	3/21/2021	3/21/2021	WO21032100TN3G				mfg		USD	SETUP 1006	-10.00
10USACO	3/21/2021	3/21/2021	WO21032100TN3H	1	1550	Mech			USD	SETUP 1006	10.00

Every operational transaction is identified by a GL reference code consisting of the GL transaction type, the date that the transaction should update the GL, and the transaction number.

The transaction type indicates the module or activity (for example, IC stands for Inventory Control) that originated the transaction.

## GL Posting Lines

Costing Accounts  
**GL Posting Lines**

General Ledger Transactions | 1 / 2 | 100% + | [Print] [Refresh]

GL Transactions Operational Report | USA DIVISION | Page 1/2

GL Account	GL Description	Sub-Acct	Description	USD Debit	USD Credit	TC Debit	TC Credit Curr
GL Period: 2021/04							
Daybook	RCT-UNP	Entity 10USACO		15,250.00	15,250.00	Layer	Primary
Reference	IC210412007N4Q		Payment	1269079		Transaction Type	IC
BatchNumber			Payment Type	IC		Address Code	
RCT-UNP/0000000004			Posting Date: 4/12/2021		250.00	250.00	
1500	Inventory	Mech	RCT-UNP	250.00	0.00	250.00	0.00 USD
6610	Purchases-Project	Mech	RCT-UNP	0.00	250.00	0.00	250.00 USD
Reference	IC210412007N4P		Payment	1269080		Transaction Type	IC
BatchNumber			Payment Type	IC		Address Code	
RCT-UNP/0000000005			Posting Date: 4/12/2021		15,000.00	15,000.00	
1500	Inventory	Mech	RCT-UNP	15,000.00	0.00	15,000.00	0.00 USD
6610	Purchases-Project	Mech	RCT-UNP	0.00	15,000.00	0.00	15,000.00 USD
Daybook	SYS-DB	Entity 10USACO		45.70	45.70	Layer	Primary
Reference	W0210413007N4Q		Payment	1007		Transaction Type	WO
BatchNumber			Payment Type	OP		Address Code	
SYS-DB/0000000029			Posting Date: 4/13/2021		45.00	45.00	
1550	Inventory WIP	Mech	LABOR 1007	45.00	0.00	45.00	0.00 USD
5120	Labor Absorbed	Mech	LABOR 1007	0.00	45.00	0.00	45.00 USD

QAD | 7

In addition to the information used to identify the transaction, the transaction record consists of one or more posting lines—debit and credit amounts that you will post to GL accounts at period-end.

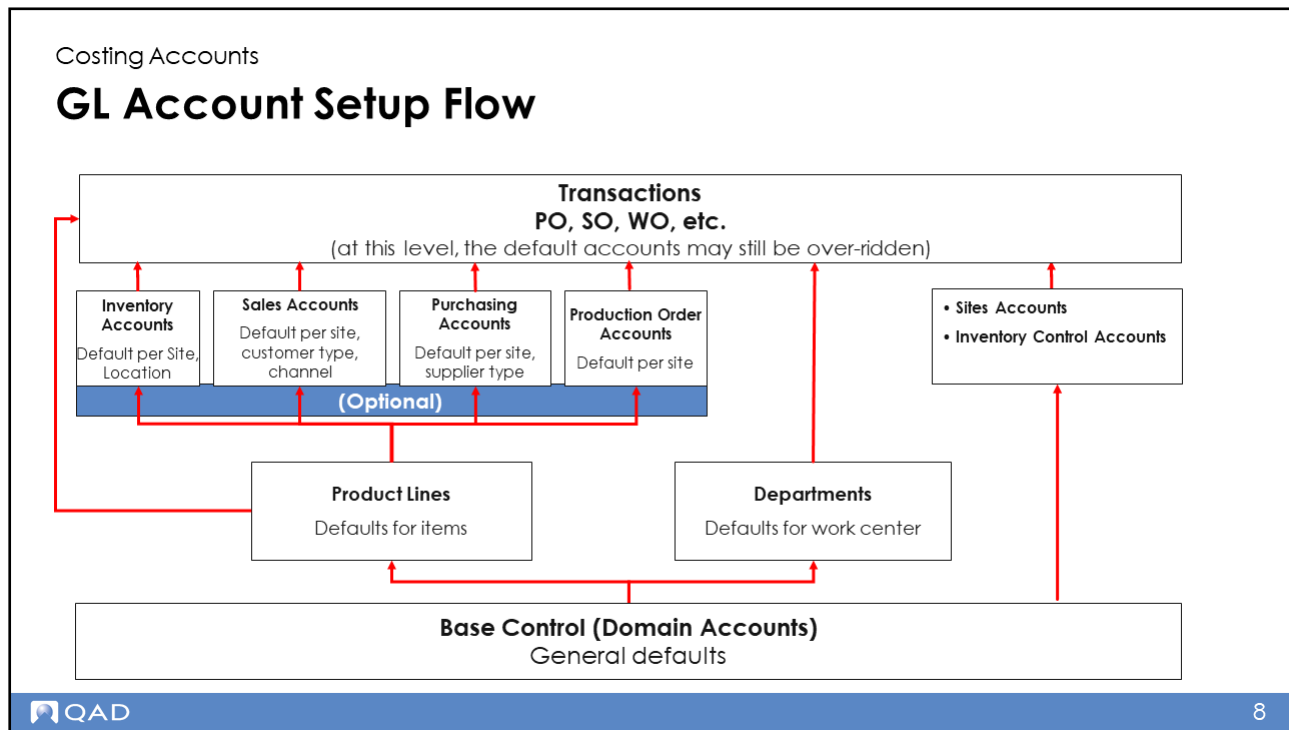
In QAD Enterprise Applications all GL posting lines are created for a specific entity and account combination. The entity indicates which business the transaction affected, and the account indicates which assets, liabilities, income or expenses were changed.

In the example above, account and sub-account are shown. Cost center and project can also be included.

A more complex transaction, a sales order invoice for example, can have many posting lines. A credit to sales a debit to accounts receivable, a credit to sales discount, a credit to sales commissions, and a credit to tax liability. The posting lines should balance.



## GL Account Setup Flow



General ledger accounts occur in a variety of places. If set up correctly, you will not have to enter the GL accounts on most transactions; the correct ones are brought in as defaults, speeding up data entry and minimizing errors.

### Domain Accounts in Base Control

Domain-wide default accounts are set up in Base Control. A few accounts are used directly, but most account defaults flow through the system as shown above.

### Department Accounts

Manufacturing costs are grouped by departments. When you create department records, the accounts to be used for transactions associated to this department default from Base Control, but can be changed to any other valid account in Departments.

### Product Line Accounts

Each item record must be associated to a product line, which is then used to determine the default accounts for transactions of this item. When you create a product line, the account information defaults from Base Control and then can be modified to any other valid account in Product Lines. Product line accounts include sales, production order, inventory, and purchasing accounts. For closer tracking of inventory and sales, purchase and production orders accounts, you can use Inventory Accounts, Sales Accounts, Purchasing Accounts and Production Order Accounts, which are described below.

### Inventory Accounts

You can specify inventory accounts in more detail than the product lines allow. If so, then you can set them by Product Line, Site and Location to obtain the level of detail you want. Location is optional and allows you to set inventory accounts differently for multiple sites within a product line.

### **Sales Accounts**

In some cases, you can break sales information down into more detail than is available through product lines alone. In that case, if you additionally define sales accounts for a product line by site, customer type, and/or channel, you can use different accounts in sales transactions. In this function, you must specify Product Line and Site, but only need to use Customer Type and Channel if you need more levels of detail.

*Note* The Customer Type is associated to the customer record and the system will look it up during sales account assignment in sales order processing; however, channel must be entered manually on each sales order.

### **Purchasing Accounts**

In some reporting, you might need Purchasing account breakdown by Site or Supplier Type. Purchase accounts, receipt accounts, OH applied accounts and AP variances can be set up specific to the breakdown. The supplier type is set up in the system and identified to the Supplier in the Supplier Maintenance.

### **Production Order Accounts**

Production Order accounts specific to variances, Floor Stock, WIP and Cost of Production can be set up specific to a site for each Product Line.

### **Site Accounts**

When sites are created in Sites, the Transfer Variance account will default from Base Control. If you will be transferring materials between sites, you might want to define different account combinations for each site. If you will be using DRP to transact materials between sites, you can define these accounts by site.

### **Inventory Control**

The Transfer Clearing account is used to track transfers within a site or between two sites within the same entity. The Intercompany account is used when transferring between two sites that are in separate entities in a single database. The system will automatically generate the transactions required to balance between the entities. They will be entity specific, though, based on the entity associated to the sites transferring the inventory.

## GL Accounts

Costing Accounts

### **GL Accounts**

- Product Line Accounts
- Department Accounts
- Site Accounts

In this section, we will review each of the QAD Enterprise Applications costing accounts in detail.

## Product Line and Department Accounts

Costing Accounts

### Product Line and Department Accounts

#### Product Line Accounts

Sales	Production Order	Inventory	Purchasing
Sales	Floor Stock	Inventory	Purchases
Sales Discount	Material Usage Variance	Inventory Discrepancy	PO Receipts
Exempt Sales	Material Rate Variance	Scrap	Overhead Applied
COGS Material	Mix Variance	WIP	PO Price Variance
COGS Labor	Cost of Production	Method Variance	AP Usage Variance
COGS Burden	Subcontract Usage Variance	Cost Revalue	AP Rate Variance
COGS Overhead	Subcontract Rate Variance		
COGS Subcontract			

#### Dept. Accounts

Department
Cost of Production
Labor Absorbed
Burden Absorbed
Labor Usage Variance
Labor Rate Variance
Burden Usage Variance
Burden Rate Variance

## Product Line Inventory Accounts

Costing Accounts

### Product Line Inventory Accounts

The screenshot displays the 'Product Line Inventory Accounts' configuration screen. The 'Inventory Accounts' section is highlighted with a red box, showing the following data:

Account Name	Amount	Unit Type	Search
Inventory	1500	Mech	Q
Inventory Discrepancy	5900	Mech	Q
Scrap	6000	Mech	Q
Cost Revalue	6100	Mech	Q

The tooltip provides the following definitions:

- Inventory:** To track inventory balances for balance sheet
- Inventory Discrepancy:** Adjustments from cycle counts and physical counts
- Scrap:** From work orders and quality orders
- Cost Revaluation:** Resulting from standard costs changing

In a perpetual inventory system such as QAD Enterprise Applications, every inventory receipt, issue, count, or transfer updates the Inventory account (at GL cost). The following are the specific inventory accounts set up in QAD Enterprise Applications, with information on the account type and the QAD Enterprise Applications functions that use the accounts.

**Inventory.** Tracks inventory value. Transactions affecting Inventory accounts include purchase order receipts, production order issues/receipts, sales order shipments, physical inventory counts, as well as manual inventory transactions. Each of these transactions affects inventory by creating a GL transaction which either debits (increases) or credits (decreases) the account value. If site/location inventory accounts are specified in Inventory Accounts, all inventory transactions will use them. Otherwise, the product line inventory account associated to the item will default.

**Inventory Discrepancy.** Tracks inventory discrepancies due to cycle count or physical inventory adjustments. Positive count adjustments debit (increase) the Inventory account and credit (decrease) the Inventory Discrepancy account. Negative count adjustments do the reverse.

**Inventory Discrepancy = Quantity change \* total GL cost**

**Scrap.** Records scrap amounts from production orders or quality orders.

**Cost Revalue.** Records the GL impact of item cost changes on inventory. Whenever the GL costs for items are changed using either Item Cost Maintenance, Item-Site Cost Maintenance, Cost Roll-Ups in the GL cost set, or Current Cost Set Move to GL Set, the system automatically creates revaluation postings in the GL. An increase in cost will cause a debit to the Inventory account and a credit to the Cost Revalue account. Note that GL item cost changes do not automatically revalue material in WIP. This material can be revalued by using WIP Material Cost Revaluation.



*Cost Revalue = Cost change \* total quantity on-hand*

## Inventory Accounts

Costing Accounts

# Inventory Accounts

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More | 10USA, 10USACO

Inventory Accounts | Default View | + New | More

Product Line 10 Finished Goods (FGI) | Site 10-100 Ultrasound Mfg Site | Location

Main | Inventory Accounts | Location Independent | Consignment Accounts | Settings

Main

Product Line 10 Finished Goods (FGI) | Site 10-100 Ultrasound Mfg Site | Location

Defaults

Default Sub-Account | Apply | Default Cost Center | Apply

Inventory Accounts

Inventory 1500 | Mech | |

Inventory Discrepancy 5900 | Mech | |

Scrap 6000 | Mech | |

Cost Revalue 6100 | Mech | |

Save | Cancel

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Usually inventory balances are maintained by product line, but you can specify inventory accounts in more detail than Product Lines, allows. If so, you can set inventory accounts by product line, site, and location in Inventory Accounts, to obtain the level of detail that you want. Location is optional and allows you to set inventory accounts differently for multiple sites within a product line.

## Product Line Purchasing Accounts

Costing Accounts

# Product Line Purchasing Accounts

Account Name	Balance	Account Type	Account Type	Account Type
Purchases	6610	Mech	ADM	
PO Receipts	2520	Mech		
Overhead Apply	5330	Mech		
PO Price Variance	6710	Mech	ADM	
AP Usage Variance	6720	Mech		
AP Rate Variance	6740	Mech		

- Purchases Non-Inventory
- PO Receipts Accrual (inventory items)
- Overhead Applied Fixed OH applied at PO Receipts and WO Receipt
- PO Price Variance PO price vs std price at PO Receipt
- AP Usage Variance PO quantity vs invoice quantity at vouchering
- AP Rate Variance PO rate vs invoice rate at vouchering

Another group of accounts is used to monitor Purchasing and Accounts Payable activities. These purchasing accounts include variance accounts, which are used to evaluate your internal performance and that of your suppliers.

**Purchases.** Records purchases of non-inventory (expense) items that exist in the Item Master. Default account usually amended.

**PO Receipts (accrued AP) for Inventory Items.** Accrues purchase order receipts prior to receipt of supplier invoices. The Inventory account is debited for the GL cost of the item less any overhead amount multiplied by the quantity received. The Purchase Order Receipts account is credited for the purchase order price times the quantity received.

$$PO \text{ unit price} * PO \text{ qty received}$$

**Overhead Applied .** Tracks fixed overhead amounts applied at purchase and manufacturing item receipts. When receipt transactions are made, the system credits the Overhead Applied account and debits Inventory for this-level overhead amount.

**PO Price Variance.** Tracks the difference between the PO price for an item and the total standard cost of the item at the time the PO is received (less any overhead amount).

$$[PO \text{ unit price} - (\text{total GL unit cost} - \text{overhead})] * PO \text{ qty received}$$

When a purchase order item is received, the system creates a debit to Purchase Price Variance in addition to a debit to Inventory in the event the PO price is higher. It does so in order to balance the credit to Purchase Order Receipts.

*AP Usage Variance* . Tracks the difference between PO quantity received and supplier invoice quantity when receipts are vouchered.

$(Invoice\ qty - PO\ receipt\ qty) * PO\ unit\ cost$

A positive variance (invoice quantity larger than received quantity multiplied by the PO unit price) is debited to the Accounts Payable Usage Variance account and credited to the PO Receipts account, which now contains both the original receipt value plus the value of the discrepancy between the original receipt quantity and the quantity that was vouchered.

*AP Rate Variance* . Tracks the difference between PO price and supplier invoice price when receipts are vouchered.

$(Invoice\ unit\ cost - PO\ unit\ cost) * invoice\ qty$

In the case of a higher price, the Accounts Payable Rate Variance account is debited and the PO Receipts account is credited. The PO Receipts account contains the original receipt value plus the AP Usage Variance and the value of the discrepancy between the original PO cost and the cost that was vouchered.

## Purchasing Accounts

The screenshot shows the QAD Cost Accounting Manager interface for configuring Purchasing Accounts. The main configuration area is titled "20 FGI Purchased" (Product Line) and "10-100 Ultrasound Mfg Site" (Site). A red box highlights the "Main" section, which includes the following fields:

- Product Line: 20 (FGI Purchased)
- Site: 10-100 (Ultrasound Mfg Site)
- Supplier Type: (empty)

Below the "Main" section are the "Defaults" and "Purchasing Accounts" sections. The "Defaults" section includes:

- Default Sub-Account: (empty)
- Default Cost Center: (empty)

The "Purchasing Accounts" section includes the following accounts:

Account	Description	Account	Description	Account	Description
Purchases	6610	Mech		ADM	
PO Receipts	2520	Mech			
Overhead Apply	5330	Mech			
PO Price Variance	6710	Mech		ADM	

At the bottom right of the interface, there are "Save" and "Cancel" buttons. The QAD logo is visible in the bottom left corner, and the page number "14" is in the bottom right corner.

Usually PO Receipts balances are maintained by product line, but you can specify PO Receipts accounts in more detail than Product Lines, allows. If so, you can set PO Receipts accounts by product line, site, and supplier type in Purchasing Accounts, to obtain the level of detail that you want. Supplier Type is optional and allows you to set PO Receipts accounts differently for multiple sites within a product line.

## Product Line Sales Accounts

Costing Accounts

# Product Line Sales Accounts

The screenshot shows the QAD Cost Accounting Manager interface. The main window is titled "Product Line Sales Accounts" for Product Line 10, which is a Finished Goods (FGI) item. The interface is divided into several sections:

- Navigation:** A top menu bar includes "QAD Cost Accounting Manager", "Inventory", "Production", "Product Costing", "Requisitions", "Cost Analysis", and "More". A left sidebar lists various product lines (10, 11, 20, 22, 30, 35, 40, 50, 60) with their descriptions.
- Main Configuration:** A central area with tabs for "Main", "Inventory Accounts", "Sales Accounts", "Purchasing Accounts", "Work Order Accounts", "Service Accounts", and "Consignment Accounts". The "Sales Accounts" tab is selected.
- Sales Accounts Table:** A table with columns for Account Name, Amount, and Mech. A red box highlights the following rows:
 

Account Name	Amount	Mech
Sales	4000	mch
Sales Discount	4200	Mech
COGS Material	5000	Mech
COGS Labor	5100	Mech
COGS Burden	5200	Mech
COGS Overhead	5300	Mech
COGS Subcontract	5400	Mech
- Right Panel:** Three panels are visible:
  - Sales:** Gross
  - Sales Disc:** Line Item
  - COGS:** Material, Labor, Burden, Overhead, Subcontract

Sales and cost of sales amounts are tracked by product line. The GL accounts for Sales and Sales Discounts default from the sales accounts if defined in Sales Accounts; otherwise, from the item product line (Product Lines).

*Sales.* Tracks gross revenue from sales

*Sales Disc.* Tracks sales order line discount amounts

**Note** Price Lists, Discount Account field: If a discount account, cost center, or project is specified in Price Lists, then any discounts arising from the selected price list are posted to that account, cost center, or project. If no account, cost center, or project is specified, the discount amounts are posted to the Discount account specified in Sales Accounts, or Product Lines. If you want to segregate discount postings based on sales order information, such as product line or sales channel, then you should leave the Disc Acct and Accrual fields blank in Price Lists.

The item's GL cost is used to post Cost of Goods Sold (COGS). This amount is split into the five major cost categories of material, labor, burden, overhead, and subcontract.

*COGS Material.* Tracks the material portion of cost of sales. Each time a shipment occurs, a credit is made to the Inventory account for the total GL cost of the item times the quantity shipped and a debit for the COGS material portion.

*COGS Labor.* Tracks the labor portion of cost of sales. Each time a shipment occurs, a credit is made to the Inventory account for the total GL cost of the item times the quantity shipped and a debit for the COGS labor portion.



*COGS Burden* . Tracks the variable overhead portion of cost of sales. Each time a shipment occurs, a credit is made to the Inventory account for the total GL cost of the item times the quantity shipped and a debit for the COGS burden portion.

*COGS Overhead* . Tracks the fixed overhead portion of cost of sales. Each time a shipment occurs, a credit is made to the Inventory account for the total GL cost of the item times the quantity shipped and a debit for the COGS overhead portion.

*COGS Subcontract* . Tracks the subcontract portion of cost of sales. Each time a shipment occurs, a credit is made to the Inventory account for the total GL cost of the item times the quantity shipped and a debit for the COGS subcontract portion.

**Note** If you do not want to track the COGS costs by cost category, then you can set the accounts to be the same for all five categories.

## Sales Accounts

Costing Accounts

# Sales Accounts

The screenshot displays the QAD Cost Accounting Manager interface for Sales Accounts. The top navigation bar includes 'QAD Cost Accounting Manager' and various menu items like 'Inventory', 'Production', and 'Product Costing'. The main header shows 'Sales Accounts' with a 'Default View' dropdown and '+ New' and 'Actions' buttons. The breadcrumb trail indicates the current path: '10 Finished Goods (FGI)' (Product Line) > '10-100 Ultrasound Mfg Site' (Site) > 'DIST DISTRIBUTOR' (Customer Type) > 'Channel'. The 'Main' section is highlighted with a red box and contains the following fields:

- Product Line: 10 (with search icon) Finished Goods (FGI)
- Site: 10-100 (with search icon) Ultrasound Mfg Site
- Customer Type: DIST (with search icon) DISTRIBUTOR
- Channel: (with search icon)

Below the 'Main' section are 'Defaults' and 'Sales Accounts' sections:

- Defaults:** Default Sub-Account (with search icon) and Default Cost Center (with search icon), both with 'Apply' buttons.
- Sales Accounts:** A grid of input fields with search icons:
  - Sales: 4000
  - Sales Discount: 4200
  - COGS Material: 5000
  - mech
  - Mech
  - Mech

At the bottom right, there are 'Save' and 'Cancel' buttons. The QAD logo is in the bottom left, and the page number '16' is in the bottom right.

In some cases, you can break sales information down into more detail than is available through product lines. In that case, if you additionally define sales accounts for a product line by site, customer type (hospitals, doctors' offices) and/or channel (direct, OEM) in Sales Accounts, you can use different accounts in sales transactions. In this function, you must specify product line and site, but only need to use customer type and channel if you want more levels of detail.

**Note** The Customer Type is associated with the customer record, and the system will look it up during sales account assignment in sales order processing. But Channel must be entered manually on each sales order. A blank Channel code is valid if accounts are assigned strictly by Customer Type.

## Product Line Work Order Accounts

The screenshot displays the QAD Cost Accounting Manager interface. The main window shows 'Product Line 10' with a description of 'Finished Goods (FGI)'. Under the 'Work Order Accounts' section, a table lists various accounts with their respective values and search icons. A red box highlights this section. A callout box on the right states: '• Cost of Production Clearing acct for subcontract costs'. The interface includes a navigation menu on the left and a top navigation bar with various system menus.

Account Name	Value	Search Icon	Account Name	Value	Search Icon
Floor Stock	1600	Q	Mech		Q
Material Usage Variance	5040	Q	Mech		Q
Material Rate Variance	5050	Q	Mech		Q
Mix Variance	6830	Q	Mech		Q
Cost of Production	5770	Q	Mech		Q
Subcontract Usage Variance	5440	Q	Mech		Q
Subcontract Rate Variance	5450	Q	Mech		Q
Work in Process	1550	Q	Mech		Q
Method Variance	6800	Q	Mech		Q

These product line accounts are used in manufacturing to track the cost of floor stock, miscellaneous production costs, and production order variances. They appear on each manufacturing order as the defaults, but can be changed on any order.

**Floor Stock.** This is an Inventory clearing account for bulk issue items (for example, nails or nuts and bolts) that are part of the product structure, but which are not issued in the normal manner. Such items, coded in Items, with an Issue Policy = No, are issued to the floor using an unplanned issue transaction (Inventory Detail, action: Issues Unplanned). The system uses the Floor Stock account rather than the Cost of Production account, though, so that the material is not expensed. The issue transaction creates a debit to Floor Stock and a credit to Inventory.

**Material Usage Variance.** Tracks the difference between actual quantity issued and the standard quantity required in production orders. Since the standard cost of the item is inflated for yield losses, differences due to yield are reflected here. This variance is calculated and posted when the manufacturing order is accounting closed. Usage variance will also be calculated for substitute materials issued to production orders, production order bill modifications that add materials, phantom use-up logic under some conditions, component issues to rework jobs, and for any materials issued to an expense job that is accounting closed.

$$\{actual\ qty\ issued - [qty\ per * (qty\ complete + qty\ reject)]\} * GL\ cost$$

**Material Rate Variance.** Tracks the difference between the GL cost of an item at the time it is issued to a production order and the frozen cost of the item in the production order bill. You get this difference when you issue material from a different site and it has a different cost or when you change GL costs without updating WIP.

$$(WO\ BOM\ unit\ cost\ at\ issue - GL\ unit\ cost) * actual\ qty\ issued$$



*Mix Variance.* This is the GL account code normally used to track the mix variance. The product line Mix Variance account is used as a default on all manufacturing orders for Co- Products/By-Products in the product line.

$$[\text{order qty} - (\text{receipt qty} + \text{scrap qty})] * \text{GL cost}$$

*Cost of Production.* Miscellaneous production costs that cannot be tracked to a specific production order, such as unplanned issues. Also serves as the clearing account for subcontract purchase transactions on production orders. When a subcontract purchase order is received, the cost of the subcontract item will remain in the Cost of Production account if no production order was linked to the subcontract purchase order.

*Subcontract Usage Variance.* Tracks the difference between the quantity received on a subcontract PO and the quantity completed in work in process.

This variance can be due to yield differences and rework, for example. It is calculated and posted by Production Order Accounting Close. A positive quantity multiplied by the subcontract operation cost is debited to Subcontract Usage and credited to WIP.

$$\text{Subcontract Usage Var} = [\text{qty received} - (\text{qty complete} + \text{qty reject})] * \text{subcontract frozen WO BOM unit cost}$$

*Subcontract Rate Variance.* Tracks the difference between the subcontract PO price and the standard subcontract cost in the routing for an item. This is calculated and posted at the time the PO Receipt is processed. A positive rate difference multiplied by the quantity received at purchase order receipt is credited to WIP and debited to the Subcontract Rate Variance account.

$$\text{Subcontract Rate Variance} = (\text{subcontract PO unit cost} - \text{subcontract frozen WO BOM unit cost}) * \text{qty received}$$

*Work in Process (WIP).* Tracks work-in-process inventory value.

*Method Variance.* Tracks any unexplained manufacturing variances at production order or cumulative order accounting close. Method variance might be due to alternate routings, alternate product structures, timing of changes to item cost standards, lot size variance, or a rounding remainder.



## Production Order Accounts

Costing Accounts

# Production Order Accounts

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

10USA 10USACO

Production Order Accounts | Default View | + New | More

Product Line: 10 Finished Goods (FGI) | Site: 10-100 Ultrasound Mfg Site

Main

Product Line: 10 Finished Goods (FGI) | Site: 10-100 Ultrasound Mfg Site

Defaults

Default Sub-Account: [ ] | Apply | Default Cost Center: [ ] | Apply

Production Order Accounts

Floor Stock	1600	Mech	[ ]
Material Usage Variance	5040	Mech	[ ]
Material Rate Variance	5050	Mech	[ ]
Mix Variance	6830	Mech	[ ]
Cost of Production	5770	Mech	[ ]

Save | Cancel

QAD 18

Use Production Order Accounts to define the product line production order accounts by site.

## Product Line Service Accounts

Costing Accounts

# Product Line Service Accounts

The screenshot displays the QAD Cost Accounting Manager interface. The main window shows the configuration for Product Line 10, 'Finished Goods (FGI)'. The 'Service Accounts' section is highlighted with a red box and contains the following data:

Account Name	Account Number	Account Type	Unit
Service Labor	6900	Mech	Q
Service Overhead	6905	Mech	Q
Service Expense	6910	Mech	Q
Expense Due Employee	6915	Mech	Q
Service Returns	6920	Mech	Q
Deferred Revenue	2450	Mech	Q
Accrued Revenue	1450	Mech	Q

Not directly related to product costing but uses cost data to track service items and returns

Use service accounts to track activity related to Service/Support Management (SSM).



## Product Line Consignment Accounts

Costing Accounts

# Product Line Consignment Accounts

Main	Inventory Accounts	Sales Accounts	Purchasing Accounts	Work Order Accounts	Service Accounts	Consignment Accounts
	Service Overhead	6905	Mech			
	Service Expense	6910	Mech			
	Expense Due Employee	6915	Mech			
	Service Returns	6920	Mech			
	Deferred Revenue	2450	Mech			
	Accrued Revenue	1450	Mech			
<b>Consignment Accounts</b>						
	SO Consigned In-Transit	1650	Mech			
	SO Consigned Inventory	1655	Mech			
	SO Consigned Offset	2455	Mech			
	PO Consigned Inventory	1660	Mech			
	PO Consigned Offset	2460	Mech			

Not directly related to product costing but uses cost data to track value of inventory held at a customer location or supplier inventory held at our location

Use consignment accounts to track the consigned inventory for customer consignment and supplier consignment.

## Product Line Accounts: Summary (1 of 2)

Costing Accounts

### Product Line Accounts: Summary (1 of 2)

Account	Type	Use
Inventory	Asset	Inventory Transactions
Inv Discrep	Expense	Inventory Counts
Scrap	Expense	WO Receipt
Work in Process	Asset	Work Orders, Backflush, Rep
Method Variance	Expense	WO Acctg Close, Cum Order Close
Cost Revalue	Expense	GL Cost Change
Sales	Income	Invoice Post
Sales Disc	Expense	Invoice Post
(Tax) Exempt Sales	Income	Invoice Post (Canadian)
COGS Material	Expense	SO Shipment
COGS Labor	Expense	SO Shipment
COGS Burden	Expense	SO Shipment
COGS Overhead	Expense	SO Shipment
COGS Subcontract	Expense	SO Shipment

A summary of the product line accounts, the account type, and the kinds of transactions the accounts might appear on.

**Product Line Accounts: Summary (2 of 2)**

Costing Accounts

**Product Line Accounts: Summary (2 of 2)**

<b>Account</b>	<b>Type</b>	<b>Use</b>
Purchases	Expense	PO Receipt (Non-Inventory)
PO Receipts (Accrued AP)	Liability	PO Receipt, Voucher
Overhead Applied	Expense	PO Receipt, WO Receipt
PO Price Variance	Expense	PO Receipt
AP Usage Variance	Expense	Voucher
AP Rate Variance	Expense	Voucher
Floor Stock	Asset	WO Close, Cum Order Acctg Close
Material Usage Variance	Expense	WO Close, Cum Order Acctg Close
Material Rate Variance	Expense	WO Issue, WO Close, Repetitive Backflush, Rework
Cost of Production	Expense	Unplanned Issues
Subcontract Usage Var	Expense	WO Close, Cum Order Acctg Close
Subcontract Rate Var	Expense	WO Close, PO Receipt

## Departments

The screenshot displays the 'Departments' configuration screen in the QAD Cost Accounting Manager. The main area is titled '9100 Shop floor 2' and shows a table of accounts for this department. A red box highlights the 'Accounts' section, which includes the following entries:

Account Name	Account Code	Account Type	Account Description
Cost of Production	5770	Mech	
Labor	5120	Mech	mfg
Burden	5220	Mech	mfg
Labor Usage Variance	5140	Mech	mfg
Labor Rate Variance	5150	Mech	mfg
Burden Usage Variance	5240	Mech	mfg

The right-hand panel contains callouts for several account types:

- COP Misc production expense** (downtime, breaks)
- Labor Absorption**
- Burden Absorption**
- Labor & Burden Usage Variance**: Quantity variance; posted at SFC or WO Receipt; default set in WO Control File
- Labor & Burden Rate Variance**: Price/rate variance; posted at SFC or WO Receipt; default set in WO Control File

Manufacturing costs are grouped by department. When you create department records, the accounts to be used for transactions associated to this department default from Base Control, and can be changed to any other valid account.

The department account codes are similar to the GL account codes for product lines. They are used when reporting labor and downtime in the Shop Floor Control and production orders modules, and when backflushing inventory and closing the accounting for completed production orders. More detailed information about these accounts follows.

*Cost of Production.* Used for indirect labor using non-productive labor reporting, or for downtime reporting.

*Labor (absorption).* Used to accumulate the labor cost for a department. The standard hours at the standard rate are debited to WIP and credited to the Labor and Burden accounts. Labor usage and burden usage variances are calculated and credited to the Labor and Burden accounts, respectively. And labor rate variances are calculated and credited to the Labor and Burden accounts.

*Burden (absorption).* Burden is the variable overhead associated with production operations, and the burden account is used to accumulate accrued burden for a department. It is used in conjunction with labor reporting and the backflushing of standard labor. Both direct and downtime hours (if employee and work center are specified in Downtime Transaction) will be burdened, while non-productive hours reported will not be.

*Labor Usage Variance.* For standard cost, labor usage variance is used to track the difference between the actual time reported and the standard time set for both setup and run labor. Since standard hours are inflated to cover yield losses, differences due to yield will be reflected in labor usage variance.

*Labor Usage Variance =*



$$[(\text{actual setup hrs} - \text{std setup hrs}) * \text{std setup rate}] + [(\text{actual run hrs} - \text{std run hrs}) * \text{std run rate}] \text{ Std run hrs} \\ = \text{std run hrs/unit} * (\text{qty completed} + \text{qty rejected})$$

**Labor Rate Variance.** Tracks the difference between the actual employee pay rate (including overtime and shift differential) and the work center standard labor rate.

*Labor Rate Variance =*

$$[(\text{actual setup rate} - \text{std setup rate}) * \text{actual setup hrs}] + [(\text{actual run rate} - \text{std run rate}) * \text{actual run hrs}]$$

**Burden Usage Variance.** Tracks the difference in burden costs due to the actual hours reported varying from the standard hours required on the routing.

*Burden Usage Variance =*

$$[(\text{actual setup hrs} - \text{std setup hrs}) * \text{std setup burden}] + [(\text{actual run hrs} - \text{std run hrs}) * \text{std run burden}]$$

Where:

$$\text{Std setup burden} = (\text{std setup rate} * \text{bdn}\%) + \text{lbr bdn rate} + (\text{mach bdn rate} * \text{mach/op}) \text{ Std run burden} = (\text{std run rate} * \text{bdn}\%) + \text{lbr bdn rate} + \text{mach bdn rate}$$

Burden can be a percentage of labor, a fixed rate per labor hour for machine, or the sum of these.

**Burden Rate Variance.** Tracks the difference in burden costs due to the employee's actual pay rate varying from the work center standard labor rate. This applies only if burden is calculated as a percentage of labor cost and the employee's pay rate is different than the work center standard.

*Burden Rate Variance =*

$$[(\text{actual setup bdn} - \text{std setup bdn}) * \text{actual setup hrs}] + [(\text{actual run bdn} - \text{std run bdn}) * \text{actual run hrs}]$$

Where

$$\text{Actual setup burden} = (\text{actual setup rate} * \text{bdn}\%) + \text{lbr bdn rate} + (\text{mach bdn rate} * \text{mach/op}) \text{ Std setup burden} = (\text{std setup rate} * \text{bdn}\%) + \text{lbr bdn rate} + (\text{mach bdn rate} * \text{mach/op})$$

$$\text{Actual run burden} = (\text{actual run rate} * \text{bdn}\%) + \text{lbr bdn rate} + \text{mach bdn rate}$$

$$\text{Std run burden} = (\text{std run rate} * \text{bdn}\%) + \text{lbr bdn rate} + \text{mach bdn rate}$$

## Department Accounts: Summary

Costing Accounts

### Department Accounts: Summary

Account	Type	Use
Cost of Production Labor (Absorbed)	Expense	Non-Prod Labor, SFC Transfer, Downtime
	Expense	SFC, Repetitive Backflush/Rework, WO Acctg Close
Burden (Absorbed)	Expense	SFC, Repetitive Backflush/Rework, WO Acctg Close
Labor Usage Variance	Expense	SFC, WO Receipt, Cum Order Acctg Close
Labor Rate Variance	Expense	SFC, WO Receipt, Repetitive Backflush/Rework
Burden Usage Variance	Expense	SFC, WO Receipt, Cum Order Acctg Close
Burden Rate Variance	Expense	SFC, WO Receipt, Repetitive Backflush/Rework

A summary of the accounts for a department, the account type, and the kinds of transactions on which the accounts might appear on.

## Sites

The screenshot displays the QAD Cost Accounting Manager interface for configuring a site. The main form is titled '10-110 Site' and 'Production 2 Description'. It features several input fields and checkboxes:

- Main Tab:**
  - Site: 10-110
  - Description: Production 2
  - Domain: 10USA
  - Entity: 10USACO
  - Automatic Locations:
  - Inspection Location: 030
  - Default Inventory Status: Y-Y-Y
  - AR/AP Sub-Account: [Empty]
- Additional Information Tab:**
  - Declarant: [Empty]
  - EMT Supplier: [Empty]
  - External Supplier:
  - Available to Global Network:
  - Transfer Variance Account: 6820
  - Mech: Mech
  - Transfer Variance: Mechanical

A callout box on the right side of the form states: "Used to book cost variance when a transfer between sites results in a cost difference". The interface includes a 'Save' button and a 'Cancel' button at the bottom right. The QAD logo and the number '25' are visible in the bottom left and right corners, respectively.

For each site in the database, you can establish a Transfer Variance account. At the time you create the site, the accounts will default from Base Control, but you can modify them.

## Review

Costing Accounts

### Review

- GL Accounting Structure
  - Entity, Account, Sub-account, Cost Center, Project
- GL Reference
  - GL Reference
  - GL Posting Lines
  - GL Account Setup Flow
- GL Accounts
  - Product Line Accounts
  - Department Accounts
  - Site Accounts

## Mastery Question – Multiple Choice

Costing Accounts

### Mastery Question – Multiple Choice

1. To set up costing GL accounts, what of following is optional?
  - A. Base Control
  - B. Product Lines
  - C. Departments
  - D. Inventory Accounts

## Mastery Question – True False

Costing Accounts

### Mastery Question – True False

2. In Inventory Accounts, you can set up inventory accounts by product line, site, and location to obtain the level of detail that you want.
  - A. True
  - B. False

## Mastery Question – Multiple Choice

Costing Accounts

### Mastery Question – Multiple Choice

3. If you want to set up COGS accounts by customer type, which of following menu you should use?
- A. Product Lines
  - B. Departments
  - C. Inventory Accounts
  - D. Sales Accounts

## Exercise: Costing Accounts

Costing Accounts

### Exercise: Costing Accounts



## Costing Accounts

In this activity, you will review the control structure for Quality Manufacturing International Company in the QAD system. This includes setting up or verifying the basic accounts, cost centers, product lines, and departments that we will use. You will also review the Base Control data. You will use this information throughout the rest of the class.

1. Sign in to QAD as user demo@qad.com and verify the current entity. It should be 10USACO.
2. Use GL Accounts to review all costing-related GL accounts.
3. Use Base Control to review all system default GL accounts
4. Use Product Lines to review the GL accounts for some product lines like 10 Finished Goods (FGI), 20 FGI Purchased, and so on.
5. Use Inventory Accounts, Purchasing Accounts, Sales Accounts, and Production Order Accounts to review the extended setup for product lines.
6. Use Departments to review the GL accounts for some departments like 0010, 0100, and so on.
7. Use Sites to review the data for site 10-100.

CHAPTER 3

# Costing Setup





# Costing Setup

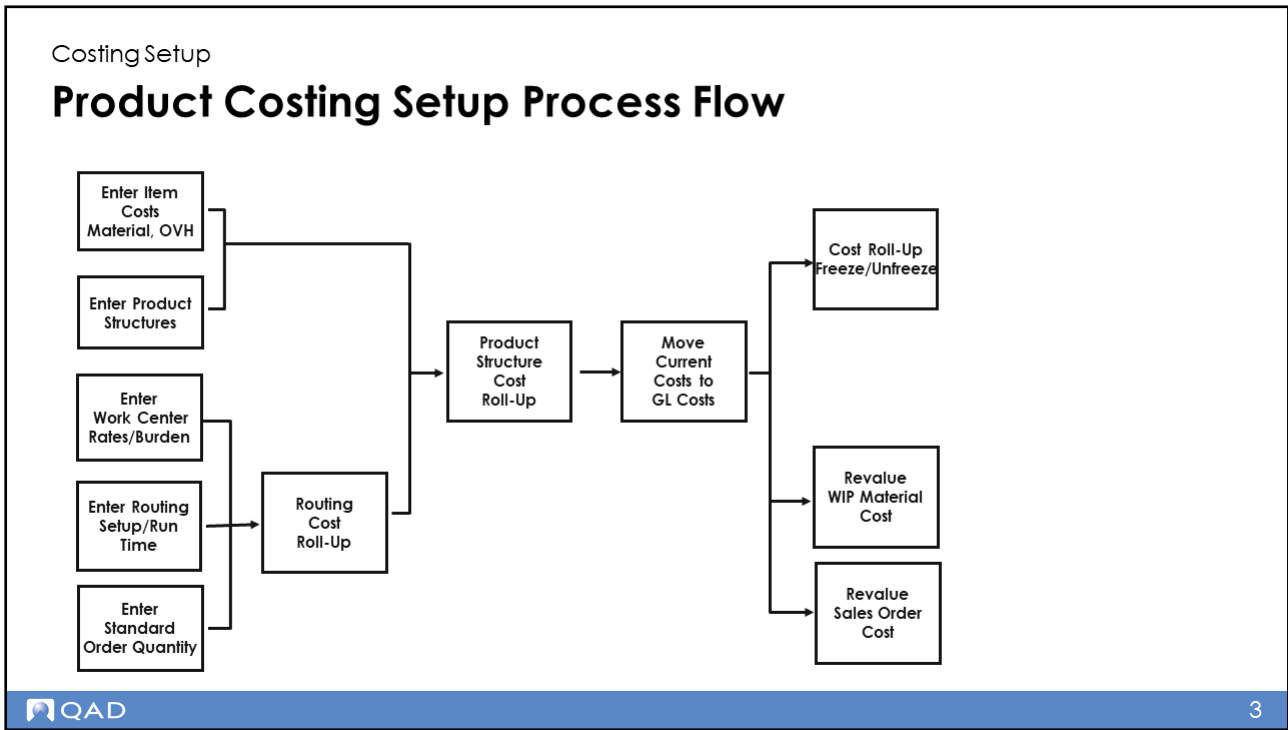
## Overview

Costing Setup

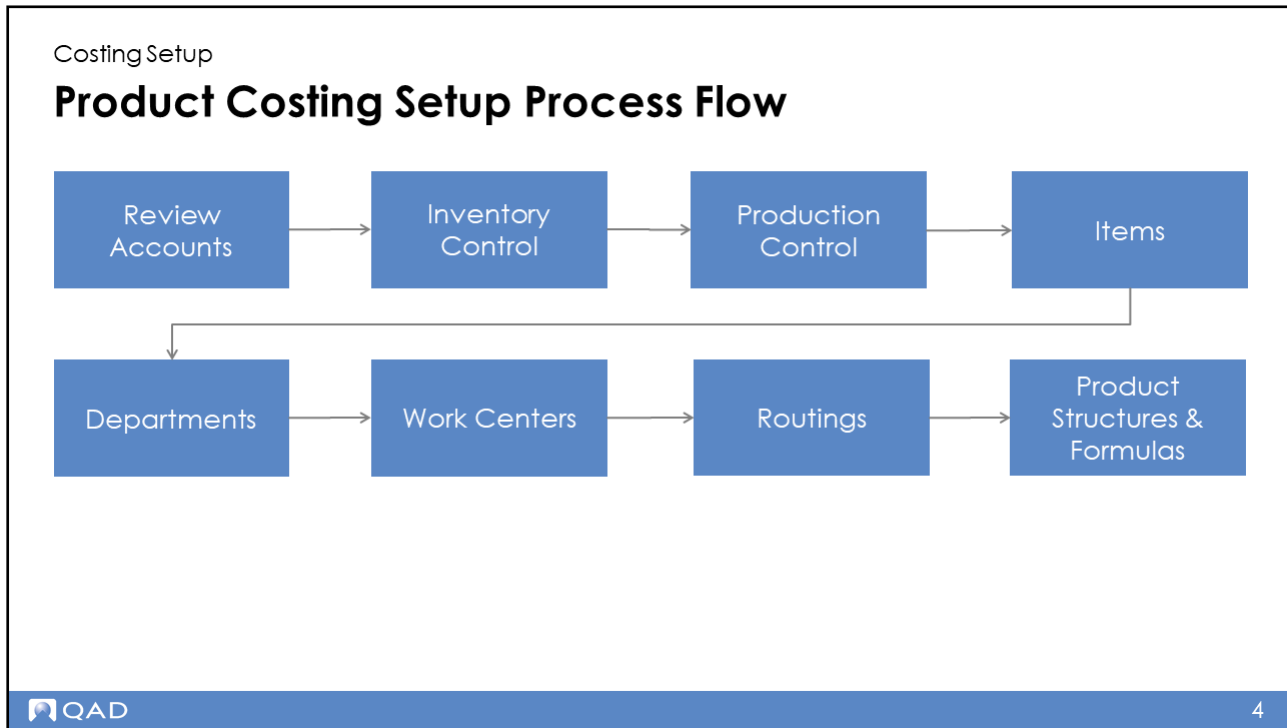
### Overview

- Setup Overview
- Inventory & Production Control
- Items Setup & Effects
- Departments
- Work Centers
- Routings
- Product Structures & Formulas
- Reject and Loss Costing

## Product Costing Setup Process Flow



## Product Costing Setup Process Flow



The steps that are covered in this chapter are summarized below.

### Review accounts

These accounts are discussed in detail in chapter 2 on Account Structures.

### Set up production order and inventory control programs

Several fields pertain to cost accounting in these control programs, including how current costs are maintained (as average, last, or none) and the accounts for intersite transfers; both are set in Inventory Control. Another important setting is in Production Control, which lets you determine when labor and burden rate and usage variances get posted if you are reporting labor in the Shop Floor Control module.

### Enter/review data in Items

Manually enter this-level costs (purchased materials and associated overhead) in the current cost set using Items. Fields particularly relevant to item costing in the item planning frame are order quantity (identifies the standard order size for setup cost allocation), purchase/manufacture field, phantom field, and yield percent.

### Set up departments in Departments

The system creates general ledger transactions using the accounts associated with the department code to collect labor, burden, and subcontract costs. (The individual department accounts are discussed in detail in chapter 2 on Account Structures)

### Set up work centers in Work Centers

The work center provides hourly labor rates, labor burden rates, labor burden percent, and machine burden rates, which are used in routing cost roll-ups.

**Set up routings in Routings**

Routings provide setup and run times per operation, machines per operation, and operation yield percent. Subcontract cost per unit is entered for each subcontracted operation.

**Set up product structure in Product Structures & Formulas**

The product structure attaches components to the parent item and defines the quantity per. Scrap rates are entered. Product structure type codes are entered.

## Review Accounts

Costing Accounts

### Review Accounts

#### Product Line Accounts

Sales	Production Order	Inventory	Purchasing
Sales	Floor Stock	Inventory	Purchases
Sales Discount	Material Usage Variance	Inventory Discrepancy	PO Receipts
Exempt Sales	Material Rate Variance	Scrap	Overhead Applied
COGS Material	Mix Variance	WIP	PO Price Variance
COGS Labor	Cost of Production	Method Variance	AP Usage Variance
COGS Burden	Subcontract Usage Variance	Cost Revalue	AP Rate Variance
COGS Overhead	Subcontract Rate Variance		
COGS Subcontract			

#### Dept. Accounts

Department
Cost of Production
Labor Absorbed
Burden Absorbed
Labor Usage Variance
Labor Rate Variance
Burden Usage Variance
Burden Rate Variance

Accounts are discussed in detail in chapter 2 on Cost Account Structures.

## Inventory Control

**Current Cost.** Current material, labor, and burden costs are maintained as Average, Last, or None.

**None:** Current costs are not maintained by the system. This must be done manually. Even if purchase line items have the field Update Avg/Last Cost set to Yes, an Inventory Control setting of None takes precedence, so no update will occur.

**Average:** Current costs are updated using a simple weighted average. This occurs for purchased items when the purchase order is received. For manufactured items, labor and burden are updated by the production order accounting close to reflect the actual hours spent.

**Last:** The current cost is simply set to the last cost on the purchase order or production order.

This is a domain-wide setting; all current costs for any site in the domain will be maintained using the setting selected None, Average, or Last unless you use the Cost Management module.

**Note** With the Cost Management module, you can use different cost sets with different costing methods at each site. Then use cost set to site assignment to specify which sites use which cost sets.

**Sum Lower Level Costs into Material Cost.** Cost of Goods Sold (COGS) is posted to the GL as the total (this-level plus lower-level) cost for each of the five cost categories: material, labor, burden, overhead, and subcontract. To report all lower-level costs as COGS-Material (as if all components were bought from outside suppliers), set Sum LL into Mtl Cost to Yes.

Usually this field is set to No. Cost of goods sold amounts are maintained separately for each cost component. However, in some companies, the material cost for an end item is considered to include all costs associated with purchasing or manufacturing components, as well as any direct material costs. Then this field is set to Yes.

*Current Cost from AP.* If the Current Cost from AP field is set to Yes, then the current material cost is updated at vouchering. If the invoice price differs from the purchase order price, the current material cost is adjusted.

*Transfer Clearing Account.* Enter the general ledger (GL) account code used to track transfers within a site or between sites in the same entity. This field cannot be blank when multiple sites are defined. This must be a valid, active account of type Standard.

Transfers between sites in different entities are tracked using the Cross-Company Inventory Control account defined for the domain and the intercompany codes of the appropriate entities. In a single-site environment, the Purchase account is used when this field is blank.

*Create GL Transactions.* Indicates if general ledger transactions are to be created by inventory activities.

Yes: All inventory issues, receipts, count adjustments, and transfers will create a general ledger transaction reflecting the change in inventory asset balances. In addition, any transactions that affect work-in-process inventory will create general ledger transactions. This includes production order issues and receipts.

No: General ledger transactions will not be created by any of these activities.

This field does not impact Memo item transactions. These do not create inventory GL transactions regardless of this field.

Companies that do perpetual inventory accounting should set this field to Yes, taking advantage of the automatic journal transactions created by the system.

Companies using period inventory accounting normally set this field to No. With period accounting, the accountant manually calculates ending inventory based on beginning inventory plus purchases less cost of goods sold. Manual journal entries must be made to post the purchases and cost of goods sold amounts, since these will not be posted automatically by the system.

Within Inventory Control, you can control whether to roll up local phantom this-level costs when running Product Structure Cost Roll-Up.

*Roll Up Local Phantom's TL Costs.* Specify whether to roll up local phantom this-level costs when running Product Structure Cost Roll-Up.

Yes: The Product Structure Cost Roll-Up program rolls up this-level costs of the local phantom items to the parent item.

No: The Product Structure Cost Roll-Up program does not roll up this-level costs of the local phantom items to the parent item.



## Production Control

Specify Yes to have the system post the value of the scrap quantity from a work-in-process operation queue to GL.

The system determines the value of scrap at the operation based on the production order, the production order routing, and bill. It calculates the cost of scrap by rolling up the material, run-time labor, burden, and subcontract costs. When the quantity is scrapped from the output queue or reject queue of an operation, the system determines the value of scrap by including the costs for that operation. When the quantity is scrapped from the input queue of an operation, the system determines the value of scrap as the value of the prior operation. For standard costing and co/by-products, the setup time is not included when the system determines the value of scrap because setup costs have already been accounted for in the quantities previously reported as completed. For average costing and co/by-products, the setup time is included when determining the value of scrap.

## Items

Costing Setup  
**Items**

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Items | Default View | + New | Delete | Actions | More

Item #1 | Description | 02002 | Electrical Connector | 10 | Product Line | Electrical Connector | Description 1 | ACTIVE | Item Status

Main | Site | Item Aliases | Intrastat Item | Production Scheduling | Picking | Service

Planning

Master Schedule

Plan Orders

Time Fence

Order Policy

Minimum Order

Maximum Order

Order Multiple

**Order Quantity**

Order Period

Safety Stock

Safety Time

MRP Required

**Phantom**

Buyer/Planner

Purchasing Buyer

Supplier

Enforce Supplier Certifica...

PO Site  Auto Industrial Mfg

**Purchase/Manufacture  PURCHASED**

Configuration Type

Inspect

Inspection Lead Time

Save | Cancel

QAD 8

For costing purposes, the important fields in the planning frame of Items are the following.

**Order Quantity.** The normal order quantity for this item. When manufacturing costs are calculated using Routing Cost Roll-Up (14.13.13), setup costs are divided by this order quantity. If this quantity is left as zero, the system assumes an order quantity of one for cost calculations only.

**Purchase/Manufacture.** Product Structure Cost Roll-Up will be affected by the Pur/Mfg code you assign to the item. The system assumes blank Pur/Mfg codes are [M]anufactured items.

[P]urchased Item. If your purchased item has a product structure and/or routing associated to it, it is not used in cost roll-up calculations. Instead, this-level labor, burden, and subcontract costs are zeroed out at the next roll-up. All lower-level costs are also zeroed out.

[D]RP item. The same cost calculation logic applies to these items as to purchased items. Any routing or product structure information is for reference only. If you have costed it as a manufactured item and then change it to a DRP (Distribution Requirements Planning) item, the next roll-up zeroes out all rolled costs from lower levels for this site (the default site specified in Items), in addition to this-level costs for routing-controlled categories.

[M]anufactured item. Costs are calculated from routing and product structure roll-ups.

[R]outable item. Functions like manufactured item during cost roll-up.

[C]onfigured item. Costs are calculated from Product Structure Cost Roll-Ups if the components on the structure have a structure type code of blank. Configured products have costs calculated during sales order entry for margin calculations.



[F]amily Planning item. Costs are calculated from product structures and routings if the structure type on the components is blank.

*Phantom.* Phantoms are often used for transient assemblies or intermediate products - ones that are not (and often cannot) be received into stock but instead go directly into the next higher assembly or product. Phantoms are often used for service items. Phantom set to Yes identifies this item and its product structure as a phantom. The effect of this setting on cost is discussed on page Engineering Changes.

## Items

Costing Setup  
**Items**

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Items | Default View | + New | Delete | Actions | More

Item #1: 02002 | Description: Electrical Connector | Product Line: 10 | Description 1: Electrical Connector | Item Status: ACTIVE

Main | Site | Item Aliases | IntraStat Item | Production Scheduling | Picking | Service

**Manufacturing**

Batch Quantity: 1.0

Operation Based Yield:

Yield: 100.00%

Run Time: 0.002

Setup Time: 0.0002

**ATP and EMT**

ATP Enforcement Level: NONE

Family ATP:

ATP Horizon: 0

Network: [ ]

Routing: 02001

BOM/Formula: [ ]

Replenishment Method: Orders

Run Sequence 1: [ ]

Run Sequence 2: [ ]

EMT Type: NON-EMT

Automatic EMT Processing:

Save | Cancel

**Operation Based Yield.** This field determines how the system calculates yield for components of this item when product structures and routings are exploded in Material Requirements Planning (MRP) programs, production orders, and configured products.

**No:** The system uses the Yield % field associated with the parent item in Item Planning Maintenance or Item-Site Planning Maintenance to calculate component requirements.

**Yes:** The system derives the yield percentage amount for components from operations on the parent item's routing. The Yield % field associated with the item is used for the parent item only, not the components.

**Yield%.** Percentage of any order that is expected to be usable. Can be updated automatically by Routing Cost Roll-up.

**Routing Code.** A code identifying the routing or process normally used in the manufacture of this item. Used only for manufactured items whose default routing/process definition is not stored under the item number.

Use of an alternate can cause a method variance to be calculated at Accounting Close. Usage and rate variances are calculated based upon the production order bill and routing used. If the alternate routing or bill calculates a value different from the standard, a method variance will be charged for the difference. If the values of the primary and alternates are of equal value, there will be no method variance calculated.

**BOM/Formula.** A code identifying the product structure, formula, and/or co-product/by-product structure normally used to manufacture this item. (For co-products/by-products, this is the base process code.) Used only for manufactured items whose default product structure/formula is not stored under the item number.



## Items

Costing Setup  
**Items**

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More | 10USA, 10USACO

Items | Default View | + New | Delete | Actions | More

Item #1: 02002 | Description: Electrical Connector | Product Line: 10 | Description 1: Electrical Connector | Item Status: ACTIVE

Main | Site | Item Aliases | Intrastat Item | Production Scheduling | **Picking** | Service

**Picking**

Allocation Policy: Detail | Detail Allocation

Transfer Allocation Policy: Drop | Drop Allocation

Pick Policy: Transfer | Pick and transfer

**Issue Policy: Backflush | Backflush**

Production Picking Order: Default | Default

Ascending/Descending: Ascending

Allocate Single Lot

Key Item

Picking Multiple: 0

Picking Minimum: 0

Picking Maximum: 0

**Service**

Model: [ ]

Service Group: [ ]

Service Category: [ ]

System Type: [ ]

Usage Code: [ ]

Installed Base

Save | Cancel

10

**Issue Policy.** Specify how the system issues inventory quantities for the item to production, and whether they appear on functions such as Product Order Receipt, Operation Activity Transaction, and Production Order Component Issue.

**Backflsh (default): Backflush.** Inventory for the item to a production order. Use this for production component items that are backflushed from inventory for a production order (operation). Items with Issue Policy Backflsh appear when processing a backflush transaction for a production order (operation) using functions such as Product Order Receipt and Operation Activity Transaction.

**Direct:** Issue Direct to Order. Use this to issue component items directly to a production order (as opposed to backflushed). Items with this Issue Policy display in Production Order Picklist Issue and Production Order Component Issue.

**No Issue:** Do not issue. Use this for expense items such as cleaning supplies that are not controlled in inventory with inventory balances, but handled as floor stock. When a production order is processed by the accounting close function, the cost of such items is debited to WIP and credited to the Floor Stock account specified on the order.

## Effect of Purchase/Manufacture Code on Cost

Costing Setup

### Effect of Purchase/Manufacture Code on Cost

Item A: Pur/Mfg Code = **M** or R

	TL	LL	TOT
Mtl	0.00	15.00	15.00
Lbr	2.50	4.00	6.50
Bdn	3.00	0.00	3.00
Ovhd	2.00	4.00	6.00
Sub	0.00	0.00	0.00

Item A: Pur/Mfg Code = **P** or D

	TL	LL	TOT
Mtl	0.00	0.00	0.00
Lbr	0.00	0.00	0.00
Bdn	0.00	0.00	0.00
Ovhd	2.00	0.00	2.00
Sub	0.00	0.00	0.00

← or →

Costs for component B and C are rolled up to A's lower-level cost

Mtl	5.00	10.00
Lbr	1.00	3.00
Bdn	0.00	0.00
Ovhd	2.00	2.00
Sub	0.00	0.00

\* After Routing and Product Structure Cost Roll-Ups

M = Manufactured  
P = Purchased  
TL = This Level; LL = Lower Level

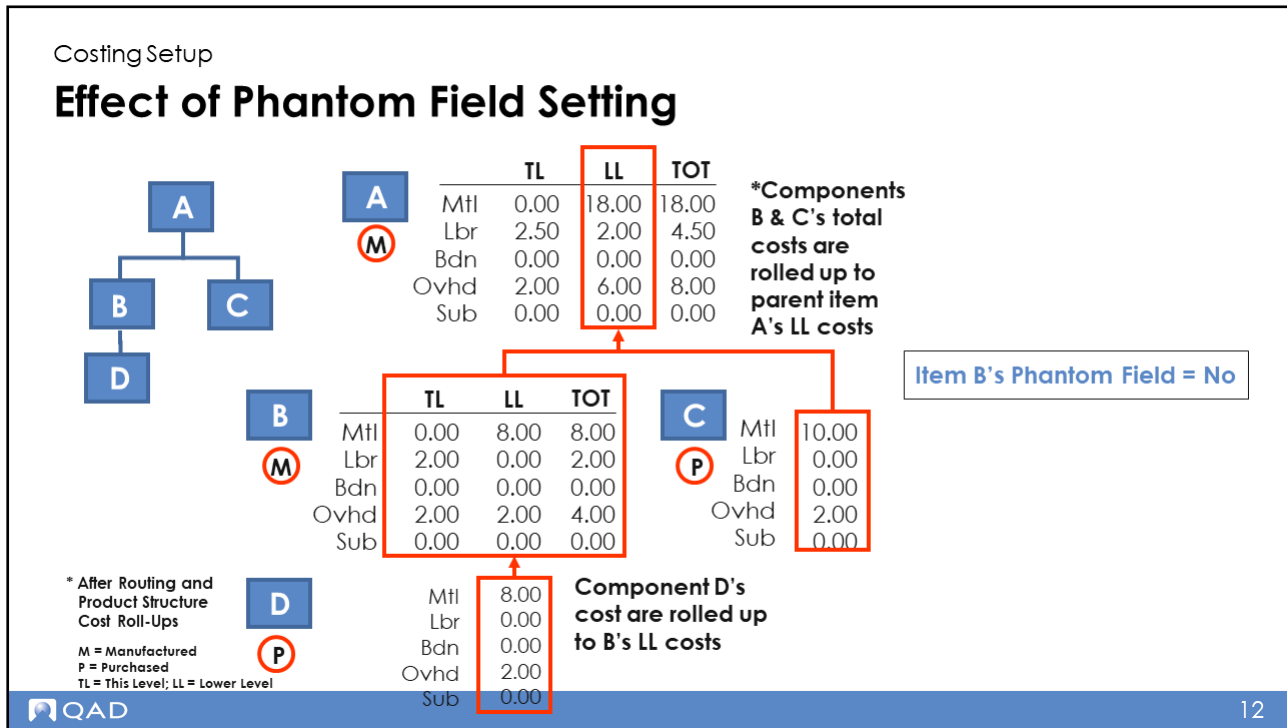
Costs for components B and C are not rolled up to A's lower-level cost

Parent item A's this-level labor and burden costs are zeroed out

This example shows the difference in how a product structure coded as a purchased part rolls up compared to a product structure that is coded as a manufactured or routable part.

- When item A has a Pur/Mfg code of [M]anufactured or [R]outable and blank structure type in the product structure for components B and C, all lower-level costs for material, labor, burden, overhead, and subcontract roll up correctly from the routing and product structure cost roll-up functions. This would also happen if you were to change the code to [R]outable.
- If the Pur/Mfg code were incorrectly changed to [P]urchased for a manufactured item, and the routing and product structure roll-ups were performed, all lower-level costs for material, labor, burden, overhead, and subcontract would be zeroed out. Additionally, this-level costs for labor and burden would also be zeroed out. This would also happen if you were to change the code to [D]RP.
- If we had not rolled up the routing in the second set of data, then this-level labor and burden costs would have remained as they were in the first set of data. Remember, only a routing cost roll-up will affect this-level labor and burden for an item.

## Effect of Phantom Field Setting

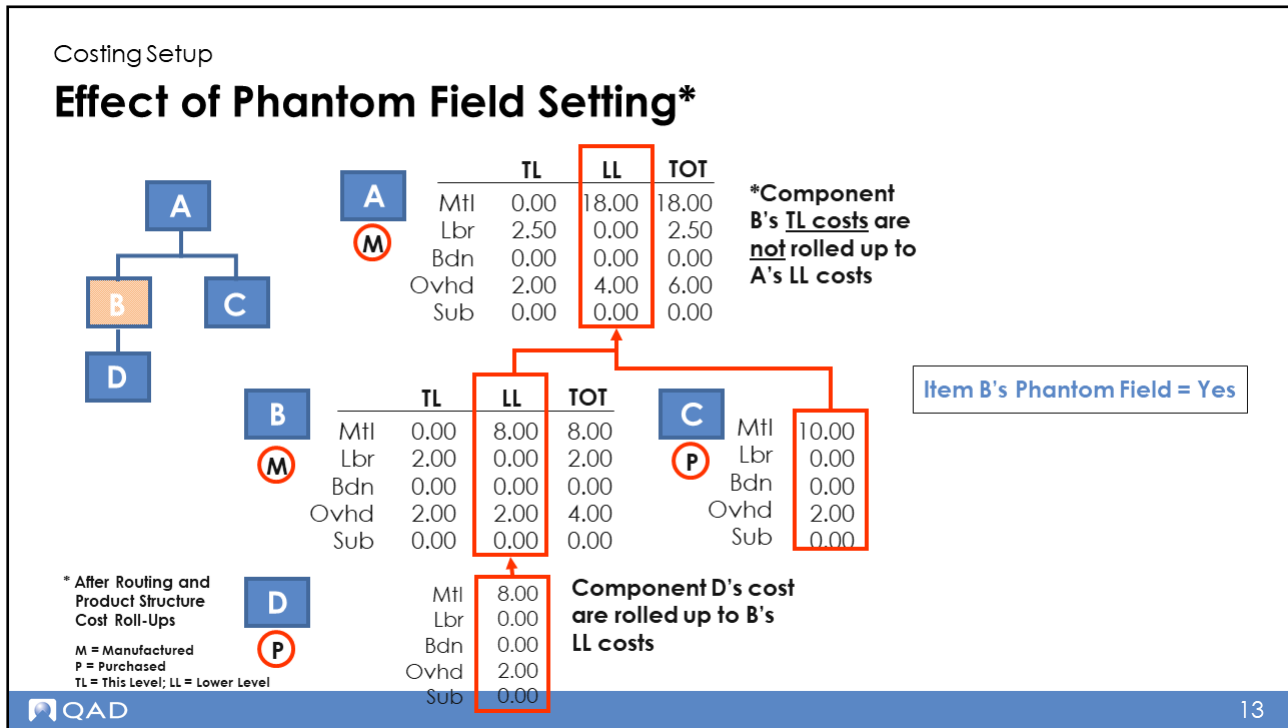


Whether an item is treated like a phantom or not is determined by the Phantom field in the item data menu: Items.

### Phantom field set to No

**Example** The figure above shows material and other costs at the lower level for all the components in the structure. Component B is an assembly with one component (D) that reports to it. Component C is a purchased part. In this first figure of two, we see the cost structure as a standard manufactured item (Phantom field = No).

### Effect of Phantom Field Setting\*



When you set the phantom field in the item data to Yes, that indicates the item is a “global” phantom and is to be treated as a phantom for all product structures it reports to.

The other way that you can set a phantom in a structure is to change the structure type code to Phantom in Product Structures & Formulas, which indicates that the item is a local phantom and is to be treated as a phantom only in that specific product structure

Routing Cost Roll-Up will roll up global phantom items. However, the labor, burden, and subcontract costs of a global phantom item are not included in the parent item’s cost when the product structure cost roll-up is performed. If you need to build and stock a phantom item, the routing roll-up and the product structure roll-up for the phantom item correctly cost it at this level.

**Example** In the figure shown above, we see the difference in cost when the phantom field is set to Yes in the item data. Notice that when B is a phantom, all of item B’s this-level costs are excluded from the roll-up.

**Warning** Local phantoms (coded as Phantom in the product structure) do have their this-level labor and overhead costs roll up into the parent’s costs, which is enabled in Inventory Control. The use of local phantoms should be discouraged for this and other reasons. They do not support use-up logic.

**Note** Phantom use-up logic, which will be discussed later, whether for global or local phantoms, is not possible in the Repetitive type of production orders.

## Items Cost Enter

Costing Setup  
Items Cost Enter

QAD Cost Accounting Manager Inventory Production Product Costing Requisitions Cost Analysis More

Items Default View + New Delete Actions More

Item #1 Description  
02002 Electrical Conn

Main Site Item Aliases IntraStat Item Production Scheduling Picking Service

02002 Item 10 Product Line Electrical Connector Description 1 ACTIVE Item Status

GL Cost

GL Cost Source Site 10-200 This Level Total 0.50  
Cost Set Standard Lower Level Total 0.00  
Date Updated 12/16/2015 Cost Total 0.50

Category #1	Element	This Level	Lower Level	Total	Primary	A/O
Burden	Burden	0.00	0.00	0.00		
Labor	Labor	0.00	0.00	0.00		
Material	Material	0.50	0.00	0.50		
Overhead	Overhead	0.00	0.00	0.00		

QAD 14

Enter the item number in Items and scroll through the Item GL screens until you reach the current cost data frame. Enter purchased material costs in the this-level field of the current cost set.

**Note** It is recommended that you initially enter costs in the current cost set so that the GL is not affected. As with any change to the GL cost set, if you have inventory on-hand, you will cause an inventory value change in the GL.

Once you have reviewed the cost entries, move the costs from current to GL by using Current Cost Set Move to GL Set.

### Fixed Overhead

Fixed overhead costs are usually allocated to each item based on an estimated production volume. You can enter them manually as a fixed cost per unit for each item by using one of the item data menus or they can be calculated as a percentage of material, labor, burden, and/or subcontract costs by using Item Overhead Cost Update.

Other than overhead, you should not manually enter costs for manufactured items, only purchased items. If you do enter costs for manufactured items, you cannot use the roll-up functions to update these costs.

## Overhead and Burden Cost Update

Costing Setup

### Overhead and Burden Cost Update

```

    graph TD
      A["A  
$10"] --- B["B  
$3"]
      A --- C["C  
$7"]
      B --- D["D  
$1"]
      B --- E["E  
$2"]
      C --- F["F  
$3"]
      C --- G["G  
$4"]
    
```

Example:  
OH set at 150% of Mat'l

Item	This-Level	Overhead	Material
A	10 x	150% =	15.00
B	3 x	150% =	4.50
C	7 x	150% =	10.50

QAD 15

This graphic shows the effect of using Item-Element Cost Calculation (shown on the next graphic) to update overhead costs to 150% of the This Level Material cost.

## Item Overhead Cost Update

Costing Setup

# Item Overhead Cost Update

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Item-Element Cost Calculation | Default Report | Schedule | Burst Settings | More

Settings

Filter

Prod Line	equals		Q	⌵	-		+ X
Item Number	equals	09001	Q	⌵	-		+ X
Item Type	equals		Q	⌵	-		+ X
Purchase/Manufacture	equals		Q	⌵	-		+ X
Site	equals	10-100	Q	⌵	-		+ X
Cost Set	equals	Current	Q	⌵	-		+ X
Cost Element	equals	Overhead	Q	⌵	-		+ X
Add To/Replace Existing ...	equals	Replace	⌵	⌵	-		+ X
Use This/Lower Level Costs	equals	This Level	⌵	⌵	-		+ X
Update	equals	Yes	⌵	⌵	-		+ X
Element #1	equals	Overhead	Q	⌵	-		+ X
Element #1 Percent	equals	150.00	⌵	⌵	-		+ X
Element #2	equals		Q	⌵	-		+ X

Run

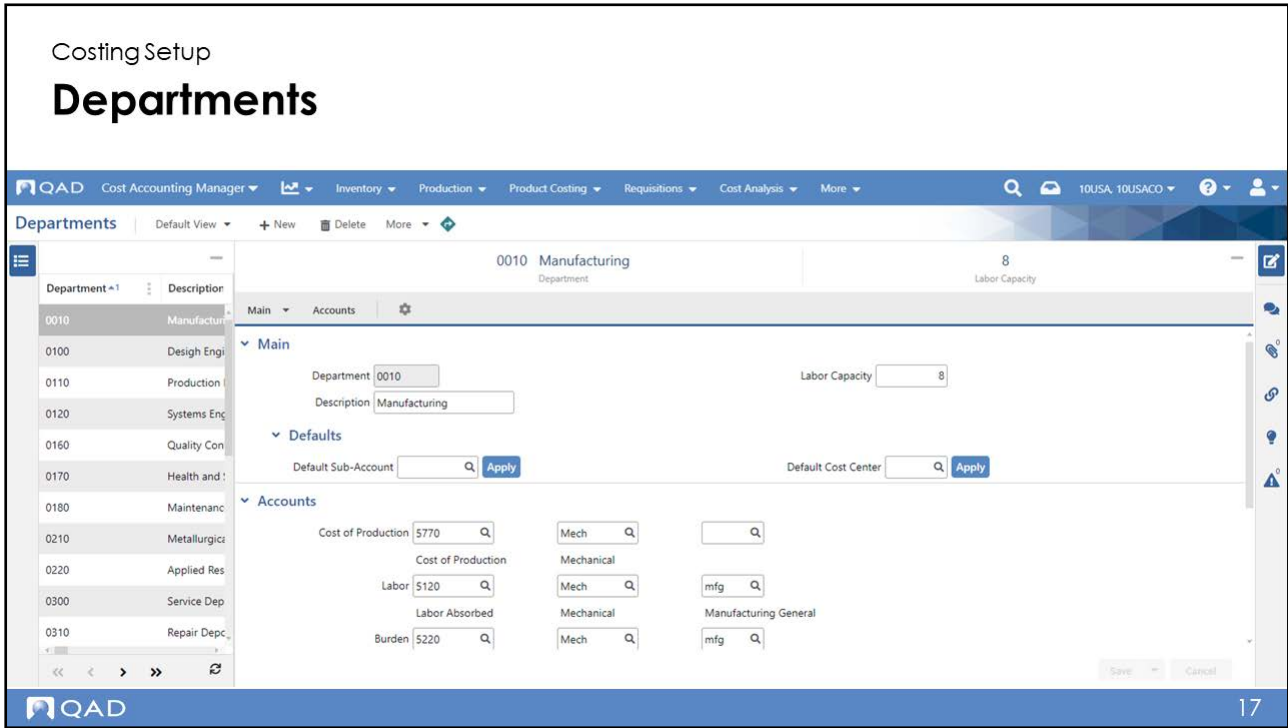
QAD 16

You can calculate overhead and burden as a percentage of lower-level costs by using Item-Element Cost Calculation. This is useful for companies that calculate overhead and burden based on material cost rather than labor cost.

### Calculate Overhead and Burden in Three Steps

- 1, Roll up product structure costs to ensure that you calculate overhead (OH) from accurate lower-level costs. Use Product Structure Cost Roll-Up.
- 2, Calculate this-level item overhead costs for the lower-level items by using Item-Element Cost Calculation.
- 3, Roll up the product structure costs again to add the calculated overhead to the lower-level costs.

## Departments



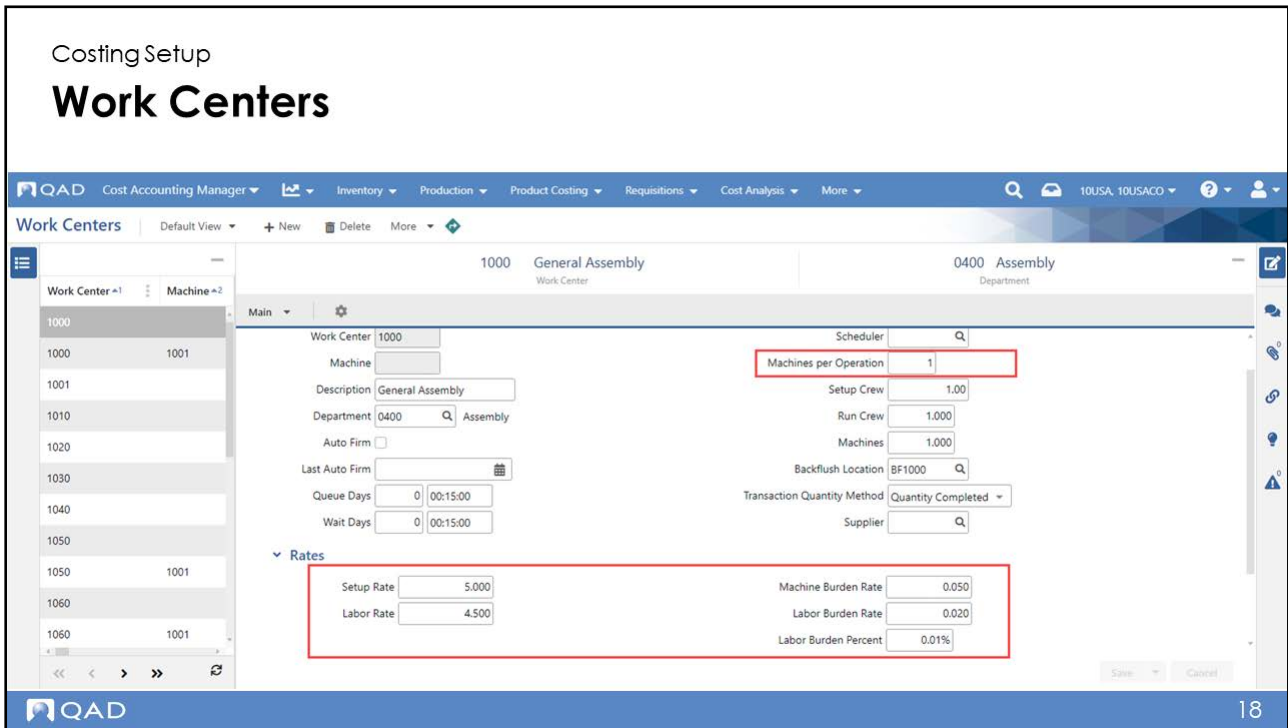
A department is used to group similar work centers. It can have many work centers, but a work center can only report to one department.

Set up departments so that you can review capacity load and costing in a meaningful way. For example, departments can group work centers performing common functions. In a job shop, there can be one department for lathes and another for welding.

Default GL accounts are set in the Base Control. They can be changed here, to allow you to see GL transactions by department.

The system creates GL transactions using the accounts associated with the department code. By changing the department code, different accounts can be used for the GL transactions created by these functions.

## Work Centers



A work center identifies a group of resources (people, machines, production lines, and so on) that are capable of doing the same processes.

Rates are specified at the work-center level. These include the standard labor rates per hour for both setup and run operations, and the variable burden rates that apply to all work done in that work center.

Most of the fields in Work Centers are important from a costing perspective:

**Machine per Operation.** Used in calculating burden costs. This value indicates how many machines are to be set up to produce this item. The setup cost will be multiplied by this number to determine the machine burden from setup cost. This is the default value for the same field in Routing Maintenance.

**Mach Burden Rate.** Used in calculating burden costs. This is the burden rate per hour applicable to machine run time and setup at this work center.

This value is used by item cost calculations and by labor feedback functions to calculate and post actual costs and variances. It applies to all operations carried out at this work center and cannot be changed for individual operations.

**Setup Rate.** The total work center labor cost paid per labor hour to set up this work center. Used in calculating labor and labor burden costs.

**Labor Rate.** The total work center labor cost paid per labor hour to run this work center. Used in calculating labor and labor burden costs.

**Example** If there are two employees in the work center (Run Crew = 2) and one employee earns

\$10 per hour and the other employee earns \$12 per hour, the labor rate entered would be \$22. If both employees earn \$12 per hour, then the labor rate entered would be \$24

*Labor Burden Rate or Percent.* The labor burden rate or percentage per hour applicable to both setup and run time at this work center.



## Routings & Processes

Costing Setup

# Routings & Processes

Routings are used to define the steps that a product passes through during the manufacturing process. More importantly, from a costing perspective, routings provide manufacturing setup and run times per operation, machines per operation, and operation yield percent or yield at each operation. Subcontract cost per unit is entered for each subcontracted operation.

Each routing operation is associated with a particular work center, so it is not necessary to enter labor or burden rates for each operation.

In Routings, enter a routing code, which is typically the item number, and the first operation. The important fields for costing are:

*Work Center.* Defines the setup, labor, and burden rates to be used in calculating cost at this operation

*Machines per Op.* Used in cost calculations. Defaults from work center and can be modified. Affects setup cost only; does not affect run cost.

*Setup Time.* The amount of time in decimal hours that it takes to set up the work center to run the standard lot size of this product.

- If you are using setup times, you need to distribute the cost of the setup normally over more than one unit of product. You can do this by determining a standard lot size for the product and then entering that lot size in the Order Quantity field of item planning data in Items.

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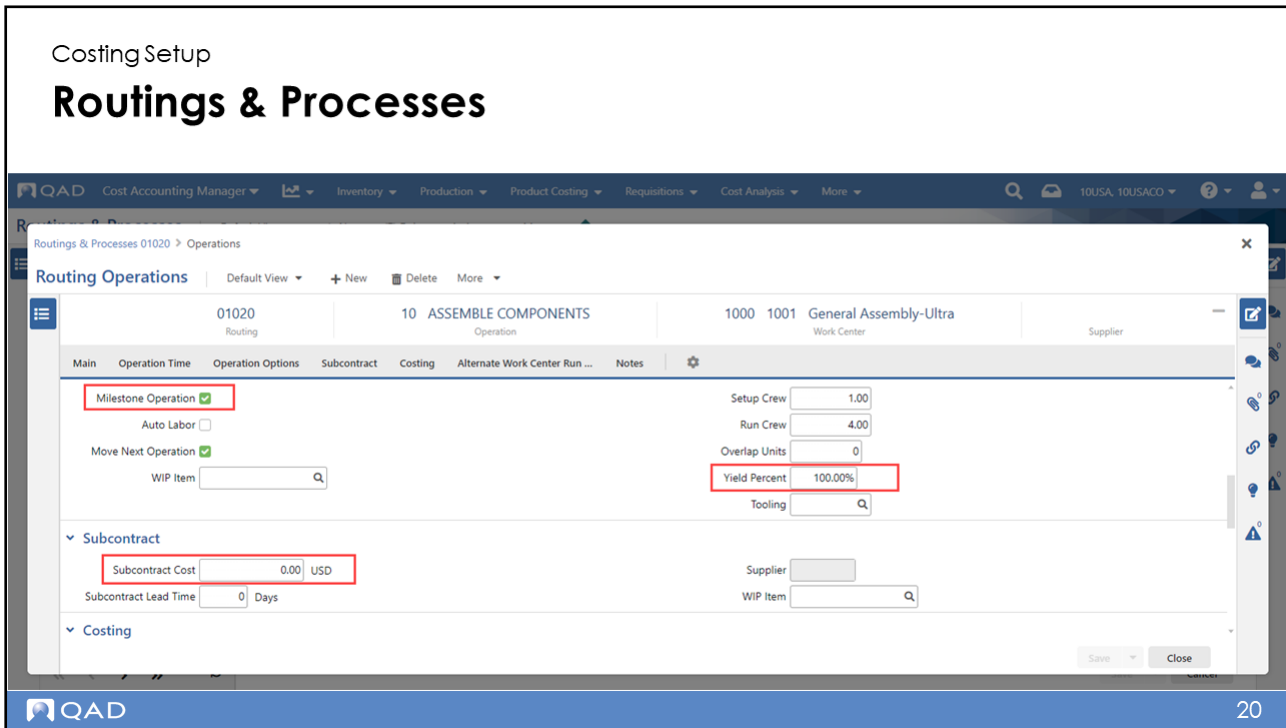
- If setup is not to be included in the cost, leave this setting (or setup rate) at 0.00

*Run Time.* The amount of time in decimal hours that it takes to produce one unit of this product. Note: You can use Routings to specify units per hour rather than run time).

*Start Date/End Date.* Used to move old operations out and new ones into a routing for historical purposes. The roll-up process will roll up costs for only those operations in effect for the date specified in the roll-up screen.



## Routings & Processes



**Milestone Operation.** Used only in Repetitive type production orders to identify operations for labor and material. If Yes, then reporting of completions, labor, and non-standard components is permitted. Prior non-milestone operations will also be backflushed for labor and components.

**Yield%.** The expected percentage of acceptable units that will be completed at this operation. The expected yield for an operation can be expressed as:

$$\text{Yield} = (\text{Acceptable Units at Operation Completion} / \text{Units at Operation Start}) * 100$$

The total manufacturing yield for a product is determined by multiplying the yield percentages for each of its operations.

$$\text{Manufacturing Yield} = \text{Yield\% for Op 10} * \text{Yield for Op 20} * \dots$$

The effect of yield on the costing process is discussed in more detail on later pages.

**Subcontract Cost.** The standard cost per unit that subcontractors charge to perform this operation. Subcontract Cost is discussed in more detail later in the course.

Use Items to specify the Routing Code to be used for an item. For example it is common for the same item manufactured at two sites to use site specific routes, which might call for different work centers or different run times.

## Labor Cost Per Operation

Costing Setup

### Labor Cost Per Operation

**Labor Cost per Operation**

Set-up Cost = Set-up Hrs/Order Qty x WC Set-up Rate

Run Cost = Run Hrs / Unit x WC Labor Rate

Total Labor = Set-up Cost + Run Cost

**Example**

$1 / 1,000 \times \$10 = \$0.01$

$1 \times \$10 = \$10$

$\$0.01 + \$10 = \$10.01$

### What Labor Costs per Operation Are Based On

Labor costs are calculated from the item’s routing. The total labor cost is the combined cost to set up the operation and the cost to run that operation.

- Setup cost is the setup time multiplied by the setup rate at the work center. Since the work center only has to be set up once, the total setup cost is divided over all of the items in a batch - identified by the item’s order quantity specified in Items. If no order quantity is entered for an item, it defaults to one.
- Run Time is expressed per unit, so labor cost per unit is simply the run time per unit multiplied by the labor rate at the work center.
- Setup Cost = *Setup Hrs/Order Qty \* WC Setup Rate*
- Run Cost = *Run Hrs per unit \* WC Labor Rate*
- Total Labor Cost = *Setup Cost + Run Cost*



## Labor Burden Cost Per Operation

Costing Setup

### Labor Burden Cost Per Operation

**Set-up Burden**  
 Burden = [(Set-up Hrs/Order Qty) x WC Lbr Bdn Rate]  
 Burden% = [(Set-up Hrs/Order Qty) x WC Set-up Rate] x WC Lbr Bdn%

**Run Burden**  
 Burden = Run Hrs x WC Lbr Bdn Rate  
 Burden% = Run Hrs x WC Labor Rate x WC Lbr Bdn%

**Example**

1.0 / 1,000 x 20 = 0.02  
 1.0 / 1,000 x 10 x 0.00% = 0

1.0 x 20 = 20  
 1.0 x 10 x 0.00% = 0

Machines: 1,000  
 Backflush Location: [Search]  
 Transaction Quantity Method: Quantity Processed  
 Supplier: [Search]

Machine Burden Rate: 20,000  
 Labor Burden Rate: 20,000  
 Labor Burden Percent: 0.00%

22

### What Labor Burden Costs Are Based On

Burden costs apply to both setup and run time. Labor burden is calculated as a rate per labor hour and/or a percentage of the total labor cost. This is most commonly used in a labor-intensive environment. Both types of burden can be applied: as a rate per hour and/or as a percentage of labor cost.

- Setup Labor Burden Rate =

$$[(Setup\ Hrs / Order\ Qty) * Work\ Ctr\ Lbr\ Burden\ Rate] / Item\ Yield\%$$

- Setup Labor Burden Percent =

$$[(Setup\ Hrs / Order\ Qty) * Work\ Ctr\ Setup\ Rate * Work\ Ctr\ Lbr\ Burden\%] / Item\ Yield\%$$

- Run Labor Burden Rate =

$$(Run\ Hrs * Work\ Ctr\ Labor\ Bdn\ Rate) / Item\ Yield\%$$

- Run Labor Burden Percent =

$$(Run\ Hrs * Work\ Ctr\ Labor\ Rate * Work\ Ctr\ Labor\ Burden\%) / Item\ Yield\%$$

## Machine Burden Cost Per Operation

Costing Setup

### Machine Burden Cost Per Operation

**Machine Burden Cost per Operation**  
 Set-up = (Set-up Hrs/Order Qty) x Mach/Op x Mach Bdn Rate  
 Run = Run Hrs x Mach Bdn Rate

**Example**  
 $1.0 / 1,000 \times 1 \times \$20 = 0.002 \times \$20 = 20.00$

**Note:** Run time for burden does not consider number of machines

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### What Machine Burden Costs Are Based On

The final source of burden is machine burden. This is calculated based on the number of hours the machine is in use - both while it is being set up and while products are being run. As in the other burden cost calculations, the machine burden cost associated with set up is divided over the item's order quantity. When there are multiple machines per operation, any machine setup burden cost is applied to each individual machine. This is most commonly used in a machine-intensive environment.

- Machine Setup Burden =  $[(Setup\ Hrs / Order\ Qty) * Mach\ Bdn\ Rate * Machines / Op] / Item\ Yield\%$
- Machine Run Burden =  $(Run\ Hrs * Mach\ Burden\ Rate) / Item\ Yield\%$
- Machine Burden = Machine Setup Burden + Machine Run Burden

There is only one field for run time on the routing. It is not split into machine time and labor time. For burden calculations, the machine and the labor are both assumed to be in use for the entire run time.

**Note** To report strictly by machine-based hours, an employee record needs to be created for that machine. Use Employees.



## Subcontract Cost per Unit

Costing Setup

# Subcontract Cost per Unit

The screenshot displays the QAD Costing Setup interface for Subcontract Cost per Unit. The main window is titled 'Routing Operations' and shows a routing operation '15 Subc Attach Elec/Plate' with a subcontract cost of 0.20 USD. The 'Subcontract' section includes fields for Subcontract Cost (0.20 USD), Subcontract Lead Time (3 Days), Supplier, and WIP Item. The 'Costing' section includes fields for Inventory Value (0.00 USD) and Subcontract Cost (0.20 USD). The 'Alternate Work Center Run Time' section is also visible.

Subcontract costs are entered in Routings at the step or operation at which the outside processing will be performed. The cost is entered as the standard charge from your subcontract supplier for performing the work. You can have multiple subcontract operations in a routing.

Actual management of subcontract processing requires that the production order be linked to a subcontract purchase order if you want to have charges applied to specific production orders. When the purchase order is received, the inventory accounts are not affected. Instead the standard subcontract cost is debited to Work in Process, and the PO amount is credited to PO Receipts. Any variance between the standard subcontract cost and the PO amount is calculated as a subcontract rate variance and posted accordingly.

If you open a subcontract purchase order and don't link it to a specific production order, then the cost of the subcontract will be debited to Cost of Production instead of Work in Process.

## Routing Costs

Costing Setup

# Routing Costs

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RoutingCostReport
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### Routing Cost Report

10USA USD

Routing 50010

Op 10 ASSEMBLE ULTRASOUND

Work Ctr Machine	Setup Time Order Qty	Setup cost Unit Run	Setup Rate Labor Rate	Labor Cost	Lbr Bdn % Mch per Op	Lbr Bdn Rate Mch Bdn Rate	Lbr Burden Mch Burden	Total Burden	Subcontract
1000	0.5	2.50	5.00		0.01%	0.02	0.012295		
	1.0	0.10	4.50	2.950	1	0.05	0.03	0.042295	0.00

Op 15 Subc Attach ElecPlate

Work Ctr Machine	Setup Time Order Qty	Setup cost Unit Run	Setup Rate Labor Rate	Labor Cost	Lbr Bdn % Mch per Op	Lbr Bdn Rate Mch Bdn Rate	Lbr Burden Mch Burden	Total Burden	Subcontract
2270	0.0	0.00	0.00		0.00%	0.00	0.00		
	1.0	0.00	0.00	0.000	1	0.00	0.00	0.00	0.20

Op 20 TEST ACOUSTIC TRANSDUCER

Work Ctr Machine	Setup Time Order Qty	Setup cost Unit Run	Setup Rate Labor Rate	Labor Cost	Lbr Bdn % Mch per Op	Lbr Bdn Rate Mch Bdn Rate	Lbr Burden Mch Burden	Total Burden	Subcontract
1040	0.5	2.50	5.00		0.01%	0.02	0.0112725		
	1.0	0.05	4.50	2.725	1	0.05	0.0275	0.0387725	0.00

<b>Routing Total</b>	<b>5.675</b>	<b>0.0810675</b>	<b>0.20</b>
----------------------	--------------	------------------	-------------

End of Report

Search Criteria

Routing Code equals 50010

25

The Routing Costs report displays the costs calculated by operation for selected routings. These routings might or might not be attached to an item, so it is always necessary to specify an Order Quantity against which setup costs can be amortized. These reports can optionally display all operations for a work center.



## Item Routing Costs

Costing Setup

# Item Routing Costs

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ItemRoutingCostReport
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### Item Routing Costs

10USA USD

Item: 50010 Acoustic Transducer A

Routing: 50010

Site: 10-100 Ultrasound Mfg Site

Work Ctr Machine	Setup Time Order Qty	Unit Setup Unit Run	Setup Rate Labor Rate	Labor Cost	Lbr Bdn % Mch per Op	Lbr Bdn Rate Mch Bdn Rate	Lbr Burden Mch Burden	Total Burden	Subcontract
<b>Op: 10 ASSEMBLE ULTRASOUND</b>									
1000	0.5	0.5	5.000	Yield: 100.00	0.01	0.020	0.0123		
	0.0	0.1	4.500	2.95	1	0.050	0.03	0.0423	0.00
<b>Op: 15 Subc Attach ElecPlate</b>									
2270	0.0	0.0	0.000	Yield: 100.00	0.00	0.000	0.00		
	0.0	0.0	0.000	0.00	1	0.000	0.00	0.00	0.20
<b>Op: 20 TEST ACOUSTIC TRANSDUCER</b>									
1040	0.5	0.5	5.000	Yield: 100.00	0.01	0.020	0.01127		
	0.0	0.05	4.500	2.725	1	0.050	0.0275	0.03877	0.00
<b>Item: 50010</b>									
<b>Routing: 50010</b>				<b>Total Include Yield:</b>	5.675			0.08107	0.20

Item Routing Costs report shows all routing costs for an item and/or work center.

Questions? Visit [community.qad.com](https://community.qad.com)

## Product Structures & Formulas

Costing Setup

# Product Structures & Formulas

Product Structures & Formulas 50010 > Components

Components | Default View | + New | Delete | More

50010 Parent | EA Unit of Measure | 50011 Component

Parent-Component Relationship

Type: Item

Component: 50011

Description 1: Ultrasound Array

Description 2:

Reference:

Quantity Per: 1.0 EA

Structure Type: [Dropdown]

Option Group:

Scrap %: 0.00

Lead Time Offset: 0

Start Effective: [Date]

End Effective: [Date]

Operation: 10

Sequence Number: 0

Remarks:

Forecast %: 100.00

Can implement product and structure type changes based on effectivity dates

Important for "loss" costing

Important for "loss" costing and Repetitive type production

Usually blank; non-blank types are generally not rolled up

QAD 27

Product structures attach the components to the parent and define the quantity to use. As you will see in the next chapter, QAD system uses the product structure cost roll-up process to calculate lower-level costs.

*Effective, start/end.* Provides date effectivity. Only those items effective for the date selected will be costed.

Next year's structure changes can be input with effective dates of next year so as to not impact this year's costs.

**Note** Product structure cost roll-up can be performed as a specific effective date and most cost reports can be run by effective date as well.

*Quantity Per.* Defines how many of the component, in its unit of measure, are required to make one of the parent, in its unit of measure.

*Structure Type.* The structure type defines how this parent/component or BOM/Formula relationship is used. Values can be blank, Configured, Document, Phantom, or Planning.

[blank]: Normal product structure relationship. The Structure Type field normally should be left blank on most parent/component or BOM/Formula relationships. These structures are used by manufacturing planning and control, and product costing. The cost roll-up process will not add the cost of this component to the parent if a value of Document, or Planning is entered.

[Documentation]: only in the structure. Is not rolled up for costing.

[Phantom]: Local phantom. Adds this-level cost to the parent, as well as its component's cost. (A global phantom adds only lower-level costs to the parent.) Phantom codes are discussed in "Effect of Phantom Field Settings".

[Planning]: item on a planning bill: Costs for items with this code are not included in rolled costs.

*Scrap.* Scrap is the inverse of yield and is used here to indicate the expected additional quantity of this item required to produce the parent.

Use scrap percentage carefully, especially on discrete items, since both MRP and inventory backflush calculations use it. If you put a 2% scrap rate on a discrete item - for example, an engine - and you have a requirement for 80 engines, the system calculates the demand quantity to be 81.6. You can enter an Order Multiple in Items to ensure you get discrete order quantities. Also note that the production order BOM and repetitive backflush component requirement and issue quantities are inflated by the Scrap percentage.

Scrap is by specific component and is always costed as:

$$\text{Component Cost} / (100\% - \text{Scrap}\%) * \text{Quantity Per} = \text{Extended Total} / \text{Component}$$

*Operation.* The routing or process operation at which this component is used. Do not leave this blank if you are using “loss” costing or Repetitive type production orders.

For Repetitive type production orders environments: Determines whether this component is backflushed. If you enter the operation number here, this component is automatically issued (backflushed) when you report quantities for the parent in Repetitive and Repetitive labor and scrap reporting transactions. If Operation is [blank], or does not match a defined operation, this component is not backflushed.

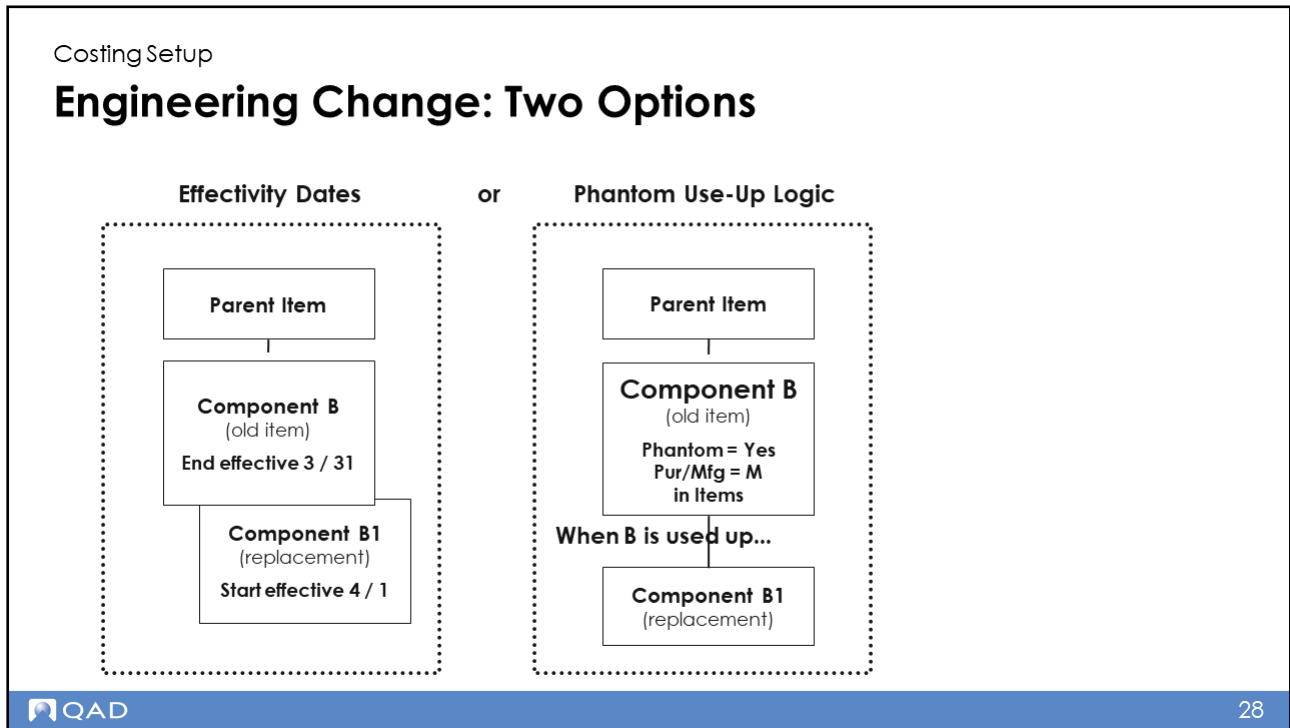
For loss costing: This field enables component yield cost calculations. Both Product Structure Cost Roll-Up and Routing Cost Roll Up use this field when calculating material costs: if the operation yield is less than 100% in Routings, then material costs are increased to reflect yield loss. If Operation is [blank], QAD Enterprise Applications assumes components are issued at the first operation.

#### Basic Product Structure Material Cost Calculations

For each component in the structure:

$$\text{Quantity Per} * \text{Component Cost} = \text{Extended Total} / \text{Component}$$

## Engineering Change: Two Options



### Effectivity Dates

When components need to be added or deleted from a product structure, you should manage this with the start and end effective dates in Product Structures & Formulas.

**Important** Do not delete an item from a product structure if you need to maintain history on product structure over time

You can specify when the old component will no longer be used in the product and when the new component will start being used. Product Structure Cost Roll Up can be performed as of a specific effective date, and most cost reports can be run by effective date as well.

Another way to phase-in engineering changes is with phantom use-up logic, which is described on the next page.

## Phantom Use-Up Logic\*

Costing Setup

### Phantom Use-Up Logic\*

		TL	LL	TOT
<b>A</b> (M)	Mtl	0.00	18.00	18.00
	Lbr	2.50	0.00	2.50
	Bdn	0.00	0.00	0.00
	Ovhd	2.00	0.00	2.00
	Sub	0.00	0.00	0.00
<b>B</b> (M)	Mtl	8.00		
	Lbr	0.00		
	Bdn	0.00		
	Ovhd	2.00		
	Sub	0.00		
<b>C</b> (P)	Mtl		10.00	
	Lbr		0.00	
	Bdn		0.00	
	Ovhd		0.00	
	Sub		0.00	
<b>D</b> (P)	Mtl	8.00		
	Lbr	0.00		
	Bdn	0.00		
	Ovhd	0.00		
	Sub	0.00		

**B's costs are not rolled up to A's LL costs; instead D's costs are rolled up**

Item B's Phantom Flag = Yes

Item B: Pur/Mfg Code = (M)

**D's cost are rolled up to A's LL costs**

\* After Routing and Product Structure Cost Roll-Ups  
M = Manufactured  
P = Purchased  
TL = This Level; LL = Lower Level

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Sometimes it is difficult to project when you will run out of a component that you will replace with a new component. In order to simplify the planning control of this item, phantom use-up logic can be applied. Basically, you create a product structure record for the old component, which has the new component reporting to it, and make the old component a phantom by setting the Phantom field to Yes in Items. As long as the old component is on-hand, planning and production orders will continue to use it up.

Phantom use-up logic must be applied globally, rather than locally, wherever the old component is used, with the Phantom field set to Yes. This can have an effect on cost.

If the product structure is rolled up, the cost of the new component is used even though you might not actually be issuing it yet.

If the product structure is not rolled up, you will have a cost variance as soon as the new component is used, unless, of course, your new component cost equals the old component cost.

### Example

In the slide, item A's component B is going to be replaced by component D when B has been used up. So a product structure for component B is created, calling for component D at a Quantity Per of one and the Phantom field on component B is changed in the item planning data to Yes. Item B also has a Pur/Mfg code of [M]anufactured.

The data in the slide shows how the product cost for A will change if the routing and structure are rolled up after the Phantom field is set.

The this-level cost of B is not included any longer in the cost of A. It has been replaced by the cost of D. (Use care if you are replacing a manufactured item, which has lower-level costs, with a purchased item.)

If you are still issuing B, you will incur an unfavorable material variance in the production order in this example. If you do not roll up the costs due to frozen standards, then when you start using D, you will incur a favorable variance.



### Effect of Structure Type on Cost\*

Costing Setup

## Effect of Structure Type on Cost\*

Item A: Pur/Mfg Code = **M**  
Items B & C: Structure Type = [blank]

	TL	LL	TOT
Mtl	0.00	15.00	15.00
Lbr	2.50	4.00	6.50
Bdn	3.00	0.00	3.00
Ovhd	2.00	4.00	6.00
Sub	0.00	0.00	0.00

Item A: Pur/Mfg Code = **M**  
Item B: Structure Type = **D**  
Item C: Structure Type = [blank]

	TL	LL	TOT
Mtl	0.00	10.00	10.00
Lbr	2.50	3.00	5.50
Bdn	3.00	0.00	3.00
Ovhd	2.00	2.00	4.00
Sub	0.00	0.00	0.00

← or →

• B & C's costs are rolled up to A's LL cost

\* After Routing and Product Structure Cost Roll-Ups

M = Manufactured  
P = Purchased  
D = Documentation

• C's costs are rolled up to A's LL cost

• B's costs are not rolled up to A's LL cost

This example shows the difference in how a component in a product structure is affected by its structure code and type.

- When item A has a Purchase/Manufacture code of Manufactured and both components have blank structure type codes, all lower-level costs roll up correctly
- When component B has its structure type code changed to Document, only the lower-level costs for component C are rolled up to item A; lower-level costs for component B are not rolled up to item A. The same effect occurs if the structure code for a component is set to Planning.

## Reject and Loss Costing

Costing Setup

### Reject and Loss Costing

- Two distinct methods, three options
  - Loss costing (method 1)
    - Planning yield on order quantities (Routings & Processes) (option 2)
    - Planning scrap on component issues (Product Structures & Formulas) (option 3)
  - Reject costing (method 2)
    - Reporting scrap (Production Operations Reporting) (option 1)
- Remember: Scrap and Yield are used for planning purposes



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In all of the calculations so far we have assumed that the production yield is 100%. But what happens if it is not? How do cost calculations account for yield losses? You have three options for accounting for losses

- Reporting scrap in Production Operation Reporting
- Planning yield on order quantities in Routings
- Planning scrap on component issues in Product Structures & Formulas

The functionality can be categorized into two distinct methods, however: loss costing and reject costing. It is advisable to review the effects of yield versus scrap and select one method on a higher level basis (per product line, site, or domain).

It is important to keep in mind that yield and scrap are used for planning purposes (to ensure that you buy enough components to make enough product), which then requires special costing consideration.

**Note** Manually changing the Yield% field in the Item Planning screen for manufactured items will result in unexplained method variances if the planning yield does not equal the yield of the rolled-up routing and product structure.



## Loss Costing

Costing Setup

### Loss Costing

- Item cost is inflated for yield (parent item)
- Expected yield (planned for)
- Cost of expected lost items included in inventory
- Variances against expected yield in material usage variance (when reported)

Loss costing means that the costs of lost items are factored into the good items received after production.

In QAD Enterprise Applications you can specify a yield% in Routings for each operation—the percentage of good items you expect to receive complete from the operation. If an operation has an 80% yield and you start with 100 items, you only expect to complete 80. However, from a cost perspective, you expect to issue enough materials and to incur enough labor, burden, and subcontract costs to make all 100. Using the yield percentage, you can factor these costs into the parent item.

## Loss Costing

Costing Setup

### Loss Costing

- Loss costing reflected in either:
  - Yield % in Routings & Processes
    - Specified as the expected percentage of good assemblies produced
    - Used when an assembly is scrapped during the manufacturing process
  - Scrap % in Product Structures & Formulas
    - Specified as a percent of a component
    - Used if components are scrapped during the manufacturing process

Loss costing is reflected in either:

- Yield% in Routings Specified as the expected percentage of good assemblies produced Used when an assembly is scrapped during the manufacturing process
- Scrap% in Product Structures & Formulas Specified as a percent of a component Used if components are scrapped during the manufacturing process

In QAD Enterprise Applications, loss costing affects either:

- The yield percentages in the routing

Whenever there are losses of parent items occurring in the production process, use yield in

Routings• Or, the scrap percentages in the product structure

For a component, you can specify a percent in Product Structures & Formulas

## Implementing Loss Costing (Yield Percent)

Costing Setup

# Implementing Loss Costing (Yield Percent)

Operation	Description	Standard Operation	Start Date	End Date	Yield Percent	Work Center	Machine
10	ASSEMBLE COMPO...				90.00%	1000	1001
20	TEST FINISHED UNIT				80.00%	1050	1001
30	PACK FOR SHIPPING				100.00%	1060	1001

Each operation's yield percentage is multiplied together, giving the expected item yield  
 - Total manufacturing yield in this example = 72% ( based on 90% x 80%)

Loss costing using yield percent is expressed as a percentage of usable parts produced in the manufacturing process and the yield is entered in Routings.

- Routing Cost Roll-Up multiplies individual operation yield percentages and posts the manufacturing yield to item data, Items, and Production Orders
- If MRP is to plan for increased requirements due to the yield being less than 100%, then the Yield% field in item planning, Items, must be set manually; or set the Roll-Up Item Yield field to Yes in Routing Cost Roll-Up
- Manufacturing yield is calculated as:

$$Yield\% \text{ for Op } 10 * Yield\% \text{ for Op } 20 * Yield\% \text{ for Op } n \dots$$

## Calculation of Costs for Yield

Costing Setup

### Calculation of Costs for Yield

**Example:**  
**Lower-level costs when yld = 72% = \$516.27032**  
 (based on 80% op 20 x 90% op 10)

Product Structure / Formula Costs												
10USA USD												
Site	10-100	Cost Set	Standard	Qty Per	UM	T P/M	Material	Labor	Burden	Overhead	Subcontract	Cost Total
Parent	01020				EA	M						
	Implantable Ultra Rev. A		This Level				0.00	2,992.36111	9.44785	0.00	0.00	3,001.80896
	5/21/2021		Lower Level				499.49605	16.26561	0.23088	0.00	0.27778	516.27032
	Yield 72%		Unit Total				499.49605	3,008.62672	9.67873	0.00	0.27778	3,518.07928

$359.87516 / 72\% = 499.49605$      
  $11.71124 / 72\% = 16.26561$      
  $0.16823 / 72\% = 0.23088$      
  $0.20 / 72\% = 0.27778$

**Lower-level costs when yld = 100% = \$371.95263**

Product Structure / Formula Costs												
10USA USD												
Site	10-100	Cost Set	Standard	Qty Per	UM	T P/M	Material	Labor	Burden	Overhead	Subcontract	Cost Total
Parent	01020				EA	M						
	Implantable Ultra Rev. A		This Level				0.00	2,282.50	7.19125	0.00	0.00	2,289.69125
	12/16/2015		Lower Level				359.87516	11.71124	0.16623	0.00	0.20	371.95263
	Unit Total						359.87516	2,274.21124	7.35748	0.00	0.20	2,641.64388



Lower-level and this-level material, labor, burden, and subcontract costs increase when yield is less than 100%, as shown in the example in the figure above.

**Example** The example shown above and used on the next few pages is based on an order for 10 units of item 01020, which is manufactured in three operations. The yield at operation 10 is 90% and the yield at operation 20 is 80%, the yield at operation 30 is 100%.

In the report for item 01020 with 100% yield (the lower image) the lower level material cost is 371.95263. The report for 72% yield shows lower level material cost as 516.27032.  $371.95263 / .72 = 516.27032$ . The same logic applies to the other lower-level costs.



## Effect of Yield Losses on This-Level & Lower-Level Costs

Costing Setup

### Effect of Yield Losses on This-Level & Lower-Level Costs

Site	10-100	Cost Set	Standard																	
Level	Component Item	Qty Per	UM	T	P/M	Material	Labor	Burden	Overhead	Subcontract	Cost Total									
Parent	01020			EA	M															
	Implantable Ultra Rev. A					0.00	2,992.36111	9.44785	0.00	0.00	3,001.80896									
	5/21/2021					499.49605	16.26561	0.23088	0.00	0.27778	516.27032									
	<b>Yield 72%</b>																			
	Unit Total					499.49605	3,008.62672	9.67873	0.00	0.27778	3,518.07928									
1	50010			EA	M															
	Acoustic Transducer A					0.00	5.675	0.08107	0.00	0.20	5.95607									
	5/21/2021					55.27516	6.03624	0.08517	0.00	0.00	61.39556									
	Unit Total					55.27516	11.71124	0.16623	0.00	0.20	67.35263									
	Ext Total					55.27516	11.71124	0.16623	0.00	0.20	67.35263									
1	60009			EA	P															
	Probe Housing Rev. A					28.75	0.00	0.00	0.00	0.00	28.75									
	5/21/2021					0.00	0.00	0.00	0.00	0.00	0.00									
	Unit Total					28.75	0.00	0.00	0.00	0.00	28.75									
	Ext Total					28.75	0.00	0.00	0.00	0.00	28.75									
1	60051			EA	P															
	Microprocessor IM Rev. A					275.00	0.00	0.00	0.00	0.00	275.00									
	5/21/2021					0.00	0.00	0.00	0.00	0.00	0.00									
	Unit Total					275.00	0.00	0.00	0.00	0.00	275.00									
	Ext Total					275.00	0.00	0.00	0.00	0.00	275.00									
1	90093			EA	P															
	Shipping Carton					0.85	0.00	0.00	0.00	0.00	0.85									
	5/21/2021					0.00	0.00	0.00	0.00	0.00	0.00									
	Unit Total					0.85	0.00	0.00	0.00	0.00	0.85									

**This-Level Costs**

**Lower-Level Costs**

**Example: Material costs for item 01020**  
 Lower Level (LL) + This Level (TL) =  
 $(55.27516 / 72\%) + (28.75 / 72\%) + (275.00 / 72\%) + (0.85 / 72\%) = 499.49605$  (LL) + 0 (TL) =  
 499.49605

Yield losses affect both lower-level and this-level costs.

- At the lower level, you lose components, increasing lower-level material, labor, and burden costs. Lower-level costs are calculated, for each component, as:

$$(Material\ Cost / Yield\%) + (Labor\ Cost / Yield\%) + (Burden\ Cost / Yield\%) + (Subcontract / Yield\%) + (OH / Yield\%)$$

- At this level, you lose parent items, increasing this-level labor, burden, and subcontract costs

Total costs are simply the sum of this level and lower level costs

In the example in the figure above, the lower-level costs for item 01020 are:

$$Material = (55.27516 / 72\%) + (28.75 / 72\%) + (275.00 / 72\%) + (0.85 / 72\%) = 499.49605 (LL) + 0 (TL) = 499.49605$$

Labor and Burden are calculated in the same manner.

(Note: yield percentage does not affect **this-level** overhead or subcontract)

## Usage and Method Variances

Costing Setup

# Usage and Method Variances

QAD Cost Accounting Manager
Inventory Production Product Costing Requisitions Cost Analysis More

Production Order Accounting Close
Default Report Schedule Burst Settings More

**Filter**

Effective Date equals 5/23/2021

Site equals 10-100

Production Line equals

Include WO/Rep/Both equals Both

Cum Order End Date equals 5/23/2021

Production Order equals

ID equals

Item Number equals

Project equals

Sales/Job equals

Transfer Work in Process equals No

Print Account Detail equals Yes

Print GL Summary equals No

Update equals No

Order	ID	Item Number	Site	Qty Ordered	Qty Completed	Qty Reject	20/Job	Project	Eff Date
20		02-0005	train	1,000.0	1,000.0	0.0			5/23/2021
MECHANICAL PENCIL (5MM) BLISTER PACKED									
GL Reference	Type	Dr Acct	CC	Description	Cr Acct	CC	Description	Amount	
W0990920000061	WO-CLOSE	1600	0100	WORK IN PROCESS	6500	5020	LABOR ABSORBED	50.00	
W0990920000062	WO-CLOSE	1600	0100	WORK IN PROCESS	6400	5020	BURDEN ABSORBED	100.00	
W0990920000063	WO-CLOSE	1600	0100	WORK IN PROCESS	6500	5020	LABOR ABSORBED	50.00	
W0990920000064	WO-CLOSE	1600	0100	WORK IN PROCESS	6500	5020	LABOR ABSORBED	50.00	
W0990920000065	WO-CLOSE	1600	0100	WORK IN PROCESS	6400	5020	BURDEN ABSORBED	20.00	
W0990920000066	WO-CLOSE	1600	0100	WORK IN PROCESS	6400	5020	BURDEN ABSORBED	150.00	
IC9909200000079	WO-CLOSE	5045	0100	MATERIAL USAGE VARIANCE	1600	0100	WORK IN PROCESS	-206.11	
IC9909200000080	WO-CLOSE	5045	0100	MATERIAL USAGE VARIANCE	1600	0100	WORK IN PROCESS	-9.72	
IC9909200000081	WO-CLOSE	5045	0100	MATERIAL USAGE VARIANCE	1600	0100	WORK IN PROCESS	-5.83	
IC9909200000082	Method Change	6200	0100	METHOD CHANGE VARIANCE	1600	0100	WORK IN PROCESS	-129.88	
									<b>Total = - \$352.50</b>

**Example**

- Material Usage Variance (component 04-0005):**  $\{ [LL\ Mat'l - (LL\ Mat'l / Yield\ \%)] \times Qty \} + \{ [LL\ Lbr - (LL\ Lbr / Yield\ \%)] \times Qty \} + \{ [LL\ Bdn - (LL\ Bdn / Yield\ \%)] \times Qty \}$   
 $\{ [0.47 - (0.47 / 72\%)] \times 1,000 \} + \{ [0.02 - (0.02 / 72\%)] \times 1,000 \} + \{ [0.04 - (0.04 / 72\%)] \times 1,000 \} = - 206.11$
- Meth Change Var:**  $\{ [TL\ Lbr - (Op\ n\ Lbr / Yld\ \% + Op\ n+1\ Lbr / Yield\ \%)] \times Qty \} + \{ [TL\ Bdn - (Op\ n\ Bdn / Yld\ \% + Op\ n+1\ Bdn / Yield\ \%)] \times Qty \}$   
 $\{ [0.11 - (Op\ 10\ Lbr\ 0.06 / 72\% + Op\ 20\ Lbr\ 0.05 / 80\%)] \times 1,000 \} + \{ [0.28 - (Op\ 10\ Bdn\ 0.18 / 72\% + Op\ 20\ Bdn\ 0.1 / 80\%)] \times 1,000 \} = - 130.84$

## Usage and Method Variances

The increased number of assemblies needed to produce the required quantity of good units results in a material usage variance for lower-level components and a method change variance for this- level items affecting material, labor, and burden costs.

- The Lower-Level Material Usage Variance is calculated for each component as:

$$\{ [LL\ Material - (LL\ Material / Yield\ \%)] \times Qty \} + \{ [LL\ Labor - (LL\ Labor / Yield\ \%)] \times Qty \} + \{ [LL\ Burden - (LL\ Burden / Yield\ \%)] \times Qty \}$$

- The Method Change Variance is calculated for this level as:

$$\{ [TL\ Material - (TL\ Material / Yield\ \%)] \times Qty \} + \{ [TL\ Labor - (TL\ Labor / Yield\ \%)] \times Qty \} + \{ [TL\ Burden - (TL\ Burden / Yield\ \%)] \times Qty \}$$

Questions? Visit [community.qad.com](https://community.qad.com)

## Cost of Lost Items Stays in WIP

Costing Setup

### Cost of Lost Items Stays in WIP

**Yield % = 72%**

Unit Cost	1.33333			Extended Cost
Accounts				
More ▾				
GL Transaction Type	Account	Sub-Account	BC Debit	BC Credit
RCT-WO	1500	Mech	1,333.33	0.00
RCT-WO	1550	Mech	0.00	1,333.33

**Yield % = 100%**

Unit Cost	0.96			Extended Cost
Accounts				
More ▾				
GL Transaction Type	Account	Sub-Account	BC Debit	BC Credit
RCT-WO	1500	Mech	960.00	0.00
RCT-WO	1550	Mech	0.00	960.00

**RCT - WO**  
DR 1500 (Inventory)  
CR 1550 (WIP)

**Qty x (Total GL Cost)**  
 $1,000 \times 1.33333 = \underline{\$1,333.30}$

Item cost inflated to include cost of items lost

**Difference = \$373.30 = var**

**RCT - WO**  
DR 1500 (Inventory)  
CR 1550 (WIP)

**Qty x (Total GL Cost)**  
 $1,000 \times 0.96 = \underline{\$960}$

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## Inventory Transactions

The Inventory Transactions, shows that the cost of the items lost in production is left in WIP as variances until Production Order Accounting Close.

**Example** In the figure above, the item's cost when its yield is 100% is \$960 and \$1,333.30 when its yield is 72%. The difference between them is \$373.30, which is the total of the Material Usage and Method Change variances shown in the figure on the preceding page.

## Loss Costing (Scrap%)

Costing Setup

# Loss Costing (Scrap%)

Product Structures & Formulas

01020 Implantable Ultra Rev. A

EA Unit of Measure

No Configured

As of Date: 5/24/2021

Enter planned scrap % in Product Structures & Formulas, MRP will plan to compensate for the scrap.

Item	Level	Component	Description	Reference	Scrap %	Op	Start Effective	End Effect
Item	2	60012	Electrodes	Position 3	0.00	10	7/19/2010	
Item	2	60012	Electrodes	Position 4	0.00	10	7/19/2010	
Item	2	60012	Electrodes	Position 5	0.00	10	7/19/2010	
Item	2	60012	Electrodes	Position 6	0.00	10	7/19/2010	
Item	1	60009	Probe Housing Rev. A		10.00	10		
Item	1	60051	Microprocessor IM...		0.00	10		
Item	1	90093	Shipping Carton		0.00	30		

Specify the operation at which the scrap occurs particularly if using repetitive type of production.

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### Loss Costing: Scrap Percent

Loss costing using scrap percent is the inverse of loss costing using yield percent and is used to indicate the expected additional quantities of this component required to produce the parent. The scrap percent is entered in Product Structures & Formulas.

- Quantity per and scrap percentage are used by the Product Structure Cost Roll-Up, for calculating the cost of the parent item

- If the Operation field is left blank, then the system assumes that all components are issued at the first operation; therefore cumulative yield losses apply to all components. This is normally the case on all BOMs that will be used with machining or processing production orders.

- If an operation code is entered in the Operation field, then, for cost calculations, the system considers the operation at which the components are normally issued. Cumulative yield loss applies only to those components that have been issued up through that operation. This is appropriate for assembly type BOMs where components are used at various stages in the routing.

## Lower-Level & Total Costs

Costing Setup

### Lower-Level & Total Costs

Level	Component Item	Cost Set	Standard	Qty Per	UM	T	P/M	Material	Labor	Burden	Overhead	Subcontract	Cost Total
Parent	01020	10-100	Standard										
	Implantable Ultra Rev. A				EA		M	0.00	2,992.36111	9.44785	0.00	0.00	3,001.80896
	5/21/2021							499.49605	16.26561	0.23088	0.00	0.27778	516.27032
	Yield 72%							499.49605	3,008.62672	9.67873	0.00	0.27778	3,518.07928
	Unit Total												
1	50010			1.0	EA		M						
	Acoustic Transducer A							0.00	5.675	0.08107	0.00	0.20	5.95607
	5/21/2021							55.27516	6.03624	0.08517	0.00	0.00	61.39656
	Unit Total							55.27516	11.71124	0.16623	0.00	0.20	67.35263
	Ext Total							55.27516	11.71124	0.16623	0.00	0.20	67.35263
1	60009			1.0	EA		P						
	Probe Housing Rev. A							28.75	0.00	0.00	0.00	0.00	28.75
	5/21/2021							0.00	0.00	0.00	0.00	0.00	0.00
	Scrap 10.00%							28.75	0.00	0.00	0.00	0.00	28.75
	Unit Total							28.75	0.00	0.00	0.00	0.00	28.75
	Ext Total							31.94444	0.00	0.00	0.00	0.00	31.94444
1	60051			1.0	EA		P						
	Microprocessor IM Rev. A							275.00	0.00	0.00	0.00	0.00	275.00
	5/21/2021							0.00	0.00	0.00	0.00	0.00	0.00
	Unit Total							275.00	0.00	0.00	0.00	0.00	275.00
	Ext Total							275.00	0.00	0.00	0.00	0.00	275.00
1	90093			1.0	EA		P						
	Shipping Carton							0.85	0.00	0.00	0.00	0.00	0.85
	5/21/2021							0.00	0.00	0.00	0.00	0.00	0.00
	Unit Total							0.85	0.00	0.00	0.00	0.00	0.85
	Ext Total							0.85	0.00	0.00	0.00	0.00	0.85

**Example**

• **Lower Level Material Cost:**  
 $[ \text{Mat'l for Component A} / ( 100\% - \text{Scrap \%} ) ]$   
 $+ \text{Mat'l for Component N} + \dots$   
 $55.27516 + [ 31.94444 / (100\% - 10\%) ] + 275.00 + 0.85$   
 $= 499.49605$

• **Total Material Cost: Lower Level + This Level**  
 $499.49605 + 0 = 499.49605$



### Lower-Level and Total Costs Calculations

**Example** The lower-level and total costs shown in the figure above are based on 10% scrap for item 01020. The calculations are given below.

• Lower Level Material

–  $[ \text{Material for Component A} / (100\% - \text{Scrap}\%) ] + \text{Material for Component N} + \dots$   
 $55.27516 + [ 31.94444 / (100\% - 10\%) ] + 275.00 + 0.85 = 499.49605$

• Lower Level Labor

–  $[ \text{Labor for Component A} / (100\% - \text{Scrap}\%) ] + \text{Labor for Component N} + \dots$   
 $[ 11.71124 / (100\% - 10\%) ] + 0 + 0 = 16.26561$

• Lower Level Burden

–  $[ \text{Burden for Component A} / (100\% - \text{Scrap}\%) ] + \text{Burden for Component N} + \dots$   
 $[ 0.16623 / (100\% - 10\%) ] + 0 + 0 = 0.23088$

• Lower Level Subcontract

–  $\text{Subcontract for Component A} / (100\% - \text{Scrap}\%) ] + \text{Subcontract for Component N} + \dots$   
 $[ 0.20 / (100\% - 10\%) ] + 0 + 0 = 0.27778$

• Total Material



– Lower Level + This Level

$$499.49605 + 0 = 499.49605$$

• Total Labor

$$16.26561 + 2,992.36111 = 3,008.62672$$

• Total Burden

$$0.23088 + 9.44785 = 9.67873$$

• Total Subcontract

$$0.27778 + 0 = 0.27778$$



## Cost of Lost Component Stays in WIP

Costing Setup

### Cost of Lost Component Stays in WIP

Scrap % = 10%

Cost Data	RCT-WO
Material: 0.56223	Dr Acct: 1500 0100
Labor: 0.13222	Cr Acct: 1600 0100
Burden: 0.32444	Dr Project:
Overhead: 0.00	Cr Project:
Subcontract: 0.00	GL Reference: IC990930000089
Cost Total: 1.01889	Amount: 1,018.89

**RCT - WO**

DR 1500 (Inventory)  
CR 1600 (WIP)

Qty x (Total GL Cost)  
1,000 x 1.01889 = \$1,018.89

Item cost inflated to include cost of items scrapped

Scrap % = 0%

Cost Data	RCT-WO
Material: 0.51	Dr Acct: 1500 0100
Labor: 0.13	Cr Acct: 1600 0100
Burden: 0.32	Dr Project:
Overhead: 0.00	Cr Project:
Subcontract: 0.00	GL Reference: IC991004000000
Cost Total: 0.96	Amount: 960.00

**RCT - WO**

DR 1500 (Inventory)  
CR 1600 (WIP)

Qty x (Total GL Cost)  
1,000 x 0.96 = \$960

### Transactions Detail

The Transactions Detail, shows that the cost of the items lost in production stays in WIP until Production Order Accounting Close. How the value of the lost items is included, though, is different than in the earlier example using yield percent. In that case, the value of lost items is included in material usage and method change variances. But when scrap percent is used, the value is reflected in the increased quantity, thus increased cost, of a component required to produce a parent item—quantity of 1.1111 of component is now required versus standard quantity of 1.

## Reject Costing

Costing Setup

### Reject Costing

- Item cost is not inflated
  - No changes to route or product structure
- Planned yield (100%)
- Cost of scrap tracked in GL Scrap account
- Scrap is Reported at
  - Shop Floor Control, Production Order Receipt, Unplanned Issue, or Quality Management
- Issue to decide...
  - Report as COGS or Expense?
  - Do not use reject and loss costing at the same time

In reject costing, you do not specify any yield percentages in the operations. Instead, the costs of scrap are tracked in a special Scrap account. Unlike when using loss costing, in reject costing you are reporting the actual scrap occurring in the production process.

## Reject Costing

In QAD Enterprise Applications, reject costing can affect:

- Production Order Receipt report scrap in Production Operation Report
- Shop Floor Control

When recording rejects in SFC, only those units that are recorded as rejects in both SFC and in one of the production order receipt transactions have corresponding transactions reflecting that loss for the GL. (An entry is created to debit Scrap and Credit WIP.) Rejects recorded in SFC alone are recorded for reporting purposes only and have no consequence for the GL.

- Unplanned Issues

Another way of sending something to scrap is to use unplanned issue to scrap, which means that you must change the default accounts to the Scrap account

- Quality Management

Quality order items that fail inspection are scrapped. The Scrap account for the product line is debited and the Inventory account defined in Inventory Account Maintenance for the product line at the inspection site and location is credited

## Using Scrap Account

Costing Setup

### Using Scrap Account

Inventory Data	
Site: train	Begin Balance: 20,780.0
Loc: 200	Qty Change: 990.0
Lot/Serial:	Qty Short: 0.0
Inv Status:	Begin Loc Bal: 20,780.0
Supplier Lot:	Loc Qty Change: 990.0
Grade/Assay:	Expire Date:
Ref:	Batch:

Cost Data	RCT-WO
Material: 0.51	Dr Acct: 1500 0100
Labor: 0.13	Cr Acct: 1600 0100
Burden: 0.32	Dr Project:
Overhead: 0.00	Cr Project:
Subcontract: 0.00	GL Reference: IC991001000021
<b>Cost Total: 0.96</b>	<b>Amount: 950.40</b>

**RCT - WO**  
 DR 1500 (Inventory)  
 CR 1600 (WIP)  
 (Std Qty - Scrapped Qty) x Total GL Cost  
 (1000 - 10) x 0.96 = \$950.40

Cost Data	RJCT-WO
Material: 0.51	Dr Acct: 5800 0100
Labor: 0.13	Cr Acct: 1600 0100
Burden: 0.32	Dr Project:
Overhead: 0.00	Cr Project:
Subcontract: 0.00	GL Reference: IC991001000022
<b>Cost Total: 0.96</b>	<b>Amount: 9.60</b>

**RJCT - WO**  
 DR 5800 (Scrap)  
 CR 1600 (WIP)  
 Qty Scrapped x (Total GL Cost - OH)  
 10 x (0.96 - 0) = \$9.60

QAD 44

### Transactions Detail

- At production order issue and during manufacturing, WIP is debited the full standard quantity standard cost (for each lower-level component and this-level item)

Total GL Cost x Standard Qty

$$(0.51 \times 1,000) + (0.13 \times 1,000) + (0.32 \times 1,000) + (0.00 \times 1,000) = \$960$$

- Upon completion of production, Inventory is debited the actual quantity of good units (standard quantity - scrapped quantity) standard cost (see RCT-WO in figure above)

(Standard Qty - Scrapped Qty) x Standard Cost

$$(1000 - 10) \times \$0.96 = \$950.40$$

- Scrapping is booked by crediting for the number of scrapped units (standard cost - overhead), and debiting the Scrap account for the same amount (see RJCT-WO in figure on the preceding page)

Number of Scrapped Units x (Standard Cost - Overhead)

$$10 \times (\$0.96 - 0) = \$9.60$$



- A disadvantage of using scrap with production order type of production orders is that scrap incurred at all stages of manufacture is valued at full GL cost
- In the Repetitive type of production orders, scrap is valued at the cumulative cost up to the operation where the scrap is incurred

### Summary

As you can see, loss costing and reject costing lead to different item costs. In the case of loss costing, the item costs will be higher. This also has an influence on margin calculations and on the calculations of Cost of Goods Sold. Please note this when making the decision between scrap and yield costing.

It is important that you notice that loss and reject costing should not be used at the same time. You will have to decide which of the two methods fits your business environment best.

## Components of Item Cost Summary: Material

Costing Setup

### Components of Item Cost Summary: Material

<u>Dependent On</u>	<u>Defined In</u>
Material/purchase price	Items
Quantity Per	Product Structures & Formulas
Scrap %	Product Structures & Formulas
Phantom	Items
Pur/Mfg	Items
Structure Type	Product Structures & Formulas
Yield %	Routings
Issue Policy	Items

## Components of Item Cost Summary: Labor

Costing Setup

### Components of Item Cost Summary: Labor

<u>Dependent On</u>	<u>Defined In</u>
Work Center Labor Rates	Work Centers
Work Center Setup Rates	Work Centers
Run Time per Unit	Routings
Setup Time per Lot/Batch	Routings
Order Quantity	Items
Subcontract Cost	Routings

## Components of Item Cost Summary: Burden

Costing Setup

### Components of Item Cost Summary: Burden

<u>Dependent On</u>	<u>Defined In</u>
Work Center Labor Burden Rates	Work Centers
Work Center Labor Burden Percent	Work Centers
Work Center Machine Burden Rate	Work Centers
Machines/Operation	Work Centers, Routings
(plus all of the items listed under Labor, except Subcontract)	

## Routing Cost Calculations: Review

Costing Setup

### Routing Cost Calculations: Review

#### Labor Cost Per Operation

Set-Up Cost = (Set-Up Hrs / Order Qty) x WC Set-Up Rate

Run Cost = Run Hrs x WC Labor Rate

Labor Cost = Set-Up Cost + Run Cost

#### Labor Burden Cost Per Operation

Set-Up Burden

Burden = (Set-Up Hrs / Order Qty) x WC Lbr Bdn Rate

Burden % = (Set-Up Hrs / Order Qty) x WC Set-Up Rate x WC Lbr Bdn%

Run Cost Burden

Burden = Run Hrs x WC Lbr Bdn Rate

Burden % = Run Hrs x WC Lbr Rate x WC Lbr Bdn%

#### Machine Burden Cost Per Operation

Set-Up = (Set-Up Hrs / Order Qty) x (Mach / Op) x WC Mach Bdn Rate

Run = Run Hrs x WC Mach Bdn Rate

## Review

Costing Setup

### Review

- Setup Overview
- Inventory & Production Control
- Items Setup & Effects
- Departments
- Work Centers
- Routings
- Product Structures & Formulas
- Reject and Loss Costing

## Mastery Question – Multiple Choice

Costing Setup

### Mastery Question – Multiple Choice

1. Which of the following is the correct manufacturing costing setup sequence?
  - A. Departments, Work Centers, Machines, Routings
  - B. Work Centers, Machines, Departments, Routings
  - C. Departments, Routings, Work Centers, Machines
  - D. Routings, Departments, Work Centers, Machines

## Mastery Question – Multiple Choice

Costing Setup

### Mastery Question – Multiple Choice

2. Which of the following is NOT a source of cost information that the system uses to calculate cost?
- A. Yield at each operation
  - B. Item order quantity
  - C. Efficiency and utility of each machine
  - D. Labor and setup rates for each work center
  - E. Variable burden at each work center

## Mastery Question – Multiple Choice

Costing Setup

### Mastery Question – Multiple Choice

3. Routing Cost Roll-Up roll up all phantom items but the labor, burden, and subcontract costs of them are not included in the parent item's cost.
  - A. True
  - B. False

## Exercise: Costing Setup

Costing Setup

### Exercise: Costing Setup



## Costing Setup

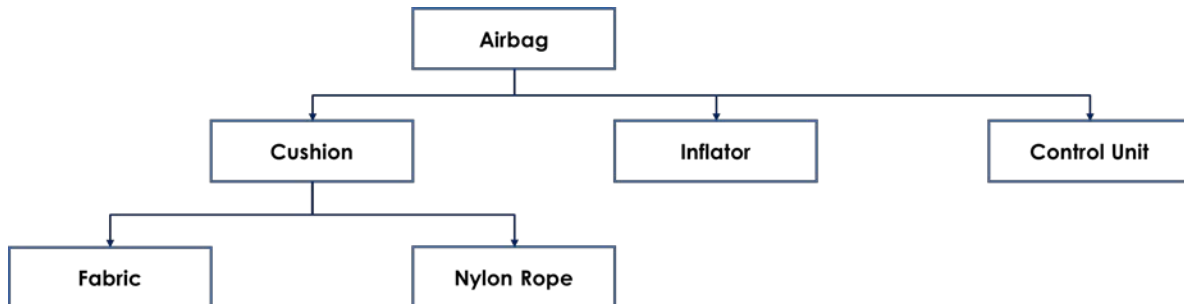
In this exercise, you will set up items, product structures, departments, work centers, and routings.

1. Review Inventory Control and make sure the Current Cost is the Last in the Inventory Accounting frame.
2. Review Production Control and make sure the Post Scrap to GL field is selected.
3. Use Items to create item master records as below and enter item costs in the current cost set (not the GL). Enter Order Quantity 10 only for item 09001.

Item No	Description	Product Line	Site	Location	Pur/Mfg	Material Cost
09001	Airbag	10	10-100	010	L	0.00
08001	Cushion	20	10-100	020	L	0.00
08002	Inflator	20	10-100	020	P	10.00
08003	Control Unit	20	10-100	020	P	10.00
07001	Fabric	20	10-100	020	P	20.00
07002	Nylon Rope	20	10-100	020	P	20.00

4. Use Product Structures & Formulas to create the Airbag and Cushion. For each component, the quantity per is 1.

Product Structure:



Product Structure	09010
Component	08001
Quantity Per	1
Operation	10
Component	08002
Quantity Per	1
Operation	20
Component	08003
Quantity Per	1
Operation	30
Product Structure	08001
Component	07001
Quantity Per	1
Operation	10
Component	07002
Quantity Per	1
Operation	10

5. Use Departments to create a new department D09001 with the default GL chart of accounts.

6. Use Work Centers to create a new work center WC09001 with the following field values:

Work Center	WC09010
Department	D09001
Backflush Location	020
Setup Rate	10.00
Labor Rate	10.00
Machine Burden Rate	20.00
Labor Burden Rate	30.00
Work Center	WC09020
Department	D09001
Backflush Location	020
Setup Rate	0.00
Labor Rate	10.00
Machine Burden Rate	20.00
Labor Burden Rate	30.00
Work Center	WC09030
Department	D09001
Backflush Location	020
Setup Rate	0.00
Labor Rate	10.00
Machine Burden Rate	20.00
Labor Burden Rate	30.00
Work Center	WC08001
Department	D09001
Backflush Location	020
Setup Rate	0.00
Labor Rate	10.00
Machine Burden Rate	20.00
Labor Burden Rate	30.00

7. Use Routings & Processes to create a new routing 09001 with the following field values:

Routing	09001
Operation	10
Work Center	WC09010
Setup Time	1.0
Run Time	0.1
Milestone Operation	Yes
Operation	20
Work Center	WC09020
Setup Time	0.0
Run Time	0.0
Subcontract Cost	10.00
Operation	30
Work Center	WC09030
Setup Time	0.0
Run Time	0.1
Milestone Operation	Yes
Routing	08001
Operation	10
Work Center	WC08001
Setup Time	0.0
Run Time	0.1
Milestone Operation	Yes



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CHAPTER 4

# Costing Process





# Costing Process



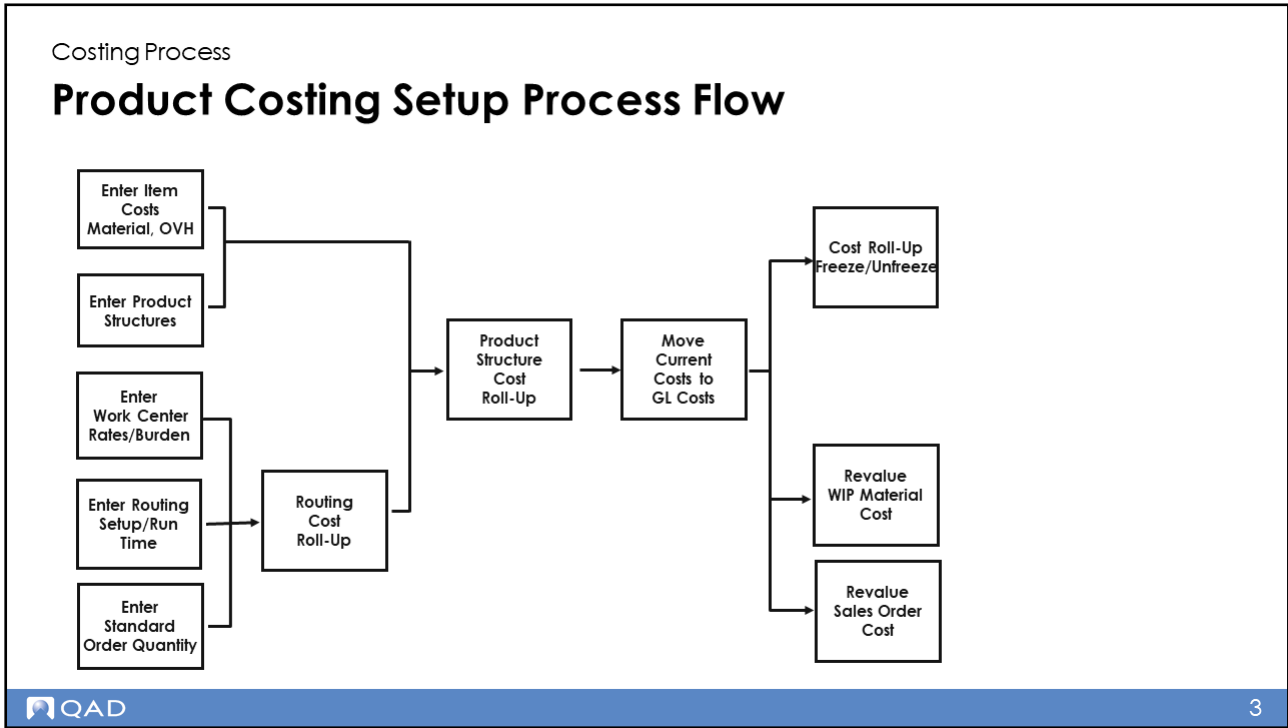
## Overview

Costing Process

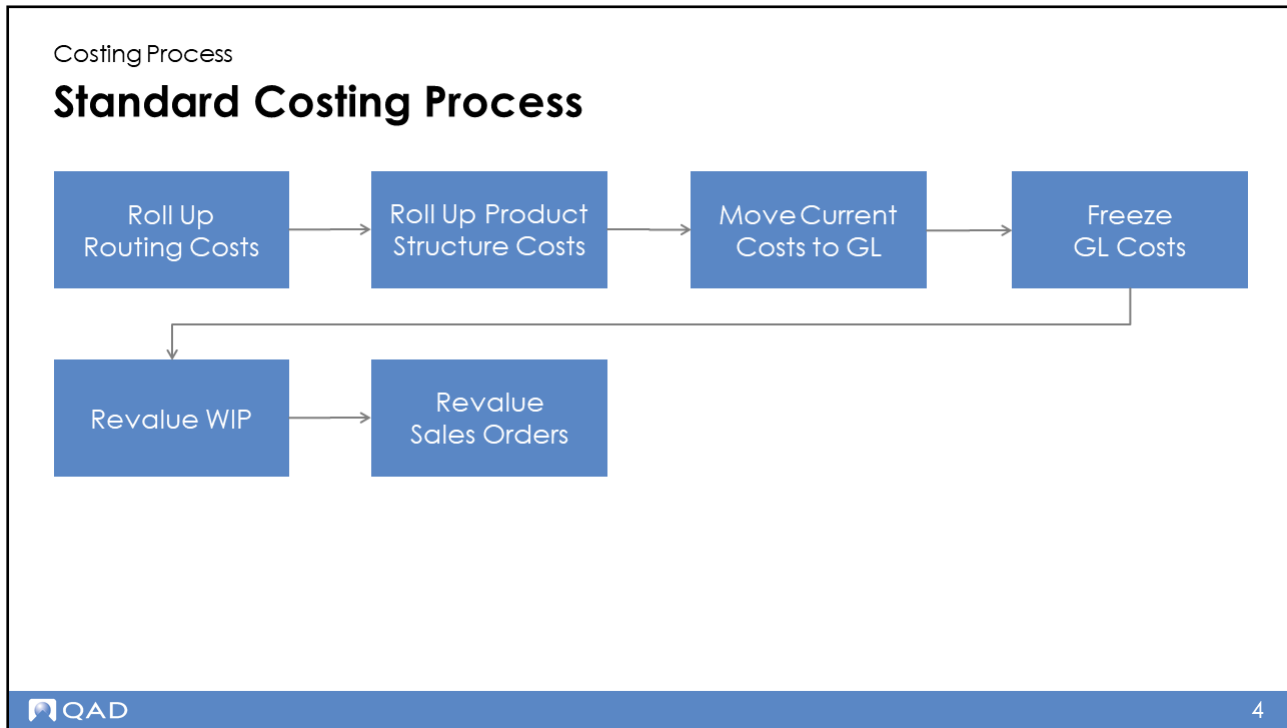
### Overview

- Standard Costing Process Overview
- Routing Cost Roll-Up
- Product Structure Cost Roll-Up
- Current Cost Set Move to GL Set
- Cost Roll-Up Freeze/Unfreeze
- WIP Material Cost Revaluation
- Sales Order Cost Revaluation

## Product Costing Setup Process Flow



## Standard Costing Process



The costing process is essentially a two-step process for items other than purchased parts.

- The first step is to run the Routing Cost Roll-Up which totals the labor/machine hours and cost, subcontract cost, and burden cost; computes the cumulative operation yield for a routing or routings; and sums the this-level labor and burden cost data for the specified cost set
- The second step is to run the Product Structure Cost Roll-Up which obtains purchased material and this-level labor and burden costs for the item, and performs the level- by-level computation of costs for the five cost set categories—material, labor, burden, overhead, and subcontract. The Product Structure Cost Roll-Up updates cumulative lower- level costs for all cost categories at each assembly level.

**Note** Usually, roll-ups are carried out in the Current or Simulation cost set. This permits validation prior to committing them as new GL Standards.

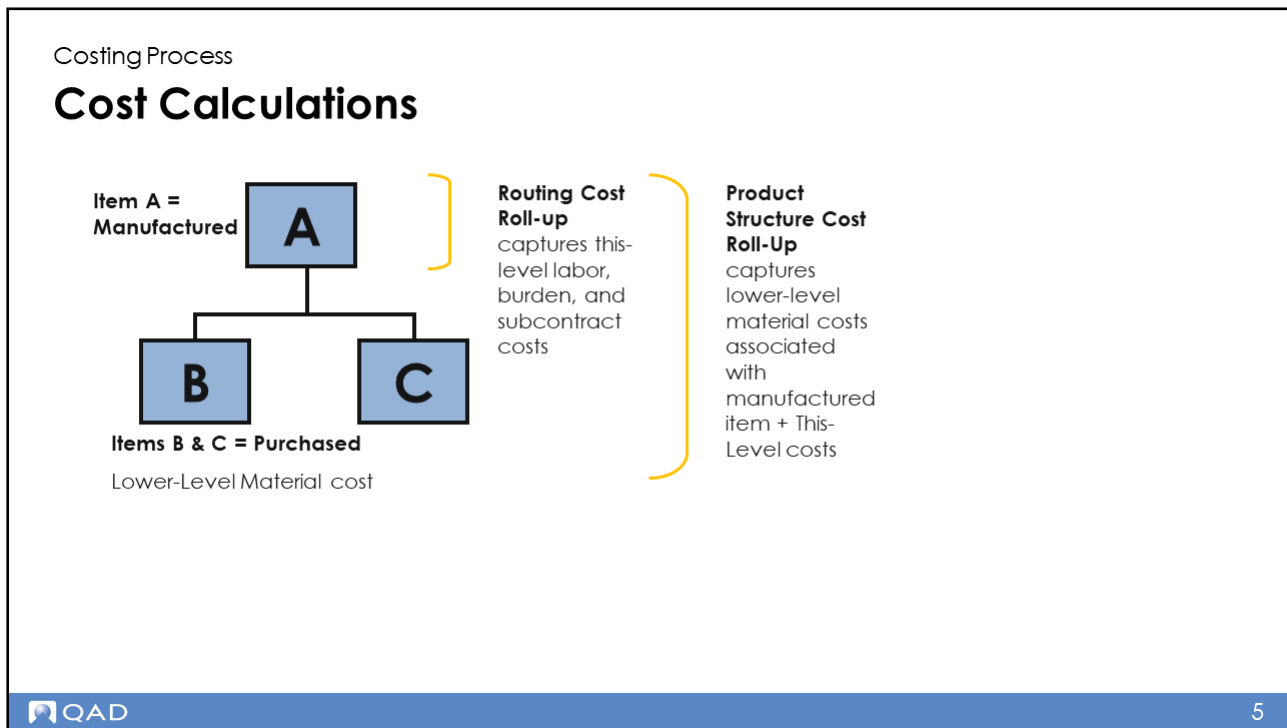
- Using Current Cost Set

– Following the routing and product structure cost roll-ups, you then move the current cost set to GL (use Current Cost Set Move to GL Set), and then optionally freeze the newly established cost (use Cost Roll-Up Freeze/Unfreeze)

- Using Simulation Cost Set

– See *Cost Simulation* on Cost Management chapter

## Cost Calculations



### Cost Calculations

Costs are calculated in different ways depending on the cost level and element being defined.

- For purchased items, the standard cost is entered manually as material, this level. Overhead is an independent cost that is also entered manually or calculated by Item Overhead Cost Update.
- Manufactured items get their this-level costs from the Routing Cost Roll-Up process, which calculates costs for labor, burden, and subcontract. (Distribution items are treated in the same way as purchased items and require manual input of this-level costs.)
- Product Structure Cost Roll-Up adds lower-level costs to an item. Total cost is the sum of this-level and lower-level costs.

## Routing Cost Roll-Up Calculations

Costing Process

### Routing Cost Roll-Up Calculations

The screenshot displays three main windows in the QAD Cost Accounting Manager interface:

- Items Window:** Shows item 09001 with fields for Order Quantity (1,000), Order Multiple (0), and Order Period (7).
- Routing Operations Window:** Shows operation 09001 with fields for Yield Percent (100.00%), Machines per Operation (1), Setup Time (1.0), and Run Time (1.0).
- Work Centers Window:** Shows work center 09001 with fields for Setup Rate (10,000), Labor Rate (10,000), Machine Burden Rate (20,000), Labor Burden Rate (20,000), and Labor Burden Percent (0.00%).

Below the windows, a list of data points is provided:

Order Quantity	Setup Rate
Setup Time	Labor Rate
Run Time	Labor Burden Rate
Yield	Labor Burden Percent
Machine Per Operation	Machine Burden Rate

QAD 6

Routing Cost Roll-Up is used to calculate the costs for items based on their routing (process) operations. The roll-up uses data defined in:

- Items
- Routings
- Work Centers

### What Routing Cost Roll-Up Calculations Are Based On

Routing cost calculations are used to calculate the value of this-level labor, burden, and subcontract costs per item using the work center data to obtain hourly rates for set-up and run labor. The work center also provides the burden rates as cost per hour for labor and machine burden, as well as a labor burden percent. The routing records provide the set-up and run times (standard), as well as the machines per operation and operation yield percent. The item (site) planning record provides the order quantity value, which is used to amortize set-up cost over a standard or normal order size to obtain a realistic cost per unit value.

- When you first set up routings, Routing Cost Roll-Up enables you to verify the item cost figures and the routing itself. The regular use of the roll-up is used to determine the current cost of an item.

### Roll Up Current Cost Set First

You can roll up either current or GL costs. The default is to roll up current costs.

You can roll up GL costs when they change, but it is safer to roll up current costs and then move them using Current Cost Set Move to GL.



Following fields are the major data for the Routing Cost Roll-Up Calculations:

- Order Quantity
- Setup Time
- Run Time
- Yield
- Machine Per Operation
- Setup Rate
- Labor Rate
- Labor Burden Rate
- Labor Burden Percent
- Machine Burden Rate

## Routing Cost Calculations: Review

Costing Process

### Routing Cost Calculations: Review

#### Labor Cost Per Operation

Set-Up Cost = (Set-Up Hrs / Order Qty) x WC Set-Up Rate

Run Cost = Run Hrs x WC Labor Rate

Labor Cost = Set-Up Cost + Run Cost

#### Labor Burden Cost Per Operation

Set-Up Burden

Burden = (Set-Up Hrs / Order Qty) x WC Lbr Bdn Rate

Burden % = (Set-Up Hrs / Order Qty) x WC Set-Up Rate x WC Lbr Bdn%

Run Cost Burden

Burden = Run Hrs x WC Lbr Bdn Rate

Burden % = Run Hrs x WC Lbr Rate x WC Lbr Bdn%

#### Machine Burden Cost Per Operation

Set-Up = (Set-Up Hrs / Order Qty) x (Mach / Op) x WC Mach Bdn Rate

Run = Run Hrs x WC Mach Bdn Rate

## Routing Cost Roll-Up

Costing Process

### Routing Cost Roll-Up

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Routing Cost Roll-Up | Default Report | Schedule | Burst Settings | More

Settings

Filter

Field	Operator	Value	Reset
Site	equals	10-100	+ X
Cost Set	equals	Current	+ X
Item Number	equals	01020	+ X
Item Type	equals		+ X
As of Date	equals	5/27/2021	+ X
Roll-up Labor Time	equals	Yes	+ X
Roll-up Setup Time	equals	Yes	+ X
Roll-up Lead Time	equals	Yes	+ X
Roll-up Item Yield	equals	Yes	+ X
Roll-up Labor Cost	equals	Yes	+ X
Roll-up Burden Cost	equals	Yes	+ X
Roll-up Subcontract Cost	equals	Yes	+ X
Include Yield in Cost	equals	Yes	+ X

Run

QAD 8

Key fields in Routing Cost Roll-Up are:

**As of Date.** Roll-up calculations only consider operations effective on the specified date. The default is the system date.

**Roll-Up Labor Time, Setup Time, and Lead Time.** Often, these fields should be set to No so that the manufacturing lead time entered in the Item Planning data is not overridden. This should be discussed with the Planners to determine how these fields should be set. The default setting is Yes.

**Include Yield in Cost.** Yield is calculated by operation and the compounded yield for all operations can optionally be used to update the item master yield for planning purposes (set Roll-Up Item Yield field to Yes). The order quantity planned will be increased to cover the expected losses, which will require more components and production time. This yield can be calculated into the costs (if set to Yes) or be excluded from the cost process (if set to No).

**Note** QAD Enterprise Applications does not calculate a yield variance. It will calculate material and labor usage variances and a method variance, which will include the yield variances.

**Roll-up Labor/Burden/Subcontract Cost.** Routing Cost Roll-Up can calculate this-level costs for individual elements or for all elements: labor, burden, and subcontract. Normally set these fields to Yes.

**Update Items Without Routings.** This determines whether cost calculations include only those items with routings, or all items. This field allows the user to clear out costs associated with obsolete routings. For example, if a company decides to stop making an item and start to acquire it from another source, simply deleting the routing does not clear out all of the manufacturing costs associated with this item. To reset those costs to zero, run the routing cost roll-up with Update Items Without Routings set to Yes. If this item is a component, then you also need to run the Product Structure Cost Roll-Up.

Note: In the Settings, user can select Excel for the File Type. Then the out put of the Routing Cost Roll-up will be Excel format and user can easily check the results.



## Product Structure Cost Roll-Up

Costing Process

### Product Structure Cost Roll-Up

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Product Structure Cost Roll-Up | Default Report | Schedule | Burst Settings | More

Cost Set	equals	Current	+	×
Item Number	equals	01020	+	×
Prod Line	equals		+	×
Item Type	equals		+	×
Group	equals		+	×
As of Date	equals	5/27/2021	+	×
Low Level Material	equals	Yes	+	×
Low Level Labor	equals	Yes	+	×
Low Level Burden	equals	Yes	+	×
Low Level Overhead	equals	Yes	+	×
Low Level Subcontract	equals	Yes	+	×
Low Level Labor Time	equals	No	+	×
Low Level Setup Time	equals	No	+	×
Include Yield %	equals	Yes	+	×
Set Cost Update Field for	equals	MFG-ALL	+	×

Run

QAD 9

Product Structure Cost Roll-Up is used to update the costs of parent items based on the costs of their lower-level components.

Set Cost Update Field for All/Changed Only

- If All, this field is set to the run date for all parts
- If Changed Only, this field is set to the run date for items where costs have actually changed. This option gives better audit trail of dates when costs changed.

**Include Yield %.** Determines whether yield percentages from Routings are used to calculate component item costs. If set to Yes, component costs are adjusted to account for any yield percentage. This adjustment can be upwards (yield < 100%) or downwards (yield > 100%).

**Note** If Scrap in Product Structures & Formulas is set to a value other than 0.00%, the system adds those costs to the parent material cost lower level. Yield and scrap are separate values. If both are used, both will be calculated into the parent costs.

**Item/Product Line/Item Type/Group.** Use these fields to select the cost data to be rolled up. Leaving fields blank selects all in the category.

**As of Date.** The effective date to use when selecting which parent/component relationship to display. The default is the system date.

**Low Level Costs (Material, Labor, Burden, Overhead, Subcontract).** Set these fields to Yes to include lower-level costs in the cost roll-up.

Note: In the Settings, user can select Excel for the File Type. Then the out put of the Routing Cost Roll-up will be Excel format and user can easily check the results.



## Product Structure / Formula Costs Report

Costing Process

# Product Structure / Formula Costs Report

MainReport
1 / 6 | 100% +
Page 1 / 6  
5/27/2021  
7:41:09 AM

### Product Structure / Formula Costs

10USA USD

Site	10-100	Cost Set	Current								
Level	Component Item	Qty Per	UM	T	P/M	Material	Labor	Burden	Overhead	Subcontract	Cost Total
Parent	01020		EA		M						
	Implantable Ultra Rev. A	This Level				0.00	2,992.36111	9.44785	0.00	0.00	3,001.80896
	5/27/2021	Lower Level				512.36322	2.70913	0.04038	0.00	0.00	515.11273
	<b>Yield 72%</b>	Unit Total				512.36322	2,995.07025	9.48823	0.00	0.00	3,516.92169
1	50010	1.0	EA		M						
	Acoustic Transducer A	This Level				0.00	1.06	0.01692	0.00	0.00	1.07692
	5/27/2021	Lower Level				55.27913	0.89058	0.01215	0.00	0.00	56.18186
		Unit Total				55.27913	1.95058	0.02907	0.00	0.00	57.25878
		Ext Total				55.27913	1.95058	0.02907	0.00	0.00	57.25878
2	50011	1.0	EA		M						
	Ultrasound Array	This Level				0.00	0.89058	0.01215	0.00	0.00	0.90273
	5/27/2021	Lower Level				54.49516	0.00	0.00	0.00	0.00	54.49516
	<b>Yield 95%</b>	Unit Total				54.49516	0.89058	0.01215	0.00	0.00	55.39788
		Ext Total				54.49516	0.89058	0.01215	0.00	0.00	55.39788
..3	60010	233.42	G		P						
	Prepared Layered Mat	This Level				0.22	0.00	0.00	0.00	0.00	0.22
	5/27/2021	Lower Level				0.00	0.00	0.00	0.00	0.00	0.00
		Unit Total				0.22	0.00	0.00	0.00	0.00	0.22
		Ext Total				51.3524	0.00	0.00	0.00	0.00	51.3524
..3	60011	4.0	EA		P						

10

Product Structure / Formula Costs report shows costs for an item and its components by structure level.



## Current Cost Set Move to GL Set

Costing Process

### Current Cost Set Move to GL Set

Item Type	Operator	Search	Currency	Copy
Item Type	equals	Q	bc	+ X
Item Group	equals	Q	bc	+ X
ABC Class	equals	Q	bc	+ X
Purchase/Manufacture	equals	Q	bc	+ X
Buyer/Planner	equals	Q	bc	+ X
Negative Change Allowed %	equals		bc	+ X
Positive Change Allowed %	equals		bc	+ X
Copy Material Cost	equals	Yes	bc	+ X
Copy Labor Cost	equals	Yes	bc	+ X
Copy Burden Cost	equals	Yes	bc	+ X
Copy Overhead Cost	equals	Yes	bc	+ X
Copy Subcontract Cost	equals	Yes	bc	+ X
Sum Costs to Material This Level for DRP	equals	No	bc	+ X
Summary/Detail	equals	Detail	bc	+ X
Update	equals	Yes	bc	+ X

Run

Use Current Cost Set Move to GL Set to copy costs from the current cost set to the general ledger (GL) cost set at a specified site.

Every item has at least two cost sets: GL and current. When costs change, update and verify the current costs first, then use Current Cost Set Move to GL Set to reflect the change in the GL cost set. At the beginning of each fiscal year, most companies set current and GL costs equal. You can do this with GL Cost Set Move to Current Set.

This function can take a long time to process.

You must specify a site. Records are selected based on the selection criteria you enter. The system first looks for item data specific for the site. If none is found, the system uses the item master record.

You can enter values in the Negative Change Allowed % and Positive Change Allowed % fields to indicate the percentage change to allow on all costs copied. GL costs are updated only if the difference between the costs lies within this tolerance range.

When one cost set is copied to another, costs may already exist in the target cost set. If so, costs are updated only if the difference between the costs lies within this tolerance range.

Total cost for an item is made up of elements in five cost categories: material, labor, burden, overhead, and subcontract. You can copy all or some of the cost elements from one cost set to another. Each cost element is copied from the current cost set to the GL cost set, provided the difference between the two total costs does not exceed the range specified in the Negative Change Allowed % and Positive Change Allowed % fields.

When the GL cost set assigned to a site is updated using this function, inventory is revalued to reflect the new costs. To reflect this cost change in work in process (WIP), run WIP Material Cost Revaluation.

When a site is the source for GL costs at other sites, updating the active GL cost set automatically generates cost adjustment (CST-ADJ) transactions at any target sites. You cannot update GL costs at a target site, since these costs are referenced from the source site. For more information on linked sites, refer to information on Linked-Site Rules in your Costing user documentation.

You may want to back up the database prior to updating costs, particularly GL costs.

QAD Enterprise Applications maintains at least two cost sets for each item-site pair: current, which reflects today's cost for an item, and GL, which is used for all general ledger transactions. At the beginning of the year, many companies set current and GL costs to be equal. You can do this with Current Cost Set Move to GL Set.

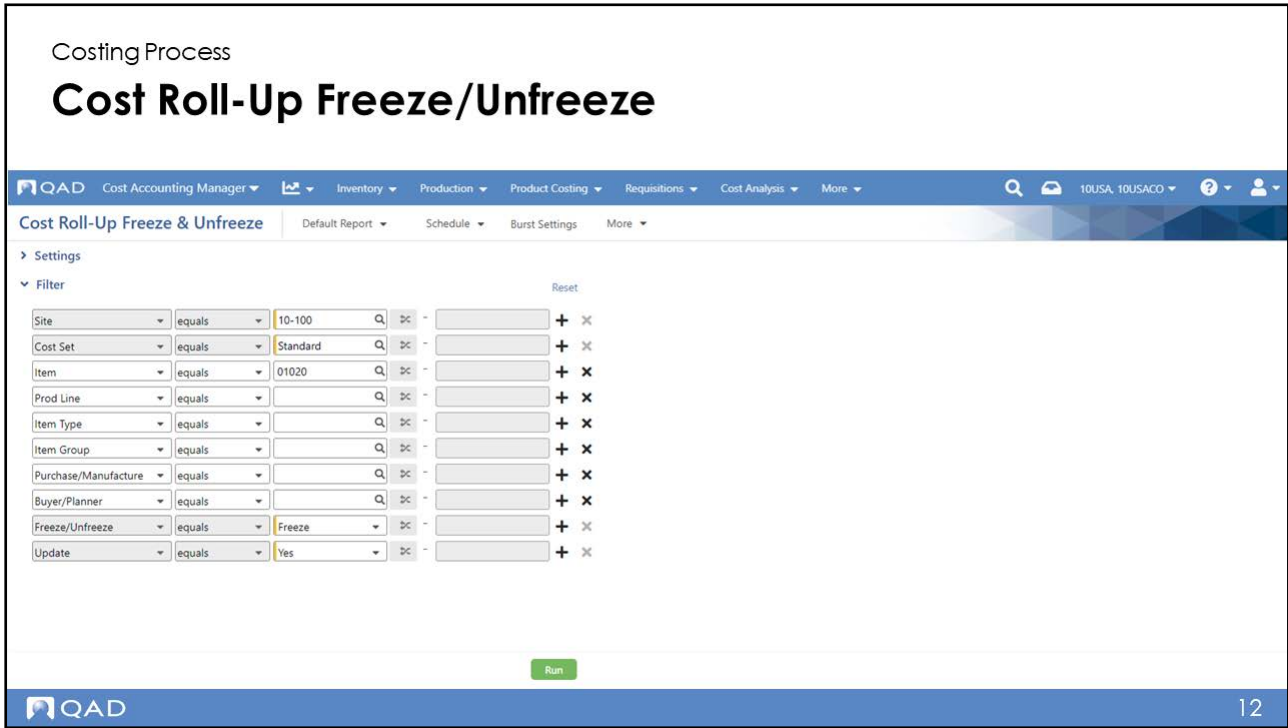
When costs change, update and verify the change in the current costs first, then use Current Cost Set Move to GL Set to reflect the change in the GL cost set. Current Cost Set Move to GL Set is most commonly used only at regular, widely spaced intervals; usually annually.

Sales order and work-in-process are not revalued automatically. To revalue them, you must use Sales Orders action Revalue Cost or WIP Material Cost Revaluation. This should be done whenever standard costs change.

Moving current costs can have significant effects on the general ledger. All changes to GL costs create a GL cost adjustment, updating the value of inventory.

**Note** This function should be permission controlled.

## Cost Roll-Up Freeze/Unfreeze



Cost Roll-Up Freeze & Unfreeze freezes standard (or other) cost sets for fiscal year control over costs or selectively unfreezes items to allow cost updates for new/revised items.

Once standard GL costs are established, use Cost Roll-Up Freeze & Unfreeze to prevent the system from recalculating the costs the next time routing or product structure roll-ups are performed. For example, you may want to set standard costs or create a reference cost set that does not change over a specific period. Any cost set can be frozen.

Freezing standard costs provides fiscal-year control over those costs. You can freeze approved or verified standard costs at the start of your fiscal year, and then track cost changes in variance accounts through the year. At the close of the fiscal year, copy the current cost set to the standard set. Freezing costs also improves processing speed during cost roll-up calculations. After item costs are calculated and frozen, all subsequent cost roll-up calculations simply use the frozen cost.

Freezing costs only prevents the system from recalculating costs. It does not prevent manual changes in item cost data maintenance functions, cost set copy functions, or operation cost calculation.

To introduce an item with wholly new components mid-year, add the items, structure, and routing, then roll up as usual and freeze the item’s standard costs. To add or change components in an existing structure or to change a routing mid-year, unfreeze the affected items including components and parents. Roll up the revised structure and routing and refreeze.

When a changed item is optional in the structure or routing or if its parent can use other unchanged subassemblies as a direct replacement, be careful to unfreeze the parent without unfreezing unchanged subassemblies.



For the correct calculation of co-product costs, freeze the costs for by-products once those by-product costs have been determined. When by-product costs are not frozen, the cost of a base process item may not be equal to the costs of the co-/by-products that it produces. This is because the costs for a by-product may have been recalculated after the costs were calculated for one or more of the co-products. This can result in co-product costs that do not tie to the cost of a by-product.

For example, you can set standards or create a reference cost set that won't change over the year. Any cost set can be frozen. Running the Cost Roll-Up Freeze & Unfreeze simply marks item costs for this cost set and site as frozen. When routing and product structure cost roll-up functions encounter an item with frozen cost, they use that cost rather than recalculating it.

The reason for doing this is best illustrated by an example. If you have a common manufactured subassembly X that is used in products A and B, and you add another product C that uses this subassembly, when you roll up the cost of product C, the system will automatically roll up the cost of all of C's components first, including subassembly X. And, if the product structure/BOM or routing has changed in any way, subassembly X can get a new cost, meaning that you will also need to recalculate costs of items A and B. If you do not want this to happen, use Cost Freeze to freeze the cost of manufactured subassemblies such as item X.

Freezing your costs can also speed up roll-up calculations. Once item cost is calculated and frozen, all subsequent cost roll-up calculations at this site for this cost set simply use the frozen cost.

**Note** The freezing process requires careful control to ensure that subassemblies that do require rolling up are unfrozen. It could be difficult to carry out this check on complex BOM structures.

**Warning** The cost freeze only prevents costs from being recalculated by the system. It does not prevent manual changes in item cost data maintenance functions, cost set copy functions, or operation cost calculation.

### **Cost Unfreeze**

When frozen costs need to be recalculated using the roll-up functions, simply run Cost Freeze/Unfreeze to mark the costs as no longer frozen. Or copy the costs to another cost set and roll up that cost set.

Use the Cost Roll-Up Freeze Status browse to review cost total for items, when updated, and whether costs are frozen or unfrozen.

## Revalue WIP

Costing Process

# Revalue WIP

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

WIP Material Cost Revaluation | Default Report | Schedule | Burst Settings | More

> Settings

Filter

Filter	Operator	Value	Action
Account	equals		+ X
Sub-Account	equals		+ X
Cost Center	equals		+ X
Project	equals		+ X
Production Order	equals		+ X
ID	equals		+ X
Item Number	equals	01020	+ X
Site	equals		+ X
GL Effective Date	equals	5/27/2021	+ X
Summary/Detail	equals	Detail	+ X
Update	equals	No	+ X

Run

QAD 13

WIP Material Cost Revaluation revalues production orders when standard costs change or when additional materials are issued. Use this program to revalue open production orders when standard costs change when:

- Standard costs change after you release a production order.
- Additional materials have been issued to work in process (WIP).

Standard component costs are recorded on production orders at release when the status is E, A or R. When materials are issued to the order, the standard cost of those materials is posted to WIP from the production order bill.

WIP Material Cost Revaluation updates the production order bill with the currently effective GL cost. Any difference between the unit cost of the components issued and the standard cost is posted as a material rate variance. WIP Material Cost Revaluation does not update product structures or labor and burden costs.

Execute this program before closing orders with Production Order Accounting Close to prevent unaccounted material rate variances.

Depending on the number of orders selected for processing, this function can take some time to complete. The program creates transactions in Inventory History and Operation History tables that represent the GL transactions created when closing out the WIP value of the production order. You should execute WIP Material Cost Revaluation before closing orders with this program to prevent unaccounted for material rate variances.

### GL Transactions

GL transactions are stored in the unposted transaction table until they are posted. Review unposted transactions with Unposted Transactions. The GL reference begins with WO.



This program:

- Debits the WIP account from the production order
- Credits the Material Rate Variance account from the production order

## Revalue Sales Order Cost

Costing Process

# Revalue Sales Order Cost

The screenshot displays the QAD Cost Accounting Manager interface. The main header shows 'Sales Orders' with a search bar and a dropdown menu. The dropdown menu is open, showing various actions. The 'Revalue Cost' action is highlighted with a red box. The background shows a table of sales orders with columns for Order Date, Due Date, Purchase Order, Salesperson, Currency, and Site. The 'Revalue Cost' action is highlighted in the dropdown menu.

Sales Order #	Sold-To	Sort Name	BILL-TO	Order Date	Due Date	Purchase Order	Salesperson	Currency	Site	Quote
10S10052	10c1001	MediLogic	10c1001	5/27/2021	5/28/2021	PO0001	10SP02	USD	10-100	

Records per page: 25 | 1 - 1 of 1

The system uses the prevailing GL cost when a sales order line item is shipped and also changes the cost in the sales order line item record. However, GL costs on open sales order item records entered before the cost change are not automatically changed when GL costs are changed. This situation could impact any reports that show margin. Consequently, you can use Sales Orders action Revalue Cost to change the GL cost of these records so that gross margin reports will reflect the proper difference between GL costs and selling price.

Use the Sales Order Gross Margin report to see the gross margin for all open sales order line item quantities by line item and order. Gross margin is based on the net price charged for the item and the item cost as stored on the order as it is entered.

## Review

Costing Process

### Review

- Standard Costing Process Overview
- Routing Cost Roll-Up
- Product Structure Cost Roll-Up
- Current Cost Set Move to GL Set
- Cost Roll-Up Freeze/Unfreeze
- WIP Material Cost Revaluation
- Sales Order Cost Revaluation

## Mastery Question – Multiple Choice

Costing Process

### Mastery Question – Multiple Choice

1. Which of the following is the correct sequence for cost process?
  - A. Freeze GL Costs, Roll-up Routing cost, Roll-up Product Structure cost
  - B. Freeze GL Costs, Roll-up Product Structure cost, Roll-up Routing cost
  - C. Roll-up Routing cost, Roll-up Product Structure cost, Freeze GL Costs
  - D. Roll-up Product Structure cost, Roll-up Routing cost, Freeze GL Costs

## Mastery Question – Multiple Choice

Costing Process

### Mastery Question – Multiple Choice

2. You move the Current cost set to the GL cost set:
- A. At the end of each shop floor calendar day
  - B. Every month end
  - C. Every quarter
  - D. On an annual basis

## Mastery Question – Multiple Choice

Costing Process

### Mastery Question – Multiple Choice

3. During routing cost roll-up, you can roll up all of the following elements EXCEPT:
- A. Material cost
  - B. Lead time
  - C. Burden cost
  - D. Item yield
  - E. Subcontract cost

## Exercise: Costing Process

Costing Process

### Exercise: Costing Process



## Costing Process

In this exercise, you will roll up routing costs, roll up product structure costs, move current costs to GL, freeze GL costs, revalue WIP, and revalue sales orders.

1. Use Routing Cost Roll-Up to roll up the routing cost in the current cost set in site 10-100 for product item 08001 and 09001 in site 10-100.
2. Use Routing Costs to report the routing costs in the current cost set in site 10-100 for product item 08001 and 09001 and set the order quantity to 10.

Routing Cost Report										Page 1 / 2
10USA USD										7/21/2021
										6:53:26 AM
<b>Routing 08001</b>										
Op 10										
Work Ctr Machine	Setup Time Order Qty	Setup cost Unit Run	Setup Rate Labor Rate	Labor Cost	Lbr Bdn % Mch per Op	Lbr Bdn Rate Mch Bdn Rate	Lbr Burden Mch Burden	Total Burden	Subcontract	
WC08001	0.0 10.0	0.00 0.10	0.00 10.00	1.000	0.00% 1	30.00 20.00	3.00 2.00	5.00	0.00	
<b>Routing Total</b>				<b>1.000</b>				<b>5.00</b>	<b>0.00</b>	
<b>Routing 09001</b>										
Op 10										
Work Ctr Machine	Setup Time Order Qty	Setup cost Unit Run	Setup Rate Labor Rate	Labor Cost	Lbr Bdn % Mch per Op	Lbr Bdn Rate Mch Bdn Rate	Lbr Burden Mch Burden	Total Burden	Subcontract	
wc09010	1.0 10.0	10.00 0.10	10.00 10.00	2.000	0.00% 1	0.00 10.00	0.00 2.00	2.00	0.00	
<b>Routing Total</b>				<b>2.000</b>				<b>2.00</b>	<b>0.00</b>	
Op 20										
Work Ctr Machine	Setup Time Order Qty	Setup cost Unit Run	Setup Rate Labor Rate	Labor Cost	Lbr Bdn % Mch per Op	Lbr Bdn Rate Mch Bdn Rate	Lbr Burden Mch Burden	Total Burden	Subcontract	
wc09020	0.0 10.0	0.00 0.00	0.00 10.00	0.000	0.00% 1	0.00 10.00	0.00 0.00	0.00	10.00	
<b>Routing Total</b>				<b>0.000</b>				<b>0.00</b>	<b>10.00</b>	
Op 30										
Work Ctr Machine	Setup Time Order Qty	Setup cost Unit Run	Setup Rate Labor Rate	Labor Cost	Lbr Bdn % Mch per Op	Lbr Bdn Rate Mch Bdn Rate	Lbr Burden Mch Burden	Total Burden	Subcontract	
wc09030	0.0 10.0	0.00 0.10	0.00 10.00	1.000	0.00% 1	0.00 10.00	0.00 1.00	1.00	0.00	
<b>Routing Total</b>				<b>3.000</b>				<b>3.00</b>	<b>10.00</b>	

3. Use Product Structure Cost Roll-Up to roll up the product structure cost in the current cost set in site 10-100 for product item 08001 and 09001.
4. Use Product Structure & Formula Costs to report the product structure costs in the current cost set in site 10-100 for product item 08001 and 09001.

Product Structure / Formula Costs										Page 1 / 4
10USA USD										7/23/2021
										6:28:37 AM
Site	10-100		Cost Set	Current						
Level	Component Item	Qty Per	UM	T P/M	Material	Labor	Burden	Overhead	Subcontract	Cost Total
Parent	08001		EA	L						
	Cushion	This Level			0.00	1.00	5.00	0.00	0.00	6.00
	7/22/2021	Lower Level			40.00	0.00	0.00	0.00	0.00	40.00
		Unit Total			40.00	1.00	5.00	0.00	0.00	46.00
1	07001	1.0	EA							
	Fabric	This Level			20.00	0.00	0.00	0.00	0.00	20.00
	7/22/2021	Lower Level			0.00	0.00	0.00	0.00	0.00	0.00
		Unit Total			20.00	0.00	0.00	0.00	0.00	20.00
		Ext Total			20.00	0.00	0.00	0.00	0.00	20.00
1	07002	1.0	EA							
	Nylon Rope	This Level			20.00	0.00	0.00	0.00	0.00	20.00
	7/22/2021	Lower Level			0.00	0.00	0.00	0.00	0.00	0.00
		Unit Total			20.00	0.00	0.00	0.00	0.00	20.00
		Ext Total			20.00	0.00	0.00	0.00	0.00	20.00



Site		Cost Set		Product Structure / Formula Costs									
10-100		Current		10USA USD									
Level	Component Item	Qty Per	UM	T	P/M	Material	Labor	Burden	Overhead	Subcontract	Cost Total		
Parent	09001		EA		L								
	Airbag	This Level				0.00	3.00	3.00	0.00	10.00	16.00		
	7/23/2021	Lower Level				60.00	1.00	5.00	0.00	0.00	66.00		
		Unit Total				60.00	4.00	8.00	0.00	10.00	82.00		
<hr/>													
1	08001	1.0	EA		L								
	Cushion	This Level				0.00	1.00	5.00	0.00	0.00	6.00		
	7/23/2021	Lower Level				40.00	0.00	0.00	0.00	0.00	40.00		
		Unit Total				40.00	1.00	5.00	0.00	0.00	46.00		
		Ext Total				40.00	1.00	5.00	0.00	0.00	46.00		
<hr/>													
1	08002	1.0	EA										
	Inflator	This Level				10.00	0.00	0.00	0.00	0.00	10.00		
	7/23/2021	Lower Level				0.00	0.00	0.00	0.00	0.00	0.00		
		Unit Total				10.00	0.00	0.00	0.00	0.00	10.00		
		Ext Total				10.00	0.00	0.00	0.00	0.00	10.00		
<hr/>													
1	08003	1.0	EA										
	Control Unit	This Level				10.00	0.00	0.00	0.00	0.00	10.00		
	7/23/2021	Lower Level				0.00	0.00	0.00	0.00	0.00	0.00		
		Unit Total				10.00	0.00	0.00	0.00	0.00	10.00		
		Ext Total				10.00	0.00	0.00	0.00	0.00	10.00		

5. Use Current Cost Set Move to GL Set to move the costs of item 08001 and 09001 from current cost set to GL cost set.
6. Use Cost Roll-Up Freeze & Unfreeze to freeze the GL cost set for item 08001 and 09001.
7. If you have any WIP items, use WIP Material Cost Revaluation to revalue the WIP material cost.
8. Use the action Revalue Cost in Sales Orders to revalue the GL costs in the sales orders.



CHAPTER 5

# Purchase Costing





# Purchase Costing

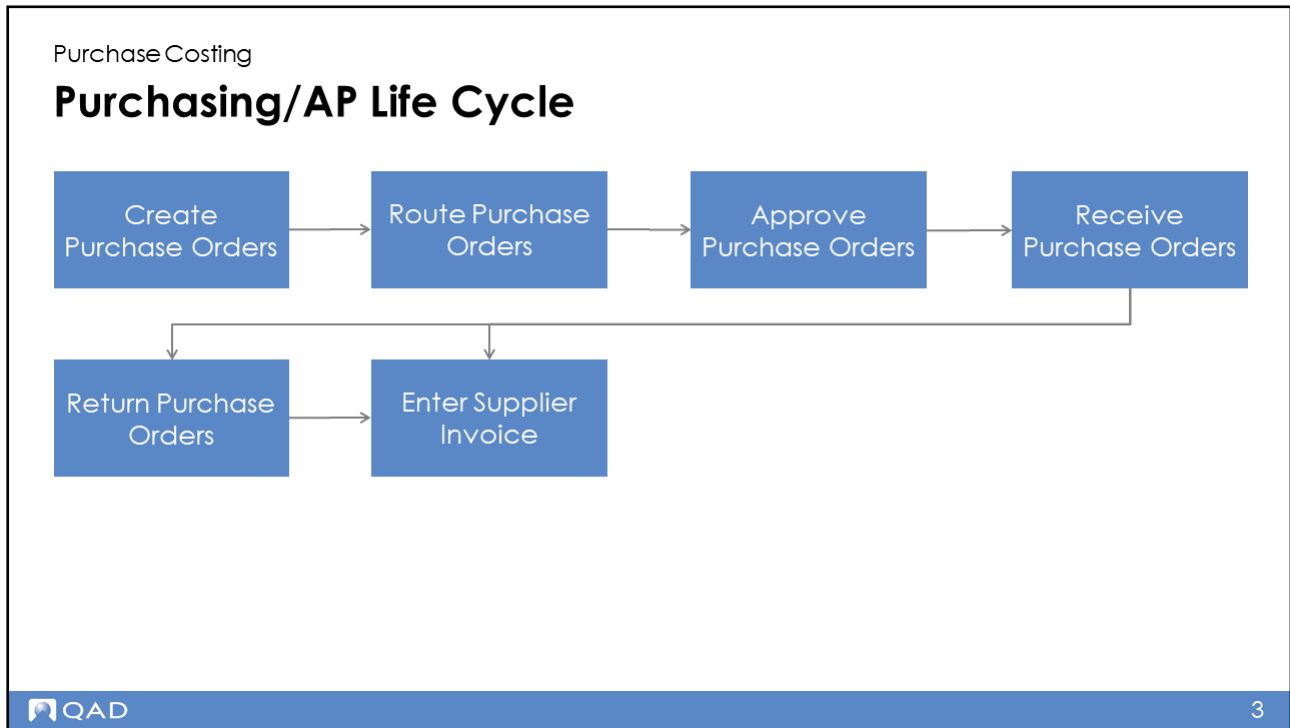
## Overview

Purchase Costing

### Overview

- Purchasing/AP Life Cycle
- Purchase Order Entry
- Purchase Order Line Types
- Automatically Updating Current Costs
- Purchase Price Variance
- Purchase Transaction
- Purchase-Related Variance
- AP Transactions
- AP-Related Variances

## Purchasing/AP Life Cycle



Functions in both Purchasing and Accounts Payable modules affect costs and generate variances. On the purchasing side, costs are not affected and general ledger transactions are not created until you actually record a purchase receipt or return. At this point, Inventory (or Expense) is updated and the purchase amount accrued.

In a standard cost system, a PO receipt is booked at standard cost and the accrual is booked at actual. Any difference is a variance. On non-base currency POs, some of this variance can be a result of exchange rate fluctuations. The rest is booked as a Purchase Price Variance. Returns do the reverse.

**Note** Return to Supplier (RTS) functions in the Service/Support Management module can have the same effect as purchasing receipt and return functions if they update inventory. These functions are not covered separately here.

## Purchase Order Entry

The screenshot displays the QAD Purchase Order Entry screen. At the top, it shows 'Purchase Costing' and 'Purchase Order Entry'. The main header includes the order number 'P1010011', supplier '10s1002 Bridgeville Industries', and 'Open Order Total' of '1,365.25 USD'. The status is 'Pending'. Below this, there are tabs for 'Main', 'Order Lines', 'Receiving', 'Billing', 'Totals', and 'Notes'. The 'Main' tab is active, showing the 'Supplier' information for Bridgeville Industries and the 'Site' field set to '10-100', which is highlighted with a red box and labeled as a 'Key field: Site (from which PO was issued)'. Other fields include 'Entity' (10USACO), 'Ship-To' (10-100), 'Order Date' (5/30/2021), 'Due Date' (5/30/2021), 'Currency' (USD), and 'Entered By' (demo). A 'Number Format' dialog box is also visible, showing 'Key field: Site (from which PO was issued)'. The bottom of the screen features a 'Route' button, a 'Save' button, and a 'Cancel' button.

*Site.* Each purchase order is associated with a site for inventory reporting. In turn each site is assigned to an entity for financial and tax reporting. GL transactions for sites are posted to the entity for the site.

- During AP Supplier Invoice create, GL transactions for AP are created for the site (entity) identified on the PO
- If you do not enter a site in the header (the first frame), you must manually enter a site for each line item. The site in the header frame is the site from which the PO was issued. The site in the next frame, the line item frame, is the site to which the line item quantity will be delivered.
- Also AP will be posted to the default entity specified in the Base Control.
- Whenever line items are shipped to sites assigned to different entities, QAD Enterprise Applications creates intercompany transactions. If a PO header site is specified, intercompany transactions are created during PO receipt for the inventory intercompany accounts setup in the financial system. If a PO header site is not specified, intercompany transactions are created during AP supplier invoicing for the AP intercompany account. (Intercompany transactions are discussed in the financial documentation.)



## Purchase Order Entry

Purchase Costing

# Purchase Order Entry

Purchase Orders P1010011 > Order Lines

Purchase Order Lines

Order Number \*1: P1010011

Line: 1

Supplier: 10s1002 Bridgeville Industries

Item Number: 60001 Durable Plastic Housing

Line Order Options:

- Import/Export
- Taxable
- Consignment
- Update Avg/Last Cost
- Fixed Price
- ERS Option: 1 - Disabled
- ERS Price List Option: 0 - Default

Billing:

Credit:

Credit Terms Interest %: 0.00

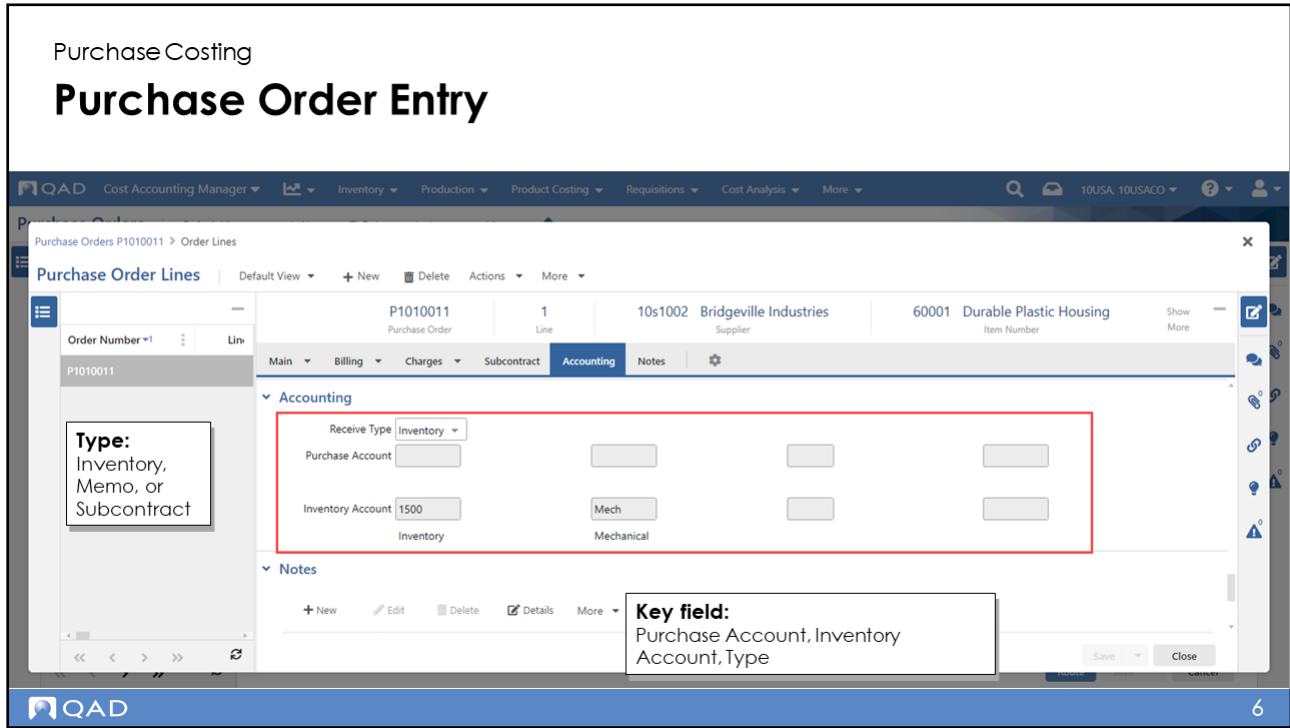
**Key field:**  
Update Avg/Last Cost (Applies to Current Cost only)

Save Close

QAD 5

*Update Avg/Last Cost.* The Update Avg/Last Cost field applies to Current costs only. It can be used to change the current cost at receipt time or to not let the change go through to current cost for this PO line item receipt.

## Purchase Order Entry



**Receive Type.** The line item type controls the accounting processes. The receive type can be Inventory, Memo, or Subcontract. If the receive type is Inventory, this is considered a normal inventory purchase subject to variances if using the standard costing method or averaging if using the average costing method.

**Purchase Account.** Purchase orders do not create GL entries until purchase order receipt, but the receipt and subsequent supplier invoicing use accounts maintained in the purchase order for memo items or the product line for most inventory items.

The usage and origin of the Purchases account varies depending on the kind of PO line item.

- Non-inventory (memo) items: Used as debit account in purchase order receipts. (PO receipts debit the Purchase account and credits Expensed Item Receipts.) The account defaults from the requisition in Requisitions, if one exists, or the account associated with the supplier record in Suppliers, if it does not.
- Inventory items (PO receive type = Inventory): Not used. In purchase order receipts, the debit account is the Inventory account for the item's product line, Product Lines or Inventory Accounts.
- Inventory items (PO receive type = memo): Used as debit account in purchase order receipts. If an inventory item is purchased as a memo item, the Purchase account defaults from the product line Purchases account, Product Lines.

**Project.** You can use an optional project to track orders or individual line items purchased to support specific company activities. The project in the order header displays as the default for line items but can be changed for individual lines.

## Purchase Order Line Types

Purchase Costing

### Purchase Order Line Types

Line Item	Type	Inventory Effect	GL Entries at Receipt	GL Type
Inventory	Inventory	Yes	DR Inventory CR PO Receipts	IC
Subcontract (No Production Order)	Subcontract	No	DR Cost of Production CR PO Receipts	IC
(With Production Order)	Subcontract	No	DR Cost of Production CR PO Receipts	IC
			DR WIP CR Cost of Production	WO
Expensed (memo)	Memo	No	DR Purchase Expense CR Expensed Item Receipts	IC

QAD

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Purchase order line items are categorized by type, set by the system when you enter the item. Type determines whether the receipt affects inventory and which GL transactions are created.

**Inventory.** The normal type of purchase order is an inventory purchase. On these, Type is Inventory. When the items are received, they are put into inventory, valued at standard or average cost, and a purchase accrual is created. Both the purchase accrual (PO receipts) and inventory accounts come from the product line of the purchased item: either Product Lines or Inventory Accounts.

**Note** The item number specified on the line must be valid.

**Memo.** When you enter PO lines for non-inventory items (for example, purchases of office supplies or services), the system automatically flags these as type Memo. These items are set up in Items with the Memo Order Type set to a code other than Inventory. Memo lines do not affect inventory. The expensed Purchases account (from the supplier record) on the PO line item is the default debit account, but you can change it to another expense or asset account. If you purchase parts that have valid item numbers for non-production use (for example, for experimental or prototype purposes), then you must manually set the PO line type to M; the Purchases account defaults from the product line record.

**Subcontract.** Another type of purchase is a purchase of subcontract manufacturing operations. Like inventory items, subcontract services are set up in the item master; however, they are received to production orders rather than to inventory. During order entry, the system prompts you to enter the production order number, production order ID, and operation for the subcontract item. See “Subcontract POs” for further discussion of subcontract purchases.

## Automatically Updating Current Costs

**Purchase Costing**  
**Automatically Updating Current Costs**

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Inventory Control | Default View | More

Inventory Accounting | Item Attributes | Serialization | Supplier Consignment | Supplier Consignment Acco... | Obsolete Inventory

**Inventory Accounting**

Current Cost: Last  
 Create GL Transactions:   
 Transfer Clearing Account: 1670 | Mech | Cost Center  
 Summarized Journal:

**Item Attributes**

Attribute Status Default: Active  
 Non-conforming Status Default: N-Y-N  
 Attribute Sequence ID: ATID | Item Attribute  
 Auto Lot Sequence ID: ILID | Item Lot Number

**Serialization**

Enable Serialization:

Sum Lower Level Costs into Mate...:   
 Current Cost from Accounts Payable:   
 Roll Up Local Phantom's This Lev...:

Display Specification for Results...:   
 Use Inventory Reference as Sublot:

**Current Cost = Last**

- If there are 100 units of item A on hand with a current cost of \$10 and a PO for 100 is received with a PO price of 9.50, then the current cost for all 200 units would now be \$9.50/unit

**Current Cost from AP = Yes**

- If update from AP is set to Yes and the supplier invoice is vouchered for 100 at \$9.45, then the current cost for all 200 units would now be \$9.45/unit

Save Cancel

QAD 8

**Note** Current cost is used for comparative analysis only. Current cost and the extended value of inventory at GL cost can be reviewed in the Inventory Valuation Report.

Purchase order receipts update the current cost information if you have set the current method to Average or Last in the Inventory Control.

### Current Cost Set to Last

When you set your current cost method to Last, the update is very simple. Upon each PO receipt, the purchase order cost for that receipt is set as the new current cost for the item.

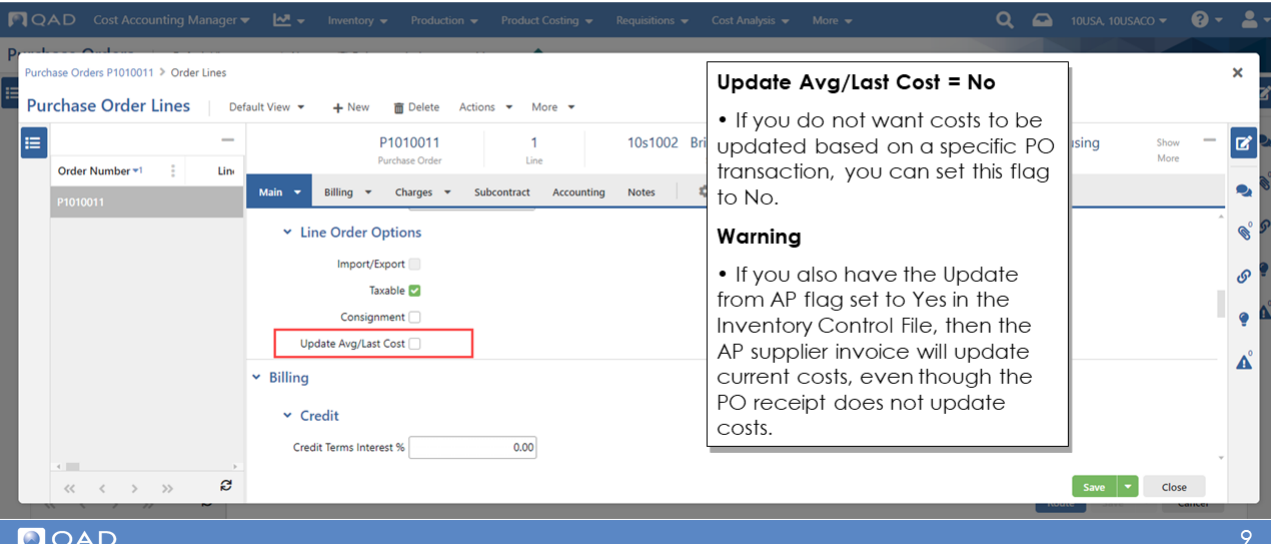
Optionally, you can also update the current cost upon each receiver matching transaction for the item, which will use the supplier invoice amount to update the current cost.



## PO Update Avg/Last Set to No

Purchase Costing

### PO Update Avg/Last Set to No



**Update Avg/Last Cost = No**

- If you do not want costs to be updated based on a specific PO transaction, you can set this flag to No.

**Warning**

- If you also have the Update from AP flag set to Yes in the Inventory Control File, then the AP supplier invoice will update current costs, even though the PO receipt does not update costs.

### Update Avg/Last Set to No

There may be times when you do not want to update the current cost based on a specific PO transaction. This may be due to having to pay an unusual price for the item because of a short-term change in business conditions. In this case, in Purchase Orders, you can set the PO line so that it does not update based on the Avg/Last cost.

**Warning** If you also have the Update from AP flag set to Yes in the Inventory Control then, even though the PO receipt does not update the current cost, the AP supplier invoice transaction will update the current cost.

## Updating Current Costs: Average

**Purchase Costing**  
**Updating Current Costs: Average**

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Inventory Control | Default View | More

Compliance | Customer Consignment | Inventory | **Inventory Accounting** | Item Attributes | Serialization | Supplier Consignment | Supplier Consignment Acco... | Obsolete Inventory

**Inventory Accounting**

Current Cost: **Average** (highlighted in red)

Sum Lower Level Costs into Mate...

Current Cost from Accounts Paya...  (highlighted in red)

Roll Up Local Phantom's This Lev...

Create GL Transactions

Transfer Clearing Account: 1670 | Mech | Cost Center

Summarized Journal

**Item Attributes**

Attribute Status Default: Active

Non-conforming Status Default: N-Y-N

Attribute Sequence ID: ATID | Item Attribute

Auto Lot Sequence ID: ILID | Item Lot Number

**Serialization**

Enable Serialization

**Current Cost = Average**

- If there are 100 units of item A with a current cost of \$10 and a PO for 100 is received with a PO price of \$9.50, then the Current cost would now be \$9.75:

$$\frac{(100 \times \$10) + (100 \times \$9.50)}{200} = \$9.75$$

**Current Cost from AP = Yes**

- If the supplier invoice is vouchered for 100 at \$9.45, then the current cost would now be \$9.725:

$$\$9.75 - \frac{100 \times (\$9.50 - 9.45)}{200} = \$9.725$$

Save Cancel

QAD 10

For the average current cost update, the current quantity on-hand is multiplied by the current cost, and the receipt quantity is multiplied by the PO cost. This total is divided by the new total quantity on-hand to obtain the new average cost.

As in the previous example, you can elect not to update your current cost during purchase order entry, but the AP Supplier Invoice will update the costs here if the Current Cost from AP field has been set to Yes in Inventory Control.

## Purchase Price Variance

Purchase Costing

# Purchase Price Variance

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More | 10USA, 10USACO

Tax Rates | Default View | + New | Delete | Actions | More

15 Tax Rate | US Sales Tax Description | 1/1/2008 Effective Date

Main | Tax Details | Tax Groups | Tax Accounts | Notes | Settings

**Tax Details**

Minimum Taxable Amount: 0.00  
 Maximum Taxable Amount: 0.00  
 Percent Recoverable: 0.00%  
 Update Tax Allowed:   
 Allow Tax Included:   
 Accrue Tax at Receipt:   
 Accrue Tax at Usage:   
 Sales Tax Absorbed:

**Non-Recoverable Tax**

- Accrual tax at receipt

Debit	Purchase Price Variance
Credit	Purchase Order Receipts

Tax Status: \*\*  
 Tax Reason:  
 Tax Method: 01 - Calls txmeth01.p; use Min/Max base amt

Discount Tax at Payment:   
 Discount Tax at Invoice:   
 AP Tax Retained:   
 Suspended/Delayed Taxes:   
 Domestic Reverse Charge:

**Tax Groups**

Customer Invoice: 10SALES | USA SALES GROUP  
 Credit Note: 10CALC | 10A CALC GROUP

Absorbed Invoice:  
 Absorbed Credit Note:

Save | Cancel

QAD 11

Purchase Price Variance (PPV) is the difference between the actual price paid to buy an item and the standard price, multiplied by the actual quantity of units purchased.

In the tax setting, if tax accrual at receipt, the non-recoverable tax will be recorded in Purchase Price Variance (PPV) account.

## Purchase Transactions

Purchase Costing

### Purchase Transactions

The screenshot displays four overlapping windows from the QAD system:

- Item Window:** Shows item 09011 with a quantity of 20. A table lists cost elements: Burden (0.00), Labor (0.00), Material (0.25), Overhead (0.10), and Subcontract (0.00). A callout box states: "GL Material cost = 0.25, GL Overhead cost = 0.10, Total GL cost = 0.35".
- Taxes Window:** Shows a tax line for item 09011 with a tax amount of 2.25. A callout box states: "Tax Amount = 2.25".
- Order Lines Window:** Shows order P1010012 with 100 units of item 09011 at a unit price of 0.30. A callout box states: "Qty Ordered = 100, PO Unit Cost = 0.30".
- Receive Order Window:** Shows the received quantity for item 09011 as 100. A callout box states: "Received = 100".

QAD logo is visible in the bottom left corner, and the page number 12 is in the bottom right corner.

### Purchase Transactions: Example

The following example illustrates the sequence of functions used and the accounts affected when purchasing and receiving items.

**Example** A purchase order is issued for 100 cushion (item 09011) at \$0.30 per cushion (Purchase Orders).

- The total standard cost for this item is \$0.35 as shown in Items —the GL material cost of \$0.25 plus the Overhead amount of \$0.10
- Because the PO unit cost is different than the standard GL cost, it will generate a Purchase Price Variance upon PO receipt
- The total non-recoverable tax amount is \$2.25

## Purchasing – Transactions Detail

Purchase Costing

# Purchasing – Transactions Detail

Inventory Transactions

09011 Cushion 10-100 Ultrasound Mfg Site RCT-PO P1010012

Transaction #	Date	GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
1269105	5/31								
1269104	5/31								
1269103	5/31								
1269102	5/27	RCT-PO	1500	Mech			25.00	0.00	TMP20210531/00997...
1269101	5/27	RCT-PO	2520	Mech			0.00	25.00	TMP20210531/00997...
1269100	5/27	RCT-PO	1500	Mech			10.00	0.00	TMP20210531/00997...
1269099	5/27	RCT-PO	5330	Mech			0.00	10.00	TMP20210531/00997...
1269098	5/24	RCT-PO	6710	Mech	ADM		7.25	0.00	TMP20210531/00997...
1269097	5/24	RCT-PO	2520	Mech			0.00	7.25	TMP20210531/00997...
1269096	5/24								
1269095	5/24								

DR 1500 (Inventory) \$25  
 $100 \times (0.35 - 0.10) = \$25$   
 Qty Rec'd x (GL Cost - OH)

DR 1500 (Inventory) \$10  
 CR 6490 (Overhead Applied) \$10  
 $100 \times 0.10 = \$10$   
 Qty Rec'd x OH

DR 5000 (Purchase Price Variance) \$7.25  
 $[0.30 - (0.35 - 0.10)] \times 100 + 2.25 = \$7.25$   
 $[PO \text{ Unit Cost} - (GL \text{ Unit Cost} - OH)] \times PO \text{ Qty Rec'd} + \text{Tax}$

CR 2200 (PO Receipts) \$25

### Purchasing—Transactions Detail

You can review the transactions by using Inventory Transactions. The resulting account debits and credits are shown for each transaction.

In this example, upon purchase order receipt (RCT-PO), the system:

- Receives the item into inventory at standard cost less overhead Qty rec'd x (standard GL cost - overhead)  
 $100 \times (0.35 - 0.10) = \$25$
- Applies the overhead amount Qty rec'd x Overhead  $100 \times 0.10 = \$10$
- Calculates the Purchase Price Variance (PPV)

$[PO \text{ Cost} - (GL \text{ Cost} - \text{Overhead})] \times PO \text{ Qty Received} + \text{tax}$

$[0.30 - (0.35 - 0.10)] \times 100 + 2.25 = \$7.25$

Negative result = favorable variance; Positive result = unfavorable variance

## PO Returns

Purchase Costing

# PO Returns

Purchase Orders > Return Order
X

Return Order

Default View ▼ More ▼

P1010012  
Order

10s1002 Bridgeville Industries  
Supplier

1.0  
Total Count of Items

Main ▼ Return Items ⚙️

RTV Number

Return Full Quantity

Effective Date  📅

Ship-From  🔍 QMI - USA Division

Ship To  🔍 Bridgeville Industries

Return Items

+ New
🗑️ Delete
More ▼
Return All
Multi Entry

Item	Item Description	Qty to Return	UM To Return	Packing Qty	Receiver	Site	Reason	Multi Entry	Location
1	09011 Cushion	8.0	EA	0.0		10-100			020

Submit
Close
Cancel

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### PO Returns

Returns to suppliers are processed in Purchase Orders action Return Order. The purchase order does not have to be open but must exist in the database for a return to be processed. The return transaction reverses the inventory and GL effects of the receipt, if any, and can optionally reopen the PO or PO line.



## PO Returns – Transactions Detail

Purchase Costing

# PO Returns – Transactions Detail

Inventory Transactions

08002 Inflator | 10-100 Ultrasound Mfg Site | ISS-PRV | P1010004

Accounts

DR 1500 (Inventory) \$-100  
 $100 \times (10) \times -1 = \$-100$   
 Qty Rec'd x (GL Cost - OH) x -1  
 CR 2520 (PO Receipts) \$-100

DR 4710 (Purchase Price Variance) \$-7.5  
 $[(10 - (10 - 0)) \times 10 + 7.5] \times -1 = \$-7.5$   
 $[(\text{PO Unit Cost} - (\text{GL Unit Cost} - \text{OH})) \times \text{PO Qty Rec'd} + \text{Tax}] \times -1$   
 CR 2520 (PO Receipts) \$-7.5

GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
ISS-PRV	1500	Mech			-100.00	0.00	TMP20210913/00998...
ISS-PRV	2520	Mech			0.00	-100.00	TMP20210913/00998...
ISS-PRV	6710	Mech	ADM		-7.50	0.00	TMP20210913/00998...
ISS-PRV	2520	Mech			0.00	-7.50	TMP20210913/00998...

Records per page: 50 | 1 - 4 of 4

### PO Returns—Transactions Detail

The calculations and GL entries for PO returns are listed below.

- REC-PO (for PO Return to Vendor)
  - DR Inventory with a negative
  - CR PO Receipts with a positive
  - DR Inventory with a negative
  - CR Overhead Applied with a negative
  - DR PPV with a negative
  - CR PO Receipts with a positive

## Subcontract POs

Purchase Costing

# Subcontract POs

Purchase Orders | Default View | + New | Delete | Actions | More

Order Number \*1 | Site

P1010016 | 10-100

Main | Order Lines | Receiving | Billing | Totals | Notes | Settings

Order Lines

Item Number	Item Description	Quantity Ordered	UM	Unit Price	Discount %	Ext Net Cost	Supplier It
09001A	Airbag	10.0	EA	8.00	0.00%	80.00	

Receiving

Ship-To: 10-100  
QMI -USA Division  
Ship Via: PER INSTRUCTIONS

Deliver To: \_\_\_\_\_  
Terms of Trade Point: \_\_\_\_\_

Subcontract

Receive Type: Subcontract  
Production Order: 1015  
ID: 2474962  
Operation: 20  
Subcontract Type: \_\_\_\_\_  
Auto Update Horizon: 0 Days

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### Subcontract POs

Subcontract POs reference a valid item number, but rather than receiving the item into inventory, they receive it into manufacturing as a cost of production. If no production order number is specified, the process stops here. The entire PO cost is reported as a cost of production and accrued. However, if the PO references a valid production order and operation, additional transactions are generated to issue the cost to WIP and to calculate variances, if any.

**Tip:** For advanced repetitive type of production order, enter the cumulative production order number and ID in the order line.

## Subcontract (PO Receipt) – Transactions Detail

Purchase Costing

### Subcontract (PO Receipt) – Transactions Detail

The screenshot shows the QAD Inventory Transactions interface. The main header includes the QAD logo, navigation tabs (Cost Accounting Manager, Inventory, Production, Product Costing, Requisitions, Cost Analysis, More), and user information (10USA, 10USACO). The transaction details are: Item 09001A Airbag, Site 10-100 Ultrasound Mfg Site, Transaction Type RCT-PO, and Order P1010016. The Accounts section is expanded, showing a summary table for RCT-PO accounts:

RCT - PO		RCT - PO	
DR 5770 (Cost of Production)	\$80	DR 5450 (Subcontract Rate Variance)	\$6
CR 2520 (PO Receipts)	\$80	CR 2520 (PO Receipts)	\$6

Below the summary is a table of GL entries for the RCT-PO transaction:

GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
RCT-PO	5770	Mech			80.00	0.00	TMP20210601/00998...
RCT-PO	2520	Mech			0.00	80.00	TMP20210601/00998...
RCT-PO	5450	Mech			6.00	0.00	TMP20210601/00998...
RCT-PO	2520	Mech			0.00	6.00	TMP20210601/00998...

The interface also includes an E-Signature section with Date and Category fields.

### Subcontract (PO Receipt)—Transactions Detail

The PO Receipts transaction uses the PO unit cost as the GL amount.

- A subcontract rate variance accounts for any difference between the PO unit cost and the standard unit cost for this operation as recorded on the Production orders routing (see page after).
- A subcontract usage variance accounts for any non-recoverable tax accrual at receipt.

## Subcontract (Component Issue) – Transactions Detail

Purchase Costing

# Subcontract (Component Issue) – Transactions Detail

Inventory Transactions | Default View | More

08002 Inflatior | 10-100 Ultrasound Mfg Site | ISS-WO | 1015

GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
ISS-WO	1550	Mech			100.00	0.00	TMP20210601/00998...
ISS-WO	1500	Mech			0.00	100.00	TMP20210601/00998...

**Component Issue**  
**DR 1550 (Work In Process)**  
 \$100  
**CR 1500 (Inventory)**  
 \$100

Date:   
 Time:   
 User:

Category:   
 Reason:   
 Remarks:

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Any components issued from the subcontract operation.



## Subcontract – Issue to WIP

Purchase Costing

# Subcontract – Issue to WIP

Operation Accounting Trans

1 / 2 | 100% + | [Icons]

QAD

### Operation Accounting Transactions

10USA USD

Page 1 / 2  
6/1/2021  
11:02:35 AM

Site : 10-100 Entity : 10USACO

Transaction	Eff Date	Type	Item Number	Production Order ID	Op Line	Work Center Machine	Run Time Setup Time	Quantity	Debit	Credit
249314	6/1/2021	SUBCNT	09001A	1015	20	wc09020	0.00	10.0		
	6/1/2021			2474962		p09001	0.00			
			SUB-2000	TMP20210601/00998003	WO21060100TNSQ	1550 Mech			80.00	
			SUB-2000	TMP20210601/00998003	WO21060100TNSQ	5770 Mech				80.00

**Backflush**

DR 1550 (Work In Process) \$80

CR 5770 (Cost of Production) \$80

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### Subcontract Transactions: Issue to WIP

The final transactions are actually production order transactions. As such, they create GL transactions of type WO with a description of SUB [op number] where [op number] is the production order operation.

## Purchase-Related Variance

Purchase Costing

### Purchase-Related Variance

<u>Variance</u>	<u>When Calculated</u>	<u>Cause</u>
Purchase Price	PO Receipts	Difference between an item's PO cost and its GL cost excluding GL this-level overhead
<i>Formula</i>	<i>[PO Unit Cost - (GL Unit Cost - OH)] x PO Qty Received</i> <i>Negative result = favorable variance;</i> <i>Positive result = unfavorable variance</i>	
<i>View in Report</i>	<i>Purchase Receipt Report</i>	

### Purchase Price Variance

Upon PO receipt, a variance is calculated that is later reflected in AP reporting. Purchase price variance (PPV) is calculated when the item's PO unit cost does not match its standard cost (GL unit cost).

The formula for PPV is:

$$[PO \text{ Unit Cost} - (GL \text{ Unit Cost} - \text{Overhead})] * PO \text{ Quantity Received}$$

*Negative result = favorable variance; positive result = unfavorable variance*

#### GL Effects

At PO Receipt, the system debits Inventory for the item's standard GL cost minus overhead and credits PO Receipts for the item's PO cost. Because the two costs are different, QAD Enterprise Applications creates a balancing entry for the PPV account.

## Purchasing – GL Effect

Purchase Costing

### Purchasing – GL Effect

<u>PO Receipt (Inventory Item)</u>	<u>GL Trans Type</u>
DR Inventory	IC
CR PO Receipts	
DR Inventory	IC
CR Applied Overhead	
*DR PPV (Material category only)	IC
CR PO Receipts	
*Positive Amount = Unfavorable Variance; Negative Amount = Favorable Variance	

### Purchasing—GL Effect

- The default general ledger entry:
  - Debits Inventory
  - Credits Applied Overhead
  - Debits Purchase Price Variance
  - Credits PO Receipts Accrual

Because this is the purchase of an inventory item, these accounts are accessed based on the product line of the purchased item—the Purchases account on the PO is not used.

- When the supplier invoice is created for the PO, QAD system calculates Accounts Payable rate and usage variances (and price variances due to exchange rate fluctuation). This is discussed in the next section.

## AP Transactions

Purchase Costing

# AP Transactions

Supplier Invoice 000002494 > GL Postings

GL Postings | Default View

10S1002 Bridgeville Industries Supplier | 36.00 USD Invoice Amount | 202106020001 Reference | 6/2/2021 Due Date | RM-OK2PAY Invoice Status

Main

CR Accounts Payable  
Inv Qty x Inv Cost  
90 x 0.40 = 36.00

DR PO Receipts  
Qty Rec'd x PO Unit Cost  
100 x 0.30 = \$30

DR AP Rate Variance  
(Inv Unit Cost - PO Unit Cost) x Inv Qty  
(0.40 - 0.30) x 90 = \$9

CR AP Usage Variance  
(Inv Qty - Qty Rec'd) x PO Unit Cost  
(90 - 100) x 0.30 = - \$3

Line Type	GL Account	GL Description	Sub-Account	Cost Center	Project	Transaction Currency	TC Debit	TC Credit	BC T
	2000	Accounts Payable	Gserv			USD	0.00	36.00	
	2500	Unapproved invoices	Gserv			USD	36.00	0.00	
	2520	PO Receipts	Mech			USD	30.00	0.00	
	6720	AP Usage Variance	Mech			USD	0.00	3.00	
	6740	AP Rate Variance	Mech			USD	9.00	0.00	
	2500	Unapproved invoices	Gserv			USD	0.00	36.00	

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### Accounts Payable

Supplier Invoice, which authorize payments, are normally used at the end of the purchasing cycle after goods are received. The supplier invoice is entered into Accounts Payable and matched with the receiver information. Variances are calculated and the receivers are flagged as closed. This process is commonly known as a three-way match.

### Example of AP Transactions

To show the AP process, we will continue with the example given on previous page.

**Example** The supplier charges you for 90 cartridges at \$0.40 per cartridge instead of for the 100 received at the PO unit cost of \$0.30.

- In Supplier Invoices, you enter the invoice quantity of 90 and cost of \$0.40
  - Because the invoice quantity is less than the quantity actually received, this generates a favorable AP usage variance (negative amount)
  - Because the invoice cost is higher than that on the PO, this generates an unfavorable AP rate variance (positive amount)

When the supplier voice is confirmed, the system:

- Clears out the purchase accrual account (amount accrued at time of receipt)



Qty Received x PO Unit Cost

Example:  $100 \times 0.30 = \$30$

- Accounts for the difference between the PO unit cost and the price listed on the invoice (AP rate variance)

$(\text{Invoice Unit Cost} - \text{PO Unit Cost}) \times \text{Invoice Qty}$

Example:  $(0.40 - 0.30) \times 90 = \$9$

- Accounts for any difference between the quantity received and the quantity invoiced (AP usage variance)

$(\text{Invoice Qty} - \text{Qty Received}) \times \text{PO Unit Cost}$

Example:  $(90 - 100) \times 0.30 = -\$3$

- Reports entire invoice amount to the Accounts Payable account

$\text{Invoice Qty} \times \text{Invoice Unit Cost}$

Example:  $90 \times 0.40 = \$36$

**Note** If you do not want to calculate AP rate or usage variances for non-inventory (memo) purchases, set Use Expensed Item Var Accts to No in the Financial Control and any variances are simply expensed.

## AP-Related Variances

Purchase Costing		
<b>AP-Related Variances</b>		
<u>Variance</u>	<u>When Calculated</u>	<u>Cause</u>
<b>AP Rate</b>	Supplier Invoices	Difference between an item's PO cost and its invoice cost. <ul style="list-style-type: none"> <li>• Can be caused by errors made during PO entry or incorrect quotes received from suppliers, for example.</li> </ul>
<i>Formula</i>	<i>(Invoice Unit Cost - PO Unit Cost) x Invoice Quantity</i>	
<b>AP Usage</b>	Supplier Invoices	Difference between an item's PO receipt quantity and its invoice quantity.
<i>Formula</i>	<i>(Invoice Quantity - PO Receipt Quantity) x PO Unit Cost</i>	
<b>Purchase Gain/Loss</b>	Supplier Invoices	Exchange rate fluctuations between the time an order is received and when it is invoiced. Goes into account defined in Purchase Gain/Loss Acct.
<i>View in Report</i>	<i>Matching Variance report</i>	

### AP-Related Variances—Summary

#### AP Rate Variance

AP Rate Variance occurs if there is a discrepancy between an item's PO cost and its invoice cost. AP Rate Variances can be caused by a variety of things, the most common being errors made during PO entry or incorrect quotes received from suppliers.

- AP Rate Variance is calculated at Supplier Invoices, as:

$(\text{Invoice Unit Cost} - \text{PO Unit Cost}) \times \text{Invoice Quantity}$

#### AP Usage Variance

AP Usage Variance occurs if there is a discrepancy between an item's PO receipt quantity and its invoice quantity. This can be caused if you close a receiver with a quantity still open or with an invoice quantity greater than the PO receipt quantity.

- AP Usage Variance is calculated at Supplier Invoices, as:

$(\text{Invoice Quantity} - \text{PO Receipt Quantity}) \times \text{PO Unit Cost}$

#### Purchase Gain/Loss

The Purchase Gain/Loss account is used to track variances resulting from exchange rate fluctuations between the effective dates of the PO receipt and the vouchering of the supplier invoice. It is calculated when the invoice is vouchered, the account number defaults from Currencies. Purchase cost variances due to exchange rate fluctuations are usually kept separate from purchase price variances. Because they cannot be controlled by the supplier, they should not influence performance evaluation.

### **Managing Variances**

Variances can arise because the supplier quote is incorrect. You can review and change these quotes in Supplier Item Maintenance, 1.19.

- When an unfavorable variance is calculated during vouchering, MFG/PRO automatically assumes that you will be disputing the amount with the supplier and records the variance as a hold amount

### **Reports**

The Matching Variances report is used to view all the AP variance.

**AP – GL Effect**

Purchase Costing

**AP – GL Effect**

<u>Accounts Payable</u>	<u>GL Trans Type</u>
DR PO Receipts (or Expensed Item Receipts)	AP
**DR AP Rate Variance (or *Expensed Item Rate Variance)	AP
**DR AP Usage Variance (or *Expensed Item Usage Variance)	AP
CR Accounts Payable	AP
**DR Purchase Gain/Loss CR PO Receipts	AP

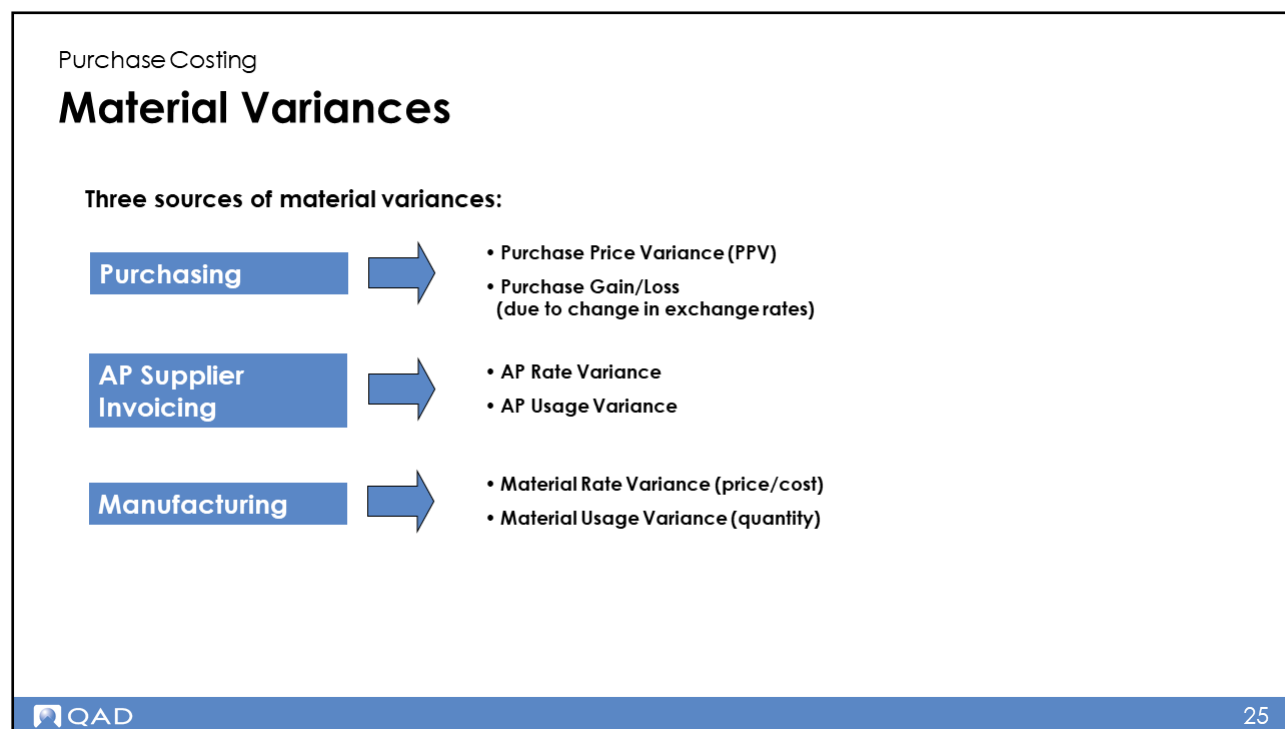
\* If you don't want to calculate AP rate and usage variance amounts for non-inventory (memo) purchases, set Use Expensed Item Var Accts to No in the Financial Control (Supplier Invoices), and any variances are simply expensed.

\*\* Positive amount = unfavorable variance; Negative amount = favorable variance

**AP—GL Effect**

- The default general ledger entry when vouchering against a purchase order (excluding the GL effects of direct taxes):
  - Debits the PO Receipts account from the product line for inventory items and Base Control
  - Debits the AP Usage Variance account and the AP Rate Variance account from the product line for inventory items and System/Account Control File. Negative amounts indicate a favorable variance; positive amounts indicate an unfavorable variance.
  - Credits the Accounts Payable account from the Suppliers

## Material Variances



### Material Variances—Summary

At this point, we have examined two of the three sources of material variance—Purchasing and Accounts Payable.

- In Purchasing, material variances are identified as purchase variances—Purchase Price Variance and Purchase Gain/Loss due to exchange rate fluctuations. Both of these indicate that the cost of the material purchased did not match the established standards.
- In Accounts Payable, material variances are identified as AP variances—AP Rate and AP Usage Variance. The AP Rate Variance indicates that the cost on the supplier’s invoice did not match the price on the PO; the AP Usage Variance indicates that the quantity on the supplier’s invoice did not match the quantity received.

Another source of material variance is manufacturing. In manufacturing, material variances occur when the cost or quantity of material issued to a manufacturing order does not match what was called for on that order. These are identified as material rate and usage variances.

Next, we will review how costs and variances are reported in the manufacturing modules.

## Review

Purchase Costing

### Review

- Purchasing/AP Life Cycle
- Purchase Order Entry
- Purchase Order Line Types
- Automatically Updating Current Costs
- Purchase Price Variance
- Purchase Transaction
- Purchase-Related Variance
- AP Transactions
- AP-Related Variances

## Mastery Question – Multiple Choice

Purchase Costing

### Mastery Question – Multiple Choice

1. When you receive a purchase order item into stock, which of following will be the debit account?
  - A. Purchase
  - B. PO Receipts
  - C. Cost of Production
  - D. Inventory

## Mastery Question – All That Apply

Purchase Costing

### Mastery Question – All That Apply

2. Which of following situation cause the Purchase Price Variance (PPV)?
  - A. PO cost difference from the item's GL cost
  - B. PO price difference from the item's price list
  - C. Exchange rate difference between Purchase Order and PO receipts
  - D. Non-recoverable tax accrual at receipt

## Mastery Question – All That Apply

Purchase Costing

### Mastery Question – All That Apply

3. If you create a subcontract purchase order for a AR type production order, which of following you need to specify?
- A. Cumulative Order number
  - B. Production Order number
  - C. Production Order quantity
  - D. Operation

## Exercise: Purchase Costing

Purchase Costing

### Exercise: Purchase Costing



## Purchase Costing

In this exercise, you will create a purchase order, receive the purchase order, and return the purchase order. You will also create a supplier invoice and do the receiver matching. You will review all the costing results for these transactions.

1. Use Tax Rates to unselect the Accrue Tax at Receipt for the tax rate code 15 (Tax Type is US-ST).
2. Use Approval Configuration to disable the Generic Approval function for purchase orders if any.
3. Use Inventory Control to make sure the Current Cost is Last and Current Cost from Accounts Payable is selected.
4. Use Item Site Costs to review the current costs for items 07001, 07002, 08003.
5. Use Purchase Orders to create a new purchase order with the following field values:

Supplier	10s1002
Site	10-100
Order Line	1
Item Number	07001
Qty Ordered	100
Unit Price	30.00
Order Line	2
Item Number	07002
Qty Ordered	100
Unit Price	30.00
Order Line	3
Item Number	08003
Qty Ordered	100
Unit Price	20.00

6. Use the Receive Order action of Purchase Orders to receive 10 item 07001, 10 item 07002, and 10 item 08003.
7. Use Inventory Transactions to review the GL transaction details.

07001 Fabric Item		10-100 Ultrasound Mfg Site Site		RCT-PO Transaction Type		P1010018 Order	
Main	Inventory	GL Cost	Accounts	E-Signature	WIP Lot Trace	⚙️	
More ▾							
GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
RCT-PO	1500	Mech			200.00	0.00	TMP20210725/00998...
RCT-PO	2520	Mech			0.00	200.00	TMP20210725/00998...
RCT-PO	6710	Mech	ADM		100.00	0.00	TMP20210725/00998...
RCT-PO	2520	Mech			0.00	100.00	TMP20210725/00998...

07002 Nylon Rope Item		10-100 Ultrasound Mfg Site Site		RCT-PO Transaction Type		P1010018 Order	
Main	Inventory	GL Cost	Accounts	E-Signature	WIP Lot Trace	⚙️	
More ▾							
GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
RCT-PO	1500	Mech			200.00	0.00	TMP20210725/00998...
RCT-PO	2520	Mech			0.00	200.00	TMP20210725/00998...
RCT-PO	6710	Mech	ADM		100.00	0.00	TMP20210725/00998...
RCT-PO	2520	Mech			0.00	100.00	TMP20210725/00998...

08003 Control Unit Item		10-100 Ultrasound Mfg Site Site		RCT-PO Transaction Type		P1010018 Order	
Main	Inventory	GL Cost	Accounts	E-Signature	WIP Lot Trace	⚙️	
More ▾							
GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
RCT-PO	1500	Mech			100.00	0.00	TMP20210725/00998...
RCT-PO	2520	Mech			0.00	100.00	TMP20210725/00998...
RCT-PO	6710	Mech	ADM		100.00	0.00	TMP20210725/00998...
RCT-PO	2520	Mech			0.00	100.00	TMP20210725/00998...

- Use Item Site Costs to review the current costs for items 07001, 07002, 08003.
- Use Return Order action of Purchase Orders to return 1 item 08003.
- Use Inventory Transactions to review the GL transaction details.

08003 Control Unit Item		10-100 Ultrasound Mfg Site Site		ISS-PRV Transaction Type		P1010018 Order	
Main	Inventory	GL Cost	Accounts	E-Signature	WIP Lot Trace	⚙️	
More ▾							
GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
RCT-PO	1500	Mech			-10.00	0.00	TMP20210726/00998...
RCT-PO	2520	Mech			0.00	-10.00	TMP20210726/00998...
RCT-PO	6710	Mech	ADM		-10.00	0.00	TMP20210726/00998...
RCT-PO	2520	Mech			0.00	-10.00	TMP20210726/00998...

- Use Supplier Invoices to create a new supplier invoice for the purchase order created in the step 5.
- Do the receiver matching for all the receivers including the purchase order return. Enter the Matched Unit Price 40.00 for the receiver of item 07001.
- Use Item Site Costs to review the current cost for items 07001; it now should be 40.00.



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CHAPTER 6

# Production Costing





# Production Costing

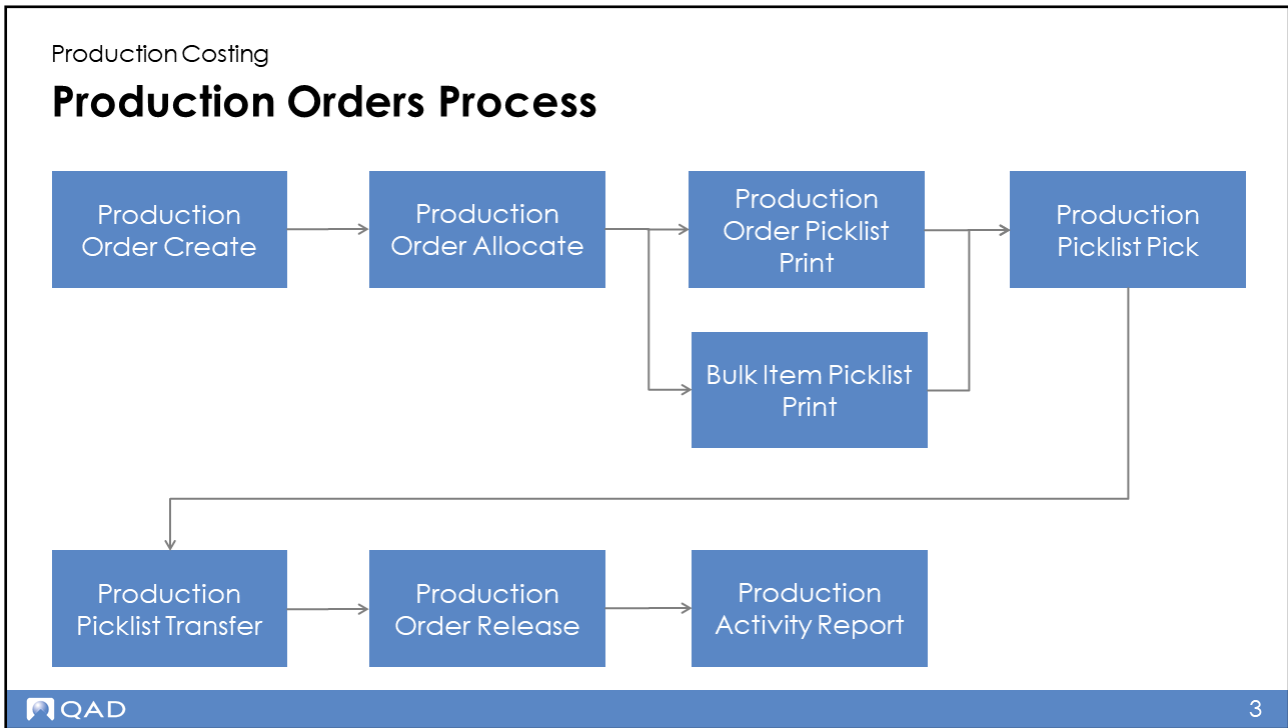
## Overview

Production Costing

### Overview

- Production Orders Process Flow
- Production Orders
- Components Issues
- WIP Material Cost Revaluation
- Floor Stock
- Inter-site Transfers/Multi-site Component Issues
- Labor/Burden Reporting
- Subcontract
- Production Order Receipts
- Scrap
- Post Production Order Usage Variances
- Production Order Accounting Close
- Production Order Cost Report

## Production Orders Process



## Manufacturing Types

Production Costing

### **Manufacturing Types**

- Production orders manufacturing type
  - Work Order
  - Repetitive
- Different production costing approach for manufacturing types
  - Work Order: GL account codes
  - Repetitive: Cumulative orders

## Production Orders – Manufacturing Type: Repetitive

The screenshot displays the QAD Production Orders interface. At the top, the title is "Production Orders – Manufacturing Type: Repetitive". The interface includes a navigation bar with options like "New", "Delete", "Actions", and "More". The main content area shows details for a production order with ID 1018, Item 09001 (Airbag), and Release Date 6/3/2021. Key fields are highlighted with red boxes: Site (10-100), Order Type (S), Manufacturing Type (Repetitive), Quantity to Start (10.0 EA), Quantity to Complete (10.0), Estimated Yield Percent (100.00%), and Order Status (Firmed). A "Defaults from Routings" box is also visible. A note states: "If an alternate BOM or routing is specified that is different than the BOM or routing used to calculate GL costs, then a method variance can result".

The system determines the default value for the Order Type by the purchase/manufacture code defined for the item. Order type can be either blank for a work order or ‘S’ for a repetitive scheduled order. It also can be other code like Final Assembly (F), Rework ®, Expense (E), etc..

The default value is S when the Pur/Mfg code for the item or item-site is L.

Order Type is highly coupled with Manufacturing Type. Manufacturing Type values are work order (WO) and repetitive (Rep).

The Order Type field together with the Manufacturing Type field determine how an order is processed. Production orders typically have type values of either blank or S. Maintain a work order by leaving the value for type blank. In this case, the manufacturing type is set to Work Order. For repetitive orders, the value type should be set to S. In this case, the manufacturing type is set to Rep.

Status. The production order status can be Planned, Firmed, Exploded, Allocated, Closed, or Released. The Repetitive Activity Threshold in the Production Control specify the earliest status that must be applied to repetitive production orders before any production activity can be processed for material issues, receipts, and labor in the production order and shop floor modules.

Yield. Yield is the item default yield and can be changed manually. If changed, there is no automatic change to rolled up component requirements or cost. For manually entered production orders, MRP will use the revised yield percentage to compute a “scrap requirement” and critique the material plan accordingly. Planned orders generated by MRP have their order quantities inflated to allow for the yield percentage.

Note Changing this yield will result in Method Variance.

BOM and Routing. These will default from the Items, and generally reflect the BOM and routing codes used to cost the item. Approved alternates can be added if the status is Exploded, Allocated, or Released.



## Production Orders – Manufacturing Type: Repetitive

Production Costing

# Production Orders – Manufacturing Type: Repetitive

QAD Cost Accounting Manager Inventory Production Product Costing Requisitions Cost Analysis Cost Planning More 10USA 10USACO

Repetitive Cumulative Orders Default View + New Delete More

1013 2474953 09001 Airbag 5/20/2021 6/19/2021

Production Order ID Item Start Effective Date End Effective Date

Site Production Order

10-100 1013

10-100 1006

10-100 1015

10-200

10-200

10-200

10-200 1007

10-202

10-202

10-202

10-202

Main Notes

Main

Production Order 1013

ID 2474953

Site 10-100 Ultrasound Mfg Site

Item 09001

Description 1 Airbag

Description 2

Production Line pl09001 Production Line 09001

Routing 09001

BOM/Formula 09001 Airbag

Created Date 5/24/2021

Order Status Released

Start Effective Date 5/20/2021

End Effective Date 6/19/2021

Notes

+ New Edit Delete Details More

Save Cancel

QAD 6

Use Repetitive Cumulative Orders to manage repetitive cumulative orders, including order creation, modification, and deletion.

The system keeps a running total for each combination of items, sites, production lines, product structures, and routings using a cumulative order. The cumulative order tracks work-in-process (WIP) costs and quantities for repetitive production. A cumulative order is created for a profile that defines the site, item number, production line, routing code, BOM/formula code for the order, and start and end effective dates.

Cumulative orders account for the cost of repetitive production. The cost of production is determined by the production order routing and production order bill for a cumulative order, together with the inventory transactions posted against that cumulative order.

Cumulative orders can be created in the following ways:

- Automatically created by the system when you invoke a repetitive transaction
- Created one at a time when you click New in the Repetitive Cumulative Orders view
- Created in batches when you choose Actions > Bulk Create Orders in the Repetitive Cumulative Orders view

## Production Orders – Manufacturing Type: Work Order

Production Costing

# Production Orders – Manufacturing Type: Work Order

The screenshot displays the QAD Production Orders form. The top navigation bar includes 'QAD Cost Accounting Manager' and various menu options like 'Inventory', 'Production', and 'Product Costing'. The main header shows 'Production Orders' with a 'Default View' dropdown and buttons for '+ New', 'Delete', 'Actions', and 'More'. Below this, a summary bar contains: Production Order 1019, ID 2474966, Item 09002 Airbag 02, Release Date 6/7/2021, and Quantity to Start 10.0 EA. The form is divided into several tabs: 'Main', 'Regulatory Attributes', 'Accounting', 'Bill of Materials', 'Routing', and 'Notes'. The 'Main' tab is active, showing fields for:
 

- Production Order: 1019
- ID: 2474966
- Item: 09002 (highlighted with a red box)
- Description 1: Airbag 02
- Description 2: (empty)
- Site: 10-100 Ultrasound Mfg Site
- Order Type: Discrete
- Manufacturing Type: Work Order (highlighted with a red box)
- Remarks: (empty)
- Order Status: Firmed (highlighted with a red box)
- Scheduling section:
  - Production Line: (empty)
  - Order Date: 6/7/2021
  - Release Date: 6/7/2021
  - Due Date: 6/10/2021
  - Need Date: 6/10/2021
  - Quantity to Start: 10.0 EA (highlighted with a red box)
  - Quantity to Complete: 10.0
  - Estimated Yield Percent: 100.00% (highlighted with a red box)
  - Estimated Qty To Scrap: 0.0
  - Routing: (empty)
  - BOM/Formula: (empty)

 The bottom of the form has 'Save' and 'Cancel' buttons and a page number '7'.

The default value of the Order Type is blank when the Pur/Mfg code for the item or item-site is M. Manufacturing Type values are work order if the order type is blank.

## Production Orders – Manufacturing Type: Work Order

Production Costing

# Production Orders – Manufacturing Type: Work Order

Account Name	Amount	Project
Work in Process	1550	Mech
Inventory WIP		Mechanical
Material Usage Variance	5040	Mech
Material Usage Var		Mechanical
Material Rate Variance	5050	Mech
Material Rate Var		Mechanical
Subcontract Usage Variance	5440	Mech
Subcontract Usage Var		Mechanical
Subcontract Rate Variance	5450	Mech
Subcontract Rate Vari		Mechanical
Mix Variance	6830	Mech
Mix Variance		Mechanical

The Accounting panel is available only for discrete production orders (Manufacturing Type is Work Order). It displays the Project field as well as the following production order accounts:

- Work in Process
- Material Usage Variance
- Material Rate Variance
- Subcontract Usage Variance
- Subcontract Rate Variance
- Mix Variance
- Floor Stock

The Project field indicates an optional component of an account number defined in the GL setup functions.

## Product Structures

Production Costing

# Product Structures

Product Structures & Formulas 09002 > Components

Components | Default View | + New | Delete | More

09002 Parent | EA Unit of Measure | 08011 Component

Parent-Component Relationship

Type: Item

Component: 08011

Description 1: Cushion

Description 2:

Reference:

Quantity Per: 1.0 EA

Structure Type:

Option Group:

Scrap %: 0.00

Lead Time Offset: 0

Start Effective:

End Effective:

Operation: 10

Sequence Number: 0

Remarks:

Forecast %: 100.00

Save | Close

### Operation

Enter the number identifying the operation in the routing or process where this component is used.

For components, this field:

- Determines whether this component is backflushed in repetitive manufacturing. If you enter the operation number here, this component is automatically issued (backflushed) when you report quantities for the parent using the Report Operation Activity action in Production Operations Reporting. If Operation is blank or does not match a defined operation, this component is not backflushed and you can issue it manually.
- Enables component yield cost calculations. Both Product Structure Cost Roll-Up and Routing Cost Roll-Up use this field when calculating material costs. If the operation yield is less than 100% in Routings & Processes, then material costs are increased to reflect yield loss. If Operation is left blank, the system assumes components are issued at the first operation.
- Enables operation-based yield calculations. If the parent item is defined with Operation Based Yield set to Yes in Items and Enable Operation Based Yield is Yes in the MRP panel of Planning Control, MRP derives component yield percentages from the operations on the parent's routing. The same method is used when bills of material are exploded in production orders and configured products.
- Determines whether this component prints on picklists printed. If Operation is entered here, the component can be picked.

When the same component is required more than once with different lead-time offsets, specify a different operation for each occurrence. Otherwise, the component requirements for orders are summarized by operation. When this happens, the requirement for the component is based on the shortest lead-time offset.

Do not leave Operation blank if you are using yield costing or repetitive manufacturing. In repetitive manufacturing, you do not need to report at this operation in order to backflush this component. Reporting at a subsequent milestone operation backflushes this one.

When the same component is used at several operations use Reference to make each a unique record.



## Milestone Operations

Production Costing

### Milestone Operations

Ops 10 - 30  
Non-Milestone Operations

Op 10      Op 20      Op 30

Op 40  
Milestone Operation

- If report labor at non-milestone operation, the system issues a warning
- Labor & completed units for Ops 10 through 30 reported at Op 40. Labor, burden, and components backflushed at standard

• Scrap, reject, rework quantities can be reported at both non-milestone and milestone operations in order to track value of WIP

The Milestone Operation flag is in Routings

QAD 10

Set up the Milestone Operation field in Routings,

You can set up certain operations as milestone operations and labor reporting is done at these operations. When a milestone operation is reported, that operation and all previous non-milestone operations are backflushed as long as a valid operation number is entered in the Operation field in Product Structures & Formulas; otherwise no backflushing of components will take place. Labor is automatically reported at standard for those operations and any components associated with those operations are issued.

Certain rules govern milestone reporting:

- You can report setup, down time, reject, and scrap against milestone or non-milestone operations. In this case, you create WIP balances at non-milestones. This allows for more accurate tracking of WIP costs and quantities.
- Although the system lets you report labor against a non-milestone operation, a warning is issued.
- If you report scrap or rejects at non-milestones operations, it will backflush components associated with that operation.

To report all operations at standard, set up a final “receiving” operation as the only milestone operation. The last operation is always considered a milestone.

## Production Control

### Post Scrap to GL

Select this option to have the system post the value of the scrap quantity from a work-in-process operation queue to the general ledger (GL).

The system determines the value of scrap at the operation based on the production order, the production order routing, and bill. It calculates the cost of scrap by rolling up the material, run-time labor, burden, and subcontract costs.

When the quantity is scrapped from the output queue or reject queue of an operation, the system determines the value of scrap by including the costs for that operation. When the quantity is scrapped from the input queue of an operation, the system determines the value of scrap as the value of the prior operation.

### Work Order & Repetitive Activity Threshold

Specify the earliest status that must apply to production orders before any production activity can take place.

Valid values include the following:

- Allocated
- Exploded
- Firm Planned
- Released

The default is Released.

### End Effective Default Method



Indicate the method to use for effective dates in new cumulative orders. Valid values to enter are as follows:

- **GL Period**

The cumulative order start and end effective dates are set to the GL period begin-end dates for the period corresponding to the effective date entered in the transaction.

- **Calendar Month**

The cumulative order start and end effective dates are set to the calendar month begin-end dates for the period corresponding to the month of the date entered in the transaction.

- **Number of Days**

The cumulative order start and end effective dates are set for the number of days that cover the interval for the transaction effective dates. When you select this method, specify a value in End Effective Days.

- **Blank**

The cumulative order start and end effective dates are not set.

### **End Effective Days**

Set this field when you set the End Effective Default Method field to Number of Days.

Specify the number of days that the start and end days cover; for example, for the cumulative order to be effective every 10 days, enter 10.

## Auto Labor Report Field

Production Costing

# Auto Labor Report Field

The screenshot displays the 'Routing Operations' form in the QAD web UI. The form is titled 'Routing Operations' and shows details for routing 09002, operation 10, and work center wc09010. The 'Auto Labor' checkbox is checked and highlighted with a red box. Other fields include 'Subcontract Lead Time' (0 Days), 'Total Operation Time' (11.00), 'Total Non-Operation Time' (0.00), 'Setup Crew' (0.00), 'Run Crew' (1.00), 'Overlap Units' (0), 'Yield Percent' (100.00%), and 'Tooling'. The 'Operation Options' section includes 'Milestone Operation' (checked), 'Auto Labor' (checked), 'Move Next Operation' (checked), and 'WIP Item' (empty). The 'Subcontract' section is also visible.

The Auto Labor field is in Routings.

- For non-milestone operations, if set the Auto Labor field to Yes, the labor is automatically reported in the Report Operation Activity transaction when the following milestone operation is processed..
- For milestone operations, if set Auto Labor to Yes, then the standard labor would be default in the Report Operation Activity transaction, users could modify it. If set Auto Labor to no, then no default value in the Report Operation Activity transaction, users need to enter the actual labor time..

**Note** Setup is never part of automatically reported costs in Production Operations Reporting. In Report Operation Activity, if users select Standard Setup Time, then the system would default standard set up time for repetitive orders, or for discrete orders which are processed first time. In Production Order Receipt, if users select Standard Setup Time, then the system would automatically report set up time for discrete orders which are processed first time.

## Auto Backflush

Production Costing

# Auto Backflush

Production Order 2474974, Operation 10 > Report Operation Activity

Report Operation Activity | Default View | More

0.0 EA Total Processed | 09001 Airbag Item | 10-100 Site | pl09001 Production Line | 2474980 Cumulative Order ID | BOM/Formula | Routing

Main | Operation Activity

Employee: 10-EMP01 Alex Erikson

Effective Date: 6/24/2021

Shift: [Dropdown]

Operation: 10

Close Operation:

Close Order:

Work Center: wc09010

Machine: [Dropdown] Work Center 09010

Department: 0010 Manufacturing

Unit of Measure: EA

Conversion: 1.0000

Process & Complete

Quantity Processed: 0.0 EA

Quantity Complete: 0.0 EA

Total Quantity Processed: 0.0 EA

Move Next Operation:

Auto Backflush:

Submit Cancel

QAD 13

### Auto Backflush

Select this field to make the system automatically handle component issue.

- When selected, the Issue Components subpanel is unavailable, and the system automatically calculates the issue list after you click Submit.

**Note:** When Auto Backflush is selected and you click Submit, if there is any invalid inventory on the issue list, the system displays an error message, asking you to manually check the inventory by clicking Calculate Issue List in the Issue Components subpanel.

- When cleared, the system displays the Issue Components subpanel, allowing you to manually calculate the issue list by clicking Calculate Issue List there. You can then click Modify Details to launch the **Issue Components** details page for maintenance.

The default value of Auto Backflush is cleared. If you click Report Another after a successful reporting transaction, the system defaults the Auto Backflush setting from the previous transaction.

## Component Issues

Production Costing

# Component Issues

Production Order 2474966, Operation 10 > Report Operation Activity

Report Operation Activity | Default View | More

1.0 EA | 09002 Airbag 02 | 10-100 | 2474966

Total Processed | Item | Site | Production Line | Cumulative Order ID | BOM/Formula | Routing

Main | Operation Activity | Stop Run 00:00:00 | Run Earning Code

Issue Components | Issue Method Backflush

+ New | Delete | More | Modify Details | Calculate Issue List

Component	Description 1	Description 2	Operation	Quantity Required	Quantity Issue	UM	Issue Policy	Phantom
08011	Cushion		10	1.0	1.0	EA	Backflush	<input type="checkbox"/>
08012	Inflator		10	1.0	1.0	EA	Backflush	<input type="checkbox"/>
08013	Control Unit		10	1.0	1.0	EA	Backflush	<input type="checkbox"/>

Submit | Cancel

QAD 14

Use Report Operation Activity action to issue components manually or backflush the components by select the Auto Backflush field.

When selected the Auto Backflush field to make the system automatically handle component issue, the Issue Components subpanel is unavailable, and the system automatically calculates the issue list after you click Submit.

Note: When Auto Backflush is selected and you click Submit, if there is any invalid inventory on the issue list, the system displays an error message, asking you to manually check the inventory by clicking Calculate Issue List in the Issue Components subpanel.

When cleared the Auto Backflush field, the system displays the Issue Components subpanel, allowing you to manually calculate the issue list by clicking Calculate Issue List there. You can then click Modify Details to launch the Issue Components details page for maintenance.

The default value of Auto Backflush is cleared. If you click Report Another after a successful reporting transaction, the system defaults the Auto Backflush setting from the previous transaction.

## Component Issue – Transactions Detail

Production Costing

### Component Issue – Transactions Detail

Inventory Transactions | Default View | More

08011 Cushion | 10-100 Ultrasound Mfg Site | ISS-WO Transaction Type | 1019 Order

Transaction #1	Date
1269143	6/7/20
1269142	6/7/20
1269141	6/11/20
1269140	6/7/20
1269139	6/7/20
1269138	6/7/20
1269137	6/7/20
1269136	6/7/20
1269135	6/7/20
1269134	6/7/20
1269133	6/7/20

Main | Inventory | **GL Cost** | Accounts | E-Signature | WIP Lot Trace

Location 09010 | Backflush location 0901C | Quantity Change -1.0 | End Balance 999.0 | Begin Location Balance 10.0 | Location Quantity Change -1.0 | End Location Balance 9.0 | Quantity Required 10.0 | Quantity Short 9.0

Inventory Status Y-Y-Y | Assay Percentage 0.00% | Expire Date | Batch

**GL Cost**

Material	10.00	Extended Material	10.00
Labor	0.00	Extended Labor	0.00

**Example**  
A quantity of 1 of an item with a GL cost of \$10 per unit is issued

QAD 15

### Production Order Issue (ISS-WO) — Transactions Detail

When materials are issued by Report Operation Activity action, a general ledger transaction is created to record the issue.

The most common situation is when materials are issued from the same site as the production order, creating a GL transaction as follows.

- Component materials are issued from inventory at their total GL cost
  - Credits Inventory account defined in Inventory Accounts, for the product line, issue site, and issue location if a record exists; otherwise uses Product Lines
- This entire amount is now considered part of Work in Process
  - Debits WIP account from the production order
- If the cost of the components issued does not match the frozen cost in the production order bill, a material rate variance results. This compares the total GL cost of the item issued (it may be a substitute) to the frozen cost. The difference is removed from WIP (credit WIP) and booked as a material rate variance (debit Material Rate Variance).
  - The frozen cost is created when the production order is Exploded, Allocated, or Released; a WIP Revalue updates the frozen standard cost
  - Floor Stock and Unplanned Issues will not create material rate variances

**Note** The general ledger transaction created by a production order component issue is easily traced. Its type is IC, indicating that it is generated by an inventory transaction and its description indicates that it was a production order issue, ISS-WO, and identifies the production order number.



## Component Issue – Transactions Detail

Production Costing

# Component Issue – Transactions Detail

Inventory Transactions | Default View | More

08011 Cushion | 10-100 Ultrasound Mfg Site | ISS-WO | 1019

Main | Inventory | GL Cost | **Accounts** | E-Signature | WIP Lot Trace

**Accounts**

More

GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
ISS-WO	1550	Mech			10.00	0.00	TMP20210607/00998...
ISS-WO	1500	Mech			0.00	10.00	TMP20210607/00998...

1 - 2 of 2

**E-Signature**

Date:   
 Time:   
 User:

**ISS - WO**  
**DR 1550 (WIP) \$10**  
 Qty Issued x GL Total Cost  
 1 x \$10 = \$10  
**CR 1500 (Inventory) \$10**

Category:   
 Reason:   
 Remarks:

QAD | 16

## Production Order Bill of Material

Production Costing

# Production Order Bill of Material

Component	Description	Operation	UM	Qty Required	Qty Open	Qty Allocated	Qty Per
08011	Cushion	10	EA	10.0	9.0	9.0	
08012	Inflator	10	EA	10.0	9.0	9.0	
08013	Control Unit	10	EA	10.0	9.0	9.0	

production order bills list components required for a production order. The standard bill for the item-site is used initially, but can be changed manually. production order bills control component picking and issuing, and provide standards against which variances are calculated.

production order explosion or release generates a bill automatically. These Bills can be modified using Production Orders As the production order moves through manufacturing, the production order bill tracks the status of each item number, indicating whether it is allocated, printed on a picklist, or issued. Quantity issued is used to calculate production order cost.

Each item number is listed with the quantity required and the issue site. Quantity required is calculated by multiplying the quantity per unit on the bill by the production order quantity, then adjusting for scrap percentage. Site defaults to the production order site.

When using standard costing, material rate and usage variances are calculated based on the standards in production order bill.

- **Material Rate Variance** is calculated when material is issued to the production order. It is the difference between the standard item cost and the cost in the production order bill, each multiplied by the quantity issued. Variances result from issuing items from another site where they have a different cost, issuing a substitute, or from changing standard costs without running the WIP Material Cost Revaluation to reflect new standards in existing bills.

**Material Usage Variance** is calculated by Production Order Accounting Close. The system determines Earned Quantity, which is the expected component quantities from the production order bill to make the quantity reported complete or scrapped. Earned quantity is compared to actual issues (at item standard cost). Any difference is posted as a variance.



## Material Rate Variance

Production Costing

### Material Rate Variance

- Manufacturing-Related Variances

<u>Variance</u>	<u>When Calculated</u>	<u>Cause</u>
<b>Material Rate</b>	Production Operation Reporting: Component Issue, or Backflush	Difference between component costs issued to the WO (actual) and component costs on the WO BOM (std)
<i>Formula</i>	<i>(WO BOM Unit Cost at Issue - GL Unit Cost) x Actual Qty Issued</i>	

### Material Rate Variance

Material Rate Variance is calculated as the difference between the GL cost of an item at the time it is issued to a production order and the frozen cost of the item in the production order bill. This variance is calculated when material is issued to a production order by Report Operation Activity..

This variance is calculated as:

$(\text{Actual Unit Cost at Issue} - \text{Std Unit Cost}) \times \text{Actual Qty Issued}$

## Issue Components – GL Effect

Production Costing

### Issue Components – GL Effect

<u>Component Issue from WO site</u>	<u>GL Trans Type</u>
DR WIP	IC
CR Inventory	
* DR Material Rate Variance	IC
CR WIP	
* Positive amounts = unfavorable variance; Negative amounts = favorable variance	

## WIP Material Cost Revaluation

Production Costing

### WIP Material Cost Revaluation

QAD

**WIP Material Cost Revaluation**

Page 1 / 2  
6/8/2021  
8:58:10 AM

Production Order 1006      Item 09001      Quantity Received 12.0  
ID 2474934      Airbag

Item	Quantity Issued	Qty in WIP	BOM Quantity	Old Material Cost	New Material Cost	Material Rate Variance Posted
08001	20.0	8.0	1.0	10.00	12.00	16.00
08002	10.0	-2.0	1.0	10.00	10.00	0.00
08003	10.0	-2.0	1.0	10.00	10.00	0.00
<b>Order Total</b>						<b>16.00</b>

After WIP Material Cost Revaluation

Before WIP Material Cost Revaluation

QAD

**WIP Material Cost Revaluation**

Page 1 / 1  
6/8/2021  
8:58:38 AM

Production Order 1006      Item 09001      Quantity Received 12.0  
ID 2474934      Airbag

Item	Quantity Issued	Qty in WIP	BOM Quantity	Old Material Cost	New Material Cost	Material Rate Variance Posted
08001	20.0	8.0	1.0	12.00	12.00	0.00
08002	10.0	-2.0	1.0	10.00	10.00	0.00
08003	10.0	-2.0	1.0	10.00	10.00	0.00
<b>Order Total</b>						<b>0.00</b>

QAD 20

### WIP Material Cost Revaluation

When the standard cost has been changed after the BOM and routing have been attached to a production order, WIP Material Cost Revaluation, is used to:

- Update the cost of *unissued* components on the production order bill
  - No rate variance will be calculated
- Update the WIP value of *issued* components
  - Rate variances will be calculated if the material has been issued prior to running the WIP Material Cost Revaluation

**Note** This variance is not a purchase price variance. That variance, between the PO and GL cost, is posted to the Purchase Price Variance account.

Once done, a WIP Material Cost Revaluation cannot be undone.



## WIP Material Cost Revaluation – Transactions Detail

Production Costing

# WIP Material Cost Revaluation – Transactions Detail

Inventory Transactions | Default View | More

09001 Airbag | 10-100 Ultrasound Mfg Site | WIP-ADJ | 1006

Main | Inventory | GL Cost | Accounts | E-Signature | WIP Lot Trace

GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
WIP-ADJ	1550	Mech			16.00	0.00	TMP20210608/00998...
WIP-ADJ	5050	Mech			0.00	16.00	TMP20210608/00998...

E-Signature

Date:   
 Time:   
 User:

WIP-ADJ  
 DR 1550 (WIP) \$16  
 CR 5050 (Material Rate Variance) \$16

Category:   
 Reason:   
 Remarks:

QAD 21

### WIP Material Cost Revaluation—Transactions Detail

WIP Material Cost Revaluation,, updates the production order bill with the currently effective standard GL cost.

For material that has been issued prior to running the WIP Material Cost Revaluation:

- Any difference between the component issue unit cost and the standard cost is posted as a material rate variance

WIP Material Cost Revaluation does not update product structures or labor and burden costs.

#### GL Effect

Debits the WIP account from the production order and credits the Material Rate Variance account found on the production order parent’s Product Line record.



## Floor Stock – No Pick, No Issue

Production Costing

# Floor Stock – No Pick, No Issue

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Items | <No Stored View> | + New | Delete | Actions | More

07009 Item | 20 Product Line | Fastener Description 1 | Active Item Status

Main | Site | Item Aliases | IntraStat Item | Production Scheduling | **Picking** | Service

**Picking**

Allocation Policy:  Detail Allocation

Transfer Allocation Policy:  Drop Allocation

Pick Policy:  Do not Pick

Issue Policy:  Do Not Issue

Production Picking Order:  Default

Ascending/Descending:

Allocate Single Lot

Key Item

Picking Multiple:

Picking Minimum:

Picking Maximum:

**Service**

Model:

Service Group:

Service Category:  Inventory Items

System Type:

Usage Code:

Installed Base

Save | Cancel

QAD 22

### Floor Stock

Floor stock items are bulk issue items—nuts and bolts, for example—that are part of the product structure, but that are usually inexpensive and easily replaced; there is not a need to keep track of them individually.

### Floor Stock: Set-up

To use an item as floor stock, change the Issue Policy to No Issue and Pick Policy to No Pick in Items.

Notes: The floor stock items will be not included in picklist as its pick policy is No Pick. But it would be printed on Production Order Sheet without picklist assigned.

## Floor Stock – Issues Unplanned

Production Costing

# Floor Stock – Issues Unplanned

Inventory Detail > Issue Unplanned

Issue Unplanned | <No Stored View> | More

Main

Main

+ New | Delete | More | Multi Entry

Item	Description 1	Description 2	Quantity	UM	Conversion	Site	Location	Debit Account	Dr Sub-Acct	Dr Cost Ctr
07009	Fastener		100.0	EA	1.0000	10-100	020	1600	Mech	

<< < > >> 50 Records per page 1 - 1 of 1

Submit Close

QAD 23

To issue the floor stock components out of inventory to production orders, use Issues–Unplanned action in Inventory Detail. The default debit account is automatically set to the Floor Stock account of the component item’s product line. (Note that this might not be the same as the parent item’s Floor Stock account. For this reason, the Floor Stock Account should be the same for all product line records. Upon Production Order Accounting Close, the cost of any floor stock items is debited to WIP and credited to the Floor Stock account specified on the order.

## Floor Stock – Transactions Detail

Production Costing  
**Floor Stock – Transactions Detail**

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More | 10USA, 10USACO

Inventory Transactions | Transactions by Date | More

07009 Fastener | 10-100 Ultrasound Mfg Site | ISS-UNP | Order

Main | Inventory | GL Cost | Accounts | E-Signature | WIP Lot Trace

Accounts

GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
ISS-UNP	1600	Mech			1,000.00	0.00	TMP20210913/00998...
ISS-UNP	1500	Mech			0.00	1,000.00	TMP20210913/00998...

E-Signature

Date:   
 Time:   
 User:

Category:   
 Reason:   
 Remarks:

QAD 24

### Floor Stock—Transactions Detail

#### Effects on the GL

Because the cost of bulk issue items is included in the rolled-up GL cost of the finished item, it is necessary to adjust WIP for the cost of these items. Otherwise this cost would get written off incorrectly to variance.

- Floor stock is calculated as the standard cost per unit multiplied by the quantity required. This quantity is posted at standard cost to WIP (debit) and Floor Stock (credit).

– If there is more floor stock issued than the standard calls for, the additional value becomes a method variance

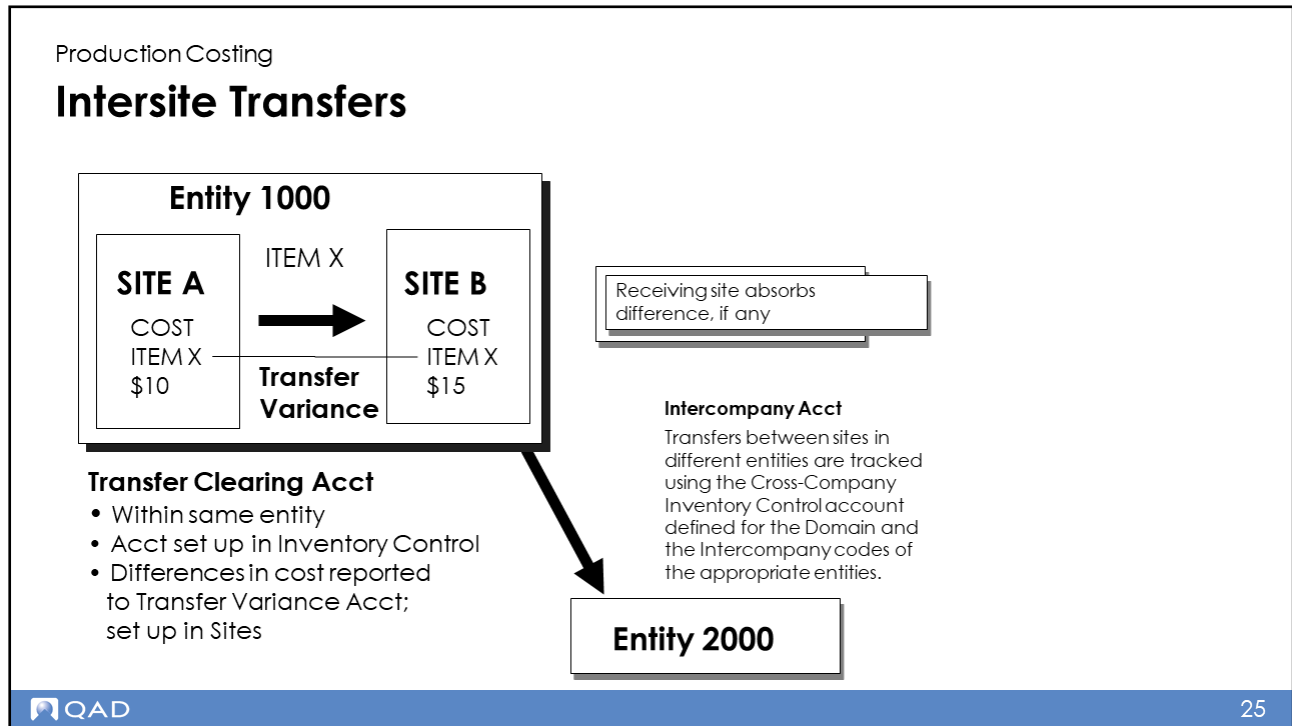
**Note** These items have been issued and should not be cycle counted back into stock.

**Tip** If quantity tracking is desired as well as cost tracking, rather than issuing the items by Issues–Unplanned, transfer them to a “floor” location. Periodically cycle count this location and debit the appropriate Floor Stock account at that time (rather than Inventory Discrepancy).

**Note** One issue that may not be apparent regarding Floor Stock is that floor stock accounts used by the Production Order Accounting Close are associated to the production order, which is determined by the product line of the parent item. If the floor stock component is associated to a different product line, then, if the floor stock accounts vary by product line, you might be crediting a different floor stock account than was debited by the issue transaction.



## Intersite Transfers



### Intersite Transfers and Multi-Site Component Issues Variances

The same item used at different sites may have a different GL cost per site. When inventory is moved between sites, the movement is accounted for either through the Transfer Clearing account (for transfers within the same entity) or through the Intercompany account (for transfers between different entities). Differences in costs at sites in the same entity are posted to the Transfer Variance account for the site; differences in costs at sites in different entities are posted to the Material Rate Variance account.

**Note** On a production order component issue, rather than report differences in cost between two sites to the Transfer Variance account, differences are reported to the production order, crediting the Material Rate Variance account.

## Inter Site Transfer – Transactions Detail (Issuing Site)

Production Costing

### Inter Site Transfer – Transactions Detail (Issuing Site)

Inventory Transactions | Default View | More

08002 Inflator | 10-200 Auto Industrial Mfg | ISS-TR

Transaction #	Date	Main	Inventory	GL Cost	Accounts	E-Signature	WIP Lot Trace	Extended Material	Extended Labor	Extended Burden	Extended Overhead	Extended Subcontract	Extended Cost
1269155	6/8												
1269154	6/8												
1269153	6/8												
1269152	6/8												
1269151	6/8												
1269150	6/8												
1269149	6/8												
1269148	6/8												
1269147	6/8												
1269146	6/8												
1269145	6/8												

Unit Cost: 12.00

ISS - TR  
 DR 1670 (Transfer Clearing) 1200.00 (1.00 x 12)  
 CR 1500 (Inventory) 1200.00

Qty Change = - 100 (issuing)

GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
ISS-TR	1670	Mech			1,200.00	0.00	TMP20210608/00998...
ISS-TR	1500	Mech			0.00	1,200.00	TMP20210608/00998...

QAD 26

**Example** Transfer 1,00 Inflator item 08002 from site 10-200, where the GL standard cost of the item is 12.00, to site 10-100 where the item has a GL standard cost of 10.00.

**Note** Location transfers within a site have no GL effect as there can be only one GL cost at a site. The Inventory Transactions shows the accounts affected by the inventory transfer.

There is only one GL transaction at the Issuing site.

- The components are issued from Inventory (credit Inventory 1200) at the standard GL cost of the 12.00, and rather than putting them directly into inventory at the receiving site, the system debits then 1200.00, to the transfer clearing account (1670).

## Inter Site Transfer – Transactions Detail (Receiving Site)

Production Costing

### Inter Site Transfer – Transactions Detail (Receiving Site)

The screenshot shows the QAD Inventory Transactions interface. The main header displays '08002 Inflator' as the item, '10-100 Ultrasound Mfg Site' as the site, and 'RCT-TR' as the transaction type. The 'Unit Cost' field is highlighted with a red box and contains the value '10.00'. Below this, a table of GL transactions is visible, with several rows highlighted in red:

GL Transaction Type	Account	Sub-Account	Cost Center	Project	Debit	Credit	GL Reference
CST-TR	6820	MECH			1,200.00	0.00	TMP20210608/00998...
CST-TR	1670	Mech			0.00	1,200.00	TMP20210608/00998...
RCT-TR	1500	Mech			1,000.00	0.00	TMP20210608/00998...
RCT-TR	6820	MECH			0.00	1,000.00	TMP20210608/00998...

A tooltip for 'RCT-TR' shows the following entries:

- DR 1500 (Inventory) 1,000.00
- 1,000 x 1.00
- CR 6820 (TRV)

Next, the items are transferred to the books at the receiving site. Because inventory transactions generate “matched pairs” of transactions, the following two transactions will be generated even if costs at the respective sites are identical.

- The intersite transfer is recorded (credit transfer clearing, 1670, 1200.00). Because we do not know yet if the costs are the same, the entire standard GL cost at the sending site is booked to Transfer Variance Account (debit Transfer variance 6820, 1200.00).
- The same items are put into inventory at the receiving site at the standard GL cost at that site. (debit inventory, 1500, 1,000.00) The offsetting entry is to Transfer Variance (credit 6820, 1,000). When the GL standard costs are different, the difference ends up in this account.
- In this example, the total value of inventory is revalued downwards, thus generating a debit (unfavorable) variance

This transaction points out the disadvantage of moving inventory from a high cost site to a low cost site. Any variance accrues to the receiving site.

## Inter Site Production Order Issue

Production Costing

# Inter Site Production Order Issue

Production Order 2474966, Operation 10 > Report Operation Activity > Issue Components

Issue Components | Default View | More

09002 Airbag 02 | 08011 Cushion | 10 Operation | Backfish Issue Policy | 10-100 Site | Production Line | 2474966 Cumulative Order ID

Main

Total Quantity Required: 1.0 EA  
Total Quantity Issue: 1.0  
Issue Method: Allocated

+ New | Delete | More | Calculate Issue List

Component/Substitute Item	Site	Location	Lot/Serial	Reference	Quantity Available	Quantity Issue	UM	Expire Date
08011	10-200	020			999.0	1	EA	

1 - 1 of 1

OK Cancel

Submit

25 Records per page

1 - 3 of 3

QAD 28

In Production Operations Reporting, use Report Operation Activity action to do the production order components issues.

It is possible to issue items to a production order from a non standard site. In the graphic the production order is issuing 1 item 08011. The production order is released at site 10-100 and all components are expected to be issued from site 10-100. However a shortage is discovered and inquiry reveals the required items at site 10-200, which site agrees to supply the item. The site 10-100 cost of the 08011 is 10.00 and the cost at site 10-200 is 12.00. In this case the system atomically generates several inventory transactions.

## Inter Site Production Order Issue – Transaction Detail

Production Costing

### Inter Site Production Order Issue – Transaction Detail

GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
ISS-TR	1670	Mech			12.00	0.00	TMP20210609/00998...
ISS-TR	1500	Mech			0.00	12.00	TMP20210609/00998...

Issue Site

GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
CST-TR	6820	MECH			12.00	0.00	TMP20210609/00998...
CST-TR	1670	Mech			0.00	12.00	TMP20210609/00998...
RCT-TR	1500	Mech			10.00	0.00	TMP20210609/00998...
RCT-TR	6820	MECH			0.00	10.00	TMP20210609/00998...

Receiving Site

GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
ISS-WO	1550	Mech			10.00	0.00	TMP20210609/00998...
ISS-WO	1500	Mech			0.00	10.00	TMP20210609/00998...

Work Order Issue

QAD 29

As seen in the previous example the system generates the material issue from the supply site the material receipt at the demand site and then the production order issue. The detail of the transactions are shown on the next graphic.

In the issue step, the 08011's are credited to inventory (1500) at the GL cost of site 10-200, 12.00 and debited to transfer clearing 1670.

Then received at site 10-100 with a debit to transfer variance (5820) of the 12.00 and a credit to transfer clearing (1670). Then a debit to inventory (1500) at the site 10-100 cost of 10.00 and a credit to transfer variance (6820).

The items are then issued to work in process with a debit to WIP (1550) at the site 10-100 GL cost of 10.00 and a credit to inventory (1500).

This leaves a balance of  $12-10 = 2$  in the transfer variance account which accrues to the receiving site. As it is a positive number it is unfavorable.

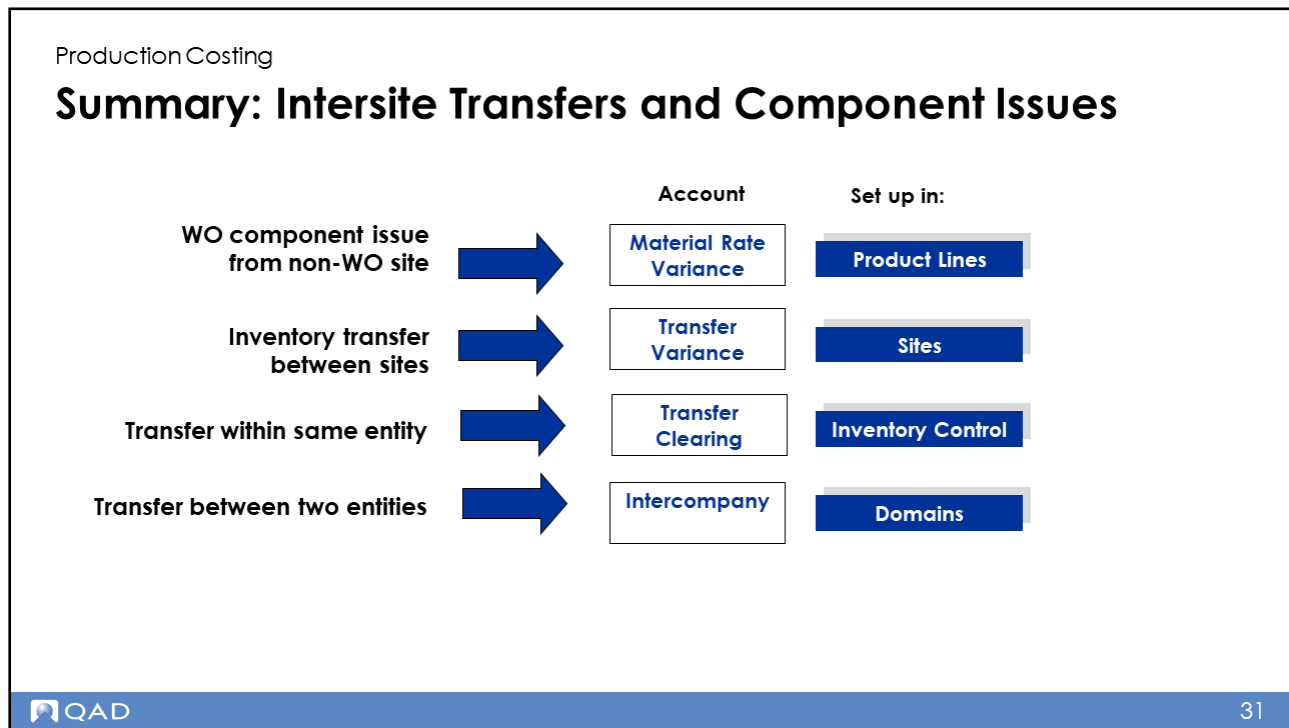
## Multi-Site Component Issues – GL Effect

Production Costing

### Multi-Site Component Issues – GL Effect

<u>Intersite Transfer - Sending Site</u>		<u>GL Trans Type</u>
DR Intercompany (if different entities)	or	IC
DR Transfer Clearing (if same entity)		
CR Inventory		
<u>Intersite Transfer - Receiving Site</u>		
If variances exist	DR Material Rate Variance (if different entities)	IC
	CR Intercompany or	
	DR Transfer Var (if same entity)	
	CR Transfer Clearing	
	DR Inventory	
	CR Material Rate Variance (if different entities) or	
	CR Transfer Var (if same entity)	
	DR Inventory (when no var in cost exists between sites/entities)	
	CR Intercompany (if different entities) or	
	CR Transfer Clearing (if same entity)	
<u>Issue to Production Order - Receiving Site</u>		
DR WIP		IC
CR Inventory		

## Summary: Intersite Transfers and Component Issues



### Summary: Intersite Transfers and Multi-Site Component Issues

As seen in the previous example, transfers between sites in different entities are booked to the Intercompany account and if there is a variance, it is a Material Rate Variance. Transfers between different sites in the same entity are booked to the Transfer Clearing account and if there is a variance, it is booked to the Transfer Variance account.

- An issue of material from a site different than the production order site operates in much the same way as a transfer of materials from one site to another. Rather than booking any GL cost difference to the Transfer Variance account, though, a production order issue books any difference in cost to the Material Rate Variance account.

## Labor Reporting

## Labor Reporting

There are three ways to handle labor accrual:

- 1 Report actual setup and run times
- 2 Accept standard setup and report actual run time
- 3 Accept standard setup and run times

This section examines the first scenario—the effects of reporting actual setup and run times. Later, you will see both the effects of accepting standard setup and run times, and reporting actual setup and run times.

### Reporting Actual Setup and Run Times

Report Operation Activity report the quantity completed and the actual labor time spent on a particular production order and operation.

- All labor feedback transactions must specify a production order, operation, employee, and work center
- Each can specify set-up, run, and down time
  - Down time (or non-productive labor) is not related to a production order and has no effect on WIP or variances. It is posted as a miscellaneous Cost of Production, which attracts burden absorption.

You can flag close operation or/and close order.

You can close the operation or order even when the processed quantity is 0 (zero). For a discrete or scheduled order, you can enter the specific order information in the Order Selection subpanel and click Calculate Consumption. If there is no processed quantity, the system displays the specified order in the grid; otherwise, the system follows the current consumption logic in use.

If you enter information about a discrete order in the Order Selection subpanel, the system always locates the order after you click Calculate Consumption, irrespective of whether it has a processed quantity in this transaction.

When Close Operation is selected, the status of the milestone operation and its affiliated non-milestone operations are changed to Closed. The system automatically removes component requirements, allocations, and shortage allocations linked to this operation, as it expects that you will not record any additional activity (material issue or labor transaction) against the operation of the order or lower-level non-milestone operations. If there is any picked allocation for components, the system converts the picked allocation into a picklist master record.

After closing an operation, the system creates GL transactions like Labor Setup, Labor Run, Burden Setup, and Burden Run Usage Variance if there is any different labor or setup time reported other than the standard one. Note that closing a scheduled order does not lead to creation of GL transactions.

When Close Order is selected, the status of the order is changed to Closed, with all operations associated with the order closed. The system automatically removes component requirements, allocations, and shortage allocations, as it expects that you will not record any additional activity (material issue or labor transaction) against the order or operations.

Variances occur whenever actual rate or time does not match the standard.



## Labor and Burden Absorption

Production Costing

### Labor and Burden Absorption

- The timing for labor and burden absorption is based on user report labor
- If there is labor reporting, then calculated at (SFC) Shop Floor Control through Production Operations Reporting
- Variances are calculated when operation reported

### Labor and Burden Absorption

The timing for labor and burden absorption is based on user report labor.

When user do report labor, the absorption will occur at the time labor is reported for each operation. This is independent of the amount received on the production order.

At the same time the absorption occurs, any variances calculated will be posted.

## Labor Calculations

Production Costing

# Labor Calculations

Operation Accounting Trans
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### Operation Accounting Transactions

10USA USD

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6/17/2021  
7:09:50 AM

Site : 10-100    Entity : 10USACO

Transaction	Eff Date	Type	Item Number	Production Order	Op Line	Work Center	Run Time	Quantity	Debit	Credit
	Trans Date		GL Reference	Reference ID	Account	Sub-Acct	Setup Time			
249327	6/17/2021	LABOR	09002	1019	10	wc09010	1.00	0.0		
	6/17/2021			2474956			0.00			
LBR-2000	TMP20210617/00998039			WO21061700TNEQ	1550	Mech			10.00	
LBR-2000	TMP20210617/00998039			WO21061700TNEQ	5120	Mech	mfg			10.00
BDN-2000	TMP20210617/00998040			WO21061700TNER	1550	Mech			10.00	
BDN-2000	TMP20210617/00998040			WO21061700TNER	5220	Mech	mfg			10.00
249328	6/17/2021	SETUP	09002	1019	10	wc09010	1.00	0.0		
	6/17/2021			2474956			0.00			
LBR-1000	TMP20210617/00998041			WO21061700TNES	1550	Mech			10.00	
LBR-1000	TMP20210617/00998041			WO21061700TNES	5120	Mech	mfg			10.00
BDN-1000	TMP20210617/00998042			WO21061700TNET	1550	Mech			10.00	
BDN-1000	TMP20210617/00998042			WO21061700TNET	5220	Mech	mfg			10.00

**Labor (Set-up)**

- 1 hr set-up x 10 = 10.00
- DR 1550 (WIP)
- CR 5120 (Labor Absorbed)

**Labor (Run)**

- 1 hr run x 10.00 = 10.00
- DR 1550 (WIP)
- CR 5120 (Labor Absorbed)

Labor = Actual Hrs x Actual Rate

34

### Labor Calculations

Set-up and run times are treated the same, but if reported at the same time, the system creates two sets of entries—one for set-up and one for run time.

- The actual amount of labor is posted to WIP (debit) and Labor Absorption (credit), and is calculated as:

Actual Hrs x Actual Rate

If employee pay rates are not loaded into the system, the standard rate at the work center where work was reported is used.

**Example** Employee Whitehead spends 1 hour set-up time and 1 hour run time at a pay rate of \$10.00 per hour. The results and calculations are shown in the figure above.

### Non-Productive Labor

Non-Productive Labor includes any time not spent in production (for example, preventative maintenance, meetings). These costs are not considered part of WIP and they don't contribute to manufacturing variances. Down time and non-productive labor cost are reported directly to the Cost of Production account (debit) and to the Labor Absorption account (credit). An operation history record of type DOWN is generated.

**Note** Operation transaction history provides the basis for many history reports within QAD system, efficiency, utilization, and downtime for example.



## Labor Rate Variance Calculations

Production Costing

### Labor Rate Variance Calculations

Operation Accounting Trans 1 / 3 100% +

249330	6/17/2021	LABOR	09002	1019	10	wc09010	1.00	0.0		
	6/17/2021			2474966			0.00			
LBR-2000	TMP20210617/00998043	WO21061700TNGU	1550	Mech	mfg				10.00	10.00
LBR-2001	TMP20210617/00998044	WO21061700TNGV	5120	Mech	mfg				5.00	5.00
LBR-2001	TMP20210617/00998044	WO21061700TNGV	5120	Mech	mfg				5.00	5.00
BDN-2000	TMP20210617/00998045	WO21061700TNGW	1550	Mech	mfg				10.00	10.00
BDN-2000	TMP20210617/00998045	WO21061700TNGW	5220	Mech	mfg				10.00	10.00
249331	6/17/2021	SETUP	09002	1019	10	wc09010	0.00	0.0		
	6/17/2021			2474966			1.00			
LBR-1000	TMP20210617/00998046	WO21061700TNGX	1550	Mech	mfg				10.00	10.00
LBR-1001	TMP20210617/00998047	WO21061700TNGY	5120	Mech	mfg				5.00	5.00
LBR-1001	TMP20210617/00998047	WO21061700TNGY	5120	Mech	mfg				5.00	5.00
BDN-1000	TMP20210617/00998048	WO21061700TNGZ	1550	Mech	mfg				10.00	10.00
BDN-1000	TMP20210617/00998048	WO21061700TNGZ	5220	Mech	mfg				10.00	10.00

**Labor Rate Var =**  
 $[(Act\ Set-Up\ Rate - Std\ Set-Up\ Rate) \times Act\ Set-Up\ Hrs] + [(Act\ Run\ Rate - Std\ Run\ Rate) \times Act\ Run\ Hrs]$

**Operation Accounting Transactions**

10USA USD

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6/17/2021  
7:33:15 AM

Entity : 10USACO

Account	Sub-Acct	CC	Project	Effective	Transaction Type	GL Reference	Reference ID	Debit	Credit
1550	Mech			6/17/2021	249327 LABOR LBR-2000	TMP20210617/00998039	WO21061700TNGQ	10.00	

### Labor Rate Variance

Labor Rate Variances are posted if the employee pay rate does not match the standard pay rate at the work center where the work was reported.

#### Calculations

Labor Rate Variance is calculated at the time shop floor labor feedback is reported (only if actual employee pay rates are entered) as:

$$[(Act\ Set-Up\ Rate - Std\ Set-Up\ Rate) \times Act\ Set-Up\ Hrs] + [(Act\ Run\ Rate - Std\ Run\ Rate) \times Act\ Run\ Hrs]$$

- When variance posting occurs, a positive (unfavorable) or negative (favorable) variance is debited to the Labor Rate Variance account and credited to WIP

– The Labor Rate Variance is posted at the same time that labor is posted.

**Example** Because employee Whitehead’s pay rate of \$15.00 per hour is different than the standard pay rate of \$10 per hour, there is a labor rate variance, as shown in the figure.



## Labor Usage Variance Calculations

Production Costing

### Labor Usage Variance Calculations

Transaction	Date	Type	Description	Quantity	Unit	Rate	Amount	Rate	Amount
249340	6/17/2021	WO-VAR	09002	1019		2474966	0.00	0.0	
							0.00		
LBR-2002	TMP20210617/00998064	WO21061700TN7F	5140	Mech	mfg		5.00		
LBR-2002	TMP20210617/00998064	WO21061700TN7F	1550	Mech				5.00	5.00
BDN-2002	TMP20210617/00998065	WO21061700TN7G	5240	Mech	mfg		5.00		
BDN-2002	TMP20210617/00998065	WO21061700TN7G	1550	Mech				5.00	5.00
249341	6/17/2021	WO-VAR	09002	1019		2474966	0.00	0.0	
							0.00		
LBR-1002	TMP20210617/00998066	WO21061700TN7H	5140	Mech	mfg		10.00		
LBR-1002	TMP20210617/00998066	WO21061700TN7H	1550	Mech				10.00	10.00
LBR-2002	TMP20210617/00998067	WO21061700TN7I	5140	Mech	mfg		-10.00		
LBR-2002	TMP20210617/00998067	WO21061700TN7I	1550	Mech				-10.00	-10.00
BDN-1002	TMP20210617/00998068	WO21061700TN7J	5240	Mech	mfg		10.00		
BDN-1002	TMP20210617/00998068	WO21061700TN7J	1550	Mech				10.00	10.00
BDN-2002	TMP20210617/00998069	WO21061700TN7K	5240	Mech	mfg		-10.00		
BDN-2002	TMP20210617/00998069	WO21061700TN7K	1550	Mech				-10.00	-10.00

**Labor Usage Variance = [ ( Actual Set-up Hrs - Std Set-up Hrs ) x Std Set-up Rate ] + [ ( Actual Run Hrs - \*Std Run Hrs ) x Std Labor Rate ]**  
**\*Std Hrs = Run Hrs/Unit x ( Qty Completed + Qty Rejected )**

Operation Accounting Transactions  
10USA USD

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6/17/2021  
8:14:37 AM

### Labor Usage Variance

Labor Usage Variances are posted when actual set-up and/or run time differ from the time it should have taken to set up and/or make the number of units reported as complete (referred to as earned hours).

#### Calculations

If the production order is a discrete order (type is Work Order), the Labor Usage Variance is calculated at the time shop floor feedback is reported as:

$$[(\text{Act Set-Up Hrs} - \text{Std Set-Up Hrs}) \times \text{Std Set-Up Rate}] + [(\text{Act Run Hrs} - \text{Std Run Hrs}) \times \text{Std Run Rate}]$$

where: Std Run Hrs = Run Hrs/Unit x (Qty Completed + Qty Rejected)

- When variance reporting occurs, a positive (unfavorable) or negative (favorable) variance is debited to the Labor Usage Variance account and credited to WIP
- The Labor Usage Variance is normally posted at the same time that labor is posted.
- When labor is reported with no completed units, no labor was earned. The total amount not attributable to set-up is flagged as unfavorable variance. The set-up portion only posts the true variance amount and is unaffected by units. The unfavorable variance is offset later by a favorable variance when completed items are reported. In an operation that takes 12 hours to finish, shift one reports 8 hours and zero complete. All 8 hours is unfavorable variance. Shift two works 4 hours and completes 100 units. It should have taken 12 hours, so shift 2 shows an 8 hours favorable variance.



**Example** The one-hour set-up time that employee Whitehead reported is standard, so there is no variance recorded. The 1.5 hour run time, though, is not standard—1 hour is standard—so a labor usage variance is created, as shown in the figure.

If the production order is a repetitive order (type is Repetitive), the Labor Usage Variance is calculated at Production Order Accounting Close or Post Production Order Usage Variance.

## Labor Reporting – GL Effect

Production Costing

### Labor Reporting – GL Effect

<u>Set-up and Run Time</u>	<u>GL Trans Type</u>
----------------------------	----------------------

DR WIP	WO
--------	----

CR Labor Absorbed	
-------------------	--

DR Labor Rate Variance	WO
------------------------	----

CR WIP	
--------	--

DR Labor Usage Variance	WO
-------------------------	----

CR WIP	
--------	--

Positive amount = unfavorable variance;

Negative amount = favorable variance

The credit and variance accounts are derived from the Dept. record of the work center being processed

- Post Labor Usage Variances by Post Production Order Usage Variances

### Labor Reporting—GL Effect

The default general ledger entry:

- Debits WIP
  - Credits Labor Absorbed
- The credit account is derived from the Department record of the work center being processed

Upon shop floor reporting, labor usage and rate variances are calculated (see following note). If the variance amount is positive, then it is an unfavorable variance; if the amount is negative, then it is a favorable variance. The variance accounts are derived from the Department record (Departments).

**Note** The Labor Usage and Rate variances are posted at the same time that labor is posted.

## Down Time – GL Effect

Production Costing

### Down Time – GL Effect

<u>Downtime</u>	<u>GL Trans Type</u>	<u>Op Hist Record</u>
DR Cost of Production for Dept. CR Labor	WO	DOWNTIME

Because labor time entered here is not for direct production, the labor time is not used to update the cum order

### Down Time Reporting

Use Report Labor action in Production Operations Reporting, to register labor spent due to nonproductive activities associated with a manufacturing operation, such as machine breakdown or material shortage. The value of labor is added to Cost of Production.

- A GL record is generated for the labor reported

## Non-Productive Labor Feedback – GL Effect

Production Costing

### Non-Productive Labor Feedback – GL Effect

<u>Time Reported for an Employee</u>	<u>GL Trans Type</u>	<u>Op Hist Record</u>
DR Cost of Production CR Labor (for department)	WO	DOWN
<u>Time reported for an employee at a work center</u>		
DR Cost of Production CR Labor (for department)	WO	DOWN
DR Cost of Production CR Labor Burden (work ctr burden rate and/or work ctr percent and labor rate)		
<u>Time reported for a work center</u>		
There is no financial effect		

### Non-Productive Labor Feedback—GL Effect

Use Report Non-Productive Labor action Production Operations Reporting, to record non-productive labor for an employee or down time for a work center. For an employee, it is time not directly related to set-up or production; time spent in meetings, waiting for work, cleaning up, preventative maintenance. For a work center, it is idle time.

- Time can be reported for an employee, an employee at a specific work center, or a work center. The financial effects are different for each.

## Burden Calculations

Production Costing

# Burden Calculations

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Operation Accounting Trans
1 / 2 - 100% +

**Operation Accounting Transactions**

10USA USD

Site : 10-100 Entity : 10USACO

Transaction	Eff Date	Type	Item Number	Production Order ID	Op Line	Work Center	Run Time	Quantity	Debit	Credit
	Trans Date		GL Reference	Reference ID	Account	Sub-Acct CC Project	Setup Time			
249327	6/17/2021	LABOR	09002	1019	10	wc09010	1.00	0.0		
	6/17/2021			2474966			0.00			
			LBR-2000	TMP20210617/00998039	WO21061700TNEQ	1550 Mech			10.00	10.00
			LBR-2000	TMP20210617/00998039	WO21061700TNEQ	5120 Mech				
			BDN-2000	TMP20210617/00998040	WO21061700TNER	1550 Mech			10.00	10.00
			BDN-2000	TMP20210617/00998040	WO21061700TNER	5220 Mech				
249328	6/17/2021	SETUP	09002	1019	10	wc09010	0.00	0.0		
	6/17/2021			2474966			1.00			
			LBR-1000	TMP20210617/00998041	WO21061700TNES	1550 Mech			10.00	10.00
			LBR-1000	TMP20210617/00998041	WO21061700TNES	5120 Mech				
			BDN-1000	TMP20210617/00998042	WO21061700TNET	1550 Mech			10.00	10.00
			BDN-1000	TMP20210617/00998042	WO21061700TNET	5220 Mech				

(Set-up Hrs/Qty x [Lbr Bdn Rate + (Actual Set-up Rate x Lbr Bdn %) + (Mach/Op x Mach Bdn Rate)]) + (Run Hrs/Unit x [Lbr Bdn Rate + (Actual Lbr Rate x Lbr Bdn %) + Mach Bdn Rate]) = Bdn/Unit  
Qty Completed x Burden per Unit = Burden Absorbed Dollars

## Burden Calculations

Burden is the variable overhead associated with production operations, and the Burden account is used to accumulate accrued burden for a department. Each operation may have labor burden and/ or machine burden depending on how variable overhead is applied. Machine burden is applied as a machine hour rate; however, labor burden may be applied either as a labor burden rate and/or as a percentage of direct labor cost.

**Example** Continuing with the example, the burden associated with employee Whitehead’s one hour of set-up and one hour of run time is shown in the figure above.

Questions? Visit [community.qad.com](https://community.qad.com)

## Burden Rate Variance Calculations

Production Costing

### Burden Rate Variance Calculations

$$[(\text{Act Set-Up Bdn} - \text{Std Set-Up Bdn}) \times \text{Act Set-Up Hrs}] + [(\text{Act Run Bdn} - \text{Std Run Bdn}) \times \text{Act Run Hrs}]$$

Where:

$$\text{Act Set-Up Bdn} = (\text{Act Set-Up Rate} \times \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + (\text{Mach Bdn} \times \text{Mach/Op})$$

$$\text{Std Set-Up Bdn} = (\text{Std Set-Up Rate} \times \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + (\text{Mach Bdn} \times \text{Mach/Op})$$

$$\text{Act Run Bdn} = (\text{Act Run Rate} \times \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + \text{Mach Bdn Rate}$$

$$\text{Std Run Bdn} = (\text{Std Run Rate} \times \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + \text{Mach Bdn Rate}$$

Account	Sub-Acct	CC	Project	Effective	Transaction Type	GL Reference	Reference ID	Debit	Credit
1550	Mech			6/17/2021	249327 LABOR LBR-2000	TMP20210617/00998039	WO21061700TNEQ	10.00	

### Burden Rate Variance

Burden Rate Variances are posted only if burden is calculated as a percentage of labor cost and the employee pay rate is different than the work center standard.

#### Calculations

- It is calculated at the time shop floor feedback is reported as:

$$[(\text{Act Set-Up Bdn} - \text{Std Set-Up Bdn}) \times \text{Act Set-Up Hrs}] + [(\text{Act Run Bdn} - \text{Std Run Bdn}) \times \text{Act Run Hrs}]$$

where:

$$\text{Act Set-Up Bdn} = (\text{Act Set-Up Rate} \times \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + (\text{Mach Bdn Rate} \times \text{Mach/Op})$$

$$\text{Std Set-Up Bdn} = (\text{Std Set-Up Rate} \times \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + (\text{Mach Bdn Rate} \times \text{Mach/Op})$$

$$\text{Act Run Bdn} = (\text{Act Run Rate} \times \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + \text{Mach Bdn Rate}$$

$$\text{Std Run Bdn} = (\text{Std Run Rate} \times \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + \text{Mach Bdn Rate}$$

**Note** The Burden Rate Variance is normally posted at the same time that labor is posted.

**Example** Because employee Whitehead’s pay rate of \$15 per hour is different than the work center standard of \$10 per hour, a burden rate variance is created, as shown in the figure.



## Burden Usage Variance Calculations

Production Costing

### Burden Usage Variance Calculations

Operation Accounting Trans 2 / 5 100%

249340	6/17/2021	WO-VAR	09002	1019	20	wc09020	0.00	0.0		
	6/17/2021			2474966			0.00			
		LBR-2002	TMP20210617/00998064	WO21061700TN7F	5140	Mech	mfg		5.00	
		LBR-2002	TMP20210617/00998064	WO21061700TN7F	1550	Mech				5.00
		BDN-2002	TMP20210617/00998065	WO21061700TN7G	5240	Mech	mfg		5.00	
		BDN-2002	TMP20210617/00998065	WO21061700TN7G	1550	Mech				5.00
249341	6/17/2021	WO-VAR	09002	1019	10	wc09010	0.00	0.0		
	6/17/2021			2474966			0.00			
		LBR-1002	TMP20210617/00998066	WO21061700TN7H	5140	Mech	mfg		10.00	
		LBR-1002	TMP20210617/00998066	WO21061700TN7H	1550	Mech				10.00
		LBR-2002	TMP20210617/00998067	WO21061700TN7I	5140	Mech	mfg		-10.00	
		LBR-2002	TMP20210617/00998067	WO21061700TN7I	1550	Mech				-10.00
		BDN-1002	TMP20210617/00998068	WO21061700TN7J	5240	Mech	mfg		10.00	
		BDN-1002	TMP20210617/00998068	WO21061700TN7J	1550	Mech				10.00
		BDN-2002	TMP20210617/00998069	WO21061700TN7K	5240	Mech	mfg		-10.00	
		BDN-2002	TMP20210617/00998069	WO21061700TN7K	1550	Mech				-10.00

**Burden Usage Variance = [(Actual Set-Up Hrs - Std Set-Up Hrs) x Set-Up Bdn] + [(Actual Run Hrs - Std Run Hrs) x Run Bdn]**

Where:

**Set-Up Bdn = (Std Set-Up Rate x Lbr Bdn%) + Lbr Bdn Rate + (Mach Bdn Rate x Mach/Op)**

**Run Bdn = (Std Run Rate x Lbr Bdn%) + Lbr Bdn Rate + Mach Bdn Rate**

Operation Accounting Transactions  
10USA USD

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8:14:37 AM

### Burden Usage Variance

Usage variance results if the actual hours do not match the standard hours required on the routing. The extra burden on those hours is a burden usage variance. This variance applies to burden calculated by any of the three allocation methods—burden rate, burden percentage, or machine hours.

#### Calculations

If the production order is a discrete order (type is Work Order), the Burden Usage Variance is calculated at the time shop floor feedback is reported as:

$$[(\text{Act Set-Up Hrs} - \text{Std Set-Up Hrs}) \times \text{Set-Up Bdn}] + [(\text{Act Run Hrs} - \text{Std Run Hrs}) \times \text{Run Bdn}]$$

where:

$$\text{Set-Up Bdn} = (\text{Std Set-Up Rate} \times \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + (\text{Mach Bdn Rate} \times \text{Mach/Op})$$

$$\text{Run Bdn} = (\text{Std Run Rate} \times \text{Lbr Bdn}\%) + \text{Lbr Bdn Rate} + \text{Mach Bdn Rate}$$

- The Burden Usage Variance is normally posted at the same time that labor is posted.

**Example** Because employee Whitehead’s actual run time (1.5 hour) does not match standard run time (1 hour), a burden usage variance is created, as shown in figure.

If the production order is a repetitive order (type is Repetitive), the Burden Usage Variance is calculated at Production Order Accounting Close or Post Production Order Usage Variance.

Questions? Visit [community.qad.com](http://community.qad.com)

## Burden – GL Effect

Production Costing

### Burden – GL Effect

<u>Burden Absorption</u>	<u>GL Trans Type</u>
--------------------------	----------------------

DR WIP	WO
--------	----

CR Burden Absorbed	
--------------------	--

DR Burden Rate Variance	WO
-------------------------	----

CR WIP	
--------	--

DR Burden Usage Variance	WO
--------------------------	----

CR WIP	
--------	--

Positive amounts = unfavorable variance;

Negative amounts = favorable variance

The credit account is derived from the Dept. record of the work center being processed

- As with labor rate variances, burden rate variance is not calculated unless actual pay rate is set up in Employees

### Burden—GL Effect

The default general ledger entry:

- Debits WIP
  - Credits Burden Absorbed
- The credit account is derived from the Department record of the work center being processed

Upon shop floor reporting, burden usage and rate variances are calculated (see following note). If the variance amount is positive, then it is an unfavorable variance; if the amount is negative, then it is a favorable variance.

**Note** The Burden Usage and Rate variances are normally posted at the same time that labor is posted.

## Labor Rate Variances

Production Costing

### Labor Rate Variances

<u>Variance</u>	<u>When Calculated</u>	<u>Cause</u>
<b>Labor Rate</b>	SFC feedback, Production Operations Reporting <ul style="list-style-type: none"> <li>• Variances are calculated when operation reported</li> <li>• Labor and burden rate variances calculated only if actual pay rates have been set up in Employees</li> </ul>	Difference between actual employee pay rate and WC pay rate standard <ul style="list-style-type: none"> <li>• View employee pay rate in Employees; view WC rate in Work Centers</li> </ul>
<i>Formula</i>	$[(Act\ Set-Up\ Rate - Std\ Set-Up\ Rate) \times Act\ Set-Up\ Hrs] + [(Act\ Run\ Rate - Std\ Run\ Rate) \times Act\ Run\ Hrs]$	
<i>View in Report</i>	Production Order Costs	

## Labor Burden Rate Variances

Production Costing

### Labor Burden Rate Variances

<u>Variance</u>	<u>When Calculated</u>	<u>Cause</u>
<b>Labor Burden Rate</b>	SFC feedback, Production Operations Reporting <ul style="list-style-type: none"> <li>• Variances are calculated when operation reported</li> </ul>	Equivalent to labor rate variance with burden rates factored in; calculated if burden rate has also been calculated as a % of lbr cost
<i>Formula</i>	$\frac{[(Act\ Set-Up\ Bdn - Std\ Set-Up\ Bdn) \times Act\ Set-Up\ Hrs] + [(Act\ Run\ Bdn - Std\ Run\ Bdn) \times Act\ Run\ Hrs]}{Act\ Set-Up\ Hrs + Act\ Run\ Hrs}$ <p>Where:</p> $Act\ Set-Up\ Bdn = (Act\ Set-Up\ Rate \times Lbr\ Bdn\%) + Lbr\ Bdn\ Rate + (Mach\ Bdn\ Rate \times Mach/Op)$ $Std\ Set-Up\ Bdn = (Std\ Set-Up\ Rate \times Lbr\ Bdn\%) + Lbr\ Bdn\ Rate + (Mach\ Bdn\ Rate \times Mach/Op)$ $Act\ Run\ Bdn = (Act\ Run\ Rate \times Lbr\ Bdn\%) + Lbr\ Bdn\ Rate + Mach\ Bdn\ Rate$ $Std\ Run\ Bdn = (Std\ Run\ Rate \times Lbr\ Bdn\%) + Lbr\ Bdn\ Rate + Mach\ Bdn$	
<i>View in Report</i>	Production Order Costs	

## Labor Usage Variances

Production Costing

### Labor Usage Variances

<u>Variance</u>	<u>When Calculated</u>	<u>Cause</u>
<b>Labor Usage</b>	Discrete order: SFC feedback, Production Operations Reporting  Repetitive order: Variances are calculated when Post Production Order Usage Variances or Production Order Accounting Close	Difference between actual lbr hrs reported and the std time that should have been required to complete the quantity received  • View both actual and earned hours in Production Orders
<i>Formula</i>	$[(Act\ Set-up\ Hrs - Std\ Set-up\ Hrs) \times Std\ Set-Up\ Rate] + [(Act\ Run\ Hrs - Std\ Run\ Hrs) \times Std\ Lbr\ Rate]$ $Std\ Run\ Hrs = Run\ Hrs/Unit \times (Qty\ Complete + Qty\ Reject)$	
<i>View in Report</i>	<i>Production Order Costs</i>	

## Labor Burden Usage Variances

Production Costing

### Labor Burden Usage Variances

<u>Variance</u>	<u>When Calculated</u>	<u>Cause</u>
<b>Labor Burden Usage</b>	Discrete order: SFC feedback, Production Operations Reporting Repetitive order: Variances are calculated when Post Production Order Usage Variances or Production Order Accounting Close	Equivalent to labor usage variance with burden rates factored in
<i>Formula</i>	$[(Act\ Set-Up\ Hrs - Std\ Set-Up\ Hrs) \times Set-Up\ Bdn] + [(Act\ Run\ Hrs - Std\ Run\ Hrs) \times Std\ Run\ Bdn]$ <p>Where:</p> $Set-Up\ Bdn = (Std\ Set-Up\ Rate \times Lbr\ Bdn\%) + Lbr\ Bdn\ Rate + (Mach\ Bdn\ Rate \times Mach/Op)$ $Run\ Bdn = (Std\ Run\ Rate \times Lbr\ Bdn\%) + Lbr\ Bdn\ Rate + Mach\ Bdn\ Rate$	
<i>View in Report</i>	Production Order Costs	

## Subcontract – GL Effect

Production Costing

### Subcontract – GL Effect

<u>Subcontract PO Receipt</u>	<u>GL Trans Type</u>
-------------------------------	----------------------

DR Cost of Production (COP)	IC
CR PO Receipts	

Issue to WIP

DR WIP	WO
CR Cost of Production	

DR Subcontract Rate Variance	WO
CR WIP	

Positive amounts = unfavorable variance  
 Negative amounts = favorable variance

- If purchase order, of type "Subcontract," does not reference a production order, then subcontract amount stays in COP



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### Subcontract—GL Effect

Along with material issues, labor, and burden, there is one other source of cost on a production order—subcontract cost, which is the cost that an external supplier charges for processing a manufacturing operation for you. We saw this earlier, when we discussed purchasing, but let's quickly review it again here.

- The materials are received on a purchase order and the actual cost accrued (credit PO Receipts). Because the PO is flagged as Subcontract, the cost is posted to Cost of Production (debit).
- If the purchase order receipt transaction specifies a valid production order and operation, then this transaction is processed to issue the materials to WIP
- The actual cost is taken out of the Cost of Production account (credit) and put into WIP (debit) where it belongs
- Then the actual cost on the PO is compared to the standard (frozen) subcontract cost specified on the production order routing. If there is a difference, it is posted as a Subcontract Rate Variance. The amount is:  $(\text{Subcontract PO Unit Rate} - \text{Subcontract Frozen WO BOM Unit Cost}) \times \text{Qty Received}$
- Upon production order receipt, the total standard cost less overhead is subtracted from WIP and posted to inventory
- Upon Production Order Accounting Close:
  - all Material and Subcontract Usage Variances are subtracted from WIP and posted to production order usage variance
  - any cost remaining in WIP is posted to production order Method Change Variance



## Subcontract-Related Variances

Production Costing		
<b>Subcontract-Related Variances</b>		
<u>Variance</u>	<u>When Calculated</u>	<u>Cause</u>
<b>Subcontract Rate</b>	PO Receipt, Purchase Orders action Receive Order <ul style="list-style-type: none"> <li>Calculated only if WO number and operation are specified</li> </ul>	Difference between actual subcontract rate (PO price) and the subcontract rate entered in the routing detail <ul style="list-style-type: none"> <li>View both actual and standard subcontract rates in PO Receipt Costs</li> </ul>
<i>Formula</i>	$(\text{Subcontract PO Unit Rate} - \text{Subcontract Frozen WO BOM Unit Rate}) \times \text{Qty Received}$	
<b>Subcontract Usage</b>	Production Order Accounting Close	Difference between the subcontracted quantities received and the production order quantity completed. This variance can be due to yield differences, rework requirements, etc.
<i>Formula</i>	$[\text{Qty Rcvd on PO} - (\text{Qty Complete} + \text{Qty Reject})] \times \text{Subcontract Frozen WO BOM Unit Rate}$	

### Subcontract-Related Variances—Summary

#### Subcontract Rate Variance

On subcontract purchase orders, there are no Purchase Price Variances (PPV). Instead of PPV, the system debits the Subcontract Rate Variance account.

The total amount posted as Subcontract Rate Variance is:

$$(\text{Subcontract PO Unit Cost} - \text{Subcontract Frozen WO BOM Unit Cost}) \times \text{Qty Received}$$

where subcontract WO BOM unit rate is the rate entered in Routings

#### Subcontract Usage Variance

This variance is generated upon Production Order Accounting Close, and tracks the difference between the quantity invoiced on a subcontract PO and the quantity completed in work in process.

The total amount posted as Subcontract Usage Variance is:

$$[\text{Qty Received on PO} - (\text{Op Qty Complete} + \text{Op Qty Reject})] \times \text{Subcontract Frozen WO BOM Unit Cost}$$

- Any cost remaining in WIP is posted to production order Method Change Variance

## Production Order Receipt

Production Costing

# Production Order Receipt

Production Order 2474966, Operation 30 > Report Operation Activity

Report Operation Activity | Default View | More

1.0 EA Total Processed | 1.0 EA Total Received | 09002 Airbag 02 Item | 10-100 Site | Production Line | 2474966 Cumulative Order ID | BOM/Formula | Routing

Main | Operation Activity | Settings

Receive

Total Quantity to Receive: 1.0 EA | Lot Control:

Total Quantity Received: 1.0 EA

+ New | Delete | More

Site	Location	Lot/Serial	Reference	Quantity	UM	Conversion
10-100	010			1.0	EA	1.0000

1 - 1 of 1

Submit | Cancel

QAD 50

## Production Order Receipt

In Production Operations Reporting:

- You can use Report Operation Activity action to do the receive if it is the last operation of the production order. Once items have passed through all of the manufacturing operations, the finished units are received into stock.
- You can use Receive Order action to do the receive for the production order. This action processes every operation and receive the units into stock for the production order.
- If you have done all operations report but have not done the receive, you can use Report Operation Move action to move the units from the last operation to stock.

## Production Order Receipt – Transactions Detail

Production Costing

# Production Order Receipt – Transactions Detail

Inventory Transactions | Default View | More

09002 Airbag 02 | 10-100 Ultrasound Mfg Site | RCT-WO | 1019

GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
RCT-WO	1500	Mech			92.00	0.00	TMP20210618/00998...
RCT-WO	1550	Mech			0.00	92.00	TMP20210618/00998...

E-Signature

Date:  Time:  User:

Category:  Reason:  Remarks:

### Transactions Detail

Production order receipt generates two GL transactions.

- First, it increases Inventory (debit) and decreases WIP (credit) for the total standard GL cost (including overhead) of the finished item at that site
- We removed the total standard cost of the item from WIP, including this-level overhead. But this-level overhead was not posted to WIP, so if we stopped here, our subsequent variance calculations would be incorrect. So, in a second GL transaction, this-level Overhead amount is put back into WIP (debit) and absorbed by posting it to the Overhead Applied account (credit). This ensures that usage and method variances are not created for overhead amounts.

As with other transactions, for ease of audit, the GL transaction is identified as a type IC with the description set to RCT-WO followed by the production order number. The corresponding inventory transaction is identified as type RCT-WO as well.

**Note** Finished items may be received into a site other than the production order site. When this happens, the system still processes the receipt into the production order site. Then it processes an inventory transfer.

## Production Order Receipt – GL Effect

Production Costing

### Production Order Receipt – GL Effect

<u>Receipt</u>	<u>GL Trans Type</u>
DR Inventory	IC
CR WIP	
- DR WIP	IC
CR Overhead Applied	

### Production Order Receipt—GL Effect

- The default general ledger entry:
  - Debits Inventory
  - Credits WIP
  - Debits WIP
  - Credits Overhead Applied

## Scrap – Reject Costing

Production Costing

# Scrap – Reject Costing

Production Order 2474966, Operation 10 > Report Rejects & Scrap

Report Rejects & Scrap

0.0 EA Total Rejects | 1.0 EA Total Scrap

09002 Airbag 02 Item | 10-100 Site | 2474966 Cumulative Order ID

Queue	Quantity	Reason	Reason Description	Reject to Operation	Reject to Operation Description
Output	1.0	Cracked	Parts are cracked		

1 - 1 of 1

Submit Cancel

Use Report Operation Activity action to report scrap at operation level in Production Operations Reporting. It backflushes the scrapped units and records all costs at the operation. There must be a quantity in the input queue operation in order to record scrap with this transaction.

## Scrap – Transactions Detail (Reject Costing)

Production Costing

### Scrap – Transactions Detail (Reject Costing)

Operation Accounting Trans

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Operation Accounting Transactions  
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Site : 10-100 Entity : 10USACO

Transaction	Eff Date	Type	Item Number	Production Order ID	Op Line	Work Center Machine	Run Time Setup Time	Quantity	Debit	Credit
Trans Date	GL Reference	Reference ID	Account	Sub-Acct	CC	Project				
249351	6/20/2021	SCRAP-O	09002	1019	30	wc09030	0.00	1.0		
	6/20/2021			2474966			0.00			
		SCRAP	TMP20210620/00998076	WO21062000TNTR	6000	Mech			90.00	
		SCRAP	TMP20210620/00998076	WO21062000TNTR	1550	Mech				90.00

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When you record scrap, the system optionally creates GL transactions for quantities scrapped or rejected at an operation, based on the setting of the Post Scrap to GL field in Production Control.

When Quantity Open Method is Quantity Processed, for scrapped quantities, the system creates consumed transaction history transactions (CONS-WO)—regardless of the operation—for scrapped amounts and increments the quantity scrapped on these orders regardless of the scrap operation. And it doesn't have any GL impact.

Note: If Quantity Open Method is set to Quantity Completed in the Production Orders panel of Production Control, the system does not create an inventory history transaction record with type CONS-WO when an item is scrapped.

For scrap transactions, the system automatically rolls up and totals material, run-time labor and burden, and subcontract costs by operation. The system determines the value of the scrap at the operation where it is scrapped, based on the production order reporting the scrap and the order's routing and bill data.

When the quantity scrapped is from the output or reject queue (SCRAP-O or SCRAP-R type), the system scraps at the value of the operation where material is scrapped. When scrapped out of the input queue (SCRAP-I type), the system scraps at the value of the prior operation.

## Rework

Production Costing

### Rework

- GL effects are the same as
  - Issue components
  - Report labor
  - Report receipts

The Labor Rework, GL effects for production order labor, issues and receipts are the same as Report Labor, Issue Components, and Production Order Receipts.

## Post Production Order Usage Variances

Production Costing

# Post Production Order Usage Variances

QAD\_PostProdOrdUsageVar | 1 / 3 | 100% | [Icons]

**Post Production Order Usage Variances**  
10USA USD

Date: 7/2/2021  
Time: 02:37:57  
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Production Order	1026 / 2474980	Start Quantity	1,000.0	Routing	09001
Item	09001 Airbag	Qty To Complete	0.0	BOM/Formula	09001
Site	10-100 Ultrasound Mfg Site	Actual Qty Completed	1.0	Mfg Type	Rep
Production Line	pl09001			Start Effective	6/20/2021
Status	Active			End Effective	7/9/2021

Floorstock Component Expense						
Op	Processed Quantity	Item Description	Standard Quantity	Qty Prev Expensed	Quantity to Expense	Cost
10	1.0	08001 Cushion	1.0	0.0	1.0	12.00
<b>Total Floorstock Component Expense:</b>						12.00

Run Labor Usage Variance										
Op Work Center	Machine	Processed Quantity	Standard Run Time	Standard Labour Hours	Actual Labor Hours	Variance Hours	Labor Rate	Total Variance	Variance To Post	
10	wc09010	1.0	1.0	1.0	2.0	1.0	10.000	10.00	10.00	
20	wc09020									
30	wc09030									

Op Work Center	Machine	Processed Quantity	Standard Run Time	Standard Labour Hours	Actual Labor Hours	Variance Hours	Burden Rate	Total Variance	Variance To Post	
10	wc09010	1.0	1.0	1.0	2.0	1.0	10.000	10.00	10.00	

• Can record usage variances prior to closing cum order

• If Update set to No, can view usage variances in report form first without updating database

### Post Production Order Usage Variances

Use Post Production Order Usage Variance to calculate and post accumulated usage variances in production orders.

This function calculates and recognizes the following variances:

- Component Material Usage Variance
- Run Labor Usage Variance
- Run Labor Burden Usage Variance
- Setup Labor Usage Variance
- Setup Labor Burden Usage Variance
- Floor stock Component Expense Note the following when this function posts variances:
- The GL transaction type for production order variances is WO-VAR.
- This function does not create Subcontract Usage Variances, Mix Variances, or Method Variances; these variances are created by Production Order Accounting Close.

The following sections provide more information on the variance types. Each topic includes a table that depicts the transaction type, the GL transaction type, the debited and credited accounts, and the program or condition that creates the variance. Use the information in the table to help you decipher transaction/costing information that displays in reports.

### Component Material Usage Variance

Questions? Visit [community.qad.com](https://community.qad.com)

When using standard costing, material usage variances are calculated based on the standards in the production order bill. Some production orders start out with a different production order bill. Rework orders have only one billed item, the item being reworked. Expense orders have no bill. To calculate variances, you must enter a standard bill. The system calculates material usage variance from the difference between the total quantity issued for a component and the expected quantity on the production order bill and the general ledger cost for the item.

The system determines Earned Quantity, which is the expected component quantities from the production order bill to make the quantity reported complete. Earned quantity is compared to actual issues (at item standard cost). Any difference is posted as a variance. The calculation is as follows:

$$(Actual\ Qty\ Issued - [qty\ per\ (wod\_bom\_qty) * (qty\ completed + qty\ scrapped)]) * Frozen\ Std\ Unit\ Cost \\ (wod\_bom\_amt)$$

### Run Labor Usage Variance

The system determines labor usage variances for the reported setup and run hours by the difference between the total actual setup and run labor hours and the expected setup and run labor hours for the production operation. The system uses the expected labor rates for the work center on the production order routing operation.

The labor run usage variance is as follows per operation:

$$lbr\_usage\ var = [Actual\ Run\ Hrs - Std\ Run] * Std\ Run\ Rate$$

### Run Labor Burden Usage Variance

The system determines labor usage variances for the reported setup and run hours by the difference between the total actual setup and run labor hours and the expected setup and run labor hours for the production operation. The system uses the expected labor rates for the work center on the production order routing operation.

The run labor burden usage variance is as follows per operation:

$$run\ time * ((run\ rate * (bdn\ pct/100)) + bdn\ rate + mch\ bd\ rate)$$

### Setup Labor Usage Variance

The system determines labor usage variances for the reported setup and run hours by the difference between the total actual setup and run labor hours and the expected setup and run labor hours for the production operation. The system uses the expected labor rates for the work center on the production order routing operation.

The setup labor usage variance is as follows per operation:

$$lbr\_usage\_var = (Actual\ Setup\ Hrs - Std\ Setup) * Std\ Setup\ Rate$$

### Setup Labor Burden Usage Variance

The system determines labor usage variances for the reported setup and run hours by the difference between the total actual setup and run labor hours and the expected setup and run labor hours for the production operation. The system uses the expected labor rates for the work center on the production order routing operation.

The setup labor burden usage variance is as follows per operation:



*setup labor burden usage variance = (Actual Setup Hours - Operation Standard Setup Hours) \* [(Frozen Work Center Run Rate \* Frozen Work Center Labor Burden %) + Frozen Work Center Labor Burden Rate + Frozen Machines Burden Rate]*

### **Floor Stock Component Expense**

Floor stock is inexpensive, easily replenished components such as screws, usually stocked on a factory floor and used as needed, without requisition. Floor stock is added to the WIP value of the production order, using the quantity processed at each operation.

The calculation is as follows:

*[qty per (wod\_bom\_qty) \* (qty completed + qty scrapped)] \* Frozen Std Unit Cost (wod\_bom\_amt)*

## Material Usage Variance

Production Costing		
<b>Material Usage Variance</b>		
<u>Variance</u>	<u>When Calculated</u>	<u>Cause</u>
<b>Material Usage</b>	Post Production Order Usage Variances or Production Order Accounting Close	Difference between the actual quantity of components issued and the standard quantity required
<i>Formula</i>	<i>{Actual Qty Issued - [Qty Per x (Qty Complete + Qty Reject)]} x Std Unit Cost</i>	

### Material Usage Variance

Material usage variance is generated when there is a difference between the actual quantity of components issued/backflushed and the standard quantity required.

This variance is calculated at Post Production Order Usage Variances, or Production Order Accounting Close.

$\{ \text{Actual Qty Issued} - [\text{Qty Per} \times (\text{Qty Complete} + \text{Qty Reject})] \} \times \text{Frozen Std Unit Cost}$

- Alternate structures and issues of non-standard components will also create material usage variances, and if the costs differ from standard, a method change variance will be charged for that difference
- Specifying an alternate BOM/routing at Production Operations Reporting will generate a new cumulative order

## Post Production Order Usage Variances – GL Effect

Production Costing

### Post Production Order Usage Variances – GL Effect

<u>Floor Stock</u>	<u>GL Trans Type</u>	<u>Op Hist Record</u>
DR WIP CR Floor Stock	WO	FLOORSTK
<b><u>Component Mat'l Usage Var</u></b>		
*DR Material Usage Variance CR WIP	WO	MUV-CMP
<b><u>WIP Mat'l Usage Var</u></b>		
*DR Scrap CR WIP	WO	MUV-WIP
<b><u>Run Labor Usage Var</u></b>		
*DR Labor Usage Variance CR WIP	WO	RLUV

\* Positive amounts = unfavorable variance;  
 Negative amounts = favorable variance

## Post Production Order Usage Variances – GL Effect

Production Costing

### Post Production Order Usage Variances – GL Effect

<u>Run Lbr Burden Usage Var</u>	<u>GL Trans Type</u>	<u>Op Hist Record</u>
DR Burden Usage Variance CR WIP	WO	RBUV
<b><u>Set-up Lbr Usage Var</u></b>		
* DR Labor Usage Variance CR WIP	WO	SLUV
<b><u>Set-up Lbr Burden Usage Var</u></b>		
* DR Burden Usage Variance CR WIP	WO	SBUV
<b><u>Subcontract Usage Var</u></b>		
* DR Subcontract Usage Variance CR WIP	WO	SUV
* Positive amounts = unfavorable variance; Negative amounts = favorable variance		

## Production Order Accounting Close

Production Costing

# Production Order Accounting Close

QAD
10USA, 10USACO

**Production Order Accounting Close**    Default Report    Schedule    Burst Settings    More

> Settings

Filter Reset

Effective Date	equals	6/28/2021	+ X
Site	equals		+ X
Production Line	equals		+ X
Include WO/Rep/Both	equals	Both	+ X
Cum Order End Date	equals	6/28/2021	+ X
Production Order	equals		+ X
ID	equals		+ X
Item Number	equals		+ X
Project	equals		+ X
Sales/Job	equals		+ X
Transfer Work in Process	equals	No	+ X
Print Account Detail	equals	Yes	+ X
Print GL Summary	equals	No	+ X

Accounting close both discrete and repetitive cumulative production orders

Run

QAD
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Production Order Accounting Close clears work in process (WIP) amounts, calculates and posts variances, and closes outstanding operations for closed production orders.

Execute this program regularly or at least at the end of each fiscal period as defined in your General Ledger (GL) calendar. This program works with all types of production orders.

When selecting records to run this function, the Effective Date must be in an open GL calendar period.

This program creates transactions in Inventory History and Operation History tables that represent the GL transactions created when closing out the WIP value of the production order. You should execute WIP Material Cost Revaluation before closing orders with this program to prevent unaccounted material rate variances.

The system does not close final assembly orders with open sales order lines.

Accounting close makes the following updates to closed orders:

1. It marks production order operations as complete.
2. For standard costing only, accounting close uses the total quantity received against this production order to calculate material and subcontract usage variances. For example, if 80 units are received but material was issued for 100 units, the excess material cost is posted to material usage variance.
3. Floor stock is added to the WIP value of the production order, using the quantity processed plus the quantity scrapped at each operation. This is the cost of any component item with an Issue Policy set to No Issue.

4. For standard costing only, any amount remaining in WIP is posted to the Method Variance account. Usually this results from using non-standard routings and BOMs. It may also reflect in-process losses resulting from labor on materials that were rejected.
5. Current costs are updated to reflect the actual cost of labor, burden, and subcontracts.
6. Optionally, WIP is transferred from semi-processed repetitive CUM orders to the next CUM order for the following period.



## Discrete Production Order Accounting Close

Production Costing

### Discrete Production Order Accounting Close

- Completes Open Operations
  - Marks all operations complete
  - No more labor can be recorded against production orders
  - Unreported operations closed at standard
  - Adjusts quantities completed at open operations to match the total of completions plus rejects at production order receipt
- Posts Floor Stock
  - Floor Stock added to WIP before variances calculated, i.e. variances exclude floor stock
- Calculates Usage Variances
  - Qty required for qty reported less qty issued equals usage variance
- Clears Out WIP Balance
  - Sets any remaining WIP balance to zero. Any amount left in WIP reported as method variance



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Production Order Accounting Close is usually run at the end of each GL calendar period as part of the period-end closing process. The accounting close serves several functions:

*Completes Open Operations.* Marks all operations complete. No more labor can be recorded against this production order. Any unreported operations are closed at standard. Adjusts quantities completed at open operations to match the total of completions plus rejects at production order receipt.

*Posts Floor Stock.* Costs of components flagged as Issue Policy No & Pick Policy No are added to WIP before variances are calculated. Thus floor stock cost is not included in variance.

*Calculates Usage Variances.* Calculates material and subcontract usage variances. Total quantity issued is compared to total quantity required to make quantity reported complete (receipts plus rejects). Any difference is a usage variance.

*Clears Out WIP Balance.* Sets any remaining WIP balance to zero. Any amount left in WIP at this point is reported as a miscellaneous method variance that cannot be traced to any specific source (for example, material or labor, rate or usage). Method variances can result from the use of alternate bills and routings, different lot sizes, in-process loss, or changes in GL costs (without revaluing WIP). Because costs of component issues are tracked by operation, a method variance occurs if you issue components at an operation different than the one recorded in the bill.



## Discrete Production Order Accounting Close

Production Costing

# Discrete Production Order Accounting Close

QAD\_ProdOrdAcctClose
1 / 3 | 90% | [Icons]
[Icons]

### Production Order Accounting Close

10USA USD

Date: 6/21/2021  
Time: 07:27:46  
Page: 1 / 3

Site: 10-100 Ultrasound Mfg Site

Production Order	ID	Mfg Type	Prod Line	Item	Quantity to Start	Quantity to Complete	Actual Qty Completed	Actual Qty Scrapped	Sales/Job	Project	Eff Date
W1215090	2434068	WO		50010 Acoustic Transducer A	25.0	25.0	0.0	0.0			6/21/2021
W1215093	2434071	WO		50010 Acoustic Transducer A	25.0	25.0	0.0	0.0			6/21/2021
03140028	2474910	WO		02001 Automotive Connector	20.0	20.0	0.0	0.0			6/21/2021
1006	2474934	Rep	pl09001	09001 Airbag	1.0	0.0	10.0	2.0			6/21/2021

GL Reference	Type	Debit Account	Sub-Account	Cost Center	Project	Credit Account	Sub-Account	Cost Center	Project	Amount
WO21062100TN7Z	LBR-2002	5140	Mech	mfg		1550	Mech			-100.00
WO21062100TN80	BDN-2002	5240	Mech	mfg		1550	Mech			-100.00
WO21062100TN81	LBR-1002	5140	Mech	mfg		1550	Mech			200.00
WO21062100TN82	LBR-2002	5140	Mech	mfg		1550	Mech			10.00
WO21062100TN83	BDN-1002	5240	Mech	mfg		1550	Mech			200.00
WO21062100TN84	BDN-2002	5240	Mech	mfg		1550	Mech			10.00
IC21062100TN85	Method Change	6800	Mech			1550	Mech			136.00

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## Cumulative Production Order Accounting Close

Production Costing

# Cumulative Production Order Accounting Close

QAD\_ProdOrdAcctClose 1 / 2 100% +

QAD

Production Order Accounting Close  
10USA USD

Date: 6/22/2021  
Time: 03:25:48  
Page: 1 / 2

Site: 10-100 Ultrasound Mfg Site

Production Order	ID	Mfg Type	Prod Line	Item	Quantity to Start	Quantity to Complete	Actual Qty Completed	Actual Qty Scrapped	Sales/Job	Project	Eff Date
1021	2474975	Rep	p109001	09001 Airbag	1,000.0	0.0	98.0	1.0			6/21/2021

GL Reference	Type	Debit Account	Sub-Account	Cost Center	Project	Credit Account	Sub-Account	Cost Center	Project	Amount
WO21062100TNSK	LBR-2002	5140	Mech	mfg		1550	Mech			-980.00
WO21062100TNSL	BDN-2002	5240	Mech	mfg		1550	Mech			-980.00
WO21062100TNSM	LBR-2002	5140	Mech	mfg		1550	Mech			-980.00
WO21062100TNSN	BDN-2002	5240	Mech	mfg		1550	Mech			-980.00
WO21062100TNSO	LBR-1002	5140	Mech	mfg		1550	Mech			90.00
WO21062100TNSP	LBR-2002	5140	Mech	mfg		1550	Mech			100.00
WO21062100TNSQ	BDN-1002	5240	Mech	mfg		1550	Mech			90.00
WO21062100TNSR	BDN-2002	5240	Mech	mfg		1550	Mech			100.00
IC21062100TNS	FLR-STK	1550	Mech			1600	Mech			1,188.00
IC21062100TNS	Method Change	6800	Mech			1550	Mech			50.04

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Repetitive Cumulative Orders must be closed for accounting purposes in order to clear out WIP. Normally the repetitive cumulative order close is run as part of your period-end procedures. It creates the same GL transactions as the discrete production order accounting close.

The repetitive cumulative order accounting close will close all repetitive cumulative orders regardless of whether they have been “completed” or not. This completes any unreported operations, but it closes them at zero cost. If all components have been issued at the first operation, or if you have not completed all production in each operation, you could incur significant variances.

The repetitive cumulative order accounting close also creates GL entries for usage and method variances accumulated since the previous Post Accumulated Usage Variances report.

- Orders with blank End Effective dates are not selected by Production Order Accounting Close
- You can transfer WIP balances to another repetitive cumulative order or write off balances to Method Change Variance

If Transfer WIP is set to Yes, then any amount on the old repetitive cumulative order is transferred to the new cumulative order through the Transfer Clearing account. Any difference between the old cumulative order WIP and the new cumulative order WIP will create a method change variance.

If Transfer WIP is set to No, then any amount on the old cumulative order is cleared through the method change variance account

The processing sequence for each order selected by Production Order Accounting Close is:

- Execute Post Accumulated Usage Variances

- Set cumulative order status to Closed
- Create CLOSE operation history record
- Transfer WIP, if necessary
- If WIP transferred, create TRANSFER operation history
- Post any remaining balance in WIP to Method variance



## Transfer Work in Process


Production Costing

### Transfer Work in Process

**Example:**  
To produce item 02-0005, it requires two operations:  
Op 10 and Op 20

- Op 10 is completed and Op 20 is started in one period;  
Op 20 is continued into the next period

Period 11/01/00 - 11/30/00		Period 12/01/00 - 12/31/00
Op 10 Process 5,000 Eff = 11/30/00	Op 20 Process 3,000 Eff = 11/30/00 Input Queue 5,000 Output Queue 3,000	Op 20 Process 2,000 Eff = 12/01/00 Input Queue 2,000 Output Queue 5,000
	CR: WIP DR: Transfer Price Var	CR: Transfer Price Var DR: WIP



**WIP Transfer**

If the Transfer Work in Process field is set to Yes in Production Order Accounting Close, then the system transfers WIP balances to the next appropriate cumulative order—that is, an order with the same item number, site, and production line.

- The system adds the WIP queue quantities from the order being closed to the WIP Input Queue balance quantities of the receiving order. Depending on quantities completed at each operation, the transfer could be to the same operation in the new order or to the next operation.
- The system reinstates the WIP value by debiting the new cumulative order WIP account and crediting the old cumulative order WIP Transfer account (specified in the Production Control File)
- If the cost of the WIP queue inventory at this operation is different than the cost of the receiving operation, the system calculates and records the difference to Method Change Variance

### WIP Transfer Inhibitors

Below are listed some factors that will prevent a WIP transfer from taking place, thus necessitating some manual adjustments to effect the transfer.

- A cumulative order already exists in the next period, but is *closed*
- An operation with the *same* number as the transferring operation does not exist on next period's cumulative order
- An operation number match between both cumulative orders is found, but the transferring operation is *not* the first operation whereas the operation on the new order is the first operation

## Material Usage Variance

Production Costing

### Material Usage Variance

<u>Variance</u>	<u>When Calculated</u>	<u>Cause</u>
<b>Material Usage</b>	Production Order Accounting Close	Difference between the actual quantity of components issued and the standard quantity required
<i>Formula</i>	$\{Actual\ Qty\ Issued - [Qty\ Per \times (Qty\ Complete + Qty\ Reject)]\} \times Std\ Unit\ Cost$	

Material usage variance is generated when there is a difference between the actual quantity of components issued/backflushed and the standard quantity required.

This variance is calculated at Production Order Accounting Close. This variance is calculated as:

$\{Actual\ Qty\ Issued - [Qty\ Per * (Qty\ Completed + Qty\ Rejected)]\} * Frozen\ Std\ Unit\ Cost$

Alternate structures and issues of non-standard components will also create material usage variances, and if the costs differ from standard, a method change variance will be charged for that difference.

## Method Variance During Operation Report

Production Costing

### Method Variance During Operation Report

- Causes of method variance include:
  - Moving from the output queue of the last operation to finished material inventory
  - Switching to alternate BOM or routing
  - Rounding differences
  - Standard quantity for setup cost per unit varies from backflushed quantity



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Method variance is calculated and recorded upon the following transactions:

- Cumulative Order Close
- Production Order Receipt
- Rework Report
- Move Report

#### Causes of Method Variance

- In the Receipt transaction and Move transaction, method variance can be generated when moving from the output queue of the last operation to finished material inventory. Method variance is calculated as the difference between the final operation cost contained in the cumulative order and the current GL standard cost of the finished material, extended by the quantity being reported.
- In Cumulative Order Close, method variance can be generated when transferring WIP quantities to new cumulative orders. Method variance is calculated as the difference between the operation cost in the former cumulative order operation and the operation close of the future cumulative order operation, extended by the quantity transferred.
- Rounding of costs held in several decimal places could result in a non-zero balance in the WIP account. This is changed to a Method variance at Cumulative Order Close.



## Method Variance During Accounting Close

Production Costing

### Method Variance During Accounting Close

- Any value left in WIP after Production Order Accounting Close is relieved from WIP and posted to Method Variance account of parent
- Causes
  - Changes to BOM or routing without cost recalculation
  - Alternate structures or routings
  - Item substitutions
  - Order quantity (non-standard; Items)
  - Floor stock issued (non-standard quantity)

After Production Order Accounting Close, no value should be left in WIP for the order accounting closed. If any value is left in WIP after the Production Order Accounting Close has processed variances and floor stock, then this value will be relieved from WIP and posted to the Method Variance account of the parent item.

### Causes of Method Variance

Some causes of method variance are:

- Changes to the bill of material or routing without recalculating new costs
- Use of alternate structures and/or routings or item substitutions
- Order quantity (non-standard)
- Floor stock (non-standard quantity issued)
- Manually changing the Yield% in the Item Planning screen for manufactured items so that the planning yield does not equal the rolled-up routing and product structure yield
- Batch quantity in Product Structures & Formulas not the same as order quantity in Items
- Wrong Quantity Per on production order BOM (Production Orders)

If setup cost is calculated as part of standard labor and burden, a method variance occurs for the difference between the standard order quantity on the item planning record and production order quantity.

## Production Order Accounting Close – GL Effect

Production Costing

### Production Order Accounting Close – GL Effect

<u>Floor Stock</u>	<u>GL Trans Type</u>
DR WIP	IC
CR Floor Stock	
<u>Material &amp; Subcontract Usage Variances</u>	
DR Mat'l Usage Variance	IC
CR WIP	
DR Subcontract Usage Variance	WO
CR WIP	
<u>WIP Reconciliation</u>	
DR Method Variance	IC
CR WIP	
Positive amounts = unfavorable variance; Negative amounts = favorable variance	



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The calculations and GL transactions created by the Production Order Accounting Close are listed below.

- Floor stock is calculated as:

$$[(Qty Rcvd + Qty Rejected) * Qty Per] * Std Cost Per Unit$$

This quantity is posted at standard cost to WIP (debit) and Floor Stock (credit).

- Material Usage Variance is calculated. If unfavorable, WIP is decreased (credit) by this amount and the variance is posted to the Material Usage Variance account (debit). The amount is equal to:

$$Actual Qty Issued - [(Qty Completed + Qty Rejected) * Qty Per] * Frozen Std Unit Cost$$

- Subcontract Usage Variance is calculated in the same way as Material Usage Variance, comparing the number of subcontract items received to the number that should be required. It is calculated as:

$$[Qty Received on PO - (Op Qty Completed + Op Qty Rejected)] * Subcontract Frozen WO BOM Unit Cost$$

- WIP is now set to zero. Any outstanding WIP amount is removed from WIP (credit) and posted to the Method Variance account (debit).

**Note** The GL transaction is WO-CLOSE wo#. Transaction type is IC or WO, as indicated.



## Production Order Cost Report

Production Costing

# Production Order Cost Report

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6/22/2021  
4:52:36 AM

Production Order: 1025 ID: 2474979

Production Line: pl09001 Production Line: 09001

Item Number: 09002 Sales/Job: Airbag 02

Order Status: R Supplier:

Batch: 10USA USD

Remarks: City Ordered: 10.0

Quantity Completed: 9.0

City Scrapped: 1.0

Order Date: 6/21/2021 STD

Release Date: 6/21/2021

Due Date: 6/24/2021

Item Number	Accumulated Quantity	Expected Cost	Accrued Variance	Accumulated Cost	Rate Variance	Usage Variance	Consumed Operation Cost	Balance
08011	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
08012	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
08013	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
<b>Material Total</b>		<b>300.00</b>	<b>0.00</b>	<b>300.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>300.00</b>
Operation 10	10.0	110.00	55.00	165.00	55.00	0.00	0.00	110.00
Operation 20	10.0	100.00	50.00	150.00	50.00	0.00	0.00	100.00
Operation 30	10.0	100.00	50.00	150.00	50.00	0.00	0.00	100.00
<b>Labor Total</b>		<b>310.00</b>	<b>155.00</b>	<b>465.00</b>	<b>155.00</b>	<b>0.00</b>	<b>0.00</b>	<b>310.00</b>
Operation 10	10.0	110.00	0.00	110.00	0.00	0.00	0.00	110.00
Operation 20	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
Operation 30	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
<b>Burden Total</b>		<b>310.00</b>	<b>0.00</b>	<b>310.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>310.00</b>
Operation 10	10.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operation 20	10.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Operation 30	10.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Subcontract Total</b>		<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
<b>WO: 1025 Subtotal</b>		<b>920.00</b>	<b>155.00</b>	<b>1,075.00</b>	<b>155.00</b>	<b>0.00</b>	<b>0.00</b>	<b>920.00</b>

The Production Order Cost Report, is designed for accountants and managers who need to analyze the costs and variances associated with production orders. This report is normally used for reporting closed production orders. It identifies production order costs, grouping them into five categories— material, labor, burden, subcontract, and method change.

- Material costs are supported by data from inventory transactions for production order components
- Labor, burden, and subcontract costs are supported by transactions for production order operations

**Note** If this report is run for production orders before they have been processed by Production Order Accounting Close, the variances calculated for those production orders may be incomplete.



## Accum Qty, Expected Cost, Accum Cost, Balance

Production Costing

# Accum Qty, Expected Cost, Accum Cost, Balance

WorkOrder
1 / 3 | 110% +
Download | Print

### Production Order Cost Report

10USA USD

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 6/22/2021  
 4:52:36 AM

Production Order 1025		ID 2474979		Batch	
Production Line p109001	Production Line 09001	Sales/Job		Remarks	Qty Ordered 10.0
Item Number 09002	Airbag 02	Supplier		Quantity Completed 9.0	Order Date 6/21/2021
Order Status R				Qty Scrapped 1.0	Release Date 6/21/2021
					Due Date 6/24/2021

Item Number	Accumulated Quantity	Expected Cost	Accrued Variance	Accumulated Cost	Rate Variance	Usage Variance	Consumed Operation Cost	Balance
08011	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
08012	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
08013	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
<b>Material</b>	<b>Total</b>	<b>300.00</b>	<b>0.00</b>	<b>300.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>300.00</b>
Operation 10	10.0	110.00	55.00	165.00	55.00	0.00	0.00	110.00
Operation 20	10.0	100.00	50.00	150.00	50.00	0.00	0.00	100.00
Operation 30	10.0	100.00	50.00	150.00	50.00	0.00	0.00	100.00
<b>Labor</b>	<b>Total</b>	<b>310.00</b>	<b>155.00</b>	<b>465.00</b>	<b>155.00</b>	<b>0.00</b>	<b>0.00</b>	<b>310.00</b>
Operation 10	10.0	110.00	0.00	110.00	0.00	0.00	0.00	110.00
Operation 20	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
Operation 30	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
<b>Burden</b>	<b>Total</b>	<b>310.00</b>	<b>0.00</b>	<b>310.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>310.00</b>
Operation 10	10.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00

### Accumulated Quantity

For Material, Accumulated Quantity is the actual quantity of components issued to this production order or parent items processed by operation. For Labor and Burden, Accumulated Quantity represents the quantity reported complete in Production Operations Reporting.

### Expected Cost: Material

The material section of the report lists all the components associated with the production order.

- The Expected Cost is:

$$(Qty\ Complete + Qty\ Reject) \times Frozen\ Qty\ Per \times Frozen\ Std\ Cost$$

If this amount is zero, you probably did not receive or scrap anything against this production order. If you have received something and the value is still zero or the wrong value, then check the frozen quantity per and standard cost. These can be viewed and updated in Production Orders.

### Expected Cost: Labor

The expected labor cost is the standard run and set-up hours multiplied by the work center rate.

### Expected Cost: Burden

Burden is calculated as an application against labor. A labor variance has an associated burden variance.

The burden values are calculated the same way as labor, except the burden application rate is used. The accumulated quantity is the units reported complete in that operation.

### Expected Cost: Subcontract



Subcontract is similar to material in the way that it is handled.

- The Accumulated Quantity is the quantity received on the purchase order
- The Expected Cost for subcontract is the quantity completed plus rejects multiplied by the subcontract cost from the routing operation
- The Accrued Variance is the variance the system has already recognized. It should be equal to the total of the rate variance posted and the usage variance posted columns.
- Accumulated cost is the actual purchase order cost multiplied by the quantity received

**Accumulated Cost: Material**

The accumulated cost of material is the actual cost of the production order. It is the actual quantity issued multiplied by the standard cost that was in effect at the time of the issue.

**Accumulated Cost: Labor**

The accumulated cost for labor is the actual hours multiplied by the actual pay rate.

The actual pay rate is the employee's pay rate from payroll if available, or the work center rate if payroll is not available.

**Accumulated Cost: Burden**

The accumulated cost for burden is the actual quantity completed multiplied by the actual burden rate.

**Balance**

Balance is the accumulated cost minus the rate and usage variances.



## Accrued Variance, Rate Variance, Usage Variance

Production Costing

# Accrued Variance, Rate Variance, Usage Variance

Production Order Cost Report  
10USA USD

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6/22/2021  
4:52:36 AM

Item Number	Accumulated Quantity	Expected Cost	Accrued Variance	Accumulated Cost	Rate Variance	Usage Variance	Consumed Operation Cost	Balance
08011	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
08012	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
08013	10.0	100.00	0.00	100.00	0.00	0.00	0.00	100.00
<b>Material</b>	<b>Total</b>	<b>300.00</b>	<b>0.00</b>	<b>300.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>300.00</b>
Operation	10	10.0	110.00	55.00	165.00	55.00	0.00	110.00
Operation	20	10.0	100.00	50.00	150.00	50.00	0.00	100.00
Operation	30	10.0	100.00	50.00	150.00	50.00	0.00	100.00
<b>Labor</b>	<b>Total</b>	<b>310.00</b>	<b>155.00</b>	<b>465.00</b>	<b>155.00</b>	<b>0.00</b>	<b>0.00</b>	<b>310.00</b>
Operation	10	10.0	110.00	0.00	110.00	0.00	0.00	110.00
Operation	20	10.0	100.00	0.00	100.00	0.00	0.00	100.00
Operation	30	10.0	100.00	0.00	100.00	0.00	0.00	100.00
<b>Burden</b>	<b>Total</b>	<b>310.00</b>	<b>0.00</b>	<b>310.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>310.00</b>
Operation	10	10.0	0.00	0.00	0.00	0.00	0.00	0.00

### Accrued Variance

The accrued variance is the variance the system has already recognized. It should be equal to the total of the rate variance posted and the usage variance posted columns.

### Rate Variance Posted: Material

The material rate variance posted is the standard cost of the component at the time of issue minus the frozen standard cost of the components multiplied by the quantity issued. This is calculated at the point of issue.

- Favorable variances display as negatives
  - A negative indicates a credit balance. A credit balance for income statement accounts like variances are favorable.
- Unfavorable variances show as positives

### Rate Variance Posted: Labor

The rate variance posted for labor is the difference between the work center rate and the actual pay rate multiplied by the actual hours.

### Rate Variance Posted: Burden

The burden rate variance for labor is the difference between the work center rate and the actual pay rate multiplied by the actual hours and the labor burden percent.

### Rate Variance Posted: Subcontract

The Subcontract Rate Variance is the actual purchase order cost minus the subcontract cost from the routing multiplied by the quantity received. It is calculated at the point of receipt (see figure above).

$(\text{Subcontract PO Unit Cost} - \text{Subcontract Frozen WO BOM Unit Cost}) \times \text{Qty Received}$

### **Usage Variance Posted: Material**

The material usage variance posted is calculated during an accounting close. If you have not run an accounting close, the usage variance will be zero.

- The usage variance is the actual quantity used minus the quantity that should have been used multiplied by the frozen standard of the component
  - The quantity that should have been used is the quantity completed plus the quantity rejected multiplied by the frozen quantity per
  - The frozen standard is used rather than the standard currently in effect because the rate variance already adjusted for the differential. If the current standard is used, it will effectively calculate the rate variance twice for the quantity over or under issued.

### **Usage Variance Posted: Labor**

The usage variance posted for labor is the difference between the actual hours and the standard hours multiplied by the work center rate. These variances can be calculated at Post Production Order Usage Variances, or at accounting close.

### **Usage Variance Posted: Burden**

The usage variance for burden is the difference between the actual hours and the standard hours multiplied by the work center burden rate. These variances can be calculated at Post Production Order Usage Variances or at accounting close.

### **Usage Variance Posted: Subcontract**

The Usage Variance for subcontract is the difference between the quantity received on the purchase order and the quantity completed plus rejected multiplied by the subcontract cost from the router. It is calculated at accounting close.

$[\text{Qty Received} - (\text{Op Qty Completed} + \text{Op Qty Rejected})] \times \text{Subcontract Frozen WO BOM Unit Cost}$

## Standard Cost Received

Production Costing

# Standard Cost Received

WorkOrder 2 / 3 110% +

QAD

**Production Order Cost Report** Page 2 / 3  
10USA USD 6/22/2021 6:55:22 AM

Item Number	Accumulated Quantity	Expected Cost	Accrued Variance	Accumulated Cost	Rate Variance	Usage Variance	Consumed Operation Cost	Balance
Transfer In								0.00
Transfer Out								0.00
Overhead								0.00
Std Cost Rcvd								-828.00
Scrapped								-90.00
Method Change Variance								0.00
<b>Balance</b>	1025 / 2474979							<b>2.00</b>

QAD 72

### Standard Cost Received

The Standard Cost Received is the quantity completed multiplied by the standard cost of the parent in effect at the point of receipt.

If you do the scrap in the Receive Order action in Production Operation Reporting, the scrapped amount is the quantity rejected multiplied by the GL Standard cost of parent item at the point of receipt

If you do the scrap in the Report Operation Activity or Report Reject & Scrap actions in Production Operation Reporting, the system automatically rolls up and totals material, run-time labor and burden, and subcontract costs by operation. The system determines the value of the scrap at the operation where it is scrapped, based on the production order reporting the scrap and the order's routing and bill data.

## Method Change Variance

Production Costing

# Method Change Variance

The screenshot shows a 'Production Order Cost Report' for '10USA USD'. The report includes a table with columns: Item Number, Accumulated Quantity, Expected Cost, Accrued Variance, Accumulated Cost, Rate Variance, Usage Variance, Consumed Operation Cost, and Balance. The 'Method Change Variance' row is highlighted with a red border. The 'Balance' row shows a total of 2.00.

Item Number	Accumulated Quantity	Expected Cost	Accrued Variance	Accumulated Cost	Rate Variance	Usage Variance	Consumed Operation Cost	Balance
Transfer In								0.00
Transfer Out								0.00
Overhead								0.00
Std Cost Rcvd								-928.00
Scrapped								-90.00
Method Change Variance								0.00
<b>Balance</b>	1025 / 2474979							<b>2.00</b>

### Method Change Variance

Method Change Variance is the residual cost in work in process. A residual work in process is caused by changing the cost standard, product structure, routing, or work center.

- If roll-ups are not performed after a change, the resultant differential in costs will produce a method change variance
  - If the production order is in process at the time of the roll-up, a revaluation of work in process may be required
  - Production orders that are not released or closed do not need to be revalued
- Using an alternate bill of material or routing will result in a Method Change Variance, unless the cost of the alternate is equal to the primary bill of material and routing that was the basis for the standard cost
- Direct updates to values in the Production Orders BOM/Routing, which control variance calculation, like frozen quantity per, will result in a Method Change Variance
- If set-up time is used and the Qty Received-plus-Qty Rejected amount on the production order varies from the Order Qty in Items planning data, a Method Change Variance will result
- If the Qty Complete in the Production Operations Reporting is different than the Qty Received- plus-Qty Rejected amount in the production order, a Method Change Variance will result

## Review

Production Costing

### Review

- Production Orders Process Flow
- Production Orders
- Components Issues
- WIP Material Cost Revaluation
- Floor Stock
- Inter-site Transfers/Multi-site Component Issues
- Labor/Burden Reporting
- Subcontract
- Production Order Receipts
- Scarp
- Post Production Order Usage Variances
- Production Order Accounting Close
- Production Order Cost Report

## Mastery Question – Multiple Choice

Production Costing

### Mastery Question – Multiple Choice

1. If you want to post scrap to GL, which of following do you need to do?
  - A. Set up in Inventory Control
  - B. Set up in Production Control
  - C. Specify in operation reporting
  - D. Specify in production orders

## Mastery Question – True False

Production Costing

### Mastery Question – True False

2. After you issued components, you can run WIP Material Cost Revaluation to eliminate the material rate variance.
  - A. True
  - B. False

## Mastery Question – True False

Production Costing

### Mastery Question – True False

3. Use Production Order Accounting Close to close both discrete and repetitive cumulative production orders.
  - A. True
  - B. False

## Exercise: Production Costing

Production Costing

### Exercise: Production Costing



## Production Costing

### A. Discrete Production Order

In this exercise, you will create production orders, backflush components, report labor, and receive finished goods. You will also do the production order accounting close.

1. Review Production Control and make sure that the Post Scrap to GL option is selected. Also make sure that WO Activity Threshold and Repetitive Activity Threshold are set to Firm Planned.
2. Use Production Orders to create a production order for item 08001 on site 10-100. Select the blank order type and enter the Quantity to Start 10.00. Record the production order number.
3. Use Production Order Allocate to allocate the production order.
4. In Production Operations Reporting, use the Report Operation Activity action to report the operation with the following fields:

Quantity Processed	10.0
Auto Backflush	Yes
Actual Run Time	1.0
Receive Quantity	10.0
Close Order	Yes

5. Use Inventory Transactions to review the components issues and product receipts GL transactions:


07001 Fabric		10-100 Ultrasound Mfg Site		ISS-WO		1034	
Item		Site		Transaction Type		Order	
Main	Inventory	<b>GL Cost</b>	Accounts	E-Signature	WIP Lot Trace	⚙️	
Accounts More ▾							
GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
ISS-WO	1550	Mech			200.00	0.00	TMP20210727/00998...
ISS-WO	1500	Mech			0.00	200.00	TMP20210727/00998...

07002 Nylon Rope		10-100 Ultrasound Mfg Site		ISS-WO		1034	
Item		Site		Transaction Type		Order	
Main	Inventory	GL Cost	Accounts	E-Signature	WIP Lot Trace	⚙️	
Accounts More ▾							
GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
ISS-WO	1550	Mech			200.00	0.00	TMP20210727/00998...
ISS-WO	1500	Mech			0.00	200.00	TMP20210727/00998...



08001 Cushion Item	10-100 Ultrasound Mfg Site Site	RCT-WO Transaction Type	1034 Order
Main Inventory GL Cost Accounts E-Signature WIP Lot Trace			
Accounts			
More			
GL Transaction Type	Account	Sub-Account	Cost Center
RCT-WO	1500	Mech	
			BC Debit
			460.00
			BC Credit
			0.00
			GL Reference
			TMP20210727/00998...
RCT-WO	1550	Mech	
			BC Debit
			0.00
			BC Credit
			460.00
			GL Reference
			TMP20210727/00998...

6. Use Operation Accounting Transactions to review the labor GL transactions:

										Page 1 / 2 7/27/2021 8:48:11 AM	
<b>Operation Accounting Transactions</b> 10USA USD											
Site : 10-100		Entity : 10USACO									
Transaction	Eff Date	Type	Item Number	Production Order ID	Op Line	Work Center Machine	Run Time	Quantity	Debit	Credit	
			GL Reference	Reference ID	Account	Sub-Acct CC Project	Setup Time				
249463	7/27/2021	LABOR	08001	1034	10	WC08001	1.00	0.0			
	7/27/2021			2474991			0.00				
		LBR-2000	TMP20210727/00998285	WO21072700TNDK	1550	Mech			10.00		
		LBR-2000	TMP20210727/00998285	WO21072700TNDK	5120	Mech mfg				10.00	
		BDN-2000	TMP20210727/00998286	WO21072700TNDL	1550	Mech			50.00		
		BDN-2000	TMP20210727/00998286	WO21072700TNDL	5220	Mech mfg				50.00	

7. Use Production Order Accounting Close to close the production order's accounting.

**B. Repetitive Production Order**

In this exercise, you will create a repetitive production order, backflush components, report labor, and receive finished goods. You will also do the production order accounting close.

1. Use Production Lines to create a new production line PL09001 to produce item 09001 on site 10-100. The planning units per hour are 10.00.
2. Use Employees to change employee 10-EMP01's pay rate to 15.00.
3. Create a production order for item 09001 on site 10-100. Make sure the order type is S, and enter the Quantity to Start 8.00. Record the production order number.
4. Use Production Order Allocate to allocate the production order.
5. In Production Operations Reporting, use the Report Operation Activity action to report operation 10 with the following fields; notice that a production cumulative order will be created after the activity.


Employee	10-EMP01
Quantity Processed	8.0
Auto Backflush	No
Actual Run Time	0.8
Issue component 08001	9.0

6. Use Inventory Transactions to review the components issues GL transactions:



08001 Cushion Item	10-100 Ultrasound Mfg Site Site	ISS-WO Transaction Type	1036 Order				
Main Inventory <b>GL Cost</b> Accounts E-Signature WIP Lot Trace							
Accounts							
More ▾							
GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
ISS-WO	1550	Mech			414.00	0.00	TMP20210727/00998...
ISS-WO	1500	Mech			0.00	414.00	TMP20210727/00998...

7. Use Operation Accounting Transactions to review the cumulative order labor GL transactions:

 <b>Operation Accounting Transactions</b> <span style="float: right;">Page 1 / 2 7/27/2021 10:27:51 AM</span>									
10USA USD									
Site : 10-100 Entity : 10USACO									
Transaction	Eff Date	Type	Item Number	Production Order ID	Op Line	Work Center Machine	Run Time Setup Time	Quantity	
	Trans Date		GL Reference	Reference ID	Account	Sub-Acct CC Project			Debit Credit
249468	7/27/2021	LABOR	09001	1036	10	wc09010	0.80	0.0	
	7/27/2021			2474995	pl09001		0.00		
		LBR-2000	TMP20210727/00998291	WO21072700TNDQ	1550	Mech			8.00
		LBR-2000	TMP20210727/00998291	WO21072700TNDQ	5120	Mech mfg			8.00
		LBR-2001	TMP20210727/00998292	WO21072700TNDR	5150	Mech mfg			4.00
		LBR-2001	TMP20210727/00998292	WO21072700TNDR	5120	Mech mfg			4.00
		BDN-2000	TMP20210727/00998293	WO21072700TNDS	1550	Mech			8.00
		BDN-2000	TMP20210727/00998293	WO21072700TNDS	5220	Mech mfg			8.00

8. Use Purchase Orders to create a subcontract purchase order for the production order operation 20. Tip: enter the production cumulative order number in the Subcontract frame.

Supplier	10s1002
Site	10-100
Line Item	09001
Quantity	8.0
Unit Price	11.00

9. Use the Receive Order action in Purchase Orders to receive the 8.0 WIP item 09001.


10. Use Inventory Transactions to review the subcontract receipts and components issues GL transactions:

09001 Airbag Item	10-100 Ultrasound Mfg Site Site	RCT-PO Transaction Type	P1010019 Order				
Main Inventory <b>GL Cost</b> Accounts E-Signature WIP Lot Trace							
Accounts							
More ▾							
GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
RCT-PO	5770	Mech			88.00	0.00	TMP20210728/00998...
RCT-PO	2520	Mech			0.00	88.00	TMP20210728/00998...



08002 Inflator Item	10-100 Ultrasound Mfg Site Site	ISS-WO Transaction Type	1036 Order
Main Inventory <b>GL Cost</b> Accounts E-Signature WIP Lot Trace			
Accounts			
More ▾			
GL Transaction Type	Account	Sub-Account	Cost Center
ISS-WO	1550	Mech	
			BC Debit
			BC Credit
			GL Reference
			80.00 0.00 TMP20210728/00998...
			0.00 80.00 TMP20210728/00998...

11. Use Operation Accounting Transactions to review the issuing of subcontract items to WIP and subcontract rate variance.

 <b>Operation Accounting Transactions</b> <span style="float: right;">Page 1 / 2 7/29/2021 3:20:29 AM</span>									
10USA USD									
Site : 10-100 Entity : 10USACO									
Transaction	Eff Date	Type	Item Number	Production Order ID	Op Line	Work Center Machine	Run Time Setup Time	Quantity	
	Trans Date		GL Reference	Reference ID	Account	Sub-Acct CC Project			Debit Credit
249473	7/28/2021	SUBCNT	09001	1036	20	wc09020	0.00	8.0	
	7/28/2021			2474995	pl09001		0.00		
			SUB-2000	TMP20210728/00998295	WO21072800TNDU	1550 Mech			80.00
			SUB-2000	TMP20210728/00998295	WO21072800TNDU	5770 Mech			80.00
			SUB-2001	TMP20210728/00998296	WO21072800TNDV	5450 Mech			8.00
			SUB-2001	TMP20210728/00998296	WO21072800TNDV	5770 Mech			8.00

12. In Production Operations Reporting, use Report Operation Activity action to report operation 30 with the following fields:

Employee	10-EMP01
Quantity Processed	8.0
Auto Backflush	Yes
Scrap Quantity	1.0
Actual Run Time	0.8
Receive Quantity	7.0

13. Use Inventory Transactions to review the components issues GL transactions:

08003 Control Unit Item	10-100 Ultrasound Mfg Site Site	ISS-WO Transaction Type	1036 Order
Main Inventory <b>GL Cost</b> Accounts E-Signature WIP Lot Trace			
Accounts			
More ▾			
GL Transaction Type	Account	Sub-Account	Cost Center
ISS-WO	1550	Mech	
			BC Debit
			BC Credit
			GL Reference
			80.00 0.00 TMP20210728/00998...
			0.00 80.00 TMP20210728/00998...



09001	Airbag	10-100	Ultrasound Mfg Site	RCT-WO	1036		
	Item		Site	Transaction Type	Order		
Main Inventory GL Cost Accounts E-Signature WIP Lot Trace							
<b>Accounts</b> More ▾							
GL Transaction Type	Account	Sub-Account	Cost Center	Project	BC Debit	BC Credit	GL Reference
RCT-WO	1500	Mech			574.00	0.00	TMP20210728/00998...
RCT-WO	1550	Mech			0.00	574.00	TMP20210728/00998...

14. Use Operation Accounting Transactions to review the labor, burden, and scrap GL transactions:

### Operation Accounting Transactions

10USA USD

Page 1 / 3  
7/29/2021  
3:57:14 AM

Site : 10-100    Entity : 10USACO

Transaction	Eff Date	Type	Item Number	Production Order ID	Op Line	Work Center Machine	Run Time Setup Time	Quantity	Debit	Credit
	Trans Date		GL Reference	Reference ID	Account	Sub-Acct CC Project				
249478	7/28/2021	LABOR	09001	1036	30	wc09030	0.80	0.0		
	7/28/2021			2474995	pl09001		0.00			
		LBR-2000	TMP20210728/00998300	WO21072800TNDZ	1550	Mech			8.00	
		LBR-2000	TMP20210728/00998300	WO21072800TNDZ	5120	Mech mfg				8.00
		LBR-2001	TMP20210728/00998301	WO21072800TNE0	5150	Mech mfg			4.00	
		LBR-2001	TMP20210728/00998301	WO21072800TNE0	5120	Mech mfg				4.00
		BDN-2000	TMP20210728/00998302	WO21072800TNE1	1550	Mech			8.00	
		BDN-2000	TMP20210728/00998302	WO21072800TNE1	5220	Mech mfg				8.00
249479	7/28/2021	SCRAP-O	09001	1036	30	wc09030	0.00	1.0		
	7/28/2021			2474995	pl09001		0.00			
		SCRAP	TMP20210728/00998303	WO21072800TNE2	6000	Mech			80.00	
		SCRAP	TMP20210728/00998303	WO21072800TNE2	1550	Mech				80.00

15. Use Post Production Order Usage Variances to post the usage variance in the cumulative order.

16. Use Production Order Accounting Close to close the production cumulative order's accounting.



CHAPTER 7

# Cost Management





# Cost Management

## Overview

Cost Management

### Overview

- Cost Management Introduction
- Linked Site Costing
- Multi-Element Costing Setup
- Cost Simulation Process
- Cost Planning Process

## Cost Management

Cost Management

### Cost Management

- Unlimited Cost Sets
- Unlimited Cost Elements per Cost Category
- Cost Simulation - “What If” analysis
- Cost Planning – Implementing future costs
- Linked Site Costing

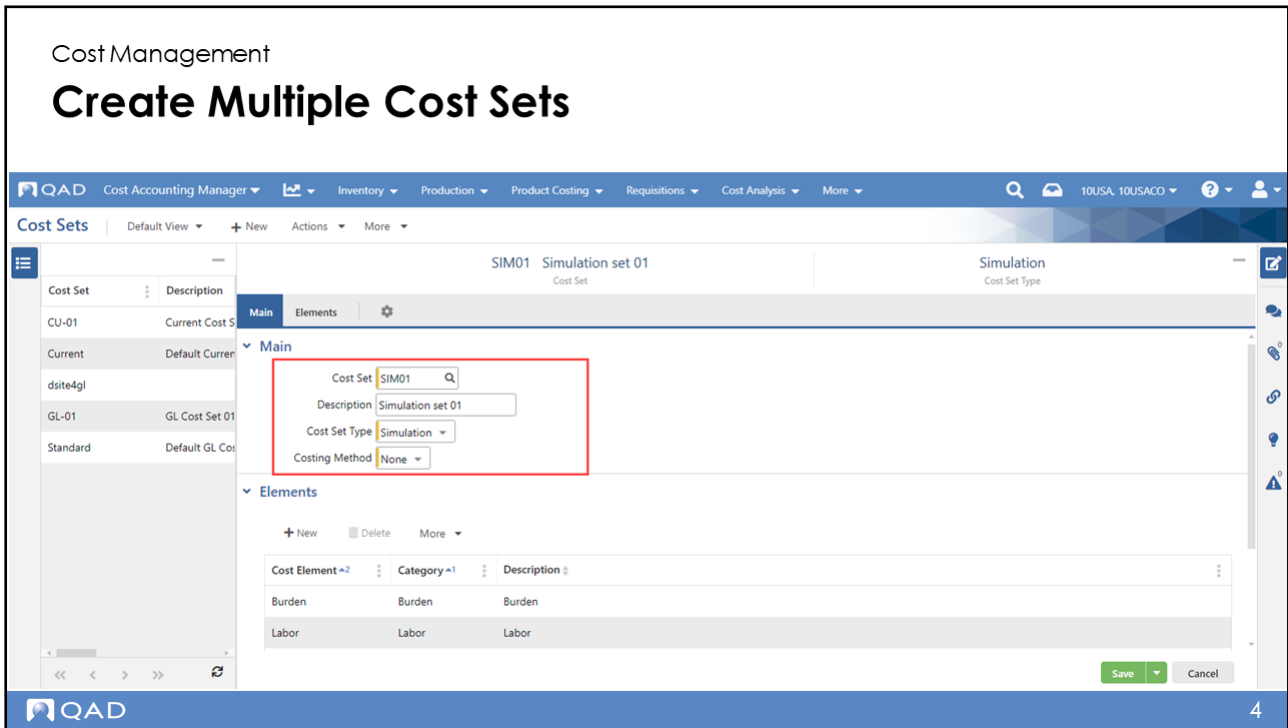
### Introduction

With the Cost Management module, you can create additional cost elements, which provide additional reporting detail; and multiple cost sets, which enable you to keep cost history and create future costs without impacting current cost updates. These are aids to live costing and are covered in this chapter.

Cost Management also provides the ability to simulate cost changes and to modify elements of cost for “what-if” scenarios, and to develop cost plans. These topics are also covered in this chapter.

Linked Site Costing allows you to create a cost set and then link it to multiple sites.

## Create Multiple Cost Sets



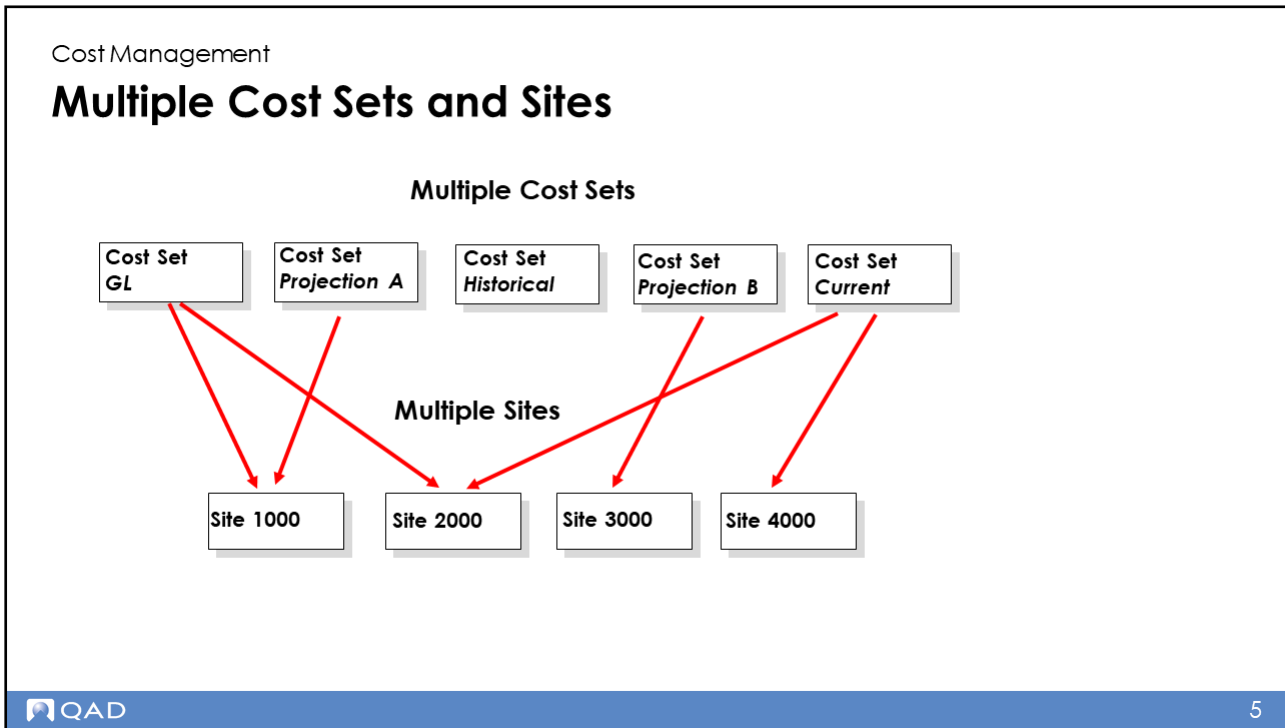
### Create Multiple Cost Sets

For any item, multiple sets of costs can be maintained, each identified by a cost set code, in Cost Sets. Data associated with this cost set code controls how these costs are updated and used.

Each cost set code is assigned a cost set type of GL, Current, or Simulated, and a costing method of Standard, Average, Last, or None. These two fields together determine how costs from this cost set are updated and used.

**Note** Only one GL and one current cost set per site are permitted. The default GL and current cost sets cannot be maintained although the costing method can be changed in Inventory Control.

## Multiple Cost Sets and Sites



### Cost Set Uses

*Historical.* Useful for tracking costs from prior periods. If standards are changed during a fiscal year, you can track original standards set at the beginning. Or you can use historical cost sets to track standards from year to year.

*Simulated.* Useful for planning future costs or performing “what-if” analyses, such as developing costs based on different estimates of volume.

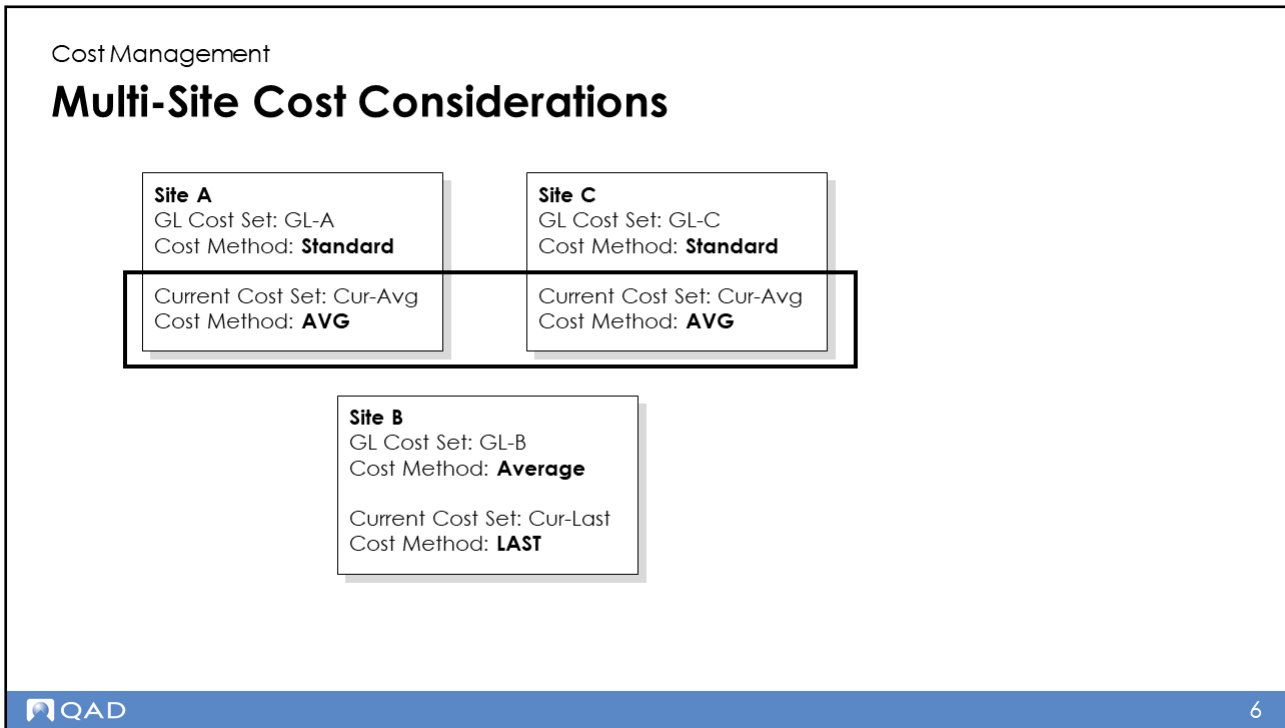
*Site Specific.* Different cost sets can be assigned to each site. Note that in a single-domain environment, you can have only one current cost method, as this is set through the Inventory Control.

*GL Cost Set.* Defines costing method that will be used for inventory valuation.

*Current Cost Set.* Defines the current cost of an item, either last, average, or none.

Once you have defined the cost sets, you can assign them to each site using Cost Set to Site Assignment.

## Multi-Site Cost Considerations



### Multi-Site Cost Considerations

Within QAD system, each site must be assigned a GL and a Current cost set. We saw earlier that these default to the cost sets Standard and Current. All sites are initially assigned these cost sets, but this can be easily changed. The Cost Set To Site Assignment, is used to assign a different GL and/or Current cost set to a particular site. When GL costs are changed, inventory is automatically revalued to the new cost.

- Any cost set of type GL can be assigned to a site as its GL cost set. This cost set may use a costing method of Standard or Average.
- Any cost set of type Current can be assigned to a site as its Current cost set. This cost set may use costing method Average, Last, or None.

In the example shown on the previous page, each of the three sites (A, B, and C) are set up differently. In particular, notice the following.

- 1 It is possible for more than one site to use the same cost set; they don't have to be different. For example, sites A and C share the same Current cost set.
- 2 Each site may use a different Current costing method. For example, sites A and C use Average costing and site B uses Last.
- 3 Each site may use a different GL cost set and costing method. If you have multiple sites making the same products, it is unlikely that they will have the same cost structure. To support this, each site may choose its own cost method. For example, sites A and C use Standard costing, while site B uses Average.

## Linked Site Costing

Cost Management

### Linked Site Costing

- Specify a set of GL cost site records to serve as an item's GL cost at another inventory site
- Assign rules to a site using Item Type, or Product Line, or Purchase/Manufacture code or by None
- No linked site rules can be assigned to the Default Site for inventory
- Other than the default site, each site can only have one rule



7

Linked-site costing lets you specify one set of GL cost site records to serve as an item's GL cost set at another inventory site. The system sets the default value for GL Cost Source Site according to three site-linking rules, that can be assigned by item type, product line, purchase/manufacture code, or none.

This costing method significantly reduces redundant data in a database, simplifies costing procedures, and decreases the chance for unexpected cost discrepancies across sites. In addition, you need only one shared GL cost set record for each inventory record instead of duplicate records for each site. Linked-site costing is useful for companies that manufacture the same product in different ways at multiple sites, or that purchase the same product from different sources.

The key benefits derived from Linked Site Costing:

- It reduces redundant data in the database since one cost record can serve many sites
- It simplifies the costing process because there is less to maintain
- It minimizes errors, which can be introduced by maintaining multiple duplicate cost records
- It eliminates time consuming and redundant Cost Set Copy processes

**Note** You cannot use linked-site costing for a site if you use the average cost method for GL transactions, since average cost calculation does not consider inventory at multiple sites.

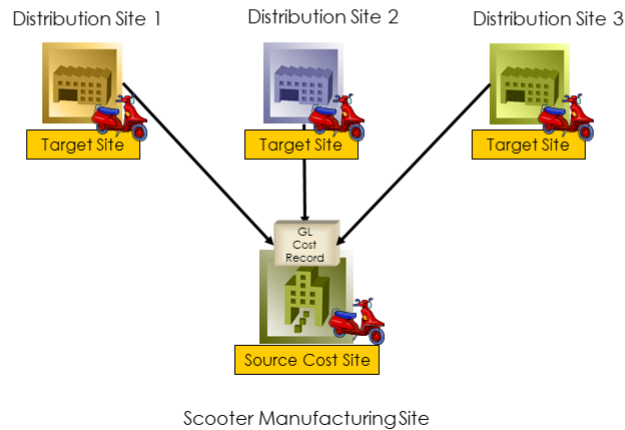


## Linked Site Costing Example

Cost Management

### Linked Site Costing Example

- Target Sites look to a Source Cost Site for their active GL Costs



### Linked Site Costing Example

Imagine you have an item, in this case a scooter, at a manufacturing site and at multiple distribution sites. And the scooter has the same cost at each site. With Linked Site Costing you don't have to maintain multiple separate GL cost records; instead you maintain one GL cost record, in this example at the manufacturing site, and the other sites use that cost record. Remember, though, that each site maintains its own Current cost record.

There are a couple of new terms on this slide—Source Cost Site and Target Site. The site that is the “source” for the costs is called the Source Cost Site; and the sites that refer to the Source Cost Site for their costs are called Target Sites. We'll discuss these terms in more detail in the next slide.

## Linked-Site Costing Rules

Cost Management

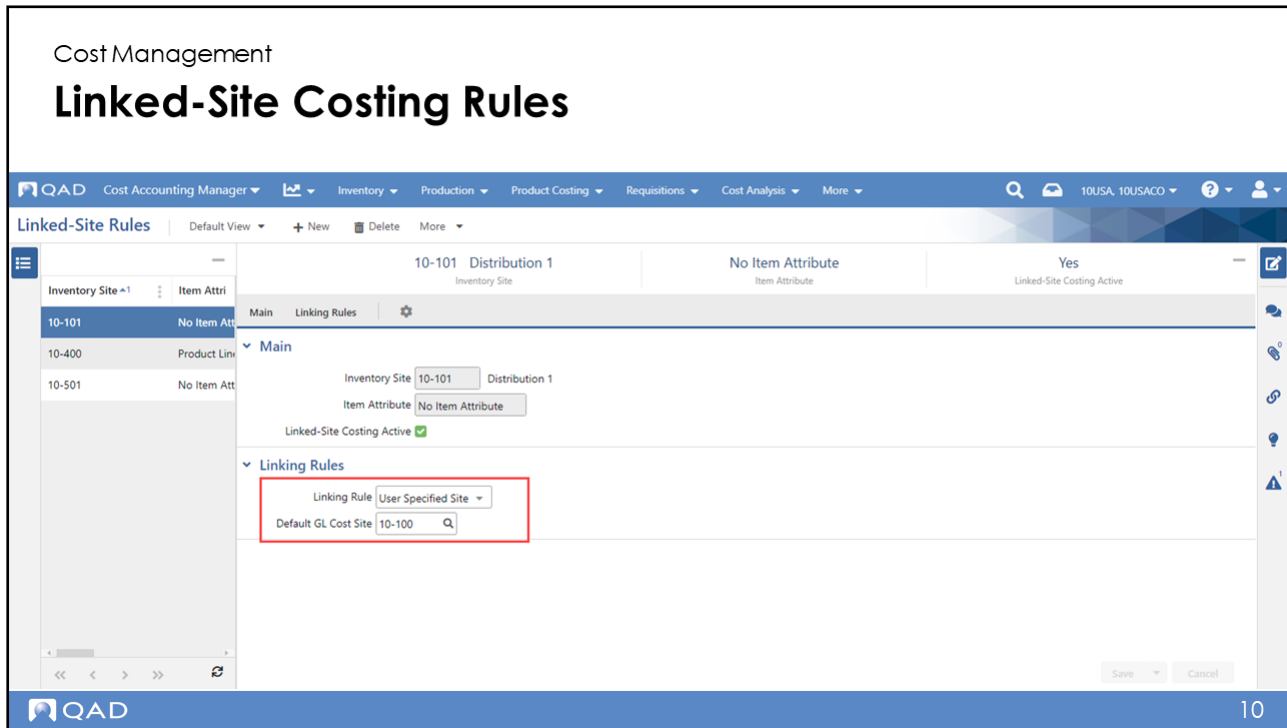
### Linked-Site Costing Rules

- There are three Linked-Site Cost Rules
  - Inventory Site
  - Item Master Site
  - User specified site

### Linked-Site Costing Rules

- Inventory Site sets the default inventory site as the GL cost source site. The inventory site is also the default site if you are not linking costs.
- Item Master Site sets the site in Items as the default GL cost source site.
- User Specified Site sets any site you designate as the default GL cost source site.

## Linked-Site Costing Rules



### Item Attributes and Linking Rules

Item attributes play a role in the data that displays in the Linked-Site Rules browse and in fields that display in the grid in the Linked-Rules panel.

You can specify a default cost source site for all items at an inventory site, or you can associate a linking rule at an inventory site with one of the following item attributes:

- No item attribute
- Product line
- Item type
- Purchase/Manufacture code

You can select only one item attribute for a particular inventory site. Existing linking rules for an item attribute must be deleted before you can associate a different attribute with an inventory site.

For example, you set up linking rules for inventory site 20000 that are associated with the product line attribute. Linking rules for the item type or Purchase/Manufacture code attribute cannot be assigned as long as the product line attribute is associated with the site.

Using item attribute information in linking rules lets you determine different primary sites for different item classifications depending on your business requirements.

When a linking rule is added or modified, run the Refresh Utility to update cost links.

### Linking Rule

Select one of the following linking rules:

- Inventory site
- Item master site
- User specified site

Use Linked-Site Rules Refresh action to update general ledger (GL) cost source sites and GL cost sets in inventory master records after you set up or change rules in Linked-Site Rules.

Note: You should run the refresh action immediately after you make linked-site rule changes and before any transactions occur; transaction should not occur until after the refresh is complete.

Three site-linking rules determine the default GL cost source site for items:

- Inventory Site

Sets the inventory site as the default GL cost source site. The inventory site is also the default site when you are not linking costs or using linked-site costing. However, when you implement linking rules, this setting lets you retain the inventory site as the default site for some item attributes, while linking other attributes to alternate sites. For example, you may want to set up the inventory site to function as the default cost site for manufactured items (Pur/Mfg code M), and set up another site as the default cost site for configured items (Pur/Mfg code C).

- Item Master Site

Sets the site in **Items** as the default GL cost source site. This lets you set up costing on a per-item basis easily. For example, if your business manufactures lipstick at one site and distributes from several sites, you could set the manufacturing site entered in **Items** as the default GL standard cost site for lipstick, regardless of the distribution site. This eliminates the need to set up separate GL standard costs for the same item at each distribution site.

- User-Specified Site

Sets any default cost site you specify for items or item attributes. For a given site, you can designate that costs for that site default from GL costs entered at another specified site for all items or for items with a specified attribute. When you select Linking Rule 3, the Default GL Cost Source field becomes active so that you can specify a site as the default GL cost source site.

## Items GL Cost Source Site

The screenshot displays the QAD Cost Accounting Manager interface for the 'Items GL Cost Source Site' screen. The header shows item details: Item 60099, Product Line 20, Description 1 'Durable Plastic Housing', and Item Status 'Active'. The main area is titled 'GL Cost' and shows a table with the following data:

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

Summary statistics on the right side of the table:

- This Level Total: 0.00
- Lower Level Total: 0.00
- Cost Total: 0.00

The 'GL Cost Source Site 10-100' field is highlighted with a red box. The interface also includes a 'Save' button and a 'Cancel' button at the bottom right.

This example shows what the Items cost maintenance screen looks like with Linked-Site Costing functionality turned off. Note that the Inventory Site and GL Cost Source Site are the same, which also means that you can modify the GL Cost Data. But, you cannot change the cost data if the item site is linked to another site and the information is display only.

## Effect of Linking on Product Structure Cost Rollups

Cost Management

### Effect of Linking on Product Structure Cost Rollups

- Roll-Up uses the costs of an item's components and any subassemblies to calculate this-level and any lower-level costs.
- Roll-Up recognizes the links for any GL cost set using the standard costing method, regardless of whether the cost set is active or inactive.
- When items are linked, the system uses the cost set specified at the GL cost source site to find the cost. If the GL cost record is not found, a zero cost value is used for the linked item.
- Performing a rollup at one site does not roll up costs for a linked subassembly at another site. The GL cost for the subassembly at the source site is used to calculate the parent item's cost at the inventory site.

Product Structure Cost Roll-Up uses the costs of an item's components and any subassemblies to calculate this-level and any lower-level costs.

Product Structure Cost Roll-Up recognizes the links for any GL cost set using the standard costing method, regardless of whether the cost set is active or inactive.

When items are linked, the system uses the cost set specified at the GL cost source site to find the cost. If the GL cost record is not found, a zero cost value is used for the linked item.

Performing a product structure cost rollup at one site does not roll up costs for a linked subassembly at another site. The GL cost for the subassembly at the source site is used to calculate the parent item's cost at the inventory site.

## Effect of Linking on Routing Cost Rollups

Cost Management

### Effect of Linking on Routing Cost Rollups

- Roll-Up calculates this-level manufacturing costs, lead times, and total yield for an item at a particular site.
- If a GL standard cost set is specified for the rollup, then:
  - The rollup does not update this-level costs if the item at the rollup site is linked.
  - Lead time and yield for all selected items are calculated whether they are linked or not.
  - The operation cost calculation recognizes linked costs.
  - Updating the active GL standard costs at a cost source site automatically updates the costs at target sites.
  - Routing Cost Roll-Up does not recognize links if the rollup is performed for current or simulation cost sets. In order to roll up costs correctly for linked items, you must use a GL standard cost set.

Routing Cost Roll-Up calculates this-level manufacturing costs, lead times, and total yield for an item at a particular site.

If a GL standard cost set is specified for the rollup, then:

- The routing cost rollup does not update this-level costs if the item at the rollup site is linked.
- Lead time and yield for all selected items are calculated whether they are linked or not.
- The operation cost calculation recognizes linked costs.
- Updating the active GL standard costs at a cost source site automatically updates the costs at target sites.
- Routing Cost Roll-Up does not recognize links if the rollup is performed for current or simulation cost sets. In order to roll up costs correctly for linked items, you must use a GL standard cost set.

## Multi-Element Costing

Cost Management

### Multi-Element Costing

Cost Category	Cost Element
Material	Domestic Content Foreign Content Packaging
Labor	Fabrication Assembly
Burden	Burden
Overhead	Freight, Duty & Insurance General Factory O/H
Subcontract	Subcontract

### Introduction

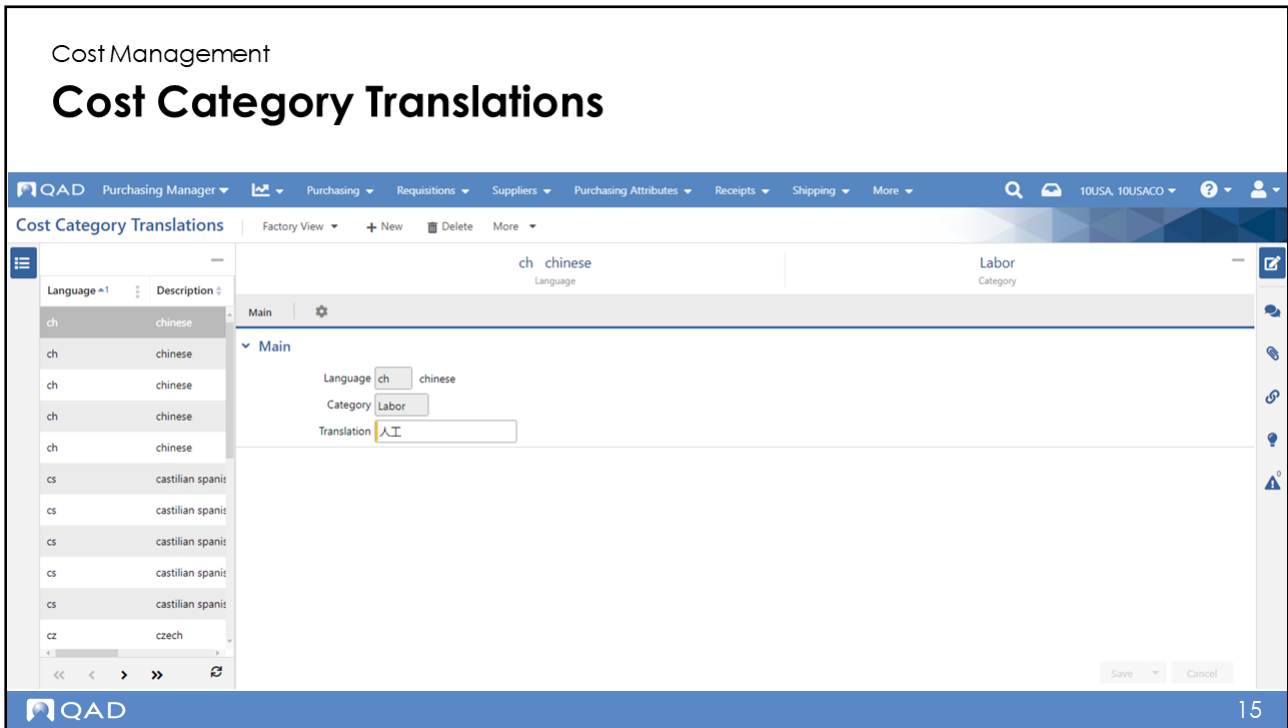
When we looked at costs earlier, we pointed out that the costs for an item are always broken out into five categories—material, labor, burden, overhead, and subcontract. So far, these are the only categories that we have looked at or entered costs for. However, each of these cost categories may be subdivided into an unlimited number of component cost elements.

- Some companies need to identify different types of cost within the five standard categories of cost. For example, a company may wish to identify the foreign versus domestic content of material cost. Another company might want freight to be an element of material cost. The needs vary widely, and multiple element costing allows you to break cost categories down further if you need to do so.

The use of cost elements is optional. You only need to introduce cost elements where you wish to have additional reporting detail. If you do not add additional cost elements, you will always have at least five elements—material, labor, burden, overhead, and subcontract; one for each category.

**Note** Regardless of how many cost elements are set up, only the cost categories will post to COGS in the GL.

## Cost Category Translations



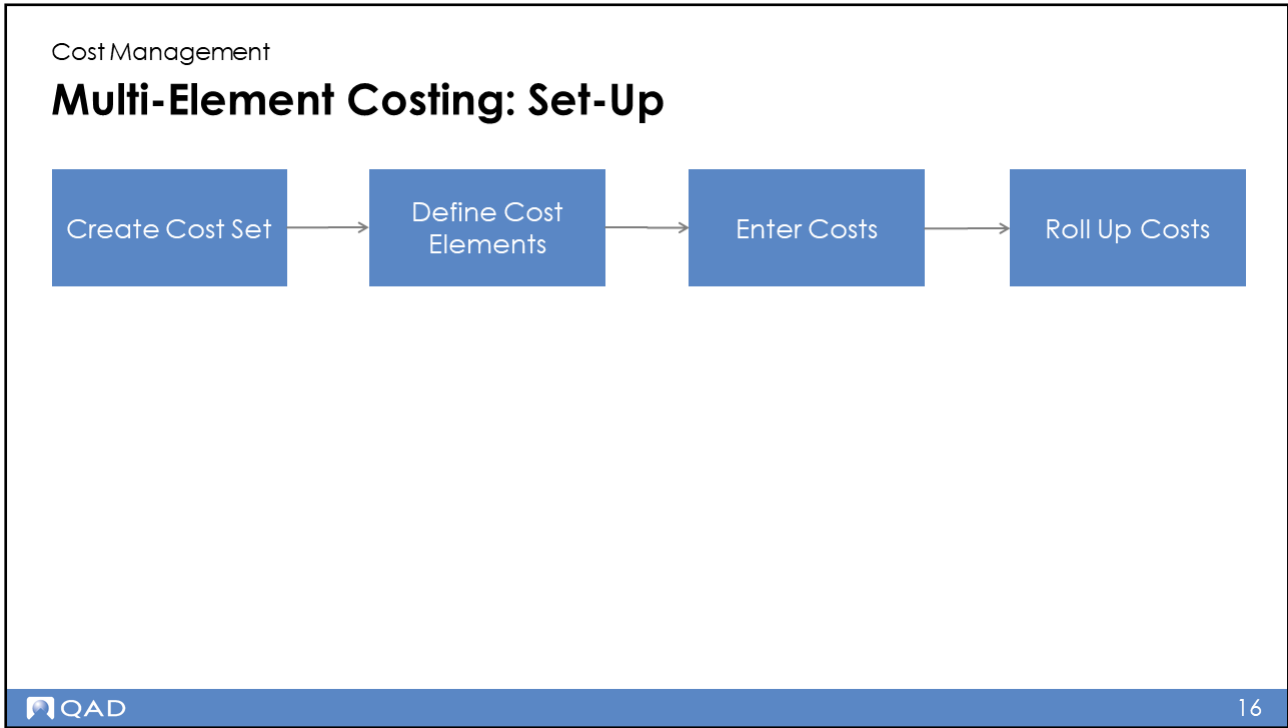
Cost Accounting Managers can use Cost Category Translations to define and correct the translation for cost categories by language.

There are five different cost categories: material, labor, burden, overhead and subcontract. Each cost element in the system is associated with one of these categories. The cost category translations display in some reports and maintenance functions in the user's own language. The cost category translations form the basis of the default cost element names when new items are created and a default set of cost elements are required. You use this function to modify the current cost category translations.

Using this function, you can modify translations by:

- Adding new cost category translations
- Updating existing cost category translations
- Deleting cost category translations

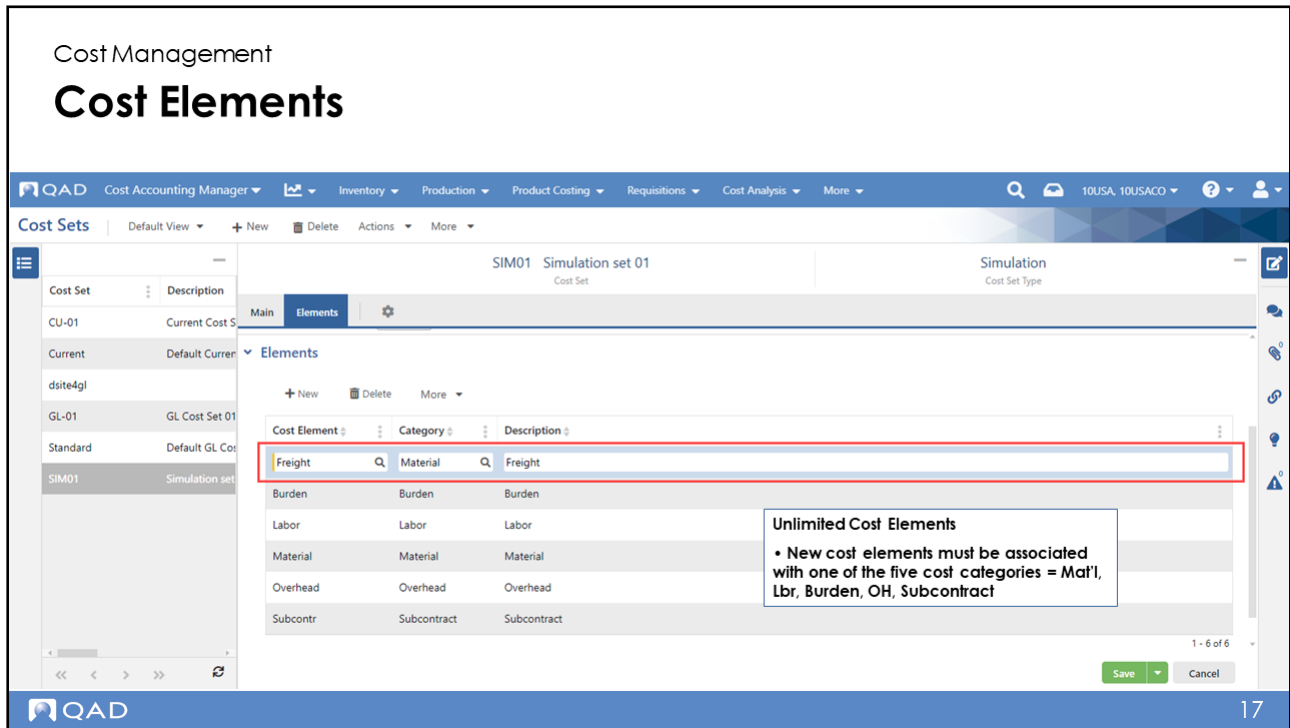
## Multi-Element Costing: Set-Up



### Multi-Element Costing: Set-Up

First, assuming that the cost set is a new one, create a cost set in Cost Sets. Next, define the cost elements in Cost Sets, and enter costs in Item Site Costs, or use Item-Element Cost Calculation, and let the system calculate the costs. Roll up the costs in Routing Cost Roll-Up, and Product Structure Cost Roll-Up. These steps are discussed on the following pages.

## Cost Elements



### Create Cost Set First

- Use Cost Sets, to define a cost set
- Ensure that cost sets to be used as the GL (Standard) or Current costs at a site are entered as type GL and Current, respectively; otherwise they can only be used for simulation purposes

### Define Cost Elements

- Use Cost Sets, to define additional cost elements for GL and Current type cost sets
- You will always have five cost elements to start with—material, labor, burden, overhead, and subcontract. You can add others but you cannot delete these. Each of the cost elements you add must be associated with one of the five cost categories.
- You can set up each current and GL cost set with its own cost elements, or each one can be set up the same. In the latter case, enter the cost elements for one cost set and then use Copy Cost Element action in Cost Sets, to copy them to other cost sets.
- To add a new cost element, while in the Elements frame, click New button and add the new element details in the frame. Note that elements are displayed in element sequence within each cost category.
- If the Costing Method is Average, you can only add additional elements for Material. You cannot add additional elements for the other categories.

## Enter Costs Manually

Cost Management

# Enter Costs Manually

Item Site Costs | Default View | + New | More

08001 Cushion | 10-100 Ultrasound Mfg Site | SIM01 Simulation set 01 | 12.00 Cost Total

Category	Element	This Level	Lower Level	Total	Primary	Add On
Material	Freight		0.00	0.00	<input checked="" type="checkbox"/>	
Burden	Burden	0.00	0.00	0.00	<input checked="" type="checkbox"/>	
Labor	Labor	0.00	0.00	0.00	<input checked="" type="checkbox"/>	
Material	Material	12.00	0.00	12.00	<input checked="" type="checkbox"/>	
Overhead	Overhead	0.00	0.00	0.00	<input checked="" type="checkbox"/>	
Subcontract	Subcontr	0.00	0.00	0.00	<input checked="" type="checkbox"/>	

1 - 6 of 6

Save Cancel

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### Enter Costs

Use Item Site Costs, to enter costs manually, or use Item-Element Cost Calculation, to have the system calculate these costs based on other cost elements in the cost set.

**Note** There is no automatic update of multi-element costs to reflect actual transactions in the same way that Current cost set values can be updated.

When you initially enter costs, only the five standard cost elements display. You can update costs for listed elements or add costs for any other element that has been associated with this cost set.

### Primary Element

Each category always has one, and only one, primary element. The primary element accrues all costs applied to the category that do not match any other element in that category, as well as the costs applied to it specifically. This only affects the routing roll-up, as you will see in the following sections.

## Let System Calculate Costs

Cost Management

# Let System Calculate Costs

QAD Cost Accounting Manager Inventory Production Product Costing Requisitions Cost Analysis More

Item-Element Cost Calculation Default Report Schedule Burst Settings More

Settings

Filter

Field	Operator	Value	Search	Reset	Clear	Apply
Prod Line	equals		Q	bc	-	+ x
Item Number	equals	08002	Q	bc	-	+ x
Item Type	equals		Q	bc	-	+ x
Purchase/Manufacture	equals		Q	bc	-	+ x
Site	equals	10-100	Q	bc	-	+ x
Cost Set	equals	Current	Q	bc	-	+ x
Cost Element	equals	Freight	Q	bc	-	+ x
Add To/Replace Existing Cost	equals	Replace			-	+ x
Use This/Lower Level Costs	equals	This Level			-	+ x
Update	equals	Yes			-	+ x
Element #1	equals	Material	Q	bc	-	+ x
Element #1 Percent	equals	10.00			-	+ x
Element #2	equals		Q	bc	-	+ x

Run

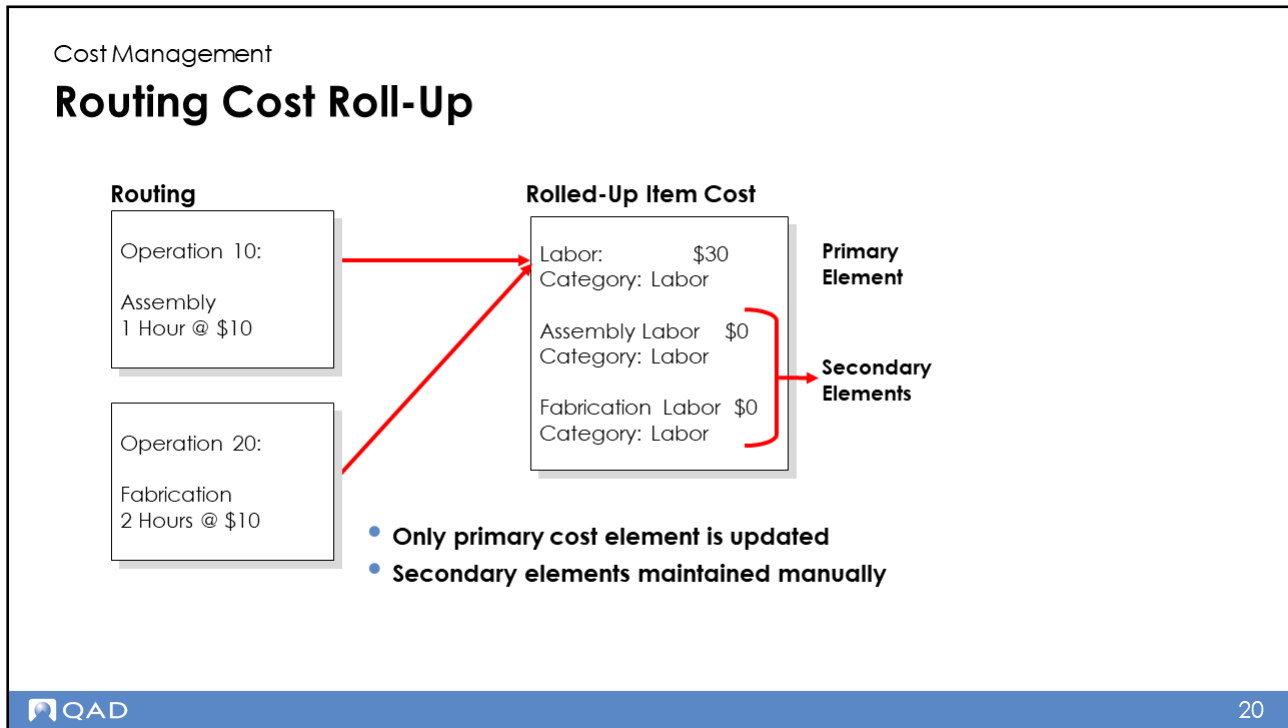
QAD 19

## Let System Calculate Costs

Costs can be entered manually for each individual cost element, as you have seen, or they can be calculated by the system. Item-Element Cost Calculation, allows you to calculate the value for a particular cost element as a percentage of one or more cost elements. For example, you may set Freight to 10% of Domestic Material costs and 30% of Foreign Material costs, and Duty may be 25% of Foreign Material cost.

- You may specify whether the system should calculate costs as a percentage of an item's this- level or lower-level costs
  - The ability to calculate a particular cost element as a percentage of lower-level costs is especially important for companies that calculate fixed overhead as a percentage of total material costs

## Routing Cost Roll-Up



### Routing Cost Roll-Up

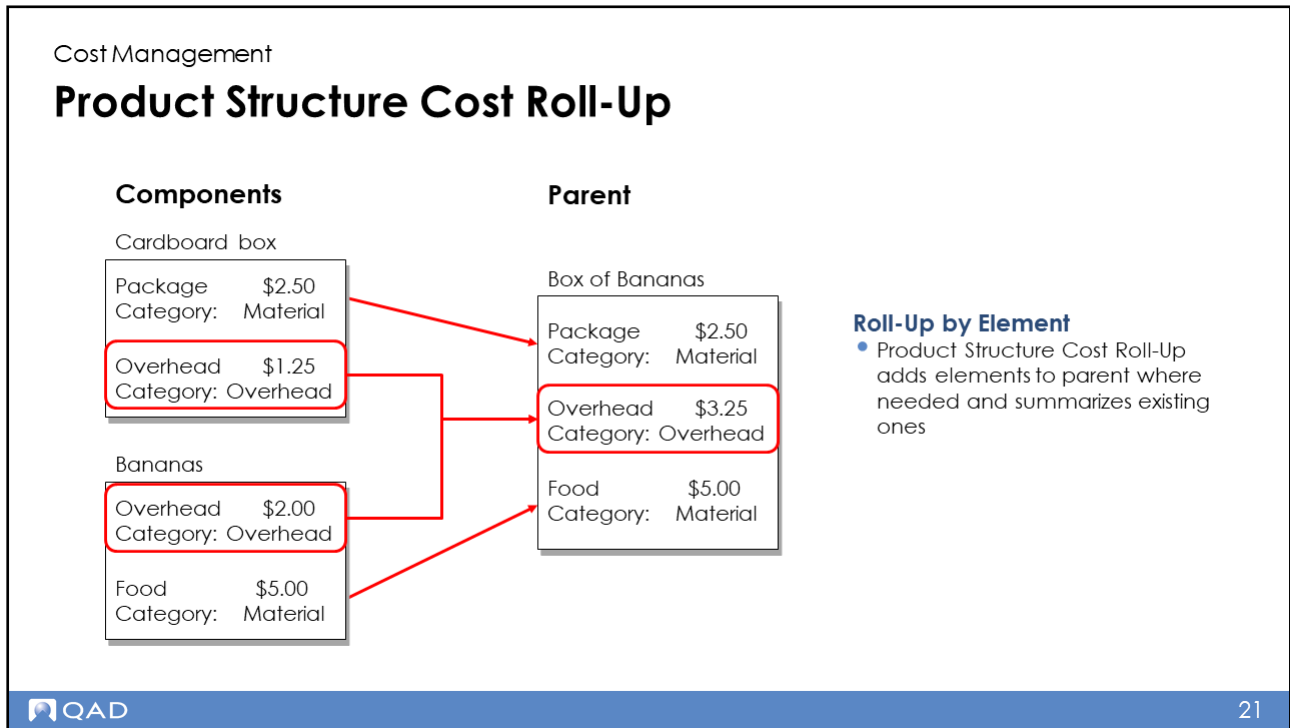
The Routing Cost Roll-Up, works a bit differently than the Product Structure Cost Roll-Up. While labor, burden, and subcontract cost elements can be created and maintained manually through cost maintenance functions, Routing Cost Roll-Up calculates labor, burden, and subcontract costs and places those costs in the primary cost elements for each category. Any non-primary labor, burden, or subcontract cost elements are not affected.

**Example** In the example in the figure above, we have a routing with two operation steps: assembly and fabrication. The Routing Cost Roll-Up uses this operation information to calculate the total labor cost for the item. This cost is stored under the primary cost element for the cost category Labor. In the example, this is the cost element Labor.

The other two non-primary cost elements—Assembly Labor and Fabrication Labor—are not affected by the cost roll-up. If the total cost of labor needed to be split into assembly and fabrication, it would have to be done manually.

The same process is used to calculate burden and subcontract costs. The Routing Cost Roll-Up calculates the total cost from all operations and stores it in the primary cost element for each of these categories.

## Product Structure Cost Roll-Up



### Product Structure Roll-Up

We indicated that the material and overhead costs for all components are accumulated and recorded as lower-level costs for the parent. But, when material costs are split into several cost elements, each of these must be rolled up separately.

**Example** A box of bananas, the parent item, consists of a box and a bunch of bananas. The cost of each of these components is split into cost elements:

- Bananas cost \$7, two elements: \$5 Food and \$2 Overhead
- Cardboard boxes cost \$3.75, two elements: \$2.50 Packaging and \$1.25 Overhead

When we roll up the cost of a box of bananas (assuming a quantity of one and no scrap), the lower-level cost is \$10.75, split into three elements:

- Food, \$5
- Package, \$2.50
- Overhead, \$3.25

Components need not have the same set of cost elements as the parent. The roll-up records one element at the parent level for each cost element found in any of its components. If the component's cost elements were not

already on the list of elements for the parent item, the system adds them and records their cost. The cost of common cost elements is summarized and recorded on the parent.



## Cost Reporting

Cost Management			
<b>Cost Reporting</b>			
Detail		Posted to GL in Summary	
Domestic content	10.00	}	= 17.50 Material
Foreign content	5.50		
Packaging	2.00		
Assembly labor	25.00	}	= 45.00 Labor
Fabrication labor	20.00		
Burden	10.00	=	10.00 Burden
Factory OH	12.00	}	= 17.00 Overhead
Insurance	5.00		
Subcontract	2.50	=	2.50 Subcontract
Total Std Cost	92.00	=	92.00

- View by element in Product Structure Costs, or Routing Costs
- No reporting to financials by elements

## Cost Reporting

When you look at costs in detail by element, you will see them broken down much like the costs displayed in the figure above. Some reports give you the option of presenting cost information in detail by element or in summary by category. Summarized reports show only the totals for each of the five cost categories.

**Example** The example in the figure above shows the difference between the information provided by a detailed report and a summarized report.

- A detailed report shows each of the cost elements in sequence by cost category and element. It would print each of the cost elements and their individual amounts.
- A summarized report shows only the totals by category. These categories are always material, labor, burden, overhead, and subcontract.

**Note** Costs are only subdivided by cost element on cost reports, such as the Product Structure Costs, or Routing Costs. Costs are not separately identifiable by cost elements through production order processing, cost of goods sold posting, or configured sales order costing. All GL posting functions continue to work with, and only with, the total for each cost category.

## Product Structure Costs

Cost Management

# Product Structure Costs

Product Structure / Formula Costs  
10USA USD

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7/7/2021  
2:45:56 AM

Site: 10-100 Cost Set: Current

Level	Component Item	Qty Per	UM	T	P/M	Material	Labor	Burden	Overhead	Subcontract	Cost Total
Parent	01020		EA		M						
	Implantable Ultra Rev. A		This Level			0.00	2,992.36111	9.44785	0.00	0.00	3,001.80896
	5/27/2021		Lower Level			512.36322	2.70913	0.04038	0.00	0.00	515.11273
	Yield 72%		Unit Total			512.36322	2,995.07025	9.48823	0.00	0.00	3,516.92169
1	50010	1.0	EA		M						
	Acoustic Transducer A		This Level			0.00	1.06	0.01692	0.00	0.00	1.07692
	5/27/2021		Lower Level			55.27913	0.89058	0.01215	0.00	0.00	56.18186
	Unit Total					55.27913	1.95758	0.02907	0.00	0.00	57.25878
	Ext Total					55.27913	1.95758	0.02907	0.00	0.00	57.25878

• View by category

Product Structure / Formula Costs  
10USA USD

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7/7/2021  
2:46:25 AM

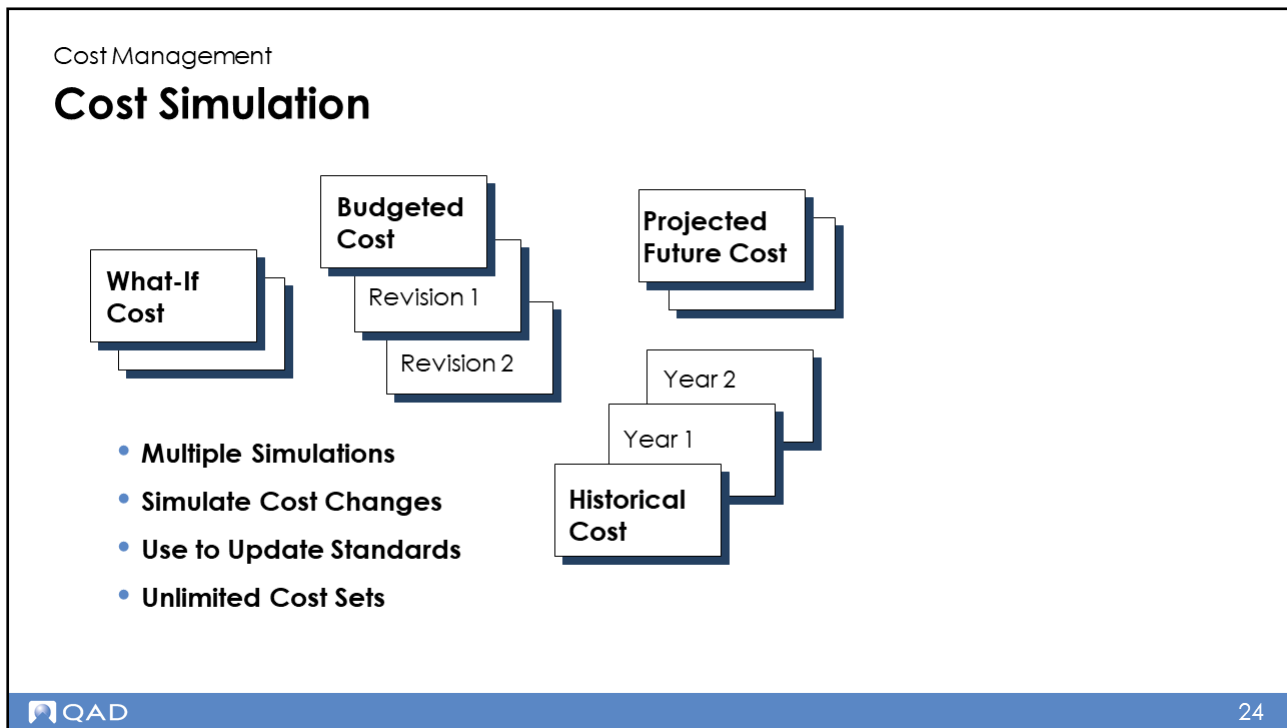
Site: 10-100 Cost Set: Current

Level	Component Item	Qty Per	UM	T	Element	Cat	Cost	Cost LL	Cost Total	Extended Cost
Parent	01020		EA		Material	Mat	0.00	512.36322	512.36322	512.36322
	Implantable Ultra Rev. A				Labor	Lab	2,992.36111	2.70913	2,995.07025	2,995.07025
	5/27/2021				Burden	Bur	9.44785	0.04038	9.48823	9.48823
	Scrap 0.00%				Overhead	Ove	0.00	0.00	0.00	0.00
	Yield 72%				Subcontr	Sub	0.00	0.00	0.00	0.00
	Component Item: 01020				Total		3,001.80896	515.11273	3,516.92169	3,516.92169
1	50010	1.0	EA		Material	Mat	0.00	55.27913	55.27913	55.27913
	Acoustic Transducer A				Labor	Lab	1.06	0.89058	1.95058	1.95058
	5/27/2021				Burden	Bur	0.01692	0.01215	0.02907	0.02907
	Unit Total				Overhead	Ove	0.00	0.00	0.00	0.00
	Ext Total				Subcontr	Sub	0.00	0.00	0.00	0.00
	Component Item: 50010				Total		1.07692	56.18186	57.25878	57.25878

• View by element



## Cost Simulation



### Introduction

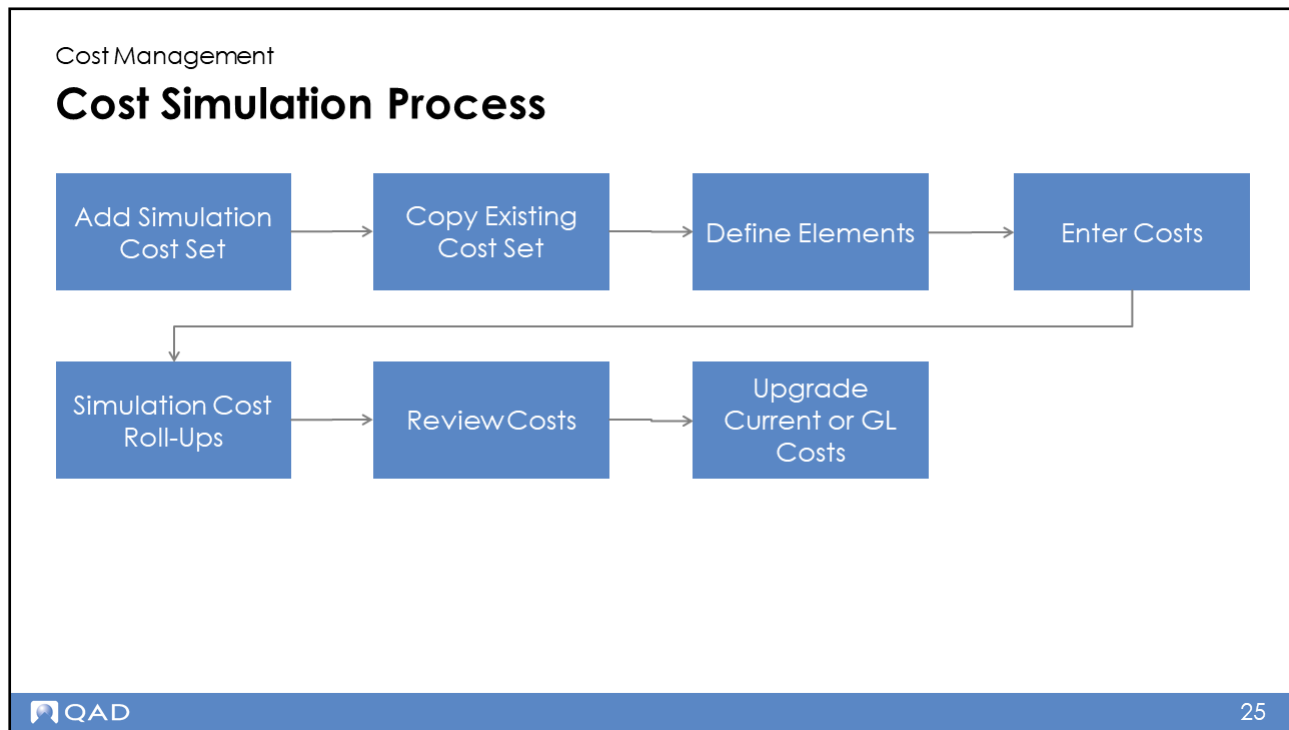
In addition to current and GL cost sets, it is also possible to set up an unlimited number of simulation cost sets. These are used to develop and/or store information for:

- “What If?” costs
- Budgeted costs
- Projected costs
- Historical costs

Cost simulation functions provide you with the ability to set up different cost scenarios and test the impact of cost changes. Unlike the other cost roll-up and update functions, cost simulation calculations look at an entirely different set of cost standards. You can set up different work center labor and burden rates, different subcontract operation costs, and different item material and overhead costs. Simulation roll-up functions look at these costs rather than the standards.

**Note** The Item Site Costs screen includes all cost set types (GL, Current and Simulation). The Simulation Item Site Costs screen only includes Simulation Cost Sets. This allows you to set up menu security so that many users can have access to the simulation functionality, while granting only a few the ability to actually affect GL cost sets.

## Cost Simulation Process



### Cost Simulation Process Overview

To develop a simulation, first set up the cost set and beginning costs, usually by copying an existing set of costs. This creates cost elements and copies the costs you specify.

- If you set up a new cost set manually, you will have to define the cost elements and enter the direct item costs, work center rates, and subcontract costs. Then these costs and rates can be adjusted either manually or through mass update functions.

Once the costs have been set up, roll-up functions calculate the simulated item costs. As in standard cost development, manufacturing costs are rolled up and then product structure costs. The roll-up process uses the BOM and routing specified for each item in Items. Simulated costs can be used to update current or GL item costs, work center rates, and subcontract costs.

### Comparison of Regular Costing and Cost Simulation

Regular costing and cost simulation differ in terminology and how costs are entered.

- In regular costing, enter purchased material and overhead rates in Item Site Costs. You can enter this-level costs for any cost element. In cost simulation, these are referred to as item-element costs and are entered using Simulation Item Site Costs.
- In regular costing, enter subcontract operation cost into the routing using Routings. In cost simulation, enter subcontract cost in Simulation Subcontract Costs. Unlike Routings, here you can subdivide subcontract costs into different cost elements.

- In regular costing, enter work center labor and burden rates in Work Centers. In cost simulation, enter rates in Simulation Work Center Rates. Rates can be subdivided into different cost elements.

**Note** Individual costs can be changed on a simulation, but there is no separate product structure and routing so you cannot simulate structure changes or routing changes. All cost simulation calculations use the standard BOM and routing identified in Items. If you have the same item/site combination in Items, the standard routing and BOM from Items will be used to roll up costs.

## Add Simulation Cost Set

Cost Management

# Add Simulation Cost Set

The screenshot shows the QAD Cost Accounting Manager interface. The main title is 'Add Simulation Cost Set'. The breadcrumb trail is 'Cost Accounting Manager > Inventory > Production > Product Costing > Requisitions > Cost Analysis > More'. The left sidebar shows a list of Cost Sets: CU-01 (Current Cost Set), Current (Default Current), dsite4gl, GL-01 (GL Cost Set 01), Standard (Default GL Cost Set), and SIM01 (Simulation set). The main area displays the 'SIM02 Simulation Cost Set' form. The form has the following fields: Cost Set (SIM02), Description (Simulation Cost Set), Cost Set Type (Simulation), and Costing Method (None). Below the form is a table for 'Elements' with columns for Cost Element, Category, and Description. The table contains two rows: 'Burden' and 'Labor'. The bottom right corner of the form has 'Save' and 'Cancel' buttons. The QAD logo is in the bottom left corner, and the page number '26' is in the bottom right corner.

### Add Simulation Cost Set

- Enter a new cost set in Cost Sets, of type Simulation—cost simulation functions work only with cost sets of this type
- Cost sets of type Simulation must have a costing method of None
- Cost sets of type Simulation cannot be assigned to a site or updated by transactions, or used to value transactions. It is used to allow changes for the purpose of cost analysis only or to establish costs for future periods.

## Copy Existing Cost Set

### Copy Existing Cost Set

Generally, it is easier to start the simulation by copying data from one cost set and site to the simulation. This can be done using various selection criteria in Cost Set Copy to Cost Set or Simulation Cost Set Copy to Cost Set.

#### Cost Set Copy to Cost Set

Use Cost Set Copy to Cost Set to copy costs stored in one cost set to another cost set.

For each item and site, multiple sets of costs can be maintained. You can copy costs between different types of cost sets (GL, current, and simulation) within the same site or between different sites. This function can take a long time to process. When you use this function to update the GL cost set assigned to a site, inventory is revalued to reflect the new costs.

After costs are copied, you can adjust them manually in Item-Site Cost Maintenance or have the system calculate costs as a percentage of one or more cost elements in Item-Element Cost Calculation.

You copy cost sets typically when:

- Costs for items used at more than one site can be entered for one site and then copied to all of the others.
- Generating costs for the next period, you can use the active GL or current cost set as a basis, and then make adjustments.
- For a simulation using costs stored in another cost set and adjusting for possible cost changes. When creating a new simulation, also run Item/Routing to Simulation Copy to initialize work center and routing costs in the simulation.

You must specify both a site and cost set for the source and target cost sets. Records are selected based on the selection criteria you enter. The system first looks for item data specific for the site. If none is found, the system uses the item master record.

You can enter values in the Negative Change Allowed and Positive Change Allowed % fields to indicate the percentage change to allow on all costs copied.

When one cost set is copied to another, costs may already exist in the target cost set. If so, costs are updated only if the difference between the costs lies within this tolerance range.

When the GL cost set assigned to a site is updated using this function, inventory is revalued to reflect the new costs. To reflect this cost change in work in process (WIP) and open sales orders, run WIP Material Cost Revaluation.

When a site is the source for GL costs at other sites, updating the active GL cost set automatically generates cost adjustment (CST-ADJ) transactions at any target sites. You cannot update GL costs at a target site, since these costs are referenced from the source site.

### **Simulation Cost Set Copy to Cost Set**

Costing Managers can use Simulation Cost Set Copy to Cost Set to copy direct costs from one cost set to a simulation cost set.

Simulation Cost Set Copy to Cost Set is similar to Cost Set Copy to Cost Set; the difference is that you are copying only to a simulation cost set from another cost set. So, the To Cost Set must be set to Simulation, while the From Cost Set can be any cost set.

Records are selected based on the selection criteria you enter. The system first looks for item data specific for the site. If none is found, the system uses the item master record.

You can enter values in the Negative Change Allowed and Positive Change Allowed % fields to indicate the percentage change to allow on all costs copied.

When one cost set is copied to another, costs may already exist in the target cost set. If so, costs are updated only if the difference between the costs lies within this tolerance range.

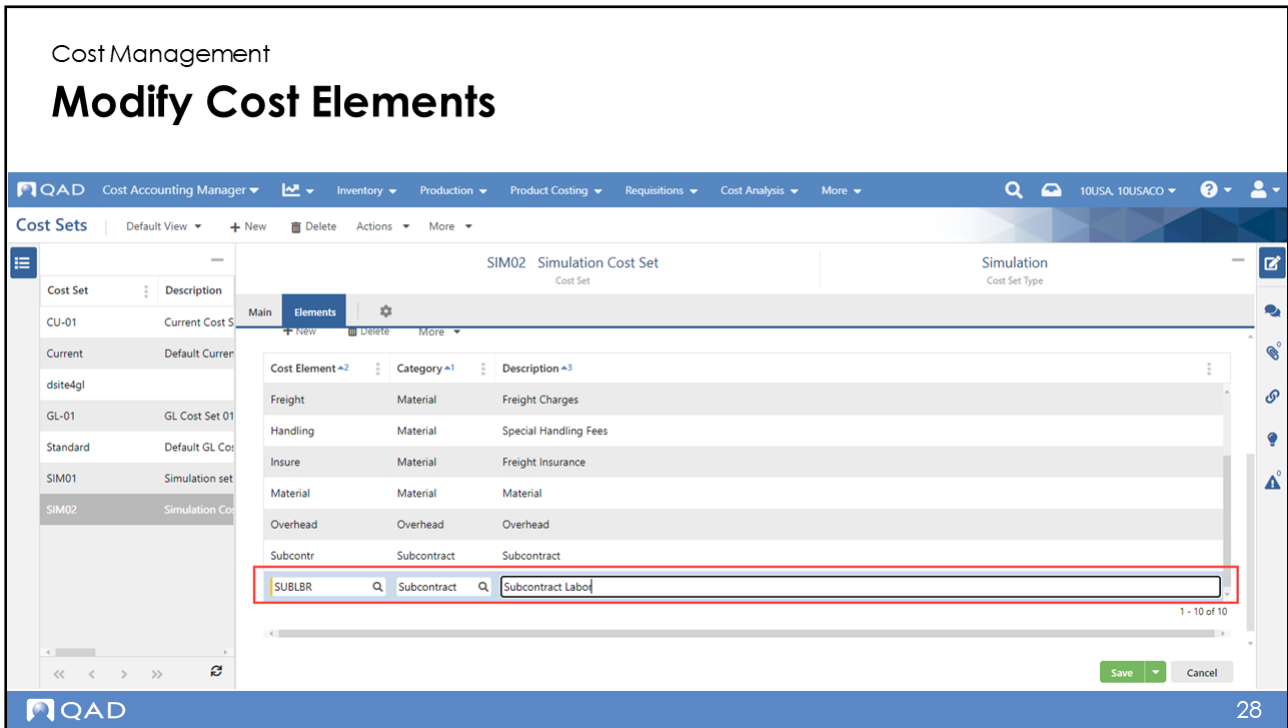
**Notes** Leave the Change Allowed % fields blank to disable the check for percentage difference between the two cost sets.

- Cost Set Copy to Cost Set will initialize those items and cost elements copied to this set for manipulation. Additional elements may be added, but this forms the basis of the simulation process.

Typically, only purchased items and their costs are copied; manufactured costs will be calculated.



## Modify Cost Elements



### Modify Cost Elements

In the simulation process, you may want to split subcontract or overhead into more than one sub- element. For example, you may wish to divide subcontract cost into two elements—material and labor cost—for which costs can be added and maintained separately. You can do this by using Cost Sets.

**Note** The cost of any sub-elements will be added to existing direct material cost, so you will first want to zero out any existing material cost using Simulation Item Site Costs.

## Simulation Cost Update

Cost Management

# Simulation Cost Update

Category	Element	This Level	Lower Level	Total	Primary	Add On
Material	Freight	1d	0.00	0.00		
Burden	Burden	9.44785	0.04038	9.48823		
Labor	Labor	2,992.36111	2.70913	2,995.07025		
Material	Material	0.00	512.36322	512.36322		
Overhead	Overhead	0.00	0.00	0.00		
Subcontract	Subcontr	0.00	0.00	0.00		

### Enter Costs

- To enter costs manually, use Simulation Item Site Costs, Simulation Subcontract Costs, Simulation Work Center Rates
- To let the system calculate costs, use Simulation Item-Element Cost Calculation, Simulation Work Center Rate Update
- To copy costs from another source, use Simulation Cost Set Copy to Cost Set, Cost Set Copy to Cost Set, Item Routing To Simulation Copy

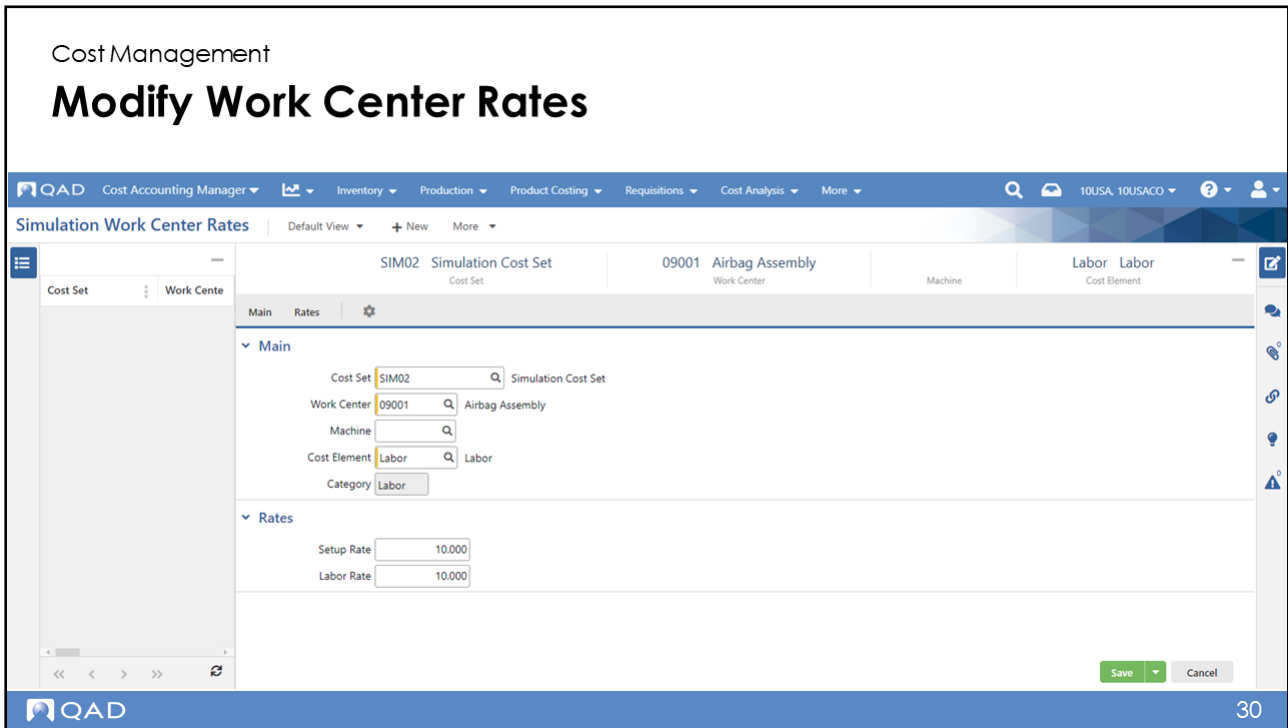
### Enter Costs Manually

Once a simulation cost set has been initialized, usually you want to make changes. The cost of a certain commodity may have changed (for example, gold prices may have gone up 25%), a new union contract may have increased labor rates, or you may be planning a change in overhead rates. The whole idea of cost simulation is to give you a vehicle so that you can test the effects of such changes without affecting your current or GL costs.

- With QAD system's simulation functions, you can do the following.
  - Enter the direct item costs in Simulation Item Site Costs (see figure above). This looks the same as Item Site Costs, but it only lets you enter costs for Simulation type cost sets.
  - Enter work center rates in Simulation Work Center Rates
  - Enter subcontract costs in Simulation Subcontract Costs



## Modify Work Center Rates



### Modify Work Center Rates

Because labor or burden often make up a significant portion of total cost, it can be useful to simulate changes in these costs.

Use Item Routing To Simulation Copy, to copy work center rates for labor, burden, and subcontract cost from user-specified routings into the simulation cost set.

Next, use Simulation Work Center Rates, to change labor, labor burden, or machine burden rates. You could, for example, evaluate the impact of a 15% increase in labor cost by multiplying the existing labor rate by 1.15 and entering that value for the labor cost element. Specify the cost elements of Labor and Burden to access the respective fields of the Simulation Work Center record. (As you will see, you can also let the system calculate and update the rates.)

- All work center costs are associated with cost elements labor and burden. If you want to split labor or burden into more than one cost element, do this manually by using Simulation Item Site Costs.
- For each work center and machine, enter hourly rates for set-up and labor, as well as hourly rates for labor and/or machine burden

## Modify Subcontract Costs

Cost Management

# Modify Subcontract Costs

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Simulation Subcontract Costs | Default View | + New | More

SIM02 Simulation Cost Set | 09001 Routing Code | 20 Operation | SUBLBR Subcontract Labor

Cost Set: SIM02 | Routing Code: 09001 | Operation: 20 | Cost Element: SUBLBR | Cost: 10.00

Save | Cancel

QAD 31

### Modify Subcontract Costs

Companies that subcontract some of their production may want to compare simulated effects of changes in their subcontract costs to simulated costs of doing the work in-house instead. The Simulation Subcontract Costs, lets you run such simulations.

- All subcontract costs are associated with cost element “Subcontr.” To split Subcontract into more than one cost element—for example, fixed and variable costs—do this manually using Simulation Subcontract Costs.

Here, you only specify the routing code, operation number, subcontract cost element, and amount. All of the other routing information (for example, set-up and run times) comes from the standard routing.

## Work Center Rate Update by Percentage

Cost Management  
**Work Center Rate Update by Percentage**

Simulation Work Center Rate Update

Settings

Filter

Work Center equals 09001

Machine equals

Cost Set equals SIM02

Cost Element equals

Change equals 10.00

Calculate Labor Rates equals Yes

Calculate Burden Rates And % equals Yes

Update equals Yes

Simulation Work Center Rate Update

10USA USD

Page 1 / 1  
7/8/2021  
8:35:26 AM

Work Center	Description	Machine	Category	Element	Cost	Setup Rate	Labor Rate	Labor Burden Rate	Labor Burden %	Machine Burden
09001	Airbag Assembly		Labor	Labor	MFG-	10.00	10.00			
					MFG-	11.00	11.00			
09001	Airbag Assembly		MFG-BUR	Burden	MFG-			10.00	0.00%	0.00
					MFG-			11.00	0.00%	0.00

End of Report

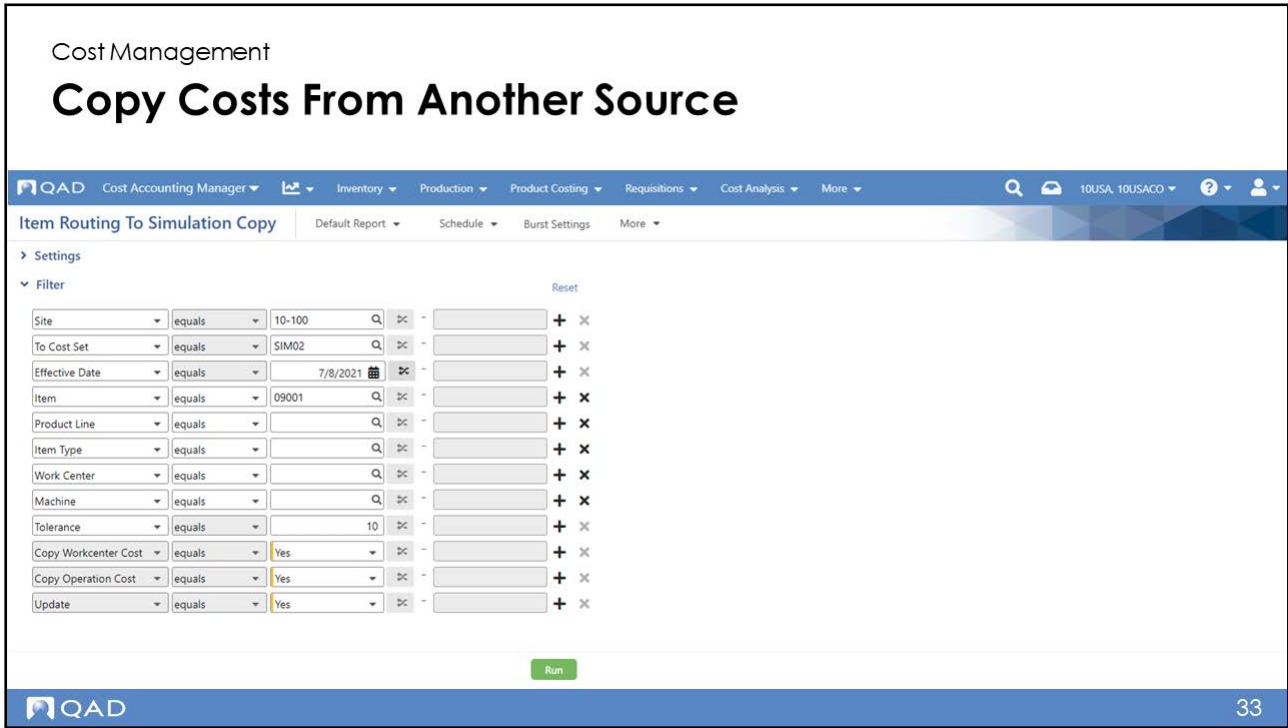
### Let the System Calculate Costs

As we have seen, all costs can be changed manually, but additionally, there are update functions that allow you to adjust costs up or down by a given percentage.

- Simulation Work Center Rate Update, updates work center labor and/or burden rates. (Shown in figure above.)
  - You can update all or some work centers and machines. Perhaps labor rates in one work center have gone down by 5% (enter a minus sign before the percentage change, -5%) or all costs have gone up by 10%. The cost update can quickly make the change.
- Simulation Item-Element Cost Calculation, lets you adjust the cost of one or more cost elements
  - This can be done for all items in a cost set, or you can select them by item number, product line, and item type. For example, you may increase Freight element costs for items of type FGI (finished goods), or decrease Duty by 100% on all intra-EC sourced items, increase Factory Overhead by 5% on all Fabricated items, or increase the purchased material cost of just one item.

Once changed, these are the rates used for simulation cost calculations.

## Copy Costs From Another Source



### Copy Costs from Another Source

As you have already seen, you can use Cost Set Copy to Cost Set or Simulation Cost Set Copy to Cost Set, depending on the user’s permissions, to copy item costs from a GL or current cost set to a simulation.

You can also use the following copy functions.

- Simulation Cost Set Copy to Cost Set, allows new simulations to be based on old ones. To establish a new simulation, create it in Cost Sets. Then copy the data from an existing simulation to the new one as a starting point. Item, work center, and operation (subcontract) costs can all be copied.

Note: The only difference between Simulation Cost Set Copy to Cost Set and Cost Set Copy to Cost Set is that the first one only allows you to select a Simulation Cost Set as the To Cost Set.

- Use Item Routing to Simulation Copy, to copy work center labor and burden rates, and subcontract costs to the simulation from the production data



## Simulation Routing Cost Roll-Up

Cost Management

# Simulation Routing Cost Roll-Up

QAD
10USA 10USACO

**Simulation Routing Cost Roll-Up**    Default Report    Schedule    Burst Settings    More

> Settings

▼ Filter

Site	equals	10-100	Q	bc	-	+	×
Cost Set	equals	SIM02	Q	bc	-	+	×
Item Number	equals	09001	Q	bc	-	+	×
Item Type	equals		Q	bc	-	+	×
As of Date	equals	7/8/2021	📅	bc	-	+	×
Roll-up Labor Time	equals	Yes		bc	-	+	×
Roll-up Setup Time	equals	Yes		bc	-	+	×
Roll-up Lead Time	equals	Yes		bc	-	+	×
Roll-up Item Yield	equals	Yes		bc	-	+	×
Roll-up Labor Cost	equals	Yes		bc	-	+	×
Roll-up Burden Cost	equals	Yes		bc	-	+	×
Roll-up Subcontract Cost	equals	Yes		bc	-	+	×
Include Yield in Cost	equals	Yes		bc	-	+	×

Reset

**Simulation Routing Cost Roll-Up**  
10USA USD

Page 1 / 2  
7/8/2021  
9:17:51 AM

Item	Description	Routing	This level costs	Labor	Burden	Subcontract
09001	Airbag	09001		40.00	40.00	0.00
			<b>Old Cost</b>	30.01	30.01	10.00
			<b>New Cost</b>	-24.98%	-24.98%	
			<b>% Change</b>	-9.99	-9.99	10.00
			<b>Amt Change</b>			

Run

QAD
34

### Simulation Cost Roll-Ups

Once all of the simulation costs have been established, roll-up functions are used to calculate total item cost—this-level plus lower-level costs. The calculations are exactly the same as in the regular Product Structure and Routing Cost Roll-Up functions. The only difference is that you may not process current or GL cost sets in the simulation roll-up functions.

- Similar to regular cost roll-up functions, you should calculate manufacturing costs prior to calculating component costs, which means that you should run the Simulation Routing Cost Roll-Up, prior to running the Simulation Structure Cost Roll-Up (see next page)



## Simulation Structure Cost Roll-Up

Cost Management

# Simulation Structure Cost Roll-Up

QAD Cost Accounting Manager
Inventory
Production
Product Costing
Requisitions
Cost Analysis
More
10USA 10USACO

Simulation Structure Cost Roll-Up
Default Report
Schedule
Burst Settings
More

> Settings

▼ Filter

Reset

Site	equals	10-100	+	×
Cost Set	equals	SIM02	+	×
Item Number	equals	09001	+	×
Prod Line	equals		+	×
Item Type	equals		+	×
Group	equals		+	×
As of Date	equals	7/8/2021	+	×
Low Level Material	equals	Yes	+	×
Low Level Labor	equals	Yes	+	×
Low Level Burden	equals	Yes	+	×
Low Level Overhead	equals	Yes	+	×
Low Level Subcontract	equals	Yes	+	×
Low Level Labor Time	equals	No	+	×

QAD

### Simulation Structure Cost Roll-Up

10USA USD

Page 1 / 2

7/8/2021

9:22:43 AM

Item	Site	LUM	Cost Set		Simulation Cost Set			Total		
			SIM02	Simulation Cost Set	Material	Labor	Burden		Overhead	Subcontract
09001	10-100	EA			30.00	30.01	30.01	0.00	10.00	100.02
Airbag					32.00	30.01	30.01	0.00	10.00	102.02
					6.67%	0.00%	0.00%		0.00%	2.00%
					Amt Change	2.00	0.00	0.00	0.00	2.00

Run

QAD
35



## Cost Set Report

Cost Management
1 / 2 | 100% +

# Cost Set Report

**Item Cost Report**

10USA USD

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7/9/2021

3:19:59 AM

Site	Description	Line	Description				
10-100	Ultrasound Mfg Site	10	Finished Goods (FGI)				
	09001	EA	Airbag				
Cost Set	Material	Labor	Burden	Overhead	Subcontract	Cost Total	Updated
Current	38.8023	28.18833	21.64774	1.00	0.00	89.63837	7/1/2021
Standard	30.00	40.00	40.00	0.00	0.00	110.00	5/18/2021
SIM02	32.00	30.01	30.01	0.00	10.00	102.02	7/8/2021

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### Cost Set Report

Simulated costs can be reviewed using any of the standard reports and inquiries. In particular, you may want to use the following reports.

- Item Costs (see figure above)
- Comparative Cost Sets (see next page)




## Comparative Cost Set Report

Cost Management

# Comparative Cost Set Report

ComparativeCostSet
1 / 1 | - 100% + | [Print] [Refresh]



**Comparative Cost Set Report**  
10USA USD

Page 1 / 1  
7/9/2021  
3:27:09 AM


Item Number		Material	Labor	Burden	Overhead	Subcontract	Cost Total
09001	Standard	30.00	40.00	40.00	0.00	0.00	110.00
Airbag	SIM02	32.00	30.01	30.01	0.00	10.00	102.02
	% Diff	6.7%	-25.0%	-25.0%	0.0%	100,000+ %	-7.3%

End of Report

**Search Criteria**

---

**Base Site** equals 10-100  
**Base Cost Set** equals Standard  
**Comparison Site** equals 10-100  
**Comparison Set** equals SIM02  
**Item Number** equals 09001


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### Comparative Cost Set Report

After you have made changes to item costs, rates, or routings in the Simulation cost set, you can quickly compare that cost set to the GL and Current cost sets by using Comparative Cost Sets.



## Cost Update

Cost Management  
**Cost Update**

Simulation to WC & Routing Cost Copy

Settings

Filter

From Cost Set equals SIM02 + X

Effective Date equals 7/8/2021 + X

Routing equals 09001 + X

Operation equals + X

Work Center equals 09001 + X

Machine equals + X

Tolerance equals 10 + X

Copy Workcenter Cost equals Yes + X

Copy Operation Cost equals Yes + X

Update equals Yes + X

Reset

Simulation to WC & Routing Cost Copy

10USA USD

Page 1 / 1  
7/8/2021  
3:58:01 AM

From Cost Set: SIM02 Effective Date: 7/8/2021 Tolerance: 10 %

Work Center	Machine	Cost	Setup Rate	Labor Rate	Labor Burden Rate	Labor Burden %	Machine Burden	Unchanged
09001		Old	10.000	10.000	20.000	0.00%	20.000	
		New	10.000	10.000	20.000	0.00%	20.000	Setup,Labor,Lbr Bdn,Lbr Bdn %,Machine B

Routing	Operation Cost	Subcontract Cost	Unchanged
09001	20 Old	0.00000	
	New	10.00000	

End of Report

Run

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### Update Current or GL Costs

- Use Simulation to WC & Routing Cost Copy, and Cost Set Copy to Cost Set

### Copy Simulations to Items and Sites

You can use the simulated cost to update current or GL costs (simulated cost sets cannot be used directly as current or GL costs).

### Copy Work Center and Subcontract Costs to Production Database

Use Simulation to WC & Routing Copy, to copy the work center and subcontract costs to the production database. The program copies the work center set-up rate, labor rate, burden rate, machine burden rate, and labor burden percentage to user-specified work center records. It also copies subcontract costs to the specified routings.

- You can run the Work Centers, and the Routing Costs, to verify that expected changes have been made

### Copy Simulation Costs to GL Cost Set

Use Cost Set Copy to Cost Set, to copy the simulation data into *another* GL cost set. This ensures that you maintain a copy of your previous standard costs. Then use Cost Set to Site Assignment, to replace the standard cost set at that site with the new GL cost set. This will update the inventory value if the GL cost set is updated. All changes will cause an update to Inventory with the offset to the Cost Revalue account of the item. Once the GL cost set is updated, the WIP Material Cost Revaluation, should be run to update WIP and the production order bills for unissued material (see next page.) The Sales Orders revaluation should also be run if the sales gross margin report is used.



- You may use the Item Costs to review the data. The Item Costs shows both the current and GL cost data for items.



## Verify Changes

Cost Management

# Verify Changes

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

Work Centers | Default View | More

Work Ctr starts with  Search

Work Ctr	Machine	Description	Dept	Supplier	Backflush Location	Mach/Op	Labor Rate	Labor Burden Rate	Labor Burden Percent
09001		Airbag Assembly				1	10.00	20.00	
1000		General Asse						0.02	

**Routing Cost Report**

10USA USD

Routing 09001

Page 1 / 1

7/9/2021

4:18:19 AM

Op 10										
Work Ctr	Machine	Setup Time	Setup cost	Setup Rate	Labor Cost	Lbr Bdn %	Lbr Bdn Rate	Lbr Burden	Total	Subcontract
		Order Qty	Unit Run	Labor Rate		Mch per Op	Mch Bdn Rate	Mch Burden	Burden	
wc09010		1.0	10.00	10.00	20.000	0.00%	0.00	0.00	20.00	0.00
		1.0	1.00	10.00		1	10.00	20.00		
Op 20										
Work Ctr	Machine	Setup Time	Setup cost	Setup Rate	Labor Cost	Lbr Bdn %	Lbr Bdn Rate	Lbr Burden	Total	Subcontract
		Order Qty	Unit Run	Labor Rate		Mch per Op	Mch Bdn Rate	Mch Burden	Burden	
wc09020		0.0	0.00	0.00	10.000	0.00%	0.00	0.00	10.00	10.00
		1.0	1.00	10.00		1	10.00	10.00		
Op 30										
Work Ctr	Machine	Setup Time	Setup cost	Setup Rate	Labor Cost	Lbr Bdn %	Lbr Bdn Rate	Lbr Burden	Total	Subcontract
		Order Qty	Unit Run	Labor Rate		Mch per Op	Mch Bdn Rate	Mch Burden	Burden	
wc09030		0.0	0.00	0.00	10.000	0.00%	0.00	0.00	10.00	0.00
		1.0	1.00	10.00		1	10.00	10.00		
<b>Routing Total</b>					<b>40.000</b>				<b>40.00</b>	<b>10.00</b>

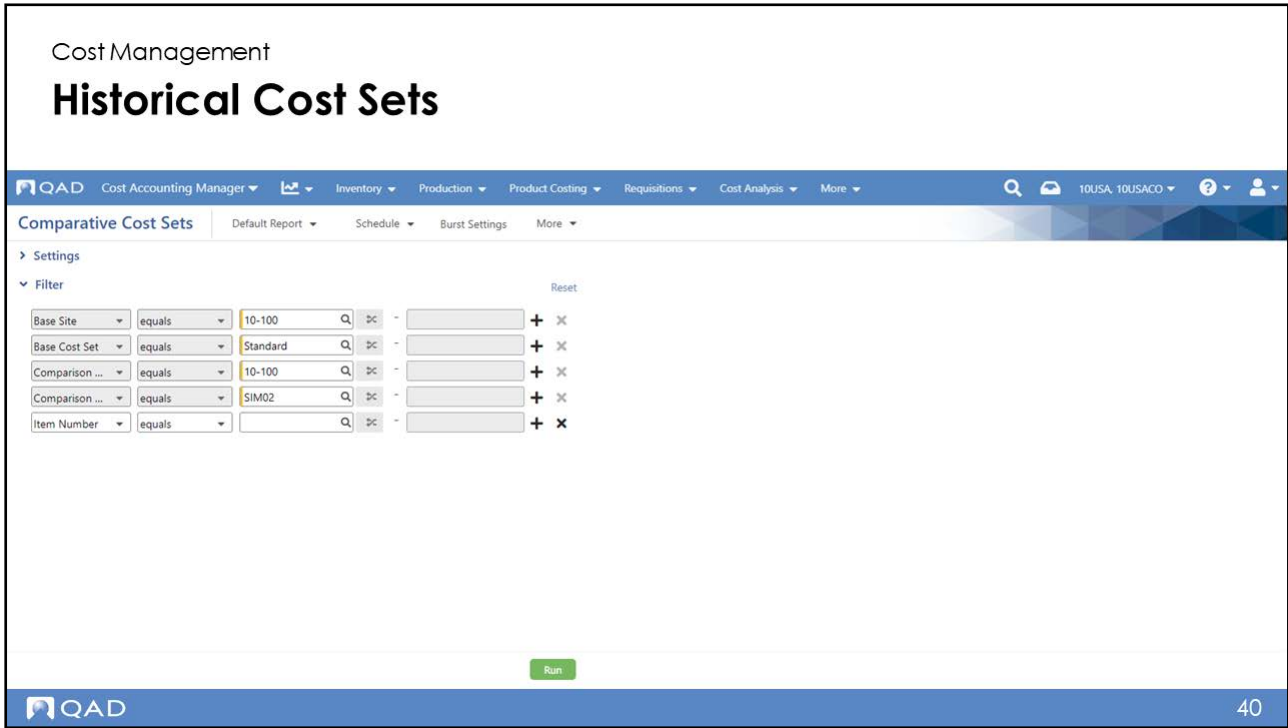
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## Verify Changes

After moving simulation costs to the GL, use Work Centers, and Routing Cost Report, to verify that expected changes have occurred.

Questions? Visit [community.qad.com](https://community.qad.com)

## Historical Cost Sets

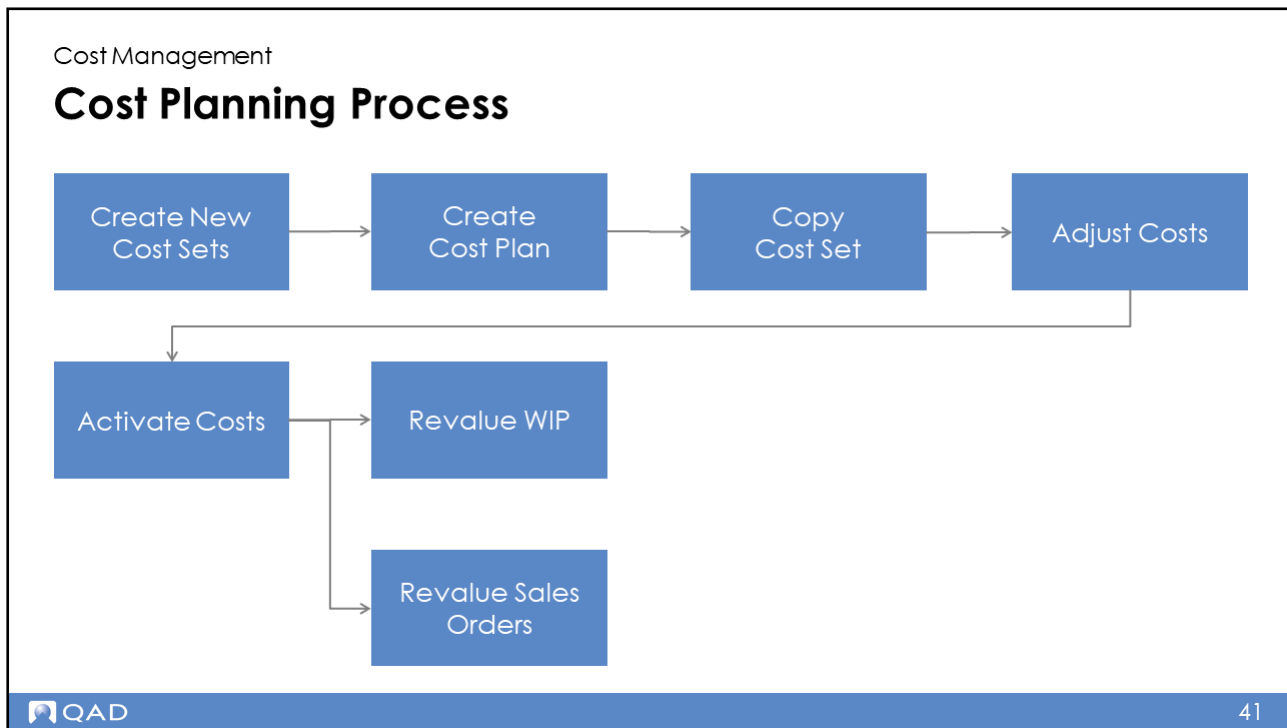


### Historical Cost Sets

You may want to compare the active GL cost set with either simulated cost sets or previously active GL cost sets. For example, you may wish to compare “Qtr 1/20” with “Qtr 2/21.” The system gives you the capability to retain an unlimited number of inactive cost sets and to make comparisons between them or between them and simulated cost sets. For example, the figure above shows the screen for requesting a comparison between cost sets for two quarters.



## Cost Planning Process



### Introduction

Cost planning functions are used to phase in new costs. When you know ahead of time that costs are going to change, you can enter those costs now, but not activate them until the actual changeover date. This is useful in several situations.

- During budgeting, where you can predict future costs, but you are not ready to phase them in yet
- For commodity-based products, where raw material costs change seasonally or on some regular basis
- In hyperinflationary economies, where costs increase by a certain percentage each period

In order to use cost planning, simply set up a new GL cost set and use it to store the projected costs. Then use Cost Plan by Site, to identify the date on which you expect these GL costs to take effect at this site.

- These costs are available for use on MRP and MPS Summary Reports, Both give you the option to use cost plans when calculating the anticipated cost of planned production. This is useful for your planners, particularly if costs are expected to change significantly. They can refer to the cost projections and reschedule production accordingly.

**Note** Entering a cost plan does not change the GL cost automatically on that date. You must run the Cost Plan by Site Update, any time after the start date for costs to change. To activate the costs earlier, use Cost Set to Site Assignment.

## Create New Cost Set for Planning

Cost Management

### Create New Cost Set for Planning

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

10USA, 10USACO

Cost Sets | Default View | + New | Actions | More

Plan01 Plan first quarter  
Cost Set

GL  
Cost Set Type

Main Elements

Main

Cost Set Plan01  
Description Plan first quarter  
Cost Set Type GL  
Costing Method Standard

Elements

+ New Delete More

Cost Element #2	Category #1	Description
Burden	Burden	Burden
Labor	Labor	Labor

Save Cancel

QAD 42

### Create New Costs Sets

- Use Cost Sets, to create a new cost set

When you know how and when costs will change, record the new costs under a new Cost Set in Cost Sets, and attach it to a site with a starting effective date in Cost Plans by Site.

- Suppose you experience a 10% cost increase in the first quarter. You would create a cost set with costs that are 10% higher than normal and name it “1<sup>st</sup> Qtr” or whatever seems appropriate. Similarly, you might want to create a cost set for the third quarter if costs for that quarter were expected to be less than normal.

## Create Cost Plan

The screenshot displays the 'Create Cost Plan' form in the QAD Cost Accounting Manager. The form is titled 'Cost Management Create Cost Plan'. The main form area contains the following fields:

- Site:** 10-100 Ultrasound Mfg Site
- Start Date:** 1/1/2022
- Old Cost Set:** Standard
- Costing Method:** Standard
- Entity:** 10USACO
- New Cost Set:** Plan01 (highlighted in a red box)
- Memo:** Labor rate increasing (highlighted in a red box)

At the bottom right of the form, there are 'Save' and 'Cancel' buttons. The QAD logo and the number '43' are visible in the bottom right corner of the interface.

### Create a Cost Plan

Use Cost Plans by Site, to enter the site and start date specifying when the cost set will be active.

- The figure above shows a cost set created to plan for an anticipated labor rate increase beginning January 1, 2022.

Recording these planned cost changes does not affect GL costs until you run Cost Plan by Site Update, on the exact date the change is to become effective. Until this date, these new costs are used by planners on costed MRP Summary report, and Master Schedule Summary.

## Copy Cost Set as Baseline

Cost Management

# Copy Cost Set as Baseline

QAD Cost Accounting Manager
10USA 10USACO

Cost Set Copy to Cost Set
Default Report Schedule Burst Settings More

> Settings

▼ Filter

From Site	equals	10-100	Q	bc		+	X
From Cost Set	equals	Standard	Q	bc		+	X
To Site	equals	10-100	Q	bc		+	X
To Cost Set	equals	Plan01	Q	bc		+	X
Item	equals	09001	Q	bc		+	X
Product Line	equals		Q	bc		+	X
Item Type	equals		Q	bc		+	X
Item Group	equals		Q	bc		+	X
ABC Class	equals		Q	bc		+	X
Purchase/Manufacture	equals		Q	bc		+	X
Buyer/Planner	equals		Q	bc		+	X
Negative Change Allowed %	equals		Q	bc		+	X
Positive Change Allowed %	equals		Q	bc		+	X

Reset

**Item Cost Set Copy to Cost Set**
Page 1 / 2  
7/9/2021  
8:30:51 AM

Item Number	Item Description	UM	Material	Labor	Burden	Overhead	Subcontract	Total	Error
09001	Airbag	EA	Old Cost	0.00	0.00	0.00	0.00	0.00	0.00
			New Cost	30.00	40.00	40.00	0.00	110.00	
			% Change	100.00%	100.00%	100.00%	0.00%	0.00%	100.00%
			Amount Change	30.00	40.00	40.00	0.00	110.00	

Run

QAD
44

## Copy Cost Set as Baseline

The costs for a planning cost set are usually added by copying an existing cost set as a baseline and then adjusting the costs. Use Cost Set Copy to Cost Set. Or you could copy a cost set into a simulated cost set, modify it, and then copy the accepted simulation as your baseline.



## Change Baseline to Fit Plan

Cost Management

# Change Baseline to Fit Plan

The screenshot shows the QAD Item-Element Cost Calculation interface. The settings on the left are as follows:

- Prod Line: equals
- Item Number: equals
- Item Type: equals
- Purchase/Manufacture: equals
- Site: equals 10-100
- Cost Set: equals Plan01
- Cost Element: equals Labor
- Add To/Replace Existing Cost: equals Replace
- Use This/Lower Level Costs: equals This Level
- Update: equals Yes
- Element #1: equals Labor
- Element #1 Percent: equals 120.00
- Element #2: equals

The main window displays the following data:

Item-Element Cost Calculation  
10USA USD  
Date: 7/9/2021  
Time: 08:36:47  
Page: 1 / 2

Site: 10-100  
Cost Set: Plan01  
Element Percent: Labor 120.00

Item Number	Item Description	UM	Material	Labor	Burden	Overhead	Subcontract	Labor	Cost Diff
09001	Airbag	EA	0.00	40.00	40.00	0.00	0.00	40.00	
			<b>Old This Level</b>	30.00	0.00	0.00	0.00	0.00	
			<b>Old Lower Level</b>	0.00	48.00	40.00	0.00	0.00	48.00 *
			<b>New This Level</b>	30.00	0.00	0.00	0.00	0.00	
			<b>New Lower Level</b>	30.00	0.00	0.00	0.00	0.00	

### Adjust Costs

- Use Item Site Costs, to enter new costs manually, or use Item- Element Cost Calculation, to let the system calculate new costs based on percentages

### Change Baseline to Fit Plan

In Item-Element Cost Calculation, you can change element costs by percentage and let the system calculate the new cost, or, in Item Site Costs, you can enter the new cost directly.

- The example in the figure above indicates a 20% increase in labor rates
- To see the effects in the MRP and MPS summary reports, you must select Update

## Activate Cost Set

Cost Management

# Activate Cost Set

QAD Cost Accounting Manager > Inventory > Production > Product Costing > Requisitions > Cost Analysis > More

Cost Plan by Site Update | Default Report | Schedule | Burst Settings | More

> Settings

Filter

Reset

Site equals 10-100 - + x

Update equals Yes - + x

Run

QAD 46

### Activate Costs

- Use Cost Plan by Site Update, or Cost Set to Site Assignment on the exact date the cost plan is to take effect to activate the cost set

To activate the cost set according to the cost plan, run the Cost Plan by Site Update, or Cost Set to Site Assignment any time after the start date.

In addition to activating the new cost set, the program also changes the inventory to reflect the new costs and posts the cost revaluation amount to the general ledger.

- The Inventory account is debited and the Cost Revalue account is credited with the difference multiplied by the quantity on hand

It is recommended that you print the report.

- If GL costs are changed by mistake, you must manually re-enter the old cost in Item Site Costs

## Revalue WIP

Cost Management  
**Revalue WIP**

QAD Cost Accounting Manager | Inventory | Production | Product Costing | Requisitions | Cost Analysis | More

WIP Material Cost Revaluation | Default Report | Schedule | Burst Settings | More

> Settings

Filter

Account	equals		Q	bc	-		+	x
Sub-Account	equals		Q	bc	-		+	x
Cost Center	equals		Q	bc	-		+	x
Project	equals		Q	bc	-		+	x
Production Order	equals		Q	bc	-		+	x
ID	equals		Q	bc	-		+	x
Item Number	equals		Q	bc	-		+	x
Site	equals	10-100	Q	bc	-		+	x
GL Effective Date	equals	7/9/2021	Q	bc	-		+	x
Summary/Detail	equals	Detail		bc	-		+	x
Update	equals	Yes		bc	-		+	x

Reset

Run

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### Revalue WIP

- Use WIP Material Cost Revaluation, to revalue WIP based on newly activated cost set

Assuming that WIP exists, you will need to revalue it using the newly activated cost set. You can do this by using WIP Material Cost Revaluation.

## Revalue Sales Orders

Cost Management

# Revalue Sales Orders

Sales Order starts with

Sales Order #	Sold-To	Sort Name	Bill-To	Order Date	Due Date	Purchase Order	Salesperson	Currency	Site	Quote
10S10033	10-100	QMI - USA Division	10-100	10/16/2017	10/17/2017			USD	10-100	
10S10035	10-100	QMI - USA Division	10-100	10/16/2017	10/17/2017			USD	10-100	
10S10043	10C1001	MediLogic	10C1001	12/7/2015	12/8/2015	po1	10SP02	USD	10-100	
10S10044	10C1001	MediLogic	10C1001	4/15/2016	4/16/2016		10SP02	USD	10-100	Q104
10S10048	10C1000	LTZ Retail	10-100	10/16/2017	10/17/2017		10SP01	USD	10-400	
10S10051	10c1001	MediLogic	10c1001	3/28/2021	3/29/2021	PO238134	10SP02	USD	10-100	
10S10052	10c1001	MediLogic	10c1001	5/27/2021	5/28/2021	PO0001	10SP02	USD	10-100	
AUTO1	12C1001	Cooper Automotive...	12C1001	5/10/2010	4/27/2017		12SP02	MXN	10-200	
SO031191	31C1003	Sanitarium Health F...	31C1003	5/9/2017	5/9/2017			AUD	10-400	
SO041191	31C1003	Sanitarium Health F...	31C1003	4/17/2017	4/17/2017			AUD	10-400	
SO051701	10C1000	LTZ Retail	10C1000	10/26/2016	5/24/2017		10SP01	USD	10-400	

Records per page: 1 - 25 of many

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The Sales Orders revaluation should also be run if the Sales Order Gross Margin report is used.



## See Effects in MSS and MRP Summary

Cost Management

# See Effects in MSS and MRP Summary

QAD Cost Accounting Manager
Inventory Production Product Costing Requisitions Cost Analysis More
10USA 10USACO

Master Schedule Summary
Default Report Schedule Burst Settings More

Settings

Filter

Item Number	equals	
Site	equals	10-100
Buyer/Planner	equals	
Product Line	equals	
Group	equals	
Item Type	equals	
Supplier	equals	
Purchase/Manufacture	equals	
Include Zero Requirements	equals	No
Cost Totals	equals	Yes
Use Cost Plans	equals	Yes
Include Negative ATP Only	equals	No
Display Negative ATP	equals	No

Master Schedule Summary
Page 2 / 3

10USA USD
7/9/2021

	Past	12/26/21	01/02/22	01/09/22	01/16/22	01/23/22	01/30/22	02/06/22	02/13/22	02/20/22	02/27/22	03/06/22	03/13/22
	12/25/21	01/01/22	01/08/22	01/15/22	01/22/22	01/29/22	02/05/22	02/12/22	02/19/22	02/26/22	03/05/22	03/12/22	03/19/22
Total GL Cost (Planned)													
Prod Forecast	0	0	0	0	0	0	0	0	0	0	0	0	0
Forecast	0	110000	118000	0	0	0	0	0	0	0	0	0	0
Sales Orders	550	0	0	0	0	0	0	0	0	0	0	0	0
Gross Reqs	0	0	0	0	0	0	0	0	0	0	0	0	0
Mstr Sched	66990	0	0	0	0	0	0	0	0	0	0	0	0
Inv Revalue	0	0	0	0	0	0	0	0	0	0	0	0	0
Projected QOH	79420	-30580	-150804	-150804	-150804	-150804	-150804	-150804	-150804	-150804	-150804	-150804	-150804
Avail Promise	79420	0	0	0	0	0	0	0	0	0	0	0	0
Cum ATP	79420	79420	85196	85196	85196	85196	85196	85196	85196	85196	85196	85196	85196

**1,000 x \$1.16 = \$1,160 (current costs)**

**1,000 x \$1.17 = \$1,171 (cost plan reflecting 10% labor rate increase)**

## See Effects of Cost Plans in MPS and MRP Summary

You can see the effects of planned changes by using the Master Schedule Summary, and the MRP Summary.

In example, report shows the effect of cost plan increases, which become effective Sat, Jan 1, 2022 - first work day affected is Monday, Jan 3.

Questions? Visit [community.qad.com](https://community.qad.com)

## Review

Cost Management

### Review

- Cost Management Introduction
- Linked Site Costing
- Multi-Element Costing Setup
- Cost Simulation Process
- Cost Planning Process

## Mastery Question – Yes No

Costing Management

### Mastery Question – Yes No

1. If a site using the average cost method, can you use linked-site costing for it?
  - A. Yes
  - B. No

## Mastery Question – All That Apply

Costing Management

### Mastery Question – All That Apply

2. Which of the following statement is NOT correct?
- A. You will always have five cost categories.
  - B. You can add or delete any cost element.
  - C. Each category can have multiple elements but always has one, and only one, primary element.
  - D. Current and GL cost set must have the same cost element.

## Mastery Question – All That Apply

Costing Management

### Mastery Question – All That Apply

3. The planned cost changes does not affect GL costs until you run:
- A. Cost Plan by Site Update
  - B. Cost Set to Site Assignment
  - C. WIP Material Cost Revaluation
  - D. Item-Element Cost Calculation

## Exercise: Cost Management

Cost Management

### Exercise: Cost Management



## Cost Management

### A. Cost Simulation

In this exercise, you will add a simulation cost set, copy an existing cost set to the simulation cost set, enter costs, and roll-up costs.

1. Use Cost Sets to create a new cost set:

Cost Set	SIM2021
Cost Set Type	Simulation
Cost Method	None

2. Use Cost Set Copy to Cost Set to copy the standard cost set to the simulation cost set:

From Site	10-100
From Cost Set	Standard
To Site	10-100
To Cost Set	Sim2021

3. Use Simulation Item Site Costs to update the material cost for items 07001 and 07002 in cost set SIM2021.

Item	07001
Material	30.00
Item	07002
Material	30.00

4. Use Item Routing To Simulation Copy to copy work center cost and operation cost to cost set SIM2021.

Site	10-100
To Cost Set	SIM2021
Copy Work Center Cost	Yes
Copy Operation Cost	Yes

5. Use Simulation Work Center Rates to update work center wc08001:

Labor Rate	20
Labor Burden Rate	40
Machine Burden Rate	30

6. Use Simulation Routing Cost Roll-Up to roll-up the simulation routing cost for routing 08001.

Site	10-100
To Cost Set	SIM2021
Item Number	08001

7. Use Simulation Structure Cost Roll-Up to roll-up the simulation product structure cost for item 08001.

Site	10-100
To Cost Set	SIM2021
Item Number	08001

8. Use Item Costs to review the simulation cost for item 08001.

Site	Description	Line	Description	Cost Set	Material	Labor	Burden	Overhead	Subcontract	Cost Total	Updated
10-100	Ultrasound Mfg Site	20	FGI Purchased	SIM2021	60.00	2.00	7.00	0.00	0.00	69.00	7/29/2021
	08001	EA	Cushion								

End of Report



- Use Comparative Cost Sets to compare the cost set standard with SIM2021 for item 08001.

QAD		Comparative Cost Set Report					Page 1 / 1
		10USA USD					7/29/2021
							10:38:48 AM
Item Number		Material	Labor	Burden	Overhead	Subcontract	Cost Total
08001	Standard	40.00	1.00	5.00	0.00	0.00	46.00
Cushion	sim2021	60.00	2.00	7.00	0.00	0.00	69.00
	% Diff	50.0%	100.0%	40.0%	0.0%	0.0%	50.0%
End of Report							

- Use Simulation to WC & Routing Cost Copy to copy the simulation work center and routing to standard for GL or current costs.

## B. Cost Planning

In this exercise, you will create a new cost set for cost planning, create cost plan, copy cost set, adjust costs, and activate costs. Assume you are going to create the cost planning for year 2023. If you do it for another year, you can enter the proper cost set code and start date.

- Use Cost Sets to create a new cost set:

Cost Set	Plan2023
Cost Set Type	GL
Cost Method	Standard

- Use Cost Plans by Site to create a cost plan:

Site	10-100
Start Date	1/1/2023
New Cost Set	Plan2023
Memo	Labor rate increasing

- Use Cost Set Copy to Cost Set to copy the standard cost set to the simulation cost set:

From Site	10-100
From Cost Set	Standard
To Site	10-100
To Cost Set	Plan2023

- Use Item-Element Cost Calculation to increase the labor rate by 20%:

Site	10-100
Cost Set	Plan2023
Cost Element	Labor
Element #1	Labor
Element #1 Percent	120%

- Use Cost Plan by Site Update to activate the planning cost set on site 10-100.
- Use Forecasts to set up the forecast 1000 for item 08001 for the last week of year 2022 and the first week of year 2023.
- Use Master Schedule Summary to view the cost effects for the Total GL Cost (Planned).

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CHAPTER 8

# Average Costing





# Average Costing

## Overview

Average Costing

### Overview

- Average Costing
- Why Use Average Costing?
- Example: Standard vs Average
- Average Cost for Purchased Items & Manufactured Items
- Purchase Order Receipts: Standard vs Average
- Production Order Receipts: Standard vs Average
- Partial Production Order Receipts
- Production Order Accounting Close
- Multi-Site Transfers
- Average Costing Exceptions

## Average Costing (Weighted Average)

Average Costing

### Average Costing (Weighted Average)

- Timing/procedure of transactions critical

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

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



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### 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 Sets 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. This new GL Average cost set can now be assigned to the appropriate sites by using Cost Set to Site Assignment.

### 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 Production Order Cost Report, all components should be issued for the entire production 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 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?

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**

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**

Average Costing


### 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**  
PPV = 30,000

**Costs chosen reflect actual**  

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


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**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 Cost for Purchased Items

Average Costing

### Average Cost for Purchased Items

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

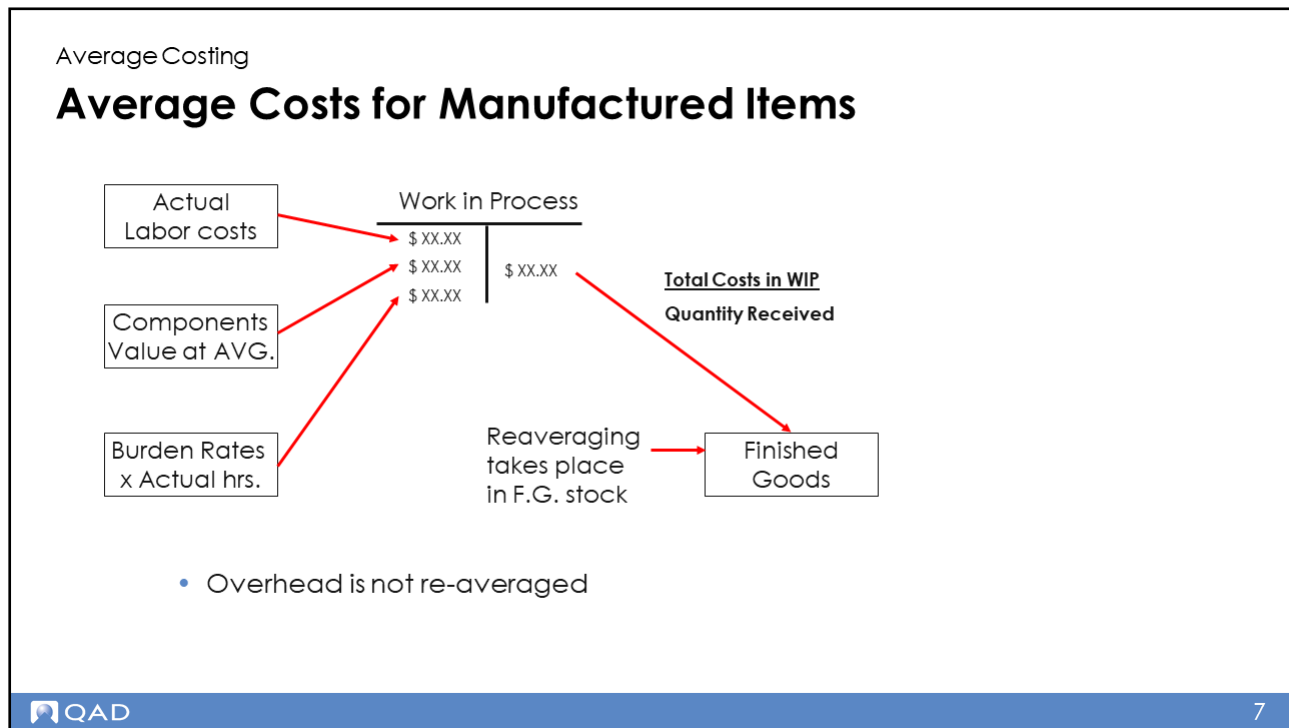
$$\frac{[(\text{Receipt Qty} \times \text{Receipt Cost}) + (\text{Item Qty On-hand} \times \text{Current Material Cost})]}{\text{New Qty On-hand}}$$

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:

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

## 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 production order using the actual amounts that have been recorded in WIP. This average production order cost is used to calculate a new average cost for the item.

### Average Cost Calculation

Average production 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:

*(Item Qty Received / Cumulative Qty Completed at the Operation) \* Operation's Cumulative WIP Cost*

## Average Costs for Manufactured Items Example

Average Costing

### Average Costs for Manufactured Items Example

A quantity of 20 is received for an assembly production order.

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	$20 / 50 * 20 = 8$
40	40	50	$20 / 40 * 50 = 25$
Total labor cost for 20 units:			93

Qty Per Component Assembly	Qty Per Assembly	Unit Cost	WO Receipt Cost Calculation, \$
Comp 1	1	5	$(20 \times 1) * 5 = 100$
Comp 2	1	1	$(20 \times 1) * 1 = 20$
Comp 3	2	1	$(20 \times 1) * 1 = 40$
Total material cost for 20 units:			160

 QAD

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

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

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

Finally, the production 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:

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

## Purchase Order Receipts: Standard vs Average

Average Costing

### Purchase Order 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



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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):

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

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

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).

## Production Order Receipts: Standard vs Average

Average Costing

### Production Order 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)



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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 production order costs are reflected in inventory.

GL and current cost is re-averaged by the Production 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 Production Order Receipt. However, if the PO receipt does not specify a valid production 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 production 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.



## Example: Production Order Receipts

Average Costing

### Example: Production Order 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

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

2. Receive 9 units complete, reject 1, close production order

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

Reject posted to  
Scrap account

3. Receive 9 units complete, close production order

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

In-process loss



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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 production order for 10 units: \$10 of material is issued to this production order and \$20 of labor. A production 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 Production Order Receipt. For example, if we received 9 units, rejected 1 unit, and closed the production 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 production order receipt, you would receive 9 units and close the production 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 Production Order Receipts

Average Costing

### Partial Production Order Receipts

Amount to apply to inventory equals:

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

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  

$$\frac{\text{Avg} = (3 \times 2.50) + (1 \times 3.00)}{4} = \$2.63$$
2. Add \$10 to WIP and receive another unit  

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



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



## Production Order Accounting Close

Average Costing

### Production Order Accounting Close

- On Receipt: Excess posts to Inventory and Re-averaged
- On Accounting Close: Costs posted after production order 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 Production Order Accounting Close, add further \$250 Labor to WO123
4. Production Order 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  $25/100 \times \$250 = \$62.50$

Generally, when a production order has been fully received, all production 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 production order has been fully received

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

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

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

## Multi-Site Transfers

Average Costing

### 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



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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

## Average Costing Exceptions

Average Costing

### 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



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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 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:

$(\text{New Average Cost} - \text{Old Average Cost}) \times (\text{Old Qty On-hand})$

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—for example, the quantity to be received is less than zero and the ending quantity is less than or equal to zero—this is considered an exception condition and is handled as noted above.

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.



## Review

Average Costing

### Review

- Average Costing
- Why Use Average Costing?
- Example: Standard vs Average
- Average Cost for Purchased Items & Manufactured Items
- Purchase Order Receipts: Standard vs Average
- Production Order Receipts: Standard vs Average
- Partial Production Order Receipts
- Production Order Accounting Close
- Multi-Site Transfers
- Average Costing Exceptions

## Mastery Question – True False

Average Costing

### Mastery Question – True False

1. If you using the average cost method for Current Cost, you need to use Cost Sets to set Average for the Current cost set
  - A. True
  - B. False

**Mastery Question – True False**

Average Costing

**Mastery Question – True False**

2. In the case of using Average cost method for GL cost set, all the purchase amount will be posted to inventory account even if the PO cost is different than GL cost.
  - A. True
  - B. False

## Mastery Question – Multiple Choice

Average Costing

### Mastery Question – Multiple Choice

3. Which of following do you use QAD Average Costing method for?
- A. Legal requirement
  - B. Business practice
  - C. Legal requirement and business practice
  - D. None of above

## Exercise: Average Costing

Average Costing

### Exercise: Average Costing



## 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 Sets to create a new cost set. Set the Cost Set code to 2021AVG, the Cost Set Type to GL, and the Costing Method to Average.
2. Use Sites to create a new site 10-110 and use Locations to create a 020 location for the site. 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 production orders.
3. Use Cost Set to Site Assignment to assign the new GL cost set to the new site. Leave the new current cost set field blank for the system default set.
4. Use Cost Set Copy to Cost Set to copy some data into the new cost set. You will use a limited number of items from the system for this exercise. Copy from site 10-100 - standard to site 10-110 - 2021AVG; use items 60001 - 60004.

Item Cost Set Copy to Cost Set										
From Site		10-100 Ultrasound Mfg Site		From Cost Set		Standard				
To Site		10-110		To Cost Set		2021AVG GL Cost Set				
Item Number	Item Description	UM		Material	Labor	Burden	Overhead	Subcontract	Total	Error
60001	Durable Plastic Housing	EA	Old Cost	0.00	0.00	0.00	0.00	0.00	0.00	0.00
			New Cost	127.00	0.00	0.00	0.00	0.00	127.00	
			% Change	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
			Amount Change	127.00	0.00	0.00	0.00	0.00	127.00	
60002	Display / Readout	EA	Old Cost	0.00	0.00	0.00	0.00	0.00	0.00	
			New Cost	122.00	0.00	0.00	0.00	0.00	122.00	
			% Change	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
			Amount Change	122.00	0.00	0.00	0.00	0.00	122.00	
60003	Keyboard	EA	Old Cost	0.00	0.00	0.00	0.00	0.00	0.00	
			New Cost	55.00	0.00	0.00	0.00	0.00	55.00	
			% Change	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
			Amount Change	55.00	0.00	0.00	0.00	0.00	55.00	
60004	Transducer - 10 Mhz	EA	Old Cost	0.00	0.00	0.00	0.00	0.00	0.00	
			New Cost	16.32	0.00	0.00	0.00	0.00	16.32	
			% Change	100.00%	0.00%	0.00%	0.00%	0.00%	100.00%	
			Amount Change	16.32	0.00	0.00	0.00	0.00	16.32	

5. Use Item Site Costs to review these item costs.
6. Use Inventory Detail to review items starting with 60001. You should have inventory for 60001, 60002, and 60003 at site 10-100.
7. Use the Receive Unplanned action to receive 10 each of the 60001, 60002, and 60003 to site 10-110.
8. Use Inventory Valuations to review the total inventory and its standard cost and value for site 10-110 at this time.



Inventory Valuation Report								Page 1 / 2
10USA USD								9/7/2021
								7:51:11 AM
Product Line	20	FGI Purchased		Cost Set GL		Cost Set Standard		
Item Number	Site ABC	Qty On Hand UM	GL Cost	Extended Cost	Cost	Extended Cost	Var Pct	
60002	10-110	10.0	122.00	1,220.00	0.00	0.00	-100.0%	
Display / Readout		B	EA					
			Item : 60002	Total	1,220.00	0.00	-100.0%	
60003	10-110	10.0	55.00	550.00	0.00	0.00	-100.0%	
Keyboard		B	EA					
			Item : 60003	Total	550.00	0.00	-100.0%	
			Prod Line : 20	Total	1,770.00	0.00	-100.0%	
Product Line	60	Purchased Materials		Cost Set GL		Cost Set Standard		
Item Number	Site ABC	Qty On Hand UM	GL Cost	Extended Cost	Cost	Extended Cost	Var Pct	
60001	10-110	10.0	127.00	1,270.00	0.00	0.00	-100.0%	
Durable Plastic Housing		C	EA					
			Item : 60001	Total	1,270.00	0.00	-100.0%	
			Prod Line : 60	Total	1,270.00	0.00	-100.0%	
Report Total					3,040.00	0.00	-100.0%	

9. Use Purchase Orders to create a purchase order for these three items: 60001- 60003.

Supplier	10s1002
Site	10-110
Taxable	No
Line	1
Item	60001
Price	150
Line	2
Item	60002
Price	140
Line	3
Item	60003
Price	75

10. Receive the purchase order completely. You will see the purchase order is closed.

11. Use Item Site Costs to review these item costs.

QAD Cost Accounting Manager					
Item Site Costs					
Cost Set	Cost Set Type	Item	Description 1	Site	Cost Total
2021AVG	GL	60001	Durable Plastic Hou...	10-110	138.50
2021AVG	GL	60002	Display / Readout	10-110	131.00
2021AVG	GL	60003	Keyboard	10-110	65.00

12. Use Inventory Valuations to review the total inventory and its standard cost and value for site 10-110.



Product Line 20		FGI Purchased		Cost Set GL		Cost Set Current		
Item Number	Site ABC	Qty On Hand UM	GL Cost	Extended Cost	Cost	Extended Cost	Var Pct	
60002	10-110	20.0	131.00	2,620.00	0.00	0.00	-100.0%	
Display / Readout		B	EA					
			<b>Item : 60002</b>	<b>Total</b>	<b>2,620.00</b>	<b>0.00</b>	<b>-100.0%</b>	
60003	10-110	20.0	65.00	1,300.00	0.00	0.00	-100.0%	
Keyboard		B	EA					
			<b>Item : 60003</b>	<b>Total</b>	<b>1,300.00</b>	<b>0.00</b>	<b>-100.0%</b>	
			<b>Prod Line : 20</b>	<b>Total</b>	<b>3,920.00</b>	<b>0.00</b>	<b>-100.0%</b>	
Product Line 60		Purchased Materials		Cost Set GL		Cost Set Current		
Item Number	Site ABC	Qty On Hand UM	GL Cost	Extended Cost	Cost	Extended Cost	Var Pct	
60001	10-110	20.0	138.50	2,770.00	0.00	0.00	-100.0%	
Durable Plastic Housing		C	EA					
			<b>Item : 60001</b>	<b>Total</b>	<b>2,770.00</b>	<b>0.00</b>	<b>-100.0%</b>	
			<b>Prod Line : 60</b>	<b>Total</b>	<b>2,770.00</b>	<b>0.00</b>	<b>-100.0%</b>	
<b>Report Total</b>				<b>Total</b>	<b>6,690.00</b>	<b>0.00</b>	<b>-100.0%</b>	



## Mastery Questions Answers

### Introduction to Product Costing

1. A, B, and C
2. A
3. B

### Costing Accounts

1. D
2. A
3. D

### Costing Setup

1. A
2. C
3. B

### Costing Process

1. C
2. D
3. A

### Purchase Costing

1. D
2. A, C, and D
3. A, and D

### Production Costing

1. B
2. B
3. A

### Costing Management

1. B
2. B, and D
3. A, and B

### Average Costing

1. B

2. A
3. B

