



QAD Adaptive Applications

User Guide

QAD Production Orders

- Introduction
- Production Order Setup
- Creating, Approving, and Modifying Production Orders
- Releasing and Printing for a Release
- Splitting Production Orders to Schedule Production
- Managing Production Materials
- Production Activities
- Subcontract Production
- Production Accounting
- Repetitive Production
- Closing and Deleting/Archiving Production Orders
- Material Planning
- Data Collection - Production Order Transactions
- Serialization and Production Orders
- Generating Reports
- Co-/By-Product Production Orders
- Reference Material

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Change Summary

Product Name Changes

Starting in September 2019, the new name for QAD's complete portfolio of products is QAD Adaptive Applications. Additionally, QAD Adaptive ERP is the new name for QAD's flagship ERP solution. QAD Adaptive ERP includes the functionality previously associated with QAD Cloud ERP and QAD Enterprise Applications - Enterprise Edition, plus the QAD Enterprise Platform and Adaptive UX which resulted from the Channel Islands program. Going forward, the terms QAD Enterprise Applications, QAD Cloud ERP, and Channel Islands will be deprecated but will remain in previous documentation and training materials. QAD's intention is to—as soon as possible—eliminate the use of the deprecated terms going forward.

Change Summary

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

Date/Version	Description	Reference
September 2020/Version 3.2	Added Transaction Quantity Method to Production Line Maintenance and Work Center Maintenance.	page 21, page 25, page 331
	Enhanced descriptions for Production Line Item Create and Production Line Item Update.	page 22
	Added information about Component Picking Data Maint (13.17).	page 81
	Updated information about backflush locations.	page 95
	Added information about local phantom items' operations during order explosion.	page 99
	Updated information about Data Collection - Production Order Transactions.	page 208
	Added to Qty Processed to Operation Activity Transaction and Production Order Receipt.	page 106, page 271, page 307
September 2019/Version 3.1	Updated information about routable production orders.	page 47
	Removed the support for status B (Batch) for production orders.	page 48
	Added information about phantom items and phantom use-up logic.	page 99
	Added new production order reports.	page 230

Date/Version	Description	Reference
December 2018/Version 3.0 Revision 1	Rebranded as Revision 1 of user guide.	--
	Added important information for Automation Solutions: Data Collection transactions, added Serialization as a requirement for transactions, and added the Production Receipt transaction.	page 208 page 225
	Enhanced function descriptions for Production Shop Floor Collection.	page 125
	Removed Prod Order Cost Variance Report (16.20.15) and WIP Valuation Report (16.13.20.4) as they were replaced by other reports in Production Orders.	page 6 page 229
September 2018/Version 3.0	Removed limitation on Production Orders with average costing.	page 4
	Expanded introduction of WIP Lot Trace (WLT) with production orders in the Introduction.	page 3
	Expanded introduction of Serialization with production orders in the Introduction.	page 3
	Added information about Trade Activity Management working with production orders in Introduction.	page 4
	Added section on Production Scrap to Production Activities chapter. Added text for support for average costing with scrap.	page 123 page 123
	Added new Component Issue Date Method field for Production Order Control.	page 20 page 293
	Updated section on Recording Scrap for an Operation in the Production Accounting chapter.	page 152
	Added information for new Production Shop Floor Collection.	page 125
	Enhanced Automation Solution: Data Collection data with field information.	page 207
	Updated text for several sections in Materials Planning chapter.	page 173
April 2018/Version 2.0	Added limitations for Production Orders use of QAD average costing.	page 4
	Removed inaccuracies in linked transactions from the Production Reporting transaction.	page 225
	Made corrections to explanatory information for production activities.	page 105

Date/Version	Description	Reference
March 2018/Version 2.0	Additional corrections in text/formatting.	--
	Added a new Materials Planning (formerly MRP) chapter.	page 173
	Added a new Data Collections transactions for production orders chapter	page 207
	Added a new Serialization, Item Attributes, and Quality Control (SAQ) chapter.	page 212
	Added a new Co-/By-Products chapter.	page 233
	Revised, updated, and rearranged Production Accounting chapter, removing CUM order information; created a new Repetitive Production chapter to house the CUM order information.	page 145
	Added new scrap transaction information to scrap/reject transaction data and to the GL information on scrap.	page 114 page 152
	Added a new section to describe modifying production order routings.	page 56
	Added new production line setup programs to mass update/setup.	page 6 page 22
	Modified the information on issue dates when modifying production order bills.	page 58
	Modified Start and Due Date fields in the Reference chapter for Production Order Routing Maintenance.	page 308
October 2017/Version 1.2	Additional corrections in text/formatting.	--
	Added additional information on restricted transactions.	page 4
September 2017/Version 1.2	Draft release of the user guide.	--

Introduction

This chapter discusses the following topics:

***Introduction* 2**

Introduces production orders and key elements of production orders.

***Working with Collections* 2**

Discusses production-order-related .NET UI collections, including their general setup and drill-down functions; then, lists the collections.

***Effects of Optional Modules* 2**

Discusses the effects other QAD modules, such as Regulatory Attributes, WIP Lot Trace, Serialization, and so on, have on production order behavior.

***Integration with Other Modules* 4**

Discusses how production order operations are tightly integrated with other QAD modules such as Material Planning, product structures, routing/BOM, and the Planning and Scheduling Workbenches.

***Restricted Transactions* 4**

Discusses the need to control the production order release mechanism.

***Production Menu* 6**

Presents the new Production Menu (16) with all submenus and programs by number and name.

***Program/Menu Changes for Production Orders* 8**

Presents a table that lists QAD ERP programs—outside of the Production Menu (16)—that are for production orders and lists QAD ERP 2019 production order-related programs that were moved, had their functions absorbed by production order programs, or were obsoleted by production order functions.

Introduction

A production order is an order for:

- An item for production at a site
- A production order or repetitive schedule that is determined by Order Type and Mfg Type
- A production line, optionally

A production order has the following key elements:

- A production order number and an ID to identify it
- An order status (such as firm, planned, released, closed, and so on)
- Routing code and BOM/formula code that determine how it is produced
- Release, due date, and need date
- Quantity to start and expected quantity to complete

You can see these key elements in Production Order Maintenance (16.3.1) screens.

Working with Collections

This chapter covers programs that are located within the Production Order Menu, Production Schedule Menu, Production Materials Menu, and Production Activity Menu to the extent that you can complete tasks, maintain, and manage production orders.

There may be multiple ways to conduct work with production orders using combinations of maintenance programs, inquiries, and other programs; however, each .NET UI collection provides a one-stop program that lets you create, manage, and view all pertinent data as well as drill down into supporting browses so that you can manage and view all associated data that interacts with or contributes to production orders. Collections pull in much of the same functionality provided by the traditional maintenance programs—particularly when the collection includes Create and Modify buttons.

The Production Menu provides the following collections:

- Production Order Collection
- Production Operation Activity Collection
- Production Picklist Collection

Note For a complete list of all Production Menu programs, see Table 1.1 on page 6.

Effects of Optional Modules

Some features of production orders are affected when you use the following modules:

- Regulatory Attributes
- WIP Lot Trace
- Serialization, Item Attribute, and Quality Control



Regulatory Attributes

When you are using the Regulatory Attributes module, and this module is active, you can assign batch numbers, restrict items issued to an order, restrict items received, and enforce stricter lot/serial control rules. These features are described in detail in the discussion of the Regulatory Attributes module. Some descriptions in this user guide provide additional material when tasks you are undertaking result in a different processing flow when Regulatory Attributes is enabled; other tasks are described with the assumption that Regulatory Attributes is not enabled.

See *QAD Master Data User Guide* for details on the Regulatory Attributes module.

WIP Lot Trace

The WIP Lot Trace module (WLT) affects some production order functions. When WIP Lot Trace is active, you can:

- Monitor and trace work in process (WIP) inventory.
- Track WIP material lot/serials processed by multiple subcontractors.
- Maintain detailed historical records, including which components produced a finished item and which finished items went to a customer.

WIP Lot Trace is available as option 3.22.13. When activated, additional frames display in some production order programs. WLT can have affects on several production order programs, but mainly affects the following and is discussed in this user guide where the program is discussed:

- Production Order Receipt (16.13.1)
- Production Order Component Issue (16.5.12)
- Production Order Picklist Issue (16.5.11)
- Operation Activity Transaction (.NET UI)

Serialization, Item Attribute, and Quality Control

Because license plate inventory management and item serialization play a role when you process production orders, QAD Serialization, Item Attributes, and Quality Control (SAQ) are prerequisites for Production Orders.

Serialization Integrated with Production Orders

When you have serialized items on production orders, Serialization frames display in production order programs. Serialization programs within the Production Menu (16) include the following:

- Production Order Serial Booking (16.3.14)
- Serial Booking by Prod Order Report (16.3.15)
- Pack Create by Production Order (16.5.17)
- Pack Create by Production Line (16.5.18)
- Component Serial Maintenance (16.5.19)

Serialization production-related functions let you perform many functions, including but not limited to:

- Booking serial ID ranges

- Creating serial IDs
- Receiving production orders and capturing serialization data during the receipt
- Creating packs
- Printing labels
- Receiving or transferring serialized goods
- Backflushing, reversing receipts for, or issuing serialized goods

For detailed information on how SAQ is integrated with Production Orders, refer to the *Serialization and Production Orders* chapter.

Trade Activity Management Programs with Production Orders

Programs that you modify with the QAD Trade Activity Management module are merged with Production Order programs and included in the Production Orders package.

QAD Trade Activity Management structures and controls the implementation, administration, and evaluation of pricing activities such as promotions and rebates. This structure and control brings the fluid pricing activities under effective management. For more information, refer to *QAD Trade Activity Management User Guide*.

Integration with Other Modules

Production orders are tightly integrated with other manufacturing modules:

- Define bills of material and product structures for production orders in the Product Structures module. Refer to the Product Structures chapter of the *QAD Manufacturing User Guide*.
- Define routings and operations for production orders in the Routings/Work Centers module. Refer to the Routings and Work Centers chapter of the *QAD Manufacturing User Guide*.
- Create planned orders to fill demand with Material Planning. Refer to the Product Structures chapter of the *QAD Manufacturing User Guide*.
- Schedule operations with Capacity Requirements Plan. Refer to the Capacity Requirements Planning chapter of the *QAD Manufacturing User Guide*.
- Set up items for production lines or define primary production lines. Refer to the Setting Up Production Line section of the *QAD Manufacturing User Guide*.
- Define inventory locations, including reserved locations. See “Setting Up Reserved Locations” on page 29.
- Setup calendars and calendar exceptions. See “Setting Up Calendars” on page 38.
- Set up and monitor subcontracting operations. See “Subcontract Setup” on page 134.
- Use Automation Solutions: Data Collection’s shop floor transactions for production orders.

Restricted Transactions

In some cases, the production order release mechanism needs to be controlled for an item because engineering changes must be completed before the order can be released into the manufacturing process.

You can prevent such an item from inadvertently reaching the shop floor on an order by setting up a status code in Item Status Code Maintenance (1.1.5) that is restricted for specific transactions. Then enter that code in the Status field in Item Master Maintenance (1.4.1) or Item Data Maintenance (1.4.3).

You can restrict entering an order or changing the production order status (WO-ADD) in the following programs:

Note For program menu numbers, see “Production Menu” on page 6.

- Production Order Maintenance
- Production Order Release/Print
- Production Order Allocate
- Prod Order Manual Allocation
- Bulk Item Picklist Calculation
- Multiple Order Status Change

You can restrict the automatic release of an order (REL-WO) in Production Order Release/Print.

You can restrict the automatic issue when releasing an order (ISS-WO) in the following programs:

- Production Order Picklist Issue
- Production Order Component Issue
- Prod Order Receipt Backflush
- Operation Activity Transaction
- Rework Transaction
- Purchase Order Receipt
- PO Shipper Receipt
- Pending PO Shipper Unload

You can restrict receipt (RCT-WO) in the following programs:

- Prod Order Receipt Backflush
- Operation Activity Transaction
- Rework Transaction
- Move Transaction
- Purchase Order Receipt
- PO Shipper Receipt
- Pending PO Shipper Unload

You can restrict rejection (RJCT-WO) in the following programs:

- Prod Order Receipt Backflush
- Operation Activity Transaction
- Reject/Scrap Transaction
- Purchase Order Receipt
- Subcontract Scrap Maintenance
- PO Shipper Maintenance

You can restrict WIP adjustments (WIP-ADJ) in WIP Adjustment Transaction.

You can restrict issues (ISS-TR) in the following programs:

- Production Picklist Transfer
- Subcontract Shipper Issue

Production Menu

The following table lists QAD ERP Production Menu (16.) programs:

Table 1.1
QAD ERP Production Order Programs

Menu	Program Label	Program Name
16.1	Production Line Setup Menu....	
16.1.1	Production Line Maintenance	splhmt.p
16.1.2	Production Line Browse	rebr002.p
16.1.4	Item Production Line Maintenance	woiplmt.p
16.1.5	Item Production Line Browse	wobr015.p
16.1.6	Production Line Allocation Maintenance	splamt.p
16.1.7	Production Line Allocation Browse	wobr075.p
16.1.13	Production Line Calendar Menu....	rescmt.p
16.1.13.1	Production Line Calendar Maintenance	rescmt.p
16.1.13.2	Production Line Calendar Browse	rebr008.p
16.1.13.3	Production Line Cal Except Maintenance	rescmt.p
16.1.13.4	Production Line Cal Except Browse	rebr009.p
16.1.13.5	Production Line Non-Workday Update	.NET UI only
16.1.13.6	Production Line Cal Inquiry By Date	resciq.p
16.1.13.7	Production Line Calendar Report	rescrp.p
16.1.15	Production Line Item Create	lnlnder.p
16.1.16	Production Line Item Update	lnlndup.p
16.1.17	Production Line/Order Update	lnwoupd.p
16.3	Production Order Menu.....	
16.3.1	Production Order Maintenance	wowomt.p
16.3.2	Production Order Browse	wobr013.p
16.3.4	Production Order Bill Maintenance	wowamt.p
16.3.5	Production Order Bill Browse	wobr014.p
16.3.6	Production Order Routing Maint	woopmt.p
16.3.7	Production Order Routing browse	wobr012.p
16.3.8	Repetitive Cum Order Create	recwup.p
16.3.8	Repetitive Cum Order Maintenance	recwomt.p
16.3.10	Cumulative Order Browse	wobr016.p
16.3.11	Production Order Split	wowosp.p
16.3.12	Split CUM Order Maintenance	wocummt.p
16.3.13	Production Order Comment Viewer	gpcmmt08.p

Menu	Program Label	Program Name
16.3.14	Production Order Serial Booking	pawobk.p
16.3.15	Serial Booking by Prod Order Rept	.NET UI Only
16.3.19	Co/By-Product Prod Order Inquiry	wojiq.p
16.3.24	Production Order Control	wowopm.p
16.4	Production Schedule Menu...	
16.4.1	Production Scheduling Workbench	.NET UI Only
16.4.2	Production Order Release/Print	.NET UI Only
16.4.3	Multiple Order Status Change	wowomt01.p
16.4.4	Prod Order Recipe Print	.NET UI Only
16.4.5	Production Order Sheet Print	.NET UI Only
16.4.6	Sequenced Schedule Browse	wobr017.p
16.4.7	Work Center Dispatch Report	.NET UI Only
16.5	Production Materials Menu....	
16.5.1	Production Order Allocate	.NET UI Only
16.5.2	Production Order Manual Allocation	womall.p
16.5.3	Bulk Item Picklist Calculation	.NET UI Only
16.5.4	Production Picklist Browse	
16.5.5	Production Order Picklist Print	.NET UI Only
16.5.6	Bulk Item Picklist Print	NET UI Only
16.5.7	Production Picklist Pick	wopkpp.p
16.5.9	Production Picklist Transfer	wopkis.p
16.5.10	Production Picklist Undo	NET UI Only
16.5.11	Production Order Picklist Issue	woispck.p
16.5.12	Production Order Component Issue	woisord.p
16.5.14	Production Picklist Shortage Update	NET UI Only
16.5.15	Picklist Shortage Browse	wobr090.p
16.5.16	Production Picklist Hist Browse	wobr088.p
16.5.17	Pack Create by Production Order	pawocr.p
16.5.18	Pack Create by Production Line	palncr.p
16.5.19	Component Serial Maintenance	pawoco.p
16.5.22	Subcontract Shipping Menu...	
16.5.22.1	Subcontract Container Maintenance	rectmt.p
16.5.22.2	Subcontract Shipper Maintenance	reshmt.p
16.5.22.3	Subcontract Shipper/Cont Inquiry	reiq03.p
16.5.22.4	Subcontract Shipper Print	rerp11.p
16.5.22.5	Subcontract Shipper Issue	resubis.p
16.5.22.6	Subcontract Scrap Maintenance	resscap.p
16.5.22.7	Subcontract Item Status Inquiry	reshsiq.p
16.5.22.8	Subcontract Item Status Report	.NET UI Only
16.5.22.11	Subshipper Container Report	.NET UI Only
16.5.22.23	Subcontract Shipper Del/Archive	rescdel.p
16.5.22.24	Subcontract Shipper Control	rescpm.p

Menu	Program Label	Program Name
16.5.23	Picklist History Delete/Archive	.NET UI Only
16.13	Production Activity Menu...	
16.13.1	Production Order Receipt	worcpt.p
16.13.5	Non-productive Labor Feedback	renplf.p
16.13.13	Operation Activity Transaction	woopact.p
16.13.14	Operation Labor Transaction	wolabor.p
16.13.15	Reject/Scrap Transaction	worjct.p
16.13.16	Rework Transaction	wowork.p
16.13.17	Move Transaction	womove.p
16.13.18	Operation Transaction Browse	sfbr002.p
16.13.19	Production Operation Activity Browse	wobr018.p
16.13.20	Production Activity Reports Menu...	
16.13.20.1	Production Activity Trans Inquiry	reopoq02.p
16.13.20.3	WIP Status Inquiry	reoiq05.p
16.13.20.5	Operation Transaction Detail Report	.NET UI Only
16.13.20.12	Downtime Browse	wobr010.p
16.13.20.15	Prod Order Efficiency Browse	wobr025.p
16.13.21	Production Order Cost Analysis	wobr114.p
16.20	Production Order Accounting Menu....	
16.20.7	Post Production Order Usage Variances	reuvup.p
16.20.10	Prod Order Accounting Close	wowocl.p
16.20.14	Operations Accounting Report	reacrp01.p
16.20.16	WIPS Valuation as of Date Report	.NET UI Only
16.20.18	Scrap Valuation Report	rescrp02.p
16.20.19	WIP Adjust Transaction	woadjust.p
16.20.20	WIP Adjustments Valuation Report	rewarp02.p
16.20.21	WIP Adjustments Analysis Report	.NET UI Only
16.20.22	WIP Material Cost Revaluation	wocswip.p
16.20.28	Production Order GL Details	

Program/Menu Changes for Production Orders

The following table lists QAD ERP programs—outside of the Production Menu (16). It also lists QAD ERP 2019 production order-related and other related programs that were moved, had their functions absorbed by production order programs, or were obsoleted by production order functions.

Table 1.2
QAD ERP Program Changes for Production Orders

NEW Production Order	Program or Menu Name	OLD EE	More Change Information or New Production Order Program to Use
1.1.16	Site Planning Scheduling Control (icsipm.p)	--	New for Production Orders
1.1.18	Location Menu...	--	New Menu for Production Orders
1.1.18.1	Location Maintenance (iclomt.p)	1.1.18	Moved under new Location Menu (1.18) for Production Orders
1.1.18.2	Location Browse (gpbr336.p)	1.1.19	Moved under new Location Menu (1.18)
1.1.18.3	Location Report (iclorp01.p)	1.1.20	Moved under new Location Menu (1.18)
1.1.18.13	Work Ctr Reserve Loc Maintenance (rwldmt.p)	--	New for Production Orders
1.1.18.14	Work Ctr Reserve Loc Browse (lnbr002.p)	--	New for Production Orders
1.1.18.16	Prod Line Reserve Loc Maintenance (sprldmt.p)	--	New for Production Orders
1.1.18.17	Prod Line Reserve Loc Browse (lnbr001.p)	--	New for Production Orders
1.6	Item Browse Menu...	--	New menu for Production Orders
1.6.1	Item Browse (ppbr100.p)	1.6	Moved under new Item Browse Menu (1.6)
1.6.4	Item Planning Browse (gpbr978.p)	--	New for Production Orders
1.6.6	Item Inventory Data Browse	--	New for Production Orders
1.6.7	Item-Site Inventory Data Browse	--	New for Production Orders
1.16.5	Item-Site Planning Browse (ppbr108.p)	--	New for Production Orders
13.15	Alternate Structure Menu...	--	New for Production Orders
13.15.1	Alternate Structure Maintenance (bmasmt.p)	13.15	Moved under new Alternate Structure Menu (13.15)
13.15.2	Alternate Structure Browse (bmasiq.p)	13.16	Moved under new Alternate Structure Menu (13.15)
13.15.3	Alternate Structure Report (mbasrp.p)	13.17	Moved under new Alternate Structure Menu (13.15)
13.17	Component Picking Data Maintenance (mcpmt.p)		New for Production Orders
13.18	Component Picking Data Browse (ptbr019.p)		New for Production Orders
16.	Production Menu...	--	New menu for Production Orders Note: All programs and submenus for the new Production Menu are in Table 1.1 on page 6.
--	Work Order Maintenance (wowomt.p)	16.1	Functions absorbed by new Production Order Maintenance (16.3.1) or Production Orders Collection
--	Work Order Browse (wobr003.p)	16.2	Functions absorbed by new Production Order Browse (16.3.2) or Production Orders Collection

NEW Production Order	Program or Menu Name	OLD EE	More Change Information or New Production Order Program to Use
--	Work Order Reports Menu	16.3	Menu removed; functions absorbed by Production Order collections and reports: • Order/order item status in new Production Orders Collection (.NET UI) • Production order bill reports in Production Order Menu (16.3) • Picklist reports in Production Materials Menu (16.5) • WIP status and operation transaction details in Production Activity Reports Menu (16.13.20) • Operations accounting; cost; and WIP, scrap and WIP adjustment valuation reports in Production Order Accounting Menu (16.20) • Component check reports are in Monitor Material Shortages, Manage Materials for Production Line, Manage Materials for Work Center (.NET UI programs)
--	Work Order Viewer (wowovw.p)	16.4	Removed; functions absorbed by Production Order Collection
--	Print Orders Selected for Print (woselprt.p)	16.5	Removed; functions absorbed by Production Order Release/Print (16.4.2)
--	Work Order Release Print (woworl.p)	16.6	Functions absorbed by Production Order Release/Print (16.4.2)
--	Multiple WO Release/Print (woworl01.p)	16.7	Removed; functions absorbed by Production Order Release/Print (16.4.2)
--	Multiple WO Status Change (wowomt01.p)	16.8	Functions absorbed by Multiple Order Status Change (16.4.3)
--	Work Order Split (wowosp.p)	16.9	Functions absorbed by Production Order Split (16.3.11)
--	Work Order Component Issue (wowois.p)	16.10	Functions absorbed by Production Order Component Issue (16.5.12)
--	Work Order Receipt (woworc.p)	16.11	Functions absorbed by Production Order Receipt (16.13.1)
--	Work Order Receipt Backflush (wowoisrc.p)	16.12	Functions absorbed by Production Order Receipt (16.13.1)
--	WO/Bills Routing Menu	16.13	Removed menu
--	Work Order Bill Maintenance (wowamt.p)	16.13.1	Functions absorbed by Production Order Bill Maint (16.3.4)
--	Work Order Bill Inquiry (wowaiq.p)	16.13.2	Functions absorbed by Production Order Bill Browse (16.3.5)
--	Work Order Bill by Order Report (wowarp01.p)	16.13.3	Removed; functions absorbed by Production Order Collection, Production Order Bill Browse, and QAD Planning and Scheduling Workbenches
--	Work Order Bill by Item Report (wowarp.p)	16.13.4	Removed; functions absorbed by Production Order Collection, Production Order Bill Browse, and QAD Planning and Scheduling Workbenches

NEW Production Order	Program or Menu Name	OLD EE	More Change Information or New Production Order Program to Use
--	Work Order Routing Maintenance (woopmt.p)	16.13.13	Functions absorbed by Production Order Routing Maintenance (16.3.6)
--	Work Order Routing Inquiry (woopiq.p)	16.13.14	Functions absorbed by Production Order Routing Browse (16.3.7)
--	Work Order Routing Report (woopr.p)	16.13.15	Removed, functions absorbed by Production Order Collection, Production Order Routing Browse (16.25.19), and QAD Planning and Scheduling Workbenches
--	Serialization - Work Order Menu	16.15	Menu removed
--	Work Order Serial Booking (pawobk.p)	16.15.1	Functions absorbed by Production Order Serial Booking (16.3.14)
--	Pack Create by WO (pawocr.p)	16.15.2	Functions absorbed by Pack Create by Production Order (16.5.17)
--	Pack Receipt by WO (paworc.p)	16.15.3	Functions absorbed by Production Order Receipt (16.13.1)
--	WO Receipt Backflush by Pack (pawobkfl.p)	16.15.6	Functions absorbed by Operation Activity Transaction (.NET UI)
--	WO Receipt Correction by Pack (pawort.p)	16.15.11	Functions absorbed by Production Order Receipt (16.13.1)
--	WO Component Issue by Pack (pawois.p)	16.15.13	Functions absorbed by Production Order Component Issue (16.5.12)
--	WO Component Return by Pack (pawoisrt.p)	16.15.14	Functions absorbed by Production Order Component Issue (16.5.12)
--	Work Order Dispatch Report (woworp04.p)	16.18	Functions absorbed by Work Center Dispatch Report(16.4.7) and PSW in QAD Planning and Scheduling Workbenches
--	Work Order Operation Backflush (wobkfl.p)	16.19	Functions absorbed by Production Order Receipt (16.13.1)
--	Shop Floor Control Menu	16.20	Menu removed
--	Labor Feedback by Work Order (sfoptr01.p)	16.20.1	Functions absorbed by Operation Labor Transaction (16.13.14)
--	Labor Feedback by Employee (sfoptr02.p)	16.20.2	Functions absorbed by Operation Labor Transaction (16.13.14)
--	Labor Feedback by Work Center (sfoptr03.p)	16.20.3	Functions absorbed by Operation Activity Transaction or Operation Labor Transaction (16.13.14)
16.13.5	Non-Productive labor Feedback	16.20.4	Moved under Production Activity Menu (16.13)
--	Operation Complete Transaction (sfoptr05.p)	16.20.5	Functions absorbed by Operation Activity Transaction (.NET UI)
--	Operation Move Transaction (sfoptr06.p)	16.20.6	Functions absorbed by Move Transaction (16.13.17) or Operation Activity Transaction (.NET UI)
--	Operation Scrap Transaction (sfscrap.p)	16.20.7	Functions absorbed by Reject/Scrap Transaction (16.13.15)
--	Shop Floor Reports Menu	16.20.13	Removed; absorbed by Production Activity Reports Menu (16.13.20)

NEW Production Order	Program or Menu Name	OLD EE	More Change Information or New Production Order Program to Use
--	Operation History Delete/Archive (sfopup.p)	16.20.23 and 18.22.23.1	Functions absorbed by Prod Activity Trans Delete/Archive (16.13.20.43)
--	Shop Floor Control (sfoppm.p)	16.20.24	Control functions absorbed by Production Order Control (16.3.24); other options removed
--	Work Order Accounting Close (wowocl.p)	16.21	Functions absorbed by Prod Order Accounting Close (16.20.10)
16.20.22	WIP Material Cost Evaluation (wocswip.p)	16.22	Program moved under new Production Order Accounting Menu (16.20)
--	Work Order Delete/Archive (wowoup.p)	16.23	Functions absorbed by Production Order Delete/Archive (16.3.50)
--	Work Order Control (wowopm.p)	16.24	Functions absorbed by Production Order Control (16.3.24)
	Flow Schedule Menu	17.13	Removed
	Flow Schedule Maintenance (flschmt.p)	17.13.3	Removed; use QAD Planning and Scheduling Workbenches
	Flow Schedule Receipts (flschrc.p)	17.13.7	Removed; use QAD Planning and Scheduling Workbenches
	Flow Schedule Copy (flschcp.p)	17.13.5	Removed; use QAD Planning and Scheduling Workbenches
	Flow Schedule Detail View (flscdv.p)	17.13.13.10	Removed; use QAD Planning and Scheduling Workbenches
	Flow Schedule Detail Report (flschrp.p)	17.13.13.11	Removed; use QAD Planning and Scheduling Workbenches
	Flow Schedule Close (flschcl.p)	17.13.19	Removed; use QAD Planning and Scheduling Workbenches
	Flow Delete/Archive (flschup.p)	17.13.23	Removed; use QAD Planning and Scheduling Workbenches
	Flow Control (flpm.p)	17.13.24	Removed; use QAD Planning and Scheduling Workbenches
--	Repetitive Menu	18.	Menu removed
--	Production Line Menu...	18.1	Menu removed, programs under new Production Line Setup Menu (16.1)
16.1.1	Production Line Maintenance (splnmt.p)	18.1.1	Moved under new Production Line Setup Menu (16.1)
16.1.2	Production Line Browse (rebr002.p)	18.1.2	Moved under new Production Line Setup Menu (16.1)
--	Production Line Detail Browse (rebr003.p)	18.1.3	Functions absorbed by Item Production Line Browse (16.1.5)
--	Production Line Report (relnrp.p)	18.1.4	Removed
--	Line Changeover Maintenance (rechmt.p)	18.1.6	Functions replaced by Item Production Line Maintenance (16.1.4)
--	Line Changeover Browse (rebr001.p)	18.1.7	Functions absorbed by Item Production Line Browse (16.1.5)
--	Line Changeover Report (rechrp.p)	18.1.8	Removed
--	Line Schedule Workbench (resqwb.p)	18.1.10	Removed; use MSW in QAD Planning and Scheduling Workbenches (.NET UI)

NEW Production Order	Program or Menu Name	OLD EE	More Change Information or New Production Order Program to Use
--	Line Allocation Maintenance (splamt.p)	18.1.11	Functions absorbed by Production Line Allocation Maint (16.1.6)
--	Line Allocation Inquiry (splaiq.p)	18.1.12	Functions absorbed Production Line Allocation Browse (16 reutlrp.p.1.7)
--	Line Allocation Browse (rebr004.)	18.1.13	Functions absorbed Production Line Allocation Browse (16 reutlrp.p.1.7)
--	Line Schedule Report (resqrp.p)	18.1.14	Removed; use QAD Planning and Scheduling Workbenches (.NET UI)
--	Line Utilization Report (reutlrp.p)	18.1.15	Removed; use QAD Planning and Scheduling Workbenches
--	Repetitive Schedule Update (recrms.p)	18.1.18	Removed; use QAD Planning and Scheduling Workbenches (.NET UI)
16.1.13	Production Line Calendar Menu...	18.1.22	Menu moved under new Production Line Setup Menu (16.1)
16.1.13.1	Production Line Calendar Maint (rescmnt.p)	18.1.22.1	Moved to new Production Line Calendar Menu (16.1.13)
16.1.13.2	Production Line Calendar Browse (rebr008.p)	18.1.22.2	Moved to new Production Line Calendar Menu (16.1.13)
16.1.13.3	Production Line Cal Except Maint (rescmnt.p)	18.1.22.3	Moved to new Production Line Calendar Menu (16.1.13)
16.1.13.4	Production Line Cal Except Browse (rebr009.p0)	18.1.22.4	Moved to new Production Line Calendar Menu (16.1.13)
16.1.13.6	Production Line Cal Inq by Date (resciq.p)	18.1.22.6	Moved to new Production Line Calendar Menu (16.1.13)
--	Schedule Menu	18.2	Removed; functions under new Production Schedule Menu (16.4)
--	Schedule Maintenance (rerpmt.p)	18.2.1 and 18.22.2.1)	Removed; use QAD Planning and Scheduling Workbenches (.NET UI)
--	Item Schedule Inquiry (rerpiq.p)	18.2.2	Removed; use QAD Planning and Scheduling Workbenches (.NET UI)
--	Item Schedule Summary (rerpiq04.p)	18.2.3 and 18.22.2.3	Removed; use QAD Planning and Scheduling Workbenches (.NET UI)
--	Schedule Explosion	18.2.4 and 18.22.2.4	Removed
--	Operation Schedule Report (reopr01.p)	18.2.5 and 18.22.2.5	Removed; use QAD Planning and Scheduling Workbenches (.NET UI)
--	Production Line Schedule Inquiry (relsiq.p)	18.2.13	Removed; use QAD Planning and Scheduling Workbenches (.NET UI)
--	Production Line Schedule Report (relsrp.p)	18.2.15	Removed; use QAD Planning and Scheduling Workbenches (.NET UI)
--	Picklist Menu	18.3	Removed; functions under new Production Materials menu (16.5)
--	Repetitive Picklist Calculation (repkup.p)	18.3.1 and 18.22.3.1	Removed; functions absorbed by Bulk Item Picklist Calculation (16.5.3) or Production Order Allocate (16.5.1)
--	Repetitive Picklist Inquiry (repkiq.p)	18.3.2 and 18.22.3.2	Removed; functions absorbed by Production Picklist Browse (16.5.4)

NEW Production Order	Program or Menu Name	OLD EE	More Change Information or New Production Order Program to Use
--	Repetitive Picklist Report (repkrp.p)	18.3.3 and 18.22.3.3	Removed; functions absorbed by picklist browses in the Production Materials Menu (16.5)
--	Repetitive Picklist Print (repkrp01.p)	18.3.5 and 18.22.3.5	Removed; functions absorbed by Bulk Item Picklist Print (16.5.6) or Production Order Picklist Print (16.5.5)
--	Repetitive Picklist Transfer (repkis.p)	18.3.6 and 18.22.3.6	Removed; functions absorbed by Production Picklist Transfer (16.5.9)
--	Repetitive Picklist Undo (repkunpk.p)	18.3.8 and 18.22.3.8	Removed; functions absorbed by Production Picklist Undo (16.5.10)
--	Repetitive Picklist Delete (repkdel.p)	18.3.9 and 18.22.3.9	Removed; functions absorbed by Production Picklist Undo (16.5.10)
--	Reports Menu	18.4	Removed; functions absorbed by the following • Operations Transaction reports in Operation Activity Transaction (.NET UI) and Operations Transaction Browse (16.13.18) • Reject and down time reports in the new Production Activity Reports menu (16.13.20) • Repetitive accounting and repetitive WIP reports in the new Production Order Accounting Menu (16.20) • Operations reporting in Operation Transaction Detail Report (16.13.20.5) in Prod Order Efficiency Browse (16.13.20.15) • Productivity reporting in Production Activity Trans Inquiry (16.13.20.1)
--	Cumulative Order Maintenance (rewomt.p)	18.6	Removed; functions absorbed by Repetitive Cum Order Maintenance (16.3.9)
--	Cumulative Order Inquiry (rewoiq.p)	18.7	Removed; functions absorbed by Cumulative Order Browse (16.3.10)
--	Cumulative Order Report (reworp.p)	18.8	Removed; functions absorbed by Cumulative Order Browse (16.3.10)
--	Cumulative Ord Accounting Close (rewocl.p)	18.9	Removed; functions absorbed by Prod Order Accounting Close (16.20.10)
--	Repetitive Setup Transaction (reoptr07.p)	18.13	Removed; functions absorbed by Operation Activity Transaction and Operation Labor Transaction (16.13.14)
--	Repetitive Labor Transaction (reoptr10.p)	18.14	Removed; functions absorbed by Operation Activity Transaction or Operation Labor Transaction (16.13.14)
--	Repetitive Down Time Transaction (reoptr12.p)	18.15	Removed; functions absorbed by Operation Labor Transaction (16.13.14)
--	Repetitive Rework Transaction (reoptr13.p)	18.16	Removed; functions absorbed by Operation Activity Transaction or Rework Transaction (16.13.16)
--	Repetitive Reject Transaction (reoptr11.p)	18.17	Removed; functions absorbed by Operation Activity Transaction and Reject/Scrap Transaction (16.13.15)

NEW Production Order	Program or Menu Name	OLD EE	More Change Information or New Production Order Program to Use
--	Repetitive Scrap Transaction (reopr14.p)	18.18	Removed; functions absorbed by Operation Activity Transaction and Reject/Scrap Transaction (16.13.15)
16.13.5	Non-Productive Labor Feedback (reopr15.p)	18.19	Moved under new Production Activity Menu (16.13)
--	Advanced Repetitive Menu	18.22	Removed; functions absorbed by new Production Activities Menu (16.13) and Production Order Accounting Menu (16.20)
--	Production Line Menu	18.22.1	Removed; functions absorbed by programs in the new Production Line Setup Menu (16.1)
16.1.1	Production Line Maintenance (splnmt.p)	18.22.1.1	Moved to new Production Line Setup Menu (16.1)
--	Production Line Inquiry (relniq.p)	18.22.1.2	Removed; functions absorbed by Production Line Browse (16.1.2)
--	Production Line Detail Inquiry (relniq01.p)	18.22.1.33	Removed; functions absorbed by Production Line Browse (16.1.2)
--	Production Line Report (relnrp.p)	18.22.1.4	Removed; functions absorbed by Production Line Browse (16.1.2)
--	Line Changeover Maintenance (rechmt.p)	18.22.1.6	Removed; use QAD Planning and Scheduling Workbenches
--	Line Changeover Inquiry (rechiq.p)	18.22.1.7	Removed; use QAD Planning and Scheduling Workbenches
--	Line Changeover Report (rechrp.p)	18.22.1.8	Removed; use QAD Planning and Scheduling Workbenches
--	Line Schedule Workbench (resqwb.p)	18.22.1.10	Removed; use functions in QAD Planning and Scheduling Workbenches
--	Line Allocation Maintenance (splamt.p)	18.22.1.11	Renamed Production Line Allocation Maintenance (16.1.6)
--	Line Allocation Inquiry (splaiq.p)	18.22.1.12	Functions absorbed by Production Line Allocation Browse (16.1.7)
--	Line Schedule Inquiry (resqiq.p)	18.22.1.13	Removed; use QAD Planning and Scheduling Workbenches
--	Line Schedule Report (resqrp.p)	18.22.1.14	Removed; use QAD Planning and Scheduling Workbenches
--	Line Utilization Report (reutlrp.p)	18.22.1.15	Removed; use QAD Planning and Scheduling Workbenches
--	Repetitive Schedule Update (recrms.p)	18.22.1.18	Removed; use QAD Planning and Scheduling Workbenches
--	Production Line/Order Update (lnwoupd.p)	18.22.1.19	Removed; use QAD Planning and Scheduling Workbenches
--	Production Line Item Create (lnlndcr.p)	18.22.1.20	Removed; functions absorbed by Item Production Line Maintenance (16.1.4)
--	Production Line Item Update (lnlndup.p)	18.22.1.21	Removed; functions absorbed by Item Production Line Maintenance (16.1.4)
16.1.13	Production Line Calendar Menu	18.22.1.22	Menu moved under new Production Line Setup Menu (16.1)

NEW Production Order	Program or Menu Name	OLD EE	More Change Information or New Production Order Program to Use
16.1.13.1	Production Line Calendar Maint (rescmt.p)	18.22.1.22.1	Moved under Production Line Calendar Menu (16.1.13)
16.1.13.2	Production Line Calendar Browse (rebr008.p)	18.22.1.22.2	Moved under Production Line Calendar Menu (16.1.13)
16.1.13.3	Production Line Cal Except Maint (rescmt.p)	18.22.1.22.3	Moved under Production Line Calendar Menu (16.1.13)
16.1.13.4	Production Line Cal Except Brwse (rebr009.p)	18.22.1.22.4	Moved under Production Line Calendar Menu (16.1.13)
16.1.13.6	Production Line Cal Inq by Date (16.1.13.6)	18.22.1.22.6	Moved under Production Line Calendar Menu (16.1.13)
--	Schedule Menu	18.22.2 18.22.2.1 18.22.2.4	Menu removed; some ERP programs are the same as those in Repetitive Schedule Menu (18.2). Refer to the 18.2 menu entry above in this table.
--	Operation Schedule Report (reopr01.p)	18.22.2.5	Removed; use QAD Planning and Scheduling Workbenches
--	Cumulative Completed Maintenance (reccmt.p)	18.22.2.6	Removed; functions absorbed by Production Order Maintenance (16.3.1) or QAD Planning and Scheduling Workbenches
--	Schedule Delete (reschdel.p)	18.22.2.7	Removed; use QAD Planning and Scheduling Workbenches
--	Production Line Schedule Inq (relsiq.p)	18.22.2.13	Removed; use QAD Planning and Scheduling Workbenches
--	Production Line Schedule Report (relsrp.p)	18.22.2.15	Removed; use QAD Planning and Scheduling Workbenches
.NET UI	Production Scheduling Workbench	18.22.2.20	.NET UI-only program; use version 4.0 with Production Orders
--	Picklist Menu		Removed; ERP programs the same as those for the Repetitive Picklist Menu (18.3). Refer to the 18.3 menu entry above in this table.
--	Reports Menu		Removed; ERP programs the same as those for the Repetitive Reports Menu (18.4). Refer to the 18.4 menu entry above in this table.
16.5.22	Subcontract Shipping Menu	18.22.5	Menu moved under Production Materials Menu (16.5)
16.5.22.1	Sub Container Maintenance (rectmt.p)	18.22.5.4	Renamed Subcontract Container Maintenance
16.5.22.2	Sub Shipper Maintenance (reshmt.p)	18.22.5.5	Renamed Subcontract Shipper Maintenance
16.5.22.3	Sub Shipper/Container Inquiry (reiq03.p)	18.22.5.6	Renamed Subcontract Shipper/Cont Inquiry
16.5.22.4	Sub Shipper Print (rerp11.p)	18.22.5.9	Renamed Subcontract Shipper Print
16.5.22.5	Sub Shipper Issue (resubis.p)	18.22.5.11	Renamed Subcontract Shipper Issue
	Subcontract Scrap Maintenance (resscrap.p)	18.22.5.15	Removed; functions absorbed by Subcontract Scrap Maintenance (16.5.22.6)
16.5.22.8	Subcontract Item Status Report (reshsrp.p)	18.22.5.16	Moved under Subcontract Shipping Menu (16.5.22)

NEW Production Order	Program or Menu Name	OLD EE	More Change Information or New Production Order Program to Use
16.5.22.7	Subcontract Item Status Inquiry (reshsiq.p)	18.22.5.17	Moved under Subcontract Shipping Menu (16.5.22)
16.5.22.23	Sub Shipper Delete/Archive (rescdel.p)	18.22.5.23	Moved under Subcontract Shipping Menu (16.5.22)
16.5.22.24	Subcontract Shipping Control (rescpm.p)	18.22.5.24	Moved under Subcontract Shipping Menu (16.5.22)
--	Adv Rep Accounting	18.22.6	Menu removed
--	Cumulative Order Maintenance (recwomt.p)	18.22.6.1	Removed; functions absorbed by Repetitive Cum Order Maintenance (16.3.80)
--	Cumulative Order Inquiry (recwoiq.p)	18.22.6.2	Removed; functions absorbed by Cumulative Order Browse (16.3.10)
--	Cumulative Order Report (rewor01.p)	18.22.6.3	Removed; functions absorbed by Cumulative Order Browse (16.3.10)
--	Post Accumulated Usage Variance (reuvup.p)	18.22.6.4	Removed; functions absorbed by Post Production Order Usage Variances (16.20.7)
--	Cumulative Order Close (reclose.p)	18.22.6.5	Removed; functions absorbed by Production Order Accounting Close (16.20.10)
--	Cumulative Order Create (recwup.p)	18.22.6.6	Removed; functions absorbed by Repetitive Cum Order Create (16.3.8)
--	Serialization - Repetitive	18.22.7	Menu removed
16.5.18	Pack Create by Production Line (palncr.p)	18.22.7.1	Program moved to Production Materials Menu (16.5)
--	Pack Receipt by Production Line (pabkfl.p)	18.22.7.2	Removed; functions absorbed by Production Order Receipt (16.13.1) or by various transaction programs in Production Activity menu (16.13)
--	Rep Receipt Correction by Pack (parrco.p)	18.22.7.3	Removed; functions absorbed by Production Order Receipt (16.13.1) or by various transaction programs in Production Activity menu (16.13)
--	Rep Picklist Transfer by Pack	18.22.7.5	Removed, functions absorbed by Pack Transfer (3.17.7) or Pack Transfer - Multi Pack (3.17.9)
16.13.20.3	WIP Status Inquiry (reqoiq05.p)	18.22.12	Moved to new Production Activity Reports Menu (16.13.20)
--	Backflush Transaction (rebkfl.p)	18.22.13	Removed; functions absorbed by Operation Activity Transaction (.NET UI)
--	Run Labor Transaction (relbr.p)	18.22.14	Removed; functions absorbed by Operation Activity Transaction (.NET UI) or Operation Labor Transaction (15.13.14)
--	Setup Labor Transaction (reset.p)	18.22.15	Removed; functions absorbed by Operation Activity Transaction (.NET UI) or Operation Labor Transaction (15.13.14)
--	Reject Transaction (reject.p)	18.22.16	Removed; functions absorbed by Operation Activity Transaction (.NET UI) or Reject/Scrap Transaction (16.13.15)
--	Rework Transaction (rework.p)	18.22.17	Removed; functions absorbed by Rework Transaction (16.13.16)

NEW Production Order	Program or Menu Name	OLD EE	More Change Information or New Production Order Program to Use
--	Scrap Transaction (rescrap.p)	18.22.18	Removed; functions absorbed by Operation Activity Transaction (.NET UI) or Reject/Scrap Transaction (16.13.15)
--	Move Transaction (remove.p)	18.22.19	Removed; functions absorbed by Operation Activity Transaction (.NET UI) or Move Transaction (16.13.17)
--	Down Time Transaction (redt.p)	18.22.20	Removed; functions absorbed by Operation Labor Transaction
16.20.19	WIP Adjust Transaction (woadjust.p)	18.20.21	Moved to new Production Order Accounting Menu (16.20)
16.13.5	Non-productive Labor Feedback	18.20.22	Moved to new Production Activity Menu
--	History Delete Archive Menu	18.22.23	Removed
--	Repetitive Control	18.22.24	Removed; functions absorbed by Production Order Control (16.3.24)
--	History Delete/Archive Menu	18.23	Removed
--	Operation History Delete/Archive (sfopup.p)	18.23.1 and 18.22.23.1	Removed; functions absorbed by Prod Activity Trans Delete/Archive (16.13.20.43)
--	Cumulative Order Delete/Archive (recwoup.p)	18.23.2 and 18.22.23.2	Removed; functions absorbed by Production Order Delete/Archive (16.3.50)
--	Repetitive Control (repm.p)	18.24 and 18.22.24	Removed; functions absorbed by Production Order Control (16.3.24)

Production Order Setup

This chapter discusses the following topics:

***Setting Up Introduction* 20**

Introduces the various areas that require setup before you can begin using production order features and functions.

***Defining Control Parameters* 20**

Describes fields within the Production Order Control (16.3.24) program.

***Setting Up Production Resources* 21**

Tells you how to complete setup tasks for resources, including production lines, work centers, routings and process operations, locations, and reserved locations.

***Reserved Location Availability* 30**

Tells you how to set up items and necessary product and manufacturing engineering data, including discrete or process manufacturing engineering data; alternate structures and routing data; engineering and item data for production lines; and item data for production allocations, picklists, and backflush.

***Setting Up Calendars* 38**

Describes the various calendar levels (domain, site, resource, and so on), discusses setup for them, and describes setting up exceptions to them.

Setting Up Introduction

Production orders interact with many other programs and modules within QAD ERP. This section covers many areas of setup. Where applicable, references are provided to other QAD user guides that contain detailed information or step-by-step procedures.

Although every company requires unique setup, the areas covered in this chapter are considered essential to use production order features and functions.

Defining Control Parameters

Use Production Order Control (16.3.24) to set fields to set defaults for production orders, repetitive, and production order control tables. You can set defaults for a specific site, too. This program consists of multiple frames:

- Set fields in the Production Order Data frame for all production orders (both discrete and scheduled orders).
- Set fields in the Repetitive Order Data frame for scheduled orders.
- Set fields in the Site Information frame as site-specific fields for all production orders.

For a list of fields and their descriptions, see “Alphabetical List of Programs” on page 244.

Fig. 2.1
Production Order Control (16.3.24)

The diagram illustrates the structure of the Production Order Control (16.3.24) program, showing three main frames and their relationships:

- Production Order Control (Main Window):** Contains a menu bar (Go To, Actions, Copy, Print, Preview) and a "Production Order Data" section with fields:
 - Next Order Number: 11983
 - Next Picklist: 14883
 - P/L Prefix: RP
 - Production Order Comments: []
 - Routing Comments: [x]
 - Move First Operation: [x]
 - Include Yield: [x]
 - Quantity Complete Method: SUM (SUMMARIZE)
 - Open Qty Method: QtyProc (Quantity Processed)
 - Component Issue Date Method: [] (Order Release Date)
 - Reason Code Criticality: W
 - Auto Add Item To Production Line: [x]
 - Auto Add Alternate BOM/Routing: [x]
 - Zero Balance Work in Process: []
 - Post Scrap To GL: []
- Production Order Data (Detail Frame):** A zoomed-in view of the "Production Order Data" section, showing fields:
 - Next Order Number: 10214
 - Next Picklist: 171611
 - P/L Prefix: RP
 - Production Order Comments: []
 - Routing Comments: []
 - Move First Operation: [x]
 - Include Yield: [x]
 - Quantity Complete Method: SUMC (SUM OF CO-PRODUCTS)
 - Open Qty Method: QtyComp (Quantity Completed)
 - Reason Code Criticality: w
 - Auto Add Item To Production Line: [x]
 - Auto Add Alternate BOM/Routing: [x]
 - Zero Balance Work in Process: []
- Site Information (Detail Frame):** A zoomed-in view of the "Site Information" section, showing fields:
 - Site: 10-100 (Ultrasound Mfg Site)
 - Production Activity Threshold - Work Order: F (Firm Planned)
 - Production Activity Threshold - Repetitive: F (Firm Planned)
 - Open Qty Method: QtyComp (Quantity Completed)
 - Completion Consumption Method: Window (Use consumption window)
 - Consume Back: []
 - Consume Forward: []
 - Start of Week: Mon
 - Begin Consumption: EffDate

Arrows indicate the flow and relationship between these frames, showing how the main window can be expanded into detailed views for specific data or site information.

Setting Up Production Resources

This section includes the following setup tasks for resources when using production orders:

- Setting Up Production Lines
- Updating Production Lines in Batches
- Work Centers and Routing/Process Operations
- Setting Up Locations
- Setting Up Reserved Locations

Setting Up Production Lines

A production line is a sequence of work centers at a site, through which production can advance for the completion of manufacturing operations. You set up production lines for production order activities using Production Line Maintenance (16.1.1).

Note The Transaction Quantity Method field determines whether to use Qty Complete or Qty Processed in Operation Activity Transaction and Production Order Receipt. The Transaction Quantity Method value set in Work Center Maintenance has a higher priority over the value set in Production Line Maintenance.

You define the production line for a site and for visibility for planned and required capacity when you use the QAD Planning and Scheduling Workbenches. You can also define an inventory backflush location.

Note As a best practice, you should define a unique work center for those that have inventory for each production line and site.

Fig. 2.2
Production Line Maintenance (16.1.1)

Production Line Maintenance (16.1.1) window showing fields for Site, Production Line, Description, Units/Hour, Enable Run Size, Number of Lines, Duration Buffer, Setup Time, Minimum Interval, Backflush Location, Transaction Quantity Method, Auto Firm, Scheduler, Last Auto Firm, Time Period, Period Number, and Calculate Date. Annotations indicate that the Backflush Location field is used to 'Set up a backflush location.' and the Scheduler field is used to 'Set Scheduler to authorize production line.'

Additional Production Line Setup

In addition to the setup described this section, you should complete setup as indicated in the following table.

Set Up	Program to Use	Reference
Authorize production for a production line	Set the production line and the release date for orders in Production Order Maintenance (16.3.1). Set the Scheduler in Production Line Maintenance.	See Figure 2.2 on page 21
Allocate production lines and set primary production line	Use Production Line Allocation Maintenance (16.1.6) to allocate lines by specifying percentages for the production of each line. The line with the largest production is the primary production line.	See the subsection on Setting Up Production Lines in the <i>QAD Manufacturing User Guide</i> .
Define a production line reserved location	Prod Line Reserve Loc Maintenance (1.1.18.16)	“Production Line Reserved Location” on page 30

Updating Production Lines in Batches

You can set up items on production lines to be updated in a mass update method within QAD ERP:

- Use Production Line Item Create (16.1.15) to set up items on production lines in a mass setup method.
- Use Production Line Item Update (16.1.16) to update the production lines/item in a mass update method that you previously set up using Production Line Item Create.
- Use Production Line/Order Update (16.1.17) to update orders in a mass update method with changes that you recently made to a production line.

Production Line Item Create

If you have used the QAD Planning and Scheduling Workbenches for scheduling, you probably have production orders, but you may or may not have items on production lines set up. To avoid manual re-entry of setup data, you can use Production Line Item Create to:

- Mass process items for a work center or machine
- Mass assign items to a site/production line

Since this program automates the setup of items on production lines, it also reduces the chances of newly introduced items not being added to a production line, which would prevent you from scheduling the item.

The program locates items with the specified work center/machine associated with the items and processes (sets up) those items to a specified resource (work center/production line). You can mass assign items to a site/production line, too.

This program facilitates your operations on the QAD Planning and Scheduling Workbenches, when you have already started planning or production. It helps create item production line records and fills in the Production Line field for orders.

Note To create a new item on a production line, use Item Production Line Maintenance. Then you can schedule the orders, which are created later with the specified item and production line defined, on the QAD Planning and Scheduling Workbenches.



After you associate items with the resource—that is, the work center, machine, or production line—you can update in mass using Production Line Item Update. This ensures that the MSW/PSW displays data and alerts the scheduler of all items requiring attention.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 2.3
Production Line Item Create (16.1.15)

Production Line Item Update

You can use Production Line Item Update to mass update the setup. Use the program to:

- Delete items from a production line.
- Make a production line the primary line.
- Update/change the Pur/Mfg code for all items on a production line when you have not historically maintained the Pur/Mfg code.
- Update the BOM/routing.
- Replace the run sequences of items on a production line with the items' run sequences defined in item planning data.
- Apply the production line run rate against all items assigned to the target production line.

Use this program to update existing BOM/routing codes from either Item-Site Planning detail records or Item Planning Maintenance master records to the production line record when you set the Update BOM/Routing field to Yes.

The system updates production orders with a status of P(lanned) or F(irmed) with the BOM/routing code from the production line, regardless of the order type.

The updates for the BOM/routing codes are as follows:

- The BOM/routing codes for a production order update from the production line record only when you specify a production line on the order. When the BOM/routing codes are blank in the production line record, the codes are blank on the order.

- When you create a new record in Production Line Maintenance for a production line/item, the system updates the BOM/Routing code fields from Item-Site Planning detail records when they exist, or from Item Planning Maintenance master records when detail records do not exist. You can change the updated codes. The system validates BOM/routing codes.

When you switch an order from one production line to an alternate, the system populates the BOM and routing code attached to the item at the alternate production line.

Production Line Item Update works with line allocation maintenance:

- When you run this menu with Delete Items set to Yes, the system deletes all item production line records of the production line-site combination.

For line allocation records, if the removed item is defined on any other production lines, the system adds the allocation percentage defined on this production line to another production line of this item, which has the highest allocation percentage. If the item to delete is defined on this production line only, all production line allocation records are deleted.

- When you run this menu with Make Primary Line set to Yes, if the current allocation percentage of this line is equal to or less than 50%, the system changes the allocation percentage of this line to 100%, and sets the percentages to 0% for all the other lines of this item.
- When you run this menu with Effective Date set to a certain date, the system checks for the item production line records, which are valid on the entered Effective Date, as well as the records that take effect later than the date.

If the Effective Date is left blank, the system checks for all item production line records.

Note When the system is creating a new line in Production Line Item Create (16.1.15), the logic for Make Primary Line also executes after the item production line record is created.

Fig. 2.4
Production Line Item Update (16.1.16)

Production Line/Order Update

Use Production Line/Order Update to mass update existing production orders with production line settings when you have updated fields on a production line.

Use the header to select the site and production line. Optionally, set the customer item number to be produced on the production line or the as-of-order release date to narrow the selection for orders to mass update. Specify Yes or No to other criteria to either apply the production line change to the mass order update or to further narrow down the type of order to which the system applies the mass update.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 2.5
Production Line/Order Update (16.1.17)

Setting Up Work Centers

A work center is a machine, a group of machines, or a work cell on a production line at a site, or at a site that can perform manufacturing operations. Alternatively, a work center can be a subcontract supplier. You use Work Center Maintenance (14.5) to set up a work center for:

- A work center, cell, or machine on the shop floor
- A supplier that can provide a subcontract service

You define a work center for each physical work center, on every production line, at every site. You can define an inventory backflush location on each work center.

Note The Transaction Quantity Method field determines whether to use Qty Complete or Qty Processed in Operation Activity Transaction and Production Order Receipt. The Transaction Quantity Method value set in Work Center Maintenance has a higher priority over the value set in Production Line Maintenance.

For work centers with inventory, best practice is to define a unique work center for them for each production line and site. This is not required for work centers that do not have inventory.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 2.6
Work Center Maintenance (14.5)

Work Center: 3000 Machine: _____
 Description: Training Work Center
 Department: 0010 Manufacturing
 Scheduler: abcd
 Supplier: _____
 Backflush Location: PL300
 Transaction Quantity Method: QtyComp Quantity Completed
 Auto Firm: _____
 Queue Time: 0.5 Wait Time: 1.0
 Mach/Op: 1
 Setup Crew: 5.00 Setup Rate: 10.000
 Run Crew: 1.000 Labor Rate: 5.000
 Machines: 1.000 Labor Burden Rate: 1.000
 Mach Bdn Rate: 1.000 Labor Bdn %: 0.00%
 Time Period: _____ Period Number: 0 Calculate Date: 8/27/2020
 Horizon End: DAY

Set up a supplier for subcontract services.

Define a backflush location.

Work Centers and Routing/Process Operations

You update existing routing and process operation data that references the standard operation for Mach/Op, Queue Time, Wait Time, Setup Crew, and Run Crew.

For a routing, you specify a work center in the Work Center field in Routing Maintenance (14.13.1) for each routing and process operation.

You can run Routing Report (.NET UI) to view work center data for a routing. You run Routing Update (36.25.7) to view standard operation data, including setup, run and move times; yield%; tool code; subcontract cost; and overlap units.

Fig. 2.7
Routing Maintenance, Report, and Update

Routing Maintenance
 Routing Code: 02210 Motor Asm 6-Way Seat Adj.
 Routing Description: _____
 Operation: 10 Start Date: _____
 Standard Operation: ASM
 Work Center: 3000 General Assembly
 Machine: _____
 Operation Description: Trim Wire Affix Con
 Machines per Operation: 1
 Overlap Units: 0
 Queue Time: 1.0
 Wait Time: 2.0
 Setup Time: 0.0
 Run Time: 0.05
 Move Time: 0.0
 Start Date: _____
 End Date: _____

Routing Report
 10USA USD
 Page: 1/1
 3/28/2017 3:46:51 PM

Op	Std Op	Description	Work Ctr	Machine	Start	End Date	Queue Time	Setup	Run Time	Wait	Move	Yield%	Tool	Supplier
10	ASM	Trim Wire Affix	1000	1000			1.0	0.0	0.05	2.0	0.0	100.00%		
15	HP	HP Pot Electrical	1040	1040			0.25	0.0	0.016666667	0.25	0.0	100.00%		
20	ASM	Asm Mtr To Mtg	1000	1000			0.25	0.0	0.05	0.25	0.0	100.00%		
30	INSPECT	Inspect Par	1050	1050			0.25	0.0	0.033333333	0.25	0.0	100.00%		

Routing Update
 10USA
 Page: 1
 04/04/17 20:15:21
 New Standard Operation Data - SIMULATION
 New Work Center Data - SIMULATION
 Routing Code: 02200 Motor Asm 8-Way Seat Adj. 24V amp 2 hp

Op	Std Op	Description	Setup	Run	Move	Overlap	Sub LT	Yield%	Tool	Supplier	Subcontract
10	ASM	Trim Wire Affix Con	0.0	0.05	0.0	0	0	100.00%			0.00
20	ASM	Asm Mtr To Mtg Plate	0.0	0.05	0.0	1	0	100.00%			0.00

Work Ctr	Machine	Mach/Op	Queue	Wait	Run	Setup
1000	1000	1	1.0	2.0	1.00	1.00
1000	1000	1	0.25	0.25	1.00	1.00

Op	Std Op	Description	Setup	Run	Move	Overlap	Sub LT	Yield%	Tool	Supplier	Subcontract
20	ASM	Asm Mtr To Mtg Plate	0.0	0.05	0.0	1	0	100.00%			0.00

Work Ctr	Machine	Mach/Op	Queue	Wait	Run	Setup
1000	1000	1	0.25	0.25	1.00	1.00

Setting Up Standard Operations

Use Standard Operation Maintenance to set up standard operation templates to provide default values when creating a routing/process operation. Figure 2.8 depicts the connection among the work center definition in Work Center Maintenance, the standard operation definition in Standard Operation Maintenance, and the standard operation setup in Routing Maintenance.

You can also use Routing Update to quickly add default values for a new routing or process operation. You can update existing routing and process operation data that references the standard operation for setup, run, and move times, yield %, and more.

Fig. 2.8
Standard Operations Setup

The figure consists of three overlapping screenshots from SAP software, illustrating the setup of standard operations:

- Top Screenshot (Work Center Maintenance):** Shows the 'Work Center: 1000' field highlighted with a red box. Other visible fields include 'Machine: 100', 'Description:', 'Department: 0010', and 'Scheduler: bmb'.
- Bottom Right Screenshot (Standard Operation Maintenance):** Shows the 'Standard Operation: ASM' field highlighted with a red box. Other visible fields include 'Description: Assemble To Print', 'Work Center: 1000', 'Supplier:', and 'Machine:'.
- Bottom Left Screenshot (Routing Maintenance):** Shows the 'Standard Operation: ASM' field highlighted with a red box. Other visible fields include 'Routing Code: 01040-006', 'Routing Description:', 'Operation: 10', 'Start Date:', 'End', 'Work Center: 1000', 'Machine: 1001', and 'Operation Description: ASSEMBLE COMPONENTS'.

Setting Up Machines for Work Centers

You can set up work center and machine codes to identify each physical work center at a site and/or production line in Work Center Maintenance. Work centers are defined by both the work center code and machine code; however, the definition does not include either site or production line. The system applies the work center code across all production lines and sites.

Additional Work Center Setup

In addition to the setup described this section, you should complete setup as indicated in the following table.

Set Up	Program to Use	Reference
Scheduling	Use Work Center Maintenance to set the following schedule-related fields: • Scheduler • Schedule Horizon • Auto Firm And in the Time Period frame: • Horizon End • Period Number	For field descriptions, find Work Center Maintenance in Table 16.2 on page 244 to link to the fields for the program.
Capacity planning	Set the number of machines in the Mach/Op field in Work Center Maintenance.	See Figure 2.6
Cost accounting	Set the following fields for cost accounting in Work Center Maintenance: • Setup Rate • Labor Rate • Labor Burden Rate • Machine Bdn Rate • Labor Bdn %	
Lead time calculations	Set the following fields for lead time calculations in Work Center Maintenance: • Queue Time • Lead Time • Machine/Op	
Work center reserved location	Use Work Center Reserved Location.	See “Work Center Reserved Location” on page 29

Setting Up Departments

A department groups similar work centers. Departments are like product lines because they organize information on planning reports and determine GL accounts on transactions. Each department is set up with a fixed daily labor capacity and a set of GL accounts. The system uses department account codes when:

- Reporting labor and downtime in production activity functions
- Backflushing inventory and closing the accounting for completed orders

Use Department Maintenance (14.1) to set up a new department. For information on setting up departments, refer to the Departments section of the *QAD Manufacturing User Guide*.

Setting Up Locations

A location can include shelves, bins, tanks, lots, or other storage areas. Each location’s parameters identify what can be stored there and how that inventory can be used. Each time you perform an inventory transaction, such as an issue, receipt, or transfer, you must specify both a site and a location.

Use Location Maintenance (1.1.18.1) to set up locations. Use Item Master Maintenance (1.4.1) or Item Inventory Data Maintenance (1.4.5) to define default sites and locations for individual items. Use Item-Site Inventory Data Maintenance (1.4.16) to assign site-specific locations to an item. When considering location defaults, the system searches for a site-specific record first. When the record does not exist, location defaults from Item Master Maintenance.



For information on setting up locations, refer to the Locations section of the *QAD Master Data User Guide*.

Set the Inventory Status field to determine whether quantity at the location is available for allocations; nettable for material planning; or can be over issued, resulting in a negative on-hand balance.

Setting Up Reserved Locations

Production reserved locations let you set aside quantities at inventory locations to fulfill material requirements at production lines or work centers. When you select inventory for production at a work center or production line for an allocation or picklist from an inventory location that is reserved for a different work center or production line, the system displays a message indicating this.

The system selects items for production order allocations by searching work center and production line reserved locations, before searching for quantities in other inventory locations. The system searches locations in the following sequence for quantities that are available to allocate:

- 1 Work center reserve location(s) for item by preference
- 2 Production line reserve location(s) for item by preference
- 3 Work center reserve location by preference
- 4 Production line reserve location by preference
- 5 Other inventory locations with a sequence determined by the item and site (or item) inventory data parameter for MFG picking order

Detail allocations are created for inventory quantities for the production order and picklist. For more information, see “Allocating Inventory” on page 77.

Work Center Reserved Location

Use Work Ctr Reserve Loc Maintenance (1.1.18.13) to specify reserved locations for a work center. Work center reserved locations work together with production line reserved locations to designate shop floor inventory for production at those work centers and production lines. Use Work Ctr Reserve Loc Maintenance to define a shop location for inventory quantities that will be consumed at a particular work center. Inventory at a work center reserved location is considered as available for allocation and consumption by production at work centers defined for that inventory location, but not available to allocate for other purposes.

Note For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

There are two ways to designate reserved locations for a work center:

- Define a general work center reserved location that is not specific to particular items. Do this by leaving the item number blank and designating the inventory location.
- Or, define a work center reserved location for an item. Do this by providing both an item number and an inventory location.

Production Line Reserved Location

Use Prod Line Reserve Loc Maintenance (1.1.18.16) to create reserved locations for a production line. Production line reserved locations work together with work center reserved locations to designate shop floor inventory for production at those work centers and production lines. Use Prod Line Reserve Loc Maintenance to define a shop location for inventory quantities that will be consumed at that production line. Inventory at a production line reserved location is considered as available for allocation for consumption by production lines defined for that inventory location, but not available to allocate for other purposes.

There are two ways to designate reserved locations for a production line. You can define a general production line reserved location that is not specific to particular items. Do this by leaving the item number blank and by designating the inventory location. You can also define a production line reserved location for an item. Do this by providing both an item number and an inventory location.

Use the Preference field to specify an integer value that determines the order in which reserved locations for a production line are evaluated by production allocation functions, when there is more than one general reserved location defined for a production line or work center.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 2.9
Prod Line Reserve Loc Maintenance

Reserved Location Availability

You can use location availability functions in the component availability collections to determine when you have enough inventory at reserved locations (or resource backflush locations) to process firm production orders.

The following component availability programs provide a Location Availability column, Location Availability Summary browse, and Location Availability Detail browse:

- Monitor Material Shortages
- Manage Materials for Production Line
- Manage Materials for Work Center
- Release Production Orders by Production Line
- Release Production Orders by Work Center

Setting Up Items and Engineering Data

Before you use production orders, you set up items and necessary product and manufacturing engineering data to be manufactured with the production resources. Discrete and process manufacturing focus on different engineering aspects. Discrete manufacturing focuses on setup of items, engineering data, product structures, routings, and their alternates, as well as production lines. Process manufacturing requires setup in these same areas, but focuses on setup of formulas and processes for batch quantities rather than product structures and routings.

This section discusses the setup of the following:

- Setting Up Essential Item Data
- Setting Up Discrete Manufacturing Engineering Data
- Setting Up for Process Manufacturing
- Setting Up Alternate Structures and Routings (Process Definitions)
- Setting Up Items and Engineering Data with Production Lines
- Setting Up Items for Production Allocations, Picklists, and Backflush

Setting Up Essential Item Data

Before you use production order capabilities, you must set up item data. This section covers the basic item data setup you should complete to use production orders:

- Setting Up Item Data
- Setting Up Item Inventory Data
- Setting Up Item Planning Data
- Setting Up Item Cost Data

Setting Up Item Data

Use Item Master Maintenance to set up and maintain basic information that identifies an item, for sales, purchasing, engineering, inventory control, production, and finance. Set up specific information in the Item Data frame. For information on frames in the program, refer to the Items/Sites chapter of the *QAD Master Data User Guide*.

Important Item Master Maintenance includes the Item Picking Data frame. You must set fields in this frame for production orders. The frame also displays in Item Inventory Data Maintenance and Item-Site Inventory Data Maintenance. Screen depictions and explanations of fields are in “Item Picking Data” on page 32.

Setting Up Item Inventory Data

Use Item Inventory Data Maintenance (1.4.5) to set parameters for inventory control. The program consists of multiple frames. You set production order picking data in the Item Picking Data frame and you set shipping parameters in the Item Shipping Data frame.

Item Picking Data

For production order operations, you set fields in the Item Picking Data frame to manage the replenishment of inventory on the shop floor by production picklist. The following graphic depicts the policy fields in Item Inventory Data Maintenance. For details, refer to “Setting Up Item Picking Parameters” on page 35.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 2.10
Item Inventory Data Maint, Policies

Item Picking Data

Allocation Policy:	System
Transfer Allocation Policy:	Drop
Allocate Single Lot:	☐
MFG Picking Order:	0
Ascending/Descending:	Ascending

Pick Policy:	Transfer
Issue Policy:	Backfish
Key Item:	☐
Picking Multiple:	0
Picking Minimum:	0
Picking Maximum:	0

Applies to Production Picklists only.

Setting Up Item Planning Data

Use Item Planning Maintenance to set up and maintain parameters for Material Planning, Production Orders, Purchasing, ATP, EMT, DRP, and Kanban. You also set up and maintain parameters for Material Planning and for scheduling production orders. For information on frames and fields, refer to the Material Requirements Planning chapter of the *QAD Manufacturing User Guide*.

Fig. 2.11
Item Planning Maintenance (1.4.7)

The figure displays two screenshots of the 'Item Planning Data' window in QAD. The top screenshot highlights the 'Material Planning parameters' section, which includes fields for Master Sched, Plan Orders, Time Fence, MRP Required, Order Policy, Order Qty, Batch Qty, Order Period, Safety Stock, Safety Time, Reorder Point, and Revision. The bottom screenshot highlights the 'Scheduling and production order parameters' section, which includes fields for Buyer/Planner, Supplier, PO Site, Purchase/Manufacture, Configuration Type, Inspect, Ins LT, Cum LT, Mfg LT, Pur LT, ATP Enforcement, Family ATP, ATP Horizon, Run Seq 1, Run Seq 2, Phantom, Minimum Order, Maximum Order, Order Multiple, Op Based Yield, Yield Percent, Run Time, Setup Time, EMT Type, Auto EMT Processing, Network Code, Routing Code, BOM/Formula, and Replenishment Method.

Setting Up Item Cost Data

Use Item Cost Maintenance or Item-Site Cost Maintenance to set up essential item cost data. For information on both programs, refer to the Defining Item Costs chapter of the *QAD Costing User Guide*.

Setting Up Discrete Manufacturing Engineering Data

Use Routing Maintenance (14.13.1) to define the routing for either an item or a routing code. In the Run Time field, enter the time per unit. Use Routing Maintenance (Rate Based) (14.13.2) to define a rate-based routing. In the Hourly Production Rate field, enter time as units per hour.

You can use Product Structure Maintenance (.NET UI) to view items as the parent of the product structure by clicking the Item tab. You can view the BOM/formula as the item parent by clicking the Product Structure Codes tab.

Setting Up for Process Manufacturing

For process manufacturing, you set up processes and formulas for a batch quantity. You maintain operations for an item or BOM/formula code. You define formulas using Formula Code Maintenance (15.1); you define processes using Process Definition Maintenance (15.13). You can view formula or process data using Formula Code Browse (15.2), Process Definition Report (15.15), or Formula by Component Report (15.7.25).

When you change batch quantities using Batch Quantity Change (15.9), the system updates the quantities and times on process definitions or on formulas. Also, when you update the batch size for a BOM/formula code, the system updates process definition run times and formula quantities per batch.

Setting Up Alternate Structures and Routings (Process Definitions)

When you use a different, older, and less efficient machine, you should set up a routing with a different sequence of operation steps. Use of an alternate routing requires a different product structure. When one or more component materials are not available, a different product structure or formulation is required to make use of alternate component materials. This may also require use of a different routing.

Different routings (or processes) or product structures (or formulas) are required to produce different order quantities/batch sizes.

Use Alternate Structure Maintenance (13.15.1) to define alternate structures. The program is applicable to both product structures and formulas.

Use Alternate Routing Maintenance (14.15.1) to define alternate routings. The program is applicable to both routings and process definitions as well as product structures and formulas.

Setting Up Items and Engineering Data with Production Lines

Use Item Production Line Maintenance (16.1.4) to set up a specific item for a specific production line. You specify the item, production line, and site. Once you complete this, you enter specific data about the item in the Item frame. It is important that the BOM and routing codes match the items.

Fig. 2.12
Item Production Line Maintenance (16.1.4)

Item Production Line Maintenance

Go To Actions Copy Print Preview Attach

Item Number: 01010 EA Medical Ultrasound
 Site: 10-100 Ultrasound Mfg Site
 Production Line: 1000 test prod line
 Units/Hour: 50.00
 Setup (D H:M:S): 0 03:00:00
 Start: 4/8/2017

Items

Units/Hour: 9.00
 Setup Time (D H:M:S): 0 00:00:00
 Setup Crew: Size: 0
 Run Crew: Size: 1
 Routing: U-001
 BOM Code:
 Tool ID:
 Run Sequence 1: 2:
 Comments:

Routing and
BOM code
must be valid
for the item.

Setting Up Items for Production Allocations, Picklists, and Backflush

This section tells you how to:

- Setting Up Item Picking Parameters
- Setting Up Non-Directed/Directed Picking
- Set Up for production backflush and shop floor locations
- Setting Up Production Backflush

Important Refer to “Item Picking Data” on page 32 for details on picking parameters.

Setting Up Item Picking Parameters

You set picking parameters in the Item Picking Data frame, which displays in the following programs:

- Item Master Maintenance (1.4.1)
- Item Inventory Data Maintenance (1.4.5)
- Item-Site Inventory Data Maintenance (1.4.6)

Fig. 2.13
Item Picking Data Frame

Item Picking Data

Allocation Policy: Detail
 Transfer Allocation Policy: Drop
 Allocate Single Lot: ☒
 MFG Picking Order: 0
 Ascending/Descending: Ascending

Pick Policy: No Pick
 Issue Policy: Backflush
 Key Item: ☒
 Picking Multiple: 0
 Picking Minimum: 0
 Picking Maximum: 0

Table 2.1 describes production allocation and pick policies. By setting the allocation and picking policies for the item, you can determine how the system processes inventory quantities for bulk item picklists and production order picklists.

Table 2.1 .
Production Allocation and Pick Policies

Policy	Description
Allocation Policy	Specify whether the system creates general allocations or detail allocations for component requirements for the item. Refer to field help for Allocation Policy to choose a value. See “Prod Order Manual Allocation” on page 80.
Pick Policy	Specify whether inventory is to be picked and transferred to a shop floor location, picked and issued to a production order, or not picked. See “Pick Policy” on page 81
Transfer-Allocation Policy	Specify for an item that has Pick Policy set to Transfer either Drop or Keep to determine whether or not the detail allocations for quantities are dropped or retained after the transfer is completed. Refer to the field help for the Transfer Allocation Policy field to choose a policy. See “Transfer Allocation Policy” on page 88,
Issue Policy	Specify whether inventory for the item is normally backflushed to a production operation or order from inventory, issued to a production order from inventory, or not issued (in the case of floor stock). In addition to the policies, you can maintain additional parameters for production picking, such as allocating to a single lot; the picking order, picking multiples; and the picking minimum and maximum. See “Issue Policy” on page 89

Setting Up Non-Directed/Directed Picking

This section discusses two types of picking:

- Non-directed picking

In non-directed picking, you pick inventory using the picklist that shows the items and quantities to pick; then, you record the items, quantities, and locations from where the items were picked.

For example, the inventory in your stockroom locations are not tightly controlled. You apply LIFO or FIFO procedures and determine that the inventory quantities are actually picked from the stockroom. You pick inventory, then record the quantities picked from the stockroom.

- Directed picking

In directed picking, you pick inventory using the picklist that shows the items, quantities, and locations from which you pick; then, you confirm that the picked quantities were picked from the locations specified on the picklist.

For example, the stockroom inventory is tightly controlled and there is high inventory accuracy as well as near real-time updates of inventory quantities. There is also high compliance for put-away, picking, and movement of stockroom inventory. The system determines the inventory quantities to pick and creates detail allocations for that inventory; you process records for the quantities picked from the stockroom.

Setting Up Production Picklists

For production picklist setup, you set the Allocation Policy that is described in Table 2.1 and shown in Figure 2.13. You set the Allocation Policy as follows for the two types of picking as follows:

Non-directed	Allocation Policy set to General	Picklist content displays item and quantity.	The picklist calculation creates a general allocation for the item and quantity.
Directed	Allocation Policy set to Detail	Picklist content displays item, quantity, and location.	The picklist calculation creates detail allocations for the item and existing inventory. The mfg picking order determines the sequence that inventory is selected for detail allocations. The system creates or updates the detail allocations when inventory is picked for a picklist.

There are two kinds of production order picklists:

- Production order picklists

For production order picklists, you pick materials for the production order; then, you dispatch and move production orders with the materials picked for each order to the shop floor.

- Bulk item picklists

For bulk item picklists, you pick materials for bulk items transfer picklists; then your transfer materials for these picklists to shop floor locations.

To set up these types of picklists, you set the Transfer Allocation Policy that is described in Table 2.1 and shown in Figure 2.13. You set the Pick Policy for the two types of picking as follows:

Production order picklists	Set the Pick Policy to Issue	Items display on production order picklists	For material movement, the picked quantity is moved with the production order and can be processed using Production Picklist Issue. Production Order Allocate (16.5.1) or Production Order Release Print (16.4.2) creates a production order picklist which represents a picklist for a single order.
Bulk item picklists	Set the Pick Policy to Transfer	Items display on bulk item (transfer) picklists and can also display on production order picklists	For material movement, picked quantity is transported to shop floor location(s) and processed using Production Picklist Transfer (16.5.9) Bulk Item Picklist Calculate (16.5.3) creates a bulk item picklist for items with Pick Policy transfer, to satisfy component requirements for bulk items on one or more production orders. To isolate items to bulk item picklists and have them not appear on production order picklists, use Bulk Item Picklist Calculate to allocate and pick quantities for items on those picklists before creating production order picklists.

The Issue Policy parameter determines how inventory quantities are selected for processing by transactions.

- When the Issue Policy is set to Direct, the item displays for processing on production order picklists, and the system uses transactions created through Production Order Picklist Issue (16.5.11) and Production Order Component Issue (16.15.12).
- When the Issue Policy is set to Backflush, the item displays for processing on Production Order Receipt (16.13.1) or Production Operation Activity (16.13.13).
- When the Issue Policy is set to No Issue, the item is not processed by either issue or backflush transactions. Instead, the Prod Order Accounting Close function creates GL transactions to account for production material costs associated with the item.

For more information, see “Pick Policy” on page 81 and “Issue Policy” on page 89.

Additional picklist parameters, which are described under the alphabetical list of programs in “Alphabetical List of Programs” on page 244, include the following:

- Allocate Single Lot
- Key Item
- MFG Picking Order
- Ascending/Descending
- Picking Multiple
- Picking Minimum, Picking Maximum

Setting Up Production Backflush

For detailed information on setup for backflush, refer to “Setup for Backflush” on page 94.

Setting Up Shop Floor Locations

To set up a shop floor location, you should define shop floor backflush locations so that you can receive material transferred from the stockroom and process inventory through backflush transactions.

Setting Up Calendars

When working with production orders, you should know the following:

- Calendars can be defined across multiple levels.

Use different calendars when there are differences for shifts, hours, and/or work days. Calendars can be defined for domains, sites, production lines, work centers, processes, and suppliers.

Set up a workweek calendar for a site to specify specific work hours and productivity, for example, for shifts.

Set up production line and work center calendars when necessary; note that the Planning and Scheduling Workbenches require a production line calendar to calculate capacity for production on a production line.

Productivity is calculated using the capacity for a production line, which is determined from a production line calendar.

The system applies site calendars to work centers within that site, unless you define a specific work center calendar when the work days, shifts, and/or hours are different for a work center than for the site calendar.

- Calendars define hours for work days and shifts.

Calendar work days (and sometimes hours) let you schedule dates for manufacturing, purchasing, sales, and supply-chain operations.

- Calendars are used for scheduling dates and calculating capacity.

Capacity requirements for production are calculated by factoring productivity from calendars. Scheduled capacity hours are calculated from the total hours for all shifts for a work day. A calendar must be defined for a production line for the Planning and Scheduling Workbenches.

- Calendars are used by Material Planning for scheduling orders.

Material Planning schedules planned orders using the lead time for the item and the workdays for the site. A site workday is any day that has 1 or more total hours.

- Calendars are used to define exceptions for specific dates.

Calendar exception functions are available for sites, production lines, work centers, processes, and suppliers. For exceptions, you can add work hours for shifts on non-workdays, for example, such as a Saturday, or you can add or reduce work hours for shifts on a workday, for example, by cutting the hours for each shift for the production line on a day before a holiday.

Note Non-working days, such as holidays, are better handled by maintaining calendar exceptions for those days that apply to the impacted sites, production lines, work centers, and so on, so that those that are not impacted can remain operational.

The following table describes the calendar task function you must perform for production orders, describes the programs to use, then references other QAD user guides with complete calendar information.

Table 2.2
Set Up Calendars for Production Order Functions/Processes

Calendar Function	Program to Use	Reference
Define a domain calendar that defines the default work week for all sites within that domain	Domain Calendar Maintenance (36.2.4.1)	Refer to “Setting Up Calendars” on page 38 and to the Domain Constants chapter of the <i>QAD System Administration User Guide</i> .
Define a site calendar if necessary.	Site Calendar Maintenance (1.1.22.1)	Refer to “Setting Up Calendars” on page 38 and to the Maintaining Shop and Holiday Calendars section of the <i>QAD System Administration User Guide</i> .
Define exceptions to site calendar if necessary.	Site Calendar Exceptions Maint (1.1.22.4)	Refer to “Setting Up Calendars” on page 38 and to the Maintaining Shop and Holiday Calendars section of the <i>QAD System Administration User Guide</i> .
Define a production line calendar for the Planning and Scheduling Workbenches to calculate production capacity	Production Line Cal Maint (16.1.13.1).	Refer to “Setting Up Calendars” on page 38 and to the Maintaining Shop and Holiday Calendars section of the <i>QAD System Administration User Guide</i> .
Define production line calendar exceptions for specific dates on a particular date	Prod Line Cal Except Maint (16.13.1.3)	Refer to “Setting Up Calendars” on page 38 and to the Maintaining Shop and Holiday Calendars section of the <i>QAD System Administration User Guide</i> .

Calendar Function	Program to Use	Reference
Define non-work days for a production line	Production Line Non-Workday Update (16.1.13.5)	
Define a work center calendar	Work Center Calendar Maintenance (14.18.1).	
Define non-workdays for a work center	Work Center Non-Workday Update (14.18.25)	Refer to “Setting Up Calendars” on page 38 and to the Maintaining Shop and Holiday Calendars section of the <i>QAD System Administration User Guide</i> .
Set up work hour and work day exceptions	Work Center Calendar Except Maint (14.18.4)	
Defined holidays	Holiday Maintenance (36.2.1)	Refer to “Setting Up Calendars” on page 38 and to the Maintaining Shop and Holiday Calendars section of the <i>QAD System Administration User Guide</i> .

Creating, Approving, and Modifying Production Orders

This chapter discusses the following topics:

***Introduction* 42**

Introduces the template and its styles.

***Creating Production Orders* 42**

Describes different methods/programs to create a production order.

***Important Elements of Production Orders* 45**

Describes elements of production orders that display in several programs and reports, such as the production order status, Mfg and order type, due and release dates, and so on.

***Approving Planned Orders* 52**

Describes different methods/programs to approve planned orders.

***Scheduling Production Orders* 56**

Briefly discusses scheduling production orders and refers you to the program to use.

***Modifying a Production Order* 56**

Describes the programs to use and discusses important elements to consider when modifying.

Introduction

This chapter describes the various methods to create and approve a production order. It also tells you how to modify production orders once you create them, and how to modify the production order bill.

This chapter includes a discussion of important elements found in all production orders. It also points you to tools that help you schedule production orders.

Creating Production Orders

You can create production orders in the following ways:

- Creating with Production Order Collection (.NET UI only).
- Creating with Production Order Maintenance (16.3.1).
- Creating with the QAD Planning and Scheduling Workbenches (.NET UI only).
- Create with Master Schedule Order Maint (22.13), which is identical to Production Order Maintenance.

When you use the production order create and modify functions, the programs:

- Act as a single function for both work orders and repetitive scheduled production orders.
- Provide direct access to fields directly related to the production order, but not including its routing or components.
- Let the system determine processing and default values for an item, site, and production line setup.

Other Ways Production Orders are Created

Production orders are also created as the result of executing other functions.

- Material Planning generates planned production orders.
- Releasing a sales order or service return material authorization (RMA) for a configured item to a production order in Sales Order Release to Production Order (8.13).
- Releasing an RMA receipt line to a production order with RMA Release to Production Order (11.7.1.5).
- Releasing a parent order for an item with a routable component creates a related production order for the component.
- Production orders created to handle customer service activities are managed with Call Activity Recording (11.1.1.13) in the Service/Support Management module.

These cannot be updated in the programs listed in this section to create a production order. Customer services production orders are included on standard production order reports. See [QAD Service/Support Management User Guide](#) for details.

Creating with Production Order Collection

Use the Production Order Collection as a one-stop production order activity center, which includes the creation of production orders. When you do, you have access to:

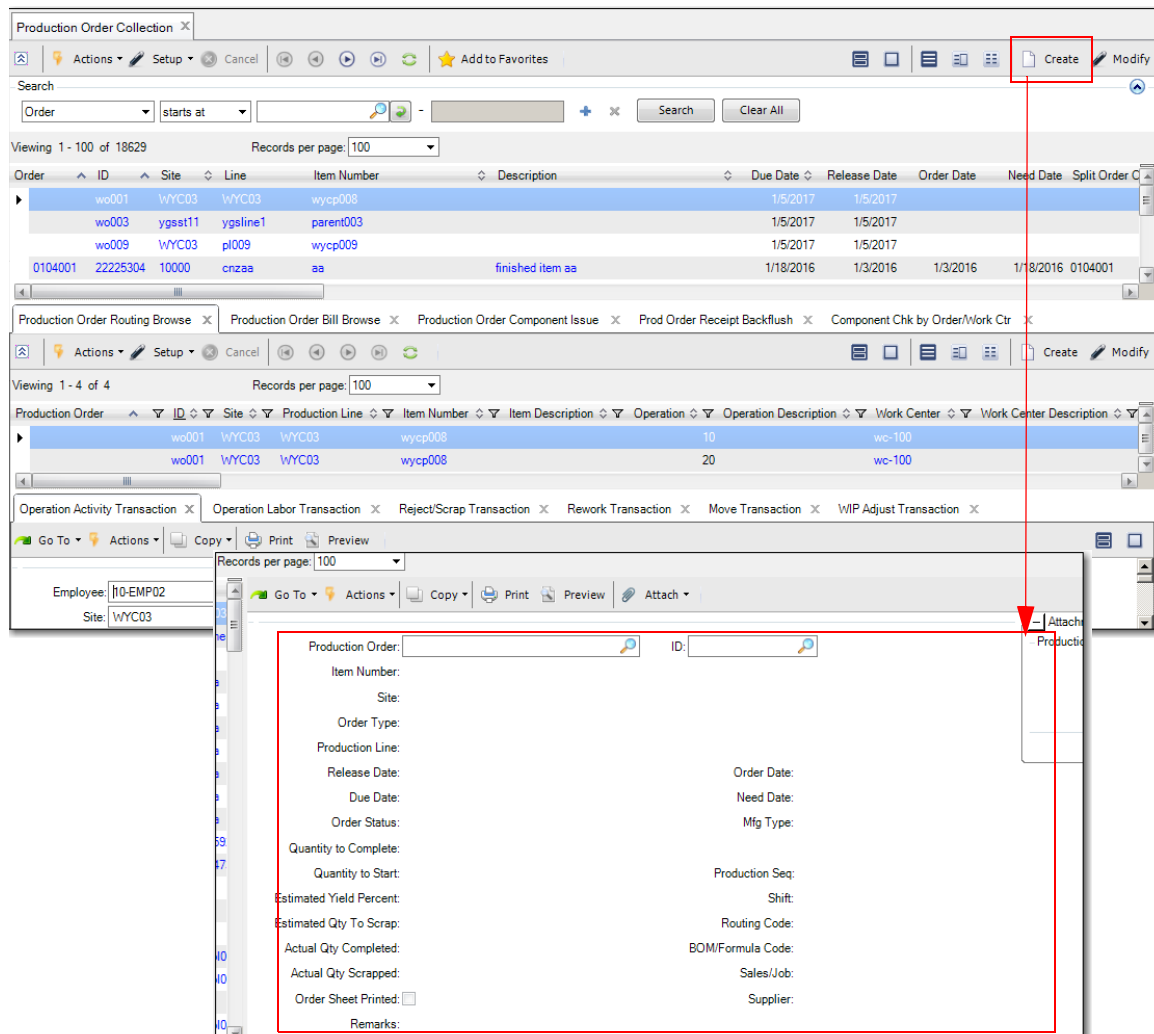


- Production Order Maintenance
- Production order routing
- Production order components
- Functions for processing transactions for production orders

To create a production order:

- 1 Start the .NET UI-only Production Order Collection.
- 2 Click the Create button.
Production Order Maintenance fields display in a panel overlay. For fields, see “Production Order Maintenance” on page 304.
- 3 Complete all fields for the new order or accept the defaults.
Some defaults are set in Production Order Control; see “Defining Control Parameters” on page 20.

Fig. 3.1
Production Order Collection



For fields and field descriptions when creating, find Production Order Maintenance in Table 16.2 on page 244 to link to a list of fields for the program.

For information on key elements (important fields) of a production order, see “Important Elements of Production Orders” on page 45.

Creating with Production Order Maintenance

Create a production order using Production Order Maintenance (16.3.1). You can also use Master Schedule Maintenance to create orders. Both programs provide:

- A single function for both work orders and repetitive scheduled production orders
- Direct access to fields directly related to the production order, but not including its routing or components
- A means for the system to determine processing and default values by item and production lines setup

For regular orders, enter data in three screens: the order header and details, an Attributes frame to specify item attributes and quality control data, and an Accounting Data frame to specify General Ledger (GL) accounts. There is one optional screen for entering comments.

When entering orders manually, specify the item number to produce and fill in the production order type and quantity ordered. The quantity ordered should reflect yield. You can override defaults.

Co-/By- and Joint- Order Products

Production orders for co-products and by-products determine what, and how many, co-products and by-products to make from a base process. Refer to Chapter 16, “Co-/By-Product Production Orders,” on page 233.

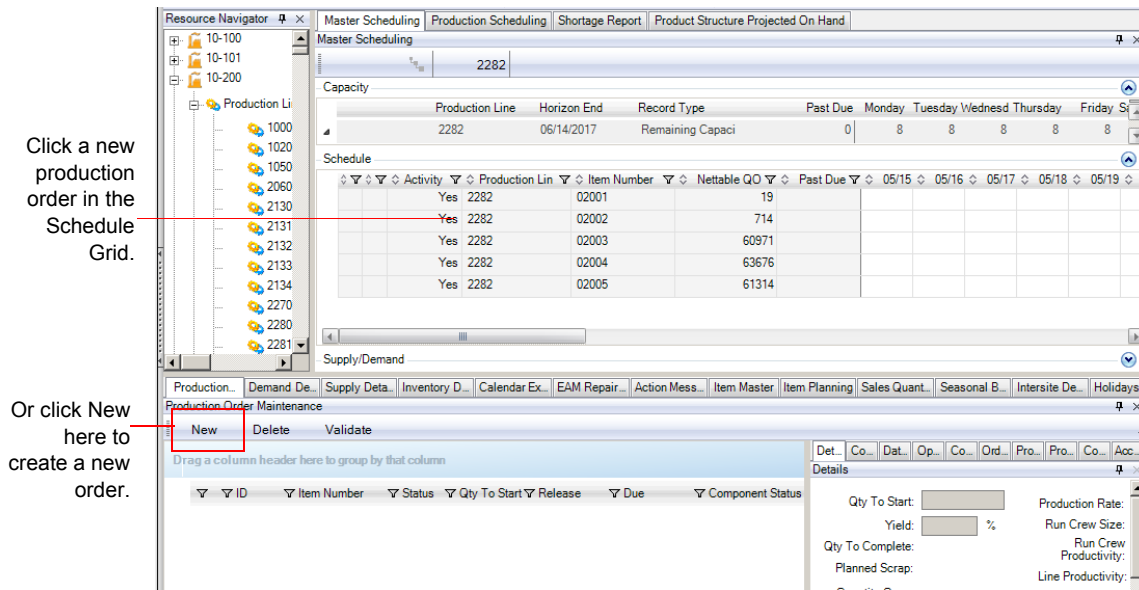
Creating with the QAD Planning and Scheduling Workbenches

You can create a production order in the Planning and Scheduling Workbenches-embedded Production Order Maintenance panel.

You can create a production order from the Scheduling Grid, the Sequence Grid, or by clicking New in the workbenches-embedded Production Order Maintenance panel.

For information on creating a production order in the workbenches, refer to the Master Scheduling Workbench (MSW) chapter of the *QAD Planning and Scheduling Workbenches User Guide*.

Fig. 3.2
Workbenches-Embedded Production Order Maintenance



For fields and field descriptions, see “Alphabetical List of Programs” on page 244.

For information on key elements (important fields) of a production order, see “Important Elements of Production Orders” on page 45.

Differences in Order Creation Process with the Various Methods

In Production Order Collection, you can create production orders, and you can drill down into supporting tabs and browses to view and maintain routing, production order bill, component issue, receipt backflush, and component check functions. You can also maintain production order transaction functions such as operation activities, operation labor, reject/scrap, rework, move and WIP adjust transactions.

The Planning and Scheduling Workbenches let you create orders, too. The focus for the workbenches is on master or production scheduling, capacity monitoring, extended component check functions, and extended product structure projected on hand (POH) data access for production lines and work centers. You can drill down into item master and planning data, inventory details, calendar exceptions, and so on.

Important Elements of Production Orders

Regardless of the method you choose to create a production order, the system displays fields that convey these important elements of a production order:

- Production Order Type
- MFG Type
- Production Line
- Production Order Status
- Release, Order, and Due Dates

- Routing Code
- BOM/Formula

These elements are discussed in the following sections.

Production Order Type

The production order type identifies the production order source and how it should be processed. Most production orders are entered with blank type. These are normal manufacturing orders with a standard product structure and routing.

Values are E, R, S, C, F, or blank. The following subsections describe the types in more detail.

E (Expense)

Create an order with type E when a production order is required to capture the costs and expenses for non-inventory jobs, such as engineering prototypes or design projects. They are tracked by a production order so costs can be accumulated. Usually a special GL account and project code is entered. Expense production orders do not have any routing operations or components. These are added manually.

R (Rework)

Create an order with type R when a production order is required for the rework or repair of an item quantity. This type of order is created with no routing and only one component—the product being reworked. Additional component materials can be issued as required to complete the rework or repair. Rework expenses can be tracked separately by entering a different GL account and project code.

S (Repetitive, Scheduled)

Repetitive scheduled orders are created when the manufacturing type is set to Rep. The default value is S when the Pur/Mfg code for the item or item-site is L. Both production orders and repetitive scheduled orders are created by the system when you maintain schedules using the Planning and Scheduling Workbenches. The system also generates production orders of type S when a production order is split. Split production orders have a cumulative order with the same order number.

C (Cumulative)

System-generated cumulative orders are generated by the system to account for the production costs of both repetitive scheduled orders and split production orders. Cumulative orders cannot be maintained using Production Order Maintenance. You can modify start date and end date of a cumulative order for repetitive production using Repetitive Cum Order Maintenance. You can modify order status, BOM/formula code, routing code and the accounts of a cumulative order for split production orders using Split Cum Order Maintenance.

F (Final Assembly)

System-generated final assembly production orders are generated when a sales order for a configured product is released to manufacturing. It uses the standard routing for the item, but the product structure contains only the items chosen on the sales order configuration. These orders are released and processed as regular production orders.

Co-/By-Products and Blank Order Type

For the production of co-products and by-products, joint production order sets can be created using production orders with Order Type set to blank. Rework and Expense production orders can share the same production order number as a joint production order set, but are not considered part of that set. As an example, a production order for a co-product or by-product can be reworked using the original order number. The type code must be blank for a base process order. For more information, see “Co-/By-Product Production Orders” on page 233.

Routable Production Orders

The system manages one other kind of production order that is not represented by a separate type code. Subassemblies can be set up so that production orders are automatically created for them when a parent item is allocated or released using:

- Production Order Maintenance (16.3.1)
- Multiple Order Status Change (16.4.3)
- Production Order Allocate (16.5.1)
- Bulk Item Picklist Calculate (16.5.3)
- Production Order Release/Print (16.4.2)

To identify a routable item, set the Pur/Mfg code for the item to Routable in Item Master Maintenance (1.4.1) or Item Planning Maintenance (1.4.7). A production order for a routable item shares the same order number with the parent production order, but has a unique order ID. Once created, the status of a routable production order is F.

Note The system cannot create routable production orders if the routable components are co- or by-products.

The system calculates Quantity to Complete of a routable component according to the following formula:

$$\text{Quantity to Complete of a routable component} = \text{Qty Required of the routable component} - \text{Qty Detail Allocated}$$

The system then calculates Quantity to Start based on the Quantity to Complete and Yield values.

Note For the system to create the routable order, Qty Required must be larger than Qty Detail Allocated for the routable component.

Once a routable production order is created, the system does not synchronize it with the parent production order. For example, modifying, removing, or splitting the parent production order does not apply changes to the routable production order. You need to maintain the routable production order manually.

Repetitive orders are supported. This indicates that the system generates production orders for the involved routable components when a repetitive order is allocated or released. Such routable production orders are discrete orders.

Routable production orders can be allocated, released, and used for processing component issues, inventory receipts, and shop floor control transactions. When the subassembly is finished:

- Process a production order receipt from the routable production order.
- Then issue the subassembly as a component to the parent production order.

MFG Type

The MFG Type describes how the production order is manufactured, either WO (work order), or Rep (Repetitive), or blank. The field is blank when the order status is P, or when the order type is F.

When working with the Production Order module, note the system settings:

- Repetitive orders: the system creates orders with the Mfg Type set to Repetitive.
- Discrete schedule orders: the system creates orders with the Mfg Type set to WO and CUM ID set to the linked discrete CUM order.
- Discrete order: the system creates orders with the Mfg Type set to WO and Cum ID set to blank.

Production Order Status

Production order status tracks the order through the manufacturing process. Status mainly determines whether the production order quantity and due date can be changed by Material Planning, and whether the order should be affected by engineering changes prior to release. Most functions can specify order status—in particular, capacity planning recalculations.

P (Planned)

Planned orders are created by Material Planning only and deleted the next time Material Planning runs. Planned orders can be included in CRP calculations.

An order generated by Material Planning has an item number that determines what is made (one item per production order) and site, which determines the routing code, bill of material, and expected yield. The production order type is blank. Material Planning fills in the quantity ordered and due date, and calculates the release date by subtracting the lead time for the item at that site from the due date. Material Planning supplies the quantity ordered based on the expected yield. The yield is not used for calculating quantities for joint orders.

F (Firm Planned)

Firm planned status indicates orders that you enter or planned orders you firm up. Once firm, Material Planning cannot change them. If Material Planning sees a need to change them, it generates action messages. If you change the quantity on a production order, the quantities of its components and the times for its routing operations are automatically adjusted. If you change a quantity or date on a co-product/by-product or base process production order, the quantities and corresponding dates are automatically adjusted on the other orders in the joint production order set.



E (Exploded)

When the production order status is changed to exploded, the order is broken into its component parts. Explosion adds components, extended quantities, and byproducts. Exploded orders firm the bill and routing for this production order. Once an order is exploded, changing the standard bill or routing does not affect the order. Any changes must be made in Production Order Bill Maintenance and Production Order Routing Maintenance.

A (Allocated)

Generally, this order status allocates components in inventory for orders. Allocations can be made based on the Allocation Policy you set for the item in Production Order Allocate. You can make detail allocations (specific lots or locations) in Production Order Manual Allocation.

R (Released)

All available components are allocated and a picklist can be printed when the order has the released status. When a key item is not available, the production order cannot be released. You can process material issues, receipts, and labor feedback against released production orders.

C (Closed)

No more material can be issued or received against a closed production order. Labor can still be reported. When the status of a joint production order set is set to closed using Production Order Receipt, current average, current last, and GL average costs are updated. Costs are also updated when running Prod Order Accounting Close. When the status of an order is changed to C, all of the open requirements for materials, allocations, and work center operations are removed.

Release, Order, and Due Dates

There are date-related fields on the production order. The most important are described in the following topics.

Release Date

The release date is the date the production order is scheduled to release to production. The default is today's date.

The system changes the date you enter here to the actual release date when you release and print the production order.

Most reports and inquiries can be selected for ranges of release dates. Orders you have not released by this date are flagged on the Material Planning reports.

The release date also determines the date components are required. Normally components are picked when an order is released, so the component need date defaults to the order release date. Some components may be needed before or after production begins, as defined on the product structure in the lead time offset field. If lead time offset is positive, it is added to the release date. If it is negative, it is subtracted. Material Planning uses component need dates and they print on the picklist document.

The system calculates either release or due date, creating, in effect, forward or backward order scheduling. When you enter:

- A release date and enter a question mark in the Due Date, the system calculates the Due Date by starting at the beginning of the Release Date and forward scheduling starting with the queue time for the first operation.
- A due date and enter a question mark in the Release Date, the system starts at the end of the Due Date and backward schedules starting with the last move time for the last operation.
- Leave both dates blank, the Release Date is set to today's date and forward scheduling is used.

In any case, the order quantity is used in calculating run time.

You may get different release and due dates using forward versus backward scheduling. This is because some lead time components are scheduled in shop days, and some in calendar days. A shop day lead time component may be in effect over a weekend in one direction, whereas in the opposite direction, a calendar day component may be in effect.

Order Date

The order date is the date the production order was entered into the system. The default is today's date. Production order reports can be selected for ranges of order dates.

Due Date

The due date is the date the production order is due to be completed. The default is today's date plus the manufacturing lead time for the item.

This is the date you plan to have product available for shipment to a customer or to issue to another manufacturing order. All Material Planning plans are based on supply being available on this due date.

When you create an order in Production Order Maintenance, the due date is calculated from the release date. The calculation begins by setting the release date to the current date, then uses the manufacturing lead time and shop calendar to calculate the due date.

In some scenarios, the system also takes production line calendars and exception settings into account:

- When you create a production order, the system uses the manufacturing lead time to calculate the due date starting from today by default. If there is a primary production line defined for the item on the order site, the primary production line calendar takes precedence over the other kinds of calendars, and should be used first.
- When no routing scheduling logic is involved and the production line is assigned, if you leave the release date or due date blank, the system uses the specified production line calendar first.

The calendar priorities in such scenarios are listed in descending order as follows:

- Production Line Calendar
- Site Calendar
- Domain Calendar

Note Material Planning uses a combination of production order due date, release date, and manufacturing lead time to schedule production orders.

Manually Controlling Due Dates

To define either the release or due date and have the program calculate the undefined date, enter the defined date and enter a question mark for the date you want calculated. The system calculates the date for the field containing the question mark using the date from the other field and the operation times from the item routing.

- If you enter a release date and enter a question mark in the Due Date field, the system calculates the due date by starting at the beginning of the release date and forward scheduling starting with queue time for the first operation.
- If you enter a due date and enter a question mark in the Release Date field, the system starts at the end of the due date and backward schedules by starting with the last move time for the last operation.
- If you leave both dates blank, the release date is set to today's date and forward scheduling is used.

Note In all cases, the order quantity is used in calculating run time.

Routing Code

Routing codes identify the routing or process used to produce this item or product. The code can identify an alternate routing or process.

The item number, site, and production line together determine the default routing code, BOM code, estimated yield, lead time calculation, and components for the order from data set up for the item, item-site, and item and production line.

When the Routing Code field is blank, the system accesses the routing or process with a routing code equal to the item number.

BOM/Formula

The production order BOM is derived from the item's product structure, defined in Product Structure Maintenance (13.5) or Formula Maintenance (15.5), and the quantity ordered. Inventory allocations and issues are based on the bill. Material Planning uses the bill of material to calculate component demand. Refer to the Material Requirements Planning chapter of the *QAD Manufacturing User Guide*.

Important When an alternate routing is entered for this production order or cumulative order, the appropriate product structure or process must also be specified. Otherwise, an error displays.

As work progresses, you can make any required changes to the order BOM. This way, you can compare what you actually use with the standard. Item quantities allocated, issued, or picked are also maintained in the BOM.

The BOM code accesses the components for the order bill. These components are listed on the order picklist and Material Planning demands are created for them.

Once the order status is Exploded, Allocated, or Released, no more changes can be made to the BOM; however, you can reassign the picking location for items on the bill even when the order status is Allocated or Released. Use Production Order Bill Maintenance (16.13.1) to make adjustments.

Approving Planned Orders

Material Planning creates time-phased material plans and production orders with a P(lanned) status. You approve the planned orders and change their status to F(irm).

Material Planning assumes that scheduled receipts (approved production orders) are rescheduled to satisfy material requirements. Material Planning updates existing planned orders and creates new planned production orders to satisfy material requirements that cannot be fulfilled by the scheduled receipts. For detailed information on Material Planning, refer to the Material Requirements Planning chapter of the *QAD Manufacturing User Guide*.

QAD recommends that you use these two functions to approve planned orders:

- QAD Planning and Scheduling Workbenches (.NET UI only)
- Auto Firm Planned Orders (22.20.2)

This section covers the recommended method to approve planned orders first, then discusses alternate methods to approve planned orders.

Using Workbenches to Approve Planned Orders

You can use the MSW's auto-firm function within the Planning and Scheduling Workbenches to quickly adjust orders and expedite your scheduling tasks. For production orders, you no longer need to approve planned production orders to change the status to F. Auto-firming is based on the order due date.

For information on auto firming within the MSW, refer to the MSW chapter of the *QAD Planning and Scheduling Workbenches User Guide*.

Using Auto Firm Planned Orders

Use Auto Firm Planned Orders (22.20.2) to have the system automatically firm orders scheduled for either production lines or work centers associated with a site. You can set the auto firm function up to be part of a background process; so, you do not have to be present to firm orders. This lets you quickly approve orders and expedite scheduling tasks. The horizon for firming orders is defined on the production line and on the work center.

You cannot auto-firm phantom items or items with Purchase/Manufacture codes:

- Purchased (items with a P code in Item Master Maintenance)
- Configured
- Routable
- Phantom

Note You must set Auto Firm to Yes in both Production Line Maintenance and Work Center Maintenance when you auto-firm for production line and work center resources. If Auto Firm is set to No in these programs, the system does not firm any planned orders. You can see the Auto Firm field status and the date of the last auto-firm in work center and production line browses in QAD ERP.

Enter the site, line, scheduler, work center, and machine associated with the production orders you want to automatically firm.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 3.3
Auto Firm Planned Orders (22.20.2)

Alternate Methods to Approve Production Orders

When you do not choose to use the Workbenches or the Auto Firm Planned Orders program, you can use any of the following methods to approve Material Planning-created planned production orders:

- Planned Production Ord Approval
- Alternate Methods to Approve Production Orders
- Multiple Order Status Change
- Production Order Collection

The following sections discuss each method.

Planned Production Ord Approval

Use Planned Production Ord Approval (23.10) to process up to 11 production orders at a time. First, set filter parameters for approving planned orders. Review the selection that displays, then flag orders for processing.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 3.4
Planned Production Order Approval (23.10)

Set selection criteria.

Review displayed selections

Flag orders for approval processing

Item Number	ID	Production Order	Qty Ordered	Rel Date	App
16129	2415058	03160007	1,000.0	7/29/2016	☒
17944	2415059	03160008	500.0	7/29/2016	☒
50020	2415896	03240004	1,129.0	7/29/2016	☒
50020-002	2415043	03160005	25.0	7/29/2016	☒
60001	2415060	03160009	11,556.0	7/29/2016	☒
60004	2406441	10050063	28,831.0	7/29/2016	☒
60006	2406442	10050064	14,680.0	7/29/2016	☒
60008	2407862	11100031	30,644.0	7/29/2016	☒
60015	2415063	03160012	16,004.0	7/29/2016	☒
80041	2319476	08300020	1,000.0	7/29/2016	☒
chz-comp2	2425621	07262603	9.0	7/29/2016	☒

Item Number	ID	Production Order	Qty Ordered	Rel Date	Approve
16129	2415058	03160007	1,000.0	7/29/2016	☒

Multiple Order Status Change

Use Multiple Order Status Change (16.4.25) to update the status of selected production orders. Select production orders to update by range of production order number or ID, release date, item number, site, or BOM/formula.

You can change the status of the following types of production orders:

- Standard (type blank)
- Rework (type R)
- Final Assembly (type F)
- Scheduled (type S)

The system does not change Expense (type E) or Cumulative (type C) production orders.

There is one screen. In the screen, set filter criteria for selecting orders that require a status change. Specify Current Status and New Status for the status change. Select item types to include in the status changes. Depending on the number of orders selected for processing, this function can take some time to complete. Consider using batch mode.

The following topics discuss additional information regarding changing the status of production orders:

- P (planned) to F (firm planned) re-explodes the production order bill and routing and re-implodes the base process for joint orders.

- P (planned) or F (firm planned) to E (exploded) schedules operations, explodes the component bill and routing, and implodes the base process for joint orders. From this point, engineering changes do not affect orders.
- P (planned), F (firm planned), or E (exploded) to A (allocated) verifies that the bill and routing are exploded and makes allocations for all components based on the allocation policy of the components
- Any status to R (released) is not allowed in this program.
- Any status to C (closed) closes the production order so that no additional materials can be issued or received. However, labor can still be reported. The system records the system date as the close date and your user ID. The production order close date and your user ID automatically appear on the Production Order Status Report and Production Order History Report.

Regression is allowed. Released orders can be changed back to status A. In some cases, you can run Multiple Order Status Change again to reverse it.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 3.5
Multiple Order Status Change (16.4.25)

Field	Operator	Value	Icons
Production Order	equals	01190021	+ -
ID	equals		+ -
Production Line	equals		+ -
Shift	equals		+ -
Release Date	equals		+ -
Due Date	equals		+ -
Item Number	equals		+ -
Site	equals		+ -
BOM/Formula	equals		+ -
Include WO/Rep/Both	equals	Both	+ -
Include Kanban Items	equals	No	+ -
Include Phantom It	equals	No	+ -
Include MPS/non-MP	equals	Both	+ -
Include GRC Items	equals	No	+ -
Current Status	equals		+ -
New Status	equals		+ -

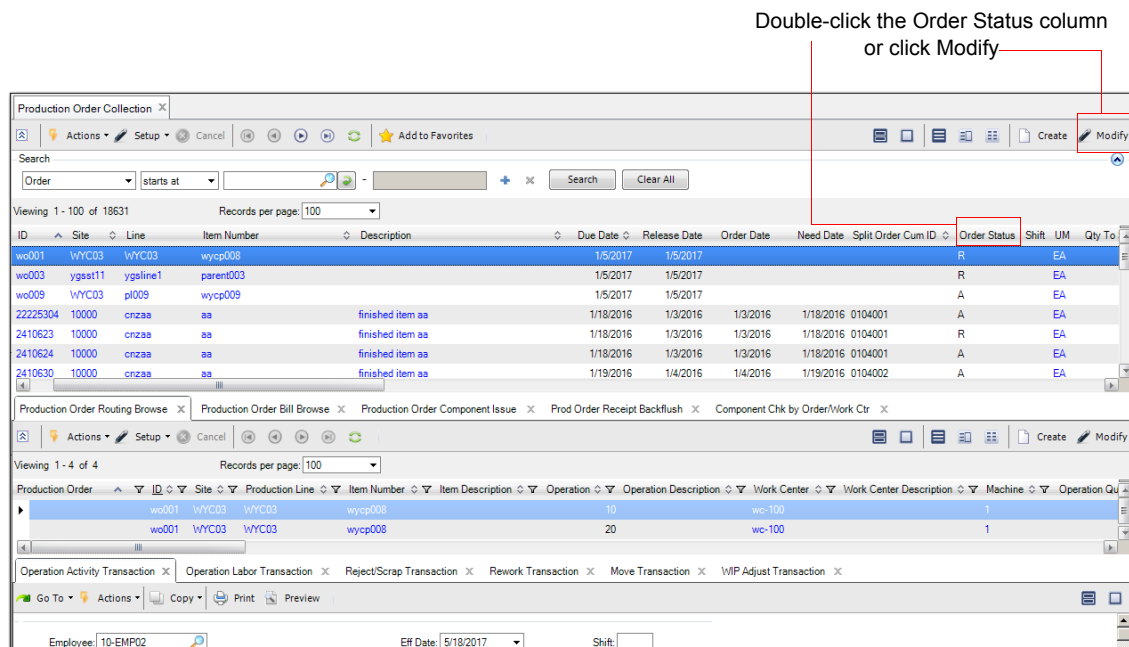
Production Order Collection

You can firm planned orders in the Production Order Collection. You change the status by invoking the Production Order Maintenance panel, then changing the Status field. You can invoke the panel in two ways:

- Double-click on the order in the Status column in the top level browse.

- Click the Modify button.

Fig. 3.6
Production Order Collection Auto Firm Orders



Scheduling Production Orders

Use the QAD Planning and Scheduling Workbenches to schedule production orders. When you do, you have a one-step process to build both a master schedule and a production schedule.

For information on scheduling through the Master Scheduling Workbench (MSW) or Production Scheduling Workbench (PSW), see the *QAD Planning and Scheduling Workbenches User Guide*.

Modifying a Production Order

You modify a production order using the same tools that you use to create the production order. See “Creating Production Orders” on page 42.

The following subsections discuss important elements to consider when modifying as well as other programs to use when modifying the elements.

Modifying Production Order Routings

Use Production Order Collection to modify the production order routing for a work order. It provides a means of accessing Production Order Routing Maintenance as well as lets you drill down into related data.

You can modify a production order routing operation:

- To add an operation

- To modify the work center and machine
- To change the operation status
- To modify production order routing fields and parameters that impact scheduling and cost
- To change the operation start and end dates
- For engineering changes that require immediate implementation for all work-in-process, including orders that have been exploded, allocated, or released

Scheduling and Modifications

Production order routing operation start and due dates are scheduled for production orders by using data defined for the routing operation, work center, and calendars set up for the domain, site, production line, and/or work center. The start and due dates for production operations are calculated by exploding the production quantity to determine the queue, setup, run, and wait times required for each the operation.

The system automatically reschedules production order operations, updating the start and due dates when modifying the production order due date, quantity to complete, quantity to start, and/or estimated yield percent. This rescheduling process is needed to update the load that production orders present against work center capacity.

The production order Release Date is not automatically aligned to the Start Date for the first production order routing operation. This is indicated by the CRP message Op Conflict. To have the system automatically determine and align the production order Release Date to the Start Date for the first operation, enter the production order Due Date and enter a question mark in the Release Date field -- the system determines the production order Release Date by backward scheduling the operations from the production order Due Date.

For information on the Start Date and Due Date fields in Production Order Routing Maintenance, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Modifying Production Order Bills

Use Production Order Collection to modify the production order bill. It provides a means of accessing Production Order Bill Maintenance as well as lets you drill down into related data.

You can modify a production order bill:

- To add components; see “Adding Components” on page 58
- For engineering changes that require immediate implementation for all work-in-process, including orders that have been exploded, allocated, or released
- To change quantities
- To change dates

Final assembly orders use production order bills equal to the sales order bills. When the sales order configuration is changed, make the same changes to the production order bill.

When the production order quantities change after production order release, the quantity required for each item number increases automatically based on the standard quantity per, and is allocated. You can generate a picklist for the incremental quantity.

Normally, Material Planning plans all components to be available on the production order Release Date. If items should be available earlier or later, specify a lead-time offset in Product Structure Maintenance or manually override the production order bill issue date.

Adding Components

In Production Order Collection, select a production order bill by entering the production order ID. Click the Modify button.

Modify the bill by adding components. When adding components, specify the quantity required and site. (Quantity required should reflect scrap.) You can override defaults.

How you replace an existing component with a new one depends on the production order status.

- If an order has been released, you can issue the new component and return the old one. This results in an unfavorable material usage variance for the new component and a favorable usage variance for the old one. To add the new component to the production order before issuing it, see Modifying Production Order Bills.
- If an order is allocated or exploded, use Production Order Bill Maintenance to add the new component, updating the quantity required and quantity allocated, and delete the old one.

After modifying a production order bill, you should not change the status back to Firm, since that causes the standard bill to be re-exploded.

With the phantom use-up logic, the Qty Required and Qty Per Unit fields are disabled for phantom items that are included in an order BOM.

When you manually add a local phantom item, the program handles it by following the regular processing flow.

When you manually add a global phantom item with Allocation Policy set to Detail, the program:

- Disables the Qty Per Unit field.
- Automatically creates detail allocations, sets the phantom item's Qty Required to be the quantity actually allocated to it, and updates Qty Per Unit based on the order quantity and the original Qty Required value you entered.
- Explodes the remaining requirement to phantom components.

Note The system does not allow you to add a global phantom item to a discrete CUM order. It does not allow you to delete a production order BOM record when it is a phantom component or when it is a phantom item and has been detail allocated.

Issue Date

Issue date is the date a component on a production order bill is required for the production order. The system determines the issue date by the operation defined for the product structure component; the system sets it to the start date for the production order routing operation. When the product structure component operation is not specified (blank), the system sets the issue date to the start date for the first production order routing operation.

The system automatically reschedules production order operations, together with the issue dates for production order components, updating the start and due dates for operations when modifying



the production order due date, quantity to complete, quantity to start, and/or estimated yield percent. This rescheduling process is needed to update the load that production orders present against work center capacity.

When the production order does not have a routing, the system uses the release date of the order as the issue date of the components. The system applies any lead time offset as defined for the component in the product structure to the issue date of the component.

Note Material Planning calculates the routing records when you set Material Planning Plan Order Routing Create to Yes in the Workbench Control File (22.20.4).

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.

Modifying Dates

For information on how the system calculates and sets up dates, see “Release, Order, and Due Dates” on page 49.



Releasing and Printing for a Release

his chapter discusses the following topics:

***Introduction* 62**

Introduces releasing and printing for production orders.

***Releasing a Production Order* 62**

Describes different programs that let you release a production order and describes the effects when you release.

***Preventing a Release* 62**

Tells you how to prevent production orders for specified items from being released to the shop floor.

***Printing for a Release* 63**

Covers various scenarios for printing and tells you how to print shop paper for releases, how to release without printing, and how to print for a repetitive order.

Introduction

This chapter describes methods to release a production order. Inventory can only be issued or received against a released production order.

- Release orders one at a time or multiple orders at the same time using Production Order Release/Print (.NET UI only)
- Release orders in Production Order Maintenance or MSW by changing the order status to Released.

Note You cannot change an order to R using the Multiple Order Status Change program.

Releasing a Production Order

Release orders in the following programs by changing their status to Released:

- Production Order Maintenance
- Production Order Collection
- Planning and Scheduling Workbenches

These methods do not let you print a picklist or routing, but they still explode phantom components and create production orders for routable components. Allocation and picking can be performed either before or together with production order release.

Releasing a production order has the following effects:

- Items not previously allocated are allocated based on the setting of the allocation policy of the item. The system uses the MFG Picking Order defined for the item-site or item master to create detail allocation, if needed. For more information on setting policies, see “Setting Up Item Picking Parameters” on page 35.
- The picklist is printed, displaying the quantity of the material to be picked. Location may be shown based on the setting of the allocation policy.
- The first operation is moved to the queue status if Move First Operation is Yes in Production Order Control; see “Defining Control Parameters” on page 20).

Preventing a Release

It is possible to prevent production orders for specified items from being released to the shop floor. For example, you might want to restrict from release any items that are going to be phased out or obsoleted in the near future.

To use this feature, use Item Status Code Maintenance (1.1.5) to identify one or more status codes that you want to associate with items that cannot have production orders released. Assign REL-WO to these codes as a restricted transaction, then enter one of these codes in the Status field in Item Master Maintenance or Item Data Maintenance for any item you want to prevent from being released on a production order.

If you attempt to release an order for such an item in the QAD Planning and Scheduling Workbenches, Production Order Maintenance, or Production Order Release/Print, the system displays an error message.



When there are shortages of important production order components, you can prevent the system from releasing an order. Do this by designating these items as key items in:

- Item Master Maintenance
- Item Inventory Data Maintenance
- Item-Site Inventory Data Maintenance

Printing for a Release

The following topics discuss various scenarios to print shop floor paper for a release through programs in the Production Menu.

You can also print for a release through the Planning and Scheduling Workbenches; however, you select and tag orders that are released first in the workbenches then print using Production Order Release Print. Refer to the subsection entitled, “Select Orders to Release and Print” in the *QAD Planning and Scheduling Workbenches User Guide*.

Printing Shop Paper for Released Production Orders

When you release a production order, you can print shop paper under two scenarios:

- Printing When Not Required to Review

You can print a production order sheet when you are not required to have someone review shop paper or to prepare documentation for an order before it is dispatched to production. This scenario is possible when there are standardized routings and product structures for production, and there is little or no modification of the routings or components for production orders.

- Printing When Required to Review

Print shop paper when you are required to have someone:

- Review component requirements, routing operations, and test specifications for a production order.
- Review engineering modifications made to the components /routing operations to a released order.
- Reprint or print additional copies of an order.

The following topics describe each method.

Printing When Not Required to Review

Use Production Order Release/Print (16.4.2) to print a production order sheet. Your objective is to release the order along with a printed shop paper; then, dispatch the shop paper along with any picked materials to the shop floor.

This scenario lets you prepare documents that authorize production, print picklists, print production order sheets, and change the order status to R(eleased).

In the program, you have options to:

- Print the production order sheet.
- Release the order along with a printed shop paper.

- Calculate a picklist.
- Print a picklist.
- Print shortage tags (for component inventory that is short/not allocated).
- Dispatch the shop paper along with any picked materials to the shop floor.
- Print the production order ID and operation number in both bar code format and numeric and alphabetic format.

Note If released production orders are included after you set search criteria, the system does not release such orders again but supports all the other preceding functions such as reprinting the order sheets or picklists.

Fig. 4.1
Production Order Release /Print (16.4.2)

Production Order Release/Print... X

Filter | Viewer

New Filter Open Save Save As Delete Settings Layout Schedule Document Run

Search Conditions

Production Order	equals	44576			+ X
ID	equals				+ X
Batch	equals				+ X
Release Date	equals				+ X
Due Date	equals				+ X
Item Number	equals				+ X
Scheduler	equals				+ X
Production Line	equals				+ X
Shift	equals				+ X
BOM/Formula Code	equals				+ X
Site	equals	yucsite1			+ X
Order Status	equals				+ X
Include MPS/non-MP	equals	Both			+ X
Include GRC Items	equals	no			+ X
Include Phantom It	equals	no			+ X
Include Kanban Item	equals	no			+ X
Include W/O/Rep/Bot	equals	Both			+ X
Sequence Orders On	equals	no			+ X
Include Subcontract	equals	no			+ X
Move First Operation	equals	yes			+ X
Calculate Picklist	equals	yes			+ X
Print Picklist	equals	Unprintd			+ X
Picklist Sort By	equals	Location			+ X
Page Break By Sort	equals	yes			+ X
Print Shortage Tags	equals	no			+ X
Remarks	equals				+ X
Print Production Ord	equals	Both			+ X
Include Routing	equals	yes			+ X
Include Components	equals	yes			+ X
MSIV Selected to Pri	equals	no			+ X
Print Attribute Profile	equals	Yes			+ X
Print Item Level Attrib	equals	No			+ X
Group Attributes by C	equals	No			+ X
Print Test Data	equals	Yes			+ X
Print Lot Attributes	equals	No			+ X
Update Release Date	equals	No			+ X
Print Bar Code	equals	No			+ X

Printing When Required to Review

Use Production Order Sheet Print (16.4.5) when you are required to review.

Set the following important fields:

Field	Setting
Print Production Order	Unprintd
Include Routing	Yes
Include Components	Yes
Update Order Sheet	Yes
Include Work Order/Repetitive	Select from options for WO, Rep, or Both

Fig. 4.2
Production Order Sheet Print (16.4.5)

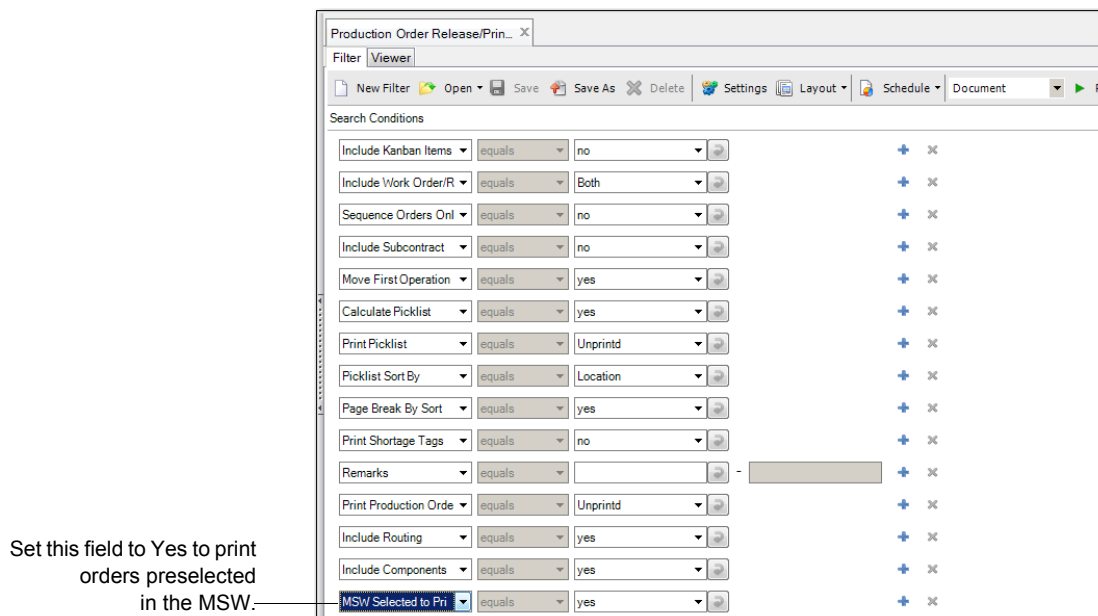
Printing Orders Selected in the Planning and Scheduling Workbenches

You can print production orders preselected from the MSW. To do this:

- 1 Select orders for print in the MSW.
- 2 Save the production orders you want to print.
- 3 Start Production Order Release/Print (16.4.2).
- 4 Set the MSW Selected to Print filter to Yes; see Figure 4.3.

The orders selected on the MSW/PSW print. The MSW Selected for Print field is cleared in MSW's Production Order Maintenance.

Fig. 4.3
Print Orders Selected in MSW



Releasing an Order without Shop Paper

Use Production Order Release/Print (16.4.1) when you are required to release an order without printing. This scenario is most likely to occur when production is supported by paperless systems. These systems may provide manufacturing controls for the movement and selection of materials, as well as the execution of processes for both manufacturing and quality. This can be more common for repetitive production.

To release without printing, set release options; then set Production Order Sheet Print option to None (see Figure 4.1 on page 65).

Printing Shop Paper for a Repetitive Order

Use Production Order Release/Print when you are required to document production in a paper-based systems, such as those used in life-science companies that require documentation. This lets you print a production order sheet as an independent process.

Set Include Work Order/Repetitive to Rep. Note additional print options as shown in Figure 4.1 on page 65.

Splitting Production Orders to Schedule Production

This chapter discusses the following topics:

***Introduction* 70**

Introduces splitting production orders.

***Checking Components* 70**

Tells you programs to use to check components.

***Splitting an Order to Level Production Orders* 70**

Tells you how to use Production Order Split.

***Scenarios for Partially Completed Production and Process Alternatives* 73**

Describes splitting alternatives and the results from each alternative.

Introduction

When materials are not available or other issues arise, you may need to split a production order to complete and ship based on current availability.

Additionally, level loading production is necessary when a single production order presents a load on resources that exceeds capacity and/or material supply.

The process of splitting a production order helps to link the multiple production orders to the demand they supply, such as a sales order requirement.

Important In the QAD Planning and Scheduling Workbenches, you can divide production orders by selecting the order in the MSW Schedule Grid or PSW Sequence Grid, then right-clicking to display the menu option to Divide Orders. Note, though, that dividing an order is not the same as splitting an order. For more information, refer to the Splitting Production Orders section of the PSW chapter in the 4.x version of the *QAD Planning and Scheduling Workbenches User Guide*.

The following topics discuss ways to check for component availability and split the order.

Checking Components

Even if you check for potential shortages before an order is released, quality problems and inaccurate inventory balances may result in a shortage of components. These shortages can be monitored using any of these .NET UI-only programs:

- Component Check capabilities embedded in the Planning and Scheduling Workbenches
- Production Order Component Viewer
- Component Chk by Item/Order
- Component Chk by Order/WorkCtr
- Monitor Material Shortages
- Manage Materials for Production Line
- Manage Materials for Work Center

Splitting an Order to Level Production Orders

Use Production Order Split (16.3.11) to level production for a production order with a large quantity by subdividing it into multiple scheduled orders. The objective is to schedule production of the item to level the load on resources and assure the completion of the required quantity by the due date and account for activity on a single order.

Production Order Split provides the ability to quickly split an order into two or more orders that have quantities that can be scheduled to level load on a production line and/or work centers. After the one order is split into multiple order, those orders can be scheduled over shifts, days, and/or weeks for completion by the required due date.

When splitting a work order, the system creates scheduled production orders with an Order Type set to S for scheduling production, and the original work order becomes a cumulative order that is referenced by the resulting scheduled order.

The scheduled orders serve to schedule component requirements, operations, resource load, and receipts. These orders can be assigned to the same or different production lines.

The cumulative order accounts for the production costs for the scheduled orders, contains the production order bill and routing that are both used for production accounting. It also serves as the device or batch history record for production, and is used for lot traceability and product genealogy records when reporting production activity for scheduled orders.

Processing an Order

When processing an order using Production Order Split, the system:

- Uses the quantity to start as the quantity to split.
- Assigns the same batch number to orders split from one split CUM order and records the batch processing of split CUM orders in transaction history.
- Assigns the same status and order number as the original order to the split order.
- Assigns the status to R for the discrete cumulative order.
- Splits the quantity to complete, actual quantity completed, and the actual quantity scrapped between orders.

The order with the earliest release date, sequence number, and smaller order ID receives the actual quantity completed and scrap, depending on the open quantity method.

When the method is set to Qty Complete, the system calculates the open quantity of split orders as the order quantity to complete. When the method is set to Qty Processed, the system calculates the split order open quantity as the following:

Qty to Start - Qty Completed - Qty Scrapped

- Copies all the operations and components as the original order (with an adjustment of the quantity).
- Splits the component requirement between orders to update/create the order bill
- When the order has component issues, system adds issues up to the requirements to the order with the earliest release date, sequence number, and smaller order ID; it applies the remainder to the other order. Over-issues are applied to the latest date (most future date).
- Allocates both orders when the order has general allocations; allocates open orders when the order has detail allocations.

For detail allocations, the system adds allocations up to open requirements to the order with earliest release date, sequence number, and smaller order ID; it applies the remainder to the other order.

- Splits the picked quantity in the same way allocation occurs when the order has picked quantities; then, updates the picklist, and if applicable picked packs.
- Calculates the component issue date, based on order release date plus lead time offset for the component.
- Has the following limitations:
 - You cannot split a production order for a joint production order set, expense order, rework order or final assembly order.
 - This program is not applicable to cumulative production orders (type C).

Navigation

Specify the production order number and ID, the quantity split, and new release date.

Typically Production Order Split is used after production order release in response to a materials or capacity shortage. Prior to order release, check for shortages as quality problems or inaccurate inventory balances may still result in a shortage (see “Checking Components” on page 70).

Splitting a production order allows part of it to move on.

For joint production order sets, you can rescale the production order quantities for the original joint production order set and enter a second joint production order set to manage the remaining quantities using Master Schedule Order Maint.

The result of a production order split is two production orders with the same production order number but different IDs. Each ID can have its own billing and routing. A picklist and route sheet can be printed.

Actual complete and actual scrapped quantities and issued/allocated components on the original order are split between the split orders. The split order with the earlier release date has higher priority.

Because the split orders have the same number, you can review the Production Order Browse Collection to review the split orders

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Note You use Split CUM Order Maintenance to maintain a split cumulative (CUM) order that the Production Order Split program creates. For information on using the program, see “Production Activity and General Ledger Transactions” on page 147.

Fig. 5.1
Production Order Split (16.3.11)

The screenshot shows the 'Production Order Split' window. It has a menu bar with 'Go To', 'Actions', 'Copy', 'Print', 'Preview', and 'Attach'. Below the menu are input fields for 'Production Order' and 'ID'. Further down are fields for 'Item Number', 'Order Status', 'Batch', 'Type', and 'Mfg Type'. At the bottom are fields for 'Quantity to Complete', 'Qty To Start', 'Estimated Yield Percent', 'Actual Qty Completed', 'Open Quantity', 'Start Qty To Split', 'New Batch', and 'New Rel Date'. An arrow labeled 'Results of split' points from the window to a table below.

Production Order	ID	Qty To Start	Rel Date	Type	Mfg Type
0104002	22235483	2.0	1/4/2016	S	WO
0104002	2410630	18.0	1/4/2016	S	WO

Scenarios for Partially Completed Production and Process Alternatives

Before you split a production order, it is important that you understand splitting alternatives and the results from each alternative. The following topics describe some alternatives to consider before you split the order.

In some cases, production started and quantities are partially completed for an order that cannot be fully resourced, possibly because the necessary materials and/or resources are not available for completing the production order in full. For example, the quantity to complete for an order is 100 and there is a partial completion of 100 in WIP through the second operation, and material or resource constraints limit the quantity that can be completed to 80.

For this example there are three basic alternatives:

- Alternative 1: Process the order using Production Order Split to create two scheduled orders and a cumulative order for accounting and history for product genealogy and lot traceability.
- Alternative 2: Leave the one order open for the original quantity and report production.
- Alternative 3: Modify the original order quantity 80, and create a second order for quantity 20.

Alternative 1: Processing the Order with Production Order Split

Use this when materials and/or resources for the second order are available within a short time, on the same production line, with the same routing, and same production BOM.

Benefits

- The second order can be rescheduled, providing better visibility of projected load on production lines and work centers, as well as requirements for component materials
- Robust support for product genealogy and lot traceability

Limitations

- Not suitable when materials or resources are delayed, because the cumulative order will need to remain open
- Does not support production with a second order and a different routing and/or different production BOM

Alternative 2: Leaving the One Order Open and Reporting Production

Use this when materials and/or resources for the one order are available within a short time, on the same production line, with the same routing, and same production BOM.

Benefits

The process is simple.

Limitations

- Compromises the visibility of the scheduled load on production lines and work centers, and projected requirements for materials

- Not suitable when materials or resources are delayed, because the order will remain open for a long period of time
- Does not support production with a second order and a different routing and/or different production BOM

Alternative 3: Modifying the First Order and Creating a Second Order

Use this when production for the remaining quantity may require a different routing and/or production BOM than the first order

Benefits

- Provides the flexibility for scheduling the remaining quantity
- Can provide improved visibility of load on production resources as well as material requirements for component

Limitations

- Requires careful, manual adjustment to the routing operation requirements and the production order component requirements, for the best results
- Compromises product genealogy and lot traceability for partially completed quantities
- Production variances such as those for material usage, labor usage, and method variance may be misrepresented for the individual orders

Managing Production Materials

This chapter discusses the following topics:

***Introduction* 76**

Introduces materials management, including concepts and tasks associated with managing materials.

***Materials Management Setup* 76**

Provides a table of setup tasks you should have previously completed and provides references to the task descriptions.

***Inventory Locations* 77**

Describes key locations when managing materials.

***Allocating Inventory* 77**

Describes the method/programs to use when allocating materials.

***Picking Inventory* 81**

Describes the Pick Policy, types of picklists, and the method/program to use when picking.

***Transferring Inventory* 87**

Describes shop floor transaction programs that let you transfer inventory to the shop floor.

***Issuing Components* 88**

Describes several ways to issue inventory to a production order.

***Replenishing Inventory* 97**

Describes material planning concepts when replenishing inventory and the methods/programs to use to replenish.

***Monitoring Material for Shortages* 98**

Describes .NET UI programs to use to monitor potential shortages before you release an order.

***Managing Phantom Items* 99**

Describes the usage of phantom items.

Introduction

Materials Management includes the control and supports the supply of materials from controlled inventory locations, such as a stockroom or warehouse to support production schedules and activities.

This includes material movement to the shop floor, but does not include shipment of materials to customers, field service engineers, or other sites.

Stockroom and warehouse activities in materials management include the following:

- Supply materials for a production order.
This includes allocating and picking inventory for a picklist to accompany a production order when it is dispatched to the shop floor.
- Transfer materials to the shop floor.
This includes allocating, picking, and transferring inventory from the stockroom to shop floor locations, where they are required by production.
- Replenish inventory on the shop floor.
- Direct materials to supply shortages.

Materials Management Setup

You should have completed the setup for production orders as specified in Chapter 2, “Production Order Setup,” on page 19; however, the following key setup areas are essential for managing materials:

Table 6.1
Materials Management Setup

Setup Area	Verify Settings	Reference
Production line	Production lines allocated; primary production line	“Setting Up Production Lines” on page 21
Work Centers		“Updating Production Lines in Batches” on page 22
Departments		“Work Centers and Routing/Process Operations” on page 26
Reserved locations		“Setting Up Locations” on page 28
Items	Product structures, routings	“Work Centers and Routing/Process Operations” on page 26
		“Setting Up Item Data” on page 31
	Processes, formulas	“Setting Up for Process Manufacturing” on page 34
	Production allocations, picklists	“Setting Up Items for Production Allocations, Picklists, and Backflush” on page 35

Inventory Locations

When working with materials management, the following locations are key:

Stockroom/warehouse location	A physical location such as a bin, shelf, or area within a stockroom or warehouse.
Shop floor location	An inventory location on the shop floor. Inventory can be consumed by either an issue transaction or a backflush transaction.
Production line location	An inventory location that supplies materials for work performed on that line.
Production reserved location	A controlled, secure storage location for inventory destined for production lines and work centers; typically a staging area near the shop floor that holds materials to be transferred to the shop floor.
Work center location	An inventory location that supplies materials.
Controlled location	A secure inventory storage area with restricted access by authorized people; requires requisition or picklist documents, and actions within the area are documented processes for put-away, picking, issue, and movement of inventory, cycle counting, and physical inventory.

Allocating Inventory

The system typically allocates inventory by reserving item quantities in stock for specific uses, such as allocating inventory for a requisition, customer order, or production order. After the inventory is allocated, it is no longer available for other customer orders. So, when you set a production order status to Allocated through Production Order Maintenance functions, the system allocates components in inventory against the production order. Detail allocations (specific lots or locations) can be made in Production Order Bill Maintenance and components can be issued. You can also receive against an allocated order.

When insufficient stock exists to fulfill all orders, you can use manual allocation programs to choose which orders to fill:

- Production Order Allocate
- Prod Order Manual Allocation

Allocation Policy

You should specify the allocation policy as part of production order setup. By setting allocation policies, you can decouple allocation from order status.

You can set an allocation policy for every item. When you do, the system creates allocation based on the allocation policy regardless of whether an order status is A(llocated) or R(eleased).

In the Allocation Policy field—in three programs as listed in Transfer Allocation Policy—you specify how automated processes create inventory allocations for production requirements:

- Detail (default): Specify Detail to have production order and bulk item picking processes and picklists determine and direct the picking of inventory quantities from specific locations and/or lots. The system creates detail allocation for inventory quantities when a production picklist is created for the production order.

- **General:** Specify General to have production order and bulk item picking processes and picklist identify the item and quantity to pick, and not quantities from specific locations and/or lots. The system creates general allocations for the item and site when the status of the order is changed to Allocated or Released and when a production picklist is created for the production order. Allocation policy is not used for non-production picklists, such as those for sales and distribution orders.

Note Allocation policies are not used for non-production picklists, such as those for sales and distribution orders.

Detail Allocations

When you set the Detail Allocation field to Yes in Production Order programs, the system creates detail allocations for the component item. Use detail allocations when you want to assign specific inventory lot/serial numbers and locations to be issued to an order. The system automatically generates detail allocations when sales order, distribution order, or RMA packing lists and production order picklists print.

When creating a detail allocation, the system considers from where inventory is being supplied and to which production order inventory is allocated. The system evaluates inventory in locations in this sequence:

- 1 Work center backflush location
- 2 Production line backflush location
- 3 Work center reserved locations for the item
- 4 Production line reserved locations for the item
- 5 Work center reserved location for any item
- 6 Production line reserved location for any item
- 7 As defined in picking logic.

When the system searches locations in 1 through 6, once a location is identified, the system applies the logic below to allocate inventory:

- When Use Consigned First is Yes, the system allocates consigned inventory first.
- When No, the system allocates non-consigned inventory first.
- When Use Consigned First is the default in Supplier Consignment Control, the system applies the picking logic.

After searching locations 1 through 6, the system searches all inventory in other locations and applies the Use Consigned First logic as above.

Until otherwise specified, general allocations are sufficient. General allocations are made regardless of inventory availability.

Production Order Allocate

Use Production Order Allocate (.NET UI) to manually allocate components for a specific use. Set filter criteria for production order/ID, batch, release and due dates, item number, scheduler, production line, shift, BOM/formula code, site, and order status. Choose whether to include production orders, repetitive orders, or both; MPS/non-MPS; subcontract, kanban, GRC, or phantom items; or sequence orders only. You can choose to calculate the picklist or display picklist prefixes and numbers.

When there are global phantom items with Allocation Policy set to Detail, you can use Production Order Allocate to allocate these phantom items:

- If the order status is Firmed, the program explodes firmed orders and changes their status to Exploded. Then it sets the order status to Allocated and invokes the phantom use-up logic.
- If the order status is Exploded, the program sets the order status to Allocated and invokes the phantom use-up logic.
- If you want to calculate a picklist for the production order, the program ignores Order Multiple and Order Minimum.

Note You can manually allocate phantom items to adjust phantom component shortages.

Fig. 6.1
Production Order Allocate

Component Item	Picklist To Loc	Balance Req'd	Quantity Allocated	UM	Location	Lot/Serial Reference	Type
02003		600.0		EA			Detl
Standard Connector		0.0		EA			Tran
50001		300.0		EA			Detl
Probe Unit - 10 Mhz		0.0		EA			Tran
50020-001		300.0		EA			Detl
Industrial Housing		0.0		EA			Tran
60003		300.0		EA			Detl
Keyboard		0.0		EA			Tran

Prod Order Manual Allocation

Use Prod Order Manual Allocation (16.5.2) to manually update detail allocations for a component item on a production order.

You can only allocate for production orders with a status of F(irm), E(xploded), A(llocated), or R(eleased). When the order status is F, a warning displays indicating the status updates to E when the system creates allocations.

You can specify the quantity you want to allocate for each component/operation. The system creates the allocation.

When you enter a location/lot/ref that is already allocated or picked for the component, the system displays values in the Quantity Allocated and Quantity Picked fields. Quantity Picked is read-only; however, you can modify the existing value in the Quantity Allocated field. When you do, the system updates the value in the Total Allocated Qty field.

The phantom-use up logic now applies to global phantom items whose allocation policy is set to Detail. When the order status is E, A, or R, you can manually allocate phantom items by using Prod Order Manual Allocation. Then the system:

- Changes Qty Required of the phantom item to the quantity actually allocated to it.
- Changes Qty Required of the phantom components accordingly.
- Does not apply the phantom use-up logic if the issue policy of the phantom item is set to No Issue.

You can use this program to deallocate all currently allocated inventory. To do this, select Deallocate.

Production Reserved Location Inventory

Production reserved locations let you reserve stocking locations for production lines or work centers, where components are stored for production of the items at that resource. When inventory is reserved for other work centers or production lines, the system displays a message, indicating this; however, you can still manually allocate the inventory.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 6.2
Production Order Manual Allocation (16.5.2)

Picking Inventory

A picklist is a list of components that lets you pick, prepare, and optionally transport materials from the stockroom to support production orders and production activities on the shop floor.

There are two kinds of production order picklists:

- Bulk Item Picklists
- Production Order Picklists

Before you create picklists and begin picking, you must set the Pick Policy.

Pick Policy

When you use the picklist, you are processing items for both production order and bulk item (transfer) picklists. You should specify the pick policy for either a bulk item or a production order picklist as part of production order setup.

In the Pick Policy field, you choose from:

- No Pick: Do not pick. Select for items that are replenished on the shop floor by a process other than a picklist, such as Kanban and min/max replenishment systems.
- Transfer (default): Pick and transfer. Select for items that are picked from a stockroom location, then transferred to a shop floor location such as a product line location or a work center location for production.
- Issue: Pick and issue. Select for items that are picked from a stockroom location, moved with a production order to shop floor, then issued to the production order.

Pick Policy works with the Issue Policy field. Valid combinations include:

- Pick Policy Issue with Issue Policy Direct: Use for an item that is picked on a production picklist then issued to a production order.
- Pick Policy Transfer with Issue Policy Direct: Use for an item that is picked on a production picklist, transferred to the shop floor, then issued to a production order.

- Pick Policy Transfer with Issue Policy Backflush: Use for an item that is picked on a production picklist, transferred to the shop floor, then backflushed to a production order.
- Pick Policy None with Issue Policy Direct: Use for an item that is moved or delivered to the shop floor without a picklist, possibly by using a Kanban, then issued to a production order.
- Pick Policy None with Issue Policy Backflush: Use this for an item that is moved or delivered to the shop floor without a picklist, possibly by using a Kanban, then backflushed to a production order.
- Pick Policy None with Issue Policy None: Use this for an expense (floor stock) item that is moved or delivered to the shop floor without a picklist, possibly by a Kanban, and not issued or backflushed to a production order.

Invalid combinations are:

- Pick Policy Issue with Issue Policy None
- Pick Policy Issue with Issue Policy Backflush
- Pick Policy Transfer with Issue Policy None

Note Pick Policy does not apply to non-production picklists, such as those for sales orders.

You can set the Pick Policy for an item in Item Master Maintenance, Item Inventory Data Maintenance, or Item-Site Inventory Data Maintenance.

You can also use Component Picking Data Maint (13.17) to set up component picking data specific to the BOM code in which a component item is used.

The production picking data of a component item may vary when it is used to produce different parent items. Using Component Picking Data Maint, you can set up the allocation, pick, and issue policies by parent-child relationship. That means you can define different sets of policies for a component when it is used for producing different parent items.

When a production order is created, the system copies the allocation, pick, and issue policies for the component from the following data settings in this sequence:

- 1 Firstly, component picking data for the component used for the parent item
- 2 Then, item-site inventory data when no specific component picking data is available
- 3 Finally, item inventory data when no item-site inventory data is available

Fig. 6.3
Component Picking Data Maint (13.17)

Component Picking Data Maint

Go To Actions Copy Print Preview Attach

Parent Item: 02210
Description: Motor Asm 6-Way Seat Adj
24V 3 amp 1.hp
Component Item: 02010

Allocation Policy: ItemSite
Pick Policy: ItemSite
Issue Policy: ItemSite

Bulk Item Picklists

Bulk item picklist are independent from production order picklists, release, and order dispatch. Bulk item picklists:

- List the materials to be transferred to the shop floor for one or more production orders.
- Can be for a group of items not necessarily representing an entire, single production order.
- Transfer large quantities of low cost, bulk materials to the shop floor for either production order or repetitive production.
- Are appropriate when production is supported by paperless systems and/or procedures.

To get materials for bulk order to the shop floor, you:

- 1 Creating Bulk Item Picklist.
- 2 Printing Bulk Item Picklist.
- 3 Picking Bulk Items.
- 4 Transfer materials to the shop floor.

Note You transfer to shop floor only when the Pick Policy is set to Transfer; see “Pick Policy” on page 81.

Creating Bulk Item Picklist

Use Bulk Item Picklist Calculation (.NET UI) to create the picklist after you release a production order. Specify filter criteria in the program for site, production line/work center, shift, item/component item numbers; due, release, and issue dates; production order/ID; work, repetitive, both, or sequenced orders; and more. By default, Bulk Item Picklist Calculation creates one picklist per shop floor location.

The system creates detail allocations when an order is released, regardless of whether you print a picklist. Detail allocations reserve specific quantities in inventory for a production order. You can release an order without printing a picklist and routing, but you cannot print a picklist for an order without releasing it.

For an order with several operations, components can be grouped together on separate picklists by setting their lead time offset (LT Offset) to indicate when they are required with respect to the release date. Define lead time offset in Product Structure Maintenance (13.5) or Formula Maintenance (15.5).

Printing Bulk Item Picklist

Use Bulk Item Picklist Print (.NET UI) to print the picklist. Specify filter criteria for picklists, sites, transfer to sites, reprint picklists, picklist sort by, page breaks by sort, print shortage tags, remarks, and master serial IDs to display.

Picking Bulk Items

Use Production Picklist Pick (16.5.7) to pick inventory from the stocking location and create a record of the physical items picked. When picked, the system changes the status of the inventory from allocated to picked.

Components to pick must be either general allocated or detail allocated. When components have been detail allocated, they can be picked automatically by setting Pick Alloc to Yes (Default). This reduces manual entry because the system sets the default locations, lot/serial numbers, references, and quantities from the detail allocations on the picklist sequence.

If you pick more components than a phantom item's Qty Required, the program adjusts the Qty Required value for the phantom components.

Note The quantity allocated in Production Order Bill is the quantity general allocated.

Specify the site, picklist, and sequence in the header. Check By Pack to pick serialized materials.

The Pick Detail frame lets you record the location, lot/serial, and reference numbers of the items and the actual quantity picked. When you select By Pack, the Pick Detail frame lets you enter the Serialization data. Once you complete details, the system prompts you to display items and verify that all information is correct.

Picking is not restricted to what the system allocated. You can:

- Pick inventory other than detail allocated.
- Pick extra inventory, depending upon picklist requirements.

Manually change the pick quantity.

When inventory is picked:

- That is less than the picklist order minimum or greater than the picking maximum, a warning displays.
- That does match exactly with the detail allocated, the system updates inventory status from allocated to picked.



- For components that were general allocated, the system converts general allocation to picked inventory.
- Other than detail allocated inventory, the system assumes that users pick other inventory to fulfill the picklist.

When you exit the Pick Detail frame, the system prompts you to display items being picked. The system also confirms that information is correct before returning to the Pick Detail frame.

When you close the picklist, the system creates a picking history record. You can also reverse, transfer, issue, and delete picklists.

Negative Pick Quantities

When you enter a negative pick quantity, the system validates that inventory is already picked and that the picked quantity is greater than or equal to entered pick quantity. When processing the negative pick quantity, the system:

- Treats the picking as reverse picking.
- Changes the quantity from picked to allocated.
- Applies the reversal to picked inventory by descending component issue date, order release date, order sequence, order ID.

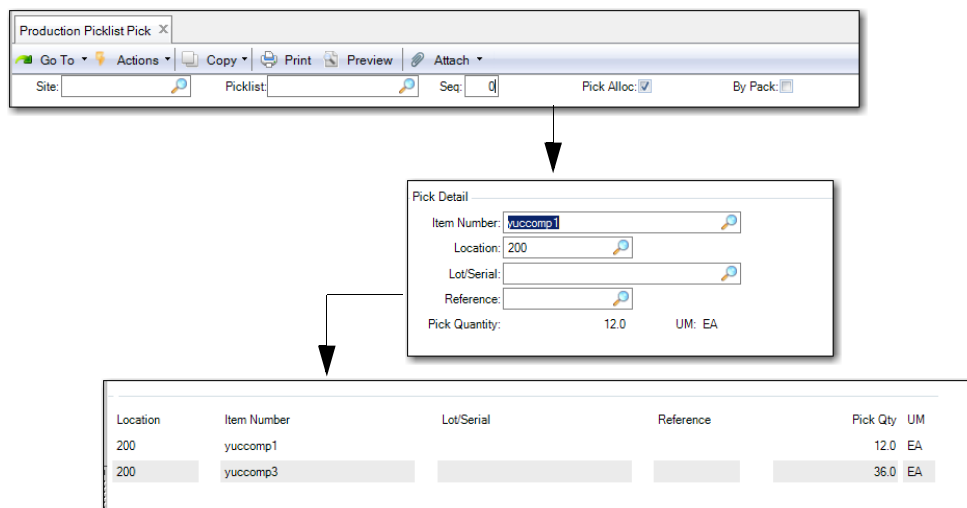
Reserved Location Picking

When inventory is by descending component issue date, order release date, order sequence, order ID, you can specify to use inventory in the Production Reserved Location; however, the system does not indicate when reserved inventory is already allocated on the picklist.

When picking is from a reserved location, the system first picks the inventory for orders for which inventory is reserved.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 6.4
Production Picklist Print (16.5.7)



Production Order Picklists

Production order picklists let you supply materials for a production order; however, they are different from bulk order picklists. Production order picklists:

- List the materials for a single production order.
- Are appropriate when production is scheduled, dispatched, and controlled using production orders.
- Are appropriate when production is set according to contract requirements for a customer.
- Let you optionally issued or backflush to the order before or after the order and picked quantities are dispatched to production.
- Let you optionally transfer to a shop floor location.

Get materials for production orders to the shop floor by:

- 1 Creating Production Order Picklist
- 2 Printing a Production Order Picklist
- 3 Picking Materials for a Production Order Picklist
- 4 Transferring Inventory

Creating Production Order Picklist

Use Production Order Allocate (.NET UI) or Production Order Release Print (.NET UI). To create the production order picklist, you must select the Calculate Picklist option. See Figure 6.5. Production Order Allocate or Production Order Release/Print creates one picklist per order.

In both programs, you specify filter criteria for production orders/ID, batch numbers, release and due dates, item numbers, scheduler, production line, shift, BOM/formula cords, sites, and order status. Also, specify whether to include production orders, repetitive orders, or both; MPS or non-MPS; subcontract, kanban, phantom or GRC items; only sequence orders; or the picklist prefix.

Fig. 6.5
Production Order Allocate, Calculate Picklist

Select this option to calculate the picklist.

Printing a Production Order Picklist

Use Production Order Picklist Print (16.5.5) to print the picklist. Specify filter criteria to print the picklist, including the picklist number, site, production line, shift, release or due date, and production order/ID. Specify whether to include production orders, repetitive, or both; reprint picklist, shortage tags, or remarks. You can choose to sort by picklist or page breaks and whether to display mater serial data.

Picking Materials for a Production Order Picklist

Use Production Order Picklist Pick to print a production order picklist. This is the same program that you use to pick materials for bulk items. See “Picking Bulk Items” on page 84.

You can process pick details for non-serialized items and serialized packs using the program.

Transferring Inventory

Shop floor transaction programs let you transfer inventory to the shop floor. Additionally, they create transactions that are recorded but also report setup time, hours worked, material scrapped, and the number of units completed for specific order operations. This information is used to track the status of production order operations, monitor performance of work centers, and update the general ledger (GL) for manufacturing costs.

You can use the following shop floor transaction programs to transfer inventory:

- Operation Activity Transaction; see “Component Issue Frame” on page 110
- Move Transaction; see “Move Transaction” on page 120

Transfer Allocation Policy

You specify the Transfer Allocation Policy in the Item Picking Data frame in Item Master Maintenance, Item Inventory Data Maintenance, or Item-Site Inventory Data Maintenance.

Specify the transfer allocation policy for production materials that are transferred to shop floor locations. Transfer Allocation Policy works together when the Pick Policy for an item is Transfer. The transfer allocation policy determines if the system retains or removes detail allocations for inventory quantities for the item that are transferred when using Production Picklist Transfer.

Keep: Retains detail inventory allocations for the item and production order after quantities have been picked and transferred using Production Picklist Transfer. Specify to Keep allocations when the lot/serial quantities to be issued or backflushed to a production order are the same as the lot/serial quantities that are picked and transferred using a production picklist.

Drop (default): Removes detail inventory allocations created for this component item and production order after quantities have been picked and transferred using Production Picklist Transfer. Specify to Drop allocations when the lot/serial quantities to be issued or backflushed to a production order are independent from the lot/serial quantities that are picked and transferred using a production picklist.

Note Production Picklist Transfer assumes that Transfer Allocation Policy of a phantom item is Keep if there is detail allocation of the phantom item.

The system also examines detailed allocations at the backflush location to determine if there is any excess inventory. When the Transfer Allocation Policy is Drop, the system considers the earlier transfers for other orders as implicitly allocated when determining the excess inventory.

Note Transfer Allocation Policy is not used for non-production picklists, such as those for sales and distribution orders.

When the system transfers the inventory from its current location to the shop floor, the system can retain or drop the allocation based on Transfer Allocation policy.

Issuing Components

Production order operations begin when an order is released and its components issued. There are several ways to issue inventory to a production order:

- Issue inventory directly with Production Order Component Issue.
- Issue inventory directly through the component issue functions in the Operation Activity Transaction Collection (.NET UI).
- Issue components to a picklist only using Production Order Picklist Issue.
- Issue inventory as completed products are received with Production Order Receipt (16.13.1).
- Issue additional components used to rework items in Rework Transaction (16.13.16).

The two issue programs are discussed in this section, along with Production Order Receipt. For information on Rework Transaction, see “Receiving Quantities from Production” on page 121.

Inventory transactions occur at different points depending on which method you use. Component QOH is reduced at a later time using the backflush method.

Issue Policy

You specify how the system issues inventory quantities to production, and whether they appear on functions such as Production Order Receipt, Operation Activity Transaction, and Production Order Component Issue as part of production order setup.

Note The Pick Policy must be set to Issue when you issue materials to the shop floor; see “Pick Policy” on page 81.

In the Issue Policy field—in three programs as listed in Issue Policy—you choose from:

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.

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.

Backflush (default): Backflush. Use this for component items that are backflushed from inventory for a production order (operation). Items with this Issue Policy appear when processing a backflush transaction for a production order (operation) using functions such as Production Order Receipt.

Production Order Component Issue

Use Production Order Component Issue (16.5.12) to issue inventory directly to a released or allocated production order.

Most production orders list their required components. When materials are issued from inventory to manufacturing, Production Order Component Issue records the transfer, decreasing inventory costs and quantities and increasing work in process (WIP).

Issues are not restricted to what the system has allocated. You can override the selections manually. The production order and inventory balances are updated only after approval of the quantities to issue from inventory.

Navigation

Multiple screens are involved. In the header, specify the site, effective date, production line and work center. Optionally specify the shift, machine, routing and BOM code. When you click Go, the system supplies the production order, ID, and item number.

Click Go to display the next frame. Specify the default quantity to issue. The default quantity is the open quantity; then, specify the open quantity open (required but not issued).

Press Go to display the next frame, which lets you specify details of components. Then, in the lower screen, enter the quantity to issue of each component and specify the site, location, lot/serial, and reference.

When you are finished entering information, press Go. Optionally, another screen displays a summary of what you just entered. If it is correct, press Go to process the inventory update; otherwise enter No or press End to go back and change it.

Transactions to issue components to a joint production order set can be initiated using any production order in a joint production order set. For a joint production order set, all components are issued to the base process production order.

Multiple issues can be processed against an open production order, with one or more issues of each component.

For component lists that display, refer to Component Lists.

Material Planning plans for open component requirements. Issuing a required component (or an approved substitute) decreases the quantity required of that item for planning. It also increases the value of WIP, as do unplanned issues, which are component issues not listed on the production order. You can issue more or less than needed of any item.

Inventory Effects

You can review all inventory transactions using Transactions Detail Inquiry. The component issue transaction type is ISS-WO.

When an inventory transaction references a different site than the originating order, the system processes this transaction in two steps. On an issue transaction, first the inventory is transferred to the order site and then issued. On a receipt transaction, the inventory is received and then transferred. This generates additional transaction types ISS-TR and RCT-TR.

Creating Shipping Documents

In some business environments, formal shipping documents must accompany any movement of goods, even when goods are merely transferred and not sold. You can create a shipping document (shipper) to record the inventory movement associated with a production order component issue when the site issuing the item is not the same as the production order site and both of the following are true:

- The addresses associated with the issuing site and production order site belong to the same shipping group defined in Shipping Group Maintenance.
- The inventory movement codes associated with the applicable shipping group allow transaction type ISS-WO.

When these criteria are met, a series of frames displays for entering shipper data:

- In the first shipping information frame, specify the document number of the shipper that you want to create or maintain. If you are creating a new shipper, you can also update the inventory movement code as required. When you are finished entering values in this frame, press Go to proceed to the carrier detail frame.

Important Pressing End in the first shipping information frame terminates the shipper creation and processes the inventory transfer as usual, without a shipper.

- Use fields in the carrier detail frame to specify carrier data and other shipper details as needed, then press Go to proceed to the trailer information frame.
- In the trailer information frame, you can set Comments to Yes to display a frame for entering comments to associate with the shipper and indicate if you want to print lot and serial numbers on the shipper.

- When the shipper has an associated document format, pressing Go in the trailer information frame displays the print shipper frame. Press Go in this frame to print the shipper. Otherwise, press End to return to the first frame of this program.

Note For detailed information on General Ledger effects, refer to “Production Activity and General Ledger Transactions” on page 147.

WIP Lot Trace-Controlled Inventory

You can issue WIP Lot Trace (WLT)-controlled inventory when

- 1 Trace Parents is Yes in WIP Lot Trace Control and a routing registration does not exist for the routing in use; all operations for that routing become WLT controlled.
- 2 A WLT routing registration is active for the routing; WLT control begins at the start operation specified in the registration record.

When the operation is WLT-controlled, the system displays a WIP Lots frame to identify the WIP lot to which the component is consumed, and can also enter the lot received by the operation or let the system generate the lot.

In WIP Lot Trace Control (3.22.13.24):

- When Combine Components Lot is Yes, the system determines whether multiple lots of the same component can be consumed into a single WIP lot/serial.
- When Trace Components is Yes, the system creates a consume component transaction record.
- When Trace Reference is Yes, the system prints references.

Corrections

When you process an incorrect quantity in this transaction, you can reverse it by processing the same transaction again with a negative quantity. Be sure to enter the same site, location, lot/serial, and lot reference numbers as you entered on the original transaction. After you reverse the original entry entirely, process this transaction again with the correct quantity. This maintains a complete audit trail.

If a production order is closed but Prod Order Accounting Close has not been executed, you can reopen it by setting the status to R (Released) in Production Order Maintenance. After an accounting close, make quantity adjustments using Receipts - Return to Stock, Receipts - Unplanned, or Issues - Unplanned. These do not affect production order cost or variances.

Floor stock components (Issue Policy is No) appear on the Production Order Component Issue screen with quantity required zero. These items should not be issued here, but from stock using Issues - Unplanned. Floor stock costs are charged to the production order during the Prod Order Accounting Close prior to calculating variances.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 6.6
Production Order Component Issue (16.5.12)

The screenshot displays the 'Production Order Component Issue' window. The top section contains fields for Site (yucsite1), Eff Date (6/1/2017), Shift, Work Center, Line (yucpl01), Machine, Prod Order, ID, CUM ID, Item Number, UM, Routing, and BOM Code. Below this is a section for 'Default Qty To Issue' (OpenQty) and 'Op'. A 'By Pack' checkbox is present, with an annotation stating: 'When By Pack is selected, enter Serialization data.' Below the main form is a 'Component Issue' section showing 'Serial: aaasn006', 'Stage: Active', 'Item: wyccp233', 'serialization', 'Issue Quantity: 1.0 EA', 'Site: wyc', 'Location:', 'Lot/Serial:', and 'Reference:'. At the bottom is an 'Issue Data Review' table with columns: Component, Op, Site, Lot/Serial, Quantity, and UM. The table contains one row for 'wyccp233' with 'Op' as 'wyc' and 'Quantity' as '1.0 EA'. A confirmation dialog box is overlaid on the table, asking 'Is all information correct' with 'Yes' and 'No' buttons. Annotations point to the 'Yes' button and the table, stating: 'Optionally specify to display components.' and 'Click Yes when done.'

Production Order Picklist Issue

Use Production Order Picklist Issue (16.5.11) to issue components on an order picklist. You can only enter picklists for orders in this program. The costs associated with the issues are recorded against the appropriate discrete or cumulative order. The system automatically calculates only items that have the Pick Policy set to Issue.

As components are issued, the system removes detail allocation for the order and for the picklist. The system also decreases the component quantity required for planning.

Once issued, the system creates a picklist history record.

Multiple screens are presented. In the header, specify the picklist and sequence. This lists components on the picklist that have the Pick Policy set to Issue. Then, in the lower screen, enter the serial ID or the quantity to issue of each component and specify the site, location, lot/serial, and reference. When you are finish entering information, press Go. Optionally, another screen displays a summary of data entered. When correct, press Go to process the inventory update; otherwise, enter No or press End to go back and change it.

When all inventory on the picklist is issued, the system removes the picklist.

Serialized Packs/Items to Issue

When you select By Pack in the header, the system displays the Serial List Frame to enter data associated with the QAD Serialization solution. The solution provides a framework for tracking and tracing both lot numbers and serial IDs independently, but linking them together where both are used.

Enter serialization data in the frame to help you track and trace the issue of serialized items and packs that are associated with a production order.

Once you confirm that packs are correct, the system issues the components as follows:

- For all packs, when the system issues all content, it changes the stage to Decommissioned.
- For all serialized items, it changes the stage to Consumed, but maintains the item, lot/serial, reference, and production order information.

When you select By Pack, you cannot specify operation. The system first issues to the operation with the earliest component issue date. When the issue date is the same, it issues to the operation in ascending order.

Adding Components to Issue

When components have been detail allocated, you can add them to the issue list automatically by setting Alloc to Yes (Default). When you do, the system sets the default value for some fields.

When components have been picked, you can add them to the issue list automatically by setting Picked to Yes (Default). When you do, the system sets the default value for some fields.

Component Issue Conditions

Component items to be issued must be on the picklist sequence.

A negative quantity is not allowed.

When the quantity being issued is greater than the open component requirement, the system displays a warning message.

The inventory to be issued must be not greater than the quantity on hand when you cannot overissue.

You can issue inventory in production reserved locations. The system displays a warning message when the location is not reserved for the current work center or production line; however, the system does not indicate when reserved inventory is already picked or allocated on the picklist.

If you select a scheduled order or a split order, the system records GL for the cumulative order or split CUM order. Refer to “Production Activity and General Ledger Transactions” on page 147.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 6.7
Production Order Picklist Issue (16.5.11)

When By Pack is selected, enter Serialization data.

Production Order Picklist Issue

Site: yucsite1 Picklist: Seq: 0 By Pack: Alloc: ☒ Picked: ☒ Operation: Effective Date: 6/1/2017

Serial List

Serial ID: Stage: Item: Issue Quantity: Location: Lot/Serial: Reference:

Component Issue

Item: UM: Operation: Substitute: ☐ Qty Required: 0.0 Site: yucsite1 Location: Lot/Serial: Reference: Issue Quantity: 0.0 Total Issue Qty: 0.0

Issue Data Review

Item	Op	Site	Lot/Serial	Quantity	UM
bctc21	10	bctsite1		1.0	EA

Issuing When Backflushing Materials

Production Order Receipt combines the functions of Production Order Component Issue and Production Order Receipt. You can also backflush quantities different from those received. Either method keeps track of the inventory transactions used to issue components to a production order and excludes floor stock, which is issued using an unplanned issue transaction.

Setup for Backflush

You must set the Issue Policy to Backflush.

When you do, the system backflushes component items from inventory for a production order (operation) when you use Production Order Receipt and Operation Activity Transaction.

Also, before you can backflush components, the following must have occurred for either a production order or for bulk items:

- Shop floor inventory must be transferred from the stockroom using picklists, replenished by a Kanban, or received from a supplier or from production.
- Materials must be picked from a picklist and recorded as picked.
- A record of transfer completion of materials must exist.

Backflush Location and Calculation

You can set up a default backflush location by work center or production line. Once a backflush location is defined in Work Center maintenance or Production Line Maintenance, Operation Activity Transaction issues components from this backflush location. If you want to issue the inventory in a reserved location in Operation Activity Transaction, leave the work center or production line backflush location blank. Note that no picklist could be generated in this case.

If no backflush location or reserved location is found, the system uses a location based on the MFG Picking Order defined in item master or item-site data. But the detail-allocated inventory is applied first. If there is insufficient inventory, the system uses the last location that was found; if there is no inventory at the site, the default location defined in item or item-site data is used to make the stock negative when over-issue is allowed.

Backflush calculates the quantities that must have been consumed to produce the quantities completed and scrapped, using the product structure (or formula) for the production order.

You can specify to have the system calculate backflush in the following programs:

- Operation Activity Transaction Collection (.NET UI)
- Production Order Receipt (16.13.1)
- Production Operation Activity Collection (.NET UI)
- Operation Activity Transaction (16.13.13)

During backflush of components, different logic is used to determine the quantity required for component issuing:

- You can manually modify the component quantity required in Production Order Bill Maint to fulfill production requirements. During backflush component issuing, the system reflects the modification by using a dynamic quantity per (Component quantity required/Order quantity) to determine the quantity required for component issuing.

If there is no substitute item issued, the quantity required for component issuing is calculated according to the following formula:

Quantity required for component issuing = Quantity processed x (Component quantity required/Order quantity)

- When you process a repetitive CUM order and no schedule could be consumed, the system uses the quantity per from the standard product structure to calculate the quantity required.
- When you process a discrete CUM order and no schedule could be consumed, the system uses the quantity per in the order BOM to calculate the quantity required.
- If you have issued substitute items to replace the original components, this affects the dynamic quantity per.

Then the quantity required for component issuing is calculated according to the following formula:

Quantity required for component issuing = Quantity processed x Quantity per in order BOM

A validation has also been added. If you have set up substitute item relationships, the system does not allow you to add any substitute item directly in the backflush frame.

Backflushing Materials for a Production Order

You can backflush materials through either program; however, note that the Operation Activity Transaction collection contains Production Order Receipt functionality. This section describes that functionality.

Use Production Order Receipt to receive completed products and issue the items used to make them at the same time. A receipt with backflush increases end-item inventory quantities at designated sites and locations and decreases component inventory. It also updates the production order to reflect quantities completed and scrapped, decreases quantities open for Material Planning, and adjusts work in process (WIP). Note that Production Order Receipt does not post labor automatically.

Navigation

Enter employee, shift, site, effective date, and the data necessary to locate the order.

Use the second frame to enter the received quantities, specifying the quantities completed and scrapped, along with reason codes for the scrap. You can also choose to calculate backflush, use standard time, and close the order.

Additional frames display when you set the following fields in the second frame to Yes:

- **Multi Entry:** Displays a panel to add additional scrapped items
- **View Schedules:** Displays the schedule against which the activity is consumed. Displays the schedule due date, production order, quantity open, and quantity processed.
- **Modify Inventory:** Displays the Component Issue frame. When Calculate Backflush is No, the system does not calculate components to be issued, and you need to add the components. When Calculate Backflush is Yes, system generates a component list for the components with Issue Policy set to Backflush, and you can optionally modify the component list.
- **Receive by Pack and Gen Pack Serial:** Displays a prompt to build the pallet after the Component Issue frame. When you respond with Yes, the Parent Pack frame displays. You continue with frames to receive the serialized packages. Enter the Serial ID, BOP code, and other QAD Serialization data; then, enter the quantities received and receipt data for the serialized items. The system displays the total received at the end of the program

Use the Component Issue frame to specify details of components, enter the quantity to issue of each component, and specify the site, location, lot/serial, and reference. Component Issue records the issue, decreasing inventory costs and quantities and increasing WIP. The Issue Date Review frame displays when you respond Yes to view issued component data.

Use the Receipt Data Input frame to record the inventory that is not packaged. Enter specific data about the receipt, including quantity, site, location, lot/serial, reference, and whether or not to change attributes and enter multiple entries. Both options cause additional frames to display. The Multi-entry frame lets you enter additional items. If you set Change Attributes to Yes, the Receipt Attributes frame displays to change inventory attributes such as Assay %, Grade, Expire Date, Inventory Status, and their corresponding Active fields.

Component Lists

For component lists that display:



- When lot-controlled items with a blank lot display in component lists, the system displays a message informing you that a lot/serial number is required for the item.
- On component issue lists, when a valid inventory detail record is added to the component issue list, the system checks whether there is an invalid issue record for the same item with a blank lot/ref. When Yes, the system prompts to remove the issue record with a blank lot and blank reference; when No, the system does not remove the issue record and saves the current issue data.

Default Component Locations in Negative Backflush

During negative backflush for production order issue, the system searches for locations in the following sequence by default:

- 1 Work center backflush location
- 2 Production line backflush location
- 3 Work center reserved location for the item
- 4 Production line reserved location for the item
- 5 Work center reserved location for any item
- 6 Production line reserved location for any item
- 7 Primary location defined on Item-Site or Item Master

The preceding locations are listed in descending order according to priorities in negative backflush. When the system searches for locations 1 through 6, once a location with a higher priority is identified as existing, the system returns the components to the location.

If there is no backflush location or production reserved location defined for components, the system returns the inventory of components back to the primary location of the item during negative backflush processing.

Backflushing Components for Co-/By-Products and Joint Order

For information on backflushing components for co-/by-product and joint orders, see “Co-/By-Product Production Orders” on page 233.

Replenishing Inventory

In environments where inventory is stored on the production line, the item’s picklist lets you easily replenish the line’s work centers.

Material Planning balances supply and demand for purchased and manufactured items. Given a set of demands or requirements, Material Planning automatically calculates a time-phased schedule of planned supply orders or replenishments to satisfy those demands.

Material Planning looks at demand for finished items and uses product structure information to calculate demand for component items. For each item, Material Planning looks at the ordering information, the amount currently on hand, and lead times, and generates planned orders suggesting how many of that item to buy or make and when to do so. Refer to the Material Requirements Planning chapter of the *QAD Manufacturing User Guide*.

Replenishment Method

Set the Replenishment Method in Item-Site Planning Maintenance (1.4.17). In the Replenishment field, specify one of the following method to replenish inventory. The default is Orders.

Kanban: Entering kanban creates a kanban record for the item. Kanban is a method of just-in-time (JIT) production that uses standard containers or lot sizes with a single card attached to each. It is a pull system in which work centers use a card to signal that items are to be withdrawn from supply sources. The kanban system defines a communication signal or card indicating that items need replenishment.

Orders: Material Planning uses order due dates to determine when quantities will be available to replenish inventory.

Purchase/Manufacture: Inventory is replenished by purchasing it from suppliers or manufacturing it internally, typically with work or production orders.

DRP: Inventory is replenished through distributed requirements planning (DRP) intersite requests, which balance supply and demand among sites.

Family: Inventory is replenished through family-level items. Components of the family item are special items that can be any type: manufactured, configured, or another family item.

Routable: Inventory is replenished from items produced internally.

Configured: Inventory is replenished through products that are configured to customer order and produced internally. These are indicated by a Pur/Mfg code of Configured in Item Master Maintenance (1.4.1).

Purchased: Inventory is replenished through purchased items, driven by purchase orders.

Manufactured: Inventory is replenished through manufactured items.

Line Manufactured: Inventory is produced internally, typically on a production line.

Other Replenishment Methods

Directed receipts from suppliers and production are methods to replenish stock.

Monitoring Material for Shortages

Even if you check for potential shortages before an order is released, quality problems and inaccurate inventory balances may result in a shortage of components. These shortages can be monitored using any of these .NET-UI only programs:

- Production Order Component Viewer
- Component Check by production order/Production Line
- Component Check by production order/Work Center
- Component Check by Item/production order

- Component Check capabilities embedded in the Planning and Scheduling Workbenches

Managing Phantom Items

Sometimes engineering drawings and bills define transient product items that exist independently for a relatively short time and are not stocked. Instead, they are immediately consumed by higher-level products. These are called *phantom structures*.

A product that starts out as a normal subassembly that is kitted, manufactured, and stocked can later evolve into a phantom item. A phantom item is typically used in a multi-level BOM, serves as a sub-level in the BOM, but does not actually exist in inventory.

If manufacturing engineering can support changes to the manufacturing flow, you can use the phantom item to reduce inventory movement, shorten lead times, and effectively reduce the levels in a BOM. This also simplifies the planning, scheduling, and management of items and materials.

A phantom item has the following characteristics:

- It is processed as a transient item by manufacturing a parent item.
- It is produced during the process of manufacturing the parent item.
- The production order for the parent item has the components of the phantom item, but not the phantom item itself.
- Phantom items are typically not planned, scheduled, purchased, manufactured, or received into inventory.

Defining Phantom Items

There are two types of phantom items:

- Global phantom items

Select the Phantom field in Item Planning Maintenance (1.4.7) to identify an item as a phantom item for all sites. When an item is a phantom item at one site but not at another, identify exceptions in Item-Site Planning Maintenance (1.4.17).

Items that are marked as phantom items using either of the two programs are known as global phantom items.

- Local phantom items

If an item serves as a phantom item only when assembled as a component of a specific parent item, do not select the Phantom field in Item Planning Maintenance (1.4.7) or Item-Site Planning Maintenance (1.4.17). Instead, use a structure type of X for it in Product Structure Maintenance (13.5).

Such a phantom is known as a local phantom item, since its use as a phantom item depends on a particular bill of material. A local phantom item is never planned as a component requirement. The explosion logic always ignores the phantom item, using only its components for costing, planning, and manufacturing activities. The phantom use-up logic is not available for local phantom items.

For a product structure with multiple levels of local phantoms, as the order is exploded, the system sets the normal component's operation based on its upper-level local phantom's operation if this operation is not blank or 0. If the local phantom's operation is 0 or blank, the normal component's operation defaults from its original operation defined in Product Structure Maintenance.

A global phantom item is processed as a transient component regardless of its parent item but a local phantom item is processed as a transient component within a specific product structure for a parent item.

Important Global and local phantom items are not recognized for items whose Order Policy is set to GRC—that is, items planned using Lean Material Planning.

Phantom Use-Up Logic

Production order processes may need to recognize, allocate, and consume inventory for the phantom item, before exploding requirements to its components, using a process called phantom use-up logic.

The phantom use-up logic first allocates and consumes available inventory for the phantom item. It then explodes the remaining requirements through the phantom BOM to the phantom's components.

The phantom use-up logic applies to a component item whose:

- Planning parameter “Phantom” is set to true, which indicates the item is a global phantom item.
- Inventory parameter “Allocation Policy” is set to Detail.

Note This logic applies only to global phantom items whose Allocation Policy is set to Detail. For those with Allocation Policy set to General, nothing is allocated to them. Besides, as local phantom items are not included in the order BOM, this logic does not apply to them either.

Example

Assume that there is a production order for item 02210, where 02210 is the parent item with a global phantom item 52210 as its component item.

You can use Product Structure Inquiry (13.6) to view the components of 02210 and 52210.

Fig. 6.8
Product Structure Inquiry (13.6)

Product Structure Inquiry 05/14/19

Parent Item/BOM Code: 02210
As Of: 05/14/19 Levels: ID: Rev: Domain: Output: PAGE

Level	Component Item	Description	Quantity	Per	UM	Ph	T
Parent	02210	Motor Asm 6-Way Seat Adj				EA	
1	02010	24V 3 amp 1.hp Motor Asm Connector	1.0		EA		
2	62060	Aluminum Bronze Backflsh	0.02		M		
1	52210	Motor Mtg Plate Asm 6-Way OEM Cust A	1.0		EA	Yes	
2	52211	Motor Mtg Plate6-Way	1.0		EA		
3	62250	Steel CRS 18ga 4301 Backflsh	1.25		LB		
3	62290	Tool Forming Die No Issue	0.0		EA		D
2	62202	Motor Assembly Pem Nut #6 .0125	1.0		EA		
2	62203	Stud Press Fit #6 1/4"	1.0		EA		
1	52280	Seat Adj Switch Assy Backflsh	1.0		EA		
1	62201	24V Amp 2HP, 1/2 Dia Backflsh	1.0		EA		
1	62510	6 Way Switch Backflsh	1.0		EA		

Product Structure Inquiry 05/14/19

Parent Item/BOM Code: 52210
As Of: 05/14/19 Levels: ID: Rev: Domain: Output: PAGE

Level	Component Item	Description	Quantity	Per	UM	Ph	T
Parent	52210	Motor Mtg Plate Asm 6-Way OEM Cust A				EA	
1	52211	Motor Mtg Plate6-Way	1.0		EA		
2	62250	Steel CRS 18ga 4301 Backflsh	1.25		LB		
2	62290	Tool Forming Die No Issue	0.0		EA		D
1	62202	Motor Assembly Pem Nut #6 .0125	1.0		EA		
1	62203	Stud Press Fit #6 1/4"	1.0		EA		

Note Qty Per Unit for a phantom component is calculated based on the Qty Required value relative to the parent item of the production order. For example, if the phantom item's Qty Per Unit is 2 and the phantom component's Qty Per Unit is 3, then Qty Per Unit for the exploded phantom component is 6.

When the production order is in P (Planned) status, the phantom item appears with its quantity required and the phantom item BOM is not exploded to its components, regardless of the allocation policy of the phantom item.

Fig. 6.9
Production Order with Order Status P

Production Order Routing Browse x Production Order Bill Browse x Production Order Component Issue x Prod Order Manual Allocation x Production Order Receipt x Component Chk by Order/Work Ctr x

Viewing 1 - 5 of 5 Records per page 100

Component	Component Description	Operation	Operation Description	Issue Date	Qty Open	Qty Per	Qty Required	Qty Allocated	Qty Picked	Qty Issued	Component UM	Allocation Policy
02010	Motor Asm Connectors			5/20/2019	9,590.0	1.0	9,590.0	0.0	0.0	0.0	EA	Detail
52210	Motor Mtg Plate Asm	20	Assemble To Print	5/20/2019	9,590.0	1.0	9,590.0	0.0	0.0	0.0	EA	General
52280	Seat Adj Switch Assy	24	Assemble To Print	5/20/2019	9,590.0	1.0	9,590.0	0.0	0.0	0.0	EA	Detail
62201	24V Amp 2HP, 1/2 Dia	24	Assemble To Print	5/20/2019	9,590.0	1.0	9,590.0	0.0	0.0	0.0	EA	Detail
62510	6 Way Switch	35	Assemble To Print	5/20/2019	9,590.0	1.0	9,590.0	0.0	0.0	0.0	EA	Detail

When the production order is in F (Firmed), E (Exploded), A (Allocated), or R (Released) status, the production order BOM shown in Production Order Bill Browse varies according to the allocation policy of the phantom item:

- If the allocation policy of the phantom item is set to General, the phantom item appears with zero quantity required and the requirement is exploded to phantom components through the BOM.

Fig. 6.10

Production Order with Order Status F, E, A, or R and General Allocation

Component	Description	Qty	Operation	Issue Date	Qty Open	Qty Per	Qty Required	Qty Allocated	Allocation Policy
02010	Motor Asm Connector	20	Assemble To Print	5/29/2019	100.0	1.0	100.0	100.0	Detail
52210	Motor Mtg Plate Asm	20	Assemble To Print	5/29/2019	0.0	1.0	0.0	0.0	General
52211	Motor Mtg Plate 6-Way	20	Assemble To Print	5/29/2019	100.0	1.0	100.0	100.0	Detail
52280	Seat Adj Switch Assy	20	Assemble To Print	5/29/2019	100.0	1.0	100.0	100.0	Detail
62201	24V Amp 2HP, 1/2 Dia	10	Assemble To Print	5/29/2019	100.0	1.0	100.0	100.0	Detail
62202	Pem Nut #6 .0125	20	Assemble To Print	5/29/2019	100.0	1.0	100.0	100.0	Detail
62203	Stud Press Fit #6 1/4"	20	Assemble To Print	5/29/2019	100.0	1.0	100.0	100.0	Detail
62510	6 Way Switch	35		5/29/2019	100.0	1.0	100.0	100.0	Detail

- When the allocation policy of the phantom item is set to Detail, the phantom use-up logic is invoked and applied to the phantom item. All available inventory for the phantom item is consumed and the remaining requirement is exploded to the phantom components through the BOM.

Fig. 6.11

Production Order with Order Status F, E, A, or R and Detail Allocation

Component	Description	Qty	Operation	Issue Date	Qty Open	Qty Per	Qty Required	Qty Allocated	Allocation Policy
02010	Motor Asm Connector	20	Assemble To Print	5/29/2019	100.0	1.0	100.0	100.0	Detail
52210	Motor Mtg Plate Asm	20	Assemble To Print	5/29/2019	80.0	1.0	80.0	80.0	Detail
52211	Motor Mtg Plate 6-Way	20	Assemble To Print	5/29/2019	20.0	1.0	20.0	20.0	Detail
52280	Seat Adj Switch Assy	20	Assemble To Print	5/29/2019	100.0	1.0	100.0	100.0	Detail
62201	24V Amp 2HP, 1/2 Dia	10	Assemble To Print	5/29/2019	100.0	1.0	100.0	100.0	Detail
62202	Pem Nut #6 .0125	20	Assemble To Print	5/29/2019	20.0	1.0	20.0	20.0	Detail
62203	Stud Press Fit #6 1/4"	20	Assemble To Print	5/29/2019	20.0	1.0	20.0	20.0	Detail
62510	6 Way Switch	35		5/29/2019	100.0	1.0	100.0	100.0	Detail

Example

You can also manually allocate phantom items with Allocation Policy set to Detail.

After the manual allocation, Qty Required of the phantom item is changed to the quantity actually allocated to it; Qty Required of phantom components is changed accordingly.

For example, there is a production order for item 02210 with a quantity of 300 required. Item 02210 is the parent item with a global phantom item 52210 as its component item, and Allocation Policy of item 52210 is set to Detail.

When you explode the order (order status changes from F to E), the production order BOM shown in Production Order Bill Browse is as follows:

Fig. 6.12
Production Order BOM Before Manual Allocation

Production Order	ID	Site	Line	Item Number	Description	Due Date	Release Date	Order Date	Need Date	Split Order Cum ID	Order Status	Shift	UM	Qty
05140029	2819974	10-200	1020	02210	Motor Arm 6-Way Seat Adj	6/6/2019	5/28/2019	5/28/2019	5/28/2019		E		EA	
05170003	2818240	10-100		02210	Motor Arm 6-Way Seat Adj	5/20/2019	5/20/2019	5/20/2019			P		EA	
05210002	2818674	10-200	1020	02210	Motor Arm 6-Way Seat Adj	5/27/2019	5/27/2019	5/21/2019			P		EA	
10100003	2817862	10-200	1000	02210	Motor Arm 6-Way Seat Adj	5/14/2019	5/14/2019	5/14/2019			F		EA	

Component	Comp	Operation Description	Issue Date	Qty Open	Qty Per	Qty Required	Qty Allocated	Qty Picked	Qty Issued	Component UM	Allocation
52210	Motor	Motor Mfg Plate Arm	5/28/2019	300.0	1.0	300.0	300.0	0.0	0.0	EA	Detail
52211	Motor Mfg Plate 6-Way	20 Assemble To Print	5/28/2019	0.0	1.0	0.0	0.0	0.0	0.0	EA	Detail
52280	Seat Adj Switch Assy	5/28/2019	300.0	1.0	300.0	0.0	0.0	0.0	0.0	EA	Detail
62201	24V Amp ZHP, 1/2 Dia	10 Assemble To Print	5/28/2019	300.0	1.0	300.0	0.0	0.0	0.0	EA	Detail
62202	Pem Nut #5 0125	20 Assemble To Print	5/28/2019	0.0	1.0	0.0	0.0	0.0	0.0	EA	Detail
62203	Stud Press Fit #5 1/4"	20 Assemble To Print	5/28/2019	0.0	1.0	0.0	0.0	0.0	0.0	EA	Detail
62510	6 Way Switch	35	5/28/2019	300.0	1.0	300.0	0.0	0.0	0.0	EA	Detail

With the phantom use-up logic, all available inventory for component item 52210 is allocated and consumed when you explode the order. Since there are 300 phantom items available in inventory, Qty Required of phantom item 52210 is 300; Qty Required of phantom components 52211, 62202, and 62203 is 0.

If you then select Detail Allocations in Production Order Bill Maint and detail-allocate the phantom items to make its Qty Allocated set to 180, the Qty Required fields for the phantom item and its component items are changed: Qty Required of the phantom item is set to the quantity actually allocated to it; Qty Required of its phantom components is changed accordingly.

Fig. 6.13
Production Order BOM After Manual Allocation

Production Order	ID	Site	Line	Item Number	Description	Due Date	Release Date	Order Date	Need Date	Split Order Cum ID	Order Status	Shift	UM	Qty
05140029	2819974	10-200	1020	02210	Motor Arm 6-Way Seat Adj	6/6/2019	5/28/2019	5/28/2019	5/28/2019		E		EA	
05170003	2818240	10-100		02210	Motor Arm 6-Way Seat Adj	5/20/2019	5/20/2019	5/20/2019			P		EA	
05210002	2818674	10-200	1020	02210	Motor Arm 6-Way Seat Adj	5/27/2019	5/27/2019	5/21/2019			P		EA	
10100003	2817862	10-200	1000	02210	Motor Arm 6-Way Seat Adj	5/14/2019	5/14/2019	5/14/2019			F		EA	

Component	Comp	Operation Description	Issue Date	Qty Open	Qty Per	Qty Required	Qty Allocated	Qty Picked	Qty Issued	Component UM	Allocation
52210	Motor	Motor Mfg Plate Arm	5/28/2019	180.0	1.0	180.0	180.0	0.0	0.0	EA	Detail
52211	Motor Mfg Plate 6-Way	20 Assemble To Print	5/28/2019	120.0	1.0	120.0	0.0	0.0	0.0	EA	Detail
52280	Seat Adj Switch Assy	5/28/2019	300.0	1.0	300.0	0.0	0.0	0.0	0.0	EA	Detail
62201	24V Amp ZHP, 1/2 Dia	10 Assemble To Print	5/28/2019	300.0	1.0	300.0	0.0	0.0	0.0	EA	Detail
62202	Pem Nut #5 0125	20 Assemble To Print	5/28/2019	120.0	1.0	120.0	0.0	0.0	0.0	EA	Detail
62203	Stud Press Fit #5 1/4"	20 Assemble To Print	5/28/2019	120.0	1.0	120.0	0.0	0.0	0.0	EA	Detail
62510	6 Way Switch	35	5/28/2019	300.0	1.0	300.0	0.0	0.0	0.0	EA	Detail

In this case, after manual allocation, Qty Required of the phantom item 52210 is changed to 180 and Qty Required of phantom components 52211, 62202, and 62203 becomes 120.



Production Activities

This chapter discusses the following topics:

***Introduction* 106**

Introduces three areas of production activity discussed in this chapter.

***Production Activity Transactions* 106**

Describes production activity transaction programs, typical frames that display in them, and production activity reporting.

***Receiving Quantities from Production* 121**

Discusses various ways to receive production orders.

***Inventory Movement Codes* 124**

Describes inventory movement codes, identifying the transaction type and reason, that are generated from production order functions.

***Production Shop Floor Collection* 125**

Describes the shop floor user's .NET UI collection, including features and functions.

Introduction

This chapter covers the following areas:

- Production activity transactions:

Production activity transactions provide feedback for shop floor and repetitive operations. Production activity transaction programs require the use of an employee code. This chapter discusses the following production activity transaction programs:

- Operation Activity Transaction
- Reject/Scrap Transaction
 - Accounting for Scrap
 - Valuation of Scrap
- Move Transaction
- Receiving Quantities from Production
- Receive production orders

When an order is completed on the production activity, the items are typically sent to the stockroom. This section describes various ways to receive production orders.

Production Activity Transactions

Production activity transaction programs create transaction records for reported setup time, labor hours, material scrapped, and the number of units completed for specific order operations. These records are used to track the status of production order operations, monitor performance of work centers, and update the general ledger (GL) for manufacturing costs.

Note The WIP Lot Trace (WLT) module affects some features of the production activity transaction programs. When WLT is activated, WLT-related fields must have data entered in them.

Operation Activity Transaction

Use Operation Activity Transaction as a one-stop program to record and track production activity.

Operation Activity Transaction lets you:

- Update, track, and report:
 - Quantities processed or quantities completed
 - Labor hours
 - Setup hours
 - Operation and descriptions
 - Open completed, rejected and scrapped quantities
 - Actual run and setup time
 - Backflush components
- Receive finished products into inventory
- Receive packaged goods (serialized)
- Close orders or operations

- Calculate backflush
- View schedules
- Modify inventory

Note In Operation Activity Transaction, when the system consumes multiple scheduled orders, the orders are sorted according to the following priorities: first by due date, then by release date, then by sequence, and finally by order ID. This logic also applies to the following functions: Production Order Receipt, Component Issue, Subcontract Receipt, and Negative Processing.

Operation Activity Transaction consists of several frames:

- Use the Heading Frame to enter enough data to locate an order.
- Use the Operation Data Frame to enter the data necessary to register or update transaction activity, starting with the operation to which the activity updates apply.
- Use the View Schedules Frame to record the actual run and setup times.
- Use the Component Issue Frame to issue components.
- Use the Receipt Data Frame to receive components. The frame displays after the Component Issue frame only for last operation and when you set Move Next Op to Yes.
- Use the Receive by Pack and Gen Pack Serial Frame to build a pack or enter Serialization data.
- Use the Multi Entry Frame to enter more than one item when you scrap, reject, or rework components.
- Use the Receipt Attributes Frame to modify inventory attributes, such as the assay percentage, grade, expired date, inventory status and more,

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 7.1
Operation Activity Transaction

Operation Activity Transact... X			
Employee: Demo		Eff Date: 8/21/2020	Shift:
Site: 11-100		Line:	
Work Center: 1000	Machine: 1001	Discrete	
Prod Order: W0419028	ID: 2524723	CUM ID: 2524723	
Item Number: 01010	Medical Ultrasound	UM: EA	
Routing: U-001	BOM Code:		
Operation: 10	Work Center Desc: General Assembly - Ultra		
Work Center: 1000	Machine: 1001	Department: 0400	
Qty Processed:	0.0		
Qty Complete:	0.0	UM: EA	Conversion: 1.00
Qty Scrapped:	0.0	Reason Code:	Multi Entry: ☐
Qty Rejected:	0.0	Reason Code:	Multi Entry: ☐
Reject To Op: 00	Receive by Pack: ☐	Gen Pack Serial: ☐	
Total Qty:	Move Next Op: ☒	Std Setup Time: ☒	
View Schedules: ☒	Calculate Backflush: ☒	Close Operation: ☐	
Modify Inventory: ☒	Close Order: ☐		

Heading Frame

All production order production activity transaction programs have the same heading frame. Use the frame to enter employee, shift, site, effective date, work center, machine, production line, item number, and the data necessary to locate an order. Once the order information is entered, the system fills in other fields.

Fig. 7.2
Heading Frame

Employee: 10-EMP01	Eff Date: 7/25/2017	Shift:
Site: wsite01	Line: wpl001	
Work Center:	Machine:	
Prod Order:	ID:	CUM ID:
Item Number:		UM:
Routing:	BOM Code:	

Operation Data Frame

Enter the data necessary to register or update transaction activity, starting with the operation to which the activity updates apply.

Additional frames display when you set fields to Yes (note that fields follow the frame names):

- Receive by Pack and Gen Pack Serial Frame
- View Schedules Frame
- Receive by Pack and Gen Pack Serial Frame

Fig. 7.3
Operation Data Frame

Operation: 10		Work Center Desc: General Assembly-Ultra	
Work Center: 1000		Machine: 1001	Department: 0400
Qty Processed:	0.0	UM: EA	Conversion: 1.00
Qty Complete:	0.0	Reason Code:	Multi Entry: ☐
Qty Scrapped:	0.0	Reason Code:	Multi Entry: ☐
Qty Rejected:	0.0	Receive by Pack: ☐	Gen Pack Serial: ☐
Reject To Op: 00		Move Next Op: ☒	Std Setup Time: ☐
Total Qty:		Calculate Backflush: ☒	Close Operation: ☐
View Schedules: ☒		Close Order: ☐	
Modify Inventory: ☐			

View Schedules Frame

When you indicate to View Schedules, the system displays a View Schedule frame that displays the schedule against which the activity is consumed. The system also displays the schedule due date production order, quantity open, and quantity processed.

Fig. 7.4
View Schedules Frame

View Schedules				
Production Order	ID	Due Date	Qty Open	Processed
3334	2447204	7/24/2017	4.0	2.0

Work Center Frame

The Work Center frame typically displays after the Operation Data frame. Use the Work Center frame to record the actual run and setup times. When you do not enter a specific run or setup time, you can specify time in the Start and Elapsed or Stop Time fields to let the system calculate the start/stop time for run and setup. The Auto Labor Report field determines if standard labor is calculated automatically by this transaction. When Yes, system automatically calculates and shows the standard number of run hours for the quantity processed on Actual Run Time. You can change the Actual Run Time when the run time is different from the standard. The value you enter is considered the actual time.

This program also automatically reports standard hours for each prior non-milestone operation that also has Auto Labor Report set to Yes. When Auto Labor Report is No, the system does not calculate standard run hours, and you should report labor explicitly.

Fig. 7.5
Work Center Frame

Work Ctr wwc001 - Op 10	
Actual Run Time:	0.0
Earning Code:	
Actual Setup Time:	0.0
Earning Code:	

Start Time:
Elapsed or Stop Time:
Start Setup:
Elapsed or Stop Setup:

Component Issue Frame

Use the Component Issue frame to specify details of components, enter the quantity to issue of each component, and specify the site, location, lot/serial, and reference. Component Issue records the issue, decreasing inventory costs and quantities and increasing WIP. The Issue Date Review frame displays when you respond Yes to view issued component data. Components that are linked to operations have their issue date (the date of the component demand) set to the same date as the start date of the operation.

The component issue date is always updated when you or the system updates the start date of the operation. Components that are not linked to an operation have an issue date equal to the start date of the first operation. When the production order does not have a routing, the system uses the release date of the order as the issue date of the components. The system applies any lead time offset as defined for the component in the product structure to the issue date of the component.

You can also indicate to review issued data; when you do, the Issue Data Review frame displays.

Component Lists

When lot-controlled items with a blank lot display in component lists, the system displays a message informing you that a lot/serial number is required for the item.

On component issue lists, when a valid inventory detail record is added to the component issue list, the system checks whether there is an invalid issue record for the same item with a blank lot/ref. When Yes, the system prompts you to remove the issue record with a blank lot and blank reference; when No, the system does not remove the issue record and saves the current issue data.

Fig. 7.6
Component Issue and Issue Data Review Frames

Component Issue Frame

Component: UM:
 Operation:
 Substitute: ☐ Qty Required: 0.0
 Site: wsite01
 Location:
 Lot/Serial:
 Reference:
 Quantity: 0.0
 Total Issue Qty: 0.0

Issue Review Frame

Component	Op	Site	Lot/Serial	Quantity	UM
whitem005c1	10	wsite01	lot01	4.0	EA
		loc01			

Receipt Data Frame

Use this frame to record the inventory that is not packaged. Enter specific data about the receipt, including site, location, total units, and more.

When lot control level is 1 or 2 in Regulatory Attributes Control, you can receive only a single lot per transaction when the following are true:

- For discrete orders: When lot controlled and Single Lot is Yes on the production order
- For discrete schedule orders: When lot controlled or the Split CUM order has single lot set to Yes
- For Repetitive schedules: When the item is lot controlled and Single Lot Per Repet Receipt is set to Yes in Regulatory Attributes Control

Note When these conditions exist, you can still assign different locations for the receipt. Also, when you implement auto-lot numbering, you can receive only a single lot number per receipt regardless of the single-lot setting and lot control level set in Regulatory Attributes Control.

Fig. 7.7
Receipt Data Frame

Receipt Data Input

Description: Lot Control:
 Quantity: 2.0 UM: EA Conversion: 1.0000
 Site: GRC8 Total Units:
 Location:
 Lot/Serial: Document:
 Reference:
 Multi Entry: ☐ Chg Attributes: ☐

Receive by Pack and Gen Pack Serial Frame

For information on receiving by pack, see “Serialization and Production Orders” on page 211.

Multi Entry Frame

When you scrap, reject, or rework components, then indicate Multi Entry, the system displays a pop-up frame to enter additional quantities for the items and the reason code.

Fig. 7.8
Multi Entry Frame

Quantity	Reason Code
1.000000000	
0.0	
0.0	
0.0	
0.0	
0.0	
0.0	
0.0	
0.0	
0.0	

Receipt Attributes Frame

When you indicate to modify inventory attributes, the system displays the Receipt Attributes frame. Use Receipt Attributes to specify the assay percentage, grade, expired date, inventory status and more; then specify whether these attributes are Active or not, or whether they are the default.

Enter Yes to set entered values as default attributes for all receipts on this order or line; otherwise, enter No.

When you set Use As Default to Yes, the system assigns the entered attributes as defaults for the current and future receipts for the order. When inventory with different attributes exists at the receipt site and location with the same lot/serial and lot reference number, an error displays and you cannot proceed. To correct this error, change the site or location, or specify a different lot or lot reference number. Alternately, enter No in the Active fields and complete the receipt using existing attributes. When Active is No, but Use as Default is Yes, the system sets all attributes to blank.

Fig. 7.9
Receipt Attributes Frame

Assay Percentage:	0.002	Active:	☒
Grade:		Active:	☒
Expire Date:		Active:	☒
Inventory Status:		Active:	☐
Use As Default: ☐			

WIP Lot Trace (WLT) Frame

When the order is WLT-controlled, you can use Operation Activity Transaction to capture WIP lot trace information. You can capture in the following ways:

- For components with an Issue Policy set to Direct:
 - a** Use Production Order Component Issue (16.5.12) or Production Order Picklist Issue (16.5.11) to identify the material issued to the WIP lot.
 - b** Then, use Operation Activity Transaction to issue the WIP Lot or report production and to receive finished goods into inventory.
- For components with an Issue Policy set to Backflush, use Operation Activity Transaction to report backflush and WIP Lot production.

When WLT-controlled, you cannot leave the Operation field blank in the header. When the operation is the first operation, WIP Lot data display as follows:

- The destination work center and machine display when Move to Next Operation is Yes, and the operation is not the last operation.
- WIP lot output queue receipt data display for you to capture WIP-lot produced components in the current operation.

When Move to Next Operation is Yes, the system moves the WIP item to the input queue of the next operation; otherwise, it moves WIP items to the output queue of the current operation.

You can manually enter the lot or leave it blank to let the system generate the WIP lot.

The expected receipt quantity should be the total of the following:

Qty Complete, Qty Scrapped and Qty Rejected.

Note the following:

- When split WIP lots is not allowed, you can work with only one WIP lot.
- When combined WIP lots are not allowed, multiple input WIP lots cannot be combined into a single output WIP lot.
- The lot size cannot exceed the maximum lot size; when it does, the system displays an error.
- You cannot enter a negative quantity for the receipt.

The system generates a WIP lot convert transaction when the component is issued by Production Order Component Issue or Production Order Picklist Issue and only reports WIP production in Operation Activity Transaction.

When you enabled system tracing-component features, the system generates a consume component transaction record when the component is issued and reports WIP production in Operation Activity Transaction.

Operation Labor Transaction

Use Operation Labor Transaction to report:

- Labor that was not recorded when using the operation activity transaction
- Down time
- Labor hours for setup and run

You can register labor spent in direct production at a manufacturing operation. You can also register labor spent in setting up production at a manufacturing operation. The value of the labor is added to work in process.

Use the first Heading Frame to enter employee, shift, site, effective date, and the data necessary to locate the order. Use the second frame to enter the data necessary to register the labor, setup, and down time. You can also choose to close the operation.

This transaction creates an operation history record to record the labor reported at the operation. The total cumulative labor hours associated with the order is updated with the labor hours entered.

The following depicts the initial frames for the program; additional frames display as discussed in the frame descriptions for “Operation Activity Transaction” on page 106.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 7.10.
Operation Labor Transaction (16.13.14)

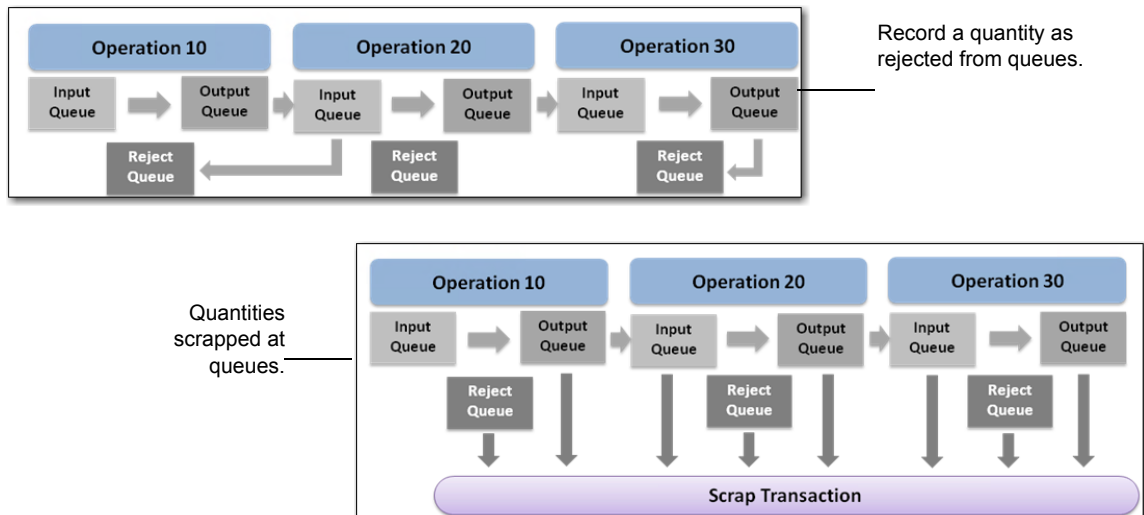
Reject/Scrap Transaction

Use Reject/Scrap Transaction to record quantities rejected and/or scrapped from a production operation queue.

Record a quantity as rejected from either the input queue and/or output queue for a production operation, and directed to the reject queue either that operation or a reject queue for a previous operation. Because the quantity processed by a reject transaction is moved to the reject queue for an operation, there is no impact to production accounting and on the valuation of work-in-process. See Figure 7.11.

Quantities may be scrapped from any queue for a production operation – either the input queue, output queue, or reject queue for an operation. When a quantity is reported as scrap from the operation input, output, or reject queue, that quantity is deducted for the queue. See Figure 7.11.

Fig. 7.11
Reject/Scrap Quantities at Operations



The system uses the quantity scrapped at an operation together with the quantity completed to determine the total quantity processed for the operation.

Fig. 7.12
Determining the Total Quantity for an Operation

Operation from where quantities rejected or scrapped

Reject quantities and sources

Scrap quantities and sources

Move reject quantity to reject queue of this operation.

Navigation

Use the first Heading Frame to enter employee, shift, site, effective date, and the data necessary to locate the order.

Use the second frame to enter the data necessary to register the reject and scrap data and adjust from either the input, output, or reject queue. The input queue holds quantities from the previous operation. The output queue holds quantities from the current operation that have not been moved to the next operation. The reject queue holds quantities rejected by the current or a subsequent operation. You can record multiple scrap, reject, and rework quantities with reason codes.

Effects

The processing of a reject quantity at an operation is recorded with one or more operation history transaction records. If the Reject To Operation field is before the operation being reported, additional operation history records are generated to reflect the fact that the reject quantities were first moved back to the output queue of the To Operation.

The processing of a scrap quantity at an operation queue is recorded with one or more operation history transaction records. These register the quantities scrapped at each of the operation's queues. Scrapping from the output or reject queues reduces their balances respectively. When scrapping from the input queue, the quantity is first moved to the output queue of the prior operation and then scrapped from there.

When multiple entries of scrapped or rejected items have the same reason code, the quantities on these lines are summed into one transaction record.

The following depicts the initial frames for the program; additional frames display as discussed in the frame descriptions for “Operation Activity Transaction” on page 106.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 7.13
Reject/Scrap Transaction (16.13.15)

Employee: 22-EMP01		Eff Date: 7/28/2017		Shift:	
Site: ygssite1		Line: ygslne1			
Work Center: 212121212		Machine:		Discrete	
Item Number: ygap4		ID: 22228021		CUM ID: 22228021	
Routing:		BOM Code:		UM: EA	
Operation: 10		UM: EA		Conversion: 1.0000	
Work Center: 1000		Work Center Desc: General Assembly			
Machine:		Department: 0400			
Reject:		Reject To Op: 00			
Out Queue:	0.0	Reason Code:	Multi: ☐		
In Queue:	0.0	Reason Code:	Multi: ☐		
Scrap:					
Out Queue:	0.0	Reason Code:	Multi: ☐		
In Queue:	0.0	Reason Code:	Multi: ☐		
Reject Queue:	0.0	Reason Code:	Multi: ☐		

Accounting for Scrap

Configure the system to support the production accounting of scrap. Select the Post Scrap To GL parameter in Production Order Control to have the system create transactions that deduct the value of a quantity scrapped at an operation queue.

The value for the quantity scrapped is deducted from work-in-process and expensed to the scrap account. The scrap quantity is recorded for an operation queue. When the quantity scrap is reported for the input queue for all but the first operation, the value for scrap is based on the value

for work-in-process at the end of the previous operation. When the quantity scrap is reported for the output or reject queue of an operation, the value for scrap is based on the value for work-in-process after the work operation has been completed.

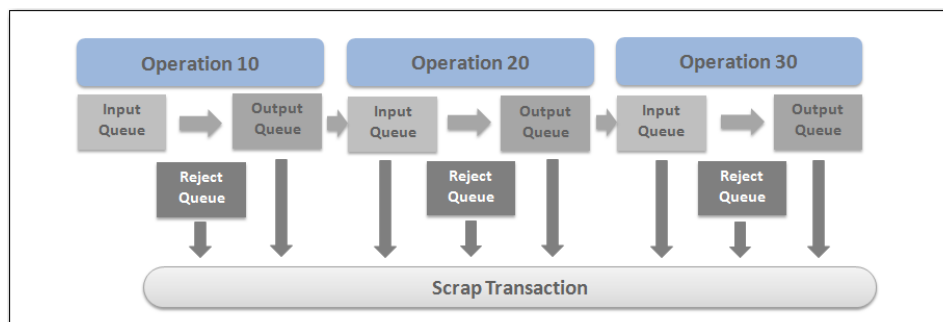
Scrap is recorded in an inventory history transaction record (tr_hist) with type CONS-WO. This inventory history transaction record for scrap creates one or more operation history transaction records to record the scrap of material at the operation. These register the quantities scrapped at each of the operation's queues. Scrapping from the output or reject queues reduces their balances respectively. When scrapping from the input queue, the quantity is first moved to the output queue of the prior operation and then scrapped from there.

When multiple entries of scrapped or rejected items have the same reason code, the quantities on these lines are summed into one transaction record.

Valuation of Scrap

When the quantity scrap is reported for the input queue for all but the first operation, the value for scrap is based on the value for work-in-process at the end of the previous operation. When the quantity scrap is reported for the output or reject queue of an operation, the value for scrap is based on the value for work-in-process after the work operation has been completed.

Fig. 7.14
Scrap Valuation



For co-/by-products, the value for the scrap quantity is the standard cost for the co- or by-product multiplied by the quantity scrapped.

Note Transactions and the valuation of scrap is different when using average costing with functions such as Operation Activity Transaction to record scrap from an operation queue than when using Production Order Receipt (16.13.1) to record scrap together with the receipt of quantities into inventory from a production order. See Production Scrap for more information.

The value for scrap from a production operation queue includes the value of materials issued or backflushed at operations, together with the value of floor stock. See Production Scrap and Floor Stock.

Rework Transaction

Use Rework Transaction to move the items back into a work center queue from a work center reject queue after reworking them. Time and material (components) recorded in this transaction are in addition to what was planned for the order; that is, required time and material are not consumed by what the system records for this transaction. This transaction generates operation history transactions for the Rework type for the quantity processed.

Note You set Allocation, Pick, Issue, and Transfer Policies in Item Data Maintenance, Item-Site Data Maintenance, and Item Master Maintenance.

Rework and Operation Queues

In general, follow these guidelines when determining where to transfer reworked quantities.

When the units in the reporting operation's reject queue were rejected from the input queue of a subsequent operation, you should transfer reworked units to one of the following:

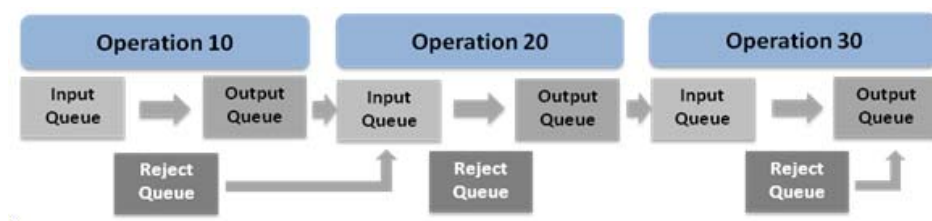
- The input queue of the subsequent operation that recorded the reject quantity
- The output queue of the operation that performed the rework

When the units were rejected from the output queue of a subsequent operation, you should transfer reworked units to one of the following:

- The output queue of the subsequent operation that recorded the reject quantity
- The input queue of the operation following the subsequent operation that recorded the reject quantity

Reworked quantities display as quantities completed on operation schedules.

Fig. 7.15
Reject at Operation



Navigation

Use the Heading Frame to enter employee, shift, site, effective date, and the data necessary to locate the order.

Use the second frame to select the operation with a reject quantity you want to record production for. Use the To Operation and To Queue fields to select the operation and queue where the processed quantity should be added as a result of this transaction. Use the Qty Reworked and Reason Code fields to record the end-item quantity moved out of the reporting operation's reject queue and to associate a reason code with this quantity. To assign multiple reason codes to rework quantities in the same transaction, set Multi Entry to Yes.

Use the Component Issue Frame to record additional components issued to rework the reported items. The Component Issue frame lets you enter components, operations, substitutions, and the quantity required. You can also set the site, location, lot/serial and other component-related data. The system does not automatically allocate for the parent item of a rework order. The system ignores the Allocation Policy of the parent item. For components that you manually add, the system follows Allocation Policy settings. The system follows Pick and Issue Policy settings for components as with regular orders.

When you finish issuing components, the system prompts you to view item and lot/serial data. When Yes, the system displays the Issue Data Review frame to view the component, operation, site, and lot/serial data.

Issuing Components

When you manually issue components in Rework Transaction, the system generates a transaction history record of type ISS-WO to record each quantity issued. Use the transaction history report, inquiry, and browse functions to review transaction history records as needed.

When you manually issue components or record labor hours in Rework Transaction, the system automatically generates GL transactions to cover the applicable rate and method variances.

Backflushing and Rework

When you use Rework Transaction, the rework quantity is not processed for the automatic backflushing of additional component quantities. This is because a quantity that is reworked after being rejected from the output queue of an operation, or rejected from the input or output queue from a subsequent operation, was processed by an automatic backflush for quantities completed for that operation.

Supplier-Consigned Inventory

When you include supplier-consigned inventory, the system creates the RCT-PO and CN-ISS supplier-consignment transactions. The consignment transactions occur only when Transfer Ownership is Yes for the receiving location.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 7.16

Rework Transaction (16.13.16)

Move Transaction

Use Move Transaction to transfer a quantity from the output queue of a manufacturing operation to the input queue of the following operation. If there are no following operations, the quantity is received to finished material inventory. For finished materials received, the system increases inventory quantities, records transaction history, and updates the production order quantity completed.

You can also use Move Transaction to move quantities to the first operation. This applies when the order was not moved to the first operation when it was released.

This transaction creates an operation history record to record the quantity moved to the operation.

Use the first Heading Frame to enter employee, shift, site, effective date, and the data necessary to locate the order.

Use the second frame to specify details of the move. Specify whether to move the first operation and from which operation as well as the quantity to move. The system displays the from and to work center, machine, and department for the operation.

Important Field Settings

When you set Modify Receipt to Yes in the second frame, the system displays the Receipt Data Frame. Use the fields in the Receipt Data frame to specify the quantity, UM, conversion, site, location, lot/serial, and other data related to the receipt. When you receive lot-controlled items into inventory (Lot Control Level is set to 1 or 2 in Regulatory Attributes Control), you can receive only a single lot per transaction when the following are true:

- For discrete orders: When lot controlled and Single Lot is Yes on the production order or Single Lot per Repet Receipt is Yes in Regulatory Attributes Control
- For discrete schedule orders: When lot controlled or the Split CUM order has single lot set to Yes

- For Repetitive schedules: When the item is lot controlled and Single Lot Per Repet Receipt is set to Yes in Regulatory Attributes Control

Note When these conditions exist, you can still assign different locations for the receipt. Also, when you implement auto-lot numbering, you can receive only a single lot number per receipt regardless of the single-lot setting and lot control level set in Regulatory Attributes Control.

When you select Chg Attributes in the Receipt Data frame, the system displays the Receipt Attributes Frame. Use the frame to specify the assay percentage, grade, expired date, inventory status and more; then specify whether these attributes are Active or not, or whether they are the default.

Note For detailed information on General Ledger effects, refer to “Production Activity and General Ledger Transactions” on page 147.

Figure 7.17 depicts the initial frames for the program; additional frames display as discussed in the frames for “Operation Activity Transaction” on page 106.

For field descriptions for Move Transaction, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 7.17
Move Transaction (16.13.17)

The screenshot shows a 'Move Transaction' window with a menu bar (Go To, Actions, Copy, Print, Preview) and a main data area. The data is organized into several sections:

Employee: 22-EMP01	Eff Date: 7/28/2017	Shift:
Site: ygssite1	Line: ygssite1	
Work Center:	Machine:	Discrete
Prod Order: 7026	ID: 22223233	CUM ID: 22223233
Item Number: ygsp6		UM: EA
Routing:	BOM Code:	

Move First Operation:	Move From Operation: 10	
From Work Center:	Machine:	Department:
To Work Center:	Machine:	Department:
Quantity To Move: 0.0	UM: EA	Conversion: 1.0000
Total Qty: 0.00		Modify Receipt: ☒

Receiving Quantities from Production

When an order is completed on the production activity, the items are typically sent to the stockroom.

You can receive production orders in the following ways:

- Use Operation Activity Transaction collection's receipt functions when you have issued items and want to receive finished products into inventory. You can receive serialized and non-serialized items. Note that you can also issue components in this collection.
- Use Production Order Receipt when you did not issue items previously and want to issue them when completed products are received. For details on Production Order Receipt, see “Backflushing Materials for a Production Order” on page 96.

For receiving, the system first creates a production order receipt transaction (RCT-WO), followed by a production order consumption transaction (CONS-WO).

When using Production Order Receipt or the same functions in Operation Activity Transaction, the system displays the Receipt Data Frame to record the inventory that is not packaged.

In the frame, enter specific data about the receipt, including quantity, site, location, lot/serial, reference, and whether or not to change attributes and enter multiple entries. Both options cause additional frames to display. The Multi Entry Frame lets you enter additional items. If you set Change Attributes to Yes, the Receipt Attributes Frame displays. Use it to change inventory attributes such as Assay %, Grade, Expire Date, Inventory Status, their corresponding Active fields, and to indicate whether to use the entered values as defaults.

You can only receive production orders without routing using the Production Order Receipt functions.

You can enter labor feedback and test results at receipt, and report individual operations as completed, using the transactions modules, such as Move, Rework Transaction, and so on. Note that Production Order Receipt does not post labor automatically. See “Managing Production Materials” on page 75.

When a production order is received:

- Inventory increases by the amount of the receipt.
- The open order quantity decreases by the amount of the receipt.
- Any scrap quantity is written off to the Scrap account and not placed in inventory. For information on scrap, see Reject/Scrap Transaction.

If Auto Lot Numbers is Yes in Item Inventory Data Maintenance (1.4.5), the system automatically assigns the production order ID as the lot number for inventory received from a production order.

Note If you are using the Regulatory Attributes module, you can set up lot groups for assigning automatic numbers. If defined, lot groups are used rather than the production order ID. See *QAD Master Data User Guide*.

WLT and Receipts

When receiving, the system displays an error and prompts you to use the .NET UI Operation Activity Transaction collection when the following conditions exist:

- WLT is enabled
- The order is WLT controlled
- Trace Parents is set to Yes in WIP Lot Trace Control or a WLT routing registration is active for the parent item being manufactured and Trace Parents is Yes for that registration.

Regulatory Attributes and Receipts

When you receive lot-controlled items into inventory (lot control level is set to 1 or 2 in Regulatory Attributes Control), you can receive only a single lot per transaction when the following are true:

- For discrete orders: When lot controlled and Single Lot is Yes on the production order or Single Lot per Repet Receipt is Yes in Regulatory Attributes Control



- For discrete schedule orders: When lot controlled or the Split CUM order has single lot set to Yes
- For Repetitive schedules: When the item is lot controlled and Single Lot Per Repet Receipt is set to Yes in Regulatory Attributes Control

When these conditions exist, you can still assign different locations for the receipt. Also, when you implement auto-lot numbering, you can receive only a single lot number per receipt regardless of the single-lot setting and lot control level set in Regulatory Attributes Control.

Closing During Receipt

During receipt, you can set the production order status to Closed. Once closed, no further component issues or completions can be recorded against the order; see “Production Activity Transactions” on page 106.

The system captures the receipt and close date as well as the user ID of the person who received or closed the production order. This information automatically appears in the release-related reports. For information on reports, see “Generating Reports” on page 229.

Closing a production order does not clear the balance in WIP. This action is done by using Prod Order Accounting Close; see “Production Activity Transactions” on page 106.

Production Scrap

Production scrap can be recognized for:

- Scrap for a work-in-process quantity from a production order operation queue when using the Production Activity Transaction (16.13.13) or similar transaction
- Scrap for a completed quantity for a production order when using the Production Order Receipt (16.13.1) transaction

When a quantity is scrapped at the output queue or reject queue of an operation, the system scraps it at the value of the operation. When the scrap is at the operation input queue, the system scraps it at the value of the prior operation.

Average Costing and Functions to Process Scrap

Transactions and the valuation of scrap are different when using average costing with functions such as Operation Activity Transaction (16.13.13) to record scrap from an operation queue than when using Production Order Receipt (16.13.1) to record scrap together with the receipt of quantities into inventory from a production order.

In general, when transaction activity is recorded for any operation for a production order, functions such as the Operation Activity Transaction should always be used for recording scrap and receipt of completed quantities from the last operation for that production order.

When transaction activity is never recorded for an operation on a production order, you can use the Production Order Receipt function for a production order only when quantities are not reported for production operations.

Production Scrap and Floor Stock

The value for scrap from a production operation queue includes the value of materials issued or backflushed at operations, together with the value of floor stock. In addition to the scrap transaction, the system now creates an additional floor stock transaction to recognize the cost of floor stock issued to work-in-process for the quantity scrapped, when the value of scrap at an operation includes a floor stock component. This additional floor stock transaction is necessary for the consistent recognition and processing of costs for floor stock by the Prod Order Accounting Close (16.20.10) function.

Inventory Movement Codes

Several production order functions generate inventory movement codes to support global shipping. Inventory movement codes identify the reason for a transaction and the type of transaction. Inventory movement codes let you create shippers for inventory issues not related to a sales order.

Transactions

Table 7.1 details the various shipping groups and associated inventory movement codes that you set up for production orders to support global shipping. In the table, note the following:

- The Transaction column depicts the transaction to be performed by the relevant function.
- When this transaction occurs, the system checks for the existence of the shipping group defined in the Shipping Group column.
- When found, the system next checks that the shipping group has been set up with an inventory movement code that represents the transaction shown in the Inventory Movement Code column.

Note Consider the following when the system processes inventory movement codes:

- Only the primary transaction must be associated with the inventory movement code. For example, a production order component issue between sites involves a transfer (ISS-TR and RCT-TR), and with a production order issue (ISS-WO), only the ISS-WO is associated with the inventory movement code.
- When you use a backflush location, and you have not defined a backflush location for the work center/production line, the system does not create global shipping documents.

Table 7.1
Inventory Movement Codes

Function	Transaction	Shipping Group	Inventory Movement Code
• Production Order Component Issue (16.512) • Production Order Picklist Issue (16.5.11)	• A production order component issue where the site issuing the component is not the same as the production order site. • A production order component issue where the location issuing the component is not the same as the backflush location.	• Source address must match the issuing site, and the destination address must match the production order site. • Source address must match the address of the issuing location, and the destination address must match the address of the backflush location.	ISS-WO

Function	Transaction	Shipping Group	Inventory Movement Code
- Operation Activity Transaction (16.13.13) - Production Order Receipt (16.13.1) - Rework Transaction (16.13.16)	- A backflush where the site issuing the component is not the same as the order site. - A backflush where the location issuing the component is not the same as the backflush location.	- Source address must match the issuing site, and the destination address must match the order site. - Source address must match the address of the issuing location, and the destination address must match the address of the backflush location.	ISS-WO
Production Picklist Transfer (16.5.9)	- A picklist transfer where the component is transferred from a site which is not the order site. - A picklist transfer where the component is transferred from a location which is not the backflush location.	- Source address must match the from site, and the destination address must match the production order site. - Source address must match the address of the from location, and the destination address must match the address of the backflush location.	ISS-TR
- Operation Activity Transaction - Production Order Receipt - Move Transaction (16.13.17) - Purchase Order Receipts(5.13.1) - PO Shipper Receipt(5.13.20) - Pending PO Shipper Unload ((5.13.12.13)	- A production receipt where the site receiving the finish goods is not the same as the order site. - A production receipt where the location receiving the finish goods is not the same as the backflush location.	- Source address must match the order site, and the destination address must match the receiving site. - Source address must match the address of the backflush location, and the destination address must match the address of the receiving location.	RCT-WO

Note If Shipment Info for Receipts is Yes in Container/Shipper Control (7.8.24), a Shipment Information frame displays for input of data for receipt. You need to manually enter the inventory movement code. Set the location address as Physical Address in Location Maintenance.

Production Shop Floor Collection

The Production Shop Floor Collection is a UI shop floor reporting function that is designed for shop floor production operators. For the operators, the collection provides a simplified rule-driven UI that reports production, issues materials, and prints packaging labels.

The collection provides real-time released production orders (from the MSW/PSW). The simplified UI to report and issue materials is enabled through the QAD Automation Solutions framework. Shop Floor users have access to this collection and the supporting tabs when they are licensed to use QAD Automation Solutions production products.

Specifically, the collection contains the following functions:

- **Production Order Browse.** The top browse—the Production Order browse (16.3.2)—lets shop floor operators view schedule data from the Production Scheduling Workbench, which is part of the QAD Planning and Scheduling Workbenches. You can set schedule-related fields to display data in the browse that is extracted from the PSW.

- **Production Order Component List.** The Production Order Component List browse (23.25.6) displays the component items for the parent item associated with the selected production order. See “Checking Component Status” on page 127.
- **Packaging.** The Packaging (16.25.30) tab lets shop floor users create serial IDs or a package for production orders, or print labels for a package. See “Packaging” on page 128 and “Printing Labels” on page 129.
- **Issue.** The Issue (16.25.31) tab lets users issue materials to production. See “Issuing Components” on page 119.
- **Receipt.** The Receipt (16.25.32) tab lets users receive materials into stock and receive serial/lot/item into a pack for production orders. See “Receiving Materials” on page 131.
- **Transactions by Item Browse.** The Transactions by Item Browse (3.21.2) displays inventory transaction history for an item number ordered by transaction date, starting with the most recent.
- **Serial Master Browse.** The Serial Master Browse (3.17.22.2) tab displays the serialized items that are associated with selected production order.

Fig. 7.18
Production Shop Floor Collection

QAD Test: 10USA Division [USD] > 10USACO Division (2) - QAD Enterprise Applications

File Edit Tools Workspace Window Help

Processes x Production Shop Floor Collectio... x

5 Actions Setup Cancel Add to Favorites

Search (Order Status = R)

Site equals - Search Clear All

Work Center equals -

Order Status equals R -

Viewing 1 - 100 of 4360

Records per page: 100

Production Order	ID	Parent Item	Sequen	Order Status	Component Status	Location Availability	Quantity Open	Release Date	Destination	Production Line	Work Center	Op	Sales/Job	Due Date
8014	090612	cnz-b	R	Shortage	Not Enough Inventory	12.0	9/5/2017	cnz-a	cnzwc001	10	9/5/2017			
8014	090612	cnz-b	R	Shortage	Not Enough Inventory	12.0	9/5/2017	cnz-a	cnzwc002	20	9/5/2017			
8014	090612	cnz-b	R	Shortage	Not Enough Inventory	12.0	9/5/2017	cnz-a	cnzwc003	30	9/5/2017			
8891	090617	cnz-b	R	Shortage	Not Enough Inventory	17.0	9/7/2017	cnz-a	cnzwc001	10	9/7/2017			
8891	090617	cnz-b	R	Shortage	Not Enough Inventory	17.0	9/7/2017	cnz-a	cnzwc002	20	9/7/2017			
8891	090617	cnz-b	R	Shortage	Not Enough Inventory	17.0	9/7/2017	cnz-a	cnzwc003	30	9/7/2017			
090801	090801	cnz-a	R	Shortage	Not Enough Inventory	10.0	9/8/2017	fg001	cnzwc001	10	9/8/2017			
090801	090801	cnz-a	R	Shortage	Not Enough Inventory	9.0	9/8/2017	fg001	cnzwc002	20	9/8/2017			
090801	090801	cnz-a	R	Shortage	Not Enough Inventory	9.0	9/8/2017	fg001	cnzwc003	30	9/8/2017			

Production Order Component List x Package x Issue x Receipt x Transactions by Item Browse x Serial Master Browse x

5 Actions Setup Cancel

Viewing 1 - 3 of 3

Records per page: 100

ID	Component Item	Gross Req	PQOH	Component Status	Location Availability	Item Description	Qty Required	Quantity Picked	Quantity Issued	Allocation Policy	Issue Policy	Pick Policy	Key Item
091402	cnz-a-001	10.0	36.0	Available	Backfish	component item 001	10.0	0.0	0.0	Detail	Detail	Issue	
091402	cnz-a-002	10.0	-166.0	Shortage	Not Enough Inventory	component item 002	10.0	0.0	0.0	Detail	Backfish	Transfer	
091402	cnz-a-003	10.0	-177.0	Shortage	Not Enough Inventory	component item 003	10.0	0.0	0.0	Detail	Backfish	Transfer	

Using the Collection

The Production Shop Floor Collection is designed primarily for shop floor personnel. Typically, IT personnel configure the Production Shop Floor Collection by setting up sites, work centers, orders, and so on in the header portion; then, they save the collection as a favorite in the .NET UI. Shop floor personnel simply run the collection, see the jobs that are dispatched to them (the orders assigned to them), and complete production tasks for the orders, using the supporting browses.

The Production Shop Floor Collection provides some of the functions and the same flow as the Production Order .Net UI Operation Activity Transaction (see page 106). That is, when shop floor users invoke functions through the Production Shop Floor Collection's supporting transaction browses—such as the Receipt and Issue tabs—the system displays screens for the transaction based on the transaction type and setup. For example, when shop floor users select to receive components, the user may be prompted for Serialization data, depending on whether the setup includes Serialization pack codes.

QAD Automation Solution Integration

The collection is integrated with QAD Automation Solutions Data Collection and Label Printing Services products; the transactions, however, are simplified to provide an easy user experience.

Note For information on the transactions, refer to the latest *QAD Automation Solutions: Data Collection Transaction User Guide*.

The following table depicts the correlation between the Production Shop Floor Collection's functions and Data Collection production transactions:

Table 7.2
Production Shop Floor Collection/DC Transaction Correlation

Data Collection Production Transaction	Corresponding Production Shop Floor Function	Reference
Production Material Issue	Issue materials by component and picklist through the Issue tab	See “Issuing Materials” on page 130.
Production Receipts	Receive components onto the shop floor using the Receipt tab.	See “Receiving Materials” on page 131.
Production Packaging	Create serial IDs or print labels for a package in the Packaging tab	For packaging, see “Packaging” on page 128. For printing, see “Printing Labels” on page 129.

Setup

You must install the following products to use the functions in the Production Shop Floor Collection:

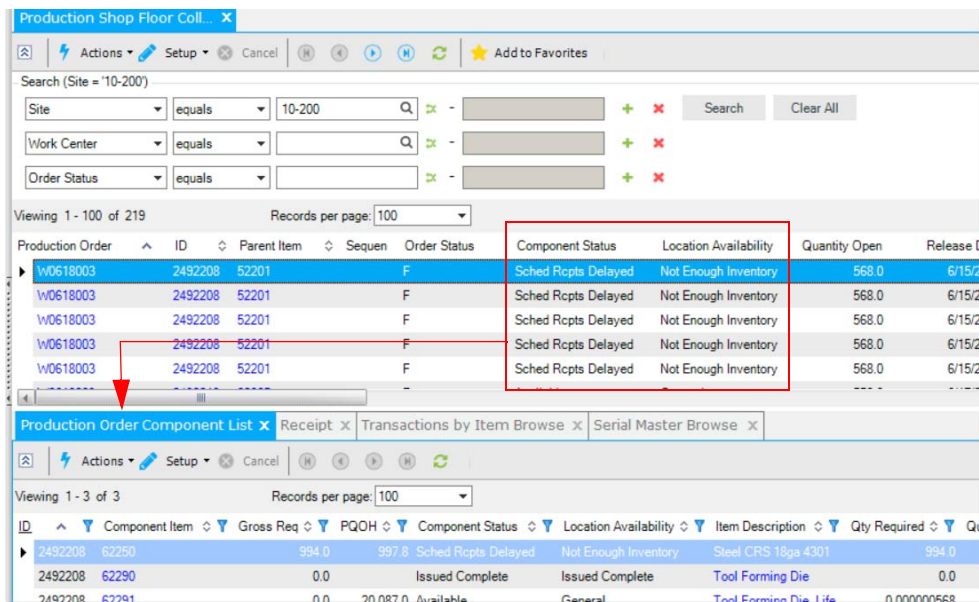
- QAD Automation Solutions: Data Collection
All Production Shop Floor transactions are based on Data Collection transactions.
- QAD Label Printing Services
You must have LPS installed and set up before using Production Shop Floor Collection to print from the collection.

Refer to your installation documentation for these products for installation information.

The following topics discuss the primary functions provided to shop floor users.

Checking Component Status

Use the primary display to check component status; then, use the Production Order Component List tab to drill down to find information about the component.



Packaging

Use the Package tab to create serial IDs or a package for production orders. The transaction includes a production order packaging parent that links to Pack Create by Production Orders, by Production Line, and Pack Build functions. For detailed information on the Data Collections Production Packaging, which runs for the Production Shop Floor Collection's packaging functions, see the latest *QAD Automation Solutions: Data Collection Transaction User Guide*.

To create a serial ID, use the following procedure:

- 1 Select the order for which you want to create serial IDs.
- 2 Click on the Package tab.
- 3 Enter the location for the materials for which you want to create a serial ID.

- 4 When prompted, leave the Master Pack field blank.

- 5 The system prompts to enter the pack code.

When you leave the pack code prompt blank, the system calls the Pack Create by Production Order program (16.5.17) and creates the pack code.

When you enter a valid, existing pack ID, the system calls Pack Build (3.17.3).

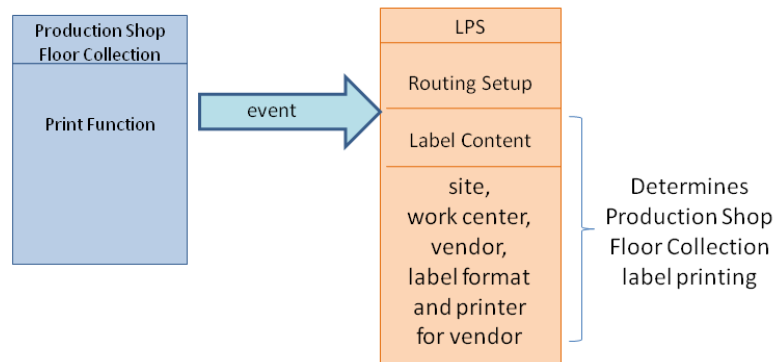
The Data Collection's Production Packaging transaction calls the Serialization programs. The flow is the same as that described for these programs in "Serialization and Production Orders" on page 211.

Printing Labels

To aid shop floor users who are responsible for packaging and labeling boxes, users can print from the Production Shop Floor Collection.

You should have QAD Label Printing Services (LPS) configured before you use the collection's print function. When LPS is set up and printers are configured, the system prompts are limited in the Production Shop Floor Collection print function. Because of this, you are not always prompted for a printer name or location in the collection's print function. The flow depends on how you have LPS configured. The following graphic depicts how LPS setup determines the print flow in the Production Shop Floor Collection:

Fig. 7.19
Production Shop Floor Collection and LPS



To print in the collection, use the following procedure:

- 1 Click on the Packaging tab.
- 2 Enter the production order.

- 3 Depending on system rules, the system can display any combination of prompts or all prompts to enter the lot, item, serial ID, and so on to gather data to print.
- 4 When you have entered all prompted data, click Enter.
The system sends an event to LPS, which processes the event, and prints the labels.
- 5 Use the LPS Label Request History Browse (36.13.16.2.1) to check for label printing success:

Source App Request ID	Copies	Request Date	Status	Request Type	Request ID	Success
0000000000000000000000047	1	10/24/2018 10:16:42 AM	PRINTED	PRINT	48	Yes
0000000000000000000000043	1	10/24/2018 9:39:50 AM	PRINTED	PRINT	45	Yes
0000000000000000000000040	1	10/24/2018 9:39:50 AM	PRINTED	PRINT	44	Yes
0000000000000000000000037	1	10/24/2018 9:39:50 AM	PRINTED	PRINT	41	Yes
0000000000000000000000034	1	10/24/2018 9:39:50 AM	PRINTED	PRINT	38	Yes
		10/23/2018 7:09:05 PM	PRINTED	PRINT	35	Yes
					32	Yes

Issuing Materials

There are several methods to use when issuing through the collection's Issue tab, including issue materials by order, picklist, or transfer. The issue policy should be set to Direct.

Depending on system rules, the system can display any combination of prompts or all prompts to enter data, including entering the lot, item, serial ID, and so on to gather data for the issue. The flow is similar to the issue flow in the Component Issue frame in Operation Activity Transaction; however, the issue is based on the Data Collection Production Material Issue transaction.

Although there are several methods to issue materials, use the following example procedure for basic data entry:

- 1 Select the order for which you want to issue materials.
- 2 Click on the Issue tab.
- 3 Enter the location from which the components are issued.

The work center backflush location is the default.

- 4 When set up for Serialization, enter the master pack.

- 5 Follow the prompts, which vary depending on setup, and enter data for lot, item, and so on.
- 6 Click Enter when you finish entering data.

The system issues components. For information on production order component issue, see "Issuing Components" on page 88.

Receiving Materials

Use the Receipt tab to receive components into stock and receive serial/lot/item into a pack for discrete and scheduled production orders. The receipt flow is similar to the receipt flow in Operation Activity Transaction.

To receive, use the following procedure:

- 1 Select the order in the primary browse for which you want to receive material.
- 2 Click on the Receipt tab.
- 3 Enter your employee ID:



- 4 Enter the quantity to receive:



- 5 Follow the prompts and enter data. Depending on your setup, the system can prompt you to:
 - Enter the scrap quantity and scrap reason code.
 - Enter the reject quantity and reason code.
 - Enter the serial ID when the receipt is the last operation on the routing.
 - Issue components when you have not previously issued components, and the issue policy is set to Direct.
- 6 Click Enter.

The system receives materials. For more information, see “Receiving Quantities from Production” on page 121.



Subcontract Production

This chapter discusses the following topics:

Introduction 134

Introduces subcontract operations within a manufacturing plant.

Subcontract Setup 134

Describes setup tasks you should complete to use production orders with subcontract operations.

Subcontract Materials 140

Discusses the production picking process and subcontract shippers based on the two subcontracting scenarios.

Subcontract Receipts 142

Discusses subcontract receipts and tells you how to use Purchase Order Receipts or PO Shipper Receipt for PO shippers for receipts.

Backflushing Subcontract Materials 144

Tells you how to use Operation Activity Transaction to optionally backflush components up to the subcontractor operation.

Subcontract Activities View 144

Describes programs to use to view subcontract data.

Introduction

Some operations may be performed by an outside supplier or subcontractor rather than by a work center. Such subcontractor operations call for the use of several QAD manufacturing modules, including production orders, purchase orders, production activity transactions, WIP/lot, item attributes, shippers, receipts, and serialization, to name a few.

When a company provides a component as an input raw material or semi-finished good to an external party, the company becomes the purchasing company for the externally produced—or subcontracted—materials. To conduct subcontracting operations for production orders, special setup is required. Moreover, processing and viewing data are slightly different than for production without subcontracting.

Subcontract Scenarios

There are two scenarios for subcontracting in production:

- **Assembly:** Production for the complete assembly of an item is outsourced to a supplier, typically outside of the plant.
- **Processing:** Production for a specialized operation, such as painting, metal plating, or heat treating, is outsourced to a supplier. Processing typically requires specialized equipment.

There are different flows when you ship WIP materials to the subcontract supplier:

- Assembly of an item from inventory materials supplied by the company
Example Company supplies parts for a device that is assembled using automated equipment in a clean room.
- Processing of inventory items supplied by the company
Example Company supplies an aluminum part (or parts) that are anodized by the supplier. The company supplies an unprocessed part as one item number and receives the processed part as a different item number.
- Processing of WIP material quantities supplied by the company
Example Company assembles a bicycle frame and supplies the unfinished frame to the supplier for painting and finishing.
- Processing of WIP material quantities and some additional assembly with component materials supplied by the company
Example Company assembles a bicycle frame and supplies the unfinished frame, a fork, and a headset for painting, finishing, and minor assembly.

Additional materials can be drop-shipped to the subcontract supplier from third-party suppliers.

Subcontract Setup

For subcontract operations, you should perform the following setup tasks:

- Setting Up Allocation, Picking, and Issue Parameters for Items
- Setting Up a Subcontract Work Center
- Defining a Routing Operation with a Subcontract Work Center
- Maintaining a Production Order with Subcontract Processing



- Creating a Purchase Order for a Subcontract Operation
- Setting Up Attributes and Test Specification

Setting Up Allocation, Picking, and Issue Parameters for Items

Use any of the following programs to set up allocation, picking, and issue parameters for items:

- Item Master Maintenance (1.4.1)
- Item Inventory Data Maintenance (1.4.5)
- Item-Site Inventory Data Maintenance (1.4.6)

To set up a production picklist to transfer materials, set the following:

Policy to Set	Setting
Allocation Policy	General or Detail
Pick Policy	Transfer
Transfer Allocation Policy	Keep or Drop
Issue Policy	Backflush

To set up subcontract shippers, set the following:

Policy to Set	Setting
Allocation Policy	General or Detail
Pick Policy	No Pick
Transfer Allocation Policy	Keep or Drop
Issue Policy	Backflush

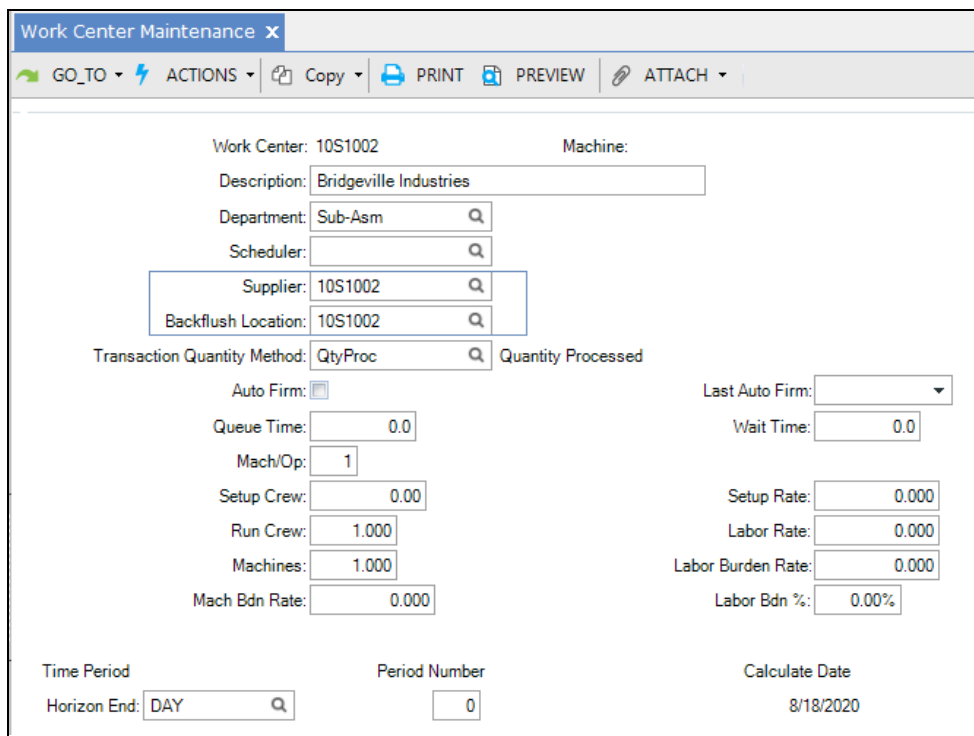
For detailed information on the policies to set, see “Setting Up Essential Item Data” on page 31.

Setting Up a Subcontract Work Center

Use Work Center Maintenance (14.5) to set up a separate work center for the subcontractor. Set the Supplier and Backflush Location fields for the subcontracting supplier.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 8.1
Work Center Maintenance



Work Center: 10S1002 Machine:

Description: Bridgeville Industries

Department: Sub-Asm

Scheduler:

Supplier: 10S1002

Backflush Location: 10S1002

Transaction Quantity Method: QtyProc Quantity Processed

Auto Firm: ☐ Last Auto Firm:

Queue Time: 0.0 Wait Time: 0.0

Mach/Op: 1

Setup Crew: 0.00 Setup Rate: 0.000

Run Crew: 1.000 Labor Rate: 0.000

Machines: 1.000 Labor Burden Rate: 0.000

Mach Bdn Rate: 0.000 Labor Bdn %: 0.00%

Time Period Period Number Calculate Date

Horizon End: DAY 0 8/18/2020

Defining a Routing Operation with a Subcontract Work Center

Use Routing Maintenance (14.13.1) to define a routing operation with a subcontract work center. Specify the subcontractor work center in the Work Center field. Refer to the *QAD Manufacturing User Guide* for setting up subcontract LT and Subcontract cost.

When shipping a WIP item to the subcontract supplier, set up the WIP item in Routing Maintenance, as shown in Figure 8.2.

Fig. 8.2
Routing Maintenance (14.13.1)

The screenshot shows the 'Routing Maintenance' window for Routing Code 52220-S. The 'Standard Operation' section is highlighted, showing 'Work Center' set to 10S1002 and 'Machine' set to Bridgeville Industries. A callout box points to the 'Work Center' field with the text: 'Set the work center for the subcontractor.'

The 'Operation Description' is 'Subcontract Assembly'. The 'Machines per Operation' is 1. The 'Yield Percent' is 100.00%. The 'Milestone Operation' is checked. The 'Subcontract LT' is 1. The 'Setup Crew' is 0.00. The 'Run Crew' is 1.00. The 'Tool Code' is 10S1002. The 'Supplier' is 10S1002. The 'Inventory Value' is 0.00. The 'Subcontract Cost' is 0.765. The 'Comments' field is empty.

Below the main window, a callout box points to the 'WIP Item' field, which is set to 52220-WL. The text says: 'Set the WIP item when shipping WIP to subcontractor.'

The 'WIP Item' section shows 'Move Time' as 0.0, 'Supplier' as 10S1002, 'Inventory Value' as 0.00, 'Subcontract Cost' as 0.765, and 'Comments' as empty. The 'Move Next Operation' and 'Auto Labor Report' checkboxes are checked.

Maintaining a Production Order with Subcontract Processing

You should maintain a production order for subcontract processing. To do this, you use Production Order Maintenance to create a subcontract work order. You specify subcontract work through the production order's routing code, which you set for subcontract operations. You can view the subcontract work order, the routing code, and the subcontract operation in the Production Order supporting browse in Production Order Collection; see Figure 8.3.

For repetitive scheduled production, create a cumulative order with the routing code that contains a subcontract operation. You can view the cumulative order for a repetitive production order with routing code and subcontract operation in Cumulative Order Browse.

Note For a list of Production Order Maintenance fields and their descriptions, see “Alphabetical List of Programs” on page 244.

Fig. 8.3
Production Order Maintenance (16.3.1)

The screenshot displays the 'Production Order Maintenance' window with the following details:

- Production Order: S1-52220
- Item Number: 52220
- Site: 10-200
- Order Type: Assembly
- Production Line: 1000
- Release Date: 7/18/2017
- Due Date: 7/18/2017
- Order Status: R
- Quantity to Complete: 100.0
- Quantity to Start: 100.0
- Estimated Yield Percent: 100.00%
- Estimated Qty To Scrap: 0.0
- Actual Qty Completed: 18.0
- Actual Qty Scrapped: 0.0
- Order Sheet Printed: ☐
- Remarks:
- Comments:
- ID: 2446031
- Motor Mfg Plate Asm
- Automotive Mfg
- Order Date: 7/18/2017
- Need Date: 7/18/2017
- Mfg Type: WVO
- Production Seq: 0.0
- Shift:
- Routing Code: 52220-S
- BOMFormula Code: 52220-S
- Sales/Job:
- Supplier:

The 'Production Order Collection' window is also visible, showing a table of production orders:

Production Order	ID	Site	Line	Item Number	Description	Manufacturing Type	Routing Code	BOMFormula Code	Due Date	Release Date
S1-52220	2446031	10-200	1000	52220	Motor Mfg Plate Asm	Work Order	52220-S	52220-S	7/18/2017	7/18/2017
S2-52220-R	2446354	10-200	1000	52220	Motor Mfg Plate Asm	Repetitive			7/19/2017	7/19/2017

Annotations in the image:

- Set the Routing Code for the subcontract operation.
- View the subcontract work order, routing, and operation.

Creating a Purchase Order for a Subcontract Operation

Use Purchase Order Maintenance (5.7) to create a PO line for a subcontract operation. Specify a S(subcontract) type. You can also use Supplier Scheduled Order Maintenance (5.5.1.13).

Use Purchase Orders By Item Report (5.9.3) to view a subcontract purchase order as a type S purchase order; see Figure 8.4.

Fig. 8.4
Purchase Order Maintenance, Subcontract

Purchase Order Maintenance

Go To Actions Copy Print Preview Attach

Header Lines Trailer

Lines Line Details Tax Info Comments

Header

Purchase Order: S1-52220 Supplier: 10S1002 Ln Format S/M: Single

Lines

Ln	Site	Req	Item Number	Qty Ordered	UM	Unit Cost	Disc Pct
1	10-200		52220	100.0	EA	0.80	0.00

Line Details

Qty Received: 20.0 Due Date: 7/18/2017 CRT Int: 0.00

Qty to Rel: 0.0 Pur Acct: 6610 Mech: ADM

Single Lot: ☒ Performance Date: 7/18/2017 Project: Type: S

Location: 020

Item Revision: 2

Status: ☒ Prod Order: S1-52220

Supplier Item: ID: 2446031

Manufacturer: Lot/Serial: 10

Description: Motor 4-Way

Subcontract Type: 10

UM Conversion: 1.0000

Stock UM Quantity: 100.0 EA

Update Avg/Last Cost: ☒

Extended Net Cost: 80.00

Set the Type for S; then specify the Subcontract Type.

Purchase Orders by Item Report

10USA 07/19/17 13:12:08 Page:1

Supplier Name	Order	Ln	Qty Ordered	Qty Open	UM	Purchase Cost	Extended Cost	Due Date	Performa	Buyer	T
Item: 52220	Motor Mtg Plate Asm 4-Way OEM Cust A										
Revision: 2	Item Rev Date:										
10S1002	Bridgeville Indust S1-52220	1	100.0	88.0	EA	0.80	70.40	07/18/17	07/18/17		S
10S1002	Bridgeville Indust S2-52220	1	100.0	95.0	EA	0.7455	70.82	07/19/17	07/19/17		S

Type S purchase order for subcontract.

Setting Up Attributes and Test Specification

When you use QAD Item Attributes functions, use Maintain Item Profile Collection (.NET UI) to define attributes to be captured and recorded for lots. Set the following:

Set up....	By setting....	Reason
Attribute	Level set to Lot	To define attributes to be captured and recorded for lots
Attribute	Input Method set to User	To capture lot level item attributes during a receipt transaction
Attribute	Input Method set to System	To capture lot level item attributes after a receipt transaction

Use Maintain Test Specification Collection (.NET UI) to create test specifications with attributes. Set up and link test specifications to capture attribute values using test records created for either an item lot or a production operation. You link the test specification to an:

- Item to capture a test record for an item lot
- Item, routing code, and operation to capture a test record for a production operation

Note For more information, refer to the Test Specifications section of the *QAD Item Attributes and Quality Control User Guide*.

Use the Test Specification Item Links supporting browse in the Maintain Item Specifications collection (.NET UI) to link the test specification for a production operation. You link the test specification to the following:

- Item to capture a test record for an item lot

- Item, routing code, and operation to capture a test record for a production operation

Use the same supporting browse and collection to also link the test specification to items for completed production. You link the test specification to the following:

- Item to capture a test record for an item lot
- Item, routing code, and operation to capture a test record for a production operation

Subcontract Materials

This section discusses Production Picking Process and Subcontract Shippers, based on the two subcontract production scenarios—assembly and production.

Production Picking Process

A production picklist supports subcontract assembly when the production is outsourced to a supplier. There are two types of picklists for subcontracting operations:

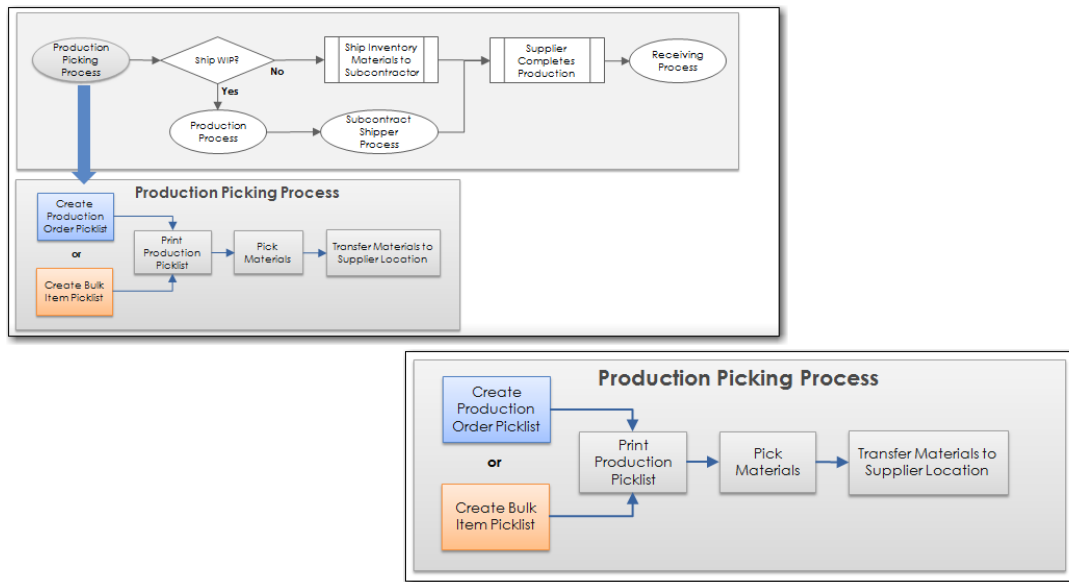
- Production order picklist: Pick and transfer materials for a single production order to a subcontract supplier work center location.
- Bulk item picklist: Pick and transfer materials for one or more production orders to a subcontract supplier work center location.

The production picklist:

- Supports subcontract assembly when the production is outsourced to a supplier.
- Meets the requirements for outside processing of inventory items for a single operation such as plating or heat treating.
- Supports allocating and picking inventory for transport to a supplier.
- Does not support shipping documents.

Figure 8.5 depicts both the picking process and the picklist process for subcontractors.

Fig. 8.5
Subcontract Picking and Picklist Processes



The following table lists picklist-related tasks to complete for subcontract operations:

Table 8.1
Subcontract Picklist Tasks

Task	Picklist Program to Use
Review picklist	Production Picklist Browse (16.5.4)
Modify process for components	Component Picking Data Maint (13.17)
Reset/delete picklist	Production Picklist Undo (16.5.10)
Print picklist	Production Order Picklist Print (16.5.5) Bulk Item Picklist Print (16.5.6)
Pick materials	Production Picklist Pick (16.5.7)
Transfer picked materials	Production Picklist Transfer (16.5.9)
Create a production order picklist for a single order	• Production Order Release/Print (16.4.1) • Production Order Allocate (16.5.1)

Subcontract Shippers

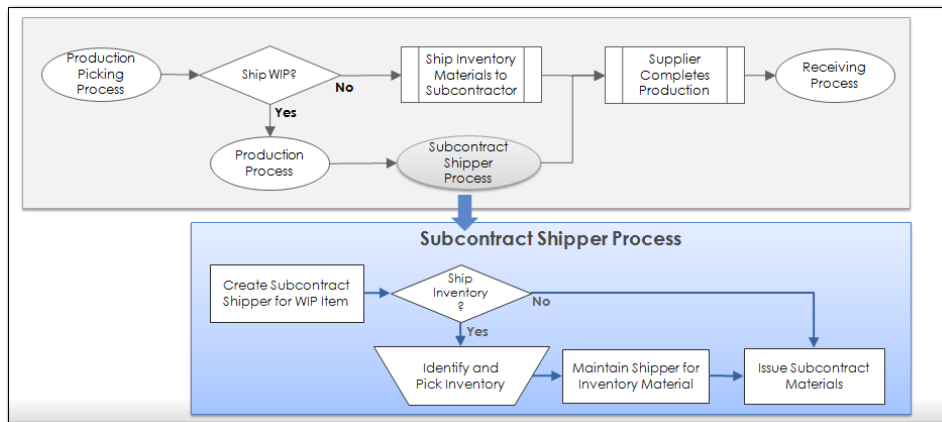
A subcontract shipper is a type of picklist that is sent to the subcontract supplier that lists the WIP items to be shipped for a subcontract operation. It can also list additional component items to be shipped to the subcontract supplier. Subcontract shippers:

- Support the processing and shipment of a WIP item for a subcontract operation
- Require that you manually determine and record the items and inventory quantities to ship for component materials
- Are not scalable when there are many component items and/or lot quantities
- Support shipping documents

Note For more information, refer to the Managing Subcontracting section of the *QAD Manufacturing User Guide*.

The following diagram shows the flow of subcontract shippers.

Fig. 8.6
Subcontract Shipper Flow



Subcontract Receipts

For subcontract receipts, you use Purchase Order Receipts (5.13.1) for purchase order lines or PO Shipper Receipt (5.5.5.11) for PO shippers to:

- Update the quantities processed for the purchase order or supplier schedule line and
- Automatically update the quantities completed for the subcontract operation referenced by the order line
- Receive finished quantities from production into inventory, when the subcontract operation is the last operation

Processing Receipts with Purchase Order Receipts

When you use purchase order receipts, you:

- Enter, review, and confirm receipt data for the completion of the subcontract operation and the purchase order or supplier schedule order line.
- Enter, review, and confirm receipt data for the production order into inventory when the subcontract operation is the last operation and when Regulatory Attributes is active.
- Enter and review values for item lot attributes when the subcontract operation is the last operation.

Purchase Order Receipts posts rate variances and simultaneously updates the database records. The system posts usage variances only when closing the production order.

In Purchase Order Receipts, the system displays the production order ID and operation. Use the following procedure:

- 1 Select the order associated with the subcontract operation; then, complete entry quantities for PO lines.
- 2 Choose one of the following:
 - Record receipt data for production of last operation in the Receipt Data Input frame.

- Record receipt data with lot/serial when the subcontract operation is the last operation. Enter or review lot attribute values, ensuring that the receipt process record lot attribute values when the Input Method is set to User and Level is set to Lot. See Figure 8.7.

3 Review all receipt data in the program; then, confirm the production receipt and attribute data.

Fig. 8.7

Purchase Order Receipts (5.13.1)

The screenshot shows a software window titled "Purchase Order Receipts". It contains the following fields and sections:

- Item Information:**
 - Item Number: 52220
 - Site: 10-200
 - Lot/Serial: CFB
 - Quantity: 8.0
 - UM: EA
 - Item Desc: Motor Mt
 - Location: 020
 - Reference:
- Transaction Attributes:**
 - Attribute ID: 100220
 - Description: Engineering Rev Text 8
 - Label: Engineering Revision
 - Specification: At or higher than specified on order
 - Reference:
 - Sequence: 10
 - Level: Lot
- Value Entry:** A text box labeled "Value:" with the letter "D" entered.
- Remarks:** A text box containing "Revision entered at PO receipt".
- Result:** An empty text box.

An annotation on the left side of the image points to the "Value:" text box with the text: "Optionally enter a value for each lot level attribute when Input Method is set to User".

Processing Receipts with PO Shipper Receipts

Refer to the section entitled, "Receiving Completed Subcontracting Items" in *QAD Manufacturing User Guide* for information on using PO Shipper Maintenance to receive items from subcontractors. The section is followed by information to connect a shipper with received items.

Subcontract Receipts and Transactions

When you process subcontract receipts using PO receipt functions, the system:

- Updates quantity received for the supplier schedule or purchase order line.
- Updates quantity processed for the subcontract operation.
- Completes the backflush for component materials from supplier inventory (in the background when possible).
- Updates or creates production operation test records.

When the subcontract operation is the last operation, the system:

- Receives completed quantities from production into inventory.
- Prompts for the values item lot attributes.
- Creates quality order with test records if there are test specifications.

Use the following .NET UI programs/functions to view subcontract receipts and transactions:

- Subcontract Receipt supporting browse in Operation History Browse (.NET UI).
- View Item Lots (.NET UI) to view item lots and attribute values for item lots.
- Maintain Lot Attribute Order (.NET UI) to view quality orders created when there is an active test record linked to the item.

Backflushing Subcontract Materials

You can use Operation Activity Transaction to optionally backflush components up to the subcontractor operation and create a cumulative work order and its ID to track subcontractor activity.

Also, the system automatically populates the production order ID on subcontract purchase order line; therefore, you do not have to return to purchase order maintenance programs to enter the production order ID and subcontract operation. Refer to “Backflushing Materials for a Production Order” on page 96.

Subcontract Activities View

You can use Operation History (.NET UI) to view history records for subcontract PO receipts. Look for history records for the SUBCNT type.

Fig. 8.8
Operation History, Subcontract Receipts

Production Order	ID	Item Number	Work Center	Op	Operation Description	Tran N	Type	Purchase Order	Quantity	Effective Date	Empl
S1-52220	2446031	52220	1051002	10	Subcontract Assembly	229090	SUBCNT	S1-52220	2.0	7/18/2017	
S1-52220	2446031	52220	1051002	10	Subcontract Assembly	229091	SUBCNT	S1-52220	1.0	7/18/2017	
S1-52220	2446031	52220	1051002	10	Subcontract Assembly	229092	SUBCNT	S1-52220	1.0	7/18/2017	
S1-52220	2446031	52220	1051002	10	Subcontract Assembly	229093	SUBCNT	S1-52220	2.0	7/18/2017	
S1-52220	2446031	52220	1051002	10	Subcontract Assembly	232412	SUBCNT	S1-52220	3.0	7/19/2017	
S1-52220	2446031	52220	1051002	10	Subcontract Assembly	232413	SUBCNT	S1-52220	3.0	7/19/2017	
S1-52220	2446031	52220	1051002	10	Subcontract Assembly	232416	SUBCNT	S1-52220	8.0	7/19/2017	
S1-52220	2446031	52220	1051002	10	Subcontract Assembly	232417	SUBCNT	S1-52220	5.0	7/19/2017	

Tran Nbr	Effective Date	Transaction Type	Date	Order	Item Number	Item Description	Site	Address	Location	Transaction Price
1043630	7/18/2017	2446031	7/18/2017	S1-52220	52220	Motor Mfg Plate Assy 4-Via	10-200	1051002	020	0.80

Drill down to supporting browse
for more information

SUBCNT Type

Note Use Item lot with Lot Attribute Values to view item lots and attribute values from PO receipts, drilling down from item lot to transaction to attribute values. Refer to your Item Attributes user documentation.

Production Accounting

This chapter discusses the following topics:

Introduction to Production Accounting 146

Introduces production accounting, concepts, and the primary audience.

Production Order Accounting Cycle Overview 146

Presents the cycle overview in steps for production accounting.

Production Activity and General Ledger Transactions 147

Introduces GL transactions, tells you how to view transaction data, and discusses the importance of issuing/receiving components, recording scrap, and revaluing WIP for transactions.

WIP Adjust Transaction 153

Discusses WIP Adjust Transaction and how you use it to adjust quantities in the input, output, or reject queues of a manufacturing operation.

Prod Order Accounting Close 154

Tells you how to use Prod Order Accounting Close to clear WIP amounts, calculate and post variances, and close outstanding operations for closed production orders.

Post Variances 156

Discusses the variance types, tells you how to post them, and discusses variance calculations.

Production Order Accounts 159

Discusses the areas included in the Accounting Data frame found in some production order programs.

Account Sources 160

Lists sources for production order accounts.

General Ledger Period End 160

Presents typical period end general ledger activities you conduct for production orders.

Introduction to Production Accounting

Production accounting provides the information necessary to analyze production costs and variances for such factors as material, labor, and burden. Production accounting supports the management and accounting of the cost of producing goods. Production costs include direct costs such as material and labor, as well as indirect costs such as burden and overhead. The production costs are captured together with transactions such as Production Order Component Issue and the Operation Labor Transaction, and also with functions that generate transactions to account for cost variances.

Capturing Production Costs

Production costs are captured differently, depending on how the production of goods is managed and scheduled. Costs are captured either for individual production orders, as is the case when using work orders, or for a period of time using a cumulative (CUM) order, as is the case for repetitive scheduled production:

When production is managed using work orders, production costs are captured for each individual production order. This works when the Order Type is blank and the Manufacturing Type is WO. The exception is when a work order is divided into multiple orders using Production Order Split, which creates scheduled orders with Order Type set to S and Manufacturing Type to WO. Production costs for these split work orders are captured on a single CUM order for those scheduled orders.

When production is scheduled for an item, site, and production line, production orders with an S Order Type and a Rep Manufacturing Type have production costs captured or not captured on the individual scheduled order. CUM orders for the item, site, production line, routing/BOM code, and period of time are bounded by start and end effective dates.

Although the system automatically creates a cumulative order, the best practice is to have a process in which you create CUM orders before each fiscal period for the following period.

Production Order Accounting Cycle Overview

The following depicts the cycle for production accounting:

- 1 Cost accountant or production scheduler creates repetitive CUM orders for the next financial period prior to the end of the current financial period.
- 2 Cost accountant or production scheduler identifies any repetitive CUM orders that the system created automatically during the current financial period, and sets the End Effective date to an appropriate date for the period to be closed.
- 3 Production manager or production controller verifies that production activity transactions have been processed for production orders that are complete.
- 4 Production scheduler or production controller verifies that the Order Status for completed work orders, scheduled orders, and split CUM orders is set to C(losed).
- 5 Cost accountant changes the Order Status to C(losed) for repetitive CUM orders for the financial period that has ended.

- 6 Cost accountant executes WIP Material Cost Revaluation if any of the costs for direct materials have changed, with an effective date that falls within the correct financial period.
- 7 Cost accountant executes Prod Order Accounting Close with an effective date that falls within the correct financial period.
- 8 Cost accountant prints time-sensitive reports such as Prod Order WIP Cost Report (16.20.26).

Production Activity and General Ledger Transactions

The system creates General ledger (GL) transactions for inventory transactions that provide a record for the consumption and production of materials and for operation activity transactions that provide a record of shop floor activity related to production operations.

You can view inventory history transaction records (tr_hist) in Transaction Accounting Report (3.21.40) and view operation history records (op_hist) in Operation Activity Report (16.20.14). Both transaction record types create GL transactions that are identified by a transaction type:

- IC for various inventory control transactions, such as those that issue component inventory and receive completed production. IC transactions are also created for transaction activity for purchasing, sales, and inventory management.
- WO for various production activity transactions for production order operations, such as those for labor and scrap at an operation.

For more information, refer to the General Ledger Transactions chapter and Posting Transactions from Other Modules section of the *QAD Financials User Guide*.

This section covers the process for viewing GL transactions, the accounting data sources for transactions, and transactions created when:

- Issuing component inventory to production
- Receiving quantities from production
- Recording labor for production operations and for non-production activity
- Receiving quantities received from subcontract supplier
- Recording scrap for an operation
- Revaluing work-in-process inventory for material costs

Viewing Transaction Data

Use Transaction PC Cost Browse (30.5.13.18) to view transaction data. Drill down to the Operational GL Transactions supporting browse; then, locate transactions by the Tran Nbr field.

Fig. 9.1
Operational GL Transactions

The screenshot shows the 'Transaction PC Cost' window with a list of transactions. The left sidebar contains a menu with 'Inv Operational GL Transactions' highlighted. A red arrow points from this menu item to a secondary window titled 'Inv Operational GL Transactions' which displays a detailed view of the selected transaction.

Tran Nbr	Effective Date	Transaction Type	Date	Order	Item Number	Item Description	Site	Location	Loc Qty Change	Quantity Change	Transaction Price	Standard Amount	PC
1060538	8/9/2017	RCT-WO	8/2/2017	3476	ygpe3		ygaste1	wc300	12.0	12.0	0.00	0.00	
1060537	8/9/2017	ISS-WO	8/2/2017	3476	ygpe33		ygaste1	wc300	-90.0	-90.0	3.00	-270.00	
1060536	8/9/2017	ISS-WO	8/2/2017	3476	ygpe32		ygaste1	wc200ygs	-60.0	-60.0	2.00	-120.00	
1064335	8/7/2017	CONS-WO	8/7/2017	3578	wgpe001		wgaste1		0.0	1.0	11.00	0.00	
1064327	8/7/2017	ISS-TR	8/7/2017	3578	wgpe001-1		wgaste1	wgmed02	-2.0	-2.0	0.00	0.00	
1064326	8/7/2017	ISS-WO	8/7/2017	3578	wgpe001		wgaste1		-1.0	-1.0	11.00	-11.00	
1064325	8/7/2017	CONS-WO	8/7/2017	3578	wgpe001		wgaste1		0.0	1.0	0.00	0.00	
1064324	8/7/2017	RCT-WO	8/7/2017	3578	wgpe001		wgaste1		0.0	1.0	11.00	11.00	
1064323	8/7/2017	CONS-WO	8/7/2017	3578	wgpe001		wgaste1		0.0	1.0	11.00	0.00	
1064322	8/7/2017	RCT-WO	8/7/2017	3578	wgpe001		wgaste1		1.0	1.0	11.00	11.00	
1064321	8/7/2017	ISS-WO	8/7/2017	3578	wgpe001-1		wgaste1	wgpe000	-2.0	-2.0	0.00	0.00	
1064320	8/7/2017	RCT-TR	8/7/2017	3578	wgpe001-1		wgaste1	wgpe000	2.0	2.0	0.00	0.00	
1064318	8/7/2017	ISS-TR	8/7/2017	3578	wgpe001-1		wgaste1	wgpe000	-2.0	-2.0	0.00	0.00	

Tran Nbr	Effective Date	Transaction Type	Date	Order	Item Number	Item Description	Site	Location	Loc Qty Change	Quantity Change	Transaction Price	Standard Amount	PC
1060538	8/9/2017	RCT-WO	8/2/2017	3476	ygpe3		ygaste1	wc300	12.0	12.0	0.00	0.00	
1060537	8/9/2017	ISS-WO	8/2/2017	3476	ygpe33		ygaste1	wc300	-90.0	-90.0	3.00	-270.00	
1060536	8/9/2017	ISS-WO	8/2/2017	3476	ygpe32		ygaste1	wc200ygs	-60.0	-60.0	2.00	-120.00	

Tran Nbr	GL Reference	Reference ID	GL Transaction Type	Account	Sub-Account	CC	Project	BC Debit
1064334	TMP20170807006102	IC17080700LKKC	RCT-WO	1550	Mech			11.00
1064334	TMP20170807006102	IC17080700LKKC	RCT-WO	1550	Mech			0.00

Issuing Component Inventory to Production

When you issue or backflush components from inventory to production using either Operation Activity Transaction or Production Order Component Issue, the system issues quantities from inventory to a production order.

Note For information on the two issue programs, see “Issuing Components” on page 88.

The system creates transactions when it issues components and costs are tracked through the following accounts:

- Material cost

For quantities issued to production from inventory.

- Material Rate Var

This account is for component quantities issued to a production order, which are determined using the difference between the actual GL transaction cost of the component item and the expected cost for the component item on the production order bill. The system copies the GL cost of each component to the production order bill when the production order is released.

Rate variances occur when:

- Costs change after the production order is released.
- Substitute items are used.
- Items are issued from a different site with a different cost structure.

Table 9.1
Material Rate Variance

Cost	DR	CR	Calculation
Material	WIP	Inventory	Material Cost = Issue Qty * GL Cost Item
Material rate variance	Material Rate Variance	WIP	Issue Qty * (GL Cost Item - Item Cost on Production Order Bill of Material)

Receiving Quantities from Production

When you receive quantities from production into inventory through either Production Order Receipt or the Receipt Data frame in Operation Activity Transaction, the system tracks and records completed quantities received into inventory from production.

- **Material cost**

This account tracks quantities received into inventory from production. When using production orders, the GL cost of each component is copied into the production order bill at the time the production order is released. Should costs subsequently change, this results in material rate variances.

- **Overhead cost**

For quantities received into inventory from production. Overhead costs are tracked through backflushing and receiving functions whenever the standard cost includes overhead. When receipt transactions are made, the system credits this account and debits inventory for the overhead amount.

Table 9.2
Material/Overhead Costs

Cost	DR	CR	Calculation
Material	Inventory	WIP	Material Cost = Receipt Qty * GL Cost Item
Overhead	WIP	Overhead	Overhead = Receipt Qty * GL this level Overhead cost for the item applied

Recording Labor for Production Operations

When you use Production Operation Labor or the report labor function in Production Activity Transaction, the system reports setup/run time hours for a production operation at a work center.

Recording Labor Transaction – Labor Cost

For labor cost for setup and run hours, the system reports for the transaction work center using the labor rates. You can use the Work Ctr frame in Operation Activity Transaction to record the actual run and setup times. The system reports labor based on the quantity processed and the labor hours required per unit. When the operation being reported is a non-milestone operation, the system reports the entered actual run time.

Table 9.3
Labor Cost

Cost	DR	CR	Calculation
Setup labor	WIP	Setup labor	Setup Labor = (Actual Setup Hours * Actual Work Center Setup Rate)
Run labor	WIP	Run labor	Run Labor = (Actual Run Hours * Actual Work Center Run Rate)

Recording Labor Transaction – Labor Rate Variance

The system determines labor rate variance setup and run hours by the difference between the actual pay rate for the employee and the expected work center labor rate for the work center on the production order routing operation.

Table 9.4
Labor Rate Variance

Cost	DR	CR	Calculation
Setup labor rate variance	Setup labor rate variance	WIP	Setup Labor Rate Variance = Actual Setup Hours * (Employee Actual pay Rate or Actual Work Center Setup Labor Rate - Frozen Work Center Setup Labor Rate)
Run labor rate variance	Run labor rate variance	WIP	Run Labor Rate Variance = Actual Run Hours (Employee Actual Pay Rate or Actual Work Center Run Labor Rate - Frozen Work Center Run Labor Rate)

Recording Labor Transaction – Burden Cost

The system calculates burden cost for setup and run hours using the burden rates and percentages for the transaction work center.

Table 9.5
Burden Costs

Cost	DR	CR	Calculation
Setup labor burden	WIP	Setup burden	Setup Burden Cost = Actual Setup Hours * [(Actual Work Center Setup Rate * Actual Work Center Labor Burden%) + Actual Work Center Labor Burden Rate + (Actual Machine Burden Rate * Machines/Op)]
Run labor burden	WIP	Run burden	Run Burden Cost = Actual Run Hours * [(Actual Work Center Run Rate * Actual Work Center Labor Burden%) + Actual Work Center Labor Burden Rate + Actual Machine Burden Rate]

Recording Labor Transaction – Burden Rate Variance

For burden rate variance for setup and run hours, the system calculates from the difference between the actual machine and labor burden cost for the work center, and the expected machine and labor burden cost for the work center on the production order routing operation.

Table 9.6
Burden Rate Variance

Cost	DR	CR	Calculation
Setup labor burden rate variance	Setup burden rate variance	WIP	Setup Burden Rate Variance = Actual Setup Hours * [(Employee Actual pay Rate or Actual Work Center Setup Labor Rate * Actual Work Center Labor Burden %) + Actual Work Center Labor Burden Rate + Actual Machine Burden Rate * Machines/Op] - (Frozen Work Center Setup Rate * Frozen Work Center Labor Burden % + Frozen Work Center Labor Burden Rate + Frozen Machine Burden Rate * Machines/Op)]
Run labor burden rate variance	Runburden rate variance	WIP	Run Burden Rate Variance = Actual Run Hours * ((Employee Actual pay Rate or Actual Work Center Run Labor Rate * Actual Work Center Labor Burden % + Actual Work Center Labor Burden Rate + Machine Burden Rate) - ((Frozen Work Center Run Rate * Frozen Work Center Labor Burden %) + Frozen Work Center Labor Burden Rate + Frozen Machine Burden Rate))

Recording Labor for Non-Production Activity

Non-productive labor activity is labor that is not associated with production, reported either for an employee, for a work center, or for an employee at a work center. You use Non-Productive Labor Feedback (16.13.5) for the recordings. You enter a valid employee ID, work center, and/or machine; then, enter the elapsed or down time.

Fig. 9.2
Non-Production Labor Feedback

The screenshot shows a web-based form titled "Non-productive Labor Feedback". The form contains several input fields and a comment section. The fields are organized as follows:

- Employee:** 10-EMP01 (with a search icon)
- Shift:** (empty)
- Pay Code:** down (with a search icon)
- Project:** (empty)
- Effective Date:** 8/8/2017 (dropdown menu)
- Site:** 10-100 (with a search icon)
- Dept:** (empty)
- Work Center:** (empty)
- Machine:** (empty)
- Reason:** (empty)
- Actual Down Time:** 0.0
- Start Down:** (empty)
- Elapsed or Stop Down:** (empty)
- Comment:** (text area)

At the top of the form, there is a toolbar with buttons for "Go To", "Actions", "Copy", "Print", "Preview", and "Attach".

Non-production labor transaction details include the following:

- Labor cost for hours not expended on production, calculated using the employee labor rate or the work center labor rate.
- Burden cost for hours not expended on production, calculated using the work center rates, its burden rate, and burden percent.

Table 9.7

Non-Productive Labor Feedback

Cost	DR	CR	Calculation
Labor	Cost of production	Labor	Labor Cost = Hours * Employee Labor Rate for Employee (if setup) otherwise the Work Center Labor Rate
Labor burden	Cost of production	Burden	Burden Cost = Hours * [(Work Center Run Rate * Work Center Labor Burden%) + Work Center Labor Burden Rate + Machine Burden Rate]

Receiving Quantities from Subcontract Supplier

The system tracks quantities received for a production order operation from subcontract suppliers through either purchase order receipts or PO shipper confirmations. Receipts include receipt of a quantity for a purchase order line for subcontract processing or assembly of a production order operation.

Subcontract receipt transaction details include:

- Subcontract cost determined by the quantity received and the work center subcontract cost
- Subcontract rate variance determined from the difference between the purchase order line subcontract cost and the work center subcontract cost

Table 9.8

Subcontract Receipt

Cost	DR	CR	Calculation
Subcontract cost	WIP	Cost of production	Subcontract Cost = PO line Cost * Transaction Qty
Subcontract rate variance	Subcontract rate variance	WIP	Subcontract Rate Variance = (PO line Cost - Work Center Subcontract Cost from Production Order Routing Op) * Transaction Qty

Recording Scrap for an Operation

When you use any of the following programs to 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 Order Control (16.3.24):

- Operation Activity Transaction
- Production Order Receipt
- Kanban Fill and Ship Transaction
- Reject/Scrap Transaction
- Subcontract Scrap Maintenance

For scrapped quantities, the system creates consumed transaction history transactions (CONS-WO)—regardless of the operation—for scrapped amounts for discrete, scheduled (repetitive and split), and co-product orders. The system increments the quantity scrapped on these orders regardless of the scrap operation. The system posts scrap to GL based on the setting of the Post Scrap To GL field.

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.

For co/by-products, the scrap amount is the standard cost for the co- or by-product multiplied by the quantity scrapped.

Revaluing WIP Inventory for Material Costs

You use WIP Material Cost Revaluation (16.20.22) to adjust the WIP value of a production order, due to changes to the material costs of component quantities issued to the order.

Fig. 9.3

WIP Material Cost Revaluation

WIP Material Cost Revaluation

Revalue WIP transaction details include the following:

- Material cost: For quantities received into inventory from production
- Overhead cost: For quantities received into inventory from production

Table 9.9

Revalue WIP Inventory

Cost	DR	CR	Calculation
Material cost change	WIP	Cost reval	Material Cost Change = Total Qty Issued * (GL Cost Item - Prod Order BOM Item Cost)

WIP Adjust Transaction

Accounting personnel or production cost accountants can use WIP Adjust Transaction to adjust quantities in the input, output, or reject queues of a manufacturing operation. Labor hours cannot be entered. This transaction does not backflush materials, labor, or burden.

Use this transaction carefully. You should determine the reason for the difference in the queue balance and your physical balance before adjusting WIP. For example, the difference may be due to erroneous data entry in another transaction. In this case, use that transaction to make corrections to the queue balances.

Effects

This transaction creates one or more operation history records to record the adjustment of material at the operation. These register the net adjustment quantities at each of the operation's queues.

Adjusting the output or reject queues reduces their balances. When adjusting the input queue, the net adjustment quantity is first moved and applied to the output queue of the prior operation.

The system does not update the order quantity; however, it does update the quantity complete of the corresponding operation on the order routing.

The system generates a GL transaction, debiting the account number entered and crediting WIP GL account number. The value that the system uses for this transaction is the calculated WIP value at the operation. Adjusting the input queue uses the value of the prior operation.

The following depicts the initial frames for the program; additional frames display as discussed in the frame subsections of "Operation Activity Transaction" on page 106.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 9.4
WIP Adjust Transaction (16.20.19)

Employee: 22-EMP01		Eff Date: 7/28/2017	Shift:
Site: ygsite1		Line: ygsline1	
Work Center:	Machine:	Discrete	
Prod Order: 7026	ID: 22223233	CUM ID: 22223233	
Item Number: ygspl6		UM: EA	
Routing:	BOM Code:		
Operation: 10	Work Center Desc:		
Work Center: ygswc1	Machine:	Department:	
Unit of Measure: EA	Conversion: 1.0000		
In Queue: 0.0	Reason Code:		
Out Queue: 0.0	Reason Code:		
Reject Queue: 0.0	Reason Code:		
Inv Discrep Acct:			

Prod Order Accounting Close

Use Prod Order Accounting Close (16.20.10) to clear work in process (WIP) amounts, calculate and post variances, and close 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.

Select closed production orders to update by range of production order number or ID, item number, site, production line, project, or sales/job number. There is one screen. Effective Date must be in an open GL calendar period.

The system does not close final assembly orders with open sales order lines. Sales order lines are considered open when:

- The quantity shipped is less than the quantity ordered.
- The invoice for the shipped quantity has not been posted.

Processing

Accounting close is the last step in the production order life cycle: production orders created and released, components issued, labor feedback entered, and finished items received. After these steps are complete, the production order status changes to C (Closed). Repetitive cumulative orders (CUM orders) are considered closed after the end date of the CUM order.

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.

Note Execute WIP Material Cost Revaluation before closing orders with Prod Order Accounting Close to prevent unaccounted material rate variances (see step 3, below).

Accounting close makes the following updates to closed orders:

- 1 It marks open production order operations as complete.
- 2 It adjusts the quantity complete at each open operation (or at the following operation) where insufficient quantities were reported to total the sum of completions and rejects at production order receipt. If the total rejects reported on receipt were greater than those reported at the operations, the difference is added to the quantity complete at the final operation.
- 3 It 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.
- 4 Floor stock is added to the WIP value of the production order. This is the cost of any component item set up in Item-Site Planning Maintenance with Issue Policy set to None.
- 5 Any amount remaining in WIP is posted to the Method Variance account. Usually this results from using a different work center for an operation. It may also reflect in-process losses resulting from labor on materials that were rejected.
- 6 Current costs are updated to reflect the actual cost of labor, burden, and subcontracts.

In a multiple-site environment, use the site selection criteria to limit production orders to be updated to a particular site or a range of sites. To ensure that only users authorized for a particular site can update production orders, set up site security.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 9.5
Prod Order Accounting Close (16.20.10)

Post Variances

You can use Post Production Order Usage Variances (16.20.7) to calculate and recognize the following variances:

- Material Usage Variance
- Labor Usage Variance
- Burden Usage Variance
- Subcontract Usage Variance
- Mix Variance
- Method Change Variance

Variance Calculations

When using standard costing, material rate and usage variances are calculated based on the standards in the production order bill.

- **Material Rate Variance.** Calculated when material is issued to the production order, this 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.** Calculated by the Prod 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.

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.

Figure 9.6 shows the Post Repetitive Usage Variance screens. The following topics discuss each variance. For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 9.6

Post Production Order Usage Variances (16.20.7)

Material Usage Variance

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.

Table 9.10

Material Usage Variance

Cost	DR	CR	Calculation
Material usage variance	Material Usage Variance	WIP	Material Usage Variance = (Actual Qty Issued - (Op Qty Processed + Op Qty Scrapped) * WO BOM Qty per) * WO BOM Item Cost

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.

Table 9.11

Labor Usage Variance

Cost	Labor Usage Variance	CR	Calculation
Setup labor usage variance	Material Usage Variance	WIP	Setup Labor Usage Variance = (Actual Setup Hours - Operation Standard Setup Hours) * Frozen Work Center Setup Rate

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.

Table 9.12
Burden Usage Variance

Cost	DR	CR	Calculation
Setup labor burden usage variance	Setup Burden Usage Variance	WIP	Setup 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]
Run labor burden usage variance	Run Burden Usage Variance	WIP	Run Burden Usage Variance = [Actual Run Hours - (Operation Standard Run Hours per Unit * (Op Qty Completed + Op Qty Scrapped))] * [(Frozen Work Center Run Rate * Frozen Work Center Labor Burden %) + Frozen Work Center Labor Burden Rate + Frozen Machines Burden Rate]

Subcontract Usage Variance

The system determines subcontract usage variance by the difference between the total quantity received and the expected operation quantity, and the work center subcontract cost.

Table 9.13
Subcontract Usage Variance

Cost	DR	CR	Calculation
Subcontract usage variance	Subcontract Usage Variance	WIP	Subcontract Usage Variance = (Production Order Receipt Qty - Operation Complete Qty + Operation Scrap Qty) * Operation Standard Subcontract Cost from Production Order Routing Op

Mix Variance

The system determines mix variance for co- and by-product production from the difference between the expected and the actual quantities received for co- and by-product items.

Table 9.14
Mix Variance

Cost	DR	CR	Calculation
Mix variance	Mix Variance	WIP	Mix Variance = Co-/By-Product (Expected Receipt Quantity - Actual Receipt Qty) * GL Cost

Method Change Variance

You post method change variance to clear the remaining WIP cost for the production order when processing Production Order Accounting Close.

Table 9.15
Method Change Variance

Cost	DR	CR	Calculation
Method change variance	Method Variance	WIP	Remaining cost in Work-in-Process for the production order

Production Order Accounts

Production Order Maintenance includes an Accounting Data frame. The values in fields default from the product line in Product Line Maintenance. In particular, the following fields in Product Line Maintenance's Production Order Accounts frame are key to production order operations:

- Overhead Applied

This account applies to Production Order Receipt when the standard cost includes overhead. When receipt transactions are made, the system credits this account and debits inventory for the this-level overhead amount.

- Cost of Production

COP is the material or subcontract cost not associated with a production order and labor not associated with a production order or repetitive schedule. This includes:

- Material and Subcontract Items: The COP account is updated by unplanned issue transactions and purchase order receipts for subcontract items. For subcontract item receipts, when a production order ID is associated with the PO, the initial posting to COP is reversed and the purchase order price is posted to WIP.
- Labor: Labor hours for maintenance, cleanup, meetings, and other labor are charged to COP. The system creates a GL transaction that debits the COP account for the actual hours at the work center labor and burden rate and credits labor and burden absorption accounts.
- Method [Change] Variance: The system calculates method change variance (MCV) as the difference between the final operation cost recorded in the cumulative order and the GL standard cost of the finished material, extended by the quantity being reported. In the backflush and move transactions, MCV can be posted when you move items from the output queue of the last operation to finished material inventory. When MCV is calculated, some shop floor transactions post the MCV.

Note When reporting labor with a rate variance in Operation Labor Transaction (16.13.14), the system reports the costs for the rate variance to the Labor Rate Variance account instead of Method [Change] Variance. The system creates the MCV at production order receipt transactions (RCT-WO) when the standard cost of the item is different from the cost of how it was planned to be produced. The MCV is also used for any variances that cannot be explained as rate or usage variances at time of Production Order Accounting Close.

For more information, refer to the Work Order Accounts section of the Cost Accounts chapter in *QAD Costing User Guide*.

Fig. 9.7
Production Order Maintenance, Accounting Data

Accounting Data			
WIP Account:	1650	Mech	
Mtl Usage Variance Acct:	5040	Mech	
Mtl Rate Variance Acct:	5050	Mech	
Subcontract Usage Variance:	5440	Mech	
Sub Rate Variance Acct:	5450	Mech	
Mix Variance Acct:	6830	Mech	
Floor Stock Account:	1600	Mech	

Account Sources

Production order accounts for the following are maintained for the production order or CUM order. The default values for the accounts are from the product line for the item.

- Work-in-Process (WIP)
- Material usage variance
- Material rate variance
- Subcontract usage variance
- Subcontract rate variance
- Mix variance
- Floor stock

For more information on product line accounts, see *QAD Master Data User Guide*.

The values for the following accounts are determined by the production line for the order.

- Overhead Applied
- Cost of Production
- Method [Change] Variance

General Ledger Period End

It is not necessary to create strict period-end procedures that require that production order transactions be entered by the end of a calendar date and time to correctly account for production activity. This is because shop floor and production transactions permit the entry of a GL effective date that is independent from the actual transaction date.

There are some reports, however, such as Production Order WIP Cost Report (16.20.26), that are sensitive to period-end procedures.

Use the following outline to write a procedure that fits your needs.

- 1 All production order and repetitive transactions should be completed and reviewed before starting the new period, including the following:
 - Production Order Component Issue
 - Production Order Receipt

- Operation Labor Transaction
 - Non-Productive Labor Feedback
- 2 The status of all closed production orders should be changed to Closed.
 - 3 All open cumulative production orders should be changed to Closed.
 - 4 Run WIP Material Cost Revaluation (16.20.22) to update allocated, released, and closed production orders.
 - 5 Run Prod Order Accounting Close.
 - 6 Print Prod Order WIP Cost Report (16.20.26) and any other time-sensitive reports required.
 - 7 After reviewing these reports, proceed with the new period.



Repetitive Production

This chapter discusses the following topics:

Introduction to Repetitive Production 164

Introduces production accounting, concepts, and the primary audience.

Setting Up for Repetitive 164

Tells you how to set up repetitive functions through the Production Order Control Repetitive Data frame.

Creating and Maintaining Repetitive CUM Orders 164

Tells you how to create and maintain repetitive cumulative orders when you invoke repetitive transactions or through the Cumulative Order Create function in a .NET UI collection.

Maintaining Split CUM Orders 168

Describes split cumulative orders and differences in a cumulative order; then tells you how to maintain them using Split CUM Order Maintenance.

Introduction to Repetitive Production

Repetitive functions support high-volume manufacturing where lead times are one day or less, WIP is complete at the end of each day, WIP costs are tracked and batches do not overlap, or WIP costs are insignificant or fairly constant. Repetitive functions are merged into Production Orders.

Setting Up for Repetitive

You set up repetitive data in Production Order Control (16.3.24), using the Repetitive Order Data window.

For a list of fields and their descriptions, see the “Alphabetical List of Programs” on page 244.

Fig. 10.1

Production Order Control (16.3.24), Repetitive Order Data

The screenshot shows the 'Repetitive Order Data' window within the 'Production Order Control' application. The window has a title bar with 'Production Order Control' and a close button. Below the title bar is a menu bar with 'Go To', 'Actions', 'Copy', 'Print', and 'Preview'. The main content area is divided into two sections: 'Production Order Data' and 'Repetitive Order Data'. The 'Production Order Data' section contains 'Production Activity Threshold: F' and 'Firm Planned'. The 'Repetitive Order Data' section contains several fields: 'Transfer Work in Process' (checked), 'WIP Transfer Acct' (1301), 'End Eff Default Method' (1), 'End Effective Days' (20), 'Completion Consumption Method' (Window), 'Consume Forward' (30), 'Consume Back' (30), 'Start of Week' (Mon), 'Begin Consumption' (Earliest), and 'Production Activity Threshold' (F Firm Planned). Each field has a search icon to its right.

Creating and Maintaining Repetitive CUM Orders

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 the following ways:

- Automatically by the system when you invoke any of the repetitive transactions
- Through the Cumulative Order Create function in the CUM Order Operations browse collection

Differences in Repetitive and Split CUM Orders

Cumulative orders are automatically created by the system for repetitive production and for split orders; you cannot create a split CUM order manually. You use Split CUM Order Maintenance (16.3.12) to split a CUM order; for more information on the Split CUM Order program, see “” on page 74.

A split CUM order is different from a repetitive CUM order in the following ways:

- Split orders are linked with a split CUM order, while repetitive schedules are not linked with a repetitive CUM order.
- You can modify the routing/BOM on CUM orders as long as no issues or production activity were done and scheduled orders do not have a status of E,A,R,C. The system replicates the BOM/routing to all open scheduled orders.
- You can specify GL accounts for the order.
- You can modify cumulative order account data on a split CUM order.
- For a split CUM order, the system only supports the R(eleased) and C(losed) order status.
- You can change the order status of a split CUM order to C(losed) manually. When you do, the system automatically closes all split orders linked to the split CUM order.

Differences in CUM Orders and Repetitive Scheduled Orders

Repetitive scheduled orders are created by the system or by you using production order creation functions in Production Order Maintenance, Production Order Collection, or the Planning and Scheduling Workbenches. Repetitive scheduled orders are created when the manufacturing type is set to S (Repetitive, Schedule). The default value is S when the Pur/Mfg code for the item or item-site is L. The system also generates production orders of type S when a production order is split.

Cumulative orders account for the production costs of both repetitive scheduled orders and split production orders. Cumulative orders cannot be maintained using production order create functions. Cumulative orders can be generated by the system or by you using creation functions unique to cumulative orders.

Scheduled orders have their own bills of material. For scheduled orders, the system first checks the effective dates for the scheduled order line. When the effective dates indicate that the scheduled order line expired, the system does not update the line with the new open cumulative order ID.

Creating Repetitive CUM Orders

You can create repetitive CUM orders manually using any of the following programs:

- CUM Order Operations (.NET UI only)
- Repetitive CUM Order Create (16.3.8)

CUM Order Operations

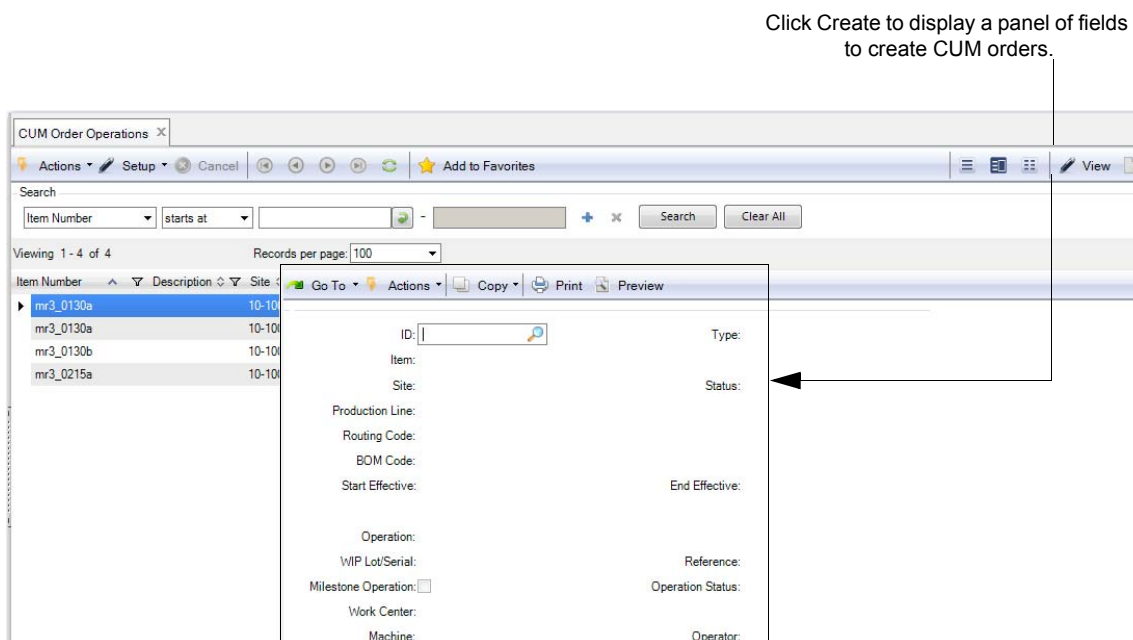
Create CUM orders in the CUM Order Operations collection by clicking the Create button. When you do, the same fields display as when you use CUM Order Create maintenance. When you create within a collection, though, you have the advantage of viewing related data and drilling into it without leaving the collection.

When adding or creating a new repetitive cumulative order, the new ID number is displayed after you confirm that the site, item, production line, routing, BOM/formula code, and start effective date are correct, and the new order is created.

When you run a repetitive transaction, the system:

- Searches for discrete or scheduled subcontract purchase orders associated with subcontract routing operations.
- Automatically updates blank ID fields on subcontract purchase order lines with the newly created cumulative order ID.
- Automatically updates blank subcontract operation fields with the subcontract operation for the item on the purchase order.
- Replaces any existing, expired cumulative order IDs with an open cumulative order ID on subcontract purchase orders.

Fig. 10.2
CUM Order Operations



Repetitive CUM Order Create

Use Repetitive Cum Order Create to create new cumulative production orders in advance in a batch-oriented setting. This prevents the system from creating them during repetitive transactions, and ensures a better response time for items with many components.

To use this function, orders must already exist in the system. The new order is based on the old, with a different effective date.

This function selects cumulative production orders based on the selection criteria entered. For a cumulative production order to be selected, its end effective date must match the end effective date entered in the selection criteria. Also, the cumulative production order must have a WIP balance.

For each cumulative production order selected, the system looks for an existing cumulative production order with an effective date range that includes the day after the entered end effective date. If none exists, a new cumulative production order is created. The start and end effective dates of the new cumulative production order are set based on the value of the End Eff Default Method field in Advanced Repetitive Acct Control.

When a cumulative production order is created:

- The production order ID is automatically assigned.
- The production order number is blank.
- The production order type is C (cumulative).
- The production order status is R (released).

When the system generates the cumulative order ID, it searches for subcontract orders associated with the cumulative order and automatically updates the production order ID and operation on the order. The system also replaces expired cumulative order IDs with the new cumulative order ID on the appropriate purchase orders.

For this automatic update to occur, you must specify a subcontract routing and operation for the subcontract order in Subcontract Routing/Op PO Maintenance if you use discrete purchase orders for your subcontract orders or in Subcontract Order Material Planning % Maintenance if you use scheduled orders for your subcontract orders.

If you need to delete any cumulative order created by this function, you must first close it and then delete it using Cumulative Order Maintenance.

For field descriptions, find the program in “Alphabetical List of Programs” on page 244 to link to a list of fields for the program.

Fig. 10.3
Repetitive CUM Order Create

Maintaining Repetitive CUM Orders

You maintain repetitive CUM orders using the following programs:

- CUM Order Operations (.NET UI only)
- Repetitive CUM Order Maintenance (16.3.9)

Maintaining Split CUM Orders

Use Split CUM Order Maintenance (16.3.12) to maintain a split cumulative order that the Production Order Split program creates. You cannot create a split CUM order manually.

A split CUM order accumulates costs and quantities for tracking WIP for split production orders. A split CUM order is linked with two or more split orders.

When you process a split order transaction, the system looks for the split CUM order to track WIP and financial data.

A split CUM order is different from a repetitive CUM order:

- Split orders are linked with a split CUM order, while repetitive schedules are not linked with a repetitive CUM order.
- You can modify the routing/BOM on CUM orders so long as no issues or production activity were done and scheduled orders do not have a status of E,A,R,C. The system replicates the BOM/routing to all open scheduled orders.
- You can specify GL accounts for the order.
- You can modify cumulative order account data on a split CUM order.
- For a split CUM order, the system only supports the R(eleased) and C(losed) order status.
- You can change the order status of a split CUM order to C(losed) manually. When you do, the system automatically closes all split orders linked to the split CUM order.

For field descriptions, find the program in “Alphabetical List of Programs” on page 244 to link to a list of fields for the program.

Fig. 10.4.
Split CUM Order Maintenance (16.3.12)

Account	Description	Search
1550	Mech	
Material Usage Var: 5040	Mech	
Material Rate Var: 5050	Mech	
Subcontract Usage Variance: 5440	Mech	
Subcontract Rate Var: 5450	Mech	
Mix Variance Acct: 6830	Mech	
Floor Stock Account: 1600	Mech	

Closing and Deleting/Archiving Production Orders

This chapter discusses the following topics:

***Introduction* 170**

Describes methods to receive production orders into inventory as well as receive items when completed and not previously issued.

***Closing Production Orders* 170**

Provides steps to close a production order and describes the program used to close it.

***Deleting/Archiving Production Orders* 170**

Describes the program used to delete or archive production orders.

Introduction

This chapter describes methods to receive production orders into inventory as well as receive item when completed and not previously issued. It also covers closing production orders, including any final accounting close activities; then deleting and archiving orders.

Closing Production Orders

To close a production order, complete the following steps:

- 1 Change the order's status to Closed. You can do this by setting Close to Yes when completed units are received, or by using:
 - Production Order Maintenance
 - Production Order Collection
 - Operation Activity Transaction or Production Order Receipt
- 2 Run "WIP Adjust Transaction" on page 153 to post variances, clear WIP, and close outstanding operations. Execute this program regularly, at least at the end of each fiscal month, for completed orders.

The system prevents component issues and Production Order Receipt for a closed production order. If you want to process inventory for a closed production order, you must change its status back to Released.

The system records the production order close date (the system date). The system also records the user ID of the person who closed the production order.

The production order close date and user ID are captured when the production order is closed through the following:

- Production Order Maintenance
- Multiple Order Status Change (16.4.25)
- Production Order Receipt

Although you are not prompted to enter the production order close date or your user ID, these items are captured by the system and appear automatically on these production order reports.

Deleting/Archiving Production Orders

You can delete production orders using Production Order Collection, Production Order Maintenance, or the embedded Production Order Maintenance in the QAD Planning and Scheduling Workbenches.

You can delete production orders under two conditions:

- They have a status of P (Planned) or F (Firm Planned) with a WIP total of zero.
- They have a status of C (Closed), a WIP total of zero, and a valid accounting close record.

Obsolete production orders can also be deleted and/or archived with Production Order Delete/Archive (16.3.50). Only orders closed with Prod Order Accounting Close can be deleted.



You can also add or delete co-product/by-product orders from a joint production order set; however, the following restrictions apply to deletion of production orders in a joint production order set:

- You cannot delete a production order from a joint production order set if the base process production order has recorded costs, or if quantity has been received on any co-product production order.
- The base process production order cannot be deleted separately from the joint production order set when, after such a deletion, the only production order remaining in the production order set would be the base process production order. This also applies to a production order for a co-product or by-product.

Production Order Delete/Archive

Use the .NET UI Prod Order Delete/Archive program to delete production orders or archive them. You set criteria for both operations. When you set criteria to archive production orders, the Archive File criteria is active and you can choose the system defaulted name or specify your own archive file name. After you set criteria, click the Run option; the system displays a report. You can also choose to view the orders that the system will delete/archive by selecting the viewer.

Fig. 11.1
Prod Order Delete/Archive (.NET UI)

Criteria	Operator	Value	+	x
Production Order	equals			
ID	equals			
Item Number	equals			
Site	equals			
Release Date	equals			
Due Date	equals			
Sales/Job	equals			
Project	equals			
Supplier	equals			
Work Order	equals	Yes		
Repetitive Order	equals	Yes		
Cumulative Ord	equals	Yes		
Delete	equals	No		
Archive	equals	Yes		
Archive File	equals	wo170809.hst		



Material Planning

Material Planning is a process that uses the master schedule, together with sources of demand and supply, to create material plans for items, by calculating the gross requirements and projected on-hand inventory, scheduling and planning orders, and creating action messages to facilitate the management of supply of materials. This chapter includes the following topics to set up and prepare, process, and manage activities for material planning:

Introduction 174

Introduces Material Planning, which includes Material Requirements Planning (MRP) and/or Lean Material Planning (LMP).

Material Planning Processes 174

Discusses the various processes involved with MRP and LMP, including calculating the material plan; Material Planning modes; sources of demand/supply; and reviewing Material Planning data.

Material Planning for Push and Pull 187

Discusses push material requirements and pull LMP requirements, compares MRP and LMP, discusses why you plan differently for pull production and replenishment, and more.

Setting Up Material Planning 192

Tells you how to set up data for Material Planning operations.

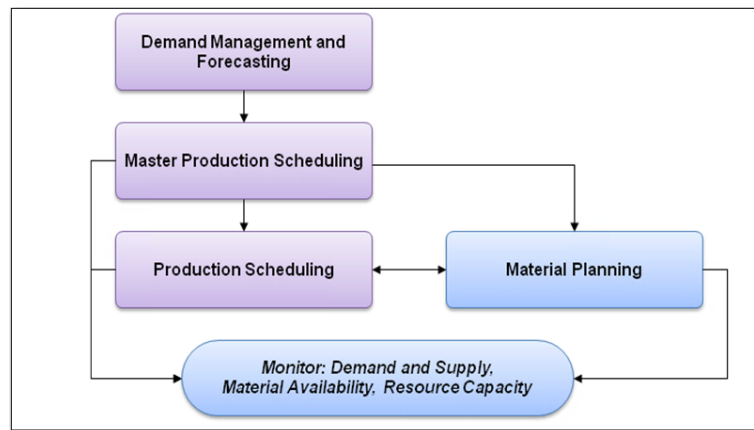
Note The QAD Document Library (documentlibrary.qad.com) includes related training material. See *QAD MRP CRP Training Guide*.

Introduction

Material Planning is the process of planning the supply of materials to satisfy demand for finished goods and items at all levels—from end items, to intermediate products and subassemblies, to raw materials and components. Its primary objective is to determine the timing and quantities to be supplied by production and purchase orders, scheduled to assure the availability of inventory over time, while minimizing inventory on-hand.

Material Planning, together with demand management, forecasting, master production scheduling, production scheduling, and capacity planning, is essential to manufacturing resource planning.

Fig. 12.1
Material Planning Overview



To evaluate the demand and supply of items, to determine material requirements, and to calculate a material plan, Material Planning:

- 1 Uses the master schedule and product structure information to calculate demand for component items.
- 2 Determines the demand, supply, and projected inventory quantity for items.
- 3 Reschedules existing supply orders.
- 4 Creates new planned supply orders to either satisfy demand or to replenish inventory. These planned orders become the master schedule for lower level components, and the process repeats from (1) above.

Material Planning Processes

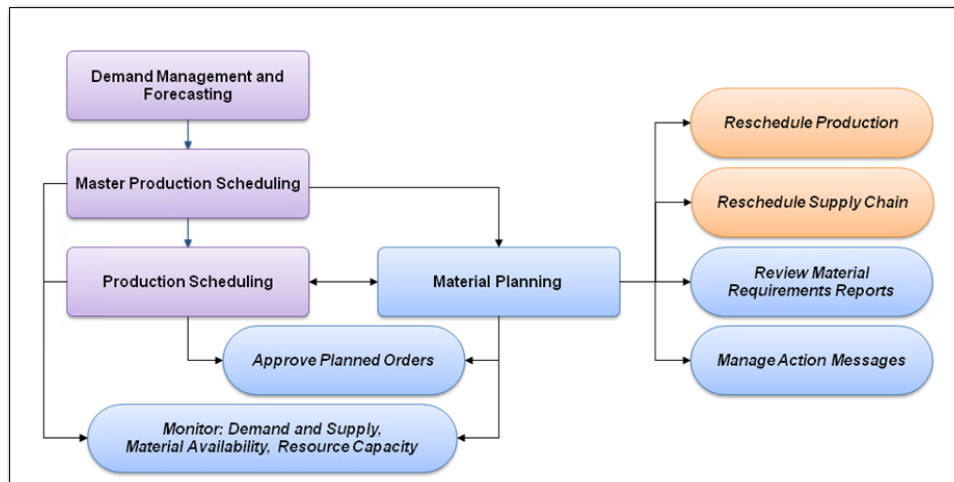
QAD Material Planning supports two methods for material planning: Material Requirements Planning (MRP) and Lean Material Planning (LMP).

- MRP applies the logic of a shortage list—matching the on-hand balance and existing orders to the requirements to anticipate shortages and then cover them with time-phased replenishment plans.
- Lean Material Planning ignores the on-hand balance and simulates the behavior of an order point system—creating a time-phased plan directly from the gross requirements.

MRP and Lean Material planning both support operational objectives to:

- Direct the scheduling of production, purchase orders, and supplier schedules.
- Direct the approval/authorization of planned orders, for either production or for purchasing.

Fig. 12.2
Material Planning Processes



Calculating the Material Plan

Material Planning, the process for calculating the material requirements and generating material plans, is typically initiated after finalizing the master production schedule. Material Planning can be initiated from any one of three functions, all of which apply shared planning logic and processing:

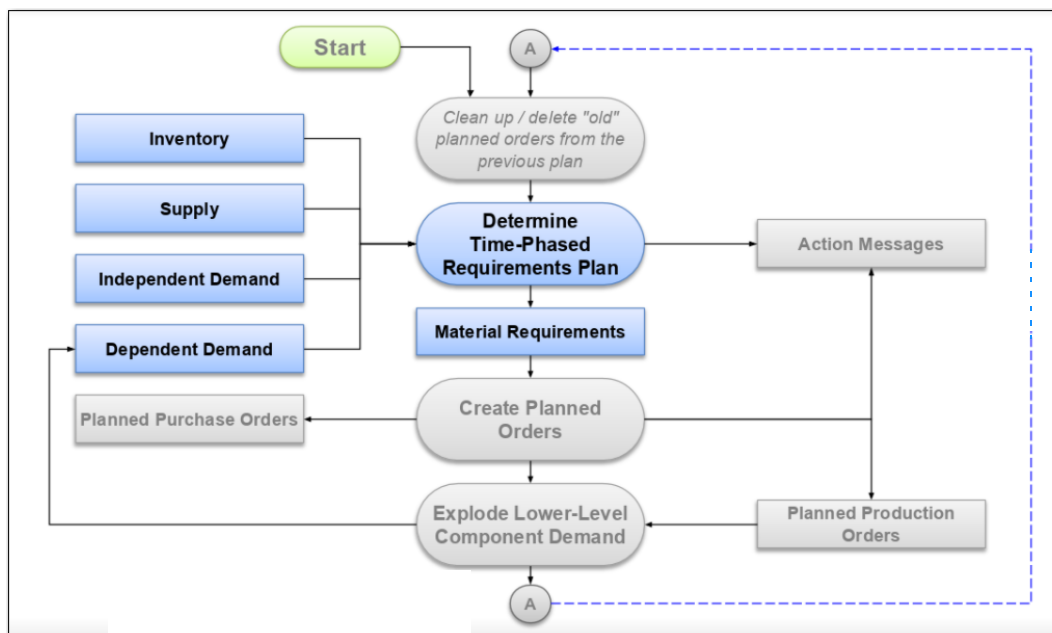
- Net change material plan
- Regenerative material plan
- Selective material plan

Material Planning processes items, level-by-level, beginning at the top level with finished goods first, creating time-phased materials plans, determining the gross requirements and projected quantity on hand for each item, before proceeding to process additional items.

It creates planned orders to satisfy demand or replenish inventory, displays action messages for scheduling orders, and explodes demand for lower-level component items, then it proceeds by planning the remaining items. It generates planned production orders for manufactured items and planned purchase orders for purchased items.

Material Planning generates planned orders for an item when the item-site or item planning data parameter for Order Policy is set to a non-blank value and the parameter for Plan Orders set to Yes. Material Planning generates planned production orders for manufactured items, for items manufactured on production lines, planned purchase orders for purchased items, and planned inter-site requests, depending on the Pur/Mfg code defined for the item.

Fig. 12.3
Material Planning Flow



Lean Material Planning optionally creates supply analysis data—data that pegs the supply of planned orders to the demand that drove the planning of the order.

For organizations with operations at multiple sites, Material Planning can be used in conjunction with Distribution Requirements Planning (DRP), which balances supply and demand among sites.

See *QAD Supply Chain Management User Guide*.

Material Planning Modes

This section discusses the following topics:

- Net Change Materials Plan
- Regenerative Materials Plan
- Selective Materials Plan
- Sites and Material Planning

Net Change Materials Plan

Net (Change) Materials Plan (23.1) creates plans for items that require planning because some key data has changed since material plan was last calculated. An item that requires planning can be identified with its item planning data parameter when you set MRP Required to Yes in item planning data. The system flags an item as requiring planning, also setting MRP Required to Yes, when any one of the following has changed for the item and site:

- Item or item-site planning data
- Product structures

- Production line for the item and site
- Sales or purchase orders
- Production orders
- Inventory
- Forecasts
- Master production schedule
- Intersite demand

In addition to planning items that have changed, Net (Change) Materials Plan also plans the lower-level, dependent demand components items whose parent items have been processed in this planning run.

Regenerative Materials Plan

Regenerate Materials Plan (23.2) recalculates the material requirements and materials for all items within a site, including items that do not require planning. This is in contrast to Net (Change) Materials Plan (23.3), which only processes items that do require planning.

Selective Materials Plan

Selective Materials Plan (23.3) creates plans that are restricted to items you selected via the program's filter criteria. You can run the program in net change mode by setting the Required Items Only parameter to Yes, or in regenerative mode by setting Required Items Only to No.

You can use Selective Materials Plan to plan master schedule items separately from other items, or to plan small groups of items by using buyer/planner, product line, group, type, supplier, or any combination of these as selection criteria.

Set MRP Items to Yes to generate planned orders for items at the specified sites and gross requirements for DRP items. Set DRP items to Yes to generate intersite requests for DRP items.

Special Considerations

When using Selective Materials Plan for a restricted set of items, the resulting plans may differ significantly from plans without those restrictions. This is because Selective Materials Plan determines the demand and plans supply for only the selected items, passing down gross requirements to the next level, without processing other parent items that may be in need of planning, but are excluded from the selection.

Similarly, when planning an item that is a component for higher-level items that are excluded from the selection, the material plans for the selected item will not be calculated from the current demand data from those excluded items—the system does not implode the product structures where the item is a component and replan the excluded higher-level items, before planning the selected item.

Sites and Material Planning

Material Planning evaluates the inventory, demand, and supply for items at a site to calculate material plans. The material plans—together with the inventory, demand, and supply for a site—are independent from material plans at other sites. When you execute Material Planning for multiple sites, it creates material plans for each site. It does not create a single, consolidated plan for the selected sites.

Material Planning, Demand, and Supply

Material Planning acts on two types of demand: independent demand and dependent demand.

Dependent demand is directly derived from the demand for higher-level items.

Independent demand is demand that cannot be calculated from replenishment plans for other items. It is represented through forecasts and sales orders and includes demand for items such as end products, spare parts, service items, and replacement items. These include master scheduled items such as end products, as well as non-master scheduled items such as spare parts and service items. In QAD Material Planning, most independent demand will be seen in material plans, once the master production schedule has been created.

Dependent demand includes demand for components items, raw materials, and subassemblies. Material Planning uses the master production schedule (MPS) and product structures to calculate dependent demand for component items.

Refer to the Forecasting/Master Schedule Planning chapter of *QAD Manufacturing User Guide* for more information.

Sources of Demand for Material Planning

Material Planning considers the following as sources of demand:

- Forecasts
- Sales orders
- Customer scheduled orders from a required ship schedule
- Intersite orders, generated by DRP
- Component requirements from manufacturing
- Production forecasts
- Safety stock requirements (MRP)

Material Planning does not consider demand for quantities on unconfirmed sales orders. Demand for those quantities is recognized once the sales order is confirmed.

Sources of Supply for Material Planning

Material Planning considers the following as sources of supply:

- Nettable quantity on hand (QOH)
- Purchase orders
- Intersite requests, generated by DRP



- Production orders
- Supplier scheduled orders

Material Planning considers purchase order quantities created by releases from blanket purchase orders as supply, but it does not consider quantities on blanket purchase orders themselves. This is because a blanket purchase order is really just the record of an agreement to purchase a volume of an item over time.

Component Requirements and Yield

When planning a parent item, material planning uses product structures to explode the demand for component. Material Planning uses the product structure BOM code and routing code defined for the default item and production line, the item-site, or the item.

The yield for the parent item, together with the yield for routing operations, and the operation for which a component is required, are all considered when calculating a component requirement. The yield for routing operations is used for the calculation of component requirements when both of the following are true:

- Enable Op Based Yield is Yes in MRP Control (23.24).
- Op Based Yield is Yes for the parent item in Item Master Maintenance (1.4.1) or Item-Site Planning Maintenance.

The yield for the parent item is used for the calculation of component requirements when operation-based yield is not applied.

Reviewing and Rescheduling Supply

Material Planning creates plans where all existing (firm) orders have priority over planned orders. Projected quantity on-hand and material plans are first created using firm orders. It creates plans with the assumption is that firm orders will be rescheduled to satisfy demand, regardless of the due dates for those firm orders.

One of the most significant business processes that should be performed after material planning is the process of reviewing the projected demand, supply, and inventory for items, followed by the process of rescheduling the supply of firm orders.

For manufactured items, the review process can include the evaluation of:

- Production line and/or work center load and capacity
- Material availability and shortages of component materials

For purchased items, the review process can include the evaluation of:

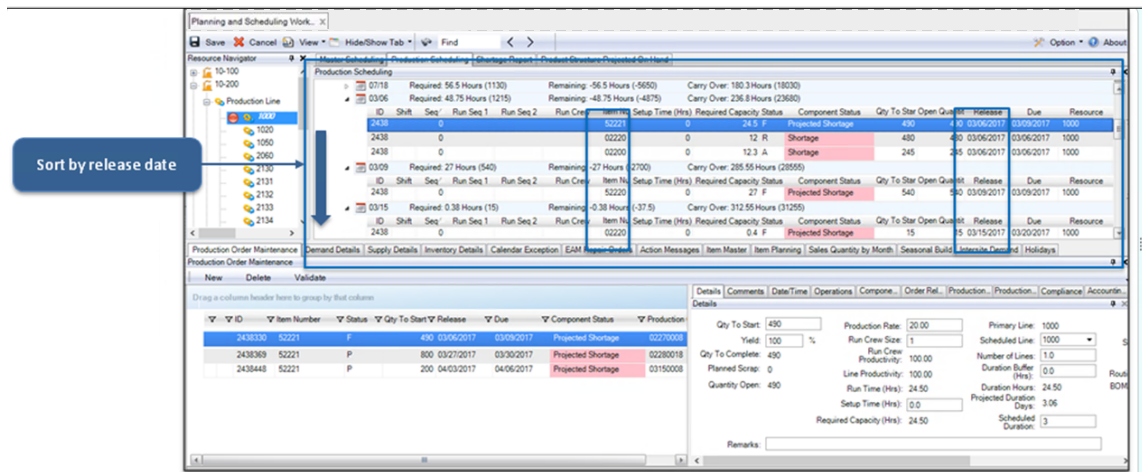
- Supplier capacity
- Goods in-transit
- Lead time and cost

The QAD Scheduling Workbenches are an essential tool for the process of reviewing and updating schedules. They provides both the capacity to reschedule production and visibility of:

- Demand and supply
- Projected on-hand inventory

- Production line and work center load and capacity
- Material status, availability, and shortages of component materials

Fig. 12.4
Workbenches Data



Reviewing, Approving, and Scheduling Planned Orders

Material Planning creates and schedules planned orders to supply future demand that cannot be supplied by firm orders alone.

It first reschedules firm orders to fill demand, before creating planned orders to supply demand that cannot be filled by the firm orders. It does not create planned orders to supply projected negative on-hand inventory balances, when demand can be filled by firm orders that are due in later periods. As a result, the projected negative on-hand inventory balances can appear as gaps in supply.

Excess supply should be managed by rescheduling and/or canceling existing, firm orders.

The process of reviewing, approving, and scheduling planned order typically follows the process of reviewing and rescheduling of firm orders.

Planned orders can be made firm using the following functions:

- Auto Firm Planned Orders (22.20.2)
- Planned Prod Ord Approval (23.10)
- Planned Purchase Order Approval (23.11)

Fig. 12.5
Auto Firm Planned Orders

Production Order	ID	Item Number	Site	Qty To Start	Order Date	Rel Date	Due Date	Line	Work Ctr	Machine
02270005	2438327	52220	10-200	540.0	03/09/17	03/09/17	03/09/17	1000		
02270008	2438330	52221	10-200	490.0	03/09/17	03/06/17	03/09/17	1000		
02280007	2438358	52220	10-200	200.0	03/09/17	03/23/17	03/23/17	1000		
02280008	2438359	52220	10-200	600.0	03/09/17	03/30/17	03/30/17	1000		
02280016	2438367	52221	10-200	200.0	03/09/17	03/20/17	03/23/17	1000		
02280017	2438368	52221	10-200	600.0	03/09/17	03/27/17	03/30/17	1000		
03090004	2438429	02220	10-200	200.0	03/09/17	03/23/17	03/27/17	1000		

End of Report

The QAD Scheduling Workbenches provide the visibility to review, firm, and reschedule planned production orders within the context of demand and supply. They also provide visibility of supply from planned and scheduled purchase orders.

Auto-Firming Planned Orders

Use Auto Firm Planned Orders (22.20.2) to have the system automatically change the status of planned orders to F (Firm) that are scheduled for a site's production lines or work centers. To do this, select the Auto Firm parameter for a production line or work center.

Auto Firm Planned Orders processes planned orders within a horizon defined by parameters for each production line or work center. Because it limits the processing of orders within horizons defined for each production line or work center, you can use it to quickly approve a large number of orders.

Approving Planned Purchase Orders

Planned Purchase Order Approval (23.11) creates a purchase requisition, which can be filled by a purchase order, and deletes the planned order.

Fig. 12.6
Planned Purchase Order Approval

Ln	Req	Item Number	Qty Ordered	Rel Date	Due Date	Appr
1	05140071	60010	10,000.0	5/25/2018	5/28/2018	☐
2	06090005	60010	1,000.0	3/18/2015	3/19/2015	☐
3	06090006	60012	1,000.0	3/3/2015	3/5/2015	☐
4	06090007	60051	25.0	2/27/2015	3/5/2015	☐
5	05140072	60051H	25.0	5/9/2018	5/14/2018	☐
6	05140073	60051M	25.0	5/9/2018	5/14/2018	☐
7	05140074	60052C	25.0	5/9/2018	5/14/2018	☐
8	01160002	60092	25.0	5/9/2018	5/14/2018	☐

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Approving Planned Production Orders

Planned Production Ord Approval (23.10) changes the status of a production order with status P (Planned) to status F (Firm Planned).

When you run Planned Production Ord Approval in Production Orders, the system automatically deletes the planned orders for phantom items, and removes the excess supply of the phantom items accordingly. Therefore, you do not need to delete such orders manually or run MRP again to delete them.

Fig. 12.7
Planned Production Order Approval

Item Number	ID	Production Order	Qty Ordered	Rel Date	Approve
02010	2438328	02270006	50.0	4/6/2017	☐
02220	2438425	03090003	120.0	3/7/2017	☐
02220	2438429	03090004	200.0	3/23/2017	☐
02220	2438430	03090005	600.0	3/30/2017	☐
02220	2438436	03090009	200.0	4/6/2017	☐
52201	2438414	03060005	2,488.0	3/6/2017	☐
52220	2438327	02270005	540.0	3/9/2017	☐
52220	2438358	02280007	200.0	3/23/2017	☐
52220	2438359	02280008	600.0	3/30/2017	☐
52220	2438360	02280009	200.0	4/6/2017	☐
52221	2438330	02270008	490.0	3/6/2017	☐

Item Number	ID	Production Order	Qty Ordered	Rel Date	Approve
52201	2438414	03060005	2,488.0	3/6/2017	☒

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Reviewing Action Messages

Material Planning creates action messages to facilitate the rescheduling, expediting, de-expediting, canceling of existing firm orders, and the releasing of planned orders.

Material Planning action messages can be viewed and processed using the following functions:

- Action Message Review/Update (23.5)
- Action Message Browse (23.6)
- Action Message Report (23.7)

Fig. 12.8
Action Message Report (23.7)

To Date	Action Message Detail	Order	Action Qty
12/06/2017	Past due Production Order	2971	2.0
	Due Date: 07/07/17	LineID: 2445054	
12/06/2017	Past due Production Order	2974	2.0
	Due Date: 07/07/17	LineID: 2445057	
12/25/2017	De-expedite Production Order	12050003	85.0
	Due Date: 12/18/17	LineID: 2487439	

Go To Item Number: 02200 Site: 10-200 Buyer/Planner: Motor Asm 8 Way Seat Adj 24V amp 2 hp

Material Planning generates action messages for all items with non-blank order policies. Action messages recommend the actions a planner should take to balance supply with demand, such as rescheduling, canceling, or releasing orders.

Material Planning does not create action messages for an item with its item-site or item planning parameter for Order Policy set to GRC when you also set the parameter in Site Planning Scheduling Control (1.1.16) for GRC Action Message to No. An order policy of GRC is the control setting used for Lean Material Planning where open and firm orders are ignored by the netting and exception checking process.

Table 12.1 contains a list of the messages that material planning generates, along with a brief explanation of each message. In the explanations, a *supply order* can be either a production order, a purchase order, or an intersite request.

Table 12.1
Action Messages

Message	Meaning
Beginning Quantity Less Than Zero	The initial nettable quantity on hand is negative.
Beginning Available Less Than Zero	The quantity on hand less safety stock is negative.
Create	A supply order should be created to satisfy a negative projected on-hand balance. This message is only generated if Plan Orders is No or if a new requirement appears within the time fence.
De-Expedite	A scheduled supply order is due before it is needed and should be delayed, or demand rescheduled to an earlier date.
Expedite	A scheduled supply order is due after it is needed and should be rescheduled to an earlier date, or demand rescheduled to a later date.
Cancel	A scheduled supply order is no longer needed and should be deleted.
Release Due For	A supply order should be released. You can release both planned and firm-planned orders. Approving the order changes its status to firm planned. Use the Order Release Horizon field in MRP Control (23.24) to specify the number of days prior to the order release date for this action message to display.
Release Past Due For	A supply order was not released when it was due. It now needs to be released and expedited, or the demand must be rescheduled for a later date.
Quantity Less than Minimum	A supply order was created for a quantity less than the minimum quantity set in the item planning data.
Quantity Exceeds Maximum	A supply order was created for a quantity greater than the maximum quantity set in the item planning data.
Past Due	Scheduled supply order receipt is past the due date.
Time Fence Conflict	Unsatisfied material requirement exists inside the planning time fence for the item. Material planning will not create planned orders within the time fence. You should either manually schedule and expedite orders to fill this demand or delay fulfillment of the requirement that created the demand.
Shipment Due	A shipment for an intersite request item is due. Action should be taken at the source site to ensure that the order is received on time.
Shipment Past Due	A shipment for an intersite request item is past due. You should either delay the orders that created the requirement for the item or expedite them when the item does arrive.

Message	Meaning
No Source Of Supply	A valid source network is not available for the date a DRP item is required. Either the item or item-site planning data does not reference a source network, or the source network is not effective on that date.
Planned Order Count Exceeds Maximum	An item/site combination generated the maximum number of planned orders. Material planning currently cuts off the creation of orders for an item/site combination at 1000. Calculation for other items continues. This prevents runaway calculations caused by, for example, an incorrect item order quantity.

Additional Lean Material Planning Processes

Two optional processes are relevant when planning items replenished using Lean Material Planning. The first creates pegging/supply analysis data. The second generates gross requirements data that can be exported.

Lean Material Planning and Pegging Data

Lean Material Planning can be set up to create supply analysis data to peg a planned order created by LMP to its demand and to peg a DRP intersite request to its demand. To do this, select the GRC Supply Data field in MRP Control or the Supply Analysis for GRC field in Site Planning Control.

Fig. 12.9
Lean Material Parameters, Supply Analysis Data

The screenshot displays two side-by-side windows from the QAD software interface. The left window, titled 'MRP Control', contains various planning parameters. The right window, titled 'Site Planning Scheduling Control', contains parameters for site planning. A black line connects the 'GRC Supply Data' checkbox in the MRP Control window to the 'Supply Analysis for GRC' checkbox in the Site Planning Scheduling Control window, indicating that these two settings are related for enabling supply analysis data.

MRP Control Parameters:

- MRP Horizon: 230
- MRP/DRP Combined: ☒
- Summary Default: Monday
- Order Release Horizon: 7
- Enable Op Based Yield: ☐
- Use AppServer: ☐
- AppServer Name:
- Default Number of Threads: 0
- Max Dynamic Time Fence: 0
- GRC Supply Data: ☒ (highlighted with a box)
- GRC Action Message: ☐
- Planned Order Maximum: 1,000
- MRP Plan Order Routing Create: ☒

Site Planning Scheduling Control Parameters:

- Site: 10-200
- Automotive Mfg
- Supply Analysis for GRC: ☒ (highlighted with a box)
- Action Message for GRC: ☐
- Planned Order Maximum: 1,000

Pegging data can be created for planned orders and DRP intersite requests by Lean Material Planning. This is possible with LMP because there is always a one-to-one relationship between a planned order or an intersite request to its gross requirement. This is not possible for MRP because a planned order or intersite request may have many sources of demand. There is not always a one-to-one relationship between a planned order or an intersite request and its source of demand.

The pegging data that links planned orders to downstream demand can also be used to:

- Observe patterns in demand and supply data for Lean replenishment.
- Monitor the impact of buffer stock and Kanban loops on supply.
- Identify patterns that can drive process improvements.

In this way the pegging/supply analysis data can be used to drive Kaizen (process improvement) events that contribute to Six Sigma.

Pegging data links the supply of planned orders and intersite requests for items with Order Policy = GRC to downstream demand such as component demand on production orders.

Fig. 12.10
Planned Order Downstream

Site	Item Number	Production Line	Production Order	ID	Order Quantity	UM	Release Date	Due Date	Parent Order	Parent ID
10-200	62201		01040019	2514244	326.0	EA	1/5/2018	1/15/2018	12060004	2488458
10-200	62201		01040020	2514245	40.0	EA	2/5/2018	2/15/2018	01040003	2514199
10-200	62201		01040021	2514246	210.0	EA	2/14/2018	2/26/2018	01040004	2514221
10-200	52210	1000	01040005	2514201	83.0	EA	1/4/2018	1/4/2018	12060004	2488458
10-200	52210	1000	01040006	2514222	40.0	EA	2/5/2018	2/5/2018	01040003	2514199

Item	Production Line	Production Order	ID	Order Status	Order Quantity	UM	Release Date	Due Date	Site	Component Item
02210	1000	12060004	2488458	A	330.0	EA	12/6/2017	12/6/2017	10-200	52210

Pegging data links the demand for component item with Order Policy = GRC on production orders to the upstream supply of planned orders and intersite requests created by Lean Material Planning.

Fig. 12.11
Planned Order Upstream

Production Upstream Supply X

Actions Setup Cancel

Add to Favorites

Search (Site = "10-200") and (Line = "1000") and (Item Number matches "22") and (Order Status = "C"))

Viewing 1 - 80 of 80

Records per page: All

Site	Item Number	Line	Production Order	ID	Order Status	Qty To Start	UM	Release Date	Due Date	Description	Order Type
10-200	02200	1000	12050003	2487439	F	85.0	EA	12/12/2017	12/18/2017	Motor Arm 8-Way Seat Adj	S
10-200	02210	1000	12060025	2488477	P	210.0	EA	2/19/2018	2/19/2018	Motor Arm 6-Way Seat Adj	S
10-200	02210	1000	12060005	2488459	P	40.0	EA	2/5/2018	2/5/2018	Motor Arm 6-Way Seat Adj	S
10-200	02210	1000	12060004	2488458	F	330.0	EA	12/6/2017	12/6/2017	Motor Arm 6-Way Seat Adj	S
10-200	02220	1000	20682	2479084	F	50.0	EA	11/21/2017	11/21/2017	Motor Arm 4-Way Seat Adj	S
10-200	02220	1000	20680	2479082	F	50.0	EA	11/21/2017	11/21/2017	Motor Arm 4-Way Seat Adj	S
10-200	02220	1000	20674	2479068	A	100.0	EA	11/20/2017	11/20/2017	Motor Arm 4-Way Seat Adj	S

Upstream Planned Orders Browse X

Upstream Intersite Request X

Actions Setup Cancel

Item	Production Line	Order	ID	Order Type	Order Status	Order Quantity	UM	Release Date	Due Date	Operation	Qty Required
02210	12140008	2497884	Manufactured	P		50.0	EA	5/4/2018	1/4/2018	10	50.0

Pegging data is deleted when those planned orders and DRP intersite requests are approved, released, or deleted.

Lean Material Planning and Gross Requirements Data

Lean Material Planning creates planned orders for items from gross requirements data. The Gross Requirements Update (23.4.40) function creates and refreshes gross requirements data that can be reported and/or exported. Together with average daily demand calculations, gross requirements data is useful for Kanban loop sizing. You would typically schedule Gross Requirements Update to be run after planning materials and scheduling production.

Fig. 12.12
Gross Requirements Update

Demand Type	Item	Date	Quantity	Order	Line	Prod Line	Op
Sales Order	02005	5/25/2016	6,000.00	SO051628	5		
Sales Order	02005	6/25/2016	3,000.00	SO061628	5		
Sales Order	02005	7/24/2016	6,000.00	SO071628	5		
Sales Order	02005	8/24/2016	3,000.00	SO081628	5		
Prod Order	02010	11/16/2017	100.00	20674		2479068 1000	10
Prod Order	02010	11/20/2017	50.00	20680		2479082 1000	10
Prod Order	02010	11/20/2017	50.00	20682		2479084 1000	10
Prod Order	02010	1/8/2018	330.00	12060004		2488458 1000	
Prod Order	02010	2/5/2018	40.00	01040003		2514199 1000	
Prod Order	02010	2/19/2018	210.00	01040004		2514221 1000	
Prod Order	02200	7/7/2017	2.00	2971		2445054	
Prod Order	02200	7/7/2017	2.00	2974		2445057	

When an item is defined as a phantom using Item Planning Maintenance or Item-Site Planning Maintenance and it is processed as a component item, demand for that component is processed as a transient item. When manufacturing any parent item containing that item, the phantom item is produced in the process of manufacturing the parent item. When the order status of a parent production order is E (Exploded), A (Allocated), or R (Released), the requirement for a global phantom item is processed differently based on its Allocation Policy setting:

- If the allocation policy of the phantom item is set to General, the phantom item appears with zero quantity required and the requirement is exploded to its components through the BOM.
- If the allocation policy of the phantom item is set to Detail, the phantom use-up logic is applied to allocate and consume available inventory for the phantom item. The component requirements for the phantom item are then exploded through its BOM to its components. As a result, the demand for a global phantom item can be less than its actual gross requirement.

When a component item is a (global) phantom item and has an Order Policy GRC for Lean Material Planning, updating gross requirements addresses the representation of demand when an item is set up as a (global) phantom using either Item Planning Maintenance or Item-Site Planning Maintenance. To export gross requirements data, use the Gross Requirement Browse and select the Export option from the Actions menu.

Fig. 12.13
Gross Requirements Browse

Item Number	Description	Site	Production Line	Quantity	Due Date	Demand Type
02010	Motor Asm Connector	10-200	1000	210.0	2/19/2018	Work Order
02010	Motor Asm Connector	10-200	1000	100.0	11/16/2017	Work Order
02010	Motor Asm Connector	10-200	1000	50.0	11/20/2017	Work Order
02010	Motor Asm Connector	10-200	1000	50.0	11/20/2017	Work Order
02010	Motor Asm Connector	10-200	1000	330.0	1/8/2018	Work Order
02010	Motor Asm Connector	10-200	1000	40.0	2/5/2018	Work Order
02210	Motor Asm 6-Way Seat Adj	10-200		55.0	1/8/2018	Forecast

Material Planning for Push and Pull

QAD Material Planning provides the capability to create material plans by using:

- MRP for items that are supplied using push production or push replenishment
- Lean Material Planning for items that are supplied using pull production or pull replenishment

You can identify push and pull production methodologies by characteristics that typify each methodology.

Table 12.2
Characteristics of Push/Pull Production Methodologies

Push Production	Pull Production
Production to supply forecast demand for a high variety of products.	Production to supply generally reliable, high-volume demand for a small variety of products.
Long lead times and/or make-to-stock.	Shorter lead times and/or make-to-order.
Large batches with work orders or production schedules.	Many small batches with Kanban or production schedules.
Finished goods production driven by forecast	Production of finished goods and intermediate items commences when there is actual demand.
Production of intermediate items and replenishment of components and raw materials to supply downstream production	Replenishment of components and raw materials only when existing quantities have been consumed.

The process for planning and scheduling the production and replenishment of items should be appropriate, whether those items are supplied using push or pull.

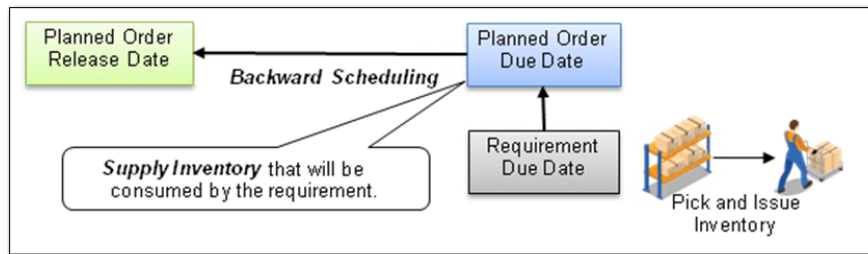
While MRP and Lean Material Planning both create material plans by simulating the long-term replenishment of inventory to supply requirements, they use different logic to reflect how replenishment orders are scheduled, authorized, and launched to supply requirements.

Material Requirements Planning for Push

MRP is the material planning process for items that are replenished using push processes such as work order or repetitive scheduled production. Time-phased net requirements are calculated from the beginning inventory quantity on-hand, gross requirements, and scheduled receipts. The logic and processes for MRP are well established and documented in textbooks. MRP creates plans to supply inventory that will be consumed by demand.

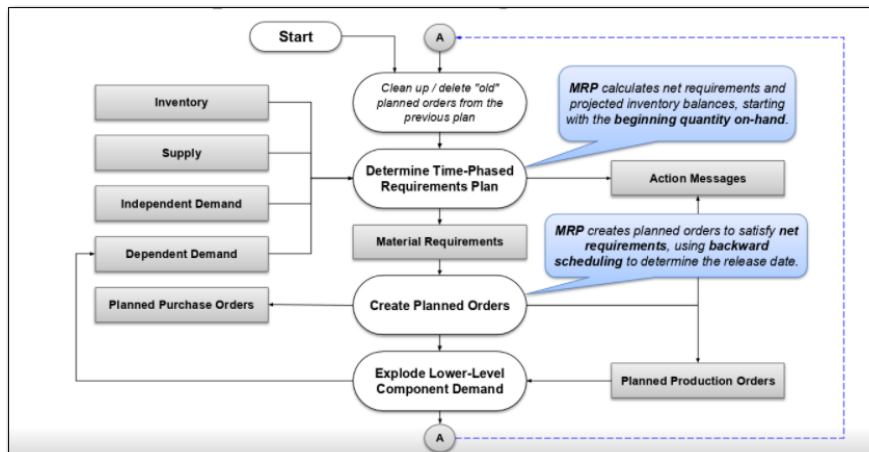
The material planning process for MRP uses net requirements to simulate the replenishment of inventory and authorization of supply. In the MRP logic, the system launches a supply order when it projects a future shortage determined from net requirements, backing off from the shortage date by the item's lead time to get the start/launch date for the order. The MRP focus is to plan orders to supply projected net requirement demand, which is calculated by netting the inventory quantity on-hand from the gross requirements.

Fig. 12.14
MRP and Push



The objective for MRP is to supply inventory required by downstream demand. MRP uses time-phased net requirements planning to schedule and plan orders with due dates to satisfy the requirements. Backward scheduling is applied to determine planned order release dates.

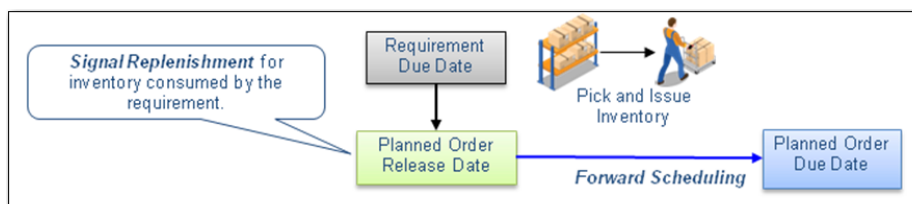
Fig. 12.15
Material Requirements Planning Process Flow



Lean Material Planning for Pull

Lean Material Planning enables a company that engages in Lean and replenishes inventory using pull signals, such as Kanban, to engage in long-term production and material planning. Time-phased requirements are calculated, without regard to the beginning inventory quantity on-hand, from gross requirements, and scheduled receipts. Unlike MRP, Lean Material Planning schedules order dates by using forward scheduling.

Fig. 12.16
MRP and Pull

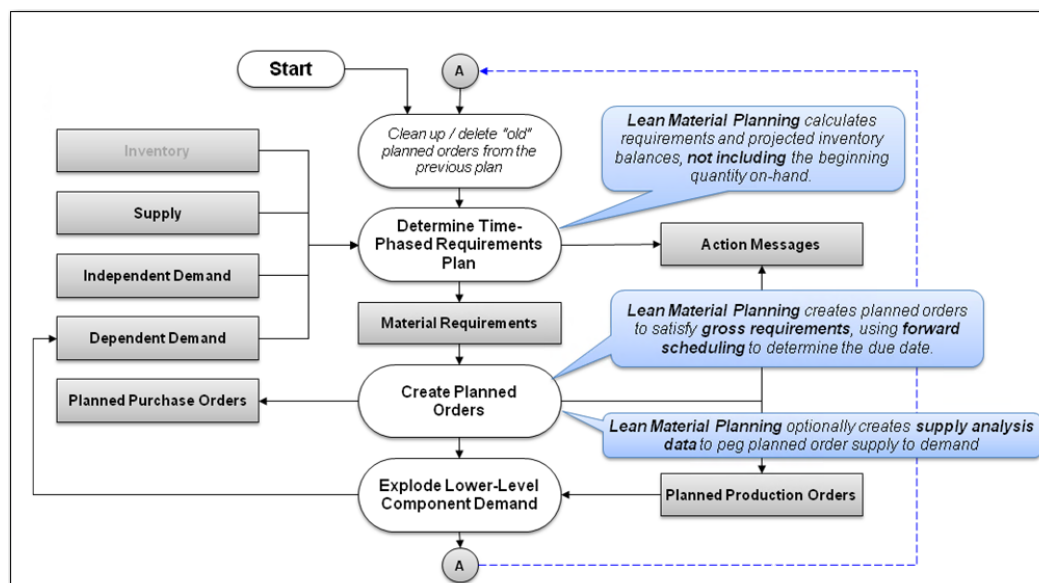


The objective for Lean Material Planning is to signal the replenishment of inventory consumed by the requirement. LMP schedules and plans orders with release dates based on the requirement due date, using time-phased gross requirements planning. Forward scheduling is applied to determine planned order due dates.

Lean Material Planning creates plans that simulate the replenishment of inventory and the authorization of the supply of materials when using a Pull or Kanban replenishment system. The focus is on demand. LMP recognizes each gross requirement as a replenishment signal and plans orders to supply each requirement. It assumes that when an item is used, it needs to be replenished—regardless of the current on-hand balance.

The start/release date for each order corresponds to the requirement date. It uses the lead time to calculate the due date for a planned order.

Fig. 12.17
Lean Material Planning Process Flow

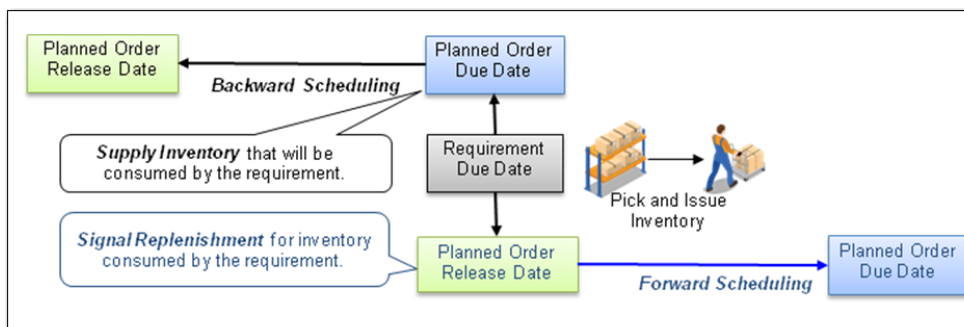


Lean Material Planning and Buffer Stock

Lean Material Planning excludes the beginning inventory quantity on-hand when calculating requirements. It does this because the beginning inventory quantity on-hand serves as buffer stock to supply replenishment requirements during the time required to replenish inventory. Buffer stock is comprised of quantities in inventory and in the supply chain. Lean replenishment systems manage buffer stock levels to satisfy demand during the replenishment period.

Planning and Scheduling for Push versus Pull

The differences between the planning and scheduling of items for push versus pull are summarized below. MRP supplies inventory that will be consumed by demand.

Fig. 12.18
Differences

Lean Material Planning signals the replenishment of inventory that will be consumed by demand.

Table 12.3 Push/Pull Planning Differences

Push Planning/Scheduling	Pull Planning/Scheduling
Material Requirements Planning	QAD Lean Material Planning
Production and supply chain replenishment are planned to satisfy anticipated demand.	Production and supply chain replenishment are planned in response to actual demand: firm, scheduled, and planned.
Orders are pushed to the shop floor and to suppliers for quantities to be received by a scheduled due date.	Orders to replenish inventory from the shop floor or from suppliers are signaled and pulled by actual demand.
Due dates for supply orders are scheduled and determined by need dates.	Release dates for supply orders are scheduled and determined by need dates.

MRP and Lean Material Planning Comparison

There are three fundamental differences between MRP and Lean Material Planning. The core reason for these differences is that MRP recognizes a replenishment requirement as needing to be supplied immediately while Lean Material Planning recognizes a replenishment requirement as needing to be supplied but not immediately because it is covered during the replenishment lead time by buffer stock.

- 1 Beginning Quantity on Hand and Safety Stock.** The first fundamental difference is how MRP and LMP use the beginning quantity on-hand and safety stock. MRP uses both to determine net requirements and to plan orders while LMP does not use either. Instead, LMP and lean replenishment signal a replenishment order for each gross requirement, without considering either the beginning quantity on-hand or safety stock, because of buffer stock. Lean replenishment systems manage buffer stock levels to satisfy demand during the replenishment period.
- 2 Planned Order Quantity.** The second fundamental difference is how the order quantity is determined for planned orders. MRP determines the order quantity for a planned order by using the settings for order modifiers, such as Order Quantity, Order Multiple, and Minimum Order Quantity. In contrast, LMP creates a planned order with the order quantity equal to the gross requirement; the gross requirement signals the replenishment and planned order for the demand quantity.
- 3 Planned Order Dates.** The third fundamental difference is how order dates are determined. When MRP is faced with a requirement, it schedules a firm order or creates a planned order. The due date for a planned order is determined by the requirement date. When LMP is faced

with a requirement, it signals a replenishment order. The release date for a planned order is determined directly from the requirement date. When the dates for replenishment/supply orders for Lean are determined, using forward scheduling from the demand due date, the resulting replenishment orders model Kanban replenishment.

The following table depicts differences with how data is recognized by MRP and Lean Material Planning.

Table 12.4
MRP and LMP Differences

Information	MRP	Lean Material Planning
Beginning inventory quantity on hand	Yes	No. Beginning inventory quantity on hand is regarded as buffer stock.
Time-phased requirements	Net requirements.	Gross requirements.
Projected quantity on hand	Yes, calculate using net requirements.	Yes, calculate using gross requirements.
Planned orders / replenishment	Plan for net requirements.	Plan for gross requirements.
Safety Stock	Yes	No. Not required because the beginning inventory on hand serves as buffer stock.
Safety Time	Yes	No. Not required because buffer stock serves to fulfill demand during the replenishment period.

Why Plan Differently for Pull Production and Replenishment?

Pull replenishment processes, such as Kanban, fill the short-term supply and replenishment of materials. Lean Material Planning processes are required for planning the long-term requirements and supply of pull replenishment items—planning that is required for planning and scheduling resources as well as lower-level materials.

Pull production and replenishment presume the management of buffer stock. Buffer stock is comprised of quantities in inventory and in the supply chain. Because of buffer stock, there is no need to:

- Factor in the beginning quantity on-hand.
- Plan orders to supply net requirements instead of gross requirements.
- Plan orders using order policies instead of supply gross requirements.
- Time the supply of material instead of initiating the replenishment of inventory.
- Plan to supply safety stock.
- Schedule orders using safety time.

Lean Material Planning simulates the replenishment of inventory and the authorization of the supply of materials that have relatively uniform demand, when using a Pull or Kanban replenishment system. Its focus is on each gross demand, and the resulting replenishment orders. It assumes that if an item is used, it needs to be replenished – irrespective of the current on hand balance. It recognizes each gross requirement as a replenishment signal and plans orders to supply each requirement.

In practice, Lean Material Planning works best when the master schedule has been leveled and consists of orders with relatively low order quantities. The easiest way to get a picture of the demand and supply for materials is to look directly at their gross requirements, which represent usage and signal supply for those items, skipping the review of intermediate items that drive demand for those materials.

Lean Material Planning and Planned Orders

Lean Material Planning creates planned orders for items when you set the Order Policy to GRC. It does this by determining the release date, which is the date when a replenishment order should be released, rather than the due date.

Lean Material Planning determines the release date for a planned order directly from a gross requirement quantity and date without regard to lead time. Then, the system uses forward scheduling to determine the due date from the release date by using item lead times. The planning parameter for safety time is not used.

Safety time is not used to determine either the due date or release date when creating planned orders for items with Order Policy GRC.

Planned Order Release Date

Lean Material Planning sets the release date of a planned order for a component item to the date that the gross requirement quantity is scheduled to be issued or consumed to produce the parent.

Planned Order Due Date

Lean Material Planning determines the due date of a planned order created for an item from its release date by adding the lead times for the item. While due dates are not relevant for planning GRC items, they support the management of purchasing, for scheduling the manufacturing operations, and for determining the capacity requirements at work centers and production lines.

Planned Order Quantity

Lean Material Planning sets the planned order quantity to the quantity for the gross requirement. It does not use any of the order modifiers including order quantity, order multiple, minimum order quantity, and maximum order quantity.

Setting Up Material Planning

A range of elements require setup for items that are processed by Material Planning, including the following:

- Item and item-site planning data parameters; see Item Planning Data for Creating Planned Orders
- Items with production lines; see Planned Orders, Production Lines, Routing Operations, and Components
- Routings; see Routing and BOM Codes
- Product structures; see Routing Operations and Component Items



- Planning control parameters; see MRP Control and Site Planning Control Parameters

Item Planning Data for Creating Planned Orders

Maintain the item and item-site planning parameters that impact Material Planning. Use field help to access more information for each of those parameters.

Important Refer to your *QAD Master Data User Guide* for more information on the Item Planning Data frame and fields. When you run programs with this frame, press F1 for field help while your cursor is on the field.

Fig. 12.19
Item Planning Maintenance, Item Planning Data

Item Planning Data and Order Policy

For order policies, use:

- POQ, FOQ, LFL, OTO to plan an item using MRP
- GRC to plan an item using LMP with gross requirements calculations for planning orders

Fig. 12.20
Item Planning Data, Order Policies

Order Policy. This field determines how Material Planning plans orders for this item.

Material Planning generates planned orders for an item when the item-site or item planning data parameter for Order Policy is set to a non-blank value and the parameter for Plan Orders is set to Yes. Material Planning generates planned production orders for manufactured items, for items manufactured on production lines, planned purchase orders for purchased items, and planned intersite requests, depending on the Pur/Mfg code defined for the item.

QAD supports two methods for material planning: Material Requirements Planning (MRP) and Lean Material Planning (LMP).

- Set Order Policy to POQ, FOQ, LFL, or OTO to have MRP create time-phased plans for the item by calculating net requirements and applying planning policies and parameters defined for the item.
- Set Order Policy to GRC to have Lean Material Planning create time-phased plans from gross requirements to replenish inventory for quantities to be consumed by those requirements. Lean recognizes each gross requirement as a replenishment signal and plans orders to supply each requirement.

Leave this field blank or enter one of the following order policies:

- **FOQ (Fixed Order Quantity).** MRP creates planned orders with the quantity specified in the Order Qty field. When the value for Minimum Order is greater than Order Quantity, planned orders are created with the order quantity specified in the Minimum Order field instead. Order Quantity must be greater than zero (even when Minimum Order is greater than zero) for MRP to create planned orders.
- **GRC (Gross Requirements Calculation).** Lean Material Planning generates planned orders with an order quantity to replenish inventory that is consumed by each net requirement. It does not use any of the order modifiers, including order quantity, order multiple, minimum order quantity, and maximum order quantity. Material plans are created without regard to the beginning on-hand inventory balance or safety stock. The start date for a planned order is the date when a quantity is required, without regard to safety time. As with Kanban replenishment, the on-hand inventory balance acts as buffer stock and is assumed to be sufficient to cover demand for the item during the replenishment lead time; that is, the time it takes to supply the quantity required.
- **LFL (Lot for Lot).** MRP creates a separate planned order to satisfy each net requirement. When there are many sources of demand, MRP creates many planned orders.
- **OTO (One Time Only).** MRP creates a single planned order with an order quantity of one. This policy is not used for inventory items, but could be used to plan project activities and milestone events that happen only once.
- **POQ (Period Order Quantity).** MRP creates one planned order to cover the requirements for the number of calendar days specified in Order Period.

Any other non-blank value is processed as lot for lot (LFL).

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Planning Data Maintenance.

Material Planning and Production Order Quantities

Material Planning determines the quantities for planned production orders, such as the quantity to complete and the quantity to start using the following item and item-site planning parameters:

- Order policy



- Order quantity
- Order period
- Order minimum
- Order multiple
- Op based yield
- Yield percent

When Order Policy = GRC for Lean Material Planning, the parameters for Safety Stock, Order Quantity, Minimum Order, Maximum Order, and Order Multiple are not used.

Fig. 12.21
Item Planning Data, Order Quantities

The screenshot displays the 'Item Planning Data' form with the following fields and values:

- Mstr Sched:** ☒ **Plan Orders:** ☐ **Time Fence:** 0
- MRP Required:** ☐ **Order Policy:** POQ **Order Qty:** 0 **Batch Qty:** 0 **Order Period:** 7 **Safety Stock:** 0
- Safety Time:** 0 **Reorder Point:** 0 **Revision:** D
- Buyer/Planner:** PLANNER4 **Supplier:** [Search] **PO Site:** [Search]
- Purchase/Manufacture:** M **Configuration Type:** [Search]
- Inspect:** ☐ **1.0 Ins LT:** 0 **Cum LT:** 0 **Run Time:** 17.000
- Mfg LT:** 3 **Pur LT:** 0 **Setup Time:** 7.500
- ATP Enforcement:** NONE **Auto EMT Processing:** ☐
- Family ATP:** ☐ **Network Code:** [Search]
- ATP Horizon:** 0 **Routing Code:** U-001
- Run Seq 1:** [Search] **BOM/Formula:** [Search]
- 2:** [Search] **Replenishment Method:** Orders
- Phantom:** ☐ **Minimum Order:** 1 **Maximum Order:** 5 **Order Multiple:** 1 **Op Based Yield:** ☐ **Yield Percent:** 100.00%
- EMT Type:** NON-EMT
- Back** **Next**

Order Qty. Enter the normal order quantity for this item. Material Requirements Planning (MRP) generates planned orders for this quantity when this item's order policy is fixed order quantity (FOQ).

For manufactured items, order quantity also identifies the average order quantity of the item. When manufacturing costs are calculated using Routing Cost Roll-Up, setup costs are divided by the order quantity. Manufacturing lead times are stated in terms of this order quantity.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Planning Data Maintenance.

If you leave Order Quantity set to 0 (zero), the system assumes an order quantity of 1 during cost calculations only.

This field is not used for co-product or by-product items when they are planned from a base process.

Important Be careful when setting this value. Since it affects both cost and lead-time calculations, it can significantly impact scheduled due dates. Order due dates are determined using the standard manufacturing lead time for the standard order quantity. If orders are entered for a different quantity, due dates must be adjusted manually.

In a process environment, order quantity should always be the same as the formula batch quantity. This is not maintained by the system; you must do it manually.

Batch Qty. This field cannot be updated manually. It is updated by Batch Quantity Change and displays the normal batch size for this item. Batch size is used only with Formula/Process functions. Ingredient quantity per and process operation run times are stated in terms of batch size.

Important If you change the formula batch size, make sure that you also change the item order quantity. These should always be the same. This is not maintained by the system; you must do it manually.

Item order quantity is used for both cost and lead-time calculations, and can significantly impact scheduled due dates.

Order Period. Enter the number of calendar days that Material Requirements Planning (MRP) should use to determine a planning period when Order Policy is POQ (period order quantity). The default is 7 days.

This field is validated against predefined values entered in Generalized Codes Maintenance for field `pt_ord_per`, if any.

This field has no effect unless Order Policy is set to period order quantity. Then, MRP looks ahead this number of days when calculating net requirements. One planned order is created to cover the requirement for this period.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Planning Data Maintenance.

Safety Stock. Enter the quantity of this item to be maintained in inventory as protection against fluctuation in demand and/or supply.

MRP considers safety stock a requirement, and schedules planned orders to cover this amount. When quantity on hand falls below the safety stock quantity, MRP plans an order.

Safety stock is especially important for critical items, when a shortage can stop production.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Planning Data Maintenance.

Important Be careful when you set safety stock and safety time, since they increase your inventory investment by inflating inventory levels. Safety stock can cause MRP to plan an order even when no real demand exists. Safety time consistently plans to have inventory on hand before it is actually needed.

Minimum Order. Enter the minimum quantity of this item to be ordered on a single order. The value you enter is the default for all sites.

MRP uses the minimum order quantity to determine the quantity of planned orders, regardless of the order policy. If the net requirement is below this amount, MRP creates an order for the minimum quantity. If an existing order is below this minimum, MRP creates an action message.

Maximum Order. Enter the maximum quantity of this item to be ordered on a single order. The 0 (zero) default indicates no maximum. The value you enter here is used for all sites.

Setting an order maximum does not prevent you from ordering more than this quantity. It is used by the system to mark exceptions. When MRP calculates a requirement greater than the maximum order quantity, it creates a planned order for the amount needed; however, it also creates an action message.

Order Multiple. Enter the multiple for placing orders for this item. The 0 (zero) default indicates no order multiple.

Material Planning uses order multiple to determine the quantity of planned orders only when order policy is period order policy (POQ) or lot for lot (LFL). The net requirement is rounded up to a multiple of this number. If the order multiple is 50 and the net requirement is 432, MRP creates a planned order for 450.

Refer to the Determining Order Multiples subsection of the *QAD Manufacturing User Guide* for more information on order multiples.

Note Supplier schedules and customer schedules provide a special type of order multiplier: the standard pack quantity. You may not want to use both order multiplier and standard pack quantity.

Op 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.

Note Enable Op Based Yield must also be Yes in MRP Control for this field to have any effect.

For more information on Yield and for example Yield calculations, refer to the Yield subsection of the *QAD Manufacturing User Guide*.

Yield Percent. Yield indicates the percentage of an order expected to be in usable condition. The default is 100%. The value entered in Item Master Maintenance is the default for all sites, unless item-site records are defined.

Yield applies to both purchased and manufactured items. If the yield is less than 100%, material requirements planning (MRP) plans orders for more than needed. For example, if the net requirement is 100 and the item yield is 50%, then the planned order quantity is set to 200.

For manufactured items, the yield percentage can be updated automatically by Routing Cost Roll-Up. It is calculated by multiplying the yield percentage at each of the routing/process operations. For example, if two operations yield 98% and 99%, the item yield is 97.02%.

Item Yield and Component Requirements

The system considers yield when bills of material are exploded in work orders, repetitive, advanced repetitive, and configured products. MRP also considers yield when it calculates component requirements.

These calculations are based either on the parent item yield percentage or the yield associated with each operation in the parent item's routing. Operation-based yield is used when both of the following are true:

- Enable Op Based Yield is Yes in MRP Control.

- Op Based Yield is Yes for the parent item in Item Master Maintenance or Item-Site Planning Maintenance.

Operation-based yield typically results in more accurate calculations and prevents overplanning of components. This is especially true for a mature process with highly predictable yield percentages.

Yield and Rounding Issues

Yield of less than 100% can cause the system to plan decimal order quantities. Use the Order Minimum and Multiple fields to adjust for this.

Rounding impacts the calculation of order quantities with decimal yield values. This is because MRP always plans orders in whole numbers, not decimal quantities.

For example, a yield of 30% applied to an order quantity of 1 results in a planned order of 4 since a quantity of 3 with a yield of 30% would not provide a complete unit to fulfill the order. The scrap requirement is 2.8, resulting in a projected on-hand quantity of 0.2.

- The calculation first establishes the number of acceptable units required: $\text{yield}/100$. In this case, the requirement is $1/0.3 = 3.3333$.
- MRP rounds this to an order quantity of 4.0.
- The scrap requirement is then calculated by MRP as $\text{order quantity} \times \text{scrap \%}$: $4.0 \times 70\% = 2.8$.

Yield applies to setup times as well as order quantities. For example, when the order quantity is 1, a 90% yield changes this number, in effect, to 0.9. If the setup rate is 10.00, the setup cost per unit is calculated as $10/0.9 = 11.1111$. If you change the order quantity to 10 with the 90% yield, you get a setup cost of $10/9 = 1.1111$.

Material Planning and Production Order Dates

Planned order dates such as release and due dates are determined using calendars, calendar exceptions, and planning parameters for items and item-site for the following parameters:

- Purchase/Manufacture
- Inspect Req
- Mfg LT
- Pur LT
- Inspect LT
- Safety Time

Note When Order Policy = GRC for Lean Material Planning, Safety Time is not used.

Fig. 12.22
Item Planning Data, Order Dates

The screenshot shows two SAP screens. The left screen is 'Item Planning Data' for item 'PLANNER4'. It contains various fields for planning parameters. The 'Purchase/Manufacture' field is set to 'M' (Manufactured). The 'Safety Time' field is set to 0. The right screen is 'Site Calendar Browse' for the same item. It shows a table of planned order dates for the week of 10-20-2022.

Site	Weekday	All Shifts	Hours 1	Hours 2	Hours 3	Hours 4
10-20-2022	Sunday	8.0	8.0	0.0	0.0	0.0
10-20-2022	Monday	8.0	8.0	0.0	0.0	0.0
10-20-2022	Tuesday	8.0	8.0	0.0	0.0	0.0
10-20-2022	Wednesday	8.0	8.0	0.0	0.0	0.0
10-20-2022	Thursday	8.0	8.0	0.0	0.0	0.0
10-20-2022	Friday	8.0	8.0	0.0	0.0	0.0
10-20-2022	Saturday	8.0	8.0	0.0	0.0	0.0

Safety Time. Enter the number of working days early that the system should plan to receive orders for this item, as protection against late deliveries.

Material Requirements Planning (MRP) schedules planned orders to be received this many days early. MRP first calculates the actual need date, then subtracts the number of days safety time.

Safety time is especially important for critical items, when a shortage can stop production.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Planning Data Maintenance.

Important Be careful when you set safety stock and safety time, since they increase your inventory investment by inflating inventory levels. Safety stock can cause MRP to plan an order even when no real demand exists. Safety time consistently plans to have inventory on hand before it is actually needed.

Purchase/Manufacture. Enter the code indicating how this item is typically processed by the system. The Purchase/Manufacture code controls how the system explodes forecasts, plans and creates orders, and calculates costs for the item. It affects Material Requirements Planning (MRP) and Distribution Requirements Planning (DRP).

This field is validated against predefined values entered in Generalized Codes Maintenance for field `pt_pm_code`, if any. Valid code options include the following.

- **P (Purchased).** The item is usually purchased. MRP uses the purchasing and inspection lead times to calculate planned order release dates. MRP and cost calculations do not explode purchased assemblies, even when a product structure exists. Any routing/process operations are ignored. You can also manufacture an item designated as purchased. The product structure and routing are accessed if a production order is created for the item.
- **D (DRP).** The item is usually supplied internally from another site. DRP uses the item's source network to determine where to generate requirements. It uses the transport lead time and shipping schedules to calculate the date when orders must be shipped from the other site. Any routing or BOM codes entered for a DRP item are for reference only. Cost calculations do not explode DRP items.
- **M (Manufactured).** The item is normally manufactured using work orders. MRP uses the manufacturing lead time to calculate planned order release dates. You can also purchase a manufactured item.

- **R (Routable).** The item is a special type of manufactured item, made only when needed by an upper-level assembly. A production order for the routable item is created automatically when a production order for its parent is released. The production order number is the same, but the lot ID is different. This lets the system track the two orders separately but accumulate the costs.
- **C (Configured).** The item is configured to order. When a sales quote or order is entered, the system prompts the order taker to select from a list of configuration options. Valid options are defined in Configured Structure Maintenance.
- **L (Line manufactured).** The item is manufactured repetitively on a single or on multiple production lines. You can approve MRP planned orders for items with this code using Planned Production Order Approval or Auto Firm Planned Orders.
- **F (Family).** A family item typically represents a generic category used for planning only; it is never actually made or stocked. For multilevel master scheduling, family items are set up with a planning bill.

Important If you are viewing items on a production line in the .NET UI Master Scheduling Workbenches, you must set this field to L to view the item.

Inspect. This field indicates whether the item is inspected after receipt. The value entered in Item Master Maintenance is used as the default for new purchase orders lines for this item when a site-specific value is not defined in Item-Site Planning Maintenance.

- **No.** The receipt location for new purchase order lines defaults from the stocking location defined for the item at the PO line site in Item-Site Inventory Data Maintenance; otherwise, from the location for the item defined in Item Master Maintenance.
- **Yes.** The receipt location defaults from the inspection location. During receipt processing, items are received into this incoming inspection location. After inspection, you must manually transfer them to another location.

The system searches for an inspection location in this order:

- The inspection location specified for the site and item in Item-Site Planning Maintenance
- The inspection location defined for the site in Site Maintenance
- The inspection location defined in Purchasing Control

This field is used in conjunction with the Inspection Lead Time field. This field and inspection lead time apply only to purchased items. An operation step must be added to account for inspection of manufactured items.

When items are inspected, you must complete a separate transaction to transfer them into regular inventory, adding a level of complexity. You need to weigh the benefits and costs.

Ins LT. Enter the normal or average number of working days, based on your shop-floor calendar, needed to inspect this item after it is received. This field is validated against predefined values entered in Generalized Codes Maintenance for field `pt_insp_lead`, if any.

When an item is purchased (Purchase/Manufacture code is P), Material Requirements Planning (MRP) uses the purchasing and inspection lead times to determine the suggested release date for planned orders. When you create requisitions by approving planned orders, the requisition need date is set to the MRP due date, which was calculated as the requirement need date minus inspection lead time.

If you create requisitions manually, you must incorporate inspection lead time if needed.

For example, if an item be issued on July 6 has a five-day inspection lead time, set the need date to July 6 and the due date to July 1. Planning functions use due date as the date the items are actually available to be shipped or issued to manufacturing.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Planning Data Maintenance.

Cum LT. This field displays the cumulative lead time for the item in calendar days. It is calculated and updated by Cumulative Lead Time Roll-Up.

Cumulative lead time represents the maximum time to produce an item if you started today with no components in stock. The system looks at the manufacturing lead time of this item and its subassemblies as well as the purchasing lead time of the raw materials to determine the critical path.

For example, you make washing machines from purchased components. Most components have a purchasing lead time of four days or less, except for motors. These have a lead time of 20 days. If it takes two days to assemble the machine, the cumulative lead time for a washing machine is 22 days, the longest possible time to make one.

Cumulative Lead Time Roll-Up assigns co-products the manufacturing and cumulative lead time values associated with their base process. By-products are assigned the cumulative lead time of the base process; the manufacturing lead time is not updated.

Cumulative lead time is useful for order promising. If no production is scheduled, you should be able to promise availability within this period of time. Cumulative lead time also determines the minimum planning horizon for the master schedule and material requirements planning.

Mfg LT. Enter the normal or average number of working days, based on your shop-floor calendar, required to manufacture this item. This includes the time to process paperwork, issue components, inspect the finished product, and receive it into stock.

This field is validated against predefined values entered in Generalized Codes Maintenance for field `pt_mfg_lead`, if any.

For manufactured items, (Purchase/Manufacture code is M), you can use Routing Cost Roll-Up to automatically calculate the manufacturing lead time from the item's routing/process. Any setup time is divided by the item order quantity.

Material Requirements Planning (MRP) uses manufacturing lead time to determine the suggested release date for planned orders. When you create a work order for a purchased or manufactured item, the system uses this lead time to calculate the release date or due date.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Planning Data Maintenance. If you use different routings/processes at each site, you can roll-up manufacturing lead time by site.

Cumulative Lead Time Roll-Up assigns co-products the manufacturing and cumulative lead time values associated with their base process. By-products are assigned the cumulative lead time of the base process; the manufacturing lead time is not updated.

A manufacturing lead time entered for a DRP item (Purchase/Manufacture code is D) is included in the cumulative lead time for the item.

Pur LT. Enter the normal or average number of calendar days required to complete a purchasing cycle for this item. The cycle begins on the date the need for a purchase is recognized and ends on the date the item is received. It does not include inspection time.

This field is validated against predefined values entered in Generalized Codes Maintenance for field `pt_pur_lead`, if any.

For purchased items (Purchase/Manufacture code is P), MRP uses the purchasing lead time along with any inspection lead time to determine the suggested release date for planned orders. When a purchase requisition is entered manually, these times are used to calculate the release date or due date.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Planning Data Maintenance.

Material Planning Features and Planning Parameters

The following table summarizes how key planning features and parameters impact processes and how orders are planned differently between MRP and Lean Material Planning.

Table 12.5
Parameter/Feature Comparisons

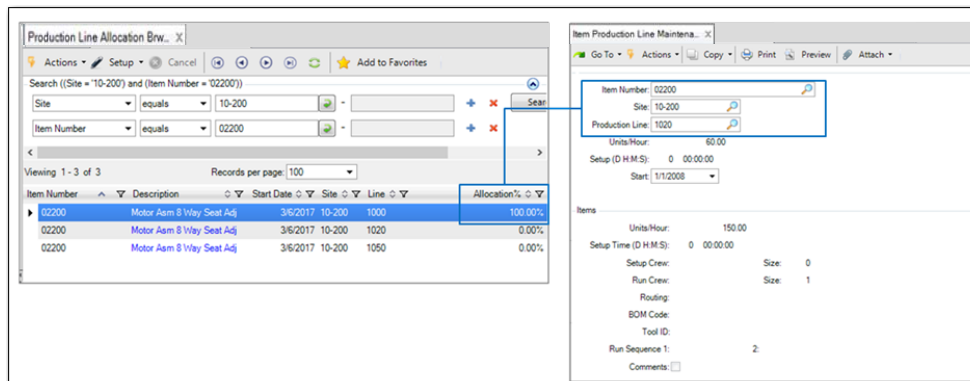
Planning Feature/ Parameter	MRP	Lean Material Planning (GRC)
Item Planning or Item-Site Planning settings	Item Planning or Item Site Planning settings: Order Policy = POQ, FOQ, LFL (conventional MRP)	Item Planning or Item Site Planning settings: Order Policy = GRC (Gross Requirements Calculation without inventory on hand)
Inventory and material requirements	Use nettable inventory quantity on-hand for the calculation of supply and time-phased material requirements.	Inventory and material requirements.
Safety Stock	Safety stock is used for the calculation of demand and material requirements.	Safety stock is not used for the calculation of demand and material requirements.
Order Policy	Create planned orders using item planning parameters appropriate for the order policy.	Create planned orders using logic like order policy LFL (lot-for-lot), with one supply order for each individual demand.
Safety Time	Safety time is used to determine the due date when creating a planned order.	Safety time is not used to determine either the due date or release date when creating planned orders for items with Order Policy GRC.
Component requirements and lead time offset	Determine the requirement date for a component as either the order release date plus the component lead time offset, or the operation start date (excluding lead time offset).	Determine the gross requirement date for a component planned as GRC as the greater of either the order release date or the order release date plus the component lead time offset.
Planned order dates	First, determine the due date for a planned order from a requirement quantity and date; second, use backward scheduling to determine the release date from the due date and the item lead times.	First, determine the release date for a planned order directly from a gross requirement quantity and date without regard to lead time; second, use forward scheduling to determine the due date from the release date by using item lead times.

Planning Feature/ Parameter	MRP	Lean Material Planning (GRC)
Planned order quantities	Create planned order using lot sizing parameters that are appropriate to the order policy: • Order quantity • Order period • Order multiple • Minimum • Maximum	Create planned orders using logic, like LFL (lot-for-lot), with one supply order for each individual requirement. Do not use order planning parameters for lot sizing, such as: • Order quantity • Order multiple • Minimum and maximum
Action messages	Create action messages.	Do not create action messages when the MRP Control parameter for GRC is set to No.
Capture supply analysis (pegging) data for GRC planned orders	Supply analysis data not captured for MRP planned orders.	Create supply analysis data for MRP planned orders for items planned using GRC to support Kaizen events.

Planned Orders, Production Lines, Routing Operations, and Components

Material Planning determines the default production line for planned orders using the production line for the item defined with the highest value for allocation policy.

Fig. 12.23
Production Line Parameters



Routing and BOM Codes

Material Planning assigns a routing code and BOM code assigned to planned production orders. This is determined by a number of factors.

- When there is no production line for the item, the system determines it by the routing code and BOM codes defined for item and item-site planning data.
- When there is a production line for the item, then it is determined by the default production line, as set up using Item Production Line Maintenance and Production Line Allocation Maintenance.

Fig. 12.24
Production Line Parameters, Routing

Item Number: 02200 EA Motor Asm 6-Way Seat Adj
Site: 10-200 Automotive Mfg
Production Line: 1000 Assembly
Units/Hour: 100.00
Setup (D H M S): 0 00:00:00
Start: 1/1/2008

Items

Item	Units/Hour	Setup Time (D H M S)	Setup Crew	Run Crew	BOM Code
1000	200.00	0 00:00:00	1	1	02200
1020					02200

Site: 10-200 Automotive Mfg
Item Number: 02200 Motor Asm 8-Way Seat Adj
Unit of Measure: EA 24V amp 2 hp

Production Line	Description	Percent
1000	Assembly	100.00%
1020	Fabrication	0.00%

Routing Operations

The quantity ordered for planned order routing operations is determined by the start quantity for the planned order and the Yield Percent for routing operations.

The start date and due date for planned order routing operations are determined by the times and parameters defined for the routing operations, production calendars, and calendar exceptions.

Fig. 12.25
Routing Operations

Op	Std Op	Description	Work Ctr	Machine	Start	End Date	Queue Time	Setup	Run Time	Wait	Move	Yield%	Tool Supplier
Routing	02200	Motor Asm 8-Way Seat Adj	24V amp 2 hp										
10	ASM	Assemble To Print	1000				0.25	0.0	0.025	0.25	0.0	100.00%	
20	ASM	Assemble To Print	1000				0.25	0.0	0.025	0.25	0.0	100.00%	
30	INSPECT	Inspect Per	1050				0.25	0.0	0.01	0.25	0.0	100.00%	

Site: 10-200 Inlet Center Machine: 1000 Weekday: 10-200 All Shifts: 10-200 Hours: 10-200

Day	Hours
Tuesday	9.0
Wednesday	9.0
Thursday	9.0
Friday	9.0
Saturday	4.0

Routing Operations and Component Items

When the Production Order Control parameter for Component Issue Date method is set to Order Release Date, component issue dates are calculated from the Release Date for the parent order. The alternative is when Component Issue Date method is set to Operation Start Date, the issue (need) dates for component items are determined from the routing operation start dates, at the operations where the components are required.

Fig. 12.26
Routing Operations, Component Items

Op	Std Op	Description	Work Ctr	Machine	Start	End Date	Queue Time	Setup	Run Time	Wait	Move	Yield%
Routing	02200	Motor Asm 8-Way Seat Adj	24V amp 2 hp									
10	ASM	Assemble To Print	1000				0.25	0.0	0.025	0.25	0.0	100.00%
20	ASM	Assemble To Print	1000				0.25	0.0	0.025	0.25	0.0	100.00%
30	INSPECT	Inspect Per	1050				0.25	0.0	0.01	0.25	0.0	100.00%

Production Order: 10000000 Site: 10-200 Line: 1000 Item Number: 02200 Description: Motor Asm 8-Way Seat Adj Due Date: 12/14/2017 Release Date: 12/14/2017 Order Date: 12/14/2017

Production Order Routing Browse Production Order Bill Browse Production Order Component Issue Prod Order Manual Allocation Production Order Allocation

Viewing 1 - 6 of 6 Records per page: 100

Component Item	Operation	Operation Description	Issue Date	Quantity Open	Qty Per Unit	Qty
10000000	10	Assemble To Print	12/14/2017	650.0	1.0	650.0
52201	20	Assemble To Print	12/14/2017	650.0	1.0	650.0
62201	20	Assemble To Print	12/14/2017	650.0	1.0	650.0
62202	20	Assemble To Print	12/14/2017	2,600.0	4.0	10,400.0
62203	20	Assemble To Print	12/14/2017	5,200.0	8.0	41,600.0
62500	20	Assemble To Print	12/18/2017	650.0	1.0	650.0

When a component is required for an operation, the quantity required and issue date for a component are directly related to the quantity ordered and start date for the production operation. These are impacted by the following:

- Product structure or formula operation, quantity per, and scrap percent—which impact the calculation of the quantity required.
- Routing operation parameters including run time (or hourly production rate), yield, and machines per op—which are used to determine the start date for issue date for operations.
- Calendars and calendar exceptions that are defined for the domain, site and/or work centers that determine capacity.

Fig. 12.27
Product Structure Maintenance

BomFSMTType	Component Item	Description 1	Description 2	Unit of Measure	Operation	Reference
	52200	Motor Mounting Plate...	8 Way OEM Cust...	EA		
	52201	Motor Mfg Plate 8 Way		EA	10	
	62202	Perm Nut #5 .0125		EA	10	
	62203	Stud Press Fit #5 1/4"		EA	10	

MRP Control and Site Planning Control Parameters

Finally, set up planning parameters for Material Planning using MRP Control (23.24) and Site Planning Scheduling Control (1.1.16).

Fig. 12.28
MRP Control (23.24) and Site Planning Scheduling Control (1.1.16)

Set these fields



Data Collection - Production Order Transactions

This chapter discusses the following topics:

***Introduction* 208**

Introduces Data Collection-built transactions for production orders.

***Production Order Transactions* 209**

Describes the transactions for production orders.

Introduction

When you use QAD Automation Solutions: Data Collection with production orders, you are provided a unique set of Data Collections-built transactions that specifically function with QAD Production Orders.

You can use Data Collection development tools to customize the transactions so that they provide the transaction flow, UI layout and fields, and data validations that the business requires for production orders.

The transactions—used in receiving, production, shipping, inventory management, and more—are processed in connection with a QAD server that provides Data Collection, data validation, and error handling during transaction processing and line-by-line or unit posting of the RF transactions in real time.

Finding Data Collections Documentation

For descriptions of all Data Collection (DC) transactions, refer to the latest *QAD Automation Solutions: Data Collection Transaction Release Notes* and *QAD Automation Solutions: Data Collection Transaction User Guide*.

Important Transaction Information

Before implementing QAD transactions, please note the following important information:

QAD published transactions are optimized for a paperless, directed-user experience that requires the fewest possible end-user data/scan entries. To achieve simplicity, generally the transactions do not provide the full functionality available in their desktop-back office .NET UI counterpart. For example, the inventory transfer function in the .NET UI can prompt for shipping details for intersite transfer; however, the published AS inventory transfer transaction does not. Moreover, AS transactions do not support negative values like some .NET UI programs do.

Note When additional capabilities are required, please contact QAD Services for help in personalizing the transactions for your business requirements.

The transactions described in this book are complete to the best of QAD's knowledge at the time of publishing. Unless otherwise specified, QAD does not guarantee, and makes no representations or warranties of any kind, as to the accuracy and completeness of the documentation.

Transactions that are modified are not supported by QAD. Please note that published transactions that are delivered in ERP, EAM, and Production Orders cannot be modified. When additional capabilities are required in a transaction, users should create a copy of a published transaction; then, make changes to the copied version. QAD does not support copied transactions that have been modified.

QAD supports only published transactions that are certified for Enterprise Edition (EE) releases and Automation Solutions (AS) framework versions. For information on transactions certified for a release, log in to the QAD Document Library and refer to *QAD Automation Solutions: Data Collection Transactions Release Notes and Installation Instructions*.

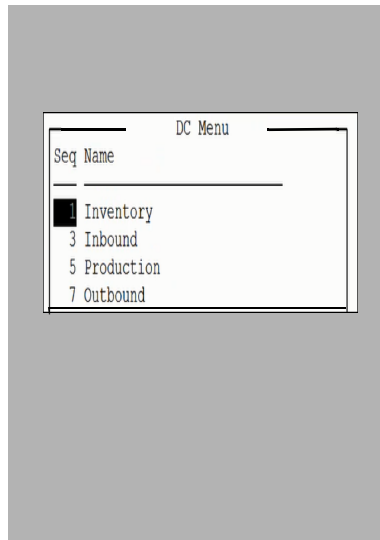
When QAD provides transaction updates, it is the customer's responsibility to retrofit to a prior QAD ERP release.



Production Order Menu

You can access transactions for production orders through the Production Order menu on your mobile radio frequency (RF) device or other device. Once you enter the correct login data, navigate to the screen shown in Figure 13.1.

Fig. 13.1
Production Order Menu



Production Order Transactions

There are various transactions that are available with production orders, such as:

- Material Request
- Material Pick-Transfer-Issue
- Material Transfer
- Material Issue
- Production Packaging
- Production Receipts
- Production Item Putaway

For details about these production order transactions, refer to the latest *QAD Automation Solutions: Data Collection Transaction User Guide*.



Serialization and Production Orders

This chapter discusses the following topics:

Introduction 212

Describes production operations integrated with Serialization, Item Attributes, and Quality Control (SAQ) functions, including production flows and process steps with links to other sections.

Production Process Flows 212

Lists steps in a general process flow for Serialization and tells you which programs to use.

Serialization Programs for Production Orders 213

Describes Serialization functions in Production Order programs.

Deleting Production Order with Associated Serial IDs 227

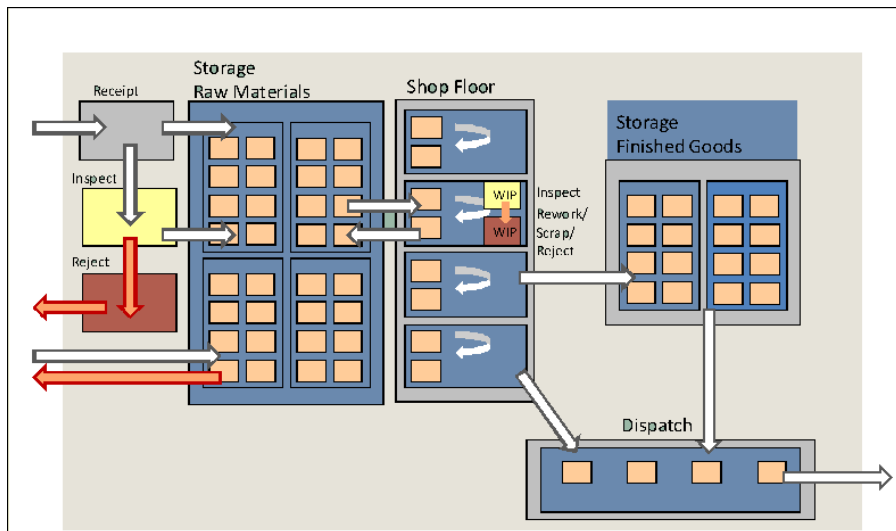
Tells you how to delete serialization data when you use production orders.

Introduction

You perform Serialization production-related functions using QAD Serialization programs or Serialization functions embedded within Production Order programs. This chapter only discusses Serialization programs built specifically for production orders or Production Order programs with embedded Serialization functions. For information on all Serialization programs/functions, refer to you *QAD Serialization User Guide*, version 2.7 or higher.

The following depicts the overall processes through the plant from inbound receiving, through production, to outbound shipment. Many of the functions can transact on packaged or serialized goods.

Fig. 14.1
Serialization Plant Processes



Production Process Flows

The production process flow requires stock movements from and to the shop floor locations. These transactions are inventory transactions. Shop floor transactions can be conducted in the Operation Activity Transaction program.

Note For sample flows and for complete information on Serialization programs, refer to your QAD Serialization user documentation.

The following table depicts typical steps when processing packaged items through production.

Table 14.1
Production Order Flow/Programs to Use

	Function	Production Order Program to Use	Program #	Link to Page
1	Create serial IDs	Serialization programs; see your Serialization user documentation	-	--
2	Book serial IDs for a production order	• Production Order Serial Booking • Pack Create by Production Order • Pack create by Production Line	• 16.3.14 • 16.5.17 • 16.5.18)	• 213 • 215 • 216

	Function	Production Order Program to Use	Program #	Link to Page
3	Pick components to production order.	Production Order Picklist Pick	.NET UI	87
4	Issue production order components	• Production Order Component Issue • Production Order Picklist Issue	• 16.5.12 • 16.5.11	• 220 • 219
5	Move components to shop floor for backflushing. Decommission packaged goods at backflush location.	• Pack Transfer • Pack Decommission	• 3.17.7 • 3.17.6	• 218 • 226
6	Print labels by production order	Pack Create by Production Order	16.5.17	215
7	Backflush components and receive packaged finished goods	• Operation Activity Transaction • Production Order Receipt	• 16.13.13 • 16.13.1	• 222 • 75
8	Move finished goods to warehouse	Pack Transfer	3.17.7	218
9	Return components to warehouse.	• Production Order Component Issue • Pack Transfer	• 16.5.12 • 3.17.7	• 220 • 218

Serialization Programs for Production Orders

The following programs are QAD Serialization programs for production orders. They are not documented in other chapters of this user guide.

Production Order Serial Booking

Use Production Order Serial Booking (16.3.14) to reserve serial IDs for discrete orders or discrete CUM orders.

Navigation

In the first frame, enter a production order. The production order can be a discrete order or a discrete CUM order. You cannot enter a repetitive order. Note the following when you enter specific order types:

- Discrete order: The booked serial IDs are linked with the discrete order.
- Discrete CUM order: The booked serial IDs are linked with the CUM order and the quantity to complete displays the total quantity of all its schedules.
- Discrete scheduled order, Type S: The system warns you to book serial IDs against the CUM order. The system displays the production order number and ID of the CUM order instead.

In the Booking Data Frame, the system calculates the fields, including the number of serial IDs required for the production order. The system calculates the number based on the quantity to complete and the serial hierarchy definition, including all level packaging that are determined by BOP explosion logic. The system also displays the number of serial IDs associated with this production order.

In the Sales Order frame, you can optionally enter a sales order line to associate the current production order with the specified sales order. Serial IDs that are already booked for the specified sales order line can be assigned to and associated with the current production order. All serial bookings for the current production order come from bookings for the specified sales order line. In

the number field, enter the number of serial IDs that you want to assign to the current production order, ensuring that the entered number is no greater than the booked serial IDs that are open for the linked sales order line. When the open quantity of booked serial IDs is not enough, you can use Production Order Serial Booking to reserve more serial IDs for the sales order line.

You can click Next to skip the Sales Order frame. Enter or accept the serial range ID and number to reserve serial IDs. The system validates the values. When you enter new numbers, it creates serial IDs with stage set to *Booked* and association set to the specified production order. When there are multiple serial ranges for the BOP, instead of entering the serial range ID one by one, you can reserve all the required serial IDs at the same time. Click Back when there are no serial IDs booked for the production order, and the system prompts you to book serial IDs for all serial ranges. Click Yes to book serial IDs for all levels.

Determining Default Serial ID

The system determines the default serial ID and number range by:

- Determining the BOP code from item packaging records based on Item (BOM)/Site/Address (Blank)/Transaction Type (RCT-WO).

When you use an alternate BOM, the system still follows the matching logic described in Item Packaging Maintenance, but the system gives the BOM code a higher priority than the item.

- Combining the BOP code and BOM code to determine the serial hierarchy definition. Components are determined by WO BOM explosion logic.

When all levels in the serial hierarchy definition use the same serial range ID, then the Serial Range ID field is display only and the default value of the Number field is serial ID required - serial ID booked. Other fields are editable. When calculating the serial ID required, the system skips phantom items, and serial IDs are calculated for its components.

- Displaying the serial range ID used at the lowest serialized level when the serial range ID is different; the default number is 0.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 14.2
Production Order Serial Booking (16.3.14)

The screenshot shows the 'Production Order Serial Booking' window. The top section displays production order details: Production Order: 7723, ID: 2530938, Item Number: pw001, Site: pwsite, BOM/Formula Code, Production Line: pwline, and Quantity to Complete: 120.0 EA. The bottom section, titled 'Booking Data', contains a 'Serial ID Required' field with a value of 45, a 'Serial ID Booked' field with a value of 0, and a 'Serial ID Used' field with a value of 0. A 'Serial ID Open' field also shows 0. Below this is a 'Serial Range ID' section with 'PwVBX' and a 'Number' field containing '30'. The 'Last Used' field shows 'BX01/24/180376'. A callout box with an arrow points to the 'Serial ID Required' field, containing the text: 'Enter production order data, then enter the number of serial IDs to book.'

Pack Create by Production Order

Use Pack Create by Production Order (16.5.17) to create packs and print labels for discrete production orders, including:

- Discrete orders
When you create serial IDs against a discrete order, the serial IDs are linked with the discrete order.
- Discrete CUM orders
When you create serial IDs against a discrete CUM order, the serial IDs are linked with the cumulative order and the Quantity to Complete displays the total quantity of all its schedules.
- Discrete scheduled orders, Type S.
When you create serial IDs against a discrete CUM order whose order type is S, the system warns you to create serial IDs against its CUM order. The system displays the production order number and ID of the CUM order instead.

The system upgrades serial IDs booked for the production order to assign pack code and standard pack quantity. When the production order is linked with a sales order line, you cannot create packs for it in this function; you can only upgrade booked serial IDs.

Navigation

Use the frames to select the production order, enter receipt data, and enter pack information.

In the Production Order frame, enter the production order information. The Item, Site, BOM/Formula Code, Production Line, Quantity to Complete fields are displayed only and come from the production order.

In the Receipt Data frame, enter lot/serial and reference information that you plan to use in the production order receipt. You can enter still enter/update data during the actual receipt.

The system displays serial creation information for the production order in the Serial ID Summary frame. The system displays the number of serial IDs required for this production order. It is determined by the quantity to complete and serial hierarchy definition, including all level packaging that are determined by BOP explosion logic. The system also displays the number of serial IDs associated with this production order.

In the Pack Data frame, you enter pack data. When you do, the following occurs:

- When no booked serial IDs are associated with the current production order, the system creates *New* packs according to the pack information in this frame.
- When there are serial IDs already booked for this production order, the system assigns pack information to booked serial IDs first, and updates the *Booked* serial IDs to *New* serial IDs. If booked serial IDs are fewer than the specified packs and the production order is *not* linked with an SO, the system also creates *New* packs using the pack data.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 14.3
Pack Create by Production Order (16.5.17)

Pack Create by Production Line

Use Pack Create by Production Line (16.5.18) to create packs and print labels based on item, site, or production line before production processing. Any production order processed on the line can use the serial IDs (labels) created by this function.

Navigation

Use the frames to enter production line data, lot/serial, and reference information that is planned to be received on the production line, and pack information.

In the header frame, enter the site, item, BOM code, and production line.

In the Receipt Data frame, you enter lot/serial and reference information that you plan to use on the production line. You can still enter/update the data during the actual receipt.

In the Pack Data frame, you enter pack data, including the pack code, number of packs, and pack quantity, and the UM for the pack quantity.

Fig. 14.4
Pack Create by Production Line (16.5.18)

Production Picklist Pick

Use Production Picklist Pick (16.5.7) to pick components from the stocking location. To pick components by pack, select the By Pack option in the header.

Note This section focuses on the Serialization functionality in Production Picklist Pick. For more information on the program's functions, see Chapter 6, "Managing Production Materials," on page 75.

In the header, specify the site, picklist, and sequence. Select the By Pack field to display the Pick Detail frame.

Scan the serial IDs of loose serialized items, unit packs, or assembly packs to pick the items or packs from the stocking location. Make sure that the scanned serial ID meet all of the following conditions:

- The serial ID is *Active*.
- The serial ID has the same site as the picklist.
- All items in the pack are on the picklist sequence.
- All items in the pack have the same pick policy and the same destination location.

The system sets the stage of the serial ID to *Picked* and links the serial ID to the picklist and the production order. When the total inventory quantity of the picked packs is greater than the quantity on the picklist, the system links the overpicked part to only the picklist.

When you scan a serial ID that is *Aggregated* on an active pack, the system prompts you to remove it. When you click Yes, the system removes it from its master pack and sets its stage to *Active*. You can then pick it for the current picklist.

When you scan a *Picked* serial ID and click Next, the system unpicks the serial ID from the picklist and changes its stage to *Active*. The system changes the inventory from picked to allocated and clears the link between the original picklist and the serial ID.

When you unpick an item serial ID whose parent unit pack is picked for multiple picklist details, the system prompts you to unpick its parent unit pack. When Yes, the system unpicks the unit pack with the item serial ID.

Fig. 14.5
Production Picklist Pick

Pack Transfer

Use Pack Transfer (3.17.7) or Pack Transfer - Multi Pack (3.17.9) to transfer packs that are picked for a production order picklist and whose pick policy is not Issue. The programs let you transfer picked packs and items to any location.

The topics in this section discuss Pack Transfer. For more information on Pack Transfer - Multi Pack, see your QAD Serialization user documentation.

In Pack Transfer, in the Serial ID field, scan the serial IDs of the packs or items. In the Location field, enter the destination location.

When the destination location is not the shop floor location (backflush location), the system updates the allocation record and keeps the serial ID at the *Picked* stage. The system creates picking history and serial history and links them. This means that packaged inventory can be moved several times while still picked on the picklist before reaching the final destination.

To transfer the inventory to the shop floor location, enter the backflush location for the component item as the destination location. After transfer, the system changes serial stages from Picked to Active. If all serial IDs on the picklist are transferred or removed, the system removes the picklist. The system follows these allocation rules:

- If the inventory is allocated to specific production orders and the Transfer Allocation Policy for the component item is Keep, after the transfer, the inventory is still allocated. But the inventory is no longer linked to the picklist.
- If the inventory is allocated to specific production orders and the Transfer Allocation Policy for the component item is Drop, after the transfer, the inventory becomes unallocated.
- If the inventory is allocated to the picklist, regardless of the Transfer Allocation Policy, after the transfer, the inventory becomes unallocated.

Fig. 14.6
Pack Transfer for Production Order

Production Order Picklist Issue

Use Production Order Picklist Issue (16.5.11) to issue components that are picked on production picklists directly to production orders. Ensure that:

- The Pick Policy for the component item is set to Issue
- Issue Policy for the component item is set to Direct.

The following topics discuss issuing serialized components. For more information on issuing other components, see “Production Order Picklist Issue” on page 92.

To issue the components by pack, select the By Pack option in the header frame.

When you select the Picked option, the system automatically loads serialized packs or items that are picked for the picklist sequence to the issue list. So you can issue the packs without scanning anything, and therefore, reduce manual entry. You can choose to manually scan serial IDs to add them to the issue list.

When you do not select the Picked option, the system displays the serial ID fields for you to manually scan the packs or items to issue. When you manually scan a unit pack that holds only non-serialized inventory with a single item and lot combination, Issue Quantity is editable. You can issue a quantity that is less than the quantity in the pack. The remaining quantity is unpicked from the picklist sequence after the transaction. For assembly packs and unit packs that contains serialized items, this field is disabled. You can only issue the whole pack.

Click Back and then answer the prompt with Yes to view the items that are being issued. When information is correct, click Yes. The system:

- Creates ISS-WO transaction, serial history, and picking history records, and links them.
- Decommissions pack serial IDs when all contents are issued.
- Consumes item serial ID but retains links to the picklist and order.
- Removes the picklist when all inventory on the picklist is issued.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 14.7
Production Order Picklist Issue by Pack

Production Order Component Issue

Use Production Order Component Issue (16.5.12) to issue components directly to a released or allocated production orders. To issue components by pack, after identifying the production order, select the By Pack option. You can issue full packs or part of a pack, and issue non-serialized loose items with this function.

Navigation

This program is best accessed from the Production Order Collection. When the program is accessed from the menu, follow the steps in this section.

In the header frame, enter production order information.

Then specify the operation you want to issue components to and select the By Pack field.

You can leave the Operation field blank. When you do, the system issues the components to multiple operations.

Then in the Serial field, scan the serial ID to issue. The pack or item serial ID that you enter can be *Active* or *Aggregated* on an active master pack. If the entered serial ID is aggregated on an active master pack, to add it to the issue list, the system prompts you to first remove it from the master pack.

When the scanned serial ID is of a unit pack that only contains non-serialized items of a single combination of item, lot, and reference, the Issue Quantity field is editable. You can issue all or part of the inventory in the pack. For all other serial IDs, the system issue the whole pack.

Click Back on the Serial field, the system prompts you to view the issue list.

After confirming the transaction, the system:

- Decommissions the pack serial IDs become when all its content is issued
- Consumes item serial IDs

- When the component is defined for multiple operations in the production order bill, the system first issues to the operation with earliest component issue date. When the issue dates are the same, the system issues to the operations in ascending order.
- When the component is defined for both a blank operation and other operations in the production order bill, the system first issues to the blank operation; then, it issues the remaining quantity to other operations.
- When a pack holds components that are not defined in the production order bill, the system checks Regulatory Attributes Control to see whether it is allowed. When allowed, the system adds the component to the production order and issues the components to the production order.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 14.8
Production Order Component Issue (16.5.12)

Component Issue Correction

You can use Production Order Component Issue to return previously issued components. You can return serialized components by pack, or return non-serialized components by pack.

To return non-serialized loose inventory, set By Pack to No, and enter a negative quantity.

You can return serialized loose inventory:

- 1 Set By Pack to Yes.
- 2 In the Serial field, scan the item serial IDs.
Ensure that the scanned item serial ID is in the Consumed stage and was issued to the production order.
- 3 Specify the destination site and location for the return.

You can return non-serialized components with unit packs. The system builds the non-serialized components into the unit packs.

- 1 Set By Pack to Yes.
- 2 In the Serial field, scan New or Decommed pack serial IDs.
- 3 In the Inventory Data frame, leave the Item serial ID field blank and enter the item number, quantity to return, site, location, and other data.

You can return serialized components with unit packs. The system builds the serialized components into the unit packs.

- 1 Set By Pack to Yes.
- 2 In the Serial ID field, scan New or Decommed pack serial IDs.
- 3 In the Item Serial ID field, scan the serial IDs of the component items to return.
Ensure that the scanned item serial ID is in the Consumed stage and was issued to the production order. If the pack serial ID is linked to sales order lines, make sure that the item serial ID is linked to the same master sales order line. If the pack serial ID is not linked to any sales order line, the item serial ID cannot be linked to any sales order line.

After you add the items and packs to the return list, click Back. You can view the return list. Then you can confirm the transaction. The system changes the master serial IDs to the Active stage and creates serial history.

Operation Activity Transaction

To receive finished goods by pack, you can use Operation Activity Transaction and select the Receive by Pack option. The system displays different Serialization UIs, depending on your scenarios and settings for the Gen Pack Serial field and the Build Pallet prompt.

Using Production Order Receipt for Similar Functions

Production Order Receipt provides many of the same serialized functions that you can find in Operation Activity Transaction. You can use Production Order Receipt to:

- Receive by pack and generate pack serial data
- Build pallets when receiving
- Specify serial IDs, BOP codes and view other Serialization data when receiving

For more information on Production Order Receipt, refer to Chapter 6, “Managing Production Materials,” on page 75.

Serialization Scenarios in Operation Activity Transactions

The following section summarizes a few scenarios for receiving packaged (Serialized) finished production into inventory with this transaction.



Receive into Prepared or Reserved Unit Packs

When you generated serial IDs in advance for unit packs and assembly packs (often pallets), you can receive finished goods into inventory, load finished goods into the prepared unit packs, and build the unit packs onto assembly packs. The packs can be available for use for any order (New stage) or reserved for a particular order (Booked stage). To do this, enter or scan a new unit pack serial ID in the Unit Pack frame; then, enter the quantity to receive in the Inventory Data frame. The system builds the scanned unit packs into the scanned assembly pack and makes the operation a pending receipt.

The following presents fields for which you must enter data:

Field	User Entry
Set Gen Pack Serial	No
Build Pallet?	No
Receive by Pack	Yes
Serial ID in Unit Pack frame	Scan or enter new unit pack serial ID
Quantity in Inventory Data frame	Enter the quantity to receive into the unit pack

Receive into Prepared or Reserved Unit Packs and Assembly Packs

When you generated serial IDs in advance for unit packs and assembly packs (often pallets), you can receive finished goods into inventory, load finished goods into the prepared unit packs, and build the unit packs onto assembly packs. The packs can be available for use for any order (New stage) or reserved for a particular order (Booked stage). To do this, enter or scan a new unit pack serial ID in the Unit Pack frame; then, enter the quantity to receive in the Inventory Data frame. The system builds the scanned unit packs into the scanned assembly pack and makes the assembly pack a pending receipt.

The following presents fields for which you must enter data:

Field	User Entry
Set Gen Pack Serial	No
Build Pallet?	Yes
Receive by Pack	Yes
Serial ID in Parent Pack frame	Scan or enter new assembly pack serial ID
Serial ID in Unit Pack frame	Scan or enter a new unit pack serial ID.
Quantity in Inventory Data frame	Enter the quantity to receive into the unit pack

Receive into New Unit Packs and Build into Prepared Assembly Packs

When you have generate serial IDs in advance for assembly packs (often pallets), you can create new serial IDs for unit packs; load finished goods into the prepared unit packs; build the unit packs onto assembly packs; and finally, receive finished goods into inventory. To do this, you can let the system generate a new unit pack serial ID in the Unit Pack frame; then, enter the quantity to

receive in the Inventory Data frame. The system can create multiple identical unit packs at once. You can also manually create one unit pack at a time; when you do, the system builds these unit packs into the scanned assembly pack and makes the assembly pack a pending receipt.

The following presents fields for which you must enter data to let the system generate unit packs and build them into prepared assembly packs:

Field	User Entry
Set Gen Pack Serial	Yes
Build Pallets?	Yes
Receive by Pack	Yes
Serial ID in Parent Pack frame	Scan or enter a new assembly pack serial ID
Pack Code-Inventory frame	Enter the
• Pack Code	• Pack code
• Std Pack Qty	• Standard pack quantity
• Nbr of Full Packs	• Number of full packs
• Qty in Partial Pack	• Quantity in the partial pack

To manually create one unit pack at a time and build the unit packs into prepared assembly packs:

Field	User Entry
Set Gen Pack Serial	No
Build Pallets?	Yes
Receive by Pack	Yes
Serial ID in Parent Pack frame	Scan or enter a new assembly pack serial ID
Serial ID in the Unit Pack frame	Blank or enter a non-existent unit pack serial ID
BOP Code in BOP Code frame	Enter the BOP code
Quantity in Inventory Data frame	Enter the quantity to receive into the unit pack.

Receive into New Unit Packs Only

When you have not generated any New packs or reserved Booked packs for the receipt, and you are receiving the finished goods, you can create new unit packs and load finished goods into the unit packs with this transaction.

You can let the system automatically generate new unit packs or manually create new unit packs. When the system automatically generates new unit packs, the system can create multiple unit packs at a time based on your entered data. The system generates unit packs based on your pack code and inventory data. The system then makes the unit packs pending receipt. When you manually create unit packs, you can only create one unit pack at a time.

The following presents fields for which you must enter data:

Field	User Entry
Set Gen Pack Serial	Yes
Build Pallets?	No

Field	User Entry
Receive by Pack	Yes
Pack Code-Inventory frame:	Enter the
• Pack Code	• Pack code
• Std Pack Qty	• Standard pack quantity
• Nbr of Full Packs	• Number of full packs
• Qty in Partial Pack	• Quantity in the partial pack

Receive into New Unit Packs and Build into New Assembly Packs

When you did not generate any New packs or reserved Booked packs for the receipt, and you are receiving the finished goods, you can create the unit packs and assembly packs at the time of the transaction.

You can let the system automatically generate new unit packs or manually create new unit packs. When the system automatically generates new unit packs, it can create multiple unit packs at a time based on your entered data. When you manually create unit packs, you can only create one unit pack at a time. When you do, the system generates unit packs based on your pack code and inventory data and creates assembly packs. The system loads finished goods into the created unit pack, builds the created unit packs into the assembly packs; then, makes the assembly packs pending receipt.

The following presents fields for which you must enter data:

Field	User Entry
Set Gen Pack Serial	Yes
Build Pallets?	Yes
Receive by Pack	Yes
Serial ID in the Parent Pack frame	Blank or enter a non-existent assembly pack serial ID
BOP Code in BOP Code frame	Enter a BOP code.
Pack Code-Inventory frame:	Enter:
• Pack Code	• Pack code
• Std Pack Qty	• Standard pack quantity
• Nbr of Full Packs	• Number of full packs
• Qty in Partial Pack	• Quantity in the partial pack

To manually create one unit pack at a time:

Field	User Entry
Set Gen Pack Serial	No
Build Pallets?	Yes
Receive by Pack	Yes
Serial ID in Parent Pack frame	Blank or enter a non-existent unit pack serial ID
Serial ID in the Unit Pack frame	Blank or enter a non-existent unit pack serial ID
BOP Code in BOP Code frame	Enter the BOP code
Quantity in Inventory Data frame	Enter the quantity to receive into the unit pack.

Receive into Existing Active Unit Packs

When receiving finished goods, you can build finished goods into existing unit packs (active unit packs already in inventory). The system add the received inventory into the existing unit pack and makes the whole unit pack pending receipt.

The following presents fields for which you must enter data:

Field	User Entry
Set Gen Pack Serial	No
Build Pallets?	No
Receive by Pack	Yes
Serial ID in Unit Pack frame	Scan or enter an active unit pack serial ID.

Decommission Pending Packs

You can remove Pending packs by scanning the pending pack serial ID once again. Answer Yes when the system prompts you to remove the pack from the receipt list. The system decommissions the pack serial ID.

To add this pack back to the receipt list, scan the decommissioned (Decommed) serial ID. The system prompts you to reactivate the pack. Answer Yes and you can load finished goods into the pack again.

When a master pack is open accidentally, and you scan an aggregated pack, the system prompts you to remove the pack from its master pack. When Yes, this pack becomes Decommed, too. When there is no other packs in the master pack after the decommission, the system decommissions the master pack.

Production Receipt Backflush

When receiving finished goods using Operation Activity Transaction or Production Order Receipt, you can backflush components at the same time for end items with an Issue Policy set to Backflush. Set Calculate Backflush field to Yes, and the system displays the Component Issue Frame. These two functions only support backflushing non-serialized components. To issue serialized components or issue components by pack, use Production Order Component Issue or Production Order Picklist Issue.

Production Receipt Correction

You can use Operation Activity Transaction or Production Order Receipt to return finished goods by pack back from inventory to work in process. You do this by entering a negative quantity for the inventory to return in the Qty Complete field. When you enter a negative quantity for production receipt correction, the system ignores the value of the Gen Pack Serial option.

You can return an assembly pack. The assembly pack can be a master pack or aggregated on an active master pack. After you scan the assembly pack, the system adds the whole assembly pack to the return list. If it is aggregated, the system first removes it from the master pack. Click Back and confirm the return transaction, and the whole pack is returned. The assembly pack and all its lower-level serial IDs become Decommed.



You can return a unit pack. The unit pack can be a master unit pack or aggregated on an active master pack. If it is aggregated, the system first prompts you to remove it from its master pack.

- When the unit pack holds serialized items or items with multiple lots, the whole unit pack is returned. The unit pack and all its lower-level serial IDs become Decommed.
- When the unit pack holds only non-serialized items with a single lot, you can return all or part of the inventory. In the Return Quantity field of the Inventory Data frame, enter the quantity to return. The system decreases the inventory quantity in the unit pack. When all inventory of the unit pack is returned, the system decommissions the unit pack.

You can also return a serialized end item. The item serial ID can be active or aggregated on an active master pack. If it is aggregated, after you scan the item serial ID, the system removes the item from its master pack automatically.

Note To return loose non-serialized items, use standard production receipt correction function. Do not select the Receive by Pack field. For more information, see Production Order User Guide.

If a serial ID is added to the return list and you scan the serial ID once again, the system removes the serial ID from the return list.

Deleting Production Order with Associated Serial IDs

You can use either of the following functions to delete a production order:

- Production Order Maintenance
- Production Order Delete/Archive

When you delete a production order:

- When the serial IDs are linked with the production order and are not associated with a sales order, the system deletes these serial IDs.
- When the booked or new serial IDs linked with the production order are associated with a sales order, the system does the following:
 - Changes *New* serial IDs to *Booked* when there are *New* serial IDs associated
 - Clears the pack code, item, lot, reference, UM, and location for the serial IDs
 - Removes the link between the serial IDs and the order

In both situations, the system also creates serial history records.



Generating Reports

This chapter discusses the following topics:

***Introduction* 230**

Introduces production order reports.

Introduction

This chapter provides a list of production order reports by activity of function.

Table 15.1
Production Order Reports/Browses by Category

Menu	Report
Production Line Reports	
16.1.2	Production Line Browse
16.1.5	Item Production Line Browse
16.1.7	Production Line Allocation Browse
.NET UI	View Production Line Reserved Loc
Calendar Reports	
14.18.2	Work Center Calendar Browse
14.18.5	Work Center Calendar Excpt Brwse
14.18.7	Work Center Calendar Inq by Date
16.1.13.2	Production Line Calendar Browse
16.1.13.4	Production Line Calendar Except Brwse
16.1.13.6	Production Line Cal Inq by Date
16.1.13.7	Production Line Calendar Report
17.1.16	Process Calendar Inq by Date
17.1.17	Process Calendar Browse
Work Center Reports	
14.6	Work Center Browse
16.4.7	Work Center Displatch Report
24.17	Work Center Load Detail Report
24.14	Work Center Load Summary Report
14.7	Work Center Report
16.13.20.44	Work Center Utilization Report
1.1.18.14	Work Ct Reserve Loc Browse
Production Order Reports	
16.3.13	Production Order Comment Viewer
16.3.7	Production Order Routing Browse
16.3.27	Production Order Status Report
16.3.2	Production Order Browse
1.22.5	Prod Order Attribute Browse
1.15.41.38	Prod Order Attribute Ctgry View
1.15.41.37	Prod Order Attribute View
16.3.28	Production Order Routing Report
16.13.20.26	Efficiency by Production Order Report
16.13.20.27	Operations by Production Order
Production Order Bill Reports	
1.15.40.18	Prod Order Bill Profile View
1.15.40.19	Prod Order Bill Profile Attr View

Menu	Report
16.3.5	Production Order Bill Browse
Production Order Activities Reports	
16.13.20.1	Production Activity Trans Inquiry
16.13.20.3	WIP Status Inquiry
16.13.20.5	Operation Transaction Detail Report
16.13.20.12	Downtime Browse
16.13.20.15	Prod Order Efficiency Browse
Production Order Account and Cost Reports	
1.2.10	Prod Order Account Viewer
1.2.11	Prod Order Account Report
16.13.20.15	Prod Order Efficiency Browse
16.20.26	Prod Order WIP Cost Report
16.20.27	Prod Order Cost Report
16.20.28	Production Order GL Details
CUM Reports	
1.15.41.42	Cum Order Profile View
16.3.10	Cumulative Order Browse
16.20.25	Cumulative Order Cost Report
Subcontract Reports	
5.12	Subcontract Routing/Op PO Browse
16.5.22.7	Subcontract Item Status Inq
16.5.22.8	Subcontract Item Status Rpt
Production Reports	
33.15.35	Production Labor Report
33.19.32	Production Data Report



Co-/By-Product Production Orders

This chapter discusses the following topics:

***Introduction* 234**

Introduces co-/by-product orders and joint orders.

***Creating a Joint Set* 234**

Tells you how to create a joint order set in Production Order Maintenance; also tells you how to modify a joint order set.

***Creating Transactions* 236**

Tells you how to create transactions using Operation Activity Transaction; then, describes the transactions.

***Co-/By-Product Receipt Backflush* 238**

Tells you how to use Production Order Receipt to backflush components for co-/by-products orders and discusses the backflush calculation.

***Recyclable By-Products* 239**

Discusses programs and functions in the Production Orders module that support recyclable by-products.

***Additional Co/By-Product Functions* 240**

Discusses programs in the Production Order module that support other functions to perform on co-/by-product orders. Also, discusses limitations for supporting co-/by-products.

Introduction

When a production order is entered for a co-product or base process, the system creates multiple production orders for the base process and each of its co-products and by-products. Together, these production orders share the same production order number and make up a joint production order set. A joint production order set consists of one production order for a base process and additional production orders for each of its co-products and by-products.

The base process production order is used to schedule and control production. The base process order has a production order bill and a production order routing, whereas the co-product and by-product orders do not.

The following topics discuss co-/by-product processing with Production Orders.

Creating a Joint Set

When you enter a production order in Production Order Maintenance (16.3.1) for a base process or co-product, the system creates a joint order set comprised of a production order for the base process and one for each of its co-products and by-products.

All production orders in the joint set (termed *joint orders*) share the same production order number, site, production line, status, release date, sequence and accounting data, but have different order IDs. The base process order includes a production order bill and routing for the base process.

You can create joint order sets for regular work orders (where the Type is blank), but not for expense, rework, and final assembly order types or repetitive. Note the following about joint order sets:

- Yield percent of all orders in a joint order set is always 100%.
- When the system calculates the quantity to start of the orders in the joint order set:
 - The system disables the yield percent on co/by-product orders and the base process order.
 - Each co-/by-product order has separate regulatory attributes settings.

You can also create a joint order set for an alternate base process. When you enter an alternate base process and alternate base process routings on a production order, the system creates a joint order set based on the entered base process and routing.

The Co/By-Product Production Orders frame displays in Production Order Maintenance. Use the frame to maintain the quantity ordered and process a percentage of the orders in joint order set.

For field descriptions, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 16.1
Co-/By-Product Frame, Production Order Maintenance

Production Order Maintenance

Prod Order: 0908-pr1 BOM/Formula Code: 0908-base-process

Order Status: E Qty To Start: 90 EA Standard Batch: 1 EA

Item Number	Description	Qty To Start	UM	Process	ID	CT
0908-base-process		90.0	EA		2457398	P
0908-by-prod		90.0	EA		2457400	B
0908-co-prod		90.0	EA		2457401	C
0823-prod		0.0	EA		2458585	C
0802-prod		0.0	EA		2458586	C

Item Number: ID:

Process: Quantity Type:

Qty To Start: Co/By Type:

Qty Completed:

Modifying a Joint Order Set

You can perform any of the following operations on joint orders in Production Order Maintenance:

- Add or delete joint orders for co-/by-products from a joint set when the status of the set is E(xploded), A(llocated), or R(eleased).
- Manually create an order with the same production order number of the joint order set.
- Add/delete orders for co/by-products.

When you add a new order to a joint set, you must specify the quantity type and co-/by-product type. Note the following about the quantity type:

- When set to blank, you can update the Qty Ordered field.
- When set to P, you can update the Process Percent field, and the system calculates the quantity ordered. You can change the quantity ordered; when you do, the system automatically updates the process percentage.

Since a joint order set must have only one base process order and at least one co-product order, when you delete the base process order or the only co-product order, the system deletes the entire set.

When you update the quantity to complete or start on any order in a joint order set, the system follows normal processing when rescaling order quantities in the joint order set. The system rescales order quantities based on the quantity to start.

Viewing Co-/By-Product Production Order Data

You can also view co-/by-product orders in the Co-/By-Product Production Browse (16.3.19). You can search by item number, production order number/ID, BOM/formula, due date, site, and more. Only co/by-product orders and base process orders display in the browse.

Fig. 16.2
Co-/By-Product Production Browse (16.3.19)

Production Order	ID	Site	Production Line	Item Number	Description	Co/By Type	Qty To Start	Actual Qty Completed	Actual Qty Scrapped	UM	Due Date	Status
0908-pr1	2457398	10-100		0908-base-process		P	90.0	0.0	0.0	EA	9/8/2017	E
0908-pr1	2457400	10-100		0908-by-prod		B	90.0	0.0	0.0	EA	9/8/2017	E
0908-pr1	2457401	10-100		0908-co-prod		C	90.0	0.0	0.0	EA	9/8/2017	E
0908-pr1	2458585	10-100		0823-prod		C	0.0	0.0	0.0	EA	9/8/2017	E
0908-pr1	2458586	10-100		0802-prod		C	0.0	0.0	0.0	EA	9/8/2017	E
10012	2460579	mtsile1	mt13	MT13	MT11 coby base item	P	10.0	5.0	0.0	EA	9/26/2017	R
10012	2460580	mtsile1	mt13	MT13by1	MT11 by products 1	B	30.0	15.0	0.0	EA	9/26/2017	R
10012	2460581	mtsile1	mt13	MT13co1	MT10 co products 1	C	10.0	3.0	0.0	EA	9/26/2017	R
10012	2460582	mtsile1	mt13	MT13co2	MT10 co products 1	C	20.0	16.0	0.0	EA	9/26/2017	R
10018	2460618	mtsile1	mt13	MT13	MT11 coby base item	P	10.0	1.0	0.0	EA	9/27/2017	R
10018	2460619	mtsile1	mt13	MT13by1	MT11 by products 1	B	30.0	3.0	0.0	EA	9/27/2017	R
10018	2460620	mtsile1	mt13	MT13co1	MT10 co products 1	C	10.0	1.0	0.0	EA	9/27/2017	R
10018	2460621	mtsile1	mt13	MT13co2	MT10 co products 1	C	20.0	2.0	0.0	EA	9/27/2017	R
10023	2460671	ygssite1	1000	ygsc01		C	10.0	1.0	0.0	EA	9/27/2017	C
10023	2460672	ygssite1	1000	ygscbase2		P	10.0	3.0	2.0	EA	9/27/2017	C
10023	2460673	ygssite1	1000	ygscby1		B	150.0	65.0	6.0	PL	9/27/2017	C

Creating Transactions

In Operation Activity Transaction, the you can perform the following functions and create transactions:

- Process quantity completion with reject/scrap material:
 - The system reports the quantity for the base process order.
 - For the last operation, the system uses the quantity complete/scrap to update the actual quantity completed and actual quantity scrapped of the base process order and creates a SCRAP-I, SCRAP-O, or SCRAP-R transaction for the base process order.
- Consume materials for work orders for co-/by-products.
- Backflush materials; the system determines the component quantities of the base process order quantity processed. For additional information on backflush, see “Co-/By-Product Receipt Backflush” on page 238.
- Report labor; the system reports labor on the base process order as for regular production orders.
- Close base process orders; the system closes all orders in the joint order set.
- Calculate the open quantity based on the base order quantity complete:
 - The quantity complete defaults from the Open Qty field, but you can update the quantity.
 - The system records the quantity complete and the scrap quantity for the corresponding co-/by-product orders.
 - The system creates a SCRAP-O transaction for co/by-product orders when you enter the quantity scrapped.

The system displays the Co-/By-Product Receipt frame in Operation Activity Transaction.

Fig. 16.3

Co-/By-Product Production Order Receipts Frame, Operation Activity Transaction

Co-/By-Products Production Order Receipts							
Item Number	ID	Open Qty	UM	Received Qty	UM	Scrapped Qty	UM
0802-prod	2458586	0.0	EA	0.0	EA	0.0	EA
0823-prod	2458585	0.0	EA	0.0	EA	0.0	EA
0908-by-prod	2457400	10.0	EA	10.0	EA	0.0	EA
0908-co-prod	2457401	10.0	EA	10.0	EA	0.0	EA

Item Number: 0802-prod

ID: 2458586

Substitute: ☐

Description:

Received Qty:

UM:

Conversion:

Scrapped Qty:

UM:

UM Conversion:

Site:

Location:

Lot/Serial:

Reference:

Multi Entry: ☐

Chg Attributes: ☐

Total Units:

In addition to creating transactions, you can use the program to:

- Maintain regulatory attributes for each co-product/by-product order.
- Maintain item attributes for each co/by-product order.
- Receive all co-/by-products in a the joint order set into inventory:
 - When reporting at the final operation, Move to Next Operation must be set to Yes.

Transaction List

The system creates inventory transactions as shown in the following table:

Table 16.1
Co-/By-Product Transactions

Transaction Type	Order	Item Number	Lot/Serial	Update Inventory
ISS-WO	Base process order	Actual component	Actual Lot	Yes
RCT-WO	Base process order	Base process Item	Base process order ID	No
ISS-WO	Co-product order	Base process Item	Base process order ID	No
ISS-WO	By-product order	Base process Item	Base process order ID	No
RCT-WO	Co-product order	Co-product Item	Actual lot	Yes
CONS-WO	Co-product order	Co-product Item	Actual lot	No
RCT-WO	By-product order	By-product Item		Yes
CONS-WO	By-product order	By-product Item		No

Additional Transactions

Additional transactions that support co-/by-product orders in this program include:

- Operation labor
- Reject/scrap
- Rework
- Move

- WIP adjust

Co-/By-Product Receipt Backflush

You can use Production Order Receipt to backflush components for co-/by-products orders. In the program, you can:

- Search on co-/by-product orders in the order search frame; the system displays the base process order in the joint order set.
- Close an order in the joint order set, the system closes all orders in the joint order set.
- Receive co-/by-product orders, the system displays the new Co-/By-Products Receipts frame regardless of the Modify Inventory field setting.
- Enter negative quantities in all transactions.

Note the following about backflush processing in the program:

- The system updates the queue and routing for the base process order.
- For a move transaction from the last operation, the system assumes all co/by-product orders are received and displays the Co-/By-Products Receipts frame.

The system does not:

- Update the queue or routing or record labor when you only receive a specific co-product/by-product order
- Issue component by default when you only receive a specific co/by-product order

Note You can set Modify Inventory to Yes to issue components manually.

Calculating Backflush Components for Co-/By-Products

The system calculates the backflush (issue) quantities for the components of a joint production order set from the quantity completed (batch quantity) for its base process. Two methods are used to calculate the quantity completed for the base process. The backflush method for the base process determines the default method used and is set up with Co-Product/By-Product Maintenance or Process/Formula Maintenance.

Backflush method 1: The backflush (base process) quantity is calculated from the receipt and scrap quantities processed for all of the co-products and by-products. Use this method when the quantity for a batch is directly related to the sum of its output. For example, for a process that sorts fruit into different sizes and grades, the batch quantity can be calculated from the total amount of fruit processed for all sizes and grades. This method is generally appropriate when there is greater variability in the output percentages for the various products.

Backflush method 2: The default backflush (base process) quantity is the order quantity for the base process production order. You can change the backflush quantity to reflect the actual quantity processed for a batch. Use this method when the batch quantity is closely related to the expected output of a particular co-product. For example, for a process that makes ice cream, the batch quantity can be calculated from the amount of ice cream processed. Any by-products, such as waste water, would not be necessary for the calculation of the batch quantity.

Important When you calculate backflush for co-/by-product components, the Calculate Backflush field only works when you receive all co/by-products.

For field descriptions for Production Order Receipt, find the program in Table 16.2 on page 244 to link to a list of fields for the program.

Fig. 16.4
Operation Activity Transaction, Receipt Backflush

The screenshot shows the 'Production Operation Activity...' window. At the top, there's a search bar with 'Site' and 'starts at' dropdowns, and a 'Search' button. Below the search bar, it says 'Viewing 1 - 100 of 2528' and 'Records per page: 100'. A table lists items with columns: Site, Line, Item Number, Description, Due Date, Shift, Sequence, Order Type, Routing Code, BOM/Formula Code, Order Status, and Qty. The table has two rows: one for 'jymline' and 'jpar-13015' with a due date of 1/1/2015, and another for 'Medical Ultrasound' with a due date of 10/8/2015. Below the table, there's a tabbed interface with 'Operation Activity Transaction' and 'Prod Order Receipt Backflush' tabs. The 'Prod Order Receipt Backflush' tab is active, showing a detailed view of the selected item. It includes fields for Employee (10-EMP02), Site (10-100), Work Center (4010), Item Number (jpar-13015), Routing (jpar-13015-ralt1), Eff Date (6/6/2017), Line (jymline), Machine (ID: 2410251), REP Schedule (CUM ID: 22235502), and BOM Code (jpar-13015-balt1). There are also input fields for Qty Complete (0.000000000), Qty Scrapped (0.0), Reason Code, and Total Qty. Checkboxes for 'Receive by Pack', 'View Schedules', 'Modify Inventory', 'Std Setup Time', 'Calculate Backflush', and 'Close Order' are present. A 'Gen Pack Ser' checkbox is also checked.

Click Production Order Receipt to backflush items.

Recyclable By-Products

For recyclable by-products, Production Order Bill Maintenance (16.3.4) lets you enter negative values in the Qty Required field. When there is inventory picked for the component, you cannot change the a positive value in the field to a negative value.

Material Planning recognizes the demand and supply of the recyclable materials; by-product supply is a negative demand.

When the order is allocated for recyclable by-products, the system:

- Sets general allocation to zero (0)
- Does not create detail allocation when the order is allocated

You can now receive recyclable by-products for the operation where a by-product is expected to be received. You do this by entering a negative quantity to receive the by-product, rather than a positive quantity to issue it. You can receive recyclable by-products using any of the following:

- Production Order Component Issue (16.5.12)
- Production Order Receipts (16.13.1)
- Operation Activity Transaction (16.13.13)

Additional Co/By-Product Functions

Additional functions were added to support co-/by-products. You can now:

- Approve them in Planned Production Ord Approval (23.10).
You specify base processes by entering a BOM/Formula code range. The program changes the status on all orders in a joint set from P(lanned) to F(irm).
- Firm all the orders in the joint order set using Auto Firm Planned Orders.
- Change the status of all the orders in the joint order set when any order is included in the selection criteria in Multiple Order Status Change (16.4.25).
- Delete or archive all orders within a joint order set when you select any single order within the set in Production Order Delete/Archive (16.3.50).
- Create picklists when you enter an order in a joint order set in Bulk Item Picklist Calculation (16.5.3).
- Allocate orders when you enter an order in a joint order set in Production Order Allocate (16.5.1).
- When allocating a joint order set with a status of F or E, the system changes the status of the joint order set to A(llocated); then, allocates components to base process orders. When there is a shortage, the system creates a shortage allocation for the component on the base process order.
- Issue components using Production Order Picklist Issue (16.5.11) or Production Order Component Issue (16.5.12).

When using Production Order Picklist Issue, the system issues the component on the base process order. When using Production Order Component Issue, the system displays the base process order in the joint order set when you select a co-/by-product order; then issues the component on the base process order.

- Manually allocate items for a co-by-product order using Prod Order Manual Allocation (16.5.2).

When users enter a co-product order or a by-product order, the system changes it to the base process order.

- Release or print a co-/by-product order using Production Order Release/Print (16.4.2).

When you release, the system releases the joint order set when you select one order in the set. When you select the order sheet as output, the system displays the order information for the base process order in the routing section and displays the co-/by-products when printing.

Limitations

QAD Serialization does not support co/by-products; therefore, Production Order functions do not support the integration between co/by-products and Serialization.

Note You cannot create repetitive co-/by-product orders or discrete scheduled orders.

Limitations with Serialization and co-/by-products includes the following:

- When a co/by-product is serialized, the system does not generate a production order.
- Production Order Serial Booking (16.3.14) does not support co/by-product orders.
- Pack Create by Production Order (16.5.17) does not support co/by-product orders



When you select an order in a joint order set in the program, the system disables the Receive by Pack and Gen Pack Serial options.

- You cannot subcontract co/by-product production orders.

When you try, Purchase Order Maintenance (5.7) and Supplier Scheduled Order Maintenance (5.5.1.13) do display an error message, informing you that you cannot process a subcontract the co/by-product production orders.



Reference Material

This chapter discusses the following topics:

***Field Help* 244**

Provides an alphabetized list of programs with links to sections that contain both fields and field descriptions.

Field Help

This chapter provides field descriptions for the important production order programs described in this user guide. Only important fields are described for each program. The fields are generally described in the order in which they display within the program.

Programs are listed alphabetically. Field descriptions for standard QAD programs that were not changed for production order functionality can be found in the core QAD user guide that describes the program or in online field help.

Table 16.2
Alphabetical List of Programs

Auto Firm Planned Orders	Pack Create by Production Order	Production Order Component Issue	Production Picklist Undo
Item Inventory Data Maint	Post Rep Accum Usage Variance	Production Order Control	Regulatory Attributes Control
Item Master Copy	Process Definition Maintenance	Production Order Delete/Archive	Reject/Scrap Transaction
Item Master Maintenance	Prod Activity Trans Delete/Arch	Production Order Maintenance	Repetitive CUM Order Create
Item-Site Inventory Data Maint	Prod Line Reserve Loc Maintenance	Production Order Picklist Issue	Repetitive CUM Order Maintenance
Item-Site Planning Maintenance	Prod Order Accounting Close	Production Order Receipt	Routing Maintenance
Move Transaction	Prod Order Manual Allocation	Production Order Routing Maintenance	Routing Maintenance (Rate Based)
Multiple Order Status Change	Production Line Allocation Maintenance	Production Order Serial Booking	Rework Transaction
Operation Activity Transaction	Production Order Bill Maintenance	Production Order Split	Split CUM Order Maintenance
Operation Labor Transaction	Production Line Item Create	Production Picklist Pick	WIP Adjust Transaction
MRP Control	Production Line Item Update	Production Picklist Print	Work Center Maintenance
Pack Create by Production Line	Production Line/Order Update	Production Picklist Transfer	Work Ctr Reserve Loc Maintenance

Auto Firm Planned Orders

Relevant fields include the following:

Include Production Lines. Specify Yes to have the system automatically firm orders associated with the site and production lines at the site.

Include production order/Rep/Both. Choose production orders, repetitive orders, or both types of orders to auto-firm.

Include Work Centers. Specify Yes to have the system automatically firm orders scheduled on work centers.

Include Kanban Replenished Items. Indicate if production orders for kanban items are considered by this function. Kanban items are defined first in Item Master Maintenance, then in Kanban Item Master Maintenance for use in the QAD kanban module. Refer to your QAD Lean Manufacturing user documentation for more information on the kanban module.

Item Inventory Data Maint

Serial Control. Define whether this item needs to be serialized.

M: Mandatory. Each item in the inventory requires a serial ID. The default is mandatory.

N: Never. This item is not serial controlled, but the pack containing this item can have a serial ID.

ABC Class. Enter a code classifying and ranking this item. This field is validated against predefined values entered in Generalized Codes Maintenance for field pt_abc, if any.

ABC classification codes determine the count frequency and the error tolerance allowed for each item. The Cycle Count Worksheet selects items for counting based on ABC class. ABC class can also determine how an item is managed. Class A items usually require tighter physical control, such as a locked stocking area, and tighter planning parameters, as well as more frequent cycle counts.

You can generate some reports, such as the Inventory Valuation Report, for ranges of ABC classes.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

You can use Item ABC Status Report/Update to calculate ABC codes automatically based on annual item usage amounts. Usually items in the top 20% are given class A, the next 30% class B, and the rest class C. However, you can adjust these percentages as needed.

Any quantity below C is assigned a blank ABC code. For example, when A is 10%, B is 20%, and C is 30%, the remaining 40% is set to blank.

You can also classify items manually. You might do this for an item that has low use but is expensive or theft-prone.

Note When you first implement the system, load ABC classes either from the old system or manually. The Item ABC Status Report/Update produces meaningful results only when it analyzes at least six months of data.

While you can assign other class codes, Item ABC Status Report/Update only reports and updates items with a class of A, B, C, or blank. Be careful not to assign a non-blank and non-ABC code to any item that may become an A, B, or C item. Assign any non-inventory items such as configured products, pseudo items, or planning parts a different ABC class.

Lot Control. The value of Lot Control for the item determines if a lot or serial number is required.

Blank: Lot/serial numbers are not required, although they can be recorded as needed.

When Serial Control is set to M (Mandatory) and Lot control is blank, the system generates item serial IDs; however, it is not mandatory that you enter the lot number.

L: Lot numbers are required for this item. During issues and receipts, a lot number must be entered. The lot number applies to the entire transaction quantity entered.

When set to L and:

- Serial Control is set to M (Mandatory), the item requires both an item serial ID and a lot number, so that each inventory item has a serial ID and the items can be of the same lot.
- Serial Control is set to N (Never), the system does not create an item serial ID for the item; however, you can still pack it in a serialized pack. You must enter a lot number.

S: Single Lot. Lot is limited to having a maximum of quantity of one (1). During issues and receipts, the maximum quantity for each lot is a quantity of one. For example, when you receive 10, you must enter 10 lot numbers with a quantity of one each.

When the Serial Control field is set to M (Mandatory), you cannot set this field to S. And, conversely, when you set Lot Control to S, you cannot set Serial Control to M.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

The system maintains complete lot/serial number traceability. The Lot Actual Bill Inquiry lists all the lot/serial numbers of components and raw materials used to make a given lot/serial number.

Average Interval. Enter the number of calendar days to use as an averaging interval for this item. The default is 90 days. This field is validated against predefined values entered in Generalized Codes Maintenance, if any.

The Item ABC Status Report/Update calculates the average sales shipments and the average total quantity issued by site using this averaging interval. These values may forecast future usage. They also suggest ABC classifications.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

When an item is shipped or issued, the quantity is recorded. Run the Item ABC Status Report/Update on a regular basis to factor in recent activity.

When the system is first implemented, average sales and average issues are zero. It can take several years to build up meaningful averages for updating ABC codes. If you have access to data for calculating average sales and average issues on your existing system, you can write a custom program to update the database fields in `_avg_sls` and `_avg_iss`.

Site. Enter the site where this item is normally produced or stored. Site defaults from the Default Site field in Inventory Control.

Site codes identify areas where inventory is manufactured or stored: an off-site storage area, a distribution center, a warehouse, a manufacturing facility, or any combination of these within a specific domain.

Inventory is controlled and production is planned by site. This includes inventory availability, manufacturing methods and costs, sales, purchases, manufacturing plans and orders, and forecasts.

Each site is associated with a specific general ledger entity, allowing complete financial results to be maintained and monitored by site (or by groups of sites).

Cycle Count Interval. Enter the number of calendar days between cycle counts for this item. The default is 120 days. This field is validated against predefined values entered in Generalized Codes Maintenance for field `pt_cyc_int`, if any.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

Cycle count intervals are normally assigned based on the ABC class of the item. They can be updated automatically using the Item ABC Status Report/Update.

When the system is first implemented, last count date is normally blank for all your items. If you do not introduce the dates, the system selects items to be counted in item number sequence. To avoid this, if you know the last count dates, load them. Otherwise, you may want to set up a Progress routine to assign dates in some logical manner.

Location. Enter an optional location code indicating the physical location where this item is normally stored. The value entered in Item Master Maintenance is used as the default for all sites. Site-specific values are set up in Item-Site Inventory Data Maintenance.

Note Default locations for sales transactions can also be defined by customer in Reserved Location Maintenance. Consigned inventory uses the default locations defined in Ship-To/Item Controls Maintenance.

QAD ERP backflush functions use default item or item-site locations only when the work center where the backflush occurs is not itself specified as a location.

Shelf Life. Enter the number of calendar days that this item can be held in inventory before it becomes unusable. Shelf life is typically defined for items that spoil or degrade over time.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

You can use shelf life to set the expiration date for inventory. Inventory that has expired does not appear on picklists as a quantity to be picked. If you try to ship or issue expired inventory, an error message displays and you cannot continue.

The system calculates an expiration date when an item is received into inventory by adding the number of days specified for shelf life to the receipt date. You can change expiration date using:

- Inventory Detail Maintenance
- Detail Maintenance by Item/Lot
- If you are using the Regulatory Attributes module, Multi-Lot Inventory Detail Update

When a lot is recertified, a new expiration date can be assigned

You can impose additional restrictions by using the Issue Days field in Inventory Control. For example, if you set the number of days to 5, you cannot ship or issue expired inventory or inventory that will expire in the next 5 days.

Location Type. Enter a code identifying the type of location where this item is stored. Use type codes for items with special storage requirements, such as temperature or humidity. You can describe the exact requirements using master comments associated with the item.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

A type code can be assigned to each location in Location Maintenance. When an item is received, transferred, or counted using a cycle count or tag count, the system verifies that the location type matches the location type associated with the item. If not, an error displays and the transaction cannot be processed.

Auto Lot Numbers. This field determines whether the system automatically assigns lot numbers to items with Lot/Serial Control set to L (lot). It has no effect for other items.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

How lot numbers are generated when Automatic Lot Numbers is Yes depends on whether you specify a lot group. Lot groups are only available if you are using the Regulatory Attributes module.

- If you enter a value in the Lot Group field, number format is determined by the rules specified in Lot Group Maintenance.
- If Lot Group is blank, work orders use the work order ID as the lot number. Automatic lot numbers are not assigned in purchase orders.

PO Receipt Status. The default value for the inventory status code for inventory lots received from this production order.

When items are received, inventory status is assigned in the following order:

- a** The Receipt Status field in Production Order Maintenance, Master Schedule Order Maint and Production Order Attribute Maintenance, if Active is Yes.
- b** The WO Rcpt Status field in Item-Site Inventory Data Maint if Active is Yes.
- c** The WO Rcpt Status field in Item Master Maintenance if Active is Yes.
- d** When all of the previous values are blank or not active, inventory status defaults to existing inventory detail records.
- e** If no inventory records exist, the value comes from the Inventory Status field in Location Maintenance.

Active. Set this field to Yes to have the system use the value of PO Receipt Status as the default for purchase order receipts.

Note An inventory status code is used only when Active is set to Yes. Otherwise, it is ignored and the search continues.

Prod Ord Rct Status. Enter the default inventory status code when production orders are received for this item and site.

Inventory status codes determine whether inventory balances are available for allocation, are considered by Material Planning, and are allowed to go negative. Status codes also restrict particular transactions at specific locations. For example, you can restrict issues from an inspection location.

Lot Group . Enter a lot group defined in Lot Group Maintenance. Lot groups are available only if you are using the Regulatory Attributes module. They determine the format of automatically assigned lot numbers.

The system generates lot numbers for an item when:

- a** Lot/Serial Control is set to L.
- b** A valid lot group is specified.
- c** Automatic Lot Numbers is Yes. If Automatic Lot Numbers is No, any entry in the Lot Group field is ignored.

When conditions a and c are true and Lot Group is blank, production orders use the order ID as the lot number. Automatic lot numbers are not assigned in purchase orders.

Prod Receipt Status. Enter the default inventory status code for items received on production orders.

Inventory status codes determine whether inventory balances are available for allocation, are considered by Material Planning, and are allowed to go negative. Status codes also restrict particular transactions at specific locations. For example, you can restrict issues from an inspection location.

Active. Indicate Yes to have the system use the value of Prod Receipt Status as the default for new work orders.

Note An item status code is used only when Active is set to Yes. Otherwise, it is ignored and the search continues.

You can change the default receipt status and other attributes for a work order in Work Order Maintenance or Work Order Attribute Maintenance. You can also change work order attributes during receipt.

Prd Ord Rct Status . Enter the default inventory status code for items received on production orders.

Inventory status codes determine whether inventory balances are available for allocation, are considered by Material Planning, and are allowed to go negative. Status codes also restrict particular transactions at specific locations. For example, you can restrict issues from an inspection location.

Article Number. Enter the article number associated with this item. This field is for reference only and can appear on some selected reports and inquiries.

Memo Order Type. Leave blank to indicate that this is not an expensed memo item.

Enter a type code to indicate that this item is an expensed memo type item. Expensed memo type items have no effect on inventory or Material Planning when they are placed on an order. Any entry other than blank implies an expensed item.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

When you place items on an order, this value defaults to the line item Type field in sales- and purchase-related programs.

Item Picking Data Frame

Allocation Policy. Specify how automated processes create inventory allocations for production requirements:

Detail (default): Specify Detail to have production order and bulk item picking processes and picklists determine and direct the picking of inventory quantities from specific locations and/or lots. The system creates detail allocation for inventory quantities when a production picklist is created for the production order.

General: Specify General to have production order and bulk item picking processes and picklist identify the item and quantity to pick, and not quantities from specific locations and/or lots. The system creates general allocations for the item and site when the status of the order is changed to Allocated or Released and when a production picklist is created for the production order. Allocation policy is not used for non-production picklists, such as those for sales and distribution orders.

Transfer Allocation Policy. Specify the transfer allocation policy for production materials that are transferred to shop floor locations. Transfer Allocation Policy works together when the Pick Policy for an item is Transfer. The transfer allocation policy determines if the system retains or removes detail allocations for inventory quantities for the item that are transferred when using Production Picklist Transfer.

Keep: Retains detail inventory allocations for the item and production order after quantities have been picked and transferred using Production Picklist Transfer. Specify to Keep allocations when the lot/serial quantities to be issued or backflushed to a production order are the same as the lot/serial quantities that are picked and transferred using a production picklist.

Drop (default): Removes detail inventory allocations created for this component item and production order after quantities have been picked and transferred using Production Picklist Transfer. Specify to Drop allocations when the lot/serial quantities to be issued or backflushed to a production order are independent from the lot/serial quantities that are picked and transferred using a production picklist.

The system also examines detailed allocations at the backflush location to determine if there is any excess inventory. When the Transfer Allocation Policy is Drop, the system considers the earlier transfers for other orders as implicitly allocated when determining the excess inventory.

Note Transfer Allocation Policy is not used for non-production picklists, such as those for sales and distribution orders.

Allocate Single Lot. This field indicates whether sales orders and production orders should always be filled from a single inventory lot. Any value is ignored unless the item has Lot/Serial Control set to L.

Yes: Customer or manufacturing orders can be filled from one lot number only. For example, an order for 100 units cannot be filled with 50 units from lot A and 50 units from lot B. The system looks for a lot number with at least 100 available to fill this order. If a sufficient quantity of a single lot is not found, an error message displays.

No: Customer and manufacturing orders can be filled from multiple lots. The system looks for a quantity available regardless of the lot reference.

You can manually allocate orders from more than one lot using Manual Sales Order Allocations or Work Order Bill Maintenance, but a warning message displays.

Use Allocate Single Lot when lots cannot be mixed, such as different dye lots of fabric or different potency chemical solutions.

MFG Picking Order. Specify the picking sequence to use when detail allocating items to production orders.

Detail allocations are created for items with an allocation policy set to Detail when production orders are allocated or released. Mfg picking order determines which inventory is allocated first. Choose from:

Default: Inventory is allocated using the value for the Picking Order parameter in Inventory Control.

Location: Inventory is allocated by location. This method is useful when you have sequential warehouse locations laid out for easy picking.

Lot/Serial: Inventory is allocated by lot/serial number. This method is useful when you assign meaningful lot/serial numbers; for example, it lets you pick the oldest lots first.

Date: Inventory is allocated by date created. This method is useful in LIFO or FIFO picking, but only when all inventory receipts are segregated by location, lot/serial, or lot reference number; otherwise, the date created is meaningless.

Expire Date: Inventory is allocated by expiration date. This method is useful when you have items with a limited shelf life and you must be sure those closest to expiration are picked first.

Inventory can be sorted in ascending or descending sequence for the specified picking order.

The picking sequence defined here is used for all sites and locations in the current working domain.

Ascending/Descending. Enter Ascending to have the system pick the oldest or lowest number first. Enter Descending to have the system pick the newest or highest number first. As an example, if Picking Order is by Date and Ascending order is specified, the first item allocated is that with the oldest create or receipt date.

Pick Policy. Specify how the system processes items to supply production on either a production order picklist or on a bulk item (transfer) picklist. Pick Policy does not apply to items that do not appear on production orders. Choose from:

No Pick: Do not pick. Select for items that are replenished on the shop floor by a process other than a picklist, such as Kanban and min/max replenishment systems.

Transfer (default): For an item used for production, pick inventory from a controlled, typically stock room location, to be transferred to a shop floor location, such as a product line location or a work center location.

Issue: For an item used for production, pick inventory from a controlled, typically stockroom location and issued to a production order. Picked quantities can issued from the controlled locations using Production Order Picklist Issue, before the production order and its materials are dispatched to the shop floor

Pick Policy works with the Issue Policy field. Valid combinations include:

- Pick Policy Issue with Issue Policy Direct: Use for an item that is picked on a production picklist then issued to a production order.
- Pick Policy Transfer with Issue Policy Direct: Use for an item that is picked on a production picklist, transferred to the shop floor, then issued to a production order.
- Pick Policy Transfer with Issue Policy Backflush: Use for an item that is picked on a production picklist, transferred to the shop floor, then backflushed to a production order.
- Pick Policy None with Issue Policy Direct: Use for an item that is moved or delivered to the shop floor without a picklist, possibly by using a Kanban, then issued to a production order.
- Pick Policy None with Issue Policy Backflush: Use this for an item that is moved or delivered to the shop floor without a picklist, possibly by using a Kanban, then backflushed to a production order.
- Pick Policy None with Issue Policy None: Use this for an expense (floor stock) item that is moved or delivered to the shop floor without a picklist, possibly by a Kanban, and not issued or backflushed to a production order.

Invalid combinations are:

- Pick Policy Issue with Issue Policy None

- Pick Policy Issue with Issue Policy Backflush
- Pick Policy Transfer with Issue Policy None

Note Pick Policy does not apply to non-production picklists, such as those for sales orders

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.

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.

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.

Backflush (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 Backflush appear when processing a backflush transaction for a production order (operation) using functions such as Product Order Receipt and Operation Activity Transaction.

Issue Policy works together with the Pick Policy parameter. Valid Combinations include:

- Pick Policy Issue with Issue Policy Direct - Use this for an item that is picked on a production picklist then issued to a production order.
- Pick Policy Transfer with Issue Policy Direct - Use this for an item that is picked on a production picklist, transferred to the shop floor, then issued to a production order.
- Pick Policy Transfer with Issue Policy Backflush - Use this for an item that is picked on a production picklist, transferred to the shop floor, then backflushed to a production order.
- Pick Policy None with Issue Policy Direct - Use this for an item that is moved or delivered to the shop floor without a picklist, possibly by using a Kanban, then issued to a production order.
- Pick Policy None with Issue Policy Backflush - Use this for an item that is moved or delivered to the shop floor without a picklist, possibly by using a Kanban, then backflushed to a production order.
- Pick Policy None with Issue Policy None - Use this for an expense (floor stock) item that is moved or delivered to the shop floor without a picklist, possibly by a Kanban, and not issued or backflushed to a production order.

Invalid combinations are:

- Pick Policy Issue with Issue Policy None
- Pick Policy Issue with Issue Policy Backflush
- Pick Policy Transfer with Issue Policy None

Key Item. Enter Yes if you do not want to start an order when an insufficient quantity of this item exists. Otherwise, enter No. The value defaults from Item Master Maintenance for all sites and from Item-Site Inventory Data Maintenance for specific sites.

You cannot release a production order or print a picklist with an insufficient quantity on hand of a key item. When you try, an error message displays. You can adjust the order quantity manually to ensure that you can complete the order.

Picking Multiple. The multiple for determining the quantity for the item on production picklist. Production picklist uses picking multiple to determine the quantity to be put on picklist. The required quantity is rounded up to a multiple of this number. When the value is 0 (zero) there is no picking multiple. The system validates that the following exists:

Picking Maximum $\geq$ Picking Multiple and that Picking Maximum $\geq$ Picking Minimum.

This does not apply to non-production picklists, such as those for sales and distribution orders.

Picking Minimum. The minimum quantity for the item on a production picklist. Production picklist calculation uses the picking minimum quantity to determine the quantity to be put on picklist. If the required quantity is below this amount, picklist calculation creates picklist detail for the minimum quantity. When the value is 0 there is no minimum. The system validates that the following exists:

Picking Maximum $\geq$ Picking Multiple and that Picking Maximum $\geq$ Picking Minimum

This does not apply to non-production picklists, such as those for sales and distribution orders.

Picking Maximum. The maximum quantity of the item on a production picklist sequence. The Picking Maximum ensures the amount of each production picklist sequence is never greater than the specified amount. When quantity required is greater than Picking Maximum, system generates a sequence of picklists, each with the same picklist number, but with different sequence numbers. This is useful when the work center can only hold a certain amount. When the value is 0 there is no maximum. The system validates that the following exists:

Picking Maximum $\geq$ Picking Multiple and that Picking Maximum $\geq$ Picking Minimum

This does not apply to non-production picklists, such as those for sales and distribution orders.

Item Shipping Data Frame

Corp Comm Code. Enter an optional corporate commodity code associated with this item. Commodity codes group similar items under one general category name.

Add a group of items to a commodity code in Commodity Code Maintenance or assign a commodity code to a specific item in Item Master Maintenance. Corporate commodity codes are not the same as commodity codes used for Intrastat reporting.

Ship Weight. Enter the ship weight per unit for this item. Shipping weight is used:

- By the Distribution Requirements Planning (DRP) Shipping Load Summary and Detail Reports to calculate scheduled load and compare it with available shipping capacity for a specific transport ID.
- By sales order programs to calculate freight charges for sales orders.
- By container and shipper programs to calculate tare weight (the difference between the item ship weight and net weight).

If you use different units of measure for transport IDs or freight lists, make sure you define appropriate conversion factors in Unit of Measure Maintenance.

Net Weight. Enter the net weight per unit for this item. Net weight represents the item weight without packaging.

When you use containers and shippers to ship items on sales orders, the shipping programs calculate tare weight as the difference between the item ship weight and net weight.

If net weight and ship weight are expressed in different units of measure, be sure to set up unit of measure conversions.

Freight Class. Enter the freight class normally used to calculate freight charges for this item. Define freight classes in Freight Class Maintenance. The item freight class defaults to new sales order lines for this item.

Freight classes are associated with both items and freight lists. The system uses the freight class to determine which charges, defined in Freight Charges Maintenance, to apply.

Use freight classes to group items with special freight considerations, such as items that must be shipped overnight or frozen.

Trade Class. Enter a valid trade class code set up in Trade Class Maintenance.

Volume. Enter a code indicating the amount of space this item occupies.

The DRP Shipping Load Summary and Detail Reports use the item's ship weight and volume to calculate scheduled load and compare it with available shipping capacity for a specific transport ID.

Shipping weight and volume are calculated using the standard weight and volume of each item, as specified in Item Master Maintenance. First, they are converted to the weight and volume units of the Transport ID, then multiplied by the scheduled shipment quantity in each time period.

If you use different units of measure for transport ID, make sure you define appropriate conversion factors in Unit of Measure Maintenance.

Item Master Copy

Note Other fields are similar to those in Item Master Maintenance.

Copy Item Number. The existing item from which item information is to be copied.

This program creates a new item number and copies all of the attributes of the existing item to this new item, including the item master, inventory, planning, pricing, and cost data. Each of the values may then be changed manually.

To. The new item number to be created.

This program creates a new item number and copies all of the attributes of the existing item to this new item, including the item master, inventory, planning, pricing, and cost data. Each of the values may then be changed manually.

Item Master Maintenance

Note Fields in Item Picking Data frame are listed under Item Inventory Data Maint.

Prod Line. Enter the product line associated with this item. Every item must be assigned to a product line for planning and accounting purposes.

Item Type. Enter an optional code to categorize similar items. Use item group and type to:

- Subdivide product lines.

- Create categories that cross product lines.
- Process and report sales and planning information.
- Correspond with product structure levels, letting you check plans level by level.
- Update product costs.

Selective Materials Plan and Selective Distribution Plan can be run by item group and type. You can use item type, but not group, to select items for cycle counting.

This field is validated against predefined values entered in Generalized Codes Maintenance for field `pt_part` type, if any.

Drawing. Optionally, enter the engineering drawing number for this item.

Added. Enter the date that this item was first entered into the system. The default is the system date.

You can select items by date added in the Item Master, Label Print, and Price List Reports.

Status. Enter a code, set up in Item Status Code Maintenance, to identify the status of an item. If no codes are defined, this field is not validated.

You can use this field to identify the engineering status of an item. For example, use codes such as A (active), I (inactive), E (engineering design), P (prototype), or O (obsolete).

Each status code can specify one or more restricted transactions. For example, you can use a status code for obsolete items to prevent an item from being issued to a work order. Before starting an inventory transaction, the system verifies if the item status permits the transaction.

Note The item status does not restrict system-required transactions such as CST-ADJ, ISS-CHL, and RCT-CHL, even if you list them as restricted for an item status code. To restrict these transactions, use menu security on the functions that create them.

Design Group. Enter a code identifying the group of users responsible for the design of this item. If you do not use the Product Change Control (PCC) module, this field is not validated and is for reference only.

If you do use PCC, set up design groups in Group Maintenance. A design group is associated with every product change request (PCR) or change order (PCO) based on the PCR and PCO type. The system can automatically notify the members of a design group when a PCO is released and distributed.

Group. Enter an optional code used to categorize similar items. This field is validated against predefined values entered in Generalized Codes Maintenance for field `pt_group`, if any.

Use item group and type to:

- Subdivide product lines.
- Create categories that cross product lines.
- Process and report sales and planning information.
- Identify manufactured items with similar setups or routing; then, release planned orders for these items at the same time.
- Correspond with product structure levels to check plans level by level.

Selective Materials Plan and Selective Distribution Plan can be run by item group and type.

Size. Enter an optional code representing the size of the engineering drawing. This field is for reference only and can help you locate an engineering drawing.

Drawing Loc. Enter an optional code representing the storage location of the engineering drawing. This field is for reference only and can help you locate an engineering drawing.

Promp Group. Enter an optional code indicating the group this item is included in for sales promotions. This field is validated against generalized codes, if any are defined.

Price Break Category. Enter an optional break category for use with item pricing. Leave blank if this item should not be combined with any others for pricing.

Break category is not validated. You must ensure that you enter the same codes in Price List Maintenance and Item Master Maintenance.

Use break categories to group items that accumulate together for volume discounts. The system accumulates either item quantities or price amounts based on the Quantity Type field of the applicable price list.

For information on setting up price break categories, refer to Setting Up Item Price Break Categories in *QAD Master Data User Guide*.

Price. Enter the list price for this item expressed in terms of base currency. This price applies to this item at all sites. If you have a different price at each site, either set up a price list for each site or use a different item number at each site.

The item master list price defaults to all sales quotes and orders in your base currency when a price is not found on a price list. In a multi-currency environment, base price is automatically converted if exchange rates are defined.

For detailed information on price lists, see Creating and Maintaining Price Lists in *QAD Master Data User Guide*.

Fiscal Class. This field is specific to legal documents implementation for Brazil.

Enter a mandatory tax code defined by the Brazilian government to help identify materials and determine their corresponding tax rates. Currently, this Brazil-specific field is used as supplementary information of an item for reference only and does not affect tax calculations in GTM.

Tax. Enter Yes if this item is normally subject to tax. Otherwise, enter No.

This value determines the item's default taxable status on purchasing and sales transactions. For the line-item tax status to default to Yes for an inventory item, both the order and item tax status must be Yes.

Under Global Tax Management, taxes are based on the transaction tax environment, tax usage, and tax class. The tax environment represents the set of tax types that applies to the ship-from and ship-to sites/addresses and the customer tax class.

A tax status of Yes does not necessarily mean a tax amount is calculated. You can use tax types and zero-percent tax rates to report tax exemptions.

Tax Class. Enter a tax class previously defined in Tax Class Maintenance. Tax classes group items taxed at specific rates or that are tax-exempt. Under Global Tax Management, tax classes help determine the default tax environment (set of tax types) for purchasing and sales transactions.

Item-Site Inventory Data Maint

Note Fields in the Item Picking Data frame are listed under Item Inventory Data Maint.



ABC Class. Enter a code classifying and ranking this item. This field is validated against predefined values entered in Generalized Codes Maintenance for field `pti_abc`, if any.

ABC classification codes determine the count frequency and the error tolerance allowed for each item. The Cycle Count Worksheet selects items for counting based on ABC class. ABC class can also determine how an item is managed. Class A items usually require tighter physical control, such as a locked stocking area, and tighter planning parameters, as well as more frequent cycle counts.

You can generate some reports, such as the Inventory Valuation Report, for ranges of ABC classes.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

You can use Item ABC Status Report/Update to calculate ABC codes automatically based on annual item usage amounts. Usually items in the top 20% are given class A, the next 30% class B, and the rest class C. However, you can adjust these percentages as needed.

Any quantity below C is assigned a blank ABC code. For example, when A is 10%, B is 20%, and C is 30%, the remaining 40% is set to blank.

You can also classify items manually. You might do this for an item that has low use but is expensive or theft-prone.

Note When you first implement the system, load ABC classes either from the old system or manually. Item ABC Status Report/Update produces meaningful results only when it analyzes at least six months of data.

While you can assign other class codes, Item ABC Status Report/Update only reports and updates items with a class of A, B, C, or blank. Be careful not to assign a non-blank and non-ABC code to any item that may become an A, B, or C item. Assign any non-inventory items such as configured products, pseudo items, or planning parts a different ABC class.

Lot Control. The value of Lot/Serial Control for the item determines if a lot or serial number is required.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

Blank: Lot/serial numbers are not required, although they can be recorded as needed.

L: Lot numbers are required for this item. During issues and receipts, a lot number must be entered. The lot number applies to the entire transaction quantity entered.

S: Serial numbers are required for this item. During issues and receipts, a unique serial number must be entered for each item. For example, if you receive 10, you must enter 10 serial numbers.

The system maintains complete lot/serial number traceability. The Lot Actual Bill Inquiry lists all the lot/serial numbers of components and raw materials used to make a given lot/serial number. Lot Where-Used Inquiry lists all the places that an individual lot/serial number was used, all the way to the end customer.

For manufactured items, lot numbers can optionally be assigned by the system by setting Automatic Lot Numbers to Yes. When the item is received into inventory using a work order receipt function, the lot number is set to the work order lot ID.

If you are using the Regulatory Attributes module, stricter levels of lot and serial control are available. You can also generate lot numbers based on a pattern specified in the Lot Group field.

You cannot modify this value from blank to S or L if a quantity of the item already exists in inventory.

Location. Enter an optional location code indicating the physical location where this item is normally stored at this site. The value in this field defaults from Item Master Maintenance and is used as the default for all sites. Enter a site here to set up site-specific values.

Note Default locations for sales transactions can also be defined by customer in Reserved Location Maintenance. Consigned inventory uses the default locations defined in Ship-To/Item Controls Maintenance.

QAD ERP backflush functions use default item or item-site locations only when the work center where the backflush occurs is not itself specified as a location.

Location Type. Enter a code identifying the type of location where this item is stored at this site.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

A type code can be assigned to each location in Location Maintenance. When an item is received, transferred, or counted using a cycle count or tag count, the system verifies that the location type matches the location type associated with the item. If not, an error displays and the transaction cannot be processed.

Use type codes for items with special storage requirements, such as temperature or humidity. You can describe the exact requirements using master comments associated with the item.

Auto Lot Numbers. This field determines whether the system automatically assigns lot numbers to items with Lot/Serial Control set to L (lot). It has no effect for other items.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

How lot numbers are generated when Automatic Lot Numbers is Yes depends on whether you specify a lot group. Lot groups are only available if you are using the Regulatory Attributes module.

- If you enter a value in the Lot Group field, number format is determined by the rules specified in Lot Group Maintenance.
- If Lot Group is blank, work orders use the work order ID as the lot number. Automatic lot numbers are not assigned in purchase orders.

Average Interval. Enter the number of calendar days to use as an averaging interval for this item. The default is 90 days. This field is validated against predefined values entered in Generalized Codes Maintenance, if any.

Item ABC Status Report/Update calculates the average sales shipments and the average total quantity issued by site using this averaging interval. These values may forecast future usage. They also suggest ABC classifications.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

When an item is shipped or issued, the quantity is recorded. Run Item ABC Status Report/Update on a regular basis to factor in recent activity.

When the system is first implemented, average sales and average issues are zero. It can take several years to build up meaningful averages for updating ABC codes. If you have access to data for calculating average sales and average issues on your existing system, you can write a custom program to update the database fields in `_avg_sls` and in `_avg_iss`.

Cycle Count Interval. Enter the number of calendar days between cycle counts for this item. The default is 120 days. This field is validated against predefined values entered in Generalized Codes Maintenance for field `pti_cyc_int`, if any.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

Cycle count intervals are normally assigned based on the ABC class of the item. They can be updated automatically using the Item ABC Status Report/Update.

When the system is first implemented, last count date is normally blank for all your items. If you do not introduce the dates, the system selects items to be counted in item number sequence. To avoid this, if you know the last count dates, load them. Otherwise, you may want to set up a Progress routine to assign dates in some logical manner.

Shelf Life. Enter the number of calendar days that this item can be held in inventory before it becomes unusable at this site. Shelf life is typically defined for items that spoil or degrade over time.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values in Item-Site Inventory Data Maintenance.

You can use shelf life to set the expiration date for inventory. Inventory that has expired does not appear on picklists as a quantity to be picked. If you try to ship or issue expired inventory, an error message displays and you cannot continue.

The system calculates an expiration date when an item is received into inventory by adding the number of days specified for shelf life to the receipt date. You can change expiration date using:

- Inventory Detail Maintenance
- Detail Maintenance by Item/Lot
- If you are using the Regulatory Attributes module, Multi-Lot Inventory Detail Update

When a lot is recertified, a new expiration date can be assigned.

You can impose additional restrictions by using the Issue Days field in Inventory Control. For example, if you set the number of days to 5, you cannot ship or issue expired inventory or inventory that will expire in the next 5 days.

PO Receipt Status. Enter the default inventory status code for items received on production orders at this site.

Inventory status codes determine whether inventory balances are available for allocation, are considered by Material Planning, and are allowed to go negative. Status codes also restrict particular transactions at specific locations. For example, you can restrict issues from an inspection location.

Active. Set this field to Yes to have the system use the value of PO Receipt Status as the default for purchase order receipts.

Note An inventory status code is used only when Active is set to Yes. Otherwise, it is ignored and the search continues.

Prod Receipt Status. Enter the default inventory status code used when production orders are created for this item and site.

Inventory status codes determine whether inventory balances are available for allocation, are considered by Material Planning, and are allowed to go negative. Status codes also restrict particular transactions at specific locations. For example, you can restrict issues from an inspection location.

Active. Indicate Yes to have the system use the value of Prod Receipt Status as the default for new work orders.

Note An item status code is used only when Active is set to Yes. Otherwise, it is ignored and the search continues.

You can change the default receipt status and other attributes for a work order in Work Order Maintenance or Work Order Attribute Maintenance. You can also change work order attributes during receipt.

Last Issue. The system displays the last date an issue transaction was processed for this item at this site.

Any issue updates this field automatically, including production order component issues, backflush, sales order shipments, service/support issues, or unplanned issues.

Last Average. The system displays the last date that Item ABC Status Report/Update calculated average issues and average sales. The default is the system date.

Last Count. The system displays the last date that a cycle count or physical inventory count updated a location detail record at this site. The default is the system date.

Last count date can be used to select items for cycle counting, either by a range of dates or past due only.

Memo Order Type. Enter a type code to indicate that this item is an expensed memo type item at this site or leave blank to indicate that this is not an expensed memo item at this site.

Expensed memo type items have no effect on inventory or Material Planning when they are placed on an order. Any entry other than blank implies an expensed item.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values here.

When you place items on an order, this value defaults to the line item Type field in sales- and purchase-related programs.

Item-Site Planning Maintenance

Mstr Sched. Enter Yes if this item is master scheduled. Otherwise, enter No. Typically, this field is set to Yes for items that require human judgment to evaluate the schedule and its implications for capacity, material, cost, and customer service. Top-level items are normally master scheduled.

You can plan master scheduled items separately using the Planning and Scheduling Workbenches. This lets you develop the master schedule for independent demand items, and then plan dependent demand items.

The value entered in Item Master Maintenance is used as the default for all sites. Set up site-specific values here.

The recommended approach to master scheduling is through the Planning and Scheduling Workbenches. You maintain the master schedule manually within the cumulative lead time. Material Planning maintains the plan beyond this cumulative lead time.

Refer to your QAD Planning and Scheduling Workbenches user documentation for setup information.

Buyer/Planner. Enter an optional code identifying the person responsible for planning and ordering this item. This field is validated against predefined values entered in Generalized Codes Maintenance for pt_buyer, if any.

Use the Buyer/Negotiator manufacturing dashboard to display items that have issues, view supplier performance to schedule, view projections by item, and more. Refer to the Manufacturing Dashboards chapter of *QAD Manufacturing User Guide* for more information.

Phantom. Indicate whether an item is normally stocked or simply put together as part of a higher-level assembly. The value you enter here is the default for all sites.

No: This item is received into stock and a supply normally exists in inventory. When an item only acts as a phantom in the product structure—termed a local phantom—set Phantom to No here and set the Structure Type to X in Product Structure Maintenance.

Yes: This item and its product structure is a phantom. Phantoms are often used for transient assemblies or intermediate products that are not received into stock. Instead, they are included directly in the next higher assembly or product.

Note You cannot set Phantom to Yes for a base process, a co-product, or a by-product.

For more information on adding a phantom item to a master schedule, refer to your QAD Planning and Scheduling Workbenches user documentation.

For information on processing phantom items, refer to *QAD Manufacturing User Guide*.

Plan Orders. This field indicates whether Material Planning (Material Planning) should create planned orders for this item. Material Planning calculates planned orders to meet planned future demand with a suggested order quantity and due date. The value you enter here is specific for the site you specify. Use Item Planning Maintenance to set up defaults for all sites.

This field works with the Order Policy field. When Order Policy is blank, Material Planning does not plan this item, even when Plan Orders is Yes. No requirements or action messages are generated.

- If Order Policy is not blank and Plan Orders is Yes, Material Planning plans the item. When a net requirement exists, Material Planning creates a planned order to fill it. The quantity and due date of the order are determined by the order policy, lead time, and order modifiers.
- If Order Policy is not blank and Plan Orders is No, Material Planning plans the item but does not create planned orders. Only action messages are created, suggesting what orders should be placed. You enter these orders manually.

The preferred technique for managing the master schedule is through the QAD Planning and Scheduling Workbenches. Refer to your QAD Planning and Scheduling Workbenches user documentation for setup information.

Supplier. Enter a valid, active supplier code identifying the normal or preferred supplier for this item. The value you enter here is the default for all sites.

Minimum Order. Enter the minimum quantity of this item to be ordered on a single production order. The value you enter is the default for all sites.

Material Planning uses the minimum order quantity to determine the quantity of planned orders, regardless of the order policy. If the net requirement is below this amount, Material Planning creates an order for the minimum quantity. If an existing order is below this minimum, Material Planning creates an action message.

Time Fence. Enter the number of calendar days inside of which Material Planning should not automatically replan this item. The value you enter here is the default for all sites.

When Plan Orders is Yes, Material Planning calculates net requirements for an item and automatically creates or adjusts planned orders to satisfy these requirements. You may want to prevent Material Planning from doing this for the near term. The time fence lets you manually control the schedule for a period of time. For example, to control planned orders manually for the next two weeks, set the time fence to 14 days.

Note The Max Dynamic Time Fence field in Material Planning Control may override this Time Fence value. When Max Dynamic Time Fence is greater than this field, the system adds Max Dynamic Time Fence to the current date, and sets the time fence as the due date of the last order that falls within this period. In effect, this prevents scheduled receipts far in the future from affecting when new planned orders are created.

Important Each time it runs, Material Planning automatically replans existing orders to dates past the current time fence. If you change this value after an item has been scheduled, the next Material Planning run might move previously planned orders inside or outside of the new time fence. If you want to change the time fence without unintended consequences, consider firming existing planned orders before updating the item record.

Material Planning adds the number of days specified for time fence to the system date, and does not create any planned orders within this time period. However, Material Planning does delete any planned order, both within and without the time fence, if no demand is generated for the item.

When a change is needed on a firm order within the time fence, Material Planning creates an action message indicating what must be done. Material Planning also generates a *Time Fence Conflict* message to indicate why the change was not made automatically.

Time fence is most often applied to items scheduled using the QAD Planning and Scheduling Workbenches. Refer to your QAD Planning and Scheduling Workbenches documentation for setup information.

PO Site. Enter the site where purchase requisitions and production orders are typically generated for this item. This site defaults to new requisitions and orders when they are created. If you are not using consolidated order processing, you can leave the site blank.

In a multi-site environment, the PO site determines which purchasing department is responsible for a requisition or purchase order. With consolidated order processing, some items may be purchased at one site for all other sites.

Maximum Order . Enter the maximum quantity of this item to be ordered on a single order. The 0 (zero) default indicates no maximum. The value you enter here is used for all sites.

Setting an order maximum does not prevent you from ordering more than this quantity. It is used by the system to mark exceptions. When Material Planning calculates a requirement greater than the maximum order quantity, it creates a planned order for the amount needed; however, it also creates an action message.

Purchase/Manufacture. Enter the code indicating how this item is typically processed by the system. The Purchase/Manufacture code controls how the system explodes forecasts, plans and creates orders, and calculates costs for the item. It affects Material Planning (MRP) and Distribution Requirements Planning (DRP).

This field is validated against predefined values entered in Generalized Codes Maintenance for field `pt_pm_code`, if any. Valid code options include the following.

- **P (Purchased).** The item is usually purchased. Material Planning uses the purchasing and inspection lead times to calculate planned order release dates. Material Planning and cost calculations do not explode purchased assemblies, even when a product structure exists. Any routing/process operations are ignored. You can also manufacture an item designated as purchased. The product structure and routing are accessed if a production order is created for the item.
- **D (DRP).** The item is usually supplied internally from another site. DRP uses the item's source network to determine where to generate requirements. It uses the transport lead time and shipping schedules to calculate the date when orders must be shipped from the other site. Any routing or BOM codes entered for a DRP item are for reference only. Cost calculations do not explode DRP items.
- **M (Manufactured).** The item is normally manufactured. Material Planning uses the manufacturing lead time to calculate planned order release dates. You can also purchase a manufactured item.
- **R (Routable).** The item is a special type of manufactured item, made only when needed by an upper-level assembly. A production order for the routable item is created automatically when a production order for its parent is released. The production order number is the same, but the lot ID is different. This lets the system track the two orders separately but accumulate the costs.
- **C (Configured).** The item is configured to order. When a sales quote or order is entered, the system prompts the order taker to select from a list of configuration options. Valid options are defined in Configured Structure Maintenance.
- **L (Line manufactured).** The item is manufactured repetitively on a single or on multiple production lines.
- **F (Family).** A family item typically represents a generic category used for planning only; it is never actually made or stocked. For multilevel master scheduling, family items are set up with a planning bill.

Important If you are viewing items on a production line in the .NET UI Master Scheduling Workbenches, you must set this field to L to view the item.

Order Multiple. Enter the multiple for placing orders for this item. The 0 (zero) default indicates no order multiple.

Material Planning uses order multiple to determine the quantity of planned orders only when order policy is period order policy (POQ) or lot for lot (LFL). The net requirement is rounded up to a multiple of this number. If the order multiple is 50 and the net requirement is 432, Material Planning creates a planned order for 450.

Refer to the Determining Order Multiples subsection of *QAD Manufacturing User Guide* for more information on order multiples.

Note Supplier schedules and customer schedules provide a special type of order multiplier: the standard pack quantity. You may not want to use both order multiplier and standard pack quantity.

Op Based Yield. This field determines how the system calculates yield for components of this item when product structures and routings are exploded in Material Planning (Material Planning) 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.

Note Enable Op Based Yield must also be Yes in Material Planning Control for this field to have any effect.

For more information on Yield and for example Yield calculations, refer to the Yield subsection of *QAD Manufacturing User Guide*.

Insp Location. Specify a code identifying the location where purchased items needing inspection are received.

This field defaults from the Inspection Location field in Site Maintenance.

This inspection location is used during receipts only when Inspection Required is Yes for the purchase order line item.

During receipts, the system searches for an inspection location in this order:

- The inspection location specified for the site and item in Item-Site Planning Maintenance
- The inspection location defined for the site in Site Maintenance
- The inspection location defined in Purchasing Control

Apply field security to this field to restrict access.

BOM/Formula. Enter a BOM code for the product structure or formula used with the routing or process to produce the item on this production line.

This field can be left blank. When blank, the system accesses the product structure or formula with a BOM code equal to the item number.

Replenishment Method. Specify the method to replenish inventory. The default is Orders.

Kanban: Entering kanban creates a kanban record for the item. Kanban is a method of just-in-time (JIT) production that uses standard containers or lot sizes with a single card attached to each. It is a pull system in which work centers use a card to signal that items are to be withdrawn from supply sources. The kanban system defines a communication signal or card indicating that items need replenishment.

Orders: Material Planning uses order due dates to determine when quantities will be available to replenish inventory.

Purchase/Manufacture: Inventory is replenished by purchasing it from suppliers or manufacturing it internally, typically with work or production orders.

DRP: Inventory is replenished through distributed requirements planning (DRP) intersite requests, which balance supply and demand among sites.

Family: Inventory is replenished through family-level items. Components of the family item are special items that can be any type: manufactured, configured, or another family item.

Routable: Inventory is replenished from items produced internally.

Configured: Inventory is replenished through products that are configured to customer order and produced internally. These are indicated by a Pur/Mfg code of Configured in Item Master Maintenance (1.4.1).

Purchased: Inventory is replenished through purchased items, driven by purchase orders.

Manufactured: Inventory is replenished through manufactured items.

Line Manufactured: Inventory is produced internally, typically on a production line.

Move Transaction

Note Heading Frame fields; see “Heading Frame” on page 271 for Operation Activity Transaction.

Move First Operation. Set to Yes to move to the input queue of the first operation; then, specify the quantity to move.

Move From Operation. Specify a valid operation from which you want to move the operation.

From Work Center. The system displays the work center from which you are moving the operation.

Machine. The system displays the machine from which you are moving the operation.

Department. The system displays the department from which you are moving the operation.

To Work Center. The system displays the work center to which you are moving the operation.

Machine. The system displays the machine to which you are moving the operation.

Department. The system displays the department to which you are moving the operation.

Quantity to Move. Specify the quantity to move from or to the operation.

Conversion. Enter the conversion factor that determines how the system converts quantities stated in terms of the alternate unit of measure back into terms of the item unit of measure. This is expressed as the ratio of the alternate unit of measure to the item unit of measure. The default is 1.0000.

Total Qty. The system displays the total quantity, calculated as:

*Total Qty = Quantity To Move * Conversion*

Modify Receipt. Specify Yes to modify data related to the receipt. When Yes, the system displays the Receipt Data Input frame. This field is prompted for only when the operation being reported is the last operation.

Receipt Data Input Frame

Note Quantity in Operation Activity Transaction field section. UM, Conversion, Change Attributes, Prod Ord Receipt, loc, lot/ser, lot/ref in Prod.Ord Component Issue field section.

Site. Enter the site associated with this transaction.

Total Units. This display-only field shows the total units as:

*Quantity * UM Conversion*

Document. Indicate Yes to integrate legal documents. For information on legal document integration, refer to either your QAD Sales or Purchasing user documentation. For legal documentation flow, refer to your QAD Financials user documentation.

Receipt Attributes Frame

Assay Percentage. Enter the assay percentage associated with this inventory quantity. Assay % usually identifies the percent solution.

Default values for assay % and grade are set in Prod Order Attribute Maintenance in the Regulatory Attributes module. If these are blank or if the Regulatory Attributes module is not active, values come from existing inventory detail records. If there are no existing records, assay % is set to 0.00% and grade is set to blank.

Grade. Enter the grade associated with this inventory quantity. This value usually identifies inventory quality or physical properties. Graded products include raw materials, intermediates, and finished goods.

You can modify inventory attributes such as expire date, grade, assay %, and inventory status in Inventory Detail Maintenance and Detail Maintenance by Item/Lot. If you are using the Regulatory Attributes module, you can also change them in Multi-Lot Inventory Detail Update.

Expire Date. Enter the expiration date associated with this specific inventory quantity.

The system calculates an expiration date when an item is received into inventory by adding the number of days specified for shelf life to the receipt date. The system searches for a value for shelf life in this order:

- For the item and site in Item-Site Inventory Data Maintenance
- For the item in Item Master Maintenance

Inventory Status. Enter the inventory status code associated with this inventory quantity. Inventory status codes identify the status of inventory at a specific site and location with a specific lot/serial number and lot reference. They determine whether specific inventory balances on hand are:

- Available for allocation to sales orders or work orders
- Considered available by Material Planning
- Allowed to become negative

Use as Default. Enter Yes to set entered values as default attributes for all receipts on this order or line; otherwise, enter No. For repetitive transactions, these values are stored and applied at the last operation.

When you set Use As Default to Yes, the system assigns the entered attributes as defaults for the current and future receipts for the order.

When inventory with different attributes exists at the receipt site and location with the same lot/serial and lot reference number, an error displays and you cannot proceed. To correct this error, change the site or location, or specify a different lot or lot reference number. Alternately, enter No in the Active fields and complete the receipt using existing attributes.

When Active is No, but Use as Default is Yes, the system sets all attributes to blank.

MRP Control

MRP Planning Horizon. Enter the period of time, in calendar days, that material planning should plan. Material planning calculations ignore data outside this time period. The horizon should be at least one day longer than the longest item cumulative lead time in the database.

If you change the MRP planning horizon, impacted items are not automatically replanned when you run net change material planning. Ensure that all items are replanned by running material planning in regenerative mode.

MRP/DRP Combined. Enter Yes to indicate that material planning items can be planned using DRP functions. Enter No if they can only be planned using material planning functions. See [QAD Supply Chain Management User Guide](#).

Summary Default. Specify the day of the week used by all MRP summary reports and inquiries when displaying item requirements summarized by week.

Order Release Horizon. Enter the number of calendar days before a planned order's release date on which the Release Due For action message should appear.

The order release horizon should be based on your normal paperwork lead time and how often you run material planning. For example, if you run material planning weekly, you should set the order release horizon to at least seven days. If you run material planning daily, you can set it to zero.

Enable Op Based Yield. This field determines how the system calculates yield for component items when product structures and routings are exploded in material requirements planning (MRP) programs, production orders, and configured products. See "Operation-Based Yield" on page 35.

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.

Even when Enable Op Based Yield is Yes, operation-based yield is only calculated for parent items with Operation Based Yield is set to Yes in either Item Planning Maintenance (1.4.1 or 1.4.7) or Item/Site Planning Maintenance (1.4.17).

Setting this field to Yes typically results in more accurate calculations and prevents overplanning of components. This is especially true in a mature process where yield percentages are highly predictable.

Use AppServer. Specify whether your system uses a Progress application server to enhance material planning performance. .

AppServer Name. When Use AppServer is Yes, enter the name of the application server that is configured to run the material planning programs. The value you enter must already be defined in AppServer Service Maintenance (36.19.1).

Default Number of Threads. When your system uses an AppServer for material planning processing, enter the default number of processing threads, or agents, that the AppServer can create. This can be any integer up to 99.

This value defaults to the Number of AppServer Threads field in the material planning programs. You can update it based on the overall load on your system when you run material planning.

As a general rule, set this field to twice the number of processors your computer has. For example, if you have a dual-processor machine, set the field to 4. You can adjust it based on how well your system and material planning perform.

Max Dynamic Time Fence. Specify the number of days that the system will use in determining a dynamically calculated time fence that controls whether material planning/DRP can replan orders.

When this value is greater than the Time Fence value specified for the item master or item-site, the system adds Max Dynamic Time Fence to the current date, and sets the time fence as the due date of the last order that falls within this period. In effect, this prevents scheduled receipts far in the future from affecting when new planned orders are created.

When this is zero (the default) or less than the value specified for the item, the system adds the item time fence to the current date and uses that as the time fence.

Supply Analysis for GRC. Set this field to Yes to have the system capture analysis data for the supply of items that have the order policy set to GRC. When this field is set to Yes, the system creates pegging data, which is data that can be used by reporting tools for improvement analysis (Kaizen). The pegging data is created from an upstream GRC order to downstream (higher-level) planned orders and to production orders for items with the order policy set to GRC. By default, this field is set to No.

Action Messages for GRC. Set this field to Yes to have the system generate messages for items with the order policy set to GRC. The system generates action messages for items that are planned using gross requirements.

Multiple Order Status Change

Production Order. Enter the first production order number for selecting records to display.

Production order and lot ID together identify a specific manufacturing order. The same production order can be used with different lot IDs.

ID. Enter the ID for selecting records to display. Production order lot ID and lot ID together identify a specific manufacturing order. The same production order number can be used with different lot IDs.

Production Line. Enter the production line for selecting records to display.

Shift. Enter the shift for selecting orders to change. The value for shift can be blank, 1, 2, 3, or 4. The default is blank. Shift schedules define how many days a week and how many hours the work center or production line is run. When you change the shift, it may change the production productivity percentage, which in turn may change the production order required capacity, and ultimately, change the projected duration days and hours.

Release Date. Enter the release date for selecting orders to change.

Due Date. Enter the first due date for selecting records to display. Leave blank to begin with the first transaction date

Item Number. Enter the item for selecting orders.

Site. Enter a valid site code for selecting records to display. A site represents a place where inventory is manufactured or stored, such as a distribution center, a warehouse, a manufacturing facility, or any combination of these.

BOM/Formula Code. Enter a BOM or formula code for selecting orders to change.

Current Status. Enter the status of production orders to be changed by this function. Values can be P, F, E, A, and C. The default is F.

All production orders in the specified range with this status are changed to the new status; however, the system only changes certain types of production orders. The system changes standard (type blank), scheduled (type S), rework (type R), and final assembly (type F) orders. The system does not change expense (type E) or cumulative (type C) production orders.

Note For Co-Products/By-Products: The status of a joint order determines when and how Co-Product/By-Product production orders can be modified (relative to each other).

Status codes:

- P (Planned). Created only by Material Planning and deleted the next time Material Planning runs. Planned orders can be included in CRP calculations.
- F (Firm Planned). Orders you enter, or planned orders you firm up. Once firm, Material Planning cannot change them. If Material Planning sees a need to change them, it generates action messages. If you change the quantity on a production order, the quantities of its components and the times for its routing operations are automatically adjusted. If you change a quantity or date on a co-product/by-product or base process production order, the quantities and corresponding dates are automatically adjusted on the other orders in the joint production order set.
- E (Exploded). Fixes the bill and routing for this production order. Once exploded, changing the standard bill or routing does not affect the order. Any changes must be made in Production Order Bill Maintenance and Production Order Routing Maintenance.
- A (Allocated). Generally allocates components in inventory against other work or sales orders. Detail allocations (specific lots or locations) can be made in Production Order Bill Maintenance and components can be issued. You can also receive against an allocated order.
- C (Closed). No more material can be issued or received against a closed production order. Labor can still be reported. When the status of a joint production order set is set to closed using Production Order Receipt, current average, current last, and GL average costs are updated. Costs are also updated when running Prod Order Accounting Close. When the status of an order is changed to C, all of the open requirements for materials, allocations, and work center operations are removed.

Note For exploded, allocated, or released joint orders, you can change the quantities for co-product/by-product production orders without having their quantities automatically re-scaled. You can also add or delete co-product/by-product orders from a joint production order set.

New Status. Enter the new status to be assigned to the production orders. Values are P, F, E, A, R, and C. (You cannot set order status to P.) The default is E. Status R is not allowed.

Note See the field help for the Change from Status field for possible combinations.

Include Work Order/Rep/Both. Indicate if discrete work orders, repetitive work orders, or both are considered by this function.

Include Kanban Items. Indicate if production orders for kanban items are considered by this function.

Kanban items are defined first in Item Master Maintenance, then in Kanban Item Master Maintenance for use in the QAD kanban module. Refer to your QAD Lean Manufacturing user documentation for more information on the kanban module.

Include Phantom Items. Indicate if production orders for phantom items are considered by this function.

Phantom items 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. Phantom items are identified by the Phantom field in Item/Product Maintenance.

Include MPS/non-MPS Items. Indicate if production orders for Master Production Schedule (MPS), non-MPS, or both type items are considered by this function.

Master schedule items are typically end items, critical subassemblies, spares, service items, critical components, or key resources.

Include GRC Items. Indicate if production orders for Governance, Risk Management, and Compliance (GRC) items are considered by this function. GRC aims to synchronize information and activity across governance, risk management and compliance to operate more efficiently, promote information sharing and effective reporting, and avoid overlaps.

Component. Specify the component to issue to the production order.

Operation. Enter a valid operation specified in Standard Operation Maintenance.

Substitute. Specify whether a defined substitute should be issued for this component.

No: You are not issuing a substitute for this component. If the item was already listed as a required component, the requirement is decreased by the quantity issued. If the item was not listed, it is added to the bill and issued.

Yes: This item is a valid substitute for a required component defined in Item Substitution Maintenance. When you issue a substitute component, the substitute item and the replacement quantity display. If more than one possible substitute item is defined for the component, the substitution quantity per and the quantity to issue display for each substitute item.

Lot/Serial. The value of Lot/Serial Control for the item determines if a lot or serial number is required.

Blank: Lot/serial numbers are not required, although they can be recorded as needed.

L: Lot numbers are required for this item. During issues and receipts, a lot number must be entered. The lot number applies to the entire transaction quantity entered.

S: Serial numbers are required for this item. During issues and receipts, a unique serial number must be entered for each item. For example, if you receive 10, you must enter 10 serial numbers.

Reference. Enter a reference number to associate with the specified item quantity. For example, this can be the production lot of the item or a location reference such as a pallet number. Reference numbers are optional.

Quantity. Enter the quantity of the component item to issue to the production order.

Issues are not restricted to what the system has allocated. You can override the selections manually by entering the quantity here. The production order and inventory balances are updated only after approval of the quantities to issue from inventory.

When you enter additional quantities or negative quantities for an item, the quantity allocated cannot become more than the quantity required or less than zero (0). It is set to the quantity required or the quantity open, whichever is less.

Total Issue Qty. The system displays the total quantity to issue.

Operation Activity Transaction

Heading Frame

Employee. Enter a valid employee set up either in Employee Create or Actual Pay Rate Maintenance.

Eff Date. Enter a valid effective date for this transaction. The system uses the value in this field, along with the site, item number, and other fields in this program to locate the cumulative order.

Shift. This field depicts the shift defined for the resource. The value for shift can be blank, 1, 2, 3, or 4. The default is blank. Shift schedules define how many days a week and how many hours the work center or production line is run. When you change the shift, it may change the production productivity percentage, which in turn may change the production order required capacity, and ultimately, change the projected duration days and hours.

Site. Enter a code identifying a valid site associated with this operation labor transaction.

Line. Enter a code identifying the production line associated with this operation labor transaction.

Work Center. Enter a code identifying the work center associated with this operation labor transaction.

Machine. Enter a code identifying the machine associated with this operation labor transaction.

Prod Order. Enter the production order associated with this operation labor transaction.

ID. Enter the ID for the production order.

Operation Frame

BOM Code. Enter a valid BOM code. The system creates records at a cumulative order for a profile that defines the site, item number, production line, routing code, and BOM code for the order, and start and end effective dates.

Item Number. Enter the item being manufactured, either a finished product or an intermediate product or subassembly. The item can be a co-product/by-product or base process item.

Operation. Enter a valid operation specified in Standard Operation Maintenance.

UM. Enter the unit of measure of the inventory transaction quantity. This field is validated against predefined values entered in Generalized Codes Maintenance, if any. When the alternate unit of measure has not been predefined in Unit of Measure Maintenance, a warning displays and the UM conversion remains 1.0000. Adjust it manually.

Qty Scrapped. Enter the quantity scrapped for this operation.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the scrapped quantity. For quantities rejected, reworked, or scrapped, you can enter up to 10 quantities and reason codes by entering Yes in the associated Multi Entry field.

Multi. When Yes, a pop-up frame displays to enter up to 10 quantities and reason codes for the materials registered in this transaction.

Std Setup Time. Specify Yes to use the standard setup time, in decimal hours, that it takes to set up operations for the order, independent of order quantity. When No, the system does not report setup time in this transaction. In this case, use Operation Labor Transaction to record time.

The system reports set up time for production orders in this program; it does not report setup time for repetitive orders even when this field is set to Yes.

View Schedules. Specify Yes to display the schedule against which the activity is consumed. The system displays the schedule due date, production order, quantity open, and quantity processed.

Calculate Backflush. Specify Yes to have the system calculate backflush. Component inventory for the item is consumed by production by using production backflush transactions. Refer to *QAD Manufacturing User Guide* for information on backflush calculation methods.

Modify Inventory. Indicate whether to modify inventory for this transaction. When Yes, the system displays a frame that lets you specify components, substitute items, and indicate the site, location, quantity, and other component details.

Conversion. The conversion factor determines how the system converts quantities stated in terms of the alternate unit of measure back into terms of the item unit of measure. This is expressed as the ratio of the alternate unit of measure to the item unit of measure. The default is 1.0000.

When a transaction uses an alternate unit of measure, the system accesses the appropriate conversion factor defined in Unit of Measure Maintenance.

Work Center. Enter a code identifying the work center associated with this operation transaction.

Machine. Enter a code identifying the machine associated with this operation transaction.

Department. Enter a code identifying the department associated with this operation transaction.

Qty Processed. Specify the quantity of material that was processed at this operation. The default is 0 (zero).

When Transaction Quantity Method is set to Qty Processed, the system allows users to enter Qty Processed rather than Qty Complete in Operation Activity Transaction and Production Order Receipt.

Note The Transaction Quantity Method value in Work Center Maintenance has a higher priority over the value set in Production Line Maintenance. If there is no production line defined on a production order and no Transaction Quantity Method defined on the work center, the system uses the Open Qty Method set in Production Order Control as the transaction quantity method.

Qty Complete. Specify the quantity completed at this operation. The quantity is transferred from the input queue of the operation to its output queue.

If there are prior non-milestone operations, they are backflushed using a demand-pull algorithm. Essentially, this means that the amount to be backflushed at a non-milestone operation depends on the following operation's input queue being negative (caused by reporting Qty Processed in the Backflush Transaction), and how much is available in the non-milestone operation's output queue to satisfy it. This is performed successively for all preceding non-milestone operations, up to the first milestone operation.

When a milestone operation is reported, the system reports prior non-milestone operations automatically; however, the system checks whether the Auto Labor Report field is set to non-milestone operations to determine whether labor of non-milestone operations is reported automatically.

Qty Scrapped. Enter the quantity of material that was processed at this operation to be scrapped. The default is 0 (zero).

The quantity entered is registered as quantity scrapped at the operation. The output queue of the operation is reduced by this quantity; the scrap queue of the To Operation specified is increased by this quantity.

You can enter up to 10 quantities and reason codes by selecting Multi Entry.

Qty Rejected. Enter the quantity of material that was processed at this operation to be rejected. The default is 0 (zero).

The quantity entered is registered as quantity rejected at the operation. The output queue of the operation is reduced by this quantity; the reject queue of the To Operation specified is increased by this quantity.

You can enter up to 10 quantities and reason codes by selecting Multi Entry.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the rejected quantity. For quantities rejected, reworked, or scrapped, you can enter up to 10 quantities and reason codes by entering Yes in the associated Multi Entry field.

Multi Entry. When Yes, a pop-up frame displays to enter up to 10 quantities and reason codes for the reject, scrap, or rework materials registered in this transaction.

The system creates an operation history record for this transaction for each quantity and reason code entered.

Reject to Op. Reject to Op must reference either the current operation or operations that precede it. The default is the current operation.

Receive by Pack. Indicate Yes when finished products are to be received into inventory as packaged goods in this transaction.

Yes: The system prompts you to build the pallet, then displays the Parent Pack frame to enter serial IDs to receive.

No: The system receives the finished products into inventory without packaging.

Total Qty. This display-only field depicts the quantity the system backflushes. The system calculates it as:

*(Qty complete + qty scrapped + qty rejected) * conversion*

Move Next Op. Indicate Yes to have the system move the quantity reported complete. This value determines where the quantity complete is transferred.

Yes: The quantity complete is transferred to the input queue of the next operation. When the reporting operation is the final operation in the cumulative order routing, the quantity complete is transferred to the appropriate finished goods inventory location.

No: The quantity complete remains in the output queue of the reporting operation. Use Move Transaction to move it manually to the next operation's input queue.

Close Operation. Set to Yes to close the operation. Closing the operation closes any remaining component requirements and capacity requirements linked to this operation.

Close Order. Indicate whether to close the production order upon completion of the transaction. Closing the order closes any remaining component requirements and capacity requirements as well as scheduled receipts linked to this order.

Work Center Frame

Actual Run Time. Enter the actual run time for the operation. When the Auto Run Labor field is Yes in the order routing, the system calculates the actual run time for the operation by multiplying the quantity processed (quantity completed + quantity rejected + quantity scrapped) and the operation run time. To override the system calculated value, you can modify the calculated run time for the operation by the actual run time.

When the Auto Run Labor field is set to No in the routing, the system does not calculate a run time for the operation; in this case, you should manually enter the time worked at the operation. The system uses the Auto Run Labor field for non-milestone operations to determine when the prior operation run time is recorded at the time the associated milestone is reported.

Hours entered here are posted to the cumulative order and to the general ledger accounts for work in process and labor. These hours are also recorded in an operation history record.

Earning Code. Enter a valid earning code set up in Earning Code Maintenance. Use earnings codes to identify different rates of pay, which are typically associated with different types of labor. For example, an employee's overtime rate may be double that of the regular pay rate. When labor is reported, a valid earning code must be entered. Each earning code identifies the type of earning (regular, overtime, sick, vacation, or other) and the pay rate multiplier or piece rate, which impacts the amount posted to GL.

Start Time. Enter the time of day when work on this operation was started. An operation must be started after any setup has been completed.

Labor time can be entered as an elapsed time or as a start and stop time. For example, if you began work at eight and finished at nine-thirty, you could enter the elapsed time of 1 hour and 30 minutes, or you could enter a start time of 8:00 and a stop time of 9:30. If you enter a start and stop time, the system calculates the elapsed time. Enter labor times in a 24-hour format.

Elapsed or Stop Time. Enter the time of day when work on this operation was completed, or if start time is zero, the total amount of time spent working on this operation. This time does not include setup time. When reporting non-productive labor, you are reporting the time spent not working.

Labor time can be entered as an elapsed time or as a start and stop time. For an example, see the field help for Start Time. Labor times can be entered in a 24-hour (H) format.

Actual Setup Time. Enter the actual time in decimal hours to prepare the work center to carry out the operation, independent of order quantity. When Std Setup Time is Yes, the system shows setup time for the operation as the default. To override the default value, you can modify the setup time for the operation by the actual setup time.

Earning Code. Enter a valid earning code set up in Earning Code Maintenance. Use earnings codes to identify different rates of pay, which are typically associated with different types of labor. For example, an employee's overtime rate may be double that of the regular pay rate. When labor is reported, a valid earning code must be entered. Each earning code identifies the type of earning (regular, overtime, sick, vacation, or other) and the pay rate multiplier or piece rate, which impacts the amount posted to GL.

Start Setup. Enter the time of day when setup for this operation started. Operations start after setup completes.

Labor time can be entered as an elapsed time or as a start and stop time. For example, if you started setup at eight and finished at nine-thirty, you could enter the elapsed time of 1 hour and 30 minutes, or you could enter a setup start time of 8:00 and a stop time of 9:30. If you enter a start and stop time, the system calculates the elapsed time. Enter labor times in a 24-hour format.

Elapsed or Stop Setup. Enter the time of day when the setup of this operation was completed, or if start time is 0 (zero), the total amount of time spent setting up this operation.

Labor time can be entered as an elapsed time or as a start and stop time. For an example, see the field help for Start Setup. Labor times can be entered in a 24-hour (H) format.

Component Issue Frame

Note Fields not listed here are described in the fields for “Production Order Component Issue” on page 291.

Parent Pack Frame

Std Pack Qty. Enter the expected quantity that the pack holds. The default is from the quantity per for the lowest-level serialized pack of the BOP structure. You cannot enter a negative number.

Gen Item Ser. Indicate Yes to automatically generate serial IDs for each inventory unit. The system only generates when you set the Serial Control field to M(andatory) in Item Master Maintenance.

When No, you are required to manually enter item serial IDs if the Serial Control field of the item is M(andatory).

Nbr of Full Packs. Enter the number of full packs to receive.

Qty in Partial Pack. Enter the number of items to receive in the partial pack.

Received Quantity. The actual quantity received.

Quantity. Enter the total quantity to receive against the transaction.

Site. Enter the site associated with this labor transaction.

Total Units. This display-only field shows the total units as:

*Quantity * UM Conversion*

Change Attributes. Specify Yes to change component attributes. When Yes, an additional frame displays with the attribute fields.

Document. Indicate Yes to integrate legal documents. For information on legal document integration, refer to either your QAD Sales or Purchasing user documentation. For legal documentation flow, refer to your QAD Financials user documentation.

Operation Labor Transaction

Note For Heading Frame fields, see “Heading Frame” on page 271 for Operation Activity Transaction.

CUM ID. This field displays the cumulative ID.

Item Number. Enter the item being manufactured, either a finished product or an intermediate product or subassembly. The item can be a co-product/by-product or base process item.

Routing. Enter a code identifying the routing or process used to produce this item on this production order. The code can identify an alternate routing or process.

This field can be left blank. When blank, the system accesses the routing or process with a routing code equal to the item number.

UM. The system displays the unit of measure for the item.

BOM Code. Enter a valid BOM code. The system creates records at a cumulative order for a profile that defines the site, item number, production line, routing code, and BOM code for the order, and start and end effective dates.

Work Center Desc. This field is display only, based on the entered work center description.

Actual Down Time. Enter the labor spent due to nonproductive activities associated with a manufacturing operation, such as machine breakdown or material shortage.

Start Down. Enter the time of day when down time began.

Time can be entered as an elapsed time or as a start and stop time. For example, if down time started at eight and finished at nine-thirty, you could enter the elapsed time of 1 hour and 30 minutes, or you could enter a down start time of 8:00 and a stop time of 9:30. If you enter a start and stop time, the system calculates the elapsed time. Enter labor times in a 24-hour format.

Earning Code. Enter a valid earning code set up in Earning Code Maintenance. Use earnings codes to identify different rates of pay, which are typically associated with different types of labor. For example, an employee's overtime rate may be double that of the regular pay rate.

When labor is reported, a valid earning code must be entered. Each earning code identifies the type of earning (regular, overtime, sick, vacation, or other) and the pay rate multiplier or piece rate, which impacts the amount posted to GL.

Elapsed/Stop Down. Enter the time of day when the down time stopped, or if start time is 0 (zero), the total amount of time spent in down time.

Time can be entered as an elapsed time or as a start and stop time. For an example, see the field help for Start Down. Enter labor times in a 24-hour format.

Reason Code. Enter a valid code, set up in Reason Codes Maintenance, for the down time.

Pack Create by Production Line

Note Some fields are described in “Pack Create by Production Order” on page 278.

Item Number. Enter the item number for which the system creates serial IDs.

Site. Enter the site on which the item is produced.

BOM Code. Enter the product structure for the production.

Production Line. Enter the production line to run.

Pack Code. Enter the pack code for which the system assigns serial IDs. The default is from the lowest-level serialized pack of the BOP structure that is determined by item (BOM), site, address (blank), and transaction type (RCT-WO).

You can modify the pack code. An assembly pack code is allowed. Blank is allowed when serial control of the item is set to M in Item Master Maintenance. When Pack Code is blank, the system considers it as item serialization. In this situation, the system ignores the pack quantity and UM.

In most cases, the pack code is the unit pack. However, if serial control of the unit pack is set to Never in Packaging Structure Maintenance, the system looks for the upper level whose serial control is other than Never.

Note When determining the BOP code from item packaging records, BOM has a higher priority than the item. This means that when alternate BOMs are in use, the system still follows the matching logic described in Item Packaging Maintenance; however, BOM codes have a higher priority than item.

Number of Packs. Enter the number of packs you want the system to create. You cannot enter a negative number.

Pack Quantity. Enter the expected quantity that the pack holds. The default is from the quantity per of the lowest-level serialized pack of the BOP structure. You cannot enter a negative number.

When serial control of the unit pack is set to Never, the system multiplies the quantity per of each level whose serial control is set to Never; however, you can modify it.

Pack Quantity UM. Enter the UM of the content the pack holds. The default is from the item UM. When you specify an assembly pack code, the value you enter here must be a pack UM.

Lot/Serial. Enter the lot/serial number to use on the production line.

Reference. Enter the reference to use on the production line.

Pack Create by Production Order

Production Order. Enter the production order number for which serial IDs have been booked or are to be created.

ID. Enter the production order ID for which serial IDs have been booked or are to be created.

Lot/Serial. Enter the lot/serial number to use in the production order receipt. This field uses the same logic as the QAD ERP production order receipt functions to obtain default values.

Reference. Enter the reference used in the production order receipt.

Pack Code. Enter the pack code for which the system assigns to booked serial ID or creates for serial IDs. The default is from the lowest-level serialized pack of the BOP structure that is determined by item (BOM), site, address (blank), and transaction type (RCT-WO).

You can modify the pack code. An assembly pack code is allowed. Blank is allowed when serial control of the item is set to M in Item Master Maintenance. When Pack Code is blank, the system considers it as item serialization. In this situation, the system ignores the pack quantity and UM.

In most cases, the pack code is the unit pack. However, if serial control of the unit pack is set to Never in Pack Code Maintenance, the system looks for the upper level whose serial control is other than Never.

Note When determining BOP code from item packaging records, BOM has a higher priority than the item. In other words, when alternate BOMs are in use, the system still follows the matching logic described in Item Packaging Maintenance; however, BOM codes have a higher priority than item.

Number of Packs. Enter the number of packs you want the system to create. You cannot enter a negative number. When the production order is linked with a sales order line, you cannot enter a number that is greater than the number of booked serial IDs.

When booked serial IDs are associated with the production order, the system tries to update booked serial IDs first.

- When the booked serial IDs are not associated with any SO line, and their quantity is less than the specified number of packs, the system creates *New* serial IDs. The number of created serial IDs equals:

(Number of Packs - Number of Booked Serial IDs)

- When the number of booked serial IDs is greater than the number of packs, the system updates the first N (number of packs) booked serial IDs with the stage set to *New* and adds pack code, pack quantity, UM, lot/serial, and reference. The system displays a message indicating that serial IDs are updated.

The default is based on the open quantity and quantity per of the lowest-level serialized pack in the BOP structure. When serial control of the unit pack is set to Never, the system multiplies the quantity per of each level whose Serial Control is set to Never.

Pack Quantity. Enter the expected quantity that the pack holds. The default is from the quantity per of the lowest-level serialized pack of the BOP structure. You cannot enter a negative number.

When serial control of the unit pack is set to Never, the system multiplies the quantity per of each level whose serial control is set to Never; however, you can modify it.

Pack Quantity UM. Enter the UM of the content the pack holds. The default is from the item UM. When you specify an assembly pack code, the value you enter here must be a pack UM.

Post Rep Accum Usage Variance

ID. Enter the first ID in a range to select repetitive cumulative order records. Records will be selected that have an ID equal to or greater than the value entered here.

Item Number. Enter the first item number in a range to select repetitive cumulative order records.

Site. Enter the first site in a range to select repetitive cumulative order records.

Production Line. Enter the first production line in a range to select repetitive cumulative order records.

Show Zero Variance to Post. Determines whether to display variances that have been completely posted to date.

To see only new accumulated variance amounts on the report, set this to No. To see all variance amounts that have been posted for each order, regardless of whether any new amounts would be posted with this update, set this to Yes.

This has no financial or database effect; it only affects what displays on the report.

Show Zero Cumulative Variance. Determines whether to display variance categories that have no accumulated or posted variances to date.

To see only those variances with accumulated or posted amounts on the report, set this to No. To see all variance categories, regardless of whether any amounts have been posted or accumulated, set this to Yes.

This has no financial or database effect; it only affects what displays on the report.

Effective Date. Enter the transaction effective date. The default is the system date, but you can modify it as needed. The system verifies that the effective date is within an open fiscal period.

The effective date determines when the general ledger (GL) Inventory account balance is updated.

Process Definition Maintenance

Routing Code. Enter a code identifying the routing or process used to produce this item on this production line. The code can identify an alternate routing or process.

This field can be left blank. When blank, the system accesses the routing or process with a routing code equal to the item number.

Batch Qty. A system-maintained field recording the normal batch quantity for an item. If the formula was entered in Formula Maintenance, Batch Quantity defaults from the item master. Otherwise, it defaults from Formula Code Maintenance. Use Batch Quantity Change to change the value.

Ingredient quantity per and process operation run times are stated in terms of this batch quantity.

Run Time/Batch Qty. Enter the process operation run time in terms of the batch quantity for the item.

Milestone Operation. Designate a process as a milestone operation to simplify streamline the reporting of shop floor activity for production operations. The reporting of completion at a milestone operation initiates a backflush for the milestone operation, as well as previous non-milestone operations, back to but not including a previous milestone. Labor can be reported for completions at a milestone operation.

WIP Item. Specify a WIP (service) item set up in the item master to represent the subcontracted service being purchased; for example, PAINT.

Auto Labor Report. For milestone operations, set to Yes for the system to report labor for milestone operations automatically.

Employee. Enter a valid employee set up either in Employee Create or Actual Pay Rate Maintenance.

Eff Date. Enter a valid employee set up either in Employee Create or Actual Pay Rate Maintenance.

Shift. This field depicts the shift defined for the resource. The value for shift can be blank, 1, 2, 3, or 4. The default is blank. Shift schedules define how many days a week and how many hours the work center or production line is run. When you change the shift, it may change the production productivity percentage, which in turn may change the production order required capacity, and ultimately, change the projected duration days and hours.

Site. Enter a code identifying a valid site associated with this operation labor transaction.

Line. Enter a code identifying the production line associated with this operation labor transaction.

Work Center. Enter a code identifying the work center associated with this operation labor transaction

Machine. Enter a code identifying the machine associated with this operation labor transaction.

Prod Order. Enter the production order associated with this operation labor transaction.

ID. Enter the ID for the production order.

CUM ID. This field displays the cumulative ID.

UM. The system displays the unit of measure for the item.

BOM Code. Enter a valid BOM code. The system creates records at a cumulative order for a profile that defines the site, item number, production line, routing code, and BOM code for the order, and start and end effective dates.

Operation. Enter a valid operation specified in Standard Operation Maintenance.

UM. Enter the unit of measure of the inventory transaction quantity. This field is validated against predefined values entered in Generalized Codes Maintenance, if any. When the alternate unit of measure has not been predefined in Unit of Measure Maintenance, a warning displays and the UM conversion remains 1.0000. Adjust it manually.

Qty Scrapped. Enter the quantity scrapped for this operation.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the scrapped quantity. For quantities rejected, reworked, or scrapped, you can enter up to 10 quantities and reason codes by entering Yes in the associated Multi Entry field.

Multi. When Yes, a pop-up frame displays to enter up to 10 quantities and reason codes for the materials registered in this transaction.

Std Setup Time. Specify Yes to use the standard setup time, in decimal hours, that it takes to set up operations for the order, independent of order quantity. When No, the system does not report setup time in this transaction. In this case, use Operation Labor Transaction to record time.

The system reports setup time for production orders in this program; it does not report setup time for repetitive orders even when this field is set to Yes.

View Schedules. Specify Yes to display the schedule against which the activity is consumed. The system displays the schedule due date, production order, quantity open, and quantity processed.

Calculate Backflush. Specify Yes to have the system calculate backflush. Component inventory for the item is consumed by production by using production backflush transactions. Refer to *QAD Manufacturing User Guide* for information on backflush calculation methods.

Modify Inventory. Indicate whether to modify inventory for this transaction. When Yes, the system displays a frame that lets you specify components, substitute items, and indicate the site, location, quantity, and other component details.

Conversion. The conversion factor determines how the system converts quantities stated in terms of the alternate unit of measure back into terms of the item unit of measure. This is expressed as the ratio of the alternate unit of measure to the item unit of measure. The default is 1.0000.

When a transaction uses an alternate unit of measure, the system accesses the appropriate conversion factor defined in Unit of Measure Maintenance.

Prod Activity Trans Delete/Arch

This program is .NET UI only and does not contain context-sensitive field help. To run the program, set criteria, then select Run.

Prod Line Reserve Loc Maintenance

Site. Enter the site for the production line reserved location.

Production Line. Enter the production line. Production lines identify a series of work centers and machines, normally dedicated to specific product families or product lines.

Item Number. Leave this field blank to designate an inventory location as a general production line reserved location. Enter an item number to define a production line reserved location for that item. Do this when inventory quantities for the item are not maintained at the general production line reserved location.

Location. Enter a code for an inventory location for the physical, shop floor location for the reserved location. You can designate one or more inventory locations as a reserved location for a production line or work center.

To shelter inventory at a production line or work center location, for production at that production line or work center, select an inventory location that is defined with an inventory status code that determines that inventory quantities at that location are not available. Production allocation and picklist functions recognize inventory quantities at those reserved locations as available for production orders and operations, even though the inventory status code indicates otherwise.

Available. This read-only field displays the available status for the inventory location as determined by the inventory status code that is defined for the location.

To shelter inventory at a production line or work center location, for production at that production line or work center, select an inventory location that is defined with an inventory status code that determines that inventory quantities at that location are not available. Production allocation and picklist functions recognize inventory quantities at those reserved locations as available for production orders and operations, even though the inventory status code indicates otherwise.

Preference. An integer value that determines the order which reserved locations for a production line or work center, are evaluated by production allocation functions, when there is more than one general reserved location defined for a production line or work center.

Prod Order Accounting Close

Include Work Order/Rep/Both. Enter the order type as WO (work order), rep(etitive), or both for the Prod Order Accounting Close operations. The default is both.

Cum Order End Date. Enter the cumulative order end date. The default is today's date.

Transfer Work in Process. Specify Yes for the system to transfer work in process automatically.

Effective Date. Enter the general ledger (GL) effective date associated with this transaction. The default is the system date. The system validates that the date is within an open fiscal period.

The effective date determines when GL transactions created by this transaction affect GL balances. A transaction does not increase the balance in the Inventory account until this effective date.

The date of the transaction can differ from the effective date. The transaction date usually indicates when the transaction was actually entered into the system. Effective date is when the transaction affects the general ledger. At period end, these dates often differ.

Print Account Detail. Specifies whether to print the GL transaction detail by production order.

No: Output of GL transaction detail is not required. Output displays in sequence by production order number, ID, item number, site quantities ordered, completed and rejected, SO/Job, Project, and Effective Date for each order that meets the selection criteria.

Yes: Print the GL transactions in sequence by GL reference number showing the debit and credit accounts and amount of each WO-CLOSE transaction created for each production order.

Print GL Summary. Specify Yes to Include GL details in the report, and No to omit them.

Update. Enter Yes to run this program in update mode and change records in the database.

Enter No to run this program in report-only mode without updating the database. A report prints for review with SIMULATION displayed at the top of each page.

Prod Order Manual Allocation

Note Additional fields in this program are described in “Production Order Component Issue” on page 291.

Status . This display-only field shows the production order status for which the system allocates components.

Production Order. Enter the production order for this function.

Deallocate. Enter Yes to remove all quantities currently allocated to the order component. Otherwise, enter No. The default is No.

Picked inventory cannot be deallocated.

Quantity Allocated. Specify the component quantity to allocate.

You cannot enter negative quantities for allocation. When allocations are changed, the system automatically updates the associated picklist if it exists.

When you enter a location/lot/ref that is already allocated or picked for the component, the system displays a value in this field; however, you can modify the value. When you do, the system updates the value in the Total Allocated Qty field.

Quantity Picked. This display-only field shows the quantity picked.

Total Allocated Qty. The system displays the total allocated quantity. The system includes the picked quantity in the Total Allocated Qty.

When you update the Quantity Allocated field, the system updates the value in the Total Allocated Qty field.

Product Order Receipt

Qty Complete. Specify the quantity completed for the order. The quantity is received into stock.

UM. Enter the unit of measure of the inventory transaction quantity. This field is validated against predefined values entered in Generalized Codes Maintenance, if any. When the alternate unit of measure has not been predefined in Unit of Measure Maintenance, a warning displays and the UM conversion remains 1.0000. Adjust it manually.

Conversion. The conversion factor determines how the system converts quantities stated in terms of the alternate unit of measure back into terms of the item unit of measure. This is expressed as the ratio of the alternate unit of measure to the item unit of measure. The default is 1.0000.

When a transaction uses an alternate unit of measure, the system accesses the appropriate conversion factor defined in Unit of Measure Maintenance.

Qty Scrapped. Enter the quantity scrapped for this operation.

Conversion. Enter the conversion for the scrapped quantity. For more information, see the online help for the Conversion field.

UM. Enter the UM for the scrapped quantity. For more information, see the online help for the UM field.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the scrapped quantity. For quantities rejected, reworked, or scrapped, you can enter up to 10 quantities and reason codes by entering Yes in the associated Multi Entry field.

Gen Pack Ser. Specify Yes to display a frame to build the pallet and receive serialized packages/items. When items are serialized, use this frame to receive serialized items. For more information on the serialization frames, see the procedural help for this program.

Std Setup Time. Specify Yes to use the standard setup time, in decimal hours, that it takes to set up operations for the order, independent of order quantity. When No, the system does not report setup time in this transaction. In this case, use Operation Labor Transaction to record time.

The system reports setup time for production orders in this program; it does not report setup time for repetitive orders even when this field is set to Yes.

Calculate Backflush. Specify Yes to have the system calculate backflush. Component inventory for the item is consumed by production by using production backflush transactions. Refer to *QAD Manufacturing User Guide* for information on backflush calculation methods.

View Schedules. Specify Yes to display the schedule against which the activity is consumed. The system displays the schedule due date, production order, quantity open, and quantity processed.

Modify Inventory. Indicate whether to modify inventory for this transaction. When Yes, the system displays a frame that lets you specify components, substitute items, and indicate the site, location, quantity, and other component details.

Close Order. Indicate whether to close the production order upon receipt/backflush.

Serial ID. Enter a valid serialized ID for the component in this transaction.

Pack Code. Enter a valid pack code for the component in this transaction.

Reference. Enter a reference number to associate with the specified item quantity.

Std Pack Qty. Enter the expected quantity that the pack holds. The default is from the quantity per for the lowest-level serialized pack of the BOP structure. You cannot enter a negative number.

Gen Item Ser. Indicate Yes to automatically generate serial IDs for each inventory unit. The system only generates when you set the Serial Control field to M(andatory) in Item Master Maintenance.

When No, you are required to manually enter item serial IDs if the Serial Control field of the item is M(andatory).

Nbr of Full Packs. Enter the number of full packs to receive.

Qty in Partial Pack. Enter the number of items to receive in the partial pack.

Received Quantity. The actual quantity received.

Production Line Allocation Maintenance

Site. Enter the code that identifies the site associated with these production lines.

Item Number. Enter the item being manufactured, either a finished product or an intermediate product or subassembly. The item can be a co-product/by-product or base process item.

The item number, site, and production line together determine the default routing code, BOM code, estimated yield, lead time calculation, and components for the order from data set up for the item, item-site, and item and production line.

Unit of Measure. Enter the unit of measure for stocking, planning, scheduling, costing, and accounting for this item. The default is EA (each). This field is validated against predefined values entered in Generalized Codes Maintenance for field pt_um, if any.

The item unit of measure is used for inventory quantity on hand, forecasts, product structures, routing operation run times, manufacturing orders, planning, and reporting. It defaults to all inventory transactions for this item, but you can change it.

Production Line. A production line is a physical arrangement of work centers that can perform a sequence of operations for the processing and manufacture of items at a site. Items can be manufactured on production lines using either work orders or repetitive production orders.

Percent. This percentage determines how much of the total requirement for an item at this site is allocated to this line.

Allocation percentages must add up to 100%; otherwise, an error displays when you exit.

Source Matrix Explosion uses this percentage to calculate the operations plan for this production line. Changes to percentages affect only subsequent source matrix explosions.

Production Line Item Create

Work Center. Specify the work center for which you want items set up for schedule processing.

Machine. Specify the machine for which you want items set up for schedule processing.

Site. Specify the site for the work center or machine.

Production Line. Specify the production line for which you want items set up for schedule processing.

Update. Specify Yes to mass update according to criteria you set here. Specify No to run a report of the mass update before you commit. The output report contains the following information:

- For each item, the current primary production and alternate production lines
- For each item, the new target production line

Production Line Item Update

Make Primary Line. Enter Yes to change to make the allocation percentage of the line to 100%.

The Make Primary Line field works in conjunction with the Production Line field. You can only set Make Primary Line to Yes when you specify a production line in the Production Line field. When Production Line is blank, you cannot change Make Primary Line to Yes.

Change Pur/Mfg Code. Enter Yes to change the item master and site master (if it exists) Pur/Mfg code on all items associated to the production line.

Update BOM and Routing. Indicate Yes to have the system update production orders with a status of P(lanned) or F(irmed) with the BOM/routing code from the production line, regardless of the order type.

Update Run Sequence. Indicate Yes to replace the run sequences of items on the target production line with the items' run sequences defined in item planning data.

Update Run Rate. Indicate Yes to apply the production line run rate against all items assigned to the target production line.

Update. Specify Yes to mass update the production line, work center, or machine and item set up, using the Production Line Item Create program and criteria you set in this program. Specify No to run a report before you update.

Production Line/Order Update

Production Line. Enter the production line with the changes that you want to mass apply to production orders.

Customer Item Number. Enter the code identifying the customer item number associated with the production line that has changes you want to mass apply to production orders.

As-of Order Release Date. Enter the as-of-order release date. The Release date is the date this production order is scheduled to be released to production. The date you enter here selects orders to which the system mass applies changes for the production line that you changed.

Update Firm Orders. Specify Yes to update firm orders with the production line changes. Firm orders are any orders with a status of F(irm), that is greater than P(lanned).

Update Production Rate. Specify Yes to mass update the production rate. Production rate is the standard run rate for the production line. When you update production rates, the system recalculates the production order run time.

Update Exploded Orders. Specify Yes to mass update exploded orders with the production line changes. An exploded order has an order status of E. Exploded production orders have system- recalculated order bills; the bill and routing are frozen.

Update Setup Time. Specify Yes to mass update the setup time. Setup time is the time required to prepare the resource (production line) to process a lot or batch quantity for a specific operation.

Update Allocated Orders. Specify Yes to mass update allocated orders with the production line changes. An allocated order has an order status of A. Allocated orders generally allocate components in inventory against other work or sales orders. Detail allocations are made in Production Order Bill Maintenance and components can be issued.

Update Tool ID . Specify Yes to mass update the tool ID. This is typically the tool that the run crew uses for this item to be produced on this production line.

Update Release Orders. Specify Yes to mass update released orders with the production line changes. A released order has a status of R. This setting only processes Released orders for which no production activity has been recorded. For released orders, all available components are detail allocated, and all key items are available. You can process material issues, receipts, and labor feedback against released production orders.

Update Run Size. Specify Yes to mass update the run size. The run size links the run crew size with the run rate. Changes in the run crew size causes the system to recalculate the run size value.

Update Orders in Process. Specify Yes to mass update orders in process with the production line changes. This setting only processes orders for which production activity has been recorded.

Update Duration Buffers. Specify Yes to mass update the duration buffer. The duration buffer is the average number of days, hours, minutes, and seconds required to process a production order in addition to run and setup time.

Update Orders. Specify Yes to mass update orders with the changes you selected or the type of order you selected. This setting allows you to simulate the update of orders prior to applying the updates to the orders in the database.

Production Order Bill Maintenance

Component Item. Enter the code identifying a component item required for this production order.

Production order component information prints on picklist documents and most other reports and inquiries, in particular, Production Order Component Issue.

When a production order is entered, the bill of material (BOM) code specified determines which component items are required. When the production order is exploded, the production order bill is created by copying this standard bill. After it is copied, the production order bill can be modified specifically for this production order. You can adjust quantities, allocate specific locations or lots, and add or subtract component items.

A final assembly production order, created by releasing a sales order for a configured product, uses the sales order bill, listing the components selected for that specific configuration. If the sales order is changed later, modify the production order bill to reflect the change.

When a production order is closed, the system calculates production order rate and usage variances. Rate variance reflects differences in cost caused by issuing different items or by issuing them at a different cost. Usage variance is an efficiency variance, calculated as the difference between the actual quantity of components issued and the standard quantity required.

These variances are calculated based on the production order bill. Add any additional components you plan to use to the bill. Otherwise, their issue is treated as unplanned and the cost updates usage variance.

This is particularly important when using rework or expense production orders, since they do not have a standard bill. Add the components to the bill before issuing them.

Qty Required. The quantity of this component item, including expected scrap, you expect to use to complete this production order.

When the production order bill is exploded, quantity required is set to the standard component quantity per multiplied by the production order quantity, and then adjusted upward to account for any scrap percentage on the bill.

The quantity required can be a decimal value. If the item is only issued in discrete units (using whole number quantities), modify the quantity required.

If you expect to use more or less of this item than is stated, modify the quantity required on the production order bill. Otherwise, production order variances will be calculated incorrectly.

When a production order is closed, the system calculates production order rate and usage variances. Rate variance reflects differences in cost by issuing different items or by issuing them at a different cost. Usage variance is an efficiency variance, calculated as the difference between the actual quantity of components issued and the standard quantity required.

These variances are calculated based on the production order bill, so add any components you plan to use to it. Otherwise, their issue will be treated as unplanned and the cost written off to usage variance.

This is particularly important when using rework or expense production orders, since they do not have a standard bill. Add the components to the bill before issuing them.

Qty Per Unit. The quantity of this component item called for in the standard bill of material.

When components are issued to a production order, material costs are posted to WIP as the quantity issued multiplied by the GL cost.

When the production order is closed, usage variance can be calculated. Usage variance is an efficiency variance, calculated as the difference between the actual quantity of each component issued and the standard quantity required, multiplied by the GL cost of that component.

This variance reflects any difference between the standard quantity required at the time the production order was exploded and the standard quantity required now.

Quantity Allocated. Enter the quantity allocated to this production order. The quantity allocated cannot be greater than the quantity required.

Component items are automatically allocated, based on their allocation policy, by the system when the production order status is changed to A, for allocated. This field indicates general allocations, reserving components for this order by reducing the quantity available to allocate. The items are not physically picked or issued, just flagged as allocated.

When inventory status displays, the quantity available to allocate appears with the quantity on hand. This is useful for preventing sales orders being taken for component items needed by manufacturing. Other production orders could be processed, since production order allocations are not restricted by quantity on hand or available.

There are two types of allocations: general and detail. General allocations allocate the required quantity of an item. This field is the quantity general allocated. Detail allocations specify the site, locations, lot/serial numbers, and lot references from which that quantity is to be allocated.

The system automatically generates detail allocations for components with an allocation policy set to Detail when production orders are allocated.

Unit Cost. Enter the total GL cost of this component item when the production order was exploded. The system uses the cost to calculate material rate variances.

When you issue components to a production order, material costs post to WIP as the quantity issued multiplied by the GL cost of the material. At the same time, any rate variance is calculated and posted.

Rate variance reflects differences in cost caused by items issued at a different cost (for example, from a different site). It is calculated as the difference between the GL cost of the materials actually used and the GL cost of the material required. When using production orders the GL cost of each component is copied into the production order bill at the time the production order is released. Should costs subsequently change, this will result in material rate variances.

If costs change, you can use WIP Material Cost Revaluation to update frozen production order costs to reflect the new GL cost. If you have changed this cost manually in Production Order Bill Maintenance, WIP Material Cost Revaluation will reset the Unit Cost to standard and post a Material Rate Variance for the difference on the production order.

Quantity Picked. This field is read-only in Production Order Bill Maintenance and displays the quantity printed on a picklist for this component item.

When a picklist prints, the system updates the quantity picked, ensuring that the same quantity is not printed again on the next picklist printed for this order.

Quantity picked can be displayed as the default quantity to issue during the Production Order Component Issue function, simplifying the entry of issues.

If component quantities are increased or if new components are added to the production order bill, another picklist can be printed listing only these quantities.

Allocation Policy. This field is the value for Allocation Policy, Transfer Allocation Policy, Pick Policy, Issue Policy, and other parameters that appear for the component item that appears on the production order bill. Values are maintained using Item Master Maintenance, Item Inventory Data Maintenances, and Item Site Inventory Data Maintenance.

Detail Allocations. Set to Yes to have the system create detail allocations for the component item.

Use detail allocations when you want to assign specific inventory lot/serial numbers and locations to be issued to an order.

Yes specifies that detail allocations are to be made for this component item. The next screen prompts you to enter the location, lot/serial, and lot reference numbers to use on this order. You can only detail allocate from inventory quantity on hand.

When creating a detail allocation, the system considers from where inventory is being supplied and to which production order inventory is allocated. The system evaluates inventory in locations in this sequence:

1. Work center backflush location
2. Production line backflush location
3. Work center reserved location for the item
4. Production line reserved location for the item
5. Work center reserved locations (by preference)
6. Production line reserved locations (by preference)

After searching locations, the system considers the picking logic last.

No specifies that general allocations are sufficient. General allocations are made regardless of inventory availability.

There are two types of allocations: general and detail. General allocations allocate the required quantity of an item. Detail allocations specify the site, location(s), lot/serial number(s), and lot reference(s) from which that quantity is to be allocated.

The system automatically generates detail allocations when sales order, distribution order, or RMA packing lists and production order picklists print.

Pick Policy. This field is the value for Allocation Policy, Transfer Allocation Policy, Pick Policy, Issue Policy, and other parameters for the component item that display on the production order bill and as maintained using Item Master Maintenance, Item Inventory Data Maintenances, and Item Site Inventory Data Maintenance.

The system displays one of the following Pick Policies for the component item:

No Pick - Component items are not put on the pick list. Component items where the issue policy is not set to No Issue can be detail allocated but are not assigned a picklist number and are not allocated as picked.

Issue - Component items appear on a production order picklist with the intent to directly issue the component to the order.

Transfer - Component items can appear on either a bulk item picklist or on a production order picklist with the intent to transfer the items to the work center.

Issue Policy. This field is the value for Allocation Policy, Transfer Allocation Policy, Pick Policy, Issue Policy, and other parameters for the component item that display on the production order bill as maintained using Item Master Maintenance, Item Inventory Data Maintenances, and Item Site Inventory Data Maintenance.

The system displays the Issue Policy for the component item as one of the following:

Backflush: Component inventory for the item is consumed by production by using production backflush transactions.

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: Component items are floorstock and are not consumed by production and not processed by inventory transactions.

Quantity Issued. The total quantity of this component issued to this production order.

This is a system-maintained field increased each time this component is issued (or backflushed) to this production order. Total quantity issued is compared to the standard quantity required to determine production order usage variance.

Location. The location from which you expect to issue this component.

For general allocations, this is the location that inventory is allocated from. For detail allocations, this displays as the default allocation location. If detail allocations need to be modified, the detail allocations window provides the user with the ability to do this. Changing this location will not have an effect on the location in the detail allocations window.

Allocations earmark particular inventory quantity on hand to be used on particular sales orders or production orders. This inventory is uniquely identified by the site, location, lot/serial number, and lot reference number of the item.

This information prints on sales order packing lists and production order picklists, and displays as the default on shipment and issue transactions.

You can create multiple allocations for each order when an insufficient quantity exists in one place to satisfy the requirement. For example, if an order needs 100, you can allocate 75 from one location and 25 from another.

Multiple allocations are affected by the Allocate Single Lot field associated with each item. When Yes, allocations must be from one lot number only. This is often used for lot-controlled items. For example, you would not want to use more than one dye lot on an order.

Key Item. Indicate whether this item must be available before a production order can be released. This field defaults first from Item-Site Inventory Data Maintenance and then from Item Master Maintenance.

You cannot release a production order or remove or print a picklist when a sufficient quantity on hand of a key item does not exist. An error message displays. You can adjust the order quantity manually to ensure that you can complete the order.

Key items are typically difficult to obtain. They may have long lead times or may be in short supply. Only a few items should be designated as key items. For example, glass is a key item for a window manufacturer. When enough glass is not available to fill an order, the order cannot be started.

Issue Date. The date a component on a production order bill is required for the production order. The issue date is determined by the operation defined for the product structure component, and the system sets it to the Start Date for the production order routing operation. When the product structure component operation is not specified (blank), then the system sets the issue date to the Start Date for the first production order routing operation.

The system automatically reschedules production order operations, together with the issue dates for production order components, updating the start and due dates for operations when modifying the production order due date, quantity to complete, quantity to start, and/or estimated yield percent. This rescheduling process is needed to update the load that production orders present against work center capacity

Production Order Component Issue

Note Some fields are listed under “Operation Labor Transaction” on page 276.

Machine. Specify the machine normally performing the operation.

Default Qty to Issue. Specify the default quantity to issue. Three options are available: OpenQty, Alloc, and None. The default is OpenQty (open quantity).

OpenQty: Only the components remaining to issue are included in the issue. The open quantity is calculated as follows:

Open Qty = Qty Required - Qty Issued - Qty Picked

The system identifies all components for the specified operation and its preceding non-milestone operations. When building the list of components to issue, the system first selects the items that were allocated and adds them to the list. Components for which the requirements have not been fully satisfied are also added to this list, through the same calculation used by order allocation for identifying inventory locations.

Alloc: Items with an open detail allocation are automatically included in the issue.

The system identifies all components for the specified operation and its preceding non-milestone operations. When building the list of components to issue, the system selects the items that were detail-allocated to this order and adds them to the list.

None: The system does not calculate the issue quantity, so you need to manually enter the items to issue them to the order.

Op. Specify the operation to use to select components to display as candidates for issue.

Enter an operation number to view only the components required at that operation. Leave blank to view all components.

Component. Specify the component to issue to the production order.

Operation. Enter a valid operation specified in Standard Operation Maintenance.

Substitute. Specify whether a defined substitute should be issued for this component.

No: You are not issuing a substitute for this component. If the item was already listed as a required component, the requirement is decreased by the quantity issued. If the item was not listed, it is added to the bill and issued.

Yes: This item is a valid substitute for a required component defined in Item Substitution Maintenance. When you issue a substitute component, the substitute item and the replacement quantity display. If more than one possible substitute item is defined for the component, the substitution quantity per and the quantity to issue display for each substitute item.

Qty Required. Specify the original component quantity required for the production order.

Site. Enter the site where items are being issued. The site defaults from the production order detail (wod_det) record of the component to be issued.

Location. Enter the location code associated with the component item to issue.

Lot/Serial. The value of Lot/Serial Control for the item determines if a lot or serial number is required.

Blank: Lot/serial numbers are not required, although they can be recorded as needed.

L: Lot numbers are required for this item. During issues and receipts, a lot number must be entered. The lot number applies to the entire transaction quantity entered.

S: Serial numbers are required for this item. During issues and receipts, a unique serial number must be entered for each item. For example, if you receive 10, you must enter 10 serial numbers.

Reference. Enter a reference number to associate with the specified item quantity. For example, this can be the production lot of the item or a location reference such as a pallet number. Reference numbers are optional.

Quantity. Enter the quantity of the component item to issue to the production order.

Issues are not restricted to what the system has allocated. You can override the selections manually by entering the quantity here. The production order and inventory balances are updated only after approval of the quantities to issue from inventory.

When you enter additional quantities or negative quantities for an item, the quantity allocated cannot become more than the quantity required or less than zero (0). It is set to the quantity required or the quantity open, whichever is less.

Total Issue Qty. The system displays the total quantity to issue.

By Pack. Select this option to issue components that use Serialization for the production order. If you select this option, the system ignores the value of the Default Qty to Issue field.

Serial. Assembly Pack: The system issues the whole pack. When aggregated on an active master pack, the system removes the pack automatically. When multiple items are included in the pack, the system issues all items.

Unit Pack: When the unit pack contains only non-serialized items of a single combination of item number, lot, and reference, you can enter issue quantities manually in the Inventory Data frame. You can do a partial issue or issue the whole unit pack. In other scenarios, the system issues the whole unit pack.

Item Serial ID: The system issues the specified item. When the item is aggregated on an active master pack, the system removes the item automatically.

Substitute Item: When a substitute item is issued, the system decreases the requirement for the preferred component. If one item is a predefined substitute for multiple components, the system automatically picks components based on the operation you enter. When the operation is blank, the system picks components based on ascending operation. When all component requirements of the operations are decreased to 0, the system maintains the remaining quantity on blank operations when the blank operation is in the production order. When not in the work order and you set Modify Component Issue to No in Regulatory Attributes Control, the system maintains the remaining quantity on the first operation. When the blank operation is not in the WO, but Modify Component Issue is Yes in Regulatory Attributes Control, the system creates the component with a blank operation in the WO, and maintains the remaining quantity on the blank operation.

Blank: When this field is blank, the system issues non-serialized loose items. System displays the Inventory Data frame to enter item number, issue quantity, site, location, lot/serial, and reference.

Entering a serial ID twice means to remove the serial ID from the issue list.

Issue quantity. This field is editable when the scanned serial ID is of a unit pack that only contains non-serialized items of a single combination of item, lot, and reference. The default issue quantity is the item quantity in the pack. You can issue all or part of quantity in the pack.

Production Order Control

Next Order Number. The next automatic production order number for system-assigned numbers.

When you add a production order, it is identified by a production order number and a production order lot ID. You can enter numbers manually or let the system assign the next number by leaving Next Order Number and ID blank.

The system records the next number and increments it automatically.

The system always assigns the next lot ID when you leave it blank. To avoid confusion, production order numbers and production order lot IDs should be assigned to different ranges of numbers.

The system always uses the next production order number when a purchase requisition is added to the system. It is not used for Material Planning planned orders.

Next Picklist. The number of the next picklist to be created.

This number is incremented by Production Order Allocate and Bulk Item Picklist Calculation when a picklist is successfully created. It is not decremented when picklists are deleted.

P/L Prefix. Enter an optional prefix (up to 3 characters) for picklist numbers.

When Production Order Allocate and Bulk Item Picklist Calculation create a picklist, the system generates a number automatically by adding the next sequential number to the prefix specified here. You can override it, if necessary.

Production Order Comments. Indicates whether comments are normally entered on each production order. Information associated with the production order usually applies to the entire order and prints at the top of the production order document.

This field setting does not control whether comments can be entered, but determines the default that displays when you enter or modify an order.

When Yes, the order comment field defaults to Yes; when No, it defaults to No. If you normally do not use comments, set this field to No to avoid being prompted each time with the comment entry screen.

The field can be changed manually on an order. When the comment field on an order is set to Yes, the transaction comments screen displays for the user to enter comments, which can be flagged as printing or non-printing.

Routing Comments. Indicates whether comments are normally entered on each routing operation. Information associated with an operation applies to just that operation and prints on the production order routing document.

The setting of this field does not control whether comments can be entered. It determines the default displayed when you enter or modify a production order routing operation.

Setting this field to Yes causes the operation comment field to default to Yes. Setting it to No causes the default to be No. The operator can manually change the field on an individual order routing operation.

When the comment field on an operation is set to Yes, the transaction comments screen displays for the user to enter comment text.

Move First Operation. A code indicating whether the production order release function should set the status of the first operation to Queue.

Yes: When the production order is released, the status of the first operation is automatically set to Queue. The status displays on the dispatch list for the specified work center and the operation status of Queue indicates that it is waiting to be started.

No: The operation status is left blank. It can be changed manually. When there is a lengthy picking effort required, the order may not be ready as soon as it is released. In that case, set this field to No. Once the picking is complete, use the Operation Move function to change the status to Queue.

Include Yield. Specify Yes to have the system consider routing operation yield when it calculates cumulative order standard cost.

Yes: The system considers the value of yield % in Routing Maintenance in the cumulative order standard cost. A yield of less than 100% at an operation causes an increase in the overall manufacturing cost, since not all the material produced is expected to be good.

No: The system ignores the value of the yield % and always uses 100% in the calculation.

You should set this field to the same value you normally use when running Routing Cost Roll-Up, Operation Cost Calculation, Product Structure Cost Roll-Up, Simulation Cost Rollup, or Simulation Structure Cost Rollup.

Quantity Complete Method. On a co/by-product structure, this field determines the method used by Prod Order Accounting Close to calculate the base process quantity complete for a joint order set. For other types of product structures and formulas, this setting has no effect.

Valid values are SUM, SUMC, MAX, MIN, and ORD. You cannot leave this field blank.

You can maintain this field when updating co-product and by-product structures in Co/By-Product Maintenance or Process/Formula Maintenance. When you create a new co/by-product structure in one of these functions, this field defaults from Prod Order Accounting Control.

The base process quantity complete for a joint order set is calculated as any one of the following, depending on the quantity complete method specified in the co/by-product structure:

- When SUM (Summarize), the total quantity complete for all co-products and by-products in the joint order set
- When SUMC (Summarize Co-products), the total quantity complete for co-products only
- When MAX (Maximum), the base process quantity required to complete the co-product that consumed the greatest amount of the base process in proportion to the quantity ordered
- When MIN (Minimum), the base process quantity required to complete the co-product that consumed the least amount of the base process in proportion to the quantity ordered

The base process quantity complete, in turn, is used to calculate the following:

- Material and labor usage variances for the base process production order
- Mix variance amounts for co-product and by-product production orders

To calculate mix variance, the base process quantity complete is multiplied by the ratio between the co-product or by-product quantity ordered and the base process quantity ordered. The result is the expected receipt quantity for that co-product or by-product. This is compared with the actual receipt quantity to calculate the mix variance amount.

When method SUM or SUMC is used, the system converts co-product or by-product quantities to the base process unit of measure before adding them together to calculate the base process quantity complete.

The following sections give a high-level overview of each quantity complete method and indicate the process environments where each might be used. For more information on these methods and their effect on co-product and by-product variance calculations, see the appropriate user guide.

SUM:

When Quantity Complete Method is SUM, Prod Order Accounting Close uses the following equation to calculate the base process quantity complete:

$$\text{Base Process Quantity Complete} = [(\text{Co-product Quantity Complete} + \text{Scrap}) * \text{Base Process UM Conversion Factor}] + [(\text{By-product Quantity Complete} + \text{Scrap}) * \text{Base Process UM Conversion Factor}]$$

The SUM method may be appropriate for base processes in which the sum of the co-product and by-product output quantities is always close to or equal to the base process quantity. This includes processes that involve sorting and separation of co-products and by-products, such as a process that sorts fruit by size and weight.

SUMC:

When Quantity Complete Method is SUMC, the system uses the following equation to calculate the base process quantity complete:

$$\text{Base Process Quantity Complete} = [(\text{Co-product Quantity Complete} + \text{Scrap}) * \text{Base Process UM Conversion Factor}]$$

Because it does not consider by-product quantities, the Summarize Co-products method may be appropriate in environments where completed by-products cannot always be traced to particular base process orders. For example, in some business environments, completed by-product quantities are reported in bulk at the end of each shift instead of in conjunction with production order operations.

MAX:

When Quantity Complete Method is MAX, the system performs the following calculation for each co-product in the joint order set with a nonzero order quantity:

$$(\text{Co-product Quantity Complete} + \text{Scrap}) * (\text{Base Process Quantity Ordered} / \text{Co-product Quantity Ordered})$$

The calculation that yields the highest result determines the base process quantity complete for the joint order set.

When the Maximum method is used, the co-product that consumed the largest quantity of the base process in proportion to the quantity ordered always has a zero mix variance. This is because the base process quantity complete is derived directly from the actual quantity complete for that co-product.

The Maximum and Minimum methods are most appropriate when a particular co-product in a co/by-product structure is considered the primary co-product for the base process. A primary co-product typically drives demand and determines the rate of production for the base process. Examples of production processes that invoice a primary co-product include sheet-metal stamping and injection molding.

MIN:

When Quantity Complete Method is MIN, the system performs the same calculations for each co-product in the joint order set as when Quantity Complete Method is MAX. However, the following key differences apply:

- The calculation that yields the lowest rather than the highest result is used to determine the base process quantity complete.
- The co-product that consumed the smallest rather than the largest quantity of the base process in proportion to the quantity ordered will have a zero mix variance.

ORD:

When Quantity Complete Method is ORD, the base process quantity complete is equal to the quantity ordered on the original base process production order.

The Order method may be appropriate in environments where batch quantities for co-products and by-products are determined by some external factor such as the production equipment used and are, therefore, constant.

Open Qty Method. This field determines how the system calculates the open quantity on a production order.

QtyComp: Quantity completed. The open quantity on a production order is calculated as the Quantity to Complete minus the Completed Quantity.

QtyProc: Quantity processed. The open quantity on a production order is calculated as the Quantity to Start minus the Quantity Processed.

If the calculated open quantity is 0 (zero), the production order is deemed completed.

Rebuild 'mrp_det' Table (23.25.1) does not rebuild MRP requirements for completed production orders.

Reason Code Criticality. Specify the system response when an invalid reason code is entered while recording backflush transactions.

W (Warning): The system displays a warning message and pauses; the system accepts the value when you press any key. This is the default value.

E (Error): The system displays an error message and returns to the Reason field.

Auto Add Item To Production Line. Specify Yes to be able to add items on the fly to a production line. For example, when modifying an order in Production Order Maintenance, you can add the item to the production line from within the Production Order Maintenance program.

Component Issue Date Method. Determines how the system calculates the issue date for production order bill components. The issue dates for those components determine the gross requirements for production orders, Material Requirements Planning, and Lean Material Planning.

There are two options available for the field. In the first case, the focus is on the production order release date and the lead time offset for the component, and in the second case, the focus is on the production order operation start date. The default is Order Release Date.

Order Release Date

The issue date for a component on a production order bill is the production order release date, adjusted for the component lead time offset. Order release date is an appropriate choice in most cases. The factors that determine the release date include the production order due date, the manufacturing lead time for the item (or item and site), and the calendars that are used to schedule orders at that site.

Note Set Component Issue Date Method to the Order option to schedule the issue date for production order components with the same logic used for Enterprise Edition before Production Orders.

Operation Start Date

The issue date for a component on a production order bill is determined by the start date for the production order routing operation that is referenced by the component. Operation start date is an appropriate choice for a site when the data for scheduling production orders and operations has been set up and the accuracy of schedules for all items, routings, and order quantities has been validated.

This is necessary so that the start dates for the operations are aligned to the dates when component materials for those operations are required. When the data is not accurate, then the start and issue dates may be scheduled much earlier or much later than when component materials are actually required, on dates that differ significantly from the production order release date.

The factors that determine the production routing operation start date include those for scheduling a production order, together with those for scheduling production order operations such as machines per operation, overlap units, yield percent, queue time, wait time, setup time, run time, and move time, together with calendars for work centers, production lines, and domain.

When the component references an operation that is not included among the production order routing operations, component issue date is determined by the start date for the previous production order routing operation. For example, when the component references operation 25 and production order contains routing operations 10, 20, and 30, the issue date for the component is the start date for operation 20. When the component operation is blank (not defined), the issue date is the start date for the first production order operation. When there are no production order routing operations, the component issue date is the production order release date, adjusted for the component lead time offset.

Auto Add Alternate BOM/Routing. Specify Yes to be able to add alternate BOM and routing codes on the fly to a production line. For example, when modifying an order in Production Order Maintenance, you can add a BOM code to the production line from within the Production Order Maintenance program.

Zero Balance Work in Process. This value determines how queue quantities at non-milestone operations are affected when production is reported at subsequent operations. This setting affects:

- Quantities processed using a backflush transaction
- Subcontract shipper issues using Sub Shipper Issue
- Item receipts from subcontract purchase orders or shippers using Purchase Order Receipts or PO Shipper Receipt

Regardless of how Zero Balance WIP is set, when the quantity to process, issue, or receive at an operation is greater than the quantity in that operation's input queue (or, for subcontract shipper issues, the output queue quantity of the previous operation), the system:

- Consumes quantities in the output and input queues of previous non-milestone operations, starting with the output queue of the previous operation. Non-milestone queue quantities are consumed until the previous milestone operation is encountered or the total quantity requirement is satisfied.
- Backflushes additional components as necessary to complete the items it consumes from prior operation queues.

When the quantity processed, issued, or received exceeds the sum of the quantities in previous non-milestone operation queues, the input queue for the non-milestone operation that directly follows the previous milestone operation is set to a negative value. This also occurs regardless of how Zero Balance WIP is set.

When Zero Balance WIP is Yes, the system does the following after transferring the applicable processed, issued, or received quantity from the input queue of the reporting operation and, when applicable, the queues of previous non-milestone operations:

- Moves any leftover quantities from previous non-milestone operation queues to the input queue of the non-milestone operation that directly follows the previous milestone operation.
- Sets all other queue quantities to zero for previous non-milestone operations up to the preceding milestone operation.

When Zero Balance WIP is No, leftover quantities remain in non-milestone operation queues until they are moved to subsequent operation queues or manually deleted using WIP Adjust Transaction.

For example, the routing for item A-100 contains 4 operations: 10, 20, 30 and 40. Operations 10 and 40 are milestone operations, while operations 20 and 30 are non-milestone operations. At operations 10 and 20, you report a processed quantity of 20 item A-100, with no scrap or reject, and set Move Next Op set to Yes. The system sets the input queue quantity at operation 30 to 20.

At operation 40, you report a processed quantity of only 15 of A-100 and set Move Next Op to Yes. The system moves 15 items from the input queue of operation 30 through operation 40 and into finished goods inventory.

- When Zero Balance Work in Process in the Production Order Frame is No, 5 items remain in the input queue of operation 30. Operation 20 displays a processed quantity of 20 while operation 30 displays a processed quantity of 15.
- When Zero Balance Work in Process in the Production Order Frame is Yes, the input queue balance at operation 20 is set to 5 and the input queue balance at operation 30 is set to 0 (zero). In addition, any components issued at operation 20 to the 5 processed units that were moved out of operation 30's input queue are transferred from WIP back to inventory. Operations 20 and 30 both display a processed quantity of 15.

Post Scrap To GL.

Specify Yes to have the system post scrap to GL.

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, the system scraps at the value of the operation where material is scrapped. When scrapped out of the input queue, the system scraps at the value of the prior operation.

For co-/by-products, the scrap amount is the standard cost for the co- or by-product multiplied by the quantity scrapped.

Production Order Data Frame

Production Activity Threshold. Specify the earliest status that must apply to discrete production orders before any production activity can take place. Valid values are F(irm), E(xploded), A(llocated), and R(eleased). The default is R.

Repetitive Order Data Frame

Transfer Work In Process. Set the default value for the Prod Order Accounting Close function. Use this field to indicate whether to transfer WIP quantities and values from Prod Order Accounting Close to new cumulative orders.

No: WIP balances are written off to the Method Variance account for the applicable end-item product line.

Yes: WIP queue quantities are transferred from each cumulative order operation to a new cumulative order.

WIP Transfer Acct. Enter the general ledger (GL) account code used to track Work in Progress (WIP) amounts in the cumulative order close functions. This must be a valid, active account of type Standard.

The account is debited at the standard cost of any WIP balances in the cumulative order being closed. If WIP balances are transferred to a new cumulative order, the WIP Transfer account is credited with the standard cost of the new cumulative order times the WIP quantities being transferred. The offset account is the WIP account.

The account is also debited or credited with any method variance generated when closing the cumulative order.

Note You can enter an allocation code, which represents a set of accounts, in any account field in an operational function. During GL transaction post, the system automatically divides transaction amounts among the set of accounts, based on percentages defined in Op Allocation Code Maintenance.

WIP Transfer Acct . Enter any GL sub-account codes used to track WIP. For more information, see the field help for the WIP Transfer Acct field.

End Eff Default Method. Indicate the method to use for effective dates in new cumulative orders. Valid values to enter are as follows:

- a** 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.
- b** 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.
- c** 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 Eff Default Method field to 3. 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.

Completion Consumption Method. This field applies to scheduled orders; that is, to repetitive or discrete schedules.

Specify the consumption method as one of the following:

Period: The system uses the GL period as the consumption method. The system does not consider schedules with due dates outside of the GL period. The current GL period is determined by effective date. When the Begin Consumption field is set to EffDate, the system consumes the quantity scheduled on the effective date first; then, it consumes from the beginning of the GL period forward when there are multiple schedules for an item when reporting completion. When Begin Consumption is set to Earliest (date), the system posts the completed quantities from the beginning of the GL Period going forward.

Week: The system uses the start of the working week for the effective date. The system does not consider schedules with due dates outside of the working week. When the Begin Consumption field is set to EffDate, the system consumes the quantity scheduled on the effective date first; then, it consumes from the beginning of the working week forward when

there are multiple schedules for an item when reporting completion. When Begin Consumption is set to Earliest (date), the system posts the completed quantities from the beginning of the working week forward.

Window: The system determines the consumption window based on effective date, and with calendar days that you set in the Consume Back and Consume Forward fields. The system ignores schedules with due dates outside of the consumption window. When you set the Begin Consumption field to EffDate, the system consumes the quantity scheduled on the effective date first; then, it consumes from the beginning of the consumption window forward when there are multiple schedules for an item when reporting completion. When you set Begin Consumption to Earliest (date), the system posts the completed quantities from the beginning of the consumption window forward.

Regardless of the consumption method chosen, the system determines the consumption date range based on effective date.

The process stops when all available schedule/order quantities are consumed or all excess completions have been recorded against a schedule/order. When the system cannot find enough open balances, it posts the operation with the transaction quantity. It posts the repetitive schedule and production order record with the open quantity available.

Consume Forward. Set the days in calendar days for which the system consumes going forward. The Consume Back and Consume Forward fields determine how the system handles item completions that exceed the quantity scheduled for a given day when the Completion Consumption Method is Window. For information on consumption, see the field help for the Complete Consumption Method field.

Consuming Schedules. When you set Completion Consumption Method to Window, the system selects schedules to consume based on the following sequence against the reported quantity:

- a** The system consumes the order entered in the initial order selection frame (when the order type is not C(umulative)).
- b** The system consumes orders on the effective date first when Begin Consumption is set to EffDate. For any date chosen, the system selects orders with the lowest sequence number on that day.
- c** When the quantity consumed is not reached; the system searches for orders from the beginning of the consumption window (that is, from the effective date, consuming back).
- d** When the quantity consumed is not reached; the system searches for orders forward until it reaches the effective date plus consume forward.
- e** The system does not consume schedules for extra quantities.

When you set Completion Consumption Method to Week, the system selects schedules to consume based on the same rules described for the Window consumption method; the only difference is that the system replaces the consumption window with the working week of the effective date.

When you set Completion Consumption Method to Period method, the system selects schedules to consume based on the same rules described for the Window consumption method; the only difference is that the system replaces the consumption window with the GL period of the effective date.

Orders are considered open and available for consumption when:

- The status of the order meets the production activity threshold and the status is not C(losed).
- The open quantity of the order is determined to be greater than 0 (zero). The system determines the open order quantity by checking the order Open Quantity Method in the control table. When the Open Quantity Method is Qty Complete, the system calculates the open quantity of available orders as the order quantity to complete – qty completed. When the Open Quantity Method is Qty Processed, the system calculates the open quantity of available orders as the qty to start – qty processed.

Note Legacy QAD ERD Advanced Repetitive processing always used the oldest schedule to apply completions. To emulate this Advanced Repetitive processing, set Completion Consumption Method to Window; set Consume Back to 999, set Consume Forward to 0 (zero); and set Begin Consumption to Earliest.

Consume Back. Set the days in calendar days for which the system consumes going back. The Consume Back and Consume Forward fields determine how the system handles item completions that exceed the quantity scheduled for a given day when you set Completion Consumption Method to Window.

For schedules/orders with due dates in the past, the Consume Back value also determines which open quantity planning functions are considered as supply sources.

Start of Week. Enter the start of the week for the system to use:

- When searching for exploded schedules with past due dates on which to record excess item completions
- To determine which open quantities on past schedules to consider as sources of supply in planning functions such as Material Planning

Valid values are Sunday through Saturday.

Begin Consumption. Use this field with the Complete Consumption Method field to determine dates for consumption:

- EffDate: The system uses the effective date and always consumes the open quantity scheduled on the effective date first.
- Earliest: The system uses the earliest date and always consumes the open quantity from the beginning of the consumption date range.

Valid values are F(irm), E(xploded), A(llocated), and R(eleased). The default is F(irm).

Specify R(eleased) when you must release repetitive production orders before any production activity (material issue, backflush and so on).

The system uses this as the value for any site that does not have a specific status assigned in the Site Information frame.

Site Information Frame

Site. Enter a valid site for which you want to apply specific settings. You must be authorized to use the site. You can delete a site-specific setting without additional editing.

Production Activity Threshold. The value that displays here defaults from the same-named field after you press Return in the Production Order Data frame.

For a site, specify the earliest status that must be applied to discrete production orders before any production activity (picking, backflush, and so on) can take place. Valid values are F(irm), E(xploded), A(llocated), and R(eleased). The default is F(irm).

Specify R(eleased) when you must release repetitive production orders before any production activity (material issue, backflush and so on).

Production Activity Threshold - Repetitive. For a site, specify the earliest status that must be applied to repetitive (scheduled) production orders before any production activity can take place.

Specify R(eleased) when you must release repetitive production orders before any production activity (material issue, backflush and so on).

Open Qty Method. The value of this field defaults from the same-named field in the Production Order Data frame.

For a site, use this field to determine how the system calculates the open quantity on a production order.

QtyComp: Quantity completed. The system calculates open quantity on a production order as the quantity to complete minus the completed quantity.

QtyProc: Quantity processed. The system calculates the open quantity on a production order as the quantity to start minus the quantity processed.

Complete Consumption Method. The value of this field defaults from the same-named field in the Repetitive Order Data frame. Set the value here for a specific site. For information on system processing for this field, refer to the field help for the same-named field in the Repetitive Order Data frame.

Consumer Back. The value of this field defaults from the same-named field in the Repetitive Order Data frame. Set the value here for a specific site. For information on system processing for this field, refer to the field help for the same-named field in the Repetitive Order Data frame.

Consume Forward. The value of this field defaults from the same-named field in the Repetitive Order Data frame. Set the value here for a specific site. For information on system processing for this field, refer to the field help for the same-named field in the Repetitive Order Data frame.

Start of Week. The value of this field defaults from the same-named field in the Repetitive Order Data frame. Set the value here for a specific site. For information on system processing for this field, refer to the field help for the same-named field in the Repetitive Order Data frame.

Begin Consumption. The value of this field defaults from the same-named field in the Repetitive Order Data frame. Set the value here for a specific site. For information on system processing for this field, refer to the field help for the same-named field in the Repetitive Order Data frame.

Production Order Delete/Archive

This program is .NET UI only and does not contain context-sensitive field help. To run the program, set criteria, then select Run.

Production Order Maintenance

ID. Specify a unique production order lot ID. The system always assigns the next lot ID if it is left blank.

Item Number. Enter the item being manufactured on this production order, either a finished product or an intermediate product or subassembly. The item can be a co-product/by-product or base process item.

Site. The site where this production line is located.

Order Type. Indicate the type of production order. See “Production Order Type” on page 46.

Production Line. Enter a valid production line for the order.

Release, Order, Due Date. Enter dates for the order; for detailed information, see “Release, Order, and Due Dates” on page 49.

Need Date. Enter the date that the completed quantities are required to fulfill higher-level demand. This is a reference date.

Order Status. Enter the current status of the production order. See “Production Order Status” on page 48.

Mfg Type. This describes how the production order is manufactured, either WO, Rep (Repetitive), or blank. The field is blank when the order status is P, or when the order type is F.

Quantity to Complete. The quantity that is expected to be completed for the production order. When the order is maintained by entering the Quantity to Start, the system calculates the Quantity to Complete from the Quantity to Start and the Estimated Yield Percent. When an order is maintained by entering the Quantity to Complete, the system calculates the Quantity to Start. When both quantities are entered, the system recalculates and updates the Estimated Yield Percent. Quantity to Complete cannot be zero.

Note For exploded, allocated, or released joint orders, you can change the quantities for co-product/by-product production orders without having their quantities automatically re-scaled.

Quantity to Start. The quantity to begin producing when an order is released. When the order is maintained by entering the Quantity to Start, the system calculates the Quantity to Complete from the Quantity to Start and the Estimated Yield Percent. When an order is maintained by entering the Quantity to Complete, the system calculates the Quantity to Start. When both quantities are entered, then the system recalculates and updates the Estimated Yield Percent. Quantity to Start cannot be zero.

Production Seq. Enter the sequence number. The production sequence number defaults to zero (0). This lets you insert a production order between orders that have already been sequenced.

Estimated Yield Percentage. Enter the percentage of items that are expected to be produced and completed in conforming or usable condition. Yield defaults from item-site or item planning data.

When you enter a value in either Quantity to Start or Quantity to Complete, the system calculates the other value based on the estimated yield percent. The difference between the two fields displays in the display-only Estimated Qty to Scrap field. When both the Quantity to Start and Quantity to Complete are entered, the system recalculates and updates the value for the Estimated Yield Percent and Estimated Quantity to Scrap.

Shift. This field is the shift defined for the resource. The value can be blank, 1, 2, 3, or 4. The default is blank. Shift schedules define how many days a week and how many hours the work center or production line is run. When you change the shift, it may change the production productivity percentage, which in turn may change the production order required capacity, and ultimately, change the projected duration days and hours.

Estimated Qty to Scrap. The difference between the Quantity to Complete and the Quantity to Start, rounded up to the next integer value. It is the quantity that is expected to be unusable as the result of production.

Routing Code. Enter a code identifying the routing or process used to produce this item or product.

Actual Qty Completed. The total quantity of finished items received against this production order.

This total is updated by the system as finished items are received into inventory. The amount remaining open on a production order is calculated as the quantity to complete less this quantity received.

This quantity is not permitted to go below 0. A hard error is caused, for instance, if you report more rejects than the quantity in WIP.

BOM/Formula Code. Enter a code identifying the product structure or formula. See “BOM/Formula” on page 51.

Actual Qty Scrapped. The total quantity reported as scrapped against this production order.

Sales/Job . Enter the code for the sale or job associating this production order with a specific sales/job. For a new order, the default is blank. For an existing order, the default is the Sales/Job from the first detail line.

Order Sheet Printed. Indicate Yes when the order sheet has been printed. The default is No.

Supplier. The supplier associated with this production order, if any.

Remarks. General remarks pertaining to this production order.

This field is for reference only and can appear on some selected reports and inquiries.

Comments. Indicate whether comments are entered for this production order. The value of this field defaults from Production Order Control. When Yes, another screen prompts you to enter or review comments regarding this production order.

Split Order Cum ID. This display-only field shows the assigned cumulative ID for the split production order. Split orders have the same order number, but a unique cumulative ID.

Assay Percentage. The default value for assay percentage for inventory lots received from this production order.

Grade. The default value for grade for inventory lots received from this production order. Grade is used to identify the quality or physical properties of a lot. Grade may determine the price charged for the finished product. Some customers may require a certain grade.

Expire Date. The default value for expiration date for inventory lots received from this production order.

When Expire Date is blank for the production order, the system calculates an expiration date when an item is received into inventory by adding the number of days specified for shelf life to the receipt date.

Receipt Status. The default value for the inventory status code for inventory lots received from this production order.

Active. Indicates whether the preceding inventory status should be used as the default for inventory receipts.

Select Yes to use the preceding status code. If you select No, the system will ignore any entry in the previous field.

Batch. Batch is an optional reference field that you can use for tracking production orders. The batch number field is stored in the production order master and in transaction history.

Single Lot. Use Single Lot to restrict receipts from this production order to a single end-item lot. You cannot modify this value after items have been received from the production order.

When Yes, all end items received in the same production order receipt transaction must have the same lot number. An end-item lot number cannot be received in multiple order receipt transactions; however, you can use the multi-entry feature in receipt transactions to assign item quantities from the same end-item lot to multiple sites, locations, or references.

Refer to the lot control fields in Regulatory Attributes Control for more information.

Lot Number. The default value for lot number for inventory lots received from this production order. Once a receipt occurs, Lot Number cannot be changed. If the Auto Lot Numbers field in Item Master Maintenance is set to Yes, an automatic lot number will be assigned to the receipt.

Production Order Picklist Issue

Site. Enter the site for the picklist issue.

Note Picklist, Seq, Alloc, Picked, Eff Date fields in Production Picklist Transfer program. Item, Operation, Substitute, Site, Location, Lot/Serial, Reference, Issue Quantity, Total Issue Qty fields in Production Order Component Issue.

Picklist. Enter the picklist for the picklist issue.

By Pack. Select this option to issue serialized items or packs for the picklist.

When this option is set to Yes, the system ignores the Pick Alloc option and the Operation field is read-only. You can issue the components for a single operation or for multiple operations, depending on the serial IDs scanned. If one component is used in multiple operations, the system first issues to the operation with the earliest component issue date. If the issue dates are the same, the system issues to the operations in ascending order.

Picked. If you select this option, the system automatically loads serialized packs or items that are picked for the picklist sequence to the issue list. So you can issue the packs without scanning anything, and therefore reduce manual entry.

Serial ID. Scan the serial IDs of loose serialized items, unit packs, or assembly packs. Make sure that the serial ID is Picked for the entered picklist and sequence combination.

If the serial ID is aggregated on a picked pack, the system prompts you to remove the pack from its master pack automatically.

If you scan a serial ID that is on the issue list, the system prompts you to remove it from the issue list. Click Yes to remove it. The system changes its stage back to Picked.

Issue Quantity. This field is enabled when you manually scan a unit pack that holds only non-serialized inventory with a single item and lot combination. You can issue a quantity that is less than the quantity in the pack. The remaining quantity is unpicked from the picklist sequence after the transaction. For assembly packs and unit packs that contains serialized items, this field is disabled. You can only issue the whole pack.

Production Order Receipt

Qty Processed. Specify the quantity of material that was processed at this operation. The default is 0 (zero).

When Transaction Quantity Method is set to Qty Processed, the system allows users to enter Qty Processed rather than Qty Complete in Operation Activity Transaction and Production Order Receipt.

Note The Transaction Quantity Method value in Work Center Maintenance has a higher priority over the value set in Production Line Maintenance. If there is no production line defined on a production order and no Transaction Quantity Method defined on the work center, the system uses the Open Qty Method set in Production Order Control as the transaction quantity method.

Qty Complete. Specify the quantity completed for the order. The quantity is received into stock.

UM. Enter the unit of measure of the inventory transaction quantity. This field is validated against predefined values entered in Generalized Codes Maintenance, if any. When the alternate unit of measure has not been predefined in Unit of Measure Maintenance, a warning displays and the UM conversion remains 1.0000. Adjust it manually.

Conversion. The conversion factor determines how the system converts quantities stated in terms of the alternate unit of measure back into terms of the item unit of measure. This is expressed as the ratio of the alternate unit of measure to the item unit of measure. The default is 1.0000.

When a transaction uses an alternate unit of measure, the system accesses the appropriate conversion factor defined in Unit of Measure Maintenance.

Qty Scrapped. Enter the quantity scrapped for this operation.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the scrapped quantity. For quantities rejected, reworked, or scrapped, you can enter up to 10 quantities and reason codes by entering Yes in the associated Multi Entry field.

Gen Pack Ser. Specify Yes to display a frame to build the pallet and receive serialized packages/items. When items are serialized, use this frame to receive serialized items. For more information on the serialization frames, see the procedural help for this program.

Std Setup Time. Specify Yes to use the standard setup time, in decimal hours, that it takes to set up operations for the order, independent of order quantity. When No, the system does not report set up time in this transaction. In this case, use Operation Labor Transaction to record time.

The system reports setup time for production orders in this program; it does not report setup time for repetitive orders even when this field is set to Yes.

Calculate Backflush. Specify Yes to have the system calculate backflush. Component inventory for the item is consumed by production by using production backflush transactions. Refer to *QAD Manufacturing User Guide* for information on backflush calculation methods.

View Schedules. Specify Yes to display the schedule against which the activity is consumed. The system displays the schedule due date, production order, quantity open, and quantity processed.

Modify. Indicate whether to modify inventory for this transaction. When Yes, the system displays a frame that lets you specify components, substitute items, and indicate the site, location, quantity, and other component details.

Close Order. Indicate whether to close the production order upon receipt/backflush.

Serial ID. Enter a valid serialized ID for the component in this transaction.

Pack Code. Enter a valid pack code for the component in this transaction.

Reference. Enter a reference number to associate with the specified item quantity.

Std Pack Qty. Enter the expected quantity that the pack holds. The default is from the quantity per for the lowest-level serialized pack of the BOP structure. You cannot enter a negative number.

Gen Item Ser. Indicate Yes to automatically generate serial IDs for each inventory unit. The system only generates when you set the Serial Control field to M(andatory) in Item Master Maintenance.

When No, you are required to manually enter item serial IDs if the Serial Control field of the item is M(andatory).

Nbr of Full Packs. Enter the number of full packs to receive.

Qty in Partial Pack. Enter the number of items to receive in the partial pack.

Received Quantity. The actual quantity received.

Production Order Routing Maintenance

Production Order. Enter the production order number. The production order number and lot ID together identify a specific manufacturing order. The same production order can be used with different lot IDs.

Joint production order sets share the same production order number. This shared production order number can only be used by one joint production order set.

ID. The lot ID for the production order. Production order number and lot ID together identify a specific manufacturing order. The same production order number can be used with different lot IDs.

Operation. Enter the operation number identifying a manufacturing step required for this production order.

Item Number. Enter the item being manufactured for the production order, either a finished product or an intermediate product or subassembly. The item can be a co-product/by-product or base process item.

Standard Operation. The valid standard operation code that identifies a process operation common to several products or applicable to different routings in different sequences.

Operation Description. The description of the production operation, determined by routing operation, as determined by the routing code for the production order.

This description prints on most reports, inquiries, and printed shop documents.

Work Center. The work center where this operation is normally performed. It is the work center for the routing operation, as determined by the routing code for the production order.

The work center code and the machine code together identify a work center, which is a basic production unit used in manufacturing planning and control. Work centers identify individual machines, groups of similar machines, or subcontract suppliers.

When a dispatch list is printed, this operation displays for this work center. When labor is reported, this work center displays as the default, but can be changed manually if the work was performed at a different work center.

If work is reported at a different work center than planned, any difference in work center labor or burden rates is written off as a production order rate variance.

Machine. The machine normally performing this operation.

When a dispatch list is printed, this operation displays for this work center. When labor is reported, this work center displays as the default, but can be changed manually if the work was performed at a different work center.

If work is reported at a different work center than planned, any difference in work center labor or burden rates is written off as a production order rate variance.

Qty Ordered. The scheduled quantity to start for the production routing operation.

Op Status. The current status of a production order operation, for tracking the order through the manufacturing process. It can be updated through this program or automatically using when reporting activity for the production order. Operation status displays on most reports and inquiries.

Values are blank, Q, S, R, C, or H:

- Blank. When a production order is first exploded, all operation status codes are blank.
- Q (Queue). The operation is waiting to be set up and run at the designated work center. Usually when a production order is released it is moved into queue at the first operation. When an operation is completed, it can be moved into queue at the next operation automatically.
- S (Setup). The work center is in the process of being set up to run this operation. Status is changed to S when setup time is recorded.
- R (Running). This operation is in process. Status is changed to R when run time is recorded.
- C (Complete). This operation is complete. This can be set automatically when reporting labor for this operation, or at operations after this one. (See Complete Previous Operations field.)

- **H (Hold).** This operation is on hold, perhaps waiting for a machine to be repaired or waiting for components. This can only be updated manually using Production Order Routing Maintenance.

Std Setup Time. The standard time, in decimal hours, it takes to prepare this work center to carry out this operation, independent of order quantity.

Std Run Time. The time, in decimal hours, it normally takes to process one unit at this operation.

Run Complete. The quantity completed at this operation—the number of good items received not including any scrap or reject quantity.

Qty Scrap. The quantity removed from work-in-process as scrap from an operation.

Auto Labor. Indicate Yes to have standard labor reported automatically for run time for quantities reported as backflushed for that operation, as well at each prior non-milestone operation. These hours are added to any manually reported hours for run labor.

Set to No if you do not want report run labor automatically from quantities that are reported as backflushed for an operation.

Qty Rework. This display-only field indicates the quantity that has been subjected to rework processing, after it had been rejected at that operation.

When a quantity is reported as rejected at an operation, it can be moved to either the reject queue of that operation, or back into either the input queue or output queue of the previous operation.

The quantity rejected can later be reported as having been reworked. Once a quantity is reworked, it can subsequently be reported as completed, and moved to the next operation, or alternatively it can be reported as scrapped from the operation.

Std Move Time. Enter the time, in decimal hours, it normally takes to move work from this operation to the next operation.

Since move time is often dependent on what the next operation is, this normally is changed on each routing or process operation.

Move time is not adjusted by the system to reflect differences in order quantity. It can be changed manually for the production order operation.

Sub Complete. The actual quantity of items received for this subcontract operation.

When operations are subcontract, a purchase order is issued that references the production order ID and operation. When these subcontract items are received, the quantity and cost are recorded. These are used for calculating subcontract rate and usage variances.

Queue. When scheduling operations, the system looks at the shop calendar for the work center to determine how many hours are available for queue time in each calendar period.

Sub Cost. Enter the actual cost per unit charged by the subcontractor to perform this operation.

The default is the standard subcontract cost defined in Routing Maintenance and is only needed for subcontract operations. When the actual subcontract cost differs from the standard cost, entering the actual cost prevents Prod Order Accounting Close from generating a subcontract cost variance. Cost calculation functions use the subcontract cost in determining item costs.

Sub Cost. Enter the actual cost per unit charged by the subcontractor to perform this operation. The default is the standard subcontract cost defined in Routing Maintenance and is only needed for subcontract operations. When the actual subcontract cost differs from the standard cost, entering the actual cost prevents Prod Order Accounting Close from generating a subcontract cost variance. Cost calculation functions use the subcontract cost in determining item costs.

Wait Time. Enter the standard wait time in decimal hours that a job normally spends waiting at this work center after processing has been completed.

This value displays as the default whenever you enter a standard operation, routing operation, or process operation that references this work center. It can be changed.

Total manufacturing lead time includes queue, setup, run, wait, and move time. Lead time is used for operation scheduling and capacity requirements planning. Wait time is independent of order quantity. An order must wait at least this long before it can go on to the next operation and it cannot be skipped in past due situations: wait time may be required for drying, cooling, aging, or curing.

Wait time is expressed in hours and is not affected by the shop calendar. If the factory is shut, this type of process continues.

Sub LT. The average number of calendar days it normally takes a subcontractor to perform this operation.

Start Date. The date the production order routing operation is scheduled to begin.

Production order routing operation start and due dates are scheduled for production orders by using data defined for the routing operation, work center, and calendars set up for the domain, site, production line, and/or work center. The start and due dates for production operations are calculated by exploding the production quantity to determine the queue, setup, run, and wait times required for each the operation.

You can manually adjust the start and due dates for production order routing operations by using functions such as Productiton Order Routing Maintenance. The production routing operations, together with the start and due dates for each operation, are used to determine the load on work centers in the Production Scheduling Workbench and CRP.

The system automatically reschedules production order operations, updating the start and due dates when modifying the production order due date, quantity to complete, quantity to start, and/or estimated yield percent. This rescheduling process is needed to update the load that production orders present against work center capacity.

Due Date. The date this production order operation is scheduled to be completed.

The system schedules production order routing operation start and due dates by using data defined for the routing operation, work center, and calendars set up for the domain, site, production line, and/or work center. The system calculates start and due dates for production operations by exploding the production quantity to determine the queue, setup, run, and wait times required for each the operation.

You can manually adjust the start and due dates for production order routing operations by using functions such as Productiton Order Routing Maintenance. The production routing operations, together with the start and due dates for each operation, are used to determine the load on work centers in the Planning and Scheduling Workbenches and CRP.

The system automatically reschedules production order operations, updating the start and due dates when modifying the production order due date, quantity to complete, quantity to start, and/or estimated yield percent. This rescheduling process is needed to update the load that production orders present against work center capacity.

Supplier. The address code of the supplier on the work center for a subcontract operation.

Move Next Operation. Enter Yes or No to determine the default for the same field in Move Transaction. When you enter a transaction, the system moves either the quantity ordered or the quantity reported complete at the last operation to the operation being reported. Which quantity displays depends on the setting of Move Next Operation for the previous operation. The quantity open for an operation is this starting quantity minus the quantities completed and rejected at that operation.

Actual Setup Time. The actual time, in decimal hours, spent setting up this work center for this operation. The sum of all reported setup hours.

Act Run Time. The actual time, in decimal hours, spent working on this operation, apart from setup time. The sum of all reported run time.

Setup Crew. The number of people normally required to set up this operation.

This field is for reference only and can appear on some selected reports and inquiries.

No scheduling or cost calculations use setup and run crew.

Run Crew. The number of people normally required to run this operation at this work center.

This field is for reference only and can appear on some selected reports and inquiries.

No scheduling or cost calculations use setup and run crew.

Machines per Op. The number of machines at this work center that can work at the same time to process a given operation.

Machines per operation is defined for each work center.

The Mach/Op field affects scheduling of operations that occur at this work center machine. During scheduling, the system uses the operation run time divided by the Mach/Op.

Alternatively, you can use this field to indicate multiple people to operate one machine. A related field, Mach/Wk Ctr, should be at least the number of machines per operation. The Mach/Wk Ctr affects capacity planning for the work center.

Milestone. Specifies whether you can report completions at this operation. Completions initiate a backflush for this and all previous non-milestone operations, back to but not including a previous milestone.

The system assumes the last operation is a milestone, regardless of what is in this field.

Tool Code. Specify a code identifying the tool normally used by this operation. This field is validated against predefined values entered in Generalized Codes Maintenance, if any.

This field is for reference only and can appear on some selected reports and inquiries.

Overlap Units. The number of units that must be completed at this operation before work can begin at the next operation.

Operation overlap is considered by scheduling algorithms, usually with the effect of reducing overall manufacturing lead time. For example, if the overlap quantity is 10, the system schedules only enough time to setup, run, wait, and move 10 items before starting the next operation. If the processing time at the next operation is longer than at the first, overall lead time is reduced.

If overlap is not used, overlap quantity should be zero.

Yield Percent. The yield percentage for this production order operation. Yield is the percentage of any order expected to be in usable condition after this operation.

For the yield calculation, the system calculates component requirements based on either the parent item yield percentage or the yield associated with each operation in the parent's routing. Operation-based yield is used when both of the following are true:

- Enable Op Based Yield is Yes in Material Planning Control.
- The item is defined in Item Planning Maintenance or Item-Site Planning Maintenance with Op Based Yield set to Yes.

Comments. Specify Yes to enter comments about the production order routing. The Transaction Comments frame displays.

Production Order Serial Booking

Production Order. Enter the production order number for which the system books serial IDs. The production order cannot be any of the following:

- Cumulative order
- Repetitive order
- Final assembly order
- Order with a closed or planned status
- Production order with lot control of the item set to S

ID. Enter the production order ID for which the system books serial IDs.

Sales Order/Line. Enter the sales order and line for this function to consider.

Number. Enter the number of serial ID bookings to create. The system determines the serial ID required by the quantity to complete and the serial hierarchy definition, including components that the system determines by BOM explosion logic. The margin needs to be considered.

Serial Range ID. Enter the sequence ID the system uses in the booking. You cannot enter a blank. When there is only one serial ID range used in the serial hierarchy definition, then this field is display only. When there are several serial ID ranges used in the serial hierarchy definition, then this field defaults from the serial ID range at the lowest serialized level, and you can only enter the serial range ID used in the serial hierarchy definition.

Production Order Split

Production Order/ID. Enter the production order and ID of the order to split.

Item Number. This read-only field displays the item number for the production order.

Order Status. Enter the order status. For explanations of status, see “Production Order Status” on page 48.

Type. Displays the type of production order. Values are E, R, S, C, F, or blank; You can split production orders, repetitive scheduled orders, and split orders. For explanations of type, see “Production Order Type” on page 46.

Batch. Displays the batch number that groups and categorizes production orders. One batch number can be assigned to many production orders.

Quantity to Complete. Displays the quantity that is expected to be completed for the production order. When the order is maintained by entering the Quantity to Start, the system calculates the Quantity to Complete value from the Quantity to Start and the Estimated Yield Percent values. When an order is maintained by entering the Quantity to Complete value, the system calculates the Quantity to Start value. When you enter both quantities, the system recalculates and updates the Estimated Yield Percent value.

Open Quantity. The system displays the open quantity for the production order to split.

Quantity to Start. Displays the quantity to begin producing when an order is released. When the order is maintained by entering the Quantity to Start value, the system calculates the Quantity to Complete value from the Quantity to Start and the Estimated Yield Percent values. When an order is maintained by entering the Quantity to Complete value, the system calculates the Quantity to Start value. When you enter both quantities, the system recalculates and updates the Estimated Yield Percent value.

Start Qty to Split. The quantity to be split off from the original production order.

The original production order is converted to a split CUM order. Two new split orders are created, one for the quantity split and one for the quantity left. The split orders have the same production order number as the original order but a different lot ID.

Production order billing and routing are copied from the original order to split orders.

New Batch. Enter the batch number for the new production order.

Production Order Split creates the new production order; however, you can assign a new batch number or leave the field blank.

Actual Qty Completed. Displays the total quantity of finished items received against this production order.

The system updates the total as finished items are received. The amount remaining open on a production order is calculated based on the open quantity method defined in Production Order Control.

New Rel Date. Specify a new release date for the new production order created when you split the original order. One split order has the release date of the original order and one split order has the new release date. You can use the drop-down calendar to specify a date.

Production Picklist Pick

Site. Specify the site for the physical pick.

Picklist. Specify the picklist number or use the drop-down list to select a picklist number for which inventory is to be picked.

If no picklists exists, the system displays an error message.

By default, Bulk Item Picklist Calculation creates one picklist per shop floor location.
Production Order Allocate or Production Order Release/Print creates one picklist per order.

Seq. Specify the sequence number to be picked. Picklist sequence numbers are generated by Bulk Item Picklist Calculation, Production Order Allocate, or Production Order Release.
When the Picking Maximum value for a component is reached, system creates multiple sequences.

Sequence numbers are used when a requirement must be met with multiple transfers, often because there is limited space at the work center. The picklist shows the total requirement; the sequence amount is the amount transferred at any one time.

Pick Alloc. Specify whether to pick allocated inventory.

No: You must specify the items in the detail screen.

Yes: The system automatically picks allocated inventory. This expedites inventory information entry.

To pick allocated components, set Pick Alloc to Yes, verify that the quantities are correct and press Go to process the picking.

By Pack. Specify Yes to enter serialization data in the Picking Detail frame.

Item Number. Enter the code identifying an inventory item that you pick for this pick detail record.

Location . Enter the location of the item to pick.

Lot/Serial. Enter the lot/serial number associated with the component to pick.

The value of Lot/Serial Control for the item determines if a lot or serial number is required.
Choices include:

Blank: Lot/serial numbers are not required, although they can be recorded as needed.

L: Lot numbers are required for this item. During issues and receipts, a lot number must be entered. The lot number applies to the entire transaction quantity entered.

S: Serial numbers are required for this item. During issues and receipts, a unique serial number must be entered for each item. For example, if you receive 10, you must enter 10 serial numbers.

Reference. Enter a reference number to associate with the specified component to pick.
Reference numbers are optional.

Serial. Enter the serial ID associated with the items in this operation.

Stage. The system displays the stage for the serialized component to pick.

Item. Enter the serialized item.

Quantity in Pack. The quantity in the serialized pack.

Pick Quantity. Enter the quantity of the component items to pick.

When the pick quantity is less than the Picking Minimum or greater than Picking Maximum value, the system displays a warning message.

When you enter a negative quantity, the system considers this as unpicking, and the inventory is changed from picked to allocated.

UM. This display-only field shows the stocking unit of measure of the item.

By Pack. Select this option to pick serialized items or packs for the picklist. When this option is set to Yes, the system ignores the Pick Alloc option.

Serial. Scan the serial IDs of loose serialized items, unit packs, or assembly packs. Only active, aggregated, or picked serial IDs are supported.

Production Picklist Print

Site. Specify the site for the physical pick.

Picklist. Specify the picklist number or use the drop-down list to select a picklist number for which inventory is to be picked.

If no picklists exist, the system displays an error message.

By default, Bulk Item Picklist Calculation creates one picklist per shop floor location. Production Order Allocate or Production Order Release/Print creates one picklist per order.

Seq. Specify the sequence number to be picked. Picklist sequence numbers are generated by Bulk Item Picklist Calculation, Production Order Allocate, or Production Order Release. When the Picking Maximum value for a component is reached, the system creates multiple sequences.

Sequence numbers are used when a requirement must be met with multiple transfers, often because there is limited space at the work center. The picklist shows the total requirement; the sequence amount is the amount transferred at any one time.

Pick. Specify whether to pick allocated inventory.

No: You must specify the items in the detail screen.

Yes: The system automatically picks allocated inventory. This expedites inventory information entry.

To pick allocated components, set Pick Alloc to Yes, verify that the quantities are correct, and press Go to process the picking.

By Pack. Specify Yes to enter serialization data in the Picking Detail frame.

Pick Detail Frame

Item Number. Enter the code identifying an inventory item that you pick for this pick detail record.

Location. Enter the location of the item to pick.

Lot/Serial. Enter the lot/serial number associated with the component to pick.

The value of Lot/Serial Control for the item determines if a lot or serial number is required. Choices include:

Blank: Lot/serial numbers are not required, although they can be recorded as needed.

L: Lot numbers are required for this item. During issues and receipts, a lot number must be entered. The lot number applies to the entire transaction quantity entered.

S: Serial numbers are required for this item. During issues and receipts, a unique serial number must be entered for each item. For example, if you receive 10, you must enter 10 serial numbers.

Reference. Enter a reference number to associate with the specified component to pick. Reference numbers are optional.

Serial. Enter the serial ID associated with the items in this operation.

Stage. The system displays the stage for the serialized component to pick.

Item. Enter the serialized item.

Quantity in Pack. The quantity in the serialized pack.

Pick Quantity. Enter the quantity of the component items to pick.

When the pick quantity is less than the Picking Minimum or greater than Picking Maximum value, the system displays a warning message.

When you enter a negative quantity, the system considers this as unpicking, and the inventory is changed from picked to allocated.

UM. This display-only field shows the stocking unit of measure of the item.

Production Picklist Transfer

Picklist. Specify the picklist number or use the drop-down list to select a picklist number to transfer to a shop floor location.

Seq. Specify the sequence number to be picked. Picklist sequence numbers are generated by Bulk Item Picklist Calculation, Production Order Allocate, or Production Order Release. When the Picking Maximum value for a component is reached, the system creates multiple sequences.

Sequence numbers are used when a requirement must be met with multiple transfers, often because there is limited space at the work center. The picklist shows the total requirement; the sequence amount is the amount transferred at any one time.

Alloc. Specify whether to transfer allocated inventory.

No: You must specify the items in the detail screen.

Yes: The system automatically transfers allocated inventory to help speed up the entry of inventory information.

To transfer allocated components, set Alloc to Yes; verify that the quantities are correct; then, press Go to process the transfer.

Picked. Indicates whether to transfer picked inventory.

No: You must specify the items in the detail screen.

Yes: The system automatically transfers picked inventory, which expedites inventory information entry.

To transfer picked components, set Picked to Yes; verify that the quantities are correct; then, press Go to process the transfer.

Effective Date. Enter the general ledger (GL) effective date for this transaction. The default is the system date.

The effective date determines when this transaction affects GL balances. The system checks that the transaction effective date is within an open fiscal period.

Use to Location Status. Indicate how the system sets inventory status when the inventory status of the items being transferred differs from the default inventory status at the transfer-to location.

Yes: The system uses the default inventory status of the transfer-to location.

No: The system uses the current inventory status when there is no inventory for that item/lot/ref in the transfer-to location or if the status of the item/lot/ref on the transfer-to location is the same as the current inventory status.

When No, the system displays an error when inventory for that item/lot/ref already exists in the transfer-to location, and the status is different from the current inventory status.

Transfer to Location Detail Frame

Item Number. Enter the code identifying the item to transfer. Items must have the Pick Policy set to Transfer. You set the Pick Policy in Item Inventory Data Maintenance, Item-Site Inventory Data Maintenance, or Item Master Maintenance.

Backflush Location. Enter the backflush location from which to transfer items. The system issues materials from the location when performing backflush transactions for the production line.

Total Open Balance. This display-only field shows the quantity to be transferred and calculated, based on the specified picklist sequence. All quantities detail allocated, picked, general allocated, and in shortage are summarized.

Total Transaction Quantity. This display-only field shows the total quantity you choose to transfer. It is summarized based on the quantity specified in Transfer From Location Detail.

Remove Untransferred Picklist Qty. Indicate how the system handles untransferred quantities:

No: Any remaining untransferred quantity remains on the picklist. This quantity can be transferred at a future time.

Yes: The quantity remaining is canceled from the picklist; but the system keeps the allocation for the order. Any picked inventory is reversed to allocated.

Transfer From Location Detail Frame

Site. Enter the site from which inventory is being transferred.

Location. Enter the from location for the inventory transfer.

Lot/Serial. Enter the lot/serial number associated with the inventory transfer

Reference. Enter a reference number to associate with the specified item quantity being transferred.

Transaction Quantity. Enter the total quantity of items transferred.

UM. This display-only field shows the stocking unit of measure of the item.

Production Picklist Undo

This program is .NET UI only and does not contain context-sensitive field help. To run the program, set criteria, then select Run.

Regulatory Attributes Control

Note Only fields changed for production orders are listed in this section. For more information on regulatory attributes, refer to the Regulatory Attributes chapter of *QAD Master Data User Guide*.

Single Lot per Discrete Order Receipt. Use this field to restrict discrete order receipts to a single end-item lot. This value defaults to the Single Lot field on individual discrete orders, where it can be manually changed as needed.

When Single Lot is Yes on a discrete order:

- All end items received in the same order receipt transaction must have the same lot number.
- An end-item lot number cannot be received in multiple discrete order receipt transactions. However, you can use the multi-entry feature in receipt transactions to assign item quantities from the same end-item lot to multiple sites, locations, or references.

Note You can only receive a single lot per transactions, too, when either the Lot Control level is set to 1 or 2 or Single Lot is set to Yes.

When either of the following is true, setting Single Lot to Yes on discrete orders has no effect:

- Lot Control Level is zero (0) in Regulatory Attributes Control.
- Lot/Serial Control is blank in the item master for the end item on the order.

In addition, when Auto Lot Numbers is Yes and Lot Group is blank in the item master, Single Lot defaults to No and cannot be updated.

The Auto Lot Numbers and Lot Group settings in the item master also affect how lot numbers are assigned during discrete order receipt transactions.

When Auto Lot Numbers is Yes and Lot Group has a valid value for the end item being received:

- End-item lot numbers are system-generated based on the lot group and cannot be manually updated.
- The system automatically increments the numeric portion of the lot number for each successive receipt against the same discrete order. This means that you cannot receive the same end-item lot in multiple receipt transactions or receive multiple lots in the same receipt transaction, regardless of whether Single Lot is Yes.
- When Auto Lot Numbers is Yes and Lot Group is blank for the end item being received:
- Single Lot defaults to No on the discrete order and cannot be updated.

Lot numbers default to the discrete order ID code and cannot be updated.

When Auto Lot Numbers is No for the end item being received, lot numbers must be manually entered in discrete order receipt transactions, regardless of how Lot Group is set.

Single Lot per REPET Receipt. Use Single Lot Per REPET Receipt to restrict end-item receipts in repetitive transactions to a single end-item lot. When this value is Yes:

- All end items received into inventory in the same repetitive transaction must have the same lot number.
- An end-item lot number cannot be received in multiple repetitive transactions. However, you can use the multi-entry feature to assign item quantities from the same end-item lot to multiple sites, locations, or references.

Note You can only receive a single lot per transaction, too, when either the Lot Control level is set to 1 or 2 or Single Lot is set to Yes.

The system validates single lots for transactions in:

- Production Order Receipt
- Operation Activity Transaction
- Move Transaction
- PO Receipt
- PO Shipper Receipt
- PO Unloading

When either of the following is true, setting Single Lot Per REPET Receipt to Yes has no effect:

- Lot Control Level is zero (0) in Regulatory Attributes Control.
- Lot/Serial Control is blank in the item master for the end item being received.

The Auto Lot Numbers and Lot Group settings in the item master also affect how lot numbers are assigned during repetitive receipt transactions.

When Auto Lot Numbers is Yes and Lot Group has a valid value for the end item being received:

- End-item lot numbers are system-generated based on the lot group and cannot be manually updated.
- The system automatically increments the numeric portion of the lot number for each successive receipt of that item. This means that you cannot receive the same end-item lot in multiple receipt transactions or receive multiple lots in the same receipt transaction, regardless of whether Single Lot Per REPET Receipt is Yes.

When Auto Lot Numbers is No for the end item being received, lot numbers must be manually entered in the repetitive transaction, regardless of how Lot Group is set. This is also true when Auto Lot Numbers is Yes and Lot Group is blank.

Modify Component Issue. Specifies whether to allow modifications to production order component issues.

Select Yes to allow any component to be issued to a production order. Select No to restrict work order component issues to items on the production order bill of material (BOM) or valid substitute items.

Substitute items are entered in Item Substitution Maintenance. Affects issues in Product Order Receipt, Operation Activity Transaction, and Repetitive Labor Transaction.

When you set to No, the system validates that only items or their valid substitutes on the order BOM can be issued in production order transactions. You cannot add items on the fly that are not on the order BOM during production order transactions. The system validates this for any transaction that issues components to an order in the following programs:

- Production Order Receipt Backflush
- Operation Activity Transaction
- Rework Transaction
- Production Order Component Issue

Reject/Scrap Transaction

Note For Heading Frame fields, see “Heading Frame” on page 271 for Operation Activity Transaction.

Reject. Use this Reject section to specify the number of unacceptable units produced at this operation that cannot be moved to the next operation.

Reject to Op. Reject To Op must reference either the current operation or operations that precede it. The default is the current operation.

Out Queue. Specify the number of unacceptable units produced at the out queue for this operation. These are the unacceptable units that cannot be moved to the next operation.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the rejected quantity. For quantities rejected, you can enter up to 10 quantities and reason codes by entering Yes in the associated Multi Entry field.

Multi. When Yes, a pop-up frame displays to enter up to 10 quantities and reason codes for the reject materials registered in this transaction.

In Queue. Specify the number of unacceptable units produced at the in queue for this operation. These are the unacceptable units that cannot be processed by the current operation.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the rejected quantity. For quantities rejected, you can enter up to 10 quantities and reason codes by entering Yes in the associated Multi Entry field.

Multi. When Yes, a pop-up frame displays to enter up to 10 quantities and reason codes for the reject materials registered in this transaction.

Scrap. Use this section to enter the number of items to scrap from the input, output, or reject queues without backflushing. This transaction is often used to scrap previous backflushed or rejected units.

Scrap transactions debit inventory accounts and credit scrap accounts. Scrap transactions are not appropriate for components that are lost or unusable as a result of the manufacturing process.

Record multiple scrap quantities for the In, Out, or Reject Queues. Specify reason codes for the scrapped quantities.

Out Queue. Specify the number of scrapped units produced at the Out queue for this operation. These are the units that are scrapped; that is, the units that cannot be reworked.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the scrapped quantity. For quantities scrapped, you can enter up to 10 quantities and reason codes by entering Yes in the associated Multi Entry field.

Multi. When Yes, a pop-up frame displays to enter up to 10 quantities and reason codes for the scrapped materials registered in this transaction.

In Queue. Specify the number of scrapped units produced at the In queue for this operation. These are the units that are scrapped; that is, the units that cannot be reworked.

The quantity you enter is first moved back to the prior operation's output queue. The output queue of that operation is reduced by the scrap quantity. The quantity is registered as quantity scrapped at the prior operation.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the scrapped quantity. For quantities scrapped, you can enter up to 10 quantities and reason codes by entering Yes in the associated Multi Entry field.

Multi. When Yes, a pop-up frame displays to enter up to 10 quantities and reason codes for the scrapped materials registered in this transaction.

Reject Queue. The quantity to scrap from the reject queue of the operation. These are the units that are scrapped; that is, the units that cannot be reworked. Record multiple reject quantities by specifying Multi. Specify reason codes for the rejected quantities.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the scrapped quantity. For quantities scrapped, you can enter up to 10 quantities and reason codes by entering Yes in the associated Multi Entry field.

Multi. When Yes, a pop-up frame displays to enter up to 10 quantities and reason codes for the reject materials registered in this transaction.

Repetitive CUM Order Create

Production Order. Enter the production order or accept the system-defaulted production order number.

ID. Enter the ID number used to select cumulative production order records. Records with an ID equal or greater than the value entered here are selected.

Item Number. Enter a range of codes for items on the repetitive cumulative production order.

Site. Enter a range of site codes to select the repetitive cumulative production orders.

Production Line. Enter a range of production lines to select the repetitive cumulative production orders.

Cum Order End Date. Enter the end effective date used to select cumulative production order records. Records with end effective dates on or before this date are selected.

The default is the current system date. This field cannot be left blank.

Repetitive CUM Order Maintenance

Production Order. Enter the production order or accept the system-defaulted production order number.

ID. Enter the ID number for a repetitive, cumulative order to modify it or delete it. Enter blank for the ID number to add a new repetitive cumulative order.



Repetitive cumulative orders are created by invoking any of the repetitive transactions or by the Cumulative Order Create function in the CUM Order Operations browse collection. When created, the CUM order is assigned an ID number.

When adding or creating a new repetitive cumulative order, the new ID number is displayed after you confirm that the site, item, production line, routing, BOM/formula code, and start effective date are correct, and the new order is created.

Site. The site code identifying the facility at which this repetitive cumulative order is being processed.

Item Number. The item being manufactured on this repetitive cumulative order, either a finished product or an intermediate subassembly. The item can be a Co-Product/By-Product or base process item when entering a work order or using Receipts - Backward Exploded

Production Line. The production line this repetitive cumulative order is to run on.

Routing Code. Enter a code identifying the routing or process used to produce this item or product. The code can identify an alternate routing or process. When an alternate routing is entered for this repetitive cumulative order, the appropriate product structure or process must also be specified. Otherwise, an error displays

This field can be left blank. When blank, the system accesses the routing stored with a routing code equal to the item number on the repetitive cumulative order.

BOM/Formula Code. Enter a code identifying the product structure or formula for this repetitive cumulative order. The code can identify an alternate product structure or base process. When an alternate routing is entered for this repetitive cumulative order, the appropriate product structure or process must also be specified. Otherwise, an error displays.

This field can be left blank. When blank, the system accesses the product structure or formula related to the item specified for this repetitive cumulative order.

Created. Identifies the date this repetitive cumulative order was entered. The default is the system date.

Order St. Indicates the current status of a repetitive cumulative order. Values are P, F, E, A, R, and C.

- P (Planned). Created only by Material Planning and deleted the next time Material Planning runs. Planned orders can be included in CRP calculations.
- F (Firm Planned). Orders you enter, or planned orders you firm up. Once firm, Material Planning cannot change them. If Material Planning sees a need to change them, it generates action messages. If you change the quantity on a production order, the quantities of its components and the times for its routing operations are automatically adjusted. If you change a quantity or date on a co-product/by-product or base process production order, the quantities and corresponding dates are automatically adjusted on the other orders in the joint production order set.
- E (Exploded). Fixes the bill and routing for this production order. Once exploded, changing the standard bill or routing does not affect the order. Any changes must be made in Production Order Bill Maintenance and Production Order Routing Maintenance.

- **A (Allocated).** Generally allocates components in inventory against other work or sales orders. Detail allocations (specific lots or locations) can be made in Production Order Bill Maintenance and components can be issued. You can also receive against an allocated order.
- **R (Released).** All available components are detail allocated and a picklist can be printed. If a key item is not available, the production order cannot be released. You can process material issues, receipts, and labor feedback against released production orders.
- **C (Closed).** No more material can be issued or received against a closed production order. Labor can still be reported. When the status of a joint production order set is changed to Closed using Production Order Receipt, current average, current last, and GL average costs are updated. Costs are also updated when running Prod Order Accounting Close. When the status of an order is changed to C, all of the open requirements for materials, allocations, and work center operations are removed.

Note For exploded, allocated, or released joint orders, you can change the quantities for co-product/by-product production orders without having their quantities automatically rescaled. You can also add or delete co-product/by-product orders from a joint production order set.

Start Effective. The starting date for a new repetitive cumulative order. The value entered for start date is used with the method defined in Advanced Repetitive Acct Control to determine the default start and end dates when adding a new repetitive cumulative order. The start effective date cannot overlap with the effective dates of another cumulative order for the same site, item, production line, routing, and bill of material.

End Effective. This field defines the end of the effective interval that the repetitive cumulative order covers. You can enter the unknown value (?). In this case, the end of the effective interval is taken to be in the indefinite future; that is, no effective interval in any other repetitive cumulative order can occur after the Start Effective date of this order.

Comments. Enter any comments associated with the repetitive cumulative order.

Rework Transaction

Note For Heading Frame fields, see “Heading Frame” on page 271 for Operation Activity Transaction.

Operation Data Frame

Note Most fields in this frame are listed in the Operation Frame section in “Operation Activity Transaction” on page 271.

Qty Reworked. Enter the quantity of reworked units.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the reworked quantity. For quantities reworked, you can enter up to 10 quantities and reason codes by entering Yes in the associated Multi Entry field.

Multi. When Yes, a pop-up frame displays to enter up to 10 quantities and reason codes for the reworked materials registered in this transaction.

Total Qty. This field displays the total quantity reworked, calculated as:

*Qty Reworked * UM conversion*

To Operation. Specify the operation to which you transfer reworked items. Refer to the Operation Queues heading in the procedural help for Rework Transaction for more information on how to specify operations and queues for reworked items.

To Queue. Specify the queue to which you transfer reworked items. Refer to the Operation Queues heading in the procedural help for Rework Transaction for more information on how to specify operations and queues for reworked items.

Component Issue Frame and Issue Data Review Frame

Note Fields in these frames are the same as those in “Production Order Component Issue” on page 291.

Routing Maintenance

Routing Code. Enter a code identifying the set of operations required to manufacture an item. For manufactured items, the system uses the routing to calculate product cost and plan for capacity.

Note You can create a routing for any item; however, when the item is not manufactured, the routing information is not used for planning or in the cost rollup functions.

Assign a default routing code to an item in Item Master Maintenance. The system assumes the item number is the default routing if a routing code is not specified. Assign a routing code to an item at each site with Item-Site Planning Data Maint, indicating how the item is normally made at that site.

You do not need to define routings for co-products because the system uses the routing associated with the base process.

Routing Description. Optionally, enter a description of the routing.

Operation. Enter an operation sequence number identifying a step within this routing. Operation numbers must be unique within a routing. The system prints routing operations in ascending sequence. For example, operation 20 follows operation 10. When you number operations by 10's or 100's, you can add new steps without renumbering existing ones.

Note Deleting an operation from a routing does not change any existing orders that reference it. If you delete an operation from a routing, close any open cumulative orders using the routing. Otherwise, employees can report labor against the operation by manually entering the number.

Start Date. Enter the first day this routing step is effective. Leave blank if the operation has no defined start date. Starting and ending effective dates are inclusive and cannot overlap.

Routing steps are typically effective over a defined period of time. When specified, the start date determines when this step should be included on the routing.

Note If you use the Product Change Control module, the incorporation process updates the start date for new routing operations automatically.

End Date. Enter the last day this operation is effective. Leave blank if the operation has no defined end date. Starting and ending effective dates are inclusive and cannot overlap.

Note If you use the Product Change Control module, the incorporation process updates the end date for deactivated routing operations automatically.

Standard Operation. Enter a code identifying a standard operation defined in Standard Operation Maintenance. A standard operation is common to several products or applicable to different routings in different operation sequences.

Standard operations act as templates and can help speed up entry of your routing or process operations by providing default information when you create a new routing operation. You can modify defaults as needed.

You can also reference standard operations directly on a production order.

Changing a standard operation does not automatically change the routings or processes that reference it. Use Routing Update to do this.

Routing Update does not update routings that have been copied into a production order. You must make any changes to these manually.

Work Center. Enter the code identifying the work center where this operation is normally performed. The work center and machine code together identify work center defaults. Work centers represent individual machines, groups of similar machines, or subcontract suppliers.

Machine. Enter the machine normally used for this operation. The work center and machine code together identify work center defaults. Work centers represent individual machines, groups of similar machines, or subcontract suppliers.

When an operation can be performed on more than one machine, enter the preferred work center and machine on the standard routing. Define alternate routings for the other machines, specifying their lead time components, yields, and processing instructions. Set up work center routing standards for each alternate machine, defining the standard run rates to use for efficiency reporting.

Operation Description. Enter a brief (24 character) description of this manufacturing operation to include on reports, inquiries, and printed shop documents.

Description defaults from the standard operation, if specified.

Machines per Operation. Enter the number of machines that can process work at the same time at this operation. You can also use this field to indicate multiple operators on one machine.

This value defaults from the work center. You can modify it as needed. The number of machines per operation affects scheduling and cost. The system schedules operations by dividing run time by the number of machines.

Standard machine burden is calculated as:

$$(((\text{setup time/order quantity}) * \text{routing machines per op}) + \text{run time}) * \text{work center machine burden rate}$$

If yield is included in the cost, machine burden reflects the cumulative yield from all operations.

Overlap Units. Enter the number of units that must be completed at this operation before work can begin at the next operation. This operation value defaults to production orders referencing this routing. You can change it on the production order routing.

Operation overlap affects scheduling, typically by reducing overall manufacturing lead time. For example, overlap quantity is set to 10. The system schedules only enough time to set up, run, wait, and move 10 items before starting the next operation. If the processing time at the next operation is longer than at the first, overall lead time is reduced. When you do not use overlap, leave overlap quantity set to 0 (zero).

Yield Percent. Enter the normal yield percentage for this operation. Yield is the percentage of any order expected to be in usable condition after this operation.

Operation yield helps calculate the value for item yield. The system multiplies the yield percentages of all operations together to determine the expected item yield. Planning functions consider yield when calculating planned order quantities, and yield is factored into item cost. Differences between actual and planned yield are accounted for as a usage variance.

Routing Cost Roll-Up uses the operation yield to calculate the item yield and update the yield in the item master and item-site planning data. Operation Cost Calculation and Reject/Scrap Transaction use operation yield to determine the operation costs.

For the yield calculation method, the system determines component requirements based on either:

- The fixed yield percentage for the parent item specified in Item Master Maintenance. This value can be updated by Routing Cost Roll-Up.
- The operation-based yield percentage that is calculated for production order operations when the production order uses the routing code and both of the following are true. (These settings also influence component requirements.)
 - In Material Planning Control, the Enable Op Based Yield parameter is Yes.
 - The item is defined with the Op Based Yield parameter set to Yes in Item Planning Maintenance or Item-Site Planning Maintenance.

Milestone Operation. Designate a routing operation as a milestone operation to simplify the reporting of shop floor activity for production operations. The reporting of a completed quantity at a milestone operation initiates a backflush for the milestone operation, as well as previous non-milestone operations, back to but not including a previous milestone. Quantities can be reported as completed at milestone operations, and not at non-milestone operations.

Queue time. Enter the amount of time, in decimal hours, a job normally waits at this work center before this operation is set up and processed. Queue time defaults from the work center.

Queue time is one component of the operation lead time. When scheduling production order operations, the system uses setup and run times to determine the operation duration. The interoperation lead time is calculated based on the first operation's wait and move times and the following operation's queue time.

Queue time is independent of order quantity and can be compressed in past-due situations. When the system uses backward scheduling, it works backward from the order due date to determine a scheduled start date. If the start date is before the current date, you may want to reschedule by reducing or eliminating queue time.

When scheduling operations, the system looks at the shop calendar for the work center to determine the maximum number of hours available for queue time in each calendar period.

Subcontract LT. Enter the average number of calendar days it normally takes a subcontractor to perform this operation. This value defaults from the standard operation, if specified, and is only needed for subcontract operations.

You should enter either subcontract cost and lead time, or setup, run, and move time. Specifying both can overstate cost and lead time and result in incorrect schedules. If you subcontract an operation sometimes and at other times complete it on site, set up an alternate routing rather than combining the information in one.

Routing Cost Roll-Up includes subcontract lead time when it calculates an item's manufacturing lead time. Subcontract lead time also influences scheduling for production order operations.

When scheduling production order operations, the system treats the subcontract lead time as the calendar days needed between the operation due date and the start date. For example, subcontract lead time is 2 and due date is the tenth of a month. The system sets the start date to the seventh because two days (the eighth and the ninth) are needed for subcontract lead time.

Wait Time. Enter the amount of time, in decimal hours, a job normally waits at this work center after the current operation is complete before it can be moved to the next operation. Wait time defaults from the work center.

Wait time is one component of the operation lead time. When scheduling work order and repetitive operations, the system uses setup and run times to determine the operation duration. The interoperation lead time is calculated based on the first operation's wait and move times and the following operation's queue time.

Wait time is independent of order quantity. An order must wait at least this long before it can move to the next operation. Wait time cannot be compressed in past-due situations since it may be required for drying, cooling, aging, or curing.

Wait time is expressed in hours and is not affected by the shop calendar. If the factory is shut, this type of process continues.

Setup Crew. Enter the number of people normally required to set up this operation. This value defaults from the work center.

Setup and run crew are not used in any scheduling or cost calculations. This field is for reference only and can appear on some selected reports and inquiries.

Setup Time. Enter the standard time, in decimal hours, required to prepare this work center to carry out this operation, independent of order quantity. This value defaults from the standard operation, if any.

Setup time is one component of the operation lead time. When scheduling production order operations, the system uses setup and run times to determine the operation duration. The interoperation lead time is calculated based on the first operation's wait and move times and the following operation's queue time.

If actual setup labor is not reported for an operation, the system assumes that standard setup was completed and not reported. Setup is posted at standard during Prod Order Accounting Close.

Run Crew. Enter the number of people normally required to run this operation at this work center. This value defaults from the work center.

Setup and run crew are not used in any scheduling or cost calculations. This field is for reference only and can appear on some selected reports and inquiries.

Run Time. Enter the time, in decimal hours, required to process one unit at this operation. This value defaults from the standard operation, if any.

Run time is one component of the operation lead time. When scheduling production order operations, the system uses setup and run times to determine the operation duration. The interoperation lead time is calculated based on the first operation's wait and move times and the following operation's queue time.

Tool Code. Enter an optional code identifying the tool normally used by this operation. This field is validated against predefined values entered in Generalized Codes Maintenance for field ro_tool, if any.

This field is for reference only and may appear on some selected reports and inquiries.

Move Time. Enter the time, in decimal hours, required to move work from this operation to the next, independent of order quantity. This value defaults from the standard operation, if any.

Since move time is often dependent on the next operation, it is typically modified for each operation.

Move time is one component of the operation lead time. When scheduling work order and repetitive operations, the system uses setup and run times to determine the operation duration. The interoperation lead time is calculated based on the first operation's wait and move times and the following operation's queue time.

Move time is not adjusted by the system to reflect differences in order quantity. It is stated in terms of the item order quantity. You can change it on the work order, as needed.

In a process flow environment, move time is normally 0 (zero). Move time applies to a physical movement of product that affects the schedule. For example, when product moves between buildings, time may be spent loading and unloading as well as in transit.

Supplier. Enter the supplier associated with the routing operation.

When a production order is entirely subcontracted, the supplier can be recorded on the order and on the production order routing operation.

Start Date. Enter the first day this routing operation is effective. Leave blank if the operation has no defined start date. Starting and ending effective dates are inclusive and cannot overlap.

Routing steps are typically effective over a defined period of time. If specified, the start date determines when this step should be included on the routing. You can use effective dates to phase in engineering changes and to maintain product history.

The system uses start and end dates to determine which routing information is effective on a specific date. You can generate many reports and inquiries for a specific effective date. This is useful for cost calculations, letting you change the routing effective in the future, and then evaluate the effect of the change.

To maintain routing history, use the following procedure when you make changes. Modify or add an end effective date to the current operation. Then add a new operation with the required change with a start date after the end date of the older operation.

Note If you use the Product Change Control module, the incorporation process updates the start date for new routing operations automatically.

Inventory Value. Enter a cost amount, representing accumulated cost through this operation.

Only Production Order WIP Cost Report uses this cost, based on the setting of Use Routing Inventory Value for WIP.

Yes: Production Order WIP Cost Report multiplies the inventory value associated with the routing operation by the WIP quantity at that operation. The sum of all operations is the total WIP value for the cumulative order.

No: Production Order WIP Cost Report uses cumulative operation costs calculated by Operation Cost Calculation, including material, labor, burden, and subcontract. If Operation Cost Calculation has not been run, WIP Cost Report calculates costs for selected items.

You might use inventory value when costs are set internally or negotiated with a customer, or for any cost you want to track in WIP, such as union costs or miscellaneous supplies.

End Date. Enter the last day this routing operation is effective. Leave blank if the operation has no defined end date. Starting and ending effective dates are inclusive and cannot overlap.

Note If you use the Product Change Control module, the incorporation process updates the end date for deactivated routing operations automatically

Subcontract Cost. Enter the average cost per unit normally charged by the subcontractor to perform this operation. This value defaults from the standard operation, if specified, and is only needed for subcontract operations.

Cost calculation functions determine item costs based on subcontract cost.

You should enter either subcontract cost and lead time or setup, run, and move time. Specifying both can overstate cost and lead time and result in incorrect schedules.

Comments. Enter Yes to create or update comments for this operation; otherwise, enter No.

If Yes, the transaction comments screen displays. You can enter additional information associated with this operation, such as detail shop floor work instructions or special precautions.

These comments are printed when Print Routing is Yes in Production Order Release/Print.

Routing Maintenance (Rate Based)

Note Fields in this program are similar to those in “Routing Maintenance” on page 325.

Split CUM Order Maintenance

ID. Specify a unique production order lot ID.

Production order number and lot ID together identify a specific manufacturing order. The same production order number can be used with different lot IDs.

Site. The system displays the site of the split CUM order.

Item Number. The system displays the item number for the split CUM order.

Production Line. The system displays the production line for the split CUM order.

Order Status. The status of the split CUM order. Values are R and C.

Routing Code. Enter a code identifying the routing or process used to produce the item or product for the cumulative order. The code can identify an alternate routing or process. This field can be left blank.

When this field is left blank, the system accesses the routing stored with a routing code equal to the item number on the cumulative order.

You can change the routing as long as no issues or production activities have been done; also, split orders must have a status of F (Firm Planned).

When routing is changed, the system replicates the routing to all split orders.

Order Date. This system displays the date this cumulative order was entered.

BOM/Formula Code. Enter a code identifying the product structure or formula for this cumulative order. The code can identify an alternate product structure or base process. This field can be left blank. When blank, the system accesses the product structure or formula related to the item specified for this cumulative order.

Important When an alternate routing is entered for this cumulative order, the appropriate product structure or process must also be specified. Otherwise, an error displays.

You can change the BOM/formula when:

- No issues or production activities have been done
- The split orders have a status of F (Firm Planned).

When the BOM/formula changes, the system replicates the BOM/formula to all split orders.

WIP Adjust Transaction

In Queue. Specify the number of units to adjust at the in queue for this operation. When adjusting the input queue, the net adjustment quantity is first moved and applied to the output queue of the prior operation.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the adjusted quantity.

Out Queue. Specify the number of units to adjust at the out queue for this operation. When you adjust the output queue, you change the balances at the current operation.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the adjusted quantity.

Reject Queue. Specify the number of units to adjust at the Reject Queue for this operation. When you adjust the reject queue, you change the balances at the current operation.

Reason Code. Enter a valid reason code or use the pull-down menu to select a reason code for the adjusted quantity.

Inv Discrep Acct. Enter the GL account code to offset the value of the WIP adjustment being made. This must be a valid, active account of type Standard. This initial value defaults from the item product line.

WIP Adjustment Transaction creates a GL transaction that debits or credits this account and records the offset to the WIP account. The amount of the entry is the quantity adjustment times the operation's standard cost.

You can enter an allocation code, which represents a set of accounts, in any account field in an operational function. During GL transaction post, the system automatically divides transaction amounts among the set of accounts, based on percentages defined in Op Allocation Code Maintenance.

Work Center Maintenance

Work Center. Enter a code for the work center. You cannot leave this field blank.

The work center code and the machine code together identify a work center, which is the basic production unit used in manufacturing planning and control. Work centers identify individual machines, groups of similar machines, or subcontract suppliers.

Work centers are used throughout the system for planning and reporting. Each operation must reference a work center. For manufacturing routings and processes, this determines the cost of the operation and is used to calculate product costs and lead time.

Most reports and inquiries can be selected and sorted by work center—in particular, dispatch lists and capacity planning reports.

At least one department must be defined before you can enter a work center. Then subdivide each department into logical work centers. A work center is a specific production unit within a department consisting of one or more people and one or more machines.

Set up one work center code for each supplier providing outside processing for subcontract operations.

Work center codes are alphanumeric and sort using a lexical sort, like entries in a telephone directory. Keep this in mind when developing a coding scheme.

Machine. Enter a code for the machine. The work center code and the machine code together identify a work center, which is a basic production unit used in manufacturing planning and control.

Where there is more than one person or machine in a work center, they can be used interchangeably. For example, there are two identical paint bays, so you can schedule a paint operation at either one. The paint time would be the same. You set this up as one work center code and leave machine code blank.

However, two CNC machines, one old and one new, may not have the same operating characteristics and perhaps may not be used interchangeably. Work scheduled on one may not be easily changed over to another. Work centers which consist of several different machines are normally set up using a common work center code and different machine codes.

Description. Optionally, enter a description of the work center and machine code, which together make up the basic production unit.

Department. Enter the department to which this work center belongs. Department codes identify major groupings of manufacturing work centers, in your own facility or at outside suppliers.

Every work center/machine should be assigned to a department, primarily for planning and accounting (blank is allowed but not recommended). Usually, the grouping is made by similarities of functions or processes.

Scheduler. Enter a valid user name specified in User Maintenance for the person responsible for scheduling the work center.

Supplier. Optionally specify a supplier to associate with this production unit (work center and machine).

Backflush Location. Enter the inventory location used to issue materials from when performing backflush transactions for the production line.

Transaction Quantity Method. Determine whether to use Qty Complete or Qty Processed in Operation Activity Transaction and Production Order Receipt.

Note The setting of this field defaults from Open Qty Method in Production Order Control.

- When it is set to Qty Complete, the system allows users to enter Qty Complete rather than Qty Processed in Operation Activity Transaction and Production Order Receipt.

- When it is set to Qty Processed, the system allows users to enter Qty Processed rather than Qty Complete in Operation Activity Transaction and Production Order Receipt.
- When it is left blank, the system uses the method set in Production Line Maintenance and applies the method to Operation Activity Transaction and Production Order Receipt.

Note The Transaction Quantity Method value in Work Center Maintenance has a higher priority over the value set in Production Line Maintenance.

If there is no production line defined on a production order and no Transaction Quantity Method defined on the work center, the system uses the Open Qty Method set in Production Order Control as the transaction quantity method.

Auto Firm. Specify Yes to have the system automatically firm orders scheduled on this production line using Auto Firm Planned Orders (woscauto.p). Auto Firm Planned Orders firms planned orders for either production lines or work centers for a specific horizon or a range of dates.

If you use the QAD Planning and Scheduling Workbenches, you must set this field to Yes if you schedule for work centers and plan to firm planned orders in the workbenches. You must set the same-named field to Yes in Production Line Maintenance when you firm planned orders for production lines, using the workbenches. If Auto Firm is set to No, the system does not firm planned orders.

Last Auto Firm. Enter a date of the last auto-firm by selecting a date from the calendar that displays when you click the drop-down icon. You can see the date of the last auto-firm in work center and production line browses in QAD ERP.

Queue Time. Enter the standard queue time, in decimal hours, a job normally spends waiting at this work center before it is set up and processed.

This value displays as the default when you enter a standard operation, routing operation, or process operation that references this work center. It can be changed.

Total manufacturing lead time includes queue, setup, run, wait, and move time. Lead time is used for operation scheduling and capacity requirements planning.

Queue time is independent of order quantity and can be compressed in past-due situations. Backward scheduling algorithms look at the order due date and work backward to determine the scheduled start date. If this start date is before today, you may want to reschedule, allowing for just a specified percentage of (or no) queue time.

When scheduling operations, the system looks at the shop calendar for the work center to determine how many hours are available for queue time in each calendar period.

Wait Time. Enter the standard wait time in decimal hours that a job normally spends waiting at this work center after processing has been completed.

This value displays as the default whenever you enter a standard operation, routing operation, or process operation that references this work center. It can be changed.

Total manufacturing lead time includes queue, setup, run, wait, and move time. Lead time is used for operation scheduling and capacity requirements planning.

Wait time is independent of order quantity. An order must wait at least this long before it can go on to the next operation and it cannot be skipped in past due situations: wait time may be required for drying, cooling, aging, or curing.

Wait time is expressed in hours and is not affected by the shop calendar. If the factory is shut, this type of process continues.

Mach/Op. Enter the number of machines at this work center that can work at the same time to process a given operation. The default is 1.

This value displays as the default whenever you enter a standard operation, routing operation, or process operation for this work center. It can be changed.

The Mach/Op field affects scheduling of operations that occur at this work center machine. During scheduling, the system uses the operation run time divided by the Mach/Op.

You can also use this field to indicate multiple operators on one machine. A related field, Mach/Wk Ctr, should be at least the number of machines per operation. The Mach/Wk Ctr affects capacity planning for the work center.

Setup Crew. Enter the number of people normally required to set up this work center.

This field is for reference only and can appear on some selected reports and inquiries.

No scheduling or cost calculations use setup and run crew.

Setup Rate. Enter the average labor rate paid per labor hour to set up 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.

If no setup labor is reported for an operation, the system assumes that standard setup was completed and not reported; setup is posted at standard during operation close or Prod Order Accounting Close.

The setup portion of standard labor cost is calculated by multiplying the standard operation setup time by the setup rate. (Setup time is the time it takes to set up all machines. Machines/operation is not considered here.) This cost is divided by the item order quantity. Labor burden percentage is applied to both setup and run cost, and added to standard burden cost.

Actual setup cost is calculated by multiplying the actual setup time by the setup rate for the work center at which the setup was reported.

Any difference is posted to variance. Rate variance accounts for different standard rates between work centers. Usage variance accounts for different setup and run times.

Run Crew. Enter the number of people normally required to run this work center. The default is 1.

This field is for reference only and can appear on some selected reports and inquiries.

No scheduling or cost calculations use setup and run crew.

Labor Rate. Enter the average labor rate paid per labor hour to run 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.

If no setup labor is reported for an operation, the system assumes that standard setup was completed and not reported; setup is posted at standard during operation close or Prod Order Accounting Close.

The run portion of standard labor cost is calculated by multiplying the standard operation run time by the run rate. Labor burden percentage is applied to both setup and run cost, and added to standard burden cost.

Actual run cost is calculated by multiplying the actual run time by the run rate for the work center at which the run time was reported.

Any difference is posted to variance. Rate variance accounts for different standard rates between work centers. Usage variance accounts for different setup and run times.

Machines. Enter the number of machines (or people) in this work center. The default is 1.

The total capacity for a work center is calculated by multiplying the number of working hours, defined in the shop calendar for each work center, by the number of machines.

When machines in this work center operate at the same time, you should enter that number in the Mach/Op field.

Labor Burden Rate. Enter the labor burden rate per hour applicable to both setup and run time 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.

The labor burden portion of standard burden cost is calculated using the labor burden rate and labor burden percentage. The labor burden rate is multiplied by the operation setup and run times. The labor burden percentage is multiplied by the total labor cost for operation setup and run.

Actual labor burden is calculated using the actual hours reported and the burden rates and labor costs from the work center at which the operation was reported.

Any difference is posted to variance. Rate variance accounts for different standard rates between work centers. Usage variance accounts for different setup and run times.

Mach Bdn Rate. 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.

Standard machine burden cost at the operation is calculated as:

*(setup time / order quantity * routing machines per op + run time) * WC mach burden rate*

If yield is included in the standard cost, machine burden reflects the cumulative yield from all operations.

Any difference is posted to variance. Rate variance accounts for different standard rates between work centers. Usage variance accounts for different setup and run times.

Labor Bdn %. The labor burden percentage applicable to the total labor cost 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.

The labor burden portion of standard burden cost is calculated using the labor burden rate and labor burden percentage. The labor burden rate is multiplied by the operation setup and run times. The labor burden percentage is multiplied by the total labor cost for operation setup and run.

Actual labor burden is calculated using the actual hours reported and the burden rates and labor costs from the work center at which the operation was reported.

Any difference is posted to variance. Rate variance accounts for different standard rates between work centers. Usage variance accounts for different setup and run times.

Horizon End. Specify day, month, or week as the horizon end. In the Planning and Scheduling Workbenches, work centers display as resources. The workbench depicts the scheduling or sequencing horizon, depending on your order type and the schedule (master or production) with which you work in the workbench. You can change the future and history horizon within the workbench; however, the type of period you enter here sets the unit for the horizon end.

The calculate date is read-only. The system calculates the date from period and period number, so if you set Horizon End to Day and Period to 5, the Calculate Date is five days starting with today. If you set Horizon End to Week and Period to 4, then the Calculate Date is four weeks from now including today.

Work Ctr Reserve Loc Maintenance

Site. Enter the site for the work center.

Location. Enter a code for an inventory location for the physical, shop floor location for the reserved location. You can designate one or more inventory locations as a reserved location for a production line or work center.

To shelter inventory at a production line or work center location, for production at that production line or work center, select an inventory location that is defined with an inventory status code that determines that inventory quantities at that location are not available. Production allocation and picklist functions recognize inventory quantities at those reserved locations as available for production orders and operations, even though the inventory status code indicates otherwise.

Available. The available status for the inventory location as determined by the inventory status code that is defined for the location.

To shelter inventory at a production line or work center location, for production at that production line or work center, select an inventory location that is defined with an inventory status code that determines that inventory quantities at that location are not available. Production allocation and picklist functions recognize inventory quantities at those reserved locations as available for production orders and operations, even though the inventory status code indicate otherwise.

Preference. An integer value that determines the order which reserved locations for a production line or work center are evaluated by production allocation functions, when there is more than one general reserved location defined for a production line or work center.

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