



User Guide

QAD Warehousing

Setting Up QAD Warehousing
Using QAD Warehousing
QAD Warehousing Reference

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Setting Up QAD Warehousing

This section includes chapters describing how to set up the data required to use QAD Warehousing.

Introduction to Setting Up QAD Warehousing **3**

Explains the principle entities which are used to set up QAD Warehousing, with sections on warehousing entities, setting up QAD Warehousing, and setting up QAD Warehousing with QAD Standard Edition.

Defining Warehouses **17**

Discusses Control File Maintenance, Warehouse Maintenance, Warehouse Master List Maintenance, sequence definitions, and warehouse reports and inquiry functions.

Defining Internal Routings **47**

Explains the QAD Warehousing concept of internal routings and internal routing groups, with sections on internal routings, Internal Routing Group Maintenance, Internal Routing Maintenance, Internal Routing Assignment Maintenance, and internal routing report and inquiry functions.

Defining Location Groups **61**

Explains the purpose of location groups and gives information on Storage Location Group Maintenance, Storage Location Group List Maintenance, Inter-Work Location Group Maintenance, and location group reports and inquiries.

Defining Locations **77**

Describes how to set up locations, how to use Location Maintenance, Mass Location Maintenance, using Check Digits with locations, and location report and inquiry functions.

Defining Items **87**

Explains how to define item data relating to warehouse activities, with sections on defining item data for sites and warehouses, storage location groups, suppliers, defining customer status for items, and item data report and inquiry functions.

Sizing **101**

Discusses sizing and units of measure, Alternate UM Maintenance, UM-Group Maintenance, UM Conversion Generation, and sizing and UM report and inquiry functions.

Algorithms **111**

Explains how algorithms are used, Algorithm Type Maintenance, Algorithm Master Maintenance, algorithm assignment, simulation, and listings, and algorithm report and inquiry functions.

QAD Warehousing Engine Processing 141

Explains how QAD Warehousing uses engine processing and discusses Transaction Type Maintenance, Warehouse Transaction Report Maintenance, and transaction type report and inquiry functions.

Labor Management 149

Explains how QAD Warehousing provides the ability to manage resources by using resources and groups of resources and assigning tasks to these resources. Resources are simply individuals or users of the system, who work specifically within the warehouse.

System Administration 161

Discusses QAD Warehousing menu options, including warehouse security, utility menu options, cross-referencing program names, interface menu options, the local exit routine control file, and printing.

Introduction to Setting Up QAD Warehousing

This chapter explains the principal entities that you deal with when setting up QAD Warehousing to control your inventory management procedures. It also briefly describes the whole process of setting up QAD Warehousing so that it is ready to handle inventory transactions in conjunction with QAD Enterprise Resource Planning (ERP). The chapter is divided into the following major sections:

Warehousing Entities 4

Introduces warehouses, discusses warehouse location groupings, locations and items, sizing and units of measure, algorithms and transaction types, and engine processing.

Setting Up QAD Warehousing 10

Illustrates the setup workflow and discusses preparing QAD Warehousing environments, defining warehouses, defining internal routings, defining location groups, defining locations, defining items, defining units of measure, assigning algorithms to transactions, and defining transaction processing.

Using QAD Warehousing with QAD Standard Edition 14

Explains how to use QAD Warehousing with QAD Standard Edition with details on utilities for domains.

Warehousing Entities

QAD Warehousing provides highly flexible and adaptable warehousing facilities that integrate fully with the QAD ERP system. QAD Warehousing lets you incorporate a full range of inventory management functions into the warehousing aspect of your business.

To minimize the intrusiveness of integrating QAD Warehousing into your QAD ERP system, it has been designed so that almost all the operational functions work without the need to change QAD ERP. Without QAD Warehousing, QAD ERP recognizes sites and locations. However, running a complex warehousing operation using only these entities is limiting, so QAD Warehousing introduces a set of new entities that let you be very specific about the way you receive, store, and pick your inventory.

These new entities start at the warehouse level. In QAD Warehousing, a *warehouse* is the highest level of QAD Warehousing-specific data. The other elements of warehousing that are specific to QAD Warehousing are all subsidiary to the warehouses. They represent ways of:

- Arranging storage locations within each warehouse
- Defining the routes through the warehouses that you want your inventory to take
- Handling the inventory management transactions that are involved in managing your warehousing activities on a day-to-day basis

This chapter briefly introduces each of the main QAD Warehousing entities including:

- Warehouses
- Internal Routing Groups (IRGs)
- Internal Routings
- Storage Location Groups (SLGs)
- Work Location Groups (WLGs)
- Locations
- Items
- Units of Measure (UM)
- Algorithms
- Transaction types
- Engine processes

Introducing Warehouses

A warehouse consists of a group of storage locations. These can constitute a single building, but this is not necessary. A warehouse could be part of a larger building, or, for storage of material such as construction materials, the storage locations could be in the open air. A single warehouse could actually consist of a number of separate buildings. To define it as a warehouse, you identify the storage locations that you want to group together and manage in the same way.

Because QAD ERP does not have to be aware of all the workings within the warehouse, each warehouse is defined in QAD ERP as a standard QAD ERP location. This approach lets you keep all the internal warehouse operations separate from other QAD ERP activities. When you want to

send inventory into a warehouse, as far as QAD ERP is concerned, you are simply putting it in a location. However, when that location is also specified as a warehouse, all the warehousing facilities become available within it.

From QAD ERP's point of view, you receive inventory into a location such as WHSE01, which is associated with an existing QAD ERP site. However, because this is a warehouse, the inventory does not actually stay in that location. The location is used as a gateway into the actual storage locations that exist within the warehouse.

Eventually, the inventory is put away in one or more actual storage locations within the warehouse. These are real locations, not dummy locations. Each of these actual locations is also defined as an QAD ERP location, so the inventory is again recognized by QAD ERP as residing in a known location in a known site. The part of this process that QAD Warehousing handles is the selection of the locations for the inventory, an activity that is transparent to QAD ERP.

In order for QAD Warehousing to put your inventory away in the way you require, you must define the characteristics of your warehouses. This involves setting up a range of fields that control the inventory management processes, and also defining the way that the storage locations within each warehouse are broken down into groups.

The main groupings of locations within a warehouse are:

- Internal routing groups
- Storage location groups
- Work location groups

Note Since QAD Warehousing does not modify the QAD ERP database, the relationship between site and location is still the same. This means that locations are unique to a site. Because of this, two locations in two different warehouses but at the same site cannot have the same-name.

As explained, items are received in a location representing a warehouse. The inventory status of this location should be non-available but nettable. Even though the inventory does not remain for long in that dummy warehouse location, the non-available status prevents the picking process from looking there.

Warehouse Location Groupings

QAD Warehousing manages the movement of inventory within and between warehouses by defining pathways that take the inventory from one part of the warehouse to another. These pathways are called *internal routings*, and defining them involves specifying a sequence of steps that determine which part of the warehouse the next step goes to and any specific controls that should be applied at each step.

The parts of the warehouse involved in these internal routings are the major breakdown of the warehouse storage locations into areas that have a specific purpose. In QAD Warehousing, the top-level grouping of the storage locations is known as an *internal routing group (IRG)*.

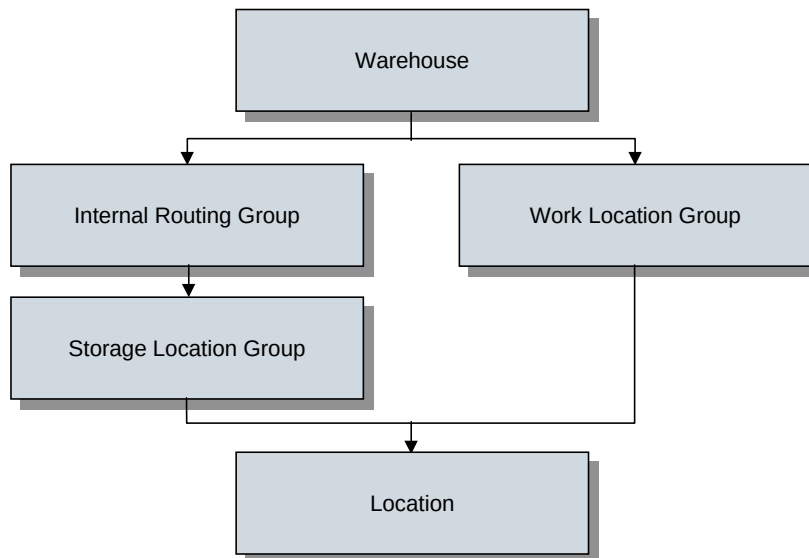
Example You define an internal routing group for receipt, another for bulk storage, and another for dispatch. Each internal routing that defines a route for inventory to take through the warehouse involves moving the inventory from one of these groups to another.

The next level below the internal routing groups is the *storage location group (SLG)*. All the storage locations within an IRG can have the same basic function, such as bulk storage, but the use of SLGs enables you to group your storage locations in more specific ways. For example, you can group together all the locations in which a particular type of item is stored, or which have a common purpose, such as a primary picking area within bulk storage.

In parallel with the storage location groups is another way of grouping locations called the *work location group (WLG)*. This way of grouping locations enables you to account for factors related to working practices. For example, you can specify the printers to use, and the format of the printed output, for each separate work location group.

When you have set up all the groupings within a warehouse, every location belongs to a particular storage location group as well as a particular work location group. Each SLG is defined as being within an internal routing group. The hierarchy of these groupings is shown in Figure 1.1.

Fig. 1.1
Warehouse and Groups



Part of the flexibility of QAD Warehousing comes from the fact that you can set up as many IRGs as you need within a warehouse, you can set up as many SLGs as you need within each IRG, and you can set up just one WLG, or as many as you need for your different working areas.

No rules govern the type of internal routing groups that you have to set up in a warehouse. Most users define areas such as receipt, inspection, storage, picking, packing, and dispatch. However, none of these are mandatory—you choose the areas you want, and you then choose the routes through these areas that you want your inventory to take.

Note You use IRGs to distinguish between the major functional areas of your warehouse. Although you have as many IRGs as you need for the goods-in and goods-out areas, you normally need only one or at the most two IRGs in your main storage area. Within your main storage IRG, you use SLGs to distinguish between the different types of storage areas.

QAD Warehousing recognizes two basic types of internal routing group: functional and non-functional. The functional IRGs are areas that have a particular warehousing function, such as receipt or dispatch. Non-Functional IRGs are used for storing inventory. For QAD Warehousing, the difference between the two types is the way in which it considers locations in the group when putting inventory away:

- In functional IRGs, QAD Warehousing uses routines that simply find a location for the inventory, without considering capacity—the location-find algorithms.
- In non-functional IRGs, QAD Warehousing uses routines that consider the size and quantity of the inventory, and the available capacity of the locations—the put-away algorithms.

The reason for this is that when you are receiving inventory, you simply want to find somewhere to put it in the goods-in part of the warehouse, and when you are shipping inventory, you just want to move it to the goods-out area. In either case, available storage space is not a relevant factor. However, when you are storing inventory—whether in bulk storage or in a picking area—you want QAD Warehousing to choose the most efficient locations that meet your warehouse storage strategy.

Locations and Items

Both the locations that you define in your warehouses and the items of inventory that you intend to receive, store, and ship are elements that are also used by QAD ERP. In both cases, though, some additional information is required by QAD Warehousing so that it can manage your inventory procedures in the warehouses.

For locations, you must define for QAD Warehousing the groups to which the location belongs (SLG and WLG), and specify a number of fields that control the way that inventory is stored in and picked from the location. QAD Warehousing provides a Location Maintenance (80.3.13.1) function that replaces standard Location Maintenance (1.1.18) in QAD ERP. You can, therefore, set up all your location details within QAD Warehousing. Standard Location Maintenance options are not recognized by QAD Warehousing, and are not available for warehouse functions.

For items, QAD Warehousing requires certain additional fields that relate to item storage. However, QAD Warehousing does not provide full item maintenance functions. For items, therefore, you define the basic item data using standard QAD ERP programs, and then use the QAD Warehousing item data functions to define the additional warehouse storage information.

Sizing and Units of Measure

One significant type of information about locations and items that QAD Warehousing needs is the way they are sized and the units of measure used. QAD Warehousing has a flexible approach that does not require you to specify a warehouse as being palletized or non-palletized. You can mix palletized goods with different types and sizes of pallets and loose items within the same location.

To be able to do this and still retain accurate records of the quantities of inventory and the available location capacities, QAD Warehousing uses a system of alternate units of measure (UM). This enables you to define a base UM for an item, and also define alternate UMs that can be used for receipt, storage, and picking the item. You must define the conversion factors between the different UMs used for the item, such as how many items are in a box, or how many on a pallet. You also must define whether a unit can be split when picking inventory from a location.

When you have given QAD Warehousing all the sizing data about your inventory items and your storage locations, it is then able to offer you complete flexibility regarding the storage and picking of those items.

Algorithms and Transaction Types

“Warehouse Location Groupings” on page 5 mentions the different routines that QAD Warehousing uses when putting stock away in functional and non-functional areas. These routines are called *algorithms*. Each algorithm is a separate program that takes into account particular conditions before attempting to carry out an inventory movement transaction.

Advanced QAD Warehousing users can set up new types of algorithms to perform special functions; the following set of algorithms is supplied with the system:

- Container move (CM) algorithms find suitable stage, truck, and dock locations, including empty locations, locations with the least goods, and locations that already contain stock designated for a particular ship-to.
- Lane (LA) algorithms find suitable shipping lanes, including empty lanes, lanes with the best load, and lanes for a given carrier.
- Location-find (LF) algorithms are used in functional IRGs to find a location for the inventory without considering capacity.
- Put-away (PA) algorithms are used in non-functional IRGs to find locations in storage areas by considering the size and available space.
- Picking (PK) algorithms are used when picking stock to fill sales orders or work orders.
- Shortage clearance (SC) algorithms are used when receiving stock that is immediately required to fill short orders. The inventory is moved directly from receipt to dispatch, being stored in between. This type of movement is also known as cross-docking.
- Inspection (QA) algorithms are used to determine when an inspection must take place.

See Chapter 8, “Algorithms,” on page 111.

QAD Warehousing lets you choose which algorithm to use in any given situation. At the simplest level, you can just assign a particular algorithm to a particular transaction type.

Example When you receive inventory as a result of a purchase order, the transaction type is RCT-PO. You can define an internal routing for a RCT-PO transaction that moves it first to the receipt IRG and then to the storage IRG. The first movement uses a location-find algorithm to find a space in the functional receipt area; the second movement uses a put-away algorithm to find suitable locations for the inventory in the non-functional storage area.

In each of these movements, you can select which algorithms you want to assign. In put-away, you can choose different criteria, such as empty locations, or popular locations, or locations where the inventory can be merged with existing stock.

QAD Warehousing also lets you assign a sequence of different algorithms for each transaction type. QAD Warehousing tries your first choice algorithm, but if this does not succeed in completing the transaction, QAD Warehousing then applies the second choice algorithm, and so on until the transaction is complete.

As well as assigning algorithms to each transaction type, you can also specify combinations of site, warehouse, item, supplier, or customer for which a different sequence of algorithms is to be applied. This approach lets you be very specific about exactly how you handle supplies of stock from particular suppliers and how you pick particular inventory for particular customers.

Algorithm assignment setup can be as simple or as complicated as needed.

The most general setup of algorithm is for a generic transaction type RCT-*, which represents all kinds of receipt—such as unplanned, PO, DO, WO—for a given site and warehouse combination, and for a blank item, item type, and address.

On the other hand, you can define a very specific algorithm assignment for a given item for a given transaction type, in a given site/warehouse, and coming from a given supplier or going to a given customer.

Engine Processing

When all the QAD Warehousing fields have been specified and you are operating your warehouses, QAD Warehousing uses processing engines to process all the inventory transactions.

Processing engines are run-time programs within QAD Warehousing that select and process all the required inventory transactions. The way you set up your internal routings controls the way that inventory transactions are created and confirmed, and each step of an internal routing specifies the next step that is to follow when the current step is complete.

For each transaction type in each internal routing, you can specify the type of engine processing that you want applied. The three types are:

- AUTO mode specifies that the transaction is processed immediately.
- MANUAL mode specifies that the transaction is processed only when it is selected for processing by warehousing staff.
- TIMED mode specifies that the transaction is processed a set time interval after the preceding transaction has been confirmed.

By applying these different types of engine processing, you can control whether inventory passes through an internal routing automatically, with intervention from warehouse staff, or with built-in delays at specific stages.

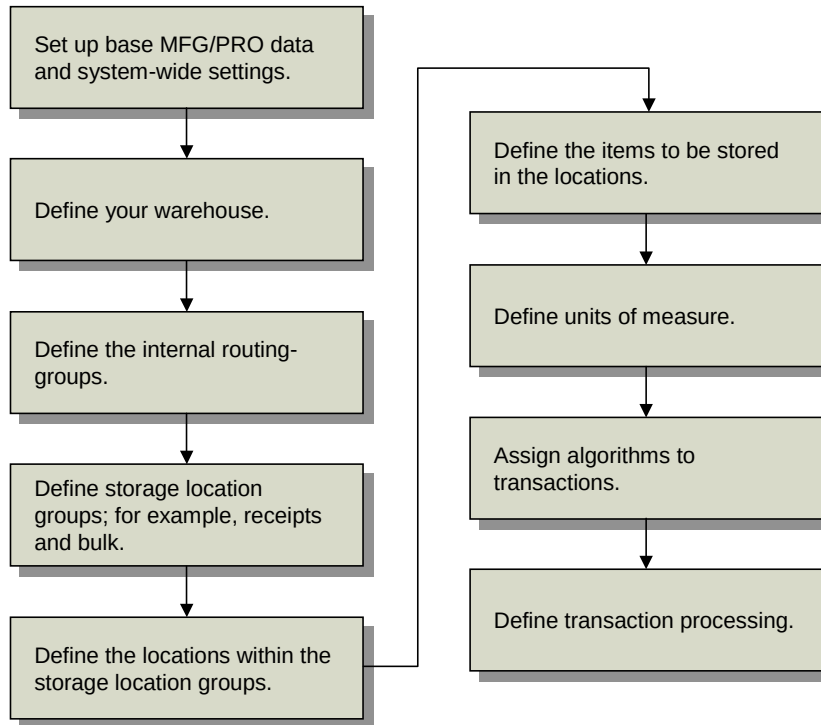
Example An internal routing is defined to go from Storage to Packing, and then from Packing to Dispatch. In AUTO mode, as soon as the transaction from Storage to Packing is confirmed, the next transaction is created. This could mean that somebody receives a task before the packing really takes place. In order to avoid this, you can use the MANUAL mode so the next step (from Packing to Dispatch) is only created when the mode is changed to AUTO.

Note The TIMED mode can only be used with an appropriate program, so only advanced QAD Warehousing users with Progress experience can use it.

Setting Up QAD Warehousing

See Figure 1.2 for an illustration of the work flow for QAD Warehousing setup. Each work flow step is discussed on the following pages.

Fig. 1.2
QAD Warehousing Setup Work Flow



QAD Warehousing supports many different types of warehouse implementations. This section describes basic setup of warehousing components. These components can be combined in many different ways. Some specific implementation requirements are discussed in the chapters on bulk picking, batch picking, and wave planning. Review the setup sections in these chapters for instructions are setting up these types of warehouse activities:

- “About Bulk Picking” on page 250
- “Setting Up Batch Picking” on page 265
- “Setting Up Wave Planning” on page 289

Prepare QAD Warehousing Environment

The first step in setting up QAD Warehousing is to ensure that the QAD ERP environment in which your warehouses are to operate is already completely defined within QAD ERP. This means that you must ensure that all the following elements have been set up:

- All the sites in which you want to set up warehouses
- All the inventory items you want to store in your warehouses

Refer to your QAD ERP documentation for details of setting up these elements.

Also, you must set up system control fields that govern the entire QAD Warehousing operation using System Control File (80.24.24). You can also define the numbering sequences that you want QAD Warehousing to use for automatically generated pallet references and for generating location identifiers when creating a range of storage locations. You do this using the QAD Warehousing Sequence Definition options on the System Menu (80.24).

See “System Control File” on page 20.

Define Warehouse

The second step is to set up details of the warehouses you want to operate. Each warehouse must have its individual fields defined. However, often you have similar requirements for a number of warehouses, so QAD Warehousing lets you set up generic defaults used for each warehouse. You can also set up master lists of warehouses, which define the order QAD Warehousing should use looking for a warehouse for an item. The sequence is:

- 1 Use Warehouse Control File Maintenance (80.1.24) to set up generic defaults for your warehouses. This step is optional. See page 22.
- 2 Use Warehouse Maintenance (80.1.1) to set up the individual fields for your warehouses. This step is mandatory. See page 24.
- 3 Use Warehouse Master List Maintenance (80.1.5) to set up master lists of warehouses that you can attach to inventory items. This step is optional; however, for multi-warehouse picking or inter-warehouse transfers and picking, it is mandatory. See page 40.

See “Warehouse Maintenance” on page 24.

Define Internal Routings

The third step is to define the internal routing groups (IRGs) within each warehouse, then define the internal routings you want to use to move inventory between these IRGs, and finally assign the internal routings to the inventory transaction types. This sequence is as follows:

- 1 Use Internal Routing Group Maintenance (80.2.1) to set up your IRGs. You must define these before you can create internal routings.
- 2 Use Internal Routing Maintenance (80.2.5) to set up your internal routings. These define specific pathways through the warehouse by way of the IRGs.
- 3 Use Internal Routing Assignment Maintenance (80.2.9) to assign your internal routings to particular transaction types.

See Chapter 3, “Defining Internal Routings,” on page 47.

Define Location Groups

The fourth step is to define the storage location groups and work location groups within the warehouse. You must set up these groups before defining locations, so you can specify the groups to which each location belongs.

See Chapter 4, “Defining Location Groups,” on page 61.

- 1 Use Storage Location Group Maintenance (80.3.1) to set up your SLGs. You must define these before you can set up your locations.
- 2 Use Storage Location Group List Maintenance (80.3.5) to set up lists of SLGs, which you can use in place of an individually specified SLG to widen your choices for storage for an item. This step is optional.
- 3 Use Work Location Group Maintenance (80.3.9) to set up your WLGs. You must define these before you can set up your locations.
- 4 Use Inter-Work Location Group Maintenance (80.2.19) to specify any special requirements you have when moving inventory within a warehouse from one WLG to another. This step is optional.

Define Location

The fifth step is to set up all the individual storage locations within the warehouse. You define the standard location details as well as the required QAD Warehousing fields. Where you have a large number of similar locations, you can use Mass Location Maintenance (80.3.13.21) to avoid repetition.

See Chapter 5, “Defining Locations,” on page 77.

Setup locations using one of the following methods:

- 1 Use Location Maintenance (80.3.13.1) to set up individual locations one at a time.

—Or—

- 2 Use Mass Location Maintenance (80.3.13.21) to set up a range of similar locations.

If you want to set up a range of locations:

- a Use QAD Warehousing Sequence Definition Maintenance (80.24.1) to set up a sequence definition code. This identifies the template to use for setting up the individual locations. See “Sequence Definition” on page 42 for details.
- b Use Mass Location Maintenance (80.3.13.21) to generate the range of locations. You specify the Sequence Definition to use, and QAD Warehousing uses the format and range you defined in step a.

Define Items

The sixth step is to define the QAD Warehousing fields for the inventory items you want to store in your warehouses. The items must already exist in QAD ERP. In addition to setting up the basic QAD Warehousing fields for each item, QAD Warehousing lets you specify information that links the storage or picking of an item with a particular site, warehouse, storage location group, supplier, or customer. The sequence is as follows:

- 1 Use Item Maintenance (80.4.7) to set up generic default values for items. This step is optional.
- 2 Use Item-Site Maintenance (80.4.9) to set up default values for items that apply to all warehouses at the specified site. This step is optional, and uses the generic default values from Item Maintenance if you defined them.
- 3 Use Item-Warehouse Maintenance (80.4.11) to set up the actual fields to use for each item in the specified warehouse. This step is mandatory, and uses the site-level default values from Item-Site Maintenance if you have set these up.
- 4 Use Item/SLG Properties Maintenance (80.4.1) to specify additional warehousing fields for items related to a specific storage location group. This step is optional.
- 5 Use Supplier-Item Maintenance (80.4.13) to specify inspection parameters for a supplier-item relationship. This step is optional.
- 6 Use Customer-Item Status Maintenance (80.4.17) to specify particular inventory status codes for particular customers. This step is optional.

See Chapter 6, “Defining Items,” on page 87.

Note An additional option, Item Master Maintenance (80.4.5), combines all the first three steps in a single program, so that you can set up generic defaults, site-level defaults, and item-warehouse data in one continuous process. This option is an alternative to using options Item Maintenance (80.4.7), Item-Site Maintenance (80.4.9), and Item-Warehouse Maintenance (80.4.11).

Define Units of Measure

The seventh step is to set up details of the units of measure you want to use in the QAD Warehousing sizing calculations. In practice, you may want to set up these details before you define the warehouses.

- 1 Use Alternate UM Maintenance (80.5.1) to define the alternate units of measure you want to use for sizing calculations for inventory and location capacities.
- 2 Use UM-Group Maintenance (80.5.5) to set up groups of related units of measure, with specified conversion factors between the different units. A UM group can then be attached to an item, with all the relevant conversion factors already defined. This step is optional.
- 3 Use UM Conversion Generation (80.5.9) to attach the conversion factors for UM groups to selected ranges of items. This step is optional.

See Chapter 7, “Sizing,” on page 101.

Note Defining UM groups helps to simplify the process of defining the conversion factors and assigning them to items. QAD Warehousing does not use the UM groups other than to generate the conversion factors in UM Conversion Generation maintenance.

Assign Algorithms to Transactions

The eighth step is to link a specified sequence of algorithms to each transaction type that is used in your internal routings. A range of standard algorithms is supplied with QAD Warehousing, but you can customize these, or add new algorithms, if required.

- 1 Use Algorithm Type Maintenance (80.6.1) to modify the verbosity level for reporting purposes of any of the existing algorithm types. This step is optional.
- 2 Use Algorithm Master Maintenance (80.6.5) to modify the descriptions of existing individual algorithms within each of the algorithm type categories, or to add new algorithms to any of the categories.
- 3 Use Algorithm Assignment Maintenance (80.6.9) to link a specified sequence of algorithms to each transaction type or combination of transaction type, site, warehouse, item, and address. This step is required to define what algorithms QAD Warehousing runs when processing your inventory transactions.

See Chapter 8, “Algorithms,” on page 111.

Define Transaction Processing

The ninth step is to define the processing fields associated with each of the transaction types you are using in your internal routings. Again, in practice, you may want to set up these details before you define warehouses. However, because the main transaction types are supplied with QAD Warehousing and because they take default values from the basic warehouse fields, you may not need to make many alterations to the supplied transaction type fields.

- 1 Use Transaction Type Maintenance (80.7.6) to modify the processing fields for any of the existing transaction types, or to add new transaction types.
- 2 Use Warehouse Transaction Type Maintenance (80.7.10) to modify the processing fields for any of the existing transaction types, in relation to their operation within a specified warehouse. This step is optional.

See Chapter 9, “QAD Warehousing Engine Processing,” on page 141.

When you have completed these setup steps, your QAD Warehousing system is ready for use.

Refer to Section 2, “Using QAD Warehousing,” beginning on page 185 for details of the day-to-day running of the system.

Using QAD Warehousing with QAD Standard Edition

QAD Warehousing can be used with multiple releases of QAD ERP, including QAD Standard Edition, which introduced the concept of domains. Operations can be stored in separate, logical partitions—called *domains*—in a single database. Each domain can have a different base currency, chart of accounts, as well as completely different configurations for manufacturing, distribution, services, and financials. The QAD Warehousing version that can be used with QAD Standard Edition is called QAD Warehousing SSD (shared services domain), since it supports the domain concept.

When you implement QAD Warehousing SSD in an QAD Standard Edition environment, you must follow some general guidelines.

The following are assumed when implementing QAD Warehousing SSD:

- Settings in QAD Warehousing control programs apply to all domains in a database.
- QAD Warehousing can be used with multiple domains, but no cross-domain features are supported. You can use QAD Warehousing functions only within a primary site within the current domain.
- Site-independent settings defined in QAD Warehousing in the functions listed in Table 1.1 apply to all domains within a database.

Table 1.1
Programs with General Settings

Function	Menu	Description
whermnt.p	80.2.13	External Routing Maintenance
whummt.p	80.5.1	Alternate UM Maintenance
whppugmt.p	80.5.5	UM-Group Maintenance
whppugen.p	80.5.9	UM Conversion Generation
whaltymt.p	80.6.1	Algorithm Type Maintenance
whalmmt.p	80.6.5	Algorithm Master Maintenance
whtrttmt.p	80.7.6	Transaction Type Maintenance
whlmtkmt.p	80.11.1	Task Maintenance
whlmatmt.p	80.11.3	Alternate Task Maintenance
whlmttmt.p	80.11.5	Task Times Maintenance
whlmtamt.p	80.11.7	Task Assignment Maintenance
whlmusmt.p	80.11.13	User Maintenance
whsyugmt.p	80.11.15	Group Maintenance
whlmcamt.p	80.11.17	Calendar Maintenance
whsyugmt.p	80.19.1	User Group Maintenance
whcodemt.p	80.24.21.1	Generalized Codes Maintenance

QAD Warehousing SSD does not work with Enhanced Controls. Enhanced Controls tracks changes that were made for every record by using a unique key value. Enhanced Controls adds the unique key to all QAD ERP tables. For QAD Warehousing SSD, the key is not added to QAD Warehousing tables and the Enhanced Controls functionality does not apply.

When implementing QAD Warehousing SSD, you should ensure that:

- Order numbers are unique across domains in the database; the same order number does not exist in two domains. You can do this by using a unique order prefix for each domain in the various programs that manage order numbering such as Sales Order Control (7.1.24).
- Item, customer, and supplier codes are either unique across domains or if the same numbers exist in more than one domain, they point to identical information. So, you can have a physical item, customer, or supplier with the same code in more than one domain or a with a different code in more than one domain; however, you cannot have the same code in more than one domain for the item, customer, or supplier if the code represents a different physical item or a different customer or supplier.

Utility for Domains

During installation, many generalized code values are predefined and loaded into the system. When you create a new domain, this default system data is included. You can use Generalized Codes/Domain Utility (80.24.21.4) to specify a domain that you want to synchronize with QAD Warehousing system data field values. You set QAD Warehousing System Data to Yes in Generalized Codes Maintenance (80.24.21.1) to specify that system data field values you define are for QAD Warehousing system data.

Defining Warehouses

This chapter explains how the warehouse fields determine the way QAD Warehousing operates, and describes how you can use the warehouse maintenance functions to configure the operation of QAD Warehousing in your own warehouses. It also explains how you can define structured sequences of reference numbers to be used for pallet references and for setting up a range of locations in Mass Location Maintenance. The chapter is divided into the following major sections:

Overview 18

Discusses warehouse master lists, and inventory account synchronization.

Control File Maintenance 20

Explains how to use System Control File and Warehouse Control File Maintenance.

Warehouse Maintenance 24

Explains how to use Warehouse Maintenance, the General Data frame, QAD location data, the Transaction Create Defaults frame, Transaction Confirmation Defaults frame, Picking defaults, the Cycle Count Defaults frame, the Miscellaneous frame, the Printing frame, and define a warehouse for a site.

Warehouse Master List Maintenance 40

Explains how to use Warehouse Master List Maintenance.

Sequence Definition 42

Explains how to use Sequence Definition Maintenance.

Warehouse Report and Inquiry Functions 45

Lists and describes different warehouse reports and inquiries.

Overview

The first chapter of this user guide introduced the structure of a QAD Warehousing site and the different entities that you need to set up. In its broadest possible definition, a warehouse consists of a grouping of storage locations. The logical grouping of these storage locations is further broken down into a hierarchy of internal routing groups, storage location groups, and, at the bottom of the hierarchy, the locations. In parallel with this logical structure is one relating to working practices that breaks the locations down into work location groups within the warehouse.

Managing the movement of inventory within your warehouses is a matter of specifying internal routings, which define a sequence of movements from internal routing group to internal routing group. These internal routings are associated with transaction types and items within the warehouse.

Example When a particular item is received as a result of a purchase order, the internal routing that is linked to the purchase order receipt transaction type for the item determines where the item is received and what route it takes through unpacking and inspection before it arrives in bulk storage.

You set up each warehousing entities—warehouses, internal routing groups, storage location groups, work location groups, locations, and internal routings—by setting values for a number of fields that control how that entity operates within your inventory management system. For example, for each storage location group, you can define fields that control whether issue of stock from locations in the group is allowed, and whether receipt of stock into locations in the group is allowed.

Because the warehousing structure is in the form of a hierarchy, many of the fields are applied at more than one level in the structure.

For example, you can specify at the warehouse level whether locations in the warehouse are allowed to contain stock with mixed inventory status codes. The value you specify for the warehouse becomes the default setting for each storage location group within the warehouse. At the storage location group level, you can either accept the default from the warehouse level, or override it with a different setting.

Because you can have several related warehouses within a site, a level in the hierarchy exists above warehouse defined in the Warehouse Control File Maintenance (80.1.24). The fields you set at this level do not control anything directly, but become defaults for each warehouse you set up. The highest level of all is the System Control File (80.24.24). However, the system control fields relate to overall use of the QAD Warehousing system, and do not provide defaults lower down the hierarchy.

The most efficient way to set up your warehousing entities, therefore, is to start at the top of the hierarchy and work down. In this way, you only need to enter exceptions to the general field settings at the lower levels.

Use of both System Control File and Warehouse Control File Maintenance is described in “Control File Maintenance” on page 20; use of Warehouse Maintenance is described in “Warehouse Maintenance” on page 24.

Warehouse Master Lists

Warehouses and individual QAD Warehousing locations are also defined as standard QAD ERP locations. This enables them to use both the standard QAD ERP facilities and the additional QAD Warehousing facilities. One instance of this combined functionality is the feature where each item can have a default location. In QAD Warehousing, this default location can be a dummy location that is defined as a warehouse. The QAD Warehousing functions then take over from standard QAD ERP functions to find the actual location within the warehouse for the specified item.

However, you can specify a different warehouse for the item, depending on the type of inventory transaction being performed. For example, you can receive items in one warehouse, but pick for sales orders in another.

QAD Warehousing supports this by letting you specify master lists of warehouses, which define different warehouses for different transaction types. You can attach one of these warehouse master lists to an item instead of a default location.

Example When a purchase order line is created, the system examines the Location field in the line. If it identifies the code as a warehouse master list, it looks in the list for the warehouse specified for purchase order receipts. That warehouse is then used as the location for the item.

Use of Warehouse Master List Maintenance is described in “Warehouse Master List Maintenance” on page 40.

Inventory Account Synchronization

QAD ERP Inventory accounts are specified by product line. The cost of the full on-hand quantity of an item is posted to the general ledger (GL) account identified as the Inventory account for that item’s product line. This is how QAD ERP represents the value of your company’s inventory within the general ledger. It is adjusted by any inventory transactions or cost adjustments that occur.

QAD ERP lets you further refine this accounting process by defining a different set of Inventory accounts for each site. This is important since when an item is stored in multiple sites, site-specific GL accounts let you generate separate balance sheets for each site. If an Inventory account is not defined for a site, product line accounts are used.

This accounting refinement is extended still further. Within any site, you can give each individual location a different set of accounts. Without QAD Warehousing, this process is frequently used to store all consignment stock—inventory held by your company but owned by somebody else—in a separate location that has a different set of Inventory accounts. GL reports then split the costs of this stock out to a different account.

In summary, QAD ERP checks to see which Inventory accounts are affected whenever an inventory movement occurs. It does this by looking in the following order:

- 1 Accounts defined for a product line/site/location combination
- 2 Accounts defined for a product line/site combination
- 3 If neither of these is available, accounts defined for the product line

Within QAD Warehousing, you can specify GL accounts at an additional level: for the warehouse. This lets you set up different accounts for all inventories stored in a specific warehouse. QAD Warehousing makes this possible using a process called account synchronization.

Based on standard QAD ERP features that support GL accounts at the location level, if you define Inventory accounts for a product line/site/warehouse combination, QAD Warehousing automatically duplicates this definition for every location within that warehouse.

Example Warehouse W in site S contains 1000 locations. When you create an entry for product line PL in Inventory Account Maintenance (1.2.13) (product line set to PL, site set to S, location set to W), QAD Warehousing creates a duplicate record for every location within warehouse W. The single record you create results in 1001 Inventory account records.

The Inventory Account Sync field in Warehouse Maintenance, which defaults from Warehouse Control File Maintenance, lets you specify how you want your Inventory accounts synchronized for a warehouse. The options are Full, Partial, and Blank.

- Full creates Inventory account records for the locations as described in the previous example, over-writing any existing definitions. That is, location accounts are always synchronized with the corresponding warehouse accounts.
- Partial is similar. It creates Inventory account records for the locations, but any existing location definitions are not over-written. This allows some location accounts to be different from the warehouse accounts.
- Blank prevents any automatic Inventory account synchronization. Instead, you can use QAD Warehousing Inventory Account Synchronization (80.1.13) to perform that function manually. With this approach, you define all of the warehouse accounts required in Inventory Account Maintenance without creating any corresponding location accounts. The location accounts are created only when you run Account Synchronization.

See “Inventory Account Sync” on page 26.

Control File Maintenance

Two control files affect the way QAD Warehousing operates:

- Use System Control File (80.24.24) to set a few fields that affect the entire QAD Warehousing setup.
- Use Warehouse Control File Maintenance (80.1.24) to set system-wide default values for fields that you can specify for individual warehouses. These values default to each warehouse, but you can modify them as required.

System Control File

System Control File (80.24.24) is shown in Figure 2.1.

Fig. 2.1
System Control File (80.24.24)

The screenshot shows a window titled "System Control File" with a toolbar containing "Go To", "Actions", "Copy", "Print", and "Preview". The main content area displays the following configuration options:

- Version: QAD Warehousing 3.0.7(eB2.1 SP11)
- Active?: ☒
- Template Delimiter: .
- Inventory History?: ☒
- Reference Uniqueness Level: L (dropdown menu)
- Verbosity Level: 999
- Cycle Count Reason: COUNT (dropdown menu)

Active. Indicate whether QAD Warehousing is active. Set this to Yes when you want to implement QAD Warehousing. If this field is No, none of the QAD Warehousing functions operate, and QAD ERP uses all the standard non-QAD Warehousing functions.

Template Delimiter. Enter the ASCII character to use as the delimiter between fields. This is relevant when QAD Warehousing data is downloaded to another system; for example, for producing pallet labels. The default is the tilde character (~), but you can enter another delimiter, if required.

Inventory History. Indicate whether the system should keep a permanent history of inventory master records. These relate to movements of inventory with a sizing type of R (reference), where the reference unit of measure is, for example, a pallet. The system creates an inventory master record when the reference stock is received, and this record is moved when the stock is moved, along with the inventory detail records. When the inventory is shipped or broken down into inventory other than sizing type R, the inventory master record is deleted if you set Inventory History to No, or permanently retained if you set it to Yes. Using inventory history lets you perform pallet tracking audits.

Reference Uniqueness Level. Indicate how you want the system to enforce unique pallet reference numbers. Valid entries are:

- Blank—References are unique throughout the system.
- S—References are unique within each site.
- W—References are unique within each warehouse.
- L—References are unique within each location.
- B—References are unique within each batch/lot/serial.

The L and B options effectively tell the system that the references are not actually unique, but prevent duplicate references being used in the same location or batch.

Verbosity Level. This field determines how many messages the system captures to be displayed on the Verbosity Report (80.24.11). You can set a value in the range 0 to 999 depending on the amount of message detail you want include, for example, for use when solving problems.

- Setting a low value such as 10 or 20 causes only the most important system messages to be reported.
- Setting a value of 999 causes all system messages to be reported.
- Setting a value of 0 switches off the function; no messages are reported.

Note Be careful when setting this field value. Even a low value can affect system performance. It is intended to be used only for trouble-shooting purposes.

Cycle Count Reason. This field sets the default for the reason for generating a cycle count, which you can enter in Cycle Count Generation (80.8.12). You can override the default as required when generating a cycle count. See “Generating a Cycle Count” on page 367.

Warehouse Control File Maintenance

Use Warehouse Control File Maintenance (80.1.24) to set default values for fields associated with individual warehouses.

Fig. 2.2
Warehouse Control File Maintenance (80.1.24)

General Defaults

Default Warehouse Inventory Status. You set up warehouses as dummy locations within QAD ERP. Each location, including QAD Warehousing locations, takes as a default value the inventory status from the site definition. However, for warehouses you normally want an inventory status that is unavailable, so that you do not hold inventory in the warehouse dummy location. This field lets you set up a default inventory status for each warehouse.

Note The inventory status you specify for your warehouses should be not available but nettable. Use Inventory Status Code Maintenance (1.1.1) to set up your inventory status codes.

The remaining fields in the General Defaults frame, the Transaction Create Defaults frame, and the Transaction Confirmation Defaults frame set default values used when you define individual warehouse details.

See “Warehouse Maintenance” on page 24.

The Picking Defaults frame is shown in Figure 2.3.

Fig. 2.3
Warehouse Control File, Picking Defaults

The screenshot shows the 'Warehouse Control File Maint.' window with the 'Picking Defaults' tab selected. The window has a menu bar with 'Go To', 'Actions', 'Copy', 'Print', and 'Preview'. The 'Picking Defaults' section contains the following fields:

Field	Value
Start Picking Level	10
End Picking Level	40
Single Level Picking ?	☐
Flav C Hard/Soft Assign:	Hard
Max. Trans. Assign:	0
Multi-bin Pick flav C Sort:	0
Def. ID Print Flavor C:	☐
Repick Type:	
Expire Date (Days):	0

The fields in the Picking Defaults frame set the default values for defining individual warehouse details.

See “Picking Defaults” on page 32.

The Hold Defaults frame is shown in Figure 2.4.

Fig. 2.4
Warehouse Control File, Hold Defaults

The screenshot shows the 'Warehouse Control File Maint.' window with the 'Hold Defaults' tab selected. The 'Hold Defaults' section contains the following fields:

Field	Value
Allow Issues ?	☐
Allow Incoming Returns ?	☐
Allow Receipts ?	☐
Allow Outgoing Returns ?	☐
Allow Picking ?	☐
Allow Cycle Counts ?	☐

The fields in the Hold Defaults frame set the default values for defining individual warehouse details.

See “Hold Defaults” on page 33.

The Cycle Count Defaults and Miscellaneous frames are shown in Figure 2.5.

Fig. 2.5
Warehouse Control File, Cycle Count Defaults and Miscellaneous

The screenshot shows the 'Warehouse Control File Maint.' window with the 'Cycle Count Defaults' and 'Miscellaneous' tabs selected. The 'Cycle Count Defaults' section contains the following fields:

Field	Value
Count Task	COUNT
Recount Task	RECOUNT
Count System Code	RF
Recount System Code	RF
Count Priority	100
Recount Priority	100
Count Increment	10
Recount Increment	10
Count on Fail ?	☒
"Count Status" Option	0
Use Recount UM of SLG	☐
Blind Location Audit	☐

The 'Miscellaneous' section contains the following fields:

Field	Value
Mode	
Optimized Storage ?	☐
Opportunity Counts ?	☐
Transaction Search Window	
OPC Frequency	
Check Digits ?	☐
Auto Replenish ?	☐
Fail Status	
Auto Replenish %	
Hold Time (Min)	
Completion Option	
Fail Option	
Repick Option	

The fields in the Cycle Count Defaults frame and the Miscellaneous frame set default values used when you set up individual warehouse details.

See “Cycle Count Defaults” on page 34, and “Miscellaneous” on page 35 for details.

The Printer Defaults frame is shown in Figure 2.6.

Fig. 2.6
Warehouse Control File, Printer Defaults

Printer Defaults

Print ID ? :

ID Printer:

Number Across:

Lines of Each:

Width of Each:

132 Mode ? : ☐

Print Mode:

Use External ? : ☒

Print on Create ? : ☐

Print on Conf ? : ☐

Task Printer:

Number Across:

Lines of Each:

Width of Each:

132 Mode ? : ☐

Print Mode (Cr):

Print Mode (Conf):

Use External ? : ☐

Print Except ? : ☐

Print Mode:

Manufact. Code:

Insp Printer:

Number Across:

Lines of Each:

Width of Each:

Form Printer:

132 Mode ? : ☐

Use External ? : ☐

External Device Printer:

Number Across:

Lines of Each:

Width of Each:

132 Mode ? : ☐

132 Mode ? : ☐

Use External ? : ☐

Print Mode (Conf):

Print Flavor:

Print by W.Loc.Gp. ? : ☐

The fields in the Printer Defaults frame set default values used when you set up individual warehouse details.

See “Printing” on page 170 for details.

Warehouse Maintenance

Use Warehouse Maintenance (80.1.1) to set values for the fields associated with individual warehouses. Some of these fields directly control aspects of warehouse operation under QAD Warehousing, while other fields act as default settings further down the hierarchy for internal routings or storage location groups associated with a warehouse. Most of the fields in Warehouse Maintenance default from Warehouse Control File Maintenance.

See “Warehouse Control File Maintenance” on page 22.

Figure 2.7 illustrates the first frame of Warehouse Maintenance (80.1.1).

Fig. 2.7
Warehouse Maintenance (80.1.1)

Enter values for the following fields:

Site. Enter the name of an existing site.

Warehouse. To modify the fields for an existing warehouse, enter the name of an existing warehouse.

To create a new warehouse, enter the name of the warehouse.

General Data

The General Data frame contains fields that relate to overall operation of the warehouse.

Description. Enter an optional text description of the warehouse.

Address. Enter the code for the address of the warehouse. Set up addresses for the company using Company Address Maintenance (2.12). This field is for information only.

Active. Enter Yes to make this an active warehouse using all the QAD Warehousing functions. If you enter No, the warehouse is inactive and does not use the QAD Warehousing functions.

Reference Sequence ID. Enter the code that defines the format and sequence for reference numbers used to identify items such as pallets. The sequence definition format codes are set up using Sequence Definition Maintenance (80.24.1). See “Sequence Definition” on page 42.

Packaging Sequence ID. Enter the code that defines the format and sequence for packaging units, such as boxes or eaches. The sequence definition format codes are set up using Sequence Definition Maintenance (80.24.1). See “Sequence Definition” on page 42.

Flavor. Enter the code to define the style and format of Radio Frequency screens to be used for displaying QAD Warehousing information. The Flavor codes are set up in Generalized Code Maintenance (36.2.13), and relate to display of information in situations such as forklift truck screens or Radio Data Terminals (RDTs).

Inventory Account Sync. This field controls the synchronization of warehouse, location, and Inventory account records. The options are as follows:

F (Full synchronization)

P (Partial synchronization)

Blank (no synchronization)

See “Inventory Account Synchronization” on page 19 for a more detailed explanation.

Allow Mixed Status Codes. Indicate whether a single location in this warehouse can contain inventory with a mixture of different status codes. Enter Yes to allow mixed status codes; otherwise, enter No. This setting defaults to storage location groups within this warehouse.

Logistics UM Tolerance. Enter the tolerance percentage to be used when determining whether a location containing reference stock, such as pallets, is full.

Example If your standard pallet can hold 100 items, and you set the tolerance percentage to 5%, a location containing a pallet with 95 items is considered full, while one with 94 items is not.

This value defaults to the storage location groups you set up within this warehouse.

Log With Base UM Only. Indicate if the Logistic UM must be used when an item is received in a UM other than this base UM. For instance, if the logistic UM of an item is pl (pallet), the item is received in bx (box), and the base UM is ea (each), the system generates pallet numbers only if Log With Base UM Only is set to No. If set to Yes, no reference is generated.

Comments. Enter Yes to display a standard page of comments when you press Go.

QAD Location Data

Because the warehouse is handled as a dummy location, you must specify the standard location data, as for any other location in QAD ERP. This frame displays the relevant QAD location fields.

The Description is an optional text description of the location.

The inventory status defines the status of any inventory that is placed in the dummy location that corresponds to this warehouse. It is strongly recommended that you choose a status that defines the inventory as unavailable. This status defaults from the default warehouse inventory status field defined in Warehouse Control File Maintenance (80.24.1).

The Single Item and Single Lot/Reference fields are both automatically set to No. The dummy location—the warehouse—must be allowed to contain multiple items and multiple lot/references.

You can enter values for the other fields, but these do not affect the operation of the QAD Warehousing functions. Refer to the QAD ERP user documentation for further details of these fields and their use.

See *User Guide: Master Data*.

Transaction Create Defaults

Figure 2.8 illustrates the Transaction Create Defaults frame.

Fig. 2.8
Warehouse Maintenance, Transaction Create Defaults

Site: 00009
Warehouse: whse09

Transaction Create Defaults

Confirmed at Source ? ☐

System Code: RF

Two Phase ? ☒

Keep From Status ? ☒

Task: TRANSFER

Priority: 100

Increment: 10

The fields in this frame determine the characteristics of stock movement transactions that are created in the warehouse. The values you enter here default to all internal routings and work location groups within this warehouse and can be changed as needed.

Confirmed at Source. Enter Yes for transactions that are confirmed by the warehouse staff who initiate the stock movement; enter No for transactions that are confirmed by the warehouse staff who complete the stock movement at its destination.

Example In a warehouse with the three basic work areas (Receipts, Stores, and Dispatch) and two work teams (Receiving and Shipping), the receiving team logs on to their QAD Warehousing devices in the Receipts area, and the shipping team logs on in the Dispatch area. Put-away transactions are created FROM receipts TO stores, and are confirmed by the receiving team. These transactions are defined with Confirmed at Source set to Yes. Picking transactions are created FROM Stores TO Dispatch, and are confirmed by the Shipping team. These transactions are defined with Confirmed at Source set to No since they are confirmed at their destination.

System Code. Specify the type of QAD Warehousing screen that confirms transactions:

Blank: Normal QAD Warehousing screens are used.

RF: Transactions are confirmed using Radio Data Terminals (RDTs), also known as Radio Frequency (RF) terminals.

This field defaults to the internal routings and work location groups that you set up within this warehouse

Two Phase. This field defaults to the internal routings and work location groups that you set up within this warehouse.

No: Inventory movements are created and confirmed in a single step, the single phase.

Yes: Inventory movements are created in one step—the first phase— and confirmed in a second step, the second phase. Between the two phases, the stock is marked as being booked out of the first location and expected in the second location. However, the anticipated inventory levels are only confirmed when the stock is confirmed as arriving at the destination.

Note Two-phase operation is a much safer way of ensuring precision in inventory management. Single-phase operation should only be used in special circumstances.

Keep From Status. Indicate how the system should set the status of transferred inventory.

No: The inventory takes its status from the new location.

Yes: The inventory status of the transferred inventory retains its original value.

This field defaults to the internal routings and work location groups that you set up within this warehouse.

Task. Specify the task associated with any inventory transaction that is created. This field defaults to internal routings and work location groups that you set up within this warehouse. You use it here simply to specify the most frequent task. Set up task codes in Task Maintenance (80.11.1), described in “Defining Tasks” on page 153.

Priority. Assign a default priority value to transactions. The value you enter here defaults to the internal routings and work location groups that you set up within this warehouse. You normally assign different priorities to different types of transaction. The RDTs select the highest priority task as the next action: the lower the number you specify, the lower the priority.

Increment. Specify the increment that is added to a transaction’s priority as time elapses when you run the increment addition program as a background process.

Specifying an increment prevents the situation where a relatively low priority transaction never reaches the top of the priority list, and therefore, never gets performed. By gradually incrementing the priority, you ensure that even low priority tasks are eventually performed. This field defaults to the internal routings and work location groups that you set up within this warehouse.

Transaction Confirmation Defaults

Figure 2.9 illustrates the Transaction Confirmation Defaults frame.

Fig. 2.9
Warehouse Maintenance, Transaction Confirmation Defaults

Transaction Confirmation Defaults	
"From Location" Option:	"To Location" Option:
"From Item" Option:	"To Item" Option:
"From Lot/Serial" Option:	"To Lot/Serial" Option:
"From Reference" Option:	"To Reference" Option:
Allow Quantity Increase ? ☐	Alternative UM Option:
Allow Quantity Decrease ? ☐	Allow Task Switching ? ☐
Quantity Change Option:	

The fields in this frame determine the characteristics of the confirmation of stock movements entered in the warehouse. The values you enter here default to internal routings within this warehouse, but you can change the values for individual routings.

Note During transaction confirmation, you can change location, item, lot, or reference only if source inventory is not detail allocated. If a detail allocation exists, the inventory record cannot be exchanged for another one. In this case, an error message displays.

From Location Option. Enter a number to define whether warehouse staff are allowed to modify the From Location aspect of inventory transactions, and, if so, what action is required. The options are as follows:

- 0 No change allowed.
- 1 Issue a warning if the From location is changed.
- 2 Request confirmation if the From location is changed.
- 3 Require re-entry if the From location is changed.

From Item Option. Enter a number to define whether warehouse staff are allowed to modify the From Item aspect of inventory transactions, and, if so, what action is required. The options are as follows:

- 0 No change allowed.
- 1 Issue a warning if the From Item is changed.
- 2 Request confirmation if the From Item is changed.
- 3 Require re-entry if the From Item is changed.

From Lot/Serial Option. Enter a number to define whether warehouse staff are allowed to modify the From Lot/Serial aspect of inventory transactions, and, if so, what action is required. The options are as follows:

- 0 No change allowed.
- 1 Issue a warning if the From lot/serial is changed.
- 2 Request confirmation if the From lot/serial is changed.
- 3 Require re-entry if the From lot/serial is changed.

From Reference Option. Enter a number to define whether warehouse staff are allowed to modify the From Reference aspect of inventory transactions, and, if so, what action is required. The options are as follows:

- 0 No change allowed.
- 1 Issue a warning if the From Reference is changed.
- 2 Request confirmation if the From Reference is changed.
- 3 Require re-entry if the From Reference is changed.

Allow Quantity Increase. Enter Yes if warehouse staff are allowed to increase the quantity when a transaction is confirmed; otherwise, enter No.

Example You might want sales orders to be picked in whole packaging quantities from Bulk Storage and then split down to the required quantity in a Repackaging area. The internal routing from Bulk Storage to Repackaging would then allow an increase in the original transaction quantity.

Allow Quantity Decrease. Enter Yes if warehouse staff are allowed to decrease the quantity when a transaction is confirmed; otherwise, enter No. This is normally set to Yes, unless your inventory management system can guarantee that sufficient inventory is always available in every possible circumstance.

Quantity Change Option. This field defines the action to take when the quantity is changed as controlled by the Allow Quantity Increase and Allow Quantity Decrease settings. The options are as follows:

- 0 Accept the change.
- 1 Accept the change and display a warning.
- 2 Accept the change after positive confirmation.
- 3 Force second entry of the quantity to confirm.

To Location Option. Enter a number to define whether warehouse staff are allowed to modify the To Location aspect of inventory transactions, and, if so, what action is required. The options are as follows:

- 0 No change allowed
- 1 Reprompt; must be different location
- 2 Reprompt; can be same location
- 3 Reprompt; can be same location, warn if different
- 4 Reprompt; can be same location, confirm if different
- 5 Reprompt; can be same location, re-enter if different

To Item Option. Enter a number to define whether warehouse staff are allowed to modify the To Item aspect of inventory transactions, and, if so, what action is required. The options are as follows:

- 0 No change allowed
- 1 Reprompt; must be different item
- 2 Reprompt; can be same item
- 3 Reprompt; can be same item, warn if different
- 4 Reprompt; can be same item, confirm if different
- 5 Reprompt; can be same item, re-enter if different

To Lot/Serial Option. Enter a number to define whether warehouse staff are allowed to modify the To Lot/Serial aspect of inventory transactions, and, if so, what action is required. The options are as follows:

- 0 No change allowed
- 1 Blank the lot/serial field
- 2 Reprompt; must be new, non-blank lot/serial number
- 3 Reprompt; allow old lot/serial number
- 4 Reprompt; any value of lot/serial number allowed
- 5 3 + warning if changed
- 6 4 + warning if changed
- 7 3 + confirmation of change required
- 8 4 + confirmation of change required
- 9 3 + re-entry of change required
- 10 4 + re-entry of change required

To Reference Option. Enter a number to define whether warehouse staff are allowed to modify the To Reference aspect of inventory transactions, and, if so, what action is required. The options are as follows:

- 0 No change allowed
- 1 Blank the Reference field
- 2 Reprompt; a new, non-blank reference is required
- 3 Reprompt; allow old reference, blank reference not allowed
- 4 Reprompt; any value of reference is allowed
- 5 Automatically regenerate a new reference
- 6 3 + warning if changed

- 7 4 + warning if changed
- 8 3 + confirmation required if changed
- 9 4 + confirmation required if changed
- 10 3 + re-entry required if changed
- 11 4 + re-entry required if changed
- 12 5 + Reprompt

An example of a reference change is to facilitate backflushing. When backflushing is used, either in repetitive production or discrete production (work orders), it is easier to issue inventory if it is as standard as possible: no lot/serial (when possible), and no pallet number (reference). Using option 1 that blanks the reference lets you do that.

Another example is used for multi-bin pickup. When processing a multi-bin pickup movement, it is possible to assign a new pallet number to all items picked during the process. Option 12 that generates a new reference with a possible reprompt is the option to use in that case.

Note Some of the To Reference options are less accurate than the following alternate UM option. For instance, if an inventory record has a reference and an alternate UM pl and you use To Reference option 1 to blank the reference, the alternate UM pl is still on record, which is wrong. Instead, if you use an alternate UM option to set the Alternate UM field to the item's default stocking UM (1) together with a UM change action that blanks the reference when going from pl to ea (each), you obtain the expected result. See "Alternate UM Maintenance" on page 105.

Alternate UM Option. This field defines the action to be performed regarding any change to the Alternate Unit of Measure field during the transfer of any inventory moved by this sequence in an internal routing. The options are as follows:

- 0 No change allowed
- 1 Set the Alternate UM field to the item's default stocking UM
- 2 Reprompt and force entry of a new UM: the item's default stocking UM is not allowed
- 3 Reprompt, allow use of the old alternate UM, but not the item's default stocking UM
- 4 Reprompt, allow any value including the old alternate UM or the item's default stocking UM
- 5 Automatically set the alternate UM to the default of the From storage location group
- 6 Automatically set the alternate UM to the UM of the internal routing
- 7 3 + warning if changed
- 8 4 + warning if changed
- 9 3 + confirmation required if changed
- 10 4 + confirmation required if changed
- 11 3 + re-entry required if changed
- 12 4 + re-entry required if changed
- 13 Automatically set the alternate UM to the default of the To storage location group
- 14 Put-away in base UM, then take SLG acquisition UM

Option 14 is very useful for replenishment done using simulation functions on the Algorithm Simulation menu (80.6.21).

Repick Type. This field defines the transaction type that should be used if a repick is required. The entry you make here defaults to internal routings you set up in this warehouse.

It is possible when confirming an inventory transaction, if allowed by the quantity change fields described above, to confirm a quantity picked less than the quantity expected. In this case, warehouse staff can set a field at confirmation to allow a repick of the missing items. For the repick, QAD Warehousing uses an internal routing and a picking algorithm for the transaction type you specify in the Repick Type field.

Note This repick transaction type must start with PICK-, and must be defined in Transaction Type Maintenance (80.7.6). If you leave the Repick Type field blank, the repick uses the same transaction type as the original picking.

Allow Task Switching. This field is used to specify for a work location group whether warehouse staff are allowed to switch to a different task. The setting of this field is important whenever any of the task confirmation fields has been set to allow a different value—for example, of a reference or lot/serial number, from that which was expected. You must indicate whether a user who enters a different reference is changing the value for the current task or switching to another task. In Warehouse Maintenance, you set the default for each work location group in the warehouse.

No: Prevent task switching. When a user enters a different value, QAD Warehousing assumes that the value is being changed for the current task.

Yes: Allow task switching. When a user enters a different value such as a reference, QAD Warehousing checks to see whether another task exists with the reference.

When a task is hard assigned, it cannot be switched with another task.

Picking Defaults

Figure 2.10 illustrates the Picking frame in Warehouse Maintenance.

Fig. 2.10
Warehouse Maintenance, Picking

Picking

Start Picking Level:

End Picking Level:

Single Level Picking?: ☐

Flav C Hard/Soft Assign.:

Max. Trans. Assign.:

Multi-bin Pick. flav C Sort.:

Def. ID Print Flavor C.: ☐

Repick Type:

Expire Date (Days):

The fields in these frames define which storage location groups the system should use for picking inventory. Each SLG has a picking level defined. Any SLG with a picking level that is not between the Start and End levels you specify here is not considered for picking by the picking algorithms in this warehouse.

Start Picking Level. Enter the numerical code for the picking level at which picking is to start. The picking algorithms do not consider any storage location group with a picking level below that value.

End Picking Level. Enter the numerical code for the picking level at which picking is to end. The picking algorithms do not consider any storage location group with a picking level above that value.

Single Level Picking. Enter Yes if all the picking quantity must be taken from only one picking level; otherwise, enter No.

Note Start and end picking levels are useful to restrict picking to one storage location group. You can define the start and end picking levels for a given transaction type within Warehouse-Transaction Type Maintenance (80.7.10). See “Storage Location Group Maintenance” on page 65.

Flavor C Hard/Soft Assign. Flavor C is the multi-bin pickup process. This field indicates if transactions for this process are reserved for a given person and can be exchanged with another one (soft), or not (hard).

Max Trans Assign. For a Multi-Bin process, multiple transactions having, for instance, the destination in common, are reserved for a given person. The Maximum Number of Transactions Assigned indicates how many transactions are reserved for such a process.

Multi-Bin Pick Flavor C Sort. The Sort Code indicates the criteria for grouping transactions for a multi-bin pickup process. The minimum requirement is to have a common destination.

- 0 Sort by order and destination location
- 1 Sort by ship-to and destination location
- 2 Sort by destination location

Default ID Print Flavor C. Specify the default value for the Print ID field that appears at the confirmation of a multi-bin pickup movement.

Hold Defaults

You can use Hold Maintenance (80.3.22.1) to put stock on hold so that it is not picked. You can put a hold on any entity from a warehouse: a storage location group, a location, or an item. The values you define in this frame default when you put stock on hold, but you can modify the settings as needed.

Figure 2.11 illustrates the Hold Defaults frame in Warehouse Maintenance.

Fig. 2.11
Warehouse Maintenance, Hold Defaults

Hold Defaults			
Allow Issues ?:	☐	Allow Incoming Returns ?:	☐
Allow Receipts ?:	☐	Allow Outgoing Returns ?:	☐
Allow Picking ?:	☐	Allow Cycle Counts ?:	☐

Allow Issues. Enter Yes if stock on hold can be issued or moved to another location; otherwise, enter No.

Allow Receipts. Enter Yes if stock can be received into the hold location; otherwise, enter No.

Allow Picking. Enter Yes if picking from the hold location is allowed; otherwise, enter No.

Allow Incoming Returns. Enter Yes if stock returned from a customer can be placed in the hold location; otherwise, enter No.

Allow Outgoing Returns. Enter Yes if stock to be returned to a supplier can be issued from the hold location; otherwise, enter No.

Allow Cycle Counts. Enter Yes if the hold location is to be included in system-generated cycle counts; otherwise, enter No.

Cycle Count Defaults

The Cycle Count Defaults frame is shown in Figure 2.12.

Fig. 2.12
Warehouse Maintenance, Cycle Count Defaults

Cycle Count Defaults	
Count Task:	COUNT
Count System Code:	RF
Count Priority:	100
Count Increment:	10
Count on Fail ?	☒
Use Recount UM of SLG:	☐
Recount Task:	RECOUNT
Recount System Code:	RF
Recount Priority:	100
Recount Increment:	10
'Count Status' Option:	0
Blind Location Audit:	☐

The fields in this frame control the way cycle counts and recounts are performed. The values you enter here default to all work location groups you set up within this warehouse, but you can change the values for individual work location groups.

Count Task. Specify the task of any cycle counts created in the work location group. The tasks must already have been set up in Task Maintenance.

Count System Code. Specify the system code associated with any cycle counts created in the work location group. The system code determines the type of QAD Warehousing screen that is used to confirm cycle count transactions. Leave blank for normal QAD Warehousing screens; enter RF for RDT screens.

Count Priority. Specify a priority value for cycle count transactions created in the work location group. The RDTs select the highest priority task as the next action. The higher the number you specify, the higher the priority.

Count Increment. Specify the increment that is added to a cycle count transaction's priority as time elapses, if you run the increment addition program—for example, as a background process. You use this facility to prevent low priority tasks from never reaching the top of the priority list, and, therefore, never being performed.

Count on Fail. Indicate whether a cycle count should be automatically generated for the inventory if that inventory is failed, for example, when a transaction is completed for less than the required quantity.

Use Recount UM of SLG. Indicate whether recounts should result in inventory with the alternate unit of measure specified for the storage location group.

This field is especially useful when a CIM load in Cycle Count Entry (3.14) is required to load the stock into the system. The way session triggers work prevents the system from creating the alternate UM correctly. The consequence is an incorrect capacity calculation. When this field is set to Yes, the system gives any pallet recounted in Cycle Count Entry the alternate UM defined in the recount UM of the corresponding storage location group.

See “Alternate UM Maintenance” on page 105.

Recount Task. This field is used to specify the task of any recounts created in the work location group. The tasks must already have been set up in Task Maintenance.

Recount System Code. Specify the system code for any recounts created in the work location group. System codes define the type of QAD Warehousing screen that is used to confirm recount transactions, blank for normal QAD Warehousing screens, RF for RDT screens.

Recount Priority. Assigns a priority value to recount transactions created in the work location group. The RDTs select the highest priority task as the next action: the higher the number you specify, the higher the priority.

Recount Increment. Specify the increment that is added to a recount transaction's priority as time elapses, if you run the increment addition program—for example, as a background process. You use this facility to prevent low priority tasks from never reaching the top of the priority list, and, therefore, never being performed.

Count Status Option. Enter a number to define how the system manages the inventory status upon confirmation of a recount or in-tolerance count in this storage location group. In Warehouse Maintenance, you set the default for each SLG in the warehouse.

The options are as follows:

- 0 No status change.
- 1 Change to Location Status: The status of the inventory is changed to the default inventory status of the location.
- 2 Status change based on Fail Status: The status of the inventory is changed to the good status associated with the current fail status in Inventory Status Maintenance (80.8.15).

Blind Location Audit. Indicate whether you want the recounted quantity displayed on the RF during a cycle recount.

No (the default): The system displays a 0 (zero) on the RF and staff must enter a value for the recounted stock.

Yes: The value of the recounted stock displays on the RF and staff can press Enter to validate the value.

Miscellaneous

The Miscellaneous frame is shown in Figure 2.13.

Fig. 2.13
Warehouse Maintenance, Miscellaneous

The screenshot shows a window titled "Miscellaneous" with the following fields and options:

- Mode:
- Opportunity Counts ? ☐
- DPC Frequency:
- Auto Replenish ? ☐
- Auto Replenish %:
- Completion Option:
- Fail Option:
- Optimized Storage ? ☐
- Transaction Search Window:
- Check Digits ? ☐
- Fail Status:
- Hold Time (Min):
- Repick Option:

The fields in this frame affect the operation of storage location groups and internal routings. The values you enter here default to all storage location groups or internal routings you set up within this warehouse, but you can change the values for individual storage location groups or routings.

Mode. The Mode relates to internal routings and specifies how processes defined by the routing are initiated. This field defaults to the internal routings that you set up within this warehouse. The options are as follows:

AUTO	The process in a routing sequence is started automatically as soon as the previous process is complete.
TIMED	The process is started after a specified time interval, following completion of the previous process.
MANUAL	The process is only started when it is manually selected for processing.

Note The TIMED mode must be used with a custom batch program. There is no code currently to handle this mode.

Opportunity Counts. This field defaults to storage location groups that you set up within this warehouse. Enter Yes to specify that staff can be requested to perform cycle counts while they are at locations within this storage location group; otherwise, enter No.

OPC Frequency. If you enter Yes for Opportunity Counts, enter the frequency, in days, with which counts can be initiated. This field defaults to storage location groups that you set up within this warehouse.

Auto Replenish. Enter Yes to select Auto Replenishment. If an existing replenishment definition for a location/item or an SLG/item is active, when the inventory level falls below the replenishment point, the system automatically starts a replenishment process. This process picks the missing items and transfers them to the location/SLG to be replenished.

With auto replenishment, no need exists to start a manual replenishment; the process is triggered automatically. Enter No to switch off Auto Replenishment. This field defaults to item-warehouse data that you set up within this warehouse. To enable automatic replenishment, both fields at the warehouse level and at the item-warehouse level must be Yes.

Auto Replenish %. This field specifies the tolerance for the replenishment point. The replenishment point is the quantity of stock below which an automatic replenishment is triggered.

Example If the replenishment point is defined as 50 EA, when the inventory level drops below 50 EA, the system initiates a replenishment process. If the Auto Replenish percentage is 80%, the automatic replenishment occurs only when the stock level falls below 40 EA.

Note A value of 0% has the same effect as a value of 100%. This field defaults to item-warehouse data that you set up within this warehouse.

Optimized Storage. This field relates to the way QAD Warehousing organizes put-away of inventory in your warehouse storage locations. Enter Yes for optimized storage, in which QAD Warehousing completely fills one location before moving to another. Enter No if you want other factors to control put-away, such as the ability to place the entire stock in a single location.

You can specify optimized storage separately for the warehouse and for individual storage location groups within the warehouse. You can, therefore, have different combinations of optimized storage settings at warehouse and SLG level.

See “About Optimized Storage” on page 63 for more details about optimized storage.

Note You normally minimize the number of put-away transactions, which requires the No setting for optimized storage at both levels. Only when your warehouse is very full do you want to use optimized storage, so that QAD Warehousing tries to find locations to put away the inventory by examining the available space within each available location, without regard for the number of put-away transactions.

Transaction Search Window. To speed up processing, put-away algorithms 134 to 139 consider the last location, the last item, the last lot/serial or the last reference used for put-away when that same item, lot, or reference is received again. The algorithm does this by searching backwards through previous transactions.

You should limit the age of transactions that are searched in this way, because it is unlikely that the location found is still the most efficient for storage if the previous transaction is more than a few days old. Use this field to specify the number of days that the algorithms should search backwards for previous transactions relating to the current item.

Example Set this value to 1 if you want the algorithms to search only the transactions that were created today or yesterday.

Check Digits. This field defaults to the storage location groups that you set up within this warehouse. Enter Yes to specify that entry of the check digit defined for a location is required to confirm movement of stock to that location. You can specify the use of check digits individually for locations within each storage location group. Enter No if check digit entry is not required.

Fail Status. When the quantity confirmed is less than the expected quantity, you can fail the transaction. When a transaction fails, the system changes the status of the remaining stock in the source location to the Fail Status you define here. The Fail Status must be defined in Inventory Status Code Maintenance (1.1.1).

Example Consider a transaction of 10 items where only 9 are confirmed because the remaining item is damaged. If you fail the transaction, the remaining item in the source location changes its status to the Fail Status you define. If the original status was GOOD, and the corresponding Fail Status is BLOCKED, this item takes the BLOCKED status.

Hold Time. When confirming movement using Movement Confirmation By Order (80.8.3), you can generate a hold, which prevents any receipt or issue in that location for a certain period of time. When confirming with the Generate Hold field set to Yes, a hold on that location is created in the source location for a duration equivalent to the Hold Time field entered at the Warehouse Maintenance level. It is used when some action must be taken on the source location before it can be used again by another process. The Hold Time field is set in Minutes.

Occasionally, the quantity available in a location is lower than the task quantity; for instance, because of an inventory error. Set the Repick Option, Completion Option, and Fail Option so that the RF displays any or all of the following options when the quantity to pick is less than the total quantity. When the user enters a quantity that is less than the total quantity, the system displays the following prompt:

Scan other?

If the user specifies No because the quantity at the location is less than the quantity needed for the actual pick, any or all of the options display, depending on how you set the three option fields.

Completion Option. This field indicates if a transaction must be confirmed or stay unconfirmed when the transaction quantity is changed. In some cases, on RF, a pop-up window appears where this field can be changed. Different setup values are:

- 0 Always complete
- 1 Default to complete
- 2 Default to NOT complete
- 3 Never complete

Fail Option. Indicate if a transaction must be failed when the transaction quantity is changed. In some cases, on RF, a pop-up window appears where this field can be changed. Failing a transaction can have different consequences: create a count task in the source location and change the inventory status of the stock failed. Different setup values are:

- 2 Default to NOT fail
- 3 Never fail

Repick Option. Indicate if a repick process must be started when the transaction quantity is changed. In some cases, on RF, a pop-up window appears where this field can be changed. Different setup values are:

- 2 Default to NOT repick
- 3 Never repick

Printing

The Printing frame is shown in Figure 2.14.

Fig. 2.14
Warehouse Maintenance, Printing Screen

The screenshot shows the 'Printing' configuration window with the following settings:

- Print ID ?:** ☒ **ID Printer:** form **Number Across:** 1 **Lines of Each:** 99 **Width of Each:** 0 **132 Mode ?:** ☐ **Print Mode:** AUTO **Use External ?:** ☒ **Form Printer:** form
- Pr on Create ?:** ☐ **Print on Conf ?:** ☐ **Task Printer:** form **Number Across:** 1 **Lines of Each:** 0 **Width of Each:** 0 **132 Mode ?:** ☐ **Print Mode (Cr):** AUTO **Print Mode (Conf):** AUTO **Use External ?:** ☐ **External Device Printer:** form
- Print Except ?:** ☐ **Print Mode:** AUTO **Insp Printer:** form **Number Across:** 1 **Lines of Each:** 0 **Width of Each:** 0 **132 Mode ?:** ☐ **Use External ?:** ☐ **Print Mode (Conf):** AUTO **Print Flavor:** a **Print by W.Loc.Gp. ?:** ☐

The Printing frame contains fields that control the printing of transaction details. These cover the following:

- Printing an identification of inventory coming into the warehouse, such as a pallet label.
- Printing transactions for tasks when they are created.
- Printing transactions for tasks when they are confirmed.

- Printing exceptions when changes have been made to the original transaction; for example, a change to the put-away location or quantity.
- Printing transactions relating to external devices.
- Printing QA sampling inspection tags.

See “Printing” on page 170 for additional details about print setup.

The fields relating to identification printing are as follows:

Print ID. Enter Yes to print an identification of inventory coming into the warehouse; otherwise, enter No. If you enter No, you can ignore the other fields in this group.

ID Printer. Enter the name of the printer on which the IDs are to be printed.

Number Across. Enter the number of identifications that are to be printed across each page.

Lines of Each. Enter the number of printed lines in each identification.

Width of Each. Enter the width in character positions of the lines of the identification.

132 Mode. Enter Yes if the identifications are to be printed in 132 character position mode; otherwise, enter No.

Print Mode. Select a print mode to determine when output should be printed. The options are as follows:

AUTO	The system prints identifications automatically as soon as they are created.
MANUAL	The system holds identification print requests until an online or batch process activates printing.
AUTOSIG	The system prints identifications automatically but holds them until a signal to print is received.

The signal to trigger AUTOSIG printing is normally a sign that the process creating print requests is complete and that all requested prints can be output at one time. This is particularly relevant when, for example, printing multiple transactions on the same task sheet.

Use External. Enter Yes if you want RDT users to be able to print the identifications on an external printer such as the local printer in a fork-lift truck. Enter No if the identifications must be printed on the ID printer.

The remaining groups of fields apply to other types of printing; for example, tasks, exceptions, forms, and external devices. The explanation of the fields is the same as for identifications. The final group of fields covers general print format:

Print Flavor. This field defaults to each work location group you set up within the warehouse. Select the Print Flavor code to determine the format of the printed output. Print Flavor codes are set up in Generalized Code Maintenance (36.2.13). See “Print Flavor Codes” on page 171.

Print by Work Location Group. Indicate whether the sequence in the printed output is sorted by work location group.

If you are using barcode prefixes, update the Manufact Code field.

Manufact Code. Specify the code that identifies your company's site. This code is a required component of serial shipping container codes (SSCC) used in some barcode pallet IDs. See "Serial Shipping Container Code (SSCC)" on page 166 for details.

Defining a Warehouse for a Site

After you activate QAD Warehousing in the System Control File, you do not have to link all locations to a warehouse. If a site is defined without any warehouse, the picking process is a standard QAD ERP picking process. QAD Warehousing algorithms will not be started.

If you define at least one warehouse in a site, active or not, all locations of that site have to be linked to a warehouse. QAD Warehousing picking algorithms are started instead of standard QAD ERP picking rules.

This is particularly useful for a company that has multiple sites but does not use QAD Warehousing at all of them. Generally, the sites that are not using QAD Warehousing do not want to make additional set up like defining warehouses, linking locations to warehouses, and defining picking algorithms.

Warehouse Master List Maintenance

When an inventory transaction is created for a particular item, you should link a default warehouse to that item, specifically for that type of transaction.

Example You can specify that when purchased supplies of item X are ordered, they are normally received in warehouse A. This links transaction type RCT-PO for item X with warehouse A. However, after internal storage, transfers, and repackaging, sales order picking of item X is normally carried out in warehouse B. This links transaction type PICK-SO for item X with warehouse B.

In some cases, you can specify an alternate warehouse to cover situations where the first choice has insufficient stock. The first choice for picking item X can be warehouse B, but the second choice, if warehouse B runs out of stock, is to pick directly from warehouse A.

You achieve this by creating warehouse master lists. You identify each list by a unique name, and then specify the warehouses to associate with particular transaction types within that list. You can specify more than one warehouse for a given transaction type by giving each warehouse a sequence number. For that transaction type, QAD Warehousing tries to use the warehouses in the order of the sequence numbers you have assigned.

Note Warehouses in the warehouse master list provide default values. If you want to specify a different warehouse or location for the item you can override the warehouse that QAD Warehousing has offered from the warehouse master list. Warehouse master lists are completely optional: if an item has all its operations performed in the same warehouse, you can simply specify that warehouse as the default location for the item, without using a master list at all.

You set up warehouse master lists using Warehouse Master List Maintenance (80.1.5). You can then attach a warehouse master list to an item using the standard QAD ERP Item Master Maintenance (1.4.1). Enter the name of the warehouse master list in the Location field for the item.

In summary, use a warehouse master list:

- To receive/issue stock from different warehouses.
- For inter-warehouse picking.
- For multiple warehouse picking. If the stock is not available in one warehouse, start looking in the next one.

Figure 2.15 illustrates Warehouse Master List Maintenance.

Fig. 2.15
Warehouse Master List Maintenance (80.1.5)

Type	Seq	Whse	Description	Location	Ultimate Site	Ultimate Whse
pick-so	50	amc1				
pick-so	60	amc2				

Type: Seq: Ultimate Site:
Warehouse: Location: Ultimate Warehouse:

Enter values in the following fields:

Site. Enter the site associated with the warehouse master list.

Master List. To add a new list, enter the name of the list. To modify an existing list, enter the name of the list.

Description. Enter a description of the master list. Description displays in the lookup to help you select the required list, either for future modification or when attaching lists to items.

Type. Enter the transaction type code for which you want to specify one or more default warehouses.

Seq. Enter a sequence number. You can specify one default warehouse for each sequence number. The lowest sequence number is the first warehouse that QAD Warehousing tries to use for this transaction type.

Location. Enter the location to display from the master list. See the the discussion below for more information about the Location field.

Ultimate Site. If the transaction type relates to inter-warehouse picking, where you pick in warehouse A, for example, and transfer to warehouse B before issue, enter the site for the final issuing warehouse. Otherwise, leave this field blank.

Warehouse. Enter the name of the warehouse you want to default to this sequence number and this transaction type.

Ultimate Warehouse. If the transaction type relates to inter-warehouse picking, enter the final issuing warehouse. Otherwise, leave this field blank.

The Location field should be used whenever possible. For instance, for receipt movements, use the Location field—such as a receipt dock—instead of a warehouse. Since a receipt works as if QAD Warehousing were not there, items are received into the location/warehouse defined in the master list. If the receipt is into a warehouse, QAD ERP makes the receipt in the warehouse dummy location and QAD Warehousing moves it from this dummy warehouse location to the location determined by the first step of the internal routing linked to the receipt movement. This is generally the receipt dock. From there, a transaction is created to move the stock from the dock to the destination location, which is calculated by a put-away algorithm.

This means that five QAD ERP transactions are created:

- RCT-PO in the dummy warehouse
- ISS-TR from the dummy warehouse
- RCT-TR in the dock
- ISS-TR from the dock
- RCT-TR in the destination location

The two last are created after confirmation only.

If, instead, you use a location such as the dock, and not a warehouse, QAD ERP makes the initial receipt (RCT-PO) in this location and QAD Warehousing creates a task to move it from the dock (ISS-TR) to the destination location (RCT-TR), which means three transactions only. This can make a significant difference in performance and disk usage.

Sequence Definition

The sequence definition options on the QAD Warehousing System Menu (80.24) let you define how controlled sequences of numbers are structured. The two main uses are to:

- Specify number sequences for use in generating pallet references, or other sized-by-reference units of measure.
- Specify the format and range of the location identifiers when you use Mass Location Maintenance to create a number of storage locations.

Use Sequence Definition Maintenance (80.24.1) to define either the automatically incrementing sequence number for pallet references, or the format and range of generated location identifiers. You can specify fixed-value parts and incrementing parts of the location names, so that you end up with location names such as Bulk0101, Bulk0102, Bulk0103.

Sequence Definition Maintenance

Figure 2.16 illustrates Sequence Definition Maintenance (80.24.1).

Fig. 2.16
Sequence Definition Maintenance (80.24.1)

Seq T	Format	Min	Max	Inc	Description
1	F	MY		1	
2	C	X	A	D	1

Sequence Definition. Enter a code to identify this sequence definition, which can be a pallet numbering scheme or a template for creating a particular set of locations.

Description. Enter a description to explain how this sequence definition is used.

You can enter a number of sequence definitions in succession using these two fields.

When you have set up your sequence definition codes, the next step is to define the details of the way QAD Warehousing generates the next required pallet reference, or identify a whole sequence of locations; for example by including an incrementing number in one part of the location identifier.

Seq. The pallet reference numbers or location identifiers for the range of locations are constructed from sequential segments, which can be fixed values or incrementing numbers; for example, Bulk01, Bulk02, where the Bulk segment is fixed and the number segment is incremented. Enter a sequence number like 1, 2, or 3 to specify which sequential segment of the identifier you are defining in the remaining fields of this program.

Type. Enter the type for this segment of the identifier. Valid types are:

- I for integer
- C for character
- F for fixed
- D for Date
- S for Sequence

Depending on the type you select, you enter additional details in other fields in the frame.

Example If you enter S for sequence, you specify only which sequence you want in the Seq field, and optionally, a description.

Format. Enter the format for this segment of the reference number or location identifier. Valid formats are:

Segment Type	Format Entry
I	Enter an integer for each numeric position.
C	Enter a character for each character position.
F	Enter the actual text to use for the fixed value.
D	Enter one of the following valid date formats: DD, MM, YY, or YYYY. Use consecutive segments if you want a full DDMMYY date.

In the previous example (Bulk01, Bulk02, and so on), the first segment has type F, format Bulk; the second segment has type I, format 99.

Sequence. For sequence segments, enter the sequence you want to use. QAD Warehousing provides 20 separately incrementing reference number schemes, identified as AIMRef01 to AIMRef20. Each time a new pallet reference is required, QAD Warehousing takes the next sequential number from the specified sequence.

Minimum Value. For incrementing segments, enter the start value for the incrementing range. Leave this field blank for fixed segments.

Maximum Value. For incrementing segments, enter the end value for the incrementing range. Leave this field blank for fixed segments.

Increment. For incrementing segments, enter the amount by which each successive location identifier or reference number should be incremented.

Description. Enter a description of this segment of the reference number or location identifier, if required. This is used for information purposes only.

Note The I (Integer) type and the S (Sequence) type are very different. The I type is used when you want to generate all values between boundaries. S is used when you want to have an increment that is not limited only by the maximum size of the sequence. For instance, for a pallet number generation, you want to generate a new number for each pallet. Use type S for the increment. When you want to use the sequence definition to generate locations within a range such as from Bulk10 to Bulk99, use an Integer sequence.

Warehouse Report and Inquiry Functions

Table 2.1 lists report and inquiry options available from the Warehouse menu.

Table 2.1
Warehouse Reports and Inquiries

Program	Description
Warehouse Inquiry (80.1.2)	This option lets you select the site and the warehouse, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current values of the fields that have been set up for the selected warehouse.
Warehouse Report (80.1.3)	This option lets you select a range of sites and warehouses, and then specify where you want the report results printed or displayed. The report shows the current values of the fields that have been set up for the selected warehouses.
Whse Master List Inquiry (80.1.6)	This option lets you select the site and the warehouse master list, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current entries that have been set up for the selected warehouse master list.
Whse Master List Report (80.1.7)	This option lets you select a range of sites and warehouse master lists, and then specify where you want the report results printed or displayed. The report shows the current entries that have been set up for the selected warehouse master lists.

Defining Internal Routings

This chapter explains the QAD Warehousing concept of internal routing groups and internal routings. It also describes how you can use the Routing Maintenance functions to set up and assign routing groups and routings. The chapter is divided into the following major sections:

About Internal Routings 48

An introduction to internal routing and internal routing concepts.

Internal Routing Group Maintenance 50

Using Internal Routing Group Maintenance to create internal routing groups for warehouses.

Internal Routing Maintenance 52

Using Internal Routing Maintenance to create the warehouse pathways (internal routings).

Internal Routing Assignment Maintenance 57

Assigning and linking transactions to specific internal routings.

Internal Routing Report and Inquiry Functions 59

Various ways to display internal routing data.

About Internal Routings

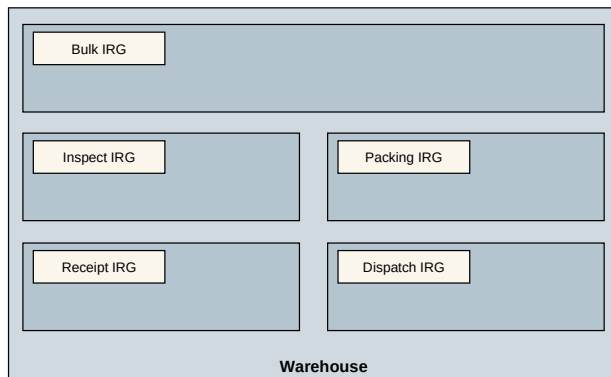
QAD Warehousing offers great flexibility regarding the way you handle inventory movements. Any inventory transaction involves a particular item, a particular warehouse, and a particular transaction type such as receipt, transfer, or issue. You can distinguish between items that originate from a particular supplier, or that are destined for a particular customer. The particular combination of these factors creates a special set of requirements for the way the inventory movement is handled.

Example You can have one very trustworthy supplier of an item whose reliability is such that you do not need to route supplies of the item through an inspection stage. Another supplier of the same item, however, could be less reliable and you therefore, need to inspect all items from this source before putting them away in the warehouse.

Internal routings within QAD Warehousing provide the flexibility to handle such situations. You can set up as many internal routings as you need. Each routing specifies a particular path through different warehouse areas. The first step is to define the different warehouse areas as internal routing groups. Then set up internal routings, each of which describes a path consisting of a sequence of internal routing groups. Finally, assign the appropriate internal routing to each transaction type, combined, where appropriate, with particular items, item types, or addresses.

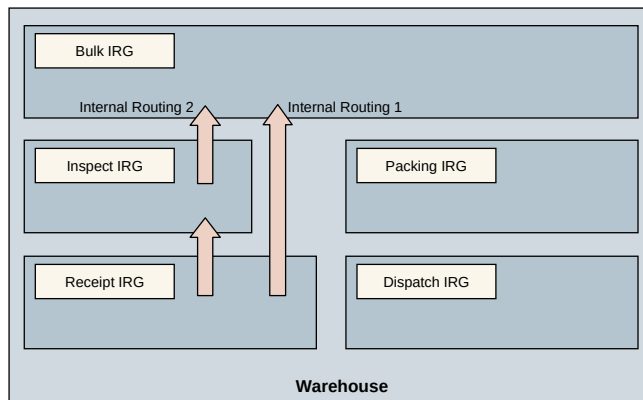
Figure 3.1 shows a simple arrangement of internal routing groups within a typical warehouse.

Fig. 3.1
Internal Routing Example



The two internal routings shown in Figure 3.1 would work as shown in Figure 3.2.

Fig. 3.2
Internal Routing Example



Internal routing 1 takes the items directly to Bulk storage from the receipt area, while internal routing 2 takes the items first to the Inspect area, and then to the bulk storage area.

Internal Routing Definition

There are two aspects to the definition of an internal routing:

- An internal routing is a list of steps that specify the path inventory should follow through the warehouse.
- An internal routing is the means by which you specify the properties for inventory transactions.

Note Although you can also specify transaction properties for a work location group, it is important that you always specify the properties you require for inventory transactions as part of the internal routing.

You can specify internal routings that consist of a single step. Such an internal routing would represent a movement within the IRG, and would be used to specify the transaction properties, such as the options for making changes to the original transaction.

You could also create a simple internal routing with two steps, such as:

10	Receipt
20	Bulk

Each step has transaction properties specified, but only one transaction is present: the movement from the Receipt IRG to the Bulk IRG. In all such cases, the properties for the transaction are taken from the second step. A three-step internal routing has two transactions. The second step of the IR defines the properties for the first transaction, and the third step defines the properties for the second transaction.

You can have two identical steps in an internal routing. Use this to avoid creating any transaction but complete other tasks, such as printing a label.

Example During work order receipt, you want to receive the pallets in the production area without moving them immediately. If you do not define any internal routing for these RCT-WO movements, a message “No internal routing could be found” is displayed at receipt. However, the result is the expected result: no transaction is created to move the pallet from the production area. To avoid the warning message, define two identical steps from PROD to PROD. This avoids any task creation and does not cause any warning message. However, print of a pallet ID is still possible, if set up in the second step of the internal routing.

Functional and Non-functional Routing Groups

When you define each of your internal routing groups within the warehouse, one of the fields you set indicates whether the area is functional. The term *functional* refers to areas of a warehouse that perform some specific function; examples are receipt and dispatch areas.

The difference between functional and non-functional areas relates to the way that QAD Warehousing chooses a location within the internal routing group when inventory is moved into the area.

- In functional areas, QAD Warehousing uses location-find algorithms to select locations where the capacity of the location and the size of the inventory are not relevant. Location-find algorithms can make use of other inventory management criteria, such as ensuring that all picks for a sales order are kept together, ready for dispatch.
- In non-functional areas, QAD Warehousing uses put-away algorithms to select locations based on the capacity of the location and the size of the inventory. These are the standard criteria used in warehouse storage areas.

Be careful when defining your internal routing groups to make sure that you set the Functional field according to the type of QAD Warehousing processing you want for the area.

Note Some common mistakes result from a wrong setup of this Functional field. For instance, if you define an IRG as non-functional and do not define any capacity, the put-away process does not work. Another common mistake is to define a put-away algorithm for a functional area, instead of a location-find algorithm or the opposite. This causes a no source location could be found or no destination location could be found error.

Internal Routing Group Maintenance

When you have defined your warehouse, the next step is to set up all the internal routing groups (IRGs) within that warehouse. You do this using Internal Routing Group Maintenance (80.2.1). This lets you define a name and a description for each area in the warehouse, and to define whether the area is functional. See “Functional and Non-functional Routing Groups” on page 50.

You can also specify values relating to issues, receipts, and returns that default to storage location groups within the internal routing group.

Internal Routing Group Maintenance (80.2.1) is shown in Figure 3.3.

Fig. 3.3
Internal Routing Group Maint (80.2.1)

Enter values in the following fields:

Site. Enter the name of an existing site.

Warehouse. Enter the name of the warehouse in which you want to maintain IRGs.

Internal Routing Group. Enter the name of the internal routing group (IRG) that you want to modify or create.

Description. Enter a description of the internal routing group. This is displayed in the lookup when you select the required internal routing groups for each of the sequence steps that define an internal routing.

Functional. Enter Yes if this internal routing group is a functional area, such as receipt or dispatch, in which QAD Warehousing uses location-find algorithms to select locations when stock is moved into the area. Enter No if this is a non-functional area, such as general storage, in which QAD Warehousing uses put-away algorithms to select locations when stock is moved into the area.

Note You normally need only one IRG, or at the most two, for bulk or general storage: that is, one non-functional IRG. You use storage location groups to define the different types of area within this main storage grouping.

SLG Default Values

The fields in this frame relate to the permitted movement of stock into and out of locations in the area. The values you choose for these fields are not applied directly, but default to all the storage location groups you set up within this internal routing group.

Allow Issues. This field controls whether inventory can be issued out of the system from locations in this area. Generally, you limit issues to specially designated areas, such as Goods-Out. Enter Yes if stock can be issued; otherwise, enter No.

Allow Receipts. This field controls whether inventory can be received from outside the system into locations in this area. Generally, you limit receipts to specially designated areas, such as Goods-In. Enter Yes if stock can be received; otherwise, enter No.

Allow Outgoing Returns. This field controls whether inventory can be issued from locations in this area as part of a returned receipt. Generally, you limit outgoing returns to specially designated areas, such as Goods-In Returns or Rejects. Enter Yes if stock to be returned to a supplier can be issued from locations in this area; otherwise, enter No.

Allow Incoming Returns. This field controls whether inventory can be received into locations in this area as part of a returned issue. Generally, you limit incoming returns to specially designated areas, such as Goods-Out Returns or Rejects. Enter Yes if stock returned from a customer can be placed in locations in this area; otherwise, enter No.

When you are modifying an existing internal routing group, if you change any of the SLG default values, the system displays the following message:

CHANGE ALL MATCHING STORAGE LOCATION GROUPS? yes/no

Because the values you enter for the internal routing group act as defaults for all the storage location groups within the IRG, the system lets you make the same change to the related SLGs within the IRG. Enter Yes to change the related SLG field values; otherwise, enter No.

Internal Routing Maintenance

When you have defined the internal routing groups (IRGs) within a warehouse, you can link specific sequences of IRGs together to form internal routings. Each step, or sequence, within an internal routing defines the IRG to which the inventory is next moved. For each sequence step within an internal routing, you also specify a number of fields that control how the inventory is processed as it reaches that point in the sequence.

The system offers you default values for these processing fields, which are the settings that were entered in Warehouse Maintenance. You can accept the default values, or override them with new values.

See “Warehouse Maintenance” on page 24.

Remember that a three-step sequence represents two inventory transactions. For example:

10	Receipt
20	Inspect
30	Bulk

The first inventory transaction is the movement from Receipt to Inspect. The properties for this transaction are defined in IR sequence step 20. The second inventory transaction is the movement from Inspect to Bulk. The properties for this transaction are defined in IR sequence step 30.

You define internal routings using Internal Routing Maintenance (80.2.5), shown in Figure 3.4.

Fig. 3.4
Internal Routing Maintenance (80.2.5)

Enter values in the following fields:

Site. Enter the name of an existing site.

Warehouse. Enter the name of the warehouse in which you want to maintain internal routings.

Internal Routing. To modify the fields for an existing internal routing, enter its name. To create a new internal routing, enter a new name for the routing.

Description. Enter a description of the internal routing. This is displayed in the lookup when you select internal routings for assignment to transaction types within the warehouse.

Sequence. Each internal routing consists of a number of steps, identified by a sequence number. To make it easier to add steps within the sequence later, standard practice is to number the sequences as 10, 20, 30 rather than 1, 2, 3. The process of setting up an internal routing consists of entering a sequence number in the Sequence field, entering the relevant internal routing group in the next field, and then specifying the processing required for this sequence step.

Internal Routing Group. Enter the name of an existing IRG.

Transaction Create

The fields in this frame determine the characteristics of stock movement transactions that are created in this sequence step of the internal routing. The initial values default from Warehouse Maintenance, but you can change the values for individual sequence steps of your internal routings.

Confirmed at Source. Enter Yes for transactions that are confirmed by the warehouse staff who initiate the stock movement; enter No for transactions that are confirmed by the warehouse staff who complete the stock movement at its destination. See “Confirmed at Source” on page 27 for an example.

System Code. Define the type of QAD Warehousing screens that confirm transactions. Leave blank for normal QAD Warehousing screens; enter RF for transactions confirmed using Radio Data Terminals (RDTs), also known as RFs.

Two Phase. Indicate how inventory movements are created.

No: Inventory movements are created and confirmed in a single step, the single phase.

Yes: Inventory movements are created in one step, the first phase, and confirmed in a second step, the second phase. In between the two phases, the stock is marked as being booked out of the first location and expected in the second location. However, the anticipated inventory levels are only confirmed when the stock is confirmed as arriving at the destination.

Note Two-phase operation is a much safer way of ensuring precision in inventory management. Single-phase operation should be used in special circumstances only.

Keep From Status. Indicate how the system should set the status of transferred inventory.

No: The inventory takes its status from the new location.

Yes: The inventory status of the transferred inventory retains its original value.

Task. Specify the task associated with any inventory transaction that is created. The task codes are set up in Task Maintenance (80.11.1). See “Defining Tasks” on page 153.

Priority. Assigns a priority value to transactions. The RDTs select the highest priority task as the next action; the lower the number you specify, the lower the priority.

Increment. Identify the increment that is added to a transaction’s priority as time elapses, if you run the increment addition program—for example, as a background process. Use this facility to avoid the situation where a relatively low priority transaction never reaches the top of the priority list, and, therefore, never gets performed. By gradually incrementing the priority, you ensure that even low priority tasks are eventually performed.

Transaction Confirmation

The fields in this frame determine the characteristics of the confirmations of stock movements relating to this step in the internal routing sequence. The initial values default from Warehouse Maintenance, but you can change the values for individual sequence steps of your internal routings.

From Location Option. Enter a number to define whether warehouse staff are allowed to modify the From Location aspect of inventory transactions, and, if so, what action is required. See “From Location Option” on page 28 for options.

From Item Option. Enter a number to define whether warehouse staff are allowed to modify the From Item aspect of inventory transactions, and, if so, what action is required. See “From Item Option” on page 29 for options.

From Lot/Serial Option. Enter a number to define whether warehouse staff are allowed to modify the From Lot/Serial aspect of inventory transactions, and, if so, what action is required. See “From Lot/Serial Option” on page 29 for options.

From Reference Option. Enter a number to define whether warehouse staff are allowed to modify the From Reference aspect of inventory transactions, and, if so, what action is required. See “From Reference Option” on page 29 for options.

Allow Quantity Increase. Enter Yes if warehouse staff are allowed to increase the quantity when a transaction is confirmed; otherwise, enter No.

Example You might want sales orders to be picked in whole packaging quantities from bulk storage and then split down to the required quantity in a repackaging area. The internal routing from bulk storage to repackaging would then allow an increase in the original transaction quantity.

Allow Quantity Decrease. Enter Yes if warehouse staff are allowed to decrease the quantity when a transaction is confirmed; otherwise, enter No. This is normally set to Yes, unless your inventory management system can guarantee that sufficient inventory is always available in every possible circumstance.

Quantity Change Option. This field defines the action to be taken if the quantity is changed, as controlled by the Allow Quantity Increase and Allow Quantity Decrease settings. See “Quantity Change Option” on page 29 for options.

To Location Option. Enter a number to define whether warehouse staff are allowed to modify the To Location aspect of inventory transactions, and, if so, what action is required. See “To Location Option” on page 30 for options.

To Item Option. Enter a number to define whether warehouse staff are allowed to modify the To Item aspect of inventory transactions, and, if so, what action is required. See “To Item Option” on page 30 for options.

To Lot/Serial Option. Enter a number to define whether warehouse staff are allowed to modify the To Lot/Serial aspect of inventory transactions, and, if so, what action is required. See “To Lot/Serial Option” on page 30 for options.

To Reference Option. Enter a number to define whether warehouse staff are allowed to modify the To Reference aspect of inventory transactions, and, if so, what action is required. See “To Reference Option” on page 30.

Alternate UM Option. This field defines the action to be performed regarding any change to the Alternate Unit of Measure field during the transfer of any inventory moved by this sequence in an internal routing. See “Alternate UM Option” on page 31 for options.

The Picking, Print, and Miscellaneous Options Internal Routing Maintenance frames are shown in Figure 3.5.

Fig. 3.5
Internal Routing Maintenance, Pick, Print, and Miscellaneous Options

The screenshot displays a software interface for 'Internal Routing Maintenance'. It is divided into three main sections: 'Picking', 'Print Options', and 'Miscellaneous Options'.
 - The 'Picking' section contains a 'Repick Type' field with a dropdown arrow and an 'Expire Date (Days)' field with a numeric input set to '0'.
 - The 'Print Options' section is organized into two columns. The left column has four checkboxes: 'Print ID ?', 'Print Created Tasks ?', 'Print Confirmed Tasks ?', and 'Print Exceptions ?'. The right column has four corresponding labels: 'Print Mode (ID):', 'Print Mode (Created Tasks):', 'Print Mode (Confirmed Tasks):', and 'Print Mode (Exceptions):'.
 - The 'Miscellaneous Options' section also has two columns. The left column has two labels: 'Mode:' and 'NewUM:'. The right column has three checkboxes: 'Clear Shortages ?', 'Create Shipper ?', and 'Check Inspection ?'.

Repick Type. Specify the transaction type to use if a repick is required.

It is possible when confirming an inventory transaction, if allowed by the Quantity change fields described above, to confirm a quantity picked less than the quantity expected. In this case, warehouse staff can set a field at confirmation to allow a repick of the missing items. For the repick, QAD Warehousing uses an internal routing and a picking algorithm for the transaction type you specify in the Repick Type field.

Note This repick transaction type must start with PICK-, and must be defined in Transaction Type Maintenance (80.7.6). If you leave the Repick Type field blank, the repick uses the same transaction type as the original picking.

Print and Miscellaneous options are discussed in the following topics.

The site, warehouse, and internal routing details, and the current Sequence number and IRG, remain displayed in the top part of the frame.

Print Options

The Print Options frame contains fields where you define the printing operations that are performed in relation to inventory transactions for this sequence step in the internal routing. The types of printing are:

- ID, identification of the inventory
- Created tasks
- Confirmed tasks
- Exceptions, when changes have been made to the original transaction

For each of these, you can enter Yes or No to specify whether the element is printed. The initial values default from Warehouse Maintenance, but you can change the values for individual sequence steps of your internal routings.

Print Mode. For those elements that are printed, you can also specify the Print Mode to determine when the element should be printed. The options are as follows:

AUTO	The system prints the elements automatically as soon as they are created.
MANUAL	The system holds print requests until an online or batch process activates printing.
AUTOSIG	The system prints elements automatically but holds them until a signal to print is received.

The signal to trigger AUTOSIG printing is normally a sign that the process creating print requests is complete and that all requested prints can be output at one time. This is particularly relevant when, for example, printing multiple transactions on the same task sheet.

Miscellaneous Options

The fields in this frame affect the operation of this sequence step in the internal routing.

Mode. Specify how processes defined by the routing are initiated. The initial value defaults from Warehouse Maintenance, but you can change the value for individual sequence steps of your internal routings.

The options are as follows:

AUTO	The process in the routing sequence is started automatically as soon as the previous process is complete.
TIMED	The process is started after a specified time interval, following completion of the previous process.
MANUAL	The process is only started when it is manually selected for processing.

New UM. This field is used to specify the new unit of measure to be used for items upon reaching this step in the internal routing sequence, only if option 6 has been selected for the Alternate UM option.

Example You can split a pallet into boxes on arrival at a particular area of your storage. As it is unlikely that all your items use the same UM, you would normally use this field in assignments that specify a particular item number or item type. See “Alternate UM Option” on page 55.

Enter the existing new unit of measure.

Use Alternate UM Maintenance (80.5.1) to define units of measure and to specify the action that must be taken when changing an item’s UM.

See “Alternate UM Maintenance” on page 105.

Clear Shortages. Enter Yes to cause the shortage clearance algorithms to be run before a location is identified to receive the inventory. These algorithms look for orders that were not fully satisfied in the original picking because of insufficient inventory levels. Enter No if you do not want the shortage clearance algorithms to be run.

Create Shipper. Enter Yes to cause standard QAD ERP shippers to be created. Standard QAD ERP functions can then be used to consolidate and print these shippers as shippers, containers, or bills of lading. Standard QAD ERP functions are also available to then allow the bulk shipment of, for example, multiple sales orders that have been combined onto a single shipper. Enter No if you do not want to create shippers.

Check Inspection. Entering Yes causes the Inspection (QA) algorithm to be run to determine whether inspection must take place. See “Quality Inspection Internal Routings” on page 374.

Internal Routing Assignment Maintenance

When you have defined the internal routings within a warehouse, you can link specific transaction types to particular internal routings. You can also specify a combination of a transaction type with an item, an item type, or an address relating to a supplier or customer, so that the internal routing is used when that particular combination occurs.

You link transaction types to internal routings using Internal Routing Assignment Maintenance (80.2.9), as shown in Figure 3.6.

Fig. 3.6
Internal Routing Assignment Maintenance (80.2.9)

Enter values in the following fields:

Type. Enter the transaction type to which you want to assign an internal routing. You can maintain transaction types using Transaction Type Maintenance (80.7.6).

Site. Enter the name of the site.

Warehouse. Enter the name of the warehouse for which you want to assign internal routings.

Item Number. If you want to assign an internal routing to a combination of transaction type and item, enter the item number here. If you leave this field blank, the assignment is valid for all items.

Warehouse Item Type. If you want to assign an internal routing to a combination of transaction type and warehouse item type, enter the item type code here. If you leave this field blank, the assignment is valid for all item types.

The warehouse item type codes are a way of grouping together items that have similar properties. You assign the codes to items using the QAD Warehousing Item Maintenance options.

See “Defining Item Data for Sites and Warehouses” on page 88.

Address. If you want to assign an internal routing to a combination of transaction type and address, enter the address code here. If you leave this field blank, the assignment is valid for all addresses. For receipt transaction types, the address relates to the supplier of the item being received; for issue transaction types, the address relates to the customer to whom the goods are to be dispatched.

Custom. The custom assignment facility is provided to cover situations where you have a transaction type, such as PICK-RE, that could have two possible internal routing assignments. You would then run a purpose-defined custom program to determine which internal routing QAD Warehousing should use. When you run the custom program, you have to provide the input fields that enable the program to decide which IR to assign.

Enter Yes in this field if you want to use a custom program; otherwise, enter No. If you enter Yes, the system skips the Internal Routing field and moves to the Custom Program field.

See Appendix A, “Custom Assignments,” on page 385 for an example of custom assignments.

Internal Routing. Enter the name of the internal routing you want to assign to this transaction type.

Custom Program. If you entered Yes at the Custom field, enter the name of the Custom Program to run for this transaction type.

Resolving Conflicting Routing Assignments

Every internal routing assignment involves a transaction type, a site, and a warehouse. You can also specify an item number or an item type and an address. When you use these additional assignment options, there can be conflicts between different assignments.

Example You could assign one internal routing for receipt of item ABC, and a different internal routing for receipts from the address for supplier XYZ. QAD Warehousing has to decide which internal routing to use when you have a receipt of item ABC from supplier XYZ.

In such situations, QAD Warehousing uses the following sequence to look for a match between the specified conditions:

- 1 Look for a match of both item number and address
- 2 Look for a match of both item type and address
- 3 Look for a match of item number only
- 4 Look for a match of item type only
- 5 Look for a match of address only
- 6 Use the specified transaction type, site, and warehouse—no other conditions

Using these rules, you can see that the internal routing for receipt of item ABC takes precedence over the internal routing for receipts from the address for supplier XYZ.

Internal Routing Report and Inquiry Functions

Table 3.1 lists report and inquiry options available from the QAD Warehousing Routings menu.

Table 3.1
Internal Routing Reports and Inquiries

Program	Description
Internal Routing Group Browse (80.2.2)	This option lets you select the site and review details of all the internal routing groups that have been set up for warehouses in that site.
Internal Routing Group Report (80.2.3)	This option lets you select a range of sites, warehouses, and IRGs for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the current fields that have been set up for each IRG.
Internal Routing Inquiry (80.2.6)	This option lets you select the site, warehouse, and the internal routing, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current values of the fields that have been set up for the selected internal routing.
Internal Routing Report (80.2.7)	This option lets you select a range of sites, warehouses, and internal routings for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the current fields that have been set up for each internal routing.

Program	Description
Internal Routing Assignment Browse (80.2.10)	This option lets you select a transaction type and review details of all the internal routing assignments that have been set up for it, in all warehouses in all sites. You can use the usual filter options to limit the ranges displayed.
Internal Routing Assignment Report (80.2.11)	This option lets you select ranges of transaction types, sites, warehouses, item numbers, item types, and addresses to define the internal routing assignments for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the current fields that have been set up for each internal routing assignment.

Defining Location Groups

This chapter explains the purpose of grouping locations into both storage location groups and work location groups, and describes how you can use the Location Group Maintenance functions to set up your groups. The chapter is divided into the following major sections:

About Location Groups 62

An introduction to locations, locations groups, and concepts.

Storage Location Group Maintenance 65

Using Storage Location Group Maintenance to create SLGs in a warehouse.

Storage Location Group List Maintenance 70

Using Storage Location Group List Maintenance to create SLG lists for a warehouse.

Work Location Group Maintenance 71

Using Work Location Group Maintenance to create WLGs in a warehouse.

Inter-Work Location Group Maintenance 74

Specifying transaction field settings for each combination of possible movements from one WLG to another.

Location Group Reports and Inquiries 75

Displaying location and location group data.

About Location Groups

QAD Warehousing offers you two parallel ways of subdividing the areas within your warehouses:

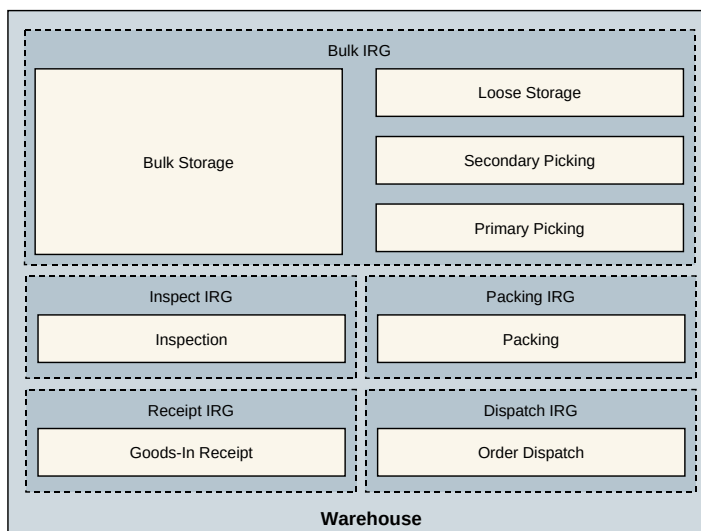
- Division into different types of storage areas. This is achieved by defining different storage location groups (SLGs) within each internal routing group (IRG), and then defining the individual storage locations within each SLG.
- Division into different types of work areas. This is achieved by defining different work location groups within each warehouse, and then identifying which work location group each storage location belongs to.

Storage location groups group storage locations that have a common storage function, such as a primary picking area, or a bulk storage area for a particular type of pallet. The hierarchy relating to storage functions is site – warehouse – internal routing group – storage location group – location.

Work location groups group storage locations that have common working practices, such as access using fork-lift truck, or that have a common physical location, such as all storage locations on the first floor of the building. It is also used if several printers are used and assigned to different warehouse areas. The hierarchy relating to working practices is site – warehouse – work location group – location.

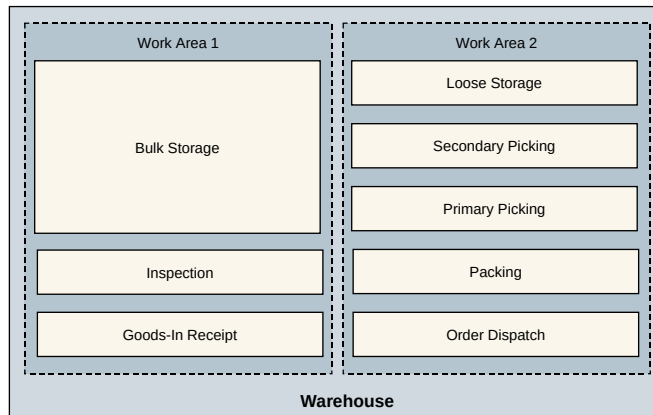
Figure 4.1 shows a simple arrangement of storage location groups within IRGs in a warehouse.

Fig. 4.1
Storage Location Groups



Each IRG can contain one or more storage location groups. Figure 4.2 shows the same locations, but now grouped into two work location groups.

Fig. 4.2
Work Location Groups



Note Work location groups do not have to contain entire SLGs; work Area 1 could include half of the Loose Storage area, with the other half being in Work Area 2. The arrangement of the work location groups is entirely independent of the arrangement of the storage location groups and internal routing groups.

The QAD Warehousing options you use for setting up and maintaining storage location groups and work location groups are both on the QAD Warehousing Location Menu (80.3).

About Optimized Storage

You can specify optimized storage separately for the warehouse and for individual storage location groups within the warehouse. You can, therefore, have different combinations of optimized storage settings at warehouse and SLG level.

Note You normally want to minimize the number of put-away transactions, which requires the No setting for optimized storage at both levels. Only when your warehouse is very full do you want to use optimized storage, so that QAD Warehousing tries to find locations to put away the inventory by examining the available space within each available location, without regard for the number of put-away transactions.

At the SLG level, the Optimized field determines whether QAD Warehousing sorts locations within the SLG in ascending or descending capacity, when looking for locations in which to put away stock.

If the warehouse is optimized, the order in which QAD Warehousing selects SLG locations is as follows:

- First, the non-optimized SLGs and locations that have the highest capacity
- Second, the optimized SLGs and locations that have the least capacity

If the warehouse is not optimized, QAD Warehousing considers the SLGs in the order specified in the storage location group list sequences. Within each SLG, QAD Warehousing looks for locations as follows:

- If the SLG is optimized, QAD Warehousing looks for the location with the smallest capacity.
- If the SLG is not optimized, QAD Warehousing looks for the location with the highest capacity.

Non-optimized storage location groups offer a large performance advantage. QAD Warehousing sorts the location with the highest capacity first, which reduces the number of movements that must be made in the warehouse, and terminates the program as soon as a suitable location has been found for all the inventory. If the warehouse is also non-optimized, the put-away program could end with the first SLG to be considered, without having to consider the other SLGs in the list. However, if the warehouse is optimized, QAD Warehousing must consider all the locations in order to sort them.

How Optimization Works

The way in which optimization is carried out depends on the combination of warehouse and SLG optimization. There are four possible combinations.

Fig. 4.3
Optimization 1

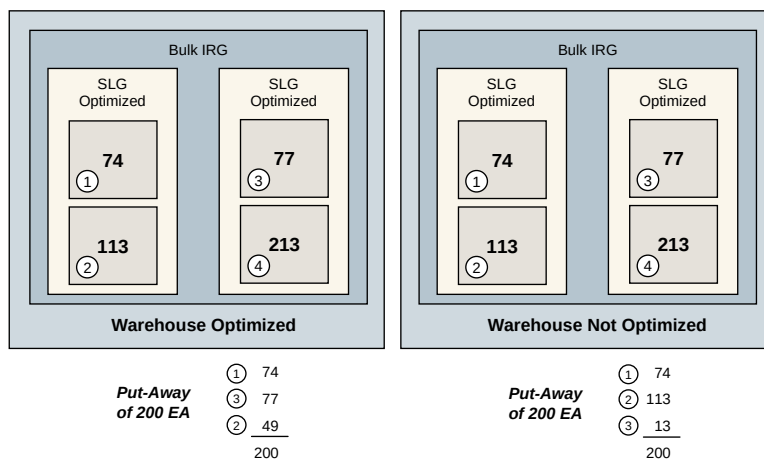
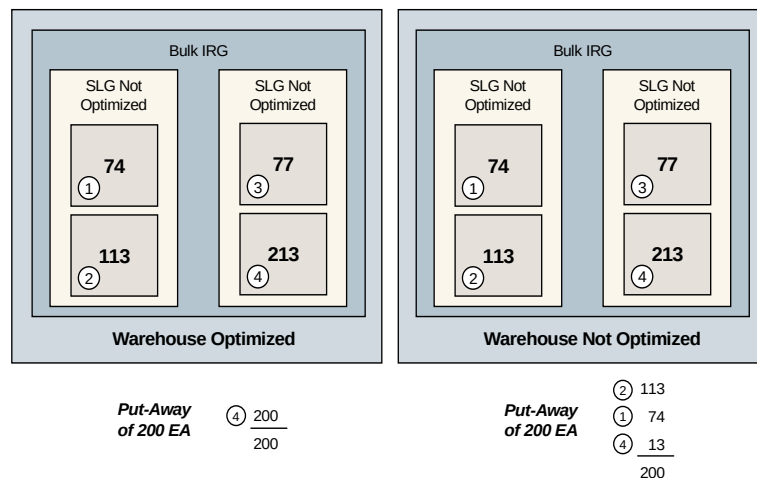


Fig. 4.4
Optimization 2



SLG Not Optimized: Sorting by size descending. Once entire quantity fit, leave the put-away.

There is a trade-off between optimization and the performance of QAD Warehousing. The more optimized locations in a warehouse, the slower the system runs. Conversely, the lower the optimization, the faster QAD Warehousing runs.

When QAD Warehousing is first set up and stock levels are low, you usually have no need for optimization. It is only as the number of locations and stock levels grows that optimization is useful.

A general recommendation for a balance of locations to performance is 500 SLGs/locations in a warehouse.

The following table compares how the different combinations of optimization affect three different benchmarks of system performance. The benchmarks are:

- 1 Number of transactions
- 2 Stock levels
- 3 System performance

		Warehouse Optimized	Warehouse Not Optimized
SLG Optimized	Good	2	2
	Medium		3
	Poor	3, 1	1
SLG Not Optimized	Good	1	3
	Medium		1
	Poor	2, 3	2

How to Optimize a Warehouse

Use Warehouse Maintenance (80.1.1) to set the Optimized Storage field to Yes.

See page 36.

In Storage Location Group Maintenance (80.3.1), set the Optimized Storage field to Yes. To optimize a group of SLGs, first enter the name of an SLG list in the Storage Loc Group field.

See page 68.

Note You can optimize both warehouse and storage location groups; or optimize the warehouse but not the storage location groups; or optimize the storage location groups but not the warehouse.

Storage Location Group Maintenance

When you have defined your warehouse and its internal routing groups (IRGs), the next step is to set up all the storage location groups (SLGs) within each IRG in the warehouse. You do this using Storage Location Group Maintenance (80.3.1). This lets you define a name and a description for each storage location group, and to define fields relating to the control of inventory movements, cycle counts, and picking for locations in the SLG.

Storage Location Group Maintenance (80.3.1) is shown in Figure 4.5.

Fig. 4.5
Storage Location Group Maintenance (80.3.1)

Enter values in the following fields:

Site. Enter the name of the existing site.

Warehouse. Enter the name of the warehouse in which you want to maintain SLGs.

Store Loc Group. To modify the fields for an existing storage location group, enter its name. To create a new storage location group, enter the name of the SLG.

Description. Enter a description of the storage location group.

Press Go to accept the site, warehouse, and storage location group details and move to the next frame.

Internal Routing Group. Enter the name of the existing IRG to which this storage location group belongs.

When you have specified the IRG, the system displays default values for most of the remaining fields in the frame. The defaults for the first four fields relating to allowing issues and receipts are taken from the default values that were entered for the IRG. The other defaults come from the default values entered for the warehouse.

See “Internal Routing Group Maintenance” on page 50.

For each SLG, you can accept the defaults or override them with new values.

See “Warehouse Maintenance” on page 24.

Allow Issues. This field controls whether inventory can be issued out of the system from locations in this SLG. Generally, you limit issues to specially designated areas, such as Goods-Out. Enter Yes if stock can be issued; otherwise, enter No.

Allow Receipts. This field controls whether inventory can be received from outside the system into locations in this SLG. Generally, you limit receipts to specially designated areas, such as Goods-In. Enter Yes if stock can be received; otherwise, enter No.

Allow Incoming Returns. This field controls whether inventory can be received into locations in this SLG as part of a returned issue. Generally, you limit incoming returns to specially designated areas, such as Goods-Out Returns or Rejects. Enter Yes if stock returned from a customer can be placed in locations in this SLG; otherwise, enter No.

Allow Outgoing Returns. This field controls whether inventory can be issued from locations in this SLG as part of a returned receipt. Generally, you limit outgoing returns to specially designated areas, such as Goods-In Returns or Rejects. Enter Yes if stock to be returned to a supplier can be issued from locations in this SLG; otherwise, enter No.

Opportunity Counts. Enter Yes to specify that staff can be requested to perform cycle counts while they are at locations within this storage location group; otherwise, enter No.

Warehouse staff perform opportunity counts at the SLG level only. If the quantity drops below a level defined in Item-Warehouse Maintenance (80.4.11) and if the OPC frequency is past the last OPC date, then staff can perform an opportunity count.

OPC Frequency. If you have entered Yes for Opportunity Counts, enter the frequency, in days, with which counts can be initiated. This field defaults to the locations that you set up within this SLG.

Check Digits. This field specifies whether check digits are to be used for locations that you set up within this storage location group. Enter Yes to specify that entry of the check digit defined for a location is required to confirm movement of stock to that location. You can specify the use of check digits individually for locations within each storage location group. Enter No if check digit entry is not required.

Count Status Option. Enter a number to define what action should be performed on the inventory status upon confirmation of a recount or in-tolerance count in this storage location group. In Warehouse Maintenance, you set the default that is offered for each SLG you set up in the warehouse. The options are as follows:

- 0 No status change.
- 1 Change to Location Status: The status of the inventory is changed to the default inventory status of the location.
- 2 Status change based on Fail Status: The status of the inventory is changed to the good status associated with the current fail status in Inventory Status Maintenance (80.8.15).

Exclude From Picking. Enter Yes if locations within this SLG are to be excluded from picking; otherwise, enter No. If you enter Yes, the other picking fields are not relevant. Generally, you exclude from picking all SLGs in your functional IRGs, such as receipt, inspect, pack, and dispatch.

Picking Level. You can assign a picking level number to each storage location group. You can set default start and end picking levels in Warehouse Maintenance, or by using Warehouse Transaction Type Maintenance (80.7.10). These start and end settings determine the picking levels to be used for the pick. QAD Warehousing then looks for inventory in the storage location groups that correspond to the specified range of picking levels.

Overpick. This field specifies whether you can pick more stock from locations in this storage location group than is specified in the order. Enter Yes if over picking is allowed; otherwise, enter No.

Note The Over Pick setting at SLG level is taken into account only if the Control Over Pick at SLG field is set to Yes in Transaction Type Maintenance or Warehouse Transaction Type Maintenance. See “Control Over Pick at SLG” on page 144.

This field works in conjunction with the Allow Split field to control whether stock can be picked from locations in the SLG in situations where the quantity required for the pick does not match the unit of measure in which the item is stocked in the location.

Example If a location contains boxes of 100 of the item, and the required picking quantity is 70 pieces, the following possibilities can be specified:

Over Pick?	Allow Split?	Result
Yes	Yes	Pick 70 by splitting a box
Yes	No	Over pick—take a box of 100
No	Yes	Pick 70 by splitting a box
No	No	No pick from this location

Picking Multiple UM. Enter the unit of measure (UM) multiples of which must be used when picking inventory from locations in this storage location group.

Example Inventory could be stored on pallets, with the pallets containing a number of boxes. Each box contains a number of individual items. You might want to allow splitting of the pallet, but restrict such splitting to multiples of whole boxes.

Multi-Trans. This field defines whether QAD Warehousing should create multiple transactions when picking in multiples of the UM.

Example If BX (for Box) is the picking multiple UM, and a box contains 20 EA, for individual items, you have two ways of creating transactions when you pick 40 EA:

Setting	Effect
Yes	Two transactions each for 1 BX
No	One transaction for 40 EA

Detail Overflow Group. Specify a storage location group that the system should use if the locations of the current storage location group cannot contain any additional goods replenished from the main storage area. This overflow storage location group must also be defined in Storage Location Group Maintenance (80.3.1).

The overflow group can be used during wave replenishment when put-away algorithms 150 or 151 are being used.

See Table 8.5 on page 121.

Optimized Storage. This field relates to the way QAD Warehousing organizes put-away of inventory in your warehouse storage locations. Enter Yes for optimized storage, in which QAD Warehousing completely fills one location before moving to another during put-away. Enter No if you want other factors to control put-away, such as the ability to place the entire stock in a single location.

See “About Optimized Storage” on page 63.

Capacity Check with OTF. Indicate whether you want the system to verify if this location has sufficient capacity for items when warehouse staff initiate an on-the-fly transfer from the RF device.

A put-away algorithm never selects a location without sufficient capacity, but a forced transfer initiated from the RF can by-pass this check.

See “On-the-Fly Transfer” on page 219.

Allow Mixed Status Codes. This field determines whether a single location in this SLG can contain inventory with a mixture of different status codes. Enter Yes to allow mixed status codes; otherwise, enter No. This setting is used by put-away algorithms for all the locations you set up within this SLG.

Acquisition UM. The acquisition UM is used in conjunction with some of the options, such as option 13, of the Alternate UM option from the internal routing definition. This option sets the inventory record UM to the acquisition UM of the destination storage location group.

Recount UM. This field specifies the alternate UM that should result from recounts, or intolerance counts, of inventory in this storage location group. This applies mainly to recounts entered using

QAD ERP’s cycle counting functions, not the QAD Warehousing Cycle Count Generation options.

The second Storage Location Group Maintenance frame is shown in Figure 4.6.

Fig. 4.6
Storage Location Group Maint, Second Frame

The five fields in this frame define alternate units of measure to be used in relation to inventory in locations in this storage location group. You can specify more than one alternate UM by using more than one line in this frame.

Alt UM. Enter the two character identifier for the Alternate unit of measure.

Split. Enter Yes if splitting this alternate UM is allowed when picking from locations in this SLG. Enter No if splitting the UM is not allowed.

Over Pick. This field specifies whether you can pick more stock from locations in this storage location group than is specified in the order. Enter Yes if over picking in the alternate UM is allowed; otherwise, enter No.

Pick Mult UM. Enter the two-character identifier for the UM multiples which must be used when specifying the quantity to pick.

Multi-Trans. Indicate whether QAD Warehousing should produce multiple transactions, one for each of the picking multiple UM, or a single transaction for the total number of items in the base UM.

Storage Location Group List Maintenance

To control which storage location groups QAD Warehousing uses to put away particular items, you can specify a particular SLG for the item using Item-Warehouse Maintenance (80.4.11). If you have more than one SLG in which you might want to store the item, you can alternatively specify a list of SLGs. These lists specify the order in which you want QAD Warehousing to consider them for put-away of the item. You set up these SLG lists using Storage Location Group List Maintenance (80.3.5).

See “Defining Item Data for Sites and Warehouses” on page 88.

Note QAD Warehousing also considers the setting of the optimized field when considering the list of SLGs. See “About Optimized Storage” on page 63 for details.

Storage Location Group List Maintenance (80.3.5) is shown in Figure 4.7.

Fig. 4.7
Storage Location Group List Maintenance (80.3.5)

Enter values in the following fields:

Site. Enter the name of the existing site.

Warehouse. Enter the name of the existing warehouse in which you want to maintain storage location group lists.

Storage Location Group List. To modify the fields for an existing storage location group list, enter the name of the existing list.

To create a new SLG list, enter the name of the list.

Description. Enter a description of the SLG list.

Press Go to accept these entries and move to the list detail frame.

Seq. Enter a sequence number. You can specify one storage location group for each sequence number. The lowest sequence number is the first SLG that QAD Warehousing tries to use for put-away of the item.

SLocGrp. Enter the name of the SLG for this sequence number.

Work Location Group Maintenance

When you have defined your warehouse, its internal routing groups (IRGs), and storage location groups (SLGs), the next step is to set up all the work location groups (WLGs) within the warehouse using Work Location Group Maintenance (80.3.9). This lets you define a name and a description for each work location group, and to define fields relating to the WLG.

The main purpose of work location groups is to enable you to control which warehouse staff work in which areas of the warehouse using User-Work Location Group Maintenance (80.11.19.1). The second purpose is to define the cycle count and printing fields for each work area.

Work Location Group Maintenance (80.3.9) is shown in Figure 4.8.

Fig. 4.8
Work Location Group Maint (80.3.9)

Enter values in the following fields:

Site. Enter the name of an existing site.

Warehouse. Enter the name of an existing warehouse in which you want to maintain work location groups.

Work Location Group. To modify the fields for an existing work location group, enter its name. To create a new work location group, enter its name.

Press Go to accept the site, warehouse, and work location group and move to the second frame.

Description. Enter a brief description (maximum 24 characters) of the work location group.

Confirmed at Source. Enter Yes if transactions in this work location group are confirmed by the warehouse staff who initiate the stock movement. Enter No if transactions are confirmed by the warehouse staff who complete the stock movement at its destination. See “Confirmed at Source” on page 27.

Priority. This field assigns a priority value to transactions in this WLG. If no priority is assigned to the internal routing, RDTs select the highest priority task at the work location group as the next action. The lower the number you specify, the lower the priority.

Increment. This field specifies the increment that is added to a transaction's priority as time elapses.

Task. This field defines the task associated with any inventory transaction that is created in this WLG. Task codes are set up in Task Maintenance (80.11.1).

System Code. This field defines the type of QAD Warehousing screen that confirms transactions in this work location group. Leave this blank for normal QAD Warehousing screens; enter RF for transactions confirmed using Radio Data Terminals (RDTs), also known as RFs.

Flavor. Enter the code to define the style and format of screens to be used for displaying QAD Warehousing information in this work location group other than in the standard QAD ERP frames. The Flavor codes are set up in Generalized Code Maintenance (36.2.13) and relate to display of information in situations such as fork-lift truck screens or Radio Data Terminals (RDTs).

Allow Task Switching. This field is used to specify for a work location group whether warehouse staff are allowed to switch to a different task. The setting of this field is important whenever any of the task confirmation fields has been set to allow a different value, for example, of a reference or lot/serial number, to that which was expected. You have to specify whether a user who enters a different reference is changing the value for the current task, or switching to another task.

Enter Yes to allow task switching. Upon entry of a different value, such as a reference, QAD Warehousing checks to see whether another task exists with the reference. Enter No to prevent task switching. On entry of a different value, QAD Warehousing assumes that the value is being changed for the current task.

Two Phase. Enter Yes to specify that inventory movements in this WLG are created in one step, the first phase, and confirmed in a second step, the second phase. Between the two phases, the stock is marked as being booked out of the first location and expected in the second location. However, the anticipated inventory levels are only confirmed when the stock is confirmed as arriving at the destination. If you enter No, inventory movements are created and confirmed in a single step (single phase). The default value that was set up in Warehouse Maintenance is initially displayed.

Note Two-phase operation is a much safer way of ensuring precision in inventory management. Single-phase operation should only be used in special circumstances.

Keep From Status. This field specifies whether, when an inventory transaction is created and confirmed, the inventory status of the transferred inventory retains its original value by entering Yes here, or takes its status from the new location by entering No here. The default value that was set up in Warehouse Maintenance is initially displayed.

Device. Enter the code to define the device to be used within this work location group, if applicable. If a single device code is not applicable, leave this field blank.

Cycle Counts

The WLG Cycle Counts frame is shown in Figure 4.9.

Fig. 4.9
Work Location Group Maint, Cycle Counts

Cycle Counts	
Count Task: COUNT	Recount Task: RECOUNT
Count System Code: RF	Recount System Code: RF
Count Priority: 100	Recount Priority: 100
Count Increment: 10	Recount Increment: 10
Count on Fail ? ☒	

The fields in this frame control the way cycle counts and recounts are performed in this work location group. The system initially displays default values set up in Warehouse Maintenance, but you can change these values for individual work location groups.

Count Task. This field is used to specify the task of any cycle counts created in the work location group. You must set up the tasks first in Task Maintenance.

Warehouse staff perform count tasks when stock quantities are inside the tolerance; they perform recount tasks when stock quantities are outside the tolerance. You define the tolerance in QAD ERP's Inventory Count Parameters (3.24).

Count System Code. This field specifies the system code of any cycle counts created in the work location group. It defines the type of QAD Warehousing screen that is used to confirm cycle count transactions: blank for normal QAD Warehousing screens, RF for RDT screens.

Count Priority. This field assigns a priority value to cycle count transactions created in the work location group. The RDTs select the highest priority task as the next action; the higher the number you specify, the higher the priority.

Count Increment. This field specifies the increment that is added to a cycle count transaction's priority as time elapses.

Count on Fail. This field specifies whether a cycle count should be automatically generated for the inventory if that inventory is failed; for example, when a transaction is completed for less than the required quantity.

Recount Task. This field specifies the task of any recounts created in the work location group. The tasks must already have been set up in Task Maintenance.

Recount System Code. This field specifies the system code of any recounts created in the work location group. It defines the type of QAD Warehousing screen that is used to confirm recount transactions: blank for normal QAD Warehousing screens, RF for RDT screens.

Recount Priority. This field assigns a priority value to recount transactions created in the work location group. The RDTs select the highest priority task as the next action: the higher the number you specify, the higher the priority.

Recount Increment. This field specifies the increment that is added to a recount transaction's priority as time elapses.

Printing

The WLG Printing frame is shown in Figure 4.10.

Fig. 4.10
Work Location Group Maint, Printing

The screenshot shows the 'Printing' frame with the following fields and values:

- Print ID:** []
- ID Printer:** form
- Number Across:** 1
- Lines of Each:** 0
- Width of Each:** 0
- 132 Mode ?:** []
- Print Mode:** []
- Use External ?:** [x]
- Form Printer:** form
- 132 Mode ?:** []
- Use External ?:** []
- Pr on Create ?:** []
- Print on Conf ?:** []
- Task Printer:** form
- Number Across:** 1
- Lines of Each:** 0
- Width of Each:** 0
- 132 Mode ?:** []
- Print Mode (Cr):** AUTO
- Print Mode (Conf):** AUTO
- Use External ?:** []
- External Device Printer:** form
- Number Across:** 1
- Lines of Each:** 0
- Width of Each:** 0
- 132 Mode ?:** []
- 132 Mode ?:** []
- Use External ?:** []
- Print Except ?:** []
- Print Mode:** AUTO
- Insp Printer:** form
- Number Across:** 1
- Lines of Each:** 0
- Width of Each:** 0
- Print Flavor:** a
- Manufact. Code:** []

The Printing frame contains fields where you define the fields that control the printing of transaction details. These cover the following:

- Printing an identification of inventory coming into the warehouse.
- Printing transactions for tasks when they are created.
- Printing transactions for tasks when they are confirmed.
- Printing exceptions when changes have been made to the original transaction; for example, a change to the put-away location or quantity.
- Printing transactions relating to external devices.
- Printing QA sampling tags.

See “Printing” on page 170 for an explanation of the use of the printing fields.

Inter-Work Location Group Maintenance

In situations where inventory movements between two work location groups are not defined by an internal routing; for example, when both WLGs are in the same internal routing group, you must specify the inter-work location group transaction fields. Otherwise, QAD Warehousing does not know whether to take the transaction properties from the source WLG or the destination WLG.

You do this by using Inter-Work Location Group Maintenance (80.2.19) to specify what the transaction field settings should be for each combination of possible movements from one WLG to another.

Example If you have three WLGs, A, B, and C, you have six possible types of inter-WLG movement: from A to B, from A to C, from B to A, from B to C, from C to A, and from C to B. Note that if you leave the destination WLG blank, the inter-WLG definition applies to all destination WLGs.

Inter-Work Location Group Maintenance (80.2.19) is shown in Figure 4.11.

Fig. 4.11
Inter-Work Location Group Maintenance (80.2.19)

Inter-Work Location Group Mai...

Go To Actions Copy Print Preview

Site:

Whse:

From WLocGp:

To WLocGp:

Description

Confirmed at Source ? ☐ Task:

System Code: Priority:

Two Phase ? ☐ Increment:

Keep From Status ? ☐

Enter values in the following fields:

- Site.* Enter the name of an existing site.
- Warehouse.* Enter the name of an existing warehouse in which you want to maintain inter-work location group fields.
- From WLocGroup.* Enter the name of an existing source WLG for this movement combination.
- To WLocGroup.* Enter the name of an existing destination WLG for this movement combination.

Press Go to display the Description frame.

The fields in the Description frame control the same fields as in the Transaction Create Defaults frame of Warehouse Maintenance, only here they relate to a specific movement between the two WLGs you entered in the first frame.

See “Transaction Create Defaults” on page 27 to learn more about individual fields.

Location Group Reports and Inquiries

Table 4.1 lists report and inquiry options available for storage location groups and work location groups.

Table 4.1
Location Group Reports and Inquiries

Program	Description
Storage Location Group Browse (80.3.2)	This option lets you select the site and review details of all the storage location groups that have been set up in warehouses in that site.
Storage Location Group Report (80.3.3)	This option lets you select a range of sites, warehouses, and SLGs for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the current fields that have been set up for each SLG.

Program	Description
Storage Location Group List Inquiry (80.3.6)	This option lets you select the site, warehouse, and the storage location group list, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current entries that have been set up for the selected list.
Storage Location Group List Report (80.3.7)	This option lets you select a range of sites, warehouses, and SLG lists for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the current entries that have been set up for each SLG list.
Work Location Group Inquiry (80.3.10)	This option lets you select the site and review details of all the work location groups that have been set up in warehouses in that site.
Work Location Group Report (80.3.11)	This option lets you select a range of sites, warehouses, and WLGs for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the current fields that have been set up for each WLG.
Inter-Work Location Group Browse (80.2.20)	This option lets you select the site and review details of all the inter-work location group combinations that have been set up in warehouses in that site.
Inter-Work Location Group Report (80.2.21)	This option lets you select a range of sites, warehouses, from WLGs, and to WLGs for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the current fields that have been set up for each inter-work location group combination.

Defining Locations

This chapter describes how to set up the fields for defining the characteristics of individual storage locations in your warehouses. It also explains how to use Mass Location Maintenance (80.3.13.21) to set up a range of similar storage location details to minimize the repetition of the setup process. The chapter is divided into the following major sections:

***About Locations* 78**

Defining additional QAD Warehousing fields for each location in each warehouse and defining warehouses as standard locations

***Location Maintenance* 78**

Setting up all the locations within the warehouse using Location Maintenance (80.3.13.1)

***Mass Location Maintenance* 84**

With a large number of similar locations to define in a warehouse, you can simplify and speed up the setup procedure by using the Mass Location Maintenance facilities.

***Using Check Digits with Locations* 85**

Specifying a check digit value that warehouse staff enter when they move items from the storage location.

***Location Report and Inquiry Functions* 86**

Displaying location data.

About Locations

To enable QAD ERP to make use of them, all inventory locations must be defined as standard QAD ERP locations. When you are using QAD Warehousing, you also have to define additional QAD Warehousing fields for each location in each warehouse. Because QAD ERP sees each warehouse as a dummy location, your warehouses must also be defined as standard locations. There are, therefore, three different ways to define locations:

- A warehouse is defined as a standard QAD ERP location, so that QAD ERP can use it, and is also defined as a warehouse. You define both the warehouse fields and the standard QAD ERP location data in Warehouse Maintenance. See “Warehouse Maintenance” on page 24.
- A storage location that you want to use in a warehouse is defined as a standard QAD ERP location, so that QAD ERP can report on its capacity, contents, and so on, and is also defined as a QAD Warehousing location so that QAD Warehousing can use it for put-away, storage, and picking. You define both the QAD Warehousing fields and the standard QAD ERP data using QAD Warehousing Location Maintenance (80.3.13.1).
- A storage location that is outside the QAD Warehousing system is defined only as a standard QAD ERP location. QAD ERP can report on its capacity and contents, but QAD Warehousing is not aware of its existence. These locations are set up using QAD ERP’s standard Location Maintenance (1.1.18) and are not part of the QAD Warehousing system. Put-away or picking algorithms do not consider those locations. See *User Guide: Master Data* for details on locations.

You do not need to use QAD ERP’s Location Maintenance (1.1.18) to set up your warehouses or your QAD Warehousing locations within these warehouses. However, after you define warehouses and locations, they also exist as standard QAD ERP locations and can be accessed using QAD ERP’s Location Maintenance (1.1.18). Do not use this option to maintain your warehouses and locations though, because the entries you make in QAD ERP are not available to QAD Warehousing.

Location Maintenance

When you have defined your warehouse and its internal routing groups (IRGs), storage location groups (SLGs), and work location groups (WLGs), the next step is to set up all the locations within the warehouse. You can do this for individual locations using Location Maintenance (80.3.13.1). This lets you define a name for each location and define both the standard QAD ERP location data and the QAD Warehousing specific data. When you have many locations to define, use Mass Location Maintenance (8.3.13.21).

See “Mass Location Maintenance” on page 84.

Locations do not need to be permanent storage areas. Use Location Maintenance to:

- Set up individual user IDs as locations, representing the carts where these users place picked inventory. See “Specifying Locations for User Carts” on page 266 for details.
- Set up trucks as locations for tracking shipped inventory. See “Defining a Truck Location” on page 355.

You must also set up docks and shipping lanes as locations before they can be referenced in wave planning functions. See “Defining Lanes and Docks” on page 292.

Figure 5.1 illustrates Location Maintenance.

Fig. 5.1

Location Maintenance (80.3.13.1)

Enter data in the following fields:

Site. Enter the name of an existing site.

Location. To modify the fields for an existing location, enter its name. To create a new location, enter its name or identifier. A blank location name is not allowed.

QAD Location Data

The fields in this frame define the location for QAD ERP. Refer to the QAD ERP user documentation for full details of each field.

Following is a brief summary of the use of each field.

Description. Enter a brief description of this location, usually describing where to look for it.

Inventory Status. Enter the status typically assigned to inventory held in this location.

Permanent. Enter Yes to indicate that the location is permanent; it is retained even if the balance on hand is zero. Enter No to indicate that the location is temporary. Temporary locations are created and deleted by the system. They exist only when the on-hand balance in the location is greater than zero.

Item Location Type. If required, enter a code to indicate the type of storage location. These codes define special storage conditions.

Single Item. Enter Yes if quantities of only one item or product can be stored in this location; otherwise, enter No.

Single Lot/Ref. Enter Yes if only one lot/serial number of the same item can be stored in this location; otherwise, enter No.

Capacity. Enter the capacity of this storage location, in terms of the capacity unit of measure, in the next field.

Note This value is for reference only. The capacity value that QAD Warehousing uses for all calculations is the one you define in the Quantity field for a specific UM or UM and item number combination. See “Quantity” on page 83.

UM. Enter the unit of measure in which the location capacity is expressed.

Note If you are using the optional Supplier Consignment Inventory module, a Transfer Ownership field also displays as shown in the following figure. This module is described in *User Guide: Distribution*.

Fig. 5.2

Location Maintenance, Transfer Ownership Frame

The screenshot shows the 'Location Maintenance' window with a 'Transfer Ownership' frame. The window has a title bar 'Location Maintenance' and a menu bar with 'Go To', 'Actions', 'Copy', 'Print', and 'Preview'. The main area is divided into sections: 'Site: spain', 'Location: 0001', 'Qad Location Data', and 'Location Dimensional Data'. The 'Qad Location Data' section includes fields for 'Description:', 'Inventory Status:', 'Permanent:' (checkbox), 'Item Location Type:', 'Single Item:' (checkbox), 'Single Lot/Ref:' (checkbox), and 'Capacity:'. The 'Location Dimensional Data' section includes fields for 'Height: 0.00', 'Length: 0.00', 'Width: 0.00', 'Dimensional UM:', and '% Full: 0.00'. The 'Transfer Ownership' frame is a small window with a 'Transfer Ownership:' checkbox.

Location Dimensional Data

Location dimensions are used for reference purposes only, so you do not have to enter values.

Fig. 5.3

Location Maintenance, Location Dimensional Data

The screenshot shows the 'Location Dimensional Data' window. It has a title bar 'Location Dimensional Data' and contains fields for 'Height: 0.00', 'Length: 0.00', 'Width: 0.00', 'Dimensional UM:' (with a dropdown arrow), and '% Full: 0.00'.

If you do enter dimensions, the values are all in terms of the dimensional unit of measure, specified in the Dimensional UM field, below the three dimensions. QAD Warehousing does not perform any validation between this reference dimensional data and the functional capacity of the location, which you define as described on page 83.

Height. Enter the height of the location.

Length. Enter the length of the location.

Width. Enter the width of the location.

Dimensional UM. Enter the unit of measure used to define the dimensions.

% Full. This field is for display only; you cannot modify it. It shows the percentage full value for the location, which is blank when you first set up the location.

QAD Warehousing Location Groupings

The QAD Warehousing Location Grouping frame is shown in Figure 5.4.

Fig. 5.4
Location Maintenance, QAD Warehousing Location Grouping

Warehouse. Enter the name of the warehouse in which the location is found.

Store Loc Group. Enter the name of the storage location group to which the location belongs.

Work Loc Group. Enter the name of the work location group to which the location belongs.

QAD Warehousing Location Data

The QAD Warehousing Location Data frame is shown in Figure 5.5.

Fig. 5.5
Location Maintenance, QAD Warehousing Location Data

Check Digit. If check digits are in use for this storage location group, enter the code used to confirm the movement of inventory into or out of this location. Leave this field blank if check digits are not in use for this location. See “Using Check Digits with Locations” on page 85 for details.

Popularity. Enter a code to define the relative priority for choosing this location when QAD Warehousing has a choice of locations in which to put away inventory. Low alphanumeric values for the Popularity code indicate greater popularity.

Example A popularity code of AAA indicates a popular location that is easily accessed, while a code of ZZZ indicates an unpopular location, which is perhaps difficult to access. You normally want to put fast moving stock in the low value Popularity code locations, and slow moving stock in the higher ones.

You can base the popularity codes on an ABC analysis of the number of transactions; QAD ERP (3.6.3) provides a report on item-ABC status.

Storage Type. Unless you are doing cycle counts, storage type codes are optional and are used only for information to define different types of storage locations.

Warehouse Location Type. This field is not currently in use; leave it blank.

Travel Sequence. This field is optional. You can use it to assign a number to this location that is used in conjunction with the numbers assigned to other locations to define a travel sequence within the warehouse. This is effective only in an RDT environment using the Next Task

function. When the next task is selected, QAD Warehousing considers all outstanding tasks and selects the task where the source location has a travel sequence number closest to the value of the current location's travel sequence number. You can use this feature to minimize travel within the warehouse.

See “Labor Management Workbench” on page 158.

Note When working with priorities, the Next Task function first sorts tasks by priority. This means that travel sequences are only efficient for tasks having the same priority.

Dedicated. Enter Yes if this location is dedicated to storage of only one item or product; otherwise, enter No. If you enter Yes, only specific algorithms for dedicated items consider this location for put away. You must also specify the item for which the location is dedicated in the next frame of Location Maintenance.

See Figure 5.3 on page 83.

Picking Type. You must enter a valid picking type code for the location. The standard values are FIFO (First In First Out), LIFO (Last In First Out), and blank, which takes the first database record for the location.

Preferred UM. Enter the preferred unit of measure for this location. This can be used by the relevant put-away algorithms; for example to put away only pallets in a location.

OPC Frequency. This field is used only if opportunity counts are in use for the storage location group to which this location belongs. If opportunity counts are in use, you can specify a number to control the frequency with which such counts are initiated. When inventory is taken out of the location, QAD Warehousing checks whether the quantity on-hand falls below the threshold level for the item, and also checks the OPC frequency value for the location.

- Enter 0 to allow unlimited numbers of opportunity counts.
- Enter 1 to allow an opportunity count at a frequency of one per day.
- Enter 2 to allow an opportunity count at a frequency of one every two days, and so on.

Last OPC. This field is for display purposes only. It shows the date of the last opportunity count for this location.

Stage (In). This field identifies the location that must be used prior to arriving in the current location.

Stage (Out). This field identifies the location that must be used when leaving the current location.

Stage in and out locations are useful when certain fork-lift trucks or engines are used within the aisle while other equipment is used from another area to the aisle itself. When you make a put-away for instance, you must find the destination location, but the RF terminal shows the movement from the receipt area to the stage in first and then another task is created to move goods from the stage in to the destination location. For issue, when picking goods out of the location to the dispatch area, the first movement is from the location to the stage out and the second is from the stage out to the dispatch area. The two movements have the same transaction number.

See “Confirming in Staged Locations” on page 240.

The stock is never in the stage location in the system, although physically, it is a mandatory step for the goods in movement. The stage in and out locations may or may not be defined as locations in the system.

Location Capacities

The Location Capacity frame is shown in Figure 5.6.

Fig. 5.6
Location Maintenance, Capacity

Item Number	UM	Quantity	Height	Length	Width
fg	ea	60.0000			

The fields in this frame specify item quantities in a particular unit of measure that fits in the location. You can enter multiple lines for different items and different units of measure.

Item Number. Enter the number for the inventory item to which this quantity definition relates. You can leave this field blank if the quantity relates to all items.

Example You could define how many standard pallets fit in the location, regardless of the items contained on the pallets.

If you entered Yes in the Dedicated field on the previous frame, you must also specify the item to which this location is dedicated.

UM. Enter the unit of measure in which this quantity definition is specified.

Quantity. Enter the quantity of the selected UM that fits in this location.

In Alternate UM Maintenance (80.5.1), pallets typically have the Sizing Type field set to R for sizing by reference so that reference numbers are unique to pallets.

If you specify 99999 as the quantity of a UM that is not sized by reference in Alternate UM Maintenance, the system does not calculate the % full for non-functional IRG locations.

Height, Length, Width. If the quantity is sized by reference, you have access to the height, length, and width fields to tell the system how many pallets of a given kind can be stored in that location. The Quantity field is automatically updated with the multiplication of the three dimensions. If a maximum pallet height is defined at the item/warehouse level, the capacity of the location is truncated to take into account the stacking for this item.

Mass Location Maintenance

When you have a large number of similar locations to define in a warehouse, you can simplify and speed up the setup procedure by using the Mass Location Maintenance facilities. There are two steps involved:

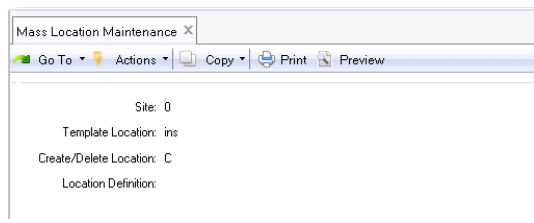
- 1 Use QAD Warehousing Sequence Definition Maintenance (80.24.1) to set up a sequence definition code. This identifies the template to use for setting up the individual locations. Then define the format and range of the location names that are generated. You can specify fixed-value parts and incrementing parts of the location names, so that you end up with location names such as Bulk0101, Bulk0102, Bulk0103, and so on. See “Sequence Definition” on page 42.
- 2 Use Mass Location Maintenance (80.3.13.21) to generate the range of locations. You specify the sequence definition to use, and QAD Warehousing uses the format and range you defined in step 1.

You must set up the sequence definition before starting Mass Location Maintenance. The final stage of creating a range of locations is to run Mass Location Maintenance to generate the location records based on one of the sequence definitions you have set up using the Sequence Definition Maintenance.

Mass Location Maintenance (80.3.13.21) is shown in Figure 5.7.

Fig. 5.7

Mass Location Maintenance (8.3.13.21)



The screenshot shows a window titled "Mass Location Maintenance" with a standard toolbar (Go To, Actions, Copy, Print, Preview). Below the toolbar, there are four labeled fields:

- Site: 0
- Template Location: ins
- Create/Delete Location: C
- Location Definition:

Enter values in the following fields:

Site. Enter the name of an existing site.

Template Location. As well as specifying a sequence definition code to define the way the location identifiers are generated, you must also specify a template location, which is used to provide the field settings for all the new locations you generate. It is useful, therefore, to create the first location in the sequence using Location Maintenance, set up the location field settings the way you want them for the entire group of locations, and then specify this location as the Template Location for Mass Location Maintenance.

Create/Delete Location. If you are running Mass Location Maintenance to create a block of locations, enter C in this field. The sequence definition code specifies the range of locations that are created.

You can also use Mass Location Maintenance to delete a block of locations; for example, if you are restructuring your warehouse with a different location layout. You do this by entering D in the Create/Delete Location field. Again, the sequence definition code specifies the range of locations that are deleted.

Location Definition. Specify the sequence definition code you want to use to create or delete a block of locations.

When you press Go to accept these entries, QAD Warehousing presents frames showing the field settings for the template location so that you can modify them if required. When you have checked all the fields, you are prompted to continue. Enter Yes to continue with the process or No to quit.

At the bottom of the frame, the system displays another message to inform you of the number of locations that are created or deleted based on the sequence definition you have selected.

Note If you are using the optional Supplier Consignment Inventory module, a Transfer Ownership field also displays. This module is described in *User Guide: Distribution*.

Using Check Digits with Locations

Check digit functionality exists for warehouse staff when picking items from storage locations. You can specify a check digit value that warehouse staff enter when they move items from the storage location.

The check digit can be from 1 to 8 alphanumeric characters. The system generates the check digits randomly. This function is useful for warehouses that are not managed with RF devices to ensure that the correct locations are being referenced during picking.

To implement check digit functionality, use Check Digit Generation (80.3.13.13); see Figure 5.8.

Set the following:

- Check Digit to Yes in Storage Location Group Maintenance (80.3.1). See page 81.
- Enter a digit value in the Number of Digits field in Check Digit Generation.

Check digit functionality does not exist when moving items to containers during picking.

Fig. 5.8
Check Digit Generation (80.3.13.13)

Check Digit Generation

Go To Actions Copy Print Preview

Site: 14
Warehouse: 14

Number of Digits (1-8): 0

Location Report and Inquiry Functions

Table 5.1 lists report and inquiry options available relating to Locations and Mass Location Maintenance.

Table 5.1
Location Reports and Inquiries

Program	Description
Location Inquiry (80.3.13.2)	This option lets you select the site, warehouse, and the location, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current entries that have been set up for the selected location.
Location Report (80.3.13.3)	This option lets you select a range of sites, warehouses, and locations for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the current fields that have been set up for each location.
Dedicated Location Inquiry (80.3.13.5)	This option lets you display all the available locations for a given item, and specify where you want the inquiry results displayed; for example, a window.
Locations by SLG Inquiry (80.3.13.6)	This option lets you select the site, warehouse, and the SLG, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows all the locations that have been set up for the selected SLG.

Defining Items

This chapter explains how you define item data relating to warehousing activities. Items you store in your warehouses must exist in QAD ERP, but you have to specify additional information concerning the storage and picking of items that relates the items to QAD Warehousing's warehousing activities. The chapter is divided into the following major sections:

About Item Data 88

An introduction to item data in a warehouse.

Defining Item Data for Sites and Warehouses 88

Explains the process of using Item Master Maintenance.

Defining Item Data for Storage Location Groups 95

Using Item/SLG Properties Maintenance (80.4.1) to specify warehousing fields for items related to a specific storage location group.

Defining Customer Status for Items 98

Customer-Item Status Maintenance (80.4.17) lets you specify a particular inventory status code for a specified customer.

Item Data Report and Inquiry Functions 99

Displaying item data for a warehouse.

About Item Data

You define all your standard item data in the usual way using QAD ERP Item Master Maintenance (1.4.1). However, because additional item attributes must be specified to enable QAD Warehousing to perform its put-away, storage, and picking functions, QAD Warehousing provides extra item maintenance functions that enable you to enter the required information.

The information that QAD Warehousing requires relates to the storage of items in individual warehouses. You enter this information for items using Item-Warehouse Maintenance (80.4.11). Much of this information might be the same for other warehouses in the same site, so an additional program is provided: Item-Site Maintenance (80.4.9). This program lets you enter much of the item-warehouse data in the form of default values used when you enter the details for a warehouse in that site. Similarly, much of the item-site data might be the same for other QAD Warehousing sites. You can use another additional program—Item Maintenance (80.4.7)—to enter item-site data that defaults to each site.

So, the sequence is to:

- Enter overall generic default item data settings in Item Maintenance.
- Enter defaults for each site using Item-Site Maintenance.
- Enter settings for specific warehouses using Item-Warehouse Maintenance. This is the only function that is mandatory; the use of the generic and site default programs is optional.

To simplify this procedure, you can use QAD Warehousing's Item Master Maintenance (80.4.5), which combines the three item functions into one program.

The remaining item data maintenance options are as follows:

- Item/SLG Properties Maintenance lets you specify warehousing fields for items related to a specific storage location group.
- Supplier-Item Maintenance lets you specify specific inspection properties for the given supplier and item relationship.
- Customer-Item Status Maintenance lets you specify a particular inventory status code for a specified customer. When QAD Warehousing is picking inventory to fill an order for that customer, it picks only inventory with that status.

Defining Item Data for Sites and Warehouses

The previous section explains how you can maintain item data using either Item Master Maintenance or the three separate options: Item Maintenance, Item-Site Maintenance, and Item-Warehouse Maintenance. This section explains the process of using Item Master Maintenance:

- The first part of this process corresponds to Item Maintenance; see page 89.
- The second part corresponds to Item-Site Maintenance; see page 92.
- The final part corresponds to Item-Warehouse Maintenance; see page 93.

Note These maintenance options are not used for creating item records. You must always first create item records using the standard QAD ERP Item Master Maintenance (1.4.1). Only then can you add the warehousing fields to the basic item data.

Item Master Maintenance (80.4.5) is shown in Figure 6.1.

Item Maintenance

Enter the item number you want to maintain. When you select your item, the system displays its description and base UM at the top of the frame, and displays the first frame of fields for entry of generic defaults to apply to this item across all sites.

Figure 6.1 shows the Item Data and Default Site Data frames.

Fig. 6.1
Item Master Maintenance, Item and Site Data

The screenshot shows a web application window titled "Item Master Maintenance". At the top, there is a search bar with "Item Number: 0" and a magnifying glass icon. Below the search bar, the text "UM: EA" is displayed. The main content area is divided into two sections: "Item Data" and "Default Site Data".

Item Data Section:

- UM Group: (text input field)
- Shelf Life Offset: 0
- Critical Days: 0
- Barcode 1: (text input field)
- Barcode 2: (text input field)

Default Site Data Section:

- Warehouse Item Type: (text input field)
- Replenishment Type: (text input field)
- Popularity: (text input field)
- Single PA Trans: ☐
- Issue Method: (text input field)
- Print ID ? : ☐
- ID Quantity: 0
- OPC Threshold: 0.0

Item Data

UM Group. If the units of measure used for this item belong to a group of UMs, you can enter the UM group code here. Any future revisions to the conversion factors in this UM group are then applied to this item when you run UM Conversion Generation. Leave this field blank if a UM group is not applicable. See “UM Conversion Generation” on page 108.

Note UM groups are a tool to help generate conversion factors. Defining a group and linking it to an item is not enough to have conversion factors created. You must run UM Conversion Generation.

Barcode 1. Enter a barcode number to use for this item. The system uses this number in lieu of the original barcode number. The barcode number must be unique; that is, the same barcode number cannot be linked to multiple QAD ERP items.

Typically EAN/UCC 13 or EAN/UCC 14 codes and customer item numbers that you define in Customer Item Maintenance (1.16) are alternate barcodes used in most warehouses.

For an example, see “EAN-128 Barcodes” on page 165.

Barcode 2. Enter an alternate barcode number to use in place of the original barcode number. The alternate barcode number must be unique; that is, the same alternate barcode number cannot be linked to multiple QAD ERP items.

Shelf Life Offset. For inventory that has a limited shelf life, enter the number of days between the customer’s best before date and the expiry date for the item. This time period is taken into account by some of the picking algorithms to prevent picking inventory which would have

insufficient shelf life remaining to be saleable. If shelf life is not applicable, leave this field blank. This field is frequently used in the food industry when the customer is a distributor/grocer and not the end customer.

Critical Days. For inventory that has a limited shelf life, enter the number of days counting back from the item's expiry date during which time the inventory can be regarded as critical inventory. This time period is taken into account by some of the picking algorithms that pick only critical inventory. If critical days are not applicable, leave this field blank.

Default Site Data

The entries you make in this frame default when you enter the Item-Site data. You can override these values for individual sites.

Warehouse Item Type. Enter a code to categorize items in groups of similar type; for example, handling characteristics or put-away method. These codes can be used in some algorithms and in internal routing assignment. Leave this field blank if the item does not belong to a particular item type.

Replenishment Type. Enter a code to categorize items in groups that have the same replenishment requirements. Replenishment can then be specified for a group of items, rather than for individual items. Leave this field blank if the item does not belong to a particular replenishment type.

Popularity. Locations are assigned popularity codes that represent the ease of access. Similarly, you assign a popularity code to each inventory item so that QAD Warehousing can match popular inventory with popular locations. You can use this facility to ensure that fast moving items are stored in the most accessible locations. A sensible way to define this value is to use an ABC analysis and make categories for fast and slow moving items. Locations have a popularity code as well, and using the appropriate algorithm, QAD Warehousing tries to put away fast-moving items in very accessible locations.

Single PA Trans. Enter Yes if the system should attempt to put away received quantities of this item in a single put-away transaction, that is, all the inventory in the same location. Otherwise, enter No.

Issue Method. This field specifies the picking transactions that are created for this item in the bulk picking process.

Print ID. Enter Yes to print identification labels for this item; otherwise, enter No.

ID Quantity. If you have entered Yes for Print ID, enter the number of identification labels to be printed; otherwise, leave this field blank.

OPC Threshold. This field relates to opportunity counts, which you can specify when this item is stored in an RDT environment. When inventory is taken out of the location, QAD Warehousing checks whether the quantity on-hand falls below the threshold level you specify for the item, and also checks the OPC frequency value for the location where the item is stored. If both conditions are met, a cycle count is requested.

Merging Rules

The next Item Master Maintenance frame is shown in Figure 6.2.

Fig. 6.2
Item Master Maintenance, Default Site Merging Rules

Item Master Maintenance

Go To Actions Copy Print Preview

Item Number: 0

UM: EA

Default Site Data

0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0
0	0

The fields in this frame define the merging rules when QAD Warehousing considers whether to merge newly received quantities of this item with quantities already stored in a warehouse location. The merging rules work by comparing the number of days left before the item reaches its expiry date. If the difference between the days remaining for the newly received inventory and the existing inventory is sufficiently small, the items can be merged; if the difference is too large, the items must be kept separate.

Same Days. Enter the number of days by which the days remaining before expiry date can differ while allowing the inventory to be merged.

Example If the existing inventory in the location has 70 days remaining before its expiry date, the newly received inventory has 80 days remaining, and the Same Days value for the item is 12, the inventory can be merged in the same location because the difference between 70 and 80 is less than 12. If the Same Days value was 5, QAD Warehousing would not allow the inventory to be merged.

Days from Exp/Mfg. Enter the maximum number of days remaining before expiry date to which this Same Days value applies. You can use this field to set bands of merging rules which depend on the length of time remaining until expiry.

Example You might want a figure of 10 for the Same Days field if the inventory is within 100 days of expiry, but a figure of 5 if the inventory is within 50 days from expiry. To achieve this, you would specify values of 10 and 100 on the first line, and 5 and 50 on the second line.

Note The provision of multiple lines on which you can enter Same Days and Days from Exp/Mfg values lets you specify that the further away the expiry date is, the greater the acceptable difference is when merging stock. In practice, this is very useful in a LIFO location, where only the last pallet can be picked. By merging the stock, you can ensure that the last pallet in, if not the oldest, is one of the oldest.

The next section of Item Master Maintenance corresponds to Item-Site Maintenance, where you set up default values for the item-warehouse data for a particular site.

Item-Site Maintenance

Enter the site to which the default values apply. When you have selected the site, the system displays the Item Maintenance frame shown in Figure 6.3.

Fig. 6.3
Item Master Maintenance, Site and Default Warehouse Data

The screenshot shows a software window titled "Item Master Maintenance" with a standard menu bar (Go To, Actions, Copy, Print, Preview). The form is divided into several sections:

- Item Data:**
 - Item Number: 0
 - UM: EA
 - UM Group: (blank)
 - Shelf Life Offset: 0
 - Critical Days: 0
 - Barcode 1: (blank)
 - Barcode 2: (blank)
- Default Site Data:**
 - Warehouse Item Type: (dropdown menu)
 - Replenishment Type: (dropdown menu)
 - Popularity: (text input field)
 - Single PA Trans: ☐
 - Issue Method: (dropdown menu)
 - Print ID?: ☐
 - ID Quantity: 0
 - OPC Threshold: 0.0

Site Data and Default Warehouse Data

The values you enter in these fields apply to the whole site, the Site Location field, or default to each warehouse in this site when you enter item-warehouse data for these warehouses.

Site Location. Enter a location, which can also be a warehouse or a warehouse master list, for this item at this site. This value is used when an item is issued from one site using that site's location, warehouse, or master list, and received at another site, where a different location, warehouse, or master list applies. You must identify the location, warehouse, or warehouse master list for the item at each site.

Default Whse Location. Enter a default issuing and receiving location for this item at this site to be used when the warehouse is inactive. You cannot access storage location groups for an item in an inactive warehouse. At the item-warehouse level, you specify a storage location group or a list of SLGs for the item, used when the warehouse is active.

The remaining fields (Warehouse Item Type, Replenishment Type, Popularity, Single PA Trans, Issue Method, Print ID, ID Quantity, and OPC Threshold) display the default values—if any—that you entered at the item level. At the item-site level, you can accept the generic defaults or override them with different values for this site.

See "Default Site Data" on page 90.

When you press Go to accept the first frame of Default Site Data, the system displays the second Item-Site Maintenance frame, containing further default warehouse data fields. These fields define the merging rules when QAD Warehousing considers whether to merge newly received quantities of this item with quantities already stored in a warehouse location.

Again, the system displays the generic default values that you entered for the item merging rules. You can accept the generic defaults or override them with different values for this site.

See “Merging Rules” on page 91.

The next section of Item Master Maintenance corresponds to Item-Warehouse Maintenance, where you set up the actual values for the item-warehouse data for each particular warehouse.

Item-Warehouse Maintenance

Enter the warehouse to which the item data applies. When you have selected the warehouse, the system displays the first of the Item-Warehouse Maintenance frames shown in Figure 6.4.

Fig. 6.4
Item-Warehouse Maintenance (8.4.11)

The screenshot shows the 'Item-Warehouse Maintenance' window. At the top, there's a title bar and a menu bar with 'Go To', 'Actions', 'Copy', 'Print', and 'Preview'. Below the menu bar, the following fields are populated: Item Number: of, UM: EA, Site: 2302a, Warehouse: wh2, AIM Training, and AIM Training. The 'Warehouse Data' section is divided into two columns. The left column contains: Location (blank), Store Loc Group: of, SLG List (blank), Warehouse Item Type (dropdown), Replenishment Type (dropdown), Popularity (blank), Logistics UM Tolerance: 100.00%, and Auto Replenish (checkbox). The right column contains: Single PA Trans (checkbox), Issue Method (dropdown), Print ID (checkbox), ID Quantity: 0, OPC Threshold: 0.0, Logistics UM: EA, Pal Max Height: 0, Auto Replenish %: 0.00%, and Print Unpl. Issue Tag (checkbox).

Warehouse Data

The values you enter in these fields are used by QAD Warehousing in all inventory transactions relating to this item at this warehouse.

Location. This field is accessible only when the warehouse is inactive, when you can enter or modify the default location for this warehouse, if required. When the warehouse is active, the SLG or the SLG list specified in the following fields is used to identify locations for the item.

Store Loc Group. Enter the storage location group where you want the QAD Warehousing put-away algorithms to search for locations to store receipts of this item. If you are using storage location group lists, you can leave this field blank and enter a list in the SLG List field. You cannot enter values in both of these fields.

SLG List. If you have left the Store Loc Group field blank, you can enter the name of a storage location group list. The QAD Warehousing put-away algorithms consider each SLG on the list in sequence when searching for locations to store receipts of this item.

The fields Warehouse Item Type, Replenishment Type, Popularity, Single PA Trans, Issue Method, Print ID, ID Quantity, and OPC Threshold display the default values—if any—that you entered at the Item-Site Maintenance level. At the item-warehouse level, you can accept the item-site level defaults or override them with different values for this warehouse.

See “Default Site Data” on page 90.

Logistics UM Tolerance. Enter a percentage value to specify when the sizing calculations use the Logistics UM and when they use base UM.

Example The base UM for an item is EA (each), the logistics UM is PL (pallet), and a pallet contains a maximum of 100 EA. The location where the item is stored can hold two pallets or 200 EA of the item. If you set the Logistics UM Tolerance to 10%, a pallet containing 90 items is within the tolerance of 10%, so the location is considered to have one full pallet and be 50% full. However, a pallet containing 80 items is outside the 10% tolerance, so the calculation for the space used in the location is performed in base UM (EA). Since the location holds 80 items in a capacity of 200, the location is considered to be 40% full. The main difference with pallet sizing is that additional pieces can be received in that location.

Auto Replenish. This field specifies the tolerance for the replenishment point. The replenishment point is the quantity of stock below which an automatic replenishment is triggered.

Example If the replenishment point is defined as 50 EA, when the inventory level drops below 50 EA, the system initiates a replenishment process. If the Auto Replenish value is set to 80%, the automatic replenishment occurs only when the stock level falls below 40 EA. Note that a value of 0% has the same effect as a value of 100%.

Logistics UM. Enter the logistics unit of measure to be used as the receipt UM when the receipt is made in base UM.

Note The logistics UM is only used if the receipt is made in the base UM for the item. Its use lets you make the receipt in pieces. For example, if the logistics UM is a pallet (PL) which holds 100 EA, and you receive 280 EA, QAD Warehousing creates 3 records with reference information: 2 full pallets of 100 EA, and 1 partial pallet of 80 EA. The logistics UM Tolerance % field specifies whether the partial pallet is considered as full. From version 2.0c of QAD Warehousing, however, it is possible to use the logistic UM even when receiving in alternate UM, like boxes. At the warehouse level, the Log with Base UM Only field indicates whether logistics UM is used with base UM only or also with alternate UM.

Pal. Max Height. This field modifies the capacity calculation for the corresponding item to consider the stacking of pallets. When the location capacity is defined in referenced unit of measures such as pallets, the result of the capacity calculation is the multiplication of the height, width, and length. When the maximum pallet height is defined for a given item, the multiplication is made using this maximum height and not the location height.

Auto Replenish. Enter Yes to select Auto Replenishment. If an existing replenishment definition exists for a location/item or an SLG/item, when the inventory level falls below the replenishment point, the system automatically starts a replenishment process. This process picks the missing items and transfers them to the location/SLG to be replenished. With auto replenishment, you do not need to start a manual replenishment; the process is triggered automatically. Enter No to switch off auto replenishment.

Print Unplanned Issue Tag. This field enables you to print an unplanned issue tag to request the issue of material out of stock. It is created when using Issues–Unplanned (3.7). Make sure that the ISS-UNP transaction type is defined in Transaction Type Maintenance (80.7.6) with print procedure code PK. The printer used is the same as for pallet ID. Make sure the printer is defined correctly at the work location group level.

Figure 6.5 shows the unplanned issue tag generated by QAD Warehousing. When printed, the system is already updated. Its purpose is to help in knowing which goods are manually issued from the warehouse.

Fig. 6.5
Unplanned Issue Tag Generated By QAD Warehousing

UNPLANNED ISSUE		
Site:	site	Site
Warehouse:	raw - Raw Material Warehouse	
Location:	bulk10	
Item Number:	compA - Item A Description	
Lot/Serial:		
Reference:	99999999	
Address:		
Quantity:	100 EA	
Effective Date:	18/12/00	
Created By:	yg	
At:	18/12/00 11:44:44	

Other Item-Warehouse Data

The second Item-Warehouse Maintenance frame has a set of fields that control quality inspection of the item at the specified site and warehouse. The fields in this frame are discussed in “Quality Inspection Parameters” on page 373.

The last frame contains fields that define the merging rules when QAD Warehousing considers whether to merge newly received quantities of this item with quantities already stored in a warehouse location.

Again, the system displays the item-site level default values that you entered for the item merging rules; see “Merging Rules” on page 91. You can accept the defaults or override them with different values for this warehouse.

When you have finished entering merging rules values at the item-warehouse level, press Go to accept the entries.

Defining Item Data for Storage Location Groups

In addition to defining data for items at the warehouse level, you can also use Item/SLG Properties Maintenance (80.4.1) to specify warehousing fields for items related to a specific storage location group. Item/SLG Properties Maintenance is shown in Figure 6.6.

See “Warehouse Data” on page 93.

Fig. 6.6
Item/SLG Properties Maintenance (80.4.1)

Enter values in the following fields:

Site. Enter the name of an existing site.

Warehouse. Enter the name of the warehouse in which you want to maintain item/SLG data.

Store Loc Group. Enter the name of the storage location group.

Item Number. Enter the item number in which you want to maintain item/SLG data.

Transaction Details

The Transaction Details fields show the settings for this storage location group. If you want to modify these settings for this item only, you can modify the field values in this frame.

Allow Issues. This field controls whether inventory can be issued out of the system from locations in this SLG. Generally, you limit issues to specially designated areas, such as Goods-Out. Enter Yes if this item can be issued; otherwise, enter No.

Allow Receipts. This field controls whether inventory can be received from outside the system into locations in this SLG. Generally, you limit receipts to specially designated areas, such as Goods-In. Enter Yes if this item can be received; otherwise, enter No.

Allow Incoming Returns. This field controls whether inventory can be received into locations in this SLG as part of a returned issue. Generally, you limit incoming returns to specially designated areas, such as Goods-Out Returns or Rejects. Enter Yes if this item, when returned from a customer, can be placed in locations in this SLG; otherwise, enter No.

Allow Outgoing Returns. This field controls whether inventory can be issued from locations in this SLG as part of a returned receipt. Generally, you limit outgoing returns to specially designated areas, such as Goods-In Returns or Rejects. Enter Yes if quantities of this item to be returned to a supplier can be issued from locations in this SLG; otherwise, enter No.

Note If Allow Receipts is set to Yes in a bulk storage location group, for example, the system lets you make a direct receipt into these locations without generating any QAD Warehousing transactions.

Inventory Details

OPC Threshold. You can set the OPC Threshold for the item for the whole warehouse using Item-Warehouse Maintenance, but you can also enter a value in this field to apply only to this item in this SLG. See “OPC Threshold” on page 90.

Popularity. You can set the Popularity for the item for the whole warehouse using Item-Warehouse Maintenance, but you can also enter a value in this field to apply only to this item in this SLG. See “Popularity” on page 90.

Count Status Option. Enter a number to define the action that should be performed on the inventory status upon confirmation of a recount or in-tolerance count in this storage location group. This field defaults from Warehouse Maintenance. The options are as follows:

- 0 No status change.
- 1 Change to Location Status: The status of the inventory is changed to the default inventory status of the location.
- 2 Status change based on Fail Status: The status of the inventory is changed to the good status associated with the current fail status in Inventory Status Maintenance (80.8.15).

Recount UM. This field is especially useful when you use CIM load with Cycle Count Entry (3.14) to load stock in the system.

When the Use Recount UM of SLG field is set to Yes in Warehouse Maintenance (80.1.1), the system gives any pallet recounted in Cycle Count Entry the alternate UM defined in the recount UM of the corresponding item/storage location group, if any.

Defining Item Data for Suppliers

Supplier-Item Maintenance (80.4.13) lets you specify default units of measure and quantities relating to the pallet, or other container, capacities for particular items from specified suppliers. These values are used during purchase order flow to provide the default quantity of the item from the particular supplier. If no record is available for a supplier-item combination, the default quantity is taken from the unit of measure records.

Supplier-Item Maintenance is shown in Figure 6.7.

Fig. 6.7
Supplier-Item Maintenance (80.4.13)

Enter values in the following fields:

Address. Enter the address code for the required supplier.

Item Number. Enter the item number in which you want to maintain supplier-item data.

Selective Inspection. Enter Yes if you want this item to be inspected every time the corresponding algorithm is used. Only items marked for selective inspection are considered for inspection. See Chapter 22, “Quality Inspection,” on page 377 for details on managing inspections.

Inspection Frequency. Specify the number of receipts between each inspection of this item, from this supplier, when the corresponding algorithm is used.

Inspection Frequency (Days). Specify the number of days separating two consecutive inspections of this item, from this supplier, when the corresponding algorithm is used.

Destructive. Indicate if the inspection test is a destructive test. When set to Yes, the inspection sample is assigned a specific status after inspection. This stock must be deleted manually, using an unplanned issue, for example.

Sample Quantity. Specify the sample quantity to consider. If Reference is Yes, quantity indicates a number of references, such as pallets, to consider for inspection. Otherwise, quantity is in the base UM of the item.

Sample %. The sample % is used in place of the sample quantity. It represents the percentage of items inspected out of those being received.

Random %. This is a chance to have this item, from this supplier, inspected, if the corresponding algorithm is used.

Defining Customer Status for Items

Customer-Item Status Maintenance (80.4.17) lets you specify a particular inventory status code for a specified customer. When QAD Warehousing is picking inventory to fill an order for that customer, it picks only inventory with that status. You can use this function, for example, to pick only Grade 1 status inventory for a particularly valued customer.

Customer-Item Status Maintenance is shown in Figure 6.8.

Fig. 6.8
Customer-Item Status Maint (80.4.17)

Enter values in the following fields:

Address. Enter the address code for the required customer.

Status. Enter the item status code you want to specify for this customer.

The Name and Address details are taken from the customer address record; you cannot modify them on this frame.

Allow. Indicate whether you want to allow inventory with this status to be picked or prevent it from being picked. Enter Yes to allow picking of inventory with the selected status; otherwise, enter No.

Item Data Report and Inquiry Functions

Table 6.1 lists report and inquiry options are available relating to Item Data and Item Maintenance.

Table 6.1
Item Data Reports and Inquiries

Program	Description
Item-Storage Loc Group Inquiry (80.4.2)	Lets you select the site, warehouse, SLG, and Item, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current entries that have been set up for the selected Item and SLG.
Item-Storage Loc Group Report (80.4.3)	Lets you select a range of sites, warehouses, SLGs, and items for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the current fields that have been set up for each item and SLG.
Item Master Inquiry (80.4.6)	Lets you select an item number and, optionally, a site and warehouse for that item, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current entries in the Item Master Maintenance frames for the item, but you cannot modify the entries in the Inquiry.
Item Inquiry (80.4.8)	Lets you select an item number and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current entries in the Item Maintenance frames for the item, but you cannot modify the entries in the Inquiry.
Item-Site Inquiry (80.4.10)	Lets you select an item number and a site, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current entries in the Item-Site Maintenance frames for the item, but you cannot modify the entries in the Inquiry.
Item-Warehouse Inquiry (80.4.12)	Lets you select an item number and a warehouse, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current entries in the Item-Warehouse Maintenance frames for the item, but you cannot modify the entries in the Inquiry.

Program	Description
Supplier-Item Browse (80.4.14)	Lets you select a supplier address code and review details of the item numbers for which supplier-item details have been entered on the system.
Supplier-Item Report (80.4.15)	Lets you select a range of addresses, item numbers, and UMs for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the current quantities that have been set up for each supplier-item and UM.
Customer-Item Status Browse (80.4.18)	Lets you select the customer address and inventory status, and review details of the fields that have been set up.
Customer-Item Status Report (80.4.19)	Lets you select a range of customer addresses, and inventory status codes for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the current fields that have been set up for each customer and status code.

Sizing

This chapter explains the way that QAD Warehousing handles sizing and units of measure, for both items and locations. It also explains how you can use alternate units of measure, and set up conversions between the various units. The chapter is divided into the following major sections:

About Sizing and Units of Measure 102

An introduction to sizing and the importance of units of measure in a warehouse.

Alternate UM Maintenance 105

Defining the units of measure for sizing definitions for locations and items using Alternate UM Maintenance.

UM-Group Maintenance 107

Using UM-Group Maintenance to simplify the process of generating the same conversion factors for a number of different items.

UM Conversion Generation 108

Attaching conversion factors to selected items.

Sizing and UM Report and Inquiry Functions 109

Displaying sizing and UM data for a warehouse.

About Sizing and Units of Measure

The QAD Warehousing sizing functions are designed to give you complete flexibility in the way you handle units of measure (UMs) relating to ordering, receipt, storage, picking, and shipping of inventory. With QAD Warehousing, you do not have to define your warehouses as either palletized or non-palletized. QAD Warehousing can handle both methods of measuring the quantities of inventory, and can easily merge palletized and non-palletized stock in the same location.

QAD Warehousing provides this flexibility by maintaining sizing definitions for both individual locations and individual inventory items. In both cases, you can define a range of sizing definitions using alternate units of measure.

Example A location sizing definition could specify that location Bulk0101 has the following capacities for item A:

UM	Capacity
EA (loose items)	100,000 items
P1 (Pallet type 1)	10 P1 pallets
P2 (Pallet type 2)	12 P2 pallets

The inventory sizing definition for item A specifies a base UM of EA (each), but it can also be supplied, stored, and picked in two different types of pallet. The conversion factors for these pallets are that a P1 pallet contains 10,000 of item A, and a P2 pallet contains 8,000 of item A.

When QAD Warehousing attempts to put away a quantity of item A in location Bulk0101, it must first examine the quantity and UM of the received inventory, and then consider the inventory records for the location that show the quantities and UMs of the items already stored in the location.

One of the key elements QAD Warehousing uses to perform these calculations is the sizing type.

Sizing Types

Each QAD Warehousing unit of measure has a specified sizing type. You specify this in Alternate UM Maintenance. Table 7.1 lists the two possible sizing types.

Table 7.1
Sizing Types

Sizing Type	Explanation
blank	This sizing type is used for basic UMs to be applied to individual items or pieces. The blank sizing type indicates either that this unit is the base UM for the item, or that a conversion factor must be applied to convert to the base UM. In the example, the UM EA would have a blank sizing type.
R (reference)	This sizing type is used for UMs that are counted as a single quantity, regardless of the actual number of items contained. In the example, the pallets P1 and P2 would have a sizing type of R. Each reference type container is assigned a reference number, which can be used to identify the record that specifies the actual quantities of inventory held in the container.

You need to be careful when defining your units of measure to make sure that you assign each UM with the correct sizing type.

Example If you allow a carton to be split, you cannot then be sure that one carton represents 200 EA, as some may have been removed from the carton. In such cases, you would need to handle cartons like pallets, and assign a sizing type of R.

Calculating Location Capacities

When calculating location capacities and the available space in each location, QAD Warehousing has to take into account the UM and the sizing type for each inventory record in the location. It would not work if the available capacity was calculated by simply converting every record into the base UM, and then adding them all up.

Taking the example location that holds 10 pallets of type P1, the situation could exist where the location contains 10 P1 pallets, each of which is part full. The total number of items in the location might be only 50,000, indicating that the location is only half full. However, if the required put-away is for another pallet, there is not any space for it.

The key element in QAD Warehousing's location capacity calculations is to use a percentage full figure for each individual inventory record relating to the location. This is best understood by considering an example.

Sizing Definition for a Location

UM	Capacity	Sizing Type
EA (loose items)	100,000	
P1 (Pallet type 1)	10	R
P2 (Pallet type 2)	12	R

Inventory Records for the Location

Assume that items A and B both have the same sizing definition.

Record	Item	Lot	Ref	Alt UM	Qty (in EA)	% Full
1	A	Lot1	67088	P1	10,000	10.00
2	A	Lot1	67090	P1	8,500	10.00
3	A	Lot1	67105	EA	30,000	30.00
4	B			EA	3,000	3.00
5	B	Lot2	67090	P1	1000	N/A
6	A	Lot1	67089	P2	9,200	8.33
Total:						61.33

Record 1. This record's alternate UM is P1, and the Reference field contains a value other than the item's default UM. This indicates that it is a pallet, which is counted as a single unit. The location can contain 10 of these pallets, so the percentage full is 10%.

Record 2. This is the same situation as Record 1, but the reference value is different, indicating a different pallet. Although the quantity of item A on this pallet is different, it still counts as 10% full (being a whole pallet).

Record 3. This record has a reference, but also has an alternate UM which is the same as the item's default UM. This indicates that the item is stored in EA, so the percentage full is 30%.

Record 4. This record has a blank reference, indicating that the item is stored in base UM of EA. The percentage full is 3%.

Record 5. This record has the same reference as Record 2. It is a pallet, but this pallet has already been counted, so this record does not have any effect on the percentage full.

Record 6. This record has an alternate UM of P2 and a reference. This indicates that it is a different sort of pallet. The Sizing definition for the location specifies that it can hold 12 of these pallets, so one pallet represents 8.33% full, regardless of the quantity in EA.

The Total Percentage Full for the location is obtained by summing the percentage for the individual records relating to the location.

Each time that QAD Warehousing considers this location for put-away of inventory, it first adds the record for the new inventory to the existing location records and calculates the new Total Percentage Full. If this exceeds 100%, the new record cannot be accepted, and the inventory cannot be put away in this location. The exception to this is when the new inventory is received in base UM, in which case QAD Warehousing could put away part of the inventory in the location.

Relative Sizing

Because you can specify the quantities of a particular item that make up a unit of measure, QAD Warehousing can provide relative sizing for locations.

Example Consider three items, each of which can have an alternate UM of pallet type P1.

Item	Quantity (in EA) that Fit on a P1 Pallet
Item A	1000
Item B	1500
Item C	2000

If a location can contain 10 pallets of type P1, consider a receipt of 6,000 EA of each of the three items, assuming that full pallets are received.

Receipt	Number of Pallets	Percentage Full
6,000 of Item A	6	60%
6,000 of Item B	4	40%
6,000 of Item C	3	30%

Note Relative sizing plays an important role in reducing the number of records that QAD Warehousing needs to maintain in to be able to calculate capacities for all possible combinations of items and locations. If you have 100 different items that can be stored in 2,000 different locations, without relative sizing you need 200,000 sizing definitions, one for each possible combination. If you use relative sizing, you can define each location's pallet capacity (2,000 records) and each item's quantity per pallet (100 records).

Alternate UM Maintenance

Define the units of measure for sizing definitions for locations and items using Alternate UM Maintenance (80.5.1). Alternate UM Maintenance lets you provide a description and a sizing type for each UM, and to specify additional fields, such as whether the unit can be split and the change action to take when converting from this UM to a new one.

Alternate UM Maintenance is shown in Figure 7.1.

Fig. 7.1
Alternate UM Maintenance (80.5.1)

Enter values in the following fields:

UM. Enter the two-character code for the unit of measure.

Description. Enter the description of the UM.

Properties

Sizing Type. Enter the code for the sizing type. Valid sizing types are as follows:

Blank	This sizing type is used for basic UMs to be applied to individual items or pieces. The blank sizing type indicates either that this unit is the base UM for the item, or that a conversion factor must be applied to convert to the base UM.
R (reference)	This sizing type is used for UMs that are counted as a single quantity, regardless of the actual number of items contained.

Print ID. This field controls the printing of ID labels for inventory measured in this UM. This is the main level of printing control. However, it is not mandatory to define an alternate unit of measure. If no alternate UM is defined, the printing control comes from the item-warehouse definition. See “Item-Warehouse Maintenance” on page 93.

Example If an alternate UM is defined for pallets with the Print ID field set to Yes and an item is received on a pallet, an ID label is printed. However, if the same item is received as a number of eaches, and no alternate UM is defined for EA, whether the ID is printed is determined from the item-warehouse.

ID Quantity. This field controls the quantity of ID labels to be printed.

Allow Split. Enter Yes if this unit of measure can be split into smaller units; otherwise, enter No. You can override the Allow Split setting for a selected storage location group using Storage Location Group Maintenance.

Item Number. This field is used when the unit of measure is also an item; for example, a pallet. Enter the item number for the unit. Leave this field blank for UMs that are not also items.

Ship Type. If the alternate UM is also an item, you can track the item in inventory.

Example An item number is defined for pallets. This item is entered as the alternate UM's item number. Ship type determines if the item is to be considered as actual inventory or just as a memo item.

Leave the Ship Type field blank to maintain inventory levels for the item. When you enter a non-blank value—the convention is M for Memo—standard QAD ERP inventory transactions are created to show the movement of the item, but no on-hand or other inventory details are maintained.

Round Inspection Qty. Indicate if you want the quantity that must be inspected to be rounded to a whole unit. Use this field when you are sampling by percentage by setting the Sample % field to a value for the item. This can result in a decimal value. If your units are boxes, for example, you probably do not want to sample a percent of a box, but rather round up to a complete box. See “Quality Inspection Parameters” on page 373.

Conversion Rules

These fields specify what change action must be taken when changing from the UM specified at the top of the frame to another new UM. Typically, the change action is to clear the reference when changing from a pallet or other reference sizing type UM to a UM such as EA, and to generate a reference when changing from EA to a reference UM such as a pallet.

New UM. Enter the two-character code for the new unit of measure. This is the UM you are changing to.

Change Action. This field defines the action to be performed when the first UM is changed to the new UM. The options are as follows:

- 0 No change
- 1 Blank reference
- 2 Prompt user for reference (Other)
- 3 Prompt user for reference (Same/Other)
- 4 Prompt user for reference (Blank Allowed)
- 5 Automatic reference generation
- 6 NRM and prompt user for reference (Other)
- 7 NRM and prompt user for reference (Same/Other)
- 8 NRM and prompt user for reference (Blank Allowed)

When you have selected the change action for a change to this new UM, you can specify another new UM and continue to set up conversion rules. When you have finished specifying conversion rules, press End to move back to the Sizing Type field, and End again to move back to the UM field at the top of the frame.

UM-Group Maintenance

You can use UM-Group Maintenance (80.5.5) to simplify the process of generating the same conversion factors for a number of different items. To do this, follow these steps:

- 1 Define a UM group in UM-Group Maintenance, which specifies all the conversion factors from the selected base UM to a range of other alternate UMs.
- 2 Attach this UM group to the relevant items using Item Maintenance functions.
- 3 Run UM Conversion Generation to attach the required conversion factors to each of the items.

See “Defining Item Data for Sites and Warehouses” on page 88.

Note This option is not mandatory. It helps in defining conversion factors. They can still be defined using Alternative UM Maintenance (1.13).

UM-Group Maintenance is shown in Figure 7.2.

Fig. 7.2
UM-Group Maintenance (80.5.5)

Alt UM	Conversion
EA	0.0010
PL	30.0000

Enter values in the following fields:

UM Group. Enter a code to identify the UM group you want to define.

UM. Enter the two-character code for the base UM.

All the conversions in the group are specified in terms of the base UM. If the base UM is EA and the group includes conversion factors for boxes, cartons, and P1 pallets, you define each of these alternate UMs in terms of the number of EA it represents. You do not set up a hierarchy, in which pallets convert to cartons, cartons convert to boxes, and boxes convert to EA.

Description. Enter a description of the UM group, which normally identifies the range of items to which it applies.

Alt UM. Enter the two-character code for the alternate UM.

Conversion. Enter the conversion factor. This is the number of base UM that equates to one of the alternate UM.

You can enter multiple lines of conversions. After each line, a new line displays, as shown in Figure 7.3.

Fig. 7.3
UM-Group Maintenance (80.5.5), Multiple Conversion Lines

The screenshot shows the 'UM-Group Maintenance' window. At the top, there's a title bar and a menu bar with 'Go To', 'Actions', 'Copy', 'Print', and 'Preview'. Below the menu bar, there are input fields for 'UM Group' (containing '40') and 'UM' (containing 'TH'). A 'Description' field is also present. At the bottom, there is a table with two columns: 'Alt UM' and 'Conversion'.

Alt UM	Conversion
EA	0.0010
PL	30.0000

UM Conversion Generation

When you have defined the conversion factors between the base UM and a number of alternate UMs using UM-Group Maintenance and then assigned the UM group to the relevant items, the next step is to run UM Conversion Generation (80.5.9) to attach the conversion factors to the selected items.

See “Defining Item Data for Sites and Warehouses” on page 88.

UM Conversion Generation is shown in Figure 7.4.

Fig. 7.4
UM Conversion Generation (80.5.9)

The screenshot shows the 'UM Conversion Generation' window. It has a title bar and a menu bar with 'Go To', 'Actions', 'Copy', 'Print', and 'Preview'. The main area contains several input fields: 'Item Number', 'UM Group', and 'Warehouse Item Type' (a dropdown menu). To the right of these fields are three 'To:' labels, each followed by a search icon. Below the input fields, there are three checkboxes: 'Check Base UM' (checked), 'Delete Old UM Definitions First' (unchecked), and 'Create UM Conv?' (checked). At the bottom right, there is an 'Output' label and a 'Batch ID' field.

You can run the conversion generation for a range of item numbers, a range of UM groups, and a range of warehouse item types. Enter the From and To values for these ranges in the fields at the top of the frame.

Check Base UM. Enter Yes to cause the system to check first that the base UM specified for the UM groups is the same as the base UM for the items to which the conversion factors are to be attached. If the base UMs are not the same, the conversions will not operate as planned, or there can be inconsistencies. This check is not mandatory, so you can enter No if you want to omit the check.

Note You can run this check separately without generating conversions by using UM Check Report (80.5.10).

Delete Old UM Definitions First. Enter Yes to delete any existing alternate UM definitions from the selected items before attaching the new alternate UM conversion factors. This eliminates any inconsistencies between previous conversions and those being generated. Enter No if you want to retain any existing alternate UM definitions for the items.

Create UM Conv. Enter Yes to generate the conversions and attach them to the selected items. Enter No to run the report only, without generating the actual conversions. This is the same as running the UM Check Report (80.5.10).

Sizing and UM Report and Inquiry Functions

Table 7.2 lists report and inquiry options available relating to Sizing and UM Maintenance.

Table 7.2
Sizing and UM Reports and Inquiries

Program	Description
Alternate UM Inquiry (80.5.2)	Lets you select the alternate UM, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current values of the fields that have been set up for the selected alternate UM.
Alternate UM Report (80.5.3)	Lets you select a range of alternate UMs, and then specify where you want the report results printed or displayed. The report shows the current values of the fields that have been set up for the selected alternate UMs.
UM-Group Inquiry per Group (80.5.6)	Lets you select the UM Group, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current values of the conversion factors that have been set up for the selected UM Group.
UM-Group Inquiry per Item (80.5.7)	Lets you select the item number, and then specify where you want the inquiry results displayed; for example, a window. The inquiry shows the current values of the UM group conversion factors that have been set up for the selected item.
UM-Group Report (80.5.8)	Lets you select a range of item numbers, UM groups, and warehouse item types, and then specify where you want the report results printed or displayed. The report shows the current values of the conversion factors that have been set up for the selected ranges.
UM Check Report (80.5.10)	Lets you select a range of item numbers, UM groups, and warehouse item types, and then specify where you want the report results printed or displayed. The report lists inconsistencies caused when the base UM specified for the UM groups is the not same as the base UM for the items to which the conversion factors are attached.

Algorithms

This chapter describes the purpose of the QAD Warehousing algorithms that control how locations are found in which to put away stock items, and from which to pick stock for orders. It also lists the standard algorithms that are supplied with QAD Warehousing, and explains how you can use the algorithm maintenance functions to assign standard algorithms to different inventory transaction types and to introduce customized algorithms for special purposes not covered by the standard algorithms. The chapter is divided into the following major sections:

About Algorithms 112

QAD Warehousing uses algorithms both for putting inventory away in warehouse locations and for selecting locations from which to pick inventory when filling sales orders or works orders.

Algorithm Type Maintenance 113

Using Algorithm Type Maintenance to specify the basic types for warehouses.

Algorithm Master Maintenance 114

Using Algorithm Master Maintenance to modify the descriptions of individual algorithms within each of the algorithm type categories, or to add new algorithms.

Algorithm Assignment 115

Using Algorithm Assignment Maintenance to link a specified sequence of algorithms—of one type per sequence—to a defined combination of transaction, site, warehouse, item or address.

Algorithm Simulation 117

Algorithm Simulation provides functions that enable you to test your algorithm assignments without actually altering the inventory records in your database.

Algorithm Listings 119

A list of all warehouse algorithms.

Algorithm Report and Inquiry Functions 140

Displaying algorithm data.

About Algorithms

QAD Warehousing uses algorithms both for putting inventory away in warehouse locations and for selecting locations from which to pick inventory when filling sales orders or works orders. Each algorithm is a QAD Warehousing program that takes into account a particular set of criteria for choosing the location. A wide range of standard algorithms are provided with QAD Warehousing, but you can add custom programs to perform special functions if the standard algorithms do not meet your requirements.

Although the purpose of the algorithms is basically either putting inventory in locations or finding locations to take inventory out of, several types of algorithms exist, listed in Table 8.1.

Table 8.1
Algorithm Types

Type	Code	Description
Container Move	CM	Container move algorithms find suitable stage, truck, and dock locations, including empty locations, locations with the least goods, and locations that already contain stock for an SO shipper or DO ship-to code.
Lane	LA	Lane algorithms find suitable shipping lanes, including empty lanes, lanes with the best load, and lanes for a given carrier.
Location Find	LF	Location-find algorithms find suitable locations for inventory in the functional storage locations—the receipt, inspection, packing, and dispatch areas. LF algorithms do not consider the quantity of the inventory or the capacity of the relevant locations.
Put Away	PA	Put-away algorithms find suitable locations for storage of inventory in the non-functional storage locations—your main storage and picking locations. PA algorithms always take into account the quantity of the inventory to be put away and the capacity of the relevant locations.
Picking	PK	Picking algorithms find suitable locations from which to pick inventory to fulfil orders. You can have designated picking areas, but you can also allow picking from locations in your bulk storage or other areas. Different PK algorithms consider the available picking locations in different sequences.
Inspection	QA	Quality sampling algorithms define whether inspection must take place. When conditions for inspection are met, a sample is sent to an inspection area. Based on the internal routing definition, an inspection tag is printed, and inventory status is changed—to a non-available status, for instance.
Shortage Clearance	SC	Shortage clearance algorithms cut out unnecessary inventory movements by identifying newly received stock that can be used to fill sales or work order shortages directly. Instead of finding suitable storage locations for the inventory, and then picking stock to fill the back orders, SC algorithms move the inventory directly from the receipt area to the packing or dispatch area. This function is also known by the name cross-docking. See “Cross-Docking” on page 197.

Within each of these categories, QAD Warehousing provides a wide range of algorithms that perform the same basic activity, but satisfy different selection criteria.

Example During put-away, you can ask QAD Warehousing to look for empty storage locations or you can ask QAD Warehousing to select the most popular locations.

You can make sure that QAD Warehousing uses the right criteria for any given circumstance by linking algorithms to inventory transaction types, and also specifying any combination of site, warehouse, item number, item type, and supplier or customer address. In this way, you can arrange to pick stock from one set of locations when the item is item A and the customer is customer X, but you can specify a different set of locations, or even a different site or warehouse, when another item number or another customer is involved.

All of these detailed adjustments to the way QAD Warehousing puts away and picks inventory are made using the options on the QAD Warehousing Algorithms menu, described in this chapter.

The standard algorithms supplied with QAD Warehousing are all listed in “Algorithm Listings” on page 119. The descriptions associated with each algorithm provide a brief explanation of the precise function performed.

Note As part of the continuous development of QAD Warehousing, additional algorithms are defined from time to time, so the number supplied with QAD Warehousing can increase.

Algorithm Type Maintenance

The basic types of algorithm are listed in Table 8.1 on page 112:

CM: Container Move

LA: Lane

LF: Location Find

PA: Put-Away

PK: Picking

SC: Shortage Clearance

QA: Quality Sampling (Inspection)

These codes are supplied with QAD Warehousing. Normally you do not need any other algorithm types. If you do need to add another algorithm type code, you must create it and its description using Generalized Code Maintenance (36.2.13).

Use Algorithm Type Maintenance (80.6.1) to modify the verbosity level for any of the existing algorithm types. Algorithm Type Maintenance is shown in Figure 8.1.

Fig. 8.1
Algorithm Type Maintenance (80.6.1)

Type:	Description:	Verbosity Level
Type: cm	Description: Container Move Algorithm	Verbosity Level: 0
Type: LA	Description: Lane Calculation Algorithm	Verbosity Level: 0
Type: lf	Description: Location Find	Verbosity Level: 99
Type: pa	Description: Put-Away	Verbosity Level: 0
Type: pk	Description: Picking	Verbosity Level: 99
Type: QA	Description: QA Sampling	Verbosity Level: 0
Type: sc	Description: Shortage Clearance	Verbosity Level: 1

The frame shows a list of the existing algorithm types, with their descriptions and current verbosity level settings.

Enter values in the following fields:

Type. Enter the algorithm type code. When you select a code, the relevant description is shown in the Description field.

Verbosity Level. Enter a number to determine the importance level of messages that you want printed in QAD Warehousing reports relating to algorithms of this type. You can set a different value (in the range 0 to 999), depending on the amount of message detail you want included in reports; for example, for use when solving problems.

- Setting a low value such as 10 or 20 causes only the most important system messages to be reported.
- Setting a value of 999 causes all system messages to be reported.
- Setting a value of 0 switches off the function; no messages are reported.

Algorithm Master Maintenance

Use Algorithm Master Maintenance (80.6.5) to modify the descriptions of individual algorithms within each of the algorithm type categories, or to add new algorithms to any of the categories. To add a new algorithm, you must first create the program that QAD Warehousing runs to perform the algorithm tasks.

Algorithm Master Maintenance is shown in Figure 8.2.

Fig. 8.2
Algorithm Master Maintenance (80.6.5)

Algorithm Master Maintenance

Go To Actions Copy Print Preview

Algorithm Details

Type: PA

Algorithm: 2

Algorithm Description

Description: Empty Storage Locations

Enter values in the following fields:

Type. Enter the algorithm type code.

Algorithm. Enter the number of an existing algorithm of this type if you want to modify its description.

To set up a new algorithm, enter an unused number in the range 0 to 999.

Description. For existing algorithms, the description is displayed; you can modify it if required. For new algorithms, enter the description of the algorithm.

Algorithm Assignment

Use Algorithm Assignment Maintenance (80.6.9) to link a specified sequence of algorithms—of one type per sequence—to a defined combination of the following:

- Transaction type
- Site
- Warehouse
- Item number or warehouse item type
- Address (supplier for received inventory, customer for shipped inventory)

Setting up as many combinations of these elements as you choose provides flexibility in the way you define the algorithms that QAD Warehousing runs in any given situation.

The reason for setting up a sequence of algorithms is so that you can specify the ideal method for selecting locations as the first step in the sequence. If QAD Warehousing cannot meet the full requirements either of put-away or picking by running the first choice algorithm, it then runs the second algorithm in the sequence, and so on until the requirement has been met.

Include a very general algorithm as the last one in the sequence, so that QAD Warehousing is always able to complete the task.

Example A general put-away algorithm merely asks QAD Warehousing to look for any storage location that has available capacity. While this does not meet any specific requirements, including it as a last step in the sequence means that QAD Warehousing can always put inventory away somewhere, preventing the task from failing.

Algorithm Assignment Maintenance is shown in Figure 8.3.

Fig. 8.3
Algorithm Assignment Maintenance (80.6.9)

Algorithm Assignment Maintenance

Algorithm Type: PA Transaction Type: BACK-WO

Site: spain Warehouse: distrib

Item Number: Warehouse Item Type:

Address: Custom ? ☒

Enter values in the following fields:

Algorithm Type. Enter the two-character code for the type of algorithm you want to assign. The standard codes are LF, PA, PK, SC and QA.

Transaction Type. Enter the transaction type to which you want to assign algorithms. You can use an asterisk as a wild card if you want to assign the same algorithm to a range of transaction types.

Example The transaction type RCT-* covers all receipt transaction types, such as RCT-PO, RCT-UNP, RCT-WO, and so on.

Site. If this algorithm assignment is valid only for one site, enter the site name.

Warehouse. If this algorithm assignment is valid only for one warehouse, enter the warehouse name.

Item Number. If this algorithm assignment is valid only for one item, enter the item number. If you limit the assignment to an item number, you cannot also specify a warehouse item type; you can enter one or the other, but not both.

Warehouse Item Type. If this algorithm assignment is valid only for one item type, enter the warehouse item type code. If you limit the assignment to an item type, you cannot also specify an item number; you can enter one or the other, but not both.

Address. If this algorithm assignment is valid only for one supplier or customer address, enter the address code.

Custom. If you want to assign a custom program instead of a sequence of algorithms, enter Yes in the Custom field; otherwise, enter No.

If you enter Yes in the Custom field, the system displays the Custom Detail frame.

Custom Program. Enter the name of the custom program that QAD Warehousing should run in place of any assigned algorithms. The custom program must exist before you can use this assignment.

If you enter No in the Custom field, the system displays the frame shown in Figure 8.4.

Fig. 8.4
Algorithm Assignment Maintenance, Assignment Fields

The screenshot shows a software window titled "Algorithm Assignment Maintenance". It has a menu bar with "Go To", "Actions", "Copy", "Print", and "Preview". Below the menu bar, the "Algorithm Assignment Maintenance" section is active. It contains several fields: "Algorithm Type: PA", "Site: spain", "Item Number:", "Address:", "Transaction Type: BACK-WO", "Warehouse: distrib", "Warehouse Item Type:", and "Custom ?:" with an unchecked checkbox. At the bottom, there are fields for "Seq: 10", "Algorithm:", and "Description:".

Enter values in the following fields:

Seq. For a new assignment, Sequence defaults to 10. Number sequences by 10's (10, 20, 30, and so on) so that additional steps can be inserted easily later, if required.

Algorithm. Assign algorithms of the type you selected at the top of the frame.

Example If you selected algorithm type PA, you can assign any of the put-away algorithms. You can either type in the required number, or use the Up and Down arrow keys to move through the list of algorithms.

Description. The system displays the description of each algorithm as its number is shown in the Algorithm field. You cannot modify the descriptions here.

Remember, QAD Warehousing tries to use the first algorithm in the sequence first, typically sequence 10. If that fails to complete the transaction, it moves on to the second algorithm (20). You should, therefore, put your ideal solution first, and finish the sequence with a fail-safe option designed to prevent complete failure of the transaction.

As you enter the required algorithms in the assignment sequence, the system adds them to the list in the center of the frame.

Algorithm Simulation

Algorithm Simulation (80.6.21) provides functions that enable you to test your algorithm assignments without actually altering the inventory records in your database.

- Put Away/Location Find Simulation lets you simulate the put-away of some received inventory
- Picking Simulation lets you simulate picking of inventory from your existing locations.

In each case, QAD Warehousing displays or reports on the locations that would have been used by QAD Warehousing if the simulation had been carried out as a real receipt or pick.

PA/LF Simulation

Put-Away/Location-Find Algorithm Simulation (80.6.21.1) is shown in Figure 8.5.

Fig. 8.5
PA/LF Simulation (80.6.21.1)

Enter values in the following fields:

Type. Enter the transaction type that you want to simulate. This must be a transaction type to which you have assigned PA or LF algorithms.

Site. Enter the site name.

Warehouse. Enter the warehouse name.

Internal Routing Group. Enter the name of the IRG into which the simulated inventory is to be received. If this is a functional IRG, the LF algorithm assigned to this transaction type is used for the simulation. If this is a non-functional IRG, the PA algorithm is used.

Item Number. Enter the item number of the simulated inventory to be received.

Lot/Serial. Enter the lot/serial number for the inventory, if applicable.

Ref. Enter the reference number for the inventory, if applicable.

Qty On Hand. Enter the quantity of the received inventory, in base UM.

Alternate UM. Enter the alternate unit of measure in which the inventory is to be received. Note that the quantity you entered in the previous field is the number of items in base UM, and not the number of, for example, pallets, if this is the alternate UM.

When you press Go to accept the simulation entries, the system runs the relevant algorithms and displays the results of the put-away or location-find.

The PA/LF Report (80.6.21.2) operates in the same way as PA/LF Simulation but provides a printed report giving more information about the simulation results.

Picking Simulation

Picking Simulation (80.6.21.4) is shown in Figure 8.6.

Fig. 8.6
Picking Simulation (80.6.21.4)

Enter values in the following fields:

Type. Enter the transaction type that you want to simulate. This must be a transaction type to which you have assigned PK algorithms.

Site. Enter the site name.

Warehouse. Enter the warehouse name.

Item Number. Enter the item number of the simulated inventory to be picked.

Lot/Serial. Enter the lot/serial number for the inventory, if applicable.

Ref. Enter the reference number for the inventory, if applicable.

Qty On Hand. Enter the quantity of the inventory to be picked, in base UM.

When you press Go to accept the simulation entries, the system runs the relevant algorithms and displays the results of the picking.

The Picking Simulation Report (80.6.21.5) operates in the same way as picking simulation but provides a printed report giving more information about the simulation results.

Algorithm Listings

This section lists the existing algorithms that are shipped with QAD Warehousing in each category: container move (CM), lane (LA), location-find (LF), put-away (PA), picking (PK), shortage clearance (SC), and quality inspection (QA).

Container-Move Algorithms

Table 8.2 lists the container-move algorithms that are supplied with QAD Warehousing.

Table 8.2
Container-Move Algorithms

	Algorithm	Description
1	Move to Stage – Find First Location	The system finds the first location defined as a stage location.
2	Move to Stage – Find Empty Location	The system finds the first location defined as a stage location.
3	Move to Stage – Merge with same shipper/ship-to	The system finds a location in the stage area that already contains stock for the SO shipper or DO ship-to code.
4	Move to Stage – Find Location with Best Load	The system looks for a stage location with the least number of containers/pallets in it.
10	Move to Dock – Find First Location	The system finds the first location defined as a truck location.
11	Move to Dock – Find Empty Location	The system looks for an empty dock location.
12	Move to Dock – Merge with Same Shipper/Ship-To	The system finds a dock location that already contains stock for the SO shipper or DO ship-to.
13	Move to Dock – Find Location with Best Load	The system looks for a dock location that has the least number of containers/pallets in it.
14	Move to Dock – Find a Dedicated Dock	The system finds a dock dedicated to a given carrier.

Lane Algorithms

Table 8.3 lists the lane algorithms that are supplied with QAD Warehousing.

Table 8.3
Lane Algorithms

	Algorithm	Description
1	Merge with Same Carrier	The system looks for a shipping lane in use for a given carrier.
2	Find Empty Shipping Lane	The system looks for an unassigned shipping lane.
3	Find Shipping Lane by Best Load (active tasks)	The system looks for a shipping lane with the lowest number of tasks assigned to it.
4	Find a Dedicated Unique Lane for Carrier	The system considers carriers assigned to a specific shipping lane in Lane/Dock Maintenance (8.15.13). A carrier can only be assigned to one shipping lane.

Location-Find Algorithms

Table 8.4 lists the location-find algorithms that are supplied with QAD Warehousing.

Table 8.4
Location-Find Algorithms

	Algorithm	Description
1	First Location in First	Finds the first location in the first SLG in the internal routing group.
2	Empty Functional Location	Looks for a location containing no inventory
3	Merge with same order	Looks for a location containing inventory from the same order.
4	Merge with same order line	Looks for a location containing inventory from the same order line.
5	Merge with same part	Looks for a location containing inventory of the same item number.
6	Merge with same address	Looks for a location containing inventory destined for the same customer address.
7	Best Load by Ship Weight	Looks for a functional location with the least load weight in it.
8	Best Load by Number of Items	Looks for a functional location with the smallest number of items in it
9	Best Load by Number of Ref. Sized Items (such as pallets)	Looks for a location with the smallest number of items of sizing type R.
10	Find Work Center from Routing	For work orders, look at the work center coming from the routing of the operation linked to the component of the BOM. It is used to send raw material to the work center that requires this item for production.
11	Find first location different than work center	Look for the first location in a group that is not defined as a work center in QAD ERP.

	Algorithm	Description
12	Find last work center of Routing	As a complement to algorithm 10, this algorithm finds the last work center defined on the production routing. It is used when making the work order receipt, so QAD Warehousing creates a task to move stock from the last production step to a storage area.
13	Merge with same Bill of Lading	Looks for a location containing inventory from the same bill of lading.

Put-Away Algorithms

Table 8.5 lists the put-away algorithms that are supplied with QAD Warehousing.

Table 8.5
Put-Away Algorithms

	Algorithm	Description
1	Storage Locations	Put-away looks for locations in the item's storage location group, or list of SLGs, with the locations selected in popularity code order within each SLG.
2	Empty Storage Locations	Put-away looks for empty locations in the item's storage location group, or list of SLGs, with the locations selected in popularity code order within each SLG.
3	Storage Locations–Merge with Part	Put-away looks for locations in the item's storage location group, or list of SLGs. Locations must already contain the item being put away. The locations are selected in popularity code order within each SLG.
4	Storage Locations–Merge with Lot/Serial	Put-away looks for locations in the item's storage location group, or list of SLGs. Locations must already contain the lot/serial and item being put away. The locations are selected in popularity code order within each SLG.
5	Storage Locations–Merge with Reference	Put-away looks for locations in the item's storage location group, or list of SLGs. Locations must already contain the reference, lot/serial, and item being put away. The locations are selected in popularity code order within each SLG.
6	Storage Locations–Merge with Any	Put-away looks for locations in the item's storage location group, or list of SLGs. Locations must already contain inventory and are selected in popularity code order within each SLG.

Table 8.5 — Put-Away Algorithms (Page 1 of 13)

	Algorithm	Description
7	Storage Locations–Merge with Rules	Put-away looks for locations in the item's storage location group, or list of SLGs. Locations must already contain inventory and are selected in popularity code order within each SLG. Additional validation is performed to ensure that the merging rules are satisfied.
8	Storage Locations–Merge with Unit of Measure	Put-away looks for locations in the item's storage location group, or list of SLGs. Locations must already contain inventory with the alternate UM being put away, and are selected in popularity code order within each SLG.
9	Storage Locations–Merge with UM and Part	Put-away looks for locations in the item's storage location group, or list of SLGs. Locations must already contain the item being put away with the same alternate UM as this put away, and are selected in popularity code order within each SLG.
10	Storage Locations–Merge with UM and Rules	Put-away looks for locations in the item's storage location group, or list of SLGs. Locations must already contain inventory with the alternate UM being put away, and are selected in popularity code order within each SLG. Additional validation is performed to ensure that the merging rules are satisfied.
11	Storage Locations–Merge with Part and Rules	Put-away looks for locations in the item's storage location group, or list of SLGs. Locations must already contain the item being put away. The locations are selected in popularity code order within each SLG. Additional validation is performed to ensure that the merging rules are satisfied.
15	Multi-Item Pallet split and Put-Away	When multi-item pallets, this algorithm makes put-away for each of the components of the pallet, and not put-away the pallet as a whole. Each item could eventually go in another location.
16	Multi-Item Pallet split and Put-Away – No Partial	When multi-item pallets, this algorithm makes put-away for each of the components of the pallet, and not put-away the pallet as a whole. Each item could eventually go in another location, but for a given item, it must go completely in one single location
21	Replenished Locations	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence.

Table 8.5 — Put-Away Algorithms (Page 2 of 13)

	Algorithm	Description
22	Empty Replenished Locations	Put-away looks for empty locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence.
23	Replenished Locations–Merge with Part	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence. Locations must already contain the item being put away.
24	Replenished Locations–Merge with Lot/Serial	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence. Locations must already contain the lot/serial and item being put away.
25	Replenished Locations–Merge with Reference	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence. Locations must already contain the reference, lot/serial, and item being put away.
26	Replenished Locations–Merge with Any	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence. Locations must already contain inventory.
27	Replenished Locations–Merge with Rules	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence. Locations must already contain inventory. Additional validation is performed to ensure that the merging rules are satisfied.
28	Replenished Locations–Merge with Unit of Measure	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence. Locations must already contain inventory with the same alternate UM as this put away.
29	Replenished Locations–Merge with UM and Part	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence. Locations must already contain the item being put away, with the same alternate UM as this put away.

Table 8.5 — Put-Away Algorithms (Page 3 of 13)

	Algorithm	Description
30	Replenished Locations–Merge with UM and Rules	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence. Locations must already contain inventory with the same alternate UM as this put away. Additional validation is performed to ensure that the merging rules are satisfied.
31	Replenished Locations–Merge with Part and Rules	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence. Locations must already contain the item being put away. Additional validation is performed to ensure that the merging rules are satisfied.
41	Reverse-Replenished Locations	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick-level sequence.
42	Empty Reverse-Replenished Locations	Put-away looks for empty locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick level sequence.
43	Reverse-Replenished Locations–Merge with Part	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick level sequence. Locations must already contain the item being put away.
44	Reverse-Replenished Locations–Merge with Lot/Serial	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick-level sequence. Locations must already contain the lot/serial and item being put away.
45	Reverse-Replenished Locations–Merge with Reference	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick-level sequence. Locations must already contain the reference, lot/serial, and item being put away.

Table 8.5 — Put-Away Algorithms (Page 4 of 13)

	Algorithm	Description
46	Reverse-Replenished Locations–Merge with Any	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick-level sequence. Locations must already contain inventory.
47	Reverse-Replenished Locations–Merge with Rules	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick-level sequence. Locations must already contain inventory. Additional validation is performed to ensure that the merging rules are satisfied.
48	Reverse-Replenished Locations–Merge with Unit of Measure	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick-level sequence. Locations must already contain inventory with the same alternate UM as this put away.
49	Reverse-Replenished Locations–Merge with UM and Part	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick-level sequence. Locations must already contain the item being put away, with the same alternate UM as this put away.
50	Reverse-Replenished Locations–Merge with UM and Rules	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick-level sequence. Locations must already contain inventory with the same alternate UM as this put away. Additional validation is performed to ensure that the merging rules are satisfied.
51	Reverse-Replenished Locations–Merge with Part and Rules	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick-level sequence. Locations must already contain the item being put away. Additional validation is performed to ensure that the merging rules are satisfied.
61	Storage Locations by Popularity Code	Put-away looks for locations in the item's storage location group, or list of SLGs, with the locations selected in popularity code order within each SLG. Additional validation is performed to ensure that the selected locations are in the correct popularity code range.

Table 8.5 — Put-Away Algorithms (Page 5 of 13)

	Algorithm	Description
62	Empty Storage Locations by Popularity Code	Put-away looks for empty locations in the item's storage location group, or list of SLGs, with the locations selected in popularity code order within each SLG. Additional validation is performed to ensure that the selected locations are in the correct popularity code range.
63	Replenished Locations by Popularity Code	Put-away looks for locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick level sequence. Additional validation is performed to ensure that the selected locations are in the correct popularity code range.
64	Empty Replenished Locations by Popularity Code	Put-away looks for empty locations in the item's replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick-level sequence. Additional validation is performed to ensure that the selected locations are in the correct popularity code range.
65	Storage Locations by Descending Popularity Code	Put-away looks for locations in the item's storage location group, or list of SLGs, with the locations selected in descending popularity code order within each SLG. Additional validation is performed to ensure that the selected locations are in the correct popularity code range.
66	Empty Storage Locations by Descending Popularity Code	Put-away looks for empty locations in the item's storage location group, or list of SLGs, with the locations selected in descending popularity code order within each SLG. Additional validation is performed to ensure that the selected locations are in the correct popularity code range.
67	Replenished Locations by Descending Popularity Code	Put-away looks for locations in the item's replenished location groups, with the locations selected in descending popularity code order within each SLG, which are selected in pick-level sequence. Additional validation is performed to ensure that the selected locations are in the correct popularity code range.
68	Empty Replenished Locations by Descending Popularity Code	Put-away looks for empty locations in the item's replenished location groups, with the locations selected in descending popularity code order within each SLG, which are selected in pick-level sequence. Additional validation is performed to ensure that the selected locations are in the correct popularity code range.

Table 8.5 — Put-Away Algorithms (Page 6 of 13)

	Algorithm	Description
69	Merge with Part–Ascending Popularity Code	Put-away looks for locations in the item’s storage location group, or list of SLGs. Locations must already contain the item being put away. The locations are selected in popularity code order within each SLG. Additional validation is performed to ensure that the selected locations are in the correct popularity code range.
70	Merge with Part and Lot–Ascending Popularity Code	Put-away looks for locations in the item’s storage location group, or list of SLGs. Locations must already contain the item and lot being put away. The locations are selected in popularity code order within each SLG. Additional validation is performed to ensure that the selected locations are in the correct popularity code range.
81	Storage Locations–Preferred Unit of Measure	Put-away looks for locations in the item’s storage location group, or list of SLGs, with the locations selected in popularity code order within each SLG. The system considers only locations with a preferred UM the same as the UM of this put away.
82	Empty Storage Locations–Preferred Unit of Measure	Put-away looks for empty locations in the item’s storage location group, or list of SLGs, with the locations selected in popularity code order within each SLG. The system considers only locations with a preferred UM the same as the UM of this put away.
83	Replenished Locations–Preferred Unit of Measure	Put-away looks for locations in the item’s replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick level sequence. The system considers only locations with a preferred UM the same as the UM of this put away.
84	Empty Replenished Locations–Preferred UM	Put-away looks for empty locations in the item’s replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick level sequence. The system considers only locations with a preferred UM the same as the UM of this put away.
85	Reverse-Replenished Locations–Preferred UM	Put-away looks for locations in the item’s replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick level sequence. The system considers only locations with a preferred UM the same as the UM of this put away.

Table 8.5 — Put-Away Algorithms (Page 7 of 13)

	Algorithm	Description
86	Empty Reverse-Replenished Locations–Preferred UM	Put-away looks for empty locations in the item’s replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in descending pick level sequence. The system considers only locations with a preferred UM the same as the UM of this put away.
87	Storage Locations by Popularity Code–Preferred UM	Put-away looks for locations in the item’s storage location group, or list of SLGs, with the locations selected in popularity code order within each SLG. Additional validation is performed to ensure that the selected locations are in the correct popularity code range. The system considers only locations with a preferred UM the same as the UM of this put away.
88	Empty Storage Locations by Popularity Code–Preferred UM	Put-away looks for empty locations in the item’s storage location group, or list of SLGs, with the locations selected in popularity code order within each SLG. Additional validation is performed to ensure that the selected locations are in the correct popularity code range. The system considers only locations with a preferred UM the same as the UM of this put away.
89	Replenished Locations by Popularity Code–Preferred UM	Put-away looks for locations in the item’s replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick level sequence. Additional validation is performed to ensure that the selected locations are in the correct popularity code range. The system considers only locations with a preferred UM the same as the UM of this put away.
90	Empty Replenished Locations by Popularity Code–Preferred UM	Put-away looks for empty locations in the item’s replenished location groups, with the locations selected in popularity code order within each SLG, which are selected in pick level sequence. Additional validation is performed to ensure that the selected locations are in the correct popularity code range. The system considers only locations with a preferred UM the same as the UM of this put away.

Table 8.5 — Put-Away Algorithms (Page 8 of 13)

	Algorithm	Description
91	Storage Locations by Descending Popularity Code–Preferred UM	Put-away looks for locations in the item’s storage location group, or list of SLGs, with the locations selected in descending popularity code order within each SLG. Additional validation is performed to ensure that the selected locations are in the correct popularity code range. The system considers only locations with a preferred UM the same as the UM of this put away.
92	Empty Storage Locations by Descending Popularity Code–Preferred UM	Put-away looks for empty locations in the item’s storage location group, or list of SLGs, with the locations selected in descending popularity code order within each SLG. Additional validation is performed to ensure that the selected locations are in the correct popularity code range. The system considers only locations with a preferred UM the same as the UM of this put away.
93	Replenished Locations by Descending Popularity Code–Preferred UM	Put-away looks for locations in the item’s replenished location groups, with the locations selected in descending popularity code order within each SLG, which are selected in pick level sequence. Additional validation is performed to ensure that the selected locations are in the correct popularity code range. The system considers only locations with a preferred UM the same as the UM of this put away.
94	Empty Replenished Locations by Descending Popularity Code–Preferred UM	Put-away looks for empty locations in the item’s replenished location groups, with the locations selected in descending popularity code order within each SLG, which are selected in pick level sequence. Additional validation is performed to ensure that the selected locations are in the correct popularity code range. The system considers only locations with a preferred UM the same as the UM of this put away.
95	Merge with same Part – Preferred UM	Put-away looks for locations in the item’s storage location group, or list of SLGs. Locations must already contain the item being put away. Only locations with a preferred UM, the same as the item being put-away, are considered.
96	Merge with same Lot/Serial – Preferred UM	Put-away looks for locations in the item’s storage location group, or list of SLGs. Locations must already contain the item and lot/serial being put away. Only locations with a preferred UM, the same as the item being put-away, are considered.

Table 8.5 — Put-Away Algorithms (Page 9 of 13)

	Algorithm	Description
101	Empty Dedicated Storage Locations	Put-away looks for empty dedicated locations in the item's storage location group, or list of SLGs, with the locations selected in popularity code order within each SLG.
102	Dedicated Storage Locations–Merge with Part	Put-away looks for dedicated locations in the item's storage location group, or list of SLGs. The locations must already contain the item being put away, and are selected in popularity code order within each SLG.
103	Dedicated Storage Locations–Merge with Any	Put-away looks for dedicated locations in the item's storage location group, or list of SLGs. The locations must already contain inventory, and are selected in popularity code order within each SLG.
104	Dedicated Storage Locations – Merge with Part and Lot	Put-away looks for dedicated locations in the item's storage location group, or list of SLGs. The locations must already contain the item and lot/serial, and are selected in popularity code order within each SLG.
106	Empty Dedicated Storage Locations – Ascending Popularity Code	Search for an empty dedicated location in the item's storage location group, or list of SLGs. Locations are selected in popularity code order within each storage location group. Additional validation is performed to ensure that selected locations are in the correct popularity code range.
107	Dedicated Storage Location – Merge with Part – Ascending Popularity Code	Search for dedicated locations in the item SLG or the item list of SLG but locations that already contain the same item as the one being put-away. The locations are selected in popularity code order within each storage location group. Additional validation is done to ensure that the selected locations are in the correct popularity code range.
109	Dedicated Storage Location–Merge with part and lot – Ascending Popularity Code	Search for dedicated locations in the item SLG or the item list of SLG but locations that already contain the same item & lot as the one being put-away. Locations are selected in popularity code order within each storage location group. Additional validation is done to ensure that the selected locations are in the correct popularity code range.
111	Consume Reference Forecast	Consume any receipt forecasts that identify the specific order line, item number, lot/serial, and reference being received. The locations are selected in popularity code order within each SLG. Generally, this is used when all of the receipts details are known ahead of time, probably on an ASN.

Table 8.5 — Put-Away Algorithms (Page 10 of 13)

	Algorithm	Description
112	Consume Lot/Serial Forecast	Consume any receipt forecasts that identify the specific order line, item number, and lot/serial being received. The locations are selected in popularity code order within each SLG. Generally, this is used when the lot/serial details are known ahead of time, probably on an ASN, but not details of specific pallets, containers, and so on. Any reference detail on the receipt or the forecast is ignored.
113	Consume Order Line Forecast	Consume any receipt forecasts that identify the specific order line being received. The locations are selected in popularity code order within each SLG. Generally, this is used when no details apart from the quantity are known ahead of time. Any lot/serial or reference detail on the receipt or the forecast is ignored.
121	Merge with Reference Forecast	This functions as per algorithm 111, except that the forecast is not consumed. The forecast quantity is left open. The forecast is simply used to identify the location.
122	Merge with Lot/Serial Forecast	This functions as per algorithm 112, except that the forecast is not consumed. The forecast quantity is left open. The forecast is simply used to identify the location.
123	Merge with Order Line Forecast	This functions as per algorithm 113, except that the forecast is not consumed. The forecast quantity is left open. The forecast is simply used to identify the location.
124	Merge with Order Forecast	This algorithm allows inventory received on an order line to be placed into a location with a forecast for the same order but a different order line. The locations are selected in popularity code order within each SLG. No consumption can occur as the forecast is for a different item with, potentially, different rules for sizing.
133	Merge with Item Outside of Storage Location Groups	Put-away looks for locations outside the item's storage location group, or list of SLGs. Locations must already contain the item being put away. The locations are selected in popularity code order within each SLG.
134	Use Last Item Number Transaction	The system looks for the last similar transaction for this item—transactions with the same from site, warehouse, and SLG as this put away. The destination location from that transaction is used for this put away.

Table 8.5 — Put-Away Algorithms (Page 11 of 13)

	Algorithm	Description
135	Use Last Lot/Serial Transaction	The system looks for the last similar transaction for this lot/serial—transactions with the same from site, warehouse, and SLG as this put away. The destination location from that transaction is used for this put away.
136	Use Last Reference Transaction	The system looks for the last similar transaction for this reference—transactions with the same from site, warehouse, and SLG as this put away. The destination location from that transaction is used for this put away.
137	Use Storage Location Group From Last Item Number Transaction	Search for the location that was used with the last transaction referring to same item number. Look for location inside the same SLG starting from the location found.
138	Use Storage Location Group from Last Lot/Serial Transaction	Search for the location that was used with the last transaction referring to same lot/serial. Look for location inside the same SLG starting from the location found.
139	Use Storage Location Group from Last Reference Transaction	Search for the location that was used with the last transaction referring to same reference. Look for location inside the same SLG starting from the location found.
140	Storage Location by Popularity Code–UM in Capacity	Search for locations in the item SLG or the item list of SLG. The locations are selected in popularity code order each storage location group. Additional validation that the selected locations are in the correct code range. Only locations with a capacity defined for this UM are considered.
142	Storage Locations by Full%–UM in Capacity	Search for locations in the item SLG or the item list of SLG. The locations are selected in Full% order each storage location group. Additional validation that the selected locations are in the correct code range. Only locations with a capacity defined for this UM are considered.
150	Detail Overflow Location Put-Away–EXACT NEED	Put-away in the Overflow storage location group. Only the needed quantity is put-away.
151	Detail Overflow Location Put-Away–INFINITE CAPACITY	Put-away in the Overflow storage location group. Capacity in destination location is Infinite, so the total quantity is put-away in the location, for instance a full pallet, even if the requirement is less.
170	Storage Locations Merge with same Item/Lot in SLG	Search for locations in the item SLG or the item list of SLG. The locations are selected in popularity code order within each storage location group. Only select storage location containing same item/lot.

Table 8.5 — Put-Away Algorithms (Page 12 of 13)

	Algorithm	Description
171	Storage Locations Merge with same Item in SLG	Search for locations in the item SLG or the item list of SLG. The Locations are selected in popularity code order within each storage location group. Only select storage location containing same item.
172	Storage Locations. Consider Only Empty SLGs	Search for locations in the item SLG or the item list of SLG. The locations are selected in popularity code order within each storage location group. Only select empty storage location.

Table 8.5 — Put-Away Algorithms (Page 13 of 13)

Picking Algorithms

Table 8.6 lists the picking algorithms that are supplied with QAD Warehousing.

Table 8.6
Picking Algorithms

	Algorithm	Description
1	Pick by Location	Picking is sorted by location so that lower location values are picked first.
2	Pick by Lot/Serial	The lot/serial numbers sort picking so that lower lot/serial values are picked first.
3	Pick by Date	Picking is sorted by manufacture date so that inventory manufactured earlier is picked first.
4	Pick by Expiration Date	Picking is sorted by expiration date so that inventory due to expire earliest is picked first.
5	Pick by Location (Descending)	Picking is sorted by location so that higher location values are picked first.
6	Pick by Lot/Serial (Descending)	Lot/serial numbers sort picking so that higher lot/serial values are picked first.
7	Pick by Date (Descending)	Picking is sorted by manufacture date so that inventory manufactured most recently is picked first.
8	Pick by Expiration Date (Descending)	Picking is sorted by expiration date so that inventory due to expire furthest into the future is picked first.
9	Pick by Level by Location	Picking is sorted, first, by the storage location group's picking level and then, within that, by the location with lower location values picked from first.
10	Pick by Level by Lot/Serial	Picking is sorted, first, by the storage location group's picking level and then, within that, by the lot/serial number with lower lot/serial values picked first.
11	Pick by Level by Date	Picking is sorted, first, by the storage location group's picking level and then, within that, by the manufacture date with the earliest manufactured inventory being picked first.

Table 8.6 — Picking Algorithms (Page 1 of 6)

	Algorithm	Description
12	Pick by Level by Expiration Date	The storage location group's picking level sorts picking first and then, within that, by the inventory's expiration date with the inventory expiring earliest being picked from first.
13	Pick by Level by Location (Descending)	Picking is sorted, first, by the storage location group's picking level and then, within that, by the location with higher location values picked from first.
14	Pick by Level by Lot/Serial (Descending)	The storage location group's picking level sorts picking first and then, within that, by the inventory's lot/serial number with higher lot/serial values picked from first.
15	Pick by Level by Date (Descending)	Picking is sorted, first, by the storage location group's picking level and then, within that, by the manufacture date with the most recently manufactured inventory being picked first.
16	Pick by Level by Expiration Date (Descending)	The storage location group's picking level sorts picking first and then, within that, by the inventory's expiration date with the inventory expiring furthest into the future being picked from first.
17	Pick by Month	Picking is sorted by manufacture date so that inventory manufactured earlier is picked first. However, all inventory manufacture within the same calendar month is considered as having the same manufacture date.
18	Pick by Expiration Month	Picking is sorted by expiration date so that inventory expiring earliest is picked first. However, all inventory due to expire within the same calendar month is considered as having the same expiration date.
19	Pick by Month (Descending)	Picking is sorted by manufacture date so that inventory manufactured last is picked first. However, all inventory manufacture within the same calendar month is considered as having the same manufacture date.
20	Pick by Expiration Month (Descending)	Picking is sorted by expiration date so that inventory expiring furthest into the future is picked first. However, all inventory due to expire within the same calendar month is considered as having the same expiration date.
21	Pick by Level by Month	This algorithm functions as PK11 except that all inventory manufactured in the same calendar month is considered to have the same manufacture date.
22	Pick by Level by Expiration Month	This algorithm functions as PK12 except that all inventory due to expire in the same calendar month is considered to have the same expiration date.

Table 8.6 — Picking Algorithms (Page 2 of 6)

	Algorithm	Description
23	Pick by Level by Month (Descending)	This algorithm functions as PK15 except that all inventory manufactured in the same calendar month is considered to have the same manufacture date.
24	Pick by Level by Expiration Month (Descending)	This algorithm functions as PK16 except that all inventory due to expire in the same calendar month is considered to have the same expiration date.
25	Pick by Date Range	This algorithm picks inventory by manufacture date, with inventory manufactured first being picked first, but using the merge rules to determine ranges of dates that can be considered the same when picking.
26	Pick by Expiration Date Range	This algorithm picks inventory by expiration date, with inventory due to expire first being picked first, but using the merge rules to determine ranges of dates that can be considered the same when picking.
27	Pick by Date Range (Descending)	This algorithm picks inventory by manufacture date, with inventory manufactured last being picked first, but using the merge rules to determine ranges of dates that can be considered the same when picking.
28	Pick by Expiration Date Range (Descending)	This algorithm picks inventory by manufacture date, with inventory due to expire last being picked first, but using the merge rules to determine ranges of dates that can be considered the same when picking.
29	Pick by Level by Date Range	This algorithm functions as PK25 except that inventory is first selected and sorted by picking level.
30	Pick by Level by Expiration Date Range	This algorithm functions as PK26 except that inventory is first selected and sorted by picking level.
31	Pick by Level by Date Range (Descending)	This algorithm functions as PK27 except that inventory is first selected and sorted by picking level.
32	Pick by Level by Expiration Date Range (Descending)	This algorithm functions as PK28 except that inventory is first selected and sorted by picking level.
33	Pick Critical Inventory Only.	This algorithm only picks inventory that has fallen into its critical period that is now within the number of critical days, defined per item, of its expiration date.
34	Pick By Date By Reference	Picking is sorted by manufacture date so that inventory manufactured earlier is picked first. If several references, such as pallets, have the same manufacture date, they are selected in ascending order

Table 8.6 — Picking Algorithms (Page 3 of 6)

	Algorithm	Description
35	Pick By Reference	Picking is sorted by reference so that lower reference values, normally the oldest, are picked first.
36	Pick By Level by Reference	Picking is sorted, first, by the storage location group's picking level and then, within that, by the reference number with lower reference values picked first.
37	Pick By Date – Full Pallets Only	Picking is sorted by manufacture date so that inventory manufactured earlier is picked first. Only full pallets are picked, so the alternate UM must be the item/warehouse logistics UM, the pallet must have at least the quantity defined in the conversion factor between the alternate and base UM and there can not be any allocation on the pallet.
38	Pick By Level By Date – Full Pallets Only	Picking is sorted, first, by the storage location group's picking level and then, within that, by the manufacture date with the earliest manufactured inventory being picked first. Only full pallets are picked, so the alternate UM must be the item/warehouse logistics UM, the pallet must have at least the quantity defined in the conversion factor between the alternate and base UM and there can not be any allocation on the pallet.
39	Pick By Level By Date – FULL ALLOCATION (OverPick)	Picking is sorted, first, by the storage location group's picking level and then, within that, by the manufacture date with the earliest manufactured inventory being picked first. The entire quantity is allocated and selected for transfer, even if the requirement is less.
40	Pick in Last Work Center from Routing	Picking is done in the work center associated with the last step of the routing for a given work order.
44	Pick By Date By Reference – FULL PALLET'S ONLY	Picking is sorted by manufacture date so that inventory manufactured earlier is picked first. If several references, such as pallet, have the same manufacture date, they are selected in ascending order. Only full pallets are picked, so the alternate UM must be the item/warehouse logistics UM, the pallet must have at least the quantity defined in the conversion factor between the alternate and base UM and there can not be any allocation on the pallet.

Table 8.6 — Picking Algorithms (Page 4 of 6)

	Algorithm	Description
45	Pick by Expiration Date – FULL PALLETS ONLY	Picking is sorted by expiration date so that inventory due to expire earliest is picked first. Only full pallets are picked, so the alternate UM must be the item/warehouse logistics UM, the pallet must have at least the quantity defined in the conversion factor between the alternate and base UM and there cannot be any allocation on the pallet.
47	Pick By Level (Descending) by Date – FULL PALLETS ONLY	Picking is sorted, first, by the storage location group's picking level from the biggest to the smallest and then, within that, by the manufacture date with the earliest manufactured inventory being picked first. Only full pallets are picked, so the alternate UM must be the item/warehouse logistics UM, the pallet must have at least the quantity defined in the conversion factor between the alternate and base UM and there cannot be any allocation on the pallet.
48	Pick By Level (Descending) by Date	Picking is sorted, first, by the storage location group's picking level from the biggest to the smallest and then, within that, by the manufacture date with the earliest manufactured inventory being picked first.
49	Pick By Level (Descending) by Lot/Serial	Picking is sorted, first, by the storage location group's picking level from the biggest to the smallest and then, within that, by the lot/serial number with lower lot/serial values picked first.
50	Pick by Level by Lot/Serial – FULL PALLETS ONLY	Picking is sorted, first, by the storage location group's picking level and then, within that, by the lot/serial number with lower lot/serial values picked first. Only full pallets are picked, so the alternate UM must be the item/warehouse logistics UM, the pallet must have at least the quantity defined in the conversion factor between the alternate and base UM and there cannot be any allocation on the pallet.
61	Pick by Location Consignment Stock Only	Picking is sorted by location so that consignment stock is picked first from lower location values.
62	Pick by Lot/Serial Consignment Stock Only	The lot/serial numbers sort picking so that consignment stock is picked first from lower lot/serial values.
63	Pick by Date Consignment Stock Only	Picking is sorted by manufacturer date so that consignment stock manufactured earlier is picked first.
64	Pick by Expiration Date Consignment Stock Only	Picking is sorted by expiration date so that consignment stock due to expire earliest is picked first.

Table 8.6 — Picking Algorithms (Page 5 of 6)

	Algorithm	Description
65	Pick by Location Nonconsignment Stock Only	Picking is sorted by location so that non-consignment stock is picked first from lower location values.
66	Pick by Lot/Serial Nonconsignment Stock Only	Picking is sorted by lot/serial numbers so that non-consignment stock is picked first from lower lot/serial values.
67	Pick by Date Nonconsignment Stock Only	Picking is sorted by manufacturer date so that non-consignment stock manufactured earlier is picked.
68	Pick by Expiration Date Nonconsignment Stock Only	Picking is sorted by expiration date so that non-consignment stock due to expire earliest is picked first.

Table 8.6 — Picking Algorithms (Page 6 of 6)

Quality Inspection Algorithms

Table 8.7 lists the quality inspection algorithms that are supplied with QAD Warehousing.

Table 8.7
Quality Inspection Algorithms

	Algorithm	Description
1	Inspection of Item Every X Days	Inspection on a cyclic basis, using the frequency in days defined at the item/warehouse level or at the item/supplier level from the last receipt of a given item.
2	Inspection of Item from Given Supplier every X Days	Inspection on a cyclic basis, using the frequency in days defined at the item/warehouse level or at the item/supplier level from the last receipt of a given item from a given supplier.
3	Inspection if previous Item Inspection was bad	Inspection takes place if previous inspection failed for the item.
4	Inspection if previous Inspection from supplier was bad	Inspection takes place if previous inspection failed for <i>any</i> item coming from a given supplier.
5	Inspection if previous Item Inspection from supplier was bad	Inspection takes place if previous inspection failed for a <i>given</i> item coming from the given supplier.
6	Inspection if inspection required on order (PO,WO only)	Inspection takes place if the order field for Inspection Required has been set to Yes.
7	Inspection ID Quantity Received is greater Quantity Required (PO Only)	Inspection takes place if the quantity received is larger than expected. This algorithm only works with purchase orders.
8	Inspection of All Items with Inspection Required	Inspection takes place if the item is marked for inspection in Item/Warehouse Maintenance.
9	Inspection of Item every X receipts	Inspection frequency is based on the receipt frequency defined at the item/warehouse level or at the supplier/item level.

	Algorithm	Description
10	Random Inspection	Inspection is based on a random % defined at the item/warehouse level or at the item/supplier level. This percentage can be dynamically changed based on the results of the inspection.
11	Inspection if new Item (No existing PO Receipt)	Inspection takes place if no existing PO receipt exists made for this item; it is received for the first time.

Shortage-Clearance Algorithms

Table 8.8 lists the shortage-clearance algorithms that are supplied with QAD Warehousing.

Table 8.8
Shortage-Clearance Algorithms

	Algorithm	Description
1	Sales Order Clearance by Priority by Due Date	Clears short sales orders, highest priority first.
2	Sales Order Clearance by Due Date by Priority	Clears short sales orders, earliest due date first.
11	Work Order Clearance by Priority by Due Date	Clears short work orders, highest priority first.
12	Work Order Clearance by Due Date by Priority	Clears short work orders, earliest due date first.
21	Distribution Order Clearance by Priority by Due Date	Clears short distribution orders, highest priority first.
22	Distribution Order Clearance by Due Date by Priority	Clears short distribution orders, earliest due date first.
31	Unplanned Issue Clearance by Priority by Due Date	Clears short unplanned issues, highest priority first.
32	Unplanned Issue Clearance by Due Date by Priority	Clears short unplanned issues, earliest due date first.
41	Global Clearance by Priority by Due Date	Clears shortages regardless of order type, highest priority first.
42	Global Clearance by Due Date by Priority	Clears shortages regardless of order type, earliest due date first.

Algorithm Report and Inquiry Functions

Table 8.9 lists report and inquiry options available relating to algorithms and their assignment.

Table 8.9
Algorithm Reports and Inquiries

Program	Description
Algorithm Type Browse (80.6.2)	This option lets you review details of all the algorithm type codes that have been set up for the field AlgoType in Generalized Code Maintenance.
Algorithm Master Browse (80.6.6)	This option lets you enter an algorithm type code and review details of all the Algorithms that have been set up for that type.
Algorithm Master Report (80.6.7)	This option lets you select a range of algorithm type codes and algorithm numbers for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows the numbers and descriptions for each algorithm in the selected range.
Algorithm Assignment Browse (80.6.10)	This option lets you enter an algorithm type code and review details of all the algorithm assignment fields that have been set up for that type. The browse window does not list the individual algorithm numbers that have been assigned, only the selection fields that define the assignment.

QAD Warehousing Engine Processing

This chapter explains how QAD Warehousing uses engine processing to handle inventory movements in the warehouses, and how you can link inventory transaction types to different modes of engine processing. The chapter is divided into the following major sections:

About Engine Processing 142

QAD Warehousing handles all inventory movement transactions within the warehouses using devices called engines to process the transactions.

Transaction Type Maintenance 142

Each type of inventory transaction is identified by a transaction type code. All standard transaction types are already set up within QAD Warehousing. You can add extra transaction type codes to define special types of inventory transactions that are not covered by the standard types.

Warehouse Transaction Type Maintenance 146

You can set fields that apply to a transaction type only in a particular warehouse.

Transaction Type Report and Inquiry Functions 148

Displaying transaction data for a warehouse.

About Engine Processing

QAD Warehousing handles all inventory movement transactions within the warehouses using devices called engines to process the transactions. QAD Warehousing creates engine workfile records when processing any internal routing or picking process. QAD Warehousing uses these records to track of transactions and to detect when a transaction has been confirmed. This enables QAD Warehousing to prepare for the next transaction specified in the internal routing or picking process.

Engine workfile records are created with a specific mode. The mode options are as follows:

- **AUTO** mode specifies that the workfile transaction is processed immediately.
- **MANUAL** mode specifies that the workfile transaction is processed only when it is selected for processing by warehousing staff.
- **TIMED** mode specifies that the workfile transaction is processed a set time interval after the preceding transaction has been confirmed.

Example Use a **TIMED** engine workfile record when you have an inventory transaction to move stock to an Inspection area, where your procedures decree that it must remain for 24 hours to allow proper inspection before being moved to the next step in its internal routing. In this case, the engine processors would not be able to start the next stage of the routing until the specified time interval—24 hours—had elapsed after the movement into the Inspection area had been confirmed.

Note To set up a **TIMED** mode, you need a custom program. No program to handle this mode is currently provided with QAD Warehousing.

Transaction Type and Warehouse Transaction Type Maintenance also let you define fields related to the way QAD Warehousing consolidates similar records—such as the receipt of two separate shipments of the same item, which could be consolidated into a single put-away. You can also specify whether the controls that allow overpicking should have priority at the storage location group level or at the transaction type level. Overpicking occurs when your requirement is for less than the specified minimum picking quantity; allowing overpicking means you can take a box of 100, for example, when the requirement is for only 70, but the box cannot be split.

Warehouse Transaction Type Maintenance (80.7.6) lets you set up values for the same fields as Transaction Type Maintenance, but relating only to a specified warehouse at a specified site. At the warehouse level, you can also set values for picking level fields related to the transaction type.

The remaining options on the QAD Warehousing Engine menu relate to the day-to-day management of the engine processes and the engine workfiles.

Transaction Type Maintenance

Each type of inventory transaction is identified by a transaction type code. Examples are a purchase order receipt (RCT-PO) or a sales order pick (PICK-SO). All the standard transaction types are already set up within QAD Warehousing.

You can add extra transaction type codes to define special types of inventory transactions that are not covered by the standard types. You can also modify the field settings for the standard transaction type codes so that QAD Warehousing processes the transactions in the way you require.

Transaction Type Maintenance (80.7.6) is shown in Figure 9.1.

Fig. 9.1

Transaction Type Maintenance (80.7.6)

Enter values in the following fields:

Type. Enter the code that defines the transaction type.

Description. Enter the description of the transaction type.

Mode. Specify how processes involving this transaction type are initiated. The options are as follows:

AUTO	The next process in the routing sequence is started automatically as soon as the previous process is complete.
TIMED	The next process is started after a specified time interval, following completion of the previous process.
MANUAL	The next process is only started when it is manually selected for processing.

Consolidate. This option applies only to MANUAL mode. Enter Yes to allow QAD Warehousing to consolidate similar records that are waiting to be processed.

Example If one manual record awaiting processing is to put away 100 of item A and a second record is to put away 50 of item A, consolidation lets QAD Warehousing process one record to put away 150 instead of the two separate records.

Enter No if you do not want to consolidate records, or if the mode is not MANUAL.

Print Procedure Code. Enter a code to define the printing procedures to be carried out for this transaction type. Set up codes in Generalized Code Maintenance (36.2.13). The basic codes are AJ (adjustment), IN (inspection), PK (picking), RC (receipt), SH (shortage), and TF (transfer). See “Print Procedure Codes” on page 171.

Together with the print flavor code defined at the work location group level, the print procedure code defines the name of the program to start to print a transaction task or a pallet ID.

Example The print ID program, used when making a receipt, is called `whprirca.p`:

(wh + pr (print) + i (ID) + RC (Print Procedure Code for a Receipt) + A (Print Flavor))

The next Transaction Type Maintenance frame is shown in Figure 9.2.

Fig. 9.2
Transaction Type Maintenance, Picking and Storage Clearance Details

The screenshot shows the 'Transaction Type Maintenance' window. The 'Transaction Details' section shows 'Type: BACK-CN' and 'Description: Return from Consignment Inspection (CN)'. The 'Picking and Shortage Clearance Details' section contains several fields: 'Control Over-Pick at SLG:' with a checkbox, 'Over Pick ?:' with a checkbox, 'Shortage Definition:' with a dropdown set to '0', 'Shortage Quantity Definition:' with a dropdown set to '0', 'Shortage Action:' with a dropdown set to '0', 'Shortage Window:' with a dropdown set to '0', 'SLG Search Extension:' with a checkbox, and 'SLG List Search Extension:' with a checkbox.

The fields in this frame apply only to transaction types that involve picking. You must enter shortage definition settings for these so that QAD Warehousing can deal with shortages correctly, but you can ignore them for other transaction types.

Control Over Pick at SLG. Enter Yes if over picking is to be controlled by the setting of the field at the SLG level, or No if it is to be controlled from the setting of the field for the transaction type. If you enter Yes, any entry in the preceding field is ignored.

Over Pick. Indicate whether transactions of this type can pick more stock from locations than is specified in the order. Enter Yes if overpicking is allowed; otherwise, enter No.

This field works in conjunction with the Allow Split field—specified at the storage location group level—to control whether stock can be picked from locations in the SLG in situations where the quantity required for the pick does not match the unit of measure in which the item is stocked in the location.

See “Allow Split” on page 106.

Example If a location contains boxes of 100 of the item and the required picking quantity is 70 pieces, the following possibilities can be specified:

Over Pick	Allow Split	Result
Yes	Yes	Pick 70 by splitting a box
Yes	No	Over pick—take a box of 100
No	Yes	Pick 70 by splitting a box
No	No	No pick from this location

Shortage Definition. For picking transaction types, enter a code from 0 to 10 to specify what constitutes a shortage. The options are as follows:

Code	Definition
0	A field is available on each QAD Warehousing order detail record which can be manually set to Yes to indicate a shortage.
1	A field is available on each QAD Warehousing order detail record which is automatically set to Yes when picking is attempted. This constitutes a shortage.

Code	Definition
2	General allocation: an allocated quantity greater than zero that is not detail allocated indicates a shortage.
3	Open order quantity: an order quantity greater than the sum of the allocated quantity, picked quantity, and shipped quantity indicates a shortage.
4	Non-detail allocated quantity: an order quantity greater than the sum of any detail allocations and the picked quantity and shipped quantity indicates a shortage.
5	General allocation previously picked: as 2 except that the sum of the quantity picked and quantity shipped must be greater than zero.
6	Open order quantity previously picked: as 3 except that the sum of the quantity picked and quantity shipped must be greater than zero.
7	Non-detail allocated quantity previously picked: as 4 except that the sum of the quantity picked and quantity shipped must be greater than zero.
8	General allocation, other line previously picked: as 2 except that sum of the quantity picked and quantity shipped of a different line on the same order must be greater than zero.
9	Open order quantity, other line previously picked: as 3 except that sum of the quantity picked and quantity shipped of a different line on the same order must be greater than zero.
10	Non-detail allocated, other line previously picked: as 4 except that sum of the quantity picked and quantity shipped of a different line on the same order must be greater than zero.

Shortage Quantity Definition. For picking transaction types, enter a code from 0 to 2 to specify how the shortage quantity is calculated. The options are as follows:

Code	Definition
0	General allocated quantity
1	Open order quantity (ordered, less allocated, less picked, less shipped)
2	Non-detail allocated quantity (ordered, less total detail allocations, less picked, less shipped)

Shortage Action. For picking transaction types, enter a code from 0 to 2 to specify the action that QAD Warehousing should take when a shortage is detected. The options are as follows:

Code	Definition
0	No action: Warehouse transactions are created.
1	Order line is general allocated; warehouse transactions are created.
2	Order line is detail allocated. These allocations are converted to detail picks that create warehouse transactions.

Shortage Window. Enter a number indicating the number of days before an order line due date that it can be considered short.

Example 1 indicates that an order line due tomorrow is short, but that one due the day after—2 days away—is not.

SLG Search Extension. When doing a transfer with a user-provided destination location, if the destination is full, the put-away takes place in the storage location group of the destination location given by the user.

SLG List Search Extension. When doing a transfer with a user-provided destination location, if the destination is full, the put-away takes place in the storage location groups linked to the list of SLGs defined at item/warehouse level of the destination location given by the user.

Note You can either first check in the SLG of the current destination location and then in the complete list of SLGs or only look at the current SLG for the given location. If you set the SLG List Search Extension field to Yes you must set the SLG Search Extension field to Yes also.

Warehouse Transaction Type Maintenance

In addition to setting fields for each transaction type, you can also set fields that apply to a transaction type only in a particular warehouse. For example, if you need to set different shortage definitions for different warehouses, you can do so using Warehouse Transaction Type Maintenance.

See “Transaction Type Maintenance” on page 142.

Warehouse Transaction Type Maintenance (80.7.10) is shown in Figure 9.3.

Fig. 9.3
Warehouse Transaction Type Maintenance (80.7.10)

Enter values in the following fields.

Site. Enter the site.

Warehouse. Enter the warehouse.

Type. Enter the code that defines the transaction type.

Note You should use Transaction Type Maintenance to set up new transaction type codes. QAD Warehousing displays a warning message if you enter a transaction type code that does not exist. The purpose of this option is to set up fields for an existing transaction type that apply only to the specified warehouse.

Engine and Printing Details Frame

The Mode, Consolidate, and Print Procedure Code fields are used in the same way as in Transaction Type Maintenance.

See “Warehouse Transaction Type Maintenance” on page 146.

Picking Details

The Over Pick and Control Over Pick at SLG fields are used in the same way as in Transaction Type Maintenance.

See “Warehouse Transaction Type Maintenance” on page 146.

The Picking Details frame is shown in Figure 9.4.

Fig. 9.4
Warehouse Transaction Type Maintenance, Picking Details Screen

The fields in this frame define the picking levels associated with this transaction type. Each storage location group has an associated picking level value. For any picking transaction type, you can define the picking levels at which picking should start and end. QAD Warehousing then looks in the relevant storage location groups that have the specified picking level.

Single Level Picking. Enter Yes if all the picking quantity must be taken from only one picking level; otherwise, enter No.

Start Picking Level. Enter the numerical code for the picking level at which picking is to start.

End Picking Level. Enter the numerical code for the picking level at which picking is to end.

Shortage Clearance Details and Searching

The Shortage Definition, Shortage Quantity Definition, Shortage Action, and Shortage Window fields are used in the same way as in Transaction Type Maintenance.

Transaction Search Window. To speed up processing, some of the picking algorithms consider the last location used for picking of a specific item when that item is to be picked again. The algorithm does this by searching backwards through previous transactions. However, you can limit the age of transactions that are searched in this way, because it is unlikely that the last location is still the most efficient for picking if the previous transaction is more than a few days old.

This field specifies the number of days that the algorithms should search backwards for previous transactions relating to the current item. For example, set this value to 1 if you want the algorithms to search only the transactions that were created today or yesterday.

SLG Search Extension. When doing a transfer with a user-provided destination location, if the destination is full, the put-away takes place in the storage location group of the destination location given by the user.

SLG List Search Extension. When doing a transfer with a user provided destination location, if the destination is full, the put-away takes place in the storage location groups linked to the list of SLGs defined at item/warehouse level of the destination location given by the user.

See “Warehouse Transaction Type Maintenance” on page 146.

Transaction Type Report and Inquiry Functions

Table 9.1 lists report and inquiry options available on the QAD Warehousing Engine Menu relating to transaction types and warehouse transaction types.

Table 9.1
Transaction Type Reports and Inquiries

Program	Description
Transaction Type Browse (80.7.7)	Lets you review details of all the transaction types that have been set up on the system.
Transaction Type Report (80.7.8)	Lets you enter a range of transaction types for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows details of all the transaction types in the specified range.
Warehouse Transaction Type Browse (80.7.11)	Lets you enter a site and review details of all the warehouse transaction type fields that have been set up in warehouses in that site.
Warehouse Transaction Type Report (80.7.12)	Lets you enter ranges of sites, warehouses, and transaction types for inclusion in the report, and then to specify where you want the report results printed or displayed. The report shows details of all the transaction types in the specified ranges.
Transactions by WLG Report (80.9.11)	Lets you display all open transactions sorted by work location group (WLG).

Labor Management

QAD Warehousing provides the ability to manage resources. This is achieved by using resources and groups of resources and assigning tasks to these resources. Resources are simply individuals or users of the system, who work specifically within the warehouse.

This chapter describes how Labor Management works within QAD Warehousing. The major sections cover these topics:

About Labor Management 150

Introduction to managing labor in a warehouse.

Labor Management Control File 150

Setting defaults for labor management programs in QAD Warehousing.

Defining Resources 151

Setting up users and calendars for warehouse operations.

Defining Tasks 153

Using Task Maintenance to create and update the tasks performed in a warehouse.

Assigning Resources to Tasks 156

After defining resources and tasks for a warehouse, you assign tasks to resources using Task Assignment Maintenance.

Updating Task Priorities 157

Using Task/Priority Update Report/Batch to change and report the priority of tasks.

Labor Management Workbench 158

Using Labor Management Workbench to assign resources to tasks.

About Labor Management

In a warehouse, it is inefficient for staff to work in many different areas on many different types of tasks and on tasks located physically distant from each other.

Using labor management, the warehouse staff can be assigned the tasks most suited to their individual or collective skill sets or experience.

When movements occur within a warehouse, QAD Warehousing generates warehouse transactions. These can be viewed using Warehouse Transaction Inquiry (80.9.1). These warehouse transactions are essentially tasks within the warehouse. You can assign warehouse staff to these tasks.

The basic flow of labor management is as follows:

- 1 Defining Resources. Define each warehouse staff, the warehouse groups, and optionally the warehouse shifts. Each warehouse staff member is a resource.
- 2 Defining Tasks. Define each variation of warehouse task (transaction), alternate tasks, and optionally the expected time required to complete these tasks.
- 3 Assigning Resources to Tasks. Use Task Assignment Maintenance (80.11.7) and the labor management workbench to assign resources to the tasks.
- 4 Approving Tasks. Use the RF (Radio Frequency), RDT (Radio Data Terminal), or non-RF movement confirmation frames to approve the movement of inventory from one location to another (tasks).

Labor Management Control File

The Labor Management Control File (80.11.24) enables you to activate Labor Management and set some default values for options in the Labor Management Workbench.

Fig. 10.1
Labor Management Control File (80.11.24)

Complete the fields as follows:

Active. If set to Yes, labor management functionality becomes active.

Check User Task Assignment. Defines whether the Labor Management Workbench should check user-task assignment lists, or assign tasks irrespective of skill sets or experience.

Check User/Group Calendars. Defines whether the Labor Management Workbench should check the user or group shift calendar, or assign tasks irrespective of time/date details.

Check User Travel Sequence. Defines whether the Labor Management Workbench should check the user's last known physical location prior to assigning tasks, or assign tasks irrespective of physical location within the warehouse.

Include Routing Tasks. Defines whether the Labor Management Workbench should calculate the times and tasks using the complete routing as opposed to the individual routing sequence.

Display Next. Defines how many tasks the Labor Management Workbench should display.

Display Tasks for Next (Minutes). Defines how many minutes worth of tasks the Labor Management Workbench should display.

Defining Resources

The following topics describe setting up users and calendars for warehouse operations.

User Maintenance

Use User Maintenance (80.11.13) to define tasks that are best suited for warehouse staff. You can also define the calendar for each user.

Fig. 10.2
User Maintenance (80.11.13)

Complete the User Maintenance fields as follows:

User ID. Defines the name of the warehouse staff. An entry should be made for each warehouse staff.

Note There must also be an entry within QAD ERP User Maintenance (36.3.1, 36.3.18 before eB2.1).

Description. Enter the description of the associated user. Typically, description is related to labor management.

Calendar. Defines the calendar which this user is associated with.

Task. Defines the task. The values entered in this frame are used by the Labor Management Workbench to calculate the most efficient warehouse staff to allocate tasks. This frame is optional and is populated and updated automatically upon completion of every task.

Type. Defines the type of task.

Internal Routing. Defines the internal routing associated with this task.

Description. Defines the description of this task.

Actual Time (Seconds). Defines the actual time taken to complete this task. This field is updated automatically upon completion of this task by this user.

Tasks Confirmed. Displays the number of tasks this user has confirmed.

Note Task and Type are internal routing specific.

Calendar Maintenance

Use Calendar Maintenance (80.11.17) to define calendars or working shifts, which can optionally be associated with users. The Labor Management Workbench can be set up to consider user calendar details when assigning tasks to employees.

Fig. 10.3
Calendar Maintenance (80.11.17)

Complete the fields as follows:

Calendar. Defines the name of the calendar.

Description. Enter a description of the calendar. This description is typically related to labor management.

Start. Defines the start effective date range of this calendar.

End. Defines the end effective date range for this calendar.

Sequence. Defines the sequence of this calendar.

Day. Defines the day for this sequence. Valid entries are Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday.

Start Time. Defines the start time for this sequence.

End Time. Defines the end time for this sequence.

Defining Tasks

The following sections describe using Task Maintenance to define warehouse tasks.

Task Maintenance

Use Task Maintenance (80.11.1) to create and update the tasks performed in a warehouse.

Fig. 10.4
Task Maintenance (80.11.1)

Complete the fields as follows:

Task. Enter the task name, such as PICKING.

Description. Enter the description of the task. This description is typically related to labor management.

Procedure Code. Enter the 2-character procedure code such as PK for this task. See Chapter 15, “Radio Frequency (RF) Terminals,” on page 229.

Confirmation Mode. Enter the default confirmation method for this task type.

- A confirmation mode of AUTO requires the user to perform a movement confirmation.
- A confirmation mode of MANUAL is confirmed by the confirmation engine.
- A confirmation mode of TIMED is confirmed at a predetermined time interval.

Comments. Enter additional comments as required for this task.

Alternate Task Maintenance

Alternate Task Maintenance (80.11.3) is an optional program you can use to define subcategories of tasks. Tasks are generally associated with specific movements within QAD Warehousing.

Example Task Transfer has a subtask Transfer1 to cover a transfer of inventory between specific locations.

Fig. 10.5
Alternate Task Maintenance (80.11.3)

Example A receipt within a specific work location group or storage location group can be confirmed by a specific individual.

Within Alternate Task Maintenance, tasks can be set up for specific transactions. These alternate tasks can later be associated with individuals or specific groups. Alternate tasks are only necessary if not enough standard tasks can cope with the distribution of labor within the warehouse.

Complete the fields as follows:

Alternate Task. Defines the alternate task name.

Description. Defines the description of the alternate task defined above. This description should be typically labor management related.

Comments. Defines whether additional comments are required for this task.

Task. Defines the standard task for this alternate task.

Sequence. Defines the sequence in which the alternate tasks should be considered, as defined in Task Assignment Maintenance.

From/To Site. Defines the effective transaction from/to site. These fields are not range fields; they are the actual transaction from site and transaction to site.

From/To Warehouse. Defines the effective transaction from/to warehouse.

From/To Storage Location Group. Defines the effective transaction from/to storage location group.

From/To Work Location Group. Defines the effective transaction from/to work location group.

From/To Location. Defines the effective transaction from/to location.

Confirmation Mode. Defines the default confirmation method for this alternate task type.

- A confirmation mode of AUTO requires the user to perform a movement confirmation.
- A confirmation mode of MANUAL is confirmed by the confirmation engine.
- A confirmation mode of TIMED is confirmed at a predetermined time interval.

Task Times Maintenance

Use Task Times Maintenance (80.11.5) to specify an estimated amount of time to complete a task for a particular internal routing. These times are used by Labor Management Workbench to calculate estimated resource requirements and estimated completion time for tasks. The workbench can also be used for reallocating resources and tasks to reduce times.

Fig. 10.6
Task Times Maintenance (80.11.5)

Task Times Maintenance

Go To Actions Copy Print Preview

Task:

Type:

Internal Routing:

Description:

Estimated Time:

Old Estimated Time:

Created:

Modified:

Complete the fields as follows:

Task. Defines the standard or alternate task name.

Type. Specify the task type.

Internal Routing. Specify the internal routing associated with this task.

Description. Enter a brief description of the task defined above. This description is typically related to labor management.

Estimated Time. Specify the estimated task completion time. This value is used by the Labor Management Workbench and is compared against the user's estimated task completion time. This field can be updated automatically based on all past transactions using Task Times Update (80.11.10).

Assigning Resources to Tasks

After defining the resources and tasks that are being undertaken within the warehouse, you must assign the tasks to the resources. This is achieved by using Task Assignment Maintenance (80.11.7).

Fig. 10.7
Task Assignment Maintenance (80.11.7)

Queue	Seq	Task	Confirmation Mode
0	COUNT	A	
10	pick	A	
20	pack	A	

Complete the fields as follows:

User ID. Enter the name of the warehouse staff. An entry should be made for each warehouse staff.

Comments. Defines whether additional comments are required for this task assignment.

Queue. Defines the queue for this task. The queue contains a number of sequences, and queues are examined sequentially. Therefore, when the system is assigning tasks to resources, it checks all the sequences in queue 1 before queue 2. If multiple tasks exist for a user, the user is prompted to perform the task with the higher priority within the queue.

Sequence. Defines the order within the queue for examining tasks.

Task. Defines the tasks that are assigned to the specified employee (user).

Note This does not assign a specific task; it indicates that the user can undertake this task, assuming some are available.

If two outstanding tasks exist within the warehouse—a pick and a receipt—and a user is defined with sequence 1 receipt and sequence 2 pick, the user is prompted to move the receipt first, since this has a higher priority within the queue.

Confirmation Mode. Defines the default confirmation method for this task type.

- A confirmation mode of AUTO requires the user to perform a movement confirmation.
- A confirmation mode of MANUAL is confirmed by the confirmation engine.
- A confirmation mode of TIMED is confirmed at a predetermined time interval.

Reassigning Hard-Assigned Tasks

In QAD Warehousing, tasks are hard assigned to the user; that is, by default all tasks for the selected order/pre-shipper/customer combination are assigned to the user only and viewable by the user only. You can restrict the number of tasks assigned to a user and re-sort tasks by editing the `whbpklx2.p` sorting procedure. The sorting procedure is the default procedure in the Batch Picking Task Sort field in the Local Exit Routine Control File (80.24.23).

See “Local Exit Routine Control File” on page 169.

You can edit `whbpklx2.p` to change the following default task-sorting order:

- Travel sequence
- Alphabetical order of location
- Task priority (descending, highest priority first)

Note When determining the priority for tasks, the system looks at the task queue, priority, and sequence, respectively.

Additionally, since the `whbpklx2.p` program receives the current user ID parameter, you can use the sorting procedure to retrieve all tasks assigned to a user. Once retrieved, you can re-sort the tasks and remove task assignments based on any logic. For example, you can re-sort tasks by weight rather than travel location so that pickers can place heavy items on the bottom of a pallet. You can add a lookup to the `whbpklx2.p` program so that warehouse staff can re-sort the tasks manually before starting to pick.

Updating Task Priorities

Use Task/Priority Update Report/Batch (80.11.11) to change and report the priority of tasks. You can enter a range of sites or warehouses; then enter a period in minutes that determines how old tasks must be before the system increases their priority. After taking the delay period you specify into account, the frequency at which the system changes task priority is defined by the frequency at which you run a batch picking program. When you run QAD Warehousing batch picking, QAD Warehousing increments the task priority when it creates the tasks.

The system bases the task priority first on the setting of the Priority field in Internal Routing Maintenance (80.2.5). If it is not set there, it uses the priority that you set for transactions in the Priority field in Work Location Group Maintenance (80.3.9).

See “Priority” on page 54.

If you specify changes to priority in Task/Priority Update Report/Batch, the system ignores any changes to priority that you make in either Internal Routing Maintenance or Work Location Group Maintenance. However, you can change both values manually by setting the Priority field in Transaction Maintenance (80.8.13).

From/To Created. Defines the From/To create date range that should be included on the workbench.

From/To Transaction. Defines the From/To transaction number range that should be included on the workbench.

From/To Type. Defines the From/To transaction type range that should be included on the workbench.

From/To Priority. Defines the From/To transaction priority range that should be included on the workbench.

From/To Task. Defines the From/To transaction task range that should be included on the workbench.

From/To Created by. Defines the From/To transaction created by user ID range that should be included on the workbench.

From/To Order. Defines the From/To transaction order number range that should be included on the workbench.

From/To Line/ID. Defines the From/To transaction order line range that should be included on the workbench.

Fig. 10.10
Labor Management Workbench, Options

Site: spain	To: spain
Warehouse:	To:
Work Loc Group:	To:
Location:	To:
Item N	
Lot/S	
Cr	
Transa	
Pri	
Created By:	To:
Order:	To:
Line/ID:	To: Output:

Options

Check User Task Assignment?: yes

Check User/Group Calendars?: yes

Check User Travel Sequence?: yes

Include Routing Tasks?: yes

Display Next: 0 Tasks

Display Tasks for Next: 0 Minutes

Check User Task Assignment. Defines whether the workbench should check the user or group task assignment.

Check User/Group Calendars. Defines whether the workbench should check the user or group calendars.

Check User Travel Sequence. Defines whether the workbench should check the user's last known physical location prior to assigning tasks, or assign tasks irrespective of physical location within the warehouse.

Include Routing Tasks. Defines whether the workbench should calculate the times and tasks using the complete routing as opposed to the individual routing sequence.

Display Next. Defines how many tasks the workbench should display.

Display Tasks for Next (Minutes). Defines how many minutes worth of tasks the workbench should display.

The Labor Management Workbench displays the current outstanding tasks based on the selection criteria entered in the first frame, together with the currently assigned warehouse staff, priority, and estimated time required to complete the task.

The lower frame displays the actual time that the report was generated, together with the estimated total time for all displayed tasks, and the estimated completion time for all displayed tasks.

The operator can select the required transaction to display a list of all valid warehouse staff that can undertake this task and add additional users if needed.

System Administration

This chapter describes QAD Warehousing menu options used to manage the system and control printing.

Warehouse Security 162

Using Warehouse Security Maintenance to control which users or groups of users can access data for a warehouse.

Utility Menu Options 162

Using various system programs within the QAD Warehousing utility menu.

Cross-Referencing Program Names 163

When you create custom programs for localization purposes, use Program X-Reference Maintenance to cross-reference QAD ERP program names with your custom programs.

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QAD Warehousing enables you to control the printing of tags, pallet labels, or exception tags from various menus within the system, with a flexible choice of format for the output.

Warehouse Security

Warehouse Security Maintenance (80.24.13) enables you to control which users or groups of users can access data for a warehouse.

The frame contains three fields:

Site. Specify the site owning the warehouse being modified. Site security validation applies.

Warehouse. Specify the warehouse being modified. It must exist, in combination with the site, as a valid warehouse.

Group. Enter a list of users or user groups separated by commas. The default is an asterisk (*), which indicates all users can perform functions for this warehouse.

Important This user group is the same as that used in QAD ERP and *not* a QAD Warehousing user group. QAD ERP user groups identify users with similar QAD ERP security access requirements. QAD Warehousing user groups identify users—typically in RF device environments—with similar task requirements.

Two further warehouse security options are provided:

- Warehouse Security Browse (80.24.14) enables you to review the security levels set for a specific warehouse.
- Warehouse Security Report (80.24.15) enables you to print a report showing the users/user groups for a specific warehouse or all warehouses.

Utility Menu Options

The Utility menu (80.24.21) provides the following options:

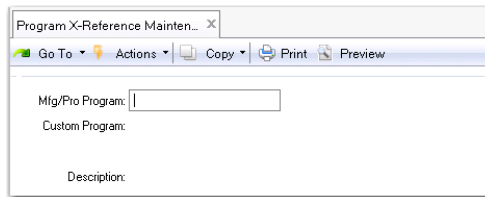
- Generalized Codes Maintenance (80.24.21.1). Lets you define values for QAD Warehousing system and reference fields.
- Window Help Maintenance (80.24.21.2). Lets you attach drill-down or look-up browses to QAD Warehousing fields.
- Program X-Reference Maintenance (80.24.21.3). Lets you cross-reference QAD ERP program names with custom program names. See “Cross-Referencing Program Names” on page 163.
- Create QAD Warehousing Diagnostic Program File (80.24.21.5).
- Rebuild InventM Records (80.24.21.8). Lets you delete all InventM records and rebuild them from Id_det records. Run this utility in single-user mode only.
- Message Maintenance (80.24.21.10), Message Inquiry (84.24.21.11), Message Report (80.24.21.12). Message Maintenance lets you add new messages or modify existing messages in QAD Warehousing. Use the inquiry and report to display messages you added or modified.
- Re-calculate Location % Full (80.24.21.13). This option enables you to run a report to recalculate the percentage full for locations. You can also update the database with the results.
- Populate Order Maintenance Files (80.24.21.14). Use this option when first installing QAD Warehousing or when installing a new version of QAD Warehousing. It takes all outstanding orders in the system and populates the appropriate database tables with updated information.
- Re-Balance Expected In/Out Qtys (80.24.21.15). Use this option to recalculate balances if you think there are mistakes in the order quantities.

- Persistent Procedure Inquiry (80.24.21.17). This inquiry is for system developers only and should not be used by QAD Warehousing users.
- CPD Control File Maintenance (80.24.21.19). This menu option is for system administrators to enable QAD Warehousing during installation.
- Incomplete Hanging Tasks Report (80.24.21). Use this utility to check for outstanding warehouse tasks that must be confirmed by warehouse staff.
- Hanging lad_det (No Task) Report (80.24.2122). Use this utility to check for detail allocations without any referenced tasks.

Cross-Referencing Program Names

If you create custom programs, for example, for localization purposes, use Program X-Reference Maintenance (80.24.21.3) to cross-reference QAD ERP program names with your custom programs. Figure 11.1 illustrates the Program X-Reference Maintenance screen.

Fig. 11.1
Program X-Reference Maintenance (80.24.21.3)



QAD ERP Program. Enter the name of the QAD ERP program that you customized.

Custom Program. Enter the new name of the customized program.

Description. Enter a short description of the cross-referenced programs.

Interface Menu Options

The Interface menu (80.19) provides three options:

- User Group Maintenance (80.19.1) enables you to create user groups—for example, picking or dispatch—and assign users to them.
This function is also accessible from the Labor Management menu as option 80.11.15.
- User-Work Location Group Maintenance (80.19.5) enables you to assign a user to a work location group and also set up print options specific to that user. This program is described in “Assigning Users to a WLG” on page 265.
- Barcode Prefix Control (80.19.24) lets you define RF barcode prefixes. See “Barcode Prefixes” on page 164.

User Group Maintenance

User Group Maintenance (80.19.1) is an optional program that lets you group users into defined categories.

Example Two groups could be defined for picking. One group can have three members (morning shift calendar) and another group can have seven members (evening shift calendar). These groups can later be assigned to tasks.

This can save time, since groups of warehouse staff can be moved quickly from one location to another, and warehouse staff can be quickly added or removed from multiple warehouse groups.

Fig. 11.2
User Group Maintenance (80.19.1)

Complete the fields as follows:

User Group. Enter the name of the warehouse group.

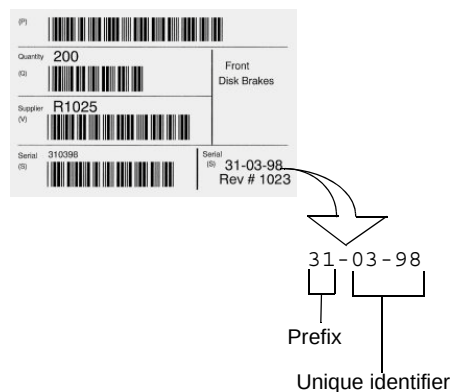
Description. Specify the description of the associated group. This description is typically related to labor management.

User ID. Specify the names of all the users that belong to this group.

Barcode Prefixes

Barcode numbers are typically divided into two parts: a company code prefix, which is assigned to the entire system, and the remainder of the code which designates a particular product within that system. Figure 11.3 illustrates a typical barcode with a prefix.

Fig. 11.3
Barcode Prefix Example



QAD ERP uses prefixes in barcode labels to identify a customer or ship-to code, while the remainder of the barcode identifies additional information about the item or shipment. Warehouse staff scan barcode shipping labels when building shipments for the customer or ship-to code. The system needs to know the barcode prefix to validate that the correct barcode data value has been scanned.

Note When scanning items, warehouse staff can scan alternate barcode numbers, including the customer code as an alternate barcode number. You define alternate barcodes in either Item Master Maintenance (80.4.5) or Item Maintenance (80.4.7). See “Defining Item Data for Sites and Warehouses” on page 88.

EAN-128 Barcodes

EAN-128 is a variant of the universal commercial code (UCC) 128. UCC code 128 provides a world-wide format and standard for exchanging common data between companies. European Article Number (EAN-128) is a superset of the uniform product code (UPC) that allows extra digits for country identification; it is primarily used in retail distribution.

While other barcodes simply encode data with no respect to what the data represents, UCC/EAN-128 encodes both data and what the data represents. UCC/EAN-128 contains two components:

- Data with its application identifier (AI)
- Barcode symbology that codes data

The barcode symbology is code 128. The AI is a prefix code that identifies the meaning and the format of the data that follows it (data field).

You specify that QAD Warehousing use the non-encrypted `whean128.p` program in the EAN/UCC 128 program field in Barcode Prefix Control File (80.19.24). The `whean128.p` program reads and interprets UCC/EAN-128 codes. It supports only the following AI prefixes:

00	15	231	235	239	335
01	30	232	236	310	340
02	37	233	237	320	
10	230	234	238	330	

See page 167.

QAD Warehousing runs `whean128.p` during batch picking. You can customize `whean128.p` or create your own EAN 128 program. If you create your own program, you must enter the name of the customized program and the name of the program it is replacing in Excname Maintenance (80.24.3).

You can also specify an alternate barcode in the Barcode 1 and Barcode 2 fields in Item Maintenance (80.4.7) to use with the `whean128.p`.

Example You define an EAN/UCC-13 alternate barcode as 1234567890123 in the Barcode 1 field. During batch picking, the RF displays an QAD ERP item as MyItem1. Warehouse staff scan a UCC/EAN-128 code that contains (01)1234567890123(310)12334, where (01) is the prefix identifying the EAN/UCC-13 terminology. The `whean128.p` program:

- Reads the full barcode
- Determines that staff need to scan the item

- Identifies (01) as a EAN/UCC-128 standard for the item number in EAN/UCC-13 terminology
- Determines that 01234567890123 corresponds to MyItem1 in QAD Warehousing
- Accepts the scan

You can also test the barcode print of an EAN-128 barcode by specifying the `whean128.p` program in EAN/SCC Coding Test (80.19.13).

Serial Shipping Container Code (SSCC)

SSCC is a specific pallet identification code that contains the manufacturer code and 7 to 11 digits for pallet identification. The SSCC uses a common vendor numbering scheme that can include EAN.UCC prefixes.

You specify a code in the Manufact Code field in the Printing Frame of Warehouse Maintenance (80.1.1). The code identifies the enterprise's site-named manufacturer code. This code is included in every SSCC used by the enterprise.

See "Manufact Code" on page 40.

You specify that QAD Warehousing use the non-encrypted `whsscc.p` program in the EAN/UCC 128 program field in Barcode Prefix Control File (80.19.24). This program reads and interprets SSCC codes. You can customize `whsscc.p` or create your own SSCC program. If you create your own program, you must enter the name of the customized program and the name of the program it is replacing in Excname Maintenance (80.24.3).

See page 167.

During batch picking, when staff scan an SSCC, the `whsscc.p` program extracts the enterprise code, verifies that it corresponds to the site, verifies that the SSCC check digit is correct, and displays the eight-digit pallet reference for the scanned container or tote.

Note Pallet numbers within QAD ERP are eight digits; therefore, if an SSCC is more than eight digits, QAD Warehousing only uses the last eight digits of the code as the pallet number. Some reports and inquiries display only the eight digits.

Warehouse staff can print labels for the SSCCs. You must set Print Flavor to 1 in Warehouse Maintenance (80.1.1) to print the labels. When set, QAD Warehousing creates the SSCC by adding the enterprise code you define in Warehouse Maintenance to the reference for the container. It also adds a check digit for the code.

If you use barcodes in EAN/UCC-128 that contain a (00) prefix, the prefix is an SSCC that contains the manufacturing code, including a prefix, country prefix, pallet number, and a check-digit suffix. In this case, `whean128.p`:

- Extracts the SSCC identity with the (00) prefix
- Runs the `whsscc.p` program to extract the pallet number from the SSCC
- Validates the pallet number with the task, if required

You can also test the barcode print of an SSCC type barcode by specifying the `whsscc.p` program in EAN/SCC Coding Test (80.19.13).

Specifying Barcode Prefixes

Use Barcode Prefix Control File (80.19.24) to define a one- to four-digit prefix for any or all of following fields:

- Date (expiration date)
- Item
- Location
- Lot/serial
- Quantity
- Reference
- Tote

Note Tote is used in batch picking and consolidation.

You can set up prefixes when using RF containerization or container move features in QAD Warehousing. Because you cannot determine whether staff scan a tote they create in batch picking or scan a reference through full-pallet picking or wave replenishment, QAD Warehousing's prefixes are valid for both boxes/pallets that are either totes or references.

See “Setting Up Containerization” on page 340.

Fig. 11.4
Barcode Prefix Control (80.19.24)

Scan Field	Pref	Enforce	EAN/UCC 128 program
Reference	s	☒	
		☐	

Site. Enter the site for scanning prefixes.

Warehouse. Enter the warehouse for scanning prefixes.

Scan Field. Enter one of the following fields:

- Date
- Item
- Location
- Lotserial
- Quantity
- Reference
- Tote

Pref. Enter up to a four-character prefix that represents the scan field definition. For example, enter L for location, R for reference, or D for date.

The system uses the expiration date for the date prefix. Only the RF PO Receipt (1.8) menu option prompts for the expiration date.

Enforce. Indicate whether to enforce prefix use during barcode scanning.

No: Staff can scan barcodes without prefixes.

Yes: Staff must scan a barcode with a prefix, unless the environment variable `AIMSkipPrefix` is set to yes for that user (see the following section on disabling prefixes).

UCC/EAN 128 program. Enter a program to read and interpret barcodes:

`whsscc.p`: for SSCC barcodes

`whean128`: for UCC/EAN-128 barcodes

Warehouse users can scan either EAN or SSCC codes and have values displayed for the various prefixes in the RF.

Example You specify the `whean128.p` program for use with the Q(uality) prefix. The RF prompts the user for the quantity. The user enters the EAN-128 code 30100. The `whean128.p` program reads the 30100 code and identifies the EAN prefix 30 for the quantity. It removes the prefix 30 and returns the value of 100 as the valid quantity to QAD Warehousing.

Disabling Prefixes

It is cumbersome to type a prefix for every field when warehouse staff use a terminal to enter barcode numbers rather than a scanning device; for example, for testing purposes. For this reason, you can set an environment variable that lets warehouse staff skip prefix entry. Set the following environment variable in the Progress initialization file of the application used to record prefixes:

```
AIMSkipPrefix=yes
```

For UNIX users, use the `setenv` command to set `AIMSkipPrefix=Yes` in the starting script of the session.

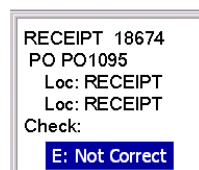
You can also disable a prefix by specifying No in the Enforce Prefix field in Barcode Prefix Control.

Processing Orders with Prefixes

Once you define the prefixes in Barcode Prefix Control, staff can scan tags using the prefixes.

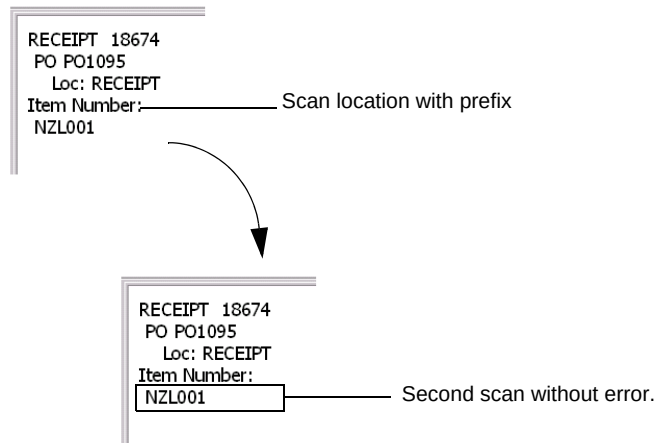
For example, if you define a location prefix as L and staff scan the location `RECEIPT` without scanning the prefix, the RF displays an error message as shown in Figure 11.5.

Fig. 11.5
RF Scan Error Message



However, if staff scan the prefix with the label by scanning **LRECEIPT**, staff can proceed to scan the item number without errors as shown in Figure 11.6.

Fig. 11.6
RF with Prefix Scanned



Local Exit Routine Control File

You can specify separate programs that add functionality for use with QAD Warehousing. Use Local Exit Routine Control File (80.24.23) to specify the program.

For example, you can use Local Exit Routine Control File to define the program to call when warehouse staff replenish from a single pallet.

Fig. 11.7
Local Exit Routine Control File (80.24.23)

The screenshot shows the 'Local Exit Routine Control File' window. It contains a table with the following data:

Routine	Program
Bulk Pick-Sheet (whbpk01.p):	whbpk01.p
Pre-Shipper List (whbpps01.p):	whbpps01.p
Printer Template User Fields (whprlx01.p):	
Order Detail Update (whomk01.p):	
Cycle Count Selection Algorithms (whicccck.p):	
Task Calculation (whlmlk01.p):	whwata01.p
Batch Picking Order Selection (whbpklk1.p):	
Batch Picking Task Sort (whbpklk2.p):	
RF Pallet OverPick (whrfmbr1.p):	whrfmbr1.p
Batch Picking Screen Format (whbpklk3.p):	whbpklk3.p

At the bottom, it shows 'Created: mlg 5/3/2006' and 'Modified: pbu 12/3/2009'.

Bulk Pick-Sheet (whbpk01.p). Specify this program to let users print all bulk-picking tasks by item.

Pre-Shipper List (whbpps01.p). Specify this program to print a pre-shipper list during bulk picking. The pre-shipper list is similar to the standard picklist that QAD ERP creates.

Printer Template User Fields (whprlx01.p). Specify this empty printer template to use as a basis when you want to create and manage your own printer user fields.

Order Detail Update (whomlx01.p). Specify this program when you want local values to be set on the order detail. Use this program before you create order detail data on the order.

Cycle Count Selection Algorithms (whicclx.p). Specify this program to determine if a cycle count should be created.

Task Calculation (whmlx01.p). Specify this program before you replenish a wave in Wave Replenishment (80.15.4) and release a wave in Wave Release (80.15.5). The Def Priority After Activ field in Wave Planning Control (80.15.23) gives priority to tasks once the system activates them. Activation occurs when you launch release groups during a wave release. The program you specify in this field takes priority into account when creating tasks. See “Replenishing a Wave” on page 316.

Batch Picking Order Selection (whbpklx1.p). Specify this program to manipulate selected orders; for example, when you want to remove orders.

Batch Picking Task Sort (whbpklx2.p). This program is the default procedure for sorting batch picking tasks. You can restrict the number of tasks assigned to a user and re-sort tasks so that hard-assigned tasks are reassigned by editing the whbpklx2.p sorting procedure. See “Reassigning Hard-Assigned Tasks” on page 157 for details.

RF Pallet Overpick (whrfmbr1.p). During replenishment, run this overpick program so that warehouse staff can return items that are not picked. When you use this program, the system sets the Allow Split Replen in Batch Picking Control (80.15.24) to Yes. See “Defining the Replenishment Overpick Program” on page 244.

Batch Picking Screen Format (whbpklx3.p). Use this program to change the format of the RF screen during batch picking. You can edit the program and alter the layout and type of batch picking information that displays.

Printing

QAD Warehousing enables you to control the printing of tags, pallet labels, or exception tags from various menus within the system, with a flexible choice of format for the output.

You have the choice of printing at the following times:

- When creating transactions
- When confirming transactions
- When transactions do not complete successfully (exceptions)
- When inventory is received into the warehouse

Some or all of these four fields can be set for:

- All warehouses (80.1.24)
- A specific warehouse (80.1.1)
- A work location group (80.3.9)
- An item (80.4.11)
- An individual step in an internal routing (80.2.5)
- A transaction type (80.7.6)

Note Inter-warehouse or inter-work location group transfers that are not associated with an internal routing take their printing control from the warehouse or work location group controlling the transaction.

For full details of how to complete the printer fields in these maintenance frames, refer to the online help. The following sections explain the most important fields.

Print Procedure Codes

Print procedure codes are defined per transaction type. The following codes are supported:

- AJ (adjustment)
- IN (inspection)
- PK (Picking)
- RC (Receipt)
- SH (Shortage)
- TF (Transfer)

Print Flavor Codes

These codes determine the format of the printed output. Two flavors are supported:

- A. Use the default print formats.
- B. Use a print template. QAD Warehousing lets you create your own templates from ASCII files, described in the next section.

Print Templates

Templates are flat ASCII files that contain the layout of required printed output. Use Print Template Load (80.20.1) to load the template into QAD ERP.

A template can contain the following elements:

- All the escape and control sequences required by specific printer types for specific functions such as bar coding, line drawing, font selection, and character position.
- Literal text that should appear as output such as field labels, headings, and banner messages.
- Token labels that are replaced by actual data when output is generated.

Token labels supported are:

- All base transaction fields. For transaction creation, all transaction detail fields are available.
- Associated fields. These are fields that are not on the base transaction but are related to it, such as item description or storage location group description.
- User-definable fields, values determined in a local exit routine.

Processing Print Requests

The Print Mode field determines how printed output is processed by QAD Warehousing:

- MANUAL results in print requests being queued up until you run Print Request Maintenance (80.20.5). You can run this online or in a batch; for example, once every hour.
- AUTO means that as soon as the print request is made, output is printed.
- AUTOSIG creates print requests, queues them, then prints as soon as the last AUTOSIG request is received. This is particularly useful if, for example, a function results in multiple transactions being created that must be printed on tags three across each page.

Other Printer Options

The following options are also available on the Printer menu:

- Print Template Inquiry (80.20.2). Select from a list of existing templates.
- Print Template Report (80.20.3). Print details of selected templates.
- User Printer Maintenance (80.20.7). Change the printer defined for you in a work location group. You can only change your own printer assignment, not that of another user.

Examples of Printed Output

Transaction Create, Flavor A, Print Procedure Code TF

Warehouse Task - 123
Site: 1000
Warehouse: RAW
Storage Location Group: STORES
Work Location Group: UPPER
From Location: ST0101 To: ST0305
Item Number: 10-1001
Lot/Serial:
Reference: R9810023
Alternate UM: PL
Quantity: 10.0 EA
Create By: Jon Miller
At: 06/19/98 13:00:22

Transaction Confirm, Flavor A, Print Procedure Code TF

Confirmed Task - 123-1

Site: 1000

Warehouse: RAW

Storage Location Group: STORES

Work Location Group: UPPER

From Location: ST0101 To: ST0305

Item Number: 10-1001

Lot/Serial:

Reference: R9810023

Alternate UM: PL

Quantity: 10.0 EA

Confirmed By: Jon Miller

At: 06/19/98 13:14:30

Transaction Create, Flavor A, Print Procedure Code PK

Warehouse Task - 123

Site: 1000

Warehouse: RAW

From Storage Location Group: STORES To: DISPATCH

From Work Location Group: UPPER To: DISPATCH

From Location: ST0101 To: SHIP01

Item Number: 10-1001

Lot/Serial:

Reference: R9810023

Alternate UM: PL

Quantity: 10.0 EA

Issuing Order: (SO) SO4444/3

Created By: Jon Miller

At: 06/22/98 09:58:00

Transaction Confirm, Flavor A, Print Procedure Code PK

Confirmed Task - 123-1

Site: 1000

Warehouse: RAW

From Storage Location Group: STORES To: DISPATCH

From Work Location Group: UPPER To: DISPATCH

From Location: ST0101 To: SHIP01

Item Number: 10-1001

Lot/Serial:

Reference: R9810023

Alternate UM: PL

Quantity: 10.0 EA

Issuing Order: (SO) SO4444/3

Confirmed By: Jon Miller

At: 06/22/98 10:03:00

Transaction Create, Flavor A, Print Procedure Code RC

Warehouse Task - 123

Site: 1000

Warehouse: RAW

From Storage Location Group: GOODS-IN To: STORES

From Work Location Group: GOODS-IN To: UPPER

From Location: RC01 To: ST0101

Item Number: 10-1001

Lot/Serial:

Reference: R9810023

Alternate UM: PL

Quantity: 10.0 EA

Receipt Order: (PO) 59326/3

Created By: Jon Miller

At: 06/22/98 09:33:00

Transaction Confirm, Flavor A, Print Procedure Code RC

Confirmed Task - 123-1

Site: 1000

Warehouse: RAW

From Storage Location Group: GOODS-IN To: STORES

From Work Location Group: GOODS-IN To: UPPER

From Location: RC01 To: ST0101

Item Number: 10-1001

Lot/Serial:

Reference: R9810023

Alternate UM: PL

Quantity: 10.0 EA

Receipt Order: (PO) 59326/3

Confirmed By: Jon Miller

At: 06/22/98 09:47:00

Transaction Create, Flavor A, Print Procedure Code SH

Warehouse Task - 123

Site: 1000

Warehouse: RAW

From Storage Location Group: GOODS-IN To: DISPATCH

From Work Location Group: GOODS-IN To: DISPATCH

From Location: RC01 To: SHIP01

Item Number: 10-1001

Lot/Serial:

Reference: R9810023

Alternate UM: PL

Quantity: 10.0 EA

Receipt Order: (PO) 54293/1

Issuing Order: (SO) S04444/3

Created By: Jon Miller

At: 06/22/98 09:58:00

Transaction Confirm, Flavor A, Print Procedure Code SH

Confirmed Task - 123-1

Site: 1000

Warehouse: RAW

From Storage Location Group: GOODS-IN To: DISPATCH

From Work Location Group: GOODS-IN To: DISPATCH

From Location: RC01 To: SHIP01

Item Number: 10-1001

Lot/Serial:

Reference: R9810023

Alternate UM: PL

Quantity: 10.0 EA

Receipt Order: (PO) 54293/1

Issuing Order: (SO) SO4444/3

Confirmed By: Jon Miller

At: 06/22/98 10:06:00

Identification, Flavor A, Print Procedure Code TF

Identification - 123

Site: 1000

Warehouse: RAW

Item Number: 10-1001

Lot/Serial:

Reference: R9810023

Quantity: 10.0 EA

Alternate UM: PL

Manufactured: 06/12/98

Expires: 06/12/99

Identification, Flavor A, Print Procedure Code PK

Identification - 123

Site: 1000

Warehouse: RAW

Item Number: 10-1001

Lot/Serial:

Reference: R9810023

Quantity: 10.0 EA

Alternate UM: PL

Manufactured: 06/12/98

Expires: 06/12/99

Destination: PICK-SO - SO1234 5

CUST001

JOE BLOW DISTRIBUTORS

Identification, Flavor A, Print Procedure Code RC

Identification - 123

Site: 1000

Warehouse: RAW

Item Number: 10-1001

Lot/Serial:

Reference: R9810023

Quantity: 10.0 EA

Alternate UM: PL

Manufactured: 06/12/98

Expires: 06/12/99

Source: RCT-PO - PO1234 5

VEND001

JOE SOAP'S SUPPLIES

Identification, Flavor A, Print Procedure Code SH

Identification - 123

Site: 1000
Warehouse: RAW

Item Number: 10-1001
Lot/Serial:
Reference: R9810023
Quantity: 10.0 EA
Alternate UM: PL

Manufactured: 06/12/98
Expires: 06/12/99

Destination: PICK-SO - SO1234 5
CUST001
JOE BLOW DISTRIBUTORS

Exception, Flavor A

NO STOCK PUT-AWAY

Site: 1000
Warehouse: RAW
Storage Location Group: GOODS-IN
Work Location Group: BAY01
Location: BAY01S01

Item Number: 10-1001
Lot/Serial:
Reference: R9810023
Total O/S Quantity: 100 EA
Alternate UM: PL
Expires: 06/12/99
Inventory Status: UNAVAIL

Reference, Flavor A

Identification

Site: 1000
 Warehouse: RAW

 Item Number: 10-1001
 Lot/Serial:
 Reference: R9810023
 Quantity: 10.0 EA
 Alternate UM: PL

Simple Template

~BANNER~

Transaction Number: ~TRNBR~ (~TYPE~)
 Site: ~SITE~ ~SITEDS~
 Location: ~LOC~ ~LOCDS~
 Item Number: ~PART~ ~PARTDS~
 Lot/Serial: ~SERIAL~
 Reference: ~REF~

 Quantity: ~QTY_CHG~ ~UM~

Simple Template Result

Identification

Transaction Number: 123 (RCT-PO)
 Site: JONSITE Jon Miller's Site
 Location: RC01 Receipt's Dock 1
 Item Number: 100101 Box of Things
 Lot/Serial:
 Reference:

 Quantity: 10 EA

JetForm Template

```

^COMMENT ^JOB id01.mdf -z/usr/jetform/mdf/send/inge2_00000039.fx
"
^REFORMAT NO
"
^GLOBAL LAB-PROPERTY
"
Property
"
^GLOBAL LAB-SPEC
"
Specification
"
^GLOBAL LAB-UNIT
Unit
^GLOBAL PAGE
@$PAGE
^GLOBAL LOT-COUNT
0
^GLOBAL TOTAL-LOTS
1
^GLOBAL FORM-TITLE
~BANNER~
^DEFINE signature_file /usr/jetform/sig/
^DEFINE idlogo_file /usr/jetform/pcx/
^GLOBAL EFF-DATE
~EFFDATE~
^GLOBAL ORD-NBR
~NBR~
^GLOBAL QTY
~QTY_CHG~ ~UM~
^GLOBAL PART
~PART~
^GLOBAL ADDR-CODE
~ADDR~
^GLOBAL PT-DESC1
~PARTDS1~
^GLOBAL LOT
~SERIAL~
^GLOBAL UM
(~UM~)
^GLOBAL REFERENCE
~REF~
^GLOBAL DATE-MAN
~DATE~
^graph @:idlogo_file
^position absolute 15.00 23.70 cm
^graph @:signature_file

```

JetForm Template Result

If the JetForm Template example was used to send output to an QAD ERP printer that is defined with an initialization value of a UNIX script or other operating system, the following output would be sent to that script as input. This script would then redirect the data to the JetForm software.

```
^COMMENT ^JOB id01.mdf -z/usr/jetform/mdf/send/inge2_00000039.fx
"
^REFORMAT NO
"
^GLOBAL LAB-PROPERTY
"
Property
"
^GLOBAL LAB-SPEC
"
Specification
"
^GLOBAL LAB-UNIT
"
Unit
"
^GLOBAL PAGE
@$PAGE
^GLOBAL LOT-COUNT
0
^GLOBAL TOTAL-LOTS
1
^GLOBAL FORM-TITLE
Identification
^DEFINE signature_file /usr/jetform/sig/
^DEFINE idlogo_file /usr/jetform/pcx/
^GLOBAL EFF-DATE
06/21/98
^GLOBAL ORD-NBR
PO1234
^GLOBAL QTY
100 EA
^GLOBAL PART
100101
^GLOBAL ADDR-CODE
VEND001
^GLOBAL PT-DESC1
Box of Things
^GLOBAL LOT

^GLOBAL UM
(EA)
^GLOBAL REFERENCE

^GLOBAL DATE-MAN
06/21/98
^graph @:idlogo_file
^position absolute 15.00 23.70 cm
^graph @:signature_file
```

Section 2

Using QAD Warehousing

This section includes information on using QAD Warehousing for day-to-day operations:

Introduction to Using QAD Warehousing 187

Processing Transactions 193

Replenishment 221

Radio Frequency (RF) Terminals 229

Bulk Picking 249

Batch Picking 259

Wave Planning 283

Using Containers 337

Container Move and Truck Ship 353

Cycle Counts 365

Quality Inspection 371

Introduction to Using QAD Warehousing

This chapter describes how QAD Warehousing helps you to keep tight control of inventory. It describes:

Overview 188

A list of what users can do using QAD Warehousing.

Inventory Transactions 188

A table, showing the five types of inventory transaction processed by QAD Warehousing, and indicating where you can find detailed information about each one.

Processing Transactions in QAD Warehousing 189

An introduction to processing transactions in QAD Warehousing.

Internal Routings and Transaction Properties 190

An introduction to transactions and how they work with internal routings in a warehouse.

Overview

Using QAD Warehousing’s inventory control features, you can:

- Control all stock movements by a series of internal routings
- Specify storage requirements for inventory
- Request stock movements
- Monitor and authorize unplanned receipts and issues
- Control and report on inventory by warehouse

The transactions created by QAD Warehousing produce printed documents, such as task lists, movement tags, and pallet labels that tell warehouse staff what to do and provide confirmation and auditing of what has been done. The documents can have barcodes printed on them, and can be used with Radio Data Terminals (RDTs).

This chapter begins by describing the following different types of basic inventory transactions:

- Receipts
- Transfers
- Issues

The final section provides an overview of how QAD Warehousing processes the main types of transaction.

Inventory Transactions

Table 12.1 shows the five types of inventory transaction processed by QAD Warehousing, and indicates where you can find detailed information about each one.

Table 12.1
Inventory Transactions

Type of Transaction	Transaction	For full details, refer to ...
Receipts	Purchase order receipt	“Processing Receipts” on page 194
	Work order receipt	
	Unplanned receipt	
	Distributed order receipt	
Transfers	Single item transfer	“Processing Inventory Transfers” on page 217
	Multi-item transfer with pallet type	
	Clearing shortages in sales order or works orders	
	Inter-warehouse transfer	
	Stock optimization transfer	

Type of Transaction	Transaction	For full details, refer to ...
Issues	Work order issue	“Processing Issue Transactions” on page 209
	Unplanned issue (inventory)	
	Unplanned issue (warehouse)	
	Bulk picking confirmation	
Returns		The standard QAD ERP processing handles returns. Refer to <i>User Guide: Distribution</i> .

Processing Transactions in QAD Warehousing

Warehouse transactions are the key to QAD Warehousing. Each transaction is an instruction, or task, for a user to take specified inventory from a specified location (the source) and deposit it in the location required or previously specified (the destination). Special transactions can be created that are from and to the same location. Generally, these are to perform some kind of inventory adjustment such as a cycle count.

Transactions are created in many different ways, but generally result from:

- A request to pick inventory to satisfy an order requirement such as a sales order or work order. Picking transactions can also result from inventory management functions such as replenishment, repetitive, unplanned issues, or inter-warehouse transfers.
- The receipt of inventory into the warehouse that must be put away. Usually this is as a result of a purchase order receipt but can also be from manufacturing, distribution orders, unplanned receipts, or inter-warehouse transfers.
- Inventory management such as stock transfers or cycle counts.

Every step in the movement of inventory is recorded by a transaction, from the moment it is received at a receiving point through put-away, storage, selection for requirement, and movement to an issue point.

All movements of inventory require that a transaction is created, indicating:

- The source and destination locations of the movement
- The inventory that requires moving
- The quantity that is required and multiple attributes that determine how the movement is to be carried out

Transactions are created with a status of OPEN, indicating that the transaction, or task, is yet to be carried out. Once the task is complete, the transaction is closed and the record is deleted. A copy is made, creating a transaction history record. The transaction is closed by the action of confirming that the task is complete. This can be done separately from the creation of the two-phase transaction or automatically at the time of single-phase creation.

In general, all inventory within QAD Warehousing is moved according to information that you enter when setting up QAD Warehousing.

See Section 1, “Setting Up QAD Warehousing,” beginning on page 1.

Although setup is time-consuming, the actual process of managing inventory in QAD Warehousing is largely automated. Each inventory movement that you request within QAD Warehousing is processed according to the internal routing and associated fields for the transaction type.

Internal Routings and Transaction Properties

When you define an internal routing, you:

- Define the movement of inventory between internal routing groups; for example, from IRG receipt to IRG bulk.
- Set the properties for the transactions that use this internal routing—creating the transaction, confirming the transaction, and printing the transaction/confirmation.

You only need to define a sequence of movements if the transaction involves moving inventory between IRGs, such as receipts or issues. If the inventory is being moved within an IRG such as a replenishment, you set up the internal routing only in order to define the transaction properties. The path for the inventory comes from the replenishment list and the known location/SLG.

Example Figure 12.1 shows how an internal routing (replen3) could be defined. There is a single step, which enables you to define the transaction properties for this particular replenishment of the IRG Bulk.

Fig. 12.1
Definition of Routing Replen3

The screenshot shows the 'Internal Routing Maintenance' window. At the top, there are tabs for 'Go To', 'Actions', 'Copy', 'Print', and 'Preview'. Below the tabs, the following fields are populated:

- Site: bm1
- Warehouse: bm1
- Internal Routing: replen3
- Description: replenishment
- Sequence: 10
- Internal Routing Group: bm1bulk

The window is divided into two main sections: 'Transaction Create' and 'Transaction Confirmation'.

Transaction Create

- Confirmed at Source?: ☐
- System Code: RF (dropdown menu)
- Two Phase?: ☒
- Keep From Status?: ☐
- Task: TRANSFER (dropdown menu)
- Priority: 100
- Increment: 10

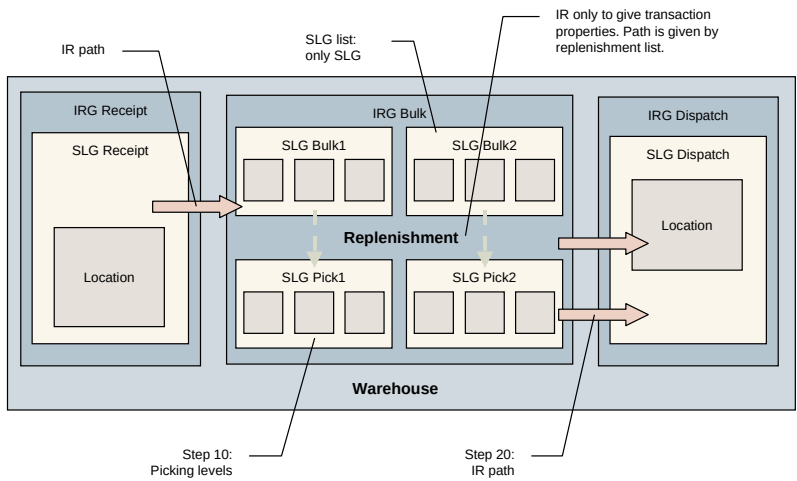
Transaction Confirmation

- "From Location" Option: 0
- "From Item" Option: 0
- "From Lot/Serial" Option: 0
- "From Reference" Option: 0
- Allow Quantity Increase?: ☐
- Allow Quantity Decrease?: ☒
- Quantity Change Option: 0
- "To Location" Option: 0
- "To Item" Option: 0
- "To Lot/Serial" Option: 0
- "To Reference" Option: 0
- Alternative UM Option: 2

Similarly, whenever you define an IR for a movement between IRGs, the transaction properties do not come from step 10, but from step 20.

Figure 12.2 summarizes the relation between internal routings and transaction properties.

Fig. 12.2
Internal Routings and Transactions



Processing Transactions

This chapter describes how QAD Warehousing processes transactions by using examples based on a typical warehouse layout. It includes the following major sections:

***Processing Receipts* 194**

Discusses how receipts are processed, gives general information about receipts, and describes types of receipts and how they work.

***Processing Issue Transactions* 209**

Details how the system handles transactions with picking algorithms, including examples.

***Processing Inventory Transfers* 217**

Discusses how Warehousing processes inventory transfers, including details on different types of transfer transactions.

Processing Receipts

The key to processing receipts in QAD Warehousing is the internal routing. The flexibility of the internal routing function means that any received inventory can move through any combination of locations before being put away.

See Chapter 3, “Defining Internal Routings,” for information on internal routing and internal routing groups.

All receipts work in the same way:

- You create a transaction using QAD ERP; for example, unplanned receipt.
- QAD Warehousing looks for the internal routing associated with the item, transaction type, warehouse, or address.
- QAD Warehousing runs the algorithms associated with the transaction type; for example, put-away.
- The receipt location can be a final location, a location in the receipt area, or a warehouse.
- Confirmations can be printed or sent to the RF. The setup fields for this can be defined for the warehouse, the item, or the transaction type.

This section provides a general overview of receipts, followed by detailed discussion of some specialized receipt topics including:

- Using items received to fill backorders (cross-docking)
- Receiving pallets in multiple units of measure
- Receiving pallets with multiple items or item lots
- Receiving consigned items
- Forecasting receipt locations

General Receipt Information

Two-Phase or Single-Phase

With all transactions in QAD Warehousing, you have a choice of defining whether the transaction is confirmed:

- Automatically, when you create the transaction. This is called single-phase.
- Manually, after you create the transaction and after you have had time to check the inventory movement. This is called two-phase.

You can define whether a transaction is single-phase or two-phase as follows:

- Warehouse Maintenance (80.1.1). This sets the default for transactions for the warehouse. See page 24.
- Internal Routing Maintenance (80.2.5). The Two-Phase field enables you to specify whether transactions moved under a particular internal routing should be single-phase or two-phase. See page 52.

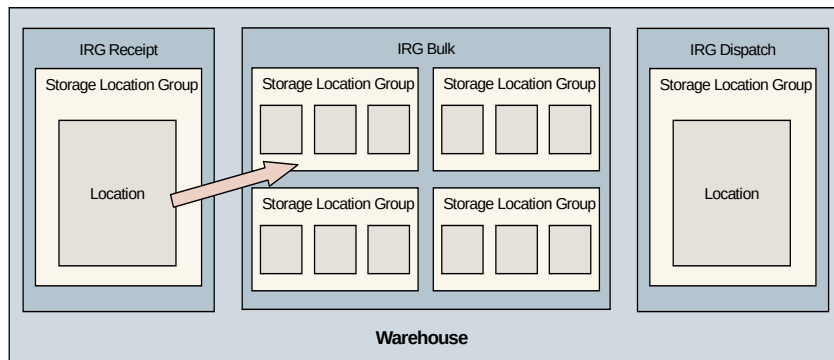
Checking Results

You can check that the inventory has been moved to the location using the Inventory Detail Inquiry (80.9.13).

Example: Unplanned Receipts

Suppose you want to make an unplanned receipt of 200 EA of component A. Figure 13.1 shows the simplest route for this receipt—that is, from the Receipt area straight into Bulk.

Fig. 13.1
Sample Receipt



You would need to define the following:

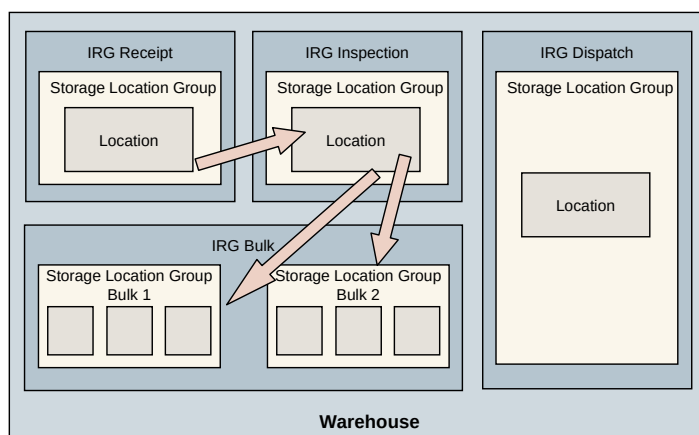
- 1 Define the item component A using Item Master Maintenance (1.4.1). Provide a default location for the component—location, warehouse, or warehouse master list.
- 2 Link component A to a storage location group in IRG Bulk. Alternatively, link component A to a storage location group list. An SLG list is a list of SLGs that can be considered for storing items. You define an SLG using Storage Location Group Maintenance (80.3.1) and then link an item to an SLG or SLG list using Item-Warehouse Maintenance (8.4.11). See Chapter 4, “Defining Location Groups,” on page 61.
- 3 Define an internal routing for transaction type RCT-UNP using Internal Routing Maintenance (80.2.5) to move the inventory from receipt to bulk, the internal routing would consist of two steps; for example:
 - Step 10: Receipt
 - Step 20: Bulk
 See “Internal Routing Maintenance” on page 52.
- 4 Assign the internal routing RCT-UNP to the transaction type RCT-UNP using Internal Routing Assignment Maintenance (80.2.9). At this point you could also specify an item, which would mean that all unplanned receipts of this item would in future follow the same internal routing. If you leave the Item field blank, this internal routing would be used for all items arriving as unplanned receipts. See “Internal Routing Assignment Maintenance” on page 57.
- 5 Assign the location-find and put-away algorithms to the transaction type RCT-UNP using Algorithm Assignment Maintenance (80.6.9). See “Algorithm Assignment” on page 115.

You would then receive 200 EA for component A using Receipts–Unplanned (3.9). Because of the information that you have entered linking the item and locations with an internal routing, the transaction is processed automatically and the inventory can be moved to one of the indicated storage locations.

Example: Purchase Order Receipts

Suppose that you want to make a purchase order receipt of 1000 EA of component A. Because of known problems with a particular supplier, you want to ensure that any receipts of component A always go through the inspection area before they are put away. In addition, you want to allow the receipt to be stored in two storage location groups, Bulk1 and Bulk2. Figure 13.2 illustrates this scenario.

Fig. 13.2
Sample Purchase Order Receipt



The setup would be exactly the same for this transaction as for an unplanned receipt, except that the internal routing would contain an extra step:

- Internal routing RCT-PO:
 - Step 10: Receipt
 - Step 20: Inspect
 - Step 30: Bulk

Also, you would need to:

- Define a storage location group list using Storage Location Group Maintenance (80.3.5).
- Link the storage location group list to the item using Item-Warehouse Maintenance (80.4.11).

You would then:

- 1 Create a purchase order using Purchase Order Maintenance (5.7) for 1000 of component A.
- 2 Create a receipt of the purchase order using Purchase Order Receipts (5.13.1).

QAD Warehousing then uses the storage location group list associated with the item to look for a location for the put-away. The put-away would occur as follows:

- 1 Look at the first SLG on the list. If the entire receipt can be put in Bulk1, do the put-away and end the transaction.
- 2 If Bulk1 has no suitable locations, look in Bulk2. If the entire receipt can be put in Bulk2, do the put-away and end the transaction.
- 3 If the entire receipt cannot go into one location in Bulk1 or Bulk2 but you have space across several locations, divide the receipt between the locations.
- 4 If no locations are available, QAD Warehousing displays a message on-frame and lets you select another location.

Work Order and Distribution Order Receipts

The setup procedures for these receipts and the way that QAD Warehousing processes them are the same as for unplanned receipts and purchase order receipts.

When a new intersite request is created, the default receipt location is the location associated with the item at the receiving site in Item Master Maintenance (1.4.1). QAD Warehousing verifies if the default value is a master list, warehouse, or a location that belongs to the receiving site. If this is not true, QAD Warehousing uses the value specified for Site Location in QAD Warehousing Item-Site Maintenance (80.4.9). This lets you set up QAD Warehousing-specific default receipt locations for distribution orders at each site.

When you receive orders with Distribution Order Receipt (12.15.20), the system automatically creates references for items set up as being received in a different unit of measure. This only occurs when the inventory in transit from the supplying site does not contain reference numbers.

Cross-Docking

In situations where insufficient stock prevents the complete filling of an order, QAD Warehousing keeps track of the order shortage quantities, item by item. To help you to fill the back orders with a minimum of inventory movements, QAD Warehousing provides shortage clearance algorithms. When you link these algorithms to inventory receipt transactions, QAD Warehousing automatically checks to see if the received stock can be used to fill back orders. The inventory is moved from receipt to dispatch, being stored in between. This type of movement is also known as *cross-docking*.

By linking the appropriate internal routings to the transaction types, you can route the relevant stock directly from the receipt dock to the shipping dock, thus removing the need for additional put-away and picking activities. The remaining received stock that is not required for shortage clearance is put away using the normal routines.

A *repick* is new, typically shortened picking that staff perform when inventory is missing and they want to fulfill the order quantity by picking the item in another location. When staff repick for cross-docking, the system looks for any open pre-shipper and adds lines to it. This only works if the pre-shipper was not converted to a shipper; if converted, the system adds the lines on a new pre-shipper.

Defining Shortages

You create a shortage transaction type using Transaction Type Maintenance (80.7.6). You link the transaction in Internal Routing Assignment (80.2.9). Set the Clear Shortages field to Yes in Internal Routing Assignment. Then, you assign the shortage clearance algorithms to the appropriate transaction types using Algorithm Assignment Maintenance (80.6.9).

See Chapter 8, “Algorithms,” on page 111.

You can specify cross-docking details for the shortage clearance using the following four shortage fields defined for distribution order (SHRT-DO), sales order (SHRT-SO), and work order (SHRT-WO) transactions in Transaction Type Maintenance:

Shortage Definition. Specify what constitutes a shortage.

Shortage Quantity Definition. Specify how the system calculates a shortage quantity.

Shortage Action. Specify the action to take for a shortage.

Shortage Window. Specify a window of time to fulfill the order in terms of days.

Multiple UM and Pallet Receipt

Standard QAD ERP Receipts

All standard QAD ERP receipt functions let users receive inventory items in either their normal stocking unit of measure (UM) or in a different UM. When items are received in a UM different than their stocking UM, QAD ERP converts the quantity of items received in the receipt UM into the corresponding quantity of items in the stocking UM when it updates the QAD ERP database.

The conversion is done on the basis of:

- The unit of measure conversion factor that applies to the item being received
- Its stocking unit of measure
- The receipt unit of measure entered by the user

However, this unit of measure factor only acts as a default that you can modify.

Example In your system, a UM conversion of 1 PL = 12 EA is defined. You record a receipt of 2 PL of an item that is stocked in EA but override the default conversion factor of 12 with the value 13. In this case, QAD ERP records the receipt of 26 EA (2 PL) in inventory when the transaction is completed.

Standard QAD ERP receipt functions also provide multi-entry functionality. Setting this field to No during a single receipt transaction of a particular item means that the entire receipt quantity is received into the same site and location with the same lot or serial number and reference. Setting it to Yes, on the other hand, means that when a single receipt of a quantity of an item is made, that quantity can be divided between different references, lot or serial numbers, locations or even sites.

Example The 2 PL = 26 EA of the item in the previous example could be received in standard QAD ERP in a single transaction split between two sites each with two locations, where each location was split between two lot numbers and each lot number was split between two references. Doing this subdivides the single receipt into 16 separate multi-entry quantities. Standard QAD ERP would hold information on each of these separately in the QAD ERP database.

In standard QAD ERP, receipt transactions can involve both a receipt UM different than the normal stocking UM and multi-entry. When this happens, all receipt quantities entered on the multi-entry frame are in the receipt UM (PL in the example).

QAD Warehousing Receipts

In all receipt transactions in QAD Warehousing, most of the standard QAD ERP functionality described previous is still present. In addition to this, QAD Warehousing lets you receive stock in the default item UM, alternate palletized receipt UMs, or alternate non-palletized UMs. Additionally, you can enter different alternate receipt UMs on different receipt detail lines when using purchase order receipts provided that none of the alternate receipt UMs used in multi-entry is palletized.

QAD Warehousing enforces a rule that when receiving in a UM different than the stocking UM of an item, you can only override the default UM conversion when the receipt UM is sized by reference (palletized) or sized by blank.

With QAD Warehousing, you have a fundamental difference in the interpretation of UM conversions when a receipt of a quantity of an item is made in a palletized UM. In this case, regardless of whether the palletized receipt UM used is the stocking UM of the item, one record is created automatically for each pallet being received. Therefore, if PL is a palletized UM and a receipt quantity of 2 PL is entered, two records are created. Each record created is assigned a unique reference number that identifies a particular pallet, and it holds all the receipt details relating to that pallet.

The difference in interpretation comes about because when these records are shown in purchase order receipts, the quantity field now denotes the number of eaches in a particular pallet reference, rather than a quantity in the receipt UM as in standard QAD ERP.

Regardless of this difference, the correct unit of measure conversions have to be applied during a palletized receipt to enable the receipt quantity to be converted to the item stocking unit of measure and hence recorded correctly in the QAD ERP database. Conversion to the item stocking unit of measure before QAD ERP inventory update is also necessary for receipt quantities in alternate non-palletized units of measure.

Examples

The concepts associated with entering a palletized receipt and multiple units of measure on any QAD Warehousing version of an QAD ERP receipt frame are now examined in more detail through some examples.

Suppose that you have defined a default item stocking unit of measure of EA. You have also defined the alternate units of measure and conversion factors listed in Table 13.1.

Table 13.1
Palletized Receipt Example

Alternate UM	Conversion	Sizing Type
TN	1 TN = 10 EA	<blank>
DZ	1 DZ = 12 EA	<blank>
EU	1 EU = 1000 EA	Reference
PL	1 PL = 1200 EA	Reference

Example 1

In one transaction in purchase order receipts, you enter the following:

- Receipt quantity of 5
- Receipt UM of PL
- Default conversion factor of 1 PL = 1200 EA

Because the receipt is for a palletized unit of measure, five records are created, each with its own unique pallet reference number, and a default quantity of items on the pallet and item unit of measure of 1200 EA. These details are then shown on the frame automatically. You then attempt to override the default quantity and alternate UM values as shown in Table 13.2.

Table 13.2
Palletized Receipt Example 1

Old Qty	Old Alt UM	Old Ref	New Qty	New Alt UM	New Ref	Swap Message	Valid
1200	EA	PL000001	115	TN	PL000001	No	Yes
1200	EA	PL000002	90	DZ	PL000002	No	Yes
1200	EA	PL000003	21	PK	PK	Yes	Yes
1200	EA	PL000004	11	BX	BX	Yes	Yes
1200	EA	PL000005	1	EU	N/A	No	no
1200	EA	PL000006	1	PL	N/A	No	no

Table 13.2 shows that the EA stocking unit of measure cannot be overridden by a size-by-reference unit of measure, but can be overridden by another unit of measure with a sizing type of blank. When a size-by-reference alternate unit of measure is entered, the following error message displays:

ERROR: CANNOT RECEIVE MORE THAN ONE PALLET UM. Please re-enter.

You are prompted to input another alternate unit of measure.

If the stocking unit of measure is overridden by a unit of measure with sizing type of blank, the pallet numbers generated in the Reference field remain unchanged.

Example 2

In another transaction, you enter:

- Receipt quantity of 5000
- Receipt UM of EA

Because the receipt is for a non-palletized unit of measure, no records holding pallet information are created, and you are not automatically taken into the multi-entry frame. You then manually set the multi-entry field to Yes. In this frame, only one record with a quantity of 5000 and an alternate unit of measure of EA is shown. In the multi-entry frame, you attempt to override the default quantity and alternate UM values as shown in Table 13.3.

Table 13.3
Palletized Receipt Example 2

Old Qty	Old Alt UM	Old Ref	New Qty	New Alt UM	New Ref	Swap Message	Valid
5000	EA	<blank>	900	EA	<Blank>	No	Yes
			1	PL	<Blank>	No	no
			2	EU	<Blank>	No	no
			25	BX	BX	yes	Yes
			20	PK	PK	yes	Yes
			50	DZ	<Blank>	No	Yes

Table 13.3 shows that the EA stocking unit of measure cannot be overridden by a size by reference unit of measure, but can be overridden by another unit of measure with a sizing type of blank or a sizing type of multiple.

This receipt is then processed in the same way as for example 1.

Example 3

In a third transaction, you enter:

- Receipt quantity of 500
- Receipt UM of TN

Because the unit of measure TN is a size by blank alternate UM, this means that the default unit of measure conversion factor between EA and TN (10) can be overridden at the start of the receipt transaction as per standard QAD ERP.

Suppose that you override the default conversion factor of 1 TN = 10 EA by 1 TN = 11 EA. After you have manually set the multi-entry field to Yes, a single detail record is shown with an initial quantity of 500 and an alternate unit of measure of TN. From then on, this receipt is processed as for example 1.

Example 4

In a fourth transaction, you enter a receipt quantity of 50, and a receipt UM of BX. Because the receipt is for a non-palletized unit of measure, no records holding pallet information are created. Note that you cannot override the default conversion factor for this receipt unit of measure, because BX is a size by multiple unit of measure. You then manually set the multi-entry field to Yes. In this frame, only one record with a quantity of 50 and an alternate unit of measure of BX is shown at first. You would modify the record shown and manually enter the details in Table 13.4 using the multi-entry frame.

Table 13.4
Palletized Receipt Example 4

Old Qty	Old Alt UM	Old Ref	New Qty	New Alt UM	New Ref	Swap Message	Valid
50	BX	<blank>	16	BX	BX	No	Yes
			2	PL		No	no
			3	EU		No	no
			40	PK	PK	Yes	Yes
			50	DZ	<Blank>	No	Yes

Old Qty	Old Alt UM	Old Ref	New Qty	New Alt UM	New Ref	Swap Message	Valid
			50	TN	<Blank>	No	Yes
			300	EA	<Blank>	No	Yes

This receipt is then processed as per example 1.

Multi-Lot/Item Pallet Receipt

When staff receive a multi-item or multi-lot pallet, they typically want a single task to move the pallet to the destination location. The put-away process finds a single location for the entire pallet and does not send different pallet components to different locations.

Setting Up Multi-Lot/Item Pallet Receipt

Additional setup is required when staff put away multi-lot/item pallets as a single movement.

Before you receive multi-lot/item pallets, ensure the following:

- A PO shipper exists; see *User Guide: Distribution*.
- The multiple lots or multiple items you are receiving are defined within QAD ERP; see *User Guide: Master Data*.
- The internal routing definition and the put-away algorithm required to transfer the multi-lot/item pallet are set for the PUT-TR transaction type. See page 57.
- Storage location groups (SLGs) or a list of SLGs are defined and linked to the pallet items. See page 65 and page 70.

Since staff perform the put-away in the SLG or an SLG list linked to an item, if multiple items exist, each can go to a different area. To avoid this situation, you must set up the SLG or SLG list so that they link to the pallet item.

The pallet item is the item you define in:

- Alt UM Maintenance (80.5.1)
- Item Master Maintenance (1.4.1)
- Item-Warehouse Maintenance (80.4.11)

QAD Warehousing uses the SLG or the SLG list linked to the combination of item and warehouse in Item-Warehouse Maintenance to determine which SLG should be used for the multi-lot/item pallet put-away; see Figure 13.3.

Fig. 13.3
Item-Warehouse Maintenance (80.4.11)

Item is linked to SLG or SLG list.

Receiving Multi-Lot Pallets

Use the RF PO Receipt menu option to receive multi-item pallets. When an existing shipper does not exist, the system lets you manually create pallets and enter different pallet components. Figure 13.4 shows the RF PO Receipt screen.

Fig. 13.4
PO Receipts (1.8)

- 1 From the RF, select option 1, Work, then option 8, PO Receipt.
The PO Receipt screen displays; see Figure 13.4.
- 2 Enter one of the following as the receipt document in the Shipper/Order 0/1 field:
0= Shipper
1= Purchase Order.
- 3 Enter the shipper ID in the Shipper/ID field or select a shipper ID from the lookup browse.
Shipper information displays in the remaining RF screens.
If the shipper is new, no shipper information displays.
The system prompts you to enter an alternate unit of measure.

4 Choose one of the following:

- a Enter the alternate UM number.
- b To create new pallets, press 1; then enter the UM corresponding to the pallet you want to create.

For information on alternate UMs in QAD Warehousing, see page 199.

Note You link a UM to a pallet in Alternate UM Maintenance (80.5.1).

The system prompts you to create pallet numbers.

5 At the Gen Ref prompt, choose one of the following:

- a Specify Yes if you want the system to generate pallet references automatically. The system prompts you to enter the number of pallets you want the system to generate.
- b Specify No to manually enter or scan an existing pallet number. The system prompts you to enter the reference number.

Note You must define the pallet generation sequence in Sequence Definition Maintenance (80.24.1), then set up PO Shipper Sequence Maintenance (80.13.13) to use the sequence definition you defined.

6 Scan or enter the pallet number.

Note If you specified the use of the Date prefix in Barcode Prefix Control (80.19.24), the system prompts you to enter the expiration date when you scan. See “Specifying Barcode Prefixes” on page 167.

7 Enter pallet details such as the item number, lot/serial information, quantity and expiration date. Data must be consistent with the Shipper/PO you select. Enter as many pallet details as necessary.

8 Press F4 when you are finished.

The system prompts you to receive.

9 Specify Yes or No to receive.

If you specify No to the receipt, the system prompts to delete the shipper.

You can specify that the shipper not be deleted. If you do not delete the shipper and do not confirm the receipt, you can exit the PO Receipt function, then return at a later time, select the shipper, modify it, and confirm receipt.

10 Specify Yes or No to put away the items on the shipper.

A receipt without put-away leaves the inventory in the receiving area based on QAD Warehousing’s receipt logic.

To put away, you must link the put-away algorithm to type PUT-TR, not to type RCT-PO. This is because the RF PO Receipt function splits the movement into two parts:

- A PO shipper receipt in the location linked to the PO line, typically the receiving dock.
- A stock transfer from the receiving dock to the main storage area as defined by the PUT-TR type, if you respond Yes to the put-away prompt.

Using transaction type PUT-TR ensures that QAD Warehousing does not create a task item per item should you receive a multi-lot/multi-item pallet and desire to transfer the pallet with a single task.

Displaying Multi-Lot/Item Pallet Data

QAD Warehousing creates a task for multi-lot/item pallets that is different than those created for single-item pallets. For multi-lot/item pallets, the task item number is the pallet item number.

Also, since QAD Warehousing does not display the total amount of units for all items on the pallet, the quantity that displays in QAD Warehousing reports and inquiries is one pallet; see Figure 13.5.

Fig. 13.5
Warehouse Transaction Inquiry (80.9.1)

Warehouse Transaction Inquiry

Go To Actions Copy Print Preview

Tran: 29066 Status: OPEN 2P: ☒ Ft: ☐ Output: PAGE

MAIN DETAILS

Type: CYC-RCNT	Expected: 0.0	Iss Dataset:
Routing:	Actual: 0.0	Iss Nbr/Line:
Seq: 0	Algo Type/Nbr: 0	Rct Dataset:
Mode: AUTO	Task: RECOUNT	Rct Nbr/Line:
Created: 1/27/2010 01:17:34	vmc whexaud.p	Priority: 100

FROM TO

Site: VMCWAVE	Site: VMCWAVE
Warehouse: VMCWAVE	Warehouse: VMCWAVE
Storage Group: BULK	Storage Group: BULK
Work Location: WORK01	Work Location: WORK01
Location: BULK01	Location: BULK01
Part: VMCWV001	Part: VMCWV001
Lot/Serial:	Lot/Serial:
Reference: PL031832	Reference: PL031832

Single pallet displays.

Also, when you select a multi-item pallet for a transfer using Transfer by Reference (80.17.1), the item that displays is the pallet item and the quantity is a single pallet. When you select the reference, a warning indicates that the pallet is a multi-item pallet.

Fig. 13.6
Transfer by Reference (80.17.1)

Item is pallet and quantity on hand is one.

Site: eeds01 test site
Warehouse: eedsw01 test warehouse

Ref: 09000120

Site:	Qty In:
Location:	Qty Out:
Item Number:	Date Created:
Lot/Serial:	Time Created:
Status:	Alternate UM:
Qty On Hand:	Qty Allocated:

To Site:
To Whse:
To Loc:

Alternate UM:
Qty To Transfer:

Finally, the RF Transfer (1.3) option lets staff perform on-the-fly transfers. When they do, the RF indicates that the pallet is a multi-item pallet.

Fig. 13.7
RF On-the-Fly Transfer

RF 1.3: AIM 2.15: site US

ON THE FLY T'FER

Loc: bulk30

Ref: 04000306

Item Number:

Lot Serial:

W: Multi-Lot Pallet...

Consignment Receipt

QAD Warehousing provides support for the QAD ERP Supplier Consignment Inventory module. If you plan to use Supplier Consignment Inventory with QAD Warehousing, you must link the Consignment transaction types with internal routings in Internal Routing Assignment Maintenance (80.2.9) and with algorithms in Algorithm Assignment Maintenance (80.6.9).

See “Defining Internal Routings” on page 47 and “Algorithms” on page 111.

The Consignment transaction types are:

CN-RCT. This transaction records a purchase order receipt of consigned inventory.

INSP-CN. Use this transaction to route consigned inventory (received with the CN-RCT transaction) to inspection.

BACK-CN. Use this transaction to move consigned inventory to the main storage area after inspection.

FAIL-CN. Use this transaction to move consigned inventory to the reject area when the inspection fails.

In addition, use the Transfer Ownership field in QAD Warehousing Location Maintenance (80.3.13.1) and Mass Location Maintenance (80.3.13.21) to indicate whether inventory received into the location retains its consigned status or receipt initiates a transfer of ownership.

Location Forecasts

Some warehousing situations require that locations are prepared for a specific receipt before the inventory is actually received. Such locations need to be reserved ahead of time to prevent their use for any other purpose. In other situations, running the put-away algorithms at the moment of receipt may not provide optimum system performance; for example, if receipts tend to occur during the day time when the system usage is highest.

If details of receipts are known in advance, locations can be identified and reserved ahead of time during periods when system use is low, such as at night. When the physical receipt is subsequently made, the locations to be used for storage are pre-identified, and the put-away processing is quicker and more efficient.

QAD Warehousing provides facilities for running this kind of planned put-away using Generate Receipt Forecasts (80.10.1) and Receipt Forecast Maintenance (80.10.2). Special put-away algorithms are provided to search specifically for the reserved locations.

Generate Receipt Forecasts

Use Generate Receipt Forecasts (80.10.1) to create new location forecasts.

Fig. 13.8
Generate Receipt Forecasts (80.10.1)

Select the order and due date range for which forecasts are generated. The default values for which types of orders to include and the number of days ahead for which orders due are considered are defined in the Location Forecast Control File (80.10.24). Forecasts are generated in locations identified by the defined internal routing and algorithm assignments.

Internal Routings, Algorithms, and Transaction Types

In order to determine which internal routings should be used to identify the receipt paths that enable location forecasts to be generated, a set of specific transaction types are provided. These are:

- FOR-PO for the receipt of purchase orders
- FOR-WO for the receipt of work orders

- FOR-DO for the receipt of distribution orders

This means that, though actual receipts can take many different routes, forecasts can be rationalized to only function on some or all of them. This is best explained using an example.

Two internal routings are defined:

- RECEIVE moves stock from the receipts area and puts the stock directly away.
- INSPECT moves stock from the receipts area to an inspection area before the stock is put-away.

Purchase order receipts (transaction type RCT-PO) for some item types are assigned to use the INSPECT routing, while the remainder use the RECEIVE routing.

However, locations need only be reserved in the main storage area. Therefore, all purchase order receipt forecasts (transaction type FOR-PO) are assigned to use the RECEIVE routing.

Note It should rarely be required to create a specific internal routing for receipt forecasts, only a specific internal routing assignment. Only two-step internal routings fully support location forecasts. In the previous example, where inventory is moved from receipts to inspection and then on to stores, if location forecasts are assigned to this routing, the forecasts are only created in the Inspection area. Unfortunately, if this is what is required, no location-find algorithms can identify and consume the forecast.

Similar to the assignment of internal routings, the algorithms to be used to identify the locations for forecasting must be assigned using the FOR transaction types. While the system lets any algorithms be used for the FOR transaction types, any algorithm that does more than just identify a location fails when used to generate a forecast.

Example If an algorithm to consume location forecasts is assigned to be run when location forecasts are generated, the algorithm runs but does not do any processing or return any locations.

Receipt Forecast Maintenance

Receipt Forecast Maintenance (80.10.2) enables you to modify or delete previously generated forecasts, or to create new forecasts manually.

- 1 Select Receipt Forecast Maintenance (80.10.2).

- 2 In the fields in the top half of the frame, select the range of forecasts to modify. You can delete all selected forecasts by entering Yes in the Delete Selected Forecasts field.

- 3 A scrolling window is displayed. To create a new forecast, press Go when the scrolling window displays. Alternatively, highlight any specific record to modify it and press Enter.
- 4 The details of the record are displayed in the lower frame where you can make your changes. To delete a forecast, enter a forecast quantity of zero.
- 5 To return to the scrolling window, press End. You can then repeat steps 3 and 4.
- 6 To return to the initial selection frame, press End in the scrolling window.

The Location Forecast menu options also contain standard reports and inquiries that let you review existing receipt forecasts.

Physical Receipt

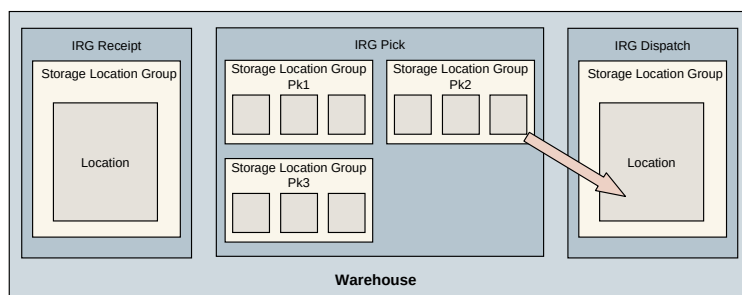
Location forecasts are created for an order line before that order line is physically received. If a location forecast is created, it must be used at the moment of the receipt to identify the locations to use. This is achieved by using put-away algorithms 111 through 124. These algorithms are described in Chapter 8.

See Table 8.5, “Put-Away Algorithms,” on page 121.

Processing Issue Transactions

As with receipts, picking transactions are governed by the internal routing for the specific transaction. In addition, you need to define in advance a set of rules governing how inventory is picked for each transaction, known as *picking algorithms*.

For full details of the setup procedures for QAD Warehousing transactions, refer to Chapter 8, “Algorithms,” on page 111.



The following is a brief outline of what you must define:

- Define the items to include in the pick using Item Master Maintenance (1.4.1).
- Define the picking properties for the transaction type and the storage location group. The main points are:
 - Picking Levels: The minimum and maximum amount of inventory that can be picked from a location. These can be set for the warehouse, the default warehouse transaction type, the storage location group, and the transaction type.
 - Over Pick: whether you can pick more inventory from a location than is specified in the order.

- **Allow Split:** whether the UM for a storage location group can be split for an order; for example, whether a pallet can be split into boxes for an order.
- **Pick by multiple UM:** Whether to allow picking in different UM—for example, both pallets and boxes to meet an order.
- **Allow Multiple Transactions:** Whether QAD Warehousing should create one transaction for the whole quantity to be picked, or allow multiple transactions using Storage Location Group Maintenance (80.3.1).

Example If Pick Multiple UM = BX, and one BX = 20 EA in the receipt, then allow multiple transactions could result in two transactions of 20 EA; while not allowing multiple transactions would result in one transaction of 40 EA.

- Define the internal routing for the transaction using Internal Routing Maintenance (80.2.5). The simplest would be a two-step movement from Bulk to Dispatch.
- Assign the internal routing to a transaction type using Internal Routing Assignment Maintenance (80.2.9).
- Assign a location-find and picking algorithm to the transaction type using Algorithm Routing Maintenance (80.6.9).

When you create an order, the following occurs:

- 1 QAD Warehousing looks for the site/warehouse/location from which the inventory can be picked.
- 2 The algorithms for the transaction type are run until the quantities specified in the order have been picked.
- 3 Open QAD Warehousing sales order pick inventory transactions, which are two-phase transactions, must be confirmed by one of the movement confirmation functions. Confirming such transactions records that the movement of inventory to the appropriate dispatch dock has been completed. The picked stock can then be shipped against the order for which it was picked. QAD Warehousing single-phase transactions do not go through this process.

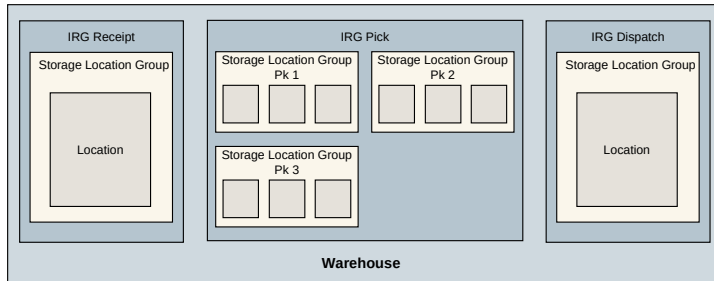
Note The shipping process uses standard QAD ERP functions.

The picking flow described here specifically for sales orders is also used in all QAD ERP functions where picking is performed, such as work orders, distribution orders, and the repetitive modules.

Example: Sales Order Pick

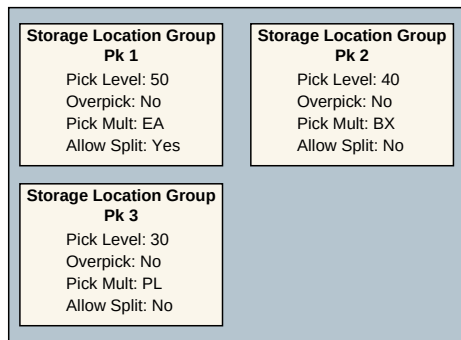
This example takes a simple sales order for 243 EA of component A, and considers how the inventory would be picked from the warehouse setup illustrated in Figure 13.9.

Fig. 13.9
Warehouse Setup for Sales Order Picking



The picking properties for storage location groups Pk 1, Pk 2, and Pk 3 have been set as shown in Figure 13.10.

Fig. 13.10
Example Picking Properties



- One PL = 100 EA
- One BX = 20 EA

For the customer order of 243 EA, the result of the pick is shown in Table 13.5.

Table 13.5
Picking Results

Result	Reason
2 PL from SLG Pk 3	• Pick Level is 30, so look in this SLG first. • Picking multiple pallets is allowed, but pallet split is not. • Therefore, pick 2 pallets to get 200 EA.
2 BX from SLG Pk 2	• Pick level is 40, so look in this SLG after SLG 3. • Picking multiple boxes is allowed, so pick 2 BX to get 40 EA. • Splitting a BX is not allowed, so cannot get the remaining 3 EA from this SLG.
3 EA from SLG Pk 1	• Pick level is 50, so look in this SLG last. • Splitting is allowed, so take the last 3 EA from SLG 1.

Example: Work Order Pick

The principles of picking described in the previous section apply to all types of issue transactions. However, in order to illustrate the flexibility that internal routings give you, this section shows different routes that a work order pick could take.

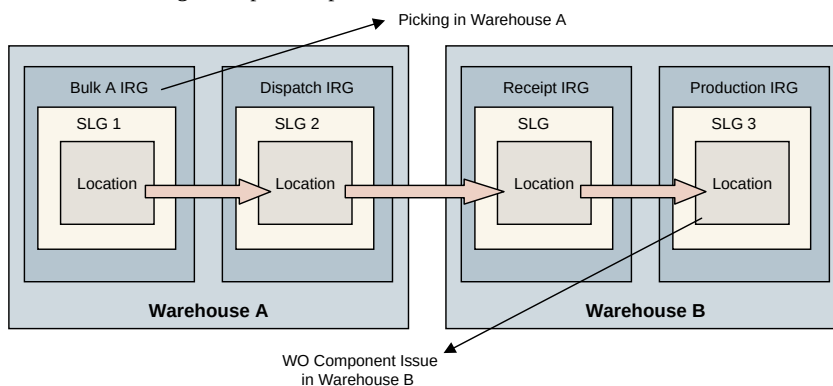
Using the Balance of a WO for Another WO

In this scenario, inventory is left over from one work order, so you want to:

- See whether the remainder can be used in warehouse B (Prod).
- If not, go back to warehouse A (Raw) and pick the inventory from there.

Figure 13.11 shows an example of work order picking setup.

Fig. 13.11
Work Order Picking Example Setup



In order to set up this movement, you would first need to define a warehouse master list using Warehouse Master List Maintenance (80.1.5). The master list defines the source and destination warehouses for the work order pick. For this scenario, a two-step sequence is created for the transaction:

- 1 Step 1 begins the pick in warehouse Prod.
- 2 If the inventory for the WO cannot be found in Prod, QAD Warehousing goes to step 2 and picks the inventory from warehouse Raw. The Ultimate warehouse in step 2 tells QAD Warehousing to make an inter-warehouse transfer from Raw to Prod after picking the inventory.

Next, you must set up the internal routings and algorithm assignments shown in the following table:

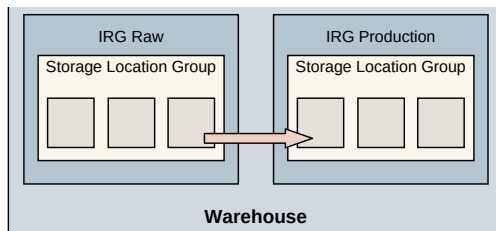
Picking in Prod	IR: No IR. Algorithm: PK for PICK-WO
Picking in Raw + Inter-Warehouse Transfer	1 — IR: PICK-WO Step 10: Bulk Step 20: Dispatch 2 — ER: ISRC-WO (No steps) 3 — IR: IWRC-WO Step 10: Receipt Step 20: Prod
Algorithm Assignments	PK for PICK-WO in Raw LF for PICK-WO in Raw LF for IWRC-WO in Prod PA for IWRC-WO in Prod

Because IRs are defined per warehouse, the IR in step 1 is defined in Raw, and the IR in step 3 is defined in Prod. The way that the transaction is created between each warehouse, from Dispatch in Raw to Receipt in Prod, cannot be described in any IR that relates to one warehouse only. Therefore, you must use an external routing to define the transaction properties for all movements that involve an inter-warehouse transfer.

Note The transaction type IWRC-WO (inter-warehouse receipt) is used to avoid confusion with RCT-WO. Furthermore, IWRC-WO designates an inter-warehouse receipt for the components of a WO, while RCT-PO is the receipt of the finished product after production.

Pick and Move Inventory Between 2 IRGs in Same Warehouse

This scenario covers the possibility of having the raw materials area and the production area in the same warehouse.

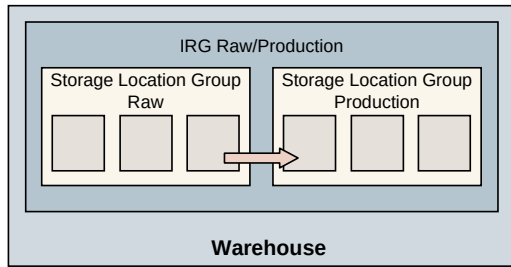


This would be a PICK-WO transaction with:

- An internal routing of two steps (Raw and Production)
- Algorithm assignments of PK, LF, and PA

Pick and Dispatch Within Same IRG

In this scenario, the warehouse has an IRG containing both raw materials and a production area.



The PICK-WO transaction would therefore, have no IR defined since no movement occurs between IRGs. Instead, you would only assign LF, PK, and PA algorithms to PICK-WO.

Repicking

For picking transactions with a detail allocation, you must repeat the picking process in case the pick fails. You do this using Internal Routing Maintenance (80.2.5). The Repick Type field enables you to specify the transaction type that is used for any resulting repicks. If you leave this field blank, the original transaction type is used.

The repick transaction type is important because it determines which internal routing is used for the repick.

Example You can choose whether repicks follow the same route as the original pick or go immediately to dispatch.

Repicking only works if the transaction type for the pick was PICK-*. This is the only way that QAD Warehousing can identify that the type refers to a picking process.

If the transaction type for the pick is PICK-WO and you leave the Repick Type field blank, QAD Warehousing uses the same transaction type PICK-WO to find the appropriate internal routing and picking algorithm for a repick. In other words, the repick works exactly the same way as the original pick.

Picking for Different Lot/Serial/Reference

When warehouse staff pick for orders, QAD Warehousing typically allocates specific pallets to be picked as specified by the appropriate algorithm selected; however, many warehouses have multiple pallets containing the same item that are housed in the same warehouse location. For more efficient picking, it may be easier for staff to pick pallets with different lot/serial or reference numbers than those assigned to be picked by the system. QAD Warehousing provides the flexibility to let warehouse staff pick other pallets for the same item, thereby letting staff ship and complete the order expeditiously.

You can set fields in QAD Warehousing so that warehouse users who access the following can switch location, lot/serial, or reference numbers to substitute pallets when confirming tasks on the RF:

- RF Next Task (1.1) option
- RF Select Task (1.2) option
- Batch Pick SO/DO (3.1) or Batch Pick All (3.2)

Picking for different lot/serial references, sometimes referred to as *switch lot/serial functionality*, can be used for distribution, sales, and work orders that run the RF BP Pick SO/DO and BP Pick All options.

Note Bulk picking does not support picking for different lot/serial or reference numbers.

Setup

You can set up switch lot/serial functionality for:

- All warehouses in Warehouse Control File Maint (80.1.24)
- A single warehouse in Warehouse Maintenance (80.1.1)
- Every specific internal routing in menu Internal Routing Maintenance (80.2.5)

To substitute pallets, you set up:

- Task switching
- System flavor
- From lot/serial, reference, and location options
- Expiration date

The following topics discuss the setup.

Task Switching

To implement picking for lot/serial or references other than those the system suggests, you must set Allow Task Switching to Yes in Warehouse Control (80.1.24).

If Allow Task Switching is Yes, warehouse staff can pick for different lot/serial and/or pallets (references) than those originally selected by the system. They do this by switching the task they are trying to confirm to the task for which the newly selected lot/serial/reference is allocated. If there is no such task, the system simply allocates the newly selected lot/serial/reference to the task being confirmed; this frees the inventory originally allocated.

If Allow Task Switching is No, warehouse staff can pick for different lot/serial/pallet than those originally selected by de-allocating the substitute pallet from its current order. To do this, they must:

- Delete the task associated with the order, if any.
- Create a new task.
- Reinitiate the picking algorithm for the new task.

For switch lot/serial functionality within batch picking, you must set Allow Task Switching to No.

When you disable switch lot/serial functions, the Expire date field has no effect on task-switching functionality.

See “Expire Date (Days)” on page 217.

System Flavor

Next Task and Select Task lot/serial and reference switching work when the Flavor field in Warehouse Maintenance (80.1.1) is set to either A or B.

From Lot/Serial, Reference, and Location Options

You can specify a substitute pallet or reference in the same location or another location by setting fields in the Transaction Confirmation Defaults frame of Warehouse Control File Maint (80.1.24):

- From Location Option
- From Lot/Serial Option
- From Reference Option

These fields default to the same-named fields in Warehouse Maintenance (80.1.1), and from Warehouse Maintenance to the same-named fields in Internal Routing Maintenance (80.2.5). To substitute pallets, you must set these fields in Internal Routing Maintenance.

These fields work together to let you substitute pallets or references, depending upon their settings and whether substitute pallets are available. If substitute pallets do not exist at the current location, you cannot make pallet or reference changes, regardless of the other two field settings, when:

- From Location Option is 0
- From Location Option is 2, but the confirmation of the change is No.

If substitute pallets do exist at the current or another location, you can make pallet or reference substitutions when:

- From Location Option is 0, 1, 2, or 3
- If any Lot/Serial or Reference fields have a non-existent value for the current pallet

Warehouse staff can pick the pallet as long as the system did not:

- Allocated it to another order
- Associate a replenishment task with it (inventory is reserved)

If the substitute pallet has been allocated to another order, or has a task associated with it, then you can switch tasks for the pallet as long as the task associated with it is not active. You can also de-allocate the substitute pallet from its current order by deleting the task associated with the order, creating a new task, and reinitiating the picking algorithm for the task.

If the picking algorithm fails or the system cannot find inventory for the new task, you cannot use the substitute pallet nor switch tasks for it.

Expire Date (Days)

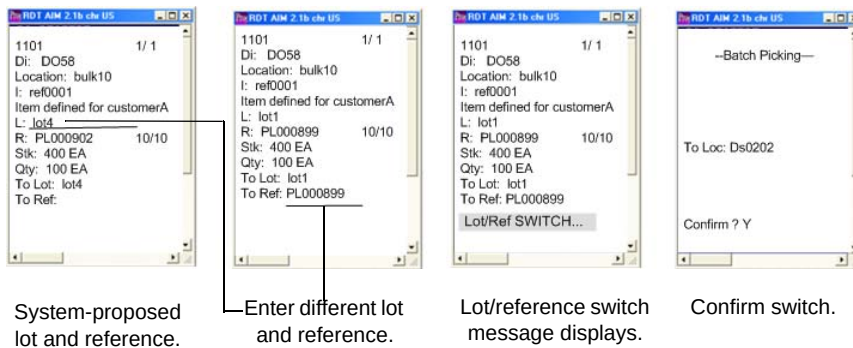
You can specify the maximum number of days (0 to 9999) that the expiration date of the new pallet can differ from the expiration date of the original pallet. For example, if you enter 5, and the expiration date of the original pallet is 12/1/2008, then the expiration date of the new pallet must fall between 12/1/2008 and 12/6/2008. The default value for this field is 0, which means that the expiration date of the original pallet must match the expiration date of the new pallet.

Switching from Batch Picking on the RF

You can use the switch lot/serial functionality while batch picking on the RF from either the SO/DO (3.1) or Batch Pick All (3.2) options. When the system prompts you to enter lot and reference, you can switch to another lot and reference by entering different lot and reference values.

When you enter lot and reference numbers from an order other than the one for which you were currently batch picking, the system displays warnings. The first warning indicates that you are switching lots; the second warning indicates that you are switching references. The system prompts for the picking destination. Once you enter the destination, the system displays a message, indicating that lot/reference switching has occurred. It then prompts you to confirm. When you reply with Yes, the system displays the confirmed picking.

Fig. 13.12
Batch Picking Switch Lot/Serial Functions



Use Inventory Detail Inquiry (80.9.13) to review inventory movement.

Processing Inventory Transfers

This section describes how QAD Warehousing processes inventory transfers. The following transfer transactions are possible:

- Transfer by reference

- Transfer multiple items
- Transfer single item

Inventory transfers can take place:

- Inside one warehouse
- Between warehouses (inter-warehouse transfers)

Inventory transfers work within QAD Warehousing in the same way as all other inventory movements. That is:

- You define internal routings for the transfer.
- You assign the internal routing to the transaction type, warehouse, item number, or address.
- You assign the appropriate algorithms to the transaction.

When you create an inventory transaction using QAD Warehousing functions, the stock is moved according to the internal routing, and put away using the algorithm linked to the transaction type.

Typically you have a one-step internal routing in the main storage area. The internal routing covers all movements within the area and to the area from another internal routing group (IRG). But the internal routing does not cover transfer movement from the main storage area to another area. For this type of movement, the system uses transaction parameters that you specify in Work Location Group Maintenance (80.3.9) for the phase, system code, and task type. If the movement is from one work location group (WLG) to another WLG, you define an inter-WLG definition that would cover the transaction parameters in Work Location Group Maintenance.

Transfer Inside One Warehouse

For transfers within a warehouse, the setup process is as follows:

- 1 Define an internal routing for transaction type PUT-TR, with one step set to BULK using Internal Routing Maintenance (80.2.5).
- 2 Assign the location-find and put-away algorithms to the transaction type PUT-TR using Algorithm Assignment Maintenance (80.6.9).

When you create a transaction for a stock transfer by reference, the movement would be exactly as for a receipt, except that there would be one movement within the Bulk storage location group.

Inter-Warehouse Transfer

An inter-warehouse transfer is processed by QAD Warehousing using a sequence of internal routings, the same as other QAD Warehousing transactions. The chief difference is that a movement between warehouses involves several transactions and the setup needs to reflect this.

Example A transfer of 100 EA from warehouse A (raw materials) to warehouse B (production) requires the following internal routings.

- 1 An issue transaction in warehouse A:
 - Transaction type: ISS-WH
 - Internal routing: ISS-WH
 - Step 10: Bulk

- Step 20: Dispatch
 - Algorithm Assignment: Location Find
- 2** An inter-warehouse receipt transaction in warehouse B:
- Transaction type: IWRC-WH
 - Internal routing: IWRC-WH
 - Step 10: Receipt
 - Step 20: Prod
 - Algorithm assignment: location-find and put-away
- 3** An inter-warehouse transfer transaction type:
- Transaction type ISRC-WH
 - Internal routing
 - Algorithm assignment

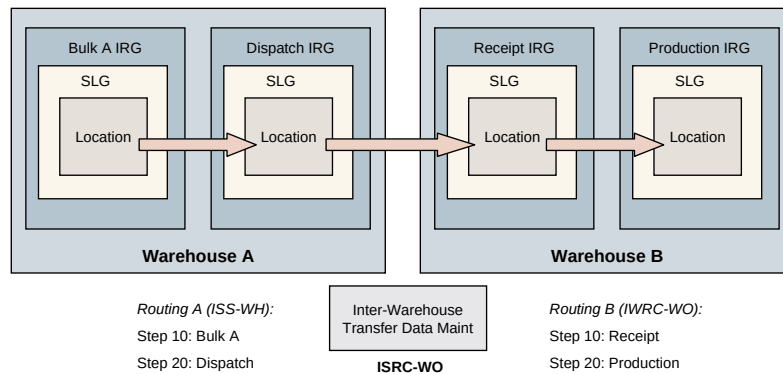
For sales order, work orders, and so on, you need to define a similar set of transaction types if the inventory movement involves an inter-warehouse transfer.

Example For a work order you would need to create:

- PICK-WO for warehouse A
- ISRC-WO
- IWRC-WO for warehouse B

Figure 13.13 summarizes the movement of 100 EA mentioned at the beginning of this section.

Fig. 13.13
Inter-Warehouse Transfer Example



On-the-Fly Transfer

If you reorganize your warehouse when it is full or if you need to move pallets to clear aisles, you can set up QAD Warehousing so that RF users can do an on-the-fly (OTF) transfer within a single warehouse.

OTF Setup

Setup is the same for an OTF transfer as it is for other transfers, except that you use OTF-TR transaction type.

- Use Internal Routing Maintenance (80.2.5) to define a `transfer` internal routing for the site and warehouse.
- Use Internal Routing Assignment Maintenance (80.2.9) to assign the OTF-TR to the `transfer` internal routing.
- Use Algorithm Assignment Maintenance (80.6.9) to assign algorithms to the OTF-TF transaction type.

RF Procedure

- 1 On the RF, select RF Transfer (1.3).
- 2 Accept the default location, or scan or enter the location.
- 3 Enter or scan the reference.
- 4 Enter the quantity to transfer.

You can add more fields to the RF OTF screens by setting different flavor codes in the Flavor field in Work Location Group Maintenance (80.3.9).

You can verify the transfer through any of the transaction history reports in the QAD Warehousing Reporting Menu (80.9).

Replenishment

This chapter describes how QAD Warehousing handles the replenishment process for a warehouse. The main topics covered are:

Defining Replenishment 222

QAD Warehousing lets you define areas in the warehouse where the main picking activity occurs. In order for this area to be maintained at the optimum stock levels, the system uses a process called *replenishment*.

Linking Replenishment Lists to Items 225

When you have created a replenishment list, you must link it to the location/item or storage location group/item.

Replenishment Request 226

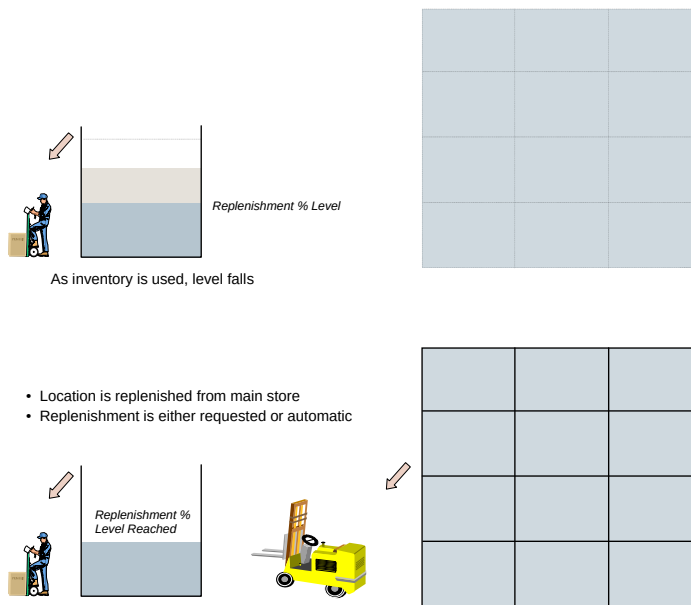
When you have created a replenishment list and linked it to a location or storage location group, you can start a replenishment request.

Defining Replenishment

QAD Warehousing lets you define areas in the warehouse where the main picking activity occurs. In order for this area to be maintained at the optimum stock levels, the system uses a process called *replenishment*. The area in which stock is stored prior to picking is generally called the primary picking area. This area would typically contain the stock required for picking first and in quantities and locations that are easy to maintain.

You define the types of items and the quantities that can be stored in the replenishment, or primary picking, locations. Picking functions look in these locations first before searching the rest of the warehouse.

Fig. 14.1
Diagram of Replenishment



Using the put-away algorithms and storage techniques, you can divide the stock into areas each consisting of common units of storage.

Example You can have an area holding pallets, one holding cartons, and one holding piece quantities. The carton locations are stocked from split pallets, and the piece locations from the carton area. This is performed by the replenishment functionality. Using this process optimizes the picking process and creates areas of the warehouse where fork-lift trucks can operate, and areas where people can walk and gather stock.

Note You can still mix pallets and pieces in the same location, if you want to.

QAD Warehousing enables you to define:

- Replenishment for a given item and a given location.
- Replenishment for a given item in a storage location group. This means that a put-away is performed in the storage location group in order to place the items at the best suitable location inside this storage location group.

- Replenishment lists. A series of storage location groups in which the system looks for the item to replenish. Sequences allow looking in some storage location groups first and then others by order corresponding to the sequence.

You define a list using Replenishment List Maintenance (80.16.1), shown in Figure 14.2.

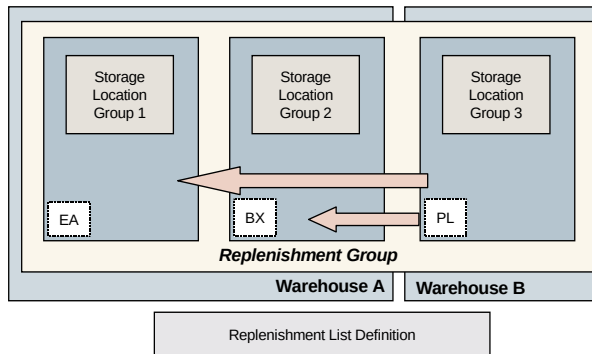
Fig. 14.2

Replenishment List Maintenance (80.16.1)

The following pages show examples of replenishment lists that you can set up in the maintenance frame.

Fig. 14.3

First Sample Replenishment List



Replenishment list definition:

Warehouse	Storage Location Group	Sequence
Warehouse A	Group 2	20
Warehouse B	Group 3	30

This means that whenever storage location group 1 must be replenished, the system first looks in storage location group 3. If the item is available, it is replenished according to the picking definition associated with the storage location group.

See “Picking Multiple UM” on page 68.

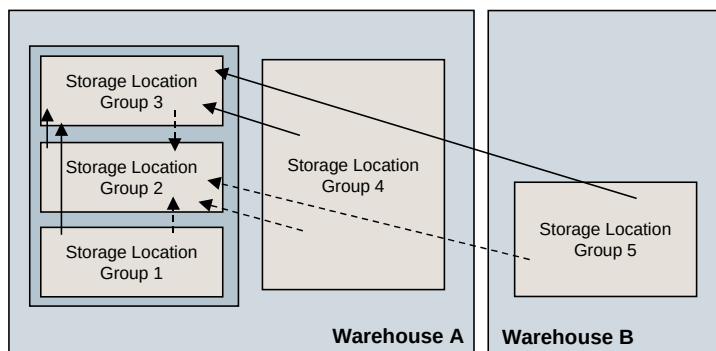
If the item is not available in this storage location group, then the system looks in storage location group 2, which can be in another warehouse, as shown in Figure 14.3.

If storage location group 2 must be replenished from storage location 3, you would define the replenishment list as shown in the following table:

Warehouse	Storage Location Group	Sequence
Warehouse B	Group 3	20

The second replenishment list example is shown in Figure 14.4.

Fig. 14.4
Second Sample Replenishment List



In this second example, storage location group 1 is replenished from storage location groups 2, 3, 4, and 5. Storage location group 2 can be replenished from storage location groups 1, 3, 4, 5, and so on. To match this example, and define the replenishment for storage location group 1, you would have to define the following replenishment list:

Warehouse	Storage Location Group	Sequence
Warehouse A	Group 2	20
Warehouse A	Group 3	30
Warehouse A	Group 4	40
Warehouse B	Group 5	50

At the item/storage location group level, you must define the replenishment list to use in order to replenish the item from storage location group 1.

For storage location group 2, you would define the following replenishment list, attached in the item/storage location group record in the Replenishment List field.

Replenishment list definition:

Warehouse	Storage Location Group	Sequence
Warehouse A	Group 1	20
Warehouse A	Group 3	30
Warehouse A	Group 4	40
Warehouse B	Group 5	50

Linking Replenishment Lists to Items

When you have created a replenishment list, you must link it to the location/item or storage location group/item using either:

- Replenishment-Location Maintenance (80.16.13)
- Replenishment-SLG Maintenance (80.16.17)

In each of these functions, you can enter the information listed in Table 14.1.

Table 14.1
Replenishment List Fields

Field	Meaning
Site	The site in which the location/SLG resides. You must complete this field.
Location/Storage Group Location	The name of the location or SLG. If you leave this field blank, the replenishment list is applied to all locations or SLGs at the site.
Item Number	The item to replenish.
Replenishment Type	A set of replenishment fields that you can apply to one or more items.
Start Date	If you want the location to be replenished on a specific date, enter the start date. Otherwise, leave the field blank.
End Date	If you want the location to be replenished by a specific date, enter the end date. Otherwise, leave the field blank.
Replenishment UM	The conversion factor between the UM for the location and the UM for the item. For example, you could have 1 PL = 100 EA, and you could define the Maximum Quantity = 2 PL. This would mean that the maximum quantity for the base UM of an item would be 200 EA.
Replenishment Point	Enter the quantity of stock at which the location should be replenished. See the next section for an explanation of the replenishment point.
Maximum Quantity	The maximum quantity by which the location can be replenished. Leave this field blank to allow any quantity.
Replenishment list	Enter the name of the replenishment list to link to this location.

Replenishment Request

When you have created a replenishment list and linked it to a location or storage location group, you can start a Replenishment Request (80.16.5).

Fig. 14.5
Replenishment Request (80.16.5)

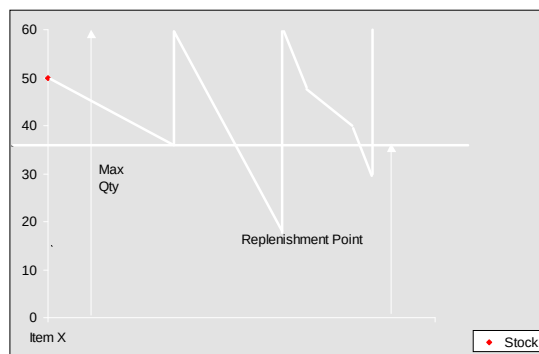
This frame enables you to:

- Run a simulation of the replenishment. By default, the Create Transactions field is set to No. You can then run a report to look at all the replenishments to be done, simulate a picking, and generate a list of all potential transactions, without actually creating the transactions. You can run this report several times using different percentages each time, until you select a quantity of work that can be handled by the current staffing levels.
- When you are satisfied that the replenishment report contains a manageable workload, change the Create Transactions field to Yes, and then run the report again.

The field Include Area Below Replenishment Point enables you to adjust the value of the replenishment point defined in Replenishment-Location Maintenance or Replenishment-SLG Maintenance.

Figure 14.6 explains the principle of replenishment for a location.

Fig. 14.6
Location Replenishment



When the inventory for a given item in a given location stays above the replenishment points, running the replenishment has no effect. When an inventory movement makes the inventory in that location drop below the replenishment point, running the replenishment request with Create Transactions set to No tries to find available stock for the replenishment. The Include Area Below Replenishment Point field enables you to change the value of the replenishment point. This is a way to have fewer transactions to carry out if the load is too high.

Example The warehouse has an item A with the following details:

- Replenishment details:
 - Item A
 - Maximum quantity 100
 - Replenishment point 50
- Location details:
 - On-hand quantity 20

Therefore, if the stock is below the replenishment point—20 being less than 50—replenishment can take place.

If you change the value of the Include Area Below Replenishment Point field to 20%, the new replenishment point is:

$$20 / 100 * 50 = 10$$

This time, the on-hand quantity is greater than the replenishment point, so replenishment does not take place.

Radio Frequency (RF) Terminals

This chapter describes how to set up the QAD Warehousing fields for using RF terminals and how RFs operate within QAD Warehousing.

Overview 230

QAD Warehousing supports the use of Radio Frequency Terminals (RFs), also known as Radio Data Terminals (RDTs). These are small terminals which communicate with the host QAD Warehousing system by radio waves.

Basic RF Setup 230

Descriptions of details that you have to enter in QAD Warehousing before you can use an RF.

Specific RF Setup 233

Descriptions of several warehouse tasks that require additional RF setup in QAD Warehousing.

RF Login 235

Describes the RF login process.

RF Menus 236

Presents menus specific to the QAD Warehousing RF software programs.

Function Key Options 238

Describes function keys, available through the RF device.

Performing RF Tasks 239

Describes the tasks available to warehouse staff through the RF device.

Overview

QAD Warehousing supports the use of Radio Frequency Terminals (RFs), also known as Radio Data Terminals (RDTs). These are small terminals which communicate with the host QAD Warehousing system by radio waves. The terminals are small enough to be hand-carried, mounted on a fork-lift, or mounted on a picking cart; see Figure 15.1.

RFs display open transactions for a work location group as the transactions are created. Employees can select the next transaction, or be informed of the next transaction in the task queue based on their location and the priorities of the transactions.

Fig. 15.1
RF on a Picking Cart



As a transaction is performed, you can use the QAD Warehousing system to view its progress and status. When it is completed, stock is updated. This gives you an accurate picture of the stock, without any delays for confirmation of the stock movement within a warehouse.

If the system crashes or an RF user ends a session by pressing Ctrl+c, when the user logs in, the RF displays the user's assigned tasks. This is applicable when the RF user works on a task in any of the following RF options:

- Batch Pick-SO
- Batch Pick-All
- Work – Next Task
- Work – Select Task

See “RF Menus” on page 236.

Basic RF Setup

This section describes the details that you have to enter in QAD Warehousing before you can use an RF. RF setup varies depending on the tasks warehouse staff intend to complete with the RF; however, some basic RF setup is required for every RF, regardless of the specific warehouse tasks performed.

You must set the following in QAD Warehousing for every RF or RDT device:

- OS variables
- System codes

- System procedure codes
- System flavors

Setting Operating System (OS) Variables

You must define the following three OS variables before using QAD Warehousing:

- An OS variable, `AIMSystemCode`, must be set with a value of `RF`. This is what tells the QAD Warehousing startup procedures that this is not a regular full-screen session but an RF device session.
- Most RF device screens are unreadable when used with a width resolution of 80 characters. The QAD Warehousing RF screens are designed to a screen width of 20 characters. However, standard QAD ERP full-screen error and warning messages are still used. If only the first 20 characters of these messages are visible, they can be meaningless. If only 20 characters are visible on the implemented RF screens, an OS variable, `AIMShortMsg`, must be set with a value of `Yes`. This causes QAD Warehousing to use only a special set of messages (numbers 10500–10600 in standard QAD ERP Message Maintenance) that are a maximum of 20 characters in length.
- Two screen layouts are available for the Select Task function within the Work menu. An OS variable, `AIMSelectType`, determines which one is used. If no value is specified, then a scrolling window type of screen is available. Any non-blank value specifies a transaction prompt type of screen.

Define these variables using one of the following methods:

- From within the OS session startup script; for example, `.profile` in UNIX, `autoexec.bat` in Windows.
- From within the QAD Warehousing execution script (UNIX only).
- From within the initialization file identified by the `-ininame` field (Windows only). The definitions must appear in the [Applications] section of the file.

In a GUI environment, by default, Progress and, therefore, QAD ERP run using a proportional font for displaying text. This causes problems for the limited space available on RF screens. Therefore, it is strongly recommended that RF programs (those beginning `whmf`, `whrf`, and `whex`) are compiled with a non-proportional font. This is specified by the default font setting within the file identified by the `-ininame` option. The recommended font is Courier New, Bold, Size=8.

Setting System Codes

Use the System Code field in QAD Warehousing programs to specify that created transactions are confirmed in the RF. Specify `RF` in the field to create transactions confirmed in RF screens.

When you specify the System Code in Warehouse Maintenance (80.1.1), the value defaults to the same-named field in Internal Routing Maintenance (80.2.5), shown in Figure 15.2; however, you must specify `RF` for every other occurrence of the System Code field.

Fig. 15.2
Internal Routing Maintenance (80.2.5), System Code Field

Specify RF.

Transaction Create	
Confirmed at Source ?	☐
System Code:	RF
Two Phase ?	☒
Keep From Status ?	☐
Task:	TRANSFER
Priority:	100
Increment:	10
Transaction Confirmation	
"From Location" Option:	0
"From Item" Option:	0
"From Lot/Serial" Option:	0
"From Reference" Option:	0
Allow Quantity Increase ?	☐
Allow Quantity Decrease ?	☒
Quantity Change Option:	0
"To Location" Option:	0
"To Item" Option:	0
"To Lot/Serial" Option:	0
"To Reference" Option:	0
Alternative UM Option:	0

Setting System Procedure Codes

You set system procedure codes in Task Maintenance (80.11.1). QAD Warehousing uses the procedure codes along with flavor codes to determine which program to run when RF users select the Next Task or Select Task menu option. For example, if the RF user is assigned a put-away task with an RC procedure code and flavor b—which specifies only prompt for pallets and not for items/lots—then QAD Warehousing uses the `whrfRCB.p` program for the next task. If the RF user's next task is a pick with procedure code PK and flavor b, QAD Warehousing uses the `whrfPKB.p` program.

See "Task Maintenance" on page 153.

Enter one of the following codes in the Procedure Code field in Task Maintenance (80.11.1):

AJ: This option is for cycle counting adjustments.

PK: This option displays the issue order number. It also defaults the From Location field to blank and the To Location field to the expected destination.

RC: This option displays the receipt order number. It defaults the From Location field to the expected source and defaults the To Location field to blank.

TF: This option does not display any order information. It defaults both the From Location and To Location fields to blank.

Setting System Flavors

The system uses flavor codes to set different RF screen layouts. For example, a fork-lift operator may use an RF layout to pick several pallets at once, while a warehouse picker may use an RF layout to pick just one pallet at a time. QAD Warehousing provides several flavors that you specify in the Flavor field in Work Location Group Maintenance (80.3.9):

b: Selection by reference

c: Multi-bin pickup

d: Dynamic sizing

See “Work Location Group Maintenance” on page 71.

Specific RF Setup

Warehouse staff can use the RF to complete several warehouse tasks. Some tasks require additional RF setup in QAD Warehousing. This section covers additional RF setup for the following RF tasks:

- Batch picking
- Printing
- Maintaining RF control during task confirmation
- Confirming tasks

See page 236.

The following subsections describe each specific task.

Batch Picking Setup

QAD Warehousing’s batch-picking functionality reorders the order-picking sequence and tasks so that warehouse staff can pick the items for different orders with a shortened travel sequence. The RF displays the pick tasks for the orders. Staff can scan either the location, item, lot/serial number, reference, or quantity picked from the location or scan the container—such as a box, tote, or pallet—that they pick to, depending on control settings.

See Chapter 17, “Batch Picking,” on page 259.

You can set several fields in Batch Picking Control (80.15.24) for the RF device. Table 15.1 describes each field and indicates whether setting the field is mandatory.

Table 15.1
RF Setup for Batch Picking

Field	Description	Mandatory
AutoSel	Specify whether QAD Warehousing selects orders with the highest priority or if warehouse staff select orders for picking in the RF.	No
Device	Define the RF device for the user within the WLG.	Yes
Logical Format	Specify whether RF users enter 1 or 0 (logical display) or yes or no at the RF device.	Yes
RF Screen Height	Specify RF screen size.	No
Scan Location	Specify whether warehouse staff can access the Location field on the RF and scan.	No
Scan Lot/Serial	Specify whether warehouse staff can access the Lot/Serial field on the RF and scan.	No

Additionally, if warehouse staff are batch picking with the RF, you can set options in Warehouse Maintenance (80.1.1) so that the RF displays any or all of the following options when the quantity to pick is less than the total quantity:

- Repick option

- Complete option
- Fail option

See “Setting Location Maintenance Options” on page 276.

You can also set printer options when batch picking.

See Table 15.2.

Print Setup

You specify printer options in Work Location Group Maintenance (80.3.9) so that RF users have access to a printer to collect the labels before they pick. Occasionally, RF users have dedicated RF printers for label printing. More often, though, each cart is equipped with a roll of pre-printed labels with unique IDs for the boxes or totes. The IDs are unique for the person and the warehouse. This method is much more economic than using RF printers.

See “Work Location Group Maintenance” on page 71.

If you are batch picking from the RF, use Batch Picking Control (80.15.24) to set printer and printing options as shown in Table 15.2.

Table 15.2
Batch Picking Printer and Printing Options

Field	Description
Form Printer	Specify the code for the form printer. Enter Yes to Use External if you want RF users to print identifications on an external printer such as a forklift printer. Enter No to Use External if you want RF users to print using the ID printer.
Task Printer	Enter the code for the printer when printing tasks. Enter Yes to Use External if you want RF users to print identifications on an external printer such as a forklift printer. Enter No to Use External if you want RF users to print using the ID printer
Label Print Option	Specify whether labels print automatically, not at all, or if the system prompts to print labels after the order selection is complete but before picking begins. You must specify the print program in the Label Print Program field in Batch Picking Control

Task Confirmation Setup

Warehouse staff can confirm that tasks are completed through the RF. To confirm tasks, ensure the steps listed in Table 15.3 are completed.

Table 15.3
Confirmation Setup

Description	Program
Ensure tasks are defined.	Task Maintenance (80.11.1)
Ensure the RF user is defined as an QAD ERP user.	User Maintenance (36.3.1; 36.3.18 before QAD Standard Edition)

Description	Program
Ensure the RF user is defined as a QAD Warehousing user.	User Maintenance (80.11.13)
Set the System Code field to RF.	Internal Routing Maintenance (80.2.5)
Ensure tasks are assigned to the user.	Task Assignment Maintenance (80.11.7)

In QAD Warehousing, you use Task Assignment Maintenance (80.11.7) to define tasks for the warehouse staff. You define the queue; the tasks within a queue; the sequence number of the task within the queue; and whether confirmation of the task is automatic, manual, or timed.

See “Assigning Resources to Tasks” on page 156.

When you set Confirmation Mode to AUTO, the system updates inventory, quantities on hand, detail allocations, and so on, immediately after warehouse staff confirm the task. The RF may pause until it completes the update and warehouse staff cannot control the RF during the pause. If warehouse staff want to control the RF at all times, set the Confirmation Mode to MANUAL. The system completes the remaining updates when you manually instruct the engine processor to do so in QAD Warehousing’s Engine Menu (80.7).

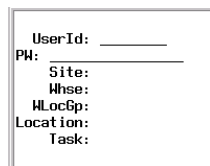
See “Confirmation Mode” on page 154.

Note You can set the engine processor to process records within fractions of a second so that records are updated immediately, even if done manually, or you can delay updating until a predefined time by setting the Repeat Every field in the engine processor options (80.7.1 through 80.7.3) within QAD Warehousing’s Engine Menu.

RF Login

After logging in to QAD ERP on the RF, the system presents the RF login screen.

Fig. 15.3
RF Login



```

  _____
  |  UserId: _____ |
  |  PW:    _____ |
  |    Site: _____ |
  |   Whse: _____ |
  |  WLocGp: _____ |
  | Location: _____ |
  |    Task: _____ |
  |_____              |
  
```

Use the following procedure to log in to the RF:

- 1 Enter your existing QAD ERP user ID and password as specified in User Maintenance (36.3.1, 36.3.18 before QAD Standard Edition) in the UserId and PW fields.
- 2 Enter the site in which you are working.
- 3 Enter the warehouse in which you are working in the Whse field.
- 4 Optionally enter the work location group (WLG) in the WLocGP field. If you leave this field blank, QAD Warehousing allocates tasks to you from anywhere in the warehouse.

- 5 Optionally enter your current location. You can change the current location at any time by returning to this login screen; however, changing locations is only effective if travel sequences are in effect, so that QAD Warehousing can allocate the task that is closest to your current location.
- 6 Optionally enter your task. If you leave this field blank, QAD Warehousing allocates any tasks available in the warehouse and, if entered, the work location group.

The system validates the information you entered and presents the RF main menu.

RF Menus

Once you log in, the system displays the RF main menu as shown in Figure 15.4.

Fig. 15.4
RF Main Menu

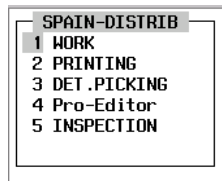


Table 15.4 describes menu options and indicates sections or chapters of this user guide that contain additional information or instructions for the option.

Table 15.4
RF Menu Options

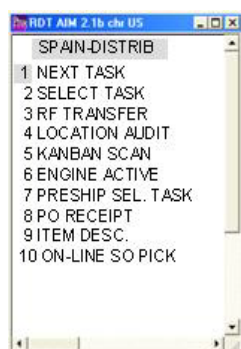
Option	Description	Reference
WORK	This menu contains options for accessing and confirming tasks, RF transfer, location audits, Kanban scans, activating engines, selecting pre-shipper tasks, PO receipts, item descriptions, and online SO picking.	See “Confirming Tasks” on page 239. See “Processing Inventory Transfers” on page 217. See Chapter 21, “Cycle Counts,” on page 365. See “QAD Warehousing Engine Processing” on page 141. See “Processing Transactions” on page 193. See “Batch Picking” on page 259.
PRINTING	This menu contains options for changing printer options and requesting reprints of tags, IDs, and so on. You can only change your printers from this option if they have been defined at the user/work location group level. You cannot change the printers for another user or for the entire work location group.	See “Print Setup” on page 234 and “Printing” on page 170.

Option	Description	Reference
DET. PICKING	This option contains sales order only picking, all order picking, container build, move container, ship truck, or pallet explosion options.	See Chapter 17, “Batch Picking,” on page 259. See Chapter 19, “Using Containers,” on page 337. See Chapter 20, “Container Move and Truck Ship,” on page 353.
Pro-Editor	This option provides access to the Progress Editor. Only experienced Progress users should access this option.	See your Progress documentation.
INSPECTION	This option lets you maintain and enter sample details during inspection, indicate pass or fail of inspection, and indicate if failed items should be returned.	See Chapter 22, “Quality Inspection,” on page 371.

RF Work Menu

Figure 15.5 shows the RF work menu.

Fig. 15.5
RF Work Menu (1.1)



The WORK menu has the following options:

- **NEXT TASK:** Calculates the next task to be performed based on priority, travel sequence, and so on, and presents the task to warehouse staff for confirmation.
- **SELECT TASK:** Displays the next task but lets you select a different one by transaction number. See “Task Switching with Confirmation Options” on page 240.
- **RF TRANSFER:** Lets you start an on-the-fly inventory transfer.
- **LOCATION AUDIT:** Enables you to start a cycle count of a bin location.
- **KANBAN SCAN:** Lets you scan a Kanban item, specify the Kanban quantity, and the item destination.
- **ENGINE ACTIVE:** Lets you launch engine records if engine tasks are not activated automatically.
- **PRESHIP SEL.TASK:** Lets you select all tasks from an SO pre-shipper.

- **PO RECEIPT:** Lets you perform standard QAD ERP purchase order shipper receipt tasks from the RF.
- **ITEM DESC:** Displays information about items, including quantity, site, location, and alternative UM.
- **ON-LINE SO Pick:** Lets you pick and allocate sales orders dynamically.

Function Key Options

You can use function keys on the RF while you perform certain tasks. Table 15.5 describe the function keys.

Table 15.5
RF Function Keys

Function Key	Description	Task
F2	Display order comments for sales and distribution orders on the RF screen. Press F2 on any field in the picking screen to view the order line comments.	Picking
F3	Display the order picking status. QAD Warehousing displays pick information per order, including the item number, the quantity already picked, and the quantity remaining to pick.	Picking
F3	Fails the task. The system creates a recount task.	Overpick replenishment and put-away
F5	Skip a task and move it to the end of the task queue. This is useful, for example, if a warehouse aisle become blocked.	Any task
F6	If all tasks are for the same destination, the system displays the Drop All prompt, letting you drop all or some boxes completed during picking.	Picking
F6	Lets staff repick missing items.	Overpick replenishment and put-away
F7	Move contents from one box to another box during picking. This helps staff balance the content of different boxes based on the volume of the different items. The system prompts to enter a new container ID.	Picking

Note Some UNIX terminals, LINUX terminals, and RF devices do not map the F5 key. Typically, terminal users can use the emulation software's key.

In addition to using function keys, when picking, sales order header comments display in the RF device even when RF users select a pre-shipper. If the pre-shipper has multiple orders, the RF displays comments for the first order on the pre-shipper.

Note Sales order header comments display only if Print Packing List Comments is set to Yes in Sales Order Maintenance (7.1.1).

Performing RF Tasks

The following subsections describe tasks you can complete on the RF and information you should know before beginning RF tasks. Tasks include the following:

- Accessing Tasks
- Confirming Tasks
- Building Containers, Moving Containers, and Loading Trucks
- Overpick Replenishment and Put Away

Accessing Tasks

Use Task Assignment Maintenance (80.11.7) in QAD Warehousing to define tasks for warehouse staff.

Before QAD Warehousing can automatically select a task and present it on the RF or a warehouse user can manually select a task from the RF, the following must be true:

- The user's log-in site, warehouse, work location group, and task must be valid, and the system code must be correct. See "Setting System Codes" on page 231.
- If user/work location group (WLG) records are defined for the WLG of a specific task, only users defined for that WLG can access the task. If no user/WLG records are defined for a WLG, all users can access tasks in that WLG.
- The task associated with the transaction must be on the task list assigned to a user in Task Assignment Maintenance (80.11.7).
- Tasks cannot be locked by or assigned to another user.

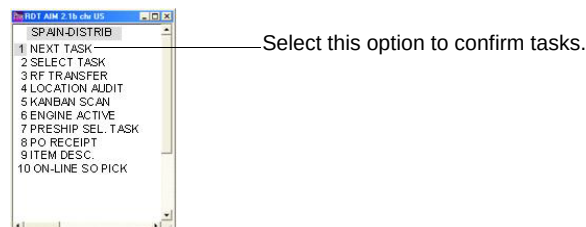
Tasks can be soft assigned or hard assigned. A soft assigned task is assigned to a user but can be manually selected by another user. A hard assigned task is assigned to one user and is not accessible by other users.

Note You can restrict the number of tasks assigned to a user and re-sort tasks so that hard-assigned tasks are reassigned by editing the `whbpklx2.p` sorting procedure. The sorting procedure is the default procedure in the Batch Picking Task Sort field in the Local Exit Routine Control File (80.24.23). See "Assigning Resources to Tasks" on page 156.

Confirming Tasks

Warehouse staff use the RF to inform QAD Warehousing that tasks are complete. This process is called *movement confirmation*. Users confirm movement on the RF through the Next Task option in the WORK menu.

Fig. 15.6
RF Work Menu



Confirmation Options

Some QAD Warehousing maintenance programs, such as Internal Routing Maintenance (80.2.5), contain confirmation option fields. Confirmation options define which values can be changed during confirmation and the action resulting from any permitted change. For example, you can specify confirmation options that let a user enter a different location when a task instructs the user to go to a specific location and whether the user receives a warning when he enters the location change or must confirm the location change. In most cases, you set the options so that RF users cannot make changes during confirmation.

Some of the options provide a static outcome; for example, always blank the reference. These options are calculated and performed when the transaction is created. This improves performance and stability since the correct inventory is referenced throughout the life cycle of the transaction.

Task Switching with Confirmation Options

The Allow Task Switching field in Work Location Group Maintenance (80.3.9) plays an important role when you set confirmation option fields. If you set this field to Yes, you allow RF users to switch to another task when they enter confirmation option values that are different than the expected one.

See “Allow Task Switching” on page 72.

Example You set Allow Task Switching to Yes, then set task confirmation options to allow a different value for reference or lot/serial number. When the user enters a different reference, QAD Warehousing checks for another task for the reference and the user can switch to the other task.

If you set Allow Task Switching to No, the user cannot switch to another task. This can cause problems if the task is a requirement to satisfy an order. Each pick task is linked to a specific order and each order is associated with a specific detail allocation. If users change a value, QAD Warehousing assumes that the changed value is for the current task and confirms the task. This affects the detail allocation and picked quantities available for an order and can cause errors.

Confirming in Staged Locations

Within QAD Warehousing, providing a stage for a location means that a task must be confirmed more than once before it is considered closed. A staged location is one that is not directly accessed. Instead, inventory coming in or going out of the location is placed on a temporary stage prior to the inventory movement. This type of environment is frequently used when fork-lift hand-offs must be performed, or when inventory is being taken out of, or placed into, an automated storage area.

The Stage In and Stage Out fields in QAD Warehousing Location Maintenance (80.3.13.1) identify whether a location is staged. If both fields are blank, the location is not staged.

See “Stage (In)” on page 82 and “Stage (Out)” on page 82.

Example If a location has a value populated in the Stage Out field, stock is taken from the location, moved to its stage, and then on to the task’s destination. This requires that the transaction be confirmed twice:

- 1 From the location to its stage
- 2 From stage to the final destination

Similarly, a location with a Stage In must have tasks moving stock into it confirmed twice:

- 1 Onto the stage
- 2 From the stage to the location

If a transaction moves inventory from a location with a Stage Out to a location with a Stage In, the task has to be confirmed three times:

- 1 From the source location to its stage
- 2 Between the source location's stage and the destination location's stage
- 3 From the destination location's stage into the destination location

Confirmation Transaction Status

As a task is being confirmed, the system updates the status. This is largely invisible to the RF user but is included here as technical information. The status flow is listed in Table 15.6.

Table 15.6
Transaction Status Flow

Status	Meaning
OPEN (Task is not locked)	Task has been created and is awaiting confirmation.
ACTIVE (Task is not locked)	Task has been selected by a user but has not reached the point where the user has confirmed completion. The task is soft assigned to the user so that no other user is offered it as the next task, but a user can manually select it.
OPEN (Task is locked)	The user has identified that the task is started. Physically, this indicates that the user has picked up the identified inventory. Because the record is locked, no other user can access this task. The status is put back to a status of OPEN so that if a software, hardware, or communications failure occurs after the transaction is locked, the task is not left in a state that cannot be accessed. If such a failure occurs, the task is soft assigned to the user who had started it, but still OPEN so other users can select it, if necessary.
PROCESS	A transaction is at a status of PROCESS only when a confirmation mode of MANUAL is in effect. It indicates that the transaction has been confirmed by a user but that it has not yet been processed by the engine processor.
CLOSED (Lock is released)	The confirmation of the task is complete and the transaction is deleted from the task queue and placed into transaction history.

Building Containers, Moving Containers, and Loading Trucks

Once all the detail picked goods have been gathered into a larger packaging unit, the final step before shipment consists of building a container with all the entities created. This can be done with QAD Warehousing's containerization functionality and the RF's Container Bld menu option (3.3).

Once you build a container, use the RF container move functionality and QAD Warehousing features to create a new RF transaction that lets staff move an allocated box or pallet from the dock location to any location that you define, such as a truck location. The RF transaction records the detail allocation move and container structure.

See “Using Containers” on page 337.

Warehouse staff use the RF for truck loading; however, since you represent the truck as a location in QAD Warehousing, there is no need to tie an RF transaction to a QAD Warehousing task. From the RF, staff select the Move Container menu item (3.4) to move items and the Ship Truck menu item (3.5) to specify the truck location. Staff can then scan references and specify locations from the RF for both functions.

See “Container Move and Truck Ship” on page 353.

Overpick Replenishment and Put Away

Using the RF, warehouse staff can select a multi- or single-item pallet from the reserve area and replenish one or multiple locations from the pallet in the picking area. After staff replenish, they can return the remainder on the pallet to the reserve area.

Staff select a complete pallet, then replenish in the home (dedicated) location. If you set up QAD Warehousing to use the RF pallet overpick program, at this point, QAD Warehousing is using overpick logic. QAD Warehousing displays the quantity to replenish in the location on the RF, but staff typically put as much as they can into the home location. The remainder of the pallet that is not used for replenishment is returned to stock using QAD Warehousing put-away logic. For this reason, this functionality is termed *overpick replenishment and put away*. Staff can return items individually from a multi-item pallet or return the complete pallet.

See “Overpick Replenishment Setup” on page 243.

Note Staff can also put away in an overflow area as long as you specify the correct put-away algorithm for this area. See “Put-Away Algorithms” on page 121.

Once the user selects the pallet, all stock that the user picks is moved to the user location. Transferring stock to the user location avoids errors should other warehouse staff have to recount the source location before the replenishment movement is completed. If QAD Warehousing sees stock is in the source location and not in the user location when the recount starts, the quantities would be in error.

Using the single pallet, the user can optionally:

- Meet the total replenishment requirement for a pick.
- Replenish more than the total replenishment requirement for a pick.
- Replenish less than the total requirement for a pick.

When replenishing beyond the requirement, the system still considers the task complete. When replenishing less than the total requirement, the replenishment is not complete and the status of the replenishment task is open and required.

Transactions

The system records a pick-replenishment transaction (PICK-RE) for the replenishment task and a return put-away transaction (RCT-BACK) for the returned pallet and put-away task.

RCT-BACK is similar to an on-the-fly transfer transaction (OTF-TR). For the RCT-BACK transaction, there is typically one step in the reserve area to put away stock. This is because in most warehouses, both the reserve area and detail picking area are part of a general storage area. This makes it possible to have a single step within that storage area.

You must link the transactions to an internal routing using Internal Routing Assignment Maintenance (80.2.9). In most cases, you can link to the same internal routing as that defined for the OTF-TR transaction type.

See page 57.

For the return to stock movement, you must link a put-away (PA) algorithm to the RCT-BACK transaction type in Algorithm Assignment Maintenance (80.6.9).

See “Algorithm Assignment” on page 115.

Replenishment for a Wave

When a replenishment is linked to a wave, the RF displays a w next to items. QAD Warehousing links a replenishment task to a wave when:

- You run Wave Replenishment (80.15.4) for that wave.
- A standard replenishment task that is based on min/max levels considers the item a requirement for another wave. See “Replenishing a Wave” on page 316.

Note When you run wave replenishment, QAD Warehousing considers the requirement for the item on the wave and all open waves that require the item.

Overpick Replenishment Setup

To use the overpick replenishment and put-away feature, you must:

- Create the transactions and link them to internal routings and algorithms. See page 243.
- Specify a user location. See page 266.
- If replenishing and putting away for a wave, you must create a wave replenishment list and specify the list in Wave Planning Control (80.15.23). See page 308.
- Set up a multi-item pallet. See page 243.
- Define the program QAD Warehousing calls when warehouse staff replenish and then return items that are not picked. See page 244.

Multi-Item Pallet Setup

You must take extra steps to set up a multi-item pallet in QAD Warehousing. The put-away process for a multi-item pallet is for the item linked to the UM that you define in Alternate UM Maintenance (80.5.1).

In Alternate UM Maintenance, the Item Number field indicates the multi-item pallet item. You must also define this pallet item in the following menu options:

- Item Master Maintenance (1.4.1)
- Item-Site Planning Maintenance (1.4.17), if the site is different than the site in Item Master Maintenance
- Item-Warehouse Maintenance (80.4.11)

QAD Warehousing conducts the put-away for a multi-item pallet in the SLG or an SLG in the SLG list that is linked to the pallet item. When you define a pallet item and link it to a UM in Alternate UM Maintenance, QAD Warehousing's put-away logic considers the multi-item pallet a single, whole item and the put-away is for the pallet as a whole; otherwise, the put-away logic may have each item being put away to different SLGs.

Defining the Replenishment Overpick Program

You specify the program QAD Warehousing calls in the RF Pallet Overpick (*whrfmbr1.p*) field in Local Exit Routine Control File (80.24.23). The *whrfmbr1.p* program is included with QAD Warehousing and defaults to the RF Pallet Overpick (*whrfmbr1.p*) field. If you do not specify a program in this field, QAD Warehousing uses the standard *whrfmbr1.p* replenishment program for the RF Next Task/Select Task option.

See “Local Exit Routine Control File” on page 169.

Fig. 15.7
Local Exit Routine Control (80.24.23)

Specify the program for replenishment pick and put-away.

Field Name	Value
Bulk Pick-Sheet (<i>whbplk01.p</i>)	<i>whbplk01.p</i>
Pre-Shipper List (<i>whbpps01.p</i>)	<i>whbpps01.p</i>
Printer Template User Fields (<i>whbprk01.p</i>)	
Order Detail Update (<i>whomk01.p</i>)	
Cycle Count Selection Algorithms (<i>whicoclk.p</i>)	
Task Calculation (<i>whimk01.p</i>)	<i>whwata01.p</i>
Batch Picking Order Selection (<i>whbpkl01.p</i>)	
Batch Picking Task Sort (<i>whbpkl02.p</i>)	
RF Pallet Overpick (<i>whrfmbr1.p</i>)	<i>whrfmbr1.p</i>
Batch Picking Screen Format (<i>whbpkl03.p</i>)	<i>whbpkl03.p</i>

Created: mlg 5/3/2006
Modified: pbu 12/3/2009

RF Pallet Overpick (*whrfmbr1.p*). Specify the overpick program that QAD Warehousing runs during replenishment so that warehouse staff can pick the exact required amount, overpick to fill bins, and return items that are not picked.

When you specify the *whrfmbr1.p* default program, the system resets Allow Split Replen in Wave Picking Control (80.15.23) to Yes. This forces the pallet to be splittable, and QAD Warehousing can create a task for the exact quantity required.

For example, if 12 EA are needed on a pallet of 100 EA, then QAD Warehousing creates a task for 12 EA. The *whrfmbr1.p* overpick replenishment program lets the user know that 12 EA is the required quantity, but the user puts away as much as can fit into the bin, regardless of the required amount.

If the pallet is not splittable, then overpicking depends on the setting of the Replenishment OverPick field in Wave Planning Control (80.15.23). If set to Yes, QAD Warehousing creates a task to pick for the entire pallet of 100 EA. This does not indicate the exact quantity required nor the amount that would fill the bin.

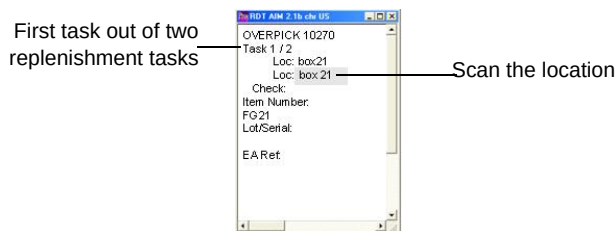
See “Replenishment OverPick” on page 305.

Replenish Procedure

The following procedure illustrates how to replenish from a single pallet and return unused quantities from the RF. Although you can perform this task with the RF Select Task function (1.2), the following procedure uses the Next Task (1.1) function.

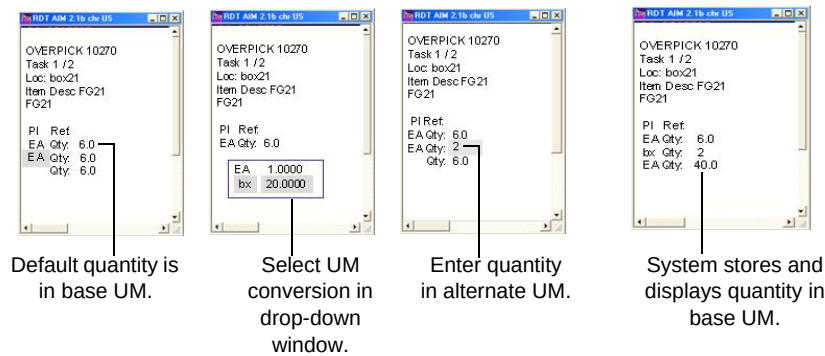
Figure 15.8 shows the initial RF screen that displays to perform replenishment pick and put-away.

Fig. 15.8
RF Overpick Screen



- 1 Log in to the RF and enter your ID, password, site, warehouse, and if applicable, your work location group.
- 2 Select Work (1), then Next Task (1.1).
The RF displays the Overpick screen; see Figure 15.8.
Note If the system displays other tasks, cancel the Next Task program, return to the RF login screen, and enter REPLEN in the Login screen's Task field; then select Work (1), then Next Task (1.1).
- 3 To pick for the replenishment, scan the source location, then scan the pallet number.
The RF displays the number of replenishment tasks to perform for the pallet in the counter at the top; see Figure 15.8.
- 4 To replenish a bin, scan the destination location, then scan the items.
The system prompts for the quantity in the base UM; see Figure 15.9.
- 5 Enter the quantity that fits into the location, attempting to completely fill the location:
 - a On the RF, scroll down to select the UM/Conversion drop-down window.
 - b Select the Alternate UM.
 - c Enter the quantity in the alternate UM.
The system stores the quantity and displays the quantity in the base UM; see Figure 15.9.
- 6 Confirm the quantity.
- 7 Repeat steps 3 through 5 for multiple replenishment from the pallet.

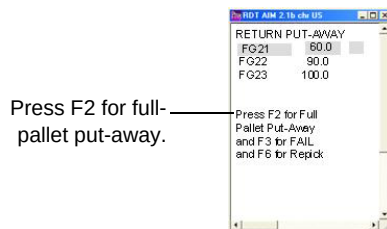
Fig. 15.9
RF Overpick, Quantity Conversion



Return Put-Away Procedure

When staff complete all replenishment tasks from the single pallet, the RF automatically displays the Return Put-Away screen; see Figure 15.10. The following procedure shows how to return unused quantities one item at a time from the RF once you finish replenishing.

Fig. 15.10
RF Return Put-Away Option



- 1 Return the pallet to the stock area.
- 2 On the RF, press F2.

The RF prompts you to enter or scan the destination location; see Figure 15.11.
- 3 Choose one of the following:
 - a Scan or enter the destination location.
 - b If a warehouse defaults in the Location field, place your cursor on the warehouse; then press Return.

Pressing Return in the Location field indicates that QAD Warehousing should find the return location in the warehouse to start the put-away.

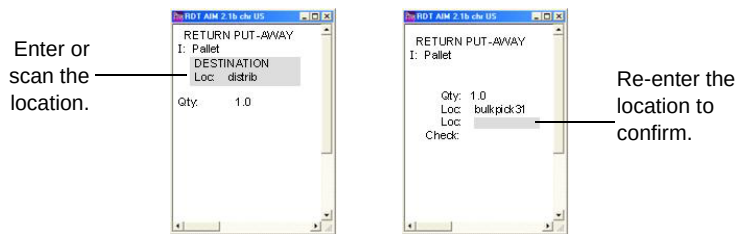
Note You can set up locations in the SLG list that are either the home location or locations that are closest to the home location to decrease travel time. Define the SLG list with the home location or the location closest to the home in the first sequence so that the QAD Warehousing checks for this location in each SLG first. See “Storage Location Group List Maintenance” on page 70.

The RF prompts you to confirm the location.

- 4 Confirm the destination location by re-entering the location.
- 5 Put away the item.

- 6 Repeat steps 1 through 6 for all items remaining on the pallet.

Fig. 15.11
RF Put-Away Location Prompt



Handling Exceptions

During the replenishment process, QAD Warehousing lets warehouse staff handle exceptions and issues.

Staff can press F3 once they are in the RF Overpick menu. The system prompts to:

- Complete the task.
- Fail the task.
- Repick the task.

If staff fail the task, the system creates a recount task for the user. You can use Inventory Detail Inquiry (80.9.13) to display the failed tasks for the location and the item and Warehouse Transaction Inquiry (80.9.1) to display the new recount task.

During replenishment, if the quantity on the pallet is less than the quantity needed to replenish, the system displays an R next to the item to repick the missing items. Staff can press F6 to repick the item.

Bulk Picking

QAD Warehousing provides the ability to group together several different works, sales or distribution orders containing the same item, and then to pick a bulk amount of stock, regardless of order. This process is called *bulk picking*.

This chapter describes how bulk picking works in QAD Warehousing. The major sections cover these topics:

About Bulk Picking 250

An introduction to bulk picking in a warehouse.

Processing Bulk Picks 250

A description of the basic bulk picking warehouse flow.

Bulk Picking: Key Concepts 251

An introduction to bulk picking concepts in a warehouse.

Setting Up the Bulk Pick Control File 252

Describes the programs and process to set up bulk picking in QAD Warehousing.

Selecting Order Lines for a Bulk Pick 254

Describes the process to select orders for bulk picking in QAD Warehousing.

Approving Orders Ready for Picking 256

Using Bulk Pick Selection Approval to approve a set of order lines that you have previously selected for a bulk pick, and to create bulk pick transactions for them.

Bulk Pick Maintenance 257

Using Bulk Pick Maintenance to modify details of a previously saved bulk pick order.

Bulk Picking and Pre-Shippers 257

Describes how you use pre-shippers in the bulk-picking process.

About Bulk Picking

In a warehouse, it is inefficient if staff have to visit the same area more than once in a short period of time. Picking stock needs to be managed so that this happens as little as possible. The orders that can be collected to form a bulk pick are sales, distribution, and works orders.

When orders are created, QAD Warehousing can optionally group them together into *routes*. You can request orders by route, so that all orders for a particular delivery area can be picked together. When creating sales orders, the route can be defined by customer and the ship-to address. For distribution orders the route can be defined by customer and the ship-to site address. Works orders can be grouped together in a similar way.

These bulk picks accumulate the items together, and, using the defined picking rules, issue the instructions to the staff to pick the stock. Efficiency is improved by grouping the orders, since the detail allocations are examined and, if necessary, the allocations rationalized. There is no direct link between orders in a bulk pick, other than the fact that they have items in common and can thus be grouped together.

By using replenishment and viewing the planned bulk pick, the stock position can be viewed and stock moved so that the bulk pick is performed as efficiently as possible.

Orders that need packing are grouped by issuing instructions to the warehouse staff to group the orders prior to shipment. This allows pallets to be made up.

Sales orders for the same ship-to address or distribution orders for the same ship-to site address can be grouped, forming one consolidated pack list. This can then be used to decide the packing of the order.

By setting control fields, you can choose whether the bulk pick is either shipped or issued as part of the bulk pick process, or issued as individual orders using the standard QAD ERP works order component issues and sales or distribution order shipment routines.

Bulk picking supports both two-phase and single-phase methods. At each step, the quantity picked, location, lot/serial, and reference can be modified by overwriting what is on the frame.

Bulk picking supports configured products for type KIT, but not for type ATO (Assembled to Order).

Bulk picking does not support Enterprise Material Transfer (EMT) order processing.

Processing Bulk Picks

The basic processing flow of bulk picking is as follows.

- 1 Select order lines for bulk picking. This involves changing the picking status from blank to S (for selected). Selected order lines are automatically general allocated. Selecting work order components results in the selected work order being upgraded to a status of A (Allocated).
- 2 Approve selected order lines. Do this at the time of selection or later. Once approved, detail allocations, bulk pick details, and warehouse transactions are created. When you approve selected work order components, you can upgrade the approved work order's status to R (Released).
- 3 Detail allocations created by bulk picking can be manipulated in the normal way.

- 4 Confirm warehouse transactions created by bulk picking as for any other transactions, except that the system does not let you repick.
- 5 When a warehouse transaction for a bulk pick is confirmed, the inventory is picked and moved according to the internal routing detail associated with the items. When no more bulk pick details are open, the bulk picking order is closed.

The system picks inventory in the same way it picks single items—the items in the detail allocations are picked and dispatched according to the associated internal routing.

For details, see “Processing Issue Transactions” on page 209.

Bulk Picking: Key Concepts

A major key to understanding how bulk picking works is the relationship between a bulk pick number, bulk pick details, temporary sequence IDs during order line selection, load IDs, and pre-shipper IDs.

Bulk Pick Details

Bulk pick details should simply be seen as a link between a warehouse transaction and one or more detail allocations. Bulk pick details are generated when you approve the order selection.

Load ID

All order lines with the same load ID are combined, if possible, in the same warehouse transaction. The load ID is automatically generated when you select the order line for inclusion in a bulk pick. Multiple bulk pick details can still result from a single load ID.

If different item numbers are grouped within one load ID, they generate separate warehouse pick transactions. The way transactions are created for multiple order lines for the same item number that are grouped within one load ID depends on the issue method:

- DISCRETE: Generates a separate transaction for each order line.
- ADDRESS: Generates a separate transaction per ship-to address.
- ROUTE: Generates a separate transaction per route code.
- BULK: Generates a single transaction for the entire load ID. This assumes that the entire requirement can be satisfied from a single location. If it cannot, then the requirement is satisfied according to the picking algorithms and rules.
- ORDTYPE: Generates a separate transaction per order type, grouping all the sales orders, work orders, and distribution orders together.

Temporary Sequence ID

When you select order lines, rather than generating all load IDs at the start, order lines are grouped by temporary sequence ID. This lets you group order lines together without having to assign them load IDs. When you accept the selections and groupings, the load IDs are generated, assigning one per temporary sequence ID.

Pre-Shipper ID

Pre-shipper IDs are not generated until you approve the order. One pre-shipper ID is assigned per load ID/site/order type/ship-to address combination. The pre-shipper IDs that are then associated with each order line are only effective and switched over to shipper IDs when the transfer of picked inventory reaches a step in an internal routing with the Create Shippers field set to Yes. See “Bulk Picking and Pre-Shippers” on page 257 for more details.

A single bulk pick number is generated to contain all bulk pick details resulting from a single approval.

Setting Up the Bulk Pick Control File

Use the Bulk Pick Control File (80.12.24) to set default values for the other bulk pick programs.

Fig. 16.1
Bulk Pick Control File (80.12.24)

Complete the fields as follows:

Create Bulk Picking Orders. If set to Yes, (the default) bulk picking orders are created automatically in the Bulk Pick Selection and Approval programs.

Bulk Pick History. Defines whether history is kept of all bulk pick details processed.

Automatically Re-Select BPs. If set to Yes, whenever an order line has been approved but not picked, the order line is automatically reselected (pick status set to S) for future bulk pick approval.

Bulk Pick Seq ID. Identify the NRM sequence ID to use for creating bulk picking order numbers. If not correctly defined, it is not possible to create bulk picking orders.

Load Seq ID. Identify the NRM sequence ID to use for defining load IDs. If not correctly defined, it is not possible to create bulk picking orders.

Pre-Ship Seq ID. Identify the NRM sequence ID to use for creating pre-shipper numbers. If not correctly defined, it is not possible to create bulk picking orders.

Select All. If set to Yes, the automatically calculated load ID assignments are used for selection. If set to No, a window is displayed in the Selection and Approval frames enabling you to include and exclude selected order lines, and to manipulate which order line is assigned to each load ID.

Auto Approve. If set to Yes, the selected order lines are automatically approved.

Select By. You can set this to A (Address), O (Order), P (Part), or R (Route).

Select by Priority. If set to Yes, order lines are selected within the address, order, part, or route selection by priority, and then by due date. If set to No, the subselection is by due date and the priority.

Min Status for WO Selection. This field enables you to enter the minimum status needed for work orders selection.

You can set this to A (Allocated), B (Batch), E (Exploded), F (Firm), P (Planned), or R (Released).

Pre-Shippers. If set to Yes (the default), a pre-shipper ID is automatically generated and assigned to each line in the Selection and Approval frames. See “Bulk Picking and Pre-Shippers” on page 257 for more details.

Print Pre-Shipper List. When Pre-Shipper is Yes, indicate if a list of generated pre-shippers should also print.

Bulk Pick-Sheets. If set to Yes (the default), bulk pick sheets are automatically created in the Selection and Approval frames.

Release Work Orders. If set to Yes (the default), work orders are automatically released for the bulk pick.

Ship Weight UM. Enter the default UM for the shipping weight of bulk pick orders.

Net Weight UM. Enter the default UM for the net weight of bulk pick orders.

Volume UM. Enter the default UM for the volume of bulk pick orders.

Quantity UM. Enter the default UM for the quantity of bulk pick orders.

Auto All Sales Orders. If set to Yes, this performs general allocations for sales order lines that are not yet generally allocated at the time the bulk picking process is run. Allocations depend on the settings in the Sales Order Control File (7.1.24).

Allocate Components. Indicate whether the system automatically applies pick logic and creates detail inventory allocations for components of configured kits.

Yes: The system creates detail allocations for confirmed sales order lines.

No: The system uses sales order line site for the site and default item location. In both cases, the quantity to ship for a component is determined by the quantity open for the configured kit item, and not the quantity available to allocate for component.

Modify detail allocations for components of configured kits in Pre-Shipper/Shipper Workbench.

Override Partial OK. Indicate whether the system overrides the sales order Partial OK field setting in Sales Order Maintenance. When Partial OK is Yes, the system prints a packing list and lets you make shipments when the entire quantity is not available. When Partial OK is No, the system checks that all line items are available for shipping before printing a packing list. If they are not, you cannot print a packing list for the order.

No (the default): Do not override the Partial OK setting.

Yes: Override the Partial OK setting and reset it to Yes. You can print a packing list and create a partial shipment for the customer. You can ship the remainder of the order when items are available.

Selecting Order Lines for a Bulk Pick

To select order lines for a bulk pick:

- 1 Select Bulk Pick Order Line Selection (80.12.1).
- 2 Enter the site and warehouse.

Fig. 16.2
Bulk Pick Order Selection (80.12.1)

Bulk Pick Order Line Selection

Site:	Active Load ID:
Warehouse:	Bulk Pick-Sheets ? : <u>yes</u>
Incl. Sales Orders ? : <u>yes</u>	Release Work Orders ? : <u>no</u>
Incl. Work Order Issues ? : <u>yes</u>	Pre-Shippers ? : <u>yes</u>
Incl. Distribution Orders ? : <u>yes</u>	Print Pre-Ship List ? : <u>yes</u>
Auto Approve ? : <u>yes</u>	Target Ship Weight: <u>0.00</u>
Select All ? : <u>yes</u>	Target Net Weight: <u>0.00</u>
Select By: <u>O</u> Order	Target Volume: <u>0.00</u>
Select by Priority ? : <u>yes</u>	Target Quantity: <u>0.0</u> <u>EA</u>
Create Bulk Picking Orders ? : <u>yes</u>	
Load ID:	To:
Route:	To:
Item Number:	To:
Whse Item Type:	To:
Order:	To:
Due Date: <u>/ /</u>	To: <u>/ /</u>
	Output:
	Batch ID:

- 3 Most of the fields are set to default values, determined by the Bulk Pick Control File. You can change these defaults as needed; for example, you can choose to exclude certain kinds of orders.

- If the Auto Approve field is set to No, you must run Bulk Pick Selection Approval (80.12.12) in order to perform the picking.
- If the Select All field is set to No, a window is displayed in which you can manually assign order lines to load IDs.
- The field Select By lets you display the selected order lines by address (A), order (O), part (P) or route (R).
- If the field Create Bulk Picking Orders is No, standard picking is performed with each created detail allocation resulting in a separate warehouse transaction. If set to Yes, the default, a bulk picking order is created that lets you regroup detail pickings on the same warehouse transaction at a later time. This is possible only if a valid NRM sequence ID is defined in the Bulk Pick Control File.
- If the Bulk Pick-Sheets field is set to Yes, then the Bulk Pick Sheets Report is printed.
- If the Release Work Orders field is set to Yes, approved work orders are released (status set to R).
- If the Pre-Shippers field is set to Yes, the system automatically generates and assigns pre-shipper IDs to each selected sales and distribution order line.

- If the Print Pre-Ship List field is set to Yes, the Pre-Shipper List Report is printed when you exit the program.
- If you enter the target weight, volume, and quantity for the bulk pick, a new load ID is automatically created after the target weight is reached.

Fig. 16.3
Bulk Pick Order Line Selection, Options

Site: spain	Active Load ID:	
Warehouse: distrib	Bulk Pick-Sheets ? : yes	
Incl. Sales Orders ? : yes		
Incl. Work Order Issues ? : yes	Release Work Orders ? : no	
Incl. Distribution Orders ? : yes	Pre-Shippers ? : yes	
Auto Approve ? : yes	Print Pre-Ship List ? : yes	
Select by Pr	Auto All Sales Orders ? : <u>no</u>	: 0.00
Create Bulk Picking	Allocate Components ? : <u>no</u>	: 0.00
Load	Override Partial OK ? : <u>no</u>	: 0.0
Route:	To:	
Item Number: fg	To: fg	
Whse Item Type:	To:	
Order:	To:	
Due Date:	To:	

The initial settings for each of these options defaults from the same named option in the Bulk Picking Control File.

- If the Auto All Sales Orders field is set to Yes, the system performs general allocation for sales order lines that are not yet general allocated at the time bulk picking process is run. See page 253.
 - If Allocate Components is set to Yes, the system automatically applies pick logic and creates detail inventory allocations for components of configured kits. See page 253.
 - If Override Partial OK is set to Yes, the system overrides the sales order Partial OK field setting in Sales Order Maintenance (7.1.1). See page 253.
- 4** The fields at the bottom of the frame let you specify the range of lines from the orders that should be included in the bulk pick:

Load ID. If you leave this field blank, QAD Warehousing generates a load ID automatically. If you enter a value, any order lines that already have this load ID are selected. This is the case when reselecting orders lines already partially picked.

Route. Enter the route if you want to include orders only from specific routes.

Item Number. Enter an item number if you want to include only order lines containing this item in the bulk pick. Otherwise, leave this field blank.

Warehouse Item Type. Enter a warehouse item type if you want to include only order lines containing this group of items in the bulk pick. Otherwise, leave this field blank.

Order. Enter an order number if you want to include lines only from specific orders.

Due Date. Enter the date on which the bulk pick should be carried out.

- 5** In the Output field, select whether you want to save, display, or print the bulk pick details.

To deselect an order from a bulk pick, use Bulk Pick Order Deselection (80.12.22). This program is only for deselection and can only be used before approving the bulk pick selection.

Approving Orders Ready for Picking

Bulk Pick Selection Approval lets you approve a set of order lines that you have previously selected for a bulk pick, and to create bulk pick transactions for them. To do this:

- 1 Select Bulk Pick Selection Approval (80.12.12).

Fig. 16.4
Bulk Pick Selection Approval (80.12.12)

- 2 Enter the site and warehouse.
- 3 The load ID, route, item number, item type, order number, and due date fields enable you to enter previously selected order lines for approval.
- 4 Complete the fields at the bottom of the frame as follows:

Create Bulk Picking Orders. If set to No, standard picking is performed with each created detail allocation resulting in a separate warehouse transaction. If set to Yes (the default), a bulk picking order is created letting you regroup detail pickings for the same warehouse transaction. This is only possible if a valid NRM sequence ID is defined in Bulk Pick Control File.

Bulk Pick Sheets. If set to Yes, Bulk Pick Sheets Report is printed.

Pre-Shippers. If set to Yes, pre-shipper IDs are generated and assigned to each sales and distribution order line.

Print Pre-Ship List. If set to Yes, the Pre-Shipper List Report is printed after you exit the program.

- 5 Once you have selected the output method, QAD Warehousing creates the pick transactions for the order lines, and prints the pick sheets.

Bulk Pick Maintenance

Bulk Pick Maintenance enables you to modify details of a previously saved bulk pick order. To do this:

- 1 Select Bulk Pick Maintenance (80.12.13).

Fig. 16.5
Bulk Pick Maintenance (80.12.13)

- 2 Enter the order number for the bulk pick, then press Go.
As needed, you can delete the entire bulk pick by pressing Delete in the first Remarks field. If detail allocations exist for the bulk pick, a message is displayed asking whether you want to remove them.
- 3 Alternatively, select a line from the bulk pick. You can then change the details of the line, or delete the line by pressing Delete in the second Remarks field. Again, if detail allocations exist for the bulk pick, a message is displayed asking whether you want to remove them.

Bulk Picking and Pre-Shippers

In Bulk Pick Order Line Selection, if Print Pre-Shipper is Yes, a pre-shipper document is generated when you save the information you enter in the bulk-pick selection frame.

You can reprint this document in Bulk Pick Pre-Shipper Print (80.12.4) for a certain pre-shipper, helping you with the packing of all the confirmed items. By adding the number of pallets and boxes, you automatically get the total ship weight for your pre-shipper.

Bulk Pick Labels Print From Pre-Shipper (80.12.16) and Bulk Pick Shipping Label Print (80.12.17) let you print labels.

With Bulk Pick Shipping Forecast Report (80.12.5), you print the document that is sent to the carrier, who prepares the trucks.

Once you approve the bulk pick, QAD Warehousing generates transactions. When you confirm the transactions, if the Create Shipper field is Yes in the Miscellaneous frame of Internal Routing Maintenance and the pre-shipper has already been generated, the confirmation of the transactions includes the confirmed items on a shipper.

See “Create Shipper” on page 57.

You can print the shipper from Pre-Shipper/Shipper Print (7.9.4). You can obtain the shipper number and pre-shipper number to use from Sales Order Maintenance (80.14.3) or Order Detail Report (80.14.10). Bulk Pick Pre-Ship/Ship Inquiry (80.12.3) also helps you retrieve all the information you need to undertake the pre-shipper process.

You can then issue the goods using standard Pre-Shipper/Shipper Confirm (7.9.5).

This means that the following occurs:

- 1 When you create the bulk pick, the system creates a pre-shipper to send to the carrier.
- 2 All items are brought to the dispatch area.
- 3 Confirming the transactions includes the items on the shipper.
- 4 When all items are in the dispatch area, you can print a shipper.
- 5 The shipper document is used to organize the items according to customers, trucks, and so on.
- 6 You must then issue the goods from the system using Pre-Shipper/Shipper Confirm (7.9.5).

Batch Picking

The following topics provide information about batch picking functionality:

Overview 260

Describes the uses of batch picking with an example.

Setting Up Batch Picking 265

Outlines the basic requirements of batch picking and the setup steps which must be completed to use it.

Processing Batch Picked Orders 273

Describes how to start a batch-picking session on the RF.

Picking for Multi-Boxes 275

Outlines the different procedures for picking boxes which are not full, calling for more items than are available, using RFDs to pick boxes, moving items between boxes, reassigning batch picking tasks, or changing batch picking task priorities.

Batch Picking Crash Recovery 278

Discusses how to use the two batch-picking crash recovery features which allow tasks to be recovered, confirmed, and viewed.

Viewing Batch Picking Data 280

Describes the Batch Picking Tasks Report (80.15.22.10) frame.

Backflushing Items From Dedicated Locations 281

Describes how to use a picking algorithm to backflush repetitive items from dedicated locations and how to pick from negative inventory during a backflush.

Batch Picking to a Kit 282

Defines kits and discusses how to batch pick to a kit in addition to a box.

Check Digit Functionality when Batch Picking 282

Discusses how to check digit functionality when batch picking.

Overview

Batch picking functionality enhances picking tasks for users for radio frequency (RF) devices, also known as radio data terminals (RDTs). Batch picking lets warehouse staff pick items in a more efficient way. The time it takes to travel through the warehouse completing tasks at various locations, or the *travel sequence*, constitutes the largest amount of time involved when picking items from a warehouse. Batch picking functionality reorders the order-picking sequence and tasks so that warehouse staff can pick multiple items from multiple orders at various locations throughout the warehouse with a shortened travel sequence.

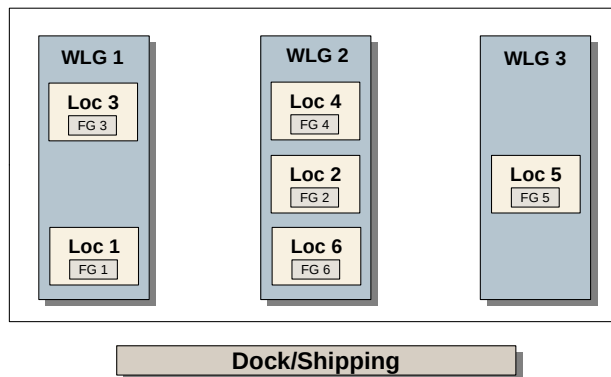
Batch picking functionality is applicable when picking the following:

- Small items with small volume from multiple order lines
- Multi-bin items for a single order

Batch-picking functionality calculates the smallest difference in location from the warehouse staff's current location, letting them pick several small items from the same storage location for several different orders, then move to the next storage location nearest their current location to pick items there. For multi-bin orders, warehouse staff can build a pallet with large boxes of large items for one order with a shortened time sequence through the warehouse. You can also specify the maximum number of orders to pick.

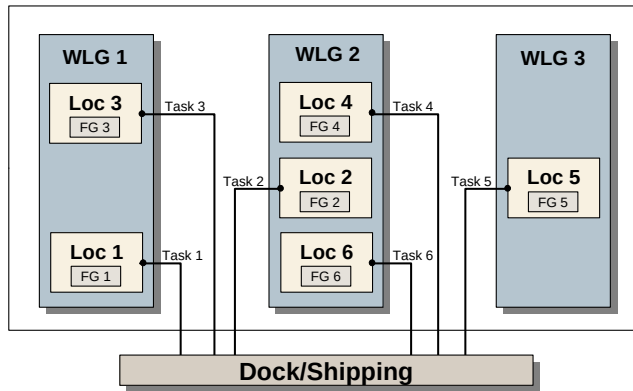
Figure 17.1 depicts a warehouse with three work location groups (WLGs) and the dock where items are shipped. There are six locations (Loc 1 through Loc 6) in various areas of each WLG. Each location stores a finished good (FG1 through FG6).

Fig. 17.1
Warehouse with WLGs



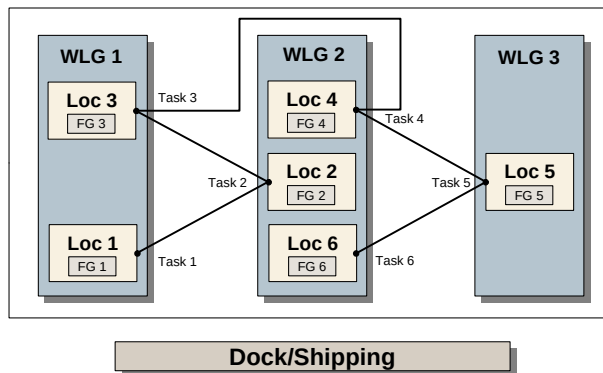
Without batch picking, warehouse staff pick the items for orders for their assigned tasks, making several trips to and from each location to the dock or shipping area. Figure 17.2 depicts tasks to pick items from six different locations.

Fig. 17.2
Picking Tasks



Batch-picking functionality reorders the order-picking sequence and tasks so that warehouse staff can pick the items for different orders with a shortened travel sequence, as shown in Figure 17.3.

Fig. 17.3
Reordered Travel Sequence



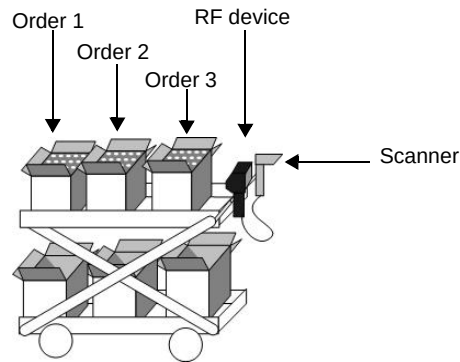
Unlike bulk picking, batch picking uses a *sort-by-pick* methodology. Warehouse staff can pick items from the same location for multiple orders while keeping the orders separated in different containers (boxes or totes) on their cart. Optionally, they can merge items for orders into a container, as long as order lines use the same pre-shipper and you have set control options to allow order merging.

Figure 17.4 depicts a typical warehouse cart that staff use to pick orders. The cart contains six boxes for six separate orders. The RF device displays the pick tasks for the orders, as shown in Figure 17.5 on page 262. Staff can scan either the location, item, lot/serial number, reference, or quantity picked from the location or scan the container—such as a box, tote, or pallet—that they pick to, depending on control settings.

Because batch picking can take several hours, the stock can be physically out of the location and on the cart. You define a user cart as a location to temporarily store the stock until staff move stock to the shipping location.

See “Specifying Locations for User Carts” on page 266.

Fig. 17.4
Separated Orders During Pick



Batch picking lets RF users select and pick items from a mixed group of the following order types:

- Sales orders
- Work orders
- Distribution orders

You can merge the following order types in the same box when batch picking:

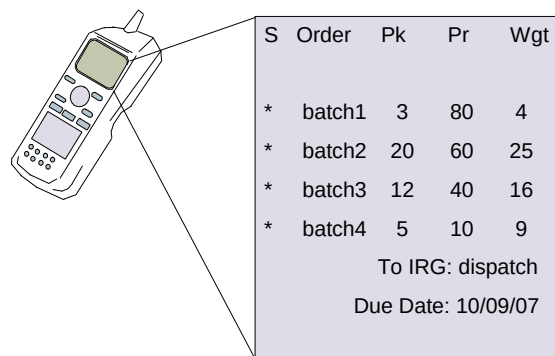
- Distribution orders, work orders, and sales orders
- Sales orders/distribution orders on different pre-shippers

When staff log onto the RF and specify their WLG, the RF lets them select orders from the following:

- Only sales and distribution orders
- All orders (work, sales or distribution orders, or combinations of sales, work, and distribution orders)

The RF displays all open pick tasks for orders that are part of the WLG in which the staff work, as shown in Figure 17.5.

Fig. 17.5
RF with Pick Tasks



Batch picking functionality searches and reorganizes the tasks for the orders by:

- 1 Travel sequence, if defined
- 2 Location name in alphabetical order if no travel sequence is specified

You can set control options so that the RF device displays picking tasks by order, customer, or pre-shipper.

Batch picking includes functionality that lets warehouse staff pick for actual quantities, regardless of the quantity of each full box. For example, if staff are required to pick 67 each of an item and the box contains 20 each, they can pick three full boxes of 60 each and create a fourth box that holds only the remaining seven items.

At any time during the picking process, warehouse staff can press F3 in the RF to display the order picking status. This displays pick information per order, including the item number, the quantity already picked, and the quantity remaining to pick. The system also displays the number of remaining tasks to perform and the total number of tasks performed.

Order comments are visible for sales and distribution orders on the RF screen. If order header comments exist, warehouse staff can display the header comments by pressing F2. Once staff select a sales or distribution order, an asterisk displays beside the order number on the picking screen if order comments exist. Staff can press F2 on any field in the picking screen to view the order line comments.

Note For work orders, comments only exist at the header level, not at the line level.

Once warehouse staff complete all picks from the selection, the system directs them to the location where they transfer the reference.

Batch picking lets warehouse staff print labels for each box or tote they require during the picking process. For example, if you select four orders for picking, the system can print four labels to paste on four different boxes or totes.

You specify printer options in Work Location Group Maintenance (80.3.9) so that RF users have access to a printer to collect the labels before they pick. Occasionally, RF users have dedicated RF printers for label printing. More often, though, each cart is equipped with a roll of pre-printed labels with unique IDs for the boxes or totes. The IDs are unique for the person and the warehouse. This method is much more economic than using RF printers.

When picking is complete, staff can post-print labels, too. This is useful if staff need to add information to a label, such as the content of each box.

Batch picking supports configured items.

Batch Picking Example

You have three sales orders with various quantities of six finished goods, located at six different locations. When you print the pre-shipper for the sales orders, the system initiates warehouse batch-picking functionality. The picklist and tasks state that you have nine tasks to pick six different items—FG1 through FG6—for the three orders. Table 17.1 lists the pick tasks for the three orders.

Table 17.1
Tasks for Three Orders

Order No.	Qty	Item	Tasks
Order 1	3	FG1	1
Order 1	4	FG2	4
Order 1	2	FG3	2

Order No.	Qty	Item	Tasks
Order 2	5	FG2	5
Order 2	2	FG3	3
Order 2	4	FG5	8
Order 3	1	FG5	9
Order 3	2	FG6	6
Order 3	2	FG4	7

A box is needed per order. You set the reference as a box and the first box ID to start at ID 1285622. Table 17.2 shows how the system reorders the tasks by location. The locations are restructured to shorten the travel sequence, but actual picking of quantities and the orders themselves have not changed.

Table 17.2
Reordered Tasks

Order No	Location	Qty	Item	Box No.
Order 1	Loc 1	3	FG1	1285622
Order 1	Loc 2	4	FG2	1285622
Order 2		5	FG2	1285623
Order 1	Loc 3	2	FG3	1285622
Order 2		2	FG3	1285623
Order 3	Loc 4	2	FG4	1285624
Order 2	Loc 5	4	FG5	1285623
Order 3		1	FG5	1285624
Order 3	Loc 6	2	FG6	1285624

Features

Batch-picking functionality includes the following features:

- Use more efficient travel sequence time when picking.
- Sort while picking into different orders or optionally merge items for orders.
- Pick items per order, customer, or pre-shipper.
- Display order picking status during pick.
- Print labels before or after picking.
- Print labels automatically, never, or let the system prompt for printing.
- List orders for picking by order priority.
- Specify maximum number of orders to pick.
- Specify whether scanning is required once items are picked.
- Specify scanning the location, item, lot/serial, reference, or quantity from which items are picked.
- Specify scanning the container to which items are picked.
- Specify whether RF users enter 1 or 0 (logical display) or yes or no at the RF device.
- Specify RF screen size.

Setting Up Batch Picking

Before you set up batch picking, you must set up basic warehouse data, including warehouses, locations, tasks, and users. In addition, you must complete the following setup:

- Assign users to a work location group (WLG).
- Specify user carts as locations to record movement of stock from a picking location to a cart.
- Set batch-picking control options.

The following sections describe these setup functions.

Assigning Users to a WLG

Use User-Work Location Group Maint (80.11.19.1) to assign users to a workgroup and to set up print options specific to the user. You must complete this step for all users if you intend to use task reassignment features.

For the system to function properly, if you define one user-WLG relationship in a warehouse, you must define a relationship for all users in all WLGs in which they work.

Setting Up Print Options

Data can display for printing in either standard screens or the RF device, including printing any of the following types of information:

- Inventory coming into the warehouse
- Transactions for system-created tasks
- Transactions for confirmed tasks
- Transactions for inspections
- Changes to original transactions (for example, a change to the put-away location)
- Transactions relating to external devices or form printers

For each type of information that you can print, you specify the name of the printer to use for printing. You can specify the code for a form, ID, or task printer, using User-Work Location Group Maintenance.

Fig. 17.6
User-Work Location Group Maintenance (80.11.19.1)

Site. Enter the site for the work location group of the user.

Warehouse. Enter the warehouse for the work location group of the user.

Work Location Group. Enter the work location group of the user.

User ID. Enter the ID of the user you are assigning to this WLG.

Flavor. Specify the code to define the style and format of screens to use for displaying warehouse information:

b: Selection by Reference

c: Multi-Bin Pick-Up

d: Dynamic Sizing

You set up flavor codes in Generalized Codes Maintenance (36.2.13). The codes determine the format for information display on devices such as fork-lift truck screens or RF devices.

Device. Enter a code to define the device, such as an RF device, for the user within the WLG. Leave blank to indicate no device.

External Device Printer. Enter the code that identifies the printer the external device uses.

Form Printer. Indicate the code for the form printer for the user or use the lookup to select a printer code.

Enter Yes to Use External if you want RF users to print identifications on an external printer such as a forklift printer. Enter No to Use External if you want RF users to print using the ID printer.

ID Printer. Indicate the code for the ID printer for the user or use the lookup to select a printer code.

Indicate whether the ID printer is an external printer by specifying either Yes to Use External.

Task Printer. Enter the code for the printer or use the lookup to select a printer code for the user when printing tasks.

Enter Yes to Use External if you want RF users to print identifications on an external printer such as a forklift printer. Enter No to Use External if you want RF users to print using the ID printer.

Specifying Locations for User Carts

Use Location Maintenance (80.3.13.1) to define a location for each user that represents the carts used to temporarily store picked stock until staff move it to the shipping location.

See page 79.

Before you can define a user location:

- Define the user in User Maintenance (80.11.13).
- Optionally, assign the user to a WLG in User-Work Location Group Maintenance (80.11.19.1)

Important If you define one user-work location group relationship, you must define all possible relationships between all users and all work location groups.

When staff pick an item and place it on a cart, the stock moves from the picking location to the user location. To reflect stock movement, the system reduces the quantity in the picking location and increases the quantity in the user location. When staff confirm the batch pick, the system:

- Moves the stock from the user location to the shipping location
- Reduces the quantity in the user location
- Increases the quantity in the shipping location

When a batch pick is not confirmed, the system returns stock from the user location back to the stocking location, thereby reducing user location quantities and increasing location quantities. You specify the ID of the picker as the cart location in the Location field in Location Maintenance.

See “Location Maintenance” on page 78.

Setting Up Control Options

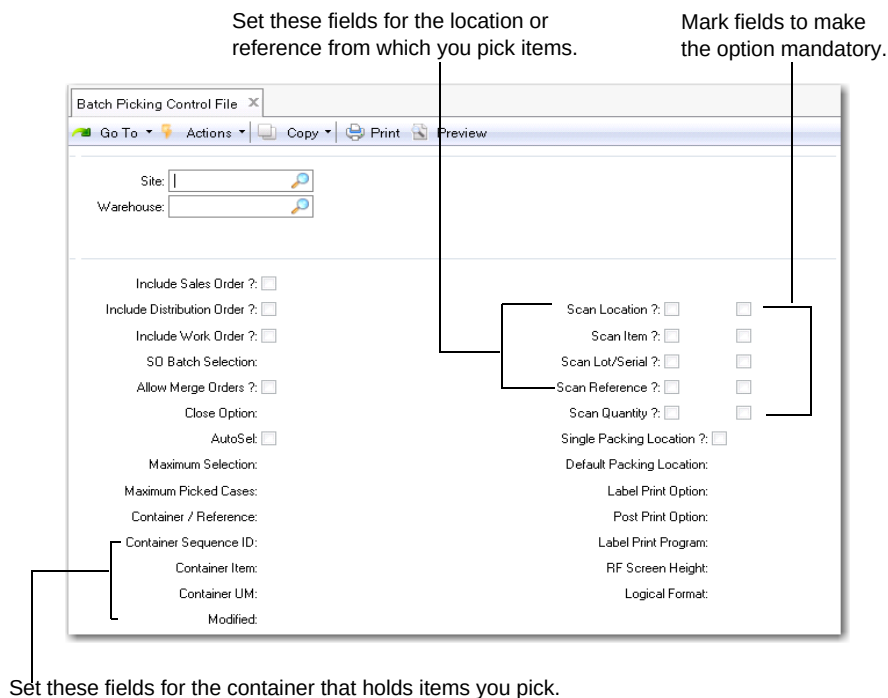
For batch picking, you complete most setup tasks using Batch Picking Control (80.15.24). Specify options for determining settings such as order types, the RF device, printing labels, displaying tasks, scanning during the pick tasks, and containers.

Figure 17.7 illustrates Batch Picking Control. Field explanations follow the figure.

Fields that relate to containers set options for the container into which staff place picked items, while fields that relate to scanning set options for the warehouse location and containers from which items are picked. There is a separate Containerization Frame that follows the main frame, too; see Figure 17.8.

For containerization fields, see “Batch Picking Control Options” on page 340.

Fig. 17.7
Batch Picking Control (80.15.24)



Site. Enter the site to use for batch picking.

Warehouse. Enter the warehouse to use for batch picking.

Include Sales Orders. Indicate whether sales orders are included for batch picking when using Batch Pick-All on the RF.

No: The system does not include sales orders for batch picking.

Yes: The system includes sales orders for Batch Pick-All on the RF. When warehouse staff select sales orders, the orders display with the letter S preceding the order number.

Include Distribution Orders. Indicate whether to include distribution orders for batch picking when using Batch Pick-All on the RF.

No: The system does not include distribution orders for batch picking.

Yes: The system includes distribution orders for Batch Pick-All on the RF. Warehouse staff specify Batch Pick-ALL from the RF selection screen to select distribution orders. Distribution orders display with the letter D preceding the order number.

Include Work Orders. Indicate whether to include work orders for batch picking.

No: The system does not include work orders for batch picking.

Yes: The system includes work orders for Batch Pick-All on the RF. Warehouse staff specify Batch Pick-ALL from the RF selection screen to select work orders. Work orders display with the letter W preceding the order number.

SO/DO Batch Selection. Indicate whether to display customers, orders, or pre-shippers when selecting from the RF screen. The system displays the following options for this field at the bottom of the screen:

C=Customer O=Order P=Pre-shipper

The system validates these codes against Generalized Codes Maintenance (36.2.13).

Customer: Display customer IDs to select from in the RF screen. You define customers in Address Detail Maintenance (80.14.17).

Order (the default): Display order numbers to select from in the RF screen. The system displays orders by priority, then due date. The system checks order priority in Sales Order Maintenance (80.14.3) or in Distribution Order Maintenance (80.14.6). The priority defaults from Address Detail Maintenance when you create a new order. You can also manually update priority in Address Warehouse Detail Maintenance by modifying the Priority field.

Pre-shipper: Display pre-shipper numbers to select from in the RF screen. The priority defaults from the Priority field in Address Warehouse Detail Maintenance.

Allow Merge Orders. Indicate whether warehouse staff can combine items from different orders into containers. The items can be from separate orders but must have the same pre-shipper.

No: Do not combine items from different orders into the same container.

Yes: Combine items from different orders and the same pre-shipper into the same container.

Close Option. Indicate the action to be performed when staff scan a container other than the one the system defaults in the batch-picking process.

When staff select a container for a given order, the system defaults that container for additional order lines to pick for the same order. If the container is full, staff can scan another container—new box or tote—and the system prompts to close the previous box.

If staff specify Yes to close the box, the system determines the action required for the remaining order lines through options you set in Release Orders Option.

0: Never close container. The system confirms the pick and leaves the previous container open. For the next pick on the same order, staff can use either an old or new container.

1: Always close container. The default container is closed. Because carts can hold only a certain number of boxes or totes, specify this option if it is not practical to open more boxes on the cart. The system determines whether it should continue proposing additional lines by options you set in Release Orders Option.

2: Prompt to close container. The system prompts to close the container and order. The system considers the option you set in Release Orders Option depending on the response to this prompt.

See “Release Orders Option” on page 272.

Auto Selection. Indicate whether to automatically select orders with the highest priority.

No (the default): Warehouse staff can select orders for batch picking.

Yes: Select orders with the highest priority for picking. The orders are marked with an asterisk (*) on the RF screen. Staff must pick for orders in the order that they display on the RF; they cannot scroll to the bottom of the list or skip orders.

Maximum Selection. Enter the maximum number of sales orders, pre-shippers, or customers that display on the RF screen. The system displays the orders with the highest priority.

Maximum Picked Cases. Enter the maximum number of orders that warehouse staff can pick at the same time. The default is one open container/tote per order, but staff can open additional containers/totes during the picking process. You cannot leave this field blank. This number typically depends on the capacity of the cart. When selecting orders from the RF, staff cannot select more orders, customers, or pre-shippers than the maximum number of picked cases.

Container/Reference. Specify a container level to create for each tote/box/pallet staff use during the batch-picking process. This field applies to sales and distribution orders only.

Container: The system creates a container level for every tote or pallet in the pre-shipper structure. The items that staff pick and place in the container display as a sub-level of the container. If you set this field to Container, you must specify an item number in Container Item.

Reference: The system does not create a container level. Instead, it uses the reference field of the inventory record as the placeholder for a container number or a kit number. All items staff place in the same container or kit have the same reference number. This field applies to work orders only when specifying a reference for a container. This field also applies to sales orders, if specifying a reference for a kit.

See “Batch Picking to a Kit” on page 282.

Container Sequence ID. Enter the starting sequence ID for box/tote/container numbers when staff print labels before picking. You specify the sequence IDs in Sequence Definition Maintenance (80.24.1). If staff use preprinted labels, the system does not consider this field.

Container Item. Enter the item number of the container. If you set Container/Reference to Container, you must specify an item number.

Container Unit of Measure. Enter the unit of measure for the container. For example, if batch picking items to a box, enter the box UM. You define the UM in Alternate Unit of Measure Maintenance (80.5.1).

Modified. This field is display only and displays the date that control values were last modified and the user who modified them.

Scan Location. Indicate whether to scan the location from which items are picked.

No: Do not scan the location label or barcode from which items are picked.

Yes: Warehouse staff can access the Location field on the RF and scan. To make scanning mandatory, mark the Required field next to the scan option field.

Note Pressing Enter while in the Required field selects or deselects the requirement.

Scan Item Number. Indicate whether to scan the item being picked.

No: Do not scan the item when picking.

Yes: Warehouse staff can access the Item field on the RF and scan. To make scanning mandatory, mark the Required field next to the scan option field.

Scan Lot/Serial. Indicate whether to scan the lot/serial number for the picking location.

No: Do not scan the lot/serial number when picking.

Yes: Warehouse staff can access the Lot/Serial field on the RF and scan. To make scanning mandatory, mark the Required field next to the scan option field.

Scan Reference. Indicate whether to scan the source reference (pallet ID) when picking. Typically, pallet IDs are not maintained in the picking area; however, you can set the second step of an internal routing so that pallet numbers are blank when staff move the pallet from the reserve area to the picking area.

No: Do not scan the reference ID when picking.

Yes: Warehouse staff can access the Reference field on the RF and scan. To make scanning mandatory, mark the Required field next to the scan option field.

See “Defining Internal Routings” on page 47.

Scan Quantity. Indicate whether to scan the quantity picked.

No: Do not scan the quantity picked.

Yes: Warehouse staff can access the Quantity field and scan. To make scanning mandatory, mark the Required field next to the scan option field.

Single Packing Location. Indicate whether batch-picked items are for a single-packing location. For example, if you use a single-shipping location as the packing location, set this option to Yes. Locations are defined in Location Maintenance (3.3.1). Specify a default packing location in Default Packing Location.

No: There are multiple packing locations. When creating picking tasks, the system uses a location-find algorithm to determine the destination location for each task. You can reassign tasks to a specific shipping lane using Wave Release (80.15.5). When staff have different possible destinations for picking tasks, they must drop off each box and scan the destination location; for example, the shipping lane.

Yes: There is a single packing location. The system eliminates an RF screen since all picks from all references go to the same destination. Once picking tasks are complete and confirmed as completed, the RF screen displays the selection screen with the default location in the To Location field.

See “Releasing a Wave” on page 326.

Default Packing Location. Specify a default packing location. Locations are defined in Location Maintenance (80.3.13.1). You define this field when you set Single Packing Location to Yes.

Label Print Option. Indicate whether labels print automatically, not at all, or if the system prompts to print labels after the order selection is complete but before picking begins. You must specify the print program in the Label Print Program field. The system prints UCC128/EAN128-format labels for cases, empty boxes, or totes that do not already have a label.

0: Never print labels before picking.

1: Always print labels before picking.

2: Prompt RF user to print labels before picking.

Note To specify printing after picking, set Postprint Option to Yes.

Printing before picking is useful when staff perform multiple order picking. Warehouse staff can print labels for containers, scan the labels, then use the scanned data to ensure that each order is put into the right container.

Warehouse staff frequently use different sized containers, depending on their picking experience and the picking information the system provides in the picking order selection program specified in the Batch Picking Order Selection (whbpk1x1.p) field in Local Exit Routines Setup (80.24.23).

Since the system does not recommend the size of the container/box that staff should use for a given number of picks, staff can select a container/box, then paste the pre-printed box label on the edge of the box, so that it can be easily removed should a different size container be needed when the batch picking is complete.

Post-Print Option. Indicate whether labels print automatically after picking, not at all, or if the system prompts to postprint labels.

0: Never postprint labels.

1: Always postprint labels.

2: Prompt to postprint labels.

Printing after picking—postprinting—is useful when warehouse staff know the exact contents of the box, tote, or pallet to which they picked items. If you use batch picking for multi-bin pickup with only one pallet, staff typically use post-printed labels, not preprinted labels.

Label Print Program. Specify the print program to use when printing labels. The whpripkz.p print program, which is Loftware-format compatible, is supplied with the system. You can edit whpripkz.p, using a standard text editor; rename the program; then, enter it here.

RF Screen Height. Specify the number of lines that display on the RF screen. The default is 0 (zero); however, for RF screen readability, enter a number between 6 and 20.

Logical Format. Indicate whether RF users enter logical values 1/0 or Yes/No, Y/N, or any other logical format. Yes/No is applicable to RF devices that have a keyboard.

This field is mandatory. Enter the forward slash (/) with either the 1/0 or Yes/No. The system treats the value preceding the slash as positive, and the value following the slash as negative.

Note Entering characters without the slash can cause errors in interpretation. For example, if RF users specify 10, the system interprets the number 10 as negative.

1/0: RF users can enter the number 1 for positive and 0 (zero) for negative responses.

Yes/No: RF users can type Yes or No on the keypad.

Undo Available. Indicate whether the system prompts to undo picking tasks and leave the batch picking process on the RF when the RF user presses cancel (F4) during picking.

No: RF users are not prompted to undo tasks and leave picking functions after they click Back.

Yes: If RF users click Back on the RF screen during picking, the system first displays a prompt to exit the process. If the user specifies Yes, the system displays a prompt to undo and leave picking tasks. If Yes, the system rolls back all completed picks and sets pick tasks to unassigned. Upon exiting the picking process, the system sets confirmed to No or 0 (zero).

Note RF use of Yes/No or 1/0 depends on control settings.

Release Orders Option. Indicate whether to release the order after staff close a box. Use this field in conjunction with the Close Option field.

0: Never Release Order: When staff close a box, they can continue picking for the next order lines and open additional boxes for the order.

1: Always Release Order: Staff cannot open additional boxes and the picking process for the order is complete. You should unallocate all remaining picking tasks for the same order so that the system does not present remaining tasks to the picker assigned. You can assign remaining tasks to other pickers.

2: Prompt for Releasing Order. The system prompts to release the order and execute the appropriate action.

See “Close Option” on page 268.

Container Length. Specify the number of characters for the container ID. For example, if you specify 8 characters, you can have a container ID as CA000001.

Containerization Options

The Containerization frame in Batch Picking Control (80.15.24) lets you set up containerization options.

See page 265.

Fig. 17.8
Containerization Frame

Batch Picking Setup for the RF

You can set several fields in Batch Picking Control for the RF device. Table 17.3 describes each field and indicates whether setting the field is mandatory.

Table 17.3
RF Setup for Batch Picking

Field	Description	Mandatory
AutoSel	Specify whether to select order with the highest priority or if warehouse staff select orders for picking in the RF.	No
Logical Format	Specify whether RF users enter 1 or 0 (logical display) or yes or no at the RF device.	Yes
RF Screen Height	Specify RF screen size.	No
Scan Location	Specify whether warehouse staff can access the Location field on the RF and scan.	No
Scan Lot/Serial	Specify whether warehouse staff can access the Lot/Serial field on the RF and scan.	No
Label Print Option	Specify whether labels print automatically, not at all, or if the system prompts to print labels after the order selection is complete but before picking begins. You must specify the print program in the Label Print Program field in Batch Picking Control.	No

Processing Batch Picked Orders

The system processes batch picked orders from the RF. Use the following procedure to start a batch-picking session on the RF:

- 1 Specify control options in Batch Picking Control (80.15.24). See “Setting Up Batch Picking” on page 265.
- 2 Ensure the orders have an existing pre-shipper. Printing the pre-shipper in Picklist/Pre-Shipper-Automatic (7.9.1), DO Picklist-Pre-shipper (12.19.1) or releasing a wave in Wave Release (80.15.5) initiates warehouse batch-picking functionality.
- 3 On the RF session, log in, specifying your login ID and password.
- 4 Specify the site and WLG in which you are picking.

You can specify a default WLG in User Maintenance (80.11.13). The default WLG displays after login.

When you enter a WLG, that WLG defaults to the RF screen. The system looks at the WLG and the task types specified for you to determine the picking tasks to select.

If you leave WLG blank, the system combines all WLGs as if they were one WLG and links the single WLG to you.

- 5 On the RF screen, select the Picking/Container function.
- 6 On the RF, select either Batch Pick-SO/DO for only sales orders and distribution orders or Batch Pick-ALL for distribution orders, work orders, or combinations of all three types of orders.
- 7 Choose one of the following:
 - Select the orders by entering the order number.
 - Use the arrow keys to move up or down; then press Enter to select the order.

The RF displays selected orders with an asterisk (*). The orders that display are open and available, and have unassigned tasks.

If you selected Batch Pick-SO/DO, orders are preceded with an S or D depending on the type of order you selected.

If you selected Batch Pick-ALL, orders are preceded with an S, D, or W, depending on control options that specify sales, distribution, or work orders.

Other order information that displays includes the number of open picks for the order, the order priority and due date, and the total weight of items for open tasks. Figure 17.5 on page 262 illustrates an RF screen with selected sales orders.

Orders can display by customer, pre-shipper, or order number, depending on control settings.

- 8 Click Next when you finish selecting orders.

The system assigns tasks to you and records the tasks assigned in the transaction file. The assigned tasks are not visible to other users.
- 9 Pick items, and either scan location data from which you pick or the container into which you place picked items, depending on control settings.

If an asterisk displays near the end of the RF screen, you can view order line comments. Press F2 to display line comments on the order.

When you pick an order for the first time, the destination reference (To Reference) is blank until you scan the box or tote. Once scanned, that reference defaults each subsequent time you pick the order.

When you pick an item and place it on a cart, the system moves the stock from the picking location to your user location.
- 10 If Check Digit is set to Yes in Storage Location Group Maintenance (80.3.1) and a check digit value is specified in Check Digit Generation enter a check digit code when moving items from the storage locations. See “Check Digit Functionality when Batch Picking” on page 282.

Note Check digit functionality does not exist when moving items to containers during picking.

- 11 Print labels for the container either before you pick, when picking is complete, or when you are prompted, depending on control settings.
- 12 Optionally, close the container (box or tote) when it is full, depending on control settings.
- 13 Confirm all picking tasks when you are finished.

The system moves stock from your user location to the shipping location.

Note The cancel function (F4) is disabled while you confirm to prevent canceling picked items.

Dropping All or Some Boxes

The orders for which staff pick can be very large. Occasionally, staff need to drop off boxes at consolidation areas or shipping lanes before they complete batch picking for an order. This is especially useful if staff are picking at locations that are close to the shipping lanes or consolidation areas.

When all completed pick tasks have the same destination location, warehouse staff can optionally drop off all items they finished picking. This lets them avoid scanning each box and the destination location for confirmation.

If one completed pick task is for a different destination location, staff can still drop off completed boxes, but they must drop off the boxes one by one, scanning the box number, then the location in which they drop off boxes, such as the shipping lane.

If all picked boxes are going to the same destination, for example, the same shipping lane, warehouse staff can press F6 on the RF during picking tasks to display the following prompt:

Drop All?

Staff should specify Yes to drop off all boxes for which they completed picking tasks if the destination location is the same for all boxes.

If one or more boxes are going to a different destination, then staff must scan each box and destination location each time they drop off a single box.

When the drop-off or drop-all is complete, the user can continue the batch-picking process for the remaining allocated tasks.

Picking for Multi-Boxes

Batch picking sets the total quantity to pick based on the item, order, or location. However, the actual quantity to pick is not always the same as:

- The total quantity
- The number of items in full boxes

Example Warehouse staff enter 67 each of an item as the total quantity to pick, but boxes are set to hold 20 each of the item. This means staff can pick three full boxes but cannot complete the pick without the remaining seven items.

Batch picking functionality lets staff pick complete boxes and create additional boxes that have less than the full amount. The system prompts warehouse staff to use another scan method. This lets staff print and paste a pre-printed label on both the full boxes and the newly created box with the remainder of the items.

See “RF Multi-Box Procedure” on page 276.

Batch picking functionality works with settings in Warehouse Maintenance so that staff can complete picking when the quantity at a location is lower than the task quantity.

Setting Location Maintenance Options

Occasionally, the quantity available in a location is lower than the task quantity; for instance, because of an inventory error.

You can set the Completion Option, Fail Option, or Repick Option in the Miscellaneous frame of Warehouse Maintenance so that the RF displays any or all of the options when warehouse staff find the quantity is lower than the task quantity.

See “Miscellaneous” on page 35.

RF Multi-Box Procedure

Use the following RF procedure to use multi-box picking to complete your picking tasks:

- 1 Select batch picking tasks as usual and enter the actual quantity you need to pick in the Qty field.

The system displays the following prompt:

`Other Scan?`

- 2 Specify Yes.

Note To use logical format on the RF, set Logical Format in Batch Picking Control. See page 272.

- 3 Scan full boxes and the box with the remaining items that make up the total you need to pick.

At each scan, the system displays the remaining quantity to pick and prompts you again to scan others until the quantity required is picked.

- 4 Print labels for full boxes and the box with the remainder of the items.

Use the following procedure if the quantity available in the location is lower than the task quantity:

- 1 When the system prompts to `Scan other?`, specify No.
- 2 If the system prompts you to complete the picking tasks, choose one of the following:

- a Specify Yes.

The system confirms the task with the actual quantity.

- b Specify No.

The system confirms the task with the actual quantity and writes the task into history records. However, the task remains open with the remaining quantity to pick.

3 If the system prompts you to repick, choose one of the following:

a Specify Yes.

The system starts an on-line repick to locate missing quantities from the same location or another location.

In batch picking, you can only see a new task after the picking process is complete. If the system selected an order because it has the highest priority, when you complete the current batch picking, the system displays the newly created repick task for the order on top of the RF selection list. The repick displays on top of the selection list because the repick is for the same high-priority order.

b Specify No.

You cannot repick for the order.

4 If the system prompts to fail the picking task, choose one of the following:

a Specify Yes.

The system fails the task and determines which fail option to present at the WLG level.

The system changes the status of the source inventory to Fail. The Fail status is typically a non-available inventory status; therefore, the system no longer considers this specific inventory for picking.

If Count on Fail is Yes in the Cycle Count Defaults frame of Warehouse Maintenance, the system creates a recount task to recount stock in this location and assigns the task to the appropriate warehouse staff.

See “Count on Fail” on page 34.

b Specify No.

The system does not fail the task and does not display fail options for the pick.

Moving Items to Another Box

Warehouse staff can press F7 on the RF device to move contents from one box to another box during picking. This helps staff balance the content of different boxes based on the volume of the different items. Once staff press F7, the system prompts to enter a new container ID.

Reassigning Batch Picking Tasks

In batch picking, the system assigns all lines on an order that belong to a user’s zone. In a typical warehouse situation, an order may have too many order lines for a single user to complete before a truck arrival, so you can reassign orders to another user.

Note Before you reassign tasks, you must assign users to a WLG.

Use Batch Picking Trans Reassignment to reassign picking tasks to another user in the same WLG or reassign them to a user in a different WLG. The program lets you:

- View the users and the number of tasks assigned to each user in a WLG.
- View up-to-date task information for each user.
- Reassign tasks from one user to another user within the same WLG.

- Assign tasks from one user to another user in a different WLG.
- Unassign tasks from a user and leave them unassigned.

See “Assigning Users to a WLG” on page 265.

Be careful when reassigning tasks in batch picking. The system sorts picking tasks for the most efficient travel sequence throughout the warehouse. Removing tasks randomly could adversely affect the travel sequence, resulting in lost efficiency and longer distances to travel.

Also, before reassigning tasks, consider whether the picker may have started tasks. For this reason, it is best not to reassign the first tasks listed for the user and to reassign tasks from the end of the user’s list of tasks. Also, selecting tasks randomly from the list to reassign may not be effective.

Use the following procedure to reassign tasks:

- 1 Specify a site, warehouse, and work location group; then click Next.
The system displays a split screen with users and tasks for the work location group you specified in the left side and other work location groups and users in the right side.
- 2 Use the arrow keys to move to the user who receives the tasks.
If the user is in another work location group, use the Tab key to move to the user, then use arrow keys to select the user who receives the tasks.
- 3 Press F3.
The system displays task details, including the item, location, order type, and so on.
- 4 Use the arrow keys to move to the task you want to transfer; then click Next.
The system displays the user to whom you are transferring tasks, then prompts you to confirm the change.
- 5 Specify Yes and click Next.

See “Reassigning Hard-Assigned Tasks” on page 157.

Changing Batch Picking Task Priorities

You can also change the priority of a batch-picking task by using Trans. Priority Ctrl by Preship (80.8.18).

See “Updating Task Priorities” on page 157.

Batch Picking Crash Recovery

Two batch-picking crash recovery features let you recover, confirm, and view picking tasks that took place when the system crashed or connections were lost:

- Batch Picking Crash Recovery (80.15.22.15)
- Crash recovery features built into batch-picking functionality described in “Built-In Recovery” on page 280

Crash Recovery Utility

You can use Batch Picking Crash Recovery to confirm tasks completed by warehouse staff and information processed by the system when a system failure occurs. The utility:

- Lets you view unprocessed tasks for a specific user, site, and warehouse combination or for all users for a warehouse/site combination.
- Lets you confirm tasks completed before the system failure.
- Lets you drop off all or some completed boxes at shipping lanes or a staging area.
- Makes selected, but not picked, tasks available to the user again.

Utility Procedure

To use the utility to confirm tasks and drop off boxes, use the following procedure:

- 1 Enter the user ID of the warehouse staff whose tasks you want to confirm.
- 2 Enter a site and warehouse.
The utility displays picked, but unconfirmed tasks that were interrupted because the system went offline. The system displays the task number, user ID, destination location, packing container, and the quantity picked/to pick in a read-only frame.
- 3 When tasks display, press F1.
If all tasks are for the same destination, the system displays the `Drop All` prompt.
If tasks are for different locations, the system prompts you to enter a location. Go to Step 5.
Note The drop-all functionality is the same as that for the RF device. See “Dropping All or Some Boxes” on page 275.
- 4 At the `Drop All` prompt, specify whether staff drop some boxes to another location or drop all boxes to the same location:
No: Staff drop some boxes one by one to another location. Go to Step 5.
Yes: Staff drop all boxes to the same location. Go to Step 6.
- 5 Enter the new location in the `To Loc` field.
Note The container and order that display are read-only fields. The system prompts once for the container and order that display, even when there are multiple tasks for the same box.
- 6 Confirm the task completion by specifying Yes at the `OK to Confirm` prompt.
The system displays the number of confirmed tasks.

Utility Fields

Use the following field descriptions when using this program:

Start User. Enter the ID for the user whose picking tasks you want to confirm. This field is required.

Site. Enter the site for the tasks you want to see.

Warehouse. Enter the warehouse for the tasks you want to see.

Drop All. Specify whether staff drop some boxes to another location or drop all boxes to the same location.

No: Staff drop some boxes one by one to another location.

Yes: Staff drop all boxes to the same location.

Container. The container ID for the box you want warehouse staff to drop off. You cannot edit this field.

Order. The order number for the box. You cannot edit this field.

To Loc. Enter the location where warehouse staff drop off boxes.

OK to Confirm. Specify whether to confirm the batch-picking tasks that display.

No: Do not confirm the tasks. The system displays 0 (zero) tasks confirmed.

Yes: Confirm the tasks. The system displays the number of tasks confirmed and a list of confirmed tasks.

Task Availability

There may be other picking tasks that warehouse staff selected but failed to process because of a system failure. The recovery utility ensures these tasks have an open status and are unassigned and available to be processed by any user from the RF batch-picking program. Use Warehouse Transaction Inquiry (80.9.1) to view the status of the tasks.

Built-In Recovery

Warehouse staff who were batch picking from an RF device can automatically resume picking when they are back online. The system skips the order-selection frame on the RF and redisplay the picking screen that displayed when the system went offline. The recovery functionality ensures that tasks previously selected but not picked are available for picking. Warehouse staff can resume picking and dropping off all or some boxes as usual.

Viewing Batch Picking Data

The Batch Picking Tasks Report (80.15.22.10) displays all open batch-picking tasks. Use the report to determine which tasks warehouse staff have performed and when. You specify the site and warehouse, then enter a range of item numbers or transaction numbers.

Fig. 17.9
Batch Picking Tasks Report (80.15.22.10)

Batch Picking Tasks Report

Go To Actions Copy Print Preview

Site: spain

Warehouse: distrib

Item Number:

Transaction:

To:

To:

Site. Enter the site for the open tasks you want to report.

Warehouse. Enter the warehouse for the open tasks you want to report.

Item Number and To. Enter a range of item numbers with open tasks.

Transaction and To. Enter a range of transaction numbers with open tasks.

The system reports information from transaction history and displays the open tasks for the item or transaction.

Backflushing Items From Dedicated Locations

You can backflush repetitive items from a dedicated location. Dedicated locations, or home locations, are picking area locations that always store the same item. A picking (PK) algorithm (algorithm 70) finds stock in a dedicated location, so warehouse staff can pick items there. The PK algorithm works with the PICK-RBK transaction type that backflushes repetitive items from a dedicated location. You can modify parameter settings for the PICK-RBK transaction type in Transaction Type Maintenance (80.7.6).

To use the PICK-RBK transaction type, you must set up the algorithm by performing the following:

- 1 Use Algorithm Master Maintenance (80.6.5) to optionally modify the description of the pick-by-dedicated location algorithm. See page 114.
- 2 Use Transaction Type Maintenance (80.7.6) to review the transaction and Whse Master List Maintenance (80.1.5) to ensure that the PICK-RBK transaction is linked to the item you want staff to pick from the dedicated location.
- 3 Use Algorithm Assignment Maintenance to link the algorithm sequence to the PICK-RBK transaction. This ensures that the correct algorithm is used when inventory is processed from the dedicated location. See page 115.
- 4 In Location Maintenance (80.3.13.1), specify the physical location for the dedicated location in the header and set the Dedicated field in the Location Data frame to Yes. This ensures the location is for only one item or product. See page 78.

Picking from Negative Inventory during a Backflush

Warehouse staff do not always have the time to update the system with the last transfer. During a backflush, this can result in a negative inventory from a system point of view. Warehouse staff can pick components during a repetitive backflush from a dedicated location even when the inventory is negative.

Warehouse staff can pick from negative inventory for transaction type PICK-RPS when the inventory status code associated with the location has Overissue set to Yes in Inventory Status Code Maintenance (1.1.1). Warehouse staff can continue to receive work orders and continue with shipping when inventory is negative. You can check the status of the inventory using Inventory Detail Inquiry (80.9.13).

Batch Picking to a Kit

You can pick to a kit in addition to picking to a box when batch picking. A kit is a set of items that are picked for shipment. You set up kits as configured items; however, for kits, no real assembly takes place. The configured item is not itself a physical element—it only exists as a logical superset of its components. The configuration defines the content of a kit, and a shipment contains the end items that comprise the kit.

See *User Guide: QAD Sales*.

To pick to a kit, specify a kit as a reference by setting the Container/Reference field in Batch Picking Control (80.15.24) to Reference. When you specify a kit as a reference, the system uses the reference field of the inventory record as the placeholder for a kit number. All items placed in the same kit have the same reference number.

See page 269.

Check Digit Functionality when Batch Picking

Check digit functionality exists for warehouse staff when batch picking items from storage locations. You can specify a check digit value that warehouse staff enter when they move items from the storage location.

See “Using Check Digits with Locations” on page 85.

Wave Planning

QAD Warehousing provides the ability to group several different sales and distribution orders and coordinate and manage the warehouse replenishment, picking, and movement activities for them. This process is called *wave planning*. The following topics describe how wave planning works.

Overview 284

Discusses the principles behind wave planning and illustrates some of the features of wave planning.

Key Concepts 284

Describes the relationship between warehouse areas and stock movement among them, and outlines how to use waves in warehouses, replenishment techniques, warehouse flow, and wave features, programs, selection, and replenishment.

Setting Up Wave Planning 289

Lists the steps required to set up for wave planning and outlines how to complete them.

Selecting Orders and Creating the Wave 310

Discusses how to use Wave Selection (80.15.1) to create a wave.

Replenishing a Wave 316

Describes how to replenish a wave and outlines the steps of wave replenishment and the results of the replenishment.

Releasing a Wave 326

Describes how to release a wave, how the system deals with a released wave, and the customizable release options for a wave.

Deleting Order Lines on a Wave 331

Describes two different ways to delete order lines on a wave.

Initializing Orders in a Wave 331

Explains how waves can be used to initialize open orders.

Closing the Wave 332

Describes how to close a wave and view open or closed waves.

Viewing Wave Information 333

Lists and describes wave reports and inquiries and their menu numbers, and describes how to monitor order and wave status.

Overview

Wave planning involves the same principles as lean distribution; that is, the objective is to plan activities in a warehouse and eliminate inefficiencies and waste. Like kanban systems or other just-in-time (JIT) manufacturing principles that streamline the replenishment process, wave planning pulls items to areas—such as the picking area—just before they are needed.

Wave planning features let you create and release a wave. A *wave* is a collection of either sales orders (SO) or distribution orders (DO) or both. Sales orders include scheduled orders and sales orders for configured kits. Warehouse staff can pick for the collection of orders together at a certain point in time. For example, if you know that a carrier arrives at 4:00 pm, you can create a wave for all orders linked to the carrier.

Note You specify carriers in the Ship Via field on sales order or distribution order trailers.

Because you can see the orders in the wave and the quantities required for each order, you can foresee tasks and the workload; this lets you plan accordingly. Based on the workload and the available capacity, you can determine when to start the wave to ensure that warehouse staff pick, pack, and prepare the orders for shipping when the carrier arrives at the warehouse.

The system combines orders for the same customer ship-to address on the same pre-shipper, even when the carriers are different. Warehouse functions, however, put the orders for different carriers on different pre-shippers. You can also maintain carriers at the line level in the system using Sales Order Maintenance (80.14.3) for sales orders and Distribution Order Maintenance (80.14.6) for distribution orders.

Key Concepts

A major key to understanding how the wave features work is the relationship between the different areas of a warehouse and how stock moves among the areas. To fully understand the flow of a wave, concepts from functional areas outside of wave planning are introduced in the following paragraphs.

Using Waves in a Warehouse

Wave planning applies best to companies that have many sales or distribution order lines. For example, large component manufacturers can typically fulfill 7,000 sales order lines with as many as 14,000 different items to pick per day.

In this scenario, extra space can be required to hold numerous pallets full of different types of items. This, in turn, results in greater distances for picking staff to travel. To reduce travel time, companies typically designate smaller areas to pick items and keep items in reserve to replenish the items being picked. These *picking areas* typically consists of a few aisles of pallets, boxes, or containers with items. The picking area is sometimes called the *forward picking area*, *detail picking area*, or the *pickface area*.

Picking for waves is done through batch picking or normal picking. Working with a separate picking area, though, is not a mandatory requirement. When volumes are lower or staff pick mostly in full pallets, you typically only need one picking area. Wave planning can accommodate both situations.

The holding area or the *reserve area* has larger quantities of the items, usually in pallets, that replenish the picking area. For this reason, the reserve area is sometimes termed the *pallet area*, *bulk area*, or *full pallet area*. When order lines can be filled with pallets, it saves time to simply move the pallets from the reserve area to the shipping area, bypassing the picking area.

Wave planning lets you have a continuous throughput of stock across the warehouse from the reserve area to the forward picking area to the consolidation area to the staging area. The *consolidation area* is an area where warehouse staff assemble items on pallets or containers; the *staging area* is the area where warehouse staff drop off wrapped pallets that are ready for shipment.

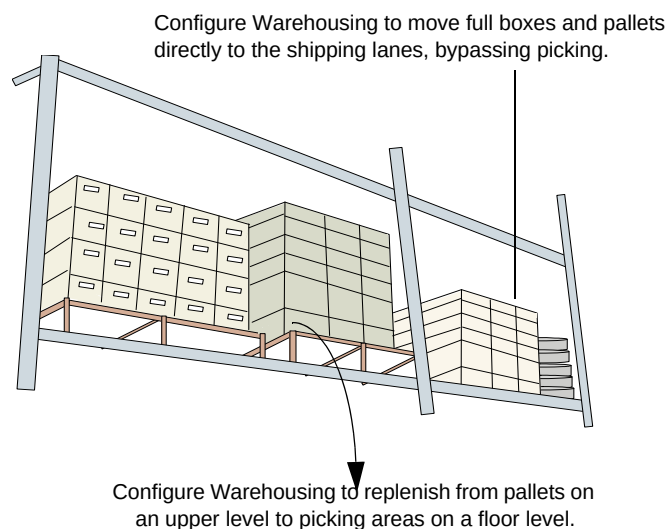
Replenishment is the movement of stock from the reserve area to the picking area. The picking area should always maintain enough stock to complete order lines of the planned wave. But because the picking area is a finite area within the warehouse, it may not be large enough to hold all items needed for the order lines. Therefore, a method of replenishment must be in place to move stock from the reserve area to the picking area to complete the orders.

Replenishment is not always required, though. For example, if a warehouse does not include a specific picking area, there is no need to move items. In this case, stock is randomly distributed throughout the warehouse. Also, if enough inventory exists to cover the requirements of a wave for a particular item, there is no need to replenish that item. Usually inventory is sufficient to cover the items of a wave because warehouse staff use multiple replenishment techniques and because the locations are big enough to cover a few days' worth of requirements.

In some warehouses, detail picking areas are on the floor levels of the racks, while reserve areas with full pallets are upstairs. In this case, the replenishment movement is from the upper levels to the floor levels. You can configure wave planning to do this. Figure 18.1 depicts a typical reserve area in a warehouse.

If the warehouse stores pallets on upper levels, typically the detail picking area contains stock for fast moving items only. In this case, the replenishment is a very short movement.

Fig. 18.1
Reserve Area



Replenishment Techniques

Wave replenishment involves three steps, so setup is different from standard replenishment where you set up picking parameters for a specific storage location group (SLG).

Also, most replenishment techniques replenish a location to its maximum level and not to just the wave's required level. This technique is called *overpicking* since staff bring more than the quantity required.

Many different techniques can be used to replenish the picking area. The following common techniques are often combined:

- *Put-away replenishment* is replenishment to a certain level of inventory; for example, when warehouse staff put away after a receipt from the supplier.
- *Automatic or manual replenishment* is a traditional replenishment technique to replenish the stock in a given location or storage location group.
- *Wave replenishment* is wave action that considers the level of stock in the picking area and compares it to the requirements for all the order lines in a given wave. If inventory is missing to fulfill some order lines, replenishment is needed.

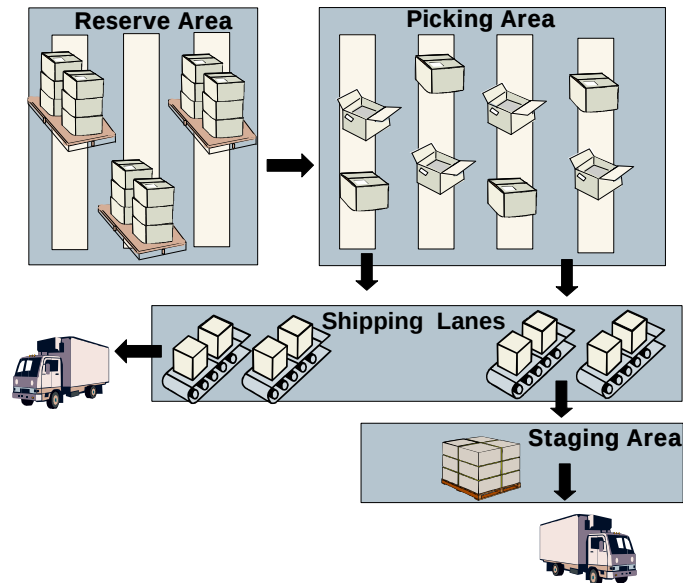
Wave planning reorganizes the workload so that aisles and the lanes leading to the shipping dock, or where you consolidate the items for the different orders—*shipping lanes*—hold the most efficient number of staff, who pick for or move items for the most efficient number of order lines.

Finally, most warehouses use containers to package and consolidate goods going to the same location. A container can be a box of finished goods, a pallet of boxes, or a truckload of pallets. A location can be an area, such as the shipping lanes or staging area, or the cart or truck. *Containerization* is a process of assembling pallets and orders for shipment.

Warehouse Flow

Figure 18.2 depicts a typical flow in a warehouse. Stock moves from the reserve area to the picking area through replenishment. Once picked, stock moves to the shipping lanes (consolidation area) and to a staging area, if used, where wrapped pallets are dropped off awaiting truck arrival. Optionally, stock can go directly from the shipping lanes to the truck.

Fig. 18.2
Warehouse Flow of Items



Wave Features

Wave planning lets you plan the picking and replenishment activities so that you have control over all workload areas of a warehouse. Organizing the picking activities by wave lets you:

- Spread the workload for picking activities across the entire business day.
- Start picking activities on time for carrier arrival at the dock.

If picking activities start too late, this wastes time for the carrier who waits at the dock.

This is especially crucial with the Hours of Services regulation. The U.S enacted this regulation in January 2004 and it requires that drivers account for their day and week time. This can result in cost increases for the trucking industry and the customer.

If picking activities start too early, this can result in too much stock in the staging area awaiting truck loading and a waste of warehouse inventory space.

- Streamline the picking operations by having a continuous throughput of stock across the warehouse. Streamlining operations lets you have better use of warehouse resources and avoid peaks.
- Spread the workload in aisles and shipping lanes based on carriers so that items are moved to the correct shipping lane for a particular carrier type.
- Save time and tasks by fulfilling order lines with full pallets or boxes that you can move directly to the dock, bypassing picking and other areas.
- Use waves interactively to initiate some tasks and release orders before one wave is complete while starting tasks for another wave.
- Manage throughput of large quantities by releasing orders in a wave incrementally or all at once.

Using wave planning, you can:

- Organize the picking by waves.

- Configure waves by carrier route, customer (ship-to), due date, or profile.
- Start wave activities based on picking loads.
- Have stock ready to load when trucks arrive.
- Optimize docking selection based on various criteria.
- Merge order lines to shipping lane by carrier.
- Specify a maximum number of order lines at a time by shipping lanes.
- Re-allocate picking tasks to shipping lanes.
- Dedicate shipping lanes for particular carriers.

Wave Programs

Wave programs are in the Wave Planning/Batch Picking Menu (80.15).

The basic processing flow of wave planning is as follows:

- 1 Wave selection
- 2 Wave replenishment
- 3 Wave release

The following subsections provide more information on each portion of the process.

Wave Selection

When you select a wave, you select from sales orders, customer scheduled orders, or distribution orders. Within wave planning, the order types are not distinguished. Wave planning creates the picking and replenishment tasks associated with the orders in the wave.

You can define wave options so that the maximum number of order lines can be set for a single wave. You can also set other options that let you create a wave based on order type, due date, weight, priority, carrier, route, and so forth.

See page 310.

You can also use a wave utility program to change the order priority of the wave, as needed.

See page 316.

Wave Replenishment

When you know the items needed for each order, you can ensure that stock moves from the reserve area to the picking area before the picking takes place.

Wave replenishment typically includes the following three steps; however, depending on the setup, you may not use all steps:

- Step 1: Full-pallet picking
- Step 2: Box picking from the reserve area
- Step 3: Picking area replenishment

Wave replenishment is not mandatory. If your warehouse does not have a dedicated picking area and all stock is randomly distributed in the warehouse, replenishment is usually not required.

See “Replenishing a Wave” on page 316.

Wave Release

There are three objectives when releasing waves:

- Create the picking tasks for staff in the picking area.
- Assign shipping lanes to a task that determine which items go where.
- Manage the picking throughput.

See page 326.

Batch picking or normal picking begins and staff can put all stock in shipping lanes only after you release the wave. Staff confirms the tasks for the wave through the RF device.

To manage throughput of large quantities, you can release orders on a wave incrementally. Or you can release all orders at once for smaller quantities.

You can implement wave releases as an iterative process. In theory, staff should complete replenishment for a wave before they start the release. However, if staff have not completed replenishment for a current wave and the picking of the previous wave is complete, staff can start picking for the current wave, even though all items are not yet replenished.

Further, if the replenishment is not complete for a wave, you can still release orders for which all order lines are replenished.

Setting Up Wave Planning

To set up for wave planning, complete the following steps:

- Plan for waves.
- Set the task calculation.
- Define lanes and docks.
- Assign lane and dock algorithms.
- Define lane groups.
- Define workload groups.
- Assign lane groups.
- Set options in the Wave Planning Control File.

The following subsections provide more information on each setup task.

Planning for Waves

You should set up your wave or waves at the beginning of the day to reflect the order lines your company typically completes for a particular time period, such as a single day or a couple of days. Wave planning creates the picking and replenishment tasks for the wave. Use Wave Open Order Inquiry (80.15.10) at the start of a work day to globally view the workload for the current day, next few days, and so on.

Before creating the wave, you should consider which orders to pick for the wave and how many orders to include on the wave. If your company typically completes about 7000 order lines in a day, you can set the maximum for each wave to be 1000 order lines. This means setting up seven waves at 1000 order lines for a single day or setting up 70 waves at 100 order lines for a day, and so on.

You can set defaults for the maximum order lines in a wave and this helps control the wave size. If you have too many waves, they are difficult to monitor. If you have too few, you lose flexibility.

The main objective of wave planning is to have continuous throughput for picking and shipping operations. Plan the wave based on workload, staff, and carrier type; then monitor the workload based on aisles, congested areas, and carrier arrival.

To do this, consider the workload in the different aisles (workgroups) to determine the size of the wave. You must also consider the capacity of the shipment area before you release orders. If you release too many orders at the same time, you may block aisles with staff and their carts. Next, consider the number of orders for each carrier type and know the arrival time and location for each carrier type.

Further, a method to manage the location of staff and the movement of carts or forklifts is required to move the items with maximum efficiency. For example, if you have 30 staff picking in 18 different aisles, you may want only two or three staff picking in a single aisle at any given time. Moreover, if your warehouse uses wire-guided forklifts, you may want only a single forklift in an aisle at any given time.

While monitoring, you can optionally move, add, or delete order lines. Although you can have multiple order lines from multiple orders on a single wave, you cannot have the same order line on two different waves. The system allocates only one order line from a single order per wave. Certain criteria must be met before you move or delete an order line from a wave.

Wave Sizes

It is difficult to recommend how many order lines you should have on a wave to constitute a typical wave size. The number of lines, and hence, the size of the wave, depends on the industry, items, order volume, and the number of shipments.

Typically, you can reasonably manage 10-15 waves per day. This allows enough visibility for the person controlling the waves to ensure that waves are processed and closed.

Take the following into consideration when determining the size of your waves:

- 1 The more waves you have in the system, the less wave visibility.
One or more users should act as wave planners who manage warehouse staff workflow and capacity, replenish waves on time, and release waves so that the system assigns tasks to warehouse staff. Too many waves can complicate and confuse both planners and staff.
The wave planner's objective is to start, replenish, release, and complete a wave with some overlapping when the next wave is started. To this end, there may be several waves at the same time, but not so many as to increase the amount of time needed to complete the waves.
- 2 Processing only a few big waves in a day impacts the space required in the picking locations.
For a single large wave, the required quantity in the picking location increases. It may not be possible to increase the picking locations in your warehouse. If your warehouse has an overflow area that you can use, this may not provide the best result. Wave planners lose visibility in overflow areas. Because overflow areas are typically floor locations near aisles, wave picking becomes more cumbersome, complicated, and dangerous for warehouse staff who may have to avoid pallets in walkways.
- 3 Consider the carriers, truck loads, and so on, departing from your warehouse each day.
Wave planners should consider step 1 and step 2 before determining the number of waves per carrier, truck load, route, and so on. After examining the first two steps above, wave planners may decide, for example, that it is better to have one wave for two truck loads or two waves per one truck load.

Setting Task Calculation

You must set the Task Calculation field in Local Exit Routine Control File (80.24.23) before you:

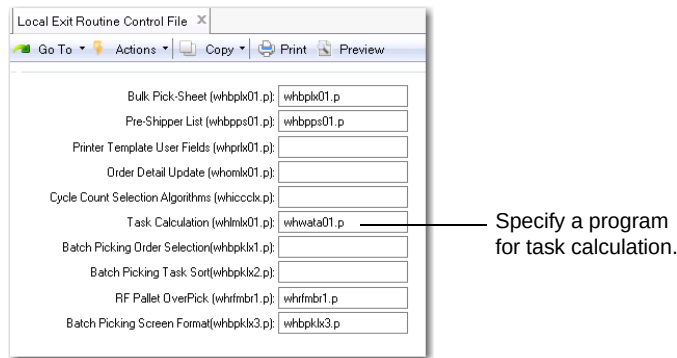
- Replenish a wave in Wave Replenishment (80.15.4).
- Release a wave in Wave Release (80.15.5).

The Priority After Active field in Wave Planning Control (80.15.23) gives priority to tasks once the system activates them. Activation occurs when you launch release groups during a wave release. The program you specify in Task Calculation in Local Exit Routine Control takes priority into account when creating tasks.

See “Def Priority after Active” on page 301.

Figure 18.3 shows the location and correct setting of the field.

Fig. 18.3
Local Exit Routine Control File (80.24.23)



Assigning Picking Algorithms

Wave planning functionality contains the logic for pick-by-level algorithms; therefore, when picking for waves, you must assign pick-by-level algorithms in Algorithm Assignment Maintenance (80.6.9). For example, use a pick-by-level-by-date algorithm to pick in all areas for items by the most recent date first. If you do not use a pick-by-level algorithm, warehouse staff can pick in the wrong areas during wave release and replenishment. This is because only pick-by-level algorithms consider full pallet areas.

See “Algorithm Assignment” on page 115.

Defining Lanes and Docks

Use Lane Maintenance (80.15.13) to define a shipping lane or a dock.

A shipping lane and a dock are locations. Typically shipping lanes are locations to which staff bring all boxes for an order, customer, or carrier. Docks are locations where staff load the boxes onto trucks. The loading dock includes various components, including platforms where goods are stacked, ramps for truck loading, and so on. Shipping lanes and docks can also be dedicated areas where you process orders in a specific way; for example, for a specific carrier type. The system considers shipping lanes and docks when it processes orders for a wave.

Before you define a shipping lane or a dock, you must set them up as locations in Location Maintenance (80.3.13.1). For shipping lanes, you also specify the capacity in Location Maintenance. Figure 18.4 shows a shipping lane defined as a location.

Fig. 18.4
Location Maintenance (80.3.13.1), Shipping Lane

Location Maintenance

Go To Actions Copy Print Preview

Site: spain
Location: 0001

Qad Location Data

Description:
Inventory Status:
Permanent: ☐
Item Location Type:
Single Item: ☐
Single Lot/Ref: ☐
Capacity: 0.0 UM: 0.0

Location Dimensional Data

Height: 0.00
Length: 0.00
Width: 0.00
Dimensional UM:
% Full: 0.00

Define shipping lane capacity.

Define a UM for capacity calculation.

Define a ship location.

Docks are typically in a functional IRG and do not require capacity specifications. In Warehouse Location Maintenance, you should define the Storage Type for the dock as Truck; see Figure 18.5.

Fig. 18.5
Location Maintenance (80.3.13.1), Storage Type Field

Warehouse Location Data

Check Digit:
Popularity:
Storage Type: Truck
Warehouse Location Type: Active
Travel Sequence: 0
Dedicated: ☐

Picking Type:
Preferred UM:
Opportunity Count Frequency: 0
Last Opportunity Count:
Stage (In):
Stage (Out):

Set the Storage Type as Truck for a dock location.

Figure 18.6 shows a dock set up in Lane Maintenance (80.15.13). You can assign a specific carrier to a lane or dock. In the setup shown in Figure 18.6, a carrier is assigned to the dock. You specify the carrier in the Carrier field.

Fig. 18.6

Lane Maintenance (80.15.13), Dock Setup

Define dock.

Assign carrier for the dock.

Site. Enter the site for the shipping lane.

Warehouse. Enter the warehouse for the shipping lane.

Lane/Dock. Enter a location previously defined in Location Maintenance that represents this shipping lane.

Description. Enter a brief description (maximum 24 characters) of the shipping lane.

Use Lane Group Maintenance (80.15.15) to group several shipping lanes together.

Capacity. Enter the capacity of this shipping lane, in terms of the dimensional unit of measure specified for the lane in Location Maintenance (80.3.13.1). See Figure 18.4 on page 293.

Carrier. Specify the carrier for this shipping lane. Specify multiple carriers with a comma-separated list.

Number of Open Tasks. This field is display only and indicates the open, existing tasks for the shipping lane.

ABS Full %. The system displays the absolute full percentage of the location. An absolute % is a count of the exact content of that location. The absolute full % also displays in Location Maintenance (80.3.13.1).

Assigning Algorithms to a Lane

Use Algorithm Assignment Maintenance (80.6.9) to assign an algorithm to a shipping lane. Specify LA as the Algorithm Type for a shipping lane; see Figure 18.7.

For both shipping lanes and docks, you can define a combination of algorithms. The system finds a shipping lane using the first algorithm in the list. If it does not find any, it considers the next algorithm to use, and so on.

See “Algorithm Assignment” on page 115.

Note When the automatic wave release is active, the system can use a lane assignment algorithm (5) that selects the last lane previously selected for the same wave.

Fig. 18.7
Algorithm Assignment Maintenance (80.6.9), Shipping Lane

Seq	Algo	Description
10	4	Find Dedicated (Unique) Lane for Carrier
20	1	Merge with Same carrier
30	2	Find Empty Shipping Lane
40	3	Find Shipping Lane by Best load (Active Tasks)

You need to assign one or more algorithms to a site/warehouse, specifying the LA algorithm type. The different available algorithms include:

- 1: Merge with same carrier. The system looks for a shipping lane in use for a given carrier.
- 2: Find empty shipping lane. The system looks for an unassigned shipping lane.
- 3: Find shipping lane by best load (active tasks). The system looks for a shipping lane with the lowest number of tasks assigned to it.
- 4: Find a dedicated unique lane for carrier. The system considers carriers assigned to a specific shipping lane in Lane/Dock Maintenance. A carrier can only be assigned to one shipping lane. See page 292.
- 5: Find the last previously selected shipping lane to use when automatic wave release is active.

Assigning Algorithms to a Dock

You need to assign one or more algorithms to a site/warehouse, specifying the CM (container move) algorithm type in Algorithm Assignment Maintenance (80.6.9).

The different available algorithms include:

- 1: Move to stage. The system finds the first location defined as a stage location.
- 2: Move to stage. The system finds an empty stage location.
- 3: Move to stage. The system finds a location in Stage that already contains stock for the SO shipper or DO ship-to code.
- 4: Move to stage. The system looks for a stage location with the least number of containers/pallets in it.
- 10: Move to dock. The system finds the first location defined as a truck location.
- 11: Move to dock. The system looks for an empty dock location.
- 12: Move to dock. The system finds a dock location that already contains stock for the SO shipper or DO ship-to.
- 13: Move to dock. The system looks for a dock location that has the least number of containers/pallets in it.
- 14: Find a dedicated dock. The system finds a dock dedicated to a given carrier.

Note The jump from 4 to 10 allows room to add future algorithms.

You can use Algorithm Assignment Maintenance to set up a logical sequence of dock algorithms so that the system selects ideal locations when moving goods to the dock.

For example, you can set up the sequence in Table 18.1.

Table 18.1
Logical Setup for Dock Algorithm

Sequence #	Algorithm #	Dock Algorithm Description
10	3	Move to stage – merge with same shipper
20	2	Move to stage – find empty location
30	1	Move to stage – find first location
40	14	Find dedicated dock
50	12	Move to dock – merge with same shipper
60	11	Move to dock – find empty location
70	4	Move to stage – find location with least pallets

Defining Lane Groups

A *lane group* is a collection of shipping lanes. You define lane groups in Lane Group Maintenance (80.15.1.5). You must define the shipping lane first in Location Maintenance (80.3.13.1), then in Lane Maintenance (80.15.13). You must have at least one lane group defined. Specify a lane group that you define here in the Lane Group field in the Wave Planning Control File (80.15.23).

When you create a new lane group, you can base it on an existing one; the system prompts you to copy another lane group.

You can group several shipping lanes together to serve other purposes; for example, you may have several shipping lanes that you use for one item type and other shipping lanes that you use for a different item type. You can group the shipping lanes based on the item type.

Use Lane Group Assignment (80.15.21) to link a warehouse item type to a shipping lane group. Specify lane load algorithms in the Wave Planning Control File.

See page 298.

Fig. 18.8
Lane Group Maintenance (80.15.15)

Specify a lane group

Specify a sequence code for each lane of the lane group.

Site. Enter the site for the lane group.

Warehouse. Enter the warehouse for the lane group.

Lane Group. Enter a lane group name.

Description. Enter a brief description (maximum 24 characters) of the lane group.

Sequence. Enter the sequence code for this shipping lane. Enter codes by 10s (10, 20, 30, and so on) so that you can insert additional steps easily later.

Lane. Enter the lane for sequence. You define lanes in Lane Maintenance (80.15.13).

Description. The system displays the description of the lane.

Defining Workload Groups

A *workload group* is a collection of work location groups (WLGs). You use Workload Group Maintenance (80.15.18) to define a workload group and assign it to a warehouse and site. When the system uses workload calculations, it takes into account all workload groups you define in Workload Group Maintenance for the site and warehouse to which it applies the calculations.

Workload Group Maintenance displays the shift size at the workload group level. The shift size indicates the number by which the system multiplies the capacity of all WLGs.

See “Shift Size” on page 298.

In Wave Selection (80.15.1), the system displays the capacity and workload for all workload groups.

See page 310.

Fig. 18.9
Workload Group Maintenance (80.15.18)

Seq	WLocGp	Description	Picks/Wave	Pick (min)
1	trolley		2	4.00

System multiplies pick/wave totals of all work location groups by this number to determine work location group capacity.

Site. Enter the site for the workload group.

Warehouse. Enter the warehouse for the workload group.

Workload Group. Specify the workload group for this site and warehouse.

Description. Enter a brief description (maximum 24 characters) of the the workload group.

Shift Size. Enter the number of warehouse staff in a shift when you create a new workload group. The system uses this value to determine the capacity of all WLGs.

Example You have a capacity of 64 picks/wave per person; therefore, for a shift of two people that work in that workload group, the total capacity is 128 picks/wave.

Seq. Enter a sequence number identifying the work location group within this workload group. Sequence numbers must be unique within a workload group. The system prints work location group sequence numbers in ascending sequence. For example, work location group 20 follows work location group 10.

Number sequences by 10s or 100s, so you can add new work location groups without renumbering existing ones. For example, if you have work location group 10, 20, and 30 and need to add another work location group after 20, you can enter it as work location group 25.

Work Location Group. Enter the name of the work location group for this sequence of the workload. The system displays the description that you previously specified.

Picks/Wave. Enter the quantity that indicates the number of picks per wave per person.

Picks (Min). Enter the number of minutes per pick. The default value for this field is defined in the Time Per Pick (Min) field in Wave Planning Control. See “Time Per Pick (Min)” on page 303.

Assigning Lane Groups

Use Lane Group Assignment (80.15.21) to link a shipping lane group to a site and warehouse, and optionally, link a warehouse item type to a shipping lane group.

Fig. 18.10
Lane Group Assignment (80.15.21)

The screenshot shows a software window titled "Lane Group Assignment". At the top is a menu bar with options: "Go To", "Actions", "Copy", "Print", and "Preview". Below the menu bar, the window contains several labeled fields: "Site: spain", "Warehouse: distrib", "Warehouse Item Type: HEAVY", "Description:", "Last Lane Group:", and "Lane Group:" followed by an empty input box.

Site. Enter the site for the lane group.

Warehouse. Enter the warehouse for the lane group.

Warehouse Item Type. Optionally, enter the type of item for this shipping lane group. Assign types to items on the warehouse item maintenance functions. See “Warehouse Item Type” on page 90.

Description. Enter a brief description (maximum 24 characters) of the the warehouse item type.

Last Lane Group. The system displays the last lane group that was used for a particular warehouse item type. You can define several lane groups so that when waves overlap, they use different lanes for each wave. When using the appropriate lane-group algorithm, the system uses one lane group first, then proceeds to the next lane group, and so on.

Lane Group. Enter a lane group name, defined in Lane Group Maintenance (80.15.15).

Setting Up Wave Planning Control

Use the Wave Planning Control File (80.15.23) to set default values for other wave planning programs.

Fig. 18.11
Wave Planning Control (80.15.23)

The screenshot shows the 'Wave Planning Control File' window. At the top, there are tabs for 'Go To', 'Actions', 'Copy', 'Print', and 'Preview'. Below the tabs, the 'Site' is set to 'spain' and the 'Warehouse' is set to 'distrib' (distribution warehouse). The main area contains two columns of settings:

- Left Column:**
 - Def From Due Date: 3,999
 - Def To Due Date: 1
 - Default Sort Algorithm: 1
 - WorkLoad Algorithm: 1
 - Use Def. W/L Algo: ☒
 - Modify Details?: ☒
 - Def Pri. at Task Creation: 0
 - Def Priority After Activ.: 100
 - Lane Load Algo: 0
 - Create RG in Wave Release: ☒
 - Default Lane Group: group1
- Right Column:**
 - Def Max Order Lines: 9,999,999
 - Default Include: ☒
 - Use Limit in Add Frame: ☐
 - Time Per Pick (min): 1.00
 - Display Only Allocated Lines: ☒
 - Display Qty Alloc/Open: Open
 - Def Generate Release Groups: ☒
 - Order Lines per Rel Group: 10
 - Release Group Algo: 2
 - Change Include: ☒
 - Activate RG in Wave Release: ☒
 - Order Priority: 9999995

At the bottom left, it says 'Modified: 7/30/2008'.

Site. Enter the site for the wave.

Warehouse. Enter the warehouse for the wave.

Def From Due Date. Specify a number of days to be added to or subtracted from the current date when setting a default value for the Due Date field in Wave Selection (80.15.1).

Specify in terms of days from the due date; for example, specify 9 for 9 days from the due date.

Use the second entry field to specify a plus (+) or minus (–) to indicate past dates or future dates. Valid past dates include today's date minus 9,999 days. Valid future dates include today's date plus 9,999 days. Use negative numbers to indicate past due items for which you want picking completed.

When you enter –9999 here, the field is blank in Wave Selection. In this case, the system includes all due dates until the To Due Date value.

Def To Due Date. Specify the number of days to be added to or subtracted from the current date when setting a default value for the To field in Wave Selection. Use the second entry field to specify a plus (+) or minus (–) to indicate past dates or future dates.

Default Sort Algorithm. Specify the algorithm the system uses to sort orders for a wave. Currently only one algorithm is available; future releases of wave planning will include additional algorithms.

Algorithm 1: Sort by priority by order. The program for this algorithm is `whwa001.p`. Algorithm 1 considers all orders with the highest priority.

Define priority for a customer in Address Detail Maintenance (80.14.17), which defaults to any order you create for the customer. Use Order Maintenance (80.14.1) to view priority.

Note In QAD Warehousing, profiles provide an additional means to categorize and select orders to process and are not associated with system security profiles. For example, you can create a Top profile for all of your top customers, then select orders by this profile to process first or monitor until shipment.

If you restrict wave selection to a specific number of order lines by specifying a maximum number of order lines in the Def Max Order Lines field, the system selects only the orders with the highest priority for that wave.

You can customize `whwa001.p` with any text-editing tool, and then enter your customized program here. For example, you can change the sort algorithm to sort by customer class and define a new algorithm as `whwa999.p`. You must add the customized program to Generalized Code Maintenance (36.2.13) for the SortAlgo field before you can use it in warehouse functions. If you create `whwa999.p`, you enter 999 in SortAlgo because the system assumes algorithm program names begin with `whwa`.

You can change the priority of the order using Wave Priority Boost (80.15.22.13); for example, if you have an urgent request to fill orders immediately.

See page 316.

Workload Algorithm. Enter an algorithm to calculate the workload during the wave selection process.

Note Currently only one algorithm is available; future releases of wave planning will include additional algorithms.

Algorithm 1: Workload by WLG – dedicated location. The default program name for this algorithm is `whl0001.p`. This algorithm first considers a dedicated location for the item. If there are multiple dedicated locations, it only considers the first one found in the system. If no dedicated locations are found, the system looks for an item-location replenishment definition. If a definition exists, then the algorithm uses this location. When multiple item-location replenishment definitions exist, the system only considers the first.

The system calculates the number of forecasted picks based on the rule:

1 order line = 1 pick

A pick occurs in a given WLG because the system links the item needed to a dedicated location and that location belongs to a WLG. If you use multiple dedicated locations for a given item, then the algorithm supplies a correct result only if the different locations belong to the same WLG. The algorithm always looks for the first location dedicated for the item.

You must define the workload group that you monitor in a specific site/warehouse for a wave in Workload Group Maintenance (80.15.18).

See page 297.

Use any text editor to edit and customize the algorithm and save it with a different name. Define and describe the new algorithm in Generalized Codes Maintenance (36.2.13) for the LoadAlgo field.

Use Def WL Algo. When different workload algorithms are available, you can specify which algorithm to use for calculations when you select a wave in Wave Selection. Indicate whether the system prompts you to use the default workload algorithm in Wave Selection.

No: Prompt for which algorithm to use during wave selection.

Yes: Do not prompt for which algorithm to use during wave selection. Use the default algorithm specified in Workload Algorithm. If you always use only one algorithm, set to Yes to remove the prompt for the algorithm to use during wave selection.

Modify Details? Indicate whether to select or deselect order lines in Wave Selection.

No: You cannot select or deselect order lines in Wave Selection. You can only deselect an entire order.

Yes: You can select or deselect order lines in Wave Selection.

Def Pri at Task Creation. Specify a default priority value for a wave release. The system creates the release group when you release the wave. Once created, you can assign the release group to a lane; however, the system may create tasks and an RF device can receive the tasks before you assign the release group to a shipping lane. To prevent this, set this field to 0 (zero). The default is 0. The field defaults to the same-named field in Wave Release (80.15.5).

Def Priority after Active. Specify a default priority value to use when you release the wave in Wave Release. This is the priority the system assigns to the picking tasks once you activate release groups. If you want the tasks to be processed with RF devices, specify a non-zero value. When using batch picking in the picking area, this value is not important as long as it is a non-zero value. This is because batch picking sorts orders by order priority, not task priority, and selects tasks based on the travel sequence. For other picking techniques, though, when warehouse staff use the RF Next Task screen, the task priority is important.

Important You must set the Task Calculation field in Local Exit Routines Setup to the whwata01.p program. See “Setting Task Calculation” on page 291.

Lane Load Algorithm. Enter a load algorithm to use when you use lane groups.

Before you set this field, you must:

- Define lanes in Lane Maintenance; See page 292.
- Define lane groups in Lane Group Maintenance; See page 296.

Table 18.2 lists load algorithms you can specify, the program that corresponds to the algorithm, and a short description of the algorithm.

Note The load algorithms are unique to Wave Planning Control and are not algorithm types that you assign to movements, items, or warehouses.

Table 18.2
Load Algorithms

Algorithm	Program	Description
Algorithm 0: Take Next Lane Group	whlalo00.p	This algorithm considers the last lane group used, then takes the next one based on alphabetical order. If the last one is reached, it takes the first one again. Use this algorithm when you want to split shipping lanes and use sets of shipping lanes for different waves. In this case, each wave uses the next lane group and the system selects a lane within that lane group.
Algorithm 1: By Number of Tasks	whlalo01.p	This algorithm selects the lane group that has the least number of tasks allocated to a shipping lane that belongs to that lane group.
Algorithm 2: By Current Stock	whlalo02.p	This algorithm selects the lane group containing the smallest amount of items. It sums the inventory records—stock on-hand and stock coming in—regardless of the base unit of measure. This means the total is not always relevant.
Algorithm 3: By Number of Orders	whlalo02.p	This algorithm selects the lane group containing the smallest amount of orders, regardless of the number of lines for those orders.
Algorithm 4: By Number of Order Line	whlalo04.p	This algorithm selects the lane group containing the smallest amount of lines.

Create RG in Wave Release. Indicate whether the system creates wave release groups automatically when you release the wave.

No: Release groups are not created automatically in Wave Release. Only picking tasks take place when you release the wave. You must use Wave Release Groups Create/Activ (80.15.6) to create release groups and assign them to shipping lanes to activate them.

Yes: The system automatically creates release groups when you release the wave in Wave Release.

Default Lane Group. Specify the default lane group created in Lane Group Maintenance. This field defaults to the Lane Group field in Wave Release. The wave release process requires that at least one group exist; even when you do not need different lane groups, you must create one and assign all shipping lanes to it.

You must leave the Lane Group field blank in Wave Release if you want to use the lane load algorithms to find the most suitable lane for a wave release; otherwise, the system uses the lane group you specify in Default Lane Group.

Def Max Order Lines. Enter the maximum order lines for a typical wave. This field defaults to the same-named field in Wave Selection.

The size of a wave depends on many factors, such as the number of order lines per day, carriers, and work load capacity. With experience, you can learn the optimal size of the wave that streamlines the throughput of operations in your warehouse and set this field to achieve the optimal wave size.

See “Planning for Waves” on page 290.

Default Include. Indicate the default value of the Include field that displays when orders display in Wave Selection.

No: The default value of the Include field is No. You must toggle the Include field to Yes in Wave Selection to include the order or order lines in the wave.

Yes: The default value of the Include field is Yes. You must toggle the Include field to No to deselect the order or order lines in the wave.

See Figure 18.15 on page 314.

Use Limit in Add Frame. When the system displays orders for a wave in Wave Selection, additional function keys can be used. One function lets you add more orders than originally selected to create the wave. Indicate whether the system considers the setting of Def Max Order Lines when you add more orders.

No: The system does not take the maximum number of order lines into account when you add more orders.

Yes: The system considers the Def Max Order Lines you specify before you can add more orders.

See “Using Additional Functions in the Wave Order Display” on page 314.

Time Per Pick (Min). Enter the default value for the average pick time in a WLG measured in minutes. This is the value the system uses when you add a WLG in a workload group in Workload Group Maintenance. You can modify this value for each WLG.

Display Only Allocated Lines. Indicate whether the system selects only order lines with a general allocation when it selects orders for a wave in Wave Selection.

No: The system selects all order lines for the wave even if no general allocation exists.

Yes: The system selects only order lines with a general allocation for the wave.

By default, the picking that takes place when you replenish the wave has Auto Allocation set to Yes. This means that if the order line is not generally allocated before the system selects it in the wave, it is generally allocated during the picking process.

Note This field does not apply to customer schedules since they do not work with general allocation on order lines.

Display Qty Alloc/Open. Indicate whether the system displays the quantity generally allocated for the order line or the quantity open for the order line in Wave Selection.

Open (the default): The system displays the quantity open for the order line.

Alloc: The system displays the quantity generally allocated for the order line.

Def Generate Release Groups. Indicate whether the system creates multiple release groups or only one release group for the entire wave when you release the wave. This field defaults to the same-named field in Wave Release.

No: The system creates only one release group for the entire wave you are releasing.

Yes: The system creates more than one release group for the wave you are releasing.

See “Releasing a Wave” on page 326.

Order Lines per Release Group. Indicate a number for the limit of picks per release group. This field defaults to the same-named field in Wave Release. If you do not want to limit the number of picks per release group, enter the maximum value of 99999.

Release Group Algo. Enter an algorithm that the system uses to create the release group.

Note The release group algorithm is unique to Wave Planning Control; it is not an algorithm type that you assign to movements, items, or warehouses. Currently only two algorithms are available; future releases of wave planning will include additional algorithms.

Release Group Algo 1: Standard release group creation. The default program name for this algorithm is `whre001.p`. This algorithm creates different release groups if the order lines are for different due dates, carriers, and warehouse item types.

Release Group Algo 2: Release group creation without due date. The default program name for this algorithm is `whre002.p`. This algorithm creates different release groups if the order lines are for different carriers and warehouse item type. Order lines are a part of the same release groups even if they have different due dates.

You can create a new release group algorithm. Add the new selection in Generalized Codes Maintenance (36.2.13) for the `RelAlgo` field.

Release Group Algo 3: Used for load optimization. The program name for this algorithm is `whre003.p`. This algorithm creates different release groups if the order lines belong to different loads.

Change Include. Indicate whether shipping lanes are included as the default when the system launches release groups during a wave release.

No: When you manually assign a shipping lane to a release group in Wave Release Groups Create/Activ (80.15.6), the system does not include the shipping lane by default when it launches the release group during a wave release. When releasing a wave, you must manually enter the shipping lane in the Lane Group field in Wave Release.

Yes: When you manually assign a shipping lane to a release group, the system includes the shipping lane by default when it launches release groups in a wave release.

See “Releasing a Wave” on page 326.

Activate RG in Wave Release. Indicate whether the system activates release groups automatically when you release the wave.

No: The system does not automatically activate release groups that it automatically creates by setting Create RG in Wave Release to Yes. You must activate release groups using Wave Release Groups Create/Activ.

Yes: The system automatically activates release groups when you release the wave in Wave Release.

Fig. 18.12
Wave Planning Control, Second Frame

Pick Boxes in Pallet Area: ☐	Pallet UM: PL
Box Pick UM:	Pallet SLG Level From/To: 10 / 10
Multi Trans for Boxes: ☐	Replenishment List: test
Replenishment OverPick: ☒	Replen Pick UM: EA
Allow Split Replen: ☐	Replen Multi Trans: ☐
Def Pal/Box Init Priority: 0	Only Alloc DO: ☐
Pause Between Waves (s): 1	Def Pick Trigger %: 0
From Order Type: DO	To Order Type: SO
SO Pick First: ☒	Avoid Release Without Replen: ☐
Split Multi-Item Pallet: ☐	Pick Multi-Item Pal (Step1): ☐
Auto Alloc: ☐	Std Repl Task Priority: 0
New Pre-Shipper by Wave: ☒	New Pre-Shipper if Older (Days): 0
Order Priority: 99999997	Check Repl Task for Same: 1 Ship-To

Pick Boxes in Pallet Area. Indicate whether this second step of a wave replenishment is implemented or bypassed.

No: The system skips this step. Staff can replenish enough items in the detail picking area to cover box picking from that area.

Yes: The system implements this step and sets tasks to pick boxes from the pallet area and move them directly to the consolidation area or dock.

See “Step 2: Box Picking from the Reserve Area” on page 319.

Box Pick UM. Enter the UM for picking boxes. The system uses this setting in step 2 of wave replenishment. For this step, the system considers only the reserve area. The following picking parameters are hard-coded and unchangeable for this step:

- Pallet splittable allowed
- Overpicking not allowed

See “Step 2: Box Picking from the Reserve Area” on page 319.

You can optionally omit the second step of wave replenishment by specifying No to Pick Boxes in Pallet Area. When you omit the step, the system does not use the value you enter here.

See page 305.

If this field is blank, the system uses the Pick/Multi Of field in Storage Location Group Maintenance (80.3.1) to set up multiple pallet units of measure.

See “Storage Location Group Maintenance” on page 65.

Multi Trans for Box. Indicate whether the system creates a task for each box picked in step 2 of wave replenishment.

No: The system creates only one task for the entire quantity that staff pick from the pallet, regardless of the number of boxes on the pallet.

Yes: The system creates a task for each box picked during step 2.

See “Step 2: Box Picking from the Reserve Area” on page 319.

Replenishment OverPick. Indicate whether staff can overpick during step 3 of replenishment.

No: Staff cannot overpick for the replenishment and can only pick the quantity required.

Yes: Staff can overpick for the replenishment and pick more than the quantity required. If you set Allows Split Replenishment to No, set this field to Yes.

See “Step 3: Picking Area Replenishment” on page 319.

Allow Split Replen. Indicate whether staff can split the pallet in the reserve area during step 3 of wave replenishment.

No: Staff can only pick the full alternate UM; for example, a complete pallet based on standard picking rules. If set to No, set Replenishment Overpick to Yes; otherwise, the system creates no tasks if the remaining required quantity is less than the pallet quantity.

Yes: Staff can split the pallet in the reserve area during the picking for replenishment. The system does not consider Replenishment Overpick if set to Yes.

See page 319.

Def Pallet/Box Init Priority. Specify the default priority for tasks in the first and second steps of the wave replenishment. In these two steps, staff pick full pallets or boxes in the reserve area and move them directly to the consolidation area or dock. This field defaults to the same-named field in Wave Replenishment (80.15.4).

The default is 0 (zero). When the priority is 0, the system creates the tasks but they are not yet visible on the RF device. When you release the wave, the system modifies the priority of the tasks when it launches the release groups during the wave release. The system does this to synchronize picking tasks in the reserve area and detail picking area. Also, during the wave release, the system reassigns the destination location of the tasks, moving the task location to the same shipping lanes as the remaining picking tasks.

Pause Between Waves. Enter the rate based on the number of seconds at which the system refreshes the display in Wave Status Inquiry (80.15.2). The display in Wave Status Inquiry is auto-refreshable, and the rate is set by the value you enter here.

See “Monitoring Waves and Wave Releases” on page 334.

From Order Type. Enter the first order type in a range of order types to:

- Use as the default when selecting orders for the wave in Wave Selection.
- Determine which order type to pick first during step 1 and step 2 of wave replenishment.

Enter the last order type in the range in To Order Type.

Valid values are SO and DO. The default is SO.

Select orders as follows:

- From SO To SO: Use sales order lines.
- From DO To DO: Use distribution order lines.
- From DO To SO: Use distribution orders and sales orders.

Note If you specify From SO To DO, the system cannot display the orders. The system searches for orders in alphabetical order and cannot find a sales order before a distribution order.

During step 1 and step 2 of wave replenishment, this field determines whether staff start with SO picking or DO picking. When enough stock to cover all orders does not exist, the setting of this field can have important consequences. Typically, general allocation prevents this

problem. If Display Only Allocated Lines is Yes in Wave Planning Control, the system selects only the lines already generally allocated for the wave; that is, only order lines for which there is enough inventory.

This field defaults to the Order Type field in Wave Selection.

See page 318 and page 319.

SO Pick First. Indicate whether warehouse staff pick first for sales orders in the wave.

No: Warehouse staff pick first for either distribution orders or sales orders in the wave.

Yes: Warehouse staff pick first for sales orders in the wave.

Spl Multi-Item Pallet. Indicate whether the system splits a multi-item pallet for step 1 of replenishment.

No: The pallet cannot be split. You should set Pick Multi-Item Pal to indicate whether staff can pick from the complete pallet.

Yes: The pallet can be split and the system proposes a picking task only for the item required on the pallet instead of the full pallet.

See “Step 1: Full-Pallet Picking” on page 318.

Auto Alloc. Indicate whether the system automatically performs general inventory allocations for confirmed order lines that are not yet generally allocated.

No: The system does not automatically perform general allocations.

Yes: The system automatically performs general inventory allocations for confirmed order lines.

New Pre-shipper by Wave. Specify whether to generate a new pre-shipper even when orders on a new wave are for a ship-to or carrier that is on an existing pre-shipper. The system typically sets up wave picking so that an open pre-shipper for a given ship-to and carrier is reused and wave order lines are added to it.

No: Do not generate a new pre-shipper. Use an existing pre-shipper and add lines for the new wave to it.

Yes: Generate a new pre-shipper by wave.

Pallet UM. Specify the common pallet alternate unit of measure (UM) for the reserve area. The default is blank.

The system uses the setting of this field during the first step of wave replenishment. During the first step, pallets are never splittable and there is no overpicking. These parameters are hard coded for the first step. The system sets up pick tasks by multiples of the pallet UM that you enter here.

If this field is blank, the system uses the Pick/Multi Of field in Storage Location Group Maintenance (80.3.1) to set up multiple pallet units of measure.

See “Step 1: Full-Pallet Picking” on page 318.

Pallet SLG Level From/To. Enter a range of Storage Location Group (SLG) picking levels. The field includes two entry points: the first for the first level in the range, and the second for the last level in the range.

Set levels here to ensure the following:

- Picking from the detail picking area only during wave release

- Picking from the reserve area only in step 1 of the wave replenishment. See “Step 1: Full-Pallet Picking” on page 318.

During a wave release, the system does not consider stock in the reserve area. The system avoids picking in the reserve area by skipping the SLG that has a picking level equal to or within the range of the values you specify here.

Note All picking algorithms the system uses in wave planning should be pick-by-level types such as the pick-by-level-by-month or pick-by-level-by-expiration-date algorithms. These types of algorithms contain the logic the system uses when setting pallet SLG picking levels. Use Algorithm Master Report (80.6.7) to find a pick-by-level algorithm.

Replenishment List. Enter a valid replenishment list that contains a list of all SLGs in the reserve area to use during wave replenishment. You define replenishment lists in Replenishment List Maintenance (80.16.1).

ReplenPick UM. Enter a UM to use during step 3 of wave replenishment when staff replenish detail picking area stock from the reserve area. The default is blank.

If this field is blank, the system uses the Pick/Multi Of field in Storage Location Group Maintenance (80.3.1) to set up multiple pallet units of measure.

See “Step 3: Picking Area Replenishment” on page 319.

Replen Multi Trans. Indicate whether the system creates a task for each alternate UM staff pick during step 3 of wave replenishment. The system determines an alternate UM based on the setting of Replen Pick UM.

No: The system creates only one task for all alternate UMs that staff pick.

Yes: The system creates a task for each alternate UM that staff pick.

For example, if you set Pick UM to bx (for box) and this field to Yes, the system creates a task for each box that staff move to the detail picking area. If you set this field to No, the system creates only one task regardless of the number of boxes on the pallet.

Note If you set Pick UM to pl (pallet), the system does not consider this field since the system creates only one task.

Only Allocate DO. Indicate whether to allocate distribution orders only.

No: Allocate both sales orders and distribution orders.

Yes: Allocate distribution orders only.

Def Pick Trigger %. Specify a percentage of completed picking tasks in a wave to use as the trigger to start the next wave.

The system displays an asterisk (*) next to the wave you need to start in Wave Status Inquiry (80.15.2).

Your experience with wave releases dictates the percentage you enter here. Typically, wave replenishment starts just before the previous wave completes, but you can start replenishment too late, resulting in too little stock to release the wave; and multiple releases are then required to complete the wave.

Avoid Rel w/o Replen. Indicate whether wave replenishment is required to release the wave.

Note Do not set this field to Yes if your warehouse does not use a picking area; wave replenishment is not needed if a picking area does not exist.

No: You can skip the wave replenishment and release the wave. You should ensure that you have enough stock in the picking area to cover the wave requirements before you avoid replenishment.

Yes: You must replenish the wave using Wave Replenishment (80.15.4) before you release the wave, even if no replenishment tasks are necessary for the current wave.

Pick Multi-Item Pal. Indicate whether warehouse staff can pick a full pallet if it contains multiple items.

No: Skip step 1 of replenishment for the pallet and instead replenish using step 3—replenishment from the picking area.

Yes: Allocate only the required item, but staff can move the complete pallet.

See “Step 1: Full-Pallet Picking” on page 318.

Std Repl Task Priority. Enter the default task priority for standard replenishment tasks.

When the system creates wave replenishment tasks, standard non-wave replenishment tasks may exist for wave items. Wave replenishment tasks are for an order, while non-wave tasks may not be for an order. When they are not for an order, the replenishment task can have a lower priority than a wave replenishment task. When the standard replenishment task has a lower priority, staff may not perform the task right away and the wave release can be blocked until that task is confirmed. Use this field to increase the priority.

New pre-shipper if Older (days). Specify the number of days that the system adds wave orders for a given ship-to to an open pre-shipper. After this period, the system creates a new pre-shipper for wave orders.

Fig. 18.13
Wave Planning Control, Third Frame

Allocate Components. Specify Yes to automatically apply pick logic and create detail inventory allocations for components of configured kits.

No: The system uses the site from the sales order line for the site and default item location. The quantity to ship for a component is determined by the quantity open for the configured kit rather than the quantity available to allocate for the component.

Yes: The system creates detail allocations for confirmed sales order lines. For detail allocations, set this field to Yes even when Available Kit Quantity to Ship has been used to update detailed allocations.

You can modify detail allocations for components of configured kits in Pre-Shipper/Shipper Workbench.

Display Only Alloc Lines for Kit. Indicate whether the system selects only configured kit sales order lines with a general allocation when it selects orders for a wave in Wave Selection.

No: The system selects all kit sales order lines for the wave even if there is no general allocation.

Yes: The system selects only kit sale order lines with a general allocation for the wave.

By default, the picking that takes place when you replenish the wave has Auto Allocation set to Yes. This means that if the order line is not generally allocated before the system selects it in the wave, it is generally allocated during the picking process.

When selecting order lines that reflect a kit, the system does not allocate the kit parent item, only the components. Since a kit is a set of items that are picked for shipment, no real assembly takes place, and the configured item is not a physical entity—it only exists as a logical superset of its components. The configuration defines the content of a kit, and a shipment contains the end items that comprise the kit.

Ship Avail Qty for Kit. This field determines the quantity picked for kit items. A kit is a type of configured item that represents a set of items that are picked and shipped together; no real assembly takes place.

No: The quantity to ship for the kit item is set to the corresponding quantity open on the order line.

Yes: The system determines the component of the kit with the least quantity available to allocate. The quantity to ship for the kit item is set to this quantity. This ensures that complete kits are shipped.

Selecting Orders and Creating the Wave

Use Wave Selection (80.15.1) to select orders and create the wave. The system uses the default sort algorithm that you specify in Wave Planning Control File to sort through orders. For example, you can specify that the system sort by-order-by-priority.

See “Default Sort Algorithm” on page 300.

Note It is highly recommended that only one person at a time use Wave Selection.

In Wave Selection, fields marked with an asterisk (*) have indexes. This lets you search the indexes and sort by different criteria, display additional information about the orders, add more orders matching the same criteria, and so on.

Example You select only orders for a specific carrier. You can search all orders for that carrier, then select orders that ship to a specific region of the country and add them to the wave.

Searchable indexes let you create a wave that provides optimal efficiency for your warehouse and optimal performance for the system.

Figure 18.14 illustrates Wave Selection.

Fig. 18.14
Wave Selection (80.15.1)

Wave Selection

Wave Number: 00000164
Wave Status: NEW
Order Priority: 0
Remark:
Site: site10
Warehouse: whse10

Due Date: 7/6/2008 To: 8/5/2008
Order Type: DO To: SO
Order:
Ship-To:
Class:
Priority:
Route:
Carrier:
Profile:
Reference:

Maximum Order Lines: 999
Default Include: ☒ Include Load Optimization: ☒

Procedure

To select orders and create the wave, use the following procedure:

- 1 If this is a new wave, leave Wave Number blank. If editing an existing wave, enter a wave number.
The system assigns the wave number for a new wave. The system displays criteria for an existing wave.
The system also assigns the order priority for a new wave as 0 (zero). The Order Priority field is display only; however, you can change the priority using Wave Priority Boost (80.15.22.13).
See “Changing the Order Priority of a Wave” on page 316.
- 2 Specify the site and warehouse for the wave; then click Next.
- 3 Specify criteria by which the system selects the waves:
 - a For SOs and DOs, enter or accept due date, order type, ship-to, customer class, priority, route, carrier, and profile.
 - b For customer schedules, enter or accept all fields for SOs and DOs and due time and reference fields.
- 4 Set Default Include to Yes to set the Inc field in the order display frame to Yes. This automatically includes the orders that match the criteria you specify.
See “Selecting Orders” on page 313.
Note You can manually deselect orders or order lines in the order display.
- 5 Select the orders for the wave. See page 313.
- 6 Click Next.
The system prompts you to complete the wave.
- 7 Specify Yes.

The system creates a wave number and displays the first screen of the wave selection with the new number.

The following sections provide Wave Selection field descriptions, instructions to select orders, and additional function descriptions.

Wave Selection Fields

Set the wave selection fields to specify criteria by which the system selects orders for your wave.

Wave Number. Enter a wave number to edit an existing wave or leave blank to let the system create a wave number for a new wave. If you enter a value, the system displays data for that wave.

Wave Status. The system displays the status of an existing wave or automatically assigns a status of NEW to a new waves. Wave status is managed and updated by the system during the wave life cycle. You can view wave status details using Wave Status Inquiry (80.15.2).

Possible statuses are:

- NEW: New wave
- INCREPL: Incomplete replenishment
- REPLEN: Replenishment
- RGASSIGN: Release groups assigned orders
- RGCREATE: Release groups created
- RGACTIVE: Release groups active
- CLOSED: Closed

See page 334.

Remark. Optionally enter any brief remarks about the wave (maximum 40 characters). These display in other wave functions such as Wave Replenishment, Wave Release, and Wave Close.

Site. Enter the name of the site to use for wave planning.

Warehouse. Enter the warehouse to use for wave planning.

Due Date and To. Enter a range of due dates for selecting orders to include in the wave. Enter two-digit months, days, and years. You can also enter the time of day, based on a 24-hour clock; for example, enter July 4, 2006, 1:00 PM as 07/04/06 13:00.

The default values for Due Date and To are calculated based on entries in the Def From Due Date and Def To Due Date fields in Wave Planning Control File.

Order Type. Enter the order type or range of order types as follows:

- From SO To SO: Use sales order lines for this wave.
- From DO To DO: Use distribution order lines for this wave.
- From DO To SO: Use distribution orders and sales orders for this line.

See “Def From Due Date” on page 299.

Note If you specify From SO To DO, the system cannot display the orders. The system searches for orders in alphabetical order and cannot find a sales order before a distribution order.

This field defaults from the same-named field in Wave Planning Control File.

Order. Enter a range of specific order numbers if you want to include lines from those orders only.

Ship-To. Enter a range of ship-to codes for selecting orders to include in the wave.

Class. Enter a range of customer class codes for selecting orders to include in the wave.

Priority. Enter a range of priorities for the orders for selecting orders to include in the wave. You associate a priority with an order in Order Maintenance (80.14.1).

Route. Enter a range of route codes if you want to include orders only from specific routes in the wave. You associate a route with an order in Order Warehouse Data Maintenance.

Carrier. Enter a range of carrier codes for selecting order lines for this wave. If you specified the carrier for order lines in warehouse order maintenance functions, the system selects lines that match. Otherwise, if you do not specify the line-level carrier, the system uses the carrier you specify at the order header level.

Profile. Enter a range of specific profiles to use when selecting orders for a wave. You define profiles in Address Detail Maintenance (80.14.17). You can update the Profile in the wave selection screen by pressing P.

Reference. For customer scheduled orders, enter a range of references for selecting orders to include in the wave.

Def Max Order Lines. Enter a numeric value for the default maximum number of order lines to include in a single wave. This field defaults from the Maximum Order Lines field in Wave Planning Control File. See “Def Max Order Lines” on page 302.

Default Include. Indicate how to set the Inc field in the wave order display. This field defaults from the Default Include field in Wave Planning Control.

No: Do not set the Inc field to Yes in the order display to automatically include the orders that match the defaults set in Wave Selection.

Yes: Set the Inc field to Yes in the order display to include all orders that match the defaults set in Wave Selection.

Use this field to streamline program execution if you typically include all selected orders when creating a wave.

See “Default Include” on page 303.

Selecting Orders

Once you specify criteria to select orders and click Next, the system displays orders that match that criteria. Figure 18.15 depicts the order display.

In the Include column, press Enter to toggle between Yes and No to select or deselect the orders to include in the wave.

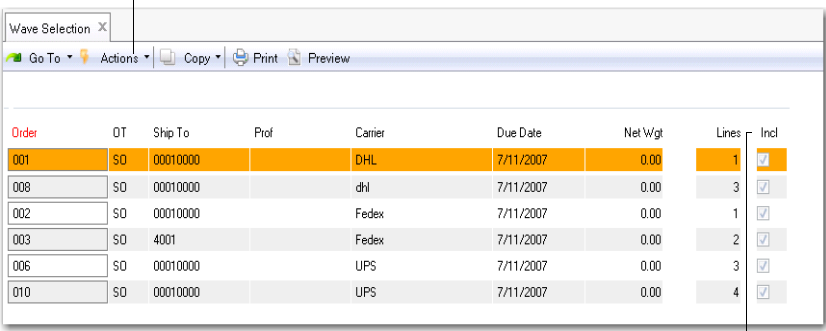
Use additional functions in the order display to further customize your order selections for the wave. Use function keys at the bottom of the list of orders or if using the .NET UI interface, select Actions for additional functions. Press R to refresh the display, D to display details of an order, W to display the workload of an order, U to undue, and H for help. When you press H for help, additional sort and editing options display.

Click Next to complete wave selection.

See page 314.

Fig. 18.15
Wave Selection (80.15.1), Order Display

Use functions to add/remove orders, sort, view details and more.



Order	OT	Ship To	Prof	Carrier	Due Date	Net Wgt	Lines	Incl
001	SO	00010000		DHL	7/11/2007	0.00	1	☒
008	SO	00010000		dhl	7/11/2007	0.00	3	☒
002	SO	00010000		Fedex	7/11/2007	0.00	1	☒
003	SO	4001		Fedex	7/11/2007	0.00	2	☒
006	SO	00010000		UPS	7/11/2007	0.00	3	☒
010	SO	00010000		UPS	7/11/2007	0.00	4	☒

Include or exclude the order in this wave.

Using Additional Functions in the Wave Order Display

You can use additional functions when orders display in Wave Selection:

- Remove orders from the wave using either the Keep Only or Remove Frame function.
- Add orders to the wave using wave selection criteria.
- Sort the frame by carrier, due date, ship-to, net weight, order or profile. You can find a line, once you sort.
- Select/deselect all orders of a given ship-to in real time after you sort by ship-to.
- See order details and select/deselect order lines one at a time.
- Edit the Profile or Carrier.
- Display a summary. The summary displays the number of orders and order lines based on the last sort criteria used. For example, first sort by carrier by pressing C; then press M.
- Refresh the frame. When you refresh a frame, the system deletes all orders or order lines having Include set to No.
- Undo the last action. The system will undo only the latest action.
- Display the workload and once displayed, calculate the workload.

The workload calculation uses the algorithm you specify in the Workload Algorithm field in Wave Planning Control. You specify whether to use the workload algorithm as the default in Use Default WL Algo. The system calculates the workload for all WLGs belonging to the workload group that you define in Workload Group Maintenance (80.15.18). When you select

W to show the workload, the system displays a frame that shows the capacity and workload for all workload groups. You can then select a particular workload group to see individual WLG capacity.

See page 300.

- Display a summary of all loads included in a wave selection, add loads to a selection, or deselect closed load orders from a wave.

Use the following additional functions in the workload order display:

- Press P to see the details by order. The system displays the number of picks by order and by WLG.
- Press Q to display the ordered quantity by order and by WLG. The system displays the quantities. Quantity information is useful when managing workloads and replenishment, regardless of the UM your warehouse uses.

Wave Selection for Configured Kits

A kit is a set of items that are picked for shipment. No real assembly takes place, and the configured item is not a physical entity; it only exists as a logical superset of its components. The configuration defines the content of a kit, and a shipment contains the end items that comprise the kit. Kit picking uses the PICK-FAS transaction, not the PICK-SO transaction. Wave reports and inquiries display data for the PICK-FAS transactions just as for the PICK-SO transactions. You can use Wave Open Order Report and set the Only Allocated Lines (Kit) to Yes to view data for allocated configured kits.

When selecting sales orders for kits for a wave, you select the kit parent item, not individual components; therefore, the kit parent item generates a warehousing order detail record. This is because the system always assigns the carrier (ship via) to the parent, not to the kit components, and carriers are important for waves.

Kit components require an Item-Warehousing Maintenance record so that you can select them for a wave and the system can use a warehouse item type to assign to lane groups in Lane Group Assignment; however, you do not need an Item-Warehousing Maintenance record for the parent item. If component records are not assigned, the system assigns a blank warehouse item type for the kit parent. If this occurs, you can assign a different warehouse item type in Item-Warehousing Maintenance.

You can press C in the Wave Selection Order Details frame to display kit configuration; the selected order line is a kit configuration.

You can use fields in Wave Planning Control to allocate kit components, display only allocated components for a kit, or ship available quantities for a kit.

When releasing a wave, the system creates PICK-FAS tasks just as does for PICK-SO tasks. When replenishing, the system creates for kit components and not the parent item. During wave release and release group creation/activation, all algorithms, ship-to and ship via codes, and orders are correctly retrieved for PICK-FAS picking tasks.

Changing the Order Priority of a Wave

Use Wave Priority Boost (80.15.22.13) to manually change the order priority or the task priority of a wave. When you boost the priority of a wave, you boost the priority of all the orders or all tasks on the wave. Since batch picking displays orders by descending priority, those orders display at the top of the list once you boost priority.

You assign task priority in the Priority field in Internal Routing Maintenance (80.2.5). If there is no internal routing defined for the movement, then the task priority is set for transactions in the Priority field in Work Location Group Maintenance (80.3.9).

You define the order priority for a customer in Address Detail Maintenance (80.14.17), which defaults to any order you create for the customer. You use Order Maintenance (80.14.1) to view priority.

To change the order or task priority, specify the wave number. The system displays the site, warehouse, and any remarks about the wave. Change the priority by entering new values in either the Order Priority or Task Priority field.

See “Default Sort Algorithm” on page 300.

Fig. 18.16
Wave Priority Boost (80.15.15)

Specify a higher priority for the wave.

Replenishing a Wave

When you know the items needed for each order, you can ensure that stock moves from the reserve area to the picking area before the picking takes place. Use Wave Replenishment (80.15.4) to replenish items in the picking area. This ensures that quantities are sufficient to meet the demands for the order lines in the wave.

When you run wave replenishment, the system considers the requirement for the item on the wave and all open waves that require the item. If other waves require the item, the system adds the requirement to the warehouse staff assigned to the replenishment task for the waves. When you run wave replenishment for the other waves that require the item, the system checks not only existing stock in the picking location but all the stock expected to arrive in the picking location. This ensures that there is enough stock to cover existing replenishment tasks.

Inventory and SLG Considerations

The system considers inventory in the storage location group (SLG) during wave replenishment to determine if enough inventory is available in the forward pick location. The system checks for stock first in the home SLG for the item, then in the overflow SLG linked to the home SLG.

Note You link the overflow SLG to the home SLG in Storage Location Group Maintenance (80.3.1). See “Storage Location Group Maintenance” on page 65.

The system looks for the home location using the following sequence:

- 1 Use the first dedicated location for the item.
The system uses the SLG that corresponds to the item and the dedicated location that you specify in Location Maintenance (80.3.13.1). You set the Dedicated field to Yes for the home location.
If you have multiple dedicated locations, the system uses the first location it finds.
- 2 If the SLG in the home location is not available, use the SLG that corresponds to these definitions in this order:
 - a The first item-SLG replenishment definition in Replenishment-SLG Maintenance (80.16.17)
 - b The first item-location replenishment definition in Replenishment Location Maintenance (80.16.5)

The quantity to replenish is calculated as follows:

$$Qty\ to\ replenish = Qty\ required\ (1) - Qty\ available\ and\ coming\ in\ (2)$$

Where:

$$Qty\ required = qty\ needed\ on\ that\ wave\ for\ the\ item + qty\ required\ on\ all\ waves\ for\ that\ item\ (1)$$

$$Qty\ available = stock\ QOH + stock\ coming\ in\ for\ open\ replenishment\ tasks\ for\ the\ SLG\ you\ need\ to\ replenish + overflow\ QOH\ and\ overflow\ qty\ coming\ in\ for\ the\ associated\ SLG\ (2)$$

You define a replenishment list in Wave Planning Control that contains the SLGs that you want to pick from to replenish other SLGs during wave replenishment.

Wave Replenishment Steps

Wave replenishment typically includes the following three steps; however, depending on the setup, you may not use all steps:

- Step 1: Full-pallet picking
- Step 2: Box picking from the reserve area
- Step 3: Picking area replenishment

The following subsections describe each step in more detail. Setup information is provided in the subsections. The following warning message displays when at least one item is not set up correctly:

No Replenishment Definition

Step 1: Full-Pallet Picking

For larger quantities to pick, such as for distribution orders, staff can pick full pallets from the reserve area and move them either to the picking area or directly to the shipping lanes, bypassing the picking area. You can bypass the picking area only if the quantity on a single order line is bigger than the pallet quantity. The system uses picking algorithms and other replenishment options to split pallets, overpick, and so on, that you specify when you set up replenishment tasks for warehouse staff.

The system can create tasks associated with full-pallet picking with a priority of 0 (zero). Even though the system creates the tasks, warehouse staff cannot process the tasks on the RF device. When you release the wave, you activate full-pallet picking tasks along with detail picking tasks. This means that warehouse staff complete full-pallet picking tasks and detail picking tasks at the same time.

If you create full-pallet picking tasks with a non-zero priority when you replenish the wave, warehouse staff bring full pallets to the consolidation or staging area before they replenish items for the wave and before they pick items for the rest of the wave. Moving the full pallets directly to the staging area at this point means that staff use unnecessary space in the staging area. Also, since the system already created the task, it reserves the pallet for the task, even though you have not activated the task.

Step 1 creates a pre-shipper for sales orders or distribution orders. You must print the pre-shipper in Wave Replenishment at the end of step 2.

Skipping Step 1

To skip the full-pallet picking step, set the Pallet SLG Level From/To field in Wave Planning Control to SLG levels that do not correspond to the picking levels of the pallet SLG levels. The system avoids picking in the reserve area by skipping the SLG that has a picking level equal to or within the range of the values you specify in Pallet SLG Level From/To.

See “Pallet SLG Level From/To” on page 307.

Example The storage location groups in the pallet area have a picking level between 10 and 20. When you set Pallet SLG Level From/To from 30 to 40, picking does not occur in the pallet area.

Setting Up Step 1

Set up step 1 of the replenishment in the same way you set up traditional order picking. Set the following:

- Use Internal Routing Group Maint (80.2.1) to assign an internal routing group to the pallet area.
- Use Internal Routing Maintenance (80.2.5) to assign an internal routing from the pallet area to the dock/consolidation area for a transaction type that is based on the order you use in the wave; for example, transaction type PICK-SO for sales orders, transaction type PICK-FAS for sales orders for configured kits, or PICK-DO for distribution orders.
- Use Algorithm Assignment Maintenance (80.6.9) to assign a pick-by-level algorithm to a PICK-SO or PICK-DO transaction type. Assign a pick-by-level algorithm such as pick-by-level-by-location to ensure that the first step consists of picking only in the pallet area.
- Set up Wave Planning Control picking parameters as shown in Table 18.3. See page 320.

- Set up other replenishment picking parameters in Wave Planning Control. See “Setting Up Wave Planning Control” on page 299.

Step 2: Box Picking from the Reserve Area

In step 2, staff can pick either:

- Full boxes from the reserve area
- Full or open boxes from the picking area

You can use this step to pick multiple boxes from the reserve area and move them directly to the consolidation or staging area.

The same rules apply when applying a zero or non-zero priority to the picking tasks as when using the full-pallet picking.

See “Step 1: Full-Pallet Picking” on page 318.

Skipping Step 2

You can skip this step by setting the same option in Wave Planning Control that you set to skip step 1. If you do, staff replenish the picking area and pick full boxes from the picking area; for example, through batch picking.

See page 318.

Setting Up Step 2

If you want to pick full boxes from the reserve area in this step, set the following:

- Set Pick Boxes in Pallet Area to Yes in Wave Planning Control.
When Yes, staff can perform box picking after the full-pallet picking. When No, the system sets the box picking completion percentage to 100% without processing any picking tasks.
- Set up Wave Planning Control picking parameters as shown in Table 18.3 on page 320.
- Set up other replenishment picking parameters in Wave Planning Control.

Step 3: Picking Area Replenishment

When full-pallet picking or box picking is complete for a wave, the system calculates the remaining missing quantities in the picking area to fulfill all order lines from the wave. The system creates the tasks to move items to the picking area from the reserve area.

The system calculates the requirement per item across the entire wave; that is, the remaining quantities needed are the sum of all order line quantities needed for a given item at a time. You can view the remaining quantity replenishment as *bulk replenishment* because staff replenish multiple orders at the same time.

For replenishment examples, see page 322.

Also, depending on the setup, you can over-replenish (overpick) a location by creating one or multiple tasks for each box and moving entire pallets to the replenishment area.

See “Replen Multi Trans” on page 308.

When step 3 of replenishment finishes, the system creates a dynamic replenishment SLG definition for the given item and an SLG to replenish.

See “Replenishment Results” on page 322.

Setting Up Step 3

- Use Internal Routing Assignment Maint (80.2.9) to assign an internal routing group between the pallet area and the detail picking area.
Because these two areas are typically part of the same storage internal routing group, set up a one-step internal routing and assign it to the replenishment picking transaction type PICK-RE.
- Use Algorithm Assignment Maintenance (80.6.9) to assign a pick-by- level algorithm to transaction type PICK-RE. Assign a pick-by-level algorithm such as pick-by-level-by-location to ensure that staff do not pick in the pallet area for this step.
- Use Algorithm Assignment Maintenance to assign a put-away algorithm to the PICK-RE transaction type.
- Use Replenishment SLG Maintenance (80.16.9) to create an SLG replenishment definition.
- Set up Wave Planning Control picking parameters as shown in Table 18.3 on page 320.
- Specify a Replenishment List in Wave Planning Control.
- Set other default replenishment controls in Wave Planning Control.

Specifying Replenishment Options

Table 18.3 explains which fields the system considers for picking parameters in the three steps of wave replenishment. You can also refer to Table 18.4 on page 323 and Table 18.5 on page 325, which list replenishment setup for explicit examples.

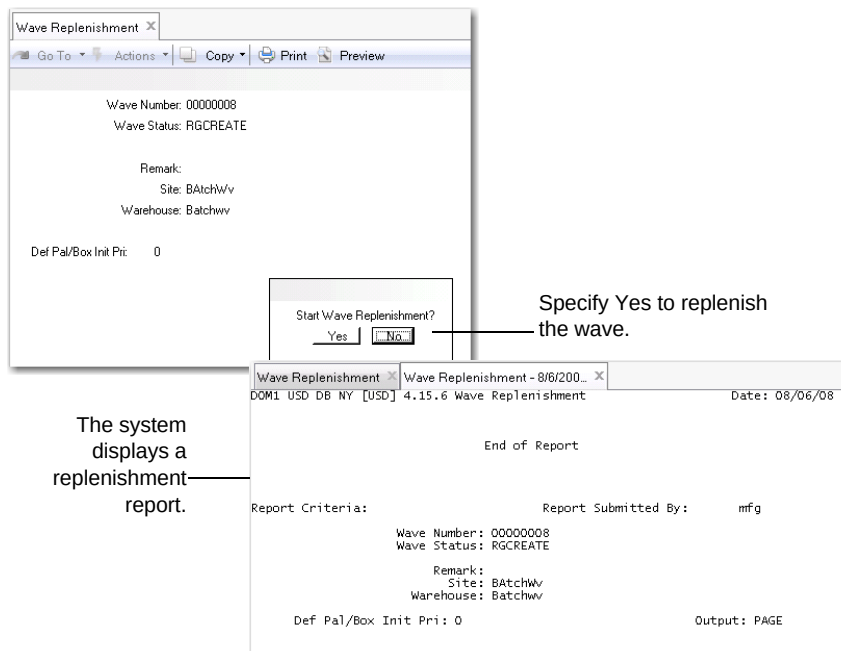
Table 18.3
Fields Considered During Replenishment

Step	For Pallet Splitting	For Over-Picking	For Picking by Multiples of	For Multiple Transactions
Step 1: Full-pallet picking	Set Allow Split Replen to No.	Set Replenishment Overpick to No.	Set Pallet UM to pallets or blank. If blank, set Pick Multi Of in Storage Location Group Maintenance (80.3.1) to pallets.	Set Replen Multi Trans to No.
Step 2: Box picking	Set Allow Split Replen to Yes.	Set Replenishment Overpick to No.	Set Box Pick UM to box.	Set Replen Multi Trans to No.
Step 3: Replenish picking	Set Allow Split Replen to Yes.	Set Replenishment Overpick to Yes.	Set Replen Pick UM to either pallets or boxes or leave blank. If blank, set Pick Multi Of in Storage Location Group Maintenance (80.3.1) to pallets or boxes.	Set Replen Multi Trans to Yes.

Wave Replenishment Procedure

Figure 18.12 illustrates the Wave Replenishment function.

Fig. 18.17
Wave Replenishment (80.15.4)



- 1 In the header, specify the number of the wave for which you want to replenish items. The system displays wave information, including the status, site, warehouse, and remarks specified in Wave Selection.

- 2 Specify the default priority for tasks in the first and second step of the wave replenishment.

Note If you want staff to perform pallet and box picking at the same time as the detail picking, set this field to 0 (zero). See page 322.

- 3 Click Next.

The system displays the following prompt:

Start Wave Replenishment?

- 4 Respond Yes; then click Next.

The system displays a replenishment summary and creates a pre-shipper for sales orders at the end of step 2; it then prompts you to specify the output device for the pre-shipper.

- 5 Print the pre-shipper to a screen, a printer, or a file.

Note Printing the pre-shipper is a mandatory step for SOs. If the wave contains only DOs, the system does not prompt warehouse staff to print.

The system displays a replenishment summary that includes the number of reserve picking tasks and replenishment tasks.

Wave Replenishment Fields

The following paragraphs present the Wave Replenishment user interface and describe fields you enter.

Wave Number. Enter the number of the wave you want to replenish. The system displays the status of the wave, and the site, warehouse, and remarks entered in Wave Selection.

Default Pal/Box Init Priority. Specify the default priority for tasks in the first and second step of the wave replenishment. In these two steps, staff pick full pallets or boxes in the reserve area and move them directly to the consolidation area or dock.

If you want staff to perform pallet and box picking at the same time as the detail picking, set this field to 0 (zero). When 0, the system creates tasks but the tasks are not visible by RF device users. When you release the wave, the system activates the tasks and sets the priority to a non-zero value. By setting priorities, the system synchronizes all picking activities for the wave.

This field defaults from the Def Pallet/Box Init Priority field in Wave Planning Control.

See “Def Pallet/Box Init Priority” on page 306.

Replenishment Results

When step 3 of replenishment finishes, the system:

- Performs one of the following functions:
 - Creates both a dynamic replenishment SLG definition for the given item and an SLG to replenish, if neither exists.
 - Copies replenishment definitions for the item and the SLG to a temporary table, if both exist.

Once copied to a temporary table, the system creates a new replenishment definition for wave requirements. After you start replenishment, the system replaces the temporary wave SLG replenishment definition with the one it creates. This ensures that wave replenishment is for the required wave quantity only.

- Starts a dedicated-location put-away logic to find a suitable location in the detail picking area. This is standard setup for SLG replenishment.
- Creates a task to move the required quantity.

Note If Replenishment Overpick is Yes in Wave Planning Control, the system can create tasks to move more than the required quantity.

- Deletes the temporary replenishment definition that was specific for the wave and replaces the definition with the static SLG replenishment definition if one exists.

Replenishment Examples

The following example shows how item replenishment occurs. In the example, you replenish for a single wave A with two orders for item B.

The following conversion factors are set:

Program	UM	Alternate UM	UM Conversion
Storage Location group Maintenance (80.3.1)	PL (Pallet)	EA	100
Storage Location Group Maintenance (80.3.1)	BX (Box)	EA	20

For Wave A, item B, two order lines exist:

Order Line 1	=	182 EA
Order Line 2	=	173 EA
Total:		355 EA

The total requirement is for 355 EA.

Setup and Results for No Box Picking from Reserve Area

Table 18.4 shows which fields to set in Wave Planning Control for replenishment for no box picking from the reserve area.

See page 299.

Table 18.4
Replenishment Setup for No Box Picking from Reserve Area

Field to Set	Set To	Results
Pick Boxes in Pallet Area	No	Step 2 of the replenishment does not take place.
Pallet UM	blank	The system considers the setting of the Pick Multi Of field in Storage Location Group Maintenance (80.3.1) for step 1 (full pallet picking). In the SLGs, the alternate UM is PL and staff need to pick by multiples of PL. Note: For step 1 of wave replenishment—full pallet picking—the following picking properties are hard-coded and, therefore, not impacted by setup: • Split allow is No. • Overpicking is No.
Replenishment Overpick	Yes	Staff bring full pallets only to the detail picking area.
Allow Split Replen	No	Staff can only move full pallets to the detail area, even if the quantity required is less than the pallet quantity. This is because Replenishment Overpick is set to Yes.

Field to Set	Set To	Results
Replen Pick UM	PL	This determines the pick by multiples of setup for step 3 of wave replenishment, which is picking for replenishment once full boxes and pallets are complete. Staff pick by PL multiples from the reserve area. Note: This field can be blank. If blank, the system considers the Pick Multi Of field setting in Storage Location Group Maintenance (80.3.1) and the alternate UM of the inventory record it is processing. The system does not consider other parameters such as overpicking, multiple transactions, and split pallets from the SLG for step 3 of wave replenishment. The settings always come from Wave Planning Control.
Replen Mult Trans	No	This setup creates multiple tasks if, for example, staff pick by box from the pallet area and you want staff to move one task per box as opposed to one task for all the boxes. This setup is not relevant for picking by multiples of pallets.

Using the setup illustrated in Table 18.4 generates the following results for the three steps of wave replenishment:

Step 1: During full-pallet picking, the system considers each order line at a time. For order line 1, 182 EA were required. In the SLG for picking, there are pallets with a PL UM. The SLG picking details dictate the following:

- PL is a non-splittable unit of measure.
- Overpicking is not allowed.
- Staff pick by PL with no multiple transactions created.

Based on this standard setup, staff can pick one full pallet of 100 EA for order line 1 and one full pallet of 100 EA for order line 2.

Of the 355 EA required, staff have already picked two pallets of 100 EA. At this stage, the missing quantity is 155 EA for Item B.

Step 2: The system skips this step because of control settings.

Step 3: This is the actual replenishment. This step is a bulk replenishment by item. The system considers each item, but the requirements are the sum of all orders for the item in the entire wave. The system removes the item requirement for items staff already picked in step 1 or 2. Based on this, the remaining requirement of 155 EA for item B remains for step 3.

Finally, the system considers the quantity already available in the detail picking area for this item:

- Available in picking area: 11 EA
- Replenishment quantity needed: 144 EA (155 EA – 11 EA)

When the replenishment starts, the system considers the picking default properties from Wave Planning Control. This is different from traditional setup, when the system considers picking defaults coming from the SLG. In this example, staff pick by non-splittable pallets and cannot overpick.

Picking results also depend on the type of algorithm the system uses. Typically you specify a pick-by-level type algorithm. Using this type algorithm, the system sets up two replenishment tasks to move two pallets from the reserve area to picking area. Each task is for a pallet of 100 EA; therefore, in this example you replenish more than the required quantity.

Setup and Results for Use Box Picking from Pallet Area

Table 18.5 lists the Wave Planning Control setup when you use boxes from the pallet area. The UM for box picking is set to bx (box).

Table 18.5
Replenishment Setup for Use Box Picking from Pallet Area

Field to Set	Set To	Results
Set all fields as in Table 18.4		For results of these settings, see Setup and Results for No Box Picking from Reserve Area on page 323.
Pick Boxes in Pallet Area	Yes	Step 2 of the replenishment will take place after the full pallet picking step.

Using the setup illustrated in Table 18.5 generates the following results for the three steps of wave replenishment:

Step 1: The same as setup for box picking from reserve area.

Step 2: Picking by boxes in the pallet area is set to Yes so the system processes step 2. For this step, the following picking properties are hardcoded and cannot be changed by any setup:

- Allow split is set to No.
- Overpicking is set to No.

The Pick by Multiple UM value is from the Box Pick UM field in Wave Planning Control or if not found, from the Pick Multi Of field setting in Storage Group Location Maintenance (80.3.1). Based on the picking algorithm, staff pick as many boxes as possible from the pallet area but without picking more than what is required (overpicking is No). This works per order line as per step 1.

For order line 1, the requirement is 82 EA (182 – 100). This means if staff pick by multiples of box without overpicking and one box contains 20 items EA, staff pick four boxes of 20, or 80 EA.

For order line 2, the requirement is 73 EA. (173 – 100). This means staff pick three boxes and move them directly to the consolidation or staging/dock area.

Step 3: This is the actual replenishment. This step is a bulk replenishment by item. The system considers each item, but the requirements are the sum of all orders for the item in the entire wave. The system also considers the quantity already picked in step 1 or 2 and removes those requirements. There is a remaining requirement of 15 EA for item B. The 15 includes 2 EA remaining for order line 1 and 13 EA for order line 2. Finally, the system considers the quantity already available in the detail picking area for this item:

- Available in picking area: 11 EA
- Replenishment quantity needed: 4 EA (15 EA – 11 EA)

Replenishing Customer Scheduled Orders in Two Waves

The same customer scheduled order can be an open order on two different waves. However, the system cannot process customer scheduled orders correctly when they are set up for multiple picking and pegging that occur in the wave replenishment and release steps. If you attempt to replenish a wave that has a customer schedule order on another open wave, the system displays an error message and blocks replenishment by:

- Skipping step 1 and step 2 of replenishment
- Ignoring the requirement for step 3 of replenishment

When the system considers the quantity open on a wave with customer schedules, it does not take into account the quantities on other open waves. This is correct even though the quantity open on a wave does not reflect any other open, non-allocated quantities on another wave.

If another open wave for a customer schedule is in the replenishment stage, once you release that wave and the system processes it, you can replenish the other wave with the customer schedule that the system previously blocked. After you release a wave and the system completes detail allocations, the quantity open corresponds to the exact quantity.

Locked Files During Replenishment

Occasionally, orders can be locked when they are being updated by other users during a replenishment. If this happens, the system displays a message in Wave Replenishment and changes the status of the wave to INCREPL (incomplete replenishment). Use Wave Unprocessed Orders Inquiry (80.15.22.1) to display the login ID of the user that is locking the order. Once the order is unlocked, you can release the wave.

Incomplete Batch Order Selection During Replenishment

It is possible that order lines selected in batch selection are not selected for a load. If this happens, the system displays a message in Wave Replenishment and changes the status of the wave to incomplete replenishment (INCREPL). Use Wave Unprocessed Orders Inquiry to display the login ID of the user that is locking the order. Once the remaining order lines in the batch selection are selected as part of a load, you can release the wave.

Releasing a Wave

Use Wave Release (80.15.5) to release a wave. When you start a picking process, the system creates a pre-shipper. In the warehousing system, when you release the wave, you release the sales and distribution orders for picking and the system creates and prints a pre-shipper.

When you release a wave, the system:

- Uses picking logic to calculate the number of items needed for the wave
- Makes tasks available to staff through the RF device
- Creates and prints the pre-shipper for sales and distribution orders

See page 330.

For SOs only, the system looks for any previously open pre-shipper for the same ship-to and carrier. If an open pre-shipper exists, the system adds more lines to the pre-shipper. This occurs primarily when you specify full-pallet picking during the replenishment step, but staff have more lines to pick in the picking area during the wave release step. The system also considers pre-shippers created for other waves but for the same ship-to and carrier. However, once the pre-shipper is printed and you create a shipper from it, the system no longer considers the pre-shipper and creates a new pre-shipper number. This process has important consequences when staff consolidate since they can only put items for the same pre-shipper on the same pallet.

When you release a wave, the system collects orders for a wave and groups them in wave release groups. The system then activates the groups.

- Set Create RG in Wave Release to Yes in Wave Planning Control to automatically create the release groups when you release the wave.
- Set Activate RG in Wave Release to Yes in Wave Planning Control to automatically activate the release group when you release the wave.

See page 302.

If you set both options to No in Wave Planning Control, you can manually create and activate release groups, assigning your own orders from the wave using Wave Release Groups Create/Activ. You then can manually activate the release groups using the same program.

To manage throughput of large quantities, you can release orders on a wave incrementally. Or you can release all orders at once for smaller quantities.

Example You have 30 staff picking 1000 order lines for a UPS carrier, but you have only one shipping lane for that carrier. Instead of releasing all 1000 order lines at the same time and creating a congestion of workers in the single shipping lane, you release the 1000 order lines in increments of 100 lines each. This continual throughput eliminates the shipping lane congestion and ensures all items are in the shipping lane in time for the carrier.

You can release orders for which the stock has been completely replenished for all lines. This lets you do multiple releases of the same wave and release more orders.

The system applies priority to wave releases so that staff are not picking for multiple waves released at the same time. So, if you release three waves that are open at the same point in time, the system arranges them so that staff finish picking for one wave before picking for another.

Important You can only release an order if there are no open replenishment tasks for the complete pre-shipper; that is, there are no existing replenishment tasks for any item of any order line belonging to the same pre-shipper.

Use Order Whse Detail Status Inquiry to view order status. Use Wave Status Inquiry to view the status of a wave release and to determine when to release a wave. This inquiry shows when the wave is ready to be released and when all orders on the wave can be released. It also shows when the wave can be partially released, when some orders can be released, or when other orders require additional replenishment before releasing them.

See “Viewing Wave Information” on page 333.

Determining the Number of Order Lines to Release

The number of order lines typically equates to the number of picking tasks. For example, 30 order lines results in 30 picking tasks. The system automatically creates release groups for the 30 order lines as:

- 30 lines per group
- A single group for the same ship date
- Warehouse item type and carrier

Note Item carrier equates to the Ship Via field.

Wave Release Procedure

Fig. 18.18

Wave Release (80.15.5)

Use the following procedure to release a wave.

- 1 Enter the open wave number you want to release; then click Next.
- 2 Specify the additional header information such as the lane group, order priority, release group algorithm, and so on. See “Wave Release Fields” on page 329.
- 3 Click Next.

The system displays the following prompt:

Launch wave picking?

- 4 Specify Yes.

The system prompts you to print a pre-shipper.

- 5 Specify terminal, a file, or a printer to print results.

The system automatically creates a single or multiple release groups if you specify to do so, then displays the number of tasks it creates for the release group. It also displays the carrier, the due date, and the shipping lane to use.

Note You can optionally manually create and activate a release group outside of Wave Release.

- 6 Follow procedures to launch the release groups. See “Launching Release Groups” on page 330.

Wave Release Fields

The following paragraphs describe the fields in Wave Release:

Wave Number. Enter the number for the wave you want to release. The system displays the status of the wave, and any remarks entered when the wave was created, as well as the associated site and warehouse.

Lane Group. Enter a valid lane group. A lane group is a collection of shipping lanes. You define lane groups in Lane Group Maintenance (80.15.15).

The system creates release groups (collections of orders) automatically and assigns them to shipping lanes when you release the wave if you set options in Wave Planning Control, or you can do this manually in Wave Release Group Create/Activ.

See page 302.

Generate Release Groups. Indicate whether the system creates multiple release groups or only one release group for the entire wave when you release the wave. This field defaults from the same-named field in Wave Planning Control.

No: The system creates only one release group for the entire wave you are releasing.

Yes: The system creates more than one release group for the entire wave you are releasing.

Priority Task Creation. Specify a default priority value for a wave release. This field defaults from the same-named field in Wave Planning Control. The system creates the release group when you release the wave. Once created, you can assign the release group to a lane; however, the system may create tasks and an RF device can receive the tasks before you assign the release group to a shipping lane. To prevent this, set this field to 0 (zero). The default is 0.

Order Lines per Rel Group. Indicate a number for the limit of picks per release group. This field defaults from the same-named field in Wave Planning Control. If you do not want to limit the number of picks per release group, enter the maximum value of 99999.

Def Pri After Activate. Specify the default priority the system assigns to the picking tasks once you activate release groups. If you want the tasks to be processed with RF devices, specify a non-zero value. When using batch picking in the picking area, this value is not important as long as it is a non-zero value. This is because batch picking sorts orders by order priority, not task priority, and selects tasks based on the travel sequence. For other picking techniques, though, when warehouse staff use the RF Next Task screen, the task priority is important. This field defaults from the same-named field in Wave Planning Control.

Important You must set the Task Calculation field in Local Exit Routine Control File (80.24.23) to the `whwata01.p` program. See page 291.

Release Group Algorithm. Enter an algorithm that the system uses to create the release group. This field defaults from the Release Group Algo field in Wave Planning Control. See page 304.

Order Priority. Specify the value of the priority for the next wave. This field defaults from the Priority field in Wave Planning Control.

When you release the wave, the system updates the wave priority and all order priorities for the wave you are releasing based on the value of this field. The order priority value is decremented by one for each new wave that you release. When you re-release a wave, however, the priority does not change. For the highest priority wave, the system sorts orders or pre-shippers by descending order with the highest number orders or pre-shippers displaying first in the RF batch-picking screens.

Launching Release Groups

After you specify criteria for the release and print the pre-shipper, the system displays release groups to select for the wave release.

The system displays the shipping lane algorithm it uses to calculate the lane. You can manually change the shipping lane by pressing L.

See “Assigning Algorithms to a Lane” on page 294.

- 1 In the Inc column, press Enter to toggle between Yes and No to select or deselect release groups for the wave release.
The system reports the number of release groups you select at the bottom of the screen. For example, if three release groups display and you include two, the system displays 2 / 3.
- 2 When you are finished including release groups, press End.
The system prompts you to confirm the exit.
- 3 Specify Yes.
The system prompts you to launch the release groups.
- 4 Specify Yes.
The system creates and activates the release groups and displays a status of the activation.

Using Additional Functions in the Task Display

When the system displays tasks in Wave Release, additional functions display at the bottom of the frame. Table 18.6 lists the additional functions.

Table 18.6
Functions in Task Selection

Key to Press	Function Description
L	Displays a list of shipping lanes and lets you choose a new shipping lane
U	Prompts you to undo changes you made to the display
Enter	Toggles between Yes/No in the Inc column

Locked Orders During Release

Occasionally, orders can be locked during a release when they are being updated by other users. If this happens and the status of the wave is NEW, the system displays a message in Wave Release (80.15.8) and you cannot release the wave even if you set Avoid Rel w/o Replen to Yes in Wave Planning Control. Use Wave Unprocessed Orders Inquiry to display the login ID of the user that is locking the order. Once unlocked, you can release the wave.

Manually Managing Release Groups

When you release a wave using Wave Release (80.15.5), the system automatically creates *release groups*—a collection of orders within a wave if you set options in Wave Planning Control. You can then assign those release groups to shipping lanes by carrier.

If you do not create release groups automatically, you can manually create and activate them using Wave Release Groups Create/Activ.

See page 302.

The frames that display for both programs are similar to Wave Release; however, there is no Order Priority field in Wave Release Groups Creation and Wave Release Groups Create/Activ.

For field descriptions, see page 329.

You must select the release groups individually and launch them.

See page 330.

Deleting Order Lines on a Wave

To delete an order line from an existing wave, use one of the following methods.

If tasks are open on the wave, use this procedure:

- 1 Use Wave Selection to open the existing wave with the order line you want to delete.
- 2 Select the lines you want to remove.
- 3 Press Enter to toggle the Inc field from Yes to No.

If the wave has no open tasks, you can delete the order line, using this procedure:

- 1 Use Wave Selection to open the wave with the order line you want to delete.
- 2 Press F11-Remove.
The system displays the Remove Orders frame.
The system displays a warning even when no tasks are open for the wave; however, you can ignore the warning.
- 3 Specify a range of criteria for selecting the order you want to delete; then click Next.
The system displays the orders and lines deleted.

Initializing Orders in a Wave

If you have open orders in the system when you install QAD Warehousing, you can use Wave Planning Orders Initialize (80.15.22.23) to:

- Update customer schedule order line due dates.
- Mark all orders that are allocated for use by sort algorithm 1. See “Default Sort Algorithm” on page 300.

Customer schedules can span multiple days. The initialize program updates the order line due dates so that they reflect the date of the last active customer schedule for that order.

Algorithm 1 sorts by-priority-by-order and considers all orders with the highest priority. The initialize program marks all allocated orders and builds an index that points to only lines with general allocations instead of all orders in the system. This increases system performance. You must set Display Only Allocated Lines to Yes in Wave Planning Control to initialize orders.

See “Display Only Allocated Lines” on page 303.

Fig. 18.19
Wave Planning Orders Initialize (80.15.22.23)

Closing the Wave

Use Wave Close (80.15.12) to close a wave. You can only close a wave when both replenishment and release are complete and no tasks exist for the wave.

Closing a wave is important since an order line can only be in one wave at a time for sales and distribution orders. If the system does not process an order line in a wave, you can close the wave so you can add the line to another wave.

Wave Status Inquiry (80.15.2) displays all open waves. When numerous waves exist in the system, the report can be difficult to read. For reporting efficiency, you should close waves. Figure 18.20 shows the Wave Close screen.

Fig. 18.20
Wave Close (80.15.12)

Wave Number. Enter a number for the wave you want to close. The system display the wave status and site, warehouse, and remarks specified when the wave was created in Wave Selection.

Close the Wave. Indicate whether to close the wave.

No: Do not close this wave.

Yes: Close this wave.

You can also close a wave when reporting using Wave Close Batch/Report; see Figure 18.21. You can use the report to close a batch of waves or a single wave. You can specify to close waves that have:

- Orders that shipped
- No open orders

Enter Yes in the Update field to close the waves.

Fig. 18.21
Wave Close Batch/Report (80.15.22.20)

Wave Close Batch/Report

Go To Actions Copy Print Preview

Site: spain
Warehouse: distrib

Wave Number: To:

Close if Shipped: ☐
Close if No Open Orders: ☐
Only show Closed: ☐

Update: ☐

Viewing Wave Information

To process orders in a wave effectively, you need to continually view the status of a wave. Monitoring a wave is especially important since waves can overlap; that is, staff can replenish for a wave while picking for another wave. You can also release more than one wave at time and release orders on a wave that is not complete.

You can use various reports and inquiries in the Wave Planning/Batch Picking menu (80.15) to view waves, orders, workloads, workload groups, open tasks, percentages of completion, and so on. Table 18.7 lists important inquiries and reports and you can use during wave processing.

Table 18.7
Wave Reports and Inquiries

Menu No.	Report/Inquiry	Description
80.15.2	Wave Status Inquiry	This inquiry displays the status of a wave and the wave release. Use this inquiry to monitor the progress of different waves or to know when a wave is ready for release. Specify how often the system refreshes the display. See “Monitoring Waves and Wave Releases” on page 334.
80.15.3	Open Order Report	This report displays the number of open orders. The number of open lines displays below the number of open orders. It also displays orders that are past due in a Before column. Optionally, you can display only allocated lines for SOs, DOs, or configured kits.
80.15.11	Wave Detail Report	This report presents detailed information about the orders in a wave. Use it to know wave details such as the order and line number data, carrier, due date, weight per lines, and a description of the items.
80.15.17	Lane Group Report	This report displays shipping lanes for the site, warehouse, and group. It also displays the sequence of the lanes and the user who created and modified the lane.
80.15.20	Workload Group Report	This report displays workload group information, including the site, warehouse, group number, the user who created or modified the group, the number of picks per wave, and the number of minutes per pick.
80.15.22.23	Wave with Blank AbsID Report	This inquiry displays waves by wave number, the number of tasks, and the blank ABS IDs as 0 (zero). You can optionally display only failed waves.

Monitoring Waves and Wave Releases

Use Wave Status Inquiry (80.15.2) to monitor the status of a wave or wave release.

Wave Status Inquiry indicates any of the following statuses for a wave:

- NEW: New wave
- INCREPL: Incomplete replenishment
- REPLEN: Replenishment
- RGCreate: Release groups created
- RGACTIVE: Release groups active
- CLOSED: Closed

You can also use Wave Status Inquiry to monitor the release of a wave to determine when to release another wave; see Figure 18.22.

Fig. 18.22
Wave Status Inquiry (80.15.2)

Table 18.8 lists each possible status of a wave release.

Table 18.8
Wave Release Statuses

Status	Description
READY	The wave is ready to be released and all orders on the wave can be released.
PARTIAL	The wave can be partially released. Some orders can be released, while other orders require additional replenishment before releasing them.
WAIT	Release must wait and you cannot release orders because either: • The wave is a new wave and replenishment has not taken place. • There are open replenishment tasks and no orders can be released.
COMPLETE	No more open orders are on the wave. Picking tasks have been created for all order lines. Orders can still be open; however, no more releases are necessary for the orders.
INCOMPLETE	Some open order lines on the wave could not be picked during a wave release; for example, if stock is missing. Some of the quantities required will not be processed. You can reprocess the wave release when the stock becomes available or close the wave so that order lines can be included in another wave. Use Wave Open Order Inquiry (80.15.4.5) for more information on the open lines.

Different actions can activate a change in the status of a wave release. Table 18.9 lists the action and the resulting change in status.

Table 18.9
Actions that Change Wave Release Status

Action	Status Change
You create a new wave.	WAIT
You launch wave replenishment.	WAIT
The system does not need to create replenishment tasks.	READY
The system creates some replenishment tasks.	PARTIAL
Warehouse staff confirm some replenishment tasks.	READY, PARTIAL, or WAIT
Warehouse staff confirm all replenishment tasks and there are no open lines on the wave.	READY

Action	Status Change
You release all orders that can be released on a wave, but there are more open replenishment tasks to confirm.	WAIT
You release all open lines on a wave.	COMPLETE

Using Containers

This chapter describes how containerization works in QAD Warehousing. The major sections cover these topics:

Overview 338

An introduction to creating and shipping using containers in QAD Warehousing.

Setting Up Containerization 340

You set up containers whether staff pick to a container or enter a reference in Batch Picking Control.

Processing Orders with Containers 341

Instructions and process flow for processing an order with containers on the RF device.

Creating a Container with a Zero Quantity 345

Provides instructions on creating a zero-quantity container using Pre-Shipper/Shipper Workbench.

Creating a Container Level Below a Pre-Shipper 345

Warehouse managers can create a container level below a pre-shipper using the Container Creation Utility.

Exploding Pallets 348

Instructions on using the RF pallet explosion option to pick a single-lot/item pallet, typically from the reserve storage area.

Deleting/Archiving DO Shipper Data 349

Instructions for system administrators to use DO Shipper/Delete Archive to delete/archive the containerization tables to avoid an impact on system performance.

Viewing Container Information in QAD Warehousing 350

Displaying container data in QAD Warehousing.

Overview

Containerization is the process of assembling pallets and orders for a shipment. In QAD ERP, you can manually create a container and link it to a pre-shipper in Pre-Shipper/Shipper Workbench (7.9.2).

QAD Warehousing provides multi-level containerization through the RF that lets staff assemble pallets for shipment until all shipments for a particular customer ship-to address are complete. The RF containerization option lets warehouse staff use the RF to place all boxes or pallets they filled during picking into other containers for shipping.

The RF containerization functionality is available for both sales orders (SOs) and distribution orders (DOs).

- For SOs, warehouse staff can create a container and link it to a pre-shipper number. All boxes for a container for SOs must be on the same pre-shipper; otherwise, the RF displays an error message.
- For DOs, boxes must be for the same ship-to code; that is, the same destination site and the same carrier. This is because two DOs for the same ship-to can be sent using different carriers. If the DO boxes are not for the same ship-to and carrier, the RF displays an error message.

Note Because DOs do not have shippers, QAD Warehousing does not create a shipper level during DO containerization, only a container level. The RF displays DO in the shipper number field.

Through the RF device, warehouse staff can create a new or modify an existing pallet and attach boxes to the pallet. When they do, QAD Warehousing updates the shipper to reflect this.

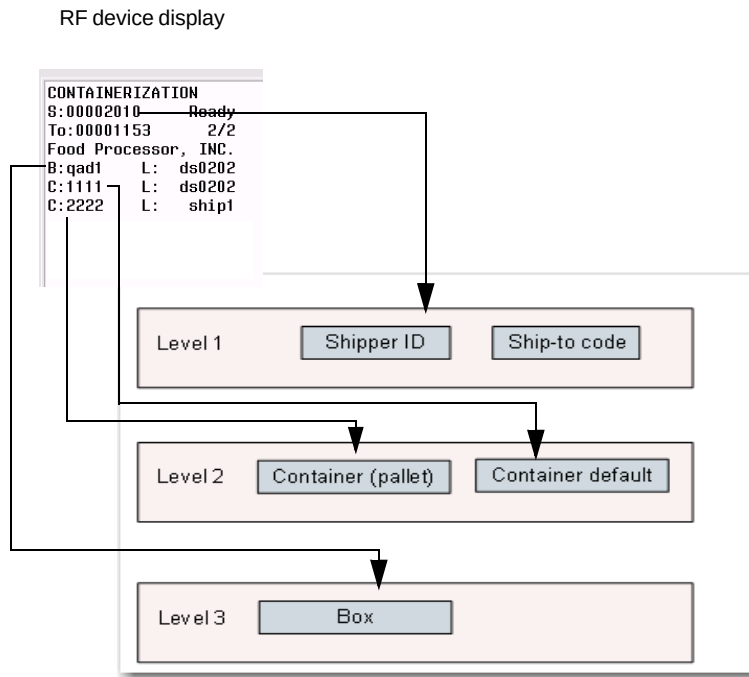
When all boxes have been containerized for a shipper or ship-to, the RF displays a message notifying staff that the shipper or ship-to is ready for shipping.

Container Levels

RF containerization is based on levels. Shipper IDs and ship-to codes are the highest level, containers are the second level, and boxes are the lowest level. When staff link the box to a new container, the container level displays between the shipper and the box level.

Note Current containerization functionality lets staff put the picking containers (boxes) into other containers (pallets) only.

Fig. 19.1
Container Levels



If you remove boxes and the container at the next level up is empty, the system deletes the empty container. For example, if staff remove all boxes from a pallet, the pallet container does not display under the shipper. When staff remove a container that belongs to a shipper, the box attaches to the shipper.

Figure 19.2 shows the container levels that display in Order Detail Status Inquiry (80.15.9). To view these details, use the S option to view shipper information.

Fig. 19.2
Order Detail Status Inquiry (80.15.9)

Level	Order	Order Line	Container Item	Qty To Ship	UOM	Location
SH00000684	Shipper					
J	001	1	AG	78.0	EA	lanes

Shipper

Containerization Features

QAD Warehousing containerization feature lets warehouse staff:

- Scan boxes first and add them to a pallet.
- Transfer a scanned box to a pallet which is in another location on the same shipper.
- Remove boxes from containers or pallets.
- View pallets to use.

- View order status or shipper data that reflects containerization in QAD Warehousing.
- View the number of boxes already containerized and the remaining boxes to be containerized on the RF.
- Move a container and its contents to a truck, with the system moving all containerization levels and detail allocations with the container.
- Merge a pallet into another pallet.
- Create a container level for a full pallet.
- Create a container level below a pre-shipper.
- Explode a pallet.

Setting Up Containerization

Containerization lets staff scan a box that the system identifies by the reference field on the inventory record. You set up whether staff pick to a container or enter a reference in Batch Picking Control (80.15.24). During picking, containers apply to sales orders, while references apply to distribution orders.

Once staff pick and complete containerization, they move a container and its contents to a truck. The system moves all containerization levels and detail allocations along with the container.

See “Container Move and Truck Ship” on page 353.

Batch Picking Control Options

You can set up the system so that it generates container IDs, prints labels for a pallet, prompts to remove containers, and so on during containerization. To do this, use settings in the Batch Picking Control (80.15.24) Containerization frame.

Fig. 19.3
Batch Picking Control (80.15.24), Containerization Frame

Pallet Item. Enter the default pallet container item. You must define the container item first in Item Maintenance (1.4.1).

Pallet Print Program. Enter a print program to use when printing labels for pallets. QAD Warehousing ships with the `whprtpal.p` program.

Pallet Print Option. Indicate whether pallet labels print automatically, not at all, or if the system prompts to print labels. You must specify the print program in Pallet Print Program. The system prints labels for pallets that do not already have a label.

0: Never print pallet labels.

1: Always print pallet labels.

2: Prompt RF user to print pallet labels.

Consolidation IRG. Enter the internal routing group (IRG) where the shipping lanes reside. This should be the destination IRG of the internal routing (IR) used to pick items from the storage area and move them to the shipping lanes. The system uses the setting here when displaying data in Order Detail Status Inquiry (80.15.9) to determine when inventory displays in the Conso or Pack columns.

Prompt to Remove Container. Indicate if you want the system to prompt RF users to remove a container. If users respond to the prompt with Yes, QAD Warehousing removes the box from the pallet. When you view the shipper structure in Order Detail Status Inquiry (80.15.9), the display shows the box below the shipper level, instead of below the pallet. When you remove all boxes in a pallet, QAD Warehousing deletes the pallet, too, and moves all items below the shipper level for the pallet.

No (the default): The system removes the box from the pallet without prompting warehouse staff for confirmation.

Yes: The system prompts warehouse staff to remove the box from the pallet.

Generate Identification. Specify whether the system generates a new container ID when warehouse staff use the RF Container Bld menu option.

No: The system does not generate a new container ID.

Yes: The system generates a new number during RF containerization. You should set up pallet label printing if the system generates new numbers.

Generating a new ID can lead to errors if warehouse staff accidentally press Return in the RF containerization process and Generate Identification is set to Yes. The system considers stock to be on the newly generated pallet number while it may actually be on a different pallet ID.

Explosion Option. Specify whether the system prompts the RF user to enter the number of boxes or splits the items into boxes when you explode a pallet.

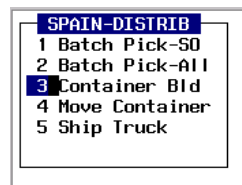
0: The RF does not prompt the user to specify the number of boxes. The system splits goods into x boxes of y items, where x and y are values that the system calculates based on the item's base UM conversion factor. You define the conversion factor in Alternate UM Maintenance (80.5.1). If the items cannot be split into boxes equally, the last box contains the remaining items from the conversion.

1: The RF prompts the user to enter the number of boxes into which the contents of the pallet are exploded.

Processing Orders with Containers

RF staff select the Container Bld option presented in the RF; see Figure 19.4.

Fig. 19.4
RF Container Menu

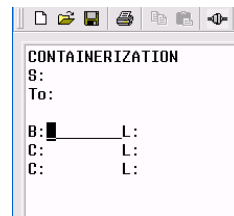


Using the container features, staff scan each box; then the system proposes a list of pallets from which to choose. The containerization can occur at different locations. With the Container Bld option, staff can:

- Scan boxes in one location and containerize on a pallet in another location.
- Move a box from a pallet in one location to another pallet in another location.

Figure 19.5 shows the RF screen that displays when staff select the Container Bld option.

Fig. 19.5
RF Containerization



Containerization Procedure

Use the following procedure when containerizing sales or distribution orders using the Container Bld option:

- 1 From the RF, select 3 Container Bld.

The system displays the Containerization frame as shown in Figure 19.5.

- 2 Scan a box.

The scanned box displays in the B: field and the box location displays in the L: field.

If this is an existing order, the last scanned-in pallet for the shipper displays in the C: field.

If there is more than one pallet, the system prompts the user to press F2 to see all other possible pallets for the box. When staff select another pallet from the lookup, that pallet displays as the default pallet above the actual field to scan the pallet. Staff can scan the proposed pallet or any pallet that is acceptable for the box.

- 3 Scan the destination pallet or press Enter to generate a new pallet number.

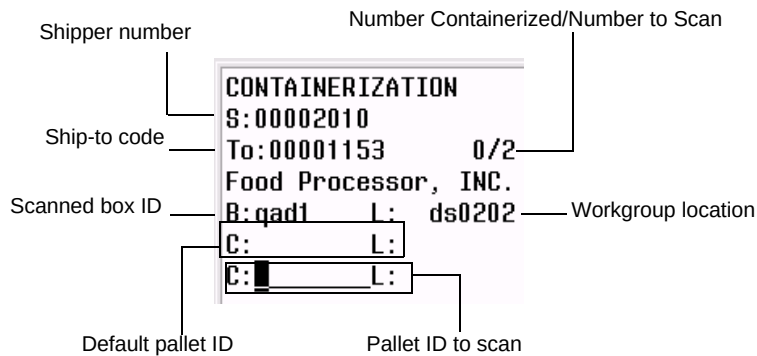
Note The system generates a new number if you set Generate Identification to Yes in Batch Picking Control. If set to No, you cannot generate a new number. See “Generate Identification” on page 341.

If the pallet is new to the system, the system prompts for the pallet location. This location can be the same as or different from the box location. If different, the system moves all items in the box to the pallet location. Also, depending on the Label Print Option field in Batch Picking Control (80.15.24), staff can print a pallet label when the pallet is new.

See “Label Print Option” on page 271.

- 4 Complete assembling the pallet by scanning additional boxes.
The system displays `Box Added` each time you scan a box.
- 5 Complete the pallet and other pallets for the order until truck shipments for the shipper or ship-to are complete.

Fig. 19.6
Containerization, Box Scanned



When assembly of pallets is complete, staff can physically load the pallets onto a truck.

RF Containerization Status

The RF displays the number of boxes containerized, the number of boxes to containerize, and containerization status in the upper right corner of the screen. Containerization status can be any of the following:

Blank: More containerization is required.

Pick: There are open pick tasks for the SO pre-shipper or DO ship-to/carrier. The total number of boxes to scan does not reflect the actual number because totals are unknown at this point.

Ready: There are no more open pick tasks for the pre-shipper or ship-to/carrier, and all boxes have been containerized.

Note The status displays boxes, not full pallet picking.

RF Containerization Error Messages

The RF displays error messages when staff:

- Scan a sales order box that is not from the current shipper.
- Scan a pallet that is not for the same SO pre-shipper as the box.
- Scan a pallet that is not for the same DO ship-to and carrier as the box.
- Scan a pallet that is for a DO while the box is for an SO.

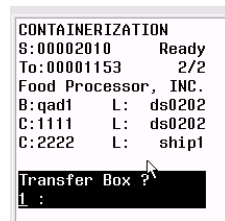
When error messages display, staff should not add the box that caused the error to the shipper.

Transferring a Box to Another Container

Staff can move a box from one pallet to another; for example, for size issues. To do this, they must first physically move the box to the correct container location, then scan the container to which they want to transfer the box.

Example Figure 19.7 shows a `qad1` box already scanned and in the container with the ID `1111`. Both the box and the container are in the work location `ds0202`. Staff then scanned a container with the ID `2222` in the location `ship1`. The system prompts to transfer `qad1` box to container `2222`.

Fig. 19.7
RF Containerization, Transfer Box



Removing Boxes from Containers

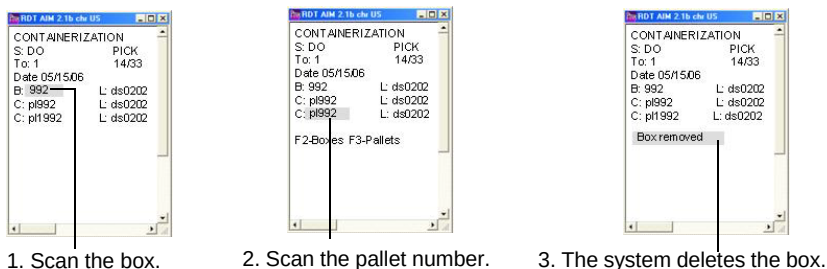
You remove boxes and containers using the RF Container Bld (3.3) menu option. To delete a box, staff scan the box and its container. The system knows the pallet for the box and understands this action is to remove the box from the pallet; see Figure 19.8.

If you remove one box from a pallet, the system displays the message:

Box Removed

If you remove all boxes from a pallet container, the pallet container is removed, too, so the pallet container level does not display under the shipper ID on the RF device.

Fig. 19.8
RF Box Removal



Merging Pallet Contents

You may need to merge pallet contents, for example, when you have only a few boxes on a pallet and you want to optimize your shipment by adding those few boxes to another open pallet for the pre-shipper.

When you scan a pallet and the destination is a pallet as well, the system merges the contents of the first pallet into the second one. The system then deletes the initial pallet container level. If the first pallet was not in the same location as the destination pallet, the system moves the content to the destination pallet location.

Full Pallet Scanning

To add visibility to a shipper, staff can pick a full pallet, then scan the pallet to add a container level to the pallet.

Staff can scan the full pallet using the RF Containerization option. When they do, the system creates a container level for the full pallet; however, the pallets do not go through a containerization process, and staff do not move the pallets to the shipping lane or dock using the RF Next Task screen.

When staff scan a pallet number in the RF containerization screen, the system identifies a full-pallet pick and creates a container level with the container number as the pallet number. The system creates the new container level between the pre-shipper and the inventory reference record. The inventory record, however, still indicates the reference is the pallet number.

If you do not scan full pallets using the RF containerization option, when the system displays data using Order Detail Status Inquiry (80.15.9), the quantity on the full pallet displays in the Conso(lidate) column. The system moves the quantity to the Pack column only after you scan the full pallet or explode the pallet using the RF Pallet Explosion option.

See “Exploding Pallets” on page 348.

Creating a Container with a Zero Quantity

In QAD Warehousing batch picking and RF containerization, when staff create a container, the system creates the container with a 0 quantity. There is no negative stock when the container ships.

When you create a container level in Pre-Shipper/Shipper Workbench (7.9.2), you cannot enter a 0 (zero) quantity for that container. You can, however, enter a quantity of 1 for the container. When the system issues stock for the container, if not monitored carefully, the result can be a negative quantity for the container item.

To create a zero-quantity container using Pre-Shipper/Shipper Workbench, create a phantom item in Item Master Maintenance (1.4.1). The system lets you enter a 0 quantity for the container of that phantom item. A phantom item is directly consumed into its parent items and not planned or stocked upon completion.

Creating a Container Level Below a Pre-Shipper

Warehouse managers can create a container level below a pre-shipper using the Container Creation Utility (80.24.21.23). Warehouse managers should use this program primarily to make corrections. This program should not be accessible to all QAD Warehousing users.

Warehouse managers can manually link a box to a pallet by creating a container instead of using the QAD ERP Pre-Shipper/Shipper Workbench to create containers; however, they must still link the item to the container using Pre-Shipper/Shipper Workbench.

To create a container level, warehouse managers can enter data for only the parent ID, ship-to code, container item, and site or location of the container they are creating; all other data entered is optional.

Figure 19.9 shows the Container Creation Utility; fields are described after the figure.

Fig. 19.9
Container Creation Utility (80.24.21.23)

The screenshot shows a web browser window titled "Container Creation Utility". It has a menu bar with "Go To", "Actions", "Copy", "Print", and "Preview". Below the menu bar, there are three input fields: "Parent ID:" followed by a text box, "Ship-from Id:" followed by a text box, and "Id:" followed by a text box.

Parent ID. Enter a parent ID or leave this field blank. The parent ID is the upper container you want to link to the current container and typically starts with the letter *c*.

Note When you specify a parent ID here, QAD Warehousing retrieves the record. If you leave this field blank, you can specify a parent ID after you press Go. The system displays the Parent ID field when it displays container details.

Ship-from ID. Enter the ship-from code. This is the shipping site that you use for warehousing operations.

ID. Enter the identification code for a container below the pallet container. Precede the ID with the letter that corresponds to the `abs_id` for a container within QAD ERP; for example, the letter *c*.

Fig. 19.10
Container Creation Utility (80.24.21.23)

The screenshot shows a more detailed view of the "Container Creation Utility" window. It includes a "Delete:" checkbox at the top left. Below it are fields for "Id:", "Parent ID:", "Ship-to Id:", "Site:", "Ref:", "Net Weight:" (with a value of 0.0), "Order:", "Lot/Serial:", "Quantity Shipp:" (with a value of 0.0), "Sequence ID:", "abs__qad01:", "abs__qad02:", "abs__qad10:", and "Status:". On the right side, there are fields for "Ship-from Id:", "Container Item:", "Location:", "Gross Weight:" (with a value of 0.0), "Act Frt Cost:" (with a value of 0.00), "Order Line:", "Qty To Ship:" (with a value of 0.0), "Inventory Move:", "Document Forma:", and "abs__qad03:". Many of these fields have a magnifying glass icon next to them, indicating a search or lookup function.

Delete. If the scanned container is an existing container, indicate whether the system deletes that container record.

No (the default): The system does not delete the container record.

Yes: The system deletes the record, but not container content. Set this field to Yes to delete a container that is empty and created in error.

Ship-To ID. Enter the ship-to code for the destination of this container. This should match the ship-to code of the pre-shipper. Use Container/Shipper ID Inquiry (80.15.22.7) to find the ship-to code.

Site. Enter the warehouse site where this container is used.

Ref. Enter a reference number for the pallet to which the container you are creating belongs.

Net Weight. Enter the net weight of the container.

Order. Enter the order number for this container.

Lot/Serial. Enter the lot/serial number for this container.

Quantity Ship. Enter the quantity to ship for this container.

Sequence ID. Enter a sequence ID for the container you are creating.

abs_qad01 through abs_qad10. Enter the QAD ERP abs identification number for the container you are creating. The abs_id uniquely identifies the shipper record. Container records are assigned to shipper records.

Status. Enter the status of the container:

S: Shipped

NS: Not shipped

Container Item. Enter the container item ID. This should be the same ID as the one in the same-named field in Batch Picking Control (80.15.24).

Location. Enter the location code of the container you are creating.

Gross Weight. Enter the gross weight for the container you are creating. Typically, freight charges apply to the boundary weight.

Act Frt Cost. Specify the active freight cost for the container. You must specify a freight list, freight class, and freight zone before establishing freight charges in QAD ERP. See *User Guide: Master Data*.

Order Line. Enter the order line number for the container you are creating.

Qty to Ship. Enter the quantity to ship for the container you are creating.

Inventory Move. Enter the inventory movement code that is associated with the shipment.

Document Format. Enter the code that identifies the format of the printed document. See “Printing” on page 170.

Linking Items to Containers

You must link an inventory item to the container you created using Pre-Shipper/Shipper Workbench (7.9.2).

- In the Ship-From ID field, enter the same ID that you entered in the same-named field in Container Creation Utility.
- In the Number field, enter the ID you created in Container Creation Utility in the ID field, including the letter c.

Exploding Pallets

Use the RF pallet explosion option to pick a single-lot/item pallet, typically from the reserve storage area, and:

- Display the pallet contents, much like a bill of materials within QAD ERP.
- Add QAD ERP containers to an exploded pallet.
- Explode boxes and add a new box level to the exploded box.

Pallets are the highest QAD Warehousing container level; they are the first level under a pre-shipper. You can explode a pallet in QAD Warehousing and you can explode a box within a pallet.

Staff can scan a container ID that is different from the pallet ID and add that container ID as an extra level on the pre-shipper. They can also scan a box ID and add an extra box level within that box on the pre-shipper.

You must specify whether the system prompts the RF user to specify the number of boxes to explode or the system divides the pallet contents into an equal number of boxes in the Explosion Option field in the Batch Picking Control Containerization frame (80.15.24).

See “Explosion Option” on page 341.

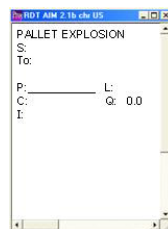
Once the pallet contents display on the RF, staff can:

- Add a new container level to the pallet.
- Add a new box level to a box.
- Move item quantities between boxes.
- Change the quantity in each box.
- Delete a box by entering a 0 quantity for the box.
- Generate new or existing barcode numbers and labels.

Exploding a Pallet from the RF

Use Figure 19.11 and the procedure following the figure to explode a pallet from the RF.

Fig. 19.11
RF Pallet Explosion



- 1 In the RF, select Pallet Explosion (3.6).
- 2 Scan the pallet you want to explode or enter the pallet number in the P: field.
- 3 Press Go to explode the pallet content.

The system explodes the pallet, then prompts to generate new references.

4 Choose one of the following:

- a** Specify No to scan containers manually for the pallet.

You can scroll through a list of boxes, select a box container to explode, and modify the container of each box after you explode it.

- b** Specify Yes to generate references for containers for the pallet.

The system creates a new container level under the pallet level, using the method you specify in the Explosion Option field in Batch Picking Control.

See page 341.

Exploding a Box from the RF

The procedure to explode a box is similar for exploding pallets. After you select Pallet Explosion (3.6) on the RF, scan or enter the box number in the **P :** field. The system explodes the box, showing item contents, then prompts to generate a new box. If you specify Yes, you create a new box level within a box as shown in Order Detail Status Inquiry (80.15.9); see Figure 19.13 on page 350.

Viewing Exploded Pallet Contents

You can view exploded pallet contents by running a report using Order Detail Status Inquiry (80.15.9). Once data displays in the report, put your cursor in the Load field, then press S for shipper details. The system display the contents of the pallet, including new containers that staff added when they exploded the pallet.

See Figure 19.2.

Deleting/Archiving DO Shipper Data

QAD Warehousing does not contain RF shippers; however, during shipping, the RF Container Bld (3.3) option creates containerization tables. Use DO Shipper/Delete Archive (80.15.22.21) to delete/archive the containerization tables to avoid an impact on system performance. This program should not be available to all QAD Warehousing users.

You can specify range criteria, including ship-to codes, sites, order numbers, and ship dates. Specify Yes or No to delete or archive the DO shipper containerization data. Optionally, specify an archive file to hold archived or deleted shipper containerization data. The system displays container levels, the order and order line, the container item number, the quantity to ship, the UM, and the location.

Fig. 19.12
DO Shipper Delete/Archive (80.15.22.21)

DO Shipper Delete/Archive

Go To

Actions

Copy

Print

Preview

Ship-To:

To:

Site:

To:

Order Number:

To:

Ship Date:

To:

Delete:

Archive:

Archive File:

Viewing Container Information in QAD Warehousing

Use Order Detail Status Inquiry (80.15.9) to view the following containerization data:

- Orders that are fully picked but not consolidated
- Orders that are picked and containerized, but not moved to a truck
- The number of units already containerized and the remaining boxes to be containerized
- Outstanding picking tasks for the shipper or ship-to

Figure 19.13 shows three orders that display in Order Detail Status Inquiry: two for the same carrier, and the same pre-shipper, and another for a different carrier and pre-shipper. In the figure, the orders are in the consolidation area, which is the containerization area. The display indicates that the status is ALLCONSO, but the orders require containerization because the Pack column reflects 0 packed.

Fig. 19.13
Order Detail Status Inquiry (80.15.9), Orders in Consolidation

whomstiq.p 80.15.9 Order Detail Status Inquiry 02/02/05											
Order	OT	Stat	Carrier	Unall	Alloc	Pick	Cart	Conso	Pack	Stage	Load C
qad1	SO	ALLCONSO	DHL	0	0	0	0	5	0	0	0
qad2	SO	ALLCONSO	DHL	0	0	0	0	4	0	0	0
qad3	SO	ALLCONSO	fedex	0	0	0	0	4	0	0	0

When orders are containerized, the status changes to ALLPACK and quantities display in the Pack column, as shown in Figure 19.14.

Fig. 19.14
Order Detail Status Inquiry (80.15.9), Orders Containerized

whomstiq.p 80.15.9 Order Detail Status Inquiry 02/02/05											
Order	OT	Stat	Carrier	Unall	Alloc	Pick	Cart	Conso	Pack	Stage	Load C
qad1	SO	ALLPACK	DHL	0	0	0	0	0	5	0	0
qad2	SO	ALLCONSO	DHL	0	0	0	0	4	0	0	0
qad3	SO	ALLCONSO	fedex	0	0	0	0	4	0	0	0

If you are building containers for sales orders, press S to view shipper information and containerization levels. You can also use Container/Shipper ID Inquiry (80.15.22.7) to display all containers corresponding to either a pre-shipper or container ID. You can also find container IDs by order, order line, and ship-to or sold-to codes. For each container, the system displays the container content, quantity, location, and shipper to which the container belongs.

Fig. 19.15
Container/Shipper ID Inquiry (80.15.22.7)

Container/Shipper ID Inquiry

Go To Actions Copy Print Preview

Id: Order: Line: Part:

Site: Sold-To: Ship-To:

Purchase Order: Customer Item:

Invoice: Date: 4/13/2010 To: 5/13/2010

Container Move and Truck Ship

This chapter describes QAD Warehousing's container move and truck ship features. It includes the following topics:

Overview 354

An introduction to container move and truck ship functionality available in QAD Warehousing.

Container Move 354

Describes setup, processing, and monitoring for QAD Warehousing container move functionality.

Truck Ship 361

Describe setting up and processing QAD Warehousing truck ship functionality.

Overview

After your staff assemble pallets to ship to customers, they can use QAD Warehousing's container move functionality to move allocated boxes or pallets from the dock location to a truck location.

Moving containers creates a new RF transaction that lets staff move an allocated box or pallet from the dock location to any location that you define, such as a truck location. The RF transaction records the detail allocation move and container structure.

When warehouse staff scan pallet tags and labels that they load onto a truck, QAD Warehousing reports and inquiries indicates that an SO or DO order line has been loaded onto a truck. When all pallets for a shipper or ship-to have been loaded, an RF message displays notifying warehouse staff that the shipper is ready to be shipped. QAD Warehousing automatically creates a bill of lading (BOL) for the truck shipment.

This chapter discusses container move functionality first, then truck ship functionality.

Container Move

The following sections describe setup, processing, and monitoring for QAD Warehousing container move functionality.

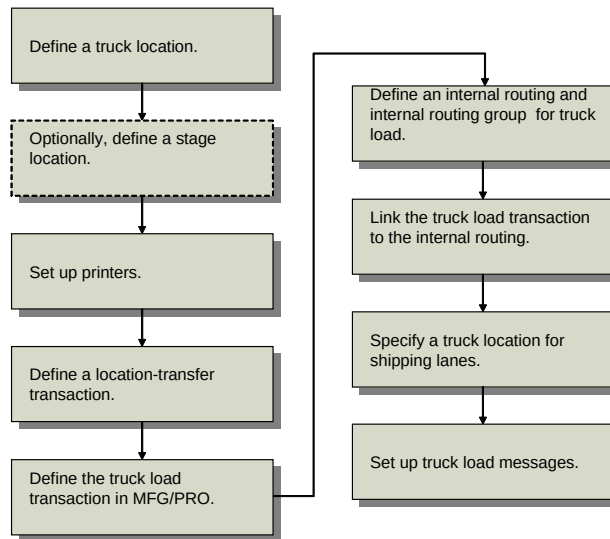
QAD Warehousing's container move features:

- Let staff move any pallet with detail allocation and containerization to any other location, including another truck.
- Optionally, let you add staging or validation steps when moving containers.
- Facilitate cross-docking functionality.
- Report the position of each pallet in the truck.

Setting Up Container Moving

There are several steps involved when setting up QAD Warehousing for container moving. Once completed, all processing takes place on the RF device. Although you can define any location for moving containers, the examples, figures, and paragraphs in the remainder of this chapter focus on setting up a truck as a location. Figure 20.1 shows the setup tasks for container move functionality.

Fig. 20.1
Container Move Setup



Defining a Truck Location

To use container move features, you must set up the truck as a location and specify its storage location group and storage type. For example, you can define a Truck location and specify the storage location group and storage type as Truck. When a truck is defined as a storage location, QAD ERP can report on truck capacity and contents and QAD Warehousing can use the truck location for storage.

Use Location Maintenance (80.3.13.1) to specify storage location and work location groups for the truck. Figure 20.2 shows the fields to set.

See “Location Maintenance” on page 78.

Fig. 20.2**Location Maintenance
(80.3.13.1), Truck Location**

Specify the name of the truck location.

The screenshot shows the 'Location Maintenance' window with the following fields and values:

- Site: spain
- Location: truck3
- Warehouse: distrib
- Store Loc Group: truck
- Work Loc Group: worka
- AIM Location Data:
 - Check Digit: (empty)
 - Popularity: (empty)
 - Storage Type: TRUCK (dropdown)
 - Warehouse Location Type: (empty)
 - Travel Sequence: 0
 - Dedicated?: ☒
- Right side fields:
 - Picking Type: (dropdown)
 - Preferred UM: (empty)
 - OPC Frequency: 0
 - Last OPC: (empty)
 - Stage (In): (empty)
 - Stage (Out): (empty)

Specify the truck storage and work

Specify truck Storage Type.

Defining an Optional Stage Location

Optionally, you can define a *stage* location—a shipment staging area—instead of a truck location. To do this, in Location Maintenance (80.3.13.1), set the fields you set for the truck location to the stage area.

Note The stage area must be part of the same internal routing group as the truck. See “Defining an IRG for Truck Load” on page 357.

Setting a Printer

You must print the shipper within QAD ERP before using truck-loading features. Typically you print the shipper before confirming the shipment. To do this, you must assign a form printer to either the:

- User who scans while loading
- Work location group (WLG) of the truck location

Important If you decide to assign printers to users, you must create a record for all users. Typically it is easier to simply assign to the printer to

QAD Warehousing checks first for a printer assigned to the user who is logged onto the RF device and performing the truck loading, then for a form printer assigned to the WLG of the truck location.

Create a work location group for the truck location with Work Location Group Maintenance (80.3.9). You can associate the user with the truck work location group in User-Work Location Group Maintenance (80.19.5). Then define print options for that user.

See “Assigning Users to a WLG” on page 265.

Fig. 20.3
User-Work Location Group Maintenance (80.19.5)

The screenshot shows the 'User-Work Location Group Maintenance' window. It has a title bar with a close button. Below the title bar is a menu bar with 'Go To', 'Actions', 'Copy', 'Print', and 'Preview'. The main area contains several input fields: 'Site: 013', 'Warehouse: 013', 'Work Loc Group: 013', and 'User ID: lla'. Below these are printer settings: 'Flavor: a', 'Device: RF', 'External Device Printer: form', 'Form Printer: form', 'ID Printer: form', 'Task Printer: form', and 'Insp Printer: form'. To the right of the printer settings are checkboxes for 'Use External?'. Annotations with lines point to specific fields: 'Specify the truck work location group.' points to 'Work Loc Group: 013'; 'Specify a user who scans during truck load.' points to 'User ID: lla'; and 'Specify the printer to print pre-shipper.' points to 'Task Printer: form'.

If you do not set up printers for a combination of user and work location group, use Work Location Group Maintenance to assign the form printer to the work location group in the Printing frame.

Defining an IRG for Truck Load

You must define an internal routing group (IRG) for all truck locations in Internal Routing Group Maintenance (80.2.1). To do this:

- Specify the truck as the Internal Routing Group.
- Set Functional to Yes.
- Optionally, set additional fields or accept the defaults.

See “Internal Routing Group Maintenance” on page 50 for details.

If you optionally defined a stage location instead of a truck location, you must define the IRG for the stage location, not the truck location. By defining an IRG for a stage location rather than a truck location, you let staff perform the following movements:

- From the shipping lane to the stage area
- Between locations in the stage area
- Between the stage area and the truck location
- Between a truck and the stage area (that is, return to a stage area from the truck location)

Staff cannot return to the stock area or any other IRG from the stage area. If you require staff to perform this type of return movement, build a custom IR assignment program.

See “Customizing Internal Routings” on page 359.

Defining an IR for Truck Load

You must define an internal routing (IR) for the truck load transaction type. Define the internal routing for type LOC-TR with a single step that moves to the truck IRG.

Note The location transfer transaction (LOC-TR) is included with the QAD Warehousing system data as a generalized code for field tr_type.

Define a single-step movement that lets staff move items:

- From the shipping lane IRG to the IRG truck location
- Between locations of the same IRG should you need to transfer from one truck to another

Use Internal Routing Maintenance (80.2.5) to define a one-phase movement for the truck. A one-phase internal routing represents movement within the IRG.

See “Internal Routing Maintenance” on page 52.

Important Do not specify a two-phase movement for the truck.

Fig. 20.4
Internal Routing Maintenance (80.2.5)

Set these fields for the truck.

Internal Routing Maintenance

Site: 1 Warehouse: whs1 Internal Routing: shp

Description:

Sequence: 20 Internal Routing Group: shp

Transaction Create

Confirmed at Source?: ☐ Task: shp

System Code: RF Priority: 100

Two Phase?: ☐ Increment: 10

Keep From Status?: ☐

Transaction Confirmation

"From Location" Option: 0 "To Location" Option: 0

"From Item" Option: 0 "To Item" Option: 0

"From Lot/Serial" Option: 0 "To Lot/Serial" Option: 0

"From Reference" Option: 0 "To Reference" Option: 0

Allow Quantity Increase?: ☐ Alternative UM Option: 0

Allow Quantity Decrease?: ☐

Quantity Change Option: 0

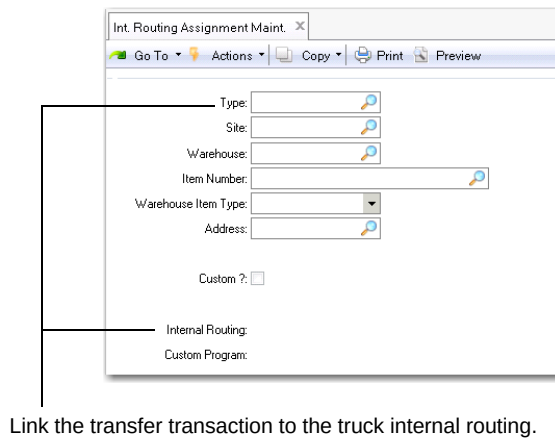
Specify a one-phase movement.

Linking the Truck Load Transaction Type to the IR

You must link the truck load internal routing to the truck location transfer transaction. Use Internal Routing Assignment Maintenance (80.2.9) to assign an internal routing to the LOC-TR transaction.

See page 57.

Fig. 20.5.
Internal Routing Assignment Maintenance (80.2.9)



Link the transfer transaction to the truck internal routing.

Customizing Internal Routings

When you set up internal routings for a truck or stage location, typically staff cannot return to the stock area or any other IRG from the truck or stage area. If you require staff to perform this type of return movement, build a custom IR assignment program. You must consider the different combinations between the truck/stage area and the IRGs.

Specify the custom program in the Internal Routing Assignment Maintenance (80.2.9) by:

- Setting Custom to Yes
- Entering the name of the custom program in Custom Program

When you run the custom program, you must provide the input fields that enable the program to decide which IR to assign.

Specifying Truck Location for Lanes

You define the truck as a destination location within QAD Warehousing. To define the truck location, set the following:

- Specify the ship-to code in the Ship-To field for the order in Sales Order Maintenance (7.1.1).
- Specify the truck location name in the Lane/Dock field in Lane/Dock Maintenance. See “Defining Lanes and Docks” on page 292.

If you do not specify a truck location, the system uses the warehouse as truck location; however, warehouse staff can override the warehouse location and manually enter a valid truck location or stage area on the RF device.

Printing the Pre-Shipper/Shipper

You can optionally print the pre-shipper/shipper within QAD ERP before beginning the truck-loading.

Note Before printing the pre-shipper/shipper, you assign a form printer to the user who scans and loads the truck. You can also assign a form printer to the WLG in Work Location Group Maintenance (80.3.9). See “Setting a Printer” on page 356.

Loading a Truck

Warehouse staff use the RF for truck loading; however, since the truck is defined as a location in QAD Warehousing, you do not have to tie an RF transaction to a QAD Warehousing task. From the RF, staff select the option to move items, specify the truck location or accept the default, and scan references. Staff must specify the location because the truck load transaction does not generate any put-away.

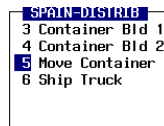
Staff can load boxes or pallets onto the truck. The boxes or pallets can be totes or references. Typically, the QAD Warehousing user who sets up QAD Warehousing for truck loading cannot predict whether warehouse staff scan:

- Totes that were created in batch picking
- References from full pallets that were moved directly from the reserve area to the shipping area

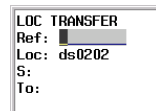
If staff are loading a pallet onto a truck, the system records the pallet ID, and moves the detail record, detail allocations, and shipper information. If the pallet ID is a container-level shipper, the system moves all detail records and detail allocations for the content of the container. When staff scan the pallet, QAD Warehousing moves the stock detail allocation and shipper information.

Use the following procedure for truck loading:

- 1 From the RF, select Move Container.



The system displays the Loc Transfer RF frame.



See “Specifying Truck Location for Lanes” on page 359.

- 2 Scan the references.

The system displays the truck location. If you assign a shipping lane to a truck location in Lane/Dock Maintenance (80.15.13) in the Associated Dock/Truck field, the default truck location displays in the Loc field. Otherwise, the system uses the warehouse as a location and you must enter either a valid truck or stage location.



- 3 Press Go.

The system displays the Transfer Complete message, then informs you that the truck is ready to ship.

```

LOC TRANSFER
Ref:
Loc: ds0202
S: 00002011
To: 00001153
Food Processor, INC.

SHIP READY 00002011

```

Transferring Items to Another Truck

Occasionally, warehouse staff may have to transfer items from one truck to another or use an entirely different carrier. For example, if you want to ship one order of a wave to the customer overnight, you may need a different carrier, and therefore, a different truck location for that carrier.

If using a different carrier, change the carrier first in QAD ERP Pre-Shipper/Shipper Workbench (7.9.2). Specify the new carrier in the Ship-To/Dock field, then reprint the pre-shipper/shipper to start the truck load process. Warehouse staff can then use the RF to select Loc Transfer, then enter a different truck location in the LOC field.

Note You can use Order Maintenance to specify carriers for both SOs and DOs for order lines in QAD Warehousing. The carrier defaults from the header Ship-To fields in the maintenance programs for both order types.

Monitoring Container Move

From QAD Warehousing, use Order Detail Status Inquiry (80.15.9) to verify that all items are in the designated location, such as the truck location. Figure 20.6 shows that boxes are loaded onto the truck. The load field displays the 4 boxes that staff scanned and moved to the truck.

Fig. 20.6
Order Detail Status Inquiry (80.15.9), Container Move Status

80.15.9 Order Detail Status Inquiry											02/02/05
Order	OT	Stat	Carrier	Unall	Alloc	Pick	Cart	Conso	Pack	Stage	Load CH
qad3	SO	ALLLOAD	fedex	0	0	0	0	0	0	0	4

Truck loaded.

Truck Ship

The following sections describe setting up and processing QAD Warehousing truck ship functionality.

After the truck has been loaded and is ready for shipment, you can use a single transaction to confirm that the truck shipped. You use the truck ship transaction to confirm a sales order shipper, much like you use QAD ERP's Pre-Shipper/Shipper Confirm (7.95.).

Note Distribution orders do not have an associated pre-shipper/shipper.

QAD Warehousing truck ship features let you:

- Indicate truck shipment, resulting in QAD ERP shipment of all orders on the truck.

- Create a master bill of lading (MBOL) that includes all shippers and DOs.
- Automatically print a bill of lading (BOL) or master bill of lading (MBOL) for the truck shipment.
- View all shippers loaded on the truck for a given truck location.

Setting Up Truck Shipping

Minimal setup is required to use QAD Warehousing truck ship features:

- Use Transaction Type Maintenance (80.7.6) to define a transaction to ship all sales orders on a truck simultaneously.
- For QAD Warehousing truck ship features to operate correctly, you must assign an order to a dock. This lets the system direct pallets to the correct dock and validates that the pallets are on the correct truck.

Shipping on a Truck

Warehouse staff use the RF to confirm truck shipping. The RF displays print documentation. Staff can use the up and down arrows to scroll available carriers for ship-to codes that are based on truck weight rules.

The system maintains a link between the pre-shipper/shipper number and the truck location. The system creates the link for pre-shippers with associated orders completely in the truck.

Note Pre-shippers cannot have orders split between two trucks.

Use the following RF procedure to confirm shipping on a truck for sales orders:

- 1 From the RF, select Ship Truck.
- 2 Select the shippers by vehicle reference.
The RF displays shipper IDs.
- 3 Press Enter to select shippers.
An asterisk (*) next to a shipper indicates open tasks exist. If no asterisk displays, no open tasks exist and staff confirm the ship truck.
Note Press Enter to deselect one shipper at a time.
- 4 Enter the weight of the pallet.
- 5 Confirm the ship truck.
The system creates a master BOL.

Use the following procedure to confirm shipping on a truck for distribution orders:

- 1 Select and confirm batch picking as usual.
- 2 Begin containerization by opening a container and entering the item destination in the To field on the RF. See Chapter 19, “Using Containers,” on page 337 for details about containers.
- 3 Scan the boxes by entering box numbers in the B: field.
- 4 Specify the truck location in the Loc field.

5 Confirm the ship truck.

The RF displays `SHIP READY`.

Monitoring Truck Shipping

You can use any of the programs listed in Table 20.1 to view truck shipment information.

Table 20.1
Programs to Monitor Truck Shipment

Menu Number	Program	Used to Monitor
3.21.1	Transaction Detail Inquiry	View the issue transaction for the order on the wave that was placed on the truck.
7.9.12.2	Master Bill of Lading Maint	Using the Ship Via from a shipper, view the BOL the RF created.
7.9.12.4	Master Bill of Lading Print	View the shipper on the BOL and the shipper coming from the pre-shipper.
12.17.22	Distribution Order Shipments	If you ship DOs manually, use this program to verify that the ship is complete.
80.9.2	Warehouse Trans. History Inquiry	View the location of the ship truck.
80.15.9	Order Detail Status Inquiry	Press S to verify that the pallets contain the boxes that the user picked.

Using Truck Ship Efficiently

RF Truck Shipment works efficiently when complete DOs or SO pre-shippers/shippers can be loaded in one truck. When using a single truck, the system:

- Scans the location representing the truck or dock.
- Finds all SO pre-shippers/shippers and DOs for all items loaded in the truck.
- Prompts to confirm the pre-shipper/shipper and the DOs and issues all items for them.

If the pre-shipper/shipper or a DO is large and the items cannot fit in a single truck, warehouse staff can partially load another truck. When this occurs, the RF does not display an `N/OK` message near the pre-shipper/shipper or DO number during truck shipment, indicating that some items are not in the truck.

Users can still confirm the shipment, though. When they do, the system issues all inventory for the pre-shipper/shipper and DO even when inventory for them is in different trucks.

Cycle Counts

Inventory levels can be checked in a planned way by using the cycle counting option. As you monitor your warehouse over time, this option lets you adjust the cycle counting, making the most of the staff effort in maintaining accurate data.

This chapter describes how to use Cycle Count Generation and how to confirm cycle count tasks using either an RDF or the Movement Confirmation programs.

About Cycle Counts in QAD Warehousing 366

An introduction to cycle counting in QAD Warehousing.

Setting Up Cycle Counts 367

Describes the programs and fields you set up to conduct a cycle count.

Generating a Cycle Count 367

Describes the steps involved to conduct a QAD Warehousing cycle count.

Confirming a Cycle Count 369

Describes the programs and fields involved with confirming cycle count results.

About Cycle Counts in QAD Warehousing

QAD Warehousing includes the following features for managing cycle counts:

- Use Cycle Count Generation to generate cycle count transactions/tasks.
- Confirm or process cycle count tasks by RF devices or Movement Confirmation programs, with cycle count tags being automatically generated, if required.
- Initiate an inventory adjustment from an RF device by the Location Audit function.
- Cycle counts that move out of preset boundaries automatically result in recount transactions/tasks being generated.
- Cycle counts and cycle recounts are defined independently to allow greater flexibility.
- Cycle counts can be generated automatically upon the failing of inventory. This usually results from short picks. QAD Warehousing can automatically generate a task for somebody to inspect the inventory condition when a short pick occurs.
- The confirmation and completion of a cycle count can result in the modification of the counted inventory's status. This means that, for example, when a cycle count has been automatically generated from the failing of inventory and that cycle count has been performed, any remaining inventory is automatically available for further picking.
- Each different type of cycle count is given a reason code, associated with any transactions created. This allows any cycle count audit authorities to differentiate between true cycle counts and inventory adjustments.
- Cycle counts can be generated for empty locations. You can implement QAD Warehousing with an empty warehouse and generate cycle count tasks for every location in the warehouse, populating the database with inventory.

Conducting Cycle and Opportunity Counts

Cycle counts and opportunity counts monitor stock levels. Cycle counting is used on a regular basis to maintain inventory accuracy. You must set up QAD ERP and QAD Warehousing to conduct cycle counts on the RF.

See page 367.

Unlike cycle counts, opportunity counts are triggered automatically by stock movements. Certain conditions—for example when stock is picked or transferred from a non-special storage location group—cause the system to check the opportunity count threshold for that item. If this is found to be at or below the level set using the Opp Cnt Threshold field, the system initiates a cycle count. This allows cycle counts to be performed on an on-going basis, reducing the need to do a large cycle count all at once.

Once a cycle count is initiated—either manually using Cycle Count Worksheet Print (3.13) or automatically from an opportunity count—a cycle count frame displays automatically on an RF, prompting the user to whom that transaction has been assigned to count the level of stock remaining in that location.

If stock is unavailable and a user must confirm a picking task with a lower quantity, you can specify that the system prompt to enter a pick fail, then prompt to conduct a count.

See “OPC Threshold” on page 90 for details.

Setting Up Cycle Counts

To conduct a cycle count, set the fields shown in Table 21.1.

Table 21.1
Cycle Count Setup Fields

Field	Description	Program
Create Trans	Set this field to Yes to request a cycle count.	QAD ERP Cycle Count Worksheet Print (3.13)
ABC Class	Set this field to classify the value of items to be counted. The more valuable the item, the more frequent the count. So, items with class A are counted more frequently than B class, and so on.	QAD ERP Item Master Maintenance (1.4.1)
Opp Cnt Threshold	Specify the threshold that triggers an opportunity count during stock movement. If stock is found to be at or below the threshold level set in this field, the system initiates a cycle count.	QAD ERP Item Master Maintenance (1.4.1)
Count System Code	Set this field to RF to specify that the RF is the device where the system creates a cycle count request in the WLG.	Warehouse Maintenance (80.1.1)
Recount System Code	Set this field to RF to specify that the RF is the device where the system creates a cycle recount request in the WLG.	Warehouse Maintenance (80.1.1)
Opportunity Counts	Set this field to Yes so that the system requests that warehouse staff perform a cycle count.	Storage Location Group Main (80.3.1)
OPC Frequency	Specify the frequency in days that you want to perform a count since the last count. QAD Warehousing checks the OPC frequency value for the location and specifies that a count be performed based on the last date and the frequency number you specify.	Storage Location Group Main (80.3.1)
Count on Fail	Specify whether the system creates a cycle count task at the WLG level for the RF user when the user confirms with a lower quantity because stock was not available to pick for the specified quantity. If Yes, the user is prompted to enter a fail during picking.	Work Location Group Maintenance (80.3.9)

Generating a Cycle Count

Use Cycle Count Generation (80.8.12) either to:

- Create a report showing the items and locations that are counted, or
- Create cycle count transactions

To do this:

1 Select Cycle Count Generation (80.8.12):

2 Complete the fields as follows:

Create Transactions. With this option set to No, a report is generated of the items and locations that are counted without transactions being created. With it set to Yes, transactions are created.

Note If the program is run with the Randomize Selection field set to Yes, items and locations selected need not match those of a previous run.

Count Reason. This value is attached to each transaction created, enabling cycle counts generated for a specific purpose—such as weekly random count—to be easily identified. This field defaults from the System Control File. See “Cycle Count Reason” on page 22.

Blind. Indicate whether the system displays the quantity that RF users have to count during the cycle count.

No (the default): The system does not display quantities to count during a cycle count.

Yes: The system displays quantities to count during a cycle count.

Selection Ranges. Item, PL, item type, site, warehouse, SLG, WLG, location, last count date, ABC class. To select empty locations, selection criteria that apply only to items are ignored.

Number of Items. Specify the number of different items to select.

Empty Locations. Specify the number of empty locations to select. Empty locations are those that have no inventory record associated with them, even ones with zero or negative on-hand quantity.

ABC Percentages. These function in the same manner as standard QAD ERP programs.

Sort by Item or Warehouse. Sorts the results by either item or warehouse.

Randomize Selection. If set to Yes, the identified number of items and/or empty locations are selected in a random order.

Past Due Only. Indicate whether to include only items that are passed their cycle count due date.

Existing Counts. Set to Yes to prevent QAD Warehousing from creating transactions for inventory that already has open cycle count transactions. Other transactions—for example, picks—are not relevant to the cycle count process.

Functional Locations. If set to No, only locations within storage location groups that are in functional internal routing groups are selected; for example dispatch locations are not selected. If set to Yes, locations from all storage location groups are selected.

Zero Quantity. This does not mean empty locations. Locations with zero on-hand inventory detail records are not considered empty. If this field is set to Yes, zero on-hand inventory detail records are included in the count; otherwise, they are not.

Negative Quantity. This does not mean empty locations. Locations with negative on-hand inventory detail records are not considered empty. If this field is set to Yes, negative on-hand inventory detail records are included in the count; otherwise, they are not.

Phantom Items. Indicates whether phantom items should be included.

3 Press Go, and then select the output destination for the cycle count.

Depending on what you selected in the Create Transactions field, the system either produces a cycle count report without creating transactions, or a report plus an actual cycle count.

Confirming a Cycle Count

You can confirm cycle count transactions using movement confirmation programs (80.8) or RDT.

With the movement confirmation programs, cycle count transactions are created with an expected quantity of zero so that the Expected In and Out inventory quantities are not automatically updated. If cycle count transactions are confirmed without first modifying them, they are confirmed as zero counts. That is, if each transaction is not manually modified to reflect the counted quantity, the on-hand quantity of each piece of counted inventory is set to zero.

Location Audit

From the RF, you can select Location Audit (1.6) to start a cycle count or a recount of a bin location. You can use functions in Location Audit to:

- Count the contents of a bin or pallet.
- View the stock you want to recount.
- Recount items that are not in the system yet.

After you select the Location Audit function, scan the location. The RF displays all pallets in the location. Select the pallet you want to audit. The RF displays item numbers and current quantities. Select the item you want recounted. If there are no pallets, the RF skips pallets and displays the items only. Once you select the item, QAD Warehousing creates a cycle count or a recount task.

Note You can also explode a pallet to view pallet contents. See “Exploding Pallets” on page 348.

Confirming a Cycle Count with an RF

RF screens identified with a system procedure code of AJ are supplied for confirming cycle counts. It is important that the tasks used to identify cycle counts and recounts are defined with a procedure code of AJ. Other tasks must *not* be defined with this procedure code; otherwise, for example, sales order picks would be processed as if they were cycle counts.

Quality Inspection

This chapter describes the steps involved in setting up QAD Warehousing for quality inspection and managing quality controls with sampling.

***About Quality Inspection* 372**

An introduction to quality inspections in QAD Warehousing.

***Inspection Flows* 372**

Examines the flow of inspected inventory throughout the warehouse.

***Quality Algorithms* 373**

Descriptions of the quality algorithm objective and how you use them within QAD Warehousing for quality inspection purposes.

***Quality Inspection Parameters* 373**

Descriptions of the inspection frequency, logical fields and sample quantities at different levels.

***Quality Inspection Internal Routings* 374**

Descriptions of several transaction types are used with the Quality Inspection module to define the internal routings required.

***Quality Inspection* 377**

Conducting a quality inspection, using the options on the Quality Inspection Menu.

***Inspected Inventory Report* 379**

Reporting inspected inventory results.

***Inspection History Maintenance* 381**

Maintaining a history of inspection data.

***RDT Quality Inspection* 381**

Conducting an inspection through the RF or RDT device.

About Quality Inspection

QAD Warehousing supports quality inspection with sample control, change of inventory status and creation of QAD Warehousing transaction.

The principle of the Quality Inspection module is similar to the shortage clearance algorithms.

During a receipt, the quality algorithms are started. These determine if an inspection is required based on different criteria such as the receipt frequency, various field values at different levels, and more. For instance, an inspection takes place depending on the number of receipts from a given supplier and/or a given item, or if the previous receipt failed.

If the quality algorithm returns a sample quantity to be inspected, a QAD Warehousing transaction or movement is created from the source location to an inspection area. After inspection, either by computer or by RDT, the sample is sent back to the inventory area, using a standard put-away algorithm.

Inspection Flows

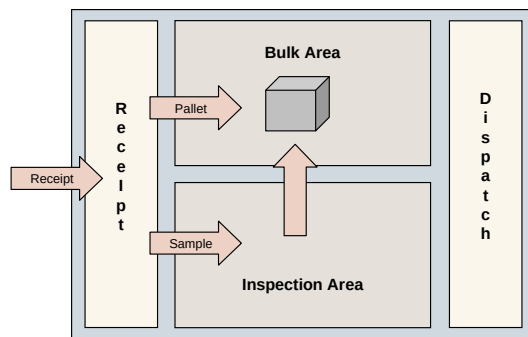
This section examines the flow of inspected inventory throughout the warehouse.

See “Quality Inspection Internal Routings” on page 374.

Example You have a receipt area (docking area), an inspection area, and a main storage area (bulk area). Because the Quality Inspection module is based on internal routings, other areas and combinations can be defined, and so different movements are possible.

In Figure 22.1, you receive a full pallet. The inspection algorithm identifies that an inspection is required and looks for an internal routing for the corresponding transaction type. The algorithm also calculates what quantity to control, and this sample quantity follows the quality inspection internal routing. The remaining items on the pallet continue the normal flow according to the receipt internal routing, and move to the Bulk Area.

Fig. 22.1
Inspection Flows



After inspection has taken place, depending on the results (pass or fail) and depending on the destructive property of the test to perform on the item, the sample is sent back to inventory following another internal routing and using a put-away algorithm. If the algorithm is the merge with same reference algorithm, this means that the sample goes back on its original pallet. Of course, any other algorithm can be used for that movement.

Quality Algorithms

The objective of a quality algorithm is to decide whether an inspection is required, to create an inspection tag, fill in the inspection history table, and also create the transactions to move the sample to an inspection area, based upon an internal routing.

Quality algorithms are defined for the algorithm type QA. Like other types of algorithms, quality algorithms are assigned to a combination of site, warehouse, item or item type, address code (supplier), and transaction type.

Quality inspection algorithms are listed in Chapter 8.

See Table 8.7, “Quality Inspection Algorithms,” on page 138.

Quality Inspection Parameters

The inspection frequency, logical fields, and sample quantities are defined at different levels:

- Item Maintenance (80.4.7)
- Item-Site Maintenance (80.4.9)
- Item-Warehouse Maintenance (80.4.11)
- Supplier-Item Maintenance (80.4.13)

Item and item-site levels are not effective levels. They define the default values for the next levels. The two effective levels for Quality Inspection fields are the item-warehouse level and the supplier-item level.

The main level is the supplier-item level, which means that if a record exists for a given item and a given supplier, quality inspection fields are used from this level. In any other case, the item-warehouse values are used. Note that this level is a mandatory level. If item-warehouse level is not defined, no put-away or picking of the item in the corresponding warehouse is possible.

See “Item-Warehouse Maintenance” on page 93.

An example Item-Warehouse Maintenance screen is shown in Figure 22.2.

Fig. 22.2
Item-Warehouse Maintenance (80.4.11), Inspection Data

Item-Warehouse Maintenance

Go To Actions Copy Print Preview

Item Number: otf
UM: EA
Site: 2302a
Warehouse: wh2

Inspection Data

Selective Inspection?: ☐
Insp. Frequency:
Insp. Frequency (Days):
Random Inspection %:
Sample Quantity: Ref: ☐
Sample %:
Destructive?: ☐

Following is a definition of all the fields that must be reviewed prior to implementing the Quality Inspection module. These fields remain the same across all levels.

Inspection Required. This field determines whether an inspection is to be performed (specific to algorithm 8).

Inspection Frequency (Number of Receipts). The value in this field determines the frequency at which inspections must take place (specific to algorithm 9) during receipt. For example, an inspection takes place every X receipts, X being the inspection frequency.

Inspection Frequency (Number of Days). This frequency is a number of days. It tells algorithms 1 and 2 that an inspection takes place if there was no inspection in the previous X days, X being the inspection frequency in days.

Note The inspection frequency counts the number of receipts. If you receive three pallets during a purchase order receipt, the system considers that as three receipts. The inspection frequency field must take that into account.

Destructive. This field informs the system if the test to apply to the sample is a destructive test. If the test is destructive, then the sample has to be issued using an unplanned issue. If the test is not destructive and the inspection did not fail, the system generates a new transaction based on a new internal routing to put the sample back in stock.

Sample Quantity. This is the quantity (in the item's base UM) of the item to inspect. Depending on the internal routing definition, the sample goes to an inspection area.

Sample %. This is another way to define the quantity to inspect. It is a percentage of the quantity being received. The system truncates the result if the percentage of the received quantity is not an integer.

Note If 3 pallets are received at the same time and the inspection frequency is set that an inspection occurs at every receipt, each pallet is considered and not the entire receipt quantity as a whole.

Quality Inspection Internal Routings

Several transaction types are used with the Quality Inspection module to define the internal routings required to send the sample to an inspection area and return it to the main inventory area after inspection.

Table 22.1 lists the first set of transaction types.

Table 22.1
QA Inspection Transaction Types

Transaction Type	Description
INSP-UNP	Transaction type for quality inspection from an unplanned receipt
INSP-PO	Transaction type for quality inspection from a purchase order receipt
INSP-DO	Transaction type for quality inspection from a distribution order receipt
INSP-WO	Transaction type for quality inspection from a work order receipt
INSP-WH	Transaction type for quality inspection from an inter-warehouse receipt

The second set of transaction types is more specifically for the movement of inventory after the inspection has taken place. Table 22.2 lists these transaction types.

Table 22.2
QA Post-Inspection Transactions

Transaction Type	Description
BACK-UNP	Transaction type for a sample return after inspection from an unplanned receipt
BACK-PO	Transaction type for a sample return after inspection a purchase order receipt
BACK-DO	Transaction type for a sample return after inspection from a distribution order receipt
BACK-WO	Transaction type for a sample return after inspection from a work order receipt
BACK-WH	Transaction type for a sample return after inspection from an inter-warehouse receipt

Example

Assume you make a purchase order receipt:

- The movement to put the stock from the receipt area to the main inventory area uses a RCT-PO transaction type.
- The movement to move the sample from the receipt area to an inspection area uses a INSP-PO transaction type.
- The movement to put the sample in the main inventory area after inspection uses a BACK-PO transaction type.

Internal Routings Definition

This section describes in detail the different inventory movements and internal routings that are required.

Based upon the example shown in Figure 22.1 on page 372, if you have a Receipt internal routing group, a Bulk internal routing group, and an Inspection internal routing group, you would define the receipt movement for the purchase order as follows:

- Internal Routing RCT-PO
 - Step 10: Receipt
 - Step 20: Bulk

If an inspection is to take place, you must inform the system that it has to check whether a quality algorithm must be started. A field on the internal routing definition of the main receipt movement does this. In this example, on step 20 of the internal routing for RCT-PO, the Check Inspection field must be set to Yes.

See “Internal Routing Maintenance” on page 52.

Figure 22.3 shows the Check Inspection field.

Fig. 22.3
Internal Routing Maintenance (80.2.5)

Picking

Repick Type: Expire Date (Days):

Print Options

Print ID ? ☐ Print Mode (ID):

Print Created Tasks ? ☐ Print Mode (Created Tasks):

Print Confirmed Tasks ? ☐ Print Mode (Confirmed Tasks):

Print Exceptions ? ☐ Print Mode (Exceptions):

Miscellaneous Options

Mode: Clear Shortages ? ☐

NewUM: Create Shipper ? ☐

Check Inspection: ☐ Check Inspection Field

The Quality Inspection algorithm is started to determine whether the inspection must take place and the sample quantity considered.

To move the sample, the system needs another internal routing:

- Internal Routing INSP-PO
 - Step 10: Receipt
 - Step 20: Inspection

The sample follows the internal routing steps and so, a transaction is created to move the sample to the Inspection Area (internal routing group). If the quantity being received does not go completely to the inspection area, then the remaining quantity continues to follow the RCT-PO internal routing.

After inspection, if the test was not a destructive test, the sample goes to the main inventory area (Bulk IRG). The internal routing to define is, for instance:

- Internal Routing BACK-PO
 - Step 10: Receipt
 - Step 20: Inspection

Algorithm Definition

All movements need to be able to find the most suitable location for the movement's destination. For the inspection movement, you need to find a location in the inspection area. For the return movement after inspection, you need to find a suitable location in the Bulk area.

If, for instance, the inspection internal routing group is a functional area, a location-find algorithm is defined for transaction type INSP-PO in order to find a suitable location in the Inspection area.

If the Bulk internal routing group is defined as a non-functional internal routing group, then a put-away algorithm is defined for transaction type BACK-PO in order to find a suitable location in the Bulk area for the sample's return movement after inspection.

Inspection Tag

Each sample is assigned a sample ID. That sample is linked to the original inventory. This means that if you make a receipt of 100 EA and the quality inspection algorithm sends 10 EA into the Inspection area, the sample is linked to the 90 EA in the Bulk area. The main reason is that it is possible to change the status of the received stock during the inspection and to release the status after inspection. This is only possible if you know what stock is related to the sample.

For each sample, the system prints an inspection tag. There is a special printer dedicated to the inspection tag printing, defined like any other QAD Warehousing printer at the work location group level, at the warehouse level, and at the Warehouse Control File level. The effective level is the work location group level; other levels are used as default values.

Figure 22.4 illustrates the frame in Work Location Group Maintenance (80.3.9) where all printers are defined.

Fig. 22.4
Work Location Group Maintenance (80.3.9), Printing

The inspection tag contains the sample ID information, the item to inspect, and other useful information. Based on the inspection tag, people control the sample, enter the test results, and initiate the return movement from the inspection area, if the inspection did not fail and the test is not a destructive test.

Quality Inspection

Quality Inspection is made using the options on the Quality Inspection Menu (80.22).

- Sample Inspection Maintenance (80.22.1) lets you enter the inspection results and generate the transaction to move the stock from the inspection area to the main storage area.
- Inspected Inventory Report (80.22.6) lists, for a given sample ID, all inventory records related to the sample as well as their inventory status.
- Failed Inspections Inquiry (80.22.10) lists all samples for which the inspection failed. With the sample ID, you can find the corresponding inventory using Inspected Inventory Report (80.22.6).

- Change Inspection Status Maintenance (80.22.13) lets you define the inspection status depending on the original status and the release status—the status after inspection if it does not fail—from the inspection status.
- Inspection History Maintenance (80.22.17) lets you modify or delete any inspection history record.
- Sample History Delete/Archive (80.22.23) is a standard procedure to delete/archive all inspection history records.
- Quality Inspection Control File (80.22.24) defines defaults for other Quality Inspection programs.

Sample Inspection Maintenance

This program is the main program to enter inspection results. It is an interactive program that lets you select the sample group to inspect and enter the inspection results.

The first frame lets you select a range of samples.

Fig. 22.5
Sample Inspection Maintenance (80.22.1)

Site: _____	To: _____
Warehouse: _____	To: _____
Item Number: _____	To: _____
Address: _____	To: _____
Receiver: _____	To: _____
	Default Incl: no

Note Samples display only if the sample has reached its destination location, the inspection location. If you have any open transaction for the sample, inspection results cannot be entered.

You can select a sample from the resulting list to view its details.

Enter details of the inspection status (Fail or Pass) and also additional information regarding the generation of return transactions and the quantity to be returned.

Note The Create Transaction defaults from Quality Inspection Control File (80.22.24). The return quantity depends on the test. If some pieces are destroyed during the test, the return quantity is different than the sample quantity. If the return quantity is always the same as the sample quantity, the Return Quantity prompt can be skipped by setting the Update Quantity field in Quality Inspection Control File to No.

Fig. 22.6
Quality Inspection Control File (80.22.24)

Table 22.3 lists the different actions that are performed depending on the test results.

Table 22.3
Inspection Results

Destructive Test	Inspection Failed	Create Transaction	Actions
No	No	Yes	- The sample is inspected. - A return transaction is created. - The release status is updated.
No	No	No	- The sample is inspected. - No transaction is created; the sample stays in the inspection area. - The release status is updated.
Yes	Yes/No	Yes/No	- The sample is inspected - No transaction is created; the sample stays in the inspection area and must be unplanned issue. - The release status is updated if the inspection does not fail.

Note If an inspection fails, the sample stays in the inspection area. The warehouse staff must perform an action in order to handle the inventory related to the sample. If the test is a destructive test, the warehouse staff must create an unplanned issue transaction. The sample does not automatically disappear from the system.

Inspected Inventory Report

The Inspected Inventory Report (80.22.6) lists all inventory records related to a sample. It is useful for displaying details of sample locations and their corresponding statuses; for example, the report could be used for displaying the location of samples within a group. The Failed Inspections Inquiry (80.22.10) provides the same functionality; however, it only displays samples that have failed.

An example Inspected Inventory Report is shown in Figure 22.7.

Fig. 22.7
Inspected Inventory Report (80.22.6)

whqainrp.p		80.22.6 Inspected Inventory Report				Date: 16/07/99	
Page: 1		Your Name Here				Time: 15:59:16	
Site	Location	Item Number Lot/Serial	Reference Status	Qty On Hand	Alt UM	Fail ?	

aim-site	bulk12	compA		200,0	EA	no	
aim-site	bulk20	compA	bad	300,0	EA	no	
aim-site	bulk21	compA	bad	300,0	EA	no	
aim-site	bulk22	compA	bad	300,0	EA	no	
			bad				
						End of Report	
whqainrp.p		80.22.6 Inspected Inventory Report				Date: 16/07/99	
Page: 2		Your Name Here				Time: 15:59:16	
REPORT CRITERIA:						Report submitted by: root	
Sample ID: 173				Output: window			
				Batch ID: ☐			

Failed Inspections Inquiry

The Failed Inspections Inquiry lists all sample IDs identified as bad (inspection failed).

Figure 22.8 shows an example Failed Inspections Inquiry screen.

Fig. 22.8
Failed Inspections Inquiry (80.22.10)

Failed Inspections Inquiry

Go To
Actions
Copy
Print
Preview

Site:
Warehouse:
Item Number:
Output:

Change Inspection Status Maintenance

While a sample is in the inspection area waiting inspection results, the inventory related to the sample can become physically blocked. This can be achieved within QAD Warehousing by changing the inventory status. Change Inspection Status Maintenance lets you define the new status of this inventory, based on its original status.

Fig. 22.9
Change Inspection Status Maintenance (80.22.13)

Change Inspection Status Mai...

Go To
Actions
Copy
Print
Preview

Status: FAIL

Release/Inspect Status:

Similarly, after a successful inspection is performed, the status needs to be changed. The release status is used as the new status. Again, the release status is based on the current inventory status.

Inspection History Maintenance

Figure 22.10 illustrates Inspection History Maintenance (80.22.17).

Fig. 22.10
Inspection History Maintenance (80.22.14)

You can maintain inspection records or delete them if necessary.

RDT Quality Inspection

The Radio Data Terminal (RDT) or Radio Frequency (RF) Quality Inspection frame (rf.5.1) lets you maintain and enter sample details during inspection.

The user must enter a valid sample ID. This can be done using the RDT/RF integrated keyboard or alternatively if a barcode scanner is attached and barcodes are being printed on the inspection tags, the user can scan the inspection tag corresponding to the sample, and the relevant information is entered automatically in the appropriate fields.

The RDT screen works the same way as Sample Inspection Maintenance (80.22.1), but the screen is simplified. The user is requested to enter the sample ID, reading the inspection tag (scanning it if a barcode is printed on it).

The Fail field and the Returned Quantity field function in a similar manner to the non-RDT frames:

Fail. The Fail field is the result of the sample quality inspection. Depending upon the value of this field, the sample inventory and the corresponding parent inventory statuses are changed accordingly.

Example If the Fail field is set to Yes, the sample inventory and the corresponding parent inventory status is FAILED, irrespective of location.

The new inventory status comes from Change Inspection Status Maintenance (80.22.13).

Ret. Qty. This value is the remaining sample quantity after inspection has taken place. This is the quantity of inventory that is returned to the parent pallet.

Example 10 EA is taken from the parent pallet as a sample. 2 EA of 10 EA have been destroyed during quality inspection. Therefore, a quantity of 8 EA is returned to the original parent pallet.

This field can be modified only if the Quality Inspection Control File settings permit.

Section 3

QAD Warehousing Reference

This section includes supplementary reference information for QAD Warehousing.

***Custom Assignments* 385**

***QAD Warehousing Menu Listing* 389**

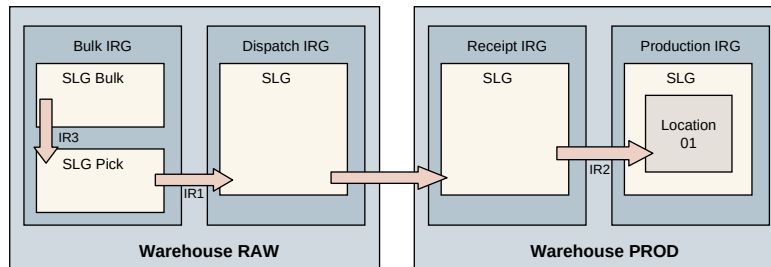
Appendix A

Custom Assignments

The custom assignment program exists to cover situations when you have a transaction type (such as PICK-RE) which could have two possible internal routing assignments. You would then run the program `whircust.p` in order to determine which internal routing QAD Warehousing should use for the transaction type.

Figure A.1 shows a possible scenario.

Fig. A.1
Custom Assignment Scenario



Location 01 in warehouse Prod is replenished from SLG Pick in warehouse Raw.

There would be two IRs to cover this movement:

- IR1
 - Step 10 Bulk
 - Step 20 Dispatch
- IR 2
 - Step 10 Receipt
 - Step 20 Prod

But you also want to replenish SLG Pick from SLG Bulk in warehouse Raw. The IR would be as follows:

- IR3
 - Step 10 Bulk

When making the IR assignment for transaction type PICK-RE, IR1, and IR3 would have the same Item, site, warehouse, transaction type, and address. Yet you can only assign one IR to the transaction type. How would you choose whether to assign IR1 or IR3?

The solution is to use the custom assignment program, `whircust.p`. You supply a set of fields to the program, and then the program determines which IR to use by looking at the ultimate destination of the inventory movement.

To do this:

- Run `whircust.p` in the Progress editor.
- The following list shows the input fields that you must enter in the custom program file:

Tran Type
Site
Whse
Item

Lot

Ref

Dataset (sod_det = Sales Order, wod_det = Work Order, pod_det = Purchase Order,
dsd_det = Distribution Order)

Order Nbr

Order Line

Ultimate Site

Ultimate Whse

Ultimate Location

- The output field of the program is the IR to use. In the example on the previous page, the program would use IR1 if the Ultimate Whse were Prod; otherwise, it would use IR3.
- Assign the output field in the Custom Program field of the IR Assignment Maintenance program.

Appendix B

QAD Warehousing Menu Listing

This appendix includes a listing of all programs included as part of the QAD Warehousing module.

Table B.1
Warehouse Menu

Menu	Menu Label	Program Name
80.1	Warehouse Menu...	
80.1.1	Warehouse Maintenance	whwhmt.p
80.1.2	Warehouse Inquiry	whwhiq.p
80.1.3	Warehouse Report	whwhrp.p
80.1.5	Whse Master List Maintenance	whwhlsmt.p
80.1.6	Whse Master List Inquiry	whwhlsiq.p
80.1.7	Whse Master List Report	whwhlsrp.p
80.1.13	Inventory Acct. Synchronization	whacsync.p
80.1.24	Warehouse Control File Maint	whwhpm.p
80.2	Routings Menu...	
80.2.1	Internal Routing Group Maint	whirgpm.p
80.2.2	Internal Routing Group Browse	whbr026.p
80.2.3	Internal Routing Group Report	whirgpr.p
80.2.5	Internal Routing Maintenance	whirmt.p
80.2.6	Internal Routing Inquiry	whiriq.p
80.2.7	Internal Routing Report	whirrp.p
80.2.9	Int Routing Assignment Maint	whirasmt.p
80.2.10	Int Routing Assignment Browse	whbr027.p
80.2.11	Int Routing Assignment Report	whirasrp.p
80.2.13	External Routing Maintenance	wherm.p
80.2.14	External Routing Inquiry	wheriq.p
80.2.15	External Routing Report	wherrp.p
80.2.17	Ext. Routing Assignment Maint	wherasmt.p
80.2.19	Inter-Work Location Group Maint	whinwlm.p
80.2.20	Inter-Work Location Group Browse	whbr023.p
80.2.21	Inter-Work Location Group Report	whlgmrp.p
80.3	Location Menu...	
80.3.1	Storage Location Group Maint	whslgmt.p
80.3.2	Storage Location Group Browse	whbr034.p
80.3.3	Storage Location Group Report	whslrp.p
80.3.5	Storage Loc. Group List Maint	whsllsmt.p
80.3.6	Storage Loc. Group List Inquiry	whsllsiq.p
80.3.7	Storage Loc. Group List Report	whsllsrp.p
80.3.9	Work Location Group Maint	whwlgmt.p
80.3.10	Work Location Group Inquiry	whwliq.p
80.3.11	Work Location Group Report	whwlrp.p
80.3.13	Location Maintenance Menu...	

Table B.1 — Warehouse Menu — (Page 1 of 10)

Menu	Menu Label	Program Name
80.3.13.1	Location Maintenance	whlomt.p
80.3.13.2	Location Inquiry	whloi.p
80.3.13.3	Location Report	whlorp.p
80.3.13.5	Dedicated Location Inquiry	whlodeiq.p
80.3.13.6	Location By SLG Inquiry	whlosliq.p
80.3.13.7	Location By WLG Inquiry	whlowliq.p
80.3.13.13	Check Digit Generation	whlomamt.p
80.3.13.21	Mass Location Maintenance	whlomamt.p
80.3.22	Hold Menu...	
80.3.22.1	Hold Maintenance	whichomt.p
80.3.22.2	Hold Inquiry	whichoiq.p
80.4	Item Menu...	
80.4.1	Item/SLG Properties Maintenance	whppslmt.p
80.4.2	Item-Storage Loc Group Inquiry	whppслиq.p
80.4.3	Item-Storage Loc Group Report	whppslrp.p
80.4.5	Item Master Maintenance	whppmt.p
80.4.6	Item Master Inquiry	whppi.p
80.4.7	Item Maintenance	whppmt.p
80.4.8	Item Inquiry	whppptiq.p
80.4.9	Item-Site Maintenance	whppsmt.p
80.4.10	Item-site Inquiry	whppsiiq.p
80.4.11	Item-Warehouse Maintenance	whppwhmt.p
80.4.12	Item-Warehouse Inquiry	whppwhiq.p
80.4.13	Supplier-Item Maintenance	whppidmt.p
80.4.14	Supplier-Item Browse	whbr009.p
80.4.15	Supplier-Item Report	whppvprp.p
80.4.17	Customer-Item Status Maint	whppcmt.p
80.4.18	Customer-Item Status Browse	whcmiciq.p
80.4.19	Customer-Item Status Report	whcmicrp.p
80.4.21	Warehousing Item Number Change	whppptcg.p
80.5	Sizing Menu...	
80.5.1	Alternate UM Maintenance	whummt.p
80.5.2	Alternate UM Inquiry	whumi.p
80.5.3	Alternate UM Report	whumrp.p
80.5.5	UM-Group Maintenance	whppugmt.p
80.5.6	UM-Group Inquiry Per Group	whppugiq.p
80.5.7	UM-Group Inquiry Per Item	whppupiq.p
80.5.8	UM-Group Report	whppugrp.p
80.5.9	UM Conversion Generation	whppugen.p
80.5.10	UM Check Report	whppburp.p

Table B.1 — Warehouse Menu — (Page 2 of 10)

Menu	Menu Label	Program Name
80.6	Algorithm Menu...	
80.6.1	Algorithm Type Maintenance	whaltymt.p
80.6.2	Algorithm Type Browse	whbr044.p
80.6.5	Algorithm Master Maintenance	whalmmt.p
80.6.6	Algorithm Master Browse	whbr043.p
80.6.7	Algorithm Master Report	whalrp.p
80.6.9	Algorithm Assignment Maintenance	whalasmt.p
80.6.10	Algorithm Assignment Browse	whbr045.p
80.6.11	Algorithm Assignment Report	whalasrp.p
80.6.21	Algorithm Simulation Menu...	
80.6.21.1	PA/LF Simulation	whpasim.p
80.6.21.2	PA/LF Report	whpasirp.p
80.6.21.4	Picking Simulation	whpksim.p
80.6.21.5	Picking Simulation Report	whpksirp.p
80.7	Engine Menu...	
80.7.1	Engine Processor – Order Display	whenpord.p
80.7.2	Engine Processor – Date Display	whenpdte.p
80.7.3	Engine Processor – LotSerial/Ref	whenplrf.p
80.7.6	Transaction Type Maintenance	whtrttmt.p
80.7.7	Transaction Type Browse	whbr054.p
80.7.8	Transaction Type Report	whtrwtrp.p
80.7.10	Whse-Transaction Type Maint	whtrwtmt.p
80.7.11	Whse-Transaction type Browse	whbr055.p
80.7.12	Whse-Transaction Type Report	whwtmtrp.p
80.7.13	Engine Workfile Maint By Order	whenmt01.p
80.7.14	Engine Workfile Maint By Date	whenmt02.p
80.7.15	Engine Workfile Inquiry By Time	wheniq.p
80.7.16	Engine WorkFile Inquiry By Inv.	when1iq.p
80.7.17	Engine Workfile Report	whenrp.p
80.7.18	Failed Engine WorkFile Report	whenfarp.p
80.7.22	Engine History Menu...	
80.7.22.1	Engine History Inquiry By Time	whenhiq.p
80.7.22.2	Engine History Inquiry By Inv.	whenh1iq.p
80.7.22.3	Engine History Inquiry By Order	whenh2iq.p
80.7.22.4	Engine History Inquiry By Date	whenh3iq.p
80.7.22.5	Engine History Report	whenhrp.p
80.7.22.13	Engine History Archive	whenup.p
80.7.24	Engine Control Maintenance	whenpm.p
80.8	Process Menu...	
80.8.1	Movement Conf By Transaction	whtrcf11.p

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Menu	Menu Label	Program Name
80.8.2	Movement Conf By Location	whtrcf12.p
80.8.3	Movement Conf By Order	whtrcf13.p
80.8.4	Movement Conf Workbench	whtrcf04.p
80.8.5	Movement Conf Processor By Tran	whtrcfp1.p
80.8.6	Movement Conf Inquiry Format	whtrcf01.p
80.8.9	Transactions By WLG Report	whtrrp02.p
80.8.12	Cycle Count Generation	whicccgn.p
80.8.13	Transaction Maintenance	whtrmt.p
80.8.14	Inventory Detail Maintenance	whicldmt.p
80.8.15	Inventory Status Maintenance	whicismt.p
80.8.18	Trans. Priority Ctrl by PreShip.	whprsbst.p
80.8.23	Transaction History Archive	whtrup.p
80.9	Reporting Menu...	
80.9.1	Warehouse Transaction Inquiry	whtriq.p
80.9.2	Warehouse Trans. History Inquiry	whthiq.p
80.9.3	Warehouse Trans. Time Inquiry	whtriq10.p
80.9.4	Transactions By Part Inquiry	whtriq01.p
80.9.5	Transactions By Pick Number	whtriq02.p
80.9.6	Transactions Reference Inquiry	whicref.p
80.9.7	Whse Transactions Inq By Ref	whtriq08.p
80.9.9	Trans. History By Part Report	whtrrp01.p
80.9.10	Trans. History By Order Inquiry	whtriq03.p
80.9.11	Transactions By WLG Report	whtrrp02.p
80.9.12	Reference Summary Inquiry	whicqliq.p
80.9.13	Inventory Detail Inquiry	whiciq01.p
80.9.14	Referenced Inventory Inquiry	whiciq02.p
80.9.15	Referenced Inventory History Inq	whiciq03.p
80.9.16	Percentage Full By Work Loc Grp	whlowliq.p
80.9.17	Percentage Full By Store Loc G.	whlosliq.p
80.9.18	Warehouse Full % Report	whlofurp.p
80.9.19	Location-Dedicated Item Inquiry	whlodeiq.p
80.9.21	Whse Inquiry By From Location	whtriq04.p
80.9.22	Whse Inquiry By To Location	whtriq05.p
80.10	Location Forecast Menu...	
80.10.1	Generate Receipt Forecasts	whfcrctgn.p
80.10.2	Receipt Forecast Maintenance	whfcrmt.p
80.10.3	Receipt Forecast Order Inquiry	whfcicq01.p
80.10.4	Receipt Forecast Inventory Inq	whfcicq02.p
80.10.5	Receipt Forecast Report	whfcrctrp.p
80.10.24	Location Forecast Control File	whfcpm.p

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80.11	Labour Management Menu...	
80.11.1	Task Maintenance	whlmtkmt.p
80.11.2	Task Browse	whbr101.p
80.11.3	Alternate Task Maintenance	whlmatmt.p
80.11.4	Alternate Task Browse	whbr100.p
80.11.5	Task Times Maintenance	whlmtmt.p
80.11.6	Task Times Browse	whbr103.p
80.11.7	Task Assignment Maintenance	whlmtamt.p
80.11.8	Task Assignment Browse	whbr102.p
80.11.10	Task Times Update	whlmstmt.p
80.11.11	Task Priority Update Rep/Batch	whlmtaup.p
80.11.12	Priority Workbench	whlmtmgr.p
80.11.13	User Maintenance	whlmusmt.p
80.11.14	User Browse	whbr104.p
80.11.15	Group Maintenance	whsyugmt.p
80.11.16	Group Browse	whbr105.p
80.11.17	Calendar Maintenance	whlmcamt.p
80.11.18	Calendar Browse	whbr106.p
80.11.19.1	User-Work Location Group Maint.	whsyuwmt.p
80.11.19.2	Task Re-Assignment Maintenance	whbbusmt.p
80.11.20	Labour Management Workbench	whlmtkwk.p
80.11.21	Labour Management Engine	whlmpren.p
80.11.23	Reporting Menu...	
80.11.23.1	Next Task Inquiry	whlmiq01.p
80.11.23.3	Task Time Inquiry	whlmiq02.p
80.11.23.5	Tasks Completed per Day Inquiry	whlmiq04.p
80.11.23.7	Performance by Task Report	whlmp02.p
80.11.23.8	Performance by User Report	whlmp03.p
80.11.23.9	Current User Performance Report	whlmp04.p
80.11.23.12	RDT/RF Operation Inquiry	whlmiq03.p
80.11.24	Labour Management Control File	whlmcmt.p
80.12	Bulk Picking Menu...	
80.12.1	Bulk Pick Order Line Selection	whbpsel.p
80.12.3	Bulk Pick Pre-Ship/Ship Inquiry	whbppsip.p
80.12.4	Bulk Pick Pre-shipper Print	whbppsip.p
80.12.5	Bulk Pick Ship. Forecast Report	whbpfcs1.p
80.12.6	Open Trans. By Preshipper Inq	whbppoip.p
80.12.8	B.P. Preshipper Print By Range	whbpp2rp.p
80.12.12	Bulk Pick Selection Approval	whbpapp.p
80.12.13	Bulk Pick Maintenance	whbpmnt.p

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Menu	Menu Label	Program Name
80.12.16	B.P Labels Print From Pre-Ship.	whbps2rp.p
80.12.17	Bulk Pick Shipping Label Print	whbpslrp.p
80.12.18	Bulk Pick Preshipper Reprint	whbpbphrp.p
80.12.22	Bulk Pick Order Deselection	whbpschg.p
80.12.23	Bulk Picking Delete/Archive	whbpup.p
80.12.24	Bulk Pick Control File	whbppm.p
80.13	Receipt Menu...	
80.13.1	Receipt Reference Generation	whprigen.p
80.13.13	PO Shipper Sequence Maintenance	whrfsipm.p
80.14	Order Management Menu...	
80.14.1	Order Maintenance	whommt.p
80.14.3	Sales Order Maintenance	whomsomt.p
80.14.4	Purchase Order Maintenance	whompomt.p
80.14.5	Inter-Site Request Maintenance	whomirmt.p
80.14.6	Distribution Order Maintenance	whomdomt.p
80.14.7	Works Order Issue Maintenance	whomwimt.p
80.14.8	Works Order Receipt Maintenance	whomwrmt.p
80.14.10	Order Detail Report	whomrp01.p
80.14.17	Address Detail Maintenance	whaddmt.p
80.14.18	Address Detail Browse	whbr051.p
80.14.19	Address Detail Report	whaddrp.p
80.15	Wave Planning/Batch Picking Menu...	
80.15.1	Wave Selection	whwavemt.p
80.15.2	Wave Status Inquiry	whwastat.p
80.15.3	Open Order Report	whwaopr.p
80.15.4	Wave Replenishment	whwarpmt.p
80.15.5	Wave Release	whwaremt.p
80.15.6	Wave Release Groups Create/Activ	whwargmt.p
80.15.7	Wave Release Groups Activation	whwargac.p
80.15.8	Wave Release Groups Inquiry	whwargiq.p
80.15.9	Order Detail Status Inquiry	whomstiq.p
80.15.10	Wave Open Order Inquiry	whwaooiq.p
80.15.11	Wave Detail Report	whwaverp.p
80.15.12	Wave Close	whwacmt.p
80.15.13	Lane/Dock Maintenance	whlanemt.p
80.15.14	Lane Browse	whbr201.p
80.15.15	Lane Group Maintenance	whlagpmt.p
80.15.16	Lane Group Inquiry	whlagpiq.p
80.15.17	Lane Group Report	whlagprp.p
80.15.18	Workload Group Maintenance	whlogpmt.p

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Menu	Menu Label	Program Name
80.15.19	Workload Group Inquiry	whlogpiq.p
80.15.20	Workload Group Report	whlogprp.p
80.15.21	Lane Group Assignment	whlaasmt.p
80.15.22	Wave Utility Menu ...	
80.15.22.1	Wave Unprocessed Orders Inquiry	whwauniq.p
80.15.22.5	Wave Task Inquiry	whwataiq.p
80.15.22.7	Container/Shipper ID Inquiry	whabsiq.p
80.15.22.10	Batch Picking Tasks Report	whbapkrp.p
80.15.22.13	Wave Priority Boost	whwaprbo.p
80.15.22.15	Batch Picking Crash Recovery	whcrabpk.p
80.15.22.20	Wave Close Batch/Report	whwacrlp.p
80.15.22.21	DO Shipper Delete/Archive	whsdodel.p
80.15.22.22	Wave With Blank AbsID Report	whwaut01.p
80.15.22.23	Wave Planning Orders Initializ.	whwainit.p
80.15.23	Wave Planning Control File	whwaplpm.p
80.15.24	Batch Picking Control File	whbbpkpm.p
80.16	Replenishment Menu...	
80.16.1	Replenishment List Maintenance	whrpgrmt.p
80.16.2	Replenishment List Inquiry	whrpgriq.p
80.16.3	Replenishment List Report	whrpgrrp.p
80.16.5	Replenishment Request	whrpreq.p
80.16.9	On-Line Replenishment	whrpolmt.p
80.16.13	Replenishment-Location Maint	whrplimt.p
80.16.14	Replenishment-Location Browse	whbr150.p
80.16.15	Replenishment-Location Report	whrplirp.p
80.16.17	Replenishment-SLG Maintenance	whrpsimt.p
80.16.18	Replenishment-SLG Browse	whbr151.p
80.16.19	Replenishment-SLG Report	whrpsirp.p
80.17	Stock Transfer Menu...	
80.17.1	Transfer By Reference	whtrbref.p
80.17.3	Transfer With Reference Split	whtrrspl.p
80.17.4	Transfer Single Item	whtrbite.p
80.17.8	Reference Management	whicrfwb.p
80.17.12	Optimization Transfer	whtropt.p
80.17.13	Unplanned Issue Request	whicunis.p
80.17.17	Logistic Palletization/Transfer	whtrpllg.p
80.17.18	DO Receipt Palletis./Transfer	whtrplld.p
80.17.20	Pallet Constitution/Transfer	whtrplcn.p
80.19	Interface Menu...	
80.19.1	User Group Maintenance	whsyugmt.p

Table B.1 — Warehouse Menu — (Page 7 of 10)

Menu	Menu Label	Program Name
80.19.2	User Group Inquiry	whsyugiq.p
80.19.5	User-Work Location Group Maint	whsyuwmt.p
80.19.6	User-Work Location Group Browse	whbr166.p
80.19.7	User-Work Location Group Report	whsyuwrp.p
80.19.13	EAN/SCC Coding Test	whbctest.p
80.19.24	Barcode Prefix Control File	whprefpm.p
80.20	Printing Menu...	
80.20.1	Print Template Load	whprtml.p
80.20.2	Print Template Inquiry	whprtmiq.p
80.20.3	Print Template Report	whprtmrp.p
80.20.5	Print Request Maintenance	whprmt.p
80.20.7	User Printer Maintenance	whprusmt.p
80.20.11	Reprint	whprprp.p
80.22	Quality Inspection Menu...	
80.22.1	Sample Inspection Maintenance	whqasmt.p
80.22.2	Sample Inspection Browse	whbr160.p
80.22.3	Sample Inspection Report	whqasrp.p
80.22.6	Inspected Inventory Report	whqainrp.p
80.22.10	Failed Inspections Inquiry	whqafaiq.p
80.22.13	Change Inspection Status Maint	whqastmt.p
80.22.14	Change Inspection Status Browse	whbr161.p
80.22.17	Inspection History Maintenance	whqainmt.p
80.22.23	Sample History Delete/Archive	whqaup.p
80.22.24	Quality Inspection Control File	whqapm.p
80.24	System Menu...	
80.24.1	Sequence Definition Maintenance	whsqmt01.p
80.24.2	Sequence Definition Inquiry	whsqiq01.p
80.24.3	Excname Maintenance	whexecmt.p
80.24.5	Translation Menu...	
80.24.5.1	Translation Manager	whltutil.p
80.24.6	Release Bulletin Utility	whrbutil.p
80.24.7	Warehousing Dump/Load Menu...	
80.24.7.1	Dump/Load Program Utility	whmkdl.p
80.24.7.2	Database File Dump/Load Utility	whmgdl.p
80.24.7.3	Database File Dump/Load w/Batch	whdmpdl.p
80.24.10	Verbosity Inquiry	whsyvbiq.p
80.24.11	Verbosity Report	whsyvbrp.p
80.24.12	Verbosity Archive	whsyvbup.p
80.24.13	Warehouse Security Maintenance	whwhsemt.p
80.24.14	Warehouse Security Browse	whbr040.p

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Menu	Menu Label	Program Name
80.24.15	Warehouse Security Report	whwhserp.p
80.24.17	Excel Menu...	
80.24.17.1	Excel Master Maintenance	whxlmmt.p
80.24.17.3	Excel Detail Maintenance	whxlrmt.p
80.24.17.24	Excel Control File	whxlcmt.p
80.24.19	Upgrade Menu...	
80.24.19.1	Whse To WMS Master Maintenance	whupgmmt.p
80.24.19.2	Whse To WMS Master Inquiry	whupgmiq.p
80.24.19.3	Whse To WMS Master Report	whupgmrp.p
80.24.19.5	Whse To WMS Detail Maintenance	whupgdmr.p
80.24.19.6	Whse To WMS Detail Inquiry	whupgdiq.p
80.24.19.7	Whse To WMS Detail Report	whupgdrp.p
80.24.19.11	Whse To WMS System Rename	whupgren.p
80.24.19.12	Whse To WMS System Copy	whupgcpy.p
80.24.19.13	Whse To WMS Data Transfer	whupgrun.p
80.24.19.15	Whse To WMS Data Validation	whupgval.p
80.24.19.17	Whse To WMS Data Loader	whupglr.p
80.24.19.19	Whse To WMS Data Tidy Up	whupgtid.p
80.24.19.21	Whse To WMS Trigger Update	whupgtrg.p
80.24.19.24	Whse To WMS Control File	whupgcmt.p
80.24.21	Utility Menu...	
80.24.21.1	Generalized Codes Maintenance	whcodemt.p
80.24.21.2	Window Help Maintenance	whflhmt.p
80.24.21.3	Program X-Reference Maintenance	whexecmt.p
80.24.21.5	Create QAD Warehousing Diagnostic File	whsydiag.p
80.24.21.6	QAD Warehousing Diagnostics Report	whsydirp.p
80.24.21.8	Re-Build InventM Records	whutinw1.p
80.24.21.10	Message Maintenance	whmsgmt.p
80.24.21.11	Message Inquiry	whmsgiq.p
80.24.21.12	Message Report	whmsgrp.p
80.24.21.13	Re-calculate Location %Full	whutfull.p
80.24.21.14	Populate Order Maintenance Files	whominit.p
80.24.21.15	Re-Balance Expected In/Out Qty's	whutldex.p
80.24.21.17	Persistent Procedure Inquiry	whsyppiq.p
80.24.21.19	CPD Control File Maintenance	cpdiprmt.p
80.24.21.21	Incomplete Hanging Tasks Report	whtrrp03.p
80.24.21.22	Hanging lad_det (No Task Report)	whutlad1.p
80.24.21.23	Container Creation Utility	whutabmt.p
80.24.22	Control Files Report	whsympmr.p

Table B.1 — Warehouse Menu — (Page 9 of 10)

Menu	Menu Label	Program Name
80.24.23	Local Exit Routine Control File	whsylvpm.p
80.24.24	System Control File	whsypm.p

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RF Warehouse Menus

Table B.2
Radio Frequency Menus

Menu	Menu Label	Program Name
1	Work	
1.1	Next Task	whextaut.p
1.2	Select Task	whextman.p
1.3	Transfer	whextotf.p
1.4	Location Audit	whextaud.p
1.5	Kanban Scan	whextkan.p
1.6	Eng Activation	whexteng.p
1.7	Preship Sel Task	whextmas.p
1.8	Receipts	whextprc.p
1.9	Shipments	whextexs.p
1.10	On-Line SO Pick	whxtst.p
1.11	Tag Count Entry	whrfphn.p
1.12	Pallet Build	whextplc.p
1.13	Pallet Split	whextpgs.p
1.14	Order Sel Task	whextmao.p
1.15	Wave Sel Task	whextmaw.p
1.16	BulkPick Sel Task	whextmab.p
1.17	Receiver Sel Task	whextmar.p
2	Printing...	
2.1	Change Printers	whrfprmt.p
2.2	Reprint	whrfprrp.p
3	Picking/Container...	
3.1	BP Pick SO/DO	whextbpk1.p
3.2	BP Pick All	whextbpk2.p
3.3	Container Build	whrfcons.p
3.4	Container Move	whextltr.p
3.5	Ship Truck	whrfshtr.p
3.6	Pallet Explosion	whrfpaex.p
3.7	Item Move	whrftrbx.p
3.8	Print Paperwork	whrfprpr.p
3.9	Cancel Shipment	whrfcnsh.p
3.10	Pallet Transfer	whrftrpr.p
4	Inspection	whextnmt.p

Menu	Menu Label	Program Name
5	Inquiries Menu....	
5.1	Item Inv Inq	whexpii.p
5.2	Loc Inv Inq	whexlii.p
5.3	Ref Inv Inq	whexrii.p
5.4	Lot Inv Inq	whexsii.p
5.5	Daily Prod	whexdpi.p
5.6	Preshipper Inq	whexpsi.p
5.7	Item Master Inq	whexpiq.p
5.8	Loc Master Inq	whexliq.p
5.9	Sto Loc Gp Inq	whexsiq.p
5.10	Address Inq	whexaiq.p
6	Read Messages	whexrms.p

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