Test

Aptean Ltd

Contents

1 GENERAL WAREHOUSE MANAGEMENT CONCEPTS

Key flow to shapes

1.1 Stock Holding

The system can track inventory in a multi?warehouse situation and multiple buildings on a warehouse site.

Inventory is tracked at the Warehouse/Product level for each owner. Stock levels for each owner of the product can be viewed.

Stock is also tracked at the location level. Within the location the stock levels for each stock trace (pallet/container), lot, batch and serial number can be viewed.

1.2 Warehouse/Product Inventory Levels

Physical inventory comprises of 8 categories:

Free

The quantity which is available for allocating to new sales orders.

Allocated

The quantity which is allocated to sales orders.

Awaiting Despatch

Sales orders which have been Pick Confirmed/Order Assembled and are awaiting despatch.

In Receipt

Stock which has been received (booked in), but has not been confirmed as putaway. This category can include stock which is received as 'Good', 'Faulty', 'Quarantine' or 'Inspection'.

During Putaway Confirmation, the system moves stock from 'In Receipt' to either, 'Free', 'Faulty', 'Quarantine', 'Buffer' and 'Reserve'

Reserve

Stock which has been set aside for back orders

The system maintains a 'Reserve Required' inventory level which represents the total back ordered quantity. During Receipts processing, Putaway Confirmation, Stock Write On and Warehouse Transfers the system attempts to match the reserve stock with the reserve required amount before allocating stock to the 'Buffer' or 'Free' category.

Buffer

Stock which has been reserved for sales orders of a particular type (e.g. VORs)

A suggested buffer stock level can be defined and the system attempts to match the buffer stock quantity to the suggested quantity. Thus during Receipts processing, Putaway Confirmation, Stock Write On and Warehouse Transfers the system attempts to move stock into buffer stock in order to bring it up to the suggested level before moving any stock increase to the 'Free' category.

Faulty

Stock which has been received as 'Faulty', or, has had the stock condition changed to 'Faulty'. This is not available for sale.

Quarantine

Stock which has been received as 'Quarantine', or, has had the stock condition changed to 'Quarantine'. This is not available for sale.

Other inventory levels which the system tracks includes:

Intransit Issues

Stock which has been transferred from one warehouse but which has not yet been confirmed as being received at the second warehouse.

This figure is displayed in the sending warehouse and forms part of the physical inventory there.

Intransit Receipts

Stock which has been transferred from one warehouse but which has not yet been confirmed as being received at the second warehouse.

This figure is displayed in the receiving warehouse but does not form part of the physical inventory.

? **On Order Quantity**

Stock which is on?order from a supplier.

1.3 Location and Stock Trace Inventory Levels

Free

Stock which is available for allocation to planned shipments during Pick Location selection.

Allocated

Stock which has been allocated to planned shipments during Pick Location selection.

In Receipt

Stock which has been received but Putaway Confirmation has not taken place.

Faulty

Stock which is 'Faulty' and which is not available for picking location assignment.

Quarantine

Stock which is in 'Quarantine' and which is not available for picking location assignment.

1.4 Stores

Within each warehouse one or several stores can be defined. Each store consists of locations which can be grouped into work sectors and into zones.

Stores can relate to physical locations e.g. a warehouse which consists of several buildings, a foods warehouse which has a cold store and an ambient store, or, the stores can relate to separate areas of the warehouse which form part of the same physical building.

Goods are received in the warehouse and then split out to individual stores when the goods are putaway. During Goods Out, the stock is picked from individual stores and consolidated to be despatched from one point.

Replenishment can occur across stores if required, e.g. stock is picked from one stores in order to replenish the stock holding in another store.

1.5 Owner

A product can be owned by more than one owner in the same warehouse. It can be used to cater for various situations:

? Third party warehousing

? Companies with subsidiaries

- Customer held stock which the customer has paid for but has not yet taken delivery

These products are managed by controlling each product separately e.g. defining multiple picking locations, one for each owner. This approach can take up a great deal of space. To improve space utilisation these products can be configured as multi-owner managed. This allows multi-owned stock to be held in the same location. This has been achieved by only maintaining stock ownership at the warehouse level and not at the location and stock trace level. For products managed like this:

- There will be one pick location.
- There will be one set of reserve locations.
- In picking there will be one pick per pick face and not one per product owner.
- In stock counting there will be one count per location not one per product owner.

Products are configured as multi-owner managed at the warehouse, product and owner level. Thus allowing for the situation where two owners will be multi-owned but a third will be managed separately.

1.6 Costing

Four costing methods are available:

Average

This method causes the average cost to be recalculated whenever the physical stock level is increased e.g. during Receipts processing, Receiving, stock Write?On and Warehouse Transfers.

Standard

A standard cost can be defined for the product. A re-evaluation program exists in order to change the standard cost. Cost re-evaluations can be set up in advance of the cost taking effect.

Actual (for serial items only)

The actual cost of the receipt is captured against the serial stock trace and this is used whenever the stock is issued.

FIFO

The cost at receipt is captured along with the receipt data. As stock is issued, the stock cost records are read in date (FIFO) order and the issue quantity apportioned over the stock cost.

1.7 Unit of Measure

Multiple units of measure can be defined and the conversion factor used to convert from one unit of measure to the other. The systems tracks inventory at the standard stocking unit (usually the lowest unit of measure), however it can be purchased and sold at a different unit of measure if required. Customers can order in any unit of measure but the system will convert it to the stocked unit of measure. (NB rounding errors may occur).

STOCKING UNIT = EACH

ORDERING UNIT = 4?PACK

CONVERSION = 0.25

A Selling Unit can also be defined against the pricing structure (Market). The customer can order in one unit of measure e.g. 10 of EACH. This can then be priced on despatch against another Unit of Measure e.g. £2 per kilo.

2 GOODS IN

2.1 BOOKING IN

Flow for booking in

Once purchase orders have been raised with suppliers, an optional step within WMS allows supplier deliveries to be booked in to the relevant warehouses. This booking in enables expected receipts to be scheduled for particular times as well as for dates. It also assigns receiving bays to each receipt to assist workload scheduling and balancing in the receiving area.

A separate maintenance program allows all the valid bays in the warehouse to be defined. Any of these bays which are usable for receiving can be booked against during booking in.

Another maintenance program requires the profile of a working day for each warehouse to be defined. This allows a day to be split into up to 48 slots by specifying the time boundaries of each slot. This gives the flexibility of variable length time slots to represent busy and idle periods of the day.

Within the booking in function each delivery to a warehouse can be scheduled for a time slot (or range of time slots, depending upon the expected size of the delivery) on a particular day, to take place for a nominated receiving bay. Only one booking can be made for a time slot/bay/date combination. Bookings may not overlap. If details are known about the purchase orders expected on the delivery, they may be recorded on a detail screen. If not, expected delivery volume, weight, number of pallets and carrier information may be entered. A unique reference number is assigned to each booking, which should be given to the carrier to quote when the delivery actually occurs.

A tabular profile of the day's current bookings by receiving bay can be viewed from a scan screen to help the user select a time and receiving bay for a new booking.

Existing bookings can be accessed by their reference number and amended or cancelled. A booking can be rescheduled to a new day, time or bay provided this will not conflict with an existing booking.

Individual time slots (or a range) can be reserved to prevent a booking being made for a particular date/time/bay combination. This is useful when a bay is known to be unavailable due to maintenance or staffing levels will not be able to cope with deliveries at certain times. Previously reserved time slots can be released to allow bookings.

2.2 GOODS RECEIVING

Flow for receiving

Once expected receipts have been set up on the system the goods can be received by purchase order within trailer reference number. By entering receipts against a trailer reference it is possible to compare the goods received from each trailer with the drivers documentation in order to verify that the delivered quantity matches the received quantity.

NB Multiple purchase orders from many suppliers can be received on one trailer.

If required goods can be received without reference to suppliers or purchase orders.

There is a separate process for receiving non?inventoried goods (e.g. service orders).

If a booking reference is available (the receipt was previously booked in), this can be entered to allow matching of actual details against expected. This information is useful in determining supplier or carrier performance.

Receiving can be a one or two step process (receiving with or without a separate putaway confirmation) as defined by warehouse.

On acceptance of the Goods In Header information, line information can be entered using the detailed line entry screen, single line entry screen or the multi-line entry screen.

The operator receives against a purchase order line, or supplier, or product code. If against a purchase order line, this can be closed during receiving.

An over delivery percentage can be defined against each product within a warehouse which is validated during goods receipt. If the received quantity exceeds the defined over delivery tolerance, the operator is warned against receiving the excess quantity. If the excess quantity is received a reason code is associated with the change.

The operator can specify the condition of the stock against the receipt e.g. 'Good', 'Quarantine' or 'Faulty' and a certain percentage of the receipt can be held for inspection.

Serial, lot, batch numbers and expiry dates can be entered if the products within the warehouse are defined as serial/lot/batch number tracked. If maximum and minimum life on receipt values have been defined for expiry dated products then warnings are reported if entered expiry dates do not fall within the life range.

Blind Goods In checking is supported. If this is in effect the operator cannot view the outstanding receipt quantity on the receiving screen. This ensures that the incoming goods are physically counted in order to discover the delivery quantity which is entered into the system.

The putaway location can be assigned manually by entering it during goods receipt, or, the system can automatically assign a putaway location according to user defined rules. If required the operator can partially control the automated putaway by specifying the putaway zone from which a location can be selected. This can be used in circumstances where the warehouse is getting full in order to avoid the system unsuccessfully attempting to locate the product in a zone with no available space.

During the receiving process, the operator can specify whether any returnable containers are associated with the receipt. This enables details of the containers to be monitored (e.g. number received, which supplier the container was received from).

If the product does not have a standard number of units per pallet, the number of units on each received pallet or container can be defined during receiving e.g. 2 pallets of 100 units, 1 pallet of 110 units and 1 of 90 units.

Stock Trace

Full traceability of the stock within the warehouse is achieved because each pallet/container is automatically assigned a unique reference number at the point of receipt. A stock trace label is produced

If the stock trace is transferred to another warehouse, the unique reference number is also transferred with the pallet/container.

Stock Status

Stock can be assigned the status of 'Good', 'Faulty', 'Quarantine' or it can be moved to 'Inspection'.

Reason codes can be entered to indicate the reason for quarantining the product or the nature of the fault. If required a reason code could also be assigned to 'Good' stock. The reason code is held against the stock trace.

Quarantine requirements can be imposed in three ways:

· By defaulting a quarantine lead time which is held against the product during Receiving. This lead time specifies the number of hours that the product should be quarantined for (e.g. 48 hours). The quarantine can be removed manually via the Change Stock Condition program or automatically. If a manual removal occurs, the operator specifies the condition that the stock has changed to e.g. 'Quarantine' to 'Faulty'. If the automatic removal occurs, a batch process is run which removes the quarantine after the specified period of time has elapsed and changes the stock condition to 'Good'.

· By specifying that the stock condition is 'Quarantine' at the point of receiving.

· By defining that the goods should be quarantined at the point of purchase order creation.

Inspection percentages can be entered against a purchase order line when the purchase order is created, or, the total quantity can be declared as awaiting inspection during the receiving process if a percentage has not been defined previously. These percentages indicate the amount of the receipt, which requires inspection. Goods, which require inspection, are moved into the warehouse inspection zone and an accompanying inspection label is produced. The warehouse inspection zone can be defined on the warehouse file and the locations within it are handled in the same way as other stock locations. Once inspection has taken place, the goods can be putaway to a stock location outside of the inspection zone if required.

Cross Docking

The user can specify whether or not to cross dock the receipt. The receiving process uses reserve required values to determine if cross docking is required in which case the user is prompted to cross dock the receipt. A back order enquiry exists within the receiving process which enables the operator to examine the back orders and decide whether the quantity should be cross docked in order to expedite the delivery to the customer. The operator selects the cross dock option by specifying that cross docking should occur on the receiving screen. During putaway processing the stock is moved into the cross dock area and the system automatically picks from here during pick location selection.

Serial Numbers

A unique number can be assigned to each unit of stock received. This enables very high value goods to be tracked from the time of receipt. Serial tracking can also occur during Goods Out processing (Order Assembly) and this enables product recall items or warranty items to be tracked.

Lot Numbers

If a product is defined as being lot tracked, (purchase) lot numbers can be assigned to receipts.

Batch Reference

If a product is defined as being batch tracked, a batch number can be entered.

Batch references are usually associated with manufacturing batches e.g. a batch of goods are produced.

Expiry Dates

If a product is defined as being expiry dated, expiry dates can be assigned to receipts.

2.3 PUTAWAY LOCATION SELECTION

Flow for put away

Putaway locations are automatically assigned as a result of goods having been received, or inspection having been confirmed.

The putaway rules are user defined for each warehouse/product/owner combination.

Small/Large Quantity Putaway Rules

Different putaway rules can be defined according to the size of the quantity to be putaway e.g. large quantity (full pallet) and small quantity (part pallet). This enables different priorities to be associated with the quantity. For example, a small quantity may be putaway directly into the picking location.

If the product is stored on a pallet, the small quantity is defined as any putaway quantity which is less than or equal to a certain percentage of the pallet quantity. (This percentage is user defined and held against the Warehouse Product file).

If the product is not stored on a pallet the user defines a quantity which the system can compare to the putaway quantity.

Putaway Methods

? Putaway to picking location (Good Stock Condition only)

? Putaway to empty location

? Consolidate full pallets of the same product (the system takes into account FIFO and stock condition restrictions). The system searches for a location which currently contains the product to be putaway and attempts to store the received product in the same location.

? Consolidate full pallets of any product. The system searches for available storage space in locations already containing products and attempts to store the received product in the same location.

These methods are user defined and can be set so that different methods are associated with different types of products. The putaway rules sequence can be user specified according to the type of product being putaway. For example:

For a full pallet quantity the user could specify that three out of four putaway methods are used.

1. Consolidate full pallets within the same product
2. Consolidate full pallets within any product
3. Putaway to empty locations

For quantities which are less than full pallets the user could specify that two out of the four methods are used and that a difference sequence operates:

1. Putaway to picking locations
2. Putaway to empty locations

Putaway of Faulty/Quarantine Stock

The system ensures that this stock is not putaway directly to the picking locations, however it can be stored in any other suitable location.

Putaway Zones

Up to 3 putaway zones (plus 1 sub?zone) can be defined for each product.

A zone is a collection of locations within the warehouse. These locations do not have to be continuous. The organisation of locations into zones facilitates optimisation of putaway e.g. zones could be defined for slow, medium and fast moving products, or to ensure that products are located near their dedicated pickface. Typically a zone is organised according to product flow, activity types, location size or equipment and storage restrictions.

The system always searches for putaway locations within the specified zones. Any quantities which cannot be located within the preferred zones are assigned to the overflow location.

Within zones a fill sequence can be defined. This enables the system to attempt to fill locations within a zone according to a pre?defined sequence. Thus a sequence number is assigned to locations and this overrides any 'natural' sequencing derived from the location code itself. For example, the system would naturally attempt to fill location AA0101 before AA0103 but using the fill sequence number this order could be reversed.

The system captures statistics relating to products which have been stored in locations that are outside of their preferred zones. This could occur if the assigned location is overridden during Putaway Confirmation or stock is adjusted into a new location. This enables the warehouse manager to detect whether the products are correctly zoned e.g. if too many products have been defined as 'fast' moving there will not be enough space available to store the product within the 'fast' zone. Acting on this information the warehouse manager can re?assign zones to specific products.

Sub?Zones

Along with the three zones, one sub?zone can be set up for each product.

A sub?zone can cross zones e.g. a sub?zone could be set up to represent an aisle in racking:

A location can be defined as being in any one zone and any one sub?zone.

To aid replenishment of primary picking zones it can be useful to store bulk pallets close to the picking locations. Thus, during putaway location selection it is important that the system should try and select a location for the bulk pallet which is as close to the primary picking location as possible. Setting the sub?zone up as the aisle of the picking locations means that the sub?zone is checked for putaway locations before the 3 putaway zones.

Location Compatibility

According to the putaway method, the location is bypassed for putaway if:

- A stock check is being carried out at the selected location.
- The location has been defined as being unusable for putaway.
- Replenishment confirmation amendments are outstanding (primary picking locations only).
- The location does not have enough available space.
- Available space is calculated in terms of units, weight, cube and number of pallets.
- Expiry dates cannot be mixed on the stock trace if the stock trace already contains an expiry dated product which has a different date.
- Product batches cannot be mixed on the stock trace if the stock trace currently contains a batch which has a different reference.
- Product lots cannot be mixed on the stock trace if the stock trace currently contains a lot which has a different reference.
- The pallet type is not compatible with the location type.
- The putaway date exceeds the FIFO window.
- Stock conditions cannot be mixed and the location already contains a product with a different stock condition.
- A location is defined as a pick/put alternate and a pick is currently in operation at the location.
- Products cannot be mixed at the location.
- The stock trace is totally 'In?receipt' and merging of stock trace details is permitted. (The 'In?receipt' stock trace may be confirmed elsewhere.)

Overflow Location

If the system is unable to locate a product within an existing location, the product is stored in the 'Overflow' location which corresponds to a logical rather than physical location.

If the system locates a significant percentage of products within the overflow location, this suggests that either the warehouse is full, or, that the location assignment parameters have not been defined correctly.

Alternate Put/Pick Locations

A flag can be set on the system to interleave picking and putaway tasks once a pick has been made a putaway task is allocated in walk sequence to the operator.

Pallet Types

Multiple pallet/container types can be defined. Against each product a default pallet type can be assigned but this can be overridden during the Receiving process which means that a product can be received on several different pallet types.

The number of units per pallet can be defined for each product/pallet/ container combination.

If multiple pallets types can be stored in a location simultaneously, conversion units need to be defined. (See capacity methods).

It is possible to prevent certain pallet types from being stored in specified locations if required.

Capacity Methods

Six different methods exist for calculating the capacity of a location:

- **Capacity not tracked by the system**

This effectively means that the location has a limitless capacity i.e. the system does not check if any available capacity exists within the location. All controls/limits should be set to zero, except for one which should have the largest value possible. The location should not have pallet control.

- **Number of pallets/containers which can be stored in a location**

This takes into account the type of pallet which can be stored in a location, thus it is possible to state the certain pallet/container type being stored in the location. A fixed number of stock trace records should be defined for the location, and the pallet type should be defined on the location. Automatic putaway will not exceed the number of stock traces, manual putaway will display a warning.

- **Number of pallet conversion units (See also Impl. guide section 2.3)**

The concept of conversion units enables a location to store pallets of different sizes/types e.g. if a beam in racking can hold either 4 mini pallets or 3 standard pallets, the location conversion unit would be 12, the mini pallet conversion unit 3 (12/3 = 4 mini pallets) and the standard pallet conversion unit 4 (12/4 = 3 pallets). It is possible to identify the type of pallet that can be stored in the location by defining the relation on the Pallet/location record.

- **Fixed number of units**

Number of units of product which can be stored in the location. This would usually be used for dedicated locations. No pallet control is required.

- **Weight**

Weight limit which can be stored in the location.

- **Cube**

Volume which the location can accommodate.

NB There are mutually exclusive methods. They are for pallet controlled locations i.e. bulk and are therefore not suitable for primary picking locations.

Not all capacity methods are mutually exclusive, for example a location which is controlled by the number of pallets/containers which can be stored in it may also have a weight restriction.

Stackable Locations (Pallet Processing Only)

The system will calculate the number of Pallets which can be stored at the location for the above two pallet control methods. If a location is flagged to allow stackable containers then the system will define the capacity of the location to be Number of Pallets * Number of Layers. (The number of layers is defined on the Product/Container record.)

e.g. Fixed no of stock trace records = 4

No of layers = 3

Capacity = 12 pallets.

NB: The calculation is based on the first pallet type in the location

for those locations supporting multiple pallet types.

2.4 INSPECTION RESULTS CONFIRMATION

Inspection notes are produced during Receiving and this enables goods to be moved to the inspection zone for checking purposes. To reduce excess handling/splitting of pallets, the quantity moved to inspection is always in terms of full pallets, therefore if the inspection percentage equates to a part pallet quantity the whole pallet is moved to the inspection zone. The system calculates the amount of stock to inspect according to the order quantity rather than the receipt quantity, thus if the inspection percentage is set to be 50%, the system assigns the first half of the total delivery to inspection.

If a sample from each pallet/container is to be inspected the inspection percentage should be set to 100%. This ensures that all pallets received for the purchase order are inspected but the inspector can decide how many cases from each container to sample.

Once the physical inspection has been carried out, details of the inspection must be entered into the system via Inspection Confirmation and a stock location found for the goods. This can be manually assigned or the Putaway Location process can select a location according to the same user defined rules outlined in section 4.

If the stock does not pass inspection (e.g. the stock condition is not defined as 'good'), a reject note can be generated.

2.5 TIMED QUARANTINE RELEASE

Stock can be automatically released from quarantine once the specified quarantine period has elapsed and once the stock has been released the stock condition is changed to 'Good'.

The automatic release can be overridden if the Inspector discovers a problem with the goods and wants the quarantine period to be prolonged. In order to prolong the quarantine, the stock condition should be changed to 'Quarantine' via the Change Stock Condition process, this causes the automatic release trigger to be ignored by the system.

2.6 CONFIRMATION OF PUTAWAY

If a two step receiving function is used, goods must be confirmed as being physically putaway in the location assigned. During confirmation the operator can enter details of any changes to the putaway information resulting from the physical putaway e.g. location or quantity alterations.

Putaway Confirmation also caters for counting into bins. Thus during Receiving the operator does not have to enter an accurate receipt quantity, instead an approximate quantity can be entered and the system can be notified of the correct quantity during the confirmation of putaway, i.e. the Purchase order and Goods?In details will be updated with the 'actual' quantities received.

Confirmation can be on an exception basis or, positive confirmation can occur. The following instances indicate when positive confirmation can take place;

· The warehouse is defined as operating putaway according to positive confirmation.

- Location check digits are defined for the location which has been selected for putaway.
- Serial numbered products are confirmed.

Once putaway confirmation has taken place, the stock is available in the warehouse for picking assuming that the condition of it is 'Good'.

The last putaway to cross-dock for a receipt will trigger the resubmission of pick batch creation for pick plans waiting for the receipt of the product.

Note: If the RDS system is in operation, Putaway Confirmation is carried out via RDS.

2.7 RETURN GOODS TO SUPPLIER

There is a requirement to return inventoried goods to a supplier in certain situations e.g. if the goods are discovered to be faulty and therefore a function exists to enable this to be carried out. Containers e.g. pallets/roll cages can be returned to the supplier alongside the goods.

Goods to be returned must have been confirmed as putaway within the warehouse (if two step receiving is used) first. The operator specifies the owner, product, quantity and the location from which the stock is to be taken.

Once the goods have been returned, the supplier will raise a credit note and this can be entered onto the OBS system via the Purchase Order Processing module where credit note matching can take place.

3 GOODS OUT

3.1 PICK/LOAD PLANNING

Flow for order scheduling and pick release

Once sales orders have been entered onto the system either in batch mode or on?line, the pick can be planned. This enables shipments of an order line ? (planned shipments) ? to be grouped together to form a pick/load plan.

The Pick/Load planning function can act as a planning tool enabling the operator to decide upon the best combination of planned shipments to pick and despatch in order to maximise vehicle capacity. The pick/load plan can be created once the planner has decided upon the preferred grouping of planned shipments.

The planner can create a pick plan according to vehicle restrictions or, create a plan according to any other required criteria.

- Delivery Area
- Carrier
- Customer delivery code
- Freight Class
- Order Type
- Owner
- Product Code
- Sales Order Number
- Date (Pick by date, i.e. Requested Despatch Date ? WH Lead Time)

If stock allocation has not occurred, planned shipments can be added to or removed from an existing load plan.

A load plan reference is generated for tracking purposes.

(N.B. the grouping criteria mentioned above can be used within the outstanding planned shipment reports to allow experimentation with different selections)

Upon confirmation of the pick plan, the picking documents can be produced if required.

3.2 PICKLOAD PLANNING CONCEPTS

Default Pick Mode

Four pick modes are available, 'Consolidated', ?Bulk?, 'Order' and 'Manual'. It is possible to set up a default pick mode for each warehouse which can be overridden by the operator if required. A pick/load plan can have a mixture of pick modes

contained within it because the pick mode can be defined at the sales order level e.g. if individual orders are selected for planning different pick modes can be associated with the order.

Consolidated

If this mode is selected all planned shipment quantities for one product are consolidated and the system attempts to locate the total quantity. This can result in one picking instruction relating to more than one planned shipment which means that orders have to be assembled as a separate step.

Bulk

As with the Consolidated pick mode this mode consolidates planned shipment quantities for one product and attempts to locate the total quantity, which can result in one picking instruction relating to more than one planned shipment. Unlike Consolidated picking the assembly process is not system driven, it is a completely manual process.

Order

If this mode is selected, the order is pick located separately from all other planned shipments which might contain the same products. Using this method the order is picked as an order and is assembled during picking. Order pick batches can have capacity and weight limits set to reflect the customers preferred delivery container.

Manual

If this mode is selected, the system does not attempt to assign a picking location during location selection and a picking list is generated without locations being specified. The operator informs the system of the location that the product has been picked from during Pick Confirmation. This enables the picker to select a specific pallet/container.

Weight/Cube Limits

Vehicle weight/cube limits can be used in order to restrict the size of the load plan. These are associated with the vehicle type which is entered by the operator.

Miscellaneous weight and cube limits can also be defined. These limits can be used to cater for situations where the vehicle is not dedicated to the pick/load plan e.g. trans-shipments are also carried on the vehicle yet they are not pick/load planned. By specifying the trans-shipment weight and cube, the system can deduct this from the available vehicle weight and cube in order to allow the planner to plan the load according to the remaining weight and cube of the vehicle.

Delivery Area

The delivery area can refer to a route.

Order Types

Default order types are set up for each customer and orders can be selected for processing according to order type in Pick/Load Planning. The order type is user defined and it controls the processing of the order. The following characteristics can be associated with an order type and it should be noted that some of the characteristics are mutually exclusive:

- **Back orders allowed**
- **Ship complete**

No partial shipments can occur. Therefore, if the total quantity ordered is not available and this results in some of the order being back ordered, the goods will not be shipped until the back ordered quantity can be filled.

- **Pick immediate allowed**

If this option is defined for the order, the operator is able to automatically call the picking routines from Order Entry. Thus the order can not be selected for Pick/Load Planning. The order will be processed on a separate Load Plan generated by the system. The picking documentation will also be triggered automatically.

- **Manual pick allowed**

If the order type has this processing rule defined, all planned shipments for the order will have a manual pick mode assigned to it as a default.

- **Amend quantity to stock available**

If the system cannot allocate the complete order quantity, the unallocated quantity will be cancelled rather than back ordered.

- **Proforma indicator**

Stock is not allocated to the order when the order is placed and this type of order can act as a price quotation. To allocate stock to the order it must be converted from a proforma order to a regular order.

- **Allocate from buffer stock**

If there is not sufficient free stock to allocate to the order, the system will attempt to allocate from buffer stock. This can be used for emergency orders which have a high stock allocation priority.

- **Schedule orders without allocation**

The system does not attempt to allocate stock to the order during Order Entry or the automatic allocation program, but instead creates unallocated planned shipments. These planned shipments can be processed in pick/load planning but before picking documents can be produced, they must be allocated using the Planned Shipment Allocation program. This delay in the allocation process enables orders to be pick/load planned before the stock is physically received into the warehouse(e.g. for fresh food).

Pick To Vehicle

By selecting this option and specifying a vehicle identifier picked containers can be deposited directly onto the despatch vehicle. These containers are marked as loaded on deposit. This functionality is restricted to Order and Bulk pick plans.

3.3 PLANNED SHIPMENT ALLOCATION

Via Planned Shipment Allocation stock can be allocated to planned shipments which have not had stock previously allocated but which have been pick/load planned. It enables pick/despatch work load planning to take place even if the stock does not exist in the warehouse. This caters for products which have to be picked and despatched as soon as they are received into the warehouse (e.g. fresh food).

A report can be generated (Unallocated Planned Shipments Report) which enables the warehouse planner to view all planned shipments which exist with no stock allocated to them. (NB. This report shows planned shipments which have been pick/load planned as well as those which have not yet been processed in this way).

Once stock has been received into the warehouse, a pick/load plan can be selected for stock allocation. An exception report is produced showing planned shipments which have not had stock allocated to them. Planned shipments appearing on this report can have stock allocated to them when the next delivery of goods arrives at the warehouse or they can be deleted via Unallocated Shipment Cleardown.

Pick Waves

Any planned shipments that are allocated during the Stock Allocation process are now available for release to location selection. However it is possible that all lines on the Pick Load will not be allocated, or may be only partially allocated. In

this situation, location selection will process only those which have been allocated, and these will form the first 'wave' of the Load Plan.

Subsequent allocations against the same Load Plan will generate further waves of picking. This enables order lines to be picked through the system as stock is made available, with the order line maintaining several different statuses.

3.4 UNALLOCATED SHIPMENT CLEARDOWN

Planned shipments which have not had stock successfully allocated to them can be deleted if required via Unallocated Shipment Cleardown.

If the Planned Shipment Allocation program cannot allocate stock to planned shipments, the shipments remain on the system and each time the Planned Shipment Allocation program is run the system continues to attempt to allocate stock. In some situations (e.g. fresh foods) if the order cannot be satisfied on the requested day, there may no longer be a requirement for the ordered goods, thus the shipments should be cleared down at the end of the day and recreated when a new sales order is received.

If a Just In Time (JIT) operation is in effect, the unallocated shipments would not be cleared down, they would remain on the system until the goods have arrived at the warehouse. Thus shipments could be planned in advance of the goods being delivered from the supplier and once the goods have arrived at the warehouse the location selection and despatch to the customer can take place immediately.

3.5 LOCATION SELECTION/PICK BATCH CREATION

Once planned shipments have been pick/load planned the locations can be assigned and either picking documentation created or an RDS task is created with documentation.

This process can be run as a separate step after pick/load planning, or, for certain order types, it can be called automatically from OBS Sales Order Processing module via a function key option within Order Entry if the operator chooses to pick immediately.

The initial step of this process is to attempt to allocate stock to any planned shipments still awaiting allocation. Depending on a product setting any planned shipments not allocated will be either cancelled or marked as ?awaiting cross-dock?.

It is during this process that RDS picking batches are generated.

Picking statistics are accumulated indicating the number of full and part pallets picked.

Up to 5 picking reports can be produced depending upon the pick criteria:

Picking Lists

- Manual Pick List
- RDS Order Pick List

  This acts as a paper backup
- Order Pick List
- RDS Consolidated Pick List

  This acts as a paper backup
- Consolidated Pick List

The picking documentation is sorted into walk sequence within work sector. Kit components are flagged so that in the instance of a short pick, the person carrying out Pick Confirmation can take the appropriate action e.g. take the decision to short pick all kit components, or despatch the kit with an incorrect number of components

3.6 LOCATION SELECTION/PICK BATCH CREATION CONCEPTS

Pick Mode

One Pick Load may contain more than one Pick Mode.

RDS Order Pick

Each planned shipment for an order is pick located separately. One pick batch is created for the whole order.

Flow for Order picking

The pick load plan is created with one set of picks for each customer?s order. The order will be split across work sectors. Within one work sector all the requirements for one order are assigned to one operative. Order pick batches can have capacity and weight limits set to reflect the customer's preferred delivery container. There is flag on the system that can be set so that bulk stock can be separated from smaller quantities of stock to reduce the emptying of the pickface. The order is picked into a preferred container by customer container labels are produced at pick batch creation and during picking pick labels are produced either by pick or by unit. The operator picks into the container until it is full and then deposits it at a P +D station or at the despatch lane or directly onto the despatch vehicle. If RDS is used then a pick list is also generated. There are reason codes that can cancel a container or can identify when a container is full. Each planned shipment for an order is pick located separately. One pick batch is created for the whole order.

Bulk Pick

Planned shipments for the same product and owner are grouped together to provide a total pick quantity to locate for each product/owner combination. Multiple batches are generated for bulk picks. The stock is picked into a default container for bulk picks, container labels are produced during picking. The operator picks into the container until it is full and then deposits it at a P +D station or at the despatch lane or directly onto the despatch vehicle. There are reason codes that can cancel a container or can identify when a container is full.

Consolidated Pick

Planned shipments for the same product and owner are grouped together to provide a total pick quantity to locate for each product/owner combination. Multiple batches are generated for consolidated picks. The batches are generated according to work sectors and within the sector it is possible to generate further batches according to full and partial pallets. i.e. one batch for full pallets within work sector 1, one batch for partial pallets within work sector 1. Batch creation according to pallet quantities is a user defined parameter.

The consolidated pick batches arrive at the despatch areas. Labels have already been generated for the containers into which the products will be packed as part of the pick batch creation process. An order assembly list has also been created as part of the pick batch creation, this tells the operator which the customers preferred containers are and which sequence they need to be laid out in according to drop sequence (diagram 1). The packer therefore has a set of labelled containers which he picks into and drops at a P +D station or despatch lane.

Order Assembly

There is a flag on the system on the warehouse first screen which can be set to positive assembly. If this is the case then the stock can either be assembled in the office by keying in the information or by the operator that is assembling with an RDT. The operator that is assembling the stock scans the container that the consolidated stock has been picked into and

instructions will be given to him on the RDT showing the order lines and which of the previously laid out containers they should be packed into (diagram 2). If the flag is set to no then it cannot be scanned and has to be assembled in the back office. An order assembly report is printed which lists all orders and their products included within the consolidated picking lists and can be used to aid order assembly after picking.

Marshalling

There is an option to be able to marshall the stock after pick confirmation/order assembly. The flag to be set is on the Warehouse file. Marshalling allows delivery containers to be moved to (associated with) a despatch bay or packed into another delivery container. The operator can pack the contents of one container into another or place the whole container into another. The limitation is that you can place a container in a container in a container.

The action code is defaulted to complete. The user scans in the first container, enters the despatch bay and completes. He then scans the rest of the containers for the bay. If not all the containers designated for this vehicle have been loaded then a warning is issued. The user can override and close the vehicle anyway.

Flow for Bulk picking - RDS

Flow for Consolidated picking - RDS

Diagram 1

Laying out the customer preferred containers in delivery drop sequence

?

Diagram 2

Assembling the picked consolidated stock into the previously laid out containers

Manual Pick

Pick locations are not assigned. One pick batch is created for the whole order.

Pick Batch (Non?RDS)

More than one pick batch can be created for each pick/load plan.

For order picks and manual picks one pick batch will contain one order. For consolidated and bulk picks one batch is created for each work sector within a store/warehouse combination. NB This can be broken down even further depending upon a user defined parameter so that one batch is created for each type of pick within a work sector e.g. one for full pallets, one for part pallets.

Pick Location Selection

Bulk Locations

The picking locator selects pallets/containers according to user defined rules. If the product is expiry dated, the pick occurs in expiry date sequence, otherwise pallets are selected according to FIFO.

If the physical structure of a location means that it is not possible to access all of the pallets, the locations can be defined as being either FIFO controlled (e.g. carton flow), or FILO (e.g. block stack, double deep racking). Whilst keeping to FIFO or expiry date rules, this affects the selection of the pallets/containers within the location.

Once a pallet/container has been selected the system ensures that the stock trace is not damaged or in quarantine and that a stock check is not currently in progress at this location.

Picking Locations

A picking location is one where part pallet quantities are picked. If the system detects that the quantity required is a part pallet, the locator is directed to the picking location for the product (if there is one). It is not necessary to establish a picking location for each product, all picking can occur from bulk locations. This may result in partial pallets within the warehouse.

Roving Picking Locations

There is an option to specify that a product has a 'roving' picking location to be used during location selection. This means that a dedicated picking location can not be defined. If this method is used in the warehouse, the system assigns in rotation order a pallet/container to be the picking face from which part pallet quantities are picked. Once emptied the next pallet/container in rotation order is selected.

Dedicated Picking Locations

Defined via Dedicated Pick Maintenance.

A dedicated picking location remains as the picking location for the product if it is picked empty. A product may have only one dedicated picking location, and the location may only store the nominated product. These locations can be replenished from the Bulk locations and they are the only ones which can. Parameters determine if a replenishment is triggered when the location quantity falls below a pre?defined level as a result of picking activity (demand replenishment) or if this occurs during an off?peak top?up of all locations in a selected replenishment zone (housekeeping replenishment).

Work Sector

Work sectors are used to facilitate picking/putaway and replenishment. A collection of locations form a work sector. The work sector should be defined according to the type of activity that is carried out (e.g. primary pick), the type of equipment which services the area (e.g. forklift truck). They can be defined as being the same as zones if required.

All operational documents e.g. putaway list, replenishment list, picking list are sorted according to work sector.

Walk Sequence

Within each work sector, the location walk sequence can be defined. This enables the optimal travel sequence between locations to be defined in order to minimise distance and time spent picking.

3.7 PICK CONFIRMATION/ORDER ASSEMBLY

Pick confirmation is used to confirm pick locations, quantities, stock trace references and log any picking exceptions e.g. change in location, change in quantity, change in serial number. For consolidated picking only Order assembly is used to change order quantities and order discrepancies can be back ordered or cancelled.

Pick Confirmation can be on an exception basis, or, positive confirmation can occur. Positive confirmation can occur if the warehouse is defined as operating picking according to positive confirmation, location check digits are defined for the location which has been selected for picking or the product is serial number tracked. Locations can also be defined to require the stock trace reference to be scanned on picking to improve accuracy. The operator is able to specify that the quantity picked is less than the ordered quantity, or greater than the ordered quantity and to indicate different locations from which picking actually occurred.

If serial numbers are tracked on despatch (e.g. for product recall/warranty items) they are captured during Order Assembly.

3.8 PICK CONFIRMATION/ORDER ASSEMBLY CONCEPTS

Reason Codes

Reason codes for pick discrepancies can be entered. Against each reason code a user defined description is stored e.g. 'not found', 'damaged'. These codes can be used for management reporting.

Order Assembly

If short pick details are entered via Pick Confirmation for a consolidated pick, the orders must be adjusted via Order Assembly.

If no exceptions are to be entered, the operator can confirm that the orders should be assembled as ordered.

Pick Confirmation

If changes need to be made to manual, bulk and order picks, these can be carried out via Pick Confirmation and this will automatically update the location database.

Picked Stock Status

Once pick confirmation has taken place, the stock status changes from being "allocated" to "awaiting despatch" at the warehouse product level.

Shipping Dock Location

If the operator notifies the system that the assembled quantity is less than the picked quantity, a special miscellaneous location (Shipping Dock) is used to store the 'lost' quantity. Stock from this location can be adjusted (written off) at a later date, or, it can be moved back to a stock location e.g. if a late order cancellation is received.

3.9 DESPATCH

Flow for Despatch

Despatching begins with the vehicle load planning process. This enables shipments to be grouped together to form a vehicle load plan. As pick planning, it acts as a planning tool enabling the operator to decide upon the best combination of order lines to despatch in order to maximise vehicle capacity.

Shipments can be grouped in many different ways for despatch. This function enables containers to be grouped together to form a vehicle load plan and for despatch to be confirmed. The deliveries can be grouped by multiple criteria:

- Original pick load plan reference
- Delivery area
- Delivery Warehouse
- Carrier
- Customer
- Owner
- Containers

They can also be grouped according to an original pick plan, multiple pick plans can be consolidated onto one vehicle load plan or parts of the pick plan can be despatched separately.

Vehicle weight and cube limits can be set which cause a warning message to be displayed if the addition of shipments to the load results in the vehicle capacity being exceeded.

The vehicle load will be the same as the pick plan if the goods have been picked to a route (delivery area). However, if another pick criteria has been selected such as product or order type, or, the vehicle originally planned for has changed, the operator may decide to consolidate pick plans to form one vehicle load. It is also possible to split pick loads across vehicle loads which means that goods can be despatched once a vehicle is full even if all the goods within the pick plan have not been picked.

To aid the planning selection, a report can be produced from this function which identifies containers awaiting load planning. The operator is able to plan the load in different ways in order to see the vehicle fill before confirming the load.

Once the load has been planned a container manifest is produced (in reverse drop sequence).

There are 2 different ways of creating a vehicle load plan and despatching

1 The vehicle load is planned and despatched in the office.

The vehicle load plan will be created in the office and then despatched using RDS. With this option the operator enters the load plan reference which he gets from the loading list report. The containers included in the load plan are listed on the loading report together with their contents. The operator scans the containers onto the lorry by way of confirmation and ensures that the correct containers go on the correct lorry if more than one lorry load has been assembled at the despatch bay. Once all the containers have been scanned onto the lorry, the operator enters an action code to mark the vehicle as having been despatched. The operator will be told if there are outstanding containers still to be loaded. The despatch updates are triggered when the vehicle load is marked as despatched. Having despatched the goods the physical inventory is reduced and re-pricing of the order can take place (if the order is to be priced on despatch rather than on order or invoicing).

2 The vehicle load plan will be created and then despatched using RDS. With this option the operator enters the dock, work reference, vehicle type and vehicle id. The vehicle load reference is generated by the system. A manifest of what has been loaded onto the vehicle when it has been confirmed as despatched can be generated. The operator then scans the containers onto the back of the vehicle containers can also be removed from the load plan. When the vehicle has been loaded the operator then confirms the vehicle load as despatched and the despatch updates are triggered. This method of despatching can only be used where a single vehicle is being loaded in a bay or all the vehicles in the loading bay deliver to the same delivery area.

Once the load has been despatched on-screen the delivery documentation is produced. This includes a delivery list in drop sequence, a load list in reverse drop sequence and the delivery advice notes. When the despatch is confirmed the physical inventory is reduced and details of despatches will be interfaced the Host system.

At this point, the next stage in the despatch cycle for this delivery advice is determined by parameters held against the owner for the order. These parameters specify that the next stage is one of the following:?

1. Shipment interface. A separate function which builds an extract of despatched delivery advices to be used by a host Sales Order Processing system for invoicing purposes,

2. Proof of Delivery.

3. OBS invoicing. The despatched delivery advices are used to generate invoices.

4. Nothing. This is the last stage in the despatch cycle so the delivery advices update the completed information on the corresponding orders.

3.10 PROOF OF DELIVERY

When goods are delivered to a customer, the accompanying documentation is matched against the actual delivery to check for any discrepancies. This function enables any such discrepancies to be recorded against the delivery advices. This information can then be used to generate more accurate invoices.

This function is optional in as much as it can be pre?determined by parameters at owner level whether or not orders have a POD stage in their despatch cycle. However, if POD is a valid stage, all orders for the owner must have a POD confirmation and if it is not, the orders can not pass through POD.

At delivery advice level, information such as signatory, claim number, actual delivery date/time and actual carrier can be recorded.

At line (product) level, actual quantities can be entered. If a quantity is different from that which was despatched, a reason code is required for the discrepancy. A product can be added to the delivery advice which was not originally despatched. This may occur if a customer was mistakenly delivered a different product which looks very similar to the intended product (this happens particularly in food distribution where flavours of a product can be confused). All discrepancies affect the delivery advice details only, no inventory levels are changed.

There is also the facility to adjust the package details that were delivered. This allows for the situation where a customer returns with the lorry packaging that they received on a previous delivery. This packaging can be used here to offset the number that they received on this delivery advice, saving on the work involved in invoicing and consequent crediting of returned packaging.

All PODs must be confirmed. Discrepancy limits associated with each operator give the facility to allow only privileged users to confirm a POD with a lot of discrepancies. At confirmation, the next stage in the despatch cycle for this delivery advice is again determined by parameters held against the owner for the order. These parameters specify that the next stage is one of the following:?

1. Shipment interface. A separate function which builds an extract of POD confirmed delivery advices to be used by a host Sales Order Processing system for invoicing purposes,

2. OBS invoicing. The POD confirmed delivery advices are used to generate invoices.

3.11 CUSTOMER RETURNS

If a customer returns goods which have been despatched and completed, they can be entered back into the system using this function.

If the goods are to be returned to stock, the operator can specify the location for the goods and the stock condition.

The goods do not have to be returned to stock and if this is the case the returns function allows the operator to notify the system that the customer has returned stock in order to raise a credit note.

NB This function automatically raises a credit note which requires approval before further processing can take place.

3.12 PACKAGE RETURNS REGISTRATION

If the warehouse supports returnable containers e.g. roll cages are delivered with the goods, notification of return to the warehouse can be carried out using this function.

The operator specifies the customer returning the container, the container type and quantity of containers returned.

Once the containers have been returned, a credit note can be raised but this does not occur automatically.

3.13 TRANSHIPMENTS

If there is more than one warehouse in the distribution network, each customer is assigned a delivery warehouse where their stock is always despatched from. Goods may be picked in a different warehouse and transhipped through one or more warehouses and finally to the despatch warehouse. Containers can be tracked through each warehouse in the chain. As soon as goods have been despatched from one warehouse they are visible in a load-planning screen in the next warehouse in the chain. When goods arrive at any warehouse, each container is scanned using RDS Transhipment Receiving. If the scanned container has not been planned onto another vehicle load the container is unloaded into a holding area. If the scanned container has been planned onto a vehicle load the operator can either deposit the container at the designated despatch dock or forward the container directly onto the despatch vehicle.

Transhipped containers intended for multiple vehicle loads can be broken down and re-assembled into delivery containers for each vehicle load. This function is performed using RDS Transhipment Breakdown and is only allowed once the container has been transhipped received. Operators are prompted to enter the ids of the containers to be re-assembled. On entry of a valid container id the system will create new delivery container labels based on the vehicle loads and the operator will be prompted to assemble the products into the new delivery containers. The operator will be prompted to breakdown the transhipped container in reverse pick sequence to ensure the first product to be assembled is at the top of the breakdown container.

4 STOCK AND LOCATION MANAGEMENT

4.1 ISSUES

Used to issue good stock from any location within the warehouse. Quarantine and damaged stock cannot be issued using this function.

Either the system suggests stock for issue according to FIFO sequence/expiry date sequence, or, the operator can specify which location stock should be issued from.

This function could be used for issues to works orders.

4.2 RECEIPTS

This program can be used to handle unexpected receipts, (expected receipts are processed using the goods inward receiving function).

Once the quantity has been entered, the user must specify the location in which the product can be stored.

All conditions of stock can be received.

4.3 WRITE ON ADJUSTMENT

This function is used to increase the inventory levels by writing on stock.

This function should be used to write on stock when an increase in physical inventory has been discovered as the result of a stock check and a manual adjustment is required.

It is assumed that the use of this function will be tightly controlled with only a few authorised users being able to access this from a menu.

4.4 WRITE OFF

This function is used to decrease the inventory levels by writing off stock.

This function should be used to write off stock when a decrease in physical inventory has been discovered as the result of a stock check and a manual adjustment is required.

It is assumed that the use of this function will be tightly controlled with only a few authorised users being able to access this from a menu.

It is only possible to write off free quantities of 'Good', 'Faulty', or 'Quarantine' stock.

4.5 CHANGE STOCK CONDITION

The user is able to change the stock condition using this process e.g. changing stock from good to quarantine, quarantine to faulty etc.

If allocated stock exists on a stock trace record then it is not possible to change the stock condition. A location movement is required to create an additional stock trace record for the quantity that is required to change condition.

4.6 ADJUST INVENTORY

This functions enables good stock to be moved to other inventory buckets ('Free', 'Reserve', 'Buffer'). It cannot be used to change the stock condition e.g. move stock from damaged or quarantine.

Inventory adjusted using this process does not lead to a change in the physical stock levels.

4.7 CHANGE OWNERSHIP

Stock can be transferred between owners within the same warehouse.

This function changes the ownership of a specified stock trace (pallet id).

4.8 CHANGE PRODUCT CODE

In the event of a mistake during the recording of the product code of a receipt, the product code can be changed.

4.9 CHANGE EXPIRY DATE

The expiry date of a pallet/container of stock can be changed.

4.10 LOCATION TO LOCATION TRANSFER

Stock can be moved from one location to another within the warehouse and an accompanying movement ticket can optionally be generated.

It is possible to move:

- A whole stock trace to a new location (no change to the stock trace).
- Part of a stock trace to a new location (with a new stock trace).
- Part of a stock trace to another (existing) stock trace.

During the transfer the stock condition of the stock can be changed if required.

Note. It is not possible to move a whole stock trace to another (existing) stock trace. This would contradict the stock traceability rules of the system, because the original stock trace would be deleted.

4.11 WAREHOUSE TRANSFER

Stock can be transferred between two warehouses using this function. A two step process is involved:

- Stock is transferred out of the sending warehouse
- Stock is transferred into the receiving warehouse

Once the first step has been completed the warehouse/product stock levels in both warehouses are updated to reflect the fact that the stock is intransit between two warehouses. Note that at this stage, the stock is still considered part of the physical inventory of the sending warehouse.

A movement list can now be printed to accompany the stock to the receiving warehouse.

In the receiving warehouse, the user must specify the location that each transferred stock trace is to be stored in. Once the stock has been received, the warehouse/product stock levels in the sending warehouse are updated to remove transferred quantity and those in the receiving warehouse are updated to move the quantity from intransit to physical stock.

During the transfer the ownership of the stock can be changed if required.

Only full stock traces may be transferred. If a partial stock trace is required in the receiving warehouse, a location movement must first create the stock trace in the sending warehouse by splitting off the partial quantity.

The system caters for the fact that the product may be handled differently within the two warehouses. For example, if the stock is transferred from the main warehouse to a small branch it may be serial tracked in the main warehouse from despatch, but serial tracked in the branch from goods in. In this instance extra information i.e. the serial number itself can be entered at the point of receipt into the branch.

If the stock has been transferred out of the sending warehouse but is never received in the receiving warehouse, there is a facility to close the transfer early. This effectively writes off the discrepant quantity from the sending warehouse and reduces the intransit quantity from the receiving warehouse.

4.12 STOCK CHECK

This function can be used to carry out stock checking according to user selected criteria. The selections available are:

- All products
- Product Group
- Product
- Store/Location
- Owner
- Count Group

Stock checking is based upon a set of activity based triggers, for example if a user is picking and a location falls between a certain level, then a stock check will be triggered.

Counting facilities allow for automatic second counts if the first count disagrees with the system. If first and second counts agree then the system controls the automatic creation of stock adjustments.

The way in which stock is counted is controlled entirely by users and is defined by a combination of:

Warehouse - Product - Activity- Type of location (Pick Slot or not)

The progress of stock counts can be viewed on a Windows screen which includes user-friendly facilities such as colour to indicate current progress.

Users define Count Groups. These contain details about the way in which stock should be counted including the trigger level for each activity and whether locations should be frozen for the count or not. Each count group can have a different entry for Pick Slots and ?Bulk? locations.

Count Groups are entered on a tag on the Warehouse Product Record.

When any warehouse activity is confirmed, the system will check the current stock to see whether the combination of number of items, activity and product should trigger a count.

If the person who is doing the activity is using RDS then the count will can either be issued to them straightaway (before they do their task) or sent to a queue for a stock controller. If they are using paper, then the count will be sent to the stock controller?s queue.

The location can be counted at any time, because the system compares the counted quantity to the location quantity when the count quantity is entered not when the count is triggered.

If the count quantity agrees with the system (within a user-defined tolerance) then no further action is taken (a record is added to the stock movements file). If the count is different from the system then a second count is triggered (this is not normally given to the same person to do again).

Stock can be moved in and out of the location between the first and second count because the system is recording the difference between actual and expected counts ***not*** the counted quantity.

If the first and second counts agree then a stock adjustment will be created. If the second count agrees with the system then the assumption is that the system is correct. If none of the counts agree with each other then a supervisor count is issued.

Count Groups can be suspended so that at busy periods, selected product types won?t be counted.

Counts can also be generated manually using a combination of product, locations, product groups to select locations to count. Alternatively a stock check can be triggered for all products in a particular count group.

The stock check functionality also allows users to count ?Empties only?

The stock check is fully audited.

4.13 REPLENISHMENT

Flow for replenishment

Replenishment is a way of keeping dedicated picking locations 'topped?up' to ensure efficient picking. Dedicated picking locations are the only locations which may be replenished. However, a dedicated picking location may be set up so as not to allow replenishment.

3 methods of replenishing locations exist:

- Request for replenishment
- Zone replenishment
- Picking Demand Replenishment

Parameters held against each dedicated picking location determine whether or not zone and/or picking demand replenishment will be allowed for the location. A manual replenishment request can not be generated for a location which does not allow either method.

All methods create a trigger record to indicate to the replenishment location selection program that a replenishment is required. This program periodically 'wakes up' and processes each trigger record. This processing assigns locations from which the stock can be picked and documentation is produced.

NB RDS can be used to carry out replenishment in certain areas of the warehouse and replenishment requests can be generated by RDS operators.

4.14 REPLENISHMENT CONCEPTS

Trigger Levels

A trigger level (replenishment level) is the user defined quantity which leads to replenishment occurring for a picking location when the total quantity in the location ('In Receipt' + 'Free' + 'Allocated' + 'Quarantine' + 'Faulty' + outstanding replenishment quantity) falls beneath this level.

Two 'trigger' levels can be set up for each dedicated picking location. One to be used if the location requires demand replenishment and one to be used if the location requires zone/housekeeping replenishment. If both methods are allowed for a location, picking replenishment may have a lower trigger level to keep replenishment to a minimum during picking.

Note that the system replenishes up to the capacity of the location and only full stock traces are used for the replenishment. Therefore, care has to be exercised when assigning trigger levels to ensure that the resulting quantity required to replenish a location is at least the average full stock trace quantity, otherwise no replenishment may be possible even though the location quantity is below the trigger level.

Replenishment Request

The operator can select a dedicated picking location to be replenished. This can be used if the operator notices that a picking location requires replenishment whilst carrying out another activity. The request will not be allowed if the location does not allow replenishment, if a replenishment is already in progress, or if the current location quantity is not below either trigger level in use. This method is much more likely to be necessary if the location allows zone replenishment only.

Zone Replenishment (Housekeeping)

All the dedicated picking locations within a replenishment zone can be examined for replenishment. A trigger record is written for each location where the current location quantity is below the housekeeping replenishment trigger level.

All locations which allow this form of replenishment must be assigned to a replenishment zone. Replenishment zones can be different from putaway zones.

Picking Demand Replenishment

This can occur in two separate areas of picking:

1 Pick Location Selection

Demand replenishment is triggered during Pick Location Selection when a dedicated pick location cannot fully satisfy the small quantity to pick, i.e. the location is picked empty. The picking documentation will be created with an instruction to pick from the picking location but the stock trace quoted will be the system virtual stock trace since the actual stock trace number will not be known until the replenishment has taken place. If the quantity to be picked from the pick location is greater than the space remaining in the location, the system will attempt to replenish that quantity rather than just

replenish to capacity.

2 Pick Confirmation

Pick location replenishment is triggered if the location quantity is driven below the demand replenishment trigger level as a result of Pick Confirmation. The timing of this is important because it reduces the possibility of blocking narrow aisle racking with pallets awaiting to replenish picking locations at the height of picking activity.

4.15 REPLENISHMENT LOCATION SELECTION

During location selection, the system selects the pallet/containers from which to source the replenishment.

The system replenishes in terms of full pallets (whole stock traces) and takes into account pick rotation rules defined by product e.g. expiry dates, FIFO, when selecting a source replenishment location. When the system examines the expiry dates, the warehouse shelf life is taken into account to prevent picking locations being replenished with stock that could expire before it is picked.

Two types of documentation can be generated, RDS replenishment list and non?RDS replenishment list. An RDS replenishment list is produced if RDS handles replenishment in both the source location and the picking location. The RDS replenishment list acts as a hard copy backup. Replenishment documentation is produced by work sector within store code. The 'From' location and 'To' location are listed along with the product, owner, replenishment quantity, stock trace code. Space is provided to enable the operator to enter any discrepancies on the list which can be entered into the system via Replenishment Confirmation.

4.16 REPLENISHMENT CONFIRMATION

Once the physical location replenishment has occurred, the replenishment can be confirmed.

During confirmation the operator can amend the stock trace used for replenishment. The operator cannot change the quantity of a stock trace because this could lead to a partial pallet having to be putaway as well as the replenishment quantity.

Confirmation can be on an exception basis, or, positive confirmation can occur. Positive confirmation can occur if the warehouse is defined as operating replenishment according to positive confirmation, or, location check digits are defined for the replenishment locations.

Note: If the RDS system is in operation, Replenishment Confirmation is carried out via RDS.

5 MANAGEMENT CONTROLS

5.1 RECONCILIATION

There are four types of reconciliation available. With each, a report is produced of all instances where the figures being checked do not reconcile. The following reconciliations may occur:

1. The sum of allocated serial records for a stock trace equals the stock trace allocated quantity.

The sum of unallocated serial records for a stock trace equals the sum of quarantine, faulty, free and in receipt quantities for the stock trace.

2. The sum of the stock trace free quantities for a location equals the location detail free quantity.

The sum of the stock trace faulty quantities for a location equals the location detail faulty quantity.

The sum of the stock trace quarantine quantities for a location equals the location detail quarantine quantity.

The sum of the stock trace in receipt quantities for a location equals the location detail in receipt quantity.

The sum of the stock trace allocated quantities for a location equals the location detail allocated quantity.

3. The sum of the location free and allocated quantities for a product equals the sum of free, allocated, buffer and reserve quantities for the warehouse product.

The sum of the location in receipt quantities for a product equals the warehouse product in receipt quantity.

The sum of the location quarantine quantities for a product equals the warehouse product quarantine quantity.

The sum of the location faulty quantities for a product equals the warehouse product faulty quantity.

The physical inventory for a product adds up to the sum of free, allocated, in receipt, quarantine, faulty, awaiting despatch, buffer, reserve and issue intransit quantities for the warehouse product.

4. The sum of all stock movements (made since the last reconciliation) involving an increase in physical quantity, less those involving a decrease in physical quantity, when added to the balance calculated at the last reconciliation, equals the current inventory total for a warehouse product.

For each balancing product, the warehouse product record is updated with the new calculated balance and the date/time the reconciliation occurred.

For each balancing product, a stock movement record is written to audit the reconciliation.

Note:

Warehouse product awaiting despatch is not represented in the location as pick confirmation has taken place.

Intransit issues are not represented in the location as they have already been physically despatched.