forward faster

SSA® ERP$_{LX}$™

Overview of Supply Chain Management

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About This Guide

The information in this guide includes:

- General navigational information for using SSA® ERP$_{LX}$™ products on the iSeries™
- Product-specific overview information

Navigation and performance

Use the information below to navigate within and between SSA ERP$_{LX}$ panels and programs.

Menus

SSA ERP$_{LX}$ menus allow you to access individual programs to process or view information. You can access individual products directly from any menu by typing the program ID into the empty field at the top of a menu and pressing **Enter**.

Refer to the “Product Quick Reference” section for a list of program IDs.

Dates

SSA ERP$_{LX}$ includes full support for dates up to and beyond the year 2000. Although most date fields display as six characters, SSA ERP$_{LX}$ records the date as eight characters. Refer to the *Company Name* and *Date Format* fields in the System Parameters Generation program for information on configuring century dating and entering dates beyond 1999.

Attention key

Press **ESC** (attention key) while in a SSA ERP$_{LX}$ program to access other programs, menus and products. You must have security authorization to use this feature.

Look-up features

When a plus sign (+) is displayed at the end of a field, press F4 to display a look-up window that is used to select from a list of valid values. Most windows accessed from inquiry programs allow you to search for alphanumeric strings.

Retention of key values (remember keys)

SSA ERP$_{LX}$ remembers certain key values, such as item number, salesperson or container in your workstation memory as you process information in certain programs. This is set up in the SYS product. (See SYS080 help text for a current program list.) The settings are as follows:

0	SSA ERP$_{LX}$ automatically retrieves this value from remember key memory. SSA ERP$_{LX}$ updates this value on a continual basis.
1	SSA ERP$_{LX}$ automatically retrieves the value you entered in SYS080 and does not update the value from any other program.
2	SSA ERP$_{LX}$ does not retrieve or update remember key fields.

Rounding

SSA ERP$_{LX}$ supports three system-wide rounding methods:

- truncate
- increment
- half-adjust

SSA ERP$_{LX}$ also supports three round-to positions:

- 0
- 10
- 100

This rounding fulfills legal and fiscal requirements in several European countries.

Depending upon the SSA ERP$_{LX}$ products you have installed, you select the rounding method and round-to position in one of two places:

- In the Currency Code Maintenance (CLD107D2-01) panel in the Multiple Currencies (MLT) product
- In the Currency application in the Configurable Enterprise Accounting (CEA) product

The rounding method and round-to position you select are then used throughout SSA ERP$_{LX}$ to consistently round calculated amount fields, displayed amount fields, and amount fields on audit reports. This rounding process affects calculated amount totals such as Invoice Total, Taxes Total, and Amounts in Journals. However, it does not affect the Unit Cost or Unit Selling Prices.

Throughout the Promotions and Deals cycle, SSA ERP$_{LX}$ presents information necessary to monitor the performance of the incentive programs. Information pertaining to discounts offered during the Order Processing cycle versus discounts taken during the Accounts Receivable cycle is available. Also, the Expected Lift (projected sales) versus the Actual Lift (actual sales) can be analyzed.

Standard help features of SSA ERP$_{LX}$

Many SSA ERP$_{LX}$ programs contain generic help text that is displayed when the user presses F1 on a panel, field or on the list of processing options. This generic help text includes help for action codes, run time parameters and processing options (also called function keys or F keys).

The information below usually is not displayed in the help text on the iSeries for individual SSA ERP$_{LX}$ programs and panels since it is used on almost all panels. If an action code or processing option other than those defined here occurs in a program, it is defined in the help text for that program and can be displayed by pressing F1 on the panel where the function keys are displayed.

Standard help text for list panels

Many SSA ERP$_{LX}$ 100-level and 300-level programs contain list panels of records from which to select for maintenance (100-level programs) or inquiry (300-level programs). Press F1 in the *Action* field to access the following generic information:

Action codes

Below are valid action codes:

Action	Description
1 = Create	Enter **1** on the prompt line, along with a new value in at least one key field, to create records in the file. Then enter data on the maintenance panels which follow. New records are printed on the audit report. You cannot enter **1** next to any displayed record.
2 = Revise	Enter **2** to change a record. You can either enter **2** and a value for at least one key field on the prompt line or you can enter **2** next to a displayed record. The change will be noted on the audit report. Entering **2** next to an inactive record will reactivate it.

Action	Description
3 = Copy	Enter **3** to create a record which is based on an existing one. You can either enter **3** and a value for at least one key field on the prompt line or you can enter **3** next to a displayed record. A maintenance panel displays, on which you can enter the new key field and change any other data.
4 = Delete	Enter **4** to delete a record. You can either enter **4** and the key field(s) to be deleted on the prompt line or you can enter **4** next to a displayed record you wish to delete. Deleted records can be reactivated using Action Code 2 (Revise).
5 = Display	Enter **5** to display a record without being able to change it. You can either enter **5** and the key field(s) to be displayed or you can enter **5** next to a record you wish to display.
6 = Print	Enter **6** to print a record. You can either enter **6** and the key field(s) to be printed on the prompt line or you can enter **6** next to a displayed record. The record is printed on the audit trail.
8 = Position To	Enter **8** to move a record to the top of the page. You can either enter **8** and the key field(s) of the record on the prompt line or you can enter **8** next to a displayed record. The selected record is displayed at the top of the page. If the record is not found, the next record in sequence is displayed at the top of the page. Once the Position To feature is used, you can continue to page down or you can use the Position To action again with a different value, but you cannot page up. However, you can return to the top of the file by entering **8** with no record selection on the prompt line.

Additional action codes

If a program contains additional action codes, refer to the help text in that specific program for descriptions of those action codes.

Standard help text for processing options

Many processing options (also called function keys or F keys) perform the same function for every program or panel in SSA ERP$_{LX}$. Definitions for these processing options are below.

Processing Option	Description
Enter	Used to proceed to the next panel of a maintenance program; on the final panel, press Enter to update the file and return to the first panel of the program for any additional maintenance activity. Also used in a report or listing program to send it to an output queue for processing.
F1	Used to display Help Text.
F3	Used to exit a program without recording, updating, or printing any information entered on the program's panels.
F4	Used on prompt-capable fields, denoted by a plus (+) character, to display a pop-up window for the field.
F5	Used to redisplay the panel; this enables the user to check the status of a function which has been executed.
F7	Used to display previous records (those alphanumerically closer to A or those with earlier dates).
F8	Used to display additional records (those alphanumerically closer to Z or 9, or those with later dates).
F11	Used to display a folded view of the panel containing additional information; pressing F11 again returns the panel to its previous format.
F12	Used to return to the previous panel without saving any information entered on this panel.
F13	Used to switch between multiple modes of a display. If three or more modes exist, a window displays the selection choices. This is also used to access Filter panels.
F23	Used to display additional action codes.

Processing Option	Description
F24	Used to display addition processing options (F keys).

Standard help text for filter panels

Some SSA ERP$_{LX}$ programs feature a filter panel that you can access when you press F13. This option enables you to filter the data to be displayed. For example, press F13 in Customer Master Maintenance to display all records by customer number or to display only active records, either by customer number or by customer name.

Chapter 1
Billing

1

The chapter consists of the following topics:

Overview

This chapter provides information on the SSA ERP$_{LX}$ Billing (BIL) product. Read this chapter first, and then read the “Sales Analysis” chapter.

You use the SSA ERP$_{LX}$ BIL product to produce invoices for orders that Order Entry generates. When you create invoices, SSA ERP$_{LX}$ updates the accounting and sales information files, and automatically generates taxes

SSA ERP$_{LX}$ installs the Sales and Commission Analysis, SAL, product when you install the BIL product. Because you can use these products at different times, there are separate chapters for your convenience.

The BIL product includes:

- Online invoice release with order data maintainable at release time
- Automatic backordering and partial shipments
- Full accounts receivable and inventory posting with audit trails throughout
- Post shipment billing and adjustments
- Correction of invoices prior to printing
- Control and monitoring of customer requests for return goods
- Acceptance and processing of customer orders for inventory items shipped directly from a vendor to the customer

The BIL product integrates with Supply Chain Management, SCM, and Configurable Enterprise Financials, CEA, product lines. It uses the information from the order entry program to print invoices and update ACR, sales, inventory, cash management, and CEA files. It is not necessary to use all of these other products, but you need a customer file with prerequisite ACR files, an inventory item master file with prerequisite inventory files, and a salesperson file. If is convenient to use the order entry address file and the special pricing file. The general sequence of implementation follows:

1. Configurable enterprise accounting files: Chart of accounts, advanced transaction processing

2. ACR files: Company, related applications, customer type, customer terms, payment types, salesperson, customer master

3. Customer order entry files: Address master, special pricing

4 Salesperson files: Salesperson master, commission rates

5 Cash management files: Bank master, draft terms, payment agreement, payment distribution

6 Distribution resources planning files: Distribution relationships

BIL interfaces

BIL interfaces with the following products:

- ACR
- Cash management (optional)
- Configurable enterprise accounting (optional)
- Inventory
- Configurable order management (optional)
- Sales
- Distribution resources planning (optional)

Processes

This section describes the various processes available when using the BIL software.

Invoicing

BIL processes invoicing online using information copied from the customer order. You can print copies of the invoices for review without posting data. You can issue a self invoice if you give a customer free goods and must still pay a tax. If necessary, you can make changes such as freight charges online at invoice release time. Otherwise, you can release the invoice.

Posting to ACR and SAL products

When you accept the invoices for processing, BIL automatically posts to ACR and sales analysis.

Posting to configurable enterprise accounting

If you installed the CEA product and you accept invoices for processing, you can post to CEA using ATP.

Post-shipment billing, debits, or credits

The billing product processes post-shipment orders and debit/credit memos that you create through order entry. You can correct these invoices before they print and automatically post to ACR, sales analysis, and the general ledger.

Return material authorization

The Return material authorization (RMA) processes controls and monitors the return of goods cycle.

SSA ERP$_{LX}$ generates an RMA that mirrors the terms and conditions of the return. You can copy the RMA from a processed invoice or enter it independently from an existing order. If you copy an invoice to create an RMA, SSA ERP$_{LX}$ copies only regular lines, not special lines. You can manually add special lines as credits on the RMA. You enter RMAs in the same manner as a customer quote, and similar to a customer quote, an RMA has no immediate affect on inventory, accounts receivable, sales or the general ledger.

SSA ERP$_{LX}$ generates a return material document that provides the customer with the authorization to proceed with the return. Internal procedures, return reason codes and instructional notes on the RMA identify the disposition processing.

Perform credit processing and determine update effects by entering the RMA number and assigning the appropriate order type.

Drop shipment

SSA ERP$_{LX}$ provides a tightly integrated drop shipment processing capability. SSA ERP$_{LX}$ supports the creation, tracking and management of customer drop shipment orders through enhancements to the order management, purchasing and billing applications.

The order processing professional initiates drop shipments during customer order creation. Designate as a drop ship item any order line that meets user-defined drop ship controls. Designating a line as a drop ship line automatically creates a drop ship request in purchase order processing.

When a buyer responds to a drop ship request by creating a purchase order, SSA ERP$_{LX}$ notifies the order processing department and cross references both the customer order and the purchase order. After vendor shipment confirmation, SSA ERP$_{LX}$ automatically notifies billing to initiate the invoice process. SSA ERP$_{LX}$ supports constant communication between the order professional, the buyer, and the billing professional throughout the order cycle.

Product workflow

To most effectively use BIL, you need to know the normal product workflow.

Billing product prerequisites

1. Before implementing BIL, determine if you intend using the CEA product. If you use CEA, SSA Global highly recommends that you familiarize yourself with the applications in CEA that relate to advanced transaction processing, ATP. ATP integrates the creation of BIL journal entries and posts them to CEA.

2. Complete all of the setup required by ATP before SSA ERP_{LX} posts ACR transactions to CEA. See the setup outline in detail in the ATP Configuration run instructions.

3. Set up customer terms codes and customer types.

4. Make sure that each customer has a valid default company in the customer master file, RCM. You assign the default company to customers in the customer master file maintenance program.

Billing, invoicing orders, from order entry

The BIL product follows logically from the Configurable Order Management (COM) application. Order entry allows you to enter, acknowledge and allocate stock to a customer order, pick the goods and print shipping documents (packing slips). The system descries the order as shipped and ready for invoicing (billing).

The BIL product uses the order information to create and print invoices and update the ACR, inventory, sales, CEA ledger products (if installed) and cash management products.

The Proforma option on the invoice release program prints copies of all the invoices generated at the workstation. You can review the invoices for accuracy without updating any files. If no changes are necessary, for example, freight charges or price, you can release the invoice.

Invoice reprint enables you to print the invoice once and save in the print queue or reprint through invoice reprint. The system assigns the Invoice numbers. If you turned off document sequencing in the BIL system parameters, SSA ERP$_{LX}$ assigns invoice numbers starting with the number specified on the BIL system parameters screen in the *Last Invoice Number Used* field. If you turned on document sequencing, SSA ERP$_{LX}$ retrieves the invoice numbers from the Document Sequence file (RDS). You update the Document Sequencing file through the Document Sequence program.

SSA ERP$_{LX}$ allows you to issue Self Invoices to fulfill fiscal, tax and accounting requirements of some countries. A Self Invoice usually relates to value added tax (VAT) on goods given for free. You designate a line item for self invoicing by selecting Tax Only treatment during order entry. Refer to the Windows help in COM for more information about Tax Only treatment.

If Order Entry is in use, a daily run consists of:

- Quote Entry - key customer quotes that can or can not become actual orders
- Order Entry - key and acknowledge customer orders
- Credit Release - release from credit hold any orders you want to ship and bill
- Picking Documents - print picking documents that update goods to a picked status
- Pick Confirm - confirm shipment of orders
- Invoice Release - review invoices before printing. After verifying the invoices, release and print the invoice. Printing invoices updates Inventory, Sales, Accounts Receivable, CEA and Cash Management. The order type determines the files to update.

Billing and tax calculations

The tax calculations on invoices occur during the tax processing programs. SSA ERP$_{LX}$ automatically calls the tax processing programs during invoice release. You must set the following four system parameters before taxation can take place in the Billing programs.

- *Order Entry/Billing List Price*: The field (Y/N) indicates if the price of the item entered or billed includes tax. Depending on the value, the taxes calculate as follows:

  N The tax calculation multiplies the tax rate times the item price.

Y The price of the item includes tax. SSA ERP$_{LX}$ uses the tax rate to determine what portion of the item price is actual price and what portion is tax.

- *Tax Net of Price Discounts*: The field (Y/N) indicates if the amount of the total order and line discounts taken on an invoice is taxable.

  N The system calculates the tax after taking the discount.

  Y The system taxes the order amount before taking any discount. However, the system does not assume the tax amount is part of the base order amount on which it calculates the total order discount.

- *Payment Tax Adjustments*: Type one of the following codes to designate the taxation method to use if taking discounts using a cash receipt.

  0 There is no adjustment to the tax amount

  1 The system adjusts the tax amount. This option divides the discount by the highest tax rate, then subtracts the resulting actual discount amount from the original discount amount to arrive at the tax adjustment.

  2 The system adjusts the tax amount. This option divides the taxable portion of the invoice by the invoice amount to arrive at the taxable percentage. It then multiplies the discount amount times the tax rate to arrive at the tax on gross discount amount. These two results are multiplied by each other to obtain the tax adjustment. Subtracting the tax adjustment from the original discount amount gives you the actual discount amount.

- *Record Tax History*: Type one of the following codes to designate the method to record tax history.

  0 Do not record tax history. If you use the ATP interface to CEA, this option is not available. You must enter **1** or **2**.

  1 This option saves the tax total per invoice in either the ACP Tax History, ATX, file and the ACP Tax Paid, ATP, file, or the ACR Tax Amount Invoiced, RTX, file and the ACR Tax Paid, RT[. file.

  2 This option saves the same information as value **1,** plus the detail tax information for each item on the invoice. It stores the detail information in the same history files as option **1**..

The following examples discuss the usage of the parameters above and their impact on the billing procedure.

Billing processing options, tax calculations

Tax Not Included in Item Price

In this example, the tax is not included in the item price; therefore, SSA ERP$_{LX}$ can perform a straightforward tax calculation on the item price.

Item	Tax
Item 1	100.00
Item 2	200.00
Freight, not taxable	15.00
Tax @ 6.2%: (100 + 200) * 0.062 =	18.60
	Invoiced Amount = 333.60

This table shows the Journal Entries for the same items.

Journal Entry	Tax
DR ACR	333.60
CR Revenue 1	100.00
CR Revenue 2	200.00
CR Freight	15.00
CR Tax Invoiced	18.60

Tax Included in Item Price

In this example, the item price includes tax. SSA ERP$_{LX}$ determines what portion of the item price is actual price and what portion is tax.

Item	Price	Total
Item 1 (taxable 6.2%, included in price)	100.00	

Item	Price	Total
Item 2 (taxable 6.2%, included in price)	200.00	
Freight (not taxable)		15.00
Item 1 Actual Price: 100/1.062 * =	94.16	
Item 2 Actual Price: 200/1.062 * =	188.32	
	Actual Price Total	282.48
	Tax (300 - 282.48)	+17.52
	Freight	+15.00
	Invoiced Total	315.00
	* 1.062 = 100% + 6.2%	
	that is, 1.062% of the Actual Price equals the Item Price	

This table shows the Journal Entries for the same items.

Journal Entry	Total
DR A/R	315.00
CR Revenue 1	94.16
CR Revenue 2	188.32
CR Freight	15.00
CR Tax Invoiced	17.52

Payment processing options, tax adjustments

Highest Tax Rate

The example illustrates how to calculate tax using the Highest Tax Rate algorithm. In this example, an invoice amount of 333.60 is discounted by 3%, resulting in a 10.00 Gross Discount. Divide the Gross Discount by the highest tax rate to produce the Actual Discount. Subtract the Actual Discount from the Gross Discount to produce the final tax adjustment.

Description	Amount	Percent
Amount Received	323.60	
Gross Discount (tax adjustment and actual discount)	10.00	
Tax Rate	Use the highest tax rate if there are multiple tax rates on one invoice.	6.2%
	1.062 * d = 10.00	

Where **d** equals the Actual Discount portion of the 10.00 Discount and 1.062 equals 100% + 6.2%; that is, 106% of the Actual Discount equals the Gross Discount.

d = Actual Discount = 9.42	
Tax Adjustment = 10.00 - 9.42 = 0.58	

This table shows the Journal Entries for the same items.

Journal Entry	Total
DR Cash	323.60
DR Discount	9.42
DR Tax Invoiced	.58
CR A/R	333.60

Taxable percentage

This option is similar to the Highest Tax Rate example, except that the algorithm to split the Gross Discount (of 10.00) into the Actual Discount and Tax Adjustment is different.

Description	Amount
Amount Received	323.60
Gross Discount (includes tax adjustment and actual discount)	10.00

Description	Amount
Taxable portion of invoice	300.00
Invoiced Amount	333.60
Percentage Taxable	300/333.60=89.93%
Tax on Gross Discount Amount	10.00 * .062 =.62
Pro-rated Tax Adjustment based on Percentage Taxable	0.62 * .8993 =.56
Actual Discount	10.00 - .56 =9.44

This table shows the Journal Entries for the same items.

Journal Entry	Total
DR Cash	323.60
DR Discount	9.44
DR Tax Invoiced	.56
CR A/R	333.60

Rounding of line item taxes

Tax regulations generally require that taxes apply to the invoice total. Line item taxes show or print for informational purposes only. Line taxes are rounded individually; therefore, the sum of the individual (rounded) line taxes can differ from the calculated (correct) tax for a total invoice.

The amount fields calculated or displayed in this program are consistently rounded based on the currency rounding method and the round-to position you selected. Depending on the SSA ERP$_{LX}$ products you have installed, select a rounding method and round-to position in one of two places:

- The Currency Code Maintenance screen in MLT
- The Currency application in CEA

This rounding process affects calculated amount totals such as Invoice Total, Taxes Total, and Amounts in Journals. However, it does not affect Unit Cost or Unit Selling Prices.

Posting to other products

This section describes where Workflow specifications can post to other products.

Accounts receivable

The invoice date is the significant date for ACR and CEA posting. Invoices are transferred to the ACR transaction file (RAR), one transaction per invoice.

Sales

All regular charge lines post automatically to the sales fields on the master files, depending on the order type. Special charge lines are summarized to the Invoice History file.

Inventory

SSA ERP$_{LX}$ creates inventory transactions with transaction type B to issue the stock that has been sold (or returned via post-ship billing). The allocated quantity is backed out and the quantity on-hand is updated.

CEA

You can create journal models to generate CEA journals for billing transactions. Use these user-defined models to debit an accounts receivable account based on the customer type, and to credit the revenue accounts based on the item class. For more information about this interface, refer to the ATP Configuration run instructions.

Function	Program
Inquire on customers (customer alpha lookup)	ACR310
Inquire on material status	INV300
Inquire on open orders	ORD300D
Maintain regular invoices	BIL500D
Post post-ship invoices	BIL500D
Post regular invoices	BIL530
Print register of regular invoices	BIL500D

Function	Program
Print invoices	BIL550D
Reprint invoices	BIL560
Review invoices before release	BIL500D
Drop ship confirmation	BIL650D

Glossary

Billing
The process of reviewing/releasing previously entered customer orders. This process also prints the invoices, and updates Accounts Receivable, Inventory, Sales, Cash Management, and CEA files.

Location
A subdivision of a warehouse: a bin, rack, aisle, or idea such as "awaiting lab check". It traces stock movements and specifies availability of stock for resale or manufacturing. The Location Master file (ILM) stores the location code.

Lot
A particular batch of product (pharmaceuticals, perishables) that is identified by an alphanumeric lot code. Lots are received into warehouses and are associated with locations. Lots are sold or released to the shop floor according their availability as described on the Lot Master file (ILN). Automatic allocation of lots to orders may be overridden by the operator. Full lot tracing is available on request. Lot control is defined by Item; only those designated as "lot- controlled" items (by a flag in their item masters [IIM]) are validated by lot.

Post-ship Billing
The process of creating and releasing orders not previously on file, for the purpose of recording sales after the goods have shipped (e.g., over-the-counter sales) or for generating credit/debit memos to existing invoices. Therefore, shipping documents are not required. Invoices are printed and Accounts Receivable, Inventory, Sales, Cash Management and CEA are updated, depending on the order type.

Salesperson master
The file (SSM) that stores the six-digit salesperson number, and the salesperson's name, address, telephone number, and commission code. You must have at least one salesperson.

Address master
The file (EST) that stores the delivery addresses (as distinct from postal addresses) for customers. Can be overridden at entry time.

Special Price master
The file (ESP) that stores special prices related to customer discounts and/or item discounts. Used for automatic retrieval of prices - can be overridden at entry time.

Terms master
The file (RTM) that stores terms codes and descriptions, which define the various payment terms allowed to customers. You must have at least one terms code.

Total Order discount
A pricing method which is based on the total invoice amount, taking into account any reduced quantities due to partial shipments. The terms Total Order Discount and Order Total Discount are used interchangeably throughout the product.

Warehouse
The place where inventory is stored. Each warehouse is identified by a two-character code (CH - Chicago) that is stored in the Warehouse Master file (IWM). You must identify at least one warehouse.

Chapter 2
Distribution Resource Planning

2

The chapter consists of the following topics:

Overview

This chapter provides information on implementing the SSA ERP$_{LX}$ Distribution Resource Planning (DRP) product. You should have read all the Inventory documentation because the Inventory product is a prerequisite for this product. The purpose of the DRP product is to bring together all the information held in the system about the movement and expected movements of inventory, so that you can see how to meet customer requirements through purchase and production. The more information available, the more useful the DRP product can be.

The general sequence of implementation would be:

1. Inventory Files
2. Purchase Orders
3. Customer Order
4. DRP

Implementation plan

The implementation plan is a suggestion and is not intended to cover the needs of all clients.

- Reading: Be sure that you have read and understood the documentation, especially the Inventory documentation.
- Existing System Review: Review your existing material plans, to consider at the following:
  - Completeness
  - Accuracy
  - Detail: Do you have enough detail about requirements? What are your order policies for material? Which items are causing supply/production problems? Number of changes occurring?
  - Control: How are actual production/purchasing decisions made? Is this satisfactory?
- Requirements Review: This arises out of your existing system review. The point is to establish regular planning procedures, so that you are up-to-date with actual and expected events.

Plan your answers to the system parameter questions. These questions are discussed briefly at the end of this manual. Enter the DRP/MRP parameter into the Parameters Generation program.

Consider what are your master schedule items and what the order policy, order cost, lead time, minimum balance, standard lot size and batch size should be. Enter these field values into the Item Master as soon as you are ready.

- Resource Review: Review the staff and time available for implementation. Your own time (as Manager and therefore Planner) is likely the greatest need. Become familiar with the reports and inquiries available and with the various options possible.
- Implementation Timetable: Schedule the implementation activities into your calendar. This should provide a realistic 'GO LIVE' date.
- System Definition: Make sure that you have DRP installed as an active product in your system. If not, you can activate it now. See the General Installation guide, System Installation.
- Inventory and Any Other Products: These are normally installed first and should be running live.

- Planning Procedures: Define regular planning procedures to take advantage of the up-to-date information that becomes available to you. The plans should be regularly regenerated and reviewed if they are to be useful.
- Operator Training: There should be no difficulty if the operator is familiar with other products.
- Master File Data Loading: If all the other products are running live, the only data loading needed is to set up your time frames and forecasts of likely demand.
- Initial Running: Use DRP Generation to generate your first planned orders and requirements. Use DRP Maintenance to enter any Firm Planned orders you already have in mind and regenerate DRP. From this you can print your planning reports.
- In the first month, you are strongly advised to monitor planning reports carefully to make sure that everything is set up properly and to ensure useful results. You can rely increasingly on the system for timely information about purchases and production, prospective shortages or overstocking and about your business operations generally.

Processes

This part describes important DRP processes.

DRP system overview

DRP is a closed-loop distribution system that integrates into the entire SSA ERP_{LX} package to give you state-of-the-art management information for the distribution aspects of your business.

SSA ERP_{LX} DRP addresses several critical business issues:

- Transportation Planning
- Interplant Communications
- Distribution Network Visibility
- In-transit Tracking
- Distribution Center Replenishment

DRP addresses these issues by moving the well established MRP principles of SSA ERP_{LX} manufacturing into the areas of managing multi-warehouse distribution and manufacturing environments.

DRP provides visibility into the entire distribution network. Planners see the actual demand on warehouses or distribution centers and how they affect the control re-supply facilities. It provides an accurate picture of the transportation loading and scheduling needed to support the distribution schedule.

There are five key concepts in DRP:

- Logical warehouses
- Distribution relationships
- Fixed shipping schedules
- Re-supply orders
- Transportation planning

Logical warehouses

Each item has the same, unique item number throughout SSA ERP$_{LX}$, but it can have different planning characteristics at different warehouses. These unique, warehouse-related planning characteristics are kept in the Warehouse Inventory (IWI) file. For example, you can have a different minimum balance, lead time, order policy, and planner code for each item at different warehouses.

A key point is that a SSA ERP$_{LX}$ warehouse is a logical warehouse. That is, it can represent any logical grouping of inventory: a distribution center, a real warehouse, a factory, a parts room, consignment inventory, quarantine inventory, and so on. This allows great flexibility.

The unique warehouse-related planning characteristics for each item are defaulted from the Item Master, IIM, file.

Throughout DRP, data is displayed for an item/warehouse combination. All DRP reports prompt for the warehouse for which items are to be displayed. Printed data is for the item in the selected warehouse. purchase orders, inventory, customer orders, re-supply orders, and so on for that warehouse appear.

Since DRP lets you plan distribution by item and warehouse, each item can have unique planning data in each warehouse, plant/distribution center. This includes minimum balance, lead time, planner code, order policy code, standard lot size, and incremental lot size. The requirements and orders are netted for each item at each warehouse, plant/distribution center.

Distribution relationships

You can link each item at each warehouse to any other warehouse that supplies it, allowing the relationships in distribution networks or multi-plant production environments to be defined completely. The netting logic for an item in a warehouse in DRP is identical to the MRP netting logic with the multiple plant option.

The new function in DRP is how planned orders at a receiving warehouse generate shipping requirements for the same item at the shipping warehouse. This is determined by the Distribution Relationship, DDR, file. If you are doing a DRP generation for the Perth distribution center, the normal netting logic takes place for items at Perth and planned re-supply orders are created. For each item at the Perth distribution center there is a record in the DDR file indicating which logical warehouse supplies that item to Perth. This DDR record determines at which warehouse a shipping requirement to Perth will be created. If all items are shipped from Melbourne to Perth, then each

Perth planned re-supply order automatically creates requirements on the Melbourne warehouse for that item.

These requirements are offset by the Perth items' lead time, with any DDR adjustment, and can have quantity adjustments for conditions like shrinkage in transit. There are effectivity dates on the DDR record that enable you to plan for switching supply points.

DRP is thoroughly flexible. You can set up any combination of logical warehouses, distribution relationships, or purchases. Centralized purchasing for distribution includes multiple plant feeder relationships, if the multiple plant option in MRP is chosen. A final example is that some Perth items can be purchased directly, some supplied by Melbourne, and some supplied by Sydney. DRP handles it all.

Fixed shipping schedules

Many companies have Fixed Shipping Schedules to their distribution centers. DRP automatically adjusts shipping requirements to match the fixed shipping schedule. The fixed shipping schedule is held in the DSC file and indicates on which days shipments are made from one warehouse to another. It can specify the standard shipping capacity on those days in terms of volume, weight, and containers available. For example, you can ship from Melbourne to Perth only on Fridays. You could set this schedule in the DSC file and the shipping requirements for Perth from Melbourne are backed up to the previous shipping date. If a shipping requirement falls on Monday, March 24, it generates automatically for Friday, March 21. Fixed shipping schedules are optional for each from warehouse - to warehouse relationship.

Each distribution relationship between warehouses (plants/distribution centers) can be qualified by a fixed shipping schedule. For example, you can want to ship from plant #2 to distribution center #3 on alternate Fridays. This fixed shipping schedule can be set up in DRP. The logic which creates planned orders and requirements is automatically adjusted to take into account the fixed shipping schedule. When the planner in plant #2 looks at the DRP requests, his planned shipments to distribution center #3 already reflect his fixed shipping schedule.

Re-supply orders

A re-supply order (RO) is an order to ship from one warehouse to another. ROs are entered through two different programs in SSA ERP_{LX}. A re-supply order can be entered through customer order entry and act like customer orders as far as the ship-from warehouse is concerned: shipping papers must be printed and adjustments must be made through billing release. The second way to enter a RO is to release planned and firm planned through Release Planned Orders program. ROs create demand on the ship-from

warehouse just like customer orders and absorb forecasts and distribution requirements.

A re-supply order is basically a customer order when the customer is a warehouse. Unlike customer orders, there is no sale, no accounts receivable, and no effect on the general ledger. Like customer orders, re-supply orders are a demand on the supply warehouse and follow the whole shipping cycle. There is additional information (such as insurance value) tracked for re-supply orders. In addition to normal customer order information, ROs include the scheduled receipt date at the ship-to warehouse. ROs act just like purchase orders from the ship-to warehouse perspective: they are supply scheduled for receipt on a certain date. This way, DRP keeps track of in-transit material. A separate RO receipt program allows ROs to be received.

When a re-supply order is demanded from the supply warehouse, it is automatically picked up as a scheduled receipt in the receiving warehouse. Re-supply orders are received via inventory transactions like any other scheduled receipts.

Transportation Planning

A critical element in any distribution network is efficient shipping. This is usually done manually as the transportation planner tries to fill full truck loads or full rail cars (or whatever). DRP has an excellent tool for this purpose -- the Transportation Planning Report.

For each supply warehouse and receiving warehouse combination, this report summarizes the planned shipments, existing re-supply orders, and the standard shipping capacity. For example, for the Melbourne to Perth shipping, it summarizes all Melbourne to Perth shipping requirements and re-supply orders by DRP time frame. The summarization is done by taking the quantities of each item and calculating the total volume, the total weight, and number of pallets or containers. The basic information for each item--the volume per unit, the weight per unit, and the number of units in a container--is kept in the Item Master (IIM) file. The planner can see at a glance which periods have less than full truckloads or rail cars and adjust the shipping schedule accordingly.

For example, this report would tell the Melbourne transportation planner the volume, weight, and number of containers of the next shipment to Perth. It can then be adjusted far ahead of time to a full truckload.

Sample planning scenarios: example 1:

Assume the following Distribution Relationships, DDR, file information:

Item	X
Ship-from Warehouse	MF
Ship-to Warehouse	DC
Start Date	1/1/91
End Date	12/31/91
Relative Quantity	1.00000
Lead time	3 days

The lead time in the DDR record represents transportation time between the Ship-from and Ship-to warehouses. The specific item/warehouse lead time is found in the Item/Facility, CIC, file. This DDR lead time is an offset to the CIC lead time. It can be positive, negative or zero.

Assume the following CIC records:

Item	X
Warehouse	MF
Lead time	5 days
Daily lead time rate	10
Item	X
Warehouse	DC
Lead time	3 days
Daily lead time rate	10

Assume the following shop calendar records in the Shop Calendar (FSC) file:

Work Center	Calendar Dates			
BLANK	02/01/91	02/03/91	02/09/91	02/10/91
	02/16/91	02/17/91	02/23/91	02/24/91
	03/01/91	03/02/91		

Assume the following fixed shop calendar in the Distribution Shipping Calendar, DSC, file:

From Warehouse	To Warehouse	Ship Date
MF	DC	01/14/91
MF	DC	02/14/91
MF	DC	03/14/91
MF	DC	04/14/91
MF	DC	05/14/91

Assume a forecast of 50 units of item X at warehouse DC exists in the Material Requirements (KMR) file.

Step 1

1 SSA ERPLX creates a Planned Order, KFP record at warehouse DC. The planned order due date equals the Date Required in the KMR record, 3/1/91 in this example.

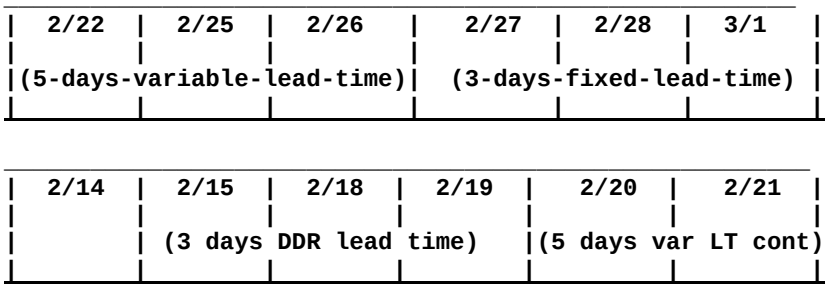
If the Date Required is defined as a non-work day in the Shop Calendar, FSC file, the planned order due date should be the first work day before the Date Required.

2 The Planned Release Date is calculated based on the lead times from the CIC and DDR files. The 3-day lead time from the CIC file is considered first. SSA ERPLX backs up three days from the Planned Due Date including the Planned Due Date as one of the three days. Non-work days defined in the shop calendar are not considered viable planning days.

3 Next, SSA ERPLX considers the Daily Lead Time Rate from the CIC file. The variable lead time in days for this planned order is the quantity of 50 divided by the Daily Lead Time Rate of 10, or 5. Therefore, SSA ERPLX backs up five additional days from the Planned Due Date.Non-work days defined in the shop calendar are not considered viable planning days.

4 SSA ERPLX considers the 3-day Lead Time from the DDR file. SSA ERPLX backs up an additional three calendar days from the Planned Due Date. Lead time calculation from the DDR file ignores the shop calendar. However, if the Planned Release Date is a defined non-work day, SSA ERPLX backs up an additional day or days as required until the Planned Release Date is a work day.

Only lead times from the CIC file are affected by the shop calendar. The shop calendar does not apply to lead times from the DDR file, except that the Planned Release Date calculated by the system must be a work day.



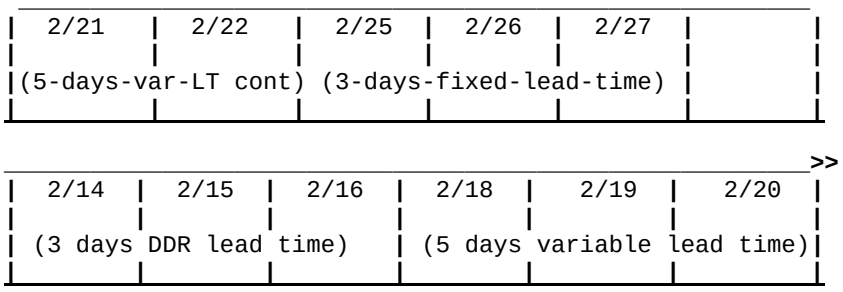
2/23 and 2/24 are skipped during the back scheduling of CIC lead times because those two days are defined in the shop calendar as non-work days.

2/16 and 2/17 are skipped during back scheduling of DDR lead times because a Planned Order cannot be released on a non-work day. The Planned Release Date of 2/15 is the same if the DDR lead time was five days because DDR lead time does not consider the shop calendar except for Planned Release Date.

Step 2

The Planned Order Release Date must fall on a Shipping Calendar date on or before the date calculated after offsetting for lead time values. In this example, there is no Shipping Calendar date for 2/15. The date defined in the Shipping Calendar equal to or before the calculated Planned Order Release Date is 2/14. This becomes the Release Date for the KFP record.

SSA ERP$_{LX}$ forward schedules from the 2/14 Release Date to calculate the KFP Due Date.



SSA ERP$_{LX}$ calculates the Due Date for the KFP record as 2/27. The DDR lead time calculation ignores the fact that 2/16 is a non-work day because it is not a Release Date. However, 2/17 is not included in the planning because it is part of the variable lead time calculation that is affected by the shop calendar. 2/23 and 2/24 are not scheduled because the fixed lead time would fall on those non-work days.

Step 3

SSA ERP$_{LX}$ creates the KMR record for the MF warehouse. The 2/14 Release Date calculated for the To warehouse (DC) becomes the Date Required for the From warehouse (MF). Following is the KMR record for the MF warehouse:

MF Warehouse	KMR Field
Date required	**2/14/91**
Quantity required	**50**
Forecast date	**3/1/91**
Requirements warehouse	**MF**
From warehouse	**DC**
Type	**P**

Step 4

SSA ERP$_{LX}$ uses DRP500 or MRP500 to generate the KFP record at warehouse MF. In this example, the planned order was created using Master Production Schedule generation, MRP500, because there was no other DDR relationship established. If another DDR relationship exists, program DRP500 completes Steps one and two for the additional relationship.

In Example 1, warehouse MF has the following KFP information:

MR Warehouse	KFP Field
Planned Release Date	**2/1/91**
Planned Due Date	**2/14/91**
Planned Order Warehouse	**MF**
Planned Order From Warehouse	**(blank)**

Sample Planning Scenarios: Example 2:

The Fixed Shipping Schedule is not used in this example.

Step 1

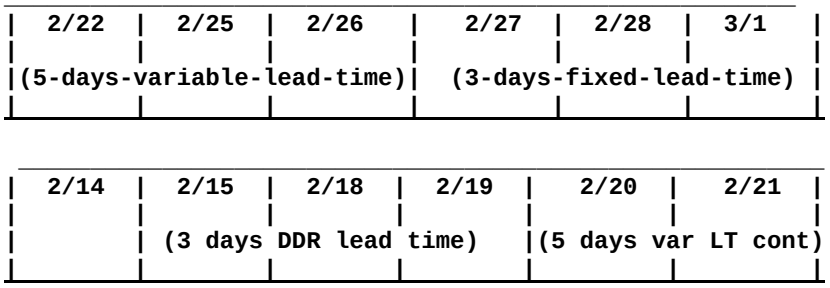
1 SSA ERPLX creates a KFP record for warehouse DC. The Planned Due Date equals the 3/1/91 Date Required from the KMR file. If the Date Required is a non-work day defined in the shop calendar, the Planned Due Date should be the first work date before the Date Required.

2 SSA ERP$_{LX}$ calculates the Planned Release Date based on the lead times from the CIC and DDR files, considering the 3-day CIC lead time first. SSA ERP$_{LX}$ backs up three days from the Planned Due Date including the Planned Due Date as one of the three days. Non-work days defined in the shop calendar are not considered viable planning days.

3 Next, SSA ERP$_{LX}$ considers the Daily Lead Time Rate from the CIC file. The variable lead time in days for this planned order is the quantity of 50 divided by the Daily Lead Time Rate of 10, or 5. Therefore, SSA ERP$_{LX}$ backs up five additional days from the Planned Due Date. Non-work days defined in the shop calendar are not considered viable planning days.

4 SSA ERP$_{LX}$ now considers the 3-day Lead Time from the DDR file. The system backs up an additional three calendar days from the Planned Due Date. Lead time calculation from the DDR file ignores the shop calendar. However, if the Planned Release Date is a defined non-work day, SSA ERP$_{LX}$ backs up an additional day or days as required until the Planned Release Date is a work day.

Only lead times from the CIC file are affected by the shop calendar. The shop calendar does not apply to lead times from the DDR file, except that the Planned Release Date calculated by the system must be a work day.



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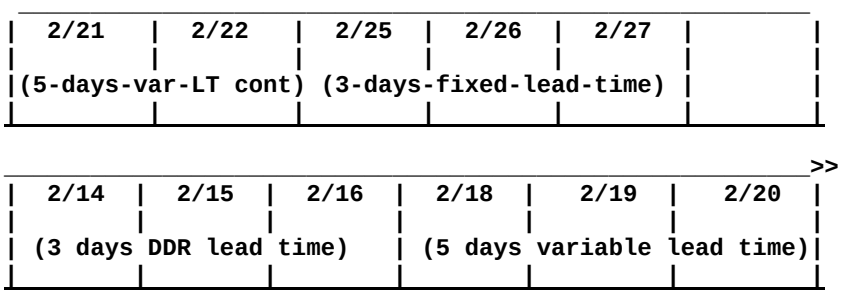
2/16 and 2/17 are skipped during back scheduling of DDR lead times because a Planned Order cannot be released on a non-work day. The Planned Release Date of 2/15 would be the same if the DDR lead time had been five days because DDR lead time does not consider the shop calendar except for Planned Release Date.

Step 2

SSA ERP$_{LX}$ creates the KMR record for warehouse MF. The 2/15 Release Date at the To warehouse (DC) becomes the Date Required at the From warehouse (MF). Following is the KMR record for warehouse MF:

MF Warehouse	KMR Field
Date Required	**2/15/91**
Quantity Required	**50**
Forecast Date	**3/1/91**
Requirements Warehouse	**MF**
From Warehouse	**DC**
Type	**P**

SSA ERP$_{LX}$ now forward schedules from the 2/14 Release Date to calculate the KFP Due Date.



SSA ERP$_{LX}$ calculates the Due Date for the KFP record as 2/27. The DDR lead time calculation ignores the fact that 2/16 is a non-work day because it is not a Release Date. However, 2/17 is not included in the planning because it is part of the variable lead time calculation, which is affected by the shop calendar. 2/23 and 2/24 not scheduled because the fixed lead time would fall on those non-work days.

Step 3

SSA ERP$_{LX}$ now creates the KMR record for the MF warehouse. The 2/14 Release Date calculated for the To warehouse (DC) becomes the Date Required for the From warehouse (MF). Following is the KMR record for the MF warehouse:

Date required	**2/14/91**
Quantity required	**50**
Forecast date	**3/1/91**
Requirements warehouse	**MF**
From warehouse	**DC**
Type	**P**

Step 4

SSA ERP$_{LX}$ uses DRP500 or MRP500 to generate the KFP record for warehouse MF. (In this example, the planned order was created using Master Production Schedule generation (MRP500), because there was no other DDR relationship established. If another DDR relationship exists, program DRP500 completes Steps one and two for the additional relationship.)

In Example 2, warehouse MF has the following KFP information:

Planned Release Date	**2/4/91**
Planned Due Date	**2/15/91**
Planned Order Warehouse	**MF**
Planned Order From Warehouse	**(blank)**

There are five days fixed lead time and five days variable lead time to offset. 2/9 and 2/10 are defined as non-work days in the shop calendar.

Functional descriptions

This section discusses some of the key functions and features of SSA ERP$_{LX}$ Distribution Requirements Planning.

Netting calculation

The system is bucketless DRP. It holds both the gross requirements detail and the planned order detail; however, no detail is duplicated from scheduled orders (shop orders, purchase orders, customer orders, and re-supply orders).

Many different lot sizing rules are available on an item/warehouse basis. Examples are period order quantity, discrete above a minimum balance, one-for-one lot, multiple of the standard lot size, and least cost. The item minimum balance is subtracted as part of the netting calculation to be used as safety stock. The netting calculation is the same for phantoms as for regular items.

Time frames

The DRP detail can be consolidated into 40 time periods for report purposes. The length of the 40 time periods is completely variable, as is the starting date. The time periods are used for an optional horizontal-format DRP report.

Firm planned orders

SSA ERP$_{LX}$ supports firm-planned orders. It can suggest releases and rescheduling of firm-planned orders but does not automatically reschedule as part of the netting logic.

Pegging

SSA ERP$_{LX}$ supports single-level pegging in reports and inquiries. The peg is to the specific order which generated the gross requirement and contains item and planning information.

Rescheduling and messages

SSA ERP$_{LX}$ makes the rescheduling assumption that you can expedite a released order before the system will generate a new planned order.

Rescheduling messages are generated by automatically setting a reschedule date for either firm planned orders, shop orders, or purchase orders during the netting logic. The reschedule date, the due date, the start date, and the current date then combine to produce messages. Possible messages include cancel, expedite, de-expedite, and release. With each message a suggested date is given.

Planning horizon

SSA ERP$_{LX}$ has an infinite horizon for planning because all data is stored by date, not by summarized buckets.

DRP inquiries and reports

An on-line DRP inquiry displays all of the planning detail for an item at a warehouse and pegs its requirements back to other warehouses. The DRP available-to-promise inquiry functions like MRP.

DRP reports show the gross requirements, customer orders, scheduled receipts, projected on hand, net requirements, and planned order receipts summarized by time frame. Pegging detail, action messages, and scheduled receipt detail can be shown.

DRP time frames can be maintained via DRP120B (Time Frame Maintenance).

A complete set of reports allows users to track, report, and audit all phases of the SSA ERP$_{LX}$ DRP system:

- by Warehouse

- by Class
- Transportation Planning
- Re-supply Order (From and To Warehouse)

Forecasting

Enter and maintain forecasts manually for any item.

SSA ERP$_{LX}$ has several options for how to include the forecasts in the gross requirements. These options are the greater of forecasts or customer orders, consumption of the forecast, adding forecasts to customer orders, use forecasts only, or use customer orders only. There are two different types of consumption logic - one for lumpy customer demand and one for smooth customer demand.

Planners

Each item is tied to a planner code. The detail DRP report can be printed in sequence by planner then item or just by item. Planner code limits and item number limits can be specified. In the multi-warehouse option, the same item can have different planner codes at different warehouses.

Order policy codes

A = Discrete, lot for lot - Generates planned orders in quantities equal to the net requirements on each day. Phantom items should be set up with this policy code.

F = Least cost - Uses the Boe-Yilmaz algorithm to closely approximate the Wagner Whitin algorithm (see Production & Inventory Management, Journal of APICS, Second Quarter, 1983) while eliminating the complex calculations for that algorithm. It is especially useful for uneven demand. An item with this policy code must have an Order/ Setup Cost specified using Item Master Maintenance (INV100). During system installation, the MRP parameter Holding Cost Percentage should be input. This parameter indicates the average percentage of the standard item cost to hold that item in inventory for the year (usually about 35%). The algorithm calculates the holding cost for a specified time (until the next order date) using the following formula:

Holding Cost =

$$\text{Holding Cost \% x Std Cost x } \frac{\text{(\#Days until next order -1) x (Qty req. next order)}}{\text{100 \% x 365 days}}$$

The system then compares the calculated holding cost to the order/setup cost to see if it is better to combine future demand with current demand in one order, or to wait to order future demand when it is needed.

Depending on the system parameters, holding cost and standard item cost can come from different files. If the *Run MPS/MRP* field is set to yes, the Order/Setup Cost must be present in the Facility Planning Data file. If the *Run MPS/MRP* field is set to no, the Order/Setup Cost must be present in the Item Master file.

If the *Cost by Facility* field is set to yes, the standard cost must be present in the Facility Planning Data file. If it is set to no, the standard cost must be present in the Item Master file.

If no standard cost is detected in the respective file, the system reverts to Order Policy Code A (Discrete).

Example: Suppose you are ready to order an item and look to future demand to see if you should include the next demand with the current order. Given the following information:

- Holding Cost = 50%
- Standard Cost = 2.00
- Number of Days to Hold (until next demand) = 8
- Total Required for Next Demand = 100
- Order/Setup Cost for Item (from INV100) =1.50

The Holding Cost Calculation yields:

50 x 2.00 700

_____ **x** (8 - 1) **x** 100 **=** ---- **=** 1.9178

100 x 365 365

Since the calculation shows the cost to hold the item in inventory (1.9178) is greater than the cost to reorder when the demand is actually there (1.50), the system would produce a planned order for the current demand only. The order for the 100 items required eight days out would be considered at that point in the MRP run.

G = Fixed period requirements - During system installation, the user specifies the number of days of coverage each planned order should provide. You can specify the number of days of coverage for a specific item from the Item Master Maintenance program (INV100), which will override the system default. The system will group all net requirements for that period and

produce one planned order at the start of the period, beginning only on a day that has requirements. A period length of one will produce the same order results as lot for lot (order type "A" = discrete).

H = Discrete above standard lot size - Produces a planned order of one lot as specified for that item in the Item Master, INV100, if the net requirements are less than or equal to the lot size. If the requirements exceed the lot size, the size of the planned order will be increased by the excess.

I = Incremental above standard lot size - Produces a planned order of one lot as specified for that item in the Item Master, INV100, if the net requirements are less than or equal to the lot size. If the requirements exceed the lot size, the size of the planned order will be increased by increments specified in the Item Master record for the item.

J = Multiple of the standard lot size - Planned orders will be produced for net requirements in multiples of the lot size as set up in the Item Master, INV100.

Note: To plan by warehouse, you can override the values defined for these policy codes in the Item Master for specific warehouses using the Warehouse Planning Data Maintenance program, MRP140, in this product.

K = Repetitive order - Used for repetitive, high volume manufacturing and variable periods. Order Policy K produces a single firm planned order consisting of the total requirements of a repetitive order for a given period. You can define up to 152 periods. The period length is variable. Specify a start date for the first period. The system calculates the start/end dates for all periods.

Product workflow

Use the DRP product to bring together all the information held in the other SSA ERP$_{LX}$ products about the movement of inventory items. Stock on hand and on order is compared with stock known to be required for customer orders or other orders. You can set the time frames to be considered, and you can enter forecasts of expected demand.

If any item is in danger of becoming overstocked at any time within the specified time frames, SSA ERP$_{LX}$ recommends that certain purchase orders or re-supply orders be canceled or delayed. If there is likely to be a shortage, the system recommends that purchase or re-supply orders be expedited and creates planned (suggested) orders where necessary. You can add, change, or delete these planned orders, then eventually use them as the basis of purchase or re-supply orders. Requirements and expected supplies can be shown pegged to the individual transaction giving rise to them. That is, they can be pegged to the actual customer order, re-supply order, purchase order, planned order, or forecast.

There are a number of System Parameters for the DRP product that affect the way planned orders are created. These parameters are questions which are answered during implementation, though you can change them later if necessary. There is a description of the DRP-related system parameters at the end of this manual.

As processing continues, the other products create events; re-supply orders are received, purchase orders are fulfilled, inventory is received or issued, planned orders are definitely scheduled or canceled, and so forth.

The Planning start date is any date you specify.

The system has up to 40 time frames for reporting purposes. Define each one as a number of days, starting from any date. Gross and detail material requirements will be shown summarized into these time frames.

There is no daily running as such, nor any specific period-end processing, since the planning process is undertaken as required. You probably want to review plans and release planned orders on a regular basis. The following is a suggested list of activities:

- Time Frame Maintenance -- Defining the reporting periods to be used. Program: DRP120B - Time Frame Maintenance
- Distribution Relation -- Defining the distribution supply relationship for each item. Program: DRP100D1 - Distribution Relationship Maintenance

- Shipping Calendar -- Defining the fixed shipping schedule between any two warehouses. Program: DRP100D1 - Distribution Relationship Maintenance
- Forecast Maintenance--Updating forecast item requirements. Program: MRP100D1 - Forecast Entry and Maintenance
- DRP Generation -- Regenerate, print, make changes as required, and reprint for each warehouse. Programs: DRP500D,DRP510D - Generate DRP, Maintain planned orders; DRP240D - Print DRP Detail
- Reports And Inquiries -- As required, especially the Transportation Planning Report, DRP250D. Use Order Maintenance and Firm Planned/Planned order maintenance to change release dates as required. Programs: DRP2XX,DRP3XX- Reports and Inquiries; DRP510D - Firm Planned/Planned Order Maintenance
- Create Re-supply Orders -- Enter re-supply orders as required, order type 9. These act as scheduled receipts at the warehouse being supplied. Or,

  Generate Re-supply Orders -- Display planned orders through the planned order release program. Select orders for release and conversion into re-supply orders through the RO generation program. Program: DRP540C - Release Planned Orders
- Receive Re-supply Orders -- You must do this to complete the receipt of re-supply orders and put inventory into the distribution warehouses. Program: DRP550 – Re-supply Order Receipt

  Most files used by DRP are maintained by programs in other SSA ERP_{LX} products: Inventory, Order Management, Billing and Purchasing.

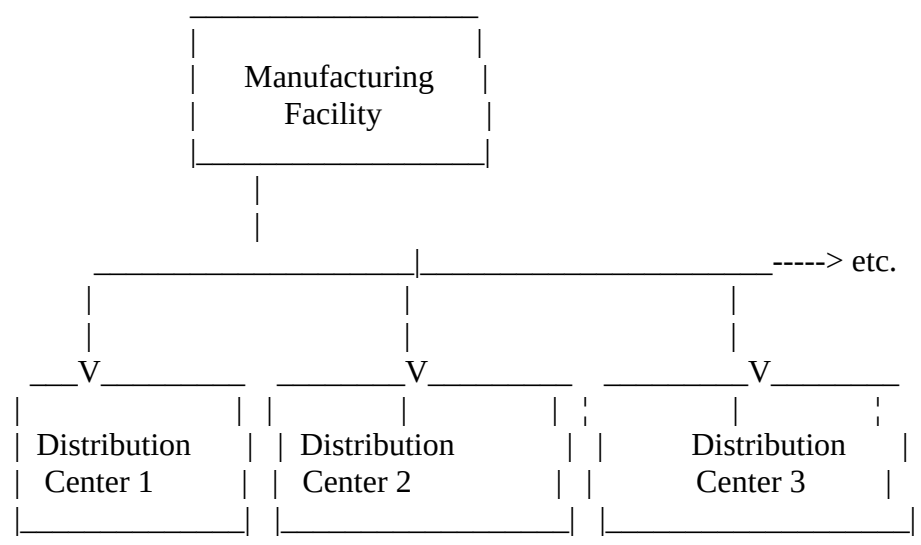
DRP in special manufacturing/distribution environments

SSA ERP$_{LX}$ Distribution Resource Planning is a powerful and flexible product. Its optimal use depends on proper setup and operation in conjunction with SSA ERP$_{LX}$ Manufacturing Resources Planning (MRP) for different manufacturing/distribution environments.

There is a correct setup and use of DRP and MRP for two different manufacturing/distribution environments:

- A single manufacturing facility feeding a distribution network
- Multiple manufacturing facilities feeding each other and then feeding a distribution network

Environment 1: A single manufacturing facility feeding a distribution network.



The key to using DRP successfully in this environment is to follow these guidelines:

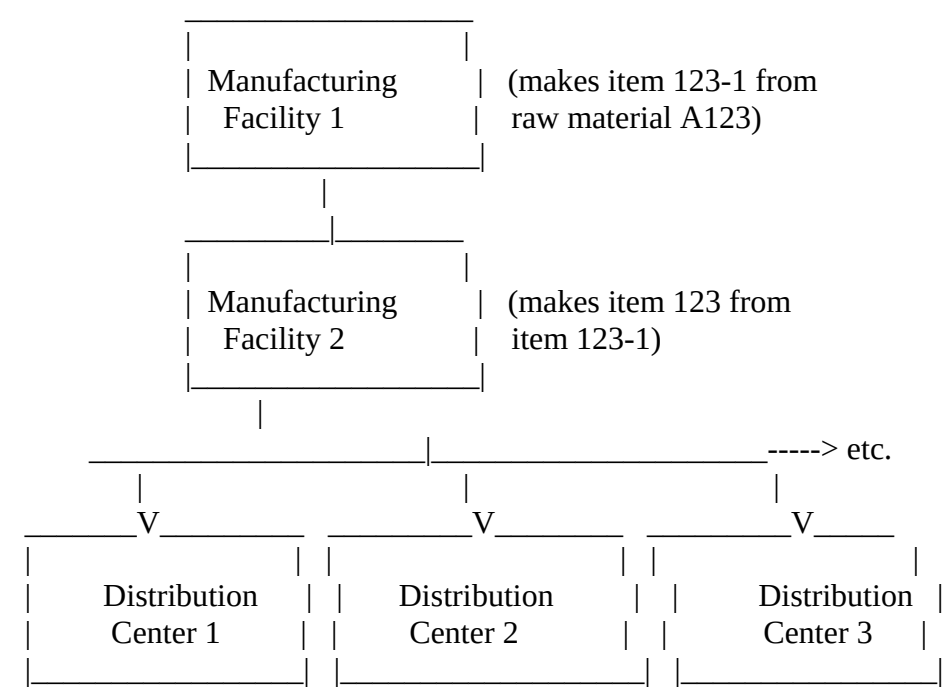
- Use the Distribution Relationship Maintenance program, DRP100D1, to set up normal distribution relationships, as required for your network. The final From Warehouse should be the manufacturing facility.
- For planning purposes, run the DRP Generation program, DRP500D, for each distribution warehouse in order.

- Perform normal Master Production Scheduling and MRP for the manufacturing warehouse.

If you have raw material warehouses that are different from the manufacturing warehouse, you should:

- Set up distribution relationships between raw material at the manufacturing warehouse, To Warehouse, and raw material warehouse (From Warehouse).
- Run DRP on the manufacturing warehouse first, then run DRP on the raw material warehouse.
- Do your purchase planning from the raw material warehouse.

Environment 2: Multiple manufacturing facilities feeding each other and then feeding a distribution network.



The key to using DRP successfully in this environment is to follow these guidelines:

The bill of materials in this example looks like this:

123 finished good
|
123-1 intermediate
|
A123 raw material

- Use the Distribution Relationship Maintenance program (DRP100D1) to set up normal distribution relationship for item 123 as in environment one above.
- Use DRP100D1 to set up another distribution relationship for item 123-1 with manufacturing facility 2 as the To Warehouse and manufacturing facility 1 as the From Warehouse.
- Go to the Facility Planning Data Maintenance program (MRP140D1) and set the Order Policy Code for item A123 at Manufacturing Facility 2 to a blank code. This means that item A123 is not an MRP item at Manufacturing Facility 2 and that the MRP explosion at that facility does NOT generate requirements for item A123.

The correct planning sequence for this example is:

1 DRP Generation, DRP500D, for the distribution warehouses.

2 Master Production Scheduling, MRP500C, at Manufacturing Facility 2.

3 MRP Explosion, MRP600C, at Manufacturing Facility 2.

4 DRP Generation, DRP500D, at Manufacturing Facility 2.

5 Master Production Scheduling, MRP500C, at Manufacturing Facility 1.

6 MRP Explosion, MRP600C, at Manufacturing Facility 1.

Differences between DRP and MRP

The SSA ERP$_{LX}$ DRP system, though based largely on MRP both in concept and in calculations, contains many functions which do differ from its MRP counterpart. The following discussion should help you to differentiate between the functions of MRP and DRP.

Warehouse planning

SSA ERP$_{LX}$ DRP enables the user to specify planning parameters at each warehouse. This function, which is used for multi-plant MRP, lets you vary the planner code, lead time, order policy, minimum balance, standard lot size, and incremental order quantity. In the DRP situation, where the system is planning the same item at various warehouses, planning parameters set at the warehouse level can be used. This information is kept on the warehouse inventory file, so any warehouse with item inventory can be planned with a set of parameters unique to that warehouse/item combination. Note that the SSA ERP$_{LX}$ DRP system uses its own time frames; therefore, the periods seen on inquiries and reports can vary from the MRP time frames used.

Shipping schedules

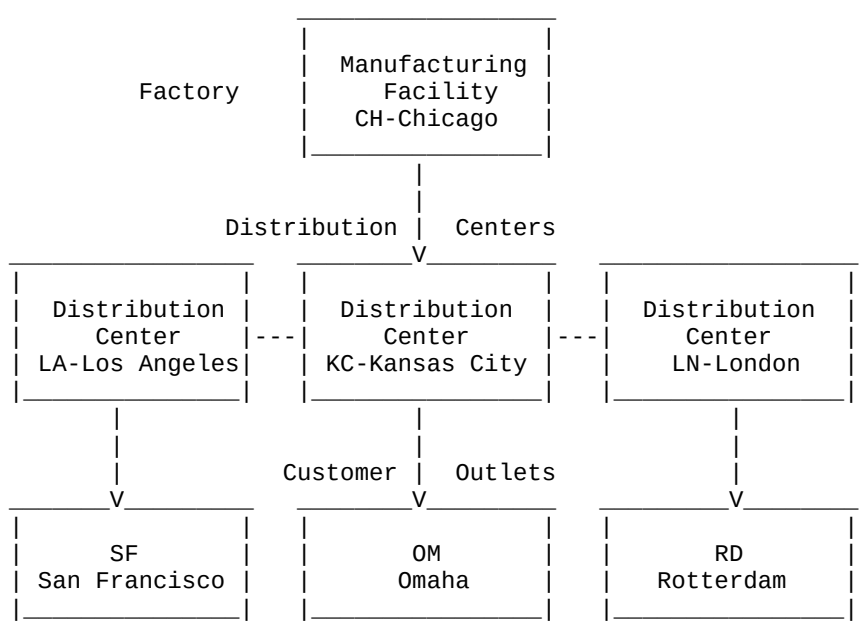
The SSA ERP$_{LX}$ DRP shipping schedules are used along with the shop calendar to plan order dates. The use of the shipping schedule is optional and should specify dates of shipment. Contrast this with the shop calendar, which is specified by exception only. DRP planning considers the shipping schedule for requirements between warehouses and create the planned orders to be shipped on the dates set in the schedule. This is done by moving the date forward in time such that the stock is available when required. Shipping schedules identify relationships between two warehouses only.

Distribution relationships

The distribution relationships within the network are under the complete control of the user. DRP planning is generated for one warehouse at a time.

The sequence of the generations should correspond to the existing network configuration.

To illustrate this, consider the following distribution network:



The planning for this network starts at the bottom and proceeds up to the Chicago factory. This way, the system creates the proper requirements up the structure as planning continues. Warehouses processe one at a time. By using the job queue, the seven generations needed for this network could be done in a single job stream. Please note that shipping schedules can be set for any of the warehouse relationships. One possible processing sequence could be SF, OM, RD, LA, KC, LN, and finally CH. Remember, the processing sequence is completely under the user's control.

Re-supply orders

A re-supply order is a customer order in SSA ERP_{LX} with an order type of 9. SSA ERP_{LX} order type 9, appearing on the order header record, is reserved for re-supply orders. These orders affect the inventory in the system, but have no effect on ACR, CLD, or sales statistics. The standard order processing program is used to enter these into the system. If you are entering a re-supply order, SSA ERP_{LX} asks you for a To Warehouse as well as the date the order is due to the receiving warehouse. All other order processing is done normally. The system looks at the re-supply order as demand on the From Warehouse, customer order, and supply to the receiving warehouse such as a purchase order. The re-supply order consumes the forecast at the From Warehouse just like any other customer order.

When you select planned orders to be generated into Re-supply Orders, (DRP540) SSA ERP_{LX} prompts you to enter a To Warehouse. SSA ERP_{LX} uses the To Warehouse that you enter to scan the Ship-To File, EST. The Ship-To File has a Re-supply Order Ship-To Warehouse entry for each Customer Number that is a warehouse re-supplied through DRP. the system scans the EST file, finds the first occurrence of the warehouse number that you enter in DRP540 and uses the Customer Number that is linked to that warehouse number through your entries in ORD100. That customer number is used for the Re-supply Orders that are generated. It is critical that your entries in ORD100 avoid any possible confusion. For example, make sure that you have one customer number linked to a To Warehouse in ORD100. This eliminates the possibility of getting the wrong customer for the Re-supply Orders that you generate.

The MRP Code field in the Item Master file, IIM, and Facility Master file, CIC, impact the generation of planned orders during MPS and MRP generation.

Each transaction that affects an item and a facility updates a record for that item and facility. This record contains information that can override:

- The Item Master order policy codes and
- Whether the item will be scheduled by DRP at the specific facility.

If you do not create this record (through this program or MRP140D1, SSA ERP_{LX} automatically creates the record when the first transaction involving the item/facility combination is processed. The order policy parameters are retrieved from the Item Master by default.

Planning occurs under the following file conditions:

Item Master (IIM)	Facility Master (CIC)	Planning Done By
M	BLANK	MRP600
BLANK	M	Not planned
BLANK	BLANK	MRP600
M	M	MRP500

Product quick reference

The table below provides the functions used within Distribution Resource Planning as well as their associated program codes. Program codes are used to quickly access a function. To use a program code, type the program code in the empty field at the top of a menu panel and press Enter. The system displays the first panel in that program.

Function	Program
Add distribution relationships	DRP100D1
Add firm planned orders	DRP510d
Add forecasts	MRP100D1
Add item to a facility	DRP140B
Add shipping calendar date	DRP150D1
Available to promise inquiry	DRP310
Change distribution relationships	DRP100D1
Change DRP time frames	DRP120B
Change firm planned order quantity	DRP510d
Change forecast quantities or dates	MRP100D1
Change item planning data	INV100D1
Change item/facility planning data	DRP140B
Change planning start date	DRP120B
Change shipping calendar	DRP150D1
Delete distribution relationships	DRP100D1
Delete firm planned orders	DRP510d
Delete purchase orders	PUR500C
Delete shipping calendar dates	DRP150D1
Display orders and requirements	DRP300D
Display pegged requirements	DRP300D
Generate DRP	DRP500D
Generate re-supply orders	DRP540DC

Function	Program
Print available to promise	DRP240D
Print distribution relationships	DRP110D
Print DRP detail	DRP240D
Print DRP summary report	DRP230D
Print forecasts	MRP105D
Print item/warehouse planning data	MRP145D
Print re-supply orders by RO number	DRP260D
Print re-supply orders by item and receipt date	DRP270D
Print shipping calendar	DRP160D
Print transportation planning report	DRP250D
Reactivate deleted firm planned orders	DRP510d
Receive re-supply orders	DRP550
Release planned orders	DRP540C
Release purchase orders	PUR640C
Reschedule firm planned orders	DRP510D
Reschedule purchase orders	PUR500

Glossary

Planning date
Whenever you generate a schedule using DRP500, you can set the planning start date to any date. SSA ERP$_{LX}$ replans material requirements from that date forward.

Horizon
In the system parameters, or in the Item Master record, you can specify a number of days forward from the current planning start date, defining the horizon date. The horizon date is used by MPS only.

Planned order
SSA ERPLX creates planned orders when you run the generation program (DRP500). These planned orders are recommendations to re-supply in order to meet the calculated requirements at the proper time. You can enter planned orders directly in the system. Planned orders are subject to rescheduling or deletion every time you run a regeneration.

Firm-planned order
A planned order can be converted to a firm-planned order in SSA ERPLX. SSA ERPLX does not reschedule or delete a firm-planned order automatically, although it does make recommendations.

Pegging
SSA ERPLX keeps track of which event gave rise to which requirement and which events are expected to satisfy requirements. For any item, you can display and report how requirements are pegged to individual customer orders, purchase orders, shop orders, planned orders, forecasts, and re-supply orders.

You can specify up to 40 time periods. Starting from a date (usually the current planning start date), each period can be any number of days long. The time frames are used for reporting and forecasting.

Forecast
You can enter forecasts of expected demand over the time frames. SSA ERPLX takes these forecasts into account when calculating requirements according to the system parameters.

Chapter 3
Forecasting

3

The chapter consists of the following topics:

Overview

Forecasts are prepared to address a wide range of business issues within an organization. Various levels of management require forecast information for different purposes. Forecasts are developed for individual products in order to effectively schedule operations. Product or brand managers require forecasts for product categories or for territorial divisions in order to generate successful marketing plans to support sales promotions, advertising and distribution activities. Executives need forecasts that identify overall sales activity in order to plan and develop budgets.

To control production levels effectively, production managers need to formulate a reasonable manufacturing plan that reaches far enough out into the future to provide adequate customer service while distributing production as evenly as possible over the planning year. However, managers cannot always wait for customer orders to materialize before goods are manufactured because the product lead time may be too long to meet the customers' immediate needs, or because the manufacturer simply lacks the capacity to satisfy large orders within a relatively short time period.

For this reason, production managers need to estimate future levels of customer demand for a finished product so they can put a production plan into effect that allows them to regulate their inventory levels to match future demand while maintaining profitability. Unfortunately, even the best managers occasionally misjudge demand and face the dilemma of producing too much, causing excessive inventory costs, or of not having enough goods to keep customers satisfied during periods of peak demand.

The purpose of a formalized forecasting system is to replace subjective forecasting tools, which all too often produce unreliable estimates of future orders, with a standardized system that consistently provides accurate predictions of future demand. However, such a system does not entirely remove forecasting decisions from management, because they often possess product-specific and market-specific information that cannot be built into the standardized models.

SSA ERP_{LX} Forecasting uses proven modeling and statistical techniques to generate demand forecasts while allowing managers the flexibility to make adjustments based on their experience and expertise.

Processes

This section describes the important processes available in Forecasting.

Forecast modeling using the best fit technique

SSA ERP$_{LX}$ Forecasting uses a “best fit” method to determine which of the available forecasting techniques produces the most accurate forecast for a given modeling period. The modeling period is user-defined, but it normally consists of a set of the most recent periods for which demand history exists. SSA ERP$_{LX}$ then selects the technique that most closely approximates the basis data, and generates a forecast that spans the planning year.

SSA ERP$_{LX}$ Forecasting comes with five pre-programmed forecasting techniques. In addition, provisions exist for making up to four more programmed techniques available, if necessary. You can modify your system by programming up to 26 individual forecasting sub-routines. You can select from one to five techniques (preprogrammed or user-created) for modeling demand through the “best fit” analysis for each item and warehouse combination.

Closed-loop design

SSA ERP$_{LX}$ Forecasting is designed as a closed loop application. This means that it processes information from the Billing and Order Entry products and creates a forecast that can be broken down into sub-periods and loaded directly to the Master Production Schedule Forecasting file. Processed orders can then consume the forecasted quantities on the master schedule. When processing for an intermediate period completes, the billing or order data can be adjusted before generating a new forecast. This reduces the danger of using data that reproduces forecast errors. However, SSA ERP$_{LX}$ allows a variation of this routine: You can elect to use the forecast history data from the MPS/MRP Forecast file to generate future forecasts.

Measuring accuracy and forecast error

SSA ERP$_{LX}$ Forecasting provides a tracking signal which measures the trend of deviation of the computed forecast values from the actual demand values as they are recorded. The tracking signal indicates if your forecasted values are consistently too high or too low, and if they are becoming more or less accurate.

There are three predefined methods for calculating forecast error. Each error computation provides a different way to view deviations between forecasted and actual data depending on your needs. You can calculate the error every time new demand data becomes available. SSA ERP$_{LX}$ can be modified you to create your own error calculation subroutines.

Manual adjustments

SSA ERP$_{LX}$ is designed to allow you to create and use your own forecasting techniques and to create new error calculations. In addition, there are a number of user-controlled features of SSA ERP$_{LX}$ Forecasting with which you should become familiar. They are listed and described below.

- You can define up to 33 error calculation techniques by programming your own subroutines. SSA ERP$_{LX}$ allows you to create and install up to 27 additional forecasting subroutines.
- SSA ERP$_{LX}$ enables you to determine the value of various smoothing factors that are used throughout the Forecasting product.
- There is an independent cycle adjustment factor to correct for long-term cyclical changes that take place over several years. These factors may vary for each different item and warehouse combination, and can be used to adjust the computed forecast values either upward or downward by a fixed percentage.
- You can set irregularity limits for the basis data (demand or forecast) to eliminate irregularities or spikes in demand or forecast history. When a basis value exceeds this limit, SSA ERP$_{LX}$ substitutes the maximum or minimum allowable value for that period into the forecasting calculation. This helps to eliminate sizable irregularities in the basis demand data.
- The number of intermediate periods per planning year is variable. Usually, the planning year for forecasting matches either the master scheduling periods or the available history data. There can be up to 13 intermediate periods per planning year. For example, you can define bi-monthly (6) or quarterly (4) periods. The number of periods per year must be constant throughout the system, but the specific period cut-off dates can vary for each warehouse.

- The current year and period are initially user-defined.
- The number of modeling periods used is variable. It can range from one to nine intermediate planning periods. Usually, at least three months of history are included for modeling.
- The length of the forecast generation period is adjustable. Forecasts can be generated for up to two years into the future. SSA ERP$_{LX}$ supports next- fiscal- year planning and provides product line summaries based on the forecast.
- You determine the number of years of basis and seasonality history to save and to use in calculations.

Smoothing factors

The exponential smoothing factors used for the Holt-Winters calculation, trend, seasonality, and error are user-defined and may vary for each valid item and warehouse combination. These smoothing factors range in value from 0 to 1. The higher you set these factors, the more weight you assign to more recent data. The trend and seasonality factors are used for the Trend Adjusted for Seasonality techniques.

Security and simulation files

SSA ERP$_{LX}$ Forecasting uses normal system security for overriding final forecast values. There is password security for copying simulation files back to the Forecasting file.

There can be many individual simulation files. Data from any simulation file can be transferred to actual forecasts and then can be broken down into appropriate sub-periods to be loaded to the MPS/MRP Simulation file. You can control whether each item and/or warehouse may be loaded to MPS.

Forecast product architecture

There are many special design features built into SSA ERP$_{LX}$ Forecasting. A few of the most important features are listed below.

- Forecasts can be generated for any item and warehouse combination.
- By using Forecasting with SPM, forecasts may be generated by product and customer characteristics. For example, forecasts may be created for

item group and customer group combinations in which item group includes item classes or brands, and customer groups include regions or territories. Product group and customer group forecasting is known as Bottom-Up/Top-Down Forecasting. This is because with SPM, sales generated at a low level can be aggregated to a higher level, used to generate a high level forecast, then disaggregated to the item/warehouse level to load to MPS/MRP

- Sales demand that values vary by both item groupitem group and customer group.
- Historical data is stored by date and summarized by period. Both demand and forecast history values can be stored for up to eight years. The history data, basis data at the item/warehouse level, can be adjusted before generating a forecast. You can determine which periods the system allows you to update.
- Demand, historical forecast, and alternative forecast strategies are available for on-line graphic review with tabulated data and reports that allow full panel comparison of values.
- If SSA ERP$_{LX}$ Order Entry is installed, the open orders can be compared to forecast values by using an on-line, full panel graphic inquiry.

Forecasting and demand principles

SSA ERP$_{LX}$ Forecasting bases its forecasts of future demand on past data which can be adjusted for predictable variations and for irregularities. You determine the values of the smoothing factors that SSA ERP$_{LX}$ uses for some of its forecasting calculations, and can adjust the final forecast values. You can modify the system by creating your own forecasting techniques if you are able to program your own subroutines.

To understand the way that the forecasting system works, you need to understand the basic factors that influence demand. These factors are listed below:

- The level of trend or the level of basis demand—the statistical average level of demand anticipated for a period.
- Seasonality—a variation in demand that occurs within a planning year.
- General cycle variations—a variation in demand that occurs over a period of several years.

Basis demand is composed primarily of a slow-varying component (trend) that can be adjusted for relatively rapidly changing variables, which account for any observed variations.

The term “basis demand” has two different, but commonly used, meanings. The term is primarily used as a generic name for the beginning data that generates a forecast. This is necessary since both actual recorded demand data and previous forecast values can be used to generate forecasts. The term represents the general level or trend of demand or of forecast history. However, in this document, the latter concept is described by the term “level of basis demand.”

To illustrate the factors noted above, consider the hypothetical changes in demand that might occur for a typical household commodity: ground coffee. Typically, the general demand for coffee varies with the change in seasons, increasing during cooler weather and decreasing during warmer weather. If the level of coffee production varied as much as the level of demand, coffee manufacturers would find themselves producing at extreme levels of capacity.

During the winter months, production levels would strain capacity and increase overhead, thus increasing costs. Conversely, during the summer months companies would need to reduce their labor force to stay efficient. Many companies with large capacity could not adjust to such instability in their production levels and simply would not survive.

Such variations in production levels can be eliminated by producing some of the requirements for peak demand months during months when capacity is underutilized. This is why determining trend or basis demand is so important. If demand is distributed over the entire planning year, efficient production levels can be consistently plotted throughout the year. Trend computes a statistical average of demand that gradually adjusts demand values to smooth out requirements. It distributes production by adjusting the recorded level of demand to a level that is consistent with the overall requirements for the year, but it allows basis level demand to vary gradually so you can keep manufacturing priorities straight.

The purpose of the trend is to smooth production levels. The purpose of seasonality is to apply minor adjustments to trend based on recurring historical variations of actual demand to the level of trend. For example, the seasonal rise and fall in the demand for ground coffee during the winter and summer months, respectively, illustrates the effects of seasonality on demand. In this example, demand typically is greater and less than trend, respectively. By adjusting basis demand in this manner, the forecast is adjusted slightly to represent realistic requirements, while avoiding drastic changes in the planned manufacturing level.

SSA ERP_{LX} does not measure seasonality in units. Forecasting calculates the ratio of actual demand to the computed level of trend. This way, seasonality can apply percentage adjustments to various computed and measured values, regardless of the relative size of those values. By computing a ratio, the amount of seasonal variation is viewed as being dependent on the overall

level of demand rather than being independent. In actual practice, the ratio is computed by using a smoothing factor.

Seasonality provides a tool for measuring the predictable variations that recur within a planning year. By combining trend and seasonality you can develop a rough forecast, but by compensating for changes in demand that occur over many years, you can develop a forecast that is even more sensitive to demand history. Using the example of ground coffee, suppose that over the course of two, three, or even ten years, the demand for ground coffee has declined. Historically, this has resulted from a wide range of market pressures like the introduction of the new technology that made instant coffee a market success, or the entry into the market of a substitute like herbal tea. In these cases the long-term demand for ground coffee declined. To include long-term changes in the forecasting model, SSA ERP_{LX} lets you apply a percentage correction to the final forecast values for the entire forecasting period, which can be up to two years long. You determine the percentage value to be used.

Even when the trend, seasonality, and long-term adjustment factors are used to generate a forecast, the forecast is as accurate as the basis data you have at the start. Often, abnormal market conditions create demand data that is not likely to repeat in a predictable manner. For example, if coffee drinkers expect a drastic increase in the cost of coffee, they might dramatically increase their purchases of coffee to stock their shelves before the prices actually rise. Poor coffee crop reports or reports of attempts to increase the price of coffee by creating market shortages often produce such market behavior.

The problem with using the resulting demand values in situations like those is that they do not represent “normal” activity. SSA ERP_{LX} Forecasting allows you to adjust the basis data to eliminate irregularities from the calculation.

SSA ERP_{LX} Forecasting treats factors of demand as related, not independent, variables. As a result, they can be represented by the general equation that appears below. This view corresponds to the most widely recognized forecasting theories.

$F = T \times S \times I \times C$

Where:

- F = Forecast
- T = General Trend
- S = Seasonality
- I = Irregularities
- C = General Cycle

SSA ERP$_{LX}$ offers five pre-programmed forecasting methods, because under varying product and market conditions, one of the methods may produce a better estimate than the others. The individual techniques weigh the seasonality and trend factors differently, or not at all, to fit different conditions. For example, the demand pattern for a product may be changing steadily, so a model that recognizes this trend produces a better forecast than a model that simply averages demand. Consequently, you might use one method to forecast demand for a mature product that is established in a level market, but could use a different forecasting technique for a product in a rapidly changing market.

You can select one technique for all forecasting, or you can let SSA ERP$_{LX}$ Forecasting decide which technique to use by matching the levels of demand, forecast by each of the five different methods, to the recorded levels of basis demand for the modeling period. The modeling period is comprised of the most recent months for which demand is recorded, and is used solely to test the accuracy of the forecasted values.

Forecast modeling

The process of generating forecasts using various forecast techniques and then comparing the various forecasted values to recorded basis values is called forecast modeling. It is the process of determining the forecast technique that most closely approximates the historical data within the modeling period. After you select the best fit you can use it to generate the demand forecast. This forecast can reliably predict what your manufacturing work load is likely to be for any time period within the next two years. You can regenerate forecasts each month by using the most recently reported information. The accuracy of your projections improves for each approaching future period. This makes it possible to predict demand even for items with long lead times, and it lets you work around limited capacity. It assists financial planning for future fiscal years.

Forecast Simulation

SSA ERP$_{LX}$ allows you to experiment with different forecasts through the use of simulation files. For example, you can adjust simulation data upwards or downwards to compensate for one-time occurrences that you feel do not represent “normal” activity. In addition, if the selected forecasting technique uses exponential smoothing factors, you can adjust those factors to suit your needs. These factors are used to mathematically weigh recent historical data more heavily. This data can be varied for each warehouse and item combination.

After making adjustments, you can generate many different forecasts to establish a range of possibilities. When you settle on one forecast, SSA ERP$_{LX}$ lets you break down that forecast into appropriate sub-periods and load it to the existing master production schedule, completing its “closed loop” design.

Evaluating the forecast accuracy

When actual demand data begins to accumulate for the forecast year, you can use it to measure the accuracy of your forecasts. SSA ERP$_{LX}$ offers three separate methods for calculating forecast error. Each method lets you view the forecast error in a different manner, according to your needs. You can view the error as an absolute mean deviation, an absolute percentage deviation, or as a mean squared deviation.

SSA ERP$_{LX}$ provides a tracking signal, which is the smoothed ratio of the cumulative error to the mean absolute deviation. The tracking signal indicates the overall trend of the forecast deviations from period to period so you can determine whether the forecasted demand is consistently too high or too low, and then make the appropriate adjustments to the master schedule. The tracking signal varies between one and negative one. When it equals one, your forecasts may be consistently too high, and when it is equal to negative one, your forecasts are probably too low. You can use your own judgment when using the tracking signal to determine when the forecast contains significant deviations. By experience, you will learn to quickly identify problems and make corrections. The tracking signal indicates whether your adjustments are producing more accurate results.

Typically, you generate a forecast for up to two years into the future by using the method that produces the closest estimate of actual demand data for the modeling period. SSA ERP$_{LX}$ determines the most accurate model. After the actual demand data is posted for the period, you should compute the forecast error by using one of the three available error techniques. SSA ERP$_{LX}$ automatically generates a new tracking signal value at this point, although you can generate new tracking signal values at any time during the period.

If the forecast error is large, or if the tracking signal indicates that the forecast error is getting larger, you can make adjustments to either the basis data or the smoothing factors and regenerate the forecast. SSA ERP$_{LX}$ can perform modeling each time you generate a new forecast. You can use the simulation files to experiment with various adjustments. You can go through this routine after closing each period to keep your forecasts accurate and up to date.

Overview of five forecasting techniques

SSA ERP$_{LX}$ Forecasting contains five preprogrammed forecasting techniques. There is a reserved capability for up to four additional programmed forecasting techniques as needed for future enhancements. SSA ERP$_{LX}$ can be modified to contain up to 26 user-defined subroutines if you want to add other forecasting techniques. Remember, to add subroutines you need to modify your programs. You can select any five techniques to perform “best fit” modeling for each item and warehouse combination. You can change your modeling selection as needed.

The five pre-programmed SSA ERP$_{LX}$ forecasting techniques satisfy a wide range of forecasting needs. They are:

- Holt-Winters Exponential Smoothing
- Least Squares Approximation
- New Forecast Equals Old Actuals (or Old Forecast)
- Trend Adjusted for Seasonality
- Average Yearly Change Adjusted for Seasonality

Holt-Winters exponential smoothing

This method applies the concepts of exponential smoothing, seasonality, and trend to the Y-axis intercept form of an approximation line to compute a forecast. The result is a highly refined forecast that is especially sensitive to variations due to changes in basis level demand as well as to seasonal variations. This technique uses a stored seasonality value. It uses a trend value that is smoothed and updated to contain the latest basis data.

Using the seasonality factor, the system de-seasonalizes the basis demand values. SSA ERP$_{LX}$ then uses exponential smoothing to combine this value with a previously computed forecast value for the current period, which is adjusted for trend. The resulting smoothed average basis level demand is adjusted for trend and re-seasonalized to arrive at the final forecast value.

The trend used corresponds to the slope of an approximation line for the starting basis demand that is computed by the least squares method.

To use the Holt-Winters technique, you must have as much history as is required for the least squares method (at least one year plus the length of the modeling period).

Least squares approximation

The Least Squares method calculates a straight line approximation of the basis data. It generates a forecast for the planning year by extrapolating the line over the planning year.

One of the best mathematical methods for developing a straight line approximation to data points is by using a technique known as least squares analysis. The idea is to minimize the sum of the deviations of the recorded data from the calculated line. The deviations are calculated by subtracting the computed value of the trend line at a specific point with the value of the actual demand level at that same point.

To minimize the sum of the deviations, all the deviations must be represented with the same sign. This is necessary because you are concerned with the relative size of the deviation, not with whether the actual deviation was higher or lower than the forecast.

To ensure that all the deviations are non-negative values, and to magnify the significance of the relatively large deviations, the individual deviations are raised to the second power, or squared, prior to being summed. Consequently, the goal of this method is to minimize the sum of the squared deviations. This is how the terminology “Least Squares Method” was derived. The result of this calculation is an equation for the approximation line that is in the Y-axis intercept form. Though this is not the simplest method for determining trend, the processing capability of your computer makes this method relatively easy for the degree of accuracy achieved.

To use the least squares model, you must have at least one year of history plus the modeling period.

New forecast equals old actuals or old forecast

The simplest and most straightforward forecasting calculation is the new equals old method. This method projects future demand patterns to be identical to the demand pattern for the previous planning year. There are no corrections for seasonality or trend. By using this method, the forecast value for a given intermediate period, for example, month, is identical to the corresponding period in the previous planning year.

To use this technique, you should have at least one planning year of history plus the amount of history needed for the modeling period.

Trend adjusted for seasonality

This technique is similar to the average yearly change model. The difference between the two is that with the “Trend Adjusted for Seasonality” method, the system calculates a smoothed trend value and uses it in place of the yearly average change. The de-seasonalized basis values for the previous planning year are added to the individual trend values for each respective period. The resulting sum is then re-seasonalized by the appropriate smoothed seasonality factor.

To use this technique, you must have an amount of history that is at least twice the length of the modeling period plus one intermediate period (e.g. month). For example, if you use a three month modeling period, you need at least seven months of basis data. However, one planning year of history is desirable.

Average yearly change adjusted for seasonality

This model first calculates the average yearly change of the basis data points (the total difference between the sum of the basis demand of the previous planning year and the sum of the basis demand of the planning year immediately before that). The system then divides this value by the number of intermediate periods in the planning year to arrive at an average change value.

SSA ERP_{LX} retrieves the computed seasonality factor for the previous year basis demand data and de-seasonalizes the individual basis values of the previous planning year. The computed average yearly change value is then added to the individual, de-seasonalized basis values, and the sum of these two is multiplied by the appropriate smoothed seasonality factor for next year to arrive at the forecast values.

To use the average change technique, you must have at least two planning years of history plus the modeling period to compute the average.

Product workflow

The processing flow chart in this section illustrates the relationships between the various programs in this product. This processing flow chart illustrates one of many processing flows that a user could follow to complete a transaction from start to finish. This flow chart represents the steps you might follow on the first time you operate the Forecasting product.

After you completely implement SSA ERP$_{LX}$ Forecasting and processing becomes routine, you can omit some steps. You will learn to use all the other Forecasting programs in a sequence that suits your needs. For example, after the initial set up, you do not use the master file maintenance programs unless you need to maintain specific master file data. The various inquiry and report programs are available to use as needed. They are positioned in this flow chart after the processing programs that affect the primary data contained on those reports, because they are useful after those processing programs have generated data.

Use this flow chart to formulate a picture of how the programs interact, but remember that it is one way of viewing the system. As you look at the flow chart, try to envision how you will use these programs.

Maintenance programs

- Forecasting Application Control, FOR100
- Methods and Errors, FOR110
- Forecast Periods, FOR120
- Seasonality Factors, FOR130
- Item Class/Warehouse Overrides, FOR140

These programs establish the basic information that the Forecasting system needs for processing. Use these programs when you initially set up SSA ERP$_{LX}$ or when you want to change some basic characteristic of the system. You do not use these programs every time you process forecasting data. Each of these maintenance programs has an analogous print program that you can use to produce a hard copy of the data you set up.

Listed below are four methods to move demand to Forecasting:

- Method A - Manual Load and Copy

FOR150 Forecast Basis

FOR020 Item Warehouse Data from Basis

- Method B - Load, Adjust and Copy,

  FOR010 Forecast Basis

  FOR150 Forecast Basis

  FOR020 Item Warehouse Data from Basis

- Method C - Manual

  FOR170 Item Warehouse Data

- Method D

  STMOVSLS Move Sales from SPM

Load Basis Data

After using the maintenance programs to tailor SSA ERP$_{LX}$ to your needs, you must establish basis data. This is not necessary if you attain sales history from Sales Performance Management (SPM). Basis data consists of actual shipments, customer orders or forecast history.

- Actual Shipments come from the Item Transaction History file (ITH). The shipment history consists of “B” transactions generated when product is shipped from SSA ERP$_{LX}$ inventory.
- Actual Order Quantities come from the Customer Order Line file (ECL). Order history is generated by the SSA ERP$_{LX}$ Order Entry product.
- Forecast History is obtained from the Material Requirements file (KMR). Forecast history is either maintained manually or generated by the SSA ERP$_{LX}$ Forecasting product and subsequently loaded to KMR.
- Basis data may be entered manually (Method A), or pulled from SSA ERP$_{LX}$ history utilizing FOR010 and maintained utilizing FOR150 (Method B).

Load Item/Warehouse Detail Data

Once the basis data is loaded in the Basis file (JFB), it may be used to update the Forecasting Item/Warehouse Detail file (JFI) by processing FOR020.

Item/Warehouse control parameters (JFC) are utilized to determine which type of basis data is used to update the JFI file.

Data in the Item/Warehouse Detail file (JFI) may be maintained with FOR170. FOR170 can be utilized to add Item/Warehouse detail data (Method C).

Alternatively, with the Bottom-Up/Top-Down Forecasting capability, high level sales demand data may be moved to JFI from the Sales Performance Management (SPM) product (Method D). If this is the case, high level sales data (at an item group and customer group level) is moved into JFI in order to utilize SSA ERPLX' statistical forecasting functionality to generate a high level forecast. The forecast is then moved from SSA ERP$_{LX}$ Forecasting to the SPM-Planner where the forecast may be adjusted according to marketing and sales strategy, dis-aggregated down to the Item/Warehouse level of detail required by MPS/MRP, then moved back to SSA ERP$_{LX}$ Forecasting where the forecast demand can be automatically loaded to MPS/MRP.

Other Maintenance Programs

- Seasonality History, FOR160
- Simulation Security Codes, (FOR180

Use the two maintenance programs indicated above if you want to manually enter seasonality history tables and use password security for transferring a simulation file to the MPS/MRP Forecasting file, respectively. Seasonality tables contain individual values for each intermediate period of either past or future years.

After these preliminary steps, you can proceed in one of two processing directions. You can choose to perform forecast simulation or you can develop a new forecast.

If you choose to perform simulation, you must either work with an existing simulation file or you must copy the existing forecast to the simulation file. Each simulation forecast must have a unique name. The three programs in the Forecast Processing box above, and the first three programs in the Simulation Processing box below, are identical except that the Simulation Processing programs affect the data for the simulation file that you select. The purpose and use of each of these programs was discussed in the previous section.

The report and inquiry programs are available for use at your discretion. The simulation programs use the set of simulation data that you selected.

After you finish simulation processing, you can copy the data to the MPS/MRP Forecasting file, produce a backup copy of the simulation data on a transferrable medium, remove the set of data from your file, or leave the simulation data on file by accessing another menu. The copy to forecast feature can be controlled through password security.

At this point you should have generated a forecast you find satisfactory. With the newly calculated forecast values, you can regenerate the tracking signal needed to evaluate your forecasts. The tracking signal must be regenerated regularly because the most recently reported information influences its true value. SSA ERP$_{LX}$ generates new tracking signal values for the items that have changed data or parameters.

The new forecast can now be copied to the MPS/MRP Forecast file and consumed or added to by customer orders. The new forecasts override the old forecast quantities. You can remove old forecasts manually.

FOR910, FOR915 and FOR920 apply to Item/Warehouse Forecasting when basis demand is used. They do not apply when demand comes from SPM sales.

At the end of each period, update your basis data with new information from actual shipments, actual orders, or from forecast history. First, you need to make room in the Item/Warehouse Detail file (JFI) by “rolling” the data for the just completed intermediate period into the bucket for the intermediate period prior to that, and so on for all other historical data. This program purges history that is old and updates the current period for Application Control.

The above applies to Item/Warehouse Level Forecasting only. It does not apply to Bottom-Up/Top-Down Forecasting.

With newly updated basis data, you can make any necessary adjustments and then update the current period basis data that SSA ERP$_{LX}$ uses to generate forecasts.

At the end of each year you must store the seasonality factors that you used during the year so that SSA ERP$_{LX}$ can use these factors to de-seasonalize data when it generates forecasts for the next year. The last step is to generate the forecast values for the next year or two. SSA ERP$_{LX}$ uses the basis data for the year just past to compute these seasonality factors. If you generate seasonality factors for two years, the factors for the second year are duplicated from those for the first year.

Initialization of new items

Follow any of these procedures to initialize new items added after installing the forecasting system:

- Manually load forecast history in Forecast Basis Maintenance, FOR150, then run Initial Item Warehouse Data Load (FOR020)
- Manually load the new items into Item Warehouse Data, FOR170
- Download new records from SPM, STMOVSLS

Program quick reference

The table provides the functions used in Forecasting and their associated program codes. Program codes can quickly access a function. To use a program code, type the program code in the empty field at the top of a menu panel and press Enter. The system displays the first panel in that program.

Function	Program
Adjust forecast (from Menu FOR)	FOR520
Adjust simulation (from Menu FOR02)	FOR520
Backup simulation	FOR630
Compare demand to actual history	FOR300
Compare demand to forecasted history by period	FOR300
Compare demand to forecasted history	FOR300
Compare forecasts to open orders	FOR310
Compare history to forecast	FOR300
Copy forecast to simulation	FOR610
Copy simulation to forecast	FOR620
Delete simulation	FOR640
Generate constants	FOR530
Generate forecast (from Menu FOR)	FOR510
Generate year-end seasonality factors	FOR950
Generate simulation forecast (from Menu FOR02)	FOR510
Initialize forecast basis data	FOR010
Initialize item/warehouse data from basis data	FOR020
Load forecasts to MPS/MRP	FOR540
Load item/warehouse from basis data	FOR930
Maintain forecast basis	FOR150
Maintain forecast periods	FOR120
Maintain forecasting methods and error techniques	FOR110
Maintain forecasting parameters (application control)	FOR100

Function	Program
Maintain item class/warehouse overrides	FOR140
Maintain item/warehouse data (from Menu FOR01)	FOR170
Maintain seasonality factors	FOR130
Maintain seasonality history	FOR160
Maintain simulation item warehouse data (from Menu FOR02)	FOR170
Maintain simulation security codes	FOR180
Perform forecast modeling (from Menu FOR)	FOR500
Perform simulation modeling.(from Menu FOR02)	FOR500
Print basis file data	FOR155
Print forecast analysis	FOR230
Print forecast periods listing	FOR125
Print forecasting parameters (application control)	FOR100
Print forecasts Vs base report	FOR200
Print forecasts Vs open orders report	FOR240
Print forecasts	FOR210
Print item class/warehouse overrides listing	FOR145
Print item/warehouse data	FOR175
Print methods and error techniques	FOR115
Print outliers report	FOR260
Print product line summary report	FOR220
Print seasonality factors listing	FOR135
Print seasonality history listing	FOR165
Print security code listing	FOR185
Print tracking signals report	FOR250
Purge and roll historical data	FOR900
Record year-end seasonality history	FOR940
Select simulation model	FOR600
Update current demand	FOR910
Update current forecast	FOR920

Function	Program
Update open orders	FOR915

The same inquiries are available for forecasts and simulations. All forecast reports are available for simulations except the tracking signal and outliers reports. The programs for forecasts are accessed through the Forecasting menu, FOR. The programs for simulations are accessed through the Forecasting Simulation menu, FOR02.

Notes

Chapter 4
Inbound Logistics Management

4

This is a high-level overview of the Inbound Logistics Management. The chapter consists of the following topics:

Product overview

The Inbound Logistics Management (ILM) product allows you to establish, track, and report on the costs associated with inbound transactions. This product also communicates with several other SSA ERP_{LX} products to provide complete support for inbound delivery processing. ILM creates inbound delivery purchase orders through the Purchasing product; Accounts Payable posts actual costs for inbound delivery charges; and SSA ERP_{LX} updates inventory costs through the Item Costing application.

Presented below are the highlights of the Inbound Logistics Management product. You can use this release of ILM to:

- Set default charges associated with the vendors you use and the ship-to locations allowed in purchasing such as warehouses, customers, or vendors.
- Use existing OLM default charges with both inbound and outbound shipments. You can use the ILM product to mark these charges for use with inbound, outbound, or both types of shipment. In addition, you can choose to use the expected inbound charges in place of the actual charges to run preliminary inventory costing. This is useful when you want to account for charges that are not included on invoices, such as bank charges.
- Obtain highly accurate freight charge calculations by creating vendor ship-from addresses. In the same way that a customer may have multiple ship-to addresses, a vendor may also have many ship-from addresses. The distance from the destination of these ship-from addresses determines the freight charge from each location.
- Create inbound deliveries using groups of purchase order lines from a specific vendor ship-from location. SSA ERP_{LX} automatically assigns the default charges you established to the inbound delivery.
- Calculate the estimated cost of the delivery using the default charges and the detail information you enter. As you receive the goods listed on the purchase order, ILM automatically updates the inbound delivery received quantities and recalculates the estimated costs based on the actual quantities received. ILM calculates the estimated costs of the delivery a third time during the delivery confirmation process.
- In certain circumstances shipping charge costs are incurred before the delivery of the goods. These costs, which have previously been calculated or manually entered, may be converted to a Service Purchase Order at any stage before completion of the delivery.

- Confirm deliveries through the confirmation process. Once you have received all the order lines on the inbound delivery, you can create purchase orders for any vendor charges associated with the delivery. During confirmation, ILM recalculates the estimated charges for the delivery.
- Post actual costs. Once you receive the vendor invoice, you can post the actual costs to the vendor purchase order and the inbound delivery charges table for later inventory costing.
- Update actual costs using three different methods:
  - Indicate on the shipment charge record that you want to use the estimated costs as the actual costs. During delivery confirmation, ILM updates the actual costs with the estimated costs.
  - Use ILM500 series to manually maintain the inbound delivery cost information.
  - Allow ACP500 to post actual charges to the inbound delivery charge table when you create vendor purchase orders.
- Select deliveries to use for inventory costing. Once you have recorded all the actual costs for the delivery, you can use ILM600 to enter selection criteria for the deliveries you want to use. SSA ERP_{LX} posts to the appropriate item cost bucket the cost of all deliveries that meet the criteria.

Glossary

Actual Costs
Actual costs reflect the final charges associated with the delivery. Actual costs differ from expected costs which are preliminary estimates.

Consignee
The person, firm, or representative to whom a shipment is sent. For outbound deliveries, the consignee is the person to whom you want to send a shipment. For inbound deliveries, you are the consignee.

Consignor
The person, firm, or representative who sends the goods. For outbound deliveries, this is the address of your shipping department. For inbound deliveries, the consignor is the vendor who shipped a delivery to you. The consignor is also referred to as the shipper.

Cost Bucket
One of 999 user-definable cost categories for an item. A cost bucket groups the cost of similar items together for inquiry, analysis, and reporting. You can define cost buckets in SSA ERP_{LX} using the Define Cost Buckets (CST150) program.

Inbound Delivery
An inbound delivery is the delivery of the goods you ordered from a vendor or supplier using a purchase order.

Planned Delivery
This type of delivery has orders assigned to it, but the arrangement of the delivery is not static. In a Planned State, any number of changes can be made to the delivery, including changes to other carriers for a better rate.

Chapter 5
Inventory Management

5

The chapter consists of the following topics:

Overview

This chapter Provides information on the SSA ERP$_{LX}$ Inventory Management.

No other SSA ERP$_{LX}$ products are required before implementing this product; however, the Inventory Management system is a prerequisite for several other products. The Inventory Item Master program is used by many other SSA ERP$_{LX}$ products.

The Inventory Management system gives management concise and accurate information for the control and planning of finished goods, in-process, and raw material inventory. SSA ERP$_{LX}$ provides summary and detail analysis for both accounting and production control purposes. It also provides a sub-system for complete cycle counting and physical inventory reconciliation.

SSA ERP$_{LX}$ includes full support for dates up to and beyond the year 2000. Although most date fields display as 6 characters, SSA ERP$_{LX}$ records the date as 8 characters. Refer to Company Name and Date Format (SYS820) in the System Parameters Generation program (SYS800) for information on configuring Century Dating and entering dates beyond 1999.

The Inventory Management product includes the following functionality:

- Multiple warehousing
- Multiple locations (bins) within warehouses
- Lots within locations
- On-line transaction posting
- Transaction effects that you define
- On-line display of inventory transaction history, location, inventory, order, and allocation detail
- Multiple user defined selling units of measure and global units of measure for automatic conversion
- Inventory Valuation
- One-step, two-step, and process control cycle counting
- Inventory usage and turnover analysis
- Reorder calculations and inventory level recommendations
- Item alpha lookup
- Interface to the Configurable Ledger product

- Complete lot control and traceability
- Complete container control and traceability
- Expiration and retest dates by lot
- Vendor lot numbers
- Physical inventory by warehouse and item
- Complete physical and book vs. physical inventory reporting
- Automatic reconciliation of physical to book (some or all warehouses)

Processes

Transaction history

A record of every inventory transaction is kept on the disk and is available for inquiries and reports. Transaction history is available for immediate inquiry by item or by item and location in the Material Status Inquiry (INV300D). The inventory transaction record holds data such as the quantity, date, reference number, cost/value, transaction type, scheduled date, and master reference number (customer, vendor, etc.), lot numbers and warehouse/location information.

Inventory stocking levels

SSA ERP$_{LX}$ supports four levels of inventory. Summaries of stock at each level may be viewed via the Material Status Inquiry (INV300D) or by way of reports. The four levels are:

- By Item
- By Item + Warehouse
- By Item + Warehouse + Location
- By Item + Warehouse + Location + Lot

The lot number level and/or container of inventory may cross multiple warehouses and locations. It may be thought of as "Item + Lot" or "Item + Lot + Container". Locations are within warehouses. There is no limit on the number of warehouses, locations or lots that may be assigned to a given item.

Multiple warehouses

SSA ERP$_{LX}$ allows for as many warehouses as needed for any item. Each warehouse may be designated as "allocatable" (allowed for order processing), or "non-MRP" (not used in the MRP netting logic). This allows your business to set up staging areas and quarantined warehouses. The warehouses may be either physical or "logical" warehouses.

Multiple locations

SSA ERP$_{LX}$ allows for as many inventory locations as desired for any item. The location number is six characters long. This allows sub-locations to be defined within a given location (aisle, bin, row).

Item-warehouse combination inventory and allocation data is stored. Optionally, sales history is available by item and warehouse, showing sales by units for the past twelve months. Total monetary amounts of sales by warehouse are also available showing year-to-date, the last twelve months individually, and previous year-to-date.

Lot inventory

SSA ERP$_{LX}$, on an item by item basis, requires input of and performs tracking of lot numbers by inventory transaction. Both forward and backward lot traceability are supported. Inquiries and reports giving the stock, allocation, and movement of inventory by lot are provided. Shelf life, expiration date and reject data are all automatically supported for each lot. The expiration date is used automatically in this allocation logic and MRP logic.

Lot/serial number control

The Lot Master record allows SSA ERP$_{LX}$ to track unlimited lots for any given item. Available information includes:

- received, QA approve, sterilized, expire and retest dates
- vendor, vendor lot, P.O. and reference number (optional)
- lot status and factors

Multiple user-defined selling units of measure

SSA ERP$_{LX}$ allows you to define as many selling units of measure as needed for any item. Using the Unit of Measure Maintenance program (INV120), you set up multiple conversion factors for converting from stocking unit of measure to selling unit of measure. Conversion factors are multipliers - selling unit of measure times the multiplier equals the stocking unit of measure. You can get a listing of conversion factors by item number using Unit of Measure List (INV125).

In addition to item specific units of measure, you can define global units of measure. When you enter an order using a customer's item number, your internal item number, or an alternate item number, SSA ERP$_{LX}$ checks the item selling unit of measure in the Item Master file (IIM). If no match is found, SSA ERP$_{LX}$ checks the Item Unit of Measure file (IUM), first for an item specific conversion factor, then, if none is found, for a global conversion factor.

User definable transactions

You define the allowable transaction effects. You can define new transactions without re-programming. You can also define the descriptions of these transactions, their required input data, and their effects on the data files. For example: You may want to define a special "scrap" transaction to automatically add recovered material into inventory and to affect the shop order from which the material was scrapped.

Transaction reasons

Each user-defined transaction can have multiple user-defined reason codes for even more specific analysis.

Location transfers

Inventory may be transferred between locations with one transaction entry. These transfers are logged as transactions just as any other defined transaction (see above).

Cycle counting

SSA ERP$_{LX}$ supports one- and two-step and process control cycle counting. A report of items to be cycle counted can be printed and then the resulting balances can be posted to inventory through a defined cycle count transaction. Various cycle count selection criteria may be entered. These criteria include:

- Item Criteria: ABC code, item class, item number

- Warehouse Criteria: item number, warehouse number, location, and lot number

The number of cycle counts per year may also be defined and items up for cycle counting can be automatically provided. Any item whose inventory has gone negative at any level is automatically selected for cycle counting. There is a Cycle Count History file (ICY) that is used for Cycle Count Variance reporting by item, warehouse, and cost.

Inventory posting

All inventory posting is real time. SSA ERP$_{LX}$ edit checks on-line according to the transaction definitions.

An audit trail of all posted transactions with batch and session totals is printed immediately after the program ends. All entered data with additional descriptive information is redisplayed for visual verification (including the new inventory balance) before each transaction is posted.

Multiple transaction types may be processed in the same program session.

Orders and allocations

A detail inquiry into all open orders and allocations is available which sequences the orders and allocations by date. This is done dynamically, so that if a date is changed on a customer order, purchase order, shop order, or a shop allocation, then this is automatically resequenced on the inquiry. The inquiry also displays a running forward balance of the projected inventory level.

Reordering

SSA ERP$_{LX}$ supports lead times, reorder points, reorder quantities, and calculates an average usage. In addition, year-to-date usage and receipts are tracked. The reorder recommendations on the reorder report take these into account.

Inventory valuation

Inventory can be valued at either last cost or weighted average. Automatic calculation of costs is available through the Purchasing and Cost Accounting products. Each inventory transaction is also costed and saved. In addition, profitability information is available.

If the SSA ERP$_{LX}$ Cost Accounting product is not installed, SSA ERP$_{LX}$ uses the actual cost from the Cost Master file (CMF) to update the general ledger for inventory locations transfers.

Physical inventory

A complete physical inventory sub-system is provided. This includes physical inventory tags, missing tag list, book versus physical inventory, and automatic reconciliation of physical to book. A physical inventory may be done for all warehouses or for any set of individual warehouses.

The physical inventory should be taken after the inventory close for a month. Then the physical inventory should be reconciled to the book inventory before the close of the next month. Reports include physical inventory by item and by warehouse/tag. Also, SSA ERP$_{LX}$ reports book-versus-physical-inventory by item and by warehouse.

Warehouse and allocation concepts

The setup of warehouses and locations determines how SSA ERP$_{LX}$ Customer Order Processing and Shop Floor handle allocations. This section discusses how the choice of warehouses impacts the allocation logic in the two order applications. Conceptually, allocations of inventory to customer order line items and allocations of inventory to component lines on a shop order are identical and are discussed together in this section.

Allocations are done at two levels in SSA ERP$_{LX}$. At order entry time (or shop order release time), each customer order line (and each shop order component line) has a warehouse attached to it. For a given shop order the warehouse is the same for all components; for a given customer order each line item may have a different warehouse. A warehouse level allocation is done at order entry time; that is, SSA ERP$_{LX}$ keeps track of the total inventory for each item at each warehouse and the total quantity ordered of that item at each warehouse. The material availability check in order entry is simply based on a comparison of the available inventory at the warehouse with the

new order quantity. The releasable orders report (MRP250) makes the same calculation for shop order components.

At the warehouse level, inventory is usually over-allocated because it is normally not needed at order entry time but rather by the date specified in the customer or shop order. There is no edit in SSA ERP$_{LX}$ at the warehouse level to prevent any number of orders from being entered regardless of the inventory position. (Of course, you may receive numerous action messages from MRP).

The allocation at the warehouse level is relieved when the material is issued (shipped). Over-issues or under-issues are properly accounted for when reducing the allocation.

The second level of allocation is done when picking slips are printed. In order entry this is a result of shipping paper release and printing (ORD550D1); in shop floor control this is the result of the shop packet print (SFC520 or SFC550 or FAS510). This second allocation is done at the lot/location detail level. Specific lots and locations of inventory are allocated to the customer line items or shop order components. If you are not using lot control, then material from specific locations is allocated.

The allocation is a 'hard' allocation; that is, only inventory which is available is allocated. If no inventory is available then there is no allocation. For a given line, ONLY INVENTORY IN THE WAREHOUSE FOR THAT LINE IS CONSIDERED FOR ALLOCATION. The picking slips print the total quantity required and then all of the detail allocation with lots and location numbers and quantities.

SSA ERP$_{LX}$ allocates from inventory in two different ways, depending on how you set up default values in the Warehouse/Inventory file. The default is determined by your entry in the 'Default Location' field of the JIT Override Location Maintenance program (JIT110) run from the JIT menu (JIT).

If you set up a specific default location, inventory is allocated from that location ONLY. There is a special case of the default location entry: '*BLANK'. This causes allocations to be done from a location defined as 'BLANK'. You would use this if you are not routinely using locations in your inventory system. You might have a few locations for special uses, but most inventory is in a general (BLANK) location.

If you leave the default field blank (no entry - NOT '*BLANK' as described above), the allocation from inventory is done in sequence alphanumerically by lot then location number. If the item is lot controlled, lot allocation totals are kept in the Lot Master file.

The concept of hard allocation is that picking slips should not be printed until the material needs to be pulled. The planning system makes sure that the

right inventory is available on the macro-level. The hard allocation just tells you from where to pull it, and makes sure no other order pulls that specific inventory. An obvious requirement is accurate and timely inventory balances - for which the cycle counting is very helpful.

Detail allocations may be adjusted at any time after the order is entered - even before pick slips are printed. There is an on-line allocation adjustment program (ORD720 and SFC720) that allows detail inventory to be reviewed and allocated to orders and for existing order allocations to be changed.

Detail allocations are relieved as material is issued.

Product workflow

The system flow depends on what other products are installed on your system, and whether you are in a manufacturing or distribution business. Basic inventory data is stored in an Item Master file, which contains the identifying Item Number, Item Description and other details, plus:

- Opening Balance of quantity on hand for the month
- Receipts into stock this month
- Issues from stock this month
- Adjustments to stock this month

Quantity on-hand during the month is calculated as: QOH = Opening Balance - Issues + Receipts + Net Adjustments

Items are stored in warehouses, and in locations within warehouses. The Warehouse/Location Inventory file contains the opening balance, receipts, issues and adjustments for each item as held in each location in each warehouse. SSA ERP_{LX} provides a Material Status Inquiry which displays the total on-hand for a selected item in each warehouse, and in which locations.

Some items may need to be controlled by 'lot' - usually a batch from production, sometimes with an expiration date. These items are flagged in the Item Master as requiring Lot Control, and require a lot number when set up in the Lot Master file. Thereafter, SSA ERP_{LX} expects a lot number to be supplied before any issues are made and checks that the lot is available for use. (Transaction processing allows you to create lots when entering a transaction.) The Material Status Inquiry allows you to display the lots on file.

Daily running

The Daily Running program consists of:

1. Data entry of transactions--issues, receipts, transfers, and adjustments (which updates the master files immediately, and prints an audit report). Customer orders and shop orders may require multiple-issue transactions, releasing all the items on the order at once. The various types of transactions appear on a menu.

Programs	Description
INV500D	Inventory Transactions
INV510	Warehouse Transfer
INV310/515	Cycle Count Worksheets and Posting

2 Post Inventory To General Ledger - creates journal entry for all inventory transactions and prints a list of JEs in error. See INV920 for more details.

Programs	Description
INV920	Inventory to G/L Post

3 On-request reports and Inquiries

Programs	Description
INV300D	Material Status
INV2xx	Various Reports
INV330	Warehouse Inquiry
INV355	Transaction Effect Selection

Period-end running

The period-end running program includes:

1 Reports: Each company has its own regular reports, probably including Stock Status, Sales/Profit analysis, transaction history.

Programs	Description
INV2xx	Varius Reports

2 Month-end close: This calculates the new Opening balance for each item, clears the month fields, updates year-to-date fields, and backs up to diskette any history transactions that are older than the number of days specified in the system parameters. (SYS824)

Programs	Description
INV903	Month-end CLose

3 Post Physical - Inventory: Reconciles physical inventory to book (system) values, adjusts the item master inventory quantities accordingly and generates transactions for Inventory History file.

Programs	Description
INV6xx	Physical Inventory Tran/Close Programs
INV7xx	Physical Inventory Reports

4 Year-end close - (when due): All 'this-year' totals are moved into 'last-year', then 'this-year' is cleared.

Programs	Description
INV910	Year-end Close

You cannot reprint reports for May, for example, after you have closed May. Be sure that all reports have been completed before close. Also, you cannot begin processing for the new month until the old month is closed - in particular, you should realize that the release of customer and shop orders can give rise to inventory issues. If they occur after your month-end reports but before the month-end close, the reports will not show the true month-end situation, and next month's reports will not agree. The audit trail reports should always be carefully filed in date order, so you can reconcile any such discrepancies. The Transaction History report is also helpful.

If you must access an old month, you can get it from backup copies on diskette, provided that month is still available. First, backup the current system, then restore the old month and print the reports, then restore the current system. (There may be a problem if you have since had a new version of the system installed -- check with your SSA ERP_{LX} affiliate.)

Product quick reference

The table below provides the functions used within this product as well as their associated program codes. Program codes are used to quickly access a function. To use a program code, type the program code in the empty field at the top of a menu panel and press Enter. The system displays the first panel in that program.

Function	Program
Allow allocations at a location	INV170
Assortment item type	INV171
Clear cycle counts	INV810
Clear physical inventory file	INV660
Close physical inventory (update book)	INV650
Close the month	INV903
Close the year	INV910
Copy an item	INV100
Deny allocations at a location	INV170
Display item data/orders/whses/lots/locs/history	INV300D
Kit item type	INV171
List alternate item	INV185
List item classes	INV165
List item status codes	INV196
List item types	INV176
List items	INV105
List locations	INV175
List lots	INV135
List reason codes	INV145
List unit of measure conversions	INV125
Maintain alternate items	INV180

Function	Program
Maintain capacity for location (volume, weight, container)	INV170
Maintain inventory system parameters	INV820, CST820, SYS824
Maintain items	INV100
Maintain item classes	INV160
Maintain item notes	INV190
Maintain item status codes	INV195
Maintain item types	INV171
Maintain locations (within warehouses)	INV170
Maintain lots	INV130
Maintain physical inventory tags	INV600
Maintain pick sequence numbers	INV170
Maintain reason codes (for transactions)	INV140
Maintain transaction effects	INV150
Maintain unit of measure conversions	INV120
Maintain vendors	ACP100
Maintain warehouses	INV110
Month-end Close	INV903
Phantom item type	INV171
Post cycle counts	INV515D
Post inventory transactions	INV500D
Post location transfers	INV510
Print ABC usage summary	INV220
Print alternate item list	INV185
Print book vs. physical by whse/item	INV700/705
Print cycle count variance by item/whse/cost	INV276/277/278
Print cycle count worksheets	INV310

Function	Program
Print inventory turns analysis	INV210
Print inventory valuation	INV260
Print lot inventory detail	INV280
Print missing physical inventory tags	INV710
Print physical inventory by item	INV720
Print physical inventory by warehouse/tag	INV740
Print physical inventory tags	INV620
Print reorder report	INV250
Print selected (open) cycle counts	INV520
Print stock status detail	INV200
Print stock status summary	INV230
Print transaction history	INV270
Purge Cycle Count file	INV015
Select items for cycle counting	INV310
System parameters definition/maintenance	INV820, CST820, SYS800, SYS824
Transaction Effect Maintenance	INV150
Year-end Close	INV910

Glossary

Item
A part, collection of parts, or finished product considered "inventory" for resale or manufacturing purposes. An item is the basic component in the Inventory product.

Item class
A two-character code that classifies items into product groups. Inventory reports are sorted and subtotaled by item class. You must have at least one item class on the Item Class Master file. If the Configurable Ledger product is in use, information from the Item Class can be used by macros to create journal entries.

Item number
A 15-character alphanumeric code which identifies an item. Every item must have a unique item number. On the AS/400, item numbers are left-justified and sorted in ALPHA order (in other words, A-Z followed by 0-9). This means that if you have numeric item numbers and you want them to appear in proper numeric sequence, you must zero-fill the fields so that they are all the same length. For example, use 10000 to 99999, not 1 to 999999. You can use a combination of letters and numbers, but the same principle applies -- use AA001 to ZZ999, not AA1 to ZZ999.

Item records are stored in the Item Master File (IIM).

Note: For complete information on the sorting sequence, refer to Item Alpha Lookup (INV350D-01)

Item type
A one-character code describing the kind of item, such as "finished product," or "raw material." For details, see the field explanations in the Master Files section of this manual. You must have at least one item type on the System Parameter file.

Location
A six-character alphanumeric code designating a physical or logical warehouse subdivision, such as a bin/rack, an aisle, or an idea such as "awaiting lab check." The location is used for tracking stock movements and specifying availability of stock for resale or manufacturing. Location codes are stored in the Location Master File (ILM).

Lot
A ten-character alphanumeric code identifying a particular batch of product for lot-specific items such as pharmaceuticals and other perishables. Lots are

received into warehouses and may be associated with locations. Lots are sold or released to the shop floor according to the availability as described on the Lot Master file (ILN). The operator can override automatic allocation of lots to orders. Full lot tracing is available upon request. Only items for which lot control has been requested are automatically validated by lot.

Off Site Location
A location that belongs to a warehouse but is not usually physically located within the warehouse. You define an off site location by entering a 1 in the Off Site Location Flag in the Location Master record. To move stock to and from the off site location, you must move it through an interim location. The interim location may be any Shipping (Type 6) or Receiving (Type 7) location within the warehouse. Move tickets and movement confirmation for off site movements always include two movement lines. One line indicates the movement between the off site location and the interim location. The other line indicates the movement from the interim location to the warehouse location.

User-defined
A term designating an entry created and maintained by the user. For example, reason codes for rejected items are user-defined codes. You might decide that items rejected for paint imperfections should be monitored. If you enter a reason code of "25" for a paint imperfection reject, you must consistently use "25" for these rejects so that reports listing this code are more meaningful to you. Keep a master list of user-defined codes to ensure consistent usage of the codes.

Vendor
A five-character numeric code identifying the supplier of an item. The vendor code is required in the Purchasing product; it is optional in the Inventory product. If a vendor code is used, it must already have been set up in Vendor Master Maintenance (ACP100 or PUR100).

Warehouse
A two-character alphanumeric code designating a physical or logical place where inventory is kept. You must have at least one warehouse on the Warehouse Master File (IWM).

Chapter 6
Outbound Logistics Management

6

This chapter provides a high-level overview about the information in Outbound Logistics Management. The chapter consists of the following topics:

Product overview

Outbound Logistics Management (OLM) is an SSA ERP$_{LX}$ product that allows control of all aspects of Supply Chain order fulfillment and deployment cycles. OLM facilitates all aspects of product shipping and tracking, which includes tracking freight costs at the item level.

SSA ERP$_{LX}$ includes full support for dates up to and beyond the year 2000. Although most date fields display as 6 characters, SSA ERP$_{LX}$ records the date as 8 characters. Refer to Company Name and Date Format (SYS820) in the System Parameters Generation program (SYS800) for information on configuring Century Dating and entering dates beyond 1999.

OLM enables you to:

- Assign Carrier Specific to Customer and Carrier Specific to Customer/Ship-To, and create overrides for those carrier assignments.
- Manually or automatically configure loads.
- Configure loads from the time of Order Entry through Pick Ship Confirmation.
- Use variable or negotiated (fixed) freight rates, as well as create overrides for those rates.
- Use tariff classes to determine freight rates.
- Generate carton information automatically at Pick Release, at Pick Confirm, from the Load Control Center, and during Auto Load Generation.
- Generate carton information manually using the OLM Packaging Maintenance program.
- View and maintain load line carton header and detail information.
- Use selection criteria to specify any combination of Master, Carton, and Signal label data you desire to transfer to business partner printing products for label generation.
- Extract SSA ERP$_{LX}$ database information for transfer to business partner products that generate international shipping documents.
- Check shipment packs to verify that the physical packs shipped correspond exactly to the packs listed on the shipping documentation and the Advance Shipping Notification (ASN). If mismatches exist, you can manually override them.

- Track shipments according to Bill of Lading (BOL) Number, PRO Number, or Shipment number.
- Use inventory forecasting that includes MRP, DRP, and Purchasing requirements.
- Use SSA ERP_{LX} Order Entry, Pick Release and Print, Pick Ship Confirm, Customer Maintenance, and Customer/Ship-To Maintenance functions.
- Define shipment capacity based on weight, volume, or number of pallets.
- State whether the Customer or Customer Ship-To require delivery appointments and an Advance Shipping Notification (ASN).
- Centralize freight charges according to specific items.
- Perform Hazardous Material Processing by warehouse and by item.
- Configure and monitor intermodal shipments.

OLM also supports multi-mode transportation (rail, truck, barge), hazardous material transportation, and freight accrual information.

About partial shipments

To ship and properly invoice partial shipments, wait until the entire order is shipped before creating the customer invoice.

If this is not possible, then:

- When you are ready to confirm the order, determine which items are available to ship. Confirm and ship only those items. This is the first partial shipment.
- Create a new load for the remaining parts of the original order. This is the second partial shipment.
- Dispatch and invoice the first partial shipment.
- Confirm, ship, dispatch, and invoice the second partial shipment when the items become available.

If you use the same Order Number and Load Number for both partial shipments, the system overwrites the Invoice Number for the first partial shipment when you invoice the second partial shipment. The result is incomplete shipping records and audit trails.

Creating a separate load for each partial shipment lets you invoice with a new invoice number, so you maintain complete records.

OLM master file setup

Before you can begin OLM processing, you must first establish the default values and initial data in the OLM set up files. You must set up the OLM Master files in the following order:

- OLM Master Code Tables
- SSA ERP$_{LX}$ Master Maintenance Files
- OLM Maintenance Files
- SSA ERP$_{LX}$ Order Processing Maintenance Files

WARNING! In order for OLM processing to work correctly, you must:

Set up postal code information in the Warehouse Master Maintenance (INV110D) program.

Set up postal code information in the Customer Master Maintenance (ACR100D) program.

Set up postal code information in the Address Master Maintenance (ORD100D) program.

Set up weight, volume, and pallet information in the Item Master Maintenance (INV100D) program.

For step-by-step set up instructions, see the procedures below.

Procedure 1 - Set up the OLM master code tables (SYS105D1)

Use the following procedure to set up the OLM Master Code Tables (SYS105D1):

1. Display the Master Code Table (SYS105D1).
2. Select the table you want to work with.
3. Verify that the codes and associated description options listed below actually exist in your system. If they do not exist, then create them.

Table ID	Description	Example Code / Description
CARRCHG	Carrier Change Code.	CEQ/Carrier Equipment Problems
DLVRYCD	Delivery Condition Code.	NTS/Not to Standards
EQUIPSTS	Equipment Status.	000=Available Equipment 001=Equipment in use
MODETRN	Mode of Transportation. Used to create Means of Transportation.	LD/Land
RATEBYTB	Rated by Flag. Used to calculate freight rates.	0=Weight, 1=Distance, 2=Volume, 3=Flat Charges
STATE	State/Province Codes. Verify that codes are set up for all states and provinces you ship to or ship from.	AK/Alaska
UOM	Unit of Measure. Used to determine Freight Rates, Means of Transportation and Truckloads.	LB=pounds, MI=miles
	Verify that codes are set up for all units of measure that you use.	
130	Languages.	
AIRALLOW	Aircraft Allowance.	
COM	Commodity Codes for Intrastate.	
COSTDESC	Cost Description.	
DOCTYPE	Document Type.	
FTRMABAS	Freight Term Basis.	
MASTFILE	Master Files.	
PRCBASIS	Percentage Basis.	
RATBASIS	Rate Basis.	
REFCODE	Reference.	
SHPOFCR	Shipping Officer.	
SHPSTS	Shipment Status.	

Table ID	Description	Example Code / Description
SPCHGBAS	Special Charge Basis.	
SUBFTERM	Sub Freight Term.	
VENDCLASS	Vendor Classification.	

Procedure 2 - Set up SSA ERP$_{LX}$ master maintenance files

Use the following procedure to set up the SSA ERP$_{LX}$ Master Maintenance files:

WARNING! In order for OLM processing to work correctly, you must set up Postal Code information in the Warehouse Master Maintenance (INV110D) program.

Step	Access this program	Perform this action step
1	Currency Code Master file (CLD107)	Create a code for all currencies.
2	Duty Master file (OLM107D)	Create duty file records.
3	Country Master file (SYS117D)	Create codes for all countries you will be shipping to.
4	Country/Duty Xref file (OLM103D)	Create cross-reference relationships between countries and duties.
5	Bank Account Master file (ACP140D1)	Create all bank accounts.
6	Vendor Master file (ACP100D1) or (PUR100D1)	Create a vendor number for all carriers.
7	Container Maintenance Master file (API140D)	Create container maintenance records.
8	Commodity Code Master file (PUR180)	Create a commodity code for freight services.
9	Salesperson Master file (SAL100D1)	Create a record for each salesperson.

Step	Access this program	Perform this action step
10	Warehouse Master file (INV110D1)	Verify that the address and origin postal code have been entered, as well as hazardous material processing activation (if applicable).

Procedure 3 - Set up OLM maintenance files

Use the following procedure to set up the OLM Maintenance files:

Step	Access this Program	Perform this action
1	Harmonization file (OLM191D1)	Enter the Harmonization/Annex number from the relevant Customs and Excise Tariff books and the effective start/end dates of the tariff.
2	Harmonization Number/Duty file (OLM193D1)	Define cross-reference relationships between Harmonization numbers and Duties.
3	Means of Transportation file (OLM110D)	Enter the applicable Means of Transportation information.
4	Equipment Master file (OLM120D)	Create an Equipment ID for each piece of equipment that is used for transporting materials. For example, trucks, trailers, vans, air vans.
5	Means of Transportation file (OLM110D)	Enter the applicable equipment information.
6	Freight Terms file (OLM115D)	Enter the applicable Freight Terms information.
7	Rate/Tariff Classification file (OLM125D)	Enter all rate and tariff classifications. (Supplemental Class is for NMFC/STCC).
	Shipment Charges (OLM162D1)	Create shipping charge codes.
8	Postal Code file (OLM170D)	Enter all postal codes to be used in Ship-To Addresses.

Step	Access this Program	Perform this action
9	Time Zone file (OLM175D)	Enter all time zone codes.
10	Standard Carrier file (OLM100D)	Enter all carriers for the Means of Transportation and Ship-To Postal Codes.
11	Carrier Rate file (OLM105D)	Enter all carrier rate information for the Means of Transportation and Ship-To Postal Codes.
12	Shipment Commissions Rate file (OLM142D1)	Enter shipment commission rates.
13	Shipping Zone file (OLM130D)	Enter all shipping zones for the Postal Codes being used.
14	Shipping Route file (OLM135D)	Enter the shipping routes for the above zones.
15	Terminal/Zone file (OLM112D1)	Enter the data for each Terminal/Zone
16	Distance Matrix (OLM180D1)	Enter the data for the Distance Matrix.
17	Load Rules file (OLM160D1)	Create all Load Rules and enter the load rule information.
18	OLM Notes file (OLM155D)	Enter the Notes information for all necessary categories.
19	Dock Scheduling file (OLM150D)	Enter the data for warehouses, dock numbers, dates and times.
20	Hazardous Classification file (OLM185D)	Enter the applicable Hazard Classes information.
21	Hazardous UN/NA ID file (OLM190D)	Enter the applicable Hazard UN/NA IDs.
22	Hazard Code Description file (OLM195D)	Enter the applicable Hazard Codes.
23	OLM System Parameter file (OLM800D)	Verify that the applicable parameters are accessible and enter the default information.
24	Auto Means Selection file (OLM810D)	Enter the data for the Auto Means Selection.

Procedure 4 - Set up SSA ERP$_{LX}$ order processing maintenance files

Use the following procedure to set up the SSA ERP$_{LX}$ Order Processing Maintenance files.

WARNING! In order for OLM processing to work correctly, you must set up Postal Code information in the Customer Master Maintenance (ACR100D) program; set up Postal Code information in the Address Master Maintenance (ORD100D) program; and set up weight, volume, and pallet information in the Item Master Maintenance (INV100D) program.

Set up the Inventory Management (INV) files

1. Display the Item Master Maintenance (INV100D1) panel.
2. Enter the:
   - FOB Price
   - Harmonization Number
   - Annex Number
   - Net Weight Per Unit
   - Length, Width, and Height
   - Units of Measure for Length, Width, and Height
   - Celsius and Fahrenheit Flashpoints
   - Default Container
   - Volume Per Unit
   - Weight Per Unit
   - Units Per Pallet
   - Item Hazard Code
   - Tariff Classification
   - Vendor Number
3. Display the Warehouse/Vendor Class Xref (INV170D) panel.
4. Enter the necessary Warehouse and Vendor Class information.
5. Display the Item Master (INV100D2) panel.

6 Enter the necessary Item Definition, Order, Demand, Supply, Quality, and Shipping information.

Set up the Order Maintenance (ORD01) files

1 Set up customer information in the Customer Master Maintenance (ACR100D) program.

2 Establish a cross-reference relationship between the customer and a Vendor Class in the Customer/Vendor Class Xref (ACR180D) program.

3 Set up ship-to information in the Ship-To Master Maintenance (ORD100) program.

4 In the Ship-To Master Maintenance (OLM140D-01) panel, set up the following default shipping information:

- Carrier code
- Means of transportation
- Freight terms
- Freight adjustment percent
- Appointment required flag
- Bank code
- Telephone number
- Facsimile number
- Data number
- Shipment commission
- Currency code
- Shipping Offices (I.C)
- Declaration parts 1,2, and 3
- Excise number

5 Establish a cross-reference relationship between the ship-to and a Vendor Class in the Ship-To/Vendor Class Xref (ORD160D) program.

Set up the Salesperson Maintenance (SAL01) files

1 Display the Salesperson Master Maintenance (SAL100-D2) panel.

2 Enter the Salesperson facsimile, data, and telephone numbers as well as the state and country codes.

Glossary

Carton
A grouping of inventory items regarded as a shippable unit.

Database Table Refresh
The Database Table Refresh function serves to refresh the local databases. When you refresh the local databases, updates Master files on local database with all changes from the server.

Load Rule
The user defined file containing the parameters the system uses when it automatically generates loads. During automatic load generation, the system performs the following processes to assemble a planned load:

- Reads the values and parameters in the specified Load Rules file
- Searches for Open and Unassigned orders that meet the Load Rules specifications.
- When the system finds an order that meets the Load Rule specifications, it places the qualifying order with other orders and makes a Planned Load. If the system places the order on a load, it records the fact that the specified order, line, and item are now part of a Planned Load and continues with the search.

Shipment
A specific portion of a load. A shipment is one or more orders going to the same destination so, if you have numerous orders going to the same destination, those orders are known as a shipment.

Planned Load
This type of load has orders and shipments assigned to it and is capable of shipment, but the arrangement of the load is not static. The Automatic Load Generation function has access to, and can take any number of orders from, this load. (If requested) and can apply them to another load to fill a shipment or truckload. In a Planned Load State, any number of changes can be made to the load, including changes to other carriers for a better rate.

Firm Planned Load
This type of load has orders and shipments assigned to it and is likely to be shipped as is. The arrangement of the load is basically static. The Automatic Load Generation function has no access to any of orders on this load. Because the load is not yet confirmed however, the orders on this load can be manually taken and placed on another load, but there **must** be a very

good reason for this action. For example, a load must leave immediately and must be made into a full load. An order can be taken from the Firm Planned load if it is the only order available that can make the load that must leave immediately into a full load.

Released Load
This type of load has shipments on the loading dock or in the truck and is ready to depart. The Automatic Load Generation function has no access to any orders on this load. Because the load is confirmed, the orders on this load are locked and cannot be manually taken and placed on another load.

Dispatched Load
This type of load is in transit and on its way to its final destination. The records are automatically passed to the purchasing system when the load is ‘dispatched’ from within the Load Control Center (LCC).

Chapter 7
Order Entry

7

The chapter consists of the following topics:

Overview

The Order Management, ORD, product is one of the key components of the Business Planning and Control System SSA ERP_{LX} product line. Use the ORD product to enter and maintain all types of orders, acknowledge and allocate stock and print a number of standard business documents.

System highlights

By using the Order Management product you can perform the following functions:

- Enter and maintain all order types from a single order entry and maintenance application
- Define required order processing events for each order
- Automatically generate various business documents at each order processing event
- Backorder automatically
- Establish customer and supplier item number cross references
- Optionally pre-allocate inventory online
- Consolidate orders online
- Check inventory availability and allocation by lot, location or container
- Inquire on open orders by customer name, customer number, item, request date, order or picker number
- Inquire on customers, customer quotes, ship-to locations, lot/location allocations, material status and warehouses
- Check customer credit
- Review and release four types of order holds : customer, credit, margin and user
- Maintain multiple addresses including: Ship-to, Promotional Payment-to, Invoice-to and Lock Box-to
- Perform special pricing by customer, salesperson, item and discount classes
- Setup contract and discount pricing with nine quantity breaks

- Maintain multiple companies, profit centers and locations
- Process made-to-order or one-time (special) items
- Perform optional batch detail allocations to orders
- Print pickable orders reports
- Maintain multiple customer terms per company
- View on-line shipment history
- Allocate to the location/lot/container level at order entry or picking time
- Control and monitor customer requests for returned goods
- Accept and process customer orders for inventory items shipped directly from a vendor to the customer

Order entry interfaces

Order Management works with many other SSA ERP_{LX} products to perform fully integrated order processing. The list below represents full product integration.

- Accounts Receivable
- Billing
- Configurable Enterprise Accounting
- Distribution Resources Planning
- Draft Management
- Forecasting
- Inventory
- Manufacturing Data Management
- Master Production Scheduling
- Multi Currency
- User Performance Measurement
- Promotions and Deals
- Sales Analysis
- Shop Floor Control

Processes

Order Entry uses the following processes.

Re-supply orders

A re-supply order, RO, is a special order (order type 9) used by the Distribution Resource Planning, DRP, System. It is used to ship from one warehouse, the supplying or ship-from warehouse, to another, the receiving or ship-to warehouse. ROs are entered through the order entry program, and are very similar to customer orders except that the customer is a warehouse.

The supplying warehouse treats an RO just like a customer order. Like customer orders, re-supply orders create a demand on the supplying warehouse, which affects forecasting and distribution requirements. Additional information, such as insurance value, is tracked for re-supply orders. However, unlike customer orders, there is no effect on sales, accounts receivable, or the general ledger. The default order class for re-supply orders must include a ship confirm event.

A separate RO receipt program allows ROs to be received. When a reupply order is demanded from the supplying warehouse, it is automatically picked up by the receiving warehouse as a scheduled receipt. Like any other scheduled receipt, reupply orders are received via inventory transactions.

The receiving warehouse treats ROs like purchase orders. They are scheduled for receipt of the order on a certain date. (SSA ERP_{LX} DRP keeps track of in-transit material through the scheduled receipt date for the receiving warehouse.)

Special pricing

To calculate and retrieve prices for Orders and Order Lines, SSA ERP_{LX} determines prices based on List Prices, Special Prices, Promotions and Deals, and User Override Prices. One Special Price applies to an Order Line or Order. Promotions can be cumulatively applied. Promotions keep track of the amount and quantity of sales tied to a promotion as well as the amount and quantity of invoice activity tied to a promotion.

Pricing method

Using Special Pricing you can establish separate pricing methods that make up a Special Price Book. By setting parameters you determine the characteristics of a special price.

To do so:

1. Determine whether to use the customer number or the salesperson number for special pricing. You set this parameter in Order Entry System Parameters, ORD820D-01.
2. Set a pricing hierarchy. You set this parameter in Order Entry System Parameters, ORD820D-02.
3. Select a Pricing Method. You set this parameter in Special Pricing Maintenance, RO140.
4. Select a Price Type. You set this parameter in Special Pricing Maintenance, PRO140.

   If you set pricing by Customer, you can use one of the following pricing methods:

Method	Description
0	Multi-Currency - Base price/item alone o
1	tem/Customer - item being ordered and customer placing the order
2	Customer - customer placing the order
3	Item - item being ordered
4	Item Discount Code/Customer - discount class of the item from the item master and customer placing the order
5	Item Discount Code - discount class of the item from the item master
6	Customer Discount Code - discount class of the customer from the customer master

7	Item/Customer Discount Code - item ordered and discount class of the customer from the customer master
8	Item Discount Code/Customer Discount Code - discount class of the item and discount class of the customer
T	Total Order Discount

If you set pricing by Salesperson, you can use one of the following pricing methods:

Method	Description
0	Multi-Currency - Base price/item alone*
1	Item/Salesperson - item being ordered and salesperson number
2	Salesperson - salesperson number
3	Item - item being ordered
4	Item Discount Code/Salesperson - discount class of the item and salesperson number
5	Item Discount Code - discount class of the item only
T	Total Order Discount

* Multi-currency pricing method is set in the item master using the MLT100 screen, the last screen in Item Master Maintenance to determine a multi-currency list price. This price applies to multi-currency applications and is not part of the Special Pricing hierarchy.

Price Types

You can choose one of four available Price Types when you create a Special Price record. SSA ERP_{LX} uses price type discounts when an order quantity or amount reaches a specified break point. Use these types to set the discount as either a percent or a discount price, fixed amount, and to base the discount on either quantity, number of items, or amount, currency value, totals. SSA ERP_{LX} automatically assigns Price Type 2 as a default, but you can select others. The price types available are:

Type	Description
1	Percent Discount - Based on Amount
2	Percent Discount - Based on Quantity
3	Discount Price - Based on Amount
4	Discount Price - Based on Quantity

You cannot use Discount Price Based on Quantity with: Customer alone when pricing by customer, Pricing Method 2, Customer Discount Code alone when pricing by customer, Pricing Method 6, Salesperson alone when pricing by salesperson, Pricing Method 2..

If you use a percent discount, price type 1 or 2, the value in the factor option is multiplied by either the list price for line level discount, or by the sum of the extended order lines for total order level discount. Therefore, a factor of 90% results in a 10% discount of the line or order. See the examples Price Type 1 and 2 that follow.

If you use a discount price, price type 3 or 4, the factor option represents a discrete value to be subtracted from the order total. See the examples Price Type 3 and 4 that follow.

Example: Price Type 1 - Discount Percent Based on Amount

Parameters: Item A List Price = 25.00

Amount	Percent
100	98
200	96
300	94

For every 100, monetary value, of product A ordered, a 2% discount is provided.

For every 200, monetary value, of product A ordered, a 4% discount is provided.

For every 300, monetary value, of product A ordered, a 6% discount is provided.

Result: If 3 units of Item A are ordered the Line Extended Amount is 75.00 No Special Price applies. Net Price per unit is 25.00.

If 5 units of Item A are ordered the Line Extended Amount is 125.00. A Discount Percent Factor of 98, 2% discount, applies. Net Price per unit is (25.00 * .98) = 24.50.

If 8 units of Item A are ordered the Line Extended Amount is 200.00. A Discount Percent Factor of 96 (4% discount) applies. Net Price per unit is (25.00 * .96) = 24.00.

Example Price Type 2 - Discount Percent Based on Quantity

Parameters: Item A List Price = 25.00

Quantity	Percent
4	98
8	96
12	94

For every 4 units of product A ordered, a 2% discount is provided.

For every 8 units of product A ordered, a 4% discount is provided.

For every 12 units of product A ordered, a 6% discount is provided.

Result: If 3 units of Item A are ordered the Line Extended Amount is 75.00 No Special Price applies. Net Price per unit is 25.00.

If 5 units of Item A are ordered a Discount Percent Factor of 98 (2% discount) applies. Net Price per unit is (25.00 * .98) = 24.50.

If 8 units of Item A are ordered a Discount Percent Factor of 96 (4% discount) applies. Net Price per unit is (25.00 * .96) = 24.00.

Example Price Type 3 - Discount Price Based on Amount

Parameters: Item A List Price = 25.00

Amount	Price
100	24.50
200	24.00
300	23.50

For every 4 units of product A ordered, a discount price of 24.50 is provided.

For every 8 units of product A ordered, a discount price of 24.00 is provided.

For every 16 units of product A ordered, a discount price of 23.50 is provided.

Result: If 3 units of Item A are ordered the Line Extended Amount is 75.00 No Special Price applies. Net Price per unit is 25.00.

If 5 units of Item A are ordered the Line Extended Amount is 125.00. A Special Price of 24.50 applies.

If 8 units of Item A are ordered the Line Extended Amount is 200.00. A Special Price of 24.00 applies.

Example Price Type 4 - Discount Price Based on Quantity

Parameters: Item A List Price = 25.00

Quantity	Price
4	24.50
8	24.00
12	23.50

For every 4 units of product A ordered, a discount price of 24.50 is provided.

For every 8 units of product A ordered, a discount price of 24.50 is provided.

For every 16 units of product A ordered, a discount price of 24.50 is provided.

Result: If 3 units of Item A are ordered the Line Extended Amount is 75.00 No Special Price applies. Net Price per unit is 25.00.

If 5 units of Item A are ordered a Special Price of 24.50 is applied.

If 8 units of Item A are ordered a Special Price of 24.00 is applied.

This program allows you to establish separate pricing methods In which are accessed dependent on:

- item numbers
- customer or salesperson numbers
- item discount codes
- customer or salesperson discount codes

- a combination of the above
- the total order amount

The following price type codes can be entered to denote the usage of the factor entries assigned to the price breaks below:

1=A percent discount based on price. The discount percentage in the Factor column applies to the total monetary amount ordered of this item if the corresponding total amount (for this item, customer, etc.) in the Qty/Price column is reached.

2=A percent discount based on quantity. The discount percentage in the Factor column applies to the item's list price if the corresponding item quantity amount in the Qty/Price column is reached.

3=A discount amount based on price. The total monetary amount in the Factor column is used as the item's list price if the corresponding total amount for this item, customer, in the Qty/Price column is reached.

4=A discount amount based on quantity. The total monetary amount in the Factor column is used as the item's list price if the corresponding item quantity amount in the Qty/Price column is reached.

The pricing methods use either a percentage discount factor or a discount amount for up to nine quantity/amount breaks. When an item is priced using a percentage discount factor (Price Types "1" and "2"), SSA ERP_{LX} accesses the appropriate discount factor based on the quantity sold; the unit price is then multiplied by the percentage discount factor. When an item is priced using a discount amount (Price Types 3 and 4), the system accesses a discounted net price which you have entered.

The pricing methods depend on four basic classifications, as well as a combination of these classifications, as indicated below:

The four basic classifications are:

- Item - the item being ordered
- Item discount - discount class of the item (from the item master)
- Customer (or salesperson) - the customer or salesperson placing the order
- Customer discount - the discount class of the customer

In addition, these four are complimented by four combinations of these basic classifications and an overall order discount.

When SSA ERP_{LX} checks for item discounts, it first determines if special pricing is based on the customer number or the salesperson number set on

the Order Entry System Parameters screen, ORD820D-01. Then it searches the pricing structures hierarchy defined on the next Order Entry System Parameters screen, ORD820D-02. Once it locates a pricing matrix for a specific item in any structure, it uses the discount factor in that structure.

If the start and end dates for multiple pricing methods overlap; SSA ERP$_{LX}$ uses the one with the most recent starting date when retrieving a pricing method, SSA ERP$_{LX}$ uses the one with the most recent starting date.

Note: If you defined different list prices in a List Price Book, SSA ERP$_{LX}$ bases the special price on the list price for the item. See List Price Maintenance, PRO150.

Special pricing data is stored in the Special Prices (ESP) file.

Inventory availability checking

When a customer order is entered for a particular item, SSA ERP$_{LX}$ performs an availability check. The system calculates the quantity of inventory available for the item by subtracting the stock committed to customer orders from the stock on hand. Optionally, it checks the inventory balances by warehouse. This is an informational check which you may override. The check takes into account order entry taking place simultaneously at other workstations.

Inquire on existing and planned inventory using the Status Inquiry program.

Customer credit checking

SSA ERP$_{LX}$ performs credit checking during Order Entry and Pick Release. Credit checking is based on the value entered in the "Credit Limit" option of the Customer Master record. If a customer's total "amount due" plus the "on-order" amount exceeds his credit limit, the customer is considered to have failed the credit check, and the Credit Check screen appears.. You can continue to process the order by overriding the message, cancel the order, or place it on "credit hold" status.

Use the Order Hold Manual Release and Order Hold Batch Release programs to release any customer orders on credit hold.

Taxes

Taxes are computed on a line-item basis at invoice print time (BIL500D) and then added to get the tax total for the invoice. Tax rates are retrieved from the Tax Rate Tables maintained in SYS150. These consist of a combination of a customer (or vendor) tax code, an item tax code, and a warehouse code. Each tax code is a five character alphanumeric field.

Warehouse and allocations concepts

The way you set up warehouses and locations determines how the SSA ERP_{LX} Customer Order and Shop Order products handle allocations. This section discusses how the choice of warehouses impacts the allocation logic in the customer order and shop order programs. Conceptually, allocations of inventory to item lines on a customer order and to component lines on a shop order are identical, and therefore are discussed together.

Allocations are done at two levels--the warehouse level, and the lot/location level.

Warehouse level allocation

The first level of allocation is the warehouse level allocation, which is done at order entry time ORD. At this level, SSA ERP_{LX} keeps track of the total inventory for each item at each warehouse and the total quantity of that item ordered from each warehouse. The material availability check performed in the Order Entry program, ORD, compares the available inventory at the warehouse with the quantity ordered.

At order entry time, a warehouse is assigned to each item line on the customer order (and each component line on the shop order). Although different warehouses may be assigned to separate lines on a customer order, only one warehouse is assigned to all of the component lines on a shop order.

Inventory is generally over-allocated at the warehouse level, because the inventory is usually not needed at order entry time, but rather by the "requested date" specified on the customer order. You can enter any number of orders regardless of the inventory status; however, warning messages are displayed if you enter orders that cause over-allocation at the warehouse.

An allocation at the warehouse level is relieved when the material is issued (shipped). Over-issues or under-issues are accounted for when the allocation is reduced.

Lot/location level allocation:

The second level of allocation is the lot/location level, which is performed when picking slips are printed. Lot/location allocation may be performed on-line in ORD720, which is accessed through ORD. In the Order Entry program this is a result of the release and printing of the pick slips (programs ORD550 and ORD560 respectively).

Specific lots and locations of inventory are allocated to line items on the customer order or to components on the shop order. If you are not using lot control, then material from specific locations is allocated.

The allocation at the lot/location level is called a "hard" allocation, because inventory that is available is allocated. If no inventory is available, then there is no allocation. For a given line item, inventory in the warehouse for that line is considered for allocation. The picking slips print the total quantity required and then all of the allocation details including lot numbers, location numbers, and quantities.

Allocations from inventory are performed two different ways, depending on how you set up default values in the Warehouse Inventory file (IWI). The default is determined by your entry in the "Override Location" field of the JIT Override Location Maintenance Program, JIT110, run from the JIT menu, JIT.

If the default is a specific location, the inventory is allocated only from that location. To make a special case of the default location, enter: "*BLANK." This entry causes allocations to be made from a location defined as "BLANK." You should use the special case default if you are not routinely using locations in your inventory system. You might have a few locations for special uses, but most inventory is in a general (BLANK) location.

If you leave the default field blank, that is no entry, the allocation from inventory is done in alphanumeric sequence by lot and then by location number. If you are using lot control, lot allocation totals are saved in the Lot Master file, ILN.

Picking slips should not be printed until the material needs to be pulled to fill an order. The planning system makes sure that the right inventory is available on the warehouse level. The lot/location allocation indicates where the inventory should be pulled from, and makes sure that no other order pulls that specific inventory. Accurate and timely inventory balances, assisted by the Cycle Counting programs, Menu INV03, are essential.

Detail allocations may be adjusted at any time after the order is entered, even before pick slips are printed. The on-line allocation adjustment program (ORD720) allows detail inventory to be reviewed and allocated to orders and for existing order allocations to be changed.

Detail allocations are relieved when material is issued.

Return material authorization

The Return Material Authorization, RMA, process controls and monitors the return of goods cycle.

SSA ERP$_{LX}$ generates an RMA which mirrors the terms and conditions of the return. You can copy the RMA from a processed invoice or enter it independent of an existing order. If you copy an invoice to create an RMA, SSA ERP$_{LX}$ copies regular lines, not special lines. You can manually add special lines as credits on the RMA. You enter RMAs in the same manner as a customer quote, and like a customer quote, an RMA has no immediate affect on inventory, accounts receivable, sales or the general ledger.

SSA ERP$_{LX}$ then generates a Return Material Document which provides the customer with the authorization to proceed with the return. Internal procedures, return reason codes and instructional notes on the RMA identify the disposition processing.

You can perform credit processing and determine update effects by entering the RMA number and assigning the appropriate order type.

Drop Shipment

SSA ERP$_{LX}$ provides a tightly integrated Drop Shipment processing capability. SSA ERP$_{LX}$ supports the creation, tracking and management of customer drop shipment orders through enhancements to the Order Management, Purchasing and Billing products.

The order processing professional initiates drop shipments during customer order creation. You may designate as a drop ship item any order line that meets user-defined drop ship controls. Designating a line as a drop ship line automatically creates a Drop Ship Request in Purchase Order Processing.

When a buyer responds to a Drop Ship Request by creating a purchase order, SSA ERP$_{LX}$ notifies the order processing department and cross references both the customer order and the purchase order. After vendor

shipment confirmation, SSA ERP$_{LX}$ automatically notifies billing to initiate the invoice process. SSA ERP$_{LX}$ supports the constant communication between the order professional, the buyer and the billing professional throughout the order cycle.

Order Management performs soft allocations for drop shipments to allow MPS/MRP to net customer order drop ship demand against open Purchase Orders. BIL650 will de-soft allocate the demand. Order Management does not allow hard allocations for drop ship items because the items are not physically received or issued from inventory.

Order Entry defaults to the Warehouse Master Default Receiving Location for all drop ship lines to specify the profit center for inventory and general ledger transactions.

Product workflow

The order processing work flow events determine the processing path for each order. You can define and configure these events by order class, ORD170,. Each order class is associated with an order type and a sold-to customer. You can attach a variety of standard documents to each order class which you can print or save as the order passes through each processing event.

The order type determines whether the order impacts inventory, sales history, or accounts receivable. You can define multiple order types to use with re-supply orders, financial orders and so on, ORD180.

The following paragraphs briefly describe the order processing work flow events. For a more detailed explanation of each event, refer to the program overview for each event.

Order Entry event

The Order Entry, ORD700, program is the entry point for an order into the system. It is the only work flow event that is required. Each order includes header detail and line item information. Acknowledgments print automatically when you exit this program.

You can update orders existing orders using the same program. After you update an order a change of order report prints automatically.

If a customer exceeds his or her credit limit, you can accept the order, reject the order, or accept the order subject to later "Credit Release." The Order Hold Manual Release, ORD580, and the Order Hold Batch Release (ORD680) programs allow you to release orders that you placed on hold in Order Entry. For example, if an order is on "credit hold," SSA ERP_{LX} does not release it, even if the customer has already paid. You must run one of the release programs before the order can be released for shipping. You can release individual orders, or all of the orders for that customer.

SSA ERP_{LX} allocates inventory instantly, so that the quantity still available is always up-to-date. If the quantity allocated for an order exceeds the quantity available, you can either reject or accept that particular line item on the order. You can accept order lines or entire orders as back orders or you can cancel them based on the back order option you defined for each customer in

Customer Master Maintenance. You can override this option during Order Entry.

After you enter and accept an order, it is immediately available for picking. SSA ERP$_{LX}$ considers these "open" orders. The Order Entry program prints the documents you assigned to the order class when you exit the program.

Pick Release event, ORD550

The Pick Release program enables you to release open orders, allocate inventory, and print picking documents. SSA ERP$_{LX}$ can release orders that are not on any type of order hold, customer, credit, margin, or user, and have not been fully shipped. To release open orders you can select orders by warehouse within a variety of ranges. Each order for that warehouse that falls within the specified parameter is displayed. You can release the whole order or individual line items. You can perform additional credit checking for each customer before Pick Release. You can perform optional allocations at the lot and location level within the warehouse of the customer line item. Note that stock allocations at this stage are only allocations, that is, they have not shipped. These detail allocations print on the picking documents. Any allocations made through the On-Line Allocation program are preserved.

Pick Confirm event, ORD570

This program allows you to confirm quantities that are actually shipped, and to backorder or cancel lines or orders that could not be shipped. Back order processing is based on the backorder codes you defined for each customer in Customer Master Maintenance, which may be overridden for individual orders during Order Entry. You can initiate order consolidation or reconsolidate at Pick Confirm. This process performs all inventory-related file updates and creates the required records for invoice processing.

Ship Confirm event, ORD590

If you have the OLM product installed, the optional ship confirm event requires that each load be confirmed for dispatch. This event completes the required status updates so that you can invoice order lines. You can produce shipping documents for each load.

Without OLM, you can use ORD590 to dispatch loads, complete the ship confirm event, and produce bills of lading and packing lists.

Invoicing event, BIL500

The Customer Document Release program, BIL500, creates and maintains regular and proforma invoices for customer orders.

Regular invoices notify customers of the money they owe. When you release regular invoices SSA ERP$_{LX}$ updates the Accounts Receivable (RAR), Sales History (SSH) and Sales Invoice History, SIH, files.

You can use proforma invoices for a variety of reasons. For example, proforma invoices provide documentation of valuation for a shipment of goods that must be insured. You can create proforma invoices either before or after order confirmation. SSA ERP$_{LX}$ automatically generates this type of invoice when you run the application.

For maintenance purposes, you can update invoice information without printing a copy of the invoice. This feature allows you to maintain master and transaction file information as frequently as you desire without printing the invoice each time.

Product quick reference

The table below provides the functions used within Order Entry as well as their associated program codes. Program codes are used to quickly access a function. To use a program code, type the program code in the empty field at the top of a menu screen and press Enter. The system displays the first screen in that program.

Function	Program
Acknowledge an order	ORD700
Allocate orders in batch by warehouse/date	ORD400
Allocate orders on-line by lot/location/container	ORD720
Consolidate/reconsolidate orders	ORD550
Copy order information to another order	ORD700
Copy quote information to a customer order	ORD700
Customer listing	ACR105
Delete closed RMAs	ORD935
Display open order information	ORD700
Display orders on credit hold	ORD580
Enter an order	ORD700
Enter customer quotes	ORD700
Include special lines in order total discount (flag)	SYS800
Inquire on customers	ACR310
Inquire on holds	ORD380
Inquire on lot/location allocations by lot or order	ORD720
Inquire on material status	INV300
Inquire on open orders	ORD700
Inquire on quotes	ORD700
Inquire on warehouses	INV330
Inquire on customer RMAs	ORD700

Function	Program
Maintain customers	ACR100
Maintain customer notes	ORD140
Maintain item cross reference	ORD150
Maintain an order	ORD700
Maintain an order line	ORD700
Maintain quotes	ORD700
Maintain customer addresses	ORD100
Maintain special prices	PRO140
Order exception report	ORD410
Override an order on credit hold	ORD700
Pickable orders report	ORD420
Pick confirm	ORD570
Pick release	ORD550
Print customer quotes	ORD260
Print open orders by class/item	ORD240
Print open orders by customer	ORD200
Print open orders by item/date	ORD210
Print open orders by customer item number	ORD280
Print open orders by planner	ORD250
Print open orders by salesperson	ORD220
Print open orders by warehouse/date	ORD230
Print order exceptions (orders not fully allocated)	ORD410
Print picking documents	ORD550
Print shipping documents	ORD590
Print special price listing	PRO140
Print item cross reference listing	ORD155
Purge order files	ORD990
Purge quotes	ORD930

Function	Program
Release all orders for a customer from credit hold	ORD680
Release one customer order from credit hold	ORD580
Release order for picking	ORD550
Select orders to pick	ORD550
Select paperwork for special line printing	SYS800
Select special pricing method (salesperson/customer)	SYS800
Set special pricing hierarchy	SYS800
Ship Confirm	ORD590
Special price listing	PRO140
View customer orders on hold	ORD380
View last customer order number used	SYS800
View last quote number used	SYS800

Glossary

Back-ordering
The process of placing a line of an order back into "open" condition, so that it can be re-released later after the goods or an acceptable substitute are available. A line placed on back order is not invoiced even though the rest of the order is invoiced.

Billing
The process of reviewing and releasing previously entered customer orders, printing the invoices, and updating Accounts Receivable, Inventory, Sales and General Ledger files.

Credit hold
The method of identifying customers who have exceeded their credit limits. If, during order entry, you find that the customer has exceeded his credit limit, you can accept the order, reject the order, or accept the order on "credit hold." The order can be acknowledged, but not processed further until it has passed through the credit release programs.

Item
A part, collection of parts or finished product that is considered to be inventory for the purposes of resale or manufacturing. The item is the main element of the Inventory product.

Item class
A product group identified by a two-character item class code. Inventory reports are usually sorted and subtotaled by item class. You must identify at least one item class, which is stored in the Item Class Master file, IIC. If you are using the General Ledger product, the Item Class is used to specify the G/L Revenue account, Cost of Goods account, Purchase Price Variance account, and Accrued Liability account affected by sales amounts of items in this item class.

Item umber

The unique identifier for an item. Every item must be assigned a unique item number that consists of up to 15 alphanumeric characters, PEN530621A or 100056453218. Within SSA ERPLX, item numbers are left-justified and sort in alphanumeric order, A-Z followed by 0-9. If you use numeric item numbers, you must fill them out with zeros so that they are all the same length. Use 011111 to 999999, not 1 to 999999. Otherwise, they do not sort properly. If you use alphanumeric item numbers, the same principle applies. Use AA001 to ZZ999, not AA1 to ZZ999.

Item type
A description of the nature of an item (finished product, raw material, etc.) that is identified by a one-character item type code. You must identify at least one item type code, which is stored in the Item Type file (ZTP).

Location
A subdivision of a warehouse (a bin, rack, aisle, or idea such as "awaiting lab check") that is identified by a six-character location code. The location code is used for tracing stock movements and for specifying availability of stock for resale or manufacturing. The Location code is stored in the Location Master file (ILM). Location codes are optional.

Lot
A particular batch of product (pharmaceuticals, perishables) that is identified by an alphanumeric lot code. Lots are received into warehouses and may be associated with locations. Lots are sold or released to the shop floor according to their availability as described in the Lot Master file (ILN). Automatic allocation of lots to orders may be overridden. Full lot tracing is available on request. Lot control is defined by item. Those items designated as "lot-controlled" items (by a flag in their Item Master file (IIM)) are validated by lot.

Open order
An order which has been entered and acknowledged, but has not yet been fully invoiced (billed).

Order Entry
The process of entering customer orders, with on-line facilities (credit checking, inventory availability, delivery addresses, pricing). Orders may be entered and amended as required, but are not put on permanent file until they are acknowledged.

Order type
An alphanumeric code that identifies the specific type of order and the types of information recorded for that order.

There are nine predefined codes (1-9) that represent predefined order types. Order Type = 9 is used for DRP processing for re-supply orders when the customer is a warehouse being re-supplied by DRP. The codes and their respective transaction effects are illustrated below:

Order type transaction effects

Order Type	Affect Inventory Balances	Affect Sales Statistics	Affect Accounts Receivable and General Ledger
1	YES	YES	YES

Order Type	Affect Inventory Balances	Affect Sales Statistics	Affect Accounts Receivable and General Ledger
2	YES	YES	NO
3	YES	NO	NO
4	YES	NO	YES
5	NO	NO	NO
6	NO	NO	YES
7	NO	YES	YES
8	NO	YES	NO
9	YES	NO	NO

In the table, the order types are presented vertically, and the three transaction effects form the horizontal index. The YES/NO values indicate which particular order type has been defined to perform a particular combination of transaction effects.

For example, an order type of 7 may be used for a credit memo when stock is not returned. In this case, you may wish to affect the customer's accounts receivable balance and the item's sales statistics, but not want to add the item back to inventory. Order type 7 has been predefined to have these system effects.

Order types 5, 6, 7 and 8 do not affect inventory balances; however, they do impact MRP and MPS.

In addition to the nine predefined order types, you can use any alphanumeric character as a user-defined code. This flexibility lets you set up codes to identify transactions that are unique to your applications. However, you can only define the meaning of these codes, not the system effects. All user-defined order types affect Inventory, Sales, and Accounts Receivable. That is, user-defined order types have the same system effects as the reserved order type "1."

Picking/Shipping

The process of releasing open orders and printing pick slips, which are sent to the warehouse for actual picking of goods. Once pick slips have been printed, the order is described as picked and is ready to be invoiced (billed), subject to any changes required if inventory is not available to fill the order as listed.

Post-Ship Billing
The process of creating and releasing orders for the purpose of recording sales after the goods have been shipped (over-the-counter sales). Invoices are printed and Accounts Receivable, Inventory, Sales and General Ledger files are updated through the post-ship printing and invoice register programs

Re-supply order
A special order (identified by Order Type 9) through which items are shipped from one warehouse to another. Re-supply orders are entered through the Order Entry program (ORD) and are processed just like customer orders by the supplying ("ship-from") warehouse. Pick slips are printed and any adjustments are made through invoice release (BIL500D). Re-supply orders create demand on the ship-from warehouse just like customer orders, and they affect forecasts and distribution requirements. (See the discussion on Re-supply Orders in the Product Overview section of this document for more information.)

Salesperson master
The file (SSM) that stores the salesperson's number, name and address, commission code, etc. Each salesperson is assigned a unique six-digit number. Salesperson numbers are maintained in SAL100 and listed in SAL110. You must identify at least one salesperson.

Ship-to Master
The file (EST) that stores the delivery "ship-to" addresses for customers. Ship-to addresses are usually different from the customer's postal address. The ship-to address can be overridden at order entry time. Ship-to addresses are maintained in ORD100 and listed in ORD110D.

Special Price master
The file (ESP) that stores special pricing methods which are dependent on the customer number, item number, customer discount and item discount. Special pricing is searched for and applied during Order Entry, but can be overridden. Special pricing is maintained in PRO140 and listed in PRO240.

Total Order discount
A pricing method which is based on the total invoice amount, taking into account any reduced quantities due to partial shipments. The terms "Total Order Discount" and "Order Total Discount" are interchangeable throughout the product; their meanings are identical.

Warehouse
This is the place where inventory is stored. Each warehouse is identified by a two-character code (CH - Chicago) that is stored in the Warehouse Master file (IWM). You must identify at least one warehouse.

Notes

Chapter 8
Promotions and Deals

8

The chapter consists of the following topics:

Overview

Promotions and Deals are marketing incentive programs used by distributors and manufacturers to stimulate sales, discourage competition, and increase market share. As an element of the marketing mix distribution, product development, advertising, customer service, direct selling, quality and pricing, these incentive programs play a vital role during the product life cycle.

The SSA ERP$_{LX}$ Promotions and Deals product addresses all aspects of Promotions and Deals processing as it relates to Sales Order Processing, Billing, Accounts Receivable, General Ledger and Sales Analysis.

Marketing and sales professionals require the capability to track and analyze Promotions and Deals based on a Promotion Calendar. The SSA ERP$_{LX}$ Promotions and Deals Calendar is set up with start and end dates with an associated period. For a customer order to qualify for a promotion or deal, the order entry date and/or the request date must fall during the promotions and deals period.

Processes

The promotions product includes:

- Sequentially assigned Promotions and Deals numbers during Promotions and Deals Maintenance
- (Optional) SSA ERP_{LX} Promotions and Deals can automatically assign Promotions and Deals during customer order processing
- More than one promotion or deal can be assigned to the customer order and/or customer order line item.
- Promotions and Deals information can be printed on various documents throughout the Order Processing, Billing and Accounts Receivable cycle.
- Free format notes may be printed to include any additional information.
- Accommodates both "Off Invoice" and "Bill Back" terms.
- Supports fixed monetary amount discounts, percentage off discounts, free goods or cash value discounts, slotting or kitting allowances and split discounts.

Promotions interfaces

Promotions interfaces with the following products:

- General Ledger files
- Accounts Receivable: Company, Profit center, Terms, Salesperson, Customer Master
- Customer Order Entry files: Order Header and Order Lines, Ship-To Master, Special Pricing
- Sales Report Definition

Product workflow

The programs below outline the workflow of promotions and deals.

- Promotions and Deals Calendar Maintenance (PRO100)

  Define start and end dates and (optional) announcement dates for promotion periods.

- Promotions and Deals Master Maintenance (PRO110D1)

  Define promotion terms and conditions, qualifications, General Ledger account number, and profit center. Define Off-Invoice and Bill-Back splits.

- Promotion Master Listing (PRO115D)

  Use this program to print a report listing the promotion master information including promotion terms, conditions, and qualifications.

- Promotions and Deals Notes Maintenance (PRO120)

  Use this program to define promotion note text and specify whether to print the notes on acknowledgments, invoices or statements.

- Promotion Calendar Listing (PRO125)

  Use this program to print a listing of the start dates, end dates, and announcement dates for each promotion period and year, by company.

- Promotion Tracking Maintenance (PRO130)

  Use this program after running Cash and Memo Posting (ACR500) to reconcile any discrepancies and close out promotions where the discount offered does not equal the discount taken.

- Promotion Tracking Listing (Pro135)

  Use this program to print a listing of the defined promotion tracking records.

- Special Price Maintenance (PRO140D1)

  Use this program to maintain special prices for items based on customer number or salesperson number. You can then define the special price based on pricing method, company, currency, and/or item discount code for a defined period of time. If pricing by customer you can use the customer and customer discount code, Order entry then uses these prices.

- List Price Book Maintenance (PRO150D)

  Use this program to maintain a book of list prices (and cost-plus list prices) for items based on Item, Customer, Region, Customer Discount Code, Facility, or a combination of these. SSA ERP_{LX} retrieves this list price during order entry based on the hierarchy you set on the List Price Hierarchy screen (PRO820D-02).

- Special Pricing Listing (PRO240D)

  Use this program to print a listing of all special pricing methods you defined in Special Price Maintenance (PRO140).

- List Price Book Listing (PRO250D)

  Use this program to print a listing of all list price methods you defined in List Price Maintenance (PRO150).

- Promotion Inquiry (PRO300)

  Use this program to display information about promotions (PDM file) and promotion tracking (PDT) records.

- Special Price Inquiry (PRO340D1)

  Use this program to view the special prices established in Special Price Maintenance (PRO140).

- List Price Book Inquiry (PRO350D)

  Use this program to view list prices you defined for Items, Customers, Regions, Customer Discount Codes, Facilities, or a combination of these.

- Mass List Price Book Update (PRO510D)

  Use this program to update the list price of a range of items. You can use this program to perform "what if" analyses on list price changes.

- Cost-Plus List Price Development (PRO520D)

  Use this program to develop/update the Cost-Plus List Price records based on costs found in SSA ERP_{LX} Cost selection criteria such as Item and Facility. You can review the effects of your updates before actually entering them.

- Batch Price Maintenance (PRO530D)

  Use this program to price or reprice an order or group of orders in batch mode rather than interactively during Order Entry.

- Inquiries and Reports

Promotion Performance reports are available at the summary or detail level and may be requested by promotion number, customer number, item number, item class, customer type, region, promotion period, item discount code, or customer discount code.

Promotions and deals reports

Below is a list of the reports available.

- Promotion Master Listing
- Promotion Calendar Listing
- Promotion Tracking Listing
- Special Price Listing
- List Price Book Listing
- Promotion Performance Summary by Promotion Information
- Promotion Performance Summary by Customer Information
- Promotion Performance Summary by Item Information
- Promotion Performance Detail by Promotion Information
- Promotion Performance Detail by Customer Information
- Promotion Performance Detail by Item Information

Promotion Inquiry is available by promotion number, item number, customer number/ship-to, customer type, customer discount code, item class, item discount code, region, and promotion period.

Data locations

Promotion data is held in the following files:

- Item Master (IIM)
- Customer Master (RCM)
- Salesperson Master (SSM)
- Transaction History (ITH)
- Order Header (ECH)
- Order Line (ECL)
- Order Line Notes (ESN)

- Promotion Calendar (PDC)
- Promotion Master (PDM)
- Promotion Tracking Detail (PDA/PDT)

Program quick reference

The table provides the functions used in Promotions and Deals and their associated program codes. Use program codes to quickly access a function. To use a program code, type the program code in the empty field at the top of a menu screen and press Enter. The system displays the first screen in that program.

Function	PROGRAM
Update a Range of List Prices	PRO510D
Define Cost-Plus List Prices	PRO520D
Price or Reprice an Order or Range of Orders	PRO530D
Maintain Promotion Calendars	PRO100
Maintain Promotions	PRO110D1
Track Promotions	PRO130
Maintain Special Prices	PRO140D1
Maintain List Price Book	PRO150D
Access Promotion Notes	PRO120
Print Promotion Master Listing	PRO115D
Print Promotion Calendar Listing	PRO125
Print Promotion Tracking Listing	PRO135
Print Performance Reports	PRO210-PRO232B
Print Special Prices Listing	PRO240D
Print List Price Book	PRO250D
Display Promotions	PRO300
Display Special Prices	PRO340D1
Display List Price Book	PRO350D
Display Promotion Terms Definitions	WINZPM
Display Orders	ORD300D
Access Order Line Notes	ORD140D1

Function	PROGRAM
Maintain Promotions and Deals System Parameters	SYS800
Maintain Tax System Parameters	SYS800

Glossary

Bill-back
Accrual type of promotion. The customer receives credit or cash back for performing a required activity such as providing additional product shelf space.

Cash value
Discount based on a product's value instead of offering the actual item free.

Commission code
The two-character identifier for a customer, item, or salesperson commission code.

Commission rate
The percentage of commission paid to a salesperson. Commission rates can be assigned to customer, item, and or salesperson commission codes. Up to three salespeople may split a commission, and the total of the percentages for the salespeople can exceed 100%

Contract flag
Identifies whether a single or cumulative promotion applies to a given order or order line.

Cost-plus list price
A price calculated by multiplying the item's list price by the selected cost set and/or a percentage multiplier or a net change amount.

Cost set
The cost element in the Cost-Plus calculation used to determine the new Cost-Plus List Price. Up to 99 cost sets can be defined in SSA ERP_{LX}. Cost sets 01 (Actual), 02 (Standard), 03 (Frozen) and 04 (Simulated) are predefined in SSA ERP_{LX}. Cost sets 05-10 are reserved for future enhancements and cost sets 11-99 can be defined by the user in Define Cost Sets (CST140).

Date flag
Identifies the effective start and end dates of a promotion based on the order entry date and/or request date.

Free goods
Promotion offering a free product rather than a discount.

Kitting allowance
A type of discount earned by a customer for installing an aisle display. Confirmation of the display is often provided to accounts receivable.

List price book
A program that stores all the defined list prices based on Item, Customer, Region, Customer Discount Code, Facility, or a combination of these.

The methods available for defining List Prices are as follows:

Method	Description
9	Cost-Plus List Price
0	Multi-Currency - Base price/item alone*
A	Item/Customer
B	Item/Region
C	Item/Customer Discount Code
D	Item/Facility

Off-invoice
A type of discount applied directly to the invoice based on qualification at the line item level and/or total order level.

Pick-up
A bill-back discount type; may apply when the customer picks up the product (as opposed to having to ship the product).

Promotion calendar
Calendar that establishes the relationship between the Promotions and Deals period, and the corresponding start, end, and announcement dates. The start and end dates determine whether the a customer qualifies for and promotion and deals discount.

Promotion period
Defined by promotion start and end dates. Promotion period dates may overlap. Used for tracking and analysis.

Promotion terms code
Identifies the method of handling promotions in Billing, Accounts Receivable, and General Ledger.

Projected lift
The expected increase in sales (quantity and/or amount) during the promotion period.

Salesperson master
The file (SSM) that stores the six-digit salesperson number, and the salesperson's name, address, telephone number, and commission code. You must have at least one salesperson. (The Salesperson Master file is maintained in SAL100D1 and listed in SAL110D)

Slotting allowance
A type of discount earned by a customer for providing shelf space, advertising, or other promotional activity on behalf of the product.

Special prices
A method of applying discounts by item, customer, item discount code, customer discount code, or combinations of these. Special prices may apply if no promotions apply to an order or order line. Special prices are maintained in ORD120C and listed in ORD130D.

Split discount
A discount method which applies both off-invoice and bill-back to one transaction.

Tax flag
Identifies tax liability on a free goods or cash value promotion or deal.

Chapter 9
Purchasing

9

The chapter consists of the following topics:

Overview

The Purchasing product, PUR, enables you to perform day-to-day purchasing functions such as maintenance and tracking of requisitions and purchase orders. Numerous reports are available to you for your evaluation of vendor performance, purchase order pricing, expense projections, and open orders.

Purchasing functionality includes:

- Multiple purchase order releases
- Optional three-way match of purchase order, inventory receipt, and invoice (in Accounts Payable)
- Automatic conversion of purchasing-to-stocking unit of measure upon receipt
- Ship-to location maintenance (for drop shipments or multiple plants)
- Integration with accounts payable
- Outside operation purchase orders
- Inspection information (inspection time support and dispatch list) for dock-to-stock tracking
- Automatic tie to MRP for vendor negotiation and scheduling
- Vendor contract and quotes
- Acceptance and processing customer orders for inventory items shipped directly from a vendor to the customer

Purchasing interfaces

Purchasing can be integrated with other products within the SSA ERP_{LX} product line, including Inventory (INV), Configurable Ledger, CLD, and Accounts Payable, ACP.

The Purchasing product requires the integration of the Inventory product (INV) which records the issue of purchase orders and the subsequent receipt of goods and the vendor's invoice.

Accounts Payable, ACP, can also be installed with Purchasing. Accounts Payable checks invoices against purchase orders and uses the same Vendor Master file, AVM.

If you install both Accounts Payable and the Configurable Ledger, CLD, an optional facility allows you to update costs in inventory and the general ledger directly from vendor invoices.

The general sequence of implementation for these products is outlined below.

General ledger

The Configurable Ledger, CLD, and Accounts Payable, ACP, interface with the Purchasing product to perform a three way match. The General Ledger should be installed according to the instructions in the General Ledger guide. The installation of this product is optional.

Accounts payable

Accounts Payable, ACP, can be optionally integrated with the Purchasing product. It requires more detailed information in the Vendor file than the Purchasing product does.

Accounts Payable automatically checks for a valid purchase order when you match invoices to POs and receipts. You need to enter any outstanding active purchase orders through PO Release, PUR500, before you can match invoices by using Accounts Payable.

Accounts Payable updates the Actual Cost fields in the Inventory Master file directly from vendor invoices. You must provide the following information for Accounts Payable to complete this update:

- Define a type C Inventory Transaction. For more information, see the section on Transaction Effect maintenance.
- Enter a valid purchase order on the ACP500D2-01 panel or in the Next Purchase Order field on the ACP500D3-01 panel.
- Enter the information for the actual cost transaction on the appropriate lines.

SSA ERP$_{LX}$ uses this information to search for the specific purchase order in the Purchase Order file to set inventory details (for example, the warehouse). A type C Inventory transaction is generated and posted to the Inventory files, updating costs.

The update of Quantity fields in the Inventory Master file is based on the setup of the C transaction. It is optional.

The purchase order line updates with the cost value.

Install this product according to the instructions in the Accounts Payable guide.

Inventory

All of the Inventory files need to integrate with the Purchasing product. Define the following fields on the Item Master file, IIM, before using the Purchasing product:

Fields	Description
Stocking U/M	The item is stored, sold, or used in this unit.
Purchasing U/M	The item is purchased in this unit.
Conversion Factor	The number used to convert purchasing units into stock units.
Vendors	Two vendor numbers can be associated with an item. The primary vendor is used as the default during purchase order entry.
Standard Cost	If Costing is not installed and there is no relevant Vendor/Price record, SSA ERP$_{LX}$ uses this field to calculate the expected cost of a purchase.

For example:

Product	Purchasing U/M	Conversion Factor	Stocking U/M
xxx	yd (yards)	3.0000	ft (feet)

Using the conversion factor of 3.0, SSA ERP$_{LX}$ converts five yards of purchased product xxx to 15 feet at the time of receipt. This information is used for inventory tracking and management purposes.

Purchasing

Implement the Purchasing product with the Vendor Master and the Vendor Ship-to files. Enter all active purchase orders that are outstanding at product implementation time.

Inventory transactions for purchase order receipts and costing

The inventory transactions for Purchase Order Receipts and costing include defining both inventory and purchase order transactions for the system,

completing daily running tasks, and performing the procedures for month end.

Inventory transactions

The Purchasing product requires that you define the receipt of goods into stock with an update of quantity-on-hand by warehouse and location, and the Cost update on receipt of the vendor's invoice. You can define this information in several ways:

- By entering two separate inventory transactions.
- By entering one combined inventory transaction.
- By entering the receipt with an inventory transaction and causing Accounts Payable to do the cost update.
- By ignoring costs altogether so that only the receipt is updated.

You define Inventory transactions through Transaction Effect Maintenance, INV150. Find complete instructions and examples in the Inventory Run Instructions.

You define purchase order transactions in Purchase Order Receipts, PUR550D. The following examples illustrate transactions to use when implementing Purchasing:

- Type P -- Uncosted receipt into stock for the arrival of goods.
- Type G -- Cost-update. Use this type when the invoice and goods arrive separately. If Accounts Payable is installed, it is unnecessary.
- Type Q -- Costed version of Type P. Use this type when invoices arrive with the goods. This is a single transaction performing both receipt and cost update.
- Type C --Reserved transaction type used by Accounts Payable. It is set up with only a description because Accounts Payable completes the cost update.

These definitions are only examples. Even if your system lists these transactions, they may be defined differently than above. If you are uncertain about your system setup, enter purchases of dummy items, then receive them by completing inventory transactions.

Use the inquiry programs to check the results. Be sure to check the quantity and cost fields in both Purchasing (Purchase Orders) and Inventory (Item and Warehouse quantity on hand, actual costs).

WARNING: Do not change transaction effects without a thorough understanding of their functions.

Costing

Each line item can have an expected as well as a standard cost. SSA ERP$_{LX}$ calculates the expected cost on the basis of the Vendor Price quote record if it exists for the item. Or it calculates the cost from the item standard cost held on the Cost Master File, CMF, in cost set number two.

If you sue facility-specific costing, SSA ERP$_{LX}$ searches for the facility-specific records in CMF before searching for the global records. The standard cost is retrieved automatically. Actual cost is posted to either the facility-specific file or the global cost record in the CMF by a purchase order cost transaction that is posting the invoice from the vendor.

Calculate actual purchase costs when updating inventory based on a system parameter: Use either a weighted average actual cost or the last cost for actual costing of purchased items in inventory.

If Accounts Payable and Configurable Ledger are installed, you can automatically create the Cost Update transactions when you enter vendor invoices into Accounts Payable. You must enter stock receipts, type P transaction, but costs are updated from ACP invoice entry. Accounts Payable Invoice Entry, ACP500, displays the Inventory Costing panel, showing un-costed purchase order lines and allowing you to enter costs. The program then updates the inventory and purchase order costing using the inventory C transaction. See the Accounts Payable Run Instructions for details.

The purchase price variance report displays actual cost, standard cost, and expected cost.

Processes

These are the frequently used processes found in Purchasing.

Drop shipment

SSA ERP$_{LX}$ provides a tightly integrated Drop Shipment processing capability. SSA ERP$_{LX}$ supports the creation, tracking, and management of customer drop shipment orders through enhancements to the Order Processing, Purchasing, and Billing products.

The order processing professional initiates drop shipments during customer order creation. You can designate as a drop ship item any order line that meets user-defined drop ship controls. Designating a line as a drop ship line automatically creates a Drop Ship Request in Purchase Order Processing.

When a buyer responds to a Drop Ship Request by creating a purchase order, SSA ERP$_{LX}$ notifies the order processing department and cross references both the customer order and the purchase order. After vendor shipment confirmation, SSA ERP$_{LX}$ automatically notifies billing to initiate the invoice process. SSA ERP$_{LX}$ supports the constant communication between the order professional, the buyer, and the billing professional throughout the order cycle.

Contract processing

SSA ERP$_{LX}$ provides a tightly integrated Contract processing capability. SSA ERP$_{LX}$ supports the creation, tracking, and management of scheduled purchase orders through enhancements to the Purchasing product.

The Purchasing product allows for the entry and tracking of outgoing orders to suppliers from the initial requisition and purchase order through the receipt of the goods and the corresponding supplier's invoice.

Make a purchase order out to a single vendor for goods to send to one address. It can have multiple purchase lines that each specify a different item and include information about the quantity ordered, scheduled receipt date, and warehouse.

The Purchasing product also allows for the entry of scheduled purchase orders and tracking of outgoing orders to suppliers. It tracks orders from contract maintenance through the receipt of the goods and the corresponding supplier's invoice.

Make a scheduled purchase order out to a single vendor for goods to send to one address. It can have multiple detail lines, each specifying an item with the quantity ordered, scheduled receipt date, warehouse, and facility. You can monitor maximum quantity and monetary value restrictions at the contract header level and the contract detail level. Any changes in the quantity ordered or received, and purchase order monetary values are taken into account.

Use PUR 640 to complete Purchase Order Receipts Posting.

Receipt tolerances and over-receipt options

Define over/under receipt quantity tolerance percentages at the item/vendor/facility/manufacturer, commodity, warehouse, or system parameter levels. Apply the tolerance percentages to the purchase order line quantity to determine whether the receipt quantity constitutes full delivery.

For example

Receipt Qty Tolerance % (+) = 10%

Receipt Qty Tolerance % (-) = 5%

If the purchase order line quantity is 100:

Over Receipt Qty = 100 + (100 * 0.10) = 110

Under Receipt Qty = 100 – (100 * 0.05) = 95

This means that a purchase order line is considered fully received if the receipt quantity is between 95 and 110. To automatically close the PO line if the receipt quantity is within tolerance, turn on an auto close flag at the item/vendor/facility/manufacturer, commodity, warehouse, or system parameter level.

SSA ERP$_{LX}$ allows a user to over-receive purchase order lines. An over-receipt is defined as a receipt quantity that is greater than the PO line quantity with the over-tolerance receipt quantity added to it. A warning message displays to notify the user that the quantity received is more than the remaining purchase order line quantity.

For example:

Receipt Qty Tolerance (+) = 10%

Quantity Ordered = 100

Quantity Received = 20

Remaining Quantity = Quantity Ordered – Quantity Received = 80

Upper Receipt Qty Limit = Remaining Qty + (Qty Ordered * Tolerance %) = 90

The system displays an over-receipt warning message if the receipt quantity is greater than 90.

Turn the field on or off at the item/vendor/facility/manufacturer level to prevent over-receipt. This over-receipt flag defines at the system parameter level.

If SSA ERP_{LX} is set up to prevent over-receipts, the user no longer can post a receipt quantity that is more than the remaining PO line quantity with the over tolerance % added to it. As an alternative, the user can:

- Receive the maximum, remaining line quantity plus over-tolerance percentage quantity, and reject the balance to quarantine, or
- Receive the full quantity into quarantine.

The system does over-receipt checking if the transaction effect spread receipt flag is off. Over-receipt checking only applies to receipts to stock.

Daily running

The Purchasing product requires the completion of several daily running tasks outlined below.

Use Requisition Entry, PUR600, to enter new requisitions, which can be used to create purchase orders. Requisition creation is optional. You can enter a purchase order without creating a requisition. Use either PO Consolidation/Release, PUR640, or Requisition Release, PUR650, to create a purchase order from a requisition, which is then automatically marked complete so that the system can remove it.

Purchase orders can be created without requisitions by using the PO Release/Maintenance option, PUR500. Purchase orders that are created with

this option are not associated with requisitions and do not update the requisition file.

Use Requisition Print, PUR620, to print all open requisitions (those that have not been changed to purchase orders).

The Automatic Release option, PUR651D and the PO Consolidation/Release option, PUR640, allow the automatic release of MRP requirements to purchase order lines.

Use Purchase Order Entry, PUR500, to enter new purchase orders and to make changes to existing purchase orders. SSA ERP_{LX} automatically changes the Print field to 1 printed each time you print a purchase order line, but you can reprint a line by resetting the Print field to 0.

Purchase Order Print, PUR520, provides you with the option of printing all purchase order lines entered since the last printout. However, you do not have to print the purchase orders.

Use Stock Receipts Entry, INV500, PUR550D, to enter stock as it is received and to enter costs as invoices are received.

Use Reports and Inquiries (PUR2XX, PUR3XX, INV300) to generate reports as needed.

Month end

When all lines of a Purchase order are completed (or closed), the purchase order can be purged at month end. If the costing applications are in use, then you can restrict the purge only to those purchase orders with all lines closed and costed. For scheduled purchase orders, detail lines that are all received and costed can be purged at month end.

Use the Schedule History Purge option (PUR955) to selectively purge history details for the schedule.

Product workflow

A purchase order is the formal authorization to purchase material from a vendor or supplier. It is made out to a single vendor for the shipment of goods to one Ship-to address. A purchase order can have multiple detail lines that each specify an item, the quantity ordered, the scheduled receipt date, and the warehouse.

The Purchasing product enables you to perform day-to-day purchasing functions such as maintenance and tracking of requisitions, contracts, and purchase orders. You can track outgoing purchase orders to suppliers from the time that they are entered into the system until the receipt of the goods and the corresponding supplier's invoice.

Use the Purchasing product to enter scheduled purchase orders. They are made out to a single vendor for the shipment of goods to one Ship-to address. They can have multiple detail lines that each specify an item, the quantity ordered, the scheduled receipt date, the warehouse, and the facility. You can monitor maximum quantity and monetary value restrictions at the contract header and the contract detail levels. Any changes in quantity ordered or received and purchase order monetary values are taken into account. You complete the processing of these orders in Scheduled Purchase Order Receipts Posting (PUR640).

Maintain the names and numbers of regular suppliers in the Vendor Master file. A vendor alpha lookup inquiry easily locates vendor numbers by searching on the vendor name. You can enter one-time vendors that remain on file only through the life of the purchase order.

The Ship-to file contains your own delivery (or street) address. By entering a Ship-to number on a purchase order, you can request that the invoice be sent to your office, while the goods are delivered to the warehouse. You can also type in a one-time delivery address.

The Inventory Item Master file contains information about the Inventory items ordered. See the Inventory document for details. SSA ERP_{LX} supports a purchasing unit of measure as well as a stocking unit of measure. It automatically converts the purchase units into stocking units for inventory reporting and inquiry purposes. You can enter amounts on the purchase order receipt in the purchase unit of measure and SSA ERP_{LX} will automatically convert them to stocking units so that inventory updates correctly.

After acceptance by SSA ERP$_{LX}$, the open purchase order appears on inquiries and reports such as the Material Status Inquiry in the Inventory product. Additional reports include open purchase order, expected purchase cost, and vendor delivery performance reports as well as others. The Inventory on-order balance shows the effect of a new order.

After the goods arrive, you must complete specific inventory transactions to receive them into stock. A stock receipt is necessary to update inventory balances. Since the invoice usually arrives at a later time, a cost update transaction is necessary. A purchase order remains open until it is received and costed. You can generate a report of all purchase orders that were received but not invoiced.

Note: If your system handles Stock Receipts with costs that is the arrival of the invoice with the goods, you need one inventory transaction that prompts for cost and quantity. This transaction is similar to type P. If you do not want to enter costs through the system, the type P transaction is sufficient. Other combinations and effects are possible because Inventory transactions are user-defined.

Use PUR550D to complete Purchase Order Receipts Posting.

A purchase order is complete after you have received all line items on a purchase order into stock. You can delete completed purchase orders by using the month-end purge, PUR900. If you do not handle costs through SSA ERP$_{LX}$, uncosted lines can be purged. However, you should NOT purge uncosted lines if you expect to enter vendor invoices. See the section on Inventory Transactions for Purchase Order Receipts and Costing for more detailed information.

Product quick reference

The table below provides the functions used in Purchasing and their associated program codes. Use program codes to quickly access a function. To use a program code, type the program code in the empty field at the top of a menu panel and press Enter. The system displays the first panel in that program.

Function	Program
Add line items to existing purchase orders	PUR500
Alpha look-up, item	INV350
Alpha look-up, vendor	PUR310
Approve Procurements	PUR530
Authorization File Maintenance	PUR170
Authorization Listing	PUR175
Authorize Procurements	PUR530
Automatic Release of Purchase Orders	PUR651
Change Purchase Order information	PUR500
Close Purchase Orders	PUR500
Close purchasing month-end	PUR900
Close purchasing year-end	PUR910
Commodity Code Listing	PUR185
Commodity Code Maintenance	PUR180
Consolidate Purchase Order Requisitions	PUR640
Create Drop Ship Purchase Order	PUR660
Delete Purchase Order line items	PUR500
Delete Requisitions	PUR600
Delete Vendor Contract/Quote	PUR150
Display open Purchase Orders by item	INV300
Display POs by PO, vendor, item, cust. order	PUR300
Display requisitions by PO, vendor, item, cust. order	PUR300

Function	Program
Expense Projections Report	PUR230
Inquiry, item or vendor history	PUR300
Inquiry, material status	INV300
Inquiry, purchasing	PUR300
Inquiry, quotations by item or vendor	PUR300
Inquiry, warehouse	INV330
Inspection Dispatch Report	PUR270
Inventory transactions	INV500
Item Alpha Lookup	INV350
Item/Vendor History Report	PUR258
Maintain Clause codes by Contract	PUR159
Maintain Contract Header Details	PUR151
Maintain Contract Detail Lines	PUR152
Maintain Purchase Order Notes	ORD140
Maintain Purchase Orders	PUR500
Maintain Requisitions	PUR600
Maintain Schedule Prices	PUR154
Maintain Ship-To Numbers	PUR130
Maintain Shipping Pattern codes	PUR161
Maintain Time Periods	PUR165
Maintain Vendor Master file	PUR100
Maintain Vendor Notes	ORD140
Maintain Vendor Quotes	PUR150
Maintain Vendor Split Rules	PUR157
Maintain Week/Dates Cross Reference file	PUR155
Material Status Inquiry.	INV300
Month-end purchasing close	PUR900
Notes Maintenance (Purchase Order)	ORD140
Notes Maintenance (Purchase Order Line)	ORD140
Notes Maintenance (Vendor)	ORD140

Function	Program
Open Purchase Orders by Buyer/Item Report.	PUR204
Open Purchase Orders by Commodity Code/Due Date Report	PUR205
Open Purchase Orders by Expected Delivery Date Report	PUR260
Open Purchase Orders by Item Class/Item Report	PUR203
Open Purchase Orders by Item/Due Date Report	PUR202
Open Purchase Orders by Purchase Order Number Report	PUR200
Open Purchase Orders by Vendor Report	PUR201
Outside Operation Purchase Orders	INV500
Post Purchase Order Costs/Invoices	PUR550D
Post Purchase Order receipts	PUR550D
Print Consumable Schedule Print	PUR542
Print Contract details	PUR153
Print Contract Exception Report	PUR288
Print Expense Projection Report	PUR230
Print Inspection Dispatch Report	PUR270
Print Item/Vendor History Report	PUR258
Print open purchase orders by:	
▪ buyer/item	PUR204
▪ commodity code/due date	PUR205
▪ expected delivery date	PUR260
▪ item class/item	PUR203
▪ item/due date	PUR202
▪ purchase order number	PUR200
▪ vendor	PUR201
Print Outstanding Requisitions Report	PUR254
Print Production Schedule Print	PUR540
Print Purchase Orders	PUR520
Print Purchase Order Line	PUR500

Function	Program
Print Purchase Planning Report	PUR284
Print Purchase Planning Exception Report	PUR286
Print Purchase Price Variance Report	PUR220
Print Received but Uncosted Purchase Orders Report	PUR210
Print Receiving Report	PUR250
Print Reject Report	PUR250
Print Requisitions	PUR620
Print Requisitions by buyer/item	PUR255
Print Requisitions by requisition/item	PUR254
Print Scheduled P.O Document	PUR524
Print Schedule Summary Report	PUR290
Print Ship-Tos	PUR140
Print Vendor Negotiation Report	PUR275
Print Vendor Performance/Detail Report	PUR240
Print Vendor Performance/Summary Report	PUR262
Print Vendor Quotes	PUR256
Print Vendor Schedule Report	PUR280
Print Vendor Split Rules	PUR158
Print Vendors	PUR110
Procurement Authorization Maintenance	PUR530
Purchase Order Audit Report	PUR500
Purchase Order Authorization Maintenance	PUR170
Purchase Order Notes	ORD140
Purchase Order Receipts	PUR550D
Purchase Order Release	PUR500
Purchase Price Variance Report	PUR220
Purchasing System Parameters	SYS800
Purge costed or closed Purchase Orders	PUR900
Purge Schedule History details	PUR955

Function	Program
Quote Maintenance	PUR150
Quotations by item or vendor inquiry	PUR300
Receipts, purchase order	PUR550D
Received But Uncosted Purchase Orders Report	PUR210
Receiving Report	PUR250
Release Purchase Order Requisitions	PUR640
Release Purchase Orders	PUR500
Requisition Consolidation and Release	PUR640
Requisition Print	PUR620
Requisition Selection	PUR650
Requisitions By Buyer/Item Report	PUR255
Requisitions By Requisition/Item Report	PUR254
Revise Drop Ship Purchase Order	PUR660
Select P.O Clause Codes	PUR163
Ship-To Listing	PUR140
Ship-To Maintenance	PUR130
Special Charges Listing	PUR186
Special Charges Maintenance	PUR181
Vendor Alpha Lookup	PUR310
Vendor History	PUR258
Vendor Inquiry	PUR300
Vendor Master Listing	PUR110
Vendor Master Maintenance	PUR100
Vendor Negotiation Report	PUR275
Vendor Notes	ORD140
Vendor Performance/Detail Report	PUR240
Vendor Performance/Summary Report	PUR262
Vendor Quotes Maintenance	PUR150
Vendor Quotes Report	PUR256
Vendor Schedule Report	PUR280

Function	Program
Warehouse Inquiry	INV330
Year-end purchasing close	PUR910

Glossary

Commodity
This term refers to anything that can be purchased but not inventoried.

Costing
Each line item can have an expected and a standard cost. SSA ERPLX automatically retrieves the standard cost.

A purchase order posts the actual cost by cost transaction, posting the invoice from the vendor. The invoice posting is a different transaction from the receipt of material. This allows purchase orders to affect inventory quantities as they are received. They are costed as the invoice is received.

Invoice cost is posted to the cost for a shop order operation that is tied to an outside operation purchase order. It appears on the shop order costing reports, CST270.

A report of all received but uncosted purchase orders is available, PUR210.

To track purchase price variances, you have the option to enter a purchase price variance, PPV profit center on the Item Class Master file, IIC. ATP uses this profit center as a segment value. If the PPV profit center is designated at the time of a three-way match, the purchase price variance is calculated as follows:

The difference between the (quantity costed * standard item cost) and the extended price of the item is calculated.

This amount is booked to the purchase price variance account using the models you chose at invoice entry.

Actual costs update inventory based on the system parameter. Use either a weighted average actual cost or the last cost for actual costing of purchased items in inventory.

Facility
Warehouses are assigned to a facility which represents the physical location where production planning takes place. When manufacturing requisitions are created by SSA ERPLX, they are assigned to the Mass Release Warehouse as defined in the Facility Master file, ZMF.

Global exchange rate
The currency conversion rate used to convert from transaction currency to global currency. The global exchange rate applies if the SSA ERPLX Multiple Currencies product is installed. All costs on the cost master file, CMF, are in global currency.

Inspection
SSA ERPLX tracks the quantity in inspection for each purchase order. An inspection dispatch list is provided, PUR270. Delivery dates are automatically calculated by SSA ERPLX, based on the purchase order due dates minus the Inspection Days parameter.

Purchase order quantities in inspection are NOT considered as received by the system. They are not available for use by MRP and are not in inventory. Quantities in inspection show on the Purchasing Inquiry, PUR300, on the Inspection Dispatch List, PUR270, and in any retrievals that use the inspection quantity field. Quantities coming into and out of inspection are controlled by inventory transactions, PUR550D, INV500 and the Transaction Effect Code. See Transaction Effect Maintenance INV150.

Invoice exchange rate
The currency conversion rate used to convert from transaction currency to base currency. The invoice exchange rate may apply if the SSA ERPLX Multiple Currencies product is installed. The base currency for a purchase order is the POs vendor company's currency.

Item
An item is the prime entity in the Inventory product. It is defined as a purchased part, collection of parts, or finished product that is considered inventory for resale or further manufacturing. Items are ordered from vendors by using purchase orders.

Location
A location is a subdivision of a warehouse such as a bin, rack, aisle, or even a logical designation like awaiting lab check.

A six-character alphanumeric code is used for tracking inventory movements and for specifying the availability of stock for resale or manufacturing. The code is stored with its description on the Location Master files.

Lot
A ten-character alphanumeric code lets you identify batches of lot-controlled items (such as pharmaceuticals and perishables). Lots are received into warehouses with associated locations and sold or released to the shop floor according to their availability as recorded in the Lot Master file. You can override automatic allocations of lots to orders. Full lot tracing is available on request.

Lot control is defined by item. Only items for which lot control is requested are validated by lot. Lot numbers are optional.

One-time vendors
A vendor used on a one-time basis. Set up one-time vendors on the Vendor Master file, but the system deletes them from SSA ERPLX when all transactions relating to them have cleared.

Outside operations
You can designate a purchase order line as an outside operation purchase order line. Such purchase orders do not affect the on-order quantity for an item and are ignored by MRP. Outside operation PO lines can be tied to shop order operation numbers and use Material This Level as their standard cost for cost analysis.

You can designate purchase order lines as outside operation lines by setting the Outside Operation field to Y, and then entering the shop order and operation numbers.

Purchase order
A PO is an order to a single vendor for the delivery of one or more items to a single address. After entry, a purchase order remains on file until all items on that order are received into stock or until the order is specifically deleted.

Multiple line item purchase orders are supported. In other words, SSA ERPLX allows different items, quantities, and scheduled receipt dates on different lines of the same purchase order.

Ship-to location maintenance is available for drop shipment purchase orders. You can enter additional comments for each line. Purchase order note maintenance, separate from vendor note maintenance, is available as well. Each line item can be tied to a different inventory warehouse.

Purchasing
Purchasing is the process of creating/amending orders to suppliers, printing purchase orders, and recording the subsequent receipt and invoicing of the goods. Inventory files are updated accordingly.

Recognition rate
The currency conversion rate from transaction currency to base currency. The recognition rate may apply if the SSA ERPLX Multiple Currencies product is installed.

Requisition
A requisition is a written demand to create a purchase order for the purpose of purchasing an item or service. Requisitions are created by those departments that depend on the Purchasing department to issue purchase orders to vendors. Many requisitions can be consolidated into a single purchase order and then released, meaning that the requisition has completed.

Ship-to master
The file, EST, that stores the delivery ship-to addresses for customers. Ship-to addresses are usually different from the customer's postal address. The ship-to address can be overridden when a purchase order is created.

Unit of measure
SSA ERPLX supports purchasing and stocking units of measure. SSA ERPLX automatically converts the purchase units from purchase order receipts into stocking units for inventory reports and inquiries.

Vendor
A vendor is a supplier of goods or services. The vendor number uniquely identifies the vendor to both purchasing and accounts payable. Regular vendors should be set up on the Vendor Master file using the Vendor Maintenance option, PUR100. Set up other vendor information for accounts payable transactions using the Vendor Master option, ACP100.

Warehouse
A two-character alphanumeric code specifies a generic location for an item in inventory (CH = Chicago). You can use locations to divide Warehouses into smaller groupings (either physically or logically). Codes and descriptions are held on the Warehouse Master file (IWM). At least one warehouse is needed for processing.

Chapter 10
Release Management System

10

This chapter provides a high-level overview of the Release Management System. The chapter consists of the following topics:

Product overview

The Release Management System product (RMS) enables you to perform day-to-day release management functions, such as maintenance and tracking of releases and shipments. You can use numerous reports in this product to evaluate the release and daily JIT information.

Highlights

- Release Processing
- Shipment Receipts
- Daily JIT Requirement Processing
- Release Comparison Reporting
- Exception Reporting

Release processing

SSA ERP_{LX} provides a tightly integrated release process. SSA ERP_{LX} supports the creation, tracking, and management of customer contract information through the Release Management, Order Processing, and Billing products.

The current version of the contract header and release information automatically create Customer Order lines during release conversion (RMS550), according to specified parameters within the contract. The following are some of the functions available through release processing:

- Customer Item Numbering
- Release maintenance by week number or date
- Release entry by cumulative or discrete quantity
- Non-working days processing
- Authorization processing for production and material purchase

Daily JIT requirement processing

SSA ERP$_{LX}$ provides a daily JIT requirement process for customers who supplement weekly or monthly releases with daily JIT requirements (JITs), also known as Daily Call-Ins (DCIs), Daily Material Requests(DMRs) or Shipping Schedules. These are often transmitted via EDI daily or several times a day. The daily JIT requirement processing allows you to view the customer's latest delivery requirements over a short time horizon.

Daily JIT requirements are converted to replace order lines created during release conversion with the more detailed and up to date information supplied on the daily JIT requirement.

SSA ERP$_{LX}$ supports RAN number processing and sequence shipping.

Release comparison reporting

SSA ERP$_{LX}$ provides various reports and inquiries to compare current and new versions of a release, allowing you to evaluate any changes in requirements before accepting the new information, as well as allowing you to compare shipments made to release requirements.

The Release Comparison Inquiry allows you to reconcile two versions of the release side by side, aligned by date. Changes in cumulative or discrete requirements are highlighted.

The Release Reconciliation Inquiry allows you to reconcile release requirements and release shipments side by side, aligned by date. You can amend or remove shipment quantities that SSA ERP$_{LX}$ displays from the inquiry to facilitate reconciliation.

Exception reporting

Various reports are available to facilitate release comparison, and many are available on an exception only basis. The following reports are available:

- Release Comparison
- Daily JIT Requirement Exceptions
- Outstanding Daily JIT Requirements
- Release/JIT History Comparison

Product flow

The Release Management System product requires the implementation of the Inventory product (INV), since Release Management records the issue of goods.

If Accounts Receivable (ACR) and Release Management are installed together, they use the same Customer Master file (RCM).

The general sequence of implementation is:

1 General Ledger and Accounts Receivable.

- Accounts Receivable Interface: Implement the A/R product as per the Accounts Receivable guide, and implement the General Ledger as per the General Ledger guide.

2 Inventory.

- You must set up he following fields in the Item Master Maintenance - Order panel (INV100D2-02) before you can use the Release Management product:

Field	Use
Stocking U/M	The item is stored, sold, or used in this unit.
Selling U/M	The item is sold in this unit.
Conversion Factor	The number used to convert stock units into selling units.

Product quick reference

Function	Program
Create Item Families	RMS130
Create Model Groups	RMS140
Create Non-working Days	RMS110
Inquiry - JIT/Reconciliation	RMS321
Inquiry - JIT/Release History	RMS370
Inquiry - JIT/Release Reconciliation	RMS380
Inquiry - Pack Sequence Number	RMS310
Inquiry - Release Comparison	RMS340
Inquiry - Release Detail	RMS300
Inquiry - Release Reconciliation	RMS320
Inquiry - Run Rates by Item	RMS360
Inquiry - Run Rates by Item Family	RMS361
Inquiry - Run Rates by Release	RMS362
Maintain JIT Requirements	RMS600
Maintain Releases	RMS500
Maintain Sequenced Requirements	RMS650
Mass Cumulative Reset	RMS535
Mass Release Delete	RMS530
Pay As Built Processing/Exceptions	RMS610
Print JIT Reconciliation Report	RMS250
Print JIT/Release History Report	RMS280
Print JIT/Release Variance Report	RMS240
Print Pay As Built Exception Report	RMS263
Print Pay As Built Invoice Report	RMS262
Print Release Comparison Report	RMS210
Print Release Detail Report	RMS220

Function	Program
Print Release Spreadsheet Report	RMS270
Print Retro Billing Report	RMS260
Print Sequence Mismatch Report	RMS200
Print Sequence Pack Status Report	RMS265
Print Unconverted Releases Report	RMS290
Release Conversion	RMS550
* SETUP-System Parameter Generation	SYS800D
Set up Company Name & Date Format	SYS820D
Set RMS to “installed” in the Installed Products Format	SYS821D
Set MTL to “installed” in the Installed Products Format	SYS821D
Set up RMS System Parameters	RMS820D
Set up Billing System Parameters	BIL820D
* SETUP-Currency and Conversion Rates	CLD107D
* SETUP-Customer Type Maintenance	ACR170D
* SETUP-Warehouse Master Maintenance	INV110D
* SETUP-Container Master Maintenance	API140D
* SETUP-Document Sequence Maintenance - Prefix Code	ACR160D
* SETUP-Customer Master Maintenance	ACR100D
* SETUP-Address Master Maintenance	ORD100D
* SETUP-Optionally, (Item) List Price Maintenance	MLT100D
* SETUP-Special Pricing Maintenance	PRO140D
* SETUP-(Customer) Item X-Reference Maintenance	ORD150D
SETUP-Item Family Maintenance	RMS130D
SETUP-Non-Working Days Maintenance	RMS110D
Sequence Packing Confirm	RMS665D
Sequence Packing Release	RMS660D
Sequence Pack Location Transfer	RMS675D
Update Item Family Percentage	RMS910

Help documentation for setting up related RMS fields and parameters is not included in this document. For detailed information about the set up programs, refer to the appropriate SSA ERP_{LX} Help documentation for individual products.

Glossary

Consigned Inventory
Under the consigned inventory concept, the supplier retains legal ownership of products until consumed by the customer. The consigned inventory is physically located in the customer's warehouse, and managed and controlled by the supplier until it is issued for production consumption. When consumed by the customer, an electronic payment is typically sent to the supplier, and the supplier performs required internal inventory and financial transactions.

Consignment Number
Consignment Number is defined as one unique number assigned to one physical delivery, whereas, Packing Group number is defined as one unique number assigned to each sub-delivery (that is, separate docks at the same delivery location). It is possible (and most common) to have a one-to-one relationship between Consignment Number and Packing Group Number, but the actual numbers assigned are different.

Contracts
Contracts reflect purchase order agreements between trading partners. Generally, the contract are supplier and item specific, for a fixed time period, and price are directly associated with a specified fixed minimum quantity to be purchased within an agreed upon time period.

Conversion
RMS Conversion performs the demand reconciliation and passes the outstanding release/JIT demand to SSA ERP_{LX} order header and detail line files. During the conversion process, releases are overlaid by the JIT schedule (shipment) demand, the quantities are rounded as required, and the ship dates are calculated taking into consideration customer requested receipt data and shipping lead time requirements.

Cumulatives (CUMS)
You use cumulatives to track and reconcile shipments against on-going release requirements. The customer may reset the cumulatives periodically, but the adjustment activity is normally carefully coordinated with the supplier.

Customer Part/SSA ERP_{LX} Item Cross-Reference
SSA ERP_{LX} contains multiple customer/ship-to/part number attributes which simplifies automatic part number conversion translation and packaging formulation.

Customer Self-Billing
SSA ERP$_{LX}$ gives the supplier the ability to retain ownership to shipped products in customer specific consigned inventory warehouses, and to electronically receive/process payments and inventory adjustments upon electronic notification of consumption. When Pay-As-Built must be used in conjunction with Sequenced Shipping activities which are directly linked to specific vehicles, customer self-billing can be used with any type of shipment and requires only notification of goods by part number/quantity.

Customer Supplied KANBAN and RAN Information:
RMS provides the ability to associate, and retain during the order fulfillment cycle, unique KANBAN and Release Authorization Number (RAN) release/demand relationships provided to the supplier by the customer. At the time of shipment, the unique relationship data can be fed back to the customer as a data element of the Advance Ship Notice (ASN), and/or paper document, and/or bar coded label.

Demand Reconciliation Methods
RMS contains multiple methods of automatically reconciling (netting) customer received demand by taking into consideration goods that have already been shipped, but not received at the customer's location. Valid SSA ERP$_{LX}$ reconciliation methods are:

1. Identifier - are reconciled by identifier (valid for JITs only)
2. Cumulative (Default) - Releases/JITs are reconciled on a cumulative basis
3. Discrete - Releases/JITs are reconciled on a cumulative basis
4. None - Releases/JITs are not reconciled

Global Exchange Rate
The currency conversion rate from transaction currency to global currency. The global exchange rate may apply if the SSA ERP$_{LX}$ Multiple Currencies product is installed.

Note: All costs on the cost master file (CMF) are in global currency.

Invoice Exchange Rate
The currency conversion rate from transaction currency to base currency. The invoice exchange rate may apply if the SSA ERP$_{LX}$ Multiple Currencies product is installed. The base currency for a sales order is the currency of the customer's company.

Item
The prime entity in the Inventory product. It is defined as a purchased part, collection of parts, or finished product that is considered as inventory for

resale or further manufacturing. Customers order these items using sales orders.

Item Status Code
Code that identifies additional information about the item. Valid values are:

01	New Item
02	Obsolete Item
03	Current Production Item
04	Revised Design
05	Reinstated Item
06	Current Spares Item
07	Balance Out Item

Note: An item status of 07 indicates that the item is a balance out item or due to become obsolete. SSA ERP$_{LX}$ does not round it according to the rules defined for the Customer Ship-to file or the Customer Master file, but rather converts the exact quantities ordered by the customer to order lines for planning and shipping.

JIT Requirements
JITs are also known as Daily Call Ins (DCIs), Daily Material Requirements (DMRs), Shipping Schedule, or Pull Signal. JIT Requirements are transmitted daily, or more frequently, and are a revision of the customer's immediate short term requirements previously communicated through releases. The supplier must ship the quantities specified on the JIT Requirements to arrive on the dates and times stipulated by the customer in order to maintain a high rating as a "certified" supplier. Comparisons need to be made between the Release and Daily JIT Requirements to determine any changes that need to be made to the production schedule.

Load Policies
Load Policies determine whether SSA ERP$_{LX}$ generates loads/shipments and packing groups during pick release and what format SSA ERP$_{LX}$ uses.

0	SSA ERP$_{LX}$ does not generate load/shipment or packing group details during pick release
1	SSA ERP$_{LX}$ generates one load per customer/ship-to. SSA ERP$_{LX}$ generates one shipment and packing group per ship-to address. This option is only valid if OLM is installed.

2 SSA ERP$_{LX}$ generates one load per customer/ship-to, one shipment per ship-to address, and one packing group per dock. This option is only valid if OLM is installed.

3 SSA ERP$_{LX}$ generates one load per customer/ship-to, one shipment per ship-to address, and one packing group per order/item. This option is only valid if OLM is installed.

When one load and shipment per customer/ship-to or one load per customer/ship-to/dock is defined, SSA ERP$_{LX}$ attempts to consolidate all requirements for a customer/ship-to or customer/ship-to/dock (selected during pick release) onto one packing group providing that the ship-to address, carrier, route, means of transportation, freight terms, shipping zone, delivery times, and order class currency are identical for each order to be considered.

Location
A subdivision of a warehouse, such as a bin, rack, aisle, or even a logical designation like Awaiting Lab Check. The ten-character alphanumeric code is used for tracking inventory movements and for specifying the availability of stock for resale or manufacturing. The code is stored with its description in the Location Master files.

Lot
A twenty five-character alphanumeric code used to identify batches of lot-controlled items (for example: pharmaceuticals and perishables). Lots are received into warehouses, associated with locations, and sold or released to the shop floor according to availability of the lot. SSA ERP$_{LX}$ stores lot information in the Lot Master (ILN) file. Automatic allocations of lots to orders may be overridden. Full lot tracing is available on request.

Lot control is optional and is defined by item. Only items for which lot control is requested are validated by lot.

Packaging
SSA ERP$_{LX}$ refers to packaging as Pallets and Cartons, which can be broadly considered as Outer and Inner. SSA ERP$_{LX}$ refers the outer level of packaging as the pallet irrespective of whether there is another level of packaging. When you simply pack an item in a box or carton, and that box or carton is shipped loose to the customer, SSA ERP$_{LX}$ regards it as the pallet because it is the outer level of packaging. When you define an additional inner level of packaging, SSA ERP$_{LX}$ refers to this as the carton. When you pack smaller boxes inside a larger box, SSA ERP$_{LX}$ refers to the smaller box as the carton and the larger box as the pallet. When using SSA ERP$_{LX}$, it is important to realize that the pack types are not limited to only pallets and cartons, but that the references to the terms pallet and carton mostly apply to the level of packaging.

Packing Group Number
Pack Group (or consignment) is used in RMS/SSA ERP$_{LX}$ to represent a selection of items/packages that is grouped together for purposes of transportation/document control.

Packing Method
Valid values are:

S	For this customer and ship-to address only this item number is shipped in a single pallet or carton
M	for this customer and ship-to address only this item is shipped and it is packed into several smaller cartons (or boxes) which are then stacked on a pallet
G	or this customer and ship-to address the item is packed into cartons (or small boxes) and then stacked on a pallet with cartons of other items

During initial entry of release information, the packing method defaults from the Customer Ship-to file if entered, or the Customer Master file.

Note: the use of the packing method code is required if you are using ASN's (AVIEXP or 856) or packaging is required for this customer/ship-to.

Pay-As-Built
Suppliers that use sequenced shipping also have the option to assign the shipped goods to a customer specific consigned inventory warehouse/location, and receive payment (electronically) from the customer at such time the goods are consumed in the customer's manufacturing process.

Reconciliation
The process by which dynamic customer JIT/release demand is reconciled with prior, in transit shipments, to determine the true outstanding demand. The reconciliation process varies depending on the type of information supplied by the customer. From items where a JIT is supplied, the release requirements which fall within the time period of the JIT are replaced by the JIT requirement. When no reconciliation is required, all of the requirements are outstanding.

Recognition Rate
The currency conversion rate from transaction currency to base currency. The recognition rate may apply if the SSA ERP$_{LX}$ Multiple Currencies product is installed.

Release Management
Release Management System (RMS) is an integrated customer solution designed to meet the requirements of a repetitive, high volume contract based order business environment, and contains built in electronic communication efficiencies associated with SSA GT's Electronic Communication Manager. The design of RMS and ECM minimizes the overall system support requirements and maximizes the processing efficiencies within the client's receipt-to-order-fulfillment cycle.

Releases
High-volume, repetitive manufactures use release to communicate on-going requirements to suppliers by release schedules. The customer periodically (for example: weekly or monthly) sends the suppliers a statement of future requirement quantities and expected ship or delivery dates. A contract is typically negotiated for a given period (usually 12 months) based on an expected purchase volume at an agreed upon price. Periodically the latest requirements for a given item are sent to the supplier manually, by fax, or using Electronic Data Interchanges (EDI). Requirements may be for specific dates or summarized by week numbers. Details related to the last shipment(s) received by the customer are also transmitted to the supplier to be considered in calculating the new net requirements.

Retroactive Invoicing
Typically prices are agreed with a supplier on an annual basis, but price negotiations can be lengthy even though the activity may have started well in advance of the previous contract termination date. During the negotiation period, the supplier continues to ship and invoice at the old price with the understanding that the supplier can produce a supplementary invoice for the difference once the new price is established.

Sequence Shipping
The ability to support customer demand that requires the supplier to pack product in a specific order prior to shipment.

Shipping Lead Time
If the requirement date that the customer supplies is a ship date, you should use a shipping lead time of 0. If the requirement date is the date the customer expects to receive the shipment at his or her specified location, you may optionally specify a shipping lead time. However, the shipping lead time value on the release header is the only value used to determine the ship date. The ship date is actually calculated dynamically during contract/release maintenance by applying the shipping lead time in conjunction with the non-working days calendars.

Ship date = Shipment arrival date - (shipping lead time - carrier non-working days).

Ship-to Master
A file that contains the addresses to which customers receive ordered goods. These addresses can be overridden when sales orders are created.

Unit of Measure
SSA ERP_{LX} supports selling and stocking units of measure. SSA ERP_{LX} automatically converts the selling units from sales order processing into stocking units for inventory reports and inquiries.

Warehouse
A three-character alphanumeric code that specifies a generic location for the item in inventory, for example, CH = Chicago. Warehouses can be divided into smaller groupings (either physically or logically) by using locations. Codes and descriptions are held on the Warehouse Master file (IWM). At least one existing warehouse is needed for processing.

Chapter 11
Sales and Commission Analysis

11

The chapter consists of the following topics:

Overview

The Sales and Commission analysis product allows you to maintain information about salespeople, make extensive inquiries into sales history, and maintain and process commissions. Sales and commission reports are generated through the SSA ERP_{LX} Information Retrieval program.

The Sales and Commission Analysis product is always installed when the Billing Product is installed. The documentation has been separated for user convenience. Read the documentation for the Billing Product (SSARUN08) if you need more detailed information about that product.

System highlights

- Establish and maintain information about salespeople
- Make inquiries into salesperson information, sales history data (by customer, item, salesperson, and warehouse), and invoiced purchase orders
- Establish and maintain rates of commission according to customer, item, and/or salesperson
- Update the amount of commission payable to salespeople
- Print listings of salesperson information, commission rates, and commission payments

Sales interfaces

Sales interfaces with the following products:

- Accounts Receivable (Company, Profit center, Terms, Salesmen, Customer master)
- Configurable Order Management files (Customer Address master)
- Promotions and Deals files (Special Pricing)
- Sales Report Definition

You will want your sales reports designed, built and tested as soon as possible, although processing does not depend on this being done. SSA ERP_{LX} maintains all the sales information automatically. You need only be

concerned with formatting your reports and retrievals. Report definition is not covered in this document.

Product workflow

Salesperson maintenance

Salespeople are established in SSA ERP$_{LX}$ by adding them to the Salesperson Master file (SSM) using the Salesperson Master program (SAL100). The Salesperson Master file stores the salesperson's name, address, telephone number, and commission code. The SAL100 program is also used to update or delete information about salespeople.

All regular charge lines on invoices post automatically from the Billing product to the sales fields on the master files. Special charge lines are summarized to the Invoice History file (SIH).

You can print a list of the contents of the Salesperson Master file (SSM) through the Salesperson List program (SAL110).

Commission maintenance

Commission codes for customers, items, and/or up to three salespeople are associated with percentage rates of commission for the salespeople using the Sales Commission Rates Maintenance program (SAL120). Commission rates can be set up to be associated only with the salesperson commission code(s), or with a combination of commission codes that also include customer and/or item. Commission rate information is stored in the Sales Commission Rate file (SCR) and can be printed through the Commission Rates List program (SAL125).

Sales inquiries

There are three types of inquiries available in the Sales and Commission Analysis system:

- Salesperson Alpha Lookup program (SAL310): allows you to view identifying information about your sales staff from the Salesperson Master file (SSM).

- Sales History Inquiry (SAL300): allows you to view information from the Sales History file. You may inquire into sales by: customer, item, salesperson, or warehouse. Several of these inquiries allow you to display even more specific information such as a customer's sales history by item, or a summary of a salesperson's sales.
- Invoiced Purchase Orders (SAL315) allows you to view a customer's purchase order history, including the invoice and order numbers associated with the P.O., as well as the profit margin resulting from the invoiced amount less cost.

Sales analysis data is held in the following files:

File name	Data
Item Master (IIM)	Month-to-date and year-to-date amount sales, amount costs, and unit sales.
Customer Master (RCM)	Last twelve months' amount sales with year-to-date and prior year-to-date sales.
Salesperson Master (SSM)	Last twelve months' amount sales with year-to-date and prior year-to-date sales.
Sales History (SSH)	Month-to-date and year-to-date sales amount, cost, and unit sales by item and customer.
Transaction History (ITH)	Each shipment transaction with customer number, invoice number, quantity, scheduled date, etc.
Invoice History (SIH)	Invoice header data such as total amount, customer number, order number, cost, total of special charges, etc.
Invoice Line History	
(SIL)	Invoice line data such as amount, tax rates, commission codes, item and quantity.
Warehouse Master (IWM)	Last twelve months' amount sales with year-to-date and prior year-to-date sales.
Sales Detail (SSD)	Last twelve months' unit sales by item and warehouse with year-to-date and last year-to-date sales and cost data.

Sales reports

Sales reports are user-designed using the SSA ERP_{LX} Information Retrieval option.

Product quick reference

The table provides the functions used within Sales and Commission Analysis as well as their associated program codes. Program codes are used to quickly access a function. To use a program code, type the program code in the empty field at the top of a menu panel and press Enter. The system displays the first panel in that program.

Function	Program
Commission generation	SAL600
Commissions payable maintenance	SAL620
Commission payment maintenance	SAL610
Generate commissions	SAL600
Inquiry, invoiced purchase orders	SAL315
Inquiry, sales history	SAL300
Inquiry, salesperson alpha	SAL310
Invoiced purchase orders inquiry	SAL315
List commission payments	SAL610
List commission rates	SAL125
List salesperson file	SAL110
Maintain commission amounts payable	SAL620
Maintain commission payments	SAL610
Maintain sales commission rates	SAL120
Maintain salesperson files	SAL100
Sales commission rate maintenance	SAL120
Sales history inquiry	SAL300
Salesperson alpha inquiry	SAL310
Salesperson maintenance	SAL100

Glossary

Commission code
The two-character identifier for a customer, item, or salesperson commission code.

Commission rate
The percentage of commission paid to a salesperson. Commission rates can be assigned to customer, item, and or salesperson commission codes. Up to three salespeople may split a commission, and the total of the percentages for the salespeople can exceed 100%.

Salesperson master
The file (SSM) that stores the six-digit salesperson number, and the salesperson's name, address, telephone number, and commission code. You must have at least one salesperson. (The Salesperson Master file is maintained in SAL100 and listed in SAL110).

Notes

Chapter 12
Warehouse Management

12

This chapter describes Warehouse Management. The chapter consists of the following topics:

Overview

Effective management of warehouse resources is a crucial component of key operating strategies. In an age in which responsiveness is as important as capital, all aspects of warehousing must be managed to reduce both cycle times and costs. Streamlined warehouse processes, from receiving and putaway to order fulfillment and development, rely on efficient use of space, manpower, equipment, inventory, information and time. Fundamental processes for effective warehouse management include:

- Definition of warehouse geographies that optimize the use of limited space for efficient storage and movement of goods.
- Scheduling of warehouse activities to facilitate cost-effective use of material handling manpower and equipment.
- Flexible, automated selection of warehouse locations for putaway and picking to help minimize order cycle times.
- Effective management of warehouse inventory through automated replenishment of picking locations and streamlined internal material movement activities.

SSA ERP_{LX} Warehouse Management (WHM) addresses the warehouse product flow and control requirements of manufacturers and distributors alike. Fully integrated with SSA ERP_{LX} Purchasing, Inventory Control, Order Management, Billing and Distribution Resource Planning applications, WHM supports warehouse issues from the scheduling of receipts through the staging and shipment of goods to customers.

Product highlights

User-defined Warehouse Geography allows locations to be identified in two or three dimensional axes such as Aisle, Bay and Level.

Scheduled Goods Receiving allows the creation, maintenance, cancellation and receipt of delivery bookings that group items together for receiving at a specified date and time .

Automated Putaway Location Selection is achieved using item/warehouse specific requirements filtered through a putaway location selection hierarchy.

Flexible Picking Controls include a comprehensive set of picking alternatives with which to effectively manage the pick process.

Stock Consolidation Locations for the Warehouse, Zone, or Item/Zone allow you to move picked stock to a designated consolidation location. Once stock is placed in a consolidation location, you can choose to return it to storage, move it to another consolidation location, or send it to the ship location.

Automatic Replenishment monitors stock levels at each dedicated picking location and triggers a replenishment order when the minimum quantity threshold defined for an item/warehouse combination is reached.

Warehouse Administration effectively manages internal warehouse activities and resources such as stock movement, transfers and status and tracking functions.

Other files that work in conjunction with Warehouse Management:

- Inventory (Item Master, Warehouse Master, Location Master, Lot Master, Location Inventory, Transaction History)
- Order Management (Order Header and Order Lines, Customer Master)
- Purchasing (Purchase Order Header and Purchase Order Lines)
- Advanced Process Industries (Container Master Maintenance)
- Capacity Planning (Work Center Maintenance)
- Shop Floor Control (Unprinted Shop Orders Report, Shop Order Release, Lot/Location Allocation)

Note: You cannot use Warehouse Management with Just In Time, since the philosophy behind JIT assumes a warehouse is not needed.

Product flow

This part describes the workflow of Warehouse Management.

Warehouse geography

Use the following programs to maintain warehouse, zone, and location details relating to the geography of the warehouse.

Warehouse master maintenance (INV110):

Allows you to define managed warehouses and enter parameters that determine the warehouse's characteristics.

Warehouse master list (INV115):

Allows you to print a list of all warehouses in the WAREHOUSE MASTER file (IWM).

Warehouse geography maintenance (WHM100):

Allows you to create and maintain Warehouse Geography records.

Warehouse geography list (WHM105):

Allows you to print a list of the way each warehouse is organized in terms of locations.

Warehouse maintenance

These programs enable you to maintain the warehouse.

Group location maintenance (WHM120):

Allows you to maintain a range of locations as a group within a warehouse and can also handle exceptions.

Location master maintenance (INV170):

Allows you to maintain locations within a warehouse. Also allows you to determine the last date a location was cycle counted.

Location master list (INV175):

Allows you to print a list of all locations defined in the Location Master file (ILM) from the Location Master Maintenance program (INV170).

Location status code maintenance (WHM170):

Allows you to maintain Location Status Codes.

Location status code list (WHM175):

Allows you to print a list of the Location Status Code Master records in the Warehouse Management System.

Warehouse area maintenance (WHM180):

Allows you to create and maintain areas in a warehouse, and to define an interim location and a putaway algorithm for the area.

Warehouse area list (WHM185):

Allows you to print a list of the records in the Warehouse Area Master (IWA) file.

Warehouse zone maintenance (WHM190):

Allows you to create and maintain Warehouse/Zones and Warehouse/Zone/Item overrides in a managed warehouse. You can also define default shop and customer order consolidation zones.

Warehouse zone list (WHM195):

Allows you to print a list of existing zones in a warehouse or range of warehouses.

Item control data

Use the following programs to define and maintain item control data for items in the warehouse.

Pallet types master maintenance (WHM110):

Allows you to define and maintain a table of Pallet Types. These types can then be attached to Item/Warehouse records to help identify which items may be placed in particular locations in the warehouse.

Pallet/container capacity selection (WHM111):

Allows you to specify container types stored on a defined pallet type and to set the maximum number of containers that fit on non-consolidated pallet types.

Pallet number maintenance (WHM112D):

Allows you to create pre-assigned pallet numbers and define the characteristics of a pallet or a range of pallets. With this program you can delete empty pallets.

Pallet type list (WHM115):

Allows you to print a list of the Pallet Types in the Warehouse Management System.

Pallet/container capacity cist (WHM116):

Allows you to print a list of pallet types along with the maximum number of a specific container type that can be stored on a the pallet.

Pallet number list (WHM117):

Allows you to print a list of pallets based on the parameters you choose. The listing prints in pallet type sequence by warehouse, and shows the location of the pallet, whether the pallet is active or inactive, and the pallet's shipping and inventory status.

Goods receiving code maintenance (WHM130):

Allows you to define and maintain a table of Goods Receiving Codes. These codes can then be attached to any items that require special goods receiving requirements.

Goods receiving code list (WHM135)

Allows you to print a list of the Goods Receiving Codes in the Warehouse Management System.

Picking select code maintenance (WHM140):

Allows you to define and maintain a table of Picking Select Codes. These codes can then be attached to any items that require special picking conditions.

Picking select code list (WHM145):

Allows you to print a list of the Picking Select Codes in the Warehouse Management System.

Item master maintenance (INV100)

Allows you to define items to be used throughout SSA ERP_{LX}.

Item master detail listing (INV105)

Prints a listing of all active items in the ITEM MASTER file (IIM) which are set up in Item Master Maintenance (INV100).

Item/warehouse master maintenance (WHM150):

Allows details of the Flexibility Table for the item to be defined. This table is used during the putaway process, before the putaway algorithm is invoked.

Item/warehouse master list (WHM155):

Allows you to print a list of the Item/Warehouse Master records in the Warehouse Management System.

Alternate pallet maintenance (WHM156):

Allows you to create and maintain alternate pallets for a particular item. After you create an alternate pallet for the item, you can store the item on either of the pallets.

Inventory status code maintenance (WHM160):

Allows you to define and maintain a table of Inventory Status Codes and to display the reserved status codes (0-9).

Pallet consolidation (WHM545):

Allows you to consolidate allocated stock from its current pallet or container to another pallet or container. After re-palletization, SSA ERP$_{LX}$ prints a label for each consolidated pallet you created and for each container that you created or reused.

Container quantity maintenance (WHM557D):

Allows you to define the quantity for each container you use or create when you receive, move, or transfer stock.

Pallet quantity maintenance (WHM558D):

Allows you to define the quantity for each pallet you use or create when you receive, move, or transfer stock.

Cross-contamination and hazard codes

The process flow includes programs to handle cross-contamination and hazard codes.

Cross-contamination maintenance (WHM152)

Allows you to define combinations of hazardous codes and cross contamination levels that prevent items with these codes from being stored on the same pallet and/or in the same area, zone, or location.

Hazardous goods inventory maintenance (WHM153)

Allows you to define inventory records for specific hazard codes. SSA ERP$_{LX}$ stores these records in the IHG (Hazardous Goods Inventory Detail Master) file. The cross contamination check algorithm uses the information in this file to determine if a cross-contamination condition exists as you move inventory within the warehouse

Additional item/hazard code maintenance (WHM154)

Allows you to define additional hazard codes for an item after you define a primary hazard code for in Item Master Maintenance.

Cross contamination list (WHM157)

Allows you to print a listing of the defined Cross-Contamination Codes.

Hazardous goods inventory list (WHM158)

Allows you to print a listing of the Hazardous Goods Inventory records defined in the Hazardous Goods Inventory Maintenance program.

Additional item/hazard code list (WHM159)

Allows you to print a listing of the Additional Item/Hazard Codes defined for an item.

Hazardous goods inquiry (WHM340)

Allows you to view information on hazardous goods stocked in a warehouse.

Goods receipt

Use the following programs to create and maintain warehouse management details for goods received into the warehouse.

Booking-in (WHM500):

Allows you to create, maintain and cancel delivery bookings within the Warehouse Management System.

Goods receiving (WHM510):

Allows you to receive goods into the warehouse, grouped together by a common delivery number. The delivery can span several order numbers. The functionality in this program is the equivalent of Purchase Order Receipts (PUR550) and Resupply Order Receipts (DRP550).

Mass delivery creation (WHM505)

Allows you to view open orders and create a delivery for each of the orders you select.

Putaway (WHM620):

Allows you to select pallets to be put away. This program is used if stock is not put away from Goods Receiving (WHM510) or if stock is first put away to an Inspection Location.

Movement confirm (WHM520):

Allows you to confirm any stock movement within a managed warehouse. This includes Putaway, Manual Movements, Inter-Warehouse Transfers and Replenishments.

Unscheduled receipts maintenance (WHM650):

Allows you to create and maintain Unscheduled Receipts. Unscheduled Receipt numbers are automatically assigned to newly created Unscheduled Receipts.

Purchase order manual close (WHM680):

Allows you to manually close Purchase Orders that are created for managed warehouses. This relates to the quantity received for the Purchase order. The Purchase Order can still be costed if necessary.

Unscheduled receipts manual close (WHM690):

Allows you to manually close Unscheduled Receipts that are created for managed warehouses. Unlike a Purchase Order, this completes the processing for the Unscheduled Receipt as Unscheduled Receipts are not costed.

Clear unscheduled receipts (WHM920):

Allows you to delete Unscheduled Receipts that are in the system for more than a specified number of days.

Unconfirmed movements inquiry (WHM330):

Allows you to view any stock movements that are not confirmed and to reprint movement tickets. Records display in movement type/movement number sequence.

Pallet receipt date update (WHM740):

Allows you to update the Receipt Date of a pallet when stock is returned. After you update the pallet receipt date to the date the stock was originally received rather than the date the item was returned, SSA ERP$_{LX}$ includes the stock in the FIFO stock rotation.

Dimension entry (WHM980)

Allows you to enter dimensions for locations, pallets, and containers during data setup or to enter dimensions when you create a pallet or change the load on a pallet during processing. Warehouse Management uses these dimensions to calculate the size of the pallet/container and space and compares the results of the calculation during putaway or move to determine whether the stock fits in the available warehouse space.

Picking and shipping

Use the following programs to create and maintain warehouse management details for picking and shipping stock.

Shop order pick release (WHM530)

Allows you to pick allocated and reserved stock for components of shop orders in managed warehouses. You can pick from consolidation locations and mixed pallets (pallets containing multiple items/lots).

Pick confirm (WHM540):

Allows you to manually confirm pick lists requested using Pick Select/Print (WHM530). If Pick Confirmation = 0 for the warehouse, then pick lists are automatically confirmed and the pick list confirmation process is not required.

This program is used only if you specified picking confirmation at the warehouse level.

Ship confirm (ORD570):

Allows you to confirm the actual quantity (and lot/location) of inventory shipped, as opposed to the quantity picked.

Mass delivery creation (WHM505):

Allows you to view open orders based on parameters you enter and to create a delivery for each of the orders you select.

Multiple picking location maintenance (WHM151)

Allows you to process multiple locations for the particular Picking level selected from Item/Warehouse Maintenance (WHM150).

Warehouse administration

Use the following programs to maintain details regarding the administration of stock stored in the warehouse.

Manual pallet movement (WHM560):

Allows you to move pallets within a managed warehouse. Movements from an off-site location can be processed as a movement to an intermediate receiving location, then to a main storage location.

Manual replenishment (WHM570):

Allows you to manually replenish Picking or Replenishment locations within the warehouse, overriding automatic replenishment. This program is normally used only following a stock adjustment at the location, as picking normally generates Replenishment instructions if required.

Inventory status maintenance (WHM580):

Allows you to amend the status of pallet inventory held within the warehouse. Individual pallets can be accessed discreetly by Pallet Number (UPI - Unique Pallet Identifier), or processing can be by Item Number/Location. In the latter case all pallets for that item at the specified location are processed.

Print shipping documents (ORD590):

Allows you to print the shipping documents, including packing lists and bills of lading.

Location status maintenance (WHM590):

Allows you to amend the status of Main Storage locations within the warehouse. The status of stock within these locations can be maintained at pallet level as well.

Inventory transaction posting (WHM610):

Allows you to enter Inventory Transactions for stock held within a managed warehouse as well as to reverse the receipt of the goods. This program must be used instead of Inventory Transaction Processing (INV500) for managed warehouses. This program is used mainly for Inventory adjustments and Opening Balance transactions.

Inter-warehouse transfers (WHM550):

Allows you to move stock between two warehouses, one of which must be a managed warehouse. It can also be used to split pallets by moving part of a pallet within the same warehouse.

Inventory Status Code List (WHM165):

Allows you to print a list of the Inventory Status Code within Warehouse Management.

Stock counting

Use the following programs to perform stock counting functions for the goods in your warehouse.

Stock count worksheets Selection (WHM313):

Allows you to select Stock Count Worksheets. You can select by Item, Location or Item Class for a given warehouse. When selecting by location, you can include locations with zero inventory.

Un-posted Stock Counts (WHM312):

Allows you to list all Stock Count Worksheet selections for the warehouse entered that are not yet posted using Stock Count Post (WHM640).

Stock count post (WHM640):

Allows you to enter Stock Count details on to the system once the stock is physically counted and written on the Stock Count Worksheets. If the warehouse uses One-Step stock counting, then the Inventory levels are adjusted immediately. If the warehouse is using Two-Step stock counting, then Inventory levels are adjusted using Inventory Transaction Post.

Stock count variance report (WHM250):

Allows you to request the Stock Count Variance Report. This details the differences between the Stock Count post quantity and the Book quantity. It is run by warehouse and selection can also be made by Stock Count Posted Date.

Stock count purge (WHM830):

This program has two functions. The first is to clear down unposted records from the STOCK COUNT file prior to selecting Stock Count Worksheets to print. The second function is to physically purge old Stock Count Records.

Cycle count worksheets (INV310)

This program selects the items which are due for cycle counting. Items are selected based upon the limits you set in the program. The last panel within this program (INV530 or INV531) allows you to print the items selected.

System parameters

Use the following programs to maintain processing and security parameters that relate to warehouse management.

System parameters generation (SYS800):

The parameters for Warehouse Management processing are established in the System Parameters program (SYS800). This program allows you to maintain System Parameters for your current SSA ERP_{LX} environment.

Reports and inquiries

Use the following programs to make inquiries and generate reports based on data relating to stock in the warehouse.

Delivery inquiry (WHM300)

Allows you to enter the selection criteria by which to view the details of a single delivery or group of deliveries.

Stock inquiry (WHM310)

Allows you to view pallet inventory items and container details within the Warehouse Management System. You can also use this program to print pallet and container labels.

Load status inquiry (WHM320)

Allows you to view the status of loads as they move throughout the system.

Consolidation of Stock Report (WHM220)

Allows you to enter the selection criteria required to print the stock consolidation report.

Inventory status list (WHM230)

Allows you to print a list of the status of the inventory held against each item within a selected range of warehouses and item numbers.

Location status list (WHM240)

Allows you to print a list of the current status of locations defined in the Warehouse Management System.

Unconfirmed movements inquiry (WHM330)

Allows you to view any stock movements that are not confirmed and to reprint movement tickets.

Material status inquiry (INV300)

This program allows you to view general material status information as well as the month-to-date and year-to-date totals for the item's inventory transactions.

Warehouse management processing

This section explains the processing done in Warehouse Management

Allocating stock

See Picking/Allocating.

Consolidation

If you are splitting a pallet by moving/picking less than the total number of containers or items on the pallet, you need to move the pallet to a consolidation or interim location in order to repalletize the stock. However, if you entered 1 (Yes) in the Use Pallet in Place field when creating or maintaining a zone, you can split pallets in those zones without moving the pallets.

When a pallet must be moved to a consolidation location for repalletization (the Use Pallet in Place flag is set to No in the Warehouse Zone Master (IZN) file), the Consolidation Location Calculator algorithm searches the existing records to determine the consolidation location used. This algorithm determines:

- Whether a consolidation location is required
- How many Movement Work File (IW1) records to build
- Reserved quantity for the pallet

If consolidation is required, the algorithm determines whether consolidation can be performed using the Pallet Quantity Maintenance (WHM558) program or the Pallet Consolidation (WHM545) program. The algorithm uses the logic illustrated in the table for Consolidation.

This logic applies for manual confirmations only (Movement Confirmation is on for this movement type). It also assumes that if the associated warehouse is not a managed warehouse, the Use Pallet in Place flag is 1 (Yes) in the Warehouse Zone Master (IZN) file.

The table below illustrates the logic SSA ERP$_{LX}$ uses to determine whether to force pallets to a consolidation location.

Pallet Type	From Location Use in place of Flags	To Location type	Interim /Consol Location	Quantity	Reserve Quantity
Simple	Yes	Non-palletized	-	10 of 100	10
Simple	No	Either	Yes	10 of 100	100
Simple	Yes	Palletized	No; Pallet Qty Mnt in place	10 of 100	10
Simple	Full	Either	Interim only	Full	Full
Mixed	Yes	Non-palletized	-	10 of 100	10
Mixed	No	Either	Yes	10 of 100	100 + all other items
Mixed	Yes	Palletized	No; Pallet Qty Mnt in place	10 of 100	Full
Mixed	Full	Either	Interim only	Full	

Cycle count for zero inventory locations

When you request a cycle count, you can specify whether to count empty locations (locations with zero inventory). The cycle count programs ensure that all locations are counted at least once a year, regardless of whether the locations are empty or not. This ensures that all stock is accounted for and helps you find pallets that are incorrectly located.

When you select to include locations with zero inventory, SSA ERP_{LX} compares the current system date to the last cycle count date for a given location in the Location Master (ILM) file. If the difference between these dates is greater than the frequency of days for cycle counting in the Warehouse Master (IWM) file, SSA ERP_{LX} selects the location for cycle counting and includes it on the cycle count worksheets.

Three separate situations can occur when counting locations that SSA ERP$_{LX}$ indicates have zero inventory.

In the first situation, you count no stock in a location. When this occurs, the Post Stock Counts (WHM640) program posts a zero inventory record and updates the last cycle count date in the Location Master (ILM) file with the cycle count post date.

In the second situation, you count stock in a location and a record exists in SSA ERP$_{LX}$ for this stock in the given location for a pallet and/or container. A record must exist for this stock in the Location Inventory (ILI) file, Pallet Inventory (IPI) file, Lot Master (ILN) file, and/or Container Master (YCI) file. In this situation the Post Stock Counts (WHM640) program posts an inventory record and updates the last cycle count date in the Location Master (ILM) file with the cycle count post date.

In the third situation, you count stock in a location and records do not exist in SSA ERP$_{LX}$ for this stock in this location for a pallet and/or container. You should close out the cycle count (ISI) record by entering a zero (0) quantity in the Post Stock Count (WHM640) program. You must then perform the necessary inventory transaction in the Inventory Transaction Posting (WHM610) program to reconcile the difference discovered during the cycle count. (This is most likely an opening balance transaction.) This records the inventory actually identified in the cycle count.

Dimensions use for putaway and movement

SSA ERP$_{LX}$ uses pallet/container and location dimensions (length, height, width, and weight) to determine whether a specific pallet/container fits in any of the fully palletized locations of the warehouse. To activate this feature enter Yes in the Compute Pallet Dimensions field for the warehouse in Warehouse Maintenance (INV110). Then enter the standard linear and weight units of measure for the warehouse.

Use the location and zone maintenance programs to enter location dimensions and the pallet, container, and item maintenance programs to enter pallet, container, and item dimensions. Use Item/Warehouse Maintenance to enter full pallet dimensions. During putaway and movement of stock between warehouses or between pallets/containers and during confirmation of the movements you enter the quantity being moved and then have the opportunity to enter the new dimensions of the From and To pallet/container. SSA ERP$_{LX}$ uses either your entries or existing pallet/container information (IAP, IIM, IIW, and IPI files) to calculate the size of the load of the pallet and stores the information in the Pallet Master (IPM) file.

To calculate the dimensions, the units of measure between the pallet and item or container must be the same. If they differ, SSA ERP$_{LX}$ uses the unit of measure conversion table (IUM file) to convert dimension. If no conversion exists, SSA ERP$_{LX}$ converts the dimension to the warehouse's default linear and weight units of measure. If conversion fails again, SSA ERP$_{LX}$ uses 1.000 as the conversion factor and issues a warning message. The system follows a similar procedure when processing inter warehouse transfers.

A compare algorithm checks each dimension's unit of measure on the pallet to the unit of measure of the To location. Only if they are the same or a conversion exists between these dimensions can processing continue. SSA ERP$_{LX}$ then compares the total to the capacity of the To location if it is a fully palletized location (0 - Main Storage, A-Reject, 5-Inspection, or 7-Receiving). If the pallet/container exceeds the location's capacity, SSA ERP$_{LX}$ issues a warning. Otherwise, the stock moves to the new location.

When processing redesignate transactions, if the Compute Pallet Dimensions flag for the warehouse is set to Yes, SSA ERP$_{LX}$ compares the dimensions of the From and To items and issues an error message if they are different. When processing Cycle Counts and Adjustment in a managed warehouse that has the Compute Pallet Dimensions flag set to Yes, SSA ERP$_{LX}$ displays a dimensions panel where you enter the dimension information.

Hazardous goods

SSA ERP$_{LX}$ uses hazard codes to prevent certain products from being handled together, moved together, or stored in the same area, zone, location or on the same pallet. In SSA ERP$_{LX}$ you define hazardous goods codes in the Hazardous Code Description program (LHD file). You then use the Cross-Contamination Maintenance program to create mutually exclusive relationships between hazard codes and link them to a level of storage (area, zone, location, pallet). SSA ERP$_{LX}$ stores Cross Contamination records in the ICC file. The cross contamination check algorithm uses the information in the ICC file and the IHG (Hazardous Goods Inventory) file to determine if a cross-contamination condition exists as you move and store inventory in the warehouse. You can print hazardous goods notes and handling information on move documents and pallet labels.

Inspection

When putting stock away from receiving locations, the Putaway Algorithm checks the Goods Receiving Code for the Inspection Algorithm. You set inspection parameters in Goods Receiving Maintenance (WHM130). If the

delivery is subject to inspection, SSA ERP$_{LX}$ executes the Inspection Algorithm.

Inter-warehouse transfers

When processing a mixed pallet, the Inter Warehouse Transfers (WHM550) program produces a separate Movement Work File (IW1) record for each item/lot/container on the pallet.

The program moves and reserves only the quantity requested and automatically creates a new pallet for the move.

If a pallet must be split or repalletized during an inter-warehouse transfer, the pallet is split according to the rules explained in “Splitting Pallets/Repalletizing” in this Processing section.

If a pallet must be moved to an interim location for repalletization during an inter-warehouse transfer, the location used is determined by the Consolidation Location Calculator. See “Consolidation Location Calculator” in this Processing section for more information.

Interim location processing

If either the area or zone of the To location selected has an Interim location defined and this Interim location differs from the area/zone of the From Location, SSA ERP$_{LX}$ initially moves the stock to the To interim location, not the final destination location. The Interim location at zone level takes precedence if the zone is linked to the area. The Interim location at area level takes precedence if the zone is not linked to an area.

If Replenishment movements are manually confirmed, SSA ERP$_{LX}$ sets the To Location on the Movement Work record to the Interim Location and sets the Final Movement Location to the Picking location. If Replenishment movements are automatically confirmed, SSA ERP$_{LX}$ sets the To Location as the Picking Location.

Inventory pallet status flow

Four fields in the Item/Warehouse record (IIW file) affect the disposition of the pallet status.

Goods receiving code

You define these codes in Goods Receiving Maintenance (WHM130). The codes control whether or not the stock passes through inspection, what percentage or quantity of a delivery to inspect, and the number of quarantine days, if any.

Inspection zone/inspection location

Either the Inspection Zone or the Inspection Location must be entered on the Item/Warehouse Master Maintenance panel WHM150D2-01.

Default inventory status

If the status is 0 (Received) or 1 (Inspection), the item moves from the receiving location to the inspection location in inspection status. If the pallet status is not 0 or 1 (that is, 4 (Available) or 9 (Rejected)), the pallet moves to the inspection location with the default status, but the pallet will not proceed from the Inspection location to the Putaway location. You must manually move the stock

Pallet status codes:

0	Received
1	Inspection
4	Available
9	Rejected

These are the only pallet status codes reserved by SSA ERP$_{LX}$ to update and advance inventory/pallet status. To do this Warehouse Management uses the following rules:

Rejected inventory goes from receiving to a Reject (type 9). Location with a Location Type A (Rejected) in the Location Extension file (ILE) record. All inventory received into a reject location is set to a pallet/inventory status of Reject (9).

Inventory received by Goods Receiving (WHM510) into a Receiving Location takes on the Default Inventory Status that is in the Item Warehouse file (IIW) record.

If the Default Inventory Status is 0 (Received), SSA ERP$_{LX}$ places the pallet status at 0 (Received) in the Receiving Location, I (Inspection) in the

Inspection Location, and 4 (Available) if moved from Inspection to any palletized location other than rejection. If moved to rejection the Default Inventory Status changes to 9 (Rejected).

Manual stock movement

When processing a mixed pallet, the Manual Stock Movement (WHM560) program produces a separate Movement Work File (IW1) record for each item/lot/container on the pallet.

If a pallet must be split or repalletized during a manual stock movement, the pallet is split according to the rules explained in “Splitting Pallets/Repalletizing” in this Processing section.

If a pallet must be moved to an interim location for repalletization during a manual stock movement, the location used is determined by the Consolidation Location Calculator. See “Consolidation Location Calculator” in this Processing section for more information.

Mixed pallet processing

For mixed pallet processing, see the processing for Inter Warehouse Transfers, Manual Stock Movement, Replenishment, and Putaway.

Picking/allocating

The Picking Algorithm ignores non-moveable pallets for both available stock calculations and picking. The Algorithm includes pallets with an Inventory Status Allocatable flag set to 1 (can be allocated). The Algorithm does not include pallets with an Inventory Status Transferable flag set to 0 (cannot transfer); no allocations are created against these pallets nor is their stock included in the available stock calculation.

The Picking Algorithm ignores stock in manufacturing locations linked to warehouses other than the current one when calculating available stock. This enables mixed pallets (pallets containing multiple items/lots) to be picked and for picking from consolidation locations.

The Shop Order Allocation process checks Inventory Status codes, Location Status codes, and Allocatable flags and generates reservations or allocations if enough stock is available. The Shop Order Reservation flag defined for the

managed warehouse determines whether reservations or allocations are created. You can convert reservations to allocations and generate stock movements by performing Shop Order Pick Release. Optionally you can run Shop Floor Batch Allocations to create reservations, allocations, or to turn reservations into allocations without producing movement instructions. You must then run Shop Order Pick Release to produce the stock movements.

SSA ERP$_{LX}$ performs batch balancing of formulas with potency items stocked in managed warehouses if the warehouse does not require reservations or if the potency item is already reserved in a warehouse that does require reservations. If the potency item was reserved, batch balancing converts the reservations to allocations.

Container controlled inventory picked for orders must go through consolidation unless the entire pallet is allocated. The allocation of containers to Customer or Shop orders generates movement instructions. See Stock Rotation Processing for additional information.

Putaway

The Putaway Algorithm, puts stock away based on the following rules:

1. The system uses the cross-contamination check algorithm to check the hazardous goods restrictions and cross-contamination table files to validate areas, zones, locations, and pallets used for putaway.

2. The system checks picking or replenishment locations that are replenished from main storage. If they are not full, they are replenished.

3. The system checks the preferred location on the Item/Warehouse (IIW) record and fills that location.

4. The system checks the preferences you set up in the flexibility table on the Item/Warehouse (IIW) record in WHM150.

5. If stock remains to be putaway, the system searches for the best available locations, starting with the location nearest the highest order picking or replenishment location (fanning). From the last location that inventory was placed, the system tries to determine the next nearest main storage location with a status of G (getting filled) that contains the same item and fills this location. If it fills the location, the system changes the status to F (full). If stock remains after checking all previously used locations, the system starts at the location nearest the highest order picking or replenishment location with an E (empty) status, stores the remaining stock and changes the status to G (getting filled) or F (full).

When a mixed pallet is being putaway to a pick or replenishment location, the system checks the Use Pallet in Place flag in the Warehouse Zone Master (IZN) file to determine whether the current pallet location allows part pallet pick. If this flag is set to Yes (1), the system generates a separate Movement Work File (IW1) record for each item/lot/container on the pallet. If this flag is set to No (0), the system displays an error message and you must execute a manual process before putaway can be performed.

Putaway ignores the stack height value when the location has dimension restrictions. However, pallet capacity is still used.

Replenishment

Replenishment processing includes pallets with an Inventory Status Allocatable flag set to 1 (Yes). The Replenishment Algorithm also checks the Transferable flag for the pallet and ignores those set to 0 (No).

When processing a mixed pallet, the Replenishment Algorithm writes a separate Movement Work File (IW1) record for each item/lot/container on the pallet.

If a pallet must be split or repalletized during Replenishment, the pallet is split according to the rules explained in “Splitting Pallets/Repalletizing” in this Processing section.

If a pallet must be moved to an interim location for repalletization during Replenishment, the location used is determined by the Consolidation Location Calculator. See “Consolidation Location Calculator” in this Processing section for more information.

Splitting pallets/repalletization

There are two methods of splitting pallets/repalletization. The method used is determined by the Use Pallet in Place flag in the Warehouse Zone Master (IZN) file. You maintain this flag in the Warehouse Zone Maintenance (WHM190D) program.

If the Use Pallet in Place flag is set to 1 (Yes) for a zone, you can split pallets without moving them in this zone.

If the Use Pallet in Place flag is set to 0 (No), you must move the pallet to a consolidation or interim location and repalletize.

When the second situation occurs, the Consolidation Location Calculator algorithm searches the existing records to determine the consolidation location used. For more information, see “Consolidation Location Calculator” in this processing section.

Splitting pick lists

Warehouse Management provides a number of options for splitting pick lists. Using Warehouse Master Maintenance (INV110) you define a split pick list option for each warehouse. The SSA ERP_{LX} code table contains the following nine choices, which are restricted and are not maintainable by users.

0	No Split List
1	Zone Split
2	Order Split
3	Zone/Order Split
4	Pallet Split
5	To Location Split
6	To Location/Zone Split
7	To Location/Order Split
8	To Location/Zone/Order Split

When you use Pick Release to create a pick list for a managed warehouse, SSA ERP_{LX} calls WHM Pick List Splits (WHM534B) and passes the warehouse and pick list number to process. WHM 534B checks the Split Pick List field in the Warehouse Extension (IWE) table for any entry except 0 (do not split pick lists) and calls the proper subroutine to process the request.

Stock rotation

For lot controlled items, stock rotation is FEFO (first expiry, first out). SSA ERP_{LX} processes containers in ascending sequence of lot expiration date, subject to the normal lot-controlled status validation, available date, for example. If stock is not lot controlled, stock rotation is FIFO (first in, first out).

SSA ERP$_{LX}$ processes containers in ascending sequence of Container Available Date.

For container-controlled items, SSA ERP$_{LX}$ moves containers on the same pallet together. Therefore, the oldest container on the pallet determines the replenishment sequence. If the replenishment quantity is less than a pallet, SSA ERP$_{LX}$ moves whole containers. SSA ERP$_{LX}$ processes containers in FEFO/FIFO sequence for the pallet until the replenishment quantity is exceeded and ignores mixed pallets, pallets having allocations, non-moveable pallets, and containers flagged as not available.

Warehouse Management data is contained in the following files:

File	Text
IAP	Alternate Pallet
IBP	Picking/Batch
ICC	Cross-Contamination
ICT	Pallet Type Codes
IDD	Delivery Detail
IDH	Delivery Header
IDW	Inventory Dimensions Work file
IGR	Goods Receiving Codes
IHG	Hazardous Goods Inventory
IIH	Item/Hazard Code
IIE	Item Extension File
IIS	Inventory Status Codes
IIW	Item/Warehouse File
ILE	Location Extension File
ILS	Location Status Codes
IMD	Mass Delivery Creation
IMP	Multiple Location Picking
IPC	Pallet/Container Capacity
IPI	Pallet Inventory
IPL	Picking Load File
IPM	Pallet Master File
IPP	Pick List File

File	Text
IPS	Picking Select Codes
IRD	Unscheduled Receipts Detail
IRH	Unscheduled Receipts Header
ISI	Stock Count File
IWA	Warehouse Area
IWE	Warehouse Extension File
IWG	Warehouse Geography File
IW1	Movement Work File
IW2	Replenishment/Picking Linkage
IW3	Group Location Range Work File
IW4	Picking Work File
IW5	Billing Work File
IW6	Picking Select Work File
IZI	Warehouse Zone/Item Override
IZN	Warehouse Zone Master

Product quick reference

The following is a list of Warehouse Management functions and the programs associated with each function.

Function	Program
Booking-In	WHM500
Clear Unscheduled Receipts	WHM920
Confirm Movement	WHM520
Consolidate Pallets	WHM545
Create Mass Deliveries	WHM505
Create/Maintain Additional Item/Hazard Codes	WHM154
Create/Maintain Alternate Pallets	WHM156
Create/Maintain Container Quantity	WHM557D
Create Mass Deliveries	WHM505
Create/Maintain Cross Contamination Records	WHM152
Create/Maintain Goods Receiving Codes	WHM130
Create/Maintain Hazardous Goods Inventory	WHM153
Create/Maintain Inventory Status Codes	WHM160
Create/Maintain Item/Warehouse Master	WHM150
Create/Maintain Pallet Numbers	WHM112D
Create/Maintain Pallet Quantity	WHM558D
Create/Maintain Pallet Type	WHM110
Create/Maintain Pallet/Container Capacity	WHM111
Create/Maintain Picking Select Codes	WHM140
Create/Maintain Unscheduled Receipts	WHM650
Create/Maintain Warehouse Areas	WHM180
Create/Maintain Warehouse Geography	WHM100
Create/Maintain Warehouse Master	INV110
Create/Maintain Warehouse Zones	WHM190

Function	Program
Delivery Inquiry	WHM300
Inter-warehouse Transfers	WHM550
List Additional Item/Hazard Codes	WHM159
List Cross Contamination Records	WHM157
List Goods Receiving Codes	WHM135
List Hazardous Goods Inventory	WHM158
List Inventory Status	WHM230
List Inventory Status Codes	WHM165
List Item/Warehouse Records	WHM155
List Location Status	WHM240
List Location Status Codes	WHM175
List Locations	INV175
List Pallet Numbers	WHM117
List Pallet Types	WHM115
List Pallet/Container Capacity	WHM116
List Picking Select Codes	WHM145
List Unposted Stock Counts	WHM312
List Warehouse Areas	WHM185
List Warehouse Geography	WHM105
List Warehouse Zones	WHM195
List Warehouses	INV115
Load Inquiry	WHM320
Maintain SSA ERP_{LX} Security	SYS600
Maintain Group Location	WHM120
Maintain Inventory Status	WHM580
Maintain Item Master	INV100
Maintain Location Status	WHM590
Maintain Location Status Codes	WHM170
Maintain Locations	INV170
Maintain Multiple Picking Locations	WHM151

Function	Program
Maintain System Parameters	SYS800
Manual P.O. Close	WHM680
Manual Replenishment	WHM570
Manual Stock Movements	WHM560
Manual U.R. Close	WHM690
Material Status Inquiry	INV300
Pick and Release Goods for Shop Orders	WHM530
Post Inventory Transactions	WHM610
Post Stock Count	WHM640
Print Shipping Documents	ORD590
Purge Stock Count	WHM830
Putaway	WHM620
Receive Goods	WHM510
Report Consolidated Stock	WHM220
Report Load Status Summary	WHM210
Report Stock Count Variance	WHM250
Reverse Receipt of Delivered Goods	WHM610
Select Stock Count Worksheets	WHM313
Ship Confirm	ORD570
Stock Inquiry	WHM310
Unconfirmed Movements Inquiry	WHM330
Hazardous Goods Inquiry	WHM340
Update Pallet Receipt Dates	WHM740

Glossary

Alternate Pallet
You create and maintain alternate pallets for a particular item in Alternate Pallet Maintenance (WHM156). For example, you can define a smaller pallet for an item that can be stored in two locations, each of which has a different height restriction. After you create an alternate pallet for the item, you can store the item on either of the pallets. Alternate pallets cannot contain multiple items/lots.

Allocation
The process of reserving specific inventory quantities for components or finished goods needed for a customer or shop order. During allocation SSA ERP_{LX} subtracts the quantity allocated from the on-hand quantity to determine the amount of inventory available for additional allocations.

Area
Areas are physical spaces defined within a managed warehouse to support movement and storage of goods. The hierarchy within the warehouse is area, zone, location. You create and maintain areas using the Warehouse Area Maintenance program (WHM180).

Booking-In
The process of scheduling the arrival of deliveries within a warehouse. This can take place in advance of the goods being physically received, or can take place at the same time.

Buffer-In Location
The Buffer-In location is a manufacturing location used to move stock from the managed warehouse to the shop floor and supports both palletized and non-palletized stock. You can attach the Buffer-In location to the first work center used by a Shop Order. Alternatively, you can attach the Buffer-In location to the manufacturing warehouse.

Buffer-Out Location
The Buffer Out location receives stock from the shop floor and can be a manufacturing location or a receiving location. You can attach Buffer-Out locations to the last work center used by a Shop Order.

Check Digit
A number, calculated using Modulus 23 in the default program WHM522, to assure that the proper from and to locations are entered at confirmation. This is controlled by the confirmation parameter being set to '2' at the confirmed warehouse.

Check-In Note
A document printed for a delivery. It is typically used to check stock against a delivery as it was unloaded from a truck.

Confirmation
The process of informing the system that a movement instruction has been completed. Warehouse Management supports five types of movement: Picking, Replenishment, Manual Movement, Inter-Warehouse Transfer and Putaway. Depending on the parameters set, each can be considered complete at the time that the movement was initiated, or can be manually confirmed, once the movement has been completed.

Consolidation
The process of preparing orders for shipping. Separate order lines can appear on separate pick lists and can therefore require consolidation. This is not to be confused with Consolidation processing within the Order Processing product.

Consolidation Location
A location defined as a Consolidation (type 9) location is the only location in which you can consolidate stock between pallets and/or containers. For example, to pick a container stored on a mixed pallet, you must first move the pallet to a consolidation location and transfer the container to the pallet defined to hold only those containers. You maintain location types in Location Master Maintenance (INV170).

Container
A container is a unit of storage and shipping that holds a specific quantity of a container-controlled item. The contents of a container must all have the same item number; a container may not include multiple item numbers. A container may contain only one lot of a lot-controlled item and may exist in only one location.

Container Availability Status
You maintain container characteristics in Container Master Maintenance (API140). Containers in SSA ERP_{LX} have the following availability status codes:

0	Available - Indicates if container accepts inventory when On-Hand is zero.
1	Unavailable

Container Reusability
You define container characteristics in Container Master Maintenance (API140). Containers in Warehouse Management have the following reusability codes:

0	Immediate - Container available for reuse when On-Hand quantity reaches zero.
1	Action Required - Container is available immediately.
2	Non-reusable - Container is not available for reuse.

Container Type
A ten-character alphanumeric code that identifies the type of container. You assign container types to containers in Container Master Maintenance (API140). Container-controlled items may be stored in different container types. Each container type has its own weight and volume.

Cross Contamination Codes
These codes define records as exclusive cross-contamination records. Exclusive means that the hazardous goods item currently being processed cannot be stocked in a given pallet or in a given area, zone, location because another hazardous good item already stocked there has been defined as not compatible with the current hazardous good item.

Deleted Pallets
Warehouse Management logically deletes pallets when they are empty (reservation and available quantity = zero).

Delivery
The means of identifying the arrival of goods at a warehouse by a single number. A delivery can consist of Purchase Orders, Resupply Orders and Unscheduled Receipts, or a combination thereof.

Fanning
This term refers to the method of searching for putaway locations. If using the automatic putaway feature of Warehouse Management, the system performs a fan search for valid putaway locations for the warehouse/item beginning at the highest level picking location. See Putaway in the Processing Section of this document for more information.

Flexibility Table
Used in putaway to put restrictions on the Location, Zone and Location Category where goods can be moved. Only one location or zone in an area can be defined as must go in. Warehouse Management uses the following flexibility codes:

0	Must go in the location/zone/location category specified
1	Preferably put in the location/zone category specified
5	Must not go in the location/zone category specified

Free Standing Stock
Inventory that is not allocated to an order (customer or shop).

Inners
Warehouse Storage names are user-defined terms on the Warehouse Management Parameters (WHM820D-01) panel. However, for consistency and clarity the documentation uses, in ascending level, the terms Units, Inners, Outers, Layers, and Pallets. Storage levels for picking and replenishing stock are defined in the Item/Warehouse Maintenance program (WHM150).

Interim Location
Interim locations are physical spaces defined within a managed warehouse to support the two-stage movement and storage of goods. You can define interim locations for any receiving, storage, or shipping location. You create and maintain interim locations in the Warehouse Area Maintenance program (WHM180) and in the Warehouse Zone Maintenance program (WHM190).

Inter-Warehouse Transfer
The movement of stock from one warehouse to another. One of the warehouses involved in the process must be a managed warehouse.

Inventory Item
The means of defining the products stored and moved within the warehouse.

Inventory Status Codes
You maintain inventory status codes in Inventory Status Code Maintenance (WHM160). Status codes for items in inventory include, but are not limited to:

`0`	Received
`1`	Inspection
`4`	Available
`9`	Rejected

Layers
Warehouse Storage names are user-defined terms on the Warehouse Management Parameters (WHM820D-01) panel. However, for consistency and clarity the documentation uses, in ascending level, the terms Units, Inners, Outers, Layers, and Pallets. Storage levels for picking and replenishing stock are defined in the Item/Warehouse Maintenance program (WHM150).

Load
A unique Load Number is assigned to each combination of Route/Carrier/Request Date/Customer/Ship-to contained within a Pick List. Once all lines within a load are picked, the load is ready for shipment.

Location
Locations are physical spaces defined within a managed warehouse to support movement and storage of goods. You can define locations to exist within a defined area or area/zone of the warehouse. The hierarchy within the warehouse is area, zone, location. You create and maintain locations using the Location Master Maintenance program (INV170). You can also set up and maintain a range of locations as a group within a warehouse using the Group Location Maintenance program (WHM120).

The following table illustrates valid areas/zones.

Area	Zone/Area	Result
No Record	No Record	Valid
No Record	Blank Record	Invalid
No Record	Non-Blank Record	Invalid
Blank Record	No Record	Valid
Blank Record	Blank Record	Valid
Blank Record	Non-Blank Record	Invalid
Non-Blank Record	No Record	Valid
Non-Blank Record	Blank Record	Valid
Non-Blank Record	Non-Blank Record	Valid

Location Status Codes
Location status codes enable you to determine the replenishment status of the main storage locations. Valid codes are:

F Full

E Empty

B Being empties

G Getting filled

X Unusable

Location Types

When you create locations in Location Master Maintenance (INV170), you define the type for each location. Valid location types include:

A	Reject location
0	Main Storage
1	Picking
2	Replenishment
4	Manufacturing location
5	Inspection location
6	Shipping location
7	Receiving location
8	Loading location
9	Consolidation

The table below illustrates the characteristics of each location type.

Location Type	Pallet	Require Capacity	Put away Interim	Buffer In	Buffer out	Intermediate Location	Mixed Pallets Allowed
A=Reject	X						X
0= Main Storage	X	X					X
1= Picking							
2= Replenish-ment		X					
4= Manufac-turing	Can be			X	X		X
5=Inspection	X	X					X

Location Type	Pallet	Require Capacity	Put away Interim	Buffer In	Buffer out	Intermediate Location	Mixed Pallets Allowed
6=Shipping	Can be					If on-site to off-site movement	X
7=Receiving	X				X	If on-site to off-site movement	X
9=Consolidation	Can be		X				X

Lot Status Codes

You maintain the characteristics of lots in Lot Master Maintenance (INV130). Lot controlled items have one of the following status codes:

A	Lot is active and may be processed in any manner
C	Conditional pass
E	Lot has expired
H	Lot is on hold
Q	Lot is on "Quality Hold." Warnings are displayed when the lot is processed in the Inventory system.
R	Lot has been rejected.
V	Archived
Z	Lot is deleted or contains a completed lot order. MRP does not take into consideration the lot status of an item. In order for a lot to be excluded from the MRP netting process, it must be moved to a non-nettable location.

Managed Warehouse

Pro-active. When stock is received into the warehouse, the system suggests where it may be stored.

Mixed Pallet

Pallets defined to accept more than one item, lot and/or container type are mixed pallets as distinguished from simple pallets whose contents are all the same item, lot, container type. You define pallet types in the Pallet Type Master Maintenance program (WHM110). To pick or ship stock stored on a

mixed pallet, the location of the pallet must have the Use Pallet in Place option set to yes or you must first move the pallet to a consolidation location.

Movement Ticket
A document instructing the warehouse operative to move stock from one location to another.

Movement Types
The following codes represent the types of stock movement in Warehouse Management:

M	Manual Movement
P	Putaway
R	Replenishment
W	Inter-Warehouse Transfer

Multi Item/Lot Pallets
See Mixed Pallets.

Non-Managed Warehouse
Reactive. The system is used to record inventory adjustment or movements after they have taken place.

Off Site Location
A location that belongs to a warehouse but is not usually physically located within the warehouse. You define an off-site location by entering a 1 in the Off Site Location Flag in the Location Master record. To move stock to and from the off site location, you must move it through an interim location. The interim location can be any Shipping (Type 6) or Receiving (Type 7) location within the warehouse. Move tickets and movement confirmation for off-site movements always include two movement lines. One line indicates the movement between the off site location and the interim location. The other line indicates the movement from the interim location to the warehouse location.

Order Type
The following three types of orders are defined for receipt of goods and for picking in Warehouse Management:

- Purchase Order
- Re-supply Order
- Unscheduled Receipt

Outers
Warehouse Storage names are user-defined terms on the Warehouse Management Parameters (WHM820D-01) panel. However, for consistency and clarity the documentation uses, in ascending level, the terms Units, Inners, Outers, Layers, and Pallets. Storage levels for picking and replenishing stock are defined in the Item/Warehouse Maintenance program (WHM150).

Pallet
The means by which stock is moved around the warehouse. The items on a pallet can be regular, lot controlled, or container controlled. Pallets may be used to hold items only in location types that are defined as palletized or can be palletized locations. A simple pallet contains a quantity of a single item, lot, or container. A single pallet may exist in only one location. A mixed pallet can hold more than one item, lot, or container. Also, you can define a container to be a pallet. The use of pallets within Warehouse Management is not to be confused with the containers used within the Advanced Process Industries product. Warehouse Management does NOT support container level inventory. A container controlled item may not be used in a WHM managed warehouse.

Pallet Label

A means of physically identifying Pallets stored within the warehouse.

Pallet Shipped Status
Pallets can have one of the following shipped statuses in Warehouse Management:

0	Available
1	Returned
2	Shipped

Pallet Type
Pallet types and their characteristics are user defined in Pallet Type Master Maintenance (WHM110).

Palletized Location
A managed warehouse location defined in Location Master Maintenance (INV170) as capable of holding inventory on pallets. The main storage, rejection, receiving, and inspection locations are always palletized. The picking and replenishment locations are never palletized. The consolidation, interim (a form of consolidation location), shipping, manufacturing, buffer in, and buffer out locations may be palletized.

Picking
The picking of items from the warehouse to satisfy Customer Orders. Warehouse Management supports both unique picking locations, and picking from main storage. However, Warehouse Management does not allow the picking of items for Shop Orders and does not report Assortments and Kits. Each Pick List request is assigned a unique Pick List number.

Pick to Light
A picking concept, such as flow racks, carousels, or an ASRS device, where the material is delivered to the employee. Since the material is stored in a specific sequence (FIFO), it must be allocated and picked in that sequence.

Pre-assigned Pallet Numbers
These are pallet numbers you manually assign. You create pre-assigned pallet numbers in Pallet Number Maintenance (WHM112D). You can then designate specific pallets for storing stock. Pre-assigned pallets must be reusable and their numbers must be retained across the warehouses within a facility.

Putaway
The process of moving stock from a receiving area to main storage. Warehouse management supports both manual and automatic putaway. Manual putaway means the warehouse operative enters the main storage location for the stock. You can assign a separate putaway algorithm to each area. If the first area is not * for all, SSA ERP_{LX} processes each area sequentially using the Flexibility Table for that area.

Range
This term is used within the field descriptions for listing programs, reports and inquiries. A range gives you the option to enter a from and a to value of a certain number or code (for example, a from and to pallet number). In this way, you can designate those codes for which you want to print a listing, report, or show an inquiry. This set of codes is known as a range of values. SSA ERP_{LX} always inserts extreme values by default in the from and to fields (see "Extreme values by default" above.)

Receiving
The process of recording the arrival of a delivery at a warehouse. The system records the stock as having arrived in a receiving area.

Recontainerize/Repalletize
You recontainerize/repalletize when you consolidate stock between pallets or containers. For example, when shop or customer orders do not require that you ship all the stock in a container or on a pallet, you must consolidate the stock needed to another pallet/container. Recontainerization does not move stock; repalletization can move stock

Replenishment
The process of moving stock from main storage to the picking area, thus ensuring that sufficient stock is always kept in the picking area.

Reservation
A form of allocation at the pallet level. Warehouse management allows you to reserve individual pallets, as well as a phantom location defined in the WHM600 system parameters to contain the reservations. The original reservations are generated for those warehouses with the reservations flag set to '1'.

Shop Order
A document authorizing the warehouse to allocate and issue inventory components to the shop floor and the manufacturing facility to expend the labor and overheads necessary to produce a product.

Simple Pallet
A pallet type that may contain only one item, lot, and container type as distinguished from a mixed pallet whose contents can be made up of a number of different items, lots, and container types.

Stock Counting
The physical checking of inventory levels for a section of the warehouse against the inventory recorded on the system.

Stock Rotation
The sequence that stock 'flows' through the warehouse. Warehouse Management currently supports two Stock Rotation methods, FIFO (First In, First Out) and FEFO (First Expiry, First Out).

Storage Level
The levels of inventory recorded within the system. Five levels of inventory are considered. For example: Pallets, Layers, Outers, Inners and Units. These terms are user defined on Warehouse Management Parameters (SYS800-29); however, for consistency and clarity the documentation uses the terms Pallets, Layers, Outers, Inners, and Units.

Unique Pallet Identifier (UPI)
Means of identifying the pallet that inventory is stored on/in. Sometimes referred to as a Pallet Number.

Units
Warehouse Storage names are user-defined terms on the Warehouse Management Parameters (WHM820D-01) panel. However, for consistency and clarity the documentation uses, in ascending level, the terms Units, Inners, Outers, Layers, and Pallets. Storage levels for picking and replenishing stock are defined in the Item/Warehouse Maintenance program (WHM150).

Unscheduled Receipt
The arrival of items at the warehouse without documentation. Within Warehouse Management, Unscheduled Receipts are treated as Purchase Orders that do not require costing.

Warehouse
The building where stock is stored. Managed Warehouses are always physical warehouses.

Warehouse Geography
The process of recording the warehouse layout using Warehouse Management.

Zone
Zones are physical spaces defined within a managed warehouse to support movement and storage of goods. You can define zones to exist within a defined area of the warehouse; zones must be unique within a warehouse. The hierarchy within the warehouse is area, zone, location. You create and maintain zones using the Warehouse Zone Maintenance program (WHM190).

Notes