

Industry-specific

QAD SOLUTIONS

Manufacturing Applications

MFG/PRO eB2 User Guide Volume 8B Service/Support Management



78-0564A
MFG/PRO eB2
September 2002

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Chapter 12

Call Quotes

This chapter introduces call quotes and their role in the service process. With call quotes, service organizations can provide estimates for services such as repairs, installation, and preventive maintenance. The estimate can provide details about labor, expenses, and items to be consumed.

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Overview of Call Quotes

To sell services to prospective customers, many service organizations provide quotations, which outline the labor, expenses, and replacement items (components) required for service or repair work. Quotations include the terms and conditions for the detailed services.

In Service/Support Management, call quotes are based on user-defined codes such as invoice sort, charge code, and service category. This enables a service organization to structure service proposals the same way it invoices service activities. To maintain this structure, call quotes are similar to Call Activity Recording (CAR).

▶ See Chapter 23, “Control Programs,” on page 745 for details of control program settings.

Fields in Call Management Control that affect call quotes include Next Quote ID, Quote Prefix, Days Until Expire, and Default Quote Queue.

Call Quote Life Cycle

Some service organizations let customers review the cost of repairs before they are made, especially for expensive items. The customer sends the item to the service center, or a field engineer reviews the item at the customer’s site. The engineer estimates the labor, expenses, and parts required to repair the item.

This detailed estimate is a *call quote*. Call Quote Maintenance is an entry point to the same frames used in Call Activity Recording (CAR). In CAR, the engineer records the labor, expenses, and parts consumed during a repair. In Call Quote Maintenance, the engineer uses the same frames to record estimates before the repair is done.

After you enter the details of a quote, Call Quote Maintenance displays a summary similar to the summary frame of Call Invoice Recording (CIR). This frame summarizes the pending invoice amounts, based on the engineer’s estimates. CIR generates a pending invoice. Call Quote Maintenance creates a simulated invoice. Both use the same method to summarize costs and display them by invoice sort.

Two limitations exist for a call quote's simulated invoice amount:

- Call Quote Maintenance uses service type just as Call Maintenance does, to determine product line, price list, response time, priority, and coverage days. However, instead of using the limits and levels of coverage, it calculates all quantities as 100% billable.
- Call Quote Maintenance does not calculate taxes. When you create a sales order and generate an invoice in Call Invoice Recording, the system calculates taxes in the sales order trailer.

▶ See “Calculating Quote Amounts” on page 424.

Other differences between Call Quote Maintenance and Call Activity Recording include:

- You can open only one report for each call quote line. In CAR, you can open multiple reports.
- The status of call quote reports is always Quote. The status determines whether a report can be invoiced. Quote reports cannot be invoiced.

Figure 12.1 illustrates the life cycle of a call quote.

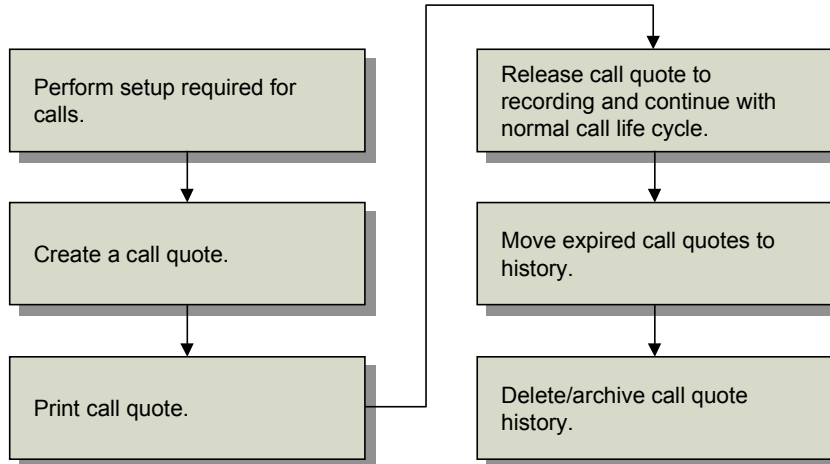


Fig. 12.1
Call Quote
Life Cycle

Because a call quote can become a call, call quotes require the setup normally used for Call Maintenance: end-user information, service BOMs and routings, engineers, status codes, queues, and service types and contracts. Because a call quote's input process is the same as Call Activity Recording, call quotes need the same setup as Call Activity Recording, including charge codes and charge product lines.

Create quotes in Call Quote Maintenance (11.1.1.7). To simplify data entry for similar repair operations, copy an existing quote in Copy Call Quote (11.1.1.12).

♦ See “Setting Up Call Defaults” on page 357.

To minimize data entry when creating call quotes, create sets of quote defaults in Call Default Maintenance (11.1.21.10) by setting category to Quote. You can access defaults you created in Call Quote Maintenance.

Print call quotes using Call Quote Print (11.1.1.10). If the customer accepts the quote and decides to proceed with the repair, use Call Quote Release to Recording (11.1.1.11) to create a call based on the quote. The quote number that initiated the call displays in the Call Info frame of Call Maintenance.

Releasing a quote sets a closed date so it cannot be released again. Use Expired Quote Move to History (11.1.1.22) to move expired or released quotes to a history table and delete them from the call master table. From the history table, you can archive and delete quotes with Call/Quote History Delete/Archive (11.1.1.23).

Calculating Quote Amounts

When creating a quote, you prepare a detailed estimate of the labor, expenses, and parts required to repair the item. If the item to be serviced has no contract or warranty coverage, you can simply use current list prices for items and service categories to calculate the billable amount.

Call Quote Maintenance uses service type information to identify the product line, repair and cost price lists, response time, and hours of coverage. However, even if the item is under contract or warranty, the levels and limits of coverage are not considered. The quoted repair is estimated at the full list price for items, expenses, and labor.

This approach to estimating is used because there is no way to be sure that coverage in effect on the quote open date will still be in effect on the call open date.

- Coverage may expire before you perform the repair because the end date of the warranty or contract is reached.
- Coverage terms may have been defined with effective dates so that the same terms are no longer in effect when the call is created.

- If you are using contract limits, coverage can also expire if other calls consume the amount before you release the quote.

As a result, the actual amount billed for the call may be less than the quote. To indicate this, create master comments explaining that the prices are subject to coverage terms in effect when the quote is released.

Using BOMs and Routings

When you create a quote for items defined in Service Item Maintenance (11.3.7), you can use the repair, PM, and installation BOM and routing for labor and item details. Operations defined in the routing can be loaded in the Labor/Expenses detail. Items specified on the BOM can be loaded into the Item Usage frame.

◆ See Chapter 20, “Service Structures and Routings,” on page 659.

Using service BOMs and routings streamlines data entry for standard repair sequences. You can customize the sequence for the quote. When the quote is released to a call, the detail records display in Call Activity Recording. The engineer makes adjustments to reflect the work performed during the repair.

Allocations and Requirements

When creating a quote, you can also create general allocation records. Do this when:

- The quote is likely to become a call.
- Inventory is limited.

You cannot perform detail allocations (picking) in Call Activity Recording or Call Quote Maintenance. In CAR, you can identify the specific inventory you used for the call—for example, by item number, site, location, serial number, and inventory reference number. For call quotes, you can create general allocations only. The detail about specific items used must be recorded in CAR. For this reason, the Multi-Item frame does not display in Call Quote Maintenance.

Tip
No MRP requirements are associated with call quotes.

When you create a call from the quote, Call Quote Release to Recording:

- Updates MRP and quantity required to reflect the call’s requirements
- Sets the required date for MRP to the call’s next status date

Creating a Call from a Quote

Use Call Quote Release to Recording (11.1.1.11) to create calls from selected call quotes. You can release a quote to a call only once. To be released, the quote must have the open status defined in Call Management Control.

Fig. 12.2
Call Quote Release
to Recording
(11.1.1.11)

Call Quote Release to Recording performs the following actions:

- Sets the quote number as the Reference field in the Call Info frame of Call Maintenance and in Call Activity Recording
- Sets the call number in the Reference field of Call Quote Maintenance
- Copies the quote's comments to the call
- Transfers the quote's engineer load to the call
- Creates MRP requirements
- Deletes the quote's allocations and re-creates them for the call
- Closes each quote report, so it cannot be updated
- Sets the quote's closed date to the release date

Tip
Leave Next Call Number blank to supply the next number from Call Management Control.

The first set of fields in Call Quote Release to Recording provides ways to select quotes for release. Call Date defaults from the system date, but you can modify it.

A released quote, like an expired quote, is closed. You can move it to history, delete, and archive it.

Calculating Coverage during Release

If a contract covers items on a quote, Call Quote Release to Recording calculates coverage based on the consumption of contract limits. Set Override Coverage Limits to Yes to apply coverage even to amounts over the limits. Set it to No to use the contract limits.

If a service type (warranty or generic) provides the coverage, Call Quote Release to Recording calculates the percentage of coverage without consideration of limit amounts.

The release report informs you of limits that were overridden. You can modify coverage amounts in Call Activity Recording.

Note When Multiple Time Zones (MTZ) is active, the quote date range and call date are relative to the customer's time zone, since Call Quote Release to Recording uses Call Date to find default charge codes and limit coverage.

Refer to Chapter 4, "Multiple Time Zones," for more information.

Errors in Releasing Quotes

Call Quote Release to Recording generates errors if either of the following occurs:

- Credit Hold Option is 2 in Service Management Control and the customer or end user on the quote is on credit hold.
- The customer on the quote requires a purchase order and you have not specified one on the quote.

Printing Quotes

Call Quote Print produces a document for the customer, showing the items to be serviced and details about labor, expenses, and items to be used.

The quote does not include information about applicable coverage or taxes. You can create master comments, printed on the report, explaining that the prices are subject to coverage amounts in effect when the quote is released.

Tip
The quote document uses the company address specified in Contract Control.

Expired Quotes

Quotes remain in effect for a period controlled by Days to Expire in Call Management Control. The system adds the value in Days to Expire to the quote creation date to determine the quote's expiration date.

When you access a quote in Call Quote Maintenance, a warning displays if the quote is expired. You cannot release an expired quote. Change the expiration date to reactivate the quote.

Move released or expired quotes to a history table with Expired Quote Move to History (11.1.1.22). Delete and archive quotes from the history table with Call/Quote History Delete/Archive (11.1.1.23).

Moving to History

Maintain quote history on line by moving expired and released (closed) quotes to a history table.

Fig. 12.3
Expired Quote
Move to History
(11.1.1.22)

Expired Quote Move to History has the following options:

- Select quotes by quote ID range, by end-user range, or by expiration or close date range.
- Move closed quotes, expired quotes, or both using Move Closed and Move Expired.
- Produce a report of potentially affected quotes without moving them by setting both move fields to No and both audit fields to Yes.

Expired Quote Move to History copies quotes meeting the specified criteria from the call master (ca_mstr) to call history (chm_mstr), then deletes the quote from call master. You can save the quotes in the history table, or delete and archive them with Call/Quote History Delete/Archive (11.1.1.23).

Tip
Releasing a quote
sets the close date.

Moving a quote to history removes any general allocations or engineer load associated with it.

Call Quote Maintenance

Define defaults for call quotes with Call Default Maintenance (11.1.21.10). Some defaults display in Call Quote Maintenance (11.1.1.7). Others appear when you create a call from the quote.

Call Quote Maintenance

Quote: CQ205011 Bill To: 10010001 End User: 10010001

Bill-To	End User
Westwood Reliable	Westwood Reliable
Westwood Shopping Center	Westwood Shopping Center
77 Sunset Strip	77 Sunset Strip
Westwood CA 89029	Westwood CA 89029
United States of America	United States of America

Status: NEW	Channel:	Currency: USD	Language: US
Priority: 40	Assigned:	Taxable: ☐	07/25/2002
Contract: 210	Work Code: PM	Terms: 30	
Price List: SSM1	Queue: Quote	Site: 10000	
PO Number:		Expire Date: 09/23/2002	
Caller: Sue Irwint		From Quote:	
Phone: 213-923-0293		Comments: ☐	Detail: ☐
Description: Quote for Preventive Maintenance Work			

Fig. 12.4
Call Quote
Maintenance
(11.1.1.7)

Quote. Enter a number or let the system generate one from the quote prefix and next quote number in Call Management Control. You must distinguish call quotes from calls with a unique prefix.

Bill-To. Enter a customer bill-to address indicating the customer responsible for this quote.

End User. Enter the end user associated with the items to be serviced. To search for an end user or create a new one, leave this field blank. In this case, the End User Selection frame displays.

▶ See “End User Selection Frame” on page 383.

Contracts Pop-Up

When you enter an end user, a pop-up window displays the contracts that are in effect for the end user. When you select a contract, the call price list associated with the contract defaults into the Price List field, and the contract number defaults into the Contract field.

If you bypass this pop-up, you can enter the contract in the Contract field, and its price list displays. If there is no contract, the price list associated with the Default Call Service Type, defined in Call Management Control, displays.

Quote Defaults Pop-Up

▶ See “Call Defaults Pop-Up” on page 385 for an example.

When you create a quote and quote defaults exist, a pop-up window displays between the first and second frame of Call Quote Maintenance, like the one that displays in Call Maintenance.

Enter values in the pop-up to find the most appropriate defaults. The work code initially defaults from the technical work code defined in Call Management Control.

▶ See “Setting Up Call Defaults” on page 357 for more information on the search algorithm.

If no defaults match the work code, model, and service group, the system looks for a match by work code and model, then work code alone. If no defaults match the work code, it uses defaults set up for call quotes, as opposed to calls.

Quote Header Frame

If you are using quote defaults, many header fields have information when they display.

Fig. 12.5
Call Quote Header

Status. Indicates where the quote is in its life cycle and determines the status of the call created from it. Define statuses of quotes and calls in Call Status Code Maintenance (11.1.21.1). For a new quote, the status defaults first from Call Default Maintenance, then from the Open status in Call Management Control.

Priority. Enter a number indicating how important this call quote is. In order of precedence, the value defaults from:

- Call Priority in End User Address Maintenance
- If Call Priority is blank and you select a service contract, the Priority field in Contract Type Maintenance
- If no contract exists, the Priority field of the Default Call Service Type in Call Management Control
- Service/Support User Preferences

Tip
Lower numbers indicate higher priority.

Contract. If you previously selected a contract, its number defaults into this field. If not, enter the contract now. The call price list associated with the contract type displays by default in the Price List field when the quote is created. If you change the contract later, you must enter the correct price list.

Price List. Use a repair price list. This field determines prices for service on this quote. If you previously selected a contract, the default is the call price list associated with the contract. If no contract is selected, the default is the price list associated with the Default Call Service Type in Call Management Control.

PO. Specify a purchase order number for the service activity associated with this quote. A warning displays if this field is blank and the end user requires a purchase order. Before you release the quote, you must supply a purchase order.

Caller. Defaults from the primary contact in the end-user record.

Phone. Defaults from the telephone number for the primary contact in the end-user record.

Description. Enter a brief description of the quote. The field defaults from Call Default Maintenance.

Channel. An optional code identifying the distribution channel originating this call quote. Use Channel to determine GL sales account and COGs accounts affected by inventory transactions in CAR and CIR. Set up optional sales accounts with Sales Account Maintenance (1.2.17) based on product line, site, customer type, and channel.

Assigned. If Assign Primary Engineer is Yes in Call Management Control, the Assigned field defaults from the primary engineer assigned to the end user. You can enter another engineer or leave the field blank.

Work Code. If you are not using quote defaults, this field defaults from the technical work code in Call Management Control (11.1.24). Set up work codes in Work Code Maintenance (11.21.1). The work code indicates the type of service performed and affects invoicing and service limits.

▶ See “Work Codes” on page 82 for details.

Queue. Enter the queue to which this quote is assigned. Quotes use the same queues as calls, set up with Call Queue Maintenance (11.1.21.7). For a new quote, this field defaults from current quote defaults, then from the user's default quote queue in Service/Support User Preferences, then from the default quote queue in Call Management Control.

Currency. Defaults from the currency of the customer bill-to record associated with this call. The first time through, you can select any currency, but after you move to the next frame, you cannot change the currency.

Taxable. Sets the default value for each line item, which you can mark individually as taxable or not. If Taxable is Yes, enter a tax class and effective date.

▶ See Chapter 7, "Taxes in SSM," on page 221.

Terms. Defaults from the credit terms associated with the bill-to address of the customer initiating the call.

Language. Defaults from the language associated with the end user, then the customer initiating the call. Use Language to select appropriate comments to print on an invoice.

Expire. Calculated by the system, this field is the current date plus the value in the Days to Expire field in Call Management Control. Expired quotes cannot be released to recording.

Tip
If MTZ is active, the expiration date displays with a value relative to the end user's time zone.

Site. The site on the header determines the default tax environment associated with the quote. Site for items can differ from the call site. For items, the site is the place where repairs are performed or where the assigned engineer gets parts for the service activity. This information is important in Call Activity Recording. The system follows these steps to assign a default site:

- Uses the site/location associated with the assigned engineer in Engineer Maintenance (11.13.1). If you leave the engineer site blank and specify a location, the system uses the area site. The engineer location takes precedence over the area location.
- Uses the site or location associated with the engineer's area if the engineer does not have a site or location.
- Uses the default spares site/location in Default Site Maintenance (11.21.13) if the above values are blank.

- Uses the site/location defined in the item master if a site still has not been found.
- Uses the site associated with the end user's customer in Customer Maintenance if a site still has not been found.

Reference. When you release this quote to recording, the number of the call created from the quote displays in this field as a reference.

Comments. If Yes, you can review or update comments associated with the quote. After you select or enter comments, you can specify where you want them to print.

Detail. Determines whether the Detail field for each line in the Labor/Expense and Item Usage frames defaults to Yes or No. Set this field in the header for more control over line item entry.

Item Selection Frame

After you enter an item requiring repair, the system fills in the item details, which you can modify. Frames display for recording labor, expenses, and items to be consumed during the repair.

♦ See “Item Selection Frame” on page 484.

If you attached a repair BOM and routing to the item in Service Item Maintenance (11.3.7), the items and operations load into the detail frames for this quote. You can modify the items and quantities.

Note In CAR, you can use the Report field to open multiple reports for recording activity against a call line, so that progressive invoicing can take place. In Call Quote Maintenance, you cannot open multiple reports against an item.

The status of reports on quotes is Quote, indicating the system does not invoice these amounts.

Call Quote Maintenance

Quote: CQ205011 Bill To: 10010001 End User: 10010001

Line	Serial	Item Number	Work Cd	Svc Type	Report
1	S-133-3366	10-10000	PM	W-1	402234

Item Detail

Engineer: MDM Site: 10000 Location: MDM Status: Q Quote BOM Code: PM10-10000 Routing: PM10-10000 Sales Acct: 3000 Disc Acct: 3905 Project:

Fixed Price: ☐ Fixed Price: 0.00 Quantity: 1 Ref: 0 Coverage: ☐ Taxable: ☐ Comments: ☐ Fault Codes: ☐ Update Installed Base: ☒

Fig. 12.6
Item Selection
Frame

Report status
for quotes is Q
and cannot be
changed.

After costs are recorded, a summary frame displays.

Call Quote Maintenance

Charge Summary

	Hours Cost	Item Cost	Exp Cost	List Price	Det
Warranty	0	0	0	0	☐
Contract	0	0	0	0	☐
Covered	0	0	0	0	☐
Project	0	0	0	0	☐
Giveaway	0	0	0	0	☐
Fixed Bill	0	0	0	0	☐
Billable	100	112	0	220	☐

Billing Summary

	Hours Cost	Item Cost	Exp Cost	List Price	Det
Labor	100	0	0	200	☒
Expenses	0	0	0	0	☐
Items	0	112	0	20	☒
	0	0	0	0	☐
	0	0	0	0	☐
	0	0	0	0	☐
Total	100	112	0	220	☐

Fig. 12.7
Call Quote
Maintenance
Summary

These frames summarize the cost of the proposed service and the amount to bill to the customer. Unlike Call Invoice Recording, Call Quote Maintenance does not calculate taxes and all service is billable to the customer.

See
“Understanding
CIR Summaries”
on page 522.

Call Activity Recording

With Call Activity Recording (CAR), you can record the parts, labor, and expenses used in servicing a call. This detail becomes the basis for generating an invoice either at the end of CAR or later in Call Invoice Recording (CIR). This chapter discusses the process of recording labor, expense, and item usage in CAR.

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Introduction to CAR

Call Activity Recording (CAR) provides a flexible, comprehensive way to record labor, expenses, and items consumed during a call. CAR information supports other areas, including:

- *Call Invoicing.* Call Activity Recording helps create accurate call invoices, managed in Call Invoice Recording (CIR).
- *Engineer Reporting.* Call Activity Recording supports detailed engineer reporting. You can report the labor performed, the items consumed, and expenses encountered, even item by item, while servicing the call. Indicate charges as warranty, contract, covered, billable, fixed billable, project, or giveaway.
- *Cost Flow into GL.* CAR uses control codes to manage the cost flow into the general ledger. You can record costs in specific service accounts and control GL reporting.

◆ See Chapter 23, “Control Programs,” on page 745 for a description of control program settings.

The following fields in Call Management Control affect processing in Call Activity Recording: Close on Recording, Exchange UM, Fixed Price UM, Modify Sales Accounts, Invoice From Recording, Item Svc Category, Labor Svc Category, Return Status, Scrap Status, and Service Work Center.

CAR in the Call Life Cycle

Call Activity Recording is designed to support a wide variety of service contexts. Use it for field engineers who provide preventive maintenance or other services. Use it in a repair depot environment or for telephone support. With CAR, you can set work codes, charge codes, service categories, service types, and invoice sorts in a combination specific to your business.

Primary functions of CAR are:

- Recording parts, labor, and expenses used for a call
- Recording items returned for a call
- Producing invoices from the call data for customer billing

Figure 13.1 illustrates how Call Activity Recording fits into the call life cycle.

Tip
You can also generate invoices in Call Invoice Recording.

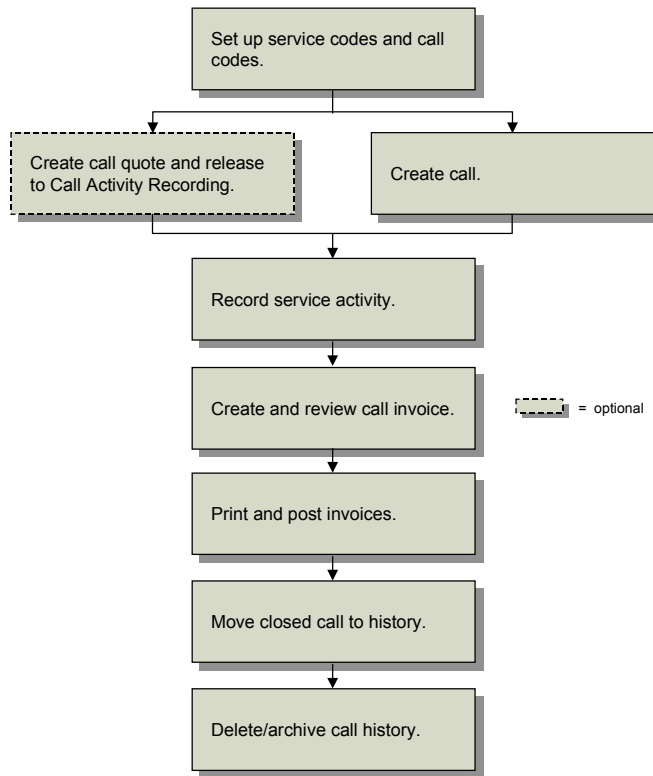


Fig. 13.1
Call Activity
Recording in the
Call Life Cycle

As shown in Figure 13.1, several activities precede Call Activity Recording and several follow.

- 1 First, perform service code and call setup. Settings in Call Management Control (11.1.24) affect processing in CAR, in particular the Call Statuses frame and Call Recording/Invoicing frame.
- 2 Create a call in Call Maintenance, or by using a background method for installation calls or PM scheduled calls. Or create a call quote and release it to a call.
- 3 Record labor, expenses, and items consumed in this call in Call Activity Recording. You can generate the invoice in CAR.
- 4 If you did not generate the invoice in CAR, generate it in Call Invoice Recording. Review the invoice in summary or detail format.

♦ See Chapter 3, “Service Setup,” on page 79.

♦ See Chapter 14, “Call Invoice Recording,” for details.

- 5 Print the invoice using Invoice Print (7.13.3); then post the invoice using Invoice Post (7.13.4).
- 6 When all work is finished, close the call and move it to history.
- 7 Periodically delete and archive closed calls to regain space.

How Is CAR Used?

Use Call Activity Recording for calls with an open status. The end user must reference a valid customer unless Call Activity with Temp is Yes in Call Management Control. In this case, you can record a call for the temporary customer. Bill-to defaults from the end user's customer. You can change the bill-to code in the Call Activity Recording header if you have not generated an invoice for the call. If a pending invoice exists, you cannot change the bill-to.

Sometimes a call remains open for several weeks—for example, during a lengthy installation project. You can generate several reports for the call in Call Activity Recording and invoice them separately.

Fig. 13.2
Changing Bill-To
in Call Activity
Recording

Bill-To can be changed.

The screenshot shows the 'Call Activity Recording' window. At the top, it displays 'Call ID: 2468', 'Bill To: 01000000', and 'End User: 01000000'. Below this, there are two main sections: 'Bill-To' and 'End User'. Both sections show the same address: 'Colossal Conglomerates LTD', 'Suite 1000 Colossal Building', 'Colossal Industrial Park', 'Evanston IL 090876', 'United States of America'. Below these sections, there are various fields for call details: 'Status: NEW', 'Priority: 80', 'Contract:', 'Price List: SSM1', 'PO Number:', 'Channel:', 'Assigned: PKH', 'Work Code: Tech', 'Queue: Customer', 'Currency: USD', 'Taxable:', 'Terms: 30', 'Site: 10000', 'Language: US', 'Expire Date:', 'Reference:', 'Comments:', and 'Detail:'. A description at the bottom reads 'Description: Customer Reported Issue'.

The lower frame in Figure 13.2 displays information to define the call, such as call priority, status, price list, a description, the assigned engineer, and the first item's work code. Most fields default from the call and cannot be changed.

In other fields, you enter new information not available in Call Maintenance, such as channel, currency, taxable status and class, terms, site, and detail level.

◆ See Chapter 7, “Taxes in SSM,” on page 221 for details about how the system applies tax defaults in CAR.

Specifying Currency

Billing information comes from the prices and costs of service you record in CAR. In some circumstances, you can modify the call currency in CAR. However, if the system set the currency in Call Maintenance, you cannot change it in CAR.

Effect of Contract Coverage

Because you can associate only one currency with a call, each call line references the same currency. Sales order processing, which forms the basis of call billing, imposes this limitation.

Each contract line also reference a currency, which defaults from the end user associated with the line. Any coverage limit amounts on the contract line are defined in terms of the contract-line currency. To apply those limits correctly, the call currency and the contract-line currency must be the same. For this reason, as soon as you add a call line that has contract coverage, the system sets the currency in Call Maintenance and it cannot be changed.

◆ See “Contract Currency in Calls” on page 253 for details.

Any other lines you add in Call Maintenance or CAR that derive coverage from a contract must reference the currency already defined for the call.

Currency for Other Coverage

If coverage comes from a warranty or the default call service type, you can edit the currency when you first access the call in CAR. The currency defaults from the bill-to address for the end user’s customer, or the customer if no separate bill-to address is defined.

You may need to modify currency when your support desk accepts calls from customers with offices in more than one country. For example, a support desk in Germany that covers a European region can change the currency on an incoming call to use an appropriate price list.

Example If the customer's base currency is Dutch guilders but the call comes from a Paris office, the service engineer can change the call's currency to French francs.

After you establish a call's currency, you cannot change it. Be careful when using multicurrency capabilities.

Currency and Price Lists

The price list in CAR can be updated as needed. It defaults either from:

- The Call Price List field of the contract providing coverage
- Or, if a contract is not available, the Call Price List field of the call's service type

The system uses currency in searching for prices. If you change the currency, ensure that the call price list supports the new currency.

Exchange Rate

When you enter a non-base currency, the system looks for a valid exchange rate in Exchange Rate Maintenance (26.4), effective on the call open date. An exchange rate pop-up enables you to specify a spot rate, and to indicate if the exchange rate is fixed or not. By default, the system displays both components of the exchange rate relationship. One of these is the base currency and the other is the call currency.

▶ For details, see the Multiple Currency chapter in *User Guide Volume 4A: Financials*.

If one or both of the exchange rate components is a member of the European Monetary Union (EMU), triangulation through the euro is used to determine the exchange rate. In this case, the exchange rate relationship includes four components. The fixed rate of the EMU currency to the euro cannot be updated.

This system uses this rate to convert limit amounts from the base currency to the contract currency. Prices and costs are converted from base to the call currency, and the exchange rate is maintained in transaction history.

When you post the call invoice, the system uses the exchange rate effective on the date of invoice post, unless you have indicated that the exchange rate is fixed.

Tracking Purchase Orders

You can enter a purchase order number in Call Activity Recording. Some companies require purchase orders for service billings. You specify whether a customer requires a purchase order in Customer Maintenance. The customer value defaults to each end user associated with the customer.

If the end user requires a purchase order, you can enter a call, but you cannot record activity for it until you specify a purchase order.

If the end user does not require a purchase order, you can use the purchase order field for reference. If you specify a purchase order, it is printed on the call invoice.

Displaying Call Items in CAR

The Item Selection frame appears after the CAR header. It displays the items you recorded in Call Maintenance for this call.

Call Activity Recording

Call ID: 2468 Bill To: 01000000 End User: 01000000

Item Selection

Line	Serial	Item Number	Work Cd	Svc Type	Report
5	K-872	44-100	Tech	STANDAR	402267

Item Detail

Engineer: PKH	Fixed Price: ☐	Quantity: 1
Site: 10000	Fixed Price: 0.00	ISB Ref: 0
Location: PKH		Coverage: ☐
Status: I Invoiceable		Taxable: ☐
BOM Code:		Comments: ☐
Routing:		Fault Codes: ☐
Sales Acct: 3000		
Disc Acct: 3900		
Project:		Update Installed Base: ☒

Last line
of call
displays.

Fig. 13.3
Item Selection
Frame in Call
Activity Recording

When you access the Item Selection frame, the last item appears, as indicated by the number in the Line field. This way you know immediately how many items are on the call. Use Next/Previous to view other call items.

You can add items to a call using the CAR Item Selection frame. Use this feature if an end user wants more items repaired after the call is created. Instead of opening a new call, you can add lines to the existing one.

Select a line item on the call to record labor, expenses, and items used in detail frames.

Multiple Time Zones in CAR

◆ See Chapter 4, “Multiple Time Zones,” for details.

Activating Multiple Time Zones (MTZ) affects Call Activity Recording. Most call dates and times refer to the end user’s time zone. The exception is the tax date. It refers to the server time zone, like other system tax dates.

Generating Usage Records Automatically

You can enter details about a call manually or use one of several methods to streamline data entry and create usage records automatically. Two significant methods are using:

- Loading bills of materials (BOMs) and routings
- Ordering items for a call with material orders (MOs)

Using BOMs and Routings in Calls

When you define an item in Service Item Maintenance (11.3.7), you can specify a repair, installation, and preventive maintenance (PM) BOM and routing, which are used as follows:

- When the system generates a PM call for the item or you create a call with the PM work code in Call Maintenance, the system uses the PM BOM and routing.
- When the system generates an installation call during invoice post or you create a call with the install work code in Call Maintenance, the system uses the installation BOM and routing.
- When you specify other work codes in Call Maintenance, the system uses the repair BOM and routing.

You can change these defaults the first time you view the call in CAR.

Use BOMs and routings to streamline data entry for standard repair sequences in CAR. When you specify BOMs and routings, the system:

- Enters routing operations into the Labor/Expenses frame
- Enters any BOMs associated with specific operations as items for that operation in the Item Usage frame
- Enters items from the top-level service BOM into the first operation that has no items of its own

Figure 13.4 illustrates how service BOMs and routings are defined and then loaded into CAR.

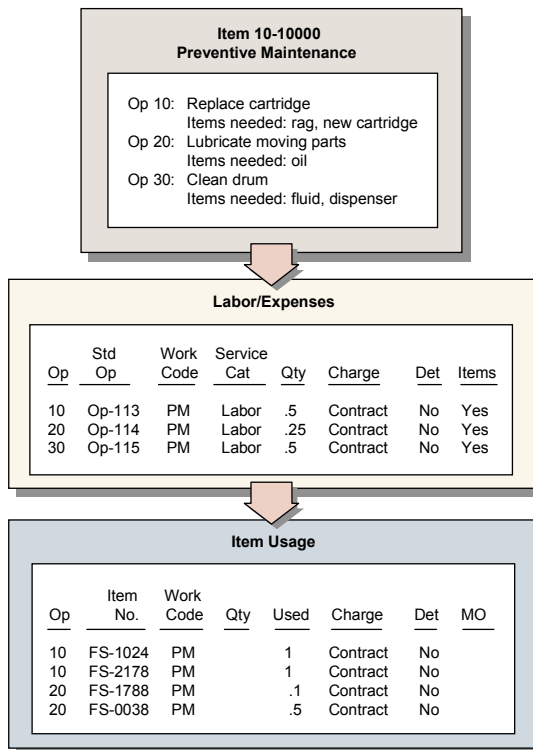


Fig. 13.4
Routing and BOMs
Loaded into CAR

In addition to providing labor/expense detail, routings can affect the cost of labor. Standard cost for labor is derived from the work centers associated with routing or standard operations. If you do not use these, the system calculates standard costs using the labor rate for the Service Work Center in Call Management Control.

♦ See Chapter 20 for information on service BOMs, routings, and standard operations.

Note If you do not use service BOMs and routings, you must manually enter the operations and items you used for the repair in CAR, unless you order items with a material order (MO).

When a BOM is initially loaded in CAR, the system does not check to determine if sufficient inventory exists in the default site and location. These checks are not done until you actually execute the item usage frames.

Connecting MOs to a Call

Engineers can obtain parts for service by ordering them with a material order (MO). The MO transfers the required inventory to the engineer's site and location.

▶ See “MO With Call” on page 620.

An MO can reference a call. Use MOs without a call to replenish general stock. If you specify a call on the MO, items must be used for that call or returned to general inventory.

▶ See “Material Order Selection Frame” on page 495 for details.

When MO items exist for a call line, the system displays a pop-up in CAR listing them. You can select some or all of these items and the system loads them into the Item Usage frame of CAR.

To close a call line, you must account for all MO items, either by using them or returning them. The same is true for the call itself.

Using MOs or BOMs to Load CAR Item Usage

The two ways of automatically entering items in CAR—through MOs or service BOMs—normally are separate alternatives. You can use them together, but you could enter more items than you intend.

If an engineer orders items with an MO for a call, they must be loaded and consumed in CAR. If you also attach a BOM to the item, the same items could be loaded again, resulting in duplicate items appearing in the usage frame. You might also get duplicates if you release a quote that has details about items needed, then order the items on an MO.

You must decide which method best fits your business practices and establish procedures to prevent overlaps.

To warn you of possible duplicates, the system checks the call when you create an MO for it. If the call line has items generated from a BOM, a warning displays.

Fixed Pricing in CAR

Some companies charge a fixed fee for repairing an item rather than basing the fee on the items used and the time spent for the repair. You can use fixed prices in Call Activity Recording.

Fixed pricing is an alternative to contracts and warranties. When you use fixed pricing, the system disregards all coverage details. When you complete a fixed price repair, you can record the details of the service to track service costs. However, the invoicing process uses the fixed price rather than the costs or prices of elements of the repair.

When you provide service for one line item at a fixed price, the system includes all details in the price. You cannot perform part of the service at a fixed price and charge regular prices for other items or services on the same line. To provide fixed and non-fixed service for the same item, create two lines for the item and record the fixed and non-fixed service separately.

Example A computer company charges a flat rate of \$150 to repair a monitor for a customer. When recording the activity, the company uses a fixed price work code and charge code. It invoices the customer \$150, but records the hours worked and items consumed in CAR, so it can review the service costs. The monitor repair might cost two hours of labor and five or six parts for a total of \$93, or it might cost \$1,000.

Recording the detail for fixed price repairs lets you review over time how closely the fixed price matches the repair cost.

Requirements

For fixed pricing, set up these codes:

- A work code with Fixed Price set to Yes
- A charge code with Fixed Billable set to Yes

Tip

Define the fixed price unit of measure in Call Management Control.

- An invoice sort with Include Fixed Prices set to Yes
- Service repair price lists using the fixed price unit of measure

When you specify a work code with Fixed Price set to Yes in CAR, the Fixed Price field in CAR defaults to Yes. The system searches for a price on the call price list with the fixed price unit of measure and uses this price as the repair price. The system also suggests a fixed billable charge code for each line of detail recorded.

Fig. 13.5
Specifying Fixed Pricing in CAR

For a fixed price work code, the system ignores coverage levels of service type.

Fixed price defaults to Yes.

System finds the fixed price from the price list.

The screenshot shows the 'Call Activity Recording' window. At the top, it displays 'Call ID: 2468', 'Bill To: 01000000', and 'End User: 01000000'. Below this is the 'Item Selection' table:

Line	Serial	Item Number	Work Cd	Svc Type	Report
3	198	55-100	Fixed	STANDARI	402265

Below the table is the 'Item Detail' section. It contains several fields: 'Engineer: PKH', 'Site: 10000', 'Location: PKH', 'Status: I' (with a note 'Invoiceable'), 'BOM Code:', 'Routing:', 'Sales Act: 3000', 'Disc Act: 3900', and 'Project:'. To the right of these fields are 'Fixed Price: 1' (checked) and 'Fixed Price: 100.00'. Further right are 'Quantity: 1', 'ISB Ref: 0', 'Coverage:', 'Taxable:', 'Comments:', and 'Fault Codes:'. At the bottom right, there is a checkbox for 'Update Installed Base:' which is checked.

For fixed pricing, create one invoice sort with Include Fixed Price set to Yes. Do not associate service categories with this invoice sort. Use it exclusively for presenting fixed price amounts in Call Invoice Recording.

Note When fixed pricing applies, the price, covered amount, and extended price for each recorded detail are zero and cannot be changed.

Multiple Reports

For fixed pricing, you charge the customer a fixed amount regardless of how much work you do. Once you invoice and post the fixed amount, any further reports added to the call line create zero invoice amounts.

You can adjust fixed prices in CAR or CIR until you post an invoice.

Taxes for Fixed Price Services

Normally, the system calculates taxes for each detailed labor, expense, and item usage record. For fixed pricing, it applies the tax rate to the fixed price. It does not consider tax data elements associated with detailed usage records.

▶ See Chapter 7, “Taxes in SSM,” on page 221.

Calculating Coverage in CAR

The relationships among service types, charge codes, and product lines affect the financial impact of service activity in CAR. You can define and use charge codes in many ways. The system supplies defaults based on the service types and values defined in Default Charge Code Maintenance. You can change these defaults to redirect costs, but only within a set of rules. To record activity in CAR, you must understand the way the system applies these rules.

What Is the Source of Coverage?

When you access a call line in CAR, it already has a service type. This service type can be different for each item on a call. Using the item, serial number, and installed base reference, the system searches for a valid contract or warranty. If none is found, the default is the Default Call Service Type in Call Management Control. If both contract and warranty coverage exist, the system prompts you to choose either warranty or contract coverage for this item when you create a new call for the item or add the item to a call.

For any item, several conditions can be true:

- No coverage exists. The system uses the default call service type.
- Coverage exists only on a contract.
- Coverage exists only on a warranty.
- Coverage exists on both a warranty and contract and you select warranty.

- Coverage exists on both a warranty and contract and you select contract.
- A warranty is normally associated with the item in Service Item Maintenance, but this particular item does not have a warranty or it is expired.

Based on the coverage conditions, the system maintains three service types for each item on a call:

- *Warranty Code.* The warranty code can be blank. It comes from the installed base record first and can be either active or expired. If the item is not in the installed base but has a warranty code in Service Item Maintenance, that warranty is used. Warranty information is maintained even when a contract provides coverage.
- *Contract Type.* The contract service type can be blank. This information is only saved when a contract covers the item on the call open date. This is unlike the warranty code, which is kept for reference even if it is expired. The contract service type is saved even if it was not chosen as the source of coverage for the item.
- *Service Type Used.* This field always has a value. Service Type Used can be the warranty or contract saved in the previous two values. If there is no coverage, the value can come from the Call Default Service Type in Call Management Control. If you manually enter a service type on the call line, it is saved in this field.

You can change a call line's service type only before you record activity for the line. Once you open reports, the field is display only.

Calculating an Initial Charge Code

When you enter detail in the Labor/Expense or Item Usage frames of CAR, the system displays a default charge code. The system derives this default using:

- The service type of the call line
- The work code, service category, quantity, and price of the usage detail record

The system uses the work code and service category to search for applicable limits. It uses the quantity and price to determine if the amount on this line of detail is under or over the limits.

Note For fixed price repairs, no coverage checking takes place. The fixed price billable charge code defined in Default Charge Code Maintenance (11.21.21.13) is always used as the default. You can enter another charge code for the item, but only if it also has fixed price billable set to Yes.

The system uses work code and service category to look for limits on service type W-1.

The system uses quantity and price to determine if the amount is over or under limit.

The screenshot shows the 'Call Activity Recording' window. At the top, it displays 'Call ID: 2468', 'Bill To: 01000000', and 'End User: 01000000'. Below this is the 'Item Selection' table with columns: Line, Serial, Item Number, Work Cd, Svc Type, and Report. The table contains one row: Line 4, Serial 33-009a1, Item Number 10-10000, Work Cd Tech, Svc Type W-1, and Report 402266. Below the 'Item Selection' table is the 'Labor/Expenses' table with columns: Op, Std Op, Work Code, Svc Cat, Quantity, Charge, Det, and Items. The table contains four rows: Op 10 (SETUP, Tech, LABOR, 0.5, WARRANT, Det checkbox, Items checkbox), Op 20 (REPAIR, Tech, LABOR, 1.0, WARRANT, Det checkbox, Items checkbox), Op 30 (CLEANUP, Tech, LABOR, 0.5, WARRANT, Det checkbox, Items checkbox), and Op 40 (SETUP, Tech, LABOR, 0.5, WARRANT, Det checkbox, Items checkbox). Arrows from the text on the left point to the 'Svc Type W-1' in the 'Item Selection' table and the 'Op 40' row in the 'Labor/Expenses' table.

Line	Serial	Item Number	Work Cd	Svc Type	Report
4	33-009a1	10-10000	Tech	W-1	402266

Op	Std Op	Work Code	Svc Cat	Quantity	Charge	Det	Items
10	SETUP	Tech	LABOR	0.5	WARRANT	☐	☒
20	REPAIR	Tech	LABOR	1.0	WARRANT	☐	☐
30	CLEANUP	Tech	LABOR	0.5	WARRANT	☐	☐
40	SETUP	Tech	LABOR	0.5	WARRANT	☐	☐

Fig. 13.6
Calculating a
Charge Code

For non-fixed price service, the system finds a default charge code using the following steps:

- 1 The system searches for applicable limits on the line item's service type. It first searches for limits based on the work code/service category, then based on the invoice sort for the service category, and then based on the total limit record.
 - If the service type is a warranty, the system examines the coverage record of the warranty type and uses the associated charge codes. If the warranty covers any amount, the system uses the under-limit charge code, which normally has Warranty set to Yes. If the warranty covers no amount, the system uses the over-limit charge code, which must have Billable set to Yes.
 - If a contract covers the call item, the system searches for coverage records at the contract line level, then at the header level, and finally at the contract type level. If a coverage record exists and has a charge code and over-limit charge code, the system uses these. The under-limit charge code normally has Contract set to Yes in Charge Code Maintenance. For the over-limit charge code, Billable must be Yes.

- If you entered a service type for the line or used the default from Call Management Control, the system uses the charge code and over-limit charge code associated with its coverage records. For service types that provide coverage separate from a contract or warranty, you normally have an under-limit charge code with Covered set to Yes. For the over-limit charge code, Billable must be Yes.
- 2** If the system does not find coverage records or charge codes are not associated with them, it searches for a default charge code set up with Default Charge Code Maintenance (11.21.21.13), using the service type of the call line; the work code and service category of the usage detail; and end-user type of the call.
- If the service type is a warranty and it provides coverage, the default warranty charge code is displayed.
 - If the service type is a contract and the line item's price is within contract limits, the default contract charge code is displayed.
 - If coverage exists on the default call service type or a service type that you entered, the default covered charge code is displayed.
 - If the warranty, contract, or service type provides no coverage, or the item has exceeded limits, the system displays the default billable charge code.

Calculating a Charge Code for Items

The system follows the same steps to calculate a default charge code for item usage that it does for labor and expenses. It uses the work code and service category to search for applicable limits on the call line's service type.

However, for items, the service category is less important.

You can specify work code for an item but cannot update service category.

The screenshot shows the 'Call Activity Recording' window. At the top, it displays 'Call ID: 2468', 'Bill To: 01000000', and 'End User: 01000000'. Below this is the 'Item Selection' table:

Line	Serial	Item Number	Work Cd	Svc Type	Report
4	33-009a1	10-10000	Tech	W-1	402266

Below the item selection is the 'Item Usage for Operation 10' table:

Op	Item Number	Work Code	Qty Used	Qty Ret	Charge	Det MD
10	44-4000	Tech	1.0	0.0	WARRANT	☐
10	44-3000	Tech	1.0	0.0	WARRANT	☐

Fig. 13.7
Calculating Item
Usage Charge Code

The item service category defaults from Service Item Maintenance or from the Item Service Category in Call Management Control and cannot be changed. The system uses it to determine a default charge code and then displays it for review.

Recalculating Charge Codes

Because the system applies limits to a line of detail based on the work code and service category, it recalculates the charge code whenever you change these fields.

Example You record a labor operation for a call with a work code of PM, service category of Labor2, and quantity of 1. Based on these values, the system defaults a contract charge code of PM_CON.

After saving this line, you realize this operation is not part of the standard PM procedure, but is an additional repair that the technician made. So you return to the line and change the PM work code to REPAIR.

The system now searches for limits again, using the REPAIR/Labor2 combination rather than the PM/Labor2 combination. This can result in a different default charge code, like REP_CON. Or perhaps the contract does not cover the repair work, so the charge code changes from contract to billable.

Important If you change the default charge code, then change the work code or service category, the system overrides your charge code when it recalculates the limits and coverage.

If you change the quantity on a line of detail, the system does not change the charge code unless an additional quantity exceeds coverage limits. In this case, the system uses the over-limit charge code.

Changing Charge Codes

The system suggests five of the seven types of charge codes as defaults in CAR: contract, warranty, billable, covered, and fixed billable. You can enter giveaway and project mandatory charge codes as manual overrides.

Within the limitations described in this section, you can change any default charge code. When you change the charge code, the system may also change the service type used. The system then applies the limits of the new service type and calculates a new covered amount.

The system applies these rules for changing charge codes:

- You cannot mix fixed and non-fixed pricing in a line. You can change a fixed charge code only to another fixed charge code and any non-fixed charge codes to another non-fixed charge code.
- You can change any charge code other than fixed to a giveaway charge code, which covers 100% of the price. The usage record consumes no limits, regardless of the service type's coverage levels.
- You can change any charge code other than fixed to a project mandatory charge code if you previously specified a project for the call item.
- You can change covered, contract, or warranty charge codes to a billable charge code. The system ignores coverage levels on the service type and enters a default of zero for the covered amount.
- You can change contract, warranty, or billable charge codes to a covered charge code. The system changes the service type to the Default Call Service Type in Call Management Control, and applies its levels of coverage.

The system also applies rules for the following special conditions:

- *Both warranty and contract coverage exist for an item.* When dual coverage exists for an item on a call, you must choose one source of coverage to use, but both sources are stored with the record. You can then switch between them on each usage detail.

If you chose warranty for the call item, you can change to contract for a specific usage detail. The system then uses the contract service type for that detail record and applies its limits and levels of coverage. If you chose contract for the call item, you can change to warranty for a usage detail and the system applies the warranty's coverage levels to the detail record.

- *A valid contract and an expired or unapplied warranty exist.* You can change a contract charge code to warranty even if the warranty is expired or was never associated with the item in the installed base record. This enables you to extend the warranty coverage, a requirement in some service contexts.

For example, if an item has been fixed twice under warranty and fails again for the same reason a week after the warranty expires, you can offer service at the normal warranty coverage as a goodwill gesture. The system applies the level of coverage from the warranty type.

- *No contract exists and you specify a contract charge code.* If the item has no associated contract and you specify a contract charge code, a warning displays. The system changes the service type to the Call Default Service Type and applies its level of coverage to the detail record.
- *No warranty exists and you specify a warranty charge code.* If the item has no associated warranty code and you specify a warranty charge code, a warning displays. The system changes the service type to the Call Default Service Type and applies its level of coverage to the detail usage record.

The flexibility in changing charge codes lets you make adjustments in a dynamic service environment. However, you should consider the defaults as the normal way to use the system. Modify charge codes only after carefully considering the appropriateness and consequences of the change.

Charge Codes and Product Lines

Charge codes play an important role in accounting through association with product lines in Charge Product Line Maintenance. Connecting particular charge codes to product lines lets you segregate the cost of warranty service, for example, from the cost of contract service.

Managing costs with distinct accounts simplifies reporting and provides information on the profitability of your service activities. When you use charge codes this way, you can direct the cost of each labor, expense, or item usage record to a different product line.

▶ “Detailed Accounting in CIR” on page 543 describes accounts affected.

To simplify accounting, you can associate only one product line with the item being repaired. The system uses that product line’s WIP account for reports you generate for the call item. The system determines the product line by the setting of Use Item Prod Line in Service Management Control.

▶ See “Search Order for Product Line” on page 113 for details on the search algorithm.

To find the charge product line for a line of usage detail, the system uses the detail line’s charge code, work code, service category, and service type. The product line and service group come from the call item. If no charge product line exists, the system uses the product line of the call item or the service type, depending on the setting of Use Item Product Line in Service Management Control.

The product line for each usage record displays if Detail is Yes. You cannot modify the product line directly. The only way to change it is to change the usage record’s charge code.

Consumption of Limits in CAR

Tip
Warranty types have no limit amounts.

When coverage comes from a warranty or service type, the system considers the level of coverage on the type, not any limit amounts. The system considers limit amounts only for contracts.

When limits come from a contract line or contract header, the amounts recorded for the limits accumulate. As activity occurs, the system monitors the amounts you charge and compares them with the contract’s limits. When you exceed the limits, the system changes the default charge code from an under-limit to an over-limit code.

Example You have a contract coverage limit for labor of 100% up to \$100. On the first line of labor usage, you record \$85. The system supplies the under-limit charge code by default, and suggests a covered amount of \$85. On the second line, you record another \$25. The system again suggests the under-limit charge code because there is some coverage, and asks if you want to cover the over-limit amount. If you respond No to this prompt, the covered amount defaults to \$15 and the billable amount to \$10.

Limit amounts are actually consumed when the call invoice is posted. However, the system also tracks limit amounts used. If you take another call for this item before posting the invoice for the previous one, the system considers any labor usage over the limit, since it looks at both the used and consumed amounts.

Use the Limits Consumption Inquiry (11.5.13.21.4) and Limits Consumption Report (11.5.13.21.5) to review amounts consumed and used for a particular contract. In this context, *consumed* means the invoice for the activity has been posted. *Used* means the activity has been recorded, but not yet posted.

▶ See page 247 for details on these reports.

Line and Header Limits

If you define limits at the contract line level, the system monitors each line against its own limits. When you define limits at the header level, the system calculates consumption based on all contract lines.

Example You have a coverage limit for labor at 100% up to \$100. When this limit is at the contract line level, each line gets \$100 of labor coverage. When defined at the header, if the first line uses \$100 of labor, no coverage is available for other line items. The charge code in CAR defaults to the over-limit code.

Inventory Processing in CAR

The information you record in CAR initiates inventory transactions for items you have consumed or exchanged. The system uses site and location information to manage inventory issues.

Determining Site and Location Defaults

Site and location defaults support a variety of ways engineers work and obtain repair parts. The system searches for a site and location as follows.

- 1 The system searches for a site and location for the assigned engineer in Engineer Maintenance. If you leave the engineer site blank and specify a location, the default is the area site but the engineer location.
- 2 If the engineer does not have a site or location, the defaults are the site and location for the engineer's area.
- 3 If area site and location are blank, the system uses the default spares site and location defined in Default Site Maintenance.
- 4 If a default spares site and location are not defined, the defaults are the item's site and location in the item master.
- 5 If the item's site and location are blank, the default is the site associated with the end user's customer in Customer Maintenance.

If the engineer works at a repair center, designate it as his default site. The system issues items to the call from the repair center site. An engineer in this type of environment typically would not use material orders to obtain inventory.

MOs are typically used when an engineer works remotely—for example, out of a repair truck or in a local office that obtains repair parts from a regional center. The MO transfers inventory to the engineer's home site and location. In this type of environment, an inventory transaction is needed to move inventory from its current site to the engineer's site, where you can issue and consume it on the call.

If inventory does not exist in the default sites and locations in CAR, you must specify them manually or errors occur during transaction processing.

Processing Inventory

Inventory processing in CAR is similar to a backflush operation. You are entering into the system information about labor that you already performed and items and expenses that you already consumed. Therefore, the system assumes you want to issue the inventory when you record it.

When you exit the usage frames, you can view a confirmation frame, illustrated in Figure 13.8, listing the items to be issued and returned. Review the summary information to ensure that the items, sites, and locations are correct.

Line	Item Number	Lot/Serial	Quantity	Site	Location
1	44-1000		1.	Fr 10000	PKH
1	44-3000		1.	Fr 10000	PKH
1	44-4000		1.	Fr 10000	PKH
2	22-100		1.	Fr 10000	PKH
2	44-1000		1.	Fr 10000	PKH
2	44-4000		1.	Fr 10000	PKH
4	44-1000		1.	Fr 10000	PKH
4	44-3000		1.	Fr 10000	PKH
4	44-4000		1.	Fr 10000	PKH

Is all information correct ☒

Fig. 13.8
Inventory
Confirmation
Frame

To make a change, respond No to the prompt. The Item Selection frame displays so that you can proceed through the detailed usage frames and adjust the data.

If you respond Yes at the confirmation frame, the next frame prompts you for an output device. Processing activity generates a report to the output device you specify. This report includes information about items you issued and returned, labor/expense transactions, updates to the installed base, and inventory errors or warnings generated during processing.

Figure 13.9 shows a sample report.

Fig. 13.9
CAR Processing
Report

fscarmt.p 1.1.1.13 Call Activity Recording					Date: 06/17/02
Page: 1 Quality Products Corp					Time: 11:01:05
Call	Line	Item Number	Serial	ISB Ref	Report
CA115	2	10-10000	1043888/A2	0	402313
Type	Item/Operation	Serial/Work Code	Ref	Quantity	
Items	44-1000			1.0	Processing
Items	44-3000			1.0	Processing
Items	44-4000			2.0	Processing
Items	44-4000			-2.0	Processing
Labor	10	Tech	LABOR	0.5	Processing
Labor	20	Tech	LABOR	1.0	Processing
Labor	30	Tech	LABOR	0.5	Processing
Expenses	40	Tech	Mileage	25.0	Processing

The report first indicates the call line being processed, then details the items, labor, and expenses for the line. Errors print below the record they refer to.

The various columns include the following information:

- Type is the invoice sort code associated with the transaction.
- Item/Operation is an item number for item issues or the operation number for labor and expense transactions.
- Serial/Work Code displays the serial number for item transactions and the work code for labor and expense transactions.
- Ref displays the ISB reference number for items and the service category for labor and expense transactions.

Inventory in CAR uses the same rules that govern inventory throughout the system. The location status determines the overissue policy. If the system encounters errors while issuing inventory, it sets the report status to hold. To complete the call line, you must correct the errors, set the report status to invoiceable, and reprocess the inventory transactions in CAR.

Allocations and Requirements

You can create general allocations in the Item Usage Detail frame of CAR. Usually, you are recording items you already used and you issue the items immediately, so this step is not needed. Use it only if you are not issuing inventory immediately.

You can designate specific inventory to be issued, by site, location, lot/serial number, and reference. The system uses the information only for the inventory issue. CAR always performs general allocations. It does not detail allocate even if you enter inventory detail in the multi-items frame.

The system creates MRP requirements in CAR to reflect the quantity of items you specify. These requirements are deleted as soon as the inventory is issued. The required date for MRP is the call's next status date.

Issuing Inventory from Multiple Sites

When you create a call line in Call Maintenance, Call Quote Maintenance, or Call Activity Recording, the system displays a default line item site. When you open the first report for the line, you can change the site.

The default site determines other line item defaults, such as the BOM and routing if it was defined with Service Item by Site Maintenance. You can also change these defaults when you create the first report.

Important After you record activity, you cannot change the line item site. If you create new reports for the line item, they share the same site, BOM, and routing.

Even though you can associate only one site with a call line, you can still use inventory from multiple sites during a repair. When entering item usage detail, you can specify a different site for each item. During processing, CAR transfers the items to the line item's site, then issues the items from that site.

This approach affects GL transactions. Costs are typically set up for each site using Item-Site Cost Maintenance (1.4.18). When CAR transfers items to the call site, appropriate GL transactions are created for any variance in costs between the two sites.

◆ See “Determining Site and Location Defaults” on page 458 for details on the logic used to determine line item sites.

Using Multiple Reports

Service organizations often use prenumbered paper reports for engineers to record the items, labor, and expenses associated with servicing an item. Engineers can turn in these forms as they complete each job. For lengthy jobs, they may turn in the reports daily or weekly.

Call Activity Recording provides a similar report structure. You can record all activity for a line item on one CAR report, or create multiple reports for one line item. You can use the provided report IDs or enter IDs from your prenumbered report forms.

You can generate more than one invoice for activity that you record for a call or a call line. This is important, for example, if the call activity covers several weeks and you bill more frequently. Record expenses at the end of each day or week by creating multiple reports for a single line item.

You can modify a report unit the invoice is posted. After this, you can review the report, but you cannot update it.

Report Statuses

To indicate its position in the recording life cycle, each report you open for a line item has one of the following statuses:

- *Quote (Q)*. A report opened in Call Quote Maintenance to record the activity needed for a line item has a status of Q.
- *Invoiceable (I)*. The default status of a new report you open in Call Activity Recording is I, indicating that the report is ready for invoicing.
- *Hold (H)*. You can mark reports hold to delay invoicing them. The system sets reports to Hold if an error occurs during transaction processing.
- *Closed (C)*. When you post an invoice, the system sets the report status to C. You can also use this status to close a report with no detail. Once you close a report, you cannot reopen it. Only fault codes and comments can be updated.

Tip
Use the status to exclude a report from invoicing.

In CAR, the report status indicates whether to include or exclude it from invoicing. The default report status is invoiceable. Report status offers you another level of control for call invoicing.

Example You enter a report in CAR but have not yet invoiced it. The engineer submits a second report that needs to be billed separately. Enter the second report and set its status to Hold. When you generate the call invoice, the system includes only the report with a status of invoiceable.

Multiple Reports and Generated BOMs

When you use a BOM and routing to generate item and labor usage records for an item, the system attaches all usage to the first report. If you open a second report to complete the service, the system does not move the remaining items and labor to the new report. Remove the unfinished steps from the first report and add them to the second one.

Correcting Report Errors

Use the call Status field to cancel a call if you have not opened any reports. You can also cancel or close individual lines on the call and continue processing the other lines. If reports exist, the call cannot be canceled.

Tip
Cancel status is defined in Call Management Control.

You cannot delete a call report opened by mistake. However, you can change its status to Closed if you have not recorded detail for the line. If you have recorded detail, delete each line of detail, then close the report.

If you have issued inventory or processed labor/expense transactions, you cannot delete the detail. You can adjust the price to prevent billing for the issued amounts or issue a credit memo if billing has already occurred.

To remove the cost of labor, expenses, or items issued by mistake, follow this process:

- 1 Enter a new operation for recording the correction in the Labor/Expenses or Item Usage frames.
- 2 For labor and expenses, enter a negative value in the Quantity field. For items, enter a negative quantity in the Qty Used field.
- 3 Process the new line to create reversing GL and inventory transactions.

Processing a correction has the following effects:

- For items, the system executes an inventory transaction to increase inventory at the site and location specified.
- The cost of the reversed item, labor, or expense is removed from the call record, so that margins and costs display correctly in Call Invoice Recording.

Note The system prevents you from entering a negative quantity when you are executing a swap. A swap occurs when the item being issued is the same as the item on the call line.

Call and Call Line Statuses in CAR

Call statuses reflect the position of a call in its life cycle. In Call Activity Recording, you can assign a call status to individual lines on the call, so you have better control over calls with multiple line items.

Example You take a call for four items. One repair proves unnecessary, so you cancel the line without affecting the call status. You finish two repairs and can close those lines to prevent more processing. The last line you leave open while waiting for a part.

▶ See “Call Status Changes” on page 411.

You can invoice only complete or closed call lines. Because recording activity is a preparation for invoicing, CAR always attempts to set the call and line status to complete or closed. These statuses are defined in the Complete Status and Closed Status in Call Management Control.

Complete or Closed?

A complete call or line is ready for invoicing. However, you can modify related data, order service items with an MO, and record new activity by updating a report or opening a new one. Use the complete status to invoice progressively during a lengthy service activity.

Tip
You can apply field security to Call Status.

For closed calls or lines, you can create invoices, but you cannot order service items or record new activity. You also cannot add more lines to a closed call. To record activity for a closed call or line, you must reopen it by changing its status. When you have completely invoiced a closed call, closing all reports, you can move it to history and archive and delete it.

Use Close on Recording in Call Management Control to indicate whether to set the call or line status to closed or complete. If Close on Recording is Yes, CAR sets the call status to closed if all conditions are met. If it cannot set the status to closed, it tries to set the status to complete. If Close on Recording is No, CAR attempts to set the status to complete.

Call Line Status

If the system can issue all inventory for a line in CAR and encounters no other errors, it sets the line's status to either complete or closed, depending on the value of Close on Recording. If the system detects errors, the line remains open and CAR displays a message indicating that it could not complete or close one or more lines.

CAR sets a line to complete when it meets two requirements.

- At least one report with item, labor, or expense detail has an invoiceable status.
- All inventory for the invoiceable reports was issued completely.

Set Invoice From Recording in Call Management Control to Yes if you want to create invoices in CAR.

To record more activity for an item before you generate the invoice, prevent invoicing by:

- Changing the line item status to a status other than complete or closed.
- Answering No to the Generate Invoice prompt in the Call Status frame, if it displays.
- Changing the report status to hold so the item has no invoiceable reports.

Call Status

CAR's final processing step is to determine the call's status, based on Close on Recording in Call Management Control.

CAR sets the call status to closed only if:

- All lines are complete, closed, or canceled.

♦ See “Call Status Changes” on page 411.

- All reports are invoiceable or closed and all transactions for the reports completed successfully. Invoiceable reports must have fully processed detail. If a report exists with no detail, set its status to closed.
- All items ordered on a material order for the call are used or returned.

CAR sets the call status to complete if at least one closed or complete line has an invoiceable report. Open MOs and reports on hold can exist.

If Close on Recording is Yes and conditions prevent CAR from changing the call status to closed, CAR attempts to set the status to complete. If conditions prevent this, CAR does not change the status. In this case, you cannot manually change the status to complete or closed. An error displays, explaining that incomplete lines or an open MO exists.

Tip
Use field security on the Call Status field to control status changes.

If you do not want to invoice the call or close it, change the closed or complete status manually. If you specify the hold status, defined in Call Management Control, an invoice cannot be generated in CAR. An error displays if you specify Yes to the Generate Invoice prompt for a call with the hold status.

However, in Call Invoice Recording, a call status of hold produces only a warning. This lets you invoice for service that has already been provided, but prevents you from recording more activity for the call.

Status Errors

The only changes CAR ever makes to the line or call status is to change it to closed or complete. It does not reverse this status change automatically. As a result, incompatible line and call statuses can sometimes occur.

Example You record activity for a call with one line and issue inventory without errors. CAR sets the line and call status to complete. Now you record two more items in the Item Usage frame, but this time when you issue inventory, errors occur. If you simply try to press Go through the Call Status frame, an error displays. Complete is no longer a valid status for the call, because it does not have any invoiceable reports. You must manually enter an appropriate status.

Deleting Call Lines

You can delete a call line if it has no associated reports. You cannot delete lines for which you have recorded activity.

If you have not issued inventory for the line, delete the detail on the open report, then close the report and the line.

Generating an Invoice

Some businesses choose to have managers handle invoicing, not the engineers or clerks entering data into CAR. Other organizations prefer to complete call recording and invoicing in one process. Call Activity Recording can generate an invoice or simply track costs.

Invoice From Recording in Call Management Control determines where you create and update invoices. If Invoice From Recording is No, you process invoicing in Call Invoice Recording (11.1.1.15). Use standard system security to restrict access to these functions.

If Invoice From Recording is Yes, a Generate Invoice prompt displays in the Call Status frame of Call Activity Recording as in Figure 13.10. You can specify an invoice number for the printed invoice. If you leave Invoice Number blank, the system supplies the next number based on the value in Sales Order Control.

Generate an invoice from Call Activity Recording.

Optionally specify an invoice number.

The screenshot shows the 'Call Activity Recording' window. At the top, it displays 'Call ID: CA123', 'Bill To: 1001000', and 'End User: 10010003'. Below this is the 'Call Status' section. It includes a 'Status' dropdown set to 'COMPLETE'. To the right are date and time fields: 'Complete Date: 07/31/2002', 'Close Date:', 'Next Status Date: 07/31/2002', and 'Time: 13:24', 'Time: :', 'Time: 08:30'. At the bottom left of the status section, there is a 'Generate Invoices:' checkbox which is checked, and an 'Invoice Number:' text box with a yellow background.

Fig. 13.10
Invoice From
Recording Set
to Yes

If you indicate Yes to the Generate Invoice prompt, the system creates a pending invoice for lines with a complete or closed status. If the status for the call is complete or closed, the system invoices all lines.

In CAR, you can generate an invoice for a call with any status except hold. You can generate an invoice for a call on hold in CIR, but a warning displays.

If a pending invoice for a call exists, the Generate Invoice prompt appears only if you make changes in CAR that affect the invoice. These changes include:

- Adding labor, expense, or item usage records
- Editing comments
- Changing invoice-related fields like PO number, credit terms, language, channel, taxes, or fixed rate

Correcting an Invoice

You can correct an invoice that you have not posted. Modify pricing and covered amount in Call Invoice Recording when you review the invoice. Change inventory amounts or add labor in CAR.

To make changes to a closed call, change the call's status in Call Activity Recording. If the line you want to change is closed, reopen it. Then you can modify or add a report. The system regenerates invoice amounts only for changed call lines.

After you post the invoice, the status of all reports included on the invoice is closed. You can view, but not modify, these reports.

Modifying Lines in CAR with Generated Invoices

After you generate an invoice for a call line, you can add or modify reports in Call Activity Recording. The system regenerates the invoice for changed call lines, either when you exit CAR or when you access the call in CIR.

♦ See
“Coordinating
CAR and CIR”
on page 521.

A warning displays in CAR when you access a call line with an invoice. If you ignore the warning and make changes, the existing invoice is no longer valid. The system resets the Ready to Invoice field in Call Invoice Recording to Yes and the Invoiced field to No. The invoice post routine ignores the invoice until you regenerate and print a new invoice to reflect the changes you made.

Invoicing by Report

If you use multiple reports to record service activity and want to invoice the reports separately, you have two choices:

- Post the invoice for the first report before creating another. This clears all quantities for the call line.
- Give the second report a status of hold so the system does not include it when you generate the pending invoice.

If you do not use one of these approaches, the system accumulates the charges on the two reports into one invoice amount.

Posting an Invoice

When you post an invoice, the status of all its reports is closed. You can view these reports, but you can change only the comments and fault codes. After posting, the system clears all amounts and the Call Invoice Recording summary frame displays zero amounts to be invoiced.

When viewing closed reports, enter the level of detail you want to review in the CAR header. You cannot change the Detail field at the line level.

Project Codes in CAR

Project code is one component of an account number defined in GL setup functions. You can use projects to track expenses and revenue for distinct activities. Other components of an account number are account, sub-account, and cost center.

Tip
Use Project Code Maintenance (25.3.11) to define project codes.

If Verify GL Accounts is Yes in System/Account Control (36.1), each account component must be valid on its own and in combination with other account number components.

Most orders generate either cost or revenue GL transactions. In work orders, project codes group costs. In sales orders, they group revenue. Call Activity Recording is unique because it tracks both labor, expense, and item costs *and* invoiceable amounts that generate service revenue.

As a result, up to three projects can be specified in Call Activity Recording, illustrated in Figure 13.11.

Fig. 13.11
Projects in Call
Activity Recording

Call Activity Recording

Call ID: 2468 Bill To: 01000000 End User: 01000000

Line	Serial	Item Number	Work Cd	Svc Type	Report
4	33-009a1	10-10000	Tech	W-1	402266

Item Detail

Engineer: PKH Site: 10000 Location: PKH Status: I Invoiceable
 BOM Code: REP10-10000 Routing: REP10-10000 Sales Acct: 3000 Disc Acct: 3905 Project: PJ1001
 Fixed Price: 0.00 Quantity: 1 ISB Ref: 0
 Coverage: Taxable: Comments: Fault Codes: Update Installed Base: ☒

Sales project — Sales discount project — Report project

- The sales project is associated with the Sales account for tracking call revenue. This project is validated with the other Sales account components that display on the screen.
- The sales discount project is associated with the Sales Discount account. This project is typically the same as the Sales account project. This project is validated with the other Sales Discount account components that display on the screen.
- The report project is associated with call line reports for tracking call costs. This project is not validated with other account components, since the Cost of Goods Sold accounts are not determined until later. However, it is validated during GL transaction post.

Project Code Handling

How projects are used and which project fields can be updated depends on the setting of Project Code Handling in Call Management Control. This field has two values: Single Project per Line (S) and Project per Labor/Expense (P).

Single Project per Line (S)

When this option is active, one sales project and one sales discount project can be associated with each call line. The system sets the report project to the value entered for the sales project and it cannot be changed. The same project is used for both revenue and costs created by labor/expense transactions and material issues and receipts for this line.

Once you have specified a project, it cannot be changed. The sales project defaults to each report and each labor, expense, and item detail record.

When an invoice is created for the call line, either in CAR (if Invoice from Recording is Yes) or CIR, the sales and sales discount projects from CAR default to the call invoice. These values can be modified in CIR, if needed.

Project per Labor/Expense (P)

When this option is active, each labor and expense transaction created for a call line can have a different project associated with it.

- The sales and sales discount project default from the contract line providing coverage and can be modified.
- The report project also defaults from the contract-line sales project and can be modified.

If a contract does not provide coverage or a project is not specified on the contract line, all call-line projects default to blank. Each time a new report is opened for a call line, the same defaulting logic is used.

The report project sets the default for each labor record. For expenses, the project defaults first from the employee (engineer), if one has been defined; otherwise, the report project is used. This is similar to the way work orders handle project codes. You can modify the report project even after other reports exist, and the new project defaults to new labor and expense transactions.

You can also modify the project on each labor and expense detail. The project associated with item consumption, however, defaults from the report project and cannot be changed.

Tip

Items always use the project on the call report header.

Tip

Associate a default project with an employee in Employee Maintenance (2.7.1).

The report project is used for costs only. When an invoice is generated, the sales and sales discount projects default to the invoice just as when Project Code Handling is set to S. The revenue projects (sales and sales discount) set the default for each line on the call invoice. The only difference in how revenue projects are handled when Project Code Handling is P is that the fields can be modified even after reports exist.

Returns and Exchanges in CAR

▶ See Chapter 21, “Return Material Authorizations,” on page 679.

You can handle simple returns in the Service/Support module through RMAs. Use RMAs when you do not need to record an engineer’s time and material. The customer returns an item, and you ship them a replacement. Or, you repair the item with a repair work order or by creating an RTS (Return to Supplier), and then return it to the customer.

CAR also provides support for returns and exchanges in the context of recording service activity, such as:

- Unused items ordered on an MO
- Exchanges for credit
- Swaps
- Other returns

▶ See “Return Status” on page 99.

You can combine some of these returns. For example, you can swap an item and return the old one for credit. You manage return processing with return statuses.

▶ See “Correcting Report Errors” on page 463.

You can also correct a mistake if the number of items used is recorded improperly and needs to be decreased. The difference between correcting a mistake and executing a return is that the first action removes the cost of the item from the call. In the second case, the cost of the item issued to the call is retained so that you can track cost variances.

MO Returns

You must account for all items that an engineer orders for a call before closing the call. You can return items directly in CAR if you do not need them. The system executes the return as an inventory transfer, since MO items remain in inventory and do not involve billing.

If the engineer will return MO items later, mark the items in CAR as a pending return. No inventory transactions take place until you complete the pending return in MO Direct/Pending Returns (11.11.8). You cannot close the call until the return is complete.

♦ See “Returning Items on MOs” on page 653.

Note With this kind of a return, the cost of the item issued is still associated with the call. This lets you track variances based on planned usage and actuals.

Exchanges

Engineers frequently replace a faulty or worn part with a new one. Sometimes, you discard the old part. In other cases, the used part has value and the customer receives credit. You can return the used part in CAR as part of an exchange by using a return status with Exchange set to Yes.

When you use an exchange return status, the system searches for an exchange price for the returned item on the service price list specified on the header in CAR. Define exchange prices using the exchange unit of measure in Call Management Control. If an exchange price exists, it displays by default during return processing. The customer is credited this amount when you generate the invoice for the call.

♦ See “Automatic Pricing” on page 199 for details.

Define items that you normally exchange as repairable in Service Item Maintenance (11.3.7). CAR assumes that when you issue a repairable item, you return one. The Quantity Returned field defaults to the Quantity Used in the Item Usage frame.

Swaps

You can swap items in Call Activity Recording. A swap occurs when the call line item is the same as the item issued. Swapping items is similar to RMA processing. The customer returns a product, like a defective television set, and you ship them a new one.

CAR displays a warning when you swap items, because normally you do not repair an item by issuing the same item. However, you can continue and complete the transaction. Use an exchange return status to provide credit for a swapped item, like any other exchanged item.

Miscellaneous Returns

In addition to MO returns, exchanges, and swaps, you can register other returns in CAR.

Example While repairing a copier, the engineer picks up two empty toner cartridges from the customer. He registers these as an exchange for credit, even though he did not use a toner cartridge on the call.

Ambiguities in Return Processing

If you want to return an item ordered on an MO and the same item exists in the end user's installed base, the system may not be able to distinguish between the two items.

Example You order two of item 44-110 on an MO. This item does not have a serial or lot number. In CAR, you use one item 44-110 and indicate that you want to return one, leaving the installed base reference as 0. If an item exists in the installed base with reference 0, the system cannot tell whether you want to return the one from the MO or return the one from the installed base.

This situation also exists for lot-controlled items if the item on the MO matches the lot of an item in the installed base with a 0 reference number.

If this situation occurs, the system returns the item from the installed base first. To return the one on the MO, mark the return as pending. The system executes pending returns only for items on an MO.

Updating the Installed Base in CAR

In CAR, you can update the installed base by setting Update ISB to Yes for the call line. This setting lets you:

- Add the call line item to the installed base
- Add items you issue as components of the call line item
- Remove items that are returned

Fig. 13.12
Update ISB Field
in CAR

Update ISB controls how you add items to the installed base in CAR.

The screenshot shows the 'Call Activity Recording' window. At the top, it displays 'Call ID: 2468', 'Bill To: 01000000', and 'End User: 01000000'. Below this is an 'Item Selection' table with columns: Line, Serial, Item Number, Work Cd, Svc Type, and Report. The table contains one row: Line 3, Serial 198, Item Number 55-100, Work Cd Fixed, Svc Type STANDAR, and Report 402265. Below the table is the 'Item Detail' section. It contains various fields: Engineer (PKH), Site (10000), Location (PKH), Status (I), BOM Code, Routing, Sales Acct (3000), Disc Acct (3900), Project, Fixed Price (checked), Fixed Price (100.00), Quantity (1), ISB Ref (0), Coverage, Taxable, Comments, Fault Codes, and an 'Update Installed Base' checkbox which is checked. A line connects the 'Update Installed Base' checkbox to the 'Status' field.

Update ISB defaults to Yes under the following conditions:

- The item is in the installed base. Update ISB defaults to Yes regardless of other settings.
- Installed Base in Service Item Maintenance is Yes for the item *and* Create ISB is Yes for the end user in End User Address Maintenance.
- The item is not in the item master, but Create ISB is Yes for the end user in End User Address Maintenance.

If you do not enter an item number, Update ISB defaults to No. If you enter the item number of a lot/serial controlled item and do not specify a lot/serial number, the system sets Update ISB to No and does not let you change it. Lot/serial-controlled items must be added to the installed base with an appropriate number.

Note If the call item is in the installed base but the quantity specified in CAR does not match the ISB quantity, Update ISB defaults to No and cannot be changed.

Call Line Item

If the call line item is not in the installed base and Update ISB is Yes, a frame appears in CAR for recording installed base information. The system creates the ISB record immediately, so you can update the installed base when you issue inventory items. To add these records as components of the parent item, the record for the parent item must exist.

If you specify active warranty information for the new ISB item, the system prompts you whether you want to apply the coverage to the item.

Figure 13.13 illustrates the Installed Base Detail frame in Call Activity Recording.

Fig. 13.13
Adding Item to ISB
with Warranty
Coverage

Call line is covered by default call service type.

Item is added to ISB with active warranty coverage.

Line	Serial	Item Number	Work Cd	Svc Type	Report
1	8456-9326	40-40000	Tech	STANDARI	402263

Installed Base Detail

Description: (TM) COOLING SYSTEM
HOME/INDUST MODEL
Quantity: 1.0
Model:
Install Date: 07/31/2002
Rev Level: AB
Warranty Code: W-1
Ownership:
Warranty End: 12/31/2002
Location:
Parent Item:
Parent ISB Ref:
Parent Serial:
Comments:

In this example, the Default Call Service Type in Call Management Control covers the line item. You can add the item to the installed base with warranty coverage if you specify an installation date that is within the warranty date range.

Note The Installed Base Detail frame displays only when the call line item is not in the installed base and Update ISB is Yes. To modify information for an item in the installed base, use Installed Base Item Maintenance (11.3.1).

Swaps

You can issue a repair item with the same item number as the call line. The system treats the transaction like a swap. It removes the call line item from the installed base and replaces it with the item you issued.

Normally, you cannot delete an installed base item that exists on an open call, RMA, or service contract. For swaps, you can. The system assumes that you will repair the item and return it to the customer. If you do not and the deleted item has a contract, update the contract and add the new line item.

Repair Items Issued

You can create installed base records for items you issue during inventory transaction processing in CAR. Define the items with Installed Base set to Yes in Service Item Maintenance and set Load Available Structure to Yes in Service Management Control.

If the line item already has a product structure in the installed base, the system adds the items issued in CAR as top-level components.

Returned Items

If Update ISB is Yes for a call item, the system updates the installed base for returned items. For this to work, set Detail to Yes so you can access the Returned Items Detail frame and specify the returned item's serial number or installed base reference. During the inventory issue, the system deletes the record for the old ISB reference or serial number.

Tip

This update occurs regardless of the value of Load Available Structure.

If you specify a quantity to return and do not set Detail to Yes, the system displays a warning. To ensure that the installed base is updated correctly, you should supply the serial number or lot number and ISB reference.

Since lot-controlled items can be added to the installed base with a quantity greater than one, returning lot-controlled items can reduce the ISB quantity.

Example One installed base record exists for a quantity of five for a lot-controlled item. You return two of the five lot-controlled items, specifying the appropriate reference numbers. The ISB record now shows three of these items at the end-user site.

Call Activity Recording

This section gives field reference information for Call Activity Recording (11.1.1.13). Executing CAR follows a number of steps. Figure 13.14 illustrates the basic flow of information in CAR.

Fig. 13.14
Call Activity
Recording
(11.1.1.13)

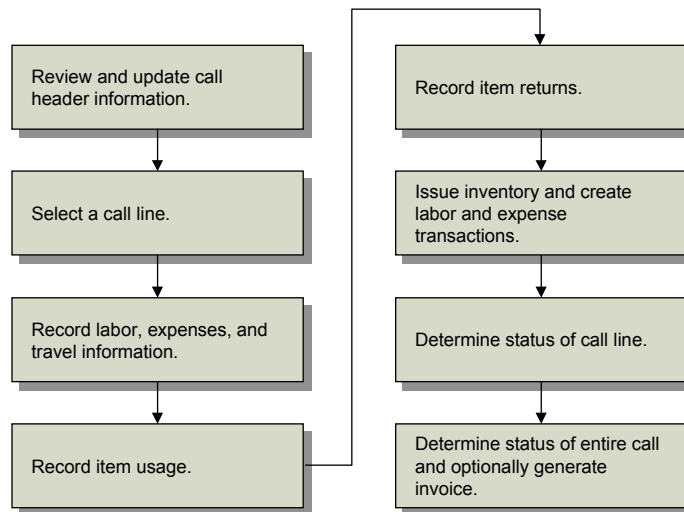


Table 13.1 lists Call Activity Recording frames. Some frames display only when you set certain fields.

Table 13.1
CAR Frames

Frame	Req	Purpose
Header	Y	Select call and display-related information.
Exchange Rate	N	If currency is non-base, review and update exchange rate.
Taxes	N	If Taxes is Yes, review header tax defaults.
Comments	N	If Comments is Yes, view or update call header comments.
Item Selection	Y	Select call line.
Item Detail	Y	Display and update call line detail.
Taxes	N	If Taxes is Yes for this line, review line tax defaults.
Installed Base Detail	N	If Update ISB is Yes and the call line item is not in the ISB, specify ISB parameters and add it to the installed base.

Frame	Req	Purpose
WIP Product Line	Y	When you access a line for the first time, specify the product line for recording work in process.
Coverage Information	N	If Coverage is Yes, view applicable limits.
Comments	N	If Comments is Yes, view or update call line item comments.
Fault Codes	N	If Fault Codes is Yes, enter or review codes for this line item.
Material Order Selection	N	If items ordered on an MO exist for the current call line, select and load them as item usage.
Labor/Expenses	Y	Record operations, labor hours, and expenses for this activity.
Labor/Expenses Detail	N	If Det is Yes, view and update detailed information about this operation.
Comments	N	If Comments is Yes, view or update operation comments.
Item Usage	Y	Record items consumed or exchanged during service activity.
Item Usage Detail	N	If Det is Yes, view and update item details.
Multi	N	If Multi is Yes, change allocation details for each item.
Comments	N	If Comments is Yes, view or update item usage comments.
Returned Items Detail	N	If Qty Ret is not zero, specify data required for returns and exchanges.
Multi	N	If Multi is Yes, change return details for each item.
Fault Codes	N	If Fault Codes is Yes, enter codes for returned items.
Issue Confirmation	Y	Displays all items about to be issued or returned for your confirmation.
Output Device	Y	Specify output device for report.
Call Line Status	Y	Specify call line status.
Item Dates	N	If Dates is Yes, specify dates related to service activity.
Call Status	Y	Specify call status and optionally generate invoice.

Call Activity Recording Header

The Call Activity Recording header frames display when you select option 11.1.1.13 from the main MFG/PRO menu.

Fig. 13.15
Call Activity
Recording
(11.1.1.13)

Call Activity Recording

Call ID: CA123 Bill To: 1001000 End User: 10010003

Bill-To	End User
Reliable Central Purchasing Attention: Accounts Payable 300000020 Century Blvd Los Angeles CA 90001 United States of America	Reliable Center Central Avenue Shops 27002 Central Ave. New York NY 02929 United States of America

Status: NEW Channel: glb Currency: USD Language: 07/30/2002
 Priority: 80 Assigned: glb Taxable: ☐
 Contract: Work Code: Tech Terms: 2/10-30
 Price List: SSM1 Queue: Customer Site: 10000
 PO Number: PO-4332
 Caller: Matt Thompson
 Phone: 213-233-4223
 Description: Customer Reported Issue

Call ID. Enter a valid call ID. If the call has a status of complete, a warning displays. If the call has a status of closed or hold, the activity recording frames do not display. The Call Line Status frame displays immediately so you can modify the status of a line you want to change. The Call Status frame displays next so you can modify the call status.

Tip
Define the
Temporary
Customer in Call
Management
Control

Bill-To. Defaults from the bill-to address for the end user's customer. You can modify the default unless a pending invoice exists for the call. If the end user on the call is associated with the temporary customer and Call Activity with Temp is No, you cannot record activity for the call until you associate the end user with a valid customer.

End User. An output-only field from the call.

Status. The call status and description display. You cannot modify the status here, but you can modify it when you complete CAR processing.

Priority. Output-only field from the priority assigned to the call.

Contract. Output-only field from the call.

Price List. Defaults from the call price list associated with the contract providing coverage for the call, if available. Otherwise, it defaults from the service type on the call. If you change it, specify a type R (repair) price list defined in Service Pricing Maintenance. If you change the price list after recording activity, the system does not recalculate existing records. It uses the new price list only for new activity on the call.

PO (Purchase Order) Number. Purchase order number for the service activity. The purchase order defaults from the call if you recorded a purchase order there. You must enter a value if PO Required is Yes for the end user in End User Address Maintenance. PO Required in End User Address Maintenance defaults from PO Required in Customer Maintenance.

Caller. Output-only field from the call.

Phone. Output-only field from the call.

Description. Output-only field from the call, briefly describing the problem.

Channel. Enter an optional code identifying the distribution channel originating this call. Use Channel to determine GL Sales account and Cost of Goods Sold accounts affected by inventory transactions in CAR and CIR. Set up optional sales accounts with Sales Account Maintenance (1.2.17) based on product line, site, customer type, and channel.

Tip
To standardize entries, set up codes for field so_channel in Generalized Codes Maintenance.

Assigned. Output-only field from the call. In CAR, you cannot change the engineer assigned to the call, but you can assign a different engineer to each call line and detail line.

Work Code. Output-only field from the call.

Queue. Defaults from the call and indicates the queue to which you assigned this call. Set up queues with Call Queue Maintenance (11.1.21.7). You can modify the queue here or by using escalations.

Tip

Currency is a factor in the price list search, so if you record activity in multiple currencies, set up prices for each.

▶ See Chapter 7, “Taxes in SSM,” on page 221 for more details about taxes.

Currency. This field is output only if the system previously set the currency on the call. This occurs when a contract provides coverage for a call item. The contract currency determines the call currency.

If the currency is not already set, it defaults from the currency for the bill-to address. You can change it only before you move to the next frame. Monetary amounts (costs, prices, limits) display in the call currency. If you use a currency other than the base currency, an exchange rate pop-up displays.

Language. Defaults from the end user’s language. You can print comments on an invoice in the receiver’s language.

Taxable. Enter Yes if activity for this call is subject to tax; otherwise, enter No. The tax status defaults from the end-user tax data.

Under Global Tax Management (GTM), taxes are based on the transaction tax environment, tax usage, and tax class. The tax environment represents the set of tax types that applies to the item issue site and end-user site and tax class.

Tax Class. Enter a tax class previously defined in Tax Class Maintenance (2.13.1.5). Tax class defaults from the end user. Tax classes group addresses taxed at specific rates or that are tax-exempt. GTM tax classes help determine the default tax environment (set of tax types) for the transaction.

The header tax class is not actually used in any tax calculation. For service detail, tax class for items defaults from Item Master Maintenance and tax class for labor and expenses from Service Category Maintenance.

Effective. Defaults from the system date. The system uses the effective date to determine the tax rate to use. The header value provides the default effective date for each line.

Terms. Defaults from the bill-to address.

Site. For calls you create in Call Maintenance, the site defaults from the site specified for the first line item in the Item Service Structure Detail frame.

The system uses the call header site to determine the default tax environment. You can specify a different site at the item level. The item-level site is where the engineer performs repairs or obtains parts for the call.

Expire Date. An output-only field that applies only to call quotes, which use the same programs as CAR.

Reference. If this call originated from a quote, the quote number displays in this field as a reference.

Comments. Defaults to Yes if comments exist. If Yes, you can enter or review the header comments when you press Go. The system copies comments into Call Invoice Recording. You can print the comments on the invoice.

Detail. Determines whether the Detail field for each line in Labor/Expense and Item Usage frames defaults to Yes or No. Set this field in the header for more control over line-item entry.

When viewing closed reports, determine the level of detail you want to review in the CAR header. You cannot change the Detail field at the line item level.

Tip

The system closes reports when you post the related invoice.

Exchange Rate Pop-Up

If you enter a non-base currency, the exchange rate pop-up displays. The system uses the foreign currency to calculate prices and costs in Call Activity Recording and Call Invoice Recording.

By default, the system displays both components of the exchange rate relationship defined in Exchange Rate Maintenance for the call open date. You can modify the value if you have access through field security.

Specify Yes for Fixed Rate to indicate that the exchange rate will not change. If Yes, the system uses the displayed exchange rate when you post the invoice. If No, the system uses the exchange rate effective when you post the invoice.

Tip

Define exchange rates in Exchange Rate Maintenance (26.4).

Tip

Fixed exchange rates and fixed pricing are not the same.

Item Selection Frame

When you leave the first set of frames, the system determines the number of items in the call record's detail and displays the last line in the Item Selection frame. Use this frame to update existing lines or to add more lines to the call.

When your cursor passes the Item field, the pop-up window shown in Figure 13.16 displays so you can enter the quantity of the item you are repairing and an optional installed base reference number.

Fig. 13.16
Item Selection
Frame

Line	Serial	Item Number	Work Cd	Svc Type	Report
2	B-0103	30-1000	Tech		

Quantity: 1 Ref: 0

Line. The system increments the line number when you add a new line to the call. When you first access this frame, the last line on the call displays to show how many lines exist.

Serial. Specify the item's lot or serial number, used to identify installed base records. You cannot update this field after you open a report for the item. If you leave this field blank and the item is defined as lot- or serial-number controlled in Item Master Maintenance, a warning displays. You cannot update the installed base without a lot or serial number.

Item Number. Enter the identifier of an item requiring service activity. Two control program settings affect the validation of this field:

- If Items Must Exist in Service Management Control is Yes, the system checks this field against items in the item master.
- If Items in Installed Base is Yes, the item must exist in the installed base before you can take a call for it.

Quantity. This pop-up displays after you press Go from the Item Number field. Quantity defaults from the call record and indicates the quantity of items you are servicing. For installed base items, Quantity

defaults from the quantity in the installed base record. If these two are not the same in CAR, a warning displays. If you are working with serialized items and managing the installed base, create separate lines for each item. You cannot update this field after you open a report for the item.

If you are using service BOMs and routings, the system multiplies the quantity required for each item and each operation run time by the quantity in this field.

Ref. The ISB reference number defaults from the line item; otherwise, it is zero. Reference numbers uniquely identify items in the installed base with the same serial/lot number or items without numbers. You cannot update this field after you open a report for the item.

Work Cd. For a new line, work code defaults from the call header. The value here defaults into the Labor/Expenses and Item Usage frames, indicating the type of work you performed for each labor operation, expense, and item you consumed. If you set up contract limits using work code/service category combinations, this work code determines the applicable limit.

If you define the work code with Fixed Price set to Yes in Work Code Maintenance, Fixed Price in Call Activity Recording is Yes and is display only. The system calculates the service price at the fixed rate regardless of the actual service cost. The system searches the call price list for a price with the fixed price unit of measure in Call Management Control.

Tip
When you use fixed prices, the system requires a charge code with Fixed Billable set to Yes.

Svc Type. Defaults from the service type in Call Maintenance for this line. For a new line, the service type defaults first from a warranty or a contract covering this particular item. If the item has no warranty or contract, this field defaults from Default Call Service Type in Call Management Control.

Service types identify terms and conditions of coverage, including response time, price lists, and days of coverage. They define coverage levels and charge codes for covered or over-limit amounts.

If Coverage is Yes in the Item Detail, a pop-up window displays the coverage limits for this service type and the amount you have already consumed.

You cannot update this field after you open a report for the item.

Report. To create a report, enter the new number or clear the existing one for the system to supply one. Use Next/Previous to scroll through reports that exist for the line item. The system-generated number defaults from the next work order lot ID.

Item Detail Frame

After you accept the Item Selection frame, the Item Detail frame appears. In this frame, you modify information for the displayed line item. Most fields default either from the call record, the information supplied on the header of Call Activity Recording, or settings in the Call Recording/ Invoicing frame of Call Management Control.

Fig. 13.17
Item Detail Frame

Call Activity Recording

Call ID: CA123 Bill To: 1001000 End User: 10010003

Line	Serial	Item Number	Work Cd	Svc Type	Report
2	B-0103	30-1000	Tech	STANDARI	402268

Item Detail

Engineer: glb
 Site: 10000
 Location: GLB
 Status: I Invoiceable
 BOM Code: REP10-10000
 Routing: REP10-10000
 Sales Act: 3000
 Disc Act: 3900
 Project:
 Fixed Price: ☐
 Fixed Price: 0.00
 Quantity: 1
 ISB Ref: 0
 Coverage: ☒
 Taxable: ☐
 Comments:
 Fault Codes: ☒
 Update Installed Base: ☒

Engineer. Engineer defaults from the engineer assigned to the item on this call. For a new line, it defaults from the engineer assigned to the call. When you create the first report for a call line, the engineer information helps determine the line-item site. This site can also affect the BOM and routing that the system suggests.

You must enter a value in this field. If you did not assign an engineer to the call, enter one here. Engineer provides the default for each line of detail, but you can edit it any time during the call. If a call involves multiple engineers, record one engineer's detail, return to the Item Detail frame to change the engineer, and record the second engineer's detail. Alternately, you can open a separate report for each engineer.

Engineer scheduling in Call Maintenance considers only the engineer on the call header when calculating engineer load. If you specify other engineers for some line items or reports, their availability is not affected.

Site. The site code identifies the facility that issues items you use to service the call line. This site code is the default for item usage records. Site defaults from the engineer record if the engineer has a designated site. Otherwise, the system searches for the site of the engineer's assigned area, then the default spares site in Default Site Maintenance, then the item's site in the item master, and finally the call customer site.

◆ See "Determining Site and Location Defaults" on page 458 for details.

The system determines costs by site. After you create a report, you cannot change the site for the line.

Location. Location defaults from the engineer record. If blank, the system searches for the location for the engineer's assigned area, then the default spares location in Default Site Maintenance. Use locations to track inventory for items issued for the line item.

Status. Specify one of three values that indicates the report's status:

- *I (invoiceable)*. Indicates that this report is ready for invoicing. Invoiceable is the default status when you create a report. When you release a quote to CAR, the system gives its reports a status of I so that you can immediately invoice activity you record.
- *H (hold)*. Does not allow the system to invoice the report. The system sets reports to H if an error occurs during inventory processing. You can enter a status of H to delay invoicing a report.
- *C (closed)*. The system sets a report status to C when you post the invoice. You cannot modify closed reports. You can enter a status of C only if the report has no detail.

BOM Code. Use only service BOMs set up with Service Structure Maintenance. This field defaults from the BOM code in Call Maintenance.

When you add items in CAR, the system searches first for BOM codes you defined in Service Item by Site Maintenance (11.3.9). If no BOM exists for the call line site, the system searches for a BOM you defined in Service Item Maintenance. For the PM work code, the

system uses the PM BOM code. For the install work code, the system uses the install BOM code. In all other cases, the system uses the repair BOM code.

Tip

If you do not want usage records created automatically, clear this field before continuing.

When you execute this frame, the system enters the detail records for the BOM into the item usage frame for the first operation on the routing that does not have items. After the system generates the line item's BOM, the field becomes output only.

Routing. Use only service routings from Service Routing Maintenance. This field defaults from the routing in Call Maintenance.

When you add items in CAR, the system uses the routing for the item's work code in Service Item by Site Maintenance (11.3.9). If no routing exists for the site, the system searches for a routing in Service Item Maintenance. For the PM work code, the system uses the PM routing. For the install work code, the system uses the install routing. In all other cases, the system uses the repair routing.

Tip

If you do not want usage records created automatically, clear this field before continuing.

When you execute this frame, the system enters the routing steps into the Labor/Expenses frames. If BOM codes exist for a routing operation, the system enters these as items used for the operation. After the system generates the line item's routing, the field becomes output only.

Sales and Discount Account, Sub-Account, Cost Center. The system displays the Sales and Sales Discount accounts from the revenue product line. You cannot update these fields here. After the invoice is created, update them in CIR as needed.

Sales and Discount Project. Enter an optional code identifying the general ledger (GL) project associated with the sales and sales discount amounts for this call line item. These fields default from the sales and discount projects associated with the contract line providing coverage; otherwise, they are blank. The sales and discount project are typically the same.

If Verify GL Accounts is Yes in System/Account Control, the system verifies that the project exists and is active and that it is valid with the other Sales and Sales Discount account components.

Project. Enter an optional code identifying the general ledger (GL) project associated with the cost of labor, expenses, and items for this call line item.

You can update this field only when the value of Project Code Handling in Call Management Control is set to Project per Labor/Expense (P). When Project Code Handling is Single Project per Line (S), the report project defaults from the sales project and cannot be changed.

♦ See “Project Codes in CAR” on page 469 for details.

This project is validated with other Cost of Goods Sold account components during GL transaction post.

Fixed Price. Displays the work code’s Fixed Price field value. You cannot change this field. If Fixed Price is Yes, you can specify a fixed price in the following field. Use fixed price repairs to charge customers a fixed amount for service regardless of the repair cost. When Fixed Price is Yes, use only a charge code with Fixed Price Billable set to Yes.

Fixed Price. If Fixed Price is Yes, the system searches the header’s price list for a price that has the fixed price unit of measure in Call Management Control. If none exists, the default price is zero.

Quantity, ISB Ref. Output-only fields showing values you entered in the previous pop-up.

Coverage. Defaults from Coverage Window in Call Management Control. If Coverage is Yes, a frame displays coverage information such as contract number, contract service type, start and end date, active service type, warranty service type, and install and expiration dates.

Coverage limits for the contract or service type also display. For a contract, this includes the contract number and the line number providing coverage. The system also displays the limits you defined by invoice sort or work code/service category, the percentage of coverage, and the coverage amounts for the defined conditions. The engineer servicing the call often examines this coverage information.

Taxable. Defaults from the header Taxable field. You can determine the tax status for each line item.

♦ See Chapter 7, “Taxes in SSM,” on page 221 for more details about taxes.

Comments. Defaults to Yes if comments exist. Specify Yes to enter or review call line comments. The system copies comments into Call Invoice Recording. You can print comments on the invoice.

Fault Codes. Defaults from Use Fault Codes in Call Management Control. Set Fault Codes to Yes to enter problem, cause, and resolved codes in a pop-up. Define these codes in Generalized Codes Maintenance. If you entered fault codes in Call Maintenance, those values display so you can adjust or add information.

Update Installed Base. Defaults to Yes when:

- The item is in the installed base, regardless of other settings.
- Installed Base in Service Item Maintenance is Yes for the item *and* Create ISB is Yes for the end user in End User Address Maintenance.
- The item is not in the item master, but Create ISB is Yes for the end user in End User Address Maintenance.

If Yes and the line item is not in the installed base, a pop-up displays so you can specify ISB parameters and add the item to the installed base. If the line item is in the installed base, no additional frames display.

If you do not enter an item number, Update ISB defaults to No. If you enter the item number of a lot/serial-controlled item and do not specify a lot/serial number, the system sets Update ISB to No and does not let you change it. A lot/serial controlled item can only be added to the installed base with a lot or serial number.

If Update ISB is Yes and Load Available Structure is Yes in Service Management Control, the system adds component items that you used to the installed base. You must mark these items as belonging in the installed base in Service Item Maintenance. The system removes returned items that exist in the installed base regardless of the setting of Load Available Structure.

Installed Base Detail Frame

If Update ISB is Yes and the call line item is not in the installed base, enter information for the ISB record in a pop-up. If the line item is a component—for example, the disk drive of a computer—you can specify a parent item and serial number to update the installed base configuration.

Fig. 13.18
Installed Base
Detail Frame

Description. The item's first description line from Item Master Maintenance displays. You can change this description.

Quantity. An output-only field indicating the number of items you are adding to the installed base.

Model. The item's model number, which defaults from the value in Service Item Maintenance.

Install Date. Defaults from the system date and determines when warranty coverage begins.

Warranty Code. Defaults from the item's warranty in Service Item Maintenance. Warranty Code determines the coverage terms and conditions, including response time, price lists, and days of coverage. If you add an item to the installed base and specify a current warranty code, the system prompts whether you want to use this warranty coverage for the call.

Tip

Define values for ownership with Generalized Codes Maintenance for field isb_owner.

Warranty End. Based on the warranty duration and the install date. If you are adding an item to the installed base with a warranty, specify an expiration date. Warranties cannot be open-ended.

Rev Level. Displays the item's revision level in the item master.

Ownership. A reference-only field indicating who possesses the item. If the end-user address code refers to a large company, you can enter the department or individual using the item.

Location. A reference-only field providing a 24-character description of the location of the installed base item at the end-user site. Location can be a building, suite number, or floor.

Parent Item, Serial, ISB Ref. You can track both products and components in the installed base. Use this especially if you have configured products. If you maintain the configuration in the installed base and the customer returns a component such as a PC disk drive, you can relate the new component you issue to the PC.

Use Parent Item to add the current item to the original purchase. Use the Parent Serial and ISB Reference fields to identify the parent item.

Comments. Defaults to Yes if comments exist. Specify Yes to enter or review ISB comments. The Installed Base Report displays comments.

WIP Product Line Pop-Up

Activity recorded in CAR can affect accounts from multiple product lines. These product lines fall into three categories:

- WIP product line, a holding area for CAR amounts
- Charge product lines, for costs in CAR
- Revenue product line, for service income in Call Invoice Recording

You can use the same product line for all three purposes, depending on how you want to separate accounts for reporting and analysis.

The default for the WIP product line is either the service type's product line or the item's product line, depending on Use Item Prod Line in Service Management Control. You can change this only when you first access a line. All reports you create for the call line use this product line.

▶ See "Detailed Accounting in CIR" on page 543.

Figure 13.19 illustrates the product line pop-up in CAR.

Product line for holding GL amounts in CAR.

Line	Serial	Item Number	Work Cd	Svc Type	Report
2	B-0103	30-1000	Tech	STANDARD	402268

WIP Product Line: 1yrc

Fig. 13.19
WIP Product Line Pop-Up

WIP Product Line. Accept the default or enter a product line. The product line determines the WIP account the system uses for activity for this line.

Coverage Information Frame

If Coverage is Yes, the Coverage Information frame displays.

Contract: Contract Line: 0
Warranty Service Type: W-1
Contract Svc Type: Install Date: 03/04/94

Limit Qualifier	Limit Amount	Used/Consumed	List Price	Limit %Cv
Expenses	0.00	0.00	0.00	75
Items	0.00	0.00	0.00	50
Labor	0.00	0.00	0.00	50
Total Limits	0.00	0.00	0.00	50

Fig. 13.20
Coverage Information Frame

This frame displays detail about the line item's coverage limits, effective on the call open date. These limits come from a contract, service type, or warranty, as the frame header indicates. If the coverage limits come from a contract, the limits include the amount you have used in CAR and consumed by posting call invoices.

Tip
When MTZ is active, call open date/time are relative to the end user's time zone.

◆ See “Levels and Limits of Service” on page 170 for details on how service limits are defined and applied.

Limit Qualifier. You can set up limits in one of three ways: as a total record, by invoice sort, or by work/code service category combination. For total records, this column displays Total Limits. Otherwise, it displays the name of the invoice sort or work code/service category.

Amount. Displays the limit amount of the service type or contract. If the call does not use base currency, the system converts the amount to the currency displayed in the frame above.

Used/Consumed. This field has a value only for contracts. As you record activity for an item that has a contract, the system accumulates quantity consumed against active limits. The amount in this column combines amounts used on open calls with amounts posted for call invoices. If the call is not using base currency, the system converts the amount to the currency displayed in the frame above.

List Price Limit. Displays the list price limit for the coverage record. When the price of an item recorded for the service activity exceeds this limit, it is not covered even when limits are not exceeded. If the call does not use base currency, the system converts the amount to the currency displayed in the frame above.

% Cv. Displays the level of coverage.

Fault Codes Frame

◆ See “Fault Codes Pop-Up” on page 403 for details.

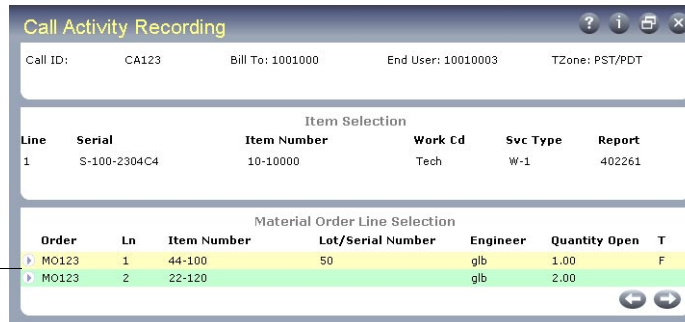
If Fault Codes is Yes, the same fault code pop-up that appears in Call Maintenance displays. If you entered fault code information for the call line in Call Maintenance, it displays here.

Material Order Selection Frame

If you ordered items with an MO for the call line, the Material Order Selection frame displays open MOs for the associated call line. An open MO has a quantity shipped greater than the quantity consumed plus the quantity returned.

See “Loading MO Lines into CAR” on page 650.

Items have been ordered for this call line on two MO lines.



The screenshot shows the 'Call Activity Recording' window with the following data:

Call Activity Recording						
Call ID:		Bill To:		End User:		TZone:
CA123		1001000		10010003		PST/PDT
Item Selection						
Line	Serial	Item Number	Work Cd	Svc Type	Report	
1	S-100-2304C4	10-10000	Tech	W-1	402261	
Material Order Line Selection						
Order	Ln	Item Number	Lot/Serial Number	Engineer	Quantity Open	T
MO123	1	44-100	50	glb	1.00	F
MO123	2	22-120		glb	2.00	

Fig. 13.21
Material Order Selection Frame

Select or deselect MO lines as needed. Selected lines display an asterisk (*). To exit the scrolling window and continue processing, press Go. After you finish the selection, the system loads the MO items into CAR item usage records. To exit the scrolling window without loading MO items into CAR, press End.

Labor/Expenses Frame

Use the Labor/Expenses frame, shown in Figure 13.22, to record the operation steps and expenses of servicing the call line item.



The screenshot shows the 'Call Activity Recording' window with the following data:

Call Activity Recording							
Call ID:		Bill To:		End User:			
2468		01000000		01000000			
Item Selection							
Line	Serial	Item Number	Work Cd	Svc Type	Report		
4	33-009a1	10-10000	Tech	W-1	402266		
Labor/Expenses							
Op	Std Op	Work Code	Svc Cat	Quantity	Charge	Det	Items
10	SETUP	Tech	LABOR	0.5	WARRANT	☐	☒
20	REPAIR	Tech	LABOR	1.0	WARRANT	☐	☐
30	CLEANUP	Tech	LABOR	0.5	WARRANT	☐	☐
40	SETUP	Tech	LABOR	0.5	WARRANT	☐	☐

Fig. 13.22
Labor/Expenses Frame

The fields in the Item Selection frame are display-only here. Information you record in the Labor/Expenses frame applies to the displayed item.

Op. Use the operation number to track the sequence of tasks for a service, much like a routing sequence. By default, operation numbers start with 10. If a routing is associated with the call line, its operations display for update.

You can record multiple items per operation but only one line of labor or expense. To specify several service categories, associate each with a separate operation number.

Tip
You can also use manufacturing standard operations in CAR.

Std Op. Define standard operation codes with Service Std Operation Maint (11.19.21). If you enter a service standard operation code, the system displays the default service category and quantity. If the standard operation uses a BOM, the system prompts you to load the items on the BOM for this operation. To calculate labor costs, the system uses the labor rate of the work center for the operation.

After you record a line, you can change the operation only by deleting the line and reentering it.

Work Code. Defaults from the Item Selection frame. The system uses the work code:

- To determine the applicable coverage limits
- To find a charge code
- To search for a price for labor and price and cost for expenses

If you change the work code, the system recalculates the default charge code.

Svc Cat. Enter a service category defined in Service Category Maintenance with one of the following fields set to Yes: Labor, Expense, Travel Labor, or Travel Expense. For standard operations and operations in service routings, the service category defaults from the operation. Otherwise, it defaults from Default Labor Svc Cat in Call Management Control.

The system uses the service category:

- To determine the applicable coverage limits
- To find a charge code
- To search for a price for labor and price and cost for expenses

If you change the service category, the system recalculates the default charge code.

After you save a labor or expense record, you can modify the service category only to one of the same type. You cannot switch a labor or travel labor category to expense or travel expense.

Quantity. Enter the number of units of the service category that you used. For labor, the units are hours. For expenses, the quantity is in units of the service category. If you use a standard operation or generate the operation from a routing, quantity defaults from the operation run time. The system uses quantity to calculate the extended price as follows:

*(Quantity * Price) – Covered Amount*

After labor and expenses have been processed, you can increase the quantity used for an operation but you cannot decrease it. To correct an overissue made by mistake, open a new operation and enter a negative quantity. Processing this new line creates reversing GL transactions.

▶ See “Correcting Report Errors” on page 463.

Charge. The default charge code is based on several factors. If you define the work code as fixed price, the Fixed Billable charge code from Default Charge Code Maintenance (11.21.21.13) displays.

If this is not a fixed repair, the system uses the under- or over-limit charge code for the coverage limits of the contract or service type. The default depends on the operation’s extended price and, for contracts only, the amount you have previously applied to the limit.

If the limits have no associated charge codes, the system selects a default charge code depending on the source of coverage (contract, warranty, or call default service type) and whether the operation is over or under limit.

With some restrictions, you can change the displayed value, but you cannot change between a non-fixed and fixed repair charge code. The system uses the charge code to determine the charge product line and the GL accounts that this service activity affects.

▶ See “Changing Charge Codes” on page 454 for details on changing system defaults.

Det. Defaults from the header’s Detail setting. Set Det (Detail) to Yes to display the Detail frame, which shows more labor and expense data.

Items. Defaults to No unless the operation has items—for example, a BOM code for a routing operation. Set Items to Yes to display an Item Usage frame so you can record items you consumed in the operation.

Labor/Expenses Detail Frame

If Detail is Yes in the Labor/Expenses frame, the Labor/Expenses Detail frame appears. The system calculates and displays cost, price, and coverage limit details for the operation. Other fields default from call information or from information in related records.

Fig. 13.23
Labor/Expenses
Detail Frame

Labor/Expenses Detail: Operation 10

Engineer: glb	Product Line: 1ycr
Start Date: 07/30/2002	Project:
Start: :	Quantity: 0.5
End Time: :	Price: 30.00
Standard Cost: 55.00	Covered Amount: 7.50
Comments:	Extended Price: 0.00
Svc Type Used: STANDARI	Currency: USD
Desc: Routine Inspection	

Engineer. Defaults from the Item Detail frame, which displays the call value. Each operation can have a distinct engineer, if needed.

Tip
When MTZ is active, these dates and times are relative to the end user's time zone.

Start Date. Defaults from the system date, which you can change only the first time through the frame. Start Date is the date when the engineer began the service activity.

Start. Reference field indicating the time of day that the engineer began work.

End Time. Reference field indicating the time when the engineer finished work.

Standard Cost. If this operation has a labor service category, the standard labor cost for the engineer for one hour displays, and cannot be modified. The system calculates the cost from the operation's work center, either from the service routing or a standard operation. The work center determines the labor rate, labor burden rate, and the labor burden percentage. For labor operations without a work center, the system calculates the cost from the Service Work Center in Call Management Control.

If this operation has an expense service category, the system calculates the cost from the expense cost price list (type E) for the call. The cost of one unit of the service category displays. If no expense cost list exists, expense cost defaults to zero.

Comments. Defaults to Yes if comments exist. Specify Yes to enter or review comments for this operation. The system copies comments into Call Invoice Recording. You can print comments on the invoice.

Svc Type Used. Output-only field displaying the service type that determines this operation's coverage. The service type that the system uses is not necessarily the one that you specified for the line item. The system can change the service type if you change the charge code.

▶ See "Changing Charge Codes" on page 454.

Description. A 24-character description of this operation, which defaults from the standard operation or service routing step. This description prints on the invoice if detail is included.

Product Line. Output-only field showing the charge product line for labor costs.

Project. Enter an optional code identifying the GL project for the labor/expense detail. The system associates the project code with the GL transactions it creates. You can track the call's cost by project.

Whether the field can be updated depends on the setting of Project Code Handling in Call Management Control. If you use a charge code with Project Mandatory set to Yes, you must enter a project code.

▶ See "Project Codes in CAR" on page 469 for details.

Quantity. An output-only field displaying the operations labor or expense quantity.

Price. The price for one unit of the operation's service category. Defaults from the price list on the call header unless this is a fixed price repair. For fixed price repairs, the system sets detail prices to zero, which you cannot change. If no price is found on the price list, the default is zero.

Tip
To prevent changes, apply field security to Price.

Tip .

To prevent changes, apply field security to Covered Amount.

Covered Amount. Amount of the total price for which you are not billing the customer. The system determines this amount from the coverage limits for the contract or service type. The covered amount defaults to zero when:

- No coverage exists on the contract or service type.
- The item has exceeded the contract's service limits.
- The item has exceeded a list price limit.
- The service is for a fixed price. In this case, covered amount cannot be changed.

Covered amount cannot exceed the price times the quantity.

Extended Price. The total price minus the covered amount. For fixed price repairs, this field is zero. The system calculate the extended price as follows:

*(Quantity * Price) – Covered Amount*

Currency. Output-only field displaying the call currency. Defaults from the call header.

When you finish entering data in this frame and press Go, you return to the Op field. Enter additional data until you record all operations. Press Go to accept the last entries and End to display the Item Usage frame.

Item Usage Frame

In the Item Usage frame, you report the inventory items that you used to repair or service the item in the Item Selection frame. Record items you used for specific operations, or simply add all the items after you complete the Labor/Expenses frame.

Line	Serial	Item Number	Work Cd	Svc Type	Report
2	B-0103	30-1000	Tech	STANDARI	402268

Op	Item Number	Work Code	Qty Used	Qty Ret	Charge	Det MO
10	44-4000	Tech	1.0	0.0	BILLABLE	☐
10	44-3000	Tech	1.0	0.0	BILLABLE	☐

Fig. 13.24
CAR Item
Usage Frame

Op. Enter the operation number. You can record items for each operation. If you are not using operation steps, record all items on the first operation.

Item Number. Enter the item number of an item defined in Item Master Maintenance that you consumed or returned during the repair. If the call line item has an associated service BOM or its routing operations had associated BOMs, records for these items are already created.

Tip
Record a non-inventory item as an expense in the Labor/Expenses frame.

Work Code. Defaults from the Item Selection frame, which defaults from the call header. The system uses the work code:

- To determine the applicable coverage limits
- To find a charge code
- To search for an item price on the call price list

Qty Used. Enter the number of item units you consumed. If this record came from a service BOM, Qty Used displays the value of Quantity Per on the BOM. If this line came from a Material Order, the order quantity defaults into this field. The system uses this field to calculate the extended price according to this formula:

$$(Qty\ Used * Price) - Covered\ Amount$$

▶ See “Correcting Report Errors” on page 463.

After inventory has been issued, you can increase the quantity used for an operation but you cannot decrease it. To correct an overissue made by mistake, open a new operation and enter a negative quantity. Processing this line creates reversing GL transactions and increases inventory at the specified site and location.

Note You cannot enter a negative quantity when you are executing a swap. This occurs when the item being issued is the same as the item on the call line.

Qty Ret. Enter the number of units you are returning. For repairable units, as defined in Service Item Maintenance, Qty Ret defaults to Qty Used.

Tip
Use RMAs for simple returns that do not require an engineer.

Generally, you return items in CAR for two reasons:

- You exchange a defective or worn item for a new one.
- On an MO, you ordered items for the call that you did not use.

If you specify a return quantity, set Det to Yes to display the Returned Items Detail frame. If item information comes from an MO, account for all items on the MO before you close the call. To close a line or call, Qty Used and Qty Ret must equal the MO order quantity.

Charge. The charge code default is based on several factors. For a fixed price work code, the Fixed Billable charge code from Default Charge Code Maintenance (11.21.21.13) displays.

If this is not a fixed repair, the system uses the under- or over-limit charge code for the coverage limits of the contract or service type. The default depends on the item’s extended price and, for contracts only, the amount applied to the limit.

If the limits have no associated charge codes, a charge code defined in Default Charge Code Maintenance displays. The system selects a charge code depending on the source of coverage (contract, warranty, or call default service type) and whether the operation is over or under limit.

▶ See “Changing Charge Codes” on page 454 for details on changing system defaults.

With some restrictions, you can change the displayed value, but you cannot change between a non-fixed and fixed repair charge code. The system uses the charge code to determine the charge product line and the GL accounts that this service activity affects.

Det. Set Det (Detail) to Yes to display the Detail frame, which shows more data for this line. To update the installed base when you return items, set Det to Yes so you can enter the serial or ISB reference of the returned item.

MO. Output-only. If you ordered the item with an MO, an asterisk (*) initially displays and the Item Detail frame displays the MO number and line. After you issue the item for the call, the system no longer connects it to the MO.

Item Usage Detail Frame

Set Det to Yes in the Item Usage frame to display the Item Usage Detail frame illustrated in Figure 13.25.

The screenshot shows the 'Item Usage Detail' frame with the following fields and values:

Multi Entry: ☐	Product Line: 1ycr
Site: 10000	Project:
Location: GLB	Quantity Used: 1.0
Lot/Serial:	Unit Cost: 100.000
Reference:	Price: 0.00
Engineer: glb	Covered Amount: 0.00
Service Category: ITEMS	Extended Price: 0.00
Qty Allocated: 0.0	Currency: USD
MO Line:	Comments:
Svc Type Used: STANDARD	

Fig. 13.25
Item Usage
Detail Frame

Multi Entry. Defaults to No unless the quantity used is greater than one and the issued item has Lot/Serial Control set to S in the item master. If Yes, a detail frame appears so you can enter a site, lot/serial, location, and reference for each item you consumed. You are not performing a detail allocation—you are simply recording detail about items.

Site. Enter the site from which you are issuing the item. This field defaults from the call line item site.

Location. Enter the inventory location at the site from which you are issuing the item.

Lot/Serial. If the item is lot/serial controlled, enter the lot or serial number. When lot/serial controlled items are loaded from MOs, this field defaults from the MO line.

If Load Available Structure is Yes in Service Management Control and the item has Installed Base set to Yes in Service Item Maintenance, you must specify a lot/serial number to add the item to the installed base. The lot/serial number is part of the installed base record. If you are exchanging an installed base item, the system replaces the previous lot/serial number with this one.

Reference. Enter the item's lot reference number. Lot reference, site, location, and lot/serial number specifically identify inventory quantities. For lot reference, you can use the production lot of the item or a location reference such as a skid, roll, or pallet number.

Engineer. Specify the engineer who installed the part. The default is the engineer for the call line item. You can change the value—for example, if more than one engineer responded to the call.

Service Category. Output-only field that defaults from the item's service category in Service Item Maintenance (11.7.3). If none, the system uses the Item Service Category in Call Management Control (11.1.24). The system uses the service category to determine service limits and to search for a default charge code.

Qty Allocated. Specify the quantity of items on this line to allocate. This defaults to zero. Normally, you do not allocate items in Call Activity Recording because you are recording items that you have used. The system issues the inventory immediately in CAR. However, if you are not going to issue the inventory at this time, enter a quantity to allocate. CAR does general allocations only. It does not create detail allocations even if you enter inventory detail.

MO Line. Material order number and line number that corresponds to the call line. MO Line has a value if you have not yet issued the MO item. Otherwise, the field is blank and cannot be updated.

Svc Type Used. Output-only field displaying the service type that determines coverage. The service type the system uses for coverage may not be the same as the one you specified initially. The service type can change when you change the charge code.

Product Line. Output-only field showing the charge product line for item costs.

▶ See “Changing Charge Codes” on page 454.

Project. Output-only field showing the GL project code.

◆ See “Project Codes in CAR” on page 469 for details.

Unit Cost. Output-only field showing the cost for one unit of the item. The system derives the cost from the site of the item you are repairing—not the site from which you issued the component.

During inventory processing, the system transfers items to the call line item site and issues them from there. The inventory transfer creates a GL transaction for any variance in costs between the sites.

For the system to find a cost, either:

- The site associated with the item in Item Master Maintenance is the same as the call line-item site, or
- Costs for the issued item at the call line-item site are set up using Item-Site Cost Maintenance.

Otherwise, cost defaults to zero. The cost displays in the Item Cost column in Call Invoice Recording. The system uses the cost to calculate the margin for this service activity.

Price. Defaults from the header’s price list unless this is a fixed price repair. For fixed price repairs, the system displays a zero for all details, which you cannot change.

Tip
To prevent changes, apply field security to Price.

Price is the price for one unit. If no price exists on the price list, the system uses the item’s list price in the item master. The system calculates Extended Price by subtracting the covered amount from the total price (price * quantity).

Covered Amount. Amount of the total price for which you are not billing the customer. The system determines this amount from the coverage limits for the contract or service type. The covered amount defaults to zero when:

Tip
To prevent changes, apply field security to Covered Amount.

- No coverage exists on the contract or service type.
- The item has exceeded the contract’s service limits.
- The item has exceeded a list price limit.
- The service is for a fixed price. In this case, covered amount cannot be changed.

Covered amount cannot exceed the price times the quantity.

Extended Price. The total price minus the covered amount. For fixed price repairs, this field is zero.

Currency. Output-only field displaying the call currency. Defaults from the call header.

Comments. Defaults to Yes if comments exist. Specify Yes to enter or review comments for this item. The system copies comments into Call Invoice Recording. You can print comments on the invoice.

Multi-Item Issue Frame

If Multi is Yes, an additional frame displays that enables you to enter detailed information for each item you issued. Detailed allocations do not take place in CAR. However, you can specify the items to issue by site/location, lot/reference, and serial number.

Fig. 13.26
Multi-Item
Issue Frame

44-3000 Issued: 1					
Ln	Site	Location	Lot/Serial	Reference	Quantity
1	10000	GLB			1.0

The fields in this pop-up are the same as those on the Item Detail frame. In this frame, you can specify separate detail for each item you are issuing.

Returned Items Detail Frame

If you specify a return quantity and Detail is Yes, the Returned Items Detail frame displays. Specify the return status and inventory return site and location. If you are returning more than one item, you can access a multiline entry frame. The system uses return serial numbers and ISB reference numbers to remove returned items from the installed base.

Fig. 13.27
Returned Items
Detail

Returned Items Detail	
Status: Scrap	
Return Site: 10000	
Return Location: SCRAP	
Return Serial:	
Return Inv Ref:	
Exchange Price: 0.00	Fault Codes:
ISB Reference: 0	Multi Entry:

Status. The return status defaults from either:

- The default return status in Call Management Control if the item is repairable
- The default scrap status in Call Management Control if the item is not repairable

Tip
Repairable items have Repairable set to Yes in Service Item Maintenance.

You can change the return status to any status defined with Return Status Maintenance (11.21.17). However, you can use a Pending status only for items you ordered on an MO and an Exchange status only for items returned from the customer.

Return Site, Location. Depending on the return status and whether or not the item is repairable, the return site and location default as follows:

- To the return site and location, if the item is repairable and Good is Yes for the return status, or if the item is not repairable and Scrap is No.
- To the scrap site and location, if the item is not repairable and Scrap is Yes for the return status.
- To the repair site and location, if the item is repairable and Good is No for the return status.

Tip
Set up default sites and locations with Default Site Maintenance (11.21.13).

♦ See “Return Statuses and Default Sites” on page 81 for details.

If you are returning an item from an MO line, the location must allow receipts (RCT-TR). If the return is not from an MO line, the location must allow unplanned receipts (RCT-UNP).

The system searches for default sites and locations based on the returned item’s product line, service group, work code, and item number and the area you specified on the call. Enter a site if no default site exists.

Return Serial. If the item you are returning is lot/serial controlled, enter the serial number. When you return an unused lot/serial controlled item originally loaded from an MO line, this field defaults from the MO line.

If the serial number is in the installed base and Update ISB is Yes for this call line, the system removes the item with this serial number from the installed base. If you are returning multiple serial-controlled items, set Multi Entry to Yes to access a line item entry frame for multiple returns.

Return Inv Ref. Enter the lot reference number of the item you are returning. Lot reference, site, location, and lot/serial number identify inventory quantities. For lot reference, you can use the production lot of the item or a location reference such as a skid, roll, or pallet number.

Tip
You cannot exchange an item ordered on an MO.

Exchange Price. If you are exchanging an item that has no coverage, the system searches the header's repair price list for an exchange price with the exchange unit of measure in Call Management Control. If the exchanged item has coverage, the exchange price defaults to zero.

ISB Reference. All items that do not have serial numbers in the installed base need ISB reference numbers. Specify the ISB reference on a return so the system can exactly identify the item to remove from the installed base.

Fault Codes. If Yes, the fault code window displays so you can specify the reason for the return.

Multi Entry. If you are returning more than one item, specify Yes to access a line-item entry frame. You must use this frame to remove multiple items from the installed base.

When you finish entering data in this frame and press Go, you return to the Op field. Enter additional data until you record all item detail. Press End to exit the item usage frames.

Multi-Item Return Detail Frame

If Multi Entry is Yes in the Returned Items Detail frame, a line-item entry frame displays. Enter information specific to each item returned. You can specify a separate return status and inventory return site and location for each item.

Fig. 13.28
Multi-Item
Return Detail

44-1000 Returned : 1						
Ln	Status Status	Return Site	Return Location	From Site	From Location	Quantity
1	Scrap	10000	SCRAP			1.0
	Lot/Serial:		ISB Ref:	0	Inv Ref:	
← →						

Confirmation Frame

When you exit the labor/expenses and item usage frames, the system prompts you to display inventory about to be processed. If you accept the default of Yes, the system displays a confirmation frame like the one illustrated in Figure 13.29, listing the items that it will issue and return on this call.

Important Review the summary information to check the item numbers, inventory sites, and locations. After the system processes the inventory, there is no simple way to correct mistakes.

Items returned with a pending status do not display on the confirmation frame, because no inventory transactions take place for them at this time.

Line	Item Number	Lot/Serial	Quantity	Site	Location
1	44-1000	1.	Fr	10000	PKH
1	44-3000	1.	Fr	10000	PKH
1	44-4000	1.	Fr	10000	PKH
2	22-100	1.	Fr	10000	PKH
2	44-1000	1.	Fr	10000	PKH
2	44-4000	1.	Fr	10000	PKH
4	44-1000	1.	Fr	10000	PKH
4	44-3000	1.	Fr	10000	PKH
4	44-4000	1.	Fr	10000	PKH

Is all information correct?

Fig. 13.29
Inventory
Confirmation
Frame

To make changes, respond No to the prompt asking if the information is correct. The Item Selection frame displays so that you can proceed through the detailed usage frames again.

Output Device Frame

If you accept the information in the confirmation frame, the next frame prompts you for an output device.

Fig. 13.30
Output Device
Frame

Enter an output device, and press Go to process inventory. The system processes inventory and generates a report to the output device. This report includes:

- Items issued or returned
- Labor/expense transactions
- Updates to the installed base
- Inventory errors or warnings the system encountered during execution

Whether you are generating an invoice or not, items that you recorded as consumed are no longer available in inventory. The system issues them immediately or transfers them to the call line site and issues them.

Call Line Status Frame

Figure 13.31 illustrates the Call Line Status frame.

Fig. 13.31
CAR Call Line
Status Frame

Line	Item Number	Serial	Status	Dates
2	30-1000	B-0103	NEW	☐
1	10-10000	S-100-2304C4	NEW	☒

The line number, item, and serial number display. Use Next/Previous to display the next and previous line numbers.

Status. You can apply field security to this field. The system sets the call line status to complete or closed, depending on the setting of Close on Recording. For a status of complete, inventory issues must complete with no errors. If the system detects errors, the line remains open and the report status is hold rather than invoiceable. You can invoice line items with a complete status.

Dates. You can record date information about the handling of this call. Use this if you have contract obligations to repair items within a defined time limit. To track the success of meeting the contract obligations, you can compare when the you received the call to when you resolved the problem.

Tip
To prevent invoicing, change the line status.

Item Dates Pop-Up

Specify Yes to the Dates field to display the pop-up window in Figure 13.32. The dates in these fields are reference only.

Note If MTZ is active, a display time zone pop-up appears before the date pop-up. This way, whoever is entering the dates and times—either an engineer or a clerical person—can choose how dates and times are entered. The Date Complete, because it has no time, is an exception. It is entered relative to the end user’s time zone, regardless of the display time zone chosen.

See Chapter 4, “Multiple Time Zones,” for more information.

The image shows a pop-up window titled "Item Dates". It contains four rows of input fields. The first row is "Start Down:" with a date field showing "07/30/2002" and a time field showing "18:46". The second row is "End Down:" with a date field showing "07/31/2002" and a time field showing "12:56". The third row is "Job Start:" with a date field and a time field showing ":". The fourth row is "Date Complete:" with a date field. At the bottom right of the window are two circular arrows, one pointing left and one pointing right.

Fig. 13.32
Setting Dates in
Call Line Status
Frame

Start Down. This date and time default from the call creation time. They indicate when the item you are servicing became dysfunctional.

End Down. This date and time default from the system date and time and indicate when the item became functional again.

Job Start. This date and time records when you started work on the problem.

Date Complete. This date defaults to the system date and indicates when you finished work on this line item.

Call Status Frame

When you complete all line items, a final frame enables you to specify a status for the entire call and modify call dates and times.

See Chapter 4, “Multiple Time Zones,” for more information.

Note If MTZ is active and you did not edit call line dates, a display time zone pop-up appears before the call status frame. Your selection in the pop-up determines how the system presents dates and times on the call status frame.

Fig. 13.33
Call Status Frame

Call Activity Recording

Call ID: CA123 Bill To: 1001000 End User: 10010003

Call Status

Status: COMPLETE

Complete Date: 07/31/2002 Time: 13:24

Close Date: Time:

Next Status Date: 07/31/2002 Time: 08:30

Generate Invoice: ☒

Invoice Number:

Status. You can field security to this field. The system attempts to set the call’s status to complete or closed, depending on the setting of Close on Recording. It sets the call’s status to complete if all line items are complete. It sets the status to closed if line items are complete and no open MOs exist. If these conditions are not met, the system does not change the call’s status.

Complete Date, Time. When the system sets the status to complete, it enters the completed date and time.

Close Date, Time. When the system sets the status to closed, it enters the close date and time.

Next Status Date, Time. Displays the value for the call. If you are using call escalations and do not want the next escalation step to affect this call, change the next status date and time.

Generate Invoice. This field appears only if Invoice From Recording in Call Management Control is Yes and you make a change in CAR that can affect the pending invoice. If Invoice from Recording is No, you must process the invoice in Call Invoice Recording (11.1.1.15). If you set the call status to hold or cancel, you cannot set Generate Invoice to Yes.

If you accept the Yes value for Generate Invoice, the system creates a pending invoice for lines that have a complete or closed status. If the call's status is complete or closed and Generate Invoice is Yes, the system invoices all lines.

Invoice Number. This field appears only if Invoice From Recording in Call Management Control is Yes and you did not access the Call Status frame because the call status is closed or hold. If Invoice from Recording is No, you must process invoicing in Call Invoice Recording (11.1.1.15). You can specify an invoice number to print on the pending invoice.

Tip

Leave Invoice Number blank to use the next invoice number as defined in Sales Order Control.

Call Invoice Recording

Call Invoice Recording (CIR) is a complementary function to Call Activity Recording. With CIR, you can create and review invoice detail for calls in a summary or detail format. You can also review and modify tax data.

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Overview

Call Invoice Recording (CIR) is a complementary function to Call Activity Recording (CAR). It uses the same setup codes and service type information as CAR or any other call management activity.

The Invoice From Recording field in Call Management Control determines where you can create pending invoices. If Yes, you can generate the invoice for call activity from CAR. If No, you generate invoices only in Call Invoice Recording.

Even if you invoice call activity in CAR, the overview of costs in CIR is helpful. Summary frames display costs and invoiceable amounts by invoice sort and charge code type. You can review item details and modify prices. The system updates these prices in CAR when you review the call. In CIR, call activity details display in similar frames to those in CAR.

Using CIR, you can:

- Review high-level summaries of charges and billing amounts.
- Check invoice detail, correct data entry errors, or adjust prices and covered amounts before you print the invoice.
- Review and update sales order trailer information.
- Review tax calculations and edit tax amounts in the trailer.

If you make changes in CIR, the system regenerates the invoice when you exit.

Generating Invoices

If you do not generate an invoice from Call Activity Recording, the system generates a pending invoice when you enter CIR's second frame. The invoice includes amounts for all invoiceable reports for the closed or complete lines on the call. Invoicing by report lets you invoice as often as you need—even daily or hourly.

If you do not want the system to invoice a particular call line, set the line item to a status other than complete or closed. You can also set the report status to hold.

You can modify complete lines. For example, if an engineer submits daily reports on a call line for a lengthy installation, you can create more than one invoice for the line. The first time through CIR, invoice amounts include existing reports. If you create additional reports, regenerate the invoice to add the new reports. When you post the invoice, invoicing starts over.

After you post an invoice, you can continue to add more reports to the call line. You can review the invoiced reports, but you cannot change them.

Once you generate an invoice, print and post it using the standard invoice programs in the Sales Orders/Invoices module. However, you can modify call invoices only in the SSM module. This ensures that the invoice remains synchronized with the call record details.

Managing Invoice Detail

All billing details are available for review in Call Invoice Recording. You do not, however, have to include all the detail on the printed invoice. You can limit the amount of detail printed on the invoice using the Detail field. Define a default level of detail when you set up an invoice sort in Invoice Sort Maintenance (11.21.5). You can also specify a default for an end user in End User Address Maintenance. In CIR, you can modify the defaults to change the level of detail as needed.

Detail determines how billing information is presented on the printed invoice. When Invoice Detail is Yes, you can print billing details for each line recorded in CAR. When Invoice Detail is No for an invoice sort, the system takes the entries for related service categories, totals them into one line item, and displays one line of detail.

Invoice Detail determines how much detail can be printed on the invoice. During invoice print, you use another field to control whether or not to actually print the details.

Figure 14.1 illustrates the option in Invoice Print.

Fig. 14.1
Printing Call
Invoice Detail
(7.13.3)

Invoice Print

Sales Order: CA100 To: CA150

Ship Date: To:

Sold-To: To:

Bill To: To:

Language ID: To:

Invoice Date: 07/31/2002

Print Only Lines to Invoice: ☒

Print Lot/Serial Numbers Shipped: ☐

Print Features and Options: ☐

Consolidate Invoices: ☐

Company Address: 10000000

Form Code: 1

Discount Detail: None

Discount Summary: None

Message:

Include Debit Invoices: ☒

Include Credit Invoices: ☒

Print Call Invoice Detail: ☒

Output:

Batch ID:

This field controls whether any call detail prints on the invoice.

If Print Call Invoice Detail is Yes, the system prints either the summarized line or all details you recorded, depending on the setting of Invoice Detail for the invoice sort or for the call line in CIR.

If Print Call Invoice Detail is No, the system prints only the call lines—the items for which service was provided—with associated information and a total invoice amount.

Note When you use fixed pricing, no pricing information prints for the detail since you provide all the service at one price.

Figure 14.2 is a sample invoice generated with Print Call Invoice Detail set to Yes in Invoice Print. The Invoice Detail field for both the Items and Labor invoice sorts is Yes. As a result, each item and operation prints in detail. You can see the number of hours for each operation and the charge code of BILLABLE.

Sales Order: CA147				Ship Date: 07/10/02	
Order Date: 07/10/02 Purchase Order:					
Item Number	UM	Repaired	Backorder Tax	Price Net Price	

10-10000	EA	1.0	yes	229.00	
OASIS(TM) COOLING SYSTEM					
HOME/INDUST MODEL					
Work Code: Tech		General Call			
Service Type: STANDARD		STANDARD SERVICE CONTRACT			
Line Item Used	Quantity		Price	Billable	

Type: ITEMS					
1 44-1000	1.0		0.00	0.00	
SENSOR UNIT,		BILLABLE	0.00		
2 44-3000	1.0		30.00	30.00	
'SMART' POWER CONVERTER		BILLABLE	0.00		
3 44-4000	1.0		49.00	49.00	
WIRING UNIT		BILLABLE	0.00		
Type: LABOR					
1 LABOR	0.5		75.00	37.50	
Routine Inspection		BILLABLE	0.00		
2 LABOR	1.0		75.00	75.00	
Fix the Problem		BILLABLE	0.00		

Fig. 14.2
Printed Invoice
with Detail

Use the combination of detail fields to customize the appearance of the invoice.

Use the Print on Invoice field to control the printing of call header comments and line item comments when you create or update comments in Call Maintenance, CAR, and CIR. Comments print for items, labor, and expenses if Print on Invoice is Yes for the comments and Print Call Invoice Detail is Yes in Invoice Print.

Modifications in CIR

The information in Call Invoice Recording comes from the activity you record and codes you use in Call Activity Recording. You can make some modifications to prices and covered amounts in CIR. However, you must make most changes in CAR and regenerate the invoice.

Item issues take place in CAR. You cannot change item quantities in CIR, since this would create errors in inventory amounts. Similarly, you cannot change charge codes, work codes, and service categories in CIR—they control the detail that CIR summarizes. For this reason, many fields in CIR are display only.

Prices

You can modify and adjust prices in CIR, including list price, net price, exchange price, and covered amount. CAR reflects any pricing changes you make in CIR. If you change the covered amount and contract limits exist, the system recalculates the remaining contract amount.

Tax Data Elements

◆ See Chapter 7, “Taxes in SSM,” on page 221 for details on how the system calculates taxes in call invoices.

If you use taxes, the system sets default tax information in CAR at the call header and line level. In CIR, the tax status and class of activity records defaults from the service category for labor and expenses or the item master for items. You can modify these tax fields as needed in CIR. However, this change does not carry over to CAR.

Important If you regenerate the invoice for a call line, the tax status and class for activity records revert to the default.

Descriptions

To include a unique description of an operation or item on the invoice, you can modify description fields. Like taxes, these changes are not reflected in Call Activity Recording.

Trailer Information

On the trailer, you can modify information such as the tax data. If you edit tax data in CIR, then make changes in CAR, your changes are overwritten when the invoice is regenerated. This should not be a problem, however, since the old tax amounts are no longer correct if you change a line’s prices and quantities.

Coordinating CAR and CIR

Because the steps of call invoicing build on one another, coordinate these activities carefully:

- Recording activity in CAR
- Generating an invoice
- Reviewing the invoice in CIR
- Printing the invoice
- Posting the invoice

These activities must occur in the proper sequence to prevent unexpected results.

Example You print an invoice for work on a call and send it to the customer without posting it. Next you record more activity in CAR and regenerate the invoice. Now the customer's invoice does not match the invoice amounts in the system.

Establish procedures to ensure that you synchronize printing and posting invoices. When you post the invoice, the system clears amounts in CIR. New activity then generates a separate invoice.

Important If you make changes to a line in CAR for which you have generated or printed an invoice, a warning displays. Make changes to this line with caution.

If you ignore the warning that a pending invoice exists and make changes to the call line, you must regenerate the invoice to reflect these changes. If Invoice from Recording is Yes in Call Management Control, the system automatically regenerates the invoice when you complete CAR.

If you do not generate invoices in CAR, the system does not regenerate the invoice until you access the call in CIR. To ensure that a new invoice is generated, the system resets the Ready to Invoice field in Call Invoice Recording to Yes and the Invoiced field to No. The invoice post routine skips the invoice until you regenerate and reprint it.

This situation points out the importance of close coordination and well planned procedures to manage these two activities.

The top half of the frame shows the charge summary. The bottom half is a billing summary.

Note In the summary frames, the system rounds numbers to the nearest integer. Only the amounts at the bottom of the frame represent exact quantities. This can cause some confusion. For example, the system rounds up two quantities of 7.5 to 8. The summary total is 16 and the exact total is 15.

Invoice Sorts Setup

Invoice sort codes determine much of the way the system presents summary information in CIR.

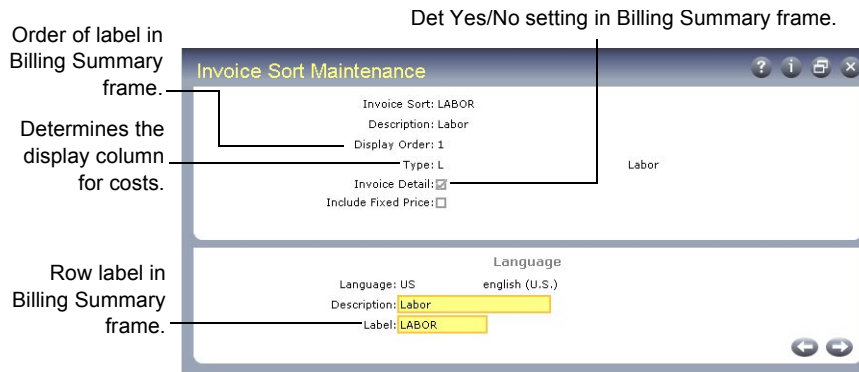


Fig. 14.4
Invoice Sort
Maintenance
(11.21.5)

In Invoice Sort Maintenance (11.21.5), you define:

- The type of data summarized by the invoice sort code, represented by the three columns in the Charge Summary frame.
- The row labels and their order in the Billing Summary frame.
- The Yes/No setting of the Det column.

♦ See “Invoice Sort Codes” on page 85.

Understanding how invoice sorts are defined is helpful in understanding CIR’s Charge Summary and Billing Summary frames.

Display Order. Determines the sequence in which invoice sort codes display in the Billing Summary frame. Define labels for different languages in the Language frame.

Tip
Labor is type L,
item is type I, and
expense is type E.

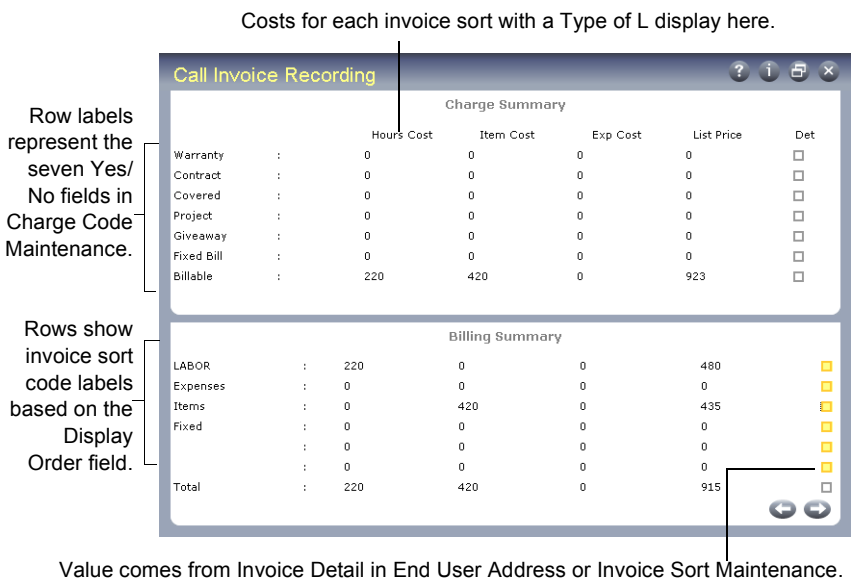
Type. Controls how the system totals costs in the Charge Summary costs. Labor costs display in column 1, item costs in column 2, and expense costs in column 3.

Invoice Detail. Determines the default in the Det column of the Billing Summary, unless you specify a different invoice format for the end user in End User Address Maintenance.

When Invoice Detail is Yes, you can print detail on the invoice. If Invoice Detail is No, the system totals the entries for a service category into one line item and displays only this total. You can choose Yes or No on each call.

Figure 14.5 shows how the system uses other codes in the design of the CIR summary frames.

Fig. 14.5
Summary Design



Charge Summary

In the Charge Summary, the columns represent invoice sorts and the rows represent types of charge codes:

- The Hrs Cost column displays labor costs, invoice sort type L.
- The Item Cost column displays item costs, invoice sort type I.
- The Exp Cost column displays expense costs, invoice sort type E.

The system separates costs by type of charge code. The seven options in Charge Code Maintenance (11.21.21.1) correspond to the seven rows in the Charge Summary frame.

Each field represents a different type of charge, reflected in the Charge Summary rows in CIR.

Fig. 14.6
Charge Code
Maintenance
(11.21.21.1)

The List Price column displays the total price for items, labor, and expenses for the service activity related to each charge code. The billable list price is usually the same as the total displayed at the bottom of the Billing Summary frame. This is the amount the end user pays for the service.

Note If you use only fixed pricing, Line Total reflects the Fixed Bill amount. If some call lines use fixed billing and others do not, the fixed billable and billable amounts together represent the line total.

The column labeled Det, Invoice Detail, in the Charge Summary refers to the Yes/No fields in the Billing Summary frame.

Billing Summary

The Billing Summary frame provides another summary view of CAR financial data.

Billing Summary Columns

The Billing Summary frame displays the total cost for each invoice sort. You can see how costs are broken out for items, labor, and expenses. The List Price column shows the total billing amount for each invoice sort.

The Det (Detail) column applies only to the Billing Summary frame. Use this to determine whether detail or only summary amounts can be printed on the invoice. The value of Det defaults first from the invoice format for the end user in End User Address Maintenance. If the end user has no invoice format, Det defaults from Invoice Sort Maintenance.

Billing Summary Rows

▶ See “Invoice Sort Codes” on page 85.

The Billing Summary rows display invoice sort labels in the order defined in Invoice Sort Maintenance. Up to six invoice sorts display. Table 14.1 shows how the invoice sorts for the example in Figure 14.5 are defined.

Table 14.1
Sample
Invoice Sorts

Label	Order	Type	Detail
LABOR	1	L	No
EXPENSES	2	E	No
ITEMS	3	I	No
FIXED	4	E	No

Effect of Exchanges

Because the summary frames display summary information only, some details are not explicitly reflected. One such detail is an exchange credit for items in CAR.

If you return items for credit in CAR, Billable List Price of the Charge Summary reflects the credit amount. The Billing Summary also shows the credit amount, although it is not labeled. Both are decreased by the amount of the credit given.

Total Summary Bar

When the Billing Summary frame displays in Call Invoice Recording, a message bar indicates summary totals.

- Line Total represents the invoice amount before adjustments or taxes are added.
- Cost shows the total cost of the service call.

- Margin percentage indicates the call's gross profit or loss, calculated according to this formula:

$$\text{Margin} = (\text{Price} - \text{Cost}) / \text{Price}$$

The system calculates the margin using price and costs before it adds taxes and trailer code amounts.

Adjustment amount includes discount percent and trailer charges.

Charge Summary					
	Hours Cost	Item Cost	Exp Cost	List Price	Det
Warranty	0	0	0	0	☐
Contract	0	0	0	0	☐
Covered	0	0	0	0	☐
Project	0	0	0	0	☐
Giveaway	0	0	0	0	☐
Fixed Bill	0	0	0	0	☐
Billable	220	420	0	923	☐

Billing Summary					
	Hours Cost	Item Cost	Exp Cost	List Price	Det
LABOR	220	0	0	480	☐
Expenses	0	0	0	0	☐
Items	0	420	0	435	☐
Fixed	0	0	0	0	☐
	0	0	0	0	☐
	0	0	0	0	☐
Total	220	420	0	915	☐

Line Total 915.00 Cost 640.00 Margin 30%
Adjustment -9.15 Tax 0.00 Total 905.85

Fig. 14.7
Summary Frame at
Completion of CIR

Tax amounts for the call lines display here.

- Adjustment displays discount percent and trailer amounts for the call.
- Tax summarizes the taxable amounts in the trailer.
- Total represents the invoice's billable amount.

Fixed Pricing in CIR

See “Fixed Pricing in CAR” on page 447.

CAR and CIR manage fixed price service differently from other activities. Figure 14.8 illustrates invoice summary frames for fixed pricing.

Fig. 14.8
Fixed Pricing
in CIR

You can record costs for a charge code with fixed billable set to Yes.

All prices reflect the price for the fixed repair; no prices are detailed individually.

Call Invoice Recording						
Charge Summary						
		Hours Cost	Item Cost	Exp Cost	List Price	Det
Warranty	:	0	0	0	0	☐
Contract	:	0	0	0	0	☐
Covered	:	0	0	0	0	☐
Project	:	0	0	0	0	☐
Giveaway	:	0	0	0	0	☐
Fixed Bill	:	110	210	0	300	☐
Billable	:	0	0	0	0	☐

Billing Summary						
LABOR	:	110	0	0	0	☒
Expenses	:	0	0	0	0	☐
Items	:	0	210	0	0	☒
Fixed	:	0	0	0	300	☐
		0	0	0	0	☐
	:	0	0	0	0	☐
Total	:	110	210	0	300	☐

In the Charge Summary frame, the system records costs using a charge type with Fixed Billable set to Yes. The list price is the fixed repair price, not the total for individual items recorded.

In the Billing Summary, costs display for invoice sort codes based on the invoice sort's service categories. The price displays for the Fixed Price invoice sort.

Note You can combine exchange credits with fixed priced service. A negative amount displays in the List Price column for items, and the system reduces the line total by the credit amount.

Call Invoice Recording

This section gives reference information for Call Invoice Recording fields. You progress through this function in several frames. Some frames are optional, depending on field settings.

Table 14.2
CIR Frames

Frame	Req	Purpose
Header	Y	Select call and display related information.
Comments	N	If Comments is Yes, view or update call header comments.
Summary Frame	Y	View summary invoice information and set detail fields.
Item Selection	Y	Select the call line item to review.
Comments	N	If Comments is Yes, view or update call item comments.
Labor/Expense Totals	N	Select labor/expense invoice sorts.
Labor/Expenses	N	If you enter an invoice sort, view or update its summary data.
Labor/Expenses Detail	N	If Det is Yes, view or update detailed information for this invoice sort.
Comments	N	If Comments is Yes, view or update operation comments.
Item Totals	Y	Select item invoice sort.
Item Usage	N	If you enter an invoice sort, view or update summary data for the sort.
Item Detail	N	If Det is Yes, view or update detailed information for the invoice sort.
Comments	N	If Comments is Yes, view or update item usage comments.
Trailer	Y	Enter taxable or nontaxable trailer codes and other trailer information.
Summary Frame	Y	View summary invoice information with tax details.

Many CIR frames are similar to CAR and in fact use the same programs. As Figure 14.9 shows, the header frames of Call Invoice Recording (11.1.1.15) are similar to Call Activity Recording (11.1.1.13).

Fig. 14.9
Call Invoice
Recording
(11.1.1.15)

Call Invoice Recording

Call Selection
Call ID: CA123 Bill To: 1001000 End User: 10010003

Bill-To	End User
Reliable Central Purchasing Attention: Accounts Payable 300000020 Century Blvd Los Angeles CA 90001 United States of America	Reliable Center Central Avenue Shops 27002 Central Ave. New York NY 02929 United States of America

Status: COMPLETE Completed Call

Priority: 80
Price List: SSM1
PO Number: PO-4332
Assigned: glb
Work Code: Tech
Site: 10000
Description: Customer Reported Issue

Channel:
Currency: USD
Language:
Taxable: 07/30/2002
Terms: 2/10-30
Ready to Invoice: ☒
Invoiced: ☐
Invoice Number:
Project:

Comments:

Reports on this call are ready to invoice.

Header Frame

You can access a call in CIR if it meets one of the following conditions:

- The call status is closed or complete. A warning displays if the call is on hold or canceled.
- The call has at least one line with a complete or closed status and an invoiceable report. Otherwise, the call is not ready for invoicing.

Note You can review a call with a canceled status in CIR, but you cannot generate an invoice for it. You can review a call with a hold status and generate an invoice for any complete or closed lines. In both cases, a warning displays regarding the call status.

Most header fields display information you entered for the call in Call Activity Recording. Display-only fields include End User, Price List, Assigned, Work Code, Priority, Status, Site, Description, and Currency.

You can update PO Number, Channel, Language, Taxable, Terms, Ready to Invoice, Invoiced, Invoice Number, and Comments. Except for Ready to Invoice and Invoiced, these fields default from Call Activity Recording.

You can change Bill-To only if you have not generated a pending invoice for the reports on the call.

Ready to Invoice. This field defaults to Yes if you have not printed an invoice for all service activity on the call. Invoice Print requires this field to be Yes before it prints the invoice. Change the field to No to prevent invoicing.

When invoice print completes, the system prompts you to update the invoice. If you respond Yes to the prompt, the system sets Ready to Invoice to No and Invoiced to Yes. This indicates you have printed the invoice and can post it to Accounts Receivable. It prevents the system from generating duplicate invoices. To reprint an invoice, reset Ready to Invoice to Yes.

Posting the invoice sets both Ready to Invoice and Invoiced to No. If you record more activity for the call and a line is complete in Call Activity Recording, the system sets Ready to Invoice to Yes.

Invoiced. Yes indicates that a pending invoice exists and you can post some quantities on the call. Invoice Print sets Invoiced to Yes and Ready to Invoice to No if you update the invoice. This indicates you have printed the invoice and can post it to Accounts Receivable. It prevents the system from generating duplicate invoices. When you have posted the invoice, the system sets Invoiced to No.

Run Invoice Post immediately after you print and verify invoices. If you make changes to a line in CAR after you generate or print an invoice for it, a warning displays. Make changes to this line only with caution.

If you ignore the warning about the existence of a pending invoice and make changes to the call line, generate a new invoice to reflect the changes. To ensure that a new invoice generates, the system resets Ready to Invoice in CIR to Yes and Invoiced to No. The invoice post routine disregards the invoice until you regenerate and reprint it.

Invoice Number. To supply an invoice number for the printed invoice, enter it here. If you leave this field blank, the system uses the next invoice number in Sales Order Control.

Project. This field has no effect on the call invoice. The sales and sales discount projects specified in CAR default to the invoice when it is generated.

Summary Frame

See “Understanding CIR Summaries” on page 522 for details.

If you did not generate an invoice from Call Activity Recording, the system generates an invoice for invoiceable line items when you enter the summary frame. This frame and its various features was discussed previously.

Call Line Detail Frames

When you leave the Billing Summary frame, you enter a sequence of frames similar to Call Activity Recording. First a line item selection frame displays. After you select a call line to review or update, labor and expense frames display first, then item usage frames. After you make changes and complete the trailer, the system recalculates the invoice and redisplay the summary frame.

The various detail frames let managers or supervisory personnel examine the CAR data and adjust prices before invoicing the customer.

Call Selection Frame

When you leave the Billing Summary frame, the Call Selection frame displays, as shown in Figure 14.10. Call ID, Bill-To, and End User are output only.

Fig. 14.10
Call Selection
Frame

Call Invoice Recording

Call Selection

Call ID: CA123 Bill-To: 1001000 End User: 10010003

Ln	Item	Fix	Qty	Repaired	Net Price	Invoice Cost
1	10-10000	☐	1.0		467.50	320.00

Item Detail

Revenue Prod Line: W-10 Fixed Price: 0.00
Comments: Total List Price: 467.50
Taxable: ☒ Covered Amount: 0.00
UM: EA Serial: S-100-2304C4
Sales Acct: 3000 Work Code: Tech
Disc Acct: 3900 Svc Group:
Description: OASIS(TM) COOLING SYST Site: 10000

Item Selection Frame

In the Item Selection frame, you can select a call line with activity to be invoiced. Other line fields are output only. Use Next/Previous to scroll through call lines. The Item Detail frame displays information related to the selected line. This example displays item detail for line 1.

The Item Selection information defaults from Call Activity Recording and the price and cost on the Billing Summary frame. The system calculates the total fields from the detail information. You cannot modify total fields. Make changes to prices or covered amounts at the detail level.

Ln. Line number refers to the call line in Call Maintenance or Call Activity Recording.

Item Number. Output only. Displays the number of the item being serviced on this call line.

Fix. Output only. Fix indicates whether or not you repaired this item at a fixed price. You enter this value in Call Activity Recording.

Qty Repaired. Output only. Qty Repaired is the total of this item that you repaired in this call. You enter this value in Call Maintenance or Call Activity Recording.

Net Price. Output only. The amount you bill the customer for this call line. Use Net Price to track margins and compare service costs and coverage costs.

Invoice Cost. Output only. The cost of service for this call line. This can be zero, less than, or greater than the net price for the item. Use Invoice Cost to track margins and compare service costs and coverage costs.

Item Detail Frame

Revenue Prod Line. The product line for the income you generate from servicing this line item. The revenue product line and the item product line can be different. The system finds a default revenue product line from product lines you define in Revenue Product Line Maintenance, using the call line's service type and work code, and the item's service group or product line.

If no revenue product line exists, the system uses as a default either the service type's product line or the item's product line, based on Use Item Prod Line in Service Management Control. If Modify Sales Accounts is Yes in Call Management Control, you can modify the sales and sales discount accounts of this product line.

Comments. If Yes, you can review or update the call line's comments. After you select or enter comments, you can specify where you want to print them.

Taxable. Defaults from the value of Taxable in CAR and sets the default for each line of detail.

Tax Class. The tax class of the detail records affects tax calculation.

UM. If Fix is No, you can edit this field. It defaults from the item's unit of measure in the item master. For non-inventory items, UM is blank. If Fix is Yes, the fixed price unit of measure in Call Management Control displays.

Sales and Discount Account, Sub-Account, Cost Center. The system displays the Sales and Sales Discount accounts. These accounts default from the revenue product line unless you define alternate accounts in Sales Account Maintenance (1.2.17).

You can modify these account components only if Modify Sales Accounts is Yes in Call Management Control.

When you post an invoice, the system:

- Credits the Sales account with the total sales amount, minus discounts or tax-included amounts. The system records this amount in sales history and uses it to calculate commissions and terms discounts. To distinguish it from other memo items, the system stores sales history for call activity with a type of R, repair.
- Debits the Sales Discount account for the total sales amount minus the extended list price.

Sales and Discount Project. Enter an optional code identifying the general ledger (GL) project associated with the sales and sales discount amounts for this call line item. These fields default from CAR. The sales and discount project are typically the same.

◆ See Chapter 7, "Taxes in SSM," on page 221 for details on how the system calculates taxes in call invoices.

◆ See "Detailed Accounting in CIR" on page 543 for more details about account usage.

◆ See "Project Codes in CAR" on page 469 for more information.

If Verify GL Accounts is Yes in System/Account Control, the system verifies that the project exists and is active and that it is valid with the other account components.

Description. For inventory items, displays the first line of the item's description in Item Master Maintenance.

Note The fields on the right side of the Item Detail frame are output only.

Fixed Price. If you specify a fixed price for this line item on the call's price list, it displays here. The fixed price displays even if Fixed Price is No for this service activity. Use this as reference if you provide fixed price repairs as an alternative to contract and warranty coverage.

Total List Price. For this line item, the total of all list prices for items, expenses, and labor. If any part of this service is covered, Total List Price is more than the net price in the Item Selection frame.

Covered Amount. The amount of service activity covered by the contract, warranty, or service type. The system calculates net price in the Item Selection frame from the total list price minus the covered amount.

Serial. The serial number of the repaired item displays.

Work Code. The work code for the repair, recorded in Call Maintenance or Call Activity Recording.

Service Group. The service group of the item, which you define in Service Item Maintenance.

Site. The line item's site in CAR. Site determines the From zone when the system calculates tax data for this line item.

Labor/Expenses Frames

After you press Go to accept and move past the call line frames, the Labor/Expense Totals frame appears. You can review labor and expenses recorded in CAR for each call line. Labor and expense details display by invoice sort.

After you enter an invoice sort, you can review its detail lines in the Labor/Expenses frame.

Fig. 14.11
Labor/Expenses
Frames

Call Invoice Recording

Call Selection

Call ID: CA123 Bill To: 1001000 End User: 10010003

Item Selection

Ln	Item Number	Fix	Qty Repaired	Net Price	Invoice Cost
1	10-10000	☐	1.0	467.50	320.00

Labor/Expense Totals

Invoice Sort: LABOR Cost: 110.00 Price: 242.50

Labor/Expenses

Ln	Svc Cat	Qty Required	List Price	Det
1	LABOR	0.5	25.00	☐

Invoice Sort. Enter an invoice sort associated with the labor and expense service categories recorded for the line item. When you select an invoice sort and press Enter, the system fills in the cost and price and displays the Labor/Expenses frame.

Cost. Output-only field displaying total labor or expense costs for the invoice sort.

Price. Output-only field displaying the net price of details recorded for this invoice sort. This is the amount you bill the customer.

Ln. Use this field to select the line of detail summarized by this invoice sort that you want to review. Use Next/Previous to scroll through lines.

Svc Cat. Output-only field displaying the line's service category.

Qty Required. Output-only field displaying the number of units of this service category recorded in CAR.

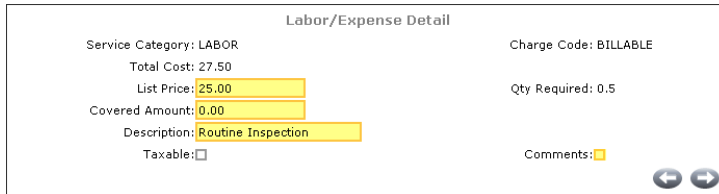
List Price. Output-only field displaying the price of one unit of this service category. To modify the price, set Detail to Yes.

Det. If Yes, the next frame is the Labor/Expense Detail frame.

Tip
Fixed price service uses one price and you cannot modify prices for individual details.

Labor/Expense Detail

If Det in the Labor/Expenses frame is Yes, the Labor/Expense Detail frame displays when you enter Go to accept the labor or expense values. Output-only fields display values updated in Call Activity Recording.



The screenshot shows the 'Labor/Expense Detail' frame with the following fields and values:

Field	Value
Service Category	LABOR
Total Cost	27.50
List Price	25.00
Covered Amount	0.00
Description	Routine Inspection
Taxable	☐
Charge Code	BILLABLE
Qty Required	0.5
Comments	

Navigation buttons (back and forward) are located at the bottom right of the frame.

Fig. 14.12
Labor/Expense
Detail Frame

Service Category. Output-only field displaying the line's service category.

Charge Code. Output-only field displaying the charge code for this labor or expense line.

Total Cost. Output-only field displaying the total cost for this labor or expense line.

List Price. The price for one unit of this service category. You can modify the price, unless you are providing the service at a fixed price. Fixed price service uses one price and you cannot specify prices for individual details. Changes you make here display in Call Activity Recording, and the system recalculates the invoice's net price.

To control changes, apply field security to this field.

Qty Required. Output-only field displaying the number of units of this service category recorded in CAR.

Covered Amount. Displays the covered amount for this labor or expense line for review or update. Changes you make here display in Call Activity Recording, and the system recalculates the invoice's net price. To control changes, apply field security to this field.

Description. Displays the description of the standard operation or operation step from a routing. For expenses, Description is blank unless you entered a description in CAR. You can modify description, but changes are not reflected in CAR.

◆ See Chapter 7, “Taxes in SSM,” on page 221 for details on how the system calculates taxes in call invoices.

Taxable. If Yes, the system calculates taxes for the line. The default depends on the taxable status of the call line and whether the line is a fixed repair.

- If this is not a fixed price service and the taxable status of the call line is No, the taxable status of detail record is No and you cannot change it.
- If this is not a fixed price service and the taxable status of the call line is Yes, the taxable status of the detail record defaults from the value in Service Category Maintenance for the service category.
- If this is a fixed price service, the system calculates tax at the call line level. The taxable status of detail record is the same as the call line’s status and you cannot change it.

Tax Class. Enter a tax class previously defined in Tax Class Maintenance (2.13.1.5). GTM tax classes help determine the tax environment (set of tax types) for the transaction.

Tax Class defaults from Service Category Maintenance. If the current call line is not taxable or is a fixed price service, Tax Class is blank and you cannot change it.

Comments. Yes displays the comments transaction frame, where you can review and update comments entered in Call Activity Recording for labor/expense transactions.

Item Totals and Item Usage Frames

After you review labor and expense invoice sorts, you can review item usage. The two frames are similar.

When you select an item invoice sort in the Item Totals frame and press Enter, the system fills in the cost and price and displays the Item Usage frame. You can review each detail line for an item invoice sort in the Item Usage frame. Output-only fields display information from Call Activity Recording.

In CAR, you can issue, return, and exchange items on the same line of detail. To ensure proper tax detail, CIR displays these actions as separate records.

Item Totals					
Invoice Sort: items		Cost: 210.00		Price: 225.00	

Item Usage					
Ln	Item Number	Qty Required	Qty Returned	Exchange	Detail
1	44-1000	1.0	0.0	☐	☒

Fig. 14.13
Item Totals and
Usage Frames

Invoice Sort. Enter an invoice sort associated with the items you used to repair the call line item. The invoice sort must be type I, for item. When you select an invoice sort and press Enter, the system fills in the cost and price and displays the Item Usage frame.

Cost. Output-only field that displays the total cost for items in the invoice sort.

Price. Output-only field that displays the total net price for items in the invoice sort. This is the amount you bill the customer. Service coverage can make the net price less than the list price.

Ln. Use this field to select the line of detail summarized by this invoice sort that you want to review. Use the up and down arrows to scroll through lines.

Item Number. Output-only field that displays the inventory item number you used in this service activity.

Qty Required. Output-only field displaying the number of units you used of this item.

Qty Returned. Output-only field displaying the number of units you returned of this item.

Exchange. Output-only field indicating if you specified an exchange credit for returned items.

Detail. Controls whether or not the Item Detail frame displays next.

Issue Detail Frame

The output-only fields display values you entered in CAR.

Fig. 14.14
Issue Detail Frame

The screenshot shows a window titled "Issue Detail" with the following fields and values:

Service Category: ITEMS	Charge Code: BILLABLE
Total Cost: 100.00	
List Price: 100.00	Qty Required: 1.0
Covered Amount: 0.00	Serial:
Description: SENSOR UNIT,	
Taxable: ☐	Comments:

At the bottom right of the window are two circular navigation buttons: a left arrow and a right arrow.

Service Category. Output-only field displaying the item's service category.

Charge Code. Output-only field displaying the charge code for the item issued.

Total Cost. Output-only field displaying the total cost for this issue line. This field is zero for items you return or exchange.

List Price. The price for one unit of this item as you entered it in Call Activity Recording. You can modify the price unless you are providing this service at a fixed price. Fixed price service uses one price for the line and you cannot specify prices for individual details. To control modifications, apply field security to this field. If you make changes, the system displays them in Call Activity Recording, and recalculates the net price for the invoice.

Qty Required. Output-only field displaying the number of units of this item you used in Call Activity Recording.

Covered Amount. Displays the covered amount for the items on this line as you entered it in CAR for review or update. To control modifications, apply field security to this field. If you make changes, the system reflects them in Call Activity Recording, and recalculates the net price for the invoice.

Serial. Output-only field displays the serial number if you issued or returned one serialized item.

Description. Description of the issued item as you entered it in Item Master Maintenance or modified it in CAR. Description can be modified, but changes are not reflected in CAR.

Comments. If Yes, you can review or update comments you recorded in Call Activity Recording for the service detail.

Taxable. Indicates if the system calculates taxes on this line of detail. The default depends on the call line's taxable status and whether or not this is a fixed price repair.

- If this is not a fixed price service and the line's taxable status is No, the system sets the taxable status of all detail records to No and you cannot change it.
- If this is not a fixed price service and the line's taxable status is Yes, the taxable status for items defaults from the value in Item Master Maintenance.
- If this is a fixed price service, the system calculates tax at the call line level. The system sets the Taxable field at the detail level to the value of the call line and you cannot change it.

Tax Class. Enter a tax class previously defined in Tax Class Maintenance (2.13.1.5). GTM tax classes help determine the tax environment (set of tax types) for the transaction.

Tax Class defaults from Item Master Maintenance. If the current call line is not taxable or is a fixed price service, Tax Class is blank and you cannot change it.

See Chapter 7, "Taxes in SSM," on page 221 for details on how the system calculates taxes in call invoices.

Exchange Detail

For items that you return for an exchange credit, a frame displays that is slightly different from the Issue Detail frame. This section describes only the fields that are different.

The screenshot shows a form titled "Exchange Detail". It contains the following fields:

- Service Category: ITEMS
- Exchange Price: 50.00 (highlighted in yellow)
- Description: EVAPORATOR,SERIES 1000 (highlighted in yellow)
- Taxable: ☐
- Charge Code: BILLABLE
- Qty Returned: 1.0
- Returned Serial: S-4445
- Comments: (empty text box)

At the bottom right of the form are two circular navigation buttons, one with a left arrow and one with a right arrow.

Fig. 14.15
Exchange Detail
Frame

Exchange Price. Displays the amount of credit you specified in CAR for this exchange. If you make changes here, the system reflects them in Call Activity Recording and recalculates the net price for the invoice.

Tip
To prevent price from being modified, apply field security to this field.

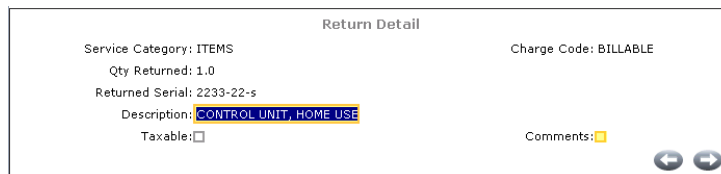
Qty Returned. Output-only field displaying the number of items you are exchanging.

Returned Serial. Output-only field displaying the serial number of the exchange item. This field has a value only when you return one serialized item in CAR.

Return Detail

For items that you return without an exchange credit, the Return Detail frame displays.

Fig. 14.16
Return Detail
Frame



The Return Detail frame displays the following information:

- Service Category: ITEMS
- Qty Returned: 1.0
- Returned Serial: 2233-22-s
- Description: CONTROL UNIT, HOME USE
- Taxable: ☐
- Charge Code: BILLABLE
- Comments:

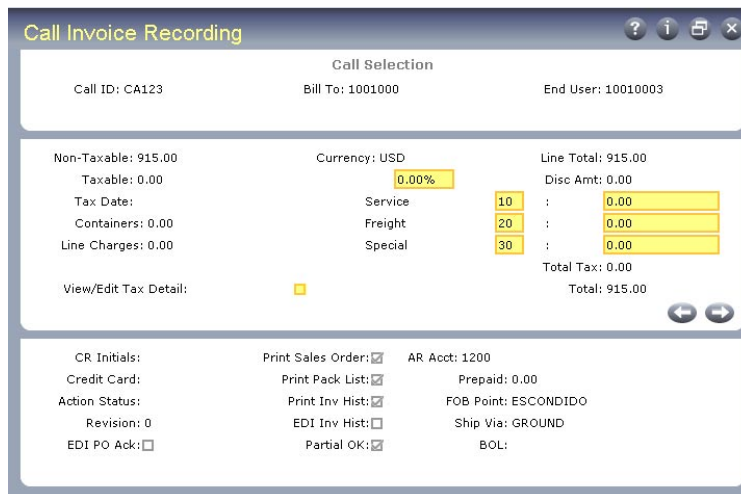
Navigation buttons (back, forward) are located at the bottom right.

The fields on this frame are the same as on the Exchange Detail frame.

Trailer Frame

After reviewing the invoice detail, the trailer frame displays. This is the same frame that displays for standard sales orders that you create in Sales Order Maintenance (7.1.1).

Fig. 14.17
Call Invoice
Recording Trailer
Frame



The Call Invoice Recording Trailer frame displays the following information:

Call Selection

- Call ID: CA123
- Bill To: 1001000
- End User: 10010003

Summary:

- Non-Taxable: 915.00
- Taxable: 0.00
- Currency: USD
- Line Total: 915.00
- Disc Amt: 0.00
- Total Tax: 0.00
- Total: 915.00

Item Details:

Service	Quantity	Amount
Service	10	0.00
Freight	20	0.00
Special	30	0.00

Other Fields:

- Tax Date:
- Containers: 0.00
- Line Charges: 0.00
- View/Edit Tax Detail: ☐
- CR Initials:
- Credit Card:
- Action Status:
- Revision: 0
- EDI PO Ack: ☐
- Print Sales Order: ☒
- Print Pack List: ☒
- Print Inv Hist: ☒
- EDI Inv Hist: ☐
- Partial OK: ☒
- AR Acct: 1200
- Prepaid: 0.00
- FOB Point: ESCONDIDO
- Ship Via: GROUND
- BOL:

Navigation buttons (back, forward) are located at the bottom right.

Most trailer fields default from the bill-to address and have the same function as in sales orders. These fields include Discount Percent, Cr Initials, Credit Card, Action Status, Partial OK, and Ship Via. By default, CIR uses the taxable and nontaxable trailer codes in Contract Control.

You can review and edit tax detail in the trailer. Unlike a sales order, multiple lines of detail can exist for each call line.

In Call Invoice Recording, you create the invoice after you consume the items, rather than before they ship as in sales orders. For this reason, some trailer fields are not relevant in CIR, such as Ship Via, FOB Point, and Partial OK.

See Chapter 7, “Taxes in SSM,” on page 221 for details on taxes in CIR.

Detailed Accounting in CIR

Call Invoice Recording uses standard transaction and accounting procedures as in other MFG/PRO modules. This section describes these transactions and the accounts they affect.

Service Accounts

Product lines manage accounting in MFG/PRO. Before you record service activity in CAR, you must set up product lines and the codes that direct how transactions impact these product lines.

Several service accounts in System/Account Control (36.1) support service activity.

Service Account	Value	Value	Value
Service Labor:	6550		
Service Overhead:	6491	s100	c100
Service Expense:	7400	s100	c100
Expense Due:	7410	s100	c100
Service Returns:	5053	s100	c100
Deferred Revenue:	3000	s100	c100
Accrued Revenue:	3000	s100	c100

Fig. 14.18
Service Accounts
in System/Account
Control (36.1)

The system uses the service accounts in the control program as defaults when you define a new product line in Product Line Maintenance (1.2.1).

Fig. 14.19
Service Accounts
in Product Line
Maintenance
(1.2.1)

The screenshot shows the 'Product Line Maintenance' window. At the top, it displays 'Product Line: 100' and 'Description: pencil product'. Below this, there are fields for 'Taxable:' (unchecked), 'Tax Class:', 'Default Sub-Account:', 'Default Cost Center:', 'Override:' (unchecked), and another 'Override:' (unchecked). The main section is titled 'Service Accounts' and contains a table with three columns. The first column lists service account names and their current values. The second column is empty. The third column shows the default value 'c100' for each account.

Service Account	Current Value	Default Value
Service Labor:	6550	c100
Service Overhead:	6491	c100
Service Expense:	7400	c100
Expense Due:	7410	c100
Service Returns:	5053	c100
Deferred Revenue:	3000	c100
Accrued Revenue:	3000	c100

The system updates service accounts for GL transactions created in Call Activity Recording and for expensed material orders (MOs).

Service Labor. For labor consumed in CAR, the system credits this account and debits the WIP account.

Service Overhead. The system uses this account and the service labor account to track labor burden for labor consumed in CAR. The system credits this account and debits the WIP account.

Tip

In service contexts, machines do not affect the formula.

The system calculates labor burden using the manufacturing operation formula for burden:

$$\text{Hours} * (\text{Labor Rate} * \text{Work Center Burden \%} * .01 + \text{Work Center Burden Rate})$$

Service Expense. The system uses the Service Expense account to track expenses in CAR. During CAR transaction processing, the system credits the Service Expense account of the charge product line for expense amounts and debits the WIP account.

The system also uses the Service Expense account when you order MOs with a charge code. The system tracks the expense of the ordered items using the Service Expense account of the product line associated with the charge code.

Expense Due. During invoice post, the system debits the Expense Due account for CAR expense amounts and credits the WIP account.

Service Returns Account. When you return items in CAR, the system credits the Returns account and debits Inventory.

Deferred and Accrued Revenue. These accounts are used during contract billing based on the revenue type associated with a contract. They are always derived from the product line of the contract type associated with the contract.

▶ See “Managing Deferred and Accrued Revenue” on page 317.

The accounts updated during the processing of transactions in CAR may come from any of these product lines:

- The item’s product line
- The service type’s product line
- The charge product line
- The revenue product line

The first two product lines are collectively referred to as the WIP product line, since that is the only account updated in CAR.

Note Even though CAR work centers supply information about labor and labor burden, CAR does not use the work center’s department to derive a product line.

CAR Reports and Work Orders

When you receive items from a customer through an RMA, you can process the RMA by releasing it to a work order. This creates a rework work order using the item’s repair routing. You manage and complete the work order in the Work Orders module.

Processing in CAR is similar, although in CAR you are recording work that already took place. However, the work still consists of operations that record labor and the items you issued. Each CAR report you generate is a simple work order. The report creates work order transactions and affects similar accounts.

Reports in CAR have a simpler life cycle than work orders. Work orders follow this sequence:

- Process item issues.
- Process labor and labor burden.
- Receive work order (RCT-WO).
- Close the work order using Work Order Accounting Close (16.21).

Reports in CAR do not go through the last two steps. The system combines item and labor processing when you press Go from CAR's inventory confirmation frame. The CAR report, or work order, has this life cycle:

- Process item issues, labor, and labor burden.
- Post the invoice, which is similar to work order accounting close.

In general, the system updates accounts in CAR similar to the way it updates accounts for a work order, except that service accounts are updated when appropriate.

Variances in CAR

Another difference exists between accounting for standard work orders and CAR work orders. The system tracks material and labor variances for standard work orders. It does not track them for call activity.

The system calculates work order variances when the work order is closed. Closing a call, however, is not as final as closing a work order. You can open a closed call and record more activity for it. The only time you cannot change a call is when it is moved to history.

For calls, the system cannot determine if a difference is a variance or the result of a report that you have not yet added to the call.

Product Lines in CAR

You can affect multiple product lines when you record activity in CAR. These product lines can be one of the following: the WIP product line, charge product lines, and the revenue product line.

◆ See “Charge and Revenue Management” on page 103.

You can use the same product line for WIP, charges, and revenue. Depending on how you separate accounts, you can set up and implement product lines ranging from simple to complex.

Table 14.3 summarizes the accounts affected by recording activity and posting call invoices.

WIP Product Line

In CAR, the system uses the WIP account of the call item's product line for all WIP transactions for the line item. You specify this product line when you select a call item in Call Activity Recording.

The system determines the default product line for the WIP account based on the value of Use Item Prod Line in Service Management Control. If Use Item Prod Line is Yes, the WIP product line defaults from the item's product line. If No, it defaults from the service type's product line. You can change the default when you begin recording activity for a call line. After you record activity, you cannot change the WIP product line.

The system uses only the WIP account from this product line, as one general holding area. During CAR processing, the system records amounts to the WIP account. When you post the invoice, the system transfers these amounts from the WIP account to the correct charge and revenue product line accounts.

Since call reports are similar to work orders, you can view financial transactions using two reports in the Work Orders module. Enter the call report number in the Work Order field of the following reports:

- Use Work Order Cost Report (16.3.4) to review costs for a call report.
- Use Work Order WIP Cost Report (16.3.5) to review GL transactions affecting WIP accounts for selected reports.

You cannot add a memo item to a standard work order. You can add memo items to calls unless Items Must Exist is Yes in Service Management Control. For CAR work orders with memo items, the system uses the service site's cost set. If none exists, the system uses the cost method in Inventory Control to generate a work order cost report.

Charge Product Line

The charge product line determines accounts for the cost of activity and appears on the item, labor, and expense detail frames in Call Activity Recording. You can relate charge codes to charge product lines to direct costs to accounts depending on the type of coverage: warranty, contract, billable.

The service accounts of the charge product line are important in CAR. The cost of goods accounts are also used: COGS-Material, COGS-Labor, COGS-Burden, COGS-Overhead, COGS-Subcontr. To isolate service costs from manufacturing costs, use different Cost of Goods Sold account numbers, or use sub-accounts and cost centers to permit distinct reporting.

During invoice post, the system searches for alternate cost of goods accounts from Inventory Account Maintenance (1.2.13) for the combination of product line, site, and location.

Revenue Product Line

The revenue product line determines the sales and sales discount accounts used for the income from service activity. You specify the revenue product line per line item in Call Invoice Recording.

Product Line Account Search Algorithm

After you enter a charge or revenue product line, the system first looks for alternate sales or inventory accounts. If these are not defined, it uses the accounts defined in Product Line Maintenance.

Inventory Accounts

Call Activity Recording searches for product line accounts the same way the rest of the system does. For an Inventory account, the system searches for GL accounts set up for the combination of product line, site, and location with Inventory Account Maintenance (1.2.13). If accounts for site and location do not exist, the system searches for a match on product line and site with a blank location. If these do not exist either, the system uses the default GL accounts in Product Line Maintenance.

Sales Accounts

You can set up alternate Sales and COGS accounts with Sales Account Maintenance (1.2.17), based on site, customer type, and channel. You normally set these up for sales orders, but the system checks for these alternate accounts when you post the call invoice.

You can define customer types and distribution channels in Generalized Codes Maintenance. Channel normally refers to the distribution channel originating the service activity.

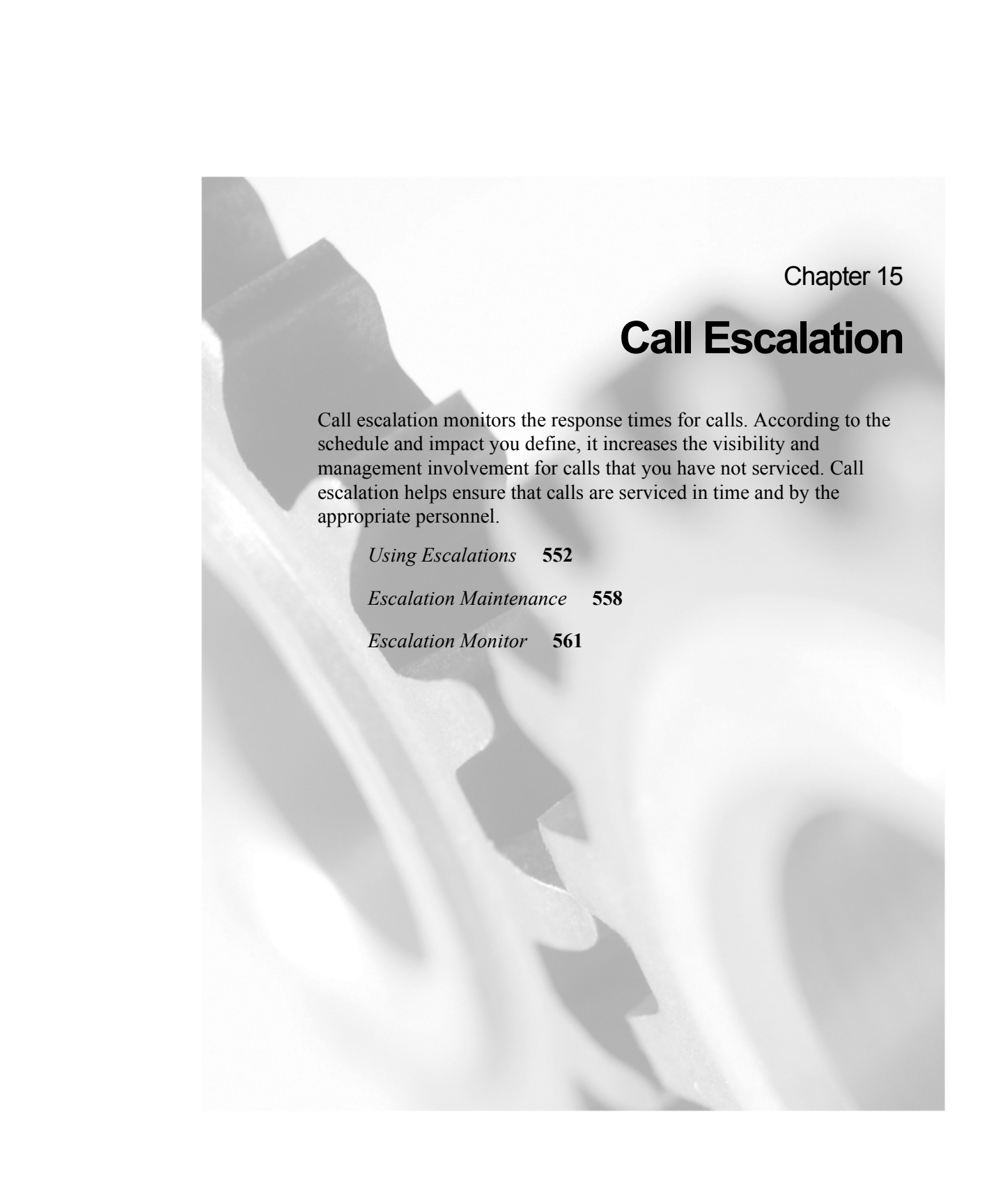
Invoice Post searches for accounts based on the revenue product line of the item repaired, the site associated with the call line item, the customer type of the end user’s customer, and the channel specified on the header in CIR. The system searches for GL sales accounts in the following order:

- Product line, site, customer type, and channel
- Product line, site, and customer type, with a blank channel
- Product line, and site, with a blank customer type and blank channel
- Default GL accounts in Product Line Maintenance

	Processing Step	Action	Account	Product Line
Issue in CAR	Item Issue	Credit Debit	Inventory WIP	Item Item
	Item Returns	Credit Debit	Service Returns Inventory	Charge Item
	Labor	Credit Debit	Service Labor WIP	Charge Item
		Credit Debit	Service Overhead WIP	Charge Item
	Expense	Credit Debit	Service Expense WIP	Charge Item

Table 14.3
Accounting in CAR

	Processing Step	Action	Account	Product Line
Invoice Post	Item Issues	Credit Debit	WIP COGS-Material COGS-Labor COGS-Burden COGS-Overhead COGS-Subcontr	Item Charge
	Item Exchange	Credit Debit	A/R Sales	Customer Revenue
	Labor	Credit Debit	WIP COGS-Labor	Item Charge
		Credit Debit	WIP COGS-Burden	Item Charge
	Expense	Credit Debit	WIP Expense Due Employee	Item Charge
	Billable Total	Credit Debit	Sales A/R	Revenue Customer

The background of the page is a grayscale image of several interlocking gears. The gears are of different sizes and are positioned in a way that they appear to be meshing together. The lighting is soft, creating a professional and technical feel.

Chapter 15

Call Escalation

Call escalation monitors the response times for calls. According to the schedule and impact you define, it increases the visibility and management involvement for calls that you have not serviced. Call escalation helps ensure that calls are serviced in time and by the appropriate personnel.

Using Escalations **552**

Escalation Maintenance **558**

Escalation Monitor **561**

Using Escalations

Call escalations let you track and correct a call's progress in its life cycle. If you do not resolve a call within a predefined time period, the system automatically gives it higher visibility.

▶ See Chapter 11, “Call Management,” on page 347.

With the Call Queue Manager, you select calls by attributes such as priority, status, and queue. Using call escalations, you assign calls to specific queues, change their status, and increase their priority.

Since escalations change the attributes of a call according to your design, you must create the design carefully. Set up each escalation step so that it changes the call in a particular way.

Note Escalations affect only *open* calls. Deleted or canceled calls are excluded.

Enabling Escalations

You enable call escalations by setting Use Escalation to Yes in Call Management Control (11.1.24).

Important You must also run the Call Escalation Monitor for escalations to have an effect.

Before you can define other settings that affect escalations in Escalation Control, set Use Escalations to Yes. If this field is No when you access Escalation Control, the system displays a prompt that indicates that call escalation is not active, and asks if you want to enable escalations.

If you answer Yes, the system sets Use Escalation to Yes in Call Management Control, and you can modify Escalation Control. If you answer No, you cannot modify escalation fields.

Sample Escalation

Figure 15.1 illustrates a sample escalation. The Dispatch queue receives a call with a status of Pending. If a dispatcher does not address the call within an hour, the system escalates it to Open status and routes it to the Engineer queue. If no engineer resolves the call within two hours in this queue, the system escalates the call again, this time to Emerg, or emergency status, and routes it to the supervisor's queue for attention.

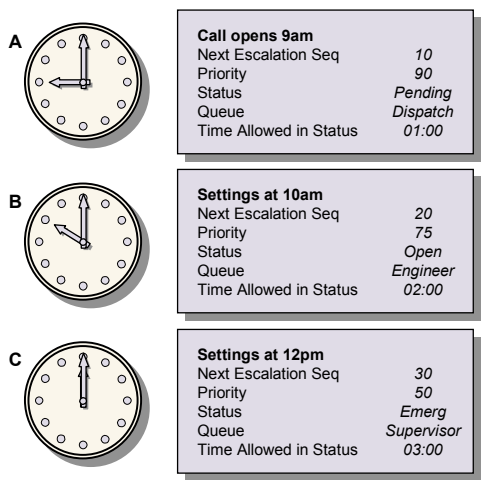


Fig. 15.1
Sample Call
Escalation

Escalation Worksheet

Use a worksheet like the one in Table 15.1 to define the escalation steps for a call.

Escalation Code	Esc Seq	Escalate?	Time in Status		Bump Priority	Next Status	Next Queue
			Days	Hrs			

Table 15.1
Escalation
Worksheet

Default Escalations

In Escalation Control, specify a default escalation to use if no other default is available. When creating calls, you can change the escalation for each call. The system searches for an escalation to use on a call as follows:

- The escalation for the end user in End User Address Maintenance
- The escalation for any call defaults in Call Default Maintenance
- The preferences of the end user in Service/Support User Preferences
- The Default Call Escalation field in Escalation Control

Effect of Escalations

You can use escalation sequences in two ways:

- To update certain fields on a call record
- To execute specific tasks external to the Call Maintenance process, such as printing the call, sending an alert message to a manager, or paging the engineer assigned to the call

To make these changes, the Escalation Monitor applies the instructions from the current escalation step. When a call is created, Call Maintenance also applies the first step of an escalation. The way these two updates occur is somewhat different.

Creating a Call with an Escalation

When you create a call with an escalation, the system applies the instructions from step 0. If the escalation has no step 0, initial call values do not change.

A call's escalation displays in the Call Info frame of Call Maintenance. A sequence number indicates the *next* escalation step that the Escalation Monitor will apply.

Call Maintenance

User Selection

Call ID: CA117 Call Date: 07/26/2002 Time: 16:00
 Serial: s-10010001-8
 End User: 10010001 Westwood Reliable
 Item Number: 10-10000 Ref: 0 OASIS(TM) COOLING SYST
 Contract: Service Type: STANDARI Area:
 Start Date: Install Date: Westwood CA 89029
 End Date: Warranty End: Response: 4 Hours
 PO Number: PO-S10001 Comments: ☐

Call Info

Caller: Rosetta Stone Phone: 213-923-0293
 Description: Customer Reported Issue
 Work Code: Tech Queue: Customer Comments: ☐
 Severity: B Status: NEW Event Date: 07/26/2002
 Type: PRODFAIL Next Status: Assign Event Time: 16:00
 Prob/Skill: DIAG Next Status Date: 07/26/2002 Escalation: ESC1 10
 Assigned: Next Status Time: 16:30
 Priority: 80 From Quote: Schedule: ☒

Fig. 15.2
Call with
Escalation

Sequence 0
has been
applied; 10 is
the next
sequence to
be applied.

Figure 15.2 illustrates a newly created call in Call Maintenance. The Escalation field displays the escalation name and sequence 10. The next step the Escalation Monitor will apply is step 10.

The system has already applied the values of step 0. Even though the service type's response time is 4 hours, the call's Next Status Time is one half hour from the call open time. The reason for this disparity is that the time allowed for step 0 is 30 minutes.

An escalation step can have the following effect when you create a call:

- Increase the call's Priority field by the value of Bump Priority.
- Update the call's Status field to reflect the value of Next Status.
- Update the call's Next Status field to reflect the value of the *next* step's Next Status field.
- Update the call's Queue field to reflect the value of Next Queue.
- Update the call's Next Status Date field and Call Next Time field using Days Allowed in Status and Time Allowed in Status.

When you create a call with an escalation, the system adds Days Allowed in Status and Time Allowed in Status for step 0 to the call's open date and time to determine the call's Next Status Date and Next Status Time.

Note Escalations do not initially affect calls that the system creates, such as installation calls from invoice post and PM calls from contract schedules. The system schedules these calls in advance. Escalations affect these calls only after they reach the default next status date and time.

Using Other Defaults with Escalations

▶ See Table 11.3, “Call Default Precedence Rules,” on page 362 for the order in which the system uses defaults.

For many call fields, you can set default values in more than one place. When an escalation is applied to a new call in Call Maintenance, values from the escalation step override other defaults. For example, the system uses the escalation sequence to determine call status, next status, and queue, even if you define defaults in Call Default Maintenance.

In the following order, the system finds a default for the call’s initial priority from:

- The end-user record, if it is not zero
- The call’s contract or warranty
- The Default Call Service Type in Call Management Control

The Bump Priority value for the first escalation step then reduces the initial default priority.

Example You have a call where the end user’s priority is zero and the service type’s priority is 100. If the first escalation step specifies a bump priority of 75, the call’s initial priority is 25, not 100.

When you do not use escalations, the system calculates the call’s Next Status Date and Time using the service type’s response time. When an escalation applies to a new call, the system uses the Days Allowed in Status and Time Allowed in Status of step 0 to determine Next Status Date and Next Status Time.

Updating Existing Calls

The Escalation Monitor applies the escalation’s next step when the call’s Next Status Date and Next Status Time is older than the system date and time. After step 0, the system adds Days Allowed in Status and Time Allowed in Status to Event Date and Event Time to determine Next Status Date and Next Status Time.

Matching Escalations to Calls

Work Code, Call Type, Call Severity, and Call Problem in the top frame of Escalation Maintenance define the escalation key. The system applies the escalation only to calls with values that match the key.

You can leave fields blank to end the key, but you cannot skip fields. For example, to set up escalations based on call severity, you must also enter a call type and work code. When applying an escalation, the Escalation Monitor searches for the most complete match to the call's fields. If no escalation matches the call exactly, it applies a more generic escalation.

Example You create a call with work code Tech, severity 3, problem Elec. No escalation with these exact fields exists, but one does exist with work code Tech and all other fields blank. The system applies this escalation as the closest match.

Default Escalations

When you create escalation sequences to use as defaults, you must carefully consider how the escalation is set. When the escalation is associated with an end user, it may apply to many different kinds of calls.

You create an escalation PREMIUM and a sequence of escalation steps for work code Tech, but not for work code PM. You associate the PREMIUM escalation with end user 1001000.

When you create a PM call for end user 1001000, the PREMIUM escalation defaults from the end-user record. When the system looks for the first step to apply, no match exists for work code PM, so the system does not apply the first sequence of the escalation.

As a result, the escalation sequence number that displays in Call Maintenance is zero. The PREMIUM escalation remains associated with the call, but it does not take effect unless you change the call's work code to Tech.

Escalation Maintenance

Use Escalation Maintenance (11.1.13.1) to create and update escalation sequences.

Fig. 15.3
Escalation
Maintenance
(11.1.13.1)

The screenshot shows the 'Escalation Maintenance' window. The top section contains the following fields: Escalation Number: ESC1, Work Code:, Call Type:, Call Severity:, Call Problem:, and Sequence: 0. The bottom section contains: Description: Just Received Call, Escalate: [checked], Group:, Print:, Days Allowed In Status: 5, Time Allowed in Status: 04:00, Page Engineer:, Bump Priority: 0, Status: NEW, and Queue: CUSTOMER. There are navigation buttons at the bottom right.

The work code, type, severity, and problem in the top frame of Escalation Maintenance uniquely define the escalation. The system applies this escalation to calls with values that match these fields. You can leave fields blank to end the key, but you cannot skip fields. For example, to base an escalation on call severity, you must specify a work code and call type.

When applying an escalation, the Escalation Monitor searches for the most complete match to the call's fields. If no escalation matches the call exactly, it applies a more generic escalation. It disregards one field at a time, moving upward from Call Problem until it disregards all key fields.

Escalation. Enter a name for the escalation. If this field is blank, the system creates a number using the prefix and next number in Escalation Control.

Work Code. Enter a value to apply the escalation only to calls with this work code. Define work codes in Work Code Maintenance (11.21.1). The work code indicates the type of work you performed during service activity and affects invoicing and service limits.

Call Type. Enter a call type defined in Call Types Maintenance (11.1.21.4). If you enter a call type, you must enter a work code also. The escalation applies only to calls with this work code and call type.

See "Work Codes" on page 82.

Call Severity. Severity indicates the end user's perception of how serious the problem is. If you enter a call severity, you must also enter a work code and call type. The escalation sequence applies only to calls with this work code, call type, and call severity.

Tip
Define call severities in Generalized Codes Maintenance for field `ca_severity`.

Call Problem. Define call problems codes in Generalized Codes Maintenance (36.2.13) for field `fsskill`. This field classifies both the call problem and the skill the engineer needs to handle the call. If you enter a call problem code, you must also enter a work code, type, and severity. The escalation sequence applies only to calls with this work code, call type, call severity, and call problem.

Sequence. Enter a number defining the current step in the escalation. Each escalation must begin with a step 0. The system executes sequences from lowest to highest.

Tip
Define number sequences in increments of 10 (0, 10, 20, 30), to insert steps more easily later.

Description. Enter up to 24 characters describing the sequence.

Escalate. If Yes, the Escalation Monitor escalates this sequence to the next higher one. Enter No for the last step in the escalation.

Group. Define group codes in Generalized Codes Maintenance (36.2.13) for field `fsgroup`.

Print. Enter Yes to print calls when the system executes this step. Use this for critical steps or final steps to keep a record of closed calls. Define the printer in Escalation Printer of Escalation Control.

Days Allowed in Status. Determines the number of days a call remains in a step before the Escalation Monitor escalates the call to the next step. Use this field by itself or with Time Allowed in Status. When you create a call with an escalation, the system applies the values of step 0. It adds the days and time allowed in status to the call's open date and time to determine the call's Next Status Date and Next Status Time.

Tip
The value of Use Calendar Days in Escalation can affect the calculation of a call's next status date and time.

The Escalation Monitor applies the next step in the sequence when the call's Next Status Date and Next Status Time is earlier than the system date and time. For steps after 0, the system adds Days Allowed in Status and Time Allowed in Status to the call's Event Date and Event Time to determine the Next Status Date and Next Status Time.

Time Allowed in Status. The system uses this value with Days Allowed in Status to determine the next status date and time.

Page Engineer. The default is No. If Yes, the system pages the engineer when the call reaches this escalation sequence. Use this when calls reach a critical or emergency situation.

Tip

Lower numbers indicate higher priority.

Bump Priority. Enter the number of points you want the system to subtract from the current call priority when it executes this sequence.

Next Status. Determines the call's status when the system executes this escalation step. The system verifies that this status exists in Call Status Code Maintenance.

When you create a call with an escalation, the system applies the values of step 0 to the call. The system updates the call's Status field with step 0's Next Status value. It updates the call's Next Status field with the next step's Next Status value.

When the system escalates a call, the call's Status field reflects the status of the recently executed step and its Next Status field reflects the status of the next step the system will execute.

On an escalation, you cannot specify a status of closed, cancel, or complete from Call Management Control.

Next Queue. When the system executes this step, it moves the call to the queue you specify. If Next Queue is blank, the call remains in the current queue.

Escalation Monitor

Escalation steps have an effect only when the Escalation Monitor (11.1.13.13) is running. You can run the monitor as a full-time process on a dedicated terminal or in a window on an X Windows terminal. For correct escalation results, the monitor must run consistently.

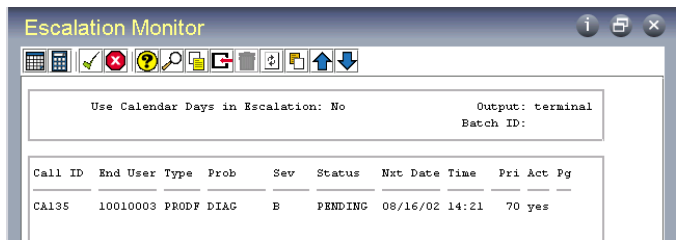


Fig. 15.4
Escalation Monitor
(11.1.13.13)

The Escalation Monitor examines each call's next event date and time. If these values are earlier than or equal to the system date and time, the system updates the call's priority, status, or queue according to the values in the current escalation step. Then it changes the call's Next Status Date and Next Status Time to reflect the days and time in the current escalation step.

The Escalation Monitor displays call records as it reviews them. It marks calls it updates with a Yes in the Act, or acted on, column.

Escalation Pause Interval

The Escalation Monitor examines calls depending on the frequency in Escalation Manager Pause in Escalation Control (11.1.13.24). This field defines the number of seconds that the Escalation Monitor pauses before rechecking open calls.

The escalation pause interval should be less than the shortest period of time you allow in any escalation. If the shortest time between two sequences is four hours, set Escalation Manager Pause to a value less than four hours.

Use Calendar Days in Escalation

When calculating the next status date and time, the Escalation Monitor uses this formula:

$$\text{Next Status Date} = \text{System Date} + \text{Days Allowed in Status}$$

Use Calendar Days in Escalation affects this calculation. Define this field in Escalation Control. It displays in the Escalation Monitor.

Set Use Calendar Days in Escalation to Yes for the system to use calendar days to calculate Days Allowed in Status. The system adds the value of days allowed in status to the system date. After the system determines this date, it examines the service coverage days. If the calculated date is not a covered day—if it is a weekend or holiday, for example—the system changes the date to the next covered day.

Set Use Calendar Days to No for the system to use work days to calculate Days Allowed in Status. The calls's service type defines valid service coverage days and hours. This method can result in a later date, and Escalation Monitor response time can increase due to extra calculations.

Example You take a call on Thursday, March 20. The service type provides coverage from Monday through Friday. The first escalation step specifies that the call can remain in the step for four days. Using calendar days, the next status date is Monday, March 24. Using work days, the next status date is Wednesday, March 26, since the calculation disregards Saturday and Sunday.

Chapter 16

Engineers and Scheduling

In the Service/Support module, you can define and assign service engineers to calls. SSM provides a rules-based system to help you select engineers for call assignment. This chapter describes how to define engineers and set up engineer scheduling.

Service Engineers **564**

Engineer Scheduling Setup **572**

Defining Scheduling Rules **578**

Engineer Transactions **585**

Scheduling Example **588**

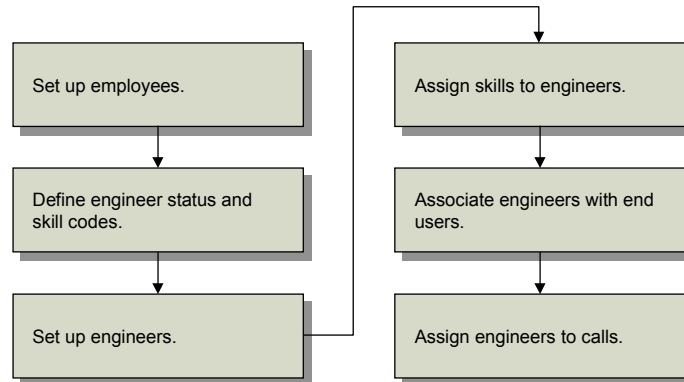
Scheduling Reports **590**

Service Engineers

To use the Service/Support Management call tracking functions, you first must identify the individuals who respond to calls.

Setting up engineers involves a number of related tasks, illustrated in Figure 16.1.

Fig. 16.1
Engineer
Work Flow



First define employees using Employee Maintenance (2.7.1). Define engineer status codes with Engineer Status Maintenance (11.13.4) and skill codes in Generalized Codes Maintenance (36.2.13). Set up engineers with Engineer Maintenance (11.13.1). Assign skills with Engineer Skills Maintenance (11.13.5).

You can associate both primary and secondary engineers with end users. The system uses this association to assign default engineers in Call Maintenance or to rank engineers in engineer scheduling.

Engineer scheduling in Call Maintenance is optional. However, even without scheduling, you must define engineers to record service activity in Call Activity Recording.

Engineers and Multiple Time Zones

♦ See Chapter 4, “Multiple Time Zones,” for details on setting up and using MTZ.

If you have end users in more than one time zone, you can use Multiple Time Zones (MTZ) to manage your response. MTZ works with service functions that deal with time-sensitive data, including call management, engineer scheduling, coverage checking, creation of installed base records, and reports and inquiries that display dates and times.

The following list summarizes how MTZ affects engineer scheduling:

- You can associate a time zone with an engineer in Engineer Maintenance.
- You can assign scheduling points in Engineer Schedule Control based on matching time zones, either exactly or within a defined range. You can optionally limit engineers to schedule in Call Maintenance based on time zone.
- The value of Field Engineer in Engineer Maintenance determines how the system interprets schedule times: either relative to the time zone of a call's end user or relative to the engineer's time zone.
- You can select a display time zone before generating engineer reports and inquiries.

Engineer Site and Location

Most engineer attributes affect engineer scheduling. However, the engineer's site, location, and area are important when you order items with material orders (MOs) and consume items in Call Activity Recording.

Use a consistent engineer site and location so you can manage inventory transactions that occur when you service calls.

Engineer Site/Location on MOs

Engineers can order service inventory with material orders (MOs). When you ship inventory for the MO, the system transfers inventory from the source site and location to the place you need it for the service activity.

▶ Chapter 19, "Material Orders," discusses MOs.

The system searches for an engineer site and location defined in Engineer Maintenance. You can define either one or both of these for an engineer. If no site or location exists, the system searches for the engineer's area site and location. The system transfers the MO items you order to this site and location.

Consider inventory management issues when you define default sites and locations. If engineers obtain repair parts from regional supply centers, let the site default from the engineer's area and define each engineer as a separate location.

Note Significant overhead occurs when you define a site. For example, you allocate costs per site. For this reason, setting up individual engineers with separate sites requires more planning and implementation.

Inventory Consumption in CAR

When you consume MO inventory in Call Activity Recording, the system uses the same logic to determine a site and location for inventory issues as it uses in MO shipments. If you ship the items to a different site than the default, change the values in CAR to process inventory issues.

Establish procedures so the system always references the same site and location for service stock for a particular engineer.

Location Validation

The system validates the engineer location like any other location in the system. For example, the location must exist, unless Automatic Locations is Yes for the site.

The location you specify should not restrict any of the following transactions, which occur during service activities:

- For all MOs, the inventory transfer receipt transaction (RCT-TR)
- For expensed MOs—those with a charge code—the unplanned issue transaction (ISS-UNP)
- To issue items in CAR, the issue to work order transaction (ISS-WO)

Reserving Service Inventory

Other functions that allocate and issue inventory can use items you order on an MO. If service and manufacturing activities are in the same site, service inventory is vulnerable to access by manufacturing functions like work orders or sales orders.

You can minimize the impact of other processes on service inventory in several ways:

- Use a special naming convention for service locations and establish procedures so that manufacturing functions skip these locations.

- Even if your service operation shares the same physical space as manufacturing, define a separate site for service. Managing service as its own site gives you greater control over inventory. In the service site, naming conventions and procedures can distinguish locations you use for different purposes such as stocking, return, repair, scrap, inspection.
- Give engineer locations an inventory status code with Available set to No. This status prevents the system from using the service inventory for other purposes. The service locations do not display in the picking logic for manufacturing functions.

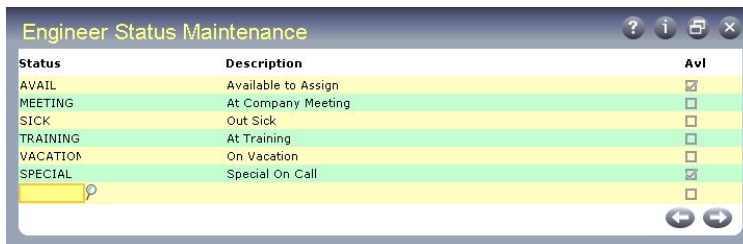
Note When you make a location unavailable, the system does not use it for standard picking. You can still issue inventory from the location in CAR. However, you cannot create detailed, or picked, allocation during Material Order Maintenance.

If the engineer location is not marked as unavailable, the system may allocate the items ordered on an MO, but not yet used, to another MO or sales order.

Setting Up Availability Status Codes

To determine an engineer's availability, define status codes in Engineer Status Maintenance (11.13.4) and associate them with engineers.

Tip
Meaningful codes are easier to use.



Status	Description	Avl
AVAIL	Available to Assign	☒
MEETING	At Company Meeting	☐
SICK	Out Sick	☐
TRAINING	At Training	☐
VACATION	On Vacation	☐
SPECIAL	Special On Call	☒
		☐

Fig. 16.2
Engineer Status Maintenance (11.13.4)

Availability status codes indicate whether or not an engineer is available. Multiple codes exist because there are multiple reasons for being available or unavailable. For example, use status to remove an engineer from consideration who is on extended leave or temporarily assigned to other duties.

Engineer Maintenance

Set up engineer information with Engineer Maintenance (11.13.1), illustrated in Figure 16.3.

Note Before setting up engineer information, define the engineer as an employee in Employee Maintenance (2.7.1).

Fig. 16.3
Engineer Maintenance
(11.13.1)

The screenshot shows the 'Engineer Maintenance' window. It is divided into two main sections: 'Employee Address' and 'Engineer Data'. The 'Employee Address' section contains fields for Employee (BJW), First Name (Bill), Last Name (Whitehead), Address 1 (701 South Shore Lane), Address 2, Address 3, City (San Diego), State (CA), Postal (92133), Country (United States of America), Home Phone (510-992-0293), Business Phone (SSN: 728-03-9912), Extension, and Birth Date (02/12/1954). The 'Engineer Data' section contains fields for Service Area (San Diego), Group, Current Location, Schedule (STANDARD), Field Engineers (checked), Pager (990-443-5487), Status (AVAIL), Site (10000), Location (BJW), and Calls per Day (10). The window has a title bar with standard OS controls and a bottom right corner with navigation buttons.

Employee Address Frame

Tip
The employee must have an active status.

To define an employee as an engineer, enter the employee code in the Employee field. This code defaults into the Engineer Code field. You can choose to set up a separate engineer code referring to this employee.

Example Some companies prefer to separate employee codes from engineer codes. An engineer's employee code might be GLB, while the individual is referred to as Eng004 for service engineer functions.

The rest of the Employee Address frame shows employee information in a display-only mode.

Tip
Address list types distinguish different kinds of addresses.

Note When you set up engineer information, the system creates an address record for the engineer with a list type of engineer. The system retrieves the address when you specify the engineer as a drop-ship address in Material Order Maintenance.

Engineer Data

Define engineer attributes in the Engineer Data frame. Engineer scheduling uses some fields to recommend an engineer for a call. Engineer paging uses other fields. Other fields are for reference. Call Activity Recording and Material Order Maintenance use Engineer Site and Location.

Service Area. Enter a service area defined in Area Maintenance (11.15.1). Engineer scheduling awards points to engineers whose area matches the area of a call's end user. Assign the service area for end users using the Service Office Detail frame of End User Address Maintenance (11.9.1). Define the number of points to assign in Engineer Schedule Control.

Group. Use this field to group engineers according to a method significant for your business practices. For example, you can group engineers by level of expertise or experience.

Current Location. Reference-only. This location is not an inventory location. Use this field if you temporarily assign the engineer to a different service center, or if the engineer is working out of his home rather than his regular office. Define location codes in Generalized Codes Maintenance for the field eng_location. If the engineer has a long-term assignment to a particular call, you can specify the call ID for location even when generalized codes validation is in effect.

Schedule. Enter the engineer's normal work schedule, which defines the hours that the system can assign calls to the engineer. For example, you can set the schedule to assign calls only 8 AM to 5 PM, Monday through Friday. Define schedules in Engineer Master Schedule Maintenance (11.13.15.1) or tailor a schedule for a specific engineer with Engineer Detail Schedule Maintenance (11.13.15.4).

Field Engineer. Indicates where an engineer normally works. Specify Yes if the engineer usually provides service at an end user's location. Specify No if the engineer primarily works in-house—for example, providing phone support or at a repair center.

Tip

Set up generalized codes for field fsgroup.

Tip

Specify a call ID for location if the engineer has a long-term assignment.

Tip

Consider setting this field to Yes if you use Paging.

This field affects call scheduling when Multiple Time Zones is active as well as engineer paging as follows:

▶ See Chapter 4, “Multiple Time Zones,” for details.

- When MTZ is active and Field Engineer is Yes, the system interprets schedule times relative to the end user’s time zone. When No, the system interprets schedule times relative to the engineer’s time zone.
- If Field Engineer is Yes and Dispatcher is Yes in Call Management Control, the Page field in Call Maintenance defaults to Yes when you create a new call. When Page is Yes, you can initiate paging to contact the engineer.

▶ See page 154 for details.

Note A Time Zone field displays when Multiple Time Zones is active. Each engineer must have an associated time zone.

Pager. If you are using the Engineer Paging function, enter the pager number for the engineer.

▶ See “Setting Up Availability Status Codes” on page 567.

Status. Enter a status defined in Engineer Status Maintenance (11.13.4). Status is a critical field for engineer scheduling that determines whether the engineer is available or not. If Limit by Availability is Yes in Engineer Schedule Control, call scheduling considers only engineers with an available status.

If you assign an engineer with an unavailable status to a call, a warning displays.

▶ See “Engineer Site and Location” on page 565.

Site and Location. Enter the site and location where this engineer obtains repair parts. The system uses this site and location as a default in Call Activity Recording and material order functions to specify where to order and consume repair parts. Standard site/location logic applies to these fields.

Set up the engineer’s location with an unavailable inventory status so that the system does not allocate items designated for the engineer’s use for other purposes such as sales orders.

Calls per Day. Enter a number representing the average number of calls this engineer can complete in one day. The engineer scheduling function considers this number in calculating engineer availability if Display by Calls is Yes in Engineer Schedule Control.

Engineer Skills Maintenance

Assign skills to engineers in Engineer Skills Maintenance (11.13.5). To ensure that you use standard codes, define skill codes with Generalized Code Maintenance (36.2.13) for field fsskill.

Skill codes serve two purposes:

- They represent an engineer's expertise.
- They represent the kinds of problems your end users report.

The screenshot shows the 'Engineer Skills Maintenance' window. At the top, it displays 'Engineer Code: BJW' and 'Name: Whitehead Bill'. Below this is a table titled 'Skills' with columns: Skill Code, Level, Cert, and Comments. The table contains two rows: 'ELEC' with Level 2 and Cert 02/23/1988, and 'GENERAL' with Level and Cert fields highlighted in yellow.

Skill Code	Level	Cert	Comments
ELEC	2	02/23/1988	Electrical Skills
GENERAL			General Problems

Fig. 16.4
Engineer Skills
Maintenance
(11.13.5)

The system matches an engineer's skills to the call when it calculates engineer points. The Level and Certification Date field for the engineer's skill are for reference only. You can use them for internal certification of skills.

Assigning Engineers to End Users

You can associate a primary and secondary engineer with an end user in End User Address Maintenance (11.9.1). In Figure 16.5, the Engineer Code field defines the end user's primary engineer.

The screenshot shows the 'End User Address Maintenance' window. It is divided into two sections: 'Customer Address' and 'Service Office Detail'. The 'Customer Address' section contains fields for Customer (1001000), Name (Reliable Central Purchasing), Address (300000020 Century Blvd), City (Los Angeles), County (001), State (CA), Country (United States of America), Post (90001), and Country Code (USA). The 'Service Office Detail' section contains fields for Engineer Code (BJW), Secondary Eng (GLB), Engineer Group, Service Area (AMERICAS), Escalation Number, Travel Distance (60), Travel Time (001:00), and a button labeled 'M'. A line points from the text 'Indicates primary engineer for this end user.' to the Engineer Code field.

Indicates primary engineer for this end user.

Fig. 16.5
Service Office
Detail Frame

The primary engineer for an end user is given double points by the scheduling process when calls for this end user are created. Define how many points to assign in Engineer Schedule Control. The system gives the secondary engineer the points without doubling them.

When you associate a primary or secondary engineer with an end user, the system checks settings in Engineer Schedule Control. A warning displays if:

- Limit by Service Area is Yes and the engineer's service area does not match the end user's area.
- Limit by Time Zone is Yes and the engineer's time zone either does not match the end user's or is outside the range in Range of Hours to Consider.

See Chapter 4, "Multiple Time Zones," for details.

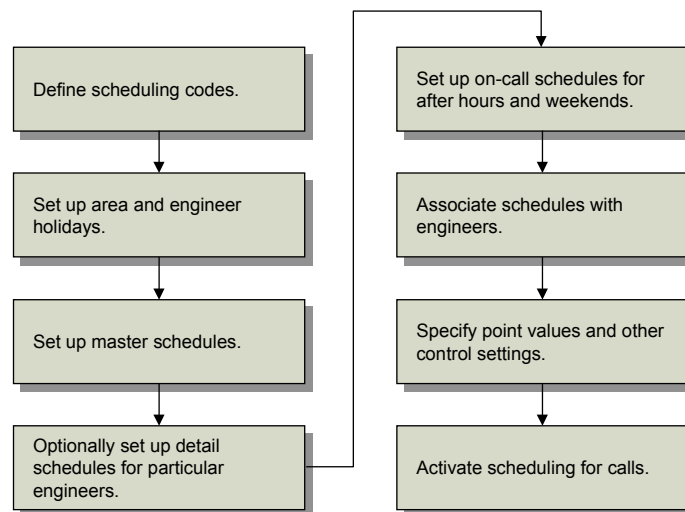
Note The system checks for time zones only if MTZ is active.

After you associate an engineer with an end user, you cannot delete the engineer in Engineer Maintenance. First change the end user's engineer, then delete the engineer.

Engineer Scheduling Setup

Setting up engineer scheduling involves a number of related tasks, illustrated in Figure 16.6.

Fig. 16.6
Engineer
Scheduling
Work Flow



After you set up engineers and the codes associated with them, define area and engineer holidays if they are important to scheduling. Then define master schedules and use them as the basis for engineer detail schedules. Master schedules are also used as the basis for an on-call schedule, covering the hours outside normal work hours.

After schedules are defined, you can associate them with engineers. Then set up the control program to express the importance each scheduling factor has in your business environment. Finally, activate call scheduling in Call Management Control (11.1.24).

The system does not require all steps. Perform those you need for your business.

Engineer Holiday Maintenance

Set up holidays for a geographic region with Area Holiday Maintenance (11.15.9). Set up holidays for a specific engineer in Engineer Holiday Maintenance (11.13.15.17). The system uses holidays you define for the engineer first. If none exist, the system looks for holidays for the call's service area.

◆ See Chapter 17, "Area Maintenance," on page 595.

The scheduling sequence in Call Maintenance considers an engineer's personal holidays. If the day is a holiday for the engineer, the engineer displays with zero availability.

Defining a Master Schedule

Set up service schedules in Engineer Master Schedule Maintenance (11.13.15.1). You can define a schedule to use as a company-wide basic schedule. You can also use master schedules as the basis for engineer detail schedules and on-call schedules.

Fig. 16.7
 Engineer Master
 Schedule
 Maintenance
 (11.13.15.1)

End Effective:	Schedule Type: Standard	Area:	Start Time:	End Time:
Sunday: ☐			00:00	00:00
Monday: ☒			08:00	17:00
Tuesday: ☒			08:00	17:00
Wednesday: ☒			08:00	17:00
Thursday: ☒			08:00	17:00
Friday: ☒			08:00	17:00
Saturday: ☐			00:00	00:00
Holidays: ☐			00:00	00:00

Holidays: ☒
 On Call Schedule: ☐

Schedule. Enter the eight-character code that identifies this schedule.

Tip
 Leave these dates
 blank for on-call
 schedules.

Start Effective and End Effective. When setting up service schedules, you can fill in a start and end effective date. When you specify a schedule, the system uses it only if the system date is within the effective period. If these fields are blank, the schedule is always effective. To set up a schedule for use in On-Call Maintenance, the effective dates must be blank.

Schedule Type. An optional field for grouping schedules. Define schedule type codes in Generalized Codes Maintenance for the field `esh_sched_type`.

Area. Enter the geographic region to which this schedule applies. Define areas in Area Maintenance. You also associate areas with end users and engineers. This field is for reference only.

Holidays. Indicates whether this schedule applies to holidays. The system uses this field with the Holidays field on the scheduled days and times to determine what hours, if any, an engineer works on a holiday.

- If this Holiday field is Yes, an engineer is available to work on a holiday. The system determines hours of availability by the day of the week on which the holiday falls. For example, if December 25 is a holiday and it falls on a Thursday, the engineer works the hours normally scheduled for Thursdays.
- If this field is No and the lower Holidays field is also No, engineers are not available to work on a holiday.

- If this field is No and the lower Holidays field is Yes, an engineer is available to work on a holiday. The hours of availability come from the hours you associate with the lower Holidays field, regardless of the day of the week of the holiday.
- If both fields are Yes, the first Holidays field takes precedence in determining the hours of availability.

Scheduling for holidays has an effect only if you set up holidays with Area Holiday Maintenance (11.15.9) or Engineer Holiday Maintenance (11.13.15.17). If you define holidays for the engineer, the system uses them first, then holidays for the area.

Typically, you create on-call schedules to cover holidays, because most employees do not work during them.

On Call Schedule. This field is display only. When you assign engineers to a schedule using On-Call Maintenance (11.13.9), the system sets this field to Yes.

After you enter information in these fields, indicate the days the schedule covers and the work hours for engineers assigned to the schedule. The system subtracts the lunch hour duration in Engineer Schedule Control from the hours on the schedule when it calculates engineer availability.

Assign a schedule to an engineer in Engineer Maintenance (11.13.1).

♦ See “Engineer Maintenance” on page 568.

Engineer Detail Schedules

The engineer scheduling sequence in Call Maintenance uses more than master schedules when calculating engineer availability. It also considers the service coverage of the service type, on-call schedules, and the engineer’s work schedule.

Create individual schedules for an engineer with Engineer Detail Schedule Maintenance (11.13.15.4), illustrated in Figure 16.8. These schedules are useful for contract or part-time personnel or engineers whose schedules do not follow the typical master schedule. Set up alternate schedules for specific periods of time by specifying a start and end effective date.

You can also use an engineer detail schedule to indicate that an engineer is unavailable for a period of time.

Fig. 16.8
 Engineer Detail
 Schedule
 Maintenance
 (11.13.15.4)

Day	Start Time	End Time
Sunday: ☐	00:00	00:00
Monday: ☒	08:00	17:00
Tuesday: ☒	08:00	17:00
Wednesday: ☒	08:00	17:00
Thursday: ☒	08:00	17:00
Friday: ☒	08:00	17:00
Saturday: ☐	00:00	00:00
Holidays: ☐	00:00	00:00

This function is similar to setting up a master schedule.

Engineer. Enter the engineer code for the employee. The schedule applies to this engineer only.

Start Date/End Date. When setting up service schedules, you can fill in a start and end effective date. The system uses this schedule only if the system date is within the effective period. If these fields are blank, the schedule is always effective.

Normal Work Schedule. The schedule assigned to the engineer in Engineer Maintenance displays in this field. If you leave Basis for Schedule blank, the days and hours from the normal work schedule display as the starting point for creating the detail schedule.

Schedule Type. An optional field for grouping schedules. Define schedule type codes in Generalized Codes Maintenance for the field `egd_sched_type`.

Basis for Schedule. When you create the detail schedule, you can specify a schedule other than the normal work schedule as the starting point for creating the detail schedule. If you enter a schedule here, its days and hours display in the detail schedule fields.

Holidays. This field displays the value for the Holiday field of the schedule you are using as a basis for this detail schedule.

On-Call Scheduling

To provide service coverage for the periods that fall outside your normal schedule, follow these steps:

- 1 For the hours that your standard schedule does not cover, create schedules with Master Schedule Maintenance. If you have different engineers covering nights, weekends, or holidays, create more than one schedule. To use master schedules as on-call schedules, set them up without effective dates.
- 2 Use On-Call Maintenance to specify engineers available to take calls during these time periods. When you link an engineer to a schedule in On-Call Maintenance, the system sets On Call to Yes for the schedule.
- 3 When you create a call with a next status date and time outside your normal schedule, only engineers that you designated as on call receive availability points.

Figure 16.9 illustrates On-Call Maintenance (11.13.9).

The screenshot shows a window titled "On-Call Maintenance" with a header bar containing help, info, and window control icons. Below the header, there are two fields: "Area: Americas" and "Description: AMERICAS REGION". A table with the following columns is displayed: "Eng Code", "Start", "Schedule", "Name", and "End". The table contains one row with the following data: "BJW", "06/01/2000", "Nights", "Whitehead Bill", and "12/31/2000". The "Schedule" cell has a magnifying glass icon, and the "End" cell has a calendar icon. At the bottom right of the table, there are two navigation arrows.

Eng Code	Start	Schedule	Name	End
BJW	06/01/2000	Nights	Whitehead Bill	12/31/2000

Fig. 16.9
On-Call
Maintenance
(11.13.9)

Area and Description. The on-call schedule applies to a particular area, which you define in Area Maintenance. When you specify an area, its description displays beside it. When you take a call after normal business hours for an end user in this area, the system uses the on-call schedule for the area to determine who can respond to the call.

Eng Code and Name. Enter the code identifying an engineer. The employee name for the engineer displays in the Name field.

Start and End. If the engineer is on call only for a specific period of time, enter the beginning and end points defining this period. Leaving these fields blank puts an engineer on permanent on-call status.

Schedule. Enter the name of a schedule that specifies the on-call days and hours. Define these schedules in Engineer Master Schedule Maintenance without a start or end effective date. This prevents confusion in matching the engineer on-call periods with the on-call schedule.

On-Call Hours

Engineer scheduling determines when to schedule a call based on the call's next status date and time. It searches for a schedule that covers this date and time. If detailed, regular, and on-call schedules exist, all engineers with these schedules display in the Availability window.

To distinguish engineers available for on-call scheduling from others, the system displays two plus signs (++) rather than the number of hours or calls.

Defining Scheduling Rules

Engineer scheduling executes as part of Call Maintenance when you set up all required information. To use engineer scheduling in normal call processing, set Schedule New Calls to Yes in Call Management Control. This, in turn, sets the default in the Schedule field of Call Maintenance. Schedule must be Yes in Call Maintenance for scheduling to execute.

The system ranks engineers to assign to a call based on criteria that you design in a control program. You can accept the engineer with the highest rank, or choose another, according to your business practices.

Engineer scheduling considers the following factors:

- *Area.* Is the engineer located in the end user's area?
- *Primary or Secondary Engineer.* Does the engineer have a special relationship with this end user?
- *Availability.* Is the engineer available during the time the call should be scheduled and how many hours or calls does the engineer have available?
- *Skill.* Do the engineer's skills match those required for the reported problem?

- *Time Zone (if Multiple Time Zones is active)*. Is the engineer located in the end user's time zone, or within a defined range of time zones?

You give these criteria weighted values. Using these values, the system calculates a point total for each engineer for the call. The system then prioritizes the engineers by total points for assignment to the call.

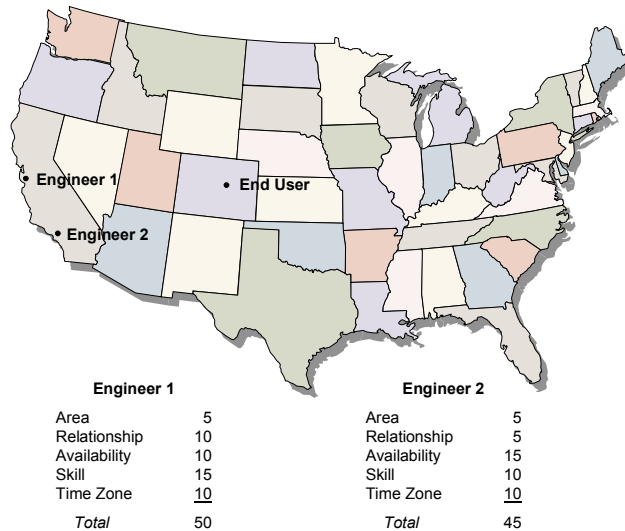


Fig. 16.10
Engineer
Scheduling

The system calculates engineer availability whenever it schedules calls. If you have many engineers or complex schedules, these calculations can impact performance. To increase the calculation's efficiency, specify in the control program which engineers to consider during scheduling.

You can limit engineers to consider for scheduling to:

- Those with available hours or calls on the call day.
- Those with a skill that matches the call problem.
- Those who reside in the same area as the call's end user.
- If Multiple Time Zones is active, you can also limit scheduling to engineers with the same time zone as the call's end user, or who have a time zone within a matching offset range.

See Chapter 4, "Multiple Time Zones," for details regarding MTZ.

Consider how to use these options relative to your business requirements. If you have many engineers, reduce the number that the system considers at one time by applying control program limits. To occasionally alter the policy expressed in the control program, you can let users update the limiting rules in Call Maintenance before scheduling occurs.

Limiting scheduling by service area or time zone also affects End User Address Maintenance. The system checks these fields when it assigns an engineer to an end user as the primary or secondary engineer. If either field is Yes, a warning displays if the engineer's area or time zone area does not match the end user's.

Engineer Point Calculation

Engineer Schedule Control (11.13.15.24) contains settings that form the basis for rules-based scheduling, as well as determining other aspects of the scheduling process.

Fig. 16.11
Engineer Schedule
Control
(11.13.15.24)

The screenshot shows the 'Engineer Schedule Control' window with the following settings:

- Lunch Duration: 01:00
- Display by Calls: ☒
- Next Engineer Number: 0
- Limit by Availability: ☒
- Limit by Service Area: ☐
- Limit by Problem/Skill: ☐
- Area Points: 20
- Available Points: 5
- Primary Eng Points: 2
- Problem Points: 10
- Time Zone Points: ☐
- Limit by Time Zone: ☐
- Range of Hours to Consider: ☐
- Override Scheduling Options: ☒

See “Viewing Engineer Availability by Hour or Call” on page 582 for details.

The system subtracts the value you specify in Lunch Duration from the number of hours you scheduled the engineer to work. Display by Calls determines whether the system calculates availability in terms of hours or calls.

Engineer ranking depends on the priorities expressed by the values you define in the control program. Changing these values affects the engineer point calculation and results in different recommendations from the system.

Area Points. If the area you assign to the engineer with Engineer Maintenance (11.13.1) matches the call's area, which defaults from the end user, the system adds these points to the calculation.

Available Points. The system determines engineer availability by the status you assign in Engineer Maintenance. If this status indicates availability, the system multiplies the availability point value by either the number of hours an engineer is available or the number of calls the engineer can take.

Primary Eng Points. If the engineer is the end user's primary engineer, the system doubles these points and adds them to the calculation. The system gives the secondary engineer these points without doubling them.

Problem Points. If the code in the Prob/Skill field of Call Maintenance exists in the engineer's skill table (set up with 11.13.5), the system adds these points to the calculation.

Time Zone Points. The system uses this field with Range of Hours to Consider. If the engineer's time zone matches or is within the specified range relative to the end user's time zone, the system adds these points to the calculation.

Tip
You can update this field only when Multiple Time Zones is active.

The system uses the following formula to calculate points for an engineer:

*Area Points + (Available Points * available hours) + Available Points + (Y * Primary Eng Points) + Problem Points + Time Zone Points*

In the formula, Y is 2 for the end user's primary engineer, 1 for the secondary engineer, and 0 for all other engineers.

The formula weights availability heavily. Also, the end user's primary engineer gets twice the points from the control program.

Note The maximum number of points the system displays for an engineer in Call Maintenance is 999. If the scheduling sequence determines a greater value, only 999 displays. Consider this limitation when you assign control program weighting values. If your engineers can take 100 calls a day and you give them 10 points for being available, an engineer without any assigned calls starts with 1010 available points, already beyond the maximum display value.

Viewing Engineer Availability by Hour or Call

You can view availability in two ways:

- Based on hours
- Based on call volume (calls per day)

Display by Calls in Engineer Schedule Control determines whether the system calculates availability by hours or by calls assigned per day. Depending on how you set up the control program, the scheduling pop-up window in Call Maintenance shows the number of calls the system can still assign an engineer or the number of hours available.

In both views, negative numbers are possible. If you assign an engineer more calls than you allow in the Calls per Day field or more hours than you allow on the assigned schedule, availability displays a negative number.

Note Use the Engineer Availability Inquiry (11.13.15.11) to review the same information that displays in Call Maintenance.

Calculating Availability by Calls

Tip
Use Display by Calls if most calls take the same amount of time to complete.

You can base availability on the number of calls that the system can still assign to an engineer during a day rather than the available hours that remain. Use this option when calls do not vary much in duration.

If you set Display by Calls to Yes, specify in Engineer Maintenance (11.13.1) the number of calls per day the system can assign an engineer. The system calculates availability by subtracting the number of calls already scheduled from the value of Calls per Day.

Table 16.1 shows how the system calculates points in engineer scheduling based on calls. The standard formula for calculating availability points applies, but calls are used instead of hours.

Table 16.1
Sample Point
Determination
Using Calls

Engineer Calls per Day	Calls Assigned	Available Today	Avail Points	Value Used in Calculation
10	0	10	10	$(10 * 10) + 10 = 110$
10	8	2	10	$(2 * 10) + 10 = 30$

In this example, the system can assign the first engineer 10 calls, although it currently has assigned none. The weighting value in the control program is 10, resulting in an availability of 110.

The second engineer also has a maximum 10 calls per day, but the system has currently assigned 8 calls. Engineer scheduling multiplies the 2 remaining calls by the value in the control program, to arrive at a point calculation of 30. If other factors are the same, the system recommends the first engineer over the second for the next call.

Calculating Availability by Hours

If Display by Calls is No, the system calculates engineer availability in hours. Call scheduling calculates an engineer's work load by examining the estimated hours for calls already assigned to the engineer.

You can affect an engineer's work load in hours in two ways:

- Record an estimated time for an engineer in the Call Engineer Schedule Maintenance pop-up that displays in Call Maintenance when you enable engineer scheduling. The estimated time defaults from the Travel and Estimated Time pop-up. These estimated times default either from Call Default Maintenance, if you have defined defaults, or Call Management Control for the work code.
- The engineer reviews the call and records an estimated time in Engineer Assignment Maintenance (11.13.15.8). This function is almost identical to the pop-up window in Call Maintenance.

♦ See "Availability Frame" on page 392.

Important Use Engineer Assignment Maintenance for scheduling, not as an engineer time-keeping device. While an engineer can record time spent on a call, this has no effect on call scheduling. Call scheduling considers only future dates and times.

Based on the number of hours the engineer is scheduled to work, the system determines how many hours remain to be scheduled.

Table 16.2 shows how the system calculates availability based on hours unconsumed. The first engineer has 8 available hours. The control program setting is 10 points for each available hour, so the resulting value is 90. The second engineer has 7 hours consumed with 1 remaining available hour. The resulting value for the second engineer is 20.

Table 16.2
Sample Point
Determination
(Hours)

Engineer Hours per Day	Hours Used	Available Hours	Avail Points in Control Program	Value Used in Calculation
8	0	8	10	$(8 * 10) + 10 = 90$
8	7	1	10	$(1 * 10) + 10 = 20$

Travel Time

Travel time is for reference only and does not affect the estimated hours available for an engineer. To consider travel time in engineer availability, include this time in the hours you estimate for the call.

You can specify typical travel time based on the end user. If you specify this value, it displays by default in the Travel Time field of the Travel and Estimated Time frame of Call Maintenance (11.1.1.1).

Use travel time as a reference for estimating the total time for a call. The total call time consists of travel time plus the time for solving the problem. To adjust for travel time, you need to override the default call duration since the system does not automatically add it to the duration. In many situations, the total time can vary—for example, depending on alternate routes to the end user’s site.

Calculating Availability for Holidays

The system considers holidays during engineer scheduling in Call Maintenance. As you create schedules in Engineer Master Schedule Maintenance, you can mark them as covering or not covering holidays. Or you can create on-call schedules with On-Call Maintenance instead of covering holidays on standard schedules. Normally, fewer engineers are available on a holiday.

During engineer scheduling, the system examines the call’s next status date and time. Then it determines if this date is a holiday for the call’s area, from the area associated with the end user. Then it searches for a schedule with Holiday set to Yes. First, it searches engineer detail schedules, then master schedules, and finally an on-call schedule that matches the call area.

The display in the engineer scheduling pop-up window in Call Maintenance is affected by which schedules exist.

- If a schedule covering the holiday is not found, engineers display without availability, indicated by an asterisk (*).
- If standard coverage exists, the engineers covering the holiday show hours or calls available.
- If an on-call schedule exists that covers holidays, engineers available on the holiday display with a ++.

The scheduling sequence also takes into account an engineer's personal holidays defined with Engineer Holiday Maintenance. If the day is a personal holiday, the engineer displays as unavailable.

Note When you assign an engineer to an on-call schedule, the system assumes that the engineer is available during the specified time period even if engineer or area holidays exist. A warning displays in On-Call Maintenance indicating that the on-call schedule overrides holidays.

Engineer Transactions

The system creates transactions to keep track of engineer scheduling information. It creates an engineer transaction record when an engineer is assigned to a call in Call Maintenance, regardless of whether or not you are using engineer scheduling. The main impact of these transactions is in calculating engineer availability when Display by Calls is No.

Engineer Assignment Maintenance

You can create and maintain engineer transactions in Call Maintenance when Schedule is Yes on the header. You can also edit them in Engineer Assignment Maintenance. In this program, engineers can access calls quickly and simply to update the start date and time and the number of hours for the call transaction.

You can close the call from this program when you finish work for the call if the call has only a single transaction. Close calls with multiple transactions in Call Activity Recording, Call Maintenance, or the Call Queue Manager.

Important Engineer Assignment Maintenance is *not* for engineers to record time spent on a call. It is a planning function that helps engineer scheduling determine the best candidate for taking a call on a future day and time.

Fig. 16.12
Engineer
Assignment
Maintenance
(11.13.15.8)

Tran Nbr	St Date	Start	Hours	Close	Call ID	Call Area
17	07/25/2002	11:52	4.0	☐	CA127	

Normally, you assign engineers to a call in Call Maintenance. However, modifications you make in Engineer Assignment Maintenance can also affect call assignment in the following ways:

- If no engineer is assigned to a call and a transaction is created, the system assigns the transaction's engineer to the call. A message displays indicating this change.
- If you delete all transactions for the engineer assigned to a call and no other engineers have transactions for the call, the system sets the Assigned field on the call to blank.
- If you delete all transactions for the engineer assigned to a call and another engineer has transactions for the call, the system assigns that engineer. A message displays indicating this change.

If only one transaction is associated with a call, the system reflects changes you make to the transaction in Engineer Assignment Maintenance in Call Maintenance. The transaction's Start Date and Start Time update the call's Next Status Date and Time. The transaction's hours update the call's Duration field.

A call can have more than one transaction. This occurs when the call resolution involves more than one engineer or the same engineer makes several visits to a site. The system enters Start Date, Start Time, and Hours per transaction.

▶ See Chapter 4, "Multiple Time Zones," for details on MTZ.

Note If MTZ is active, select a display time zone before accessing call scheduling transactions. The system replaces the call area field with the end user's time zone.

Rebuild Engineer Schedules

Engineer schedules link calls, engineers, and end users. Occasionally, these records can become unsynchronized. Use Rebuild Engineer Schedules (11.25.6) to ensure that calls and schedules have valid values for various fields.

To execute the utility, specify a default status. The system uses this for engineer records with a blank or invalid status. You can also specify a default on-call schedule. The system assigns this schedule to on-call records that have blank master schedules.

The utility also performs the following actions:

- Resets On Call to No if a master schedule is marked as an on-call schedule but has no associated on-call engineers.
- Deletes detail schedules for engineers who no longer exist.
- Closes calls for end users who do not exist.
- Verifies that an engineer scheduling transaction record exists for the engineer assigned to a call.
- If a call has no assigned engineer but engineer transaction records exist, assigns the first engineer as the call engineer.
- Deletes engineer transactions that refer to nonexistent calls or engineers.

Tip

Most of these situations do not occur in normal usage of the system.

The utility generates a report documenting records it changed, added, or deleted.

Run Rebuild Engineer Schedules as part of general maintenance and when you upgrade to a new release of MFG/PRO.

Scheduling Example

The following example illustrates how engineer scheduling works. In this example, Multiple Time Zones is not active.

A company sets up the following values in Engineer Schedule Control:

Area Points	20
Available Points	2
Primary Eng Points	10
Problem Points	5

Two engineers exist in the western region: Bill Smith, who has electrical skills, and Sam Jones, whose skill is preventive maintenance.

Note An engineer can have multiple skills, but in this example each engineer has only one.

An end user in this region reports an electrical problem. The system uses the following formula to calculate points:

$$\text{Area} + [(\text{Availability} * \text{Hours}) + \text{Availability}] + (2 * \text{Primary}) + \text{Problem}$$

How does the system apply the formula to engineers Bill Smith and Sam Jones?

- Both engineers are in the end user's area, so they each receive 20 points.
- Each engineer receives two points for working that day. Bill Smith is available eight hours, while Sam Jones is available four. The system multiplies these hours by two and adds them to the total, giving Bill 16 more points and Sam 8.
- Sam Jones is the primary engineer for the end user, so he receives 10 points multiplied by two. Bill Smith receives none.
- Bill Smith's skills match the call's problem, so he receives five points. Sam receives no points because his skills do not match the problem.

The expanded formula looks like this for each engineer:

Bill Smith:

$$\text{Area} + [(\text{Avail} * \text{Hours}) + \text{Avail}] + (0 * \text{Primary}) + \text{Prob}$$

$$20 + [(2 * 8) + 2] + (0 * 10) + 5 = 43$$

Sam Jones:

$Area + [(Avail * Hours) + Avail] + (2 * Primary) + Prob$

$20 + [(2 * 4) + 2] + (2 * 10) + 0 = 50$

Sam Jones has top priority for this call because he has 50 total points to Bill Smith's 43.

Changing Weighting Values

The engineer point calculation depends on the priorities expressed by the weighting values you define to indicate your company's needs. Changing these values in the control program affects the engineer point calculation and results in different recommendations from the system.

Area Points	20
Available Points	7
Primary Eng Points	10
Problem Points	5

The change in this example places a higher priority on the engineer's availability and de-emphasizes the other criteria. Now the final point calculation looks like this:

Bill Smith:

$Area + [(Avail * Hours) + Avail] + (0 * Primary) + Prob$

$20 + [(7 * 8) + 7] + (0 * 10) + 5 = 88$

Sam Jones:

$Area + [(Avail * Hours) + Avail] + (2 * Primary) + Prob$

$20 + [(7 * 4) + 7] + (2 * 10) + 0 = 75$

Using this set of weighting values, Bill Smith is the engineer to assign to the call.

Consider this formula carefully when establishing weighting values in Engineer Schedule Control. Pay particular attention to available hours and the primary engineer points as these become *multiples* of the weighted value in the engineer point calculation. Changes to them easily outweigh the impact of other criteria.

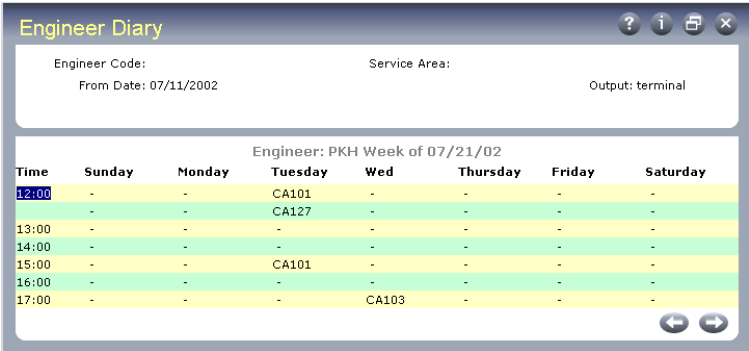
Scheduling Reports

Several reports give different views of scheduling information.

Engineer Diary

The Engineer Diary (11.13.15.9) displays the transactions created for engineers in Call Maintenance or in Engineer Assignment Maintenance. This report provides an engineer with an overview of the week’s call assignments.

Fig. 16.13
Engineer Diary
(11.13.15.9)



Time	Sunday	Monday	Tuesday	Wed	Thursday	Friday	Saturday
12:00	-	-	CA101	-	-	-	-
	-	-	CA127	-	-	-	-
13:00	-	-	-	-	-	-	-
14:00	-	-	-	-	-	-	-
15:00	-	-	CA101	-	-	-	-
16:00	-	-	-	-	-	-	-
17:00	-	-	-	CA103	-	-	-

See “Time Zones and Service Contracts” on page 152 for details.

When Multiple Time Zones is active, you must select a time zone for display.

Engineer Calendar

Engineer Calendar (11.13.15.10) displays the hours an engineer is scheduled for work during a week regardless of call assignment. If you maintain multiple schedules, including engineers on call and those with custom schedules, use this report to view who is working when.

Eng Code	Field	Weekdate	Sun	Mon	Tue	Wed	Thu	Fri	Sat
BJW	no	08/11/02		08:00	08:00	08:00	08:00	08:00	
GLB	yes	08/11/02		08:00	08:00	08:00	08:00	08:00	
RWU	yes	08/11/02		08:00	08:00	08:00	08:00	08:00	
MDM	no	08/11/02	00:00+						00:00+
PKH	yes	08/11/02	23:59+	08:00	08:00	08:00	08:00	08:00	23:59+

Fig. 16.14
Engineer Calendar
(11.13.15.10)

Engineer on
call

The pound sign (#) displays next to scheduled times that occur on holidays. If a day's only schedule is an on-call schedule, a plus sign (+) follows the scheduled times.

When Multiple Time Zones is active, the system interprets scheduled times as relative to the engineer or a call's end user, depending on the setting of Field Engineer for the engineer. This setting displays in the column labeled Field.

Note Because on-call schedules are set up by area, only on-call schedules that match the area report criteria display. If Service Area is blank, the system uses the engineer's area to find an applicable on-call schedule. If an engineer is on call for more than one area, the other schedule information does not appear on this report.

Engineer Availability Inquiry

Use Engineer Availability Inquiry (11.13.15.11) to view information similar to that in the Engineer Availability pop-up in Call Maintenance. In Call Maintenance, the system considers five factors to evaluate availability:

- Engineer skill matching the call problem
- Availability on the call's next event date and time
- Engineer area matching the call area

- Engineer being the primary or secondary engineer assigned to the call's end user
- Engineer time zone matching the defined range around the end user time zone, when MTZ is active

You must supply the same call information the system uses to calculate availability: area, date and time, problem, and time zone. The only factor the system does not consider in the simulation is the points awarded for the primary or secondary engineer, since this information is specific to an end user.

Tip

When MTZ is active, additional scheduling options display.

Like Call Maintenance, this inquiry considers the scheduling limits you define in Engineer Schedule Control. If Override Scheduling Options is Yes in the control program, the same pop-up displays as in Call Maintenance. Here you can limit the set of engineers to consider. Otherwise, the system applies limiting factors that you defined in Engineer Schedule Control.

Fig. 16.15
Engineer
Availability Inquiry
(11.13.15.11)

Important If Limit by Service Area is Yes and you do not specify an area, the system considers only engineers without a defined area. If Limit by Problem/Skill is Yes and you do not specify a problem or skill code, no engineers display.

The report output is identical to the output in the Engineer Availability scrolling window in Call Maintenance, except that the report does not show point totals.

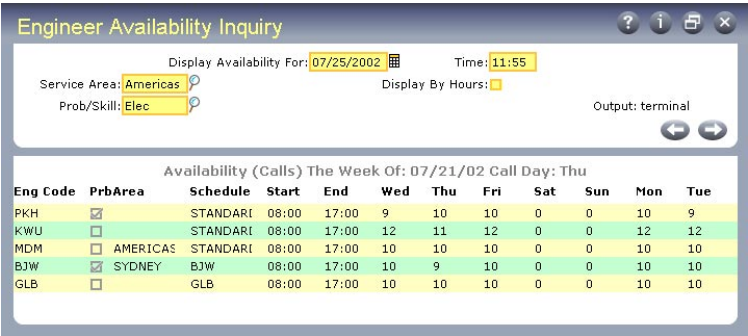
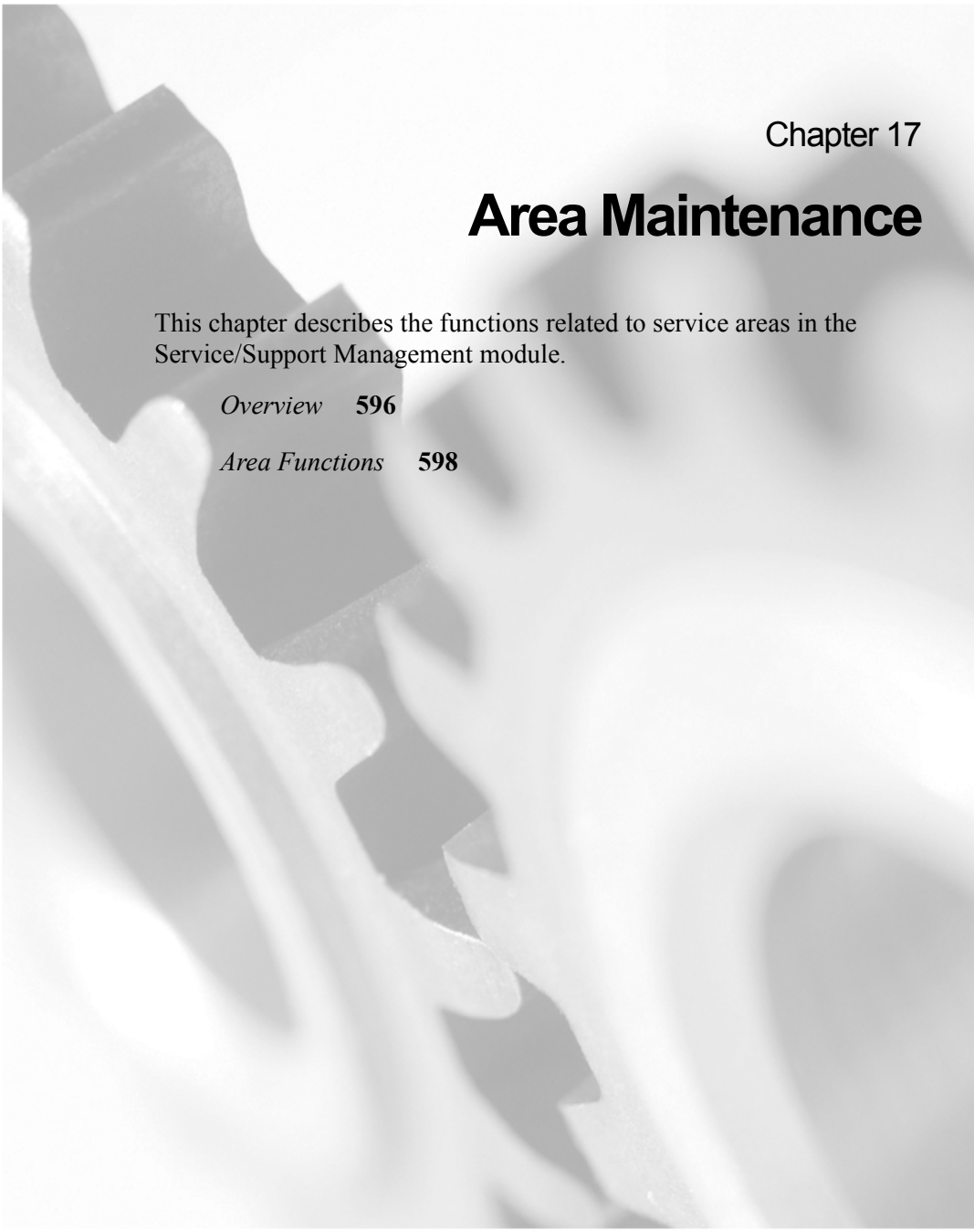


Fig. 16.16
Engineer
Availability Inquiry
(11.13.15.11)



Chapter 17

Area Maintenance

This chapter describes the functions related to service areas in the Service/Support Management module.

Overview **596**

Area Functions **598**

Overview

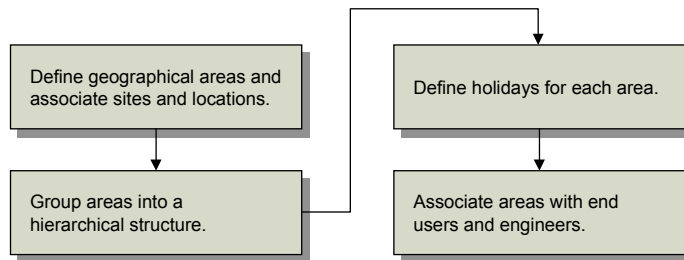
The activity of service organizations can be divided in a number of different ways:

- Geographically by physical location
- By product line or item group
- By type of service, such as telephone or on-site

When geographical regions are important, one or more service facilities may provide inventory to engineers. Use Area Maintenance and Area Structure Maintenance to record these relationships.

Figure 17.1 illustrates a typical work flow for setting up and using areas.

Fig. 17.1
Area Work Flow



You can set up each facility and area office with a code in Area Maintenance (11.15.1). Use Area Structure Maintenance (11.15.5) to group and organize these facilities and offices. For example, group Los Angeles, San Francisco, and Seattle service facilities under the Western Region, which you in turn group under the U.S. region. This grouping has no effect in service processing; it is for reference only.

If you are using engineer scheduling, define holidays for areas so that engineers are not scheduled on nonwork days in Area Holiday Maintenance (11.15.9).

Once you define areas, associate them with service engineers and end users. Engineer scheduling uses these relationships to assign engineers in the appropriate area to calls. To facilitate dispatching the appropriate engineer, you can sort calls by area in the Call Queue Manager.

Area Site/Location

The area site and location represent the source of repair parts for calls serviced in the area. This site can be the repair center, or the place where that area's service organization normally gets its inventory. You can then use three or four areas relating to a particular site for controlling remote inventory.

Area site functionality lets you manage a variety of business scenarios related to site, location, work center, area, engineer scheduling and supply, and inventory control for remote locations.

The site and location for an area provide inventory issue defaults in Call Activity Recording and Material Order Maintenance if you do not define a site and location for an engineer.

You can use engineer and area sites and locations in combinations. For example, you can associate a different location with each engineer and leave the engineer Site field blank. When the engineer records activity for a call, the site for inventory issues defaults from the area but the location defaults from the one defined in Engineer Maintenance. Use this setup to track inventory issues to individual engineers.

In Default Site Maintenance, you can set up return sites based on area to manage defective or worn material returned as part of call processing. This setup is especially useful when you return items to a different site or location than you issue them from.

♦ See "Default Sites and Locations" on page 94 for details.

Area Holidays

Since areas often represent geographic regions and holidays vary from region to region, you can specify holidays for each area. You can also associate on-call schedules with areas. Define holidays for each area so the scheduling function does not schedule engineers for those days, unless the schedule covers holidays.

♦ See Chapter 16, "Engineers and Scheduling," on page 563.

Area Functions

The three main area functions, in addition to reports and inquiries, are:

- Area Maintenance
- Area Structure Maintenance
- Area Holiday Maintenance

The following sections describe these functions.

Area Maintenance

Use Area Maintenance (11.15.1), illustrated in Figure 17.2, to create, maintain, and delete areas. Before deleting an area, the system verifies that the area is not referenced by an area structure, engineer, on-call schedule, holiday, call, default site, call quote, or end user.

Fig. 17.2
Area Maintenance
(11.15.1)

Area. Enter an eight-character code to identify the area. You can use any format.

Description. Enter up to 24 characters describing the area. This description appears in the Areas lookup to help identify the area.

Tip
Set up area types with Generalized Codes Maintenance for the field reg_type.

Type. Use this field to classify areas into types. You can use one type of area to designate work centers—for example, CENTER—and another to designate areas for assigning engineers—ENG—if these do not coincide. For example, a work center can handle repairs and returns for Western Canada, while you can assign engineers to a single city or district.

Site. Enter the site representing the place where you obtain repair parts for this area. If the engineer does not have a site and location defined, this site provides inventory issue defaults in Call Activity Recording and Material Order Maintenance.

Location. Beneath the site is location. Using standard location logic, you can maintain specific inventory locations for an area. If the engineer does not have a site and location defined, this location provides inventory issue defaults in Call Activity Recording and Material Order Maintenance.

Area Structure Maintenance

Define relationships between areas using Area Structure Maintenance (11.15.5), illustrated in Figure 17.3. In Area Structure Maintenance, you group subregions under a parent. This function is for reference only.



Fig. 17.3
Area Structure
Maintenance
(11.15.5)

To use this function, first define areas in Area Maintenance.

Area Holiday Maintenance

Define holidays for an area using Area Holiday Maintenance (11.15.9), illustrated in Figure 17.4.

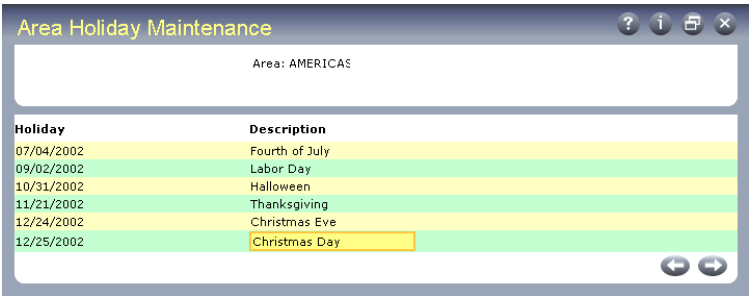


Fig. 17.4
Area Holiday
Maintenance
(11.15.9)

After you set up holidays, you can use the Holiday settings in Engineer Master Schedule Maintenance (11.13.15.1) to indicate whether or not the schedule covers them.

Service Requests

This chapter describes Service Requests (SRs). Service Requests provide a mechanism for the service organization, customers, and field personnel to get product information back to the rest of the company and track user requests throughout the enterprise.

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Business Considerations

In day-to-day business operations, calls come in on topics ranging from requests for marketing or sales material to questions regarding how your equipment works to complaints about equipment breakdown and failure. Service requests let you manage internal responses to problems relayed from field activities or calls.

Managing service requests can help you detect the causes of problems and prevent future support costs. You can consolidate several calls reporting the same failure into one service request. If a design or engineering change is necessary, you can create an Engineering Change Notice (ECN) to address the required changes.

Example A copier company runs an aggressive service organization that performs repairs and preventive maintenance for its own products and for competitors' products. After all, those who maintain a product often learn more about it than those who create it. In an industry that is driven by technological innovation, technology transfer can be a strategic ingredient.

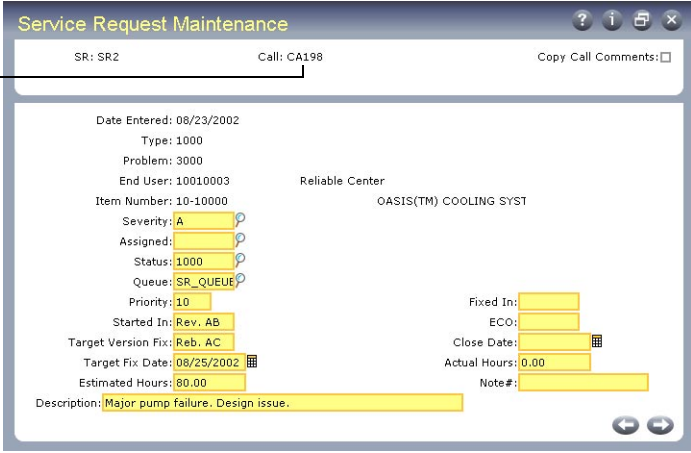
The service engineers gain insight into the design, use, and maintainability of the leading copiers. The company wants to leverage the experience and insights of the service engineers into improvements in their copier line. To accomplish this goal, the company implements a service request system where service engineers can feed suggestions back to manufacturing.

Linking Service Requests to Calls

The service request links call activity to your internal response for engineering problems: a service request is a response to a call. In this sense, only *one* call generates the SR. Each service request references only one call. Many calls can reference the same service request.

Example Call number CA198 details a pump failure. The problems recorded for the pump are significant enough to request a change in design and notify the engineering department that these failures are occurring. A service request is created that references CA198.

Specify the call ID here. →



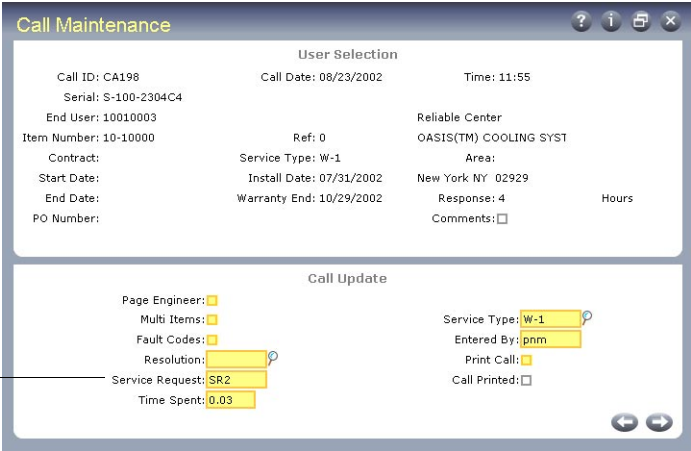
The 'Service Request Maintenance' window displays the following information:

- SR:** SR2
- Call:** CA198
- Date Entered:** 08/23/2002
- Type:** 1000
- Problem:** 3000
- End User:** 10010003
- Reliable Center:** OASIS(TM) COOLING SYST
- Item Number:** 10-10000
- Severity:** A
- Assigned:**
- Status:** 1000
- Queue:** SR_QUEUE
- Priority:** 10
- Started In:** Rev. AB
- Target Version Fix:** Rev. AC
- Target Fix Date:** 08/25/2002
- Estimated Hours:** 80.00
- Description:** Major pump failure. Design issue.
- Fixed In:**
- ECO:**
- Close Date:**
- Actual Hours:** 0.00
- Note #:**

Fig. 18.1
Service Request
Maintenance
(11.1.15.1)

The system updates the Service Request field in the Call Update frame to reflect the SR created for this call. You can view this update in Call Maintenance.

The system updates the call record. →



The 'Call Maintenance' window displays the following information:

- Call ID:** CA198
- Serial:** S-100-2304C4
- End User:** 10010003
- Item Number:** 10-10000
- Contract:**
- Start Date:**
- End Date:**
- PO Number:**
- Ref:** 0
- Service Type:** W-1
- Install Date:** 07/31/2002
- Warranty End:** 10/29/2002
- Reliable Center:** OASIS(TM) COOLING SYST
- Area:** New York NY 02929
- Response:** 4
- Comments:**
- Page Engineer:**
- Multi Items:**
- Fault Codes:**
- Resolution:**
- Service Request:** SR2
- Time Spent:** 0.03
- Service Type:** W-1
- Entered By:** pnm
- Print Call:**
- Call Printed:**

Fig. 18.2
SR Displays in Call
Maintenance

Later, you receive more calls concerning this same problem. You can select the appropriate SR number for the new calls as you receive them. In this way, you do not have to keep issuing new service requests for the same problem and can be sure engineering is already looking at the problem.

As a result, you assign only one call to a service request, but a service request can be assigned to many calls.

This process works best when there is a one-to-one correspondence between service requests and problems. Many calls with the *same problem* reference the service request addressing this problem. However, each problem requiring engineering changes should have its own service request.

Service Request Setup

Before using the SR functions, follow these steps:

- 1 Define SR Status Codes and specify open and close statuses in the control program.
- 2 Define SR queues.
- 3 Optionally define generalized codes.

SR Status Codes

Each service request has a status. These status codes are defined in SR Status Code Maintenance (11.1.15.7). The SR status is similar to the call status code, but must be managed manually.

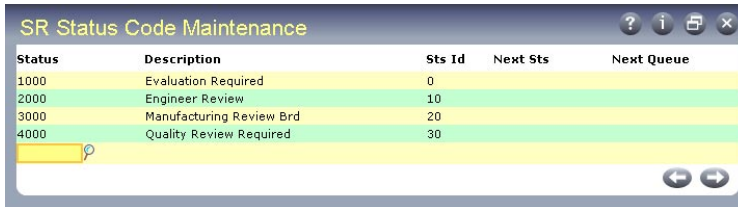
You can define two statuses in SR Control (11.1.15.24).

SR Open Status. This is the general status for an open SR and the initial status for any new SR.

SR Close Status. The closed status is the final status of an SR and indicates all service activity for it is finished. You can delete and archive closed SRs.

SR Status Code Maintenance

Figure 18.3 illustrates SR Status Code Maintenance, which is similar to Call Status Code Maintenance.



Status	Description	Sts Id	Next Sts	Next Queue
1000	Evaluation Required	0		
2000	Engineer Review	10		
3000	Manufacturing Review Brd	20		
4000	Quality Review Required	30		

Fig. 18.3
SR Status Code
Maintenance
(11.1.15.7)

Status. Enter a unique name or code for this SR status. Making the name recognizable can help users identify its purpose more easily.

Description. Enter a short description of this status. This description appears on the lookup you use to select statuses.

Sts ID. Use this field to indicate the order in which statuses occur in the life cycle of an SR. The lookup that displays SR statuses displays them in numeric order by the status ID, rather than alphabetically.

Next Status. Specify the status that normally follows this status in the SR life cycle. This field is for reference only.

Next Queue. Specify the queue to which SRs with the next status should be routed. This field is for reference only.

SR Queues

You can place each service request in a queue when you create it. The queue is a user-defined holding area for managing and directing SRs.

Define SR queues in SR Queue Maintenance (11.1.15.10).



Queue: SR_QUEUE

Description: Queue for Service Reques

Fig. 18.4
SR Queue
Maintenance
(11.1.15.10)

When you define a queue, you specify a queue name and a description.

Queue. Enter an 8-character code identifying this queue.

Description. Enter up to 24 characters describing the queue to help users in understanding its purpose.

Service Request Maintenance

Create service requests with Service Request Maintenance (11.1.15.1), illustrated in Figure 18.5.

Fig. 18.5
Service Request
Maintenance
(11.1.15.1)

The screenshot shows the 'Service Request Maintenance' window. At the top, it displays 'SR: SR2' and 'Call: CA198' with a 'Copy Call Comments:' checkbox. The main form contains the following fields and values:

- Date Entered: 08/23/2002
- Type: 1000
- Problem: 3000
- End User: 10010003
- Item Number: 10-10000
- Severity: A
- Assigned:
- Status: 1000
- Queue: SR_QUEUE
- Priority: 10
- Started In: Rev. AB
- Target Version Fix: Reb. AC
- Target Fix Date: 08/25/2002
- Estimated Hours: 80.00
- Description: Major pump failure. Design issue.
- Fixed In:
- ECO:
- Close Date:
- Actual Hours: 0.00
- Note#:

Additional text in the window includes 'Reliable Center' and 'OASIS(TM) COOLING SYST'.

SR. When you create a new SR, you can leave this field blank to have the system supply a number based on Service Request Prefix and SR Number in Service Request Control.

Call. If a call initiates the creation of this service request, enter the call ID in this field. When you enter a call, a number of fields default from it, including End User, Item Number, and Description.

Copy Call Comments. When you specify a call, you can copy the call's comments into the SR as the submitter comments. These comments can provide a description of the problem the SR addresses.

Date Entered. The default is the system date. This field is for reference only and appears on some reports and inquiries. You can also use it to prioritize work.

Type. A user-defined code that can group service requests by type. For example, you can use SR type to assign the SR to the appropriate engineer. Update this field here or from the Service Request Queue Manager.

Tip
Set up values with Generalized Codes Maintenance for the field `srr_type`.

Problem. A user-defined code describing the type of problem addressed by this SR. If you set up SR problem codes to match the engineer skills, you can easily assign appropriate engineers. Update this field here or from the Service Request Queue Manager.

Tip
Set up values with Generalized Codes Maintenance for the field `srr_problem`.

End User. You must first define end users in End User Address Maintenance. Enter the user reporting the problem addressed by this SR. End User defaults from the call if you specify one.

Item Number. Indicates the product with a problem addressed by this SR. Validation depends on the setting of Items Must Exist in Service Management Control. If Yes, you must have defined the item with Item Master Maintenance. If No, you can enter any item number. Item defaults from the call if you specify one.

Severity. A code indicating the user's perception of the severity of the problem reported on this service request. This field is for reference only and appears on selected reports and inquiries.

Tip
Set up values with Generalized Codes Maintenance for the field `srr_severity`.

Assigned. Indicates the individual assigned to address the problem reported on this SR. Define engineers first in Engineer Maintenance. You can view service requests by assigned engineer in the Service Request Queue Manager.

Status. Indicates the position of this service request as it relates to the SR life cycle. Define status codes first with SR Status Code Maintenance. For a new SR, status defaults from the SR Open Status in Service Request Control. Update this field here or from the Service Request Queue Manager.

Queue. Indicates the queue to which you assign the service request. Set up SR queues with SR Queue Maintenance.

Priority. Indicates how important this service request is. Lower numbers indicate higher priority. Update this field here or from the Service Request Queue Manager.

Started In. An optional code that identifies the version of the product that this problem started in. This field is for reference only and appears on selected reports and inquiries. When servicing software, this code can identify the program revision or software release number that the problem was found in. In other industries, this code identifies the product version or drawing that has the problem.

Target Version Fix. An optional code that identifies when or how the correction is to be issued. This field is for reference only and appears on selected reports and inquiries. For software corrections, this code can identify the patch number or software release number expected to include the fix for this problem. In other situations, this code identifies the engineering drawing or revision that includes the correction.

Tip

Compare target date and estimated hours with the close date and hours entered on the service request when evaluating service performance.

Target Fix Date. Enter the date when this service request is to be completed. This field is for reference only and appears on selected reports and inquiries. Usually, you estimate the number of hours the service request will take and then use this to arrive at a target fix date. This is the date that you promise the customer.

Estimated Hours. Enter the estimated number of hours it will take to complete this service request. This field is for reference only and appears on selected reports and inquiries.

Fixed In. An optional code identifying when or how you issued the correction. This field is for reference only and appears on selected reports and inquiries. For software corrections, this code identifies the patch number or software release number that included the fix for this problem. In other situations, this code identifies the engineering drawing or revision that includes the correction.

ECO. An optional code identifying the Engineer Change Order (ECO) or Engineer Change Notice (ECN) number associated with the correction for this service request. This field is for reference only and appears on selected reports and inquiries. Many organizations have a numbering schema for keeping track of changes such as ECO or ECN systems. You can use this field for tracking any other numbered document that is associated with the changes made to correct the problems reported on this service request.

Close Date. Enter the date this service request was closed by setting the status to the SR Close Status in Service Request Control. You can delete or archive closed service requests with Service Request Delete/Archive.

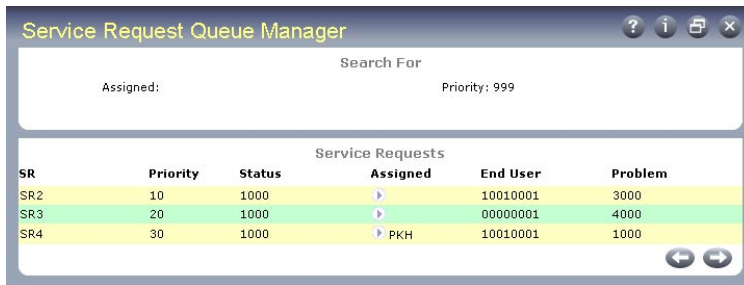
Actual Hours. The number of hours it took to complete this service request. This field is for reference only and appears on selected reports and inquiries. You can compare this number to the estimated hours when evaluating service performance.

Note #. An optional code or number referencing engineer notes pertinent to this service request.

Description. Enter a brief description of this service request. Defaults from the call if you specified one. You can include longer descriptions in the submitter comments.

Service Request Queue Manager

Use the Service Request Queue Manager (11.1.15.13) to view and manipulate service requests. You can sort SRs by the service engineer assigned to them or by priority.



SR	Priority	Status	Assigned	End User	Problem
SR2	10	1000	PKH	10010001	3000
SR3	20	1000	PKH	00000001	4000
SR4	30	1000	PKH	10010001	1000

Fig. 18.6
Service Request
Queue Manager
(11.1.15.13)

You can edit service requests from the queue manager. Select the line you want to edit and the Update SR frame, like the one in Figure 18.7, displays.

Fig. 18.7
Updating SRs in
the Queue Manager

SR	Priority	Status	Assigned	End User	Problem
SR2	10	1000		10010001	3000
SR3	20	1000		00000001	4000
SR4	30	1000	PKH	10010001	1000

SR	Priority	Status	Assigned	Problem	Type
SR4	30	1000	PKH	1000	

From this frame, you can change the SR priority, status, assigned engineer, problem code, and type. Managers can use this to re-prioritize SRs and assign them to appropriate engineers.

Service Request Delete/Archive

Use Service Request Delete/Archive (11.1.15.23) to delete and archive closed service requests from the system when you no longer need them.

Fig. 18.8
Service Request
Delete/Archive
(11.1.15.23)

SR: To:

End User: To:

Close Date: To: 12/31/2002

Delete: ☒

Archive: ☒

Archive File: sr020725.hst

Output: printer

Material Orders

Use material orders (MOs) to manage inventory in a service environment. This chapter defines the types of MOs and their basic maintenance. Following this is a discussion of how MOs are shipped and the other functions you use in conjunction with shipping. Finally, this chapter describes the consumption of MOs in Call Activity Recording and returning items ordered on MOs.

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Business Considerations

MOs provide a flexible mechanism for managing inventories in the service environment. With MOs, service personnel, whether in the field or repair center, can order repair parts for specific calls or to replenish their inventory. The MO can interact with call tracking, enabling you to track back orders and manage the relationship between service inventory and call closure.

Use MOs to:

- Issue items that you do not track individually, similar to manufacturing floor stock. These are items that you typically issue in bulk, like screws or washers, without any detailed usage tracking. This type of MO is an *expensed* MO.
- Manage inventory moving between a supply center and service locations. The supply center can be a central supply center or one dedicated to service activity. Locations are typically remote locations such as engineers in the field carrying truck stock, or a remote service center. You can also issue the items to a service location within a manufacturing site.

▶ See *User Guide Volume 10: Project Realization Management*.

Note Material orders are also used in the Project Realization Management (PRM) module and are located on menu 10.7.

The MO process is not limited by geography. MOs can manage inventory moving between any kind of service entity, mobile or stationary, large or small. The following list indicates three scenarios managed with MOs:

- 1 Inventory moving between a warehouse and a service department located at the same site or to a service desk in the same building
- 2 Inventory moving between a home supply depot and a fleet of service trucks
- 3 Inventory moving between a central warehouse and a repair center or refurbishment shop

These scenarios are illustrated in Figure 19.1.

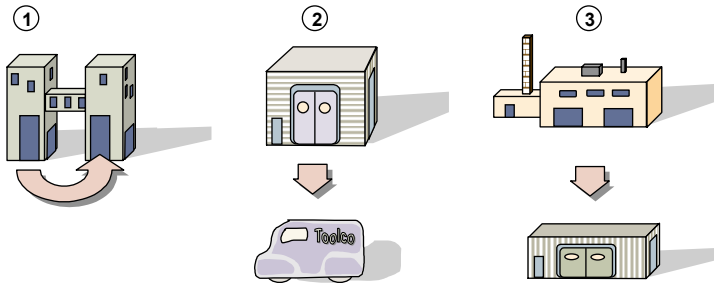


Fig. 19.1
MO Inventory
Management

If the engineer works at a repair center and you issue items to the call directly from the repair center site, you may not need to use MOs.

MOs are most useful when the engineer works remotely, such as out of a repair truck or van. In this case, you need an additional inventory transaction to move inventory from the site or location where repair parts are stocked to the engineer's site or location where you can issue and consume the inventory on the call.

MOs that transfer inventory are divided into two types:

- Items you order to replenish general service stock
- Items you order to meet the requirements of a particular call

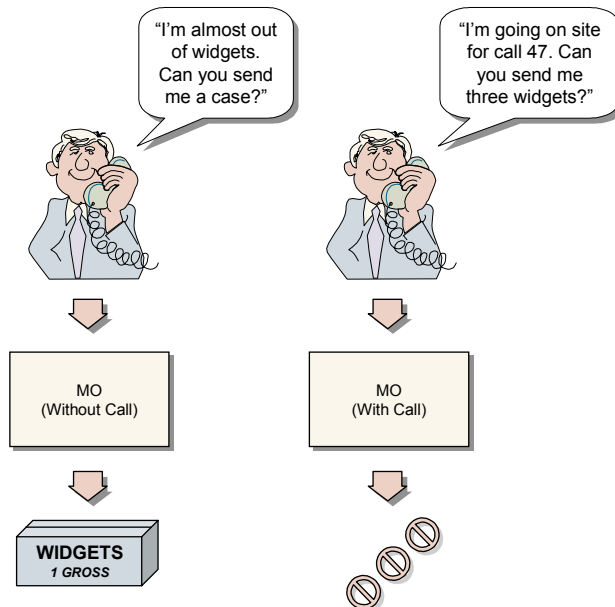


Fig. 19.2
MO Tracks
Inventory for a Call

◆ See *User Guide Volume 2A: Distribution* for details on EMT.

Based on the structure of your supply chain and your supplier relationships, you might consider using Enterprise Material Transfer (EMT) for some MO items. EMT lets you automatically generate a purchase order from an MO.

Material Order Life Cycle

MOs have a life cycle similar to a standard sales order, except that no billing occurs. The internal movement of goods in MOs mirrors the standard MFG/PRO shipping and distribution process. Whenever possible, standard programs are used. This facilitates learning MO functions for the experienced user, since they are based on familiar processes.

MOs transfer inventory from one site and location to another. They do not support the invoicing features of sales orders. Even though you can drop ship MO items to a customer location, there is no invoicing for MOs apart from their consumption in Call Activity Recording. The MO does not handle tax issues or any custom issues that can occur when drop shipments occur across international borders.

If you are ordering EMT items on MOs, your supplier provides you with the items at the end of the EMT cycle. You then transfer them to the engineer's location using Material Order Shipments (11.11.6) just as you would with any other item.

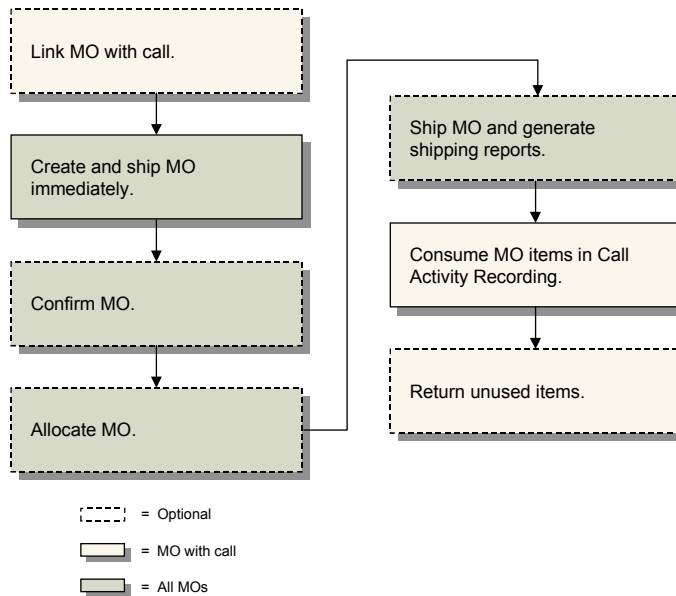


Fig. 19.3
Material Order Life Cycle

You create MOs in Material Order Maintenance and either link them with a call, for the engineer's inventory, or expense them. You can ship the ordered items when you create the MO if you allocate and confirm the order.

Otherwise, you can execute separate allocation, confirmation, and shipment functions using Material Order Confirmation (11.11.2), MO Manual Allocations (11.11.4), MO Automatic Allocations (11.11.5), and Material Order Shipments (11.11.6). These functions are similar to their counterparts in the Sales Orders/Invoices module. You can generate a packing list for an MO with Sales Order Packing List (7.9.13). A delivery note is also created as part of shipment.

When ATP Enforcement is Yes in Sales Order Control (7.1.24) and ATP Enforce in the item or item-site record is Warning or Error, the system determines whether inventory will be available to promise (ATP) on the due date. When you enter a confirmed order line and ATP is not sufficient, the system displays a frame with ATP information and options. When you use Material Order Confirmation, you can decide before confirming the MOs whether the system should change order-line due dates to meet ATP requirements.

See *User Guide Volume 2A: Distribution* for information on ATP.

If you are using EMT, MO line items that were marked as EMT type transshipment are allocated automatically to the MO when they are received from the supplier. You cannot use MO Manual Allocations or MO Automatic Allocations for these items.

The system deletes expensed MOs and MOs for the engineer's own consumption when the orders ship completely. You must consume MOs associated with a call for that call in Call Activity Recording or return unused inventory either in CAR or with MO Direct/Pending Returns (11.11.8). When you have consumed or deleted all items on the MO with a call, the system deletes the MO.

The system provides alternate ways of viewing information about open MOs, those that have shipped, those with items on back order, and those that have items marked as pending return. You can also track the status of EMT purchase orders that have been automatically generated from MOs.

MOs for EMT Items

◆ See *User Guide Volume 2A: Distribution* for more information on EMT.

The Enterprise Material Transfer (EMT) module lets you automatically translate sales orders and material orders into purchase orders. You use EDI ECommerce to exchange purchase orders, change documents, and shipping documents in electronic data interchange (EDI) format with your suppliers.

Much EMT processing is automatic. For example, when you change the order quantity of an MO item, the system automatically updates the purchase order and generates an EDI document to inform the supplier. When a supplier picks or ships the items, the supplier's system automatically generates a status change message indicating that you can no longer make changes to the MO line.

EMT Shipment Type for MOs

Most of the features of EMT are the same regardless of whether you are using sales orders or material orders. However, there is one important difference. Sales orders for EMT items let you specify two shipment types:

- **Transshipment.** The supplier sends the items to you, and you then ship them to the final customer.

- Direct shipment. The supplier is authorized to send the items directly to the final customer.

EMT MOs offer only one shipping option: transshipment. The supplier ships the EMT items to the ordering site. It is then your responsibility to transfer them to their final destination.

Direct Allocations

Depending on your relationship with an EMT supplier, you can reserve inventory in the supplier's database to fill your MO. This is called *direct allocation*. For this feature to work, you must meet a number of conditions:

- You must be able to connect with the supplier's MFG/PRO database.
- Several master table records must be set up in both your database and your supplier's. These include site and supplier records to represent the connected database.
- The feature must be enabled in Sales Order Control.

◆ See *User Guide Volume 2A: Distribution* for information on setting up direct allocations.

To directly allocate an MO line item, change the default item site to the site established for the connected database. The system then creates a special, preliminary allocation in the supplier's MFG/PRO database. When you export the EMT purchase order and your supplier imports it as a confirmed sales order, the supplier's system automatically converts the preliminary allocation to a general allocation for the secondary sales order.

MOs and Intrastat

The Intrastat module in MFG/PRO is used to capture information needed to generate customs reports for shipments among members of the European Union. If you are using Intrastat, data is generated for the shipment of material orders similarly to the way data is generated for sales orders. The Import/Export field on the MO header controls whether an additional frame displays for Intrastat defaults.

◆ See *User Guide Volume 6: Master Data* for details on Intrastat.

Note If you use Intrastat, you should manage inventory movement with MOs. In CAR, Intrastat data is generated only for items ordered on MOs. Other items are not tracked.

However, because the requirements of a service environment differ from those for standard orders, some aspects of Intrastat processing for MOs are different than for sales orders. In addition, different types of MOs are processed somewhat differently.

For standard sales orders, Intrastat data is moved to a history table when the invoice for the order is posted. Unlike sales orders, invoices are not generated for MOs. The items on the MO are invoiced directly or indirectly when they are used for a service call and the call is invoiced. For this reason, Intrastat history is not created for MOs at invoice post, but when they are shipped or consumed, depending on the type of MO.

- **MOs with a Call.** When an MO is associated with a call, Intrastat data is created in MO Maintenance, as appropriate. The MO is then loaded in Call Activity Recording as item usage. When all of the items on an MO line are either issued or returned, the line is deleted and the Intrastat data is moved to the history table.
- **MOs without a Call.** Two kinds of MOs are not associated with calls: expensed MOs and MOs for inventory replenishment. For these types of MOs, Intrastat history is created when the MO line ships completely. This may occur in MO Maintenance, if Ship Immediate is Yes, or later in Material Order Shipments.

Two types of Intrastat history records can be created for MOs: one when items are issued and one when items are returned.

Creating Material Orders

Creating an MO is similar to creating a sales order. You create MOs in Material Order Maintenance (11.11.1), shown in Figure 19.4. Follow these steps:

- 1 Define MO header data.
- 2 Create MO line items.
- 3 Optionally initiate shipment.

The screenshot shows the 'Material Order Maintenance' window. At the top, it displays 'MO: 50', 'Order Ref: CA127', 'Engineer: PKH', and 'Ship-To: PKH'. Below this, there are two main sections: 'End User' and 'Ship To'. The 'End User' section lists 'Sterling Industries' at '2000 Broadway', 'New York, NY 10001', 'United States of America'. The 'Ship To' section lists 'Harvey, Phillip' at '1900 Acacia Drive', 'San Marcos, CA 92069', 'U.S.A.'. Below these sections, there are various fields for dates (Order Date: 07/25/2002, Required Date: 07/25/2002, Due Date: 07/25/2002), Site (10000), Confirmed (checked), Currency (USD), Language (US), Charge Code, Action Status, Ship Via, Remarks (ALL SHIPMENTS PER CORP CONTRACT ARE), Import/Export (checked), Ship Immed, Allocate, Comments, and Print Pack List. There are also navigation buttons at the bottom right.

Fig. 19.4
Material Order
Maintenance
(11.11.1)

You order items on an MO as you do sales order line items.

Except for fields added to accommodate the call relationship, the MO fields act like the equivalent sales order fields. However, you define default values for MO fields in Material Order Control, including allocate lines due in days, detail allocations, line format, shipping lead time, header and line comments, and keep booking history. These fields operate in the same way as the equivalent Sales Order Control fields.

See “Material Order Control” on page 784.

If you are using EMT, additional fields display on the MO line for the supplier and EMT type—just as on a sales order.

Specifying the Type of MO

Three basic types of MOs each play a slightly different role in a service organization:

- MOs with a call
- MOs for inventory replenishment
- Expensed MOs

How you fill out the MO header determines the type of MO you create. Header information differs for each type. After you create the MO, you cannot change its type. For example, if you create an MO without a call, you cannot go back later and add one.

▶ See *User Guide Volume10: Project Realization Management* for more information on PAOs.

Note If you are using the Project Realization Module, you can create MOs for project activity orders (PAOs). You can specify either a PAO or a call in the Order Ref field of the MO header. When you specify a PAO, different frames display in Material Order Maintenance.

MO With Call

When using MOs with a call, you open a call and order material specifically for the call. Linking the MO to the call has the advantage of making all the tools inside Call Activity Recording available for managing the MO.

In some business situations, legal or contractual reasons require this explicit connection between service inventory allotments and call history. For example, the government can require military contractors to supply this kind of data as part of the maintenance record.

In other cases, the business simply prefers this method, or it is the easiest, most economical way to supply engineers and account for service costs. You can use this method when you bill a customer directly for parts consumed on a call.

For MOs with a call, you use Call Activity Recording to coordinate the whole supply, reporting, and return of inventory generated by service activity. You can track costs and activity per call, customer, end user, or problem.

Relationship Between Call and MO

MOs can only be created for open calls. The call status cannot be closed, canceled, or hold. If you enter a call with a status of complete, the system displays a warning. The engineer and ship-to values on the MO default from the call. The MO also uses other defaults associated with the customer of the call's end user, including ship via, remarks, and currency.

Ship-to addresses for MOs with a call default from the value of Ship To in Material Order Control (11.11.24). If this is end user, the Ship-To defaults from the call's end user. If it is engineer, it defaults from the address of the engineer assigned to the call.

You can also create drop-ship addresses. Suppose the engineer wants a replacement item shipped to a local airport so he can pick it up on the way to the customer site. Material Order Maintenance enables you to create a Ship-To address for this particular material order. If the address does not exist, you are prompted to create it.

Each MO line references a particular call line. When you select the call line later in Call Activity Recording, the system displays related MO lines. You can then choose to load the MO items into CAR item detail records.

▶ See “Loading MO Lines into CAR” on page 650 for details.

Note When an MO is associated with a call, all items ordered must be consumed by the call or returned before the call can be closed. When this happens, the system removes the MO.

Using MOs or BOMs to Load CAR Item Usage

The system provides two ways to streamline data entry in the Call Activity Recording Item Usage frames:

- Ordering the items needed with an MO and loading the MO lines in CAR.
- Attaching a BOM to the item being repaired and allowing CAR to list all BOM items as item usage in CAR.

▶ See “Generating Usage Records Automatically” on page 444 for details.

These two methods are alternatives to one another. You cannot use them together. Decide which method is best for your business practices and establish procedures so both are not used at the same time.

If you order the items required for a call with an MO, you must load and consume these items in CAR. If you attach a BOM to the item and the system lists the BOM items for the call, the same items can be loaded again, resulting in twice as many items appearing in the usage frame as are required.

A warning displays when you create an MO for a call line item and you have assigned a BOM to the item, or when you have already created reports with item usage. The system does not generate an error. If you need to order additional items beyond the standard BOM, this may not be an erroneous situation.

Filling Out the MO Header

For MOs with a call, you must enter an open call in the Order Ref field. If you enter a call, you cannot specify a charge code.

Fig. 19.5
Header for MO
with a Call

The screenshot shows the 'Material Order Maintenance' window. Annotations with lines pointing to specific fields are as follows:

- MO header:** Points to the top section containing 'MO: 50', 'Order Ref: CA127', 'Engineer: PKH', and 'Ship-To: PKH'.
- Call entered; Charge code disabled:** Points to the 'Order Ref' field and the 'Charge Code' field.

The form fields are organized as follows:

- Top Section:** MO: 50, Order Ref: CA127, Engineer: PKH, Ship-To: PKH.
- End User Section:**
 - Sterling Industries, 2000 Broadway, New York, NY 10001, United States of America.
- Ship To Section:**
 - Harvey, Phillip, 1900 Acacia Drive, San Marcos, CA 92069, U.S.A.
- Order Details Section:**
 - Order Date: 07/25/2002, Required Date: 07/25/2002, Due Date: 07/25/2002.
 - Site: 10000, Confirmed: ☒, Currency: USD, Language: US.
 - Action Status: , Charge Code: .
 - Ship Via: , Remarks: ALL SHIPMENTS PER CORP CONTRACT ARE, Import/Export: ☒.
- Right Side Actions:**
 - Ship Immed: ☐, Allocate: ☐, Comments: , Print Pack List: ☐.

MO Without a Call

You do not have to attach an MO to a call. The system considers inventory transferred by an MO without a call as general replenishment inventory for the engineer's service stock. Use this method when it is not reasonable to track against particular calls, but you still need to track individual items.

Once all items ordered on the MO ship completely, the system deletes the MO. Transaction history includes details about the transactions processed.

When you create an MO without a call, do not enter a call or charge code. The ordered items are put in the engineer location at shipment time, but not issued. MOs without a call basically execute an inventory transfer from one site and location to another.

Material Order Maintenance

MO: 50	Order Ref:	Engineer: PKH	Ship-To: PKH

End User	Ship To
	Harvey, Phillip 1900 Acacia Drive San Marcos CA 92069 U.S.A.

Order Date: 07/25/2002	Site: 10000	Confirmed: ☒	Language:
Required Date: 07/25/2002		Currency: USD	
Due Date: 07/25/2002		Charge Code:	
Action Status:		Ship Immed: ☐	
Ship Via:		Allocate: ☐	
Remarks:		Comments: ☐	
Import/Export: ☒		Print Pack List: ☐	

No call and
no charge
code
entered.

Fig. 19.6
MO Without a Call
for Transferring
Inventory

Expensed MOs

Expensed MOs are also not attached to a call. Use this method when tracking items expensed as part of the general service activity—usually items you order in lots and store at the workbench or truck. The service engineers do not track any inventory piece by piece. They expense the items once and use them as necessary. A reorder point method typically controls reordering.

Tip
Use this method for items ordered in bulk such as nuts, bolts, screws, washers, lubricants, cleaners, disposable tips, and wipes.

Expensed MOs require a charge code. The system uses the charge code to find a charge product line set up in Charge Product Line Maintenance (11.21.21.5) for this charge code. The system charges the Service Expense account of this product line for the cost of the items.

When you ship an expensed MO, the system transfers inventory to the destination site and location where you issue and consume the items. If this process completes successfully, the system deletes the MO upon completion of shipment. You can review transaction history for transaction details.

When you create an expensed MO, you do not enter a call in the Order Ref field, but you do specify a charge code as shown in Figure 19.7.

Fig. 19.7
MO Without a Call
for Restocking
Expensed Supplies

Summary of MO Types

Table 19.1 summarizes the interaction between the Order Ref and Charge Code fields in identifying the type of MO.

Table 19.1
Defining MO Types

MO Type	Order Ref Field	Charge Code Field
With call	Enter a call number	Field not accessible
Without a call	Blank	Blank
Expensed	Blank	Enter a charge code

Credit Implications of MOs

MOs are a type of sales order and follow most of the rules of sales orders. If the customer bill-to on an MO with a call is on credit hold, MO processing is determined by the setting of Credit Hold Option in Service Management Control. This field can have one of three values:

Tip
You can remove credit holds using Sales Order Credit Maintenance (7.1.13) or Sales Order Auto Credit Approval (7.1.17).

- 0 (zero): You can create MOs regardless of the customer's credit status.
- 1: You can create MOs, but a warning displays and the action status of the MO is set to hold.

2: You cannot create MOs for customers who are on credit hold. An error message displays, and you cannot create the MO until the customer Credit Hold field is reset to No. With this setting, if the customer is over the specified credit limit but not yet on hold, you can create the MO. However, a warning displays and the action status of the MO is set to hold.

If you are using EMT, the system applies the same logic as with EMT sales orders to determine how credit information is transmitted to the supplier. If the Action Status field on the header of an MO associated with a call is changed to HD (Hold), EMT creates a PO change document for the supplier under these conditions:

- The PO has been transmitted to the supplier.
- The supplier has not transmitted a status change indicating that the item has been picked or shipped.
- The customer associated with the call is authorized to have hold orders processed by a supplier (EMT Credit Flow is Yes in the customer’s master record).
- The supplier is authorized to receive orders placed on hold (Send Credit Held SO is Yes in the supplier’s master record).

Material Order Maintenance

This section includes a detailed field-by-field reference of Material Order Maintenance (11.11.1). It takes several steps to create an MO, some of which are optional, depending on various settings.

Frame	Req	Purpose
Header	Y	Define the kind of MO and defaults for line item entry.
Allocation Pop-Up	N	If Allocations is Yes, define allocation parameters for line-item entry.
Comments	N	If the header Comments field is Yes, specify comments for entire MO.
Line-Item Entry	Y	Enter item number and allocation information.
Allocation Detail	N	If Detail Alloc is Yes, enter detailed allocation data.

Table 19.2
Material Order
Maintenance
Frames

Frame	Req	Purpose
Comments	N	If the line-item Comments field is Yes, specify comments for this line.
Material Order Shipments	N	If Ship Immed is Yes, begin shipment process (see “Material Order Shipments” on page 639).

Tip
 An MO is a *transfer* from manufacturing inventory to service inventory.

The material order does not have a trailer for pricing and taxing information. This differs from similar ordering functions because items on MOs are not sold like other items. MOs transfer inventory from one site and location to another site and location within the same enterprise.

Material Order Header

Fig. 19.8
 Material Order Maintenance
 (11.11.1)

Material Order Maintenance

MO: 50

Order Ref: CA127

Engineer: PKH

Ship-To: PKH

End User

Sterling Industries

2000 Broadway

New York NY 10001

United States of America

Ship To

Harvey, Phillip

1900 Acacia Drive

San Marcos CA 92069

U.S.A.

Order Date: 07/25/2002

Site: 10000

Confirmed: ☒

Required Date: 07/25/2002

Currency: USD

Language: US

Due Date: 07/25/2002

Charge Code:

Action Status:

Ship Immed: ☐

Ship Via:

Allocate: ☐

Remarks: ALL SHIPMENTS PER CORP CONTRACT ARE

Comments: ☐

Import/Export: ☒

Print Pack List: ☐

Tip
 Use a unique prefix to distinguish MOs from standard sales orders.

MO. Enter the MO number. If you leave this field blank, the system supplies a number based on the Material Order Prefix and Next Material Order fields in Material Order Control (11.11.24). You can select an existing MO from a drill-down list.

Order Ref. Entering a call in this field establishes the MO type. When you enter a call ID, the system fills in the Engineer and Ship-To fields based on the call. You cannot enter a call whose status is closed, canceled, or hold. If you enter a call with a status of complete, the system displays a warning.

Engineer. If you specify a call, the engineer assigned to the call displays, but you can change this value. If the call has no assigned engineer or you have not specified a call, you must select a valid engineer to receive this order.

The engineer for the MO normally determines the site and location to which items are transferred during MO shipments. If the engineer has a site and location in Engineer Maintenance, the system uses these as defaults. Otherwise, the site and location associated with the engineer's area are used. Maintaining consistent defaults is important in streamlining the consumption and return of items ordered on MOs for a call in Call Activity Recording and MO Direct/Pending Returns.

Ship-To. For MOs without a call, the Ship-To is the engineer's address and you cannot change the value. If you entered a call, the value for Ship-To depends on the Ship To value in Material Order Control (11.11.24), either end user or engineer. You can also enter a drop-ship address, for special orders.

Note Regardless of the Ship-To value, items are transferred to the site and location for the MO line. The Ship-To address prints on the Material Delivery Note.

Tip

After you have processed shipments for an MO, you cannot modify the Engineer field.

Tip

Tailor the default ship-to for your business practices by using the Ship To setting in Material Order Control.

Lower Frame

Order Date. Order Date defaults from the system date. You can change this value. For example, if you take an order over the phone and do not enter the order into the system until three days later, you can change the date to reflect the day you took the order.

Required Date and Due Date. The required date and due date are calculated by the system based on the order date plus the Shipping Lead Time in Material Order Control (11.11.24).

Action Status. If the customer associated with the call specified on the MO is on credit hold, HD displays in the Action Status field. The effect of this status depends on the value of Credit Hold Option in Service Management Control.

▶ See "Credit Implications of MOs" on page 624.

Tip

Set up values for Ship Via with Generalized Codes Maintenance for the field so_shipvia.

▶ See “MOs and Intrastat” on page 617.

▶ See “Default Sites and Locations” on page 94 for details.

Ship Via. MOs transfer material. When you associate the MO with a call, this field defaults from the customer Ship Via for the end user initiating the call. You can enter any valid shipper in this field. The Ship Via information prints on the Material Delivery Note.

Remarks. You can enter brief remarks concerning MO handling here. If you specify a call on the MO, remarks default from the end user’s customer.

Import/Export. Defaults from Imp/Exp Default in Intrastat Control and displays if Use Intrastat is Yes in the same control program. Set this field to Yes to enter or maintain import and export data for the order used to create Intrastat History Reports. If Yes, the standard Intrastat frames displays for input of appropriate data.

Site. Enter the site where the items to ship are located. This site is used as a default during line-item entry. You can change this value on a per line-item basis. This field defaults from the spares site set up with Default Site Maintenance (11.21.13) for a blank key.

Confirmed. This field is similar to the same field in sales orders, and defaults from the value for Confirmed Orders in Material Order Control. Yes means that the MO is confirmed and available for shipping when your entry is complete. You can modify this field only when you first create an MO. If the MO is not confirmed when you create it, you must execute Material Order Confirmation (11.11.2).

If you are using EMT and enter an EMT transshipment item, the system only creates a purchase order for the supplier when the line is confirmed. If you create the line as unconfirmed, the PO is automatically generated when you run Material Order Confirmation.

Currency. If you specify a call, this field defaults from the currency associated with the call’s customer. Otherwise, it defaults from the currency associated with the internal customer specified in Material Order Control. You can enter a different currency for this material order when you create the order. You cannot change the currency for an existing order. You can apply field security to this field.

If you enter a non-base currency, an exchange rate pop-up displays the current exchange rate relationship defined in Exchange Rate Maintenance (26.4). You can modify this, if needed, and optionally specify the rate as fixed.

Language. Enter the language to use on material order documents. Language defaults from the call end user or the end user's customer.

Charge Code. You can update this field only when you first create an MO and do not specify a call. If this is an expensed MO, enter a valid charge code defined in Charge Code Maintenance (11.21.21.1). The system uses the charge code to determine a charge product line. The expense is debited to the Service Expense account associated with this product line. If you enter a charge code, the system expenses everything on the MO to this charge code.

Ship Immediately. The value for this field defaults from Material Order Control.

Yes: The shipment frames display after you complete your MO entry. Completing the MO shipment entry then starts all the inventory transfer functions.

No: You must execute shipment as a separate function later, using Material Order Shipments (11.11.6).

Allocations. If this field is Yes, a pop-up window displays so that you can modify the allocation parameters set by default in the control program. These parameters include consume forecast, allocate days in future, and detail allocations.

Comments. The value for this field defaults from the MO Header Comments field in Material Order Control. If Yes, a standard transaction comment frame displays for entry of header comments. You can print header comments on MO documents like the Material Delivery Note by setting Print on Packing List to Yes.

Print Pack List. If this field is Yes (the default), you can print a packing list for this MO with Sales Order Packing List (7.9.13). A separate MO packing list print function does not exist. However, material order shipments produce a Material Delivery Note, which you can use as a packing list. If detail allocations were not made in Material Order Maintenance, printing a packing list performs the allocations.

Allocations Pop-Up

▶ See “Allocating Material Orders” on page 637 for more information.

If you enter Yes in the Allocations field, the pop-up window illustrated in Figure 19.9 displays. The values in these three fields default from corresponding fields in Material Order Control. You manage other aspects of allocations through Sales Order Control settings.

Fig. 19.9
Allocations Pop-Up
Window (11.11.1)

Consume Forecast. Defaults from the Consume Forecast field in Material Order Control. If Yes, MOs consume forecast in the same way as sales orders. When you enter an MO, the system decreases available quantity in the sales forecast for the item by the MO quantity.

Allocate MO Lines Due in Days. Defaults from the same field in Material Order Control. Specifies the number of days into the future to allocate MOs.

Use allocations to control shipments, especially in shortage situations. When you enter an MO, the system compares the order quantity to the quantity available to allocate. If there is a shortage, the order cannot be filled. The system tries to allocate available inventory only to line items due within the number of days specified here, giving you more control over the process.

Detail Allocations. The value for this field defaults from the Detail Allocations field in Material Order Control. Yes indicates that detail allocations are normally made during MO line entry. Enter No if detail allocations are not normally entered on the MO. The value specified on the header sets the default value on each MO line item. You can change it item by item.

Note Even if this field is Yes on the MO header, it automatically changes to No for EMT line items. You cannot change it manually. The system automatically allocates EMT items to the MO when they are received from the supplier.

Line-Item Entry

After you complete MO header entries, the line-item entry frame displays. The MO line-item frame works like other line-item entry functions in the system. It has two modes of display: single-line mode and multiline mode. Set the default mode in the Line Format field in Material Order Control.

To order several items, use the multiline entry format to streamline data entry. The multiline entry format asks only for the line number, the related call line, the item number, and quantity.

Figure 19.10 illustrates the single-line format.

The Supplier and EMT Type fields display only when Use Enterprise Material Transfer is Yes in Sales Order Control.

Material Order Maintenance

MO: 50 Order Ref: CA127 Engineer: PKH Ln Format S/M:Single

Ln	Order Ref	Site	Supplier	EMT Type	Qty Ordered	UM	Unit Price
1	1	10000	5003000	NON-EMT	10.0	EA	500.00

Description: NOMAD(TM) COOLING SYS

Location: 200 Site: 10000 Line Ref:

Lot/Serial:

Qty Allocated: 10.0000 Confirmed: ☒ UM Conversion: 1.0000

Qty Picked: 0.0000 Required: 07/25/2002

Qty Shipped: 0.0000 Due Date: 07/25/2002

Qty Consumed: 0.0000 Consume Forecast: ☐

Qty Returned: 0.0000 Detail Allocation: ☒

USD Cost: 656.16688 Category: Comments: ☐

Fig. 19.10
MO Line-Item
Entry (11.11.1)

Important If you are entering an MO for an EMT transshipment item, you must use single-line mode. Otherwise, EMT Type defaults to non-EMT and the system does not automatically generate a PO for the supplier.

Ln. The current line number displays. If you are updating an MO with multiple lines, the last line of the MO displays so that you know how many lines exist.

Order Ref Line. When you attach an MO to a call, specify which line on the call is related to this line of the MO. It is crucial that you build the relationship between MO line and call line correctly because it is used later in Call Activity Recording. CAR does not assume that the line items on the MO are in the same order as those on the call; you must specify the relationship explicitly.

Tip
You can ignore the Order Ref field for MO types without a call.

CAR needs to know two elements: first, that an MO exists for the call and second, how the MO lines match the call line. This ensures that the system uses the information from the call for the right item. The system also checks the status of the call line, just like the call status. To order items for a call line, the line cannot be closed, canceled, or on hold. The system displays a warning if the call line is complete.

When you start creating the line item, even though a call is not attached to the MO, a default call line number 1 appears. This is a required field that you cannot change.

Item Number. Enter the item number you are ordering from the supply center or inventory source. Remember, this is an internal, or captive, order process—you are not ordering from a vendor or outside supplier. The item must be defined in the item master.

For an EMT transshipment item, you can enter your supplier's code for the item, as long as you set up a cross-reference to your item number in Supplier Item Maintenance (1.19).

Tip
These items have a Pur/Mfg code of C and F.

Note You cannot order configured items or family planning items on an MO.

Site. After you enter the item number, a pop-up window displays so that you can specify the inventory site of the item. This site defaults from the site on the MO header, unless the item does not exist there. In this case, the system suggests the site associated with the item in Item Master Maintenance.

Standard inventory rules for sites apply to the MO site. For example, if there is no inventory on hand for the item and the inventory status is defined with overissue set to No, the system displays an error.

▶ See “Direct Allocations” on page 617.

If this is an EMT transshipment item and you are using direct allocations to reserve inventory in your supplier's MFG/PRO database, you can change the default site to the one associated with the supplier's connected database.

Supplier. Enter the supplier associated with this item. This field displays only if Use Enterprise Material Transfer is Yes in Sales Order Control. For EMT transshipment items, the field defaults from the supplier defined for the item in Item Master Maintenance.

EMT Type. Indicate whether this is a non-EMT or transshipment item. This field displays only if Use Enterprise Material Transfer is Yes in Sales Order Control. A default EMT shipment type can be defined for customers, items, items/sites, and in Sales Order Control. The EMT Sequence field in Sales Order Control determines the order the system uses to search these records for a default.

Quantity Ordered. Enter the quantity of this item you want to order. Negative quantities are not allowed. If this MO is associated with a call, the quantity ordered displays in the Qty Used field in the Item Usage frame of Call Activity Recording.

Unit of Measure. You can update this field only when the Order Ref field is blank. Both Project Activity Recording (10.5.13) and Call Activity Recording (11.1.1.13) require items to be issued in the inventory unit of measure.

Unit of measure defaults from the unit of measure for the item in Item Master Maintenance. You can change the value, unless an order reference has been specified. If you select an alternate unit of measure that you defined in Unit of Measure Maintenance (1.13), the system accesses the appropriate conversion factor.

Example An item is held in inventory in the unit of measure EA but sold or purchased in a case of 25. If you enter the unit of measure CS, the system displays a UM conversion of 25. The system adjusts the cost and inventory quantity when this item is shipped or received. If you have not defined the alternate unit of measure in Unit of Measure Maintenance (1.13), a warning displays and no conversion takes place.

For a serial-controlled EMT transshipment item, the MO line-item unit of measure must match the stock unit of measure. Otherwise, the system displays an error.

List Price. This is an output-only field that shows the extended price for the item based on the list price in Item Master Maintenance multiplied by the quantity ordered.

Lower Line Detail Frame

This frame displays information such as the item's description. You can specify a lot or serial number here if the item is a serialized or lot-controlled item.

Fig. 19.11
MO Line-Item
Detail

Description. Output-only field that displays the inventory description of the item.

Location. This field indicates the location at the associated site where inventory items exist.

Lot/Serial. For lot/serial controlled items, you can specify the particular number for this line item. If you are ordering multiple items on one line, set Detail Alloc to Yes. This displays a pop-up window where you can specify a lot/serial number for each item you order.

Qty Allocated. The total of quantity allocated, plus quantity shipped, plus quantity picked cannot be greater than quantity open on the line item. You can apply field security to this field. For confirmed orders, the system calculates a default based on several fields.

Tip
Confirmed must be Yes before you can enter a quantity to allocate.

See “Allocating Material Orders” on page 637 for more information.

- The Quantity Available to Allocate calculation method in Sales Order Control.
- The value for Limit Allocations to Avail to Allocate in Sales Order Control.
- The setting of Allocate MO Lines Due in Days in the MO header determines the allocation window for orders.

If Allocate MO Lines Due in Days is zero or the due date is beyond the allocation horizon, Qty Allocated defaults to zero. You can use MO Manual or Automatic Allocations to allocate inventory to an MO line due outside the allocation window or when sufficient inventory becomes available.

Confirmed. This field defaults from the Confirmed field on the header. Yes or No in this field indicates whether or not the item is ready to ship. If Confirmed is No, you must execute a separate confirmation step before items can be allocated and shipped.

Required Date and Due Date. The required and due dates default from the header. You can modify either date for each line.

Note When ATP Enforcement is Yes in Sales Order Control (7.1.24) and ATP Enforce in the item or item-site record is Warning or Error, the system determines whether inventory will be available to promise (ATP) on the due date. If it is not, the system displays a frame with ATP information and options.

▶ See *User Guide Volume 2A: Distribution* for information on ATP.

Category. This field can be used to assign optional categories to material order line items. For example, you can generate some reports based on categories in the Shipment Performance module.

▶ See *User Guide Volume 11: PRO/PLUS* for information on Shipment Performance.

Entries are validated against values defined in Generalized Codes Maintenance (36.2.13) for field line_category.

Line Ref. This field can be used for custom programming as a reference for customized reports giving line-by-line information. Use this field to insert an eight-character label or reference that is later displayed by the report.

Tip
Use Line Ref to help create custom reports.

UM Conversion. Displays appropriate unit of measure conversion based on the unit of measure for the item.

Consume Forecast. Defaults from the Consume Forecast field in the MO header. If Yes, the quantity on this line consumes forecast in the same way as sales orders. When you enter the MO line, the system decreases available quantity in the sales forecast for the item by the MO quantity.

Detail Allocation. Defaults from the Detail Allocation field on the MO header, which in turn defaulted from Material Order Control. You can modify this for each line item. If you specify a quantity to allocate

and the order is confirmed, Yes displays a pop-up window so that you can specify the information required for detail allocation, including lot/serial, location, and lot reference.

Allocations for EMT transship items are performed automatically when the items are received from the supplier. You cannot detail allocate these items in Material Order Maintenance.

Comments. Specify Yes or No to enter comments for this specific MO line item. Defaults from the MO Line Comments setting in Material Order Control. Include line comments on MO documents such as the Material Delivery Note when Print on Packing List is Yes.

After you enter a line, the system returns to the beginning of line entry to start another line item. To order more material, continue and repeat the same line entry process. When you finish, press End to initiate shipment, if Ship Immed is Yes, or to return to the menu.

Detail Allocation Pop-Up

This pop-up enables you to enter specific allocation information for the items you are ordering. To perform detailed allocation, enter the order as confirmed.

Fig. 19.12
MO Detail
Allocation Pop-Up

SITE: 10000 Allocation Detail: EA			
Location	Lot/Serial	Ref	Qty Alloc
12000			

Shipping Material Orders

You can approach shipping MOs in two ways:

- Ship items in Material Order Maintenance by entering the MO as confirmed and allocated.
- Follow the more traditional approach taken with sales orders where you execute separate confirmation, allocation, and shipment functions. In addition, you can print a packing list using Sales Order Packing List.

Confirming Material Orders

MOs must be confirmed before they can be allocated or shipped. You can do this in a separate step with Material Order Confirmation (11.11.2).

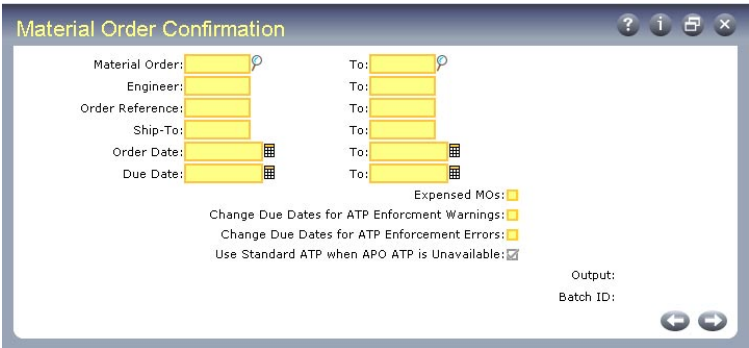


Fig. 19.13
Material Order Confirmation (11.11.2)

Enter appropriate criteria to select MOs for confirmation, then execute the function. The system processes MOs in the specified range. If Expensed MOs is No, the system processes only MOs without a charge code. If Yes, the system includes expensed orders.

When ATP Enforcement Enabled is Yes in Sales Order Control (7.1.24), you can optionally have the system automatically change the due dates before confirming MOs when the available to promise (ATP) quantity is insufficient to fill the order. Based on the ATP enforcement level associated with the item, the system adjusts the due dates for MO lines that produce ATP warnings or errors to dates when the required quantities are available.

See User Guide Volume 2A: Distribution for information on ATP.

The system generates a report like the one in Figure 19.14 to the output device you specify.

Order	Order Ref	Engineer	Ship-To	Ord Date	Required	Due	Confirmed	St
62	CA157	pkh	00000005	07/11/00	07/14/00	07/14/00	07/11/00	

Fig. 19.14
Material Order Confirmation Report

Allocating Material Orders

Allocations reserve inventory so it is not allocated to other sales orders, RMA issue lines, intersite requests, calls, or work orders. Use allocations to control the shipment of items, especially in situations when a sufficient quantity of an item does not exist to fill all orders.

▶ See “MOs for EMT Items” on page 616.

Note You cannot allocate EMT items to an MO. The system allocates these items when they are received from the supplier.

Control allocations in MOs with settings in Sales Order Control and Material Order Control.

- The Quantity Available to Allocate calculation method in Sales Order Control controls how the system determines the number of items available to allocate. The calculation is the same for all items and sites.
- The value for Limit Allocations to Avail to Allocate in Sales Order Control determines how the system handles shortage situations. If this field is No, Quantity Allocated defaults from Quantity Ordered even if a sufficient quantity to allocate does not exist. If this is Yes, Quantity Allocated never exceeds the quantity available. If there is no quantity available to allocate, Quantity Allocated defaults to 0.
- The setting of Allocate MO Lines Due in Days in Material Order Control determines the value for the same field in Material Order Maintenance, MO Manual Allocations, and MO Auto Allocations. The system only attempts to allocate MO lines with a due date within the range defined by this field. For MOs due outside the range, Quantity Allocated defaults to 0 regardless of available quantity.
- The Detail Allocations field in Material Order Control sets the default for the similar field in Material Order Maintenance. If this is Yes for an MO line, an inventory allocation pop-up window displays so you can specify site/locations and lot/serial/reference numbers.

You can even ship items in Material Order Maintenance without creating allocations by specifying a quantity to ship. If you make allocations, you can set Ship Allocated to Yes, and the system sets up default ship quantities for you.

MO items are picked when you print a packing list for an MO with the Sales Order Packing List (7.9.13) function. To do this, set Print Pack List to Yes for the MO in Material Order Maintenance.

If you use packing lists to communicate shipping priorities, you can set Pick Only Allocated Lines to Yes in Sales Order Control. In this case, only allocated quantities print from the Sales Order Packing List function, telling the shipping department what to ship.

You can allocate inventory at several stages of an MO's life cycle:

- Material Order Maintenance does general allocations for all orders due within the number of days you specified in Material Order Control. You can also enter detail allocations.
- Execute MO Automatic Allocations (11.11.5) regularly to perform general allocations for any orders due within a certain number of days. Use this function to allocate for MOs beyond the allocation limit you specified in the control program during order entry.
- You can use MO Manual Allocations (11.11.4) to override general or detailed allocations.

Material Order Shipments

Use Material Order Shipments to enter the selection data for shipping MOs. Unlike shipment for standard sales orders, Material Order Shipment executes an inventory transfer and receipt, and an additional unplanned issue, depending on the kind of MO:

- *MO with a Call*. Transfers items from their current location to the place where they will be consumed on a call.
- *MO without a Call*. Transfers items from their current location to replenish engineer stock.
- *Expensed MO*. Transfers the items, then issues them as service expense.

A transfer reduces inventory quantity for an item at the From Site and From Location, and increases it at the Engineer Site and Engineer Location. When the function completes, it prints delivery documents.

During the material order shipment process, you perform the following steps:

- Enter shipment data.
- Modify line-item quantities.
- Confirm shipments.
- Enter trailer data.
- Print Material Delivery Note and Back Order Advice.

You can execute Material Order Shipments as a separate function or initiate shipments in Material Order Maintenance if you enter confirmed orders. To initiate shipments from Material Order Maintenance, set Ship Immed on the MO header to Yes.

Engineer Site and Location

▶ See “Engineer Site and Location” on page 565 for more details.

A consistent engineer site and location are critical to managing MOs. During shipment, the destination fields default from the site and location associated with the engineer in Engineer Maintenance. If these are not available, the system uses the default site and location defined for the engineer’s area.

When inventory ordered on an MO is consumed in Call Activity Recording, the system uses the same logic to derive the site and location for inventory issues. So, if you ship the items somewhere else, change the defaults in CAR for inventory issues to occur correctly.

Establish procedures so that the system references the same site and location when looking for stock for a particular engineer.

The system performs normal location validation. This includes verifying whether the location exists, based on the setting of Automatic Locations, and verifying the actions allowed at the location based on restricted transactions.

- For all MOs, the inventory receipt transaction (RCT-TR) must be allowed.
- For expensed MOs, the unplanned issue transaction (ISS-UNP) must also be allowed.

Material Order Shipments Field Reference

If you do not choose to ship immediately from Material Order Maintenance, you can ship MOs later, using Material Order Shipments (11.11.6), illustrated in Figure 19.15. To ship an MO involves several steps, some of which are optional.

Frame	Req	Purpose
Header	Y	Specify MO to be shipped and shipment defaults.
MO Line Items	Y	Review and modify allocations and quantities.
Issue Detail	N	If Multi Entry is Yes, change details for multiple quantities.
Confirmation	Y	Confirm items to be shipped.
Trailer	Y	Generate delivery note.

Table 19.3
MO Frames

Material Order Shipments Header

Fig. 19.15
Material Order
Shipments Header
(11.11.6)

MO. Enter the number of a valid MO you created with Material Order Maintenance. The MO number must exist. If the MO is not confirmed or has no lines, a warning displays. When this function is executed from Material Order Maintenance, the system fills in the number and does not let you change it.

Engineer and Order Ref. These fields are output only and default from the MO.

Ship Allocated. The default is No. If Yes, the quantity allocated on each item line displays in the To Ship column in the MO line-item detail section of Material Order Shipments. If you have not printed a packing list—for example, if you are shipping from Material Order Maintenance—none of the items are picked. In this case, use Ship Allocated to set up default shipping information.

Ship Picked. Specify Yes (the default) to include all items in the To Ship column that were picked when the packing list was printed. Otherwise, they display in the Backorder column, and you must specify the order quantity for each line.

Tip
Use Ship Allocated to set up default shipping information if you are shipping directly from Material Order Maintenance.

Tip
This setting has no effect on MOs without a call.

Override Partial OK. Specify whether to allow partial shipments for this material order.

Yes: Allow partial shipments.

No: Check the Partial OK field in Customer Maintenance to determine whether partial shipments are allowed.

From Site. Inventory site where items are located. You can leave this field blank unless the MO spans multiple databases. If you specify the site, it must be valid.

To Site and Location. These fields default from the site and location associated with the engineer. If these values are blank, the system uses the site and location defined for the engineer's area.

Material Order Line Items

After you complete the header, the Material Order Line Items frame displays. Each item ordered on the MO displays. You can change each line before it is transferred. You can also overrule the system allocation and enter another location from which to transfer the item.

Fig. 19.16
MO Shipments
Line Items

Material Order Shipments

MO: 50
Engineer: PKH
Order Ref: CA127

Ship Allocated:☒
Ship Picked:☒
Override Partial:☐

From Site:
To Site: 10000
To Location: PKH

Ln	Item Number	T	Qty Alloc	Picked	To Ship	Backorder	Site
1	10-15000		10.0	0.0	10.0	0.0	10000
2	44-2000		0.0	0.0	0.0	10.0	10000

Line: 2
Quantity: 5.0
Item Number: 44-2000
Description: COMPUTER,CONTROL UNIT

Cancel B/O:☐
UM: EA

Site: 10000
Lot/Serial:
Reference:
Multi Entry:

Loc: 12000

Line. Enter a line number to display or modify associated data.

Cancel B/O. The default is No. Yes indicates that any item under the Backorder column should be removed from the order. No indicates that items on backorder should be retained for later shipment.

Quantity. The quantity to be shipped for this line displays. You can modify it. If Ship Allocated and Ship Picked are Yes, the quantity is the total of the Allocated and Picked columns. You can enter a new quantity. For example, an engineer may have ordered five items and now wants only three.

Item Number, Description, and UM. These are output-only fields referring to the line-item number and its inventory description and unit of measure.

Site and Location. Defaults from the inventory site and location associated with the item in the item master. You can modify these fields.

Lot/Serial and Reference. The serial number and inventory reference of the first item picked for this line.

Multi Entry. The system sets this field to Yes when a line has multiple items and it cannot be changed. If Yes, an Item Issue Detail frame displays so that you can modify the serial number of each item picked.

When you accept the shipping information, you are prompted to confirm the items being shipped. The default reply is Yes. Accepting Yes displays the line item, item being shipped, what site and location it is shipping from, lot and serial numbers, quantity, and unit of measure.

You are prompted again to confirm that all information is correct. If you accept Yes, the shipment trailer displays. If you enter No, you can change information.

Material Order Shipment Trailer

The trailer entry is analogous to standard sales order shipment. After accepting the data, the system processes the items entered.

Fig. 19.17
Material Order
Shipments Trailer
(11.11.6)

Tip
Set up codes with
Generalized Codes
Maintenance for
field so_shipvia.

Ship Via. When the MO is associated with a call, this field defaults from the Ship Via associated with the end user's customer.

Ship Date. Defaults from the system date, but can be modified.

Remarks. You can enter brief remarks concerning MO handling. If you specified a call on this MO, remarks default from the remarks associated with the end user's customer.

Output. Enter an output device for reports that print when the shipment function executes.

Printed Output

The system creates two documents during the shipment process:

- *Material Delivery Note.* This document always prints and includes the shipping address, quantities, pricing, extended price, shipped from location, and shipped date. It is a packing slip to use with your freight service. The title, Material Delivery Note, prints at the top of the output.
- *Back Order Advice.* This document prints only if items on the MO remain on back order. It shows items, quantities, and sales price information.

Material Delivery Note

Each Material Delivery Note has a control number. The system uses this number to track transactions related to this MO. Use the control number when partial shipments are made or items remain on back order and are

shipped later. In this case, the system tracks the quantity shipped on each document. Set the value for this number in the Next Delivery Note field of Material Order Control.

The material delivery note lists items on the MO that are transferred to the engineer location. This includes all picking information and price information based on the price of the item in Item Master Maintenance. These prices are suggestions only and can differ from the invoice pricing determined during Call Activity Recording.

MATERIAL DELIVERY NOTE			Doc : 00000004		Page: 1		Date : 07/11/02			
Ship to:		Lake Refrigerator Co.			Order Ref: CA157					
		321 South Lake St.			Eng: PKH					
		Building 47			MO: 62					
		Los Angeles, CA 93122			Charge:					
		USA								
Ln	Item Number	Rep	Qty Ordered	Site	Location	Lot/Serial	Qty Delivered	Unit Price	UM	Tot Pri
1	44-1000	No	1.00				2.00	10.00	EA	20.
	Sensor Unit			10000	stock		2.00			
2										

Fig. 19.18
Material Delivery
Note (132-column
print format)

Back Order Advice

Back Order Advice lists all MO items on back order, their quantity, and sales price information. Each Back Order Advice has a control number. Set the value for this number in the Next Back Order Advice field of Material Order Control.

ITEMS DUE TO BE DELIVERED TO: Doc : 00000003 Page: 1 Date : 07/11/02

Harvey, Phillip
1900 Acacia Drive

San Marcos, CA 92069
USA

Order Ref:
Eng: PKH
MO: 63
Charge:

Ln	Item Number	Description	Qty Ordered	Qty Backorder	Unit UM	Price
1	44-100	Sensor Unit	10.00	5.00	EA	0.00

Remarks:

Fig. 19.19
Back Order Advice
(132-column print
format)

Inventory and GL Transactions

Shipping an MO generates issue (ISS-TR) and receipt (RCT-TR) inventory transactions. If the transfer is a site-to-site transfer, the system creates GL account transactions and bookings with standard inventory transfer routines.

You can review and delete the transactions created using GL Transaction Delete/Archive (36.23.2). The GL reference begins with IC and does the following:

- Debits the Inventory account defined in Inventory Account Maintenance for the product line at the To site and location.
- Credits the Inventory account defined in Inventory Account Maintenance for the product line at the From site and location.

When inventory transactions affect more than one site, costs may differ between the two sites. Cost variances are posted to the Transfer Variance account defined in Site Maintenance. The system automatically generates the appropriate balancing transactions in the GL for each site.

- When the two sites are in different entities, a balancing entry is posted to the appropriate Intercompany Inventory Control debit and credit account defined in Entity Code Maintenance (25.3.1.1).
- When the two sites are in the same entity, a balancing debit or credit is posted to the Transfer Clearing account defined in Inventory Control.

Expensed MOs

In case of an expensed MO with a charge code, the items ordered are transferred to the engineer site and location entered in Material Order Shipments and then consumed. The system handles this action as an unplanned issue (ISS-UNP).

The debit account for the costs is the Service Expense account from the product line for the charge code. Costs are credited against the Inventory account of the consumed item's product line.

MOs With and Without a Call

While expensed MOs are issued immediately, items transferred with other MOs remain in inventory. Items ordered for a call are issued out of inventory only when they are consumed for the call in Call Activity Recording. To maintain the relationship between the items and the call, the system marks the items in the To site as allocated to the call or line. This allocation prints on standard reports like the Allocated Inventory Inquiry (3.18).

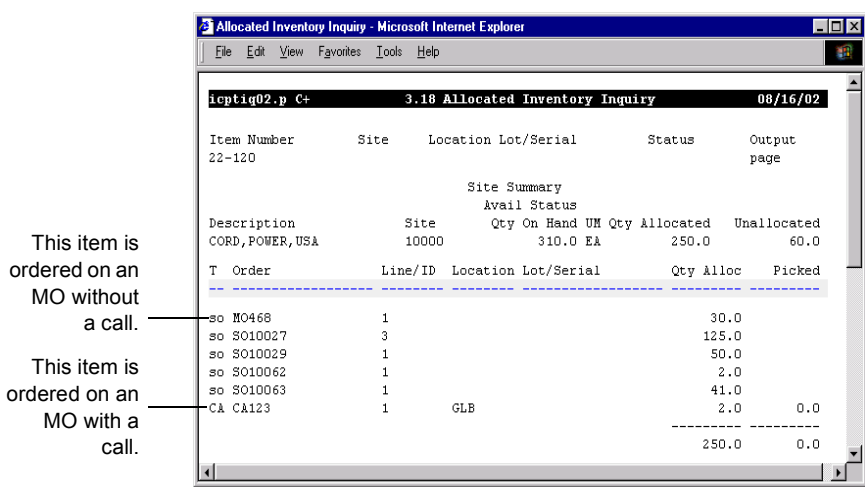


Fig. 19.20
Items Ordered
for an MO

Items ordered for the engineer’s inventory replenishment remain in inventory until consumed in some way, probably in Call Activity Recording.

Material Order Reports

Review information associated with MOs and shipments in three reports:

- Open Material Order Report (11.11.11)
- Material Order Backlog Report (11.11.12)
- Material Order Shipment Report (11.11.13)

If you are using EMT and your MO includes a line for an EMT transshipment item, you can view the transmission and shipment status of the EMT purchase order using EMT Tracking Report (7.15.11).

See User Guide
Volume 2A:
Distribution.

Open Material Order Report

Use the Open Material Order Report (11.11.11) to review line-item detail on MOs. You can restrict the report to include only MO lines that have a quantity shipped, or display information for all items on open MOs regardless of whether any quantity has shipped.

This report is generated based on information maintained in the MO master table. When an MO without a call has fully shipped, the system deletes it. When all items on an MO for a call are consumed or returned, the system also deletes it. Use the Material Order Shipment Report to generate a report based on transaction history for MOs that are no longer available in the MO master table.

Fig. 19.21
Open Material
Order Report
(11.11.11)

Select MO lines to report by call ID (order ref), engineer, and sold-to address. The system prints any item on order on any open MO line in the specified range. Line items within the selection print in order of due date.

Material Order Backlog Report

Use the Material Order Backlog Report (11.11.12) to display open MO lines waiting to be shipped. The system lists MO lines by item number, order, due date, site, or any combination. The system lists each item's availability by site and line items by due date.

Inventory quantities are the same as those in the Stock Availability Inquiry (3.17).

Material Order Backlog Report

Engineer Code:

To:

Item Number:

To:

Order:

To:

Due Date:

To:

Site:

To:

Location:

To:

Output:
Batch ID:

Fig. 19.22
Material Order
Backlog Report
(11.11.12)

The system prints back-ordered items on an MO line with a due date and site in the specified range. Each line item within the selection prints in order of due date.

fseodl.p b+	11.11.12	Material Order Backlog Report	Date: 08/19/02
Page: 1		Quality Products, Inc.	Time: 11:37:54
Order/Ln	Site	Item Number Description	Due Date Qty Ordered Qty Alloc.
50	PKH	Harvey, Phillip	Order Ref: CA127
1	10000	10-15000 COOLING SYSTEM	07/25/02 10.0 10.0
2	10000	44-2000 CONTROL UNIT	07/25/02 10.0 0.0
MO123-B	glb	Bellicose, George	Order Ref: CA123
1	10000	55-100 EVAPORATOR	07/30/02 2.0 0.0

Fig. 19.23
Backlog Report
(132-column print
format)

Material Order Shipment Report

Use the Material Order Shipment Report (11.11.13) to print a report based on the transaction history created whenever an MO is shipped. Use this to view transactions for MOs that have fully shipped and been deleted by the system. If an MO line has partially shipped, the open quantity on the MO line displays.

The report includes the call number for MOs that have not been consumed completely in CAR. Since the system does not maintain the call number in transaction history, it is not available after the MO is consumed and deleted.

Fig. 19.24
Material Order
Shipment Report
(11.11.13)

Only MO lines with a quantity shipped appear on the report. You can restrict the report to only items shipped or optionally include information for items returned.

Select MO lines to include by item number, engineer code, MO number, and ship date. Except for engineer, the selection criteria determine the way the system sorts and presents information on the report. The report is sorted by item number, effective date, or MO number, depending on the range you specify, then by the transaction history number. If you specify only the engineer, the system sorts the report by transaction history number.

Important Generating a report with blank selection criteria or using only the engineer code can impact program performance. Also, because the report searches all transaction history records, a large amount of history can degrade performance.

Loading MO Lines into CAR

When you associate an MO with a call, you must associate each line item with a particular call line. When you access the call line in Call Activity Recording, the system displays a list of MO line items ordered for it. The engineer can select some or all of these items, which the system loads into the Item Usage frame of CAR.

Loading MO lines simplifies the recording of consumed and exchanged items ordered with MOs. Once items are loaded, you can modify the usage records like any other records in CAR.

If you select an MO line but do not issue the inventory, the system removes it from the usage detail and lets you reload it. The system keeps track of items consumed on the MO and continues to present the Material Order Selection frame until you have consumed or returned all MO items.

Material Order Selection Frame

When you select a call line item in CAR that has one or more open MOs, the Material Order Selection frame displays.

Two items
have been
ordered for
this call line.

Call Activity Recording

Call ID: CA123 Bill To: 1001000 End User: 10010003 TZone: PST/PDT

Item Selection					
Line	Serial	Item Number	Work Cd	Svc Type	Report
1	S-100-2304C4	10-10000	Tech	W-1	402261

Material Order Line Selection						
Order	Ln	Item Number	Lot/Serial Number	Engineer	Quantity Open	T
MO123	1	44-100	50	glb	1.00	F
MO123	2	22-120		glb	2.00	

Fig. 19.25
Loading MO Lines
in Call Activity
Recording
(11.1.1.13)

The selection frame displays all open MO lines for the call line. An MO line is open when the quantity shipped on the MO is greater than the quantity consumed plus the quantity returned.

Select or deselect MO lines as needed. An asterisk (*) indicates selection. To leave the scrolling window and continue processing, press Go. After you finish the selection, the system loads the items ordered on the MO into item usage records in CAR. Press End while in the scrolling window to return to Call Activity Recording without loading any MO lines.

A user in CAR can select an item ordered on an MO for this call by a different engineer; however, the system displays a warning. The system validates each loaded line and displays standard CAR warnings and errors.

For each MO line you select, the system creates one item usage record. Internally, each item usage record remains linked to the MO line so it is recognized later when you update quantities. As a result, if items on an MO are not yet accounted for, the MO remains on the list of open MOs that you can select the next time you process this call item.

Item Usage Record

The system determines default information for the various fields in the item usage record as follows:

Quantity Used. The quantity used defaults from the open quantity of the MO line.

Quantity Returned. The quantity returned defaults from the quantity used if you have defined the item being consumed as repairable.

Operation Number. If item usage records exist, the system loads the MO into the first operation without them. If all operations have items, the system loads the MO into an operation numbered 10 more than the last one. If there is currently no item usage, the system loads the MO into the first operation.

Item Number. Same as the MO item number.

Lot/Serial. For lot/serial controlled items, this value is loaded from the MO line.

Tip
Set Repairable to
Yes in Service
Item Maintenance
(11.3.7)

Inventory Transactions

When you accept the information in the item usage frame, several actions can occur:

- An inventory transaction for the consumed items takes place (ISS-WO).
- The system updates the quantity open on the MO based on the quantity consumed.
- After inventory processing and quantity updating, the system deletes the MO line if the quantity shipped equals the quantity ordered, the open quantity on the line is zero, and the pending quantity is zero.
- When the system deletes the last line of an MO, it also deletes the MO header.

Returning Items on MOs

An engineer may need to return items ordered on an MO when:

- Items ordered for a call are not used. Return these items in Call Activity Recording or in MO Direct/Pending Returns (11.11.8).
- Items ordered for engineer stock on an MO without a call are no longer needed. Return these items in MO Direct/Pending Returns (11.11.8), as long as the system has not deleted the MO.
- Items returned in Call Activity Recording are given a pending status. This means that the items are registered as returned, but remain in the engineer stock. You must physically return them to general stock in MO Direct/Pending Returns.

Return Setup

The return process in CAR and MO Direct/Pending Returns depends on two important setup activities, discussed in Chapter 3:

- “Return Status” on page 99
- “Default Sites and Locations” on page 94

Make sure you understand these concepts before continuing with this section.

MO Returns in CAR

You can return items ordered on an MO in Call Activity Recording. The system executes these returns as inventory transfers, since the MO items are in standard stock. The return status you specify indicates the type of return in CAR. The system restricts the return statuses used with MO items as follows:

- Pending can be Yes or No. If Yes, Good must be Yes and Scrap No. If Pending is Yes, the return is registered against the call, but the items are not physically returned. Complete the return later using MO Direct/Pending Returns (11.19.13.8).
- Exchange must be No. You cannot return items ordered on an MO for credit. Exchange processing is reserved for items returned from a customer.

▶ See “Returned Items Detail Frame” on page 506.

When returning items in CAR, always set Detail to Yes so that you can review the return status and default site and location for the return. When Detail is Yes, the Returned Items Detail pop-up displays. This frame enables you to specify the return status and inventory return site and location. If you are returning more than one item, you can access a multiline entry frame.

Updating Inventory

When you return items loaded from an MO line in CAR, the system moves them from one inventory site/location to another, using an inventory transfer transaction. If the return status has pending set to Yes, no inventory is moved at this time. However, the allocation to the call is removed.

The system keeps track of the open quantities on the MO. Returning items updates the quantity returned. A pending return updates both quantity returned and quantity pending.

Deleting MO Lines

After processing inventory and updating quantities, the system deletes the MO line if the quantity shipped equals the quantity ordered, the open quantity on the line is zero, and the pending quantity is zero. When the system deletes the last line of an MO, it also deletes the MO header.

MO Direct/Pending Returns

Use MO Direct/Pending Returns (11.11.8) for MOs associated with a call to:

- Return items ordered for a call but not used.
- Complete the return of items ordered on an MO for a call and marked with a pending return status in Call Activity Recording.

It is possible to return items ordered for engineer stock—MOs without a call—that you no longer need. However, when all items ship successfully on an MO without a call, the system deletes it. When this occurs and it is necessary to return items, you must use standard inventory management functions to transfer the items.

Note You cannot return items ordered with an expensed MO. If you specify an MO that has a charge code, the system displays an error.

Return Status

Use the return status in MO Direct/Pending Returns in two ways, depending on whether you are doing a direct return or completing a pending return.

You cannot use MO Direct/Pending Returns to mark items as pending, only to complete a pending return started in Call Activity Recording. This means you can specify a pending return status only if some items are marked as pending in CAR. Otherwise, the system displays an error.

Pending returns are assumed to be good, since they are items you ordered on an MO and did not use. They are returned to the default return site and location set up in Default Site Maintenance.

For direct returns, the system uses the return status to determine the default site and location for the returned items. You cannot specify a return status marked with exchange, since the items being returned do not come from a customer.

Because completing a pending return and directly returning items are processed differently, you cannot execute both types of returns at once.

Example You want to return four items left on an MO. Two were marked as pending return in CAR. You must execute this function once with a pending status and the quantity pending, then again with another valid return status and the quantity unconsumed.

Return Quantities

The system keeps track of various quantities on the MO. Any kind of return, both direct and pending, updates the quantity returned. A pending return also updates the quantity pending. For this reason, when these quantities display in MO Direct/Pending Returns, the quantity shipped may not equal the quantity returned, plus the quantity consumed, plus the quantity pending.

If both an open quantity and a quantity marked pending exists, the system defaults the value into the quantity field based on the return status.

MO Direct/Pending Returns Header

Figure 19.26 illustrates the header frame of MO Direct/Pending Returns.

Fig. 19.26
MO Direct/Pending
Returns (11.11.8)

MO. Enter a valid MO with items to be returned. The MO cannot have a charge code.

Order Reference and Engineer. These are output-only fields that default from the MO.

Return All. Specifying Yes sets up all open quantities on the MO to be returned. If No, you must enter each line on the MO and select quantities to be returned before they are processed. Specify Yes to streamline data entry.

Status. Status defaults from the Return Status in Call Management Control. The definition of the return status determines what kind of return you are performing and the default return site and location.

Enter any valid return status defined with Return Status Maintenance (11.21.17) except an exchange status. If a pending status is specified, some items must be marked as a pending return in Call Activity Recording or an error displays.

Site and Location. Site and location default first from the engineer site and location, then from the engineer's area. You can change these values if the items reside in a different site and location. These values provide the default for each line with quantities to be returned.

Tip
Pending returns
have a Qty Pending
value greater than
zero.

Selecting Items to Return

Once you complete the header, the line-item selection frames display.

The screenshot shows a software window titled "MO Direct/Pending Returns". The header section contains the following information: MO: MO125, Order Reference: CA124, Engineer: BJW, Return All: ☐, Status: GOOD, Site: 10000, and Location: BJW. Below the header is a table with the following data:

Ln	Order Ref Line	Item Number	UM	Status	Quantity
1	1	44-100	EA	GOOD	1.0

Below the table, the description is "CONTROL UNIT, HOME USE". The "Type:" field is empty. The "Qty Allocated:" is 0.0000, "Qty Shipped:" is 1.0000, "Qty Consumed:" is 0.0, "Qty Returned:" is 0.0, and "Qty Pending:" is 0.0. The "From Site:" is 10000, "Return Site:" is 10000, and "Return Serial:" is empty. The "Location:" is BJW, and "Location: RETURN" is also present. The "Multi Entry:" checkbox is checked, and the "Comments:" field is empty. There are navigation buttons at the bottom right.

Fig. 19.27
MO Direct/
Pending Returns
(11.11.8)

The Ln, Order Ref Line, Item Number, and UM fields are output only and reflect values from the MO line.

Status. Defaults from the header’s status and has the same restrictions and effect.

Quantity. If a pending status is specified, the Qty Pending displays by default. For a direct return, the open quantity on the MO line displays. Enter the number of these items you want to return. If you specify more than the open or pending quantity, an error displays.

Tip
The open quantity is the Qty Shipped minus Qty Consumed minus Qty Returned.

Description, Type, Qty Allocated, Qty Shipped, Qty Consumed, Qty Returned, and Qty Pending are output-only fields.

From Site and Location. Site and location default from the header. The system transfers inventory from this site and location to the return site and location.

Return Site and Location. The system searches for a default return site and location based on the attributes of the return status. Define return sites with Default Site Maintenance (11.21.13) for combinations of product line, service group, work code, item, and area. The return location must allow receipts (RCT-TR).

The system searches for a return site using the product line and service group of the item being returned. The system derives the area from the engineer. Work code is not used in this function.

Return Serial. If the item being returned is lot/serial controlled, enter the correct number in this field.

Multi Entry. Enter Yes if you are returning multiple items and need to specify detail information for each one. If Yes, a Return Detail frame displays so that you can specify the lot/serial of each item returned.

Comments. If Comments is Yes, you can add or modify comments for the return.

Pending Return Report

The MO Pending Return Report (11.11.9) displays MO lines with at least one item that has a pending return status. Review this report on a regular basis to make sure that engineers return the items they said they did not use.

Fig. 19.28
MO Pending
Return Report
(11.11.9)

MO Pending Return Report

Item Number:

Engineer:

Sold-To:

To:

To:

To:

Output:
Batch ID:

Since you cannot close a call until you return or consume all items ordered on an MO, ensure that pending returns are completed in a timely fashion.

Service Structures and Routings

Service structures and routings address the need of service organizations to manage repairing, installing, and maintaining items. This chapter discusses BOMs and routings in the service environment and provides details about setting up service BOMs, routings, standard operations, and work centers.

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Overview

Service structures and routings address the need of service organizations to manage repairing, installing, and maintaining items. These needs fall into three general categories:

- Service engineers need to identify the parts used to maintain an item, fix or install it, and the steps to follow during the service activity.
- Items returned from the customer for repair often require overhaul and refurbishing. A way is needed to assign the repair to a work center and manage it.
- Service activities may require labor and shop floor reporting similar to standard manufacturing control functions.

The functions on the Service Structures/Routings Menu (11.19), listed in Table 20.1, address these needs.

Table 20.1
Service Structures/
Routings Menu
(11.19)

Menu No.	Menu Title	Program
11.19.1	Service BOM Code Maintenance	fsbommt.p
11.19.2	Service BOM Code Inquiry	sbomiq.p
11.19.3	Service BOM Code Report	fsbomrp.p
11.19.5	Service Structure Maintenance	fspsmt.p
11.19.6	Service Structure Inquiry	fspsiq.p
11.19.7	Service Structure Report	fspsrp.p
11.19.9	Service Structure Copy	fspscp.p
11.19.13	Service Work Center Maintenance	fswcmnt.p
11.19.14	Service Work Center Inquiry	fswcic.p
11.19.15	Service Work Center Report	fswcrp.p
11.19.17	Service Routing Maintenance	fsromt.p
11.19.18	Service Routing Inquiry	fsroiq.p
11.19.19	Service Routing Report	fsrorep.p
11.19.20	Service Routing Copy	fsrocp.p
11.19.21	Service Std Operation Maint	fsopmmnt.p
11.19.22	Standard Operation Browse	rwbr002.p
11.19.23	Service Std Operation Report	fsopmrp.p

This chapter discusses each of these functions in more detail:

- Service BOM Code Maintenance (11.19.1) defines the codes identifying a set of items used in service activity.
- Service Structure Maintenance (11.19.5) is used to create the list of items consumed during a predefined service activity.
- Service Work Center Maintenance (11.19.13) enables you to set up service work centers. You can also use standard work centers for service activities.
- Service Routing Maintenance (11.19.17) enables you to define a set of operations detailing the steps taken in a service activity.
- Service Standard Operation Maintenance (11.19.21) enables you to define operations common to the service of several products or applicable to different service routings in different operation sequences.

Figure 20.1 illustrates a typical work flow for setting up and using service structures and routings.

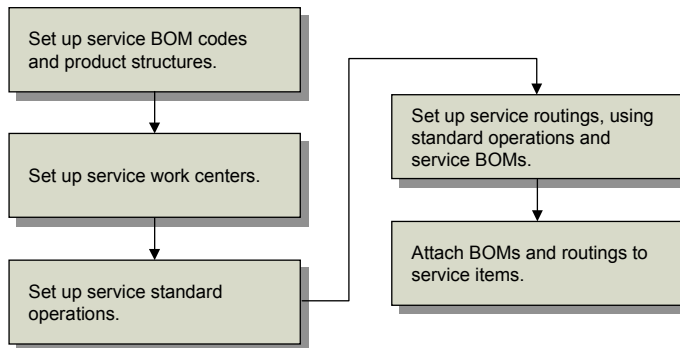


Fig. 20.1
Service Structure/
Routing Work Flow

BOMs/Routings in Service Environments

The terms *BOM* and *routing* are familiar terms to users of standard manufacturing functions. In manufacturing, a BOM defines the raw materials, components, or subassemblies that make up an item. A routing is a set of steps for manufacturing an item.

In the manufacturing environment, the BOM and routing associated with an item are typically standard: the item is generally made in the same way. While alternates and substitutions can exist, this one-to-one relationship is illustrated by the fact that the BOM and routing associated with an inventory item typically have the same number code as the item. Manufactured item 10-400 uses BOM 10-400 and routing 10-400.

In Service/Support Management, you use BOMs and routings in a slightly different fashion, reflecting the requirements of the service environment. From a service perspective, a *BOM* may be a list of replacement parts for repairing or maintaining an item, or a set of items needed to perform an installation. A *routing* is a set of steps detailing the procedure to be followed in repairing, installing, or maintaining an item.

Special Characteristics of Service BOMs/Routings

Because of the requirements of the service environment, service BOMs and routings have characteristics that distinguish them from standard manufacturing BOMs and routings.

Multiple BOMs and Routings

The major difference between manufacturing and service is that the service environment does not usually have a single way of doing things. Installation, repair, and maintenance reflect three service scenarios where different procedures requiring different item usage occur. But there can be other scenarios. A service organization can have several standard repair routings, not just one, reflecting typical problems encountered in the field.

You can associate three service BOMs and routings with a service item:

- *Repair.* Each type of repair typically has its own repair routing for procedures and repair BOM for items replaced during repair. Though repair steps can vary, the goal is to specify general repair steps that are always performed.
- *PM.* As with repairs, preventive maintenance (PM) visits also have a routing and bill of material. PM visits are different from repair situations. The PM routing defines standard procedures that need to be performed for a preventive maintenance visit. The PM BOM defines the items that you always replace or consume during a preventive maintenance visit.
- *Installation.* The operational steps and items used during an installation represent a third kind of standard BOM and routing that is different from repairs and preventive maintenance.

Tip
Use Service Item Maintenance (11.3.7) to associate BOMs and routings with an item.

BOMs Associated with Operations

This proliferation of related BOMs and routings leads to a second distinction in the service environment. In manufacturing, the BOM is often set up so that you use parts of the BOM at various operation steps. This is facilitated by the one-to-one relationship between a BOM and a routing.

In the service environment, since there can be several routings, the operation that uses an item may not be numbered the same in each. To accommodate this difference, the system links service BOMs to operations rather than linking operations to BOMs. You can create shorter BOMs listing the items used during a standard operations or routing step. You can then specify these BOM codes in the appropriate step on the routing.

Unique Codes

You typically identify manufacturing BOMs and routings with the same code as the associated item. You must identify service BOMs and routings with unique codes. You cannot use inventory item numbers.

Relationship of Service and Non-Service Codes

The programs you use to maintain service BOMs, product structures, routings, work centers, and standard operations are similar to those in the manufacturing modules. However, the system does make a distinction about where you can edit codes:

- You can maintain service and manufacturing BOM codes interchangeably in Service BOM Code Maintenance (11.19.10) and Product Structure Code Maintenance (13.1). However, a warning displays if you do not maintain the code in the program that created it.
- You cannot maintain manufacturing product structures using Service Structure Maintenance (11.19.5). Conversely, you cannot maintain service product structures with Product Structure Maintenance (13.5).
- You cannot maintain manufacturing routings using Service Routing Maintenance (11.19.17), since many of the fields required in manufacturing are not used in service. Similarly, you cannot maintain service routings with Routing Maintenance (14.13.1).
- You can edit a manufacturing work center with Service Work Center Maintenance (11.19.13), but a warning displays. You can maintain a service work center in Work Center Maintenance (14.5), but a warning displays.
- You can edit a service standard operation with Standard Operation Maintenance (14.9), but a warning displays. Similarly, you can maintain a manufacturing standard operation with Service Standard Operation Maintenance (11.19.21), but a warning displays.

You can use standard operations and work centers set up in the Routings/Work Centers module in service activities. For example, if an item is refurbished using a manufacturing work center, you can specify it on a service routing. You can also use manufacturing operations with service routings, although defaults for some data elements unique to service are not available.

You can associate a service routing with an item in Item Master Maintenance, although this is not recommended.

Important If you do cost rollups in a manufacturing environment, do not associate a service routing with an item in Item Master Maintenance. The roll-up process does not consider BOMs that are attached to routing steps. This can lead to an inaccurate cost rollup.

The only place that you can use a manufacturing BOM in service is as the list of items associated with a routing step or standard operation. You cannot associate manufacturing BOMs and routings with service items. However, you can use them in the service copy functions as source for service BOMs and routings.

Attaching BOMs/Routings to Service Items

After you create the appropriate service routings and bills of materials, you can attach them to items using Service Item Maintenance (11.3.7). You can specify three BOMs and routings that relate to three fields in Service Item Maintenance:

- A repair BOM and routing are normally attached to an item when Repairable is Yes.
- An installation BOM and routing are normally attached to an item when Installation Call is Yes. You can have variations on a standard PM BOM and routing depending on how often you service the covered item.
- A PM BOM and routing are normally attached to the item when PM Days is nonzero.

▶ See “Service Item Maintenance” on page 43 for details.

▶ See “Using BOM Type” on page 342 for details on BOM type codes.

If your company handles service activities differently at different sites, you can define service BOMs and routings for each site with Service Item by Site Maintenance (11.3.9).

BOM Codes for Non-Inventory Items

During preventive maintenance and repairs, you can use non-inventory items. To track these supplies, create BOM codes for them in Service BOM Code Maintenance (11.19.1).

Then attach the BOM code to the routing at the appropriate operation. The items are listed as part of the items needed when a call is printed. However, they are not included as item usage in Call Activity Recording, since the system loads only inventory items as item usage in CAR.

Using Service BOMs and Routings

The system uses service BOMs and routings in a number of places:

Tip
RMA Release to Work Order uses the repair routing only.

- Call creation and printing
- Call Quote Maintenance
- Call Activity Recording
- RMA Release to Work Order (repair routing only)
- Attachment of BOMs to standard operations and service routings

Call Creation

Tip
Define the Install and PM work codes in Call Management Control.

One of the three BOMs and routings associated with a service item is used during call creation, depending on the work code you specify.

- The PM BOM and routing are used by default for calls with the PM work code. The system can generate these calls from a preventive maintenance schedule associated with a service contract, or you can generate them by using the Call Generator or by specifying the PM work code in Call Maintenance.
- The Installation BOM and routing are used by default for calls with the Install work code. The system creates these calls during invoice post for items requiring an installation, or you can create them by using the Call Generator or by specifying the Install work code in Call Maintenance.
- The repair BOM and routing are used by default for calls with any other work code.

You can modify defaults in Call Maintenance if Call Structure Window is Yes in Call Management Control. This field controls the display of the repair detail window in Call Maintenance. You can change defaults later in Call Activity Recording, if they have not been loaded as usage and activity recorded against them.

You can include service BOMs and routings when you print a call to provide the engineer with a detailed set of instructions for the service activity.

Call Quote Maintenance and Call Activity Recording

When you create a call quote, the work code determines the appropriate service BOM and routing, just as in Call Maintenance. For both quotes and calls, the service BOM and routing can be used to populate the detail records for labor and items. The system loads each routing operation in the Labor/Expenses detail. The system loads all BOM items in the Item Usage frame for the first operation without items.

This streamlines data entry for standard repair sequences. You can modify the sequence for this particular quote. When you release the quote to a call, the same detail records display in Call Activity Recording. You can make minor adjustments to reflect the work performed.

RMA Release to Work Order

You can process items received on an RMA through a work order by releasing an RMA receipt line to a work order with RMA Release to Work Order (11.7.1.5). The system transfers the repair routing to the work order, defining the operations that must be performed to complete the item rework. The repair BOM is not used. The item being repaired is considered the BOM on the repair work order.

Standard Operations and Service Routings

You can associate service BOMs with service items in Service Item Maintenance, as described previously. You can also associate a BOM code with a standard operation or with a step on a routing.

Use this for more precise control over how the system loads items in Call Activity Recording and Call Quote Maintenance. When you associate a BOM with a service item, the system loads the BOM items into the first routing step without items. This may not be the step where you use them.

To avoid this, divide the list of components required for the entire service activity into lists of the items used at each step. Then create service BOMs to represent the item subsets. Finally, associate each shorter BOM with the appropriate operation.

When routings set up this way are exploded in CAR, the system loads the set of items needed for each step as item usage for the step.

Service BOM Code Maintenance

Define service BOM codes in Service BOM Code Maintenance (11.19.1).

Fig. 20.2
Service BOM Code
Maintenance
(11.19.1)

Service BOM Code Maintenance

BOM Code: IN10-10000a

Description: Install BOM for st 10000

Unit of Measure: EA

Comments:

This function is optional. You can also create BOM codes in Service Structure Maintenance. However, you can define the codes here, then define the components with Service Structure Maintenance. If you do not use this function, comments are blank.

The BOM code cannot be an item number defined in the item master. If you specify a manufacturing BOM, a warning displays.

Service Structure Maintenance

Specify the details for service BOM codes in Service Structure Maintenance (11.19.5). This program uses only a subset of the fields displayed in Product Structure Maintenance. These two functions are similar. However, there is an important difference. The parent item of a service structure must be a service BOM code; it cannot be an item defined in the item master. You can create the service BOM code here or with Service BOM Code Maintenance (11.19.1).

Fig. 20.3
Service Structure
Maintenance
(11.19.5)

Service Structure Maintenance

BOM Code: IN10-10000

Description: Installation BOM

UM: EA

Component Item: 22-100

Rev: AA

Reference:

Effective Date:

Quantity Per: 1.0

Start Effective:

End Effective:

Remarks:

To: EA

BOM Code. Specify an 18-character code identifying a service product structure, or BOM. Parts or components used in the service of an item are grouped under a BOM code. The parent item cannot be an item defined in the item master or a manufacturing BOM code, but must be a service BOM created here or in Service BOM Code Maintenance. To maintain the relationship with the item being repaired, you can use a prefix or suffix naming convention.

Tip
If the BOM code does not exist, the system prompts you to create it.

Description. Enter up to 24 characters describing this service structure. This description displays when you reference the structure.

The next four fields—component item, revision, reference, and effective dates—comprise a key for the last four fields.

Component Item. You can specify any item defined in the item master as a part of this service structure, except configured items. You can also use another service or manufacturing BOM. You can use a formula item defined in the item master. You cannot specify a formula BOM.

Rev. If you select an item master item as a component, its current revision number displays.

Reference. Use a reference number to specify the same component more than once in a service structure. The reference number defines this item's position when the BOM is exploded.

Effective Date. Starting and ending effective dates are inclusive and cannot overlap. The default is blank. This field indicates the first day this parent/component relationship is to be effective, and is part of the key in searching for a quantity to use.

Quantity Per. The quantity of the component item needed during the service activity. When you print a repair work order, call quote, or call report, the system lists each component item and the quantity required to perform the work. The system loads Quantity Per into the Item Usage frames in Call Quote Maintenance and Call Activity Recording as Qty Used.

Start Effective and End Effective. Starting and ending effective dates are inclusive and cannot overlap. You can leave one or both dates blank, which is the default. They indicate the first and last day this parent/component relationship is to be effective. Effective dates phase in engineering changes and maintain product structure history.

Remarks. Enter a brief comment describing this component's use.

Service Routing Maintenance

Tip
Standard routings cannot be updated with Service Routing Maintenance.

Specify the details for service routings in Service Routing Maintenance (11.19.17), illustrated in Figure 20.4. A service routing is the sequence of steps involved in a service operation. This sequence can include any number of standard operations, or can use operations defined for this service routing only.

Service routing codes must follow the same rules as service BOMs:

- The routing code must be unique to Service/Support Management.
- It cannot be an existing item number in the item master.

Standard Operations

Tip
If you use manufacturing standard operations, defaults for service-only attributes are not available.

Standard operations streamline data entry by providing defaults for all but the effective dates (Start Date and End Date). The comments you enter for each step print on the call so that the engineer can see how to service the item. You can use both manufacturing standard operations, which you define in the Routings/Work Center module, and service standard operations on a service routing.

Work Centers

When you set up a service routing, you can use standard work centers that are part of your regular manufacturing operations. Or you can use service work centers that you create in Service Work Center Maintenance (11.19.13). The kind of work centers you use depends on your business procedures.

Note Work centers are important in Call Activity Recording because the system derives the standard cost of labor from the work center.

The work center is a required field even if you do not use work centers in the traditional manufacturing sense. If you dispatch engineers to do preventive maintenance or repair on site, you can set up a service work center named FIELD, or designate each engineer as a work center.

The screenshot shows a window titled "Service Routing Maintenance". It contains the following fields and values:

- Routing Code: PM10-10000
- Operation: 10
- Start Date: 07/25/2002
- End Date: (blank)
- Standard Operation: SETUP
- Work Center: SSM (highlighted in yellow)
- Service Work Center: (blank)
- Description: Routine Inspection
- Run Time: 0.5
- Start Date: 07/25/2002
- End Date: (blank)
- Tool Code: (blank)
- Subcontract Cost: 0.00
- BOM Code: (blank)
- Service Category: LABOR
- Comments: (blank)

Fig. 20.4
Service Routing
Maintenance
(11.19.17)

Routing Code. An 18-character code that identifies the service routing. This cannot be a routing code defined in the Routings/Work Center module or an item number defined in the item master.

Operation. This number identifies where this step occurs in the routing sequence. Operations are usually initially defined in increments of 10, such as 10, 20, 30. This lets you easily insert steps.

Start and End Date. Starting and ending effective dates are inclusive and cannot overlap. You can leave one or both dates blank, which is the default. They indicate the first and last day this operation step is to be effective. Use effective dates to phase in engineering changes.

Standard Operation. You can specify a standard operation code set up with Service Standard Operation Maintenance (11.19.21) or Standard Operation Maintenance (14.9). Standard operations represent actions common to the service of several products or applicable to different service routings in different operation sequences. When specified, most remaining fields default from the values for the standard operation.

Work Center. Defaults from the standard operation, if specified. You can use either service work centers or manufacturing work centers. The work center is important in Call Activity Recording because the system derives the standard cost of labor from it.

Description. Enter up to 24 characters describing the operation. Description defaults from the standard operation, if specified.

Run Time. The approximate number of hours required to perform this step. This field defines the quantity in the Labor/Expenses frame of CAR. Run Time defaults from the standard operation, if specified.

Start and End Date. Starting and ending effective dates are inclusive and cannot overlap. You can leave one or both dates blank, which is the default. They indicate the first and last day this operation step is to be effective. Use effective dates to phase in engineering changes.

Tool Code. The tool associated with this step. Tool Code defaults from the standard operation, if defined.

Subcontract Cost. Defaults from the standard operation, if specified. Indicates the cost of subcontracting this step. If you specify a run time, leave this field blank. The system does not consider subcontract costs when it generates a call invoice.

BOM Code. Defaults from the standard operation, if specified. BOM Code indicates the list of items to use at this routing step. This code must be a service or manufacturing BOM code. These items are loaded as usage for this step in Call Activity Recording. By default, the system loads all items in the BOM associated with a service item into the first routing step without items.

Service Category. Defaults from the standard operation, if specified. The service category for the labor used during this operation. Use the service category to control the financial flow of service activity into GL accounts. Select a labor or expense service category.

Comments. If Yes, enter comments to print on the call. You can use them as detailed instructions for servicing an item.

Tip

Set up tool codes in Generalized Codes Maintenance for field ro_tool.

Tip

For more control over how items are loaded in CAR, create service BOMs that include only items used at an operation, then associate the BOM with the correct routing step.

Service Work Center Maintenance

In a service context, work centers represent a facility used for repairing items. If you use service routings, you must attach work centers to each operation in the routing, just as in manufacturing. You can use either service work centers or manufacturing work centers, set up with Work Center Maintenance (14.5), interchangeably.

In Call Activity Recording, the system uses the work center to derive the standard cost of labor. If operations do not have a work center, the system uses the Service Work Center value in Call Management Control to derive the cost of labor.

To use the standard cost feature, set up work centers even if you do not use them as defined in the manufacturing environment. For example, if you employ field engineers who perform their labor at the customer site, create a work center for each engineer or a generic work center named FIELD.

You define only a subset of the planning attributes of a standard work center for service work centers. For example, you do not specify setup time, run/setup crew, and machine burden rate.

Tip

If the reengineering of an article requires the same equipment as original production, service it in the same work center that created it.

The screenshot shows a software window titled "Service Work Center Maintenance". Inside, there is a header area with "Work Center: REPAIR". Below this is a form with several input fields: "Description: Repair Work Center", "Department: 50", "Labor Rate: 55.00", "Labor Burden Rate: 0.00", and "Labor Burden Percent: 0.00%". There is a "Service Department" label next to the Department field. The window has standard OS controls (help, info, save, close) in the top right and navigation arrows in the bottom right.

Fig. 20.5
Service Work
Center
Maintenance
(11.19.13)

Work Center. Enter an 8-character code to identify this service work center.

Description. Enter up to 24 characters describing this work center to help identify its function.

Department. The department to which this work center belongs. Department codes identify groupings of manufacturing work centers, in your own facility or at outside suppliers. This field is for reference only.

In the manufacturing environment, you assign work centers to a department primarily for planning and accounting. This feature is not used with service work centers. When labor is reported in Call Activity Recording, the accounts associated with the charge product line are always used.

Labor Rate. Specify the average labor rate paid per labor hour to run this work center. The system uses this value in Call Activity Recording to calculate and post labor cost and display margin in Call Invoice Recording.

Labor Burden Rate. Specify the labor burden rate per hour applicable to both setup and run time at this work center.

Labor Burden Percentage. Specify the labor burden percentage applicable to the total labor cost at this work center.

Service Standard Operation Maintenance

A standard operation represents a process or operation common to the service of several products or applicable to different service routings in different operation sequences.

Standard operations supply defaults for service routings when you define them with Service Routing Maintenance. You can also access them from the Labor/Expenses frame in Call Activity Recording. For example, when you reference a standard operation, the system supplies information about the service category and the amount required to complete the operation by default.

Tip
You can use both service and manufacturing standard operations in service routings or in CAR.

Service Standard Operation Maintenance (11.19.21) is similar to Standard Operation Maintenance (14.9). Only a subset of the fields used in manufacturing operations is used in service. You can modify non-service standard operations with this function, but a warning appears.

Fig. 20.6
Service Standard
Operation
Maintenance
(11.19.21)

Standard Operation. Enter a code identifying an operation common to the service of several products or applicable to different service routings in different operation sequences.

Description. Enter up to 24 characters describing this operation. Description defaults into the Description field when you use this operation on a routing step. Include more detailed information in the comments.

Work Center. Can be either a manufacturing work center defined in the Routings/Work Center module or a service work center defined with Service Work Center Maintenance. Work Center defaults into the Work Center field when you use this operation on a routing step. The work center provides costing information for labor reported in Call Activity Recording.

Run Time. Approximate number of hours required to perform this operation. The run time defaults into the Run Time field when you use this operation on a routing step. It also defines the quantity used in the Labor/Expenses frame of CAR when you reference this operation.

Service Category. The service category for the labor used during this operation. Use the service category to control the financial flow of service activity into GL accounts. Select a labor or expense service category. If not defined, the system uses the Default Labor Service Category value in Call Management Control.

Tool Code. The tool associated with this operation. Defaults into the Tool Code field when you use this operation on a routing step.

Tip
Set up tool codes in Generalized Codes Maintenance for field ro_tool.

Tip

If you want more control over how items are loaded in CAR, create service BOMs that include only the items used at an operation, then associate the BOM with the correct routing step.

Supplier. The address code of the normal, or preferred, supplier for this subcontract operation.

BOM Code. The product structure defining components to be used during this operation. A warning displays if this is not a service product structure. This BOM is loaded as item usage for the operation when specified on a routing. The BOM associated with a service item is loaded into the first operation without items of its own.

Subcontract Cost. Indicates the cost of subcontracting this operation step. Defaults into the Subcontract Cost field when you use this operation on a routing step. If you specify a subcontract cost, leave run time blank. This field is not used for service routings.

Subcontract LT. The average number of shop calendar days it takes a subcontractor to perform this operation. This field is not used for service routings.

Comments. If Yes, enter comments. These default into the routing when this standard operation is referenced and print on the call to give the engineer detailed instructions for servicing an item.

Copying Service Structures and Routings

To facilitate the definition of new routings, use Service Routing Copy to copy all or a range of steps from one routing to another. You can start with a standard routing as the source. If the destination routing does not exist, the system creates it as a service routing.

If the destination routing already has operations, the operations of the source routing are added to it, unless operation numbers overlap. In this case, the destination operation is not changed.

Fig. 20.7
Service Routing
Copy (11.19.20)

The screenshot shows a 'Service Routing Copy' dialog box. It has a title bar with a question mark, information icon, and close button. The main area contains the following fields:

- Source Routing Code: IN10-10000
- Operation: 10
- To: 30
- Destination Routing Code: IN10-10000a
- Output: (empty field)
- Batch ID: (empty field)

At the bottom right, there are two arrow buttons (left and right).

Copy service structures in a similar fashion with Service Structure Copy (11.19.9).

Service Structure Copy

Source Structure: PM10-10000

Unit of Measure:

Destination Structure: pm10-10000a

Unit of Measure:

Destination Description:

←

→

Component Item	Reference	Quantity Per	T	Start Eff	End Eff
22-100		1.0			
44-1000		1.0			
44-4000		1.0			

Fig. 20.8
Service Structure
Copy (11.19.9)

Use these functions to streamline data entry when setting up multiple service structures and routings.

Return Material Authorizations

Use return material authorizations (RMAs) to manage simple returns from your end users. You can receive a returned item and issue a replacement item with an RMA. This chapter discusses how to set up and use RMAs, and provides a detailed description of RMA Maintenance.

RMA Life Cycle **680**

RMA/RTS Control Settings **682**

RMA Coverage **686**

Pricing for RMA Issue Line Items **695**

RMA Issues and Receipts **700**

RMA Billing **702**

Releasing RMAs to Work Orders **706**

RMA Maintenance **707**

RMA Life Cycle

Use RMAs for managing simple returns. In general, RMAs perform three activities:

- Receive returned items for repair or replacement.
- Issue replacement items.
- Create invoices for this activity.

RMAs are limited to the receipt and issue of items. Track activities that require an engineer's intervention with Call Activity Recording (CAR). CAR also supports the exchange of items. However, in CAR, this exchange is part of an engineer's activity in responding to a call for repair or preventive maintenance.

The following two features distinguish RMA returns from returns in CAR:

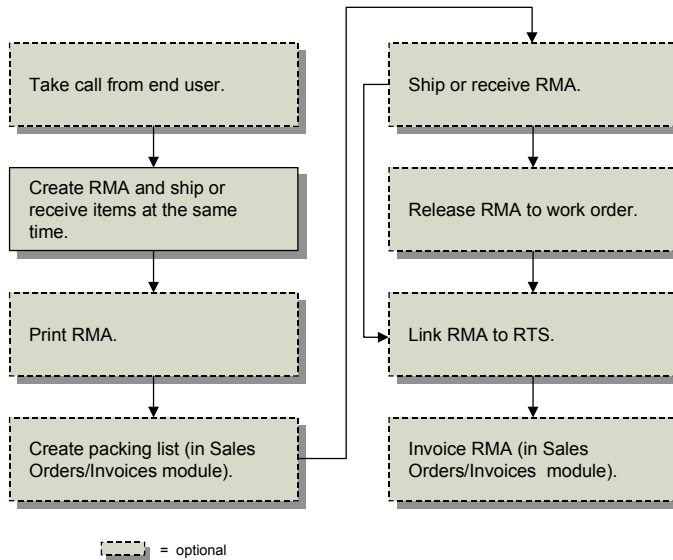
- You can generate RMAs independently of call tracking functions.
- RMAs do not require the intervention of a service engineer.

In terms of MFG/PRO functionality, you can view RMAs as a type of sales order with special features to accommodate the requirements of a service environment. RMAs use all sales order features, such as freight processing and best pricing. Best pricing determines applicable prices using codes and rules you defined in the SO/SQ/RMA Issues Pricing Menu (1.10.1).

Best pricing applies only to RMA issues. Define price lists for RMA receipts by setting up credit price lists in the PO/RTS/Sched/RMA Rcpt Pricing Menu (1.10.2).

Since RMAs are similar to sales orders, you use the Sales Orders/Invoices module to manage the invoicing and credit functions. Use Pending Invoice Maintenance to correct pricing information on an RMA invoice just like a sales order invoice.

Fig. 21.1
RMA Work Flow



Create RMAs with RMA Maintenance (11.7.1.1). Shipments and receipts on an RMA can take place when you create the RMA, or later in RMA Shipments (11.7.1.16) and RMA Receipts (11.7.1.13). If you create the RMA as unconfirmed, confirm it before shipment using RMA Confirmation (11.7.1.6).

Use RMA Print (11.7.1.3) to print the RMA and use the standard Sales Order Packing List (7.9.13) to create a packing list for an RMA.

If you are going to refurbish the item received on an RMA, release it to a work order using RMA Release to Work Order (11.7.1.5). To send the item to a supplier for repair, associate an RMA with an RTS in RTS Maintenance (11.7.3.1).

See Chapter 22, “Returns to Suppliers,” on page 731 for details on RTS features.

RMA billing takes place in the Sales Orders/Invoices module using the standard Invoice Print (7.13.3) and Invoice Post (7.13.4) functions. As with a sales order, you use Pending Invoice Maintenance (7.13.1) to change prices, tax status, and salesperson commission.

Manage credit issues in the Sales Orders/Invoices module. If an RMA is on hold because of a credit problem, you can clear it using Sales Order Auto Credit Approval (7.1.17).

Once fully invoiced, the system deletes RMAs, just like sales orders. To prevent obsolete RMAs from being left in the system, print and post invoices for an RMA even if monetary amounts are zero.

Effects of Optional Modules

A number of optional features and modules affect the processing of RMAs. Many of these options add additional pop-up windows that display during header or line-item entry. This chapter describes standard RMA processing. If you are using optional features, the following list indicates where you can find additional information when:

▶ See *User Guide Volume 2A: Distribution* for information on ATP.

- You are using available-to-promise (ATP) features and the system determines that insufficient inventory will be available on the due date for a confirmed RMA issue line. The system displays a frame with ATP information and options. When you use RMA Confirmation, you can decide before confirming the RMAs whether the system should change order-line due dates to meet ATP requirements.
- You are entering a sales order for a configured item. These pop-ups are described in *User Guide Volume 2A: Distribution*.
- You are using the optional Logistics Accounting module. The effect of this module is described in *User Guide Volume 6: Master Data*.

RMA/RTS Control Settings

RMA/RTS Control (11.7.24) sets defaults for handling both RMA and RTS (return to supplier) functions. Some fields apply to both RMAs and RTSs. Others are used exclusively by one or the other.

Fig. 21.2
RMA/RTS Control
(11.7.24)

Customer Return Site/ Location supplies defaults for RMA receipt lines.

Field	Value
RMA Header Comments	
RMA Line Comments	
Default RMA Contract	STANDARD
Keep Booking History	
Display Service Contracts	
RMA Sales Order Prefix	RMA
Next RMA Sales Order	9
Customer Return Site	10000
Customer Return Location	RETURN
Customer Spares Site	10000
Customer Spares Location	SPARES
Detail Allocations	
Allocate Days	0
Consume Forecast	
Edit Installed Base	
Print No Charge Receipts	
Purchase Order Prefix	RTS
Next RTS Purchase Order	3
At Supplier Site	10000
At Supplier Location	ATSUP
Return From Supplier Site	10000
Return From Supplier Loc	RETSUP

Customer Return Site in the control program is the default for RMA receipts. If you perform repairs at a manufacturing site, specify that site as the customer return site. If your return and repair operations are separate from manufacturing, use the repair site as your customer return site.

Figure 21.3 represents three different scenarios for setting up return sites and locations.

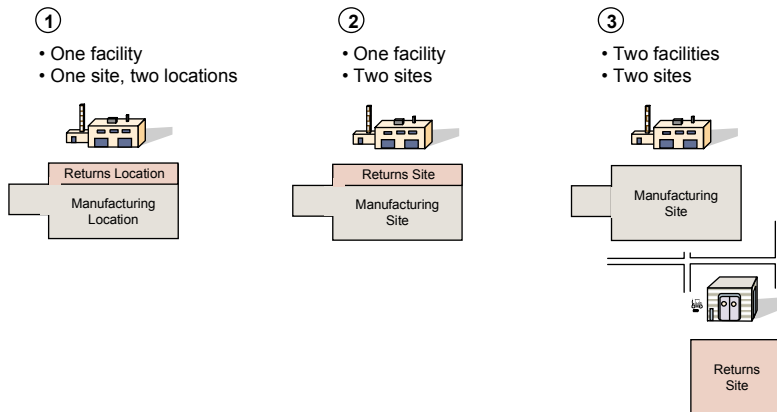


Fig. 21.3
Return and Spares
Sites and Locations

Setting Up Return Locations

Along with a customer return site, you can set a customer return location default for RMA receipts. If you use a special location for receiving RMA goods, this location probably has special characteristics. Use inventory status codes to define those characteristics.

Generally, until you inspect a returned item, you do not want it to be available for sales orders or work orders. Use a nonavailable location status to prevent other functions from allocating returned inventory.

Use the Nettable inventory status field to determine whether returned inventory is considered on-hand by MRP and planning functions. If you can put most returns into usable stock with little or no repair, set the status of this inventory location to be nettable. If you scrap most returns, set the status to be non-nettable, so MRP does not count the inventory as being on hand.

The RMA receipt function performs a negative sales order shipment to process the return. The return location should not restrict the ISS-SO transaction.

Setting Up Customer Spares

Another important control program setting for RMAs is Customer Spares Site. In this field, specify the site you want as the default for issue of replacement items on RMAs.

Business Issues for RMA Implementation

Several implementation issues determine how you set other values in RMA/RTS Control.

Forecasting Replacement Parts

If you are forecasting your replacement parts, set Consume Forecast to Yes. Forecast is then consumed when an RMA is issued.

Inventory Allocations

Allocations reserve inventory so it is not allocated to other sales orders, material orders, RMA issue lines, intersite requests, calls, or work orders. Allocations help control the shipment of items, especially when a sufficient quantity of an item does not exist to fill all orders.

Control RMA allocations with settings in Sales Order Control and RMA/RTS Control.

- The Quantity Available to Allocate calculation method in Sales Order Control controls how the system determines the number of items available to allocate. The calculation is the same for all items and sites.
- The value for Limit Allocations to Avail to Allocate in Sales Order Control determines how the system handles shortage situations. If this field is No, Quantity Allocated defaults from Quantity Ordered even if a sufficient quantity to allocate does not exist. If this is Yes, Quantity Allocated never exceeds the quantity available. If there is no quantity available to allocate, Quantity Allocated defaults to 0.

- The setting of Allocate Days in RMA/RTS Control determines the value for the same field in RMA Maintenance. The system attempts to allocate only RMAs with a due date within the range that this field defines. For RMAs due outside the range, Quantity Allocated defaults to 0 regardless of available quantity.
- The Detail Allocations field in RMA/RTS Control sets the default for the similar field in RMA Maintenance. If this is Yes for an RMA issue line, an inventory allocation pop-up window displays for specification of site and locations and lot/serial/reference numbers.

You can ship items from RMA Maintenance, without allocations, by specifying a quantity to ship. If you use packing lists to communicate shipping priorities, you can set Pick Only Allocated Lines to Yes in Sales Order Control. In this case, only allocated quantities print from the Sales Order Packing List function, telling the shipping department what to ship.

Transaction History

To keep an audit history of updates and changes to RMAs, set Keep Booking History to Yes. The system maintains transaction history records, identified as type ORD-SO. Each record includes the item, order quantity, price, cost, date, user ID, and other information. You can review this information using booking inquiries and reports.

Updating the Installed Base

You can modify installed base information within an RMA. For instance, to specify an alternate end user for one line item that is different from the end user on the header, you can change the end user for the line. Set Edit Installed Base to Yes in the control program to modify installed base information within the RMA using a pop-up window.

Default RMA Contract

The service type in the control program determines the default in RMA Maintenance (11.7.1.1) if an RMA does not reference a call or contract. All items on the RMA receive coverage as defined by this service type.

▶ See Chapter 23, “Control Programs,” on page 745 for a description of all control program settings.

Sales Order Control

RMA/RTS Control contains settings that enable you to make business decisions concerning the aspects of RMAs that are unique to a service environment. However, RMAs are also a special kind of sales order.

Many business decisions that you make in Sales Order Control (7.1.24) affect aspects of RMA processing. For example, the following settings in Sales Order Control (in addition to others) are considered by RMAs as well as sales orders:

▶ See “Inventory Allocations” on page 684 for details related to allocations.

- Allocation method, Limit Allocation to Avail to Alloc, and Print Only Lines Allocated
- ATP Enforcement
- Calculate Promise Date
- Shipping Lead Time—RMA due date for issues is the system date plus shipping lead time
- Line Format (S/M)
- Price Table Required
- Vary Pricing Date by SO Line
- Minimum Ship Amount
- Consume forecast forward or backward
- FOB Point
- Integrate with APM

RMA Coverage

When handling returns, you address many coverage issues. Is repair covered? Is repair feasible in terms of the amount of coverage? Is this item critical to the account, and should the RMA costs be shifted to goodwill? How can coverage be adjusted for one item or special case?

Pricing is another coverage issue for RMA items. A returned item is usually not new and may not be in good condition. How much credit do you give for the return if you issue a new item and credit the customer for the return?

Coverage issues for RMAs are handled through service types, charge types, and RMA credit price lists:

- Service types determine credit pricing and coverage levels for the RMA as a whole.
- Charge types enable you to change the service type for a particular item on an RMA.
- RMA credit price lists manage the cost of returns.

Note Only the percent of coverage defined for the service type or contract is used in RMA Maintenance. Limit consumption on contracts takes place only in Call Activity Recording.

RMA Service Types

The service type associated with an RMA determines credit pricing and coverage levels, as well as other coverage details. By default, an RMA uses the service type from one of three sources:

- The service type of the call associated with the RMA
- The service type of a contract selected to cover the RMA
- The default service type in RMA/RTS Control (11.7.24), if no call or contract are associated with the RMA

♦ See Chapter 5, “Contract and Warranty Types,” on page 163 for details on setting up service types.

Service types determine the financial impact of RMA processing. They provide default credit price lists for RMA receipts, default restocking charges, and also determine the percentage of coverage. In addition, the service type determines whether you can ship a replacement item before you receive the defective item, and can determine the default product line.

Credit Price List

During returns, an RMA credit price list must exist before the system can calculate the credit price. If no credit price list exists, the system sets the line item price of a receipt to zero. Define RMA credit price lists in the PO/RTS/Sched/RMA Rcpt Pricing Menu (1.10.2).

Product Line

RMA Maintenance supports an expanded use of product lines to determine accounting impacts. Support organizations use this to distinguish the financial impacts of service provided under different kinds of coverage: warranty, contract, giveaway, billable.

The default product line for RMAs depends on the setting of Use Item Prod Line in Service Management Control. If this is Yes, the item's product line is the default. If No, the product line of the service type is the default. The product line determines which GL accounts are affected by an RMA.

The system uses the product line for the RMA line to determine sales-related accounts in the same way as sales orders. In RMAs, the system determines COGS accounts in the same manner. The system first looks for accounts set up with Sales Account Maintenance (1.2.17), using the product line associated with the RMA line item, the RMA header's site and channel, and the customer type of the sold-to address. If no matching records exist, the system uses the accounts in Product Line Maintenance.

Note Inventory accounts for RMA transactions are based on the product line associated with the item being issued or returned in Item Master Maintenance. This is essential to inventory control implementation, since the same source for GL account numbers must be used for issuing and receiving items to reconcile inventory value with GL account balances.

Issue Line Percentage of Coverage

For RMA issue lines, line item discount reflects the level of coverage of the service type in effect for the RMA. The system supplies a default for this field in the following manner:

- 1 First, the system determines the service category associated with the line item. You can specify this with Service Item Maintenance (11.3.7). Otherwise, the system uses the item service category from Call Management Control.

- 2 If a contract is associated with the RMA, the system searches the contract header limits for a coverage percentage in the following order.
 - Search for a coverage percent defined for the invoice sort related to the item's service category.
 - Search for a coverage percent defined for the contract total limit.
- 3 If contract or contract header limits are not found, search the service type specified on the RMA in the same order: first by invoice sort, then total.
- 4 Add the service coverage percent to any discount calculated by the best pricing algorithms and display the results in the line item Discount field.

Note The system uses the order-line due date when it searches for effective coverage level records.

The system displays the amount of discount that results from service coverage and the amount that results from a price list discount.

Coverage Examples

An RMA obtains coverage in three ways: from a call, a contract, or the control program. The following examples illustrate each method of coverage.

RMAs with a Call

When an RMA references a call, the system uses the call's coverage. In Figure 21.4, a call is taken for an item covered under contract 210.

Tip

You can change the service type in effect on a line item basis by using a charge type code, discussed in the next section.

Fig. 21.4
Call Maintenance
(11.1.1.1)

Item
10-10000,
serial
S-133-3366
is covered by
contract 210.

Call Maintenance

User Selection

Call ID: CA104
Serial: S-133-3366
End User: 10010001
Item Number: 10-10000
Contract: 210
Start Date: 08/01/2002
End Date: 07/31/2003
PO Number:

Call Date: 07/25/2002
Time: 09:37
Ref: 0
Service Type: W-1
Install Date: 07/25/2002
Warranty End: 10/23/2002

Westwood Reliable
OASIS(TM) COOLING SYST
Area: Westwood CA 89029
Response: 4
Comments:

Hours

Call Info

Caller: Sue Irwint
Phone: 213-923-0293
Description: Quote for Preventive Maintenance Work
Work Code: PM
Severity: S
Type: Service
Prob/Skill: GENERAL
Assigned:
Priority: 40

Queue: Quote
Status: NEW
Next Status: Assign
Next Status Date: 07/25/2002
Next Status Time: 13:37
From Quote: CQ205010

Comments:
Event Date: 07/25/2002
Event Time: 13:17
Escalation: ESC1
Schedule:

If you create an RMA referencing this call, the system uses the contract and service type from the call for the RMA.

Fig. 21.5
RMA Maintenance
(11.7.1.1)

When call
CA104 is
referenced on
an RMA, its
contract and
contract type
are used for
coverage.

RMA Maintenance

Order: RMA10
Sold-To: 1001000
Bill To: 1001000
Ship-To: 10010001

Sold-To

Reliable Central Purchasing
Attention: Accounts Payable
300000020 Century Blvd
Los Angeles CA 90001
United States of America

Ship-To

Westwood Reliable
Westwood Shopping Center
77 Sunset Strip
Westwood CA 89029
United States of America

Additional RMA Details

Issue Site: 10000
Issue Location: SPARES
Call ID: CA104
RMA Contract: 210
Service Type: Standard
Credit Price List: FS-CR

Receive Site: 10000
Receive Location: RETURN
Ready to Invoice:
Invoiced:
Invoice Number:

In this example, call CA104 was taken for a contract item. Figure 21.4 shows that Call Maintenance determines the contract (210) as well as the service type associated with that contract (Standard). When call CA104 is specified in the RMA Maintenance, the system uses contract 210 and service type Standard as defaults to determine the level of coverage.

RMA with a Contract

Since RMAs do not have to refer to a call, the system has other ways to determine coverage levels. One of these is by selecting from a list of active contracts for the end user. The system displays the Service Contract pop-up window depending on the Display Service Contracts setting in RMA/RTS Control. If this field is Yes, a pop-up window showing all valid or open contracts for the end user displays after you complete the upper frame of RMA Maintenance.



Fig. 21.6
Coverage for an
RMA Without
a Call

RMA Without Call or Contract

If an RMA does not reference a call and no contracts exist for the end user or a contract is not selected, the system uses the service type for the Default RMA Contract field in RMA/RTS Control. All items added to the RMA receive the level of coverage of this service type, unless you use the charge type feature.

RMA Charge Types

The RMA charge type addresses an issue arising daily for many service organizations: How can coverage be adjusted for one call or special case?

When this need occurs, you want the ongoing contractual or warranted relationship with the customer to remain unchanged. You need only a one-time adjustment. For example, the service engineer can make a special charge for an unusual repair. Or, for various reasons, you waive normal charges for this RMA. Using a charge type, you can adjust coverage for this special case without changing the coverage relationship with the customer.

Example You issue replacement items normally covered 100% by a warranty. However, one item is broken due to misuse by the customer and therefore is not covered under the warranty terms. You need to charge full price for this part. Change the charge type for this item issue to reference a service type that has 0% coverage.

Defining Charge Type/Service Type Relationships

Define RMA charge types in the Default Charge Information frame of RMA/RTS Control (11.7.24), illustrated in Figure 21.7. The system supports four charge types. You can associate each with a separate service type. The system defines the warranty (W) and contract (S) charge type codes and you cannot change them. Select any other code for the billable and giveaway charge types.

Fig. 21.7
RMA Charge
Type Control
Settings

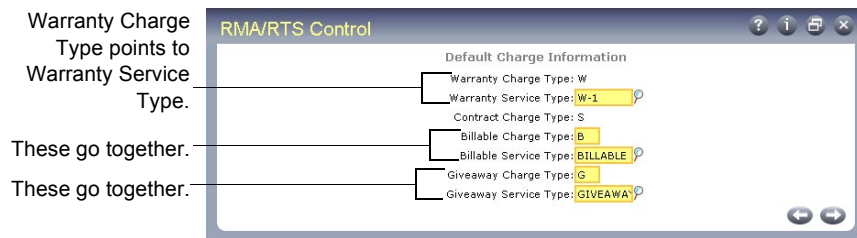


Figure 21.7 shows three groups of charge/service type relationships:

- Warranty Charge Type and Warranty Service Type
- Billable Charge Type and Billable Service Type
- Giveaway Charge Type and Giveaway Service Type

In Figure 21.7, a W charge type, which you cannot change, references a warranty service type named W-1. The billable charge type is B and references the billable service type BILLABLE. The giveaway charge type is G and associated with the giveaway service type GIVEAWAY.

A fourth relationship is not as obvious. The contract charge type, which you cannot change from S, references the Default RMA Contract in the first frame of RMA/RTS Control. When you specify a charge type of S as an override, the system applies the terms of the default RMA contract type.

Charge Type Defaults in RMA Maintenance

When you create an RMA, the header's service type is either a warranty code or a service contract type. The system uses the terms of the header service type by default for each line item. If the type is a warranty, the charge type for each line item defaults to W (warranty). If the header's service type is a contract type, the charge type on line items defaults to S (service contract).

Overriding Charge Type Defaults

The default charge type displays during RMA line item entry. You can change it to reference another charge type defined in the control program. Changing the charge type changes the level of coverage for the line item.

If the default charge type for a line item is W, you can change it to reference one of three other service types:

- Specify S to use the default RMA contract type from RMA/RTS Control.
- Specify the billable charge type you defined to bring in the level of coverage of the billable service type from the control program.
- Specify the giveaway charge type you defined to bring in the level of coverage of the giveaway service type from the control program.

In the same way, you can change an S default to W or to the billable or giveaway charge types that you can define.

Changing Charge Types

When you edit an RMA line, you can modify the charge type only if Reprice is Yes in the RMA header or for the line. The level of coverage associated with the service type referenced by a charge type affects pricing for the RMA issue line. If Reprice is No, the charge type pop-up does not display when you modify a line.

Note Even if Reprice is Yes, you cannot change the charge type if you have shipped a quantity on the line.

Changing the charge type on an RMA line always causes it to reference the service type in the control program.

Example You specify a contract service type on an RMA header. For the first line, the charge type defaults to S, but you change it to G. The system applies the coverage level of the giveaway charge type to this line item. You edit the item a second time, changing the G to S. The system applies the level of coverage of the default RMA contract type in the control program, not the one on the RMA header.

Coverage and Pricing for RMA Receipts

RMA issues use the price lists, analysis codes, and relationships you define in the SO/SQ/RMA Issues Pricing Menu (1.10.1). The system determines the issue price, without specifying a price list.

RMA receipts, however, require that you define a specific credit price list in the PO/RTS/Sched/RMA Rcpt Pricing Menu (1.10.2). The credit price list defaults from the service type, but you can modify this when you create an RMA.

Fig. 21.8
Additional RMA
Details Pop-Up

RMA Maintenance

Order: RMA10 Sold-To: 1001000 Bill To: 1001000 Ship-To: 10010001

Sold-To		Ship-To	
Reliable Central Purchasing		Westwood Reliable	
Attention: Accounts Payable		Westwood Shopping Center	
300000020 Century Blvd		77 Sunset Strip	
Los Angeles	CA 90001	Westwood	CA 89029
United States of America		United States of America	

Additional RMA Details

Issue Site: 10000	Receive Site: 10000
Issue Location: SPARES	Receive Location: RETURN
Call ID: CA104	Ready to Invoice: ☐
RMA Contract: 210	Invoiced: ☐
Service Type: Standard	Invoice Number:
Credit Price List: FS-CR	

The RMA Credit Price List defaults from service type Standard.

In Figure 21.8, use the pop-up window in the RMA Maintenance header to specify a credit price list for RMA receipts. The credit price list on the header defaults to each RMA receipt line item. If no credit price list exists, the price for that line item is zero. The RMA receipt looks only at the Credit Price List, not the full item price.

The service type on the RMA header also defines any restocking charge for a receipt line. If you change the service type on RMA header, the new restocking charge takes effect for existing lines only if Reprice is Yes or if you modify the list or net price fields for the receipt line.

The same is true if you change the price list on the RMA header. The change affects existing lines only if Reprice is Yes or if you modify the list or net price fields for the receipt line.

Pricing for RMA Issue Line Items

Pricing for RMA issue lines follows the sales order pricing algorithms. With this system, you do not specify a price list during RMA processing. The system determines the price list according to a best pricing algorithm using the codes and rules set up for pricing items on sales orders.

This section gives an overview of how pricing for RMA issues works and highlights considerations for RMAs. For a complete discussion of sales order pricing, refer to *User Guide Volume 6: Master Data*.

Determining a Price

During processing in RMA Maintenance for line item issues, the system determines which price lists apply, based on the pricing customer, then determines the price using several processing steps.

Pricing Customer

The system uses the ship-to customer in the price list search if the address code is defined in Customer Maintenance. Otherwise, the system uses the sold-to address. In RMAs, the ship-to defaults from the end user. If the end user is not defined in Customer Maintenance, the system uses the customer associated with the end user in the price list search.

Price List Candidates

The system next determines applicable price lists by comparing the customer number and item number on the RMA issue line with the customer code and item code on the price list. A match exists when all of the following conditions are true.

Tip
Blank indicates the price list applies to all customers or items.

- Customer/Analysis Code on the price list is blank or matches either the customer on the RMA an analysis code associated with this customer.
- Item/Analysis Code on the price list is blank or matches either the item number on the RMA or any analysis code associated with the item number.
- The order currency and price list currency match.
- The start and end dates are effective.

Determining Line Item Prices

After the system has found the qualifying price lists, it determines the combinations that result in the best price. The rules for combining price lists come from the Comb Type field in sales order Price List Maintenance.

When the system determines line item prices, it basically follows the same steps as for sales order pricing. Step 4 is unique to RMA pricing.

- 1** *Build the Best List Price.* The system evaluates each applicable list price type price list. If more than one exists, the system uses the lowest price. If no list price list exists, the system uses the Price field value from the item master. This price displays in the List Price field of the RMA issue line.
- 2** *Build the Best Net Price.* The system accesses each applicable discount %, discount amount, markup, and net price price list. It then determines the combinations that yield the lowest price. The rules for combining price lists come from the Combination Type field in Price List Maintenance (1.10.1.1).

- 3 *Modify Price for Minimum or Maximum.* List price type price lists can include the definition of a minimum and maximum price. If the best price comes from a price list with minimum and maximum prices, the system verifies that the calculated net price on the RMA issue line is below the maximum price or above the minimum. If not, it adjusts net price.
- 4 *Apply Coverage Percent.* This step is unique to RMAs. The system determines the applicable coverage percent based on the service type, warranty, or contract providing coverage. It adds this percent to the discount previously calculated (100% maximum), and recalculates the net price. It displays Discount and Net Price on the RMA issue line.
- 5 *Manual Override of Calculated Prices.* You can change the calculated list price, discount, and net price on RMA issue lines if you have access to these fields. When you do, the system records a manual discount, which is the difference between the system-generated price and the price you entered.

Special RMA Pricing Considerations

In the case of RMAs, the system treats the discount applied as a result of service coverage like a manual discount. It displays this way in the price list inquiry functions. You cannot distinguish it from other overrides that you specify. The system marks the discount as coming from a service type and lets you reprice the issue line.

Minimum Prices

If you specify a minimum price on the applicable price list, the system uses it in calculating the price *before* it applies the service coverage discount. However, when the system applies the service coverage percent, it allows the net price for an item to fall below the minimum list price. For minimum prices the rules and agreements of the service coverage can override the rules set up in sales order pricing.

Minimum Price Examples

You issue item 116 on an RMA using a service contract that provides 50% coverage. The system determines that price list A gives the best price for item 116. This price list specifies a price of \$6.00 with a minimum price of \$5.00 and maximum of \$7.00. The system finds no applicable price discounts when it calculates prices. If no coverage is provided on the RMA, the net price equals the list price of \$6.00.

Now the system applies the coverage percent to the price, resulting in a net price of \$3.00. Even though this net price is below the \$5.00 minimum, the system does not generate an error. The adjustment is a result of service coverage and remains even if the issue line is repriced.

Using the same data, consider what happens if the system finds applicable price discounts that lower the net price below the minimum *before* service coverage is applied.

The initial list price of \$6.00 is discounted 20% yielding a net price of \$4.80. The system raises this to the minimum (\$5.00) and then applies the service coverage (50%) for a net price of \$2.50. A message indicates that the price has been adjusted because the net price is lower than the minimum.

Repricing RMA Issue Lines

You reprice sales orders in Sales Order Repricing (7.1.11) and can include RMA issue lines in this function. To reprice an RMA issue line, create it with Fixed Price set to No. Repricing does not affect RMA receipt lines, since the system determines prices for RMA receipts differently from RMA issues.

Note If you have changed the price on an RMA issue line, the system does *not* reprice it. This is the same as with sales orders. The system only recalculates prices that it generated.

When the system reprices RMA issue lines, it recalculates list price and applicable discounts and adjusts for minimum/maximum list price as described previously. It then reapplies the coverage percent and any manual discount you specified.

Accrual for Price Breaks

Items issued on RMAs are like sales order lines in terms of price breaks and accrual.

Other Pricing Functions

RMAs follow the same rules as sales orders in calculating prices for configured products.

Use Sales Order Price Inquiry (1.10.1.17) for RMAs to display information about the price lists and discounts applied in calculating prices for line item issues. The service coverage amount displays as a manual discount. You can also use Sales Order Pricing Report (7.15.7).

Effect of Control Settings on RMA Pricing

Define settings that affect pricing in Sales Order Control and Pricing Control. These settings affect RMAs just like sales orders, with the exception of Pricing Date.

Pricing Control

In Pricing Control, the setting of Price SO by Line determines the default for the Line Pricing field in the RMA header. SO Factor Rounding and Display SO Discounts also determine how the system displays discounts in the Discount field of the RMA line item issue frame.

In sales orders, the date the system uses to search for an effective price list is determined by Default SO Pricing Date in Pricing Control. This can have one of five values: order date, required date, promise date, due date, and performance date.

For RMAs, the system uses the order date to search for effective prices, regardless of the setting in Pricing Control.

Sales Order Control

In Sales Order Control, Price Table Required and Vary Pricing Date by SO Line can affect RMA processing.

- If Price Table Required is Yes, a price list in the item unit of measure must exist.
- If Vary Pricing Date by SO Line is Yes, you can edit Pricing Date and Credit Terms Int in the pricing pop-up window during RMA issue line item entry. Otherwise, the system uses the header value for each line and you cannot change it on individual lines. When you update the header, the system automatically updates the corresponding values on the lines.

RMA Issues and Receipts

Create RMAs with RMA Maintenance (11.7.1.1). This function is similar to Sales Order Maintenance (7.1.1), with the addition of several pop-up windows for supplying information unique to RMAs.

An RMA tracks items leaving from or arriving at your site or warehouse. This includes items shipped to and returned from customers. After you receive or issue items, the installed base can be updated when you post the RMA invoice. Again, the system can record items issued to your end users and remove items received from them.

The system creates an invoice when you ship or receive items on the RMA. The Ready to Invoice field can be set in RMA Maintenance.

RMA Issues

In the classical flow for returned items, you receive a returned item and then either issue a replacement or fix the returned item and ship it back. In this scenario, you process the RMA receipt before the RMA issue.

However, in modern service organizations, an RMA issue often occurs immediately upon receipt of a return, or even before the end user returns the item. The issue is processed first.

This more aggressive approach to RMA issues tries to ensure that the customer does not go without use of the item. This has always been an important part of servicing mission-critical items, since customer down time can be costly. The trend in service is to be proactive and replace an item, even a noncritical item, as soon as possible. Dealing with the returned item comes second.

Tip
Use the Ship Before Return setting on the service type to control whether items on linked RMA lines can be shipped before defective ones are returned.

RMA Receipts

The third section of RMA Maintenance enables you to process the receipt of items returned from your customers. These items might be damaged or broken, or perhaps are being returned for a different or upgraded model.

Figure 21.9 shows the RMA Receipt Line frame of RMA Maintenance. With the exception of a few fields, the layout of this frame is the same as the RMA Issue Line frame.

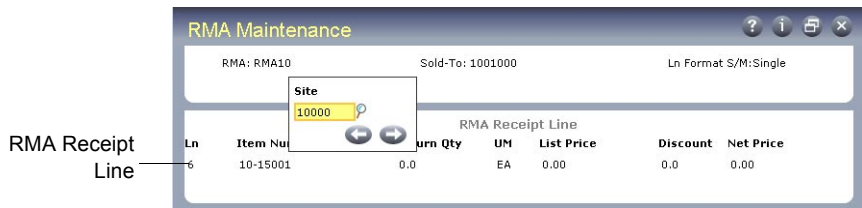


Fig. 21.9
RMA Receipt Lines

Linking Receipts to Issues

The Issue Line Detail frame in RMA Maintenance contains a Yes/No Rec (receipt) field. Set this field to Yes to display a pop-up window where you can create a receipt corresponding to an issue. The item on the current RMA issue line is the default receipt line item, and the system links the two lines. Use this feature for one-to-one part replacement.

Fig. 21.10
Linking RMA
Issues and Receipts

Item 10-10000 defaults as item to be received.

Defaults to Customer Return Site/ Location in RMA/RTS Control.

Ln	Item Number	Qty Ordered	UM	List Price	Discount	Net Price
1	10-10000	10.0	EA	2,100.00	0.0	2,100.00

Receipt

Line: 2

Item Number: 10-10000

Description: OASIS(TM) COOLING SYST

UM: EA

Lot/Serial: 200-A3

Price: 0.00

Site: 10000

Location: RETURN

Processing: P

Pending

ISB Reference: 0

Qty Expected: 10.0

Qty to Receive: 0.0

Taxable: ☐

Type:

In this example, an RMA issue line item is created for an item 10-10000. If the Rec field is Yes, the item number 10-10000, unit of measure, quantity, and ship type default from the issue line.

Note The item number on a linked receipt does not have to be the same as the issue line item. You can change it only when you first create the line. If you do change it, the system prompts you to confirm the change before it saves the line.

In the pop-up window, the default site is the customer return site in RMA/RTS Control. This link works only if you are both shipping and receiving in real time—that is, right away.

When you create a receipt line for an issue line by setting Rec to Yes, the system links the two lines. The system checks the value of Ship Before Return on the service type only when lines are linked.

RMA Billing

You can invoice RMA issues and receipts together. RMA issues can create an invoice charged to the bill-to address. RMA receipts can create a credit, as well as a billable amount if a restocking charge exists. When an RMA includes both issues and receipts, the system charges the net amount.

Example An RMA issue is charged \$500 and a receipt credited \$400. When you invoice this RMA, it shows a \$500 charge for line item one and a credit price of \$400 for line item two, with a net price of \$100.

You can also process the issue and receipt separately. This creates two postings to Accounts Receivable, one for \$500 and a credit for \$400. The net result is an invoice for \$100.

RMA Billing Flow

An RMA issue typically follows the steps shown in Figure 21.11.

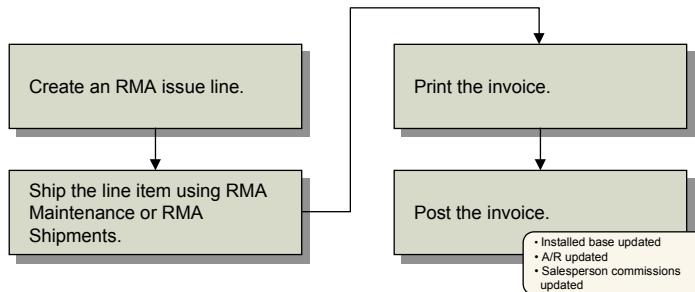


Fig. 21.11
RMA Issues
Billing Flow

After you ship the item on an RMA issue, print an invoice to get an invoice number for the RMA sales order. Printing assigns the number. Or, you can assign an invoice number to the RMA in the RMA header. Set the Ready to Invoice line to Yes for an RMA to be processed to the next step. Either way, an invoice number is assigned to the RMA before it is posted to the general ledger.

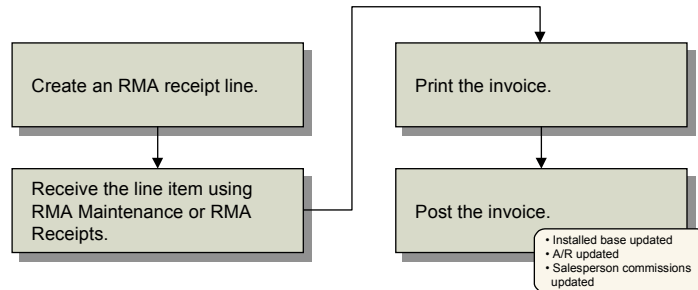
Posting the invoice updates the installed base, accounts receivable, and salesperson commissions.

Once an amount to invoice exists on an RMA, through shipment or receipts, you cannot modify pricing data in RMA Maintenance. Use Pending Invoice Maintenance (7.13.1) to change prices. You can also use Pending Invoice Maintenance to change tax status and salesperson commission.

RMA Credit Flow

An RMA receipt typically follows the steps shown in Figure 21.12.

Fig. 21.12
RMA Receipts
Credit Flow



After you receive the item on an RMA receipt line, you can print and post the invoice. Posting the invoice updates the installed base, accounts receivable, and salesperson commissions.

General Ledger Impacts

See page 688 for a discussion of product lines in RMAs.

When you ship items on an RMA, the system debits the five cost of goods sold (COGS) accounts and credits inventory. An RMA receipt does the opposite: debits inventory and credits cost of goods sold. These accounts are accessed from Inventory Account Maintenance and Sales Account Maintenance based on the product line associated with the RMA.

When you post the RMA invoice, the system debits accounts receivable and sales discount accounts and credits taxes, freight, trailer charges, and sales accounts.

Customer Credit Status

RMAs are a type of sales order and follow most sales order rules. If the customer bill-to on an RMA is on credit hold, RMA processing is determined by the setting for Credit Hold Option in Service Management Control. This field can have one of three values:

0 (zero): You can create RMAs regardless of the customer's credit status.

1: You can create RMAs, but a warning displays and the action status of the RMA is set to hold.

2: You cannot create RMAs for customers who are on credit hold. An error message displays. Reset the customer Credit Hold field to No to create the RMA. With this setting, if the customer is over the credit limit but not yet on hold, you can create the RMA. However, a warning displays and the RMA's action status is set to hold.

Remove credit holds in the Sales Order module, using Sales Order Credit Maintenance (7.1.13) or Sales Order Auto Credit Approval (7.1.17). You cannot release an RMA to a work order if the action status is nonblank.

RMA Invoices

An invoice for an RMA looks similar to a sales order invoice. However, the system handles some aspects of the invoice differently for an RMA.

- If the RMA is associated with a call, call comments that print on the invoice print on the RMA invoice.
- If the RMA is associated with a call, the call number prints on the invoice header.
- The service contract providing coverage on the RMA displays beneath each invoice line, for both issues and receipts.

Invoice reprint for an RMA creates an invoice that looks like the original with one exception. If you have deleted and archived the call associated with the RMA, call comments are not available for printing.

Releasing RMAs to Work Orders

Some service organizations use standard manufacturing operations to refurbish items received from customers on an RMA. To do this, specify W (work order) as the processing option on the RMA receipt line item.

Fig. 21.13
Processing Option

Once released, work order number and ID display here.

Set Processing to W to release this RMA to a work order.

RMA Maintenance

RMA: RMA9 Sold-To: 1001000 Ln Format S/M:single

Ln	Item Number	Return Qty	UM	List Price	Discount	Net Price
1	10-10000	0.0	EA	0.00	5.0	0.00

Receipt Line Details

Qty Received: 1.0
 Received Date: 07/31/2002
 Expected Date: 07/31/2002
 Qty to Receive: 0.0
 Fault Code:
 ISB Ref:
 Processing: **W** Rework Work Order
 Linked Line:
 Multi: ☐

Product Line: 1YRC
 Restock: 0.00
 Repair WO: RMA9.1
 ID: 402271
 RTS:
 RTS Line: 0
 Update Installed Base: ☐

The default processing option is P for pending. You can change this to W at any time.

Example When you create the RMA receipt line, you do not know if a work order is needed, so you set Processing to P. When the item is actually received and inspected, you determine a work order is required. At this point, you can go into RMA Maintenance and enter W in the Processing field.

Tip
Rework orders have a Type R.

Use RMA Release to Work Order to create rework orders for all RMA receipt lines with a quantity already received and a W processing option.

Fig. 21.14
Releasing RMA to Work Order

RMA Release to Work Order

RMA: To:

Combine Work Orders: ☐

Effective Date: 07/25/2002

Output:
Batch ID:

You can choose to combine work orders. In this case, you can summarize RMAs for a single item and site, unless it is serial-number controlled, on one repair work order. Otherwise, one work order is created for each RMA.

The system always creates individual work orders for serial-number controlled items by using a unique ID, so the components used in the repair can be identified.

The system creates the work order number by taking the RMA number and appending the receipt line number, using a period as a separator. In Figure 21.13, the work order number is RMA9.1. The system stores this number and the work order ID on the RMA. View it in RMA Maintenance in the Receipt Line Details frame.

Note When Combine Work Orders is Yes, the RMA number used for the work order number is the first RMA with a line released.

If the item being repaired has an associated repair routing in Service Item Maintenance, the system uses the repair routing to determine the operations on the work order. The work order type is R, indicating a rework order.

Note You cannot release an RMA with a non-blank action status to a work order. A non-blank action status indicates that the RMA is on credit hold.

RMA Maintenance

The execution of RMA Maintenance follows several steps:

- Fill out the RMA header, including customer, end user, and call, and coverage information specific to RMA processing. This sets up default values for line item issues and receipts.
- Specify items to be shipped to the customer.
- Specify items to be received from the customer for repair or replacement.
- Enter trailer information, including trailer codes, tax, and standard credit information.

- Complete the trailer that totals billing amounts and trailer codes.
- Optionally ship or receive directly from RMA Maintenance. You can also use the separate ship and receive functions.

This section illustrates the frames used to complete this sequence.

Fig. 21.15
RMA Maintenance
(11.7.1.1)

The screenshot shows the 'RMA Maintenance' window with the following data:

RMA Maintenance			
Order: RMA10	Sold-To: 1001000	Bill To: 1001000	Ship-To: 10010001
Sold-To Reliable Central Purchasing Attention: Accounts Payable 300000020 Century Blvd Los Angeles CA 90001 United States of America		Ship-To Westwood Reliable Westwood Shopping Center 77 Sunset Strip Westwood CA 89029 United States of America	
Order Date: 07/25/2002	Line Pricing: ☐	Confirmed: ☒	07/25/2002
Due Date: 07/30/2002	Manual:	Currency: USD	Language: US
Promise Date: 07/30/2002	Site: 10000	Taxable: ☐	Fixed Price: ☒
Expected: 07/25/2002	Channel:	Credit Terms:	Credit Terms Interest %: 0.00
Perform Date:	Project:	Reprice: ☐	Entered By: pnm
Pricing Date: 07/25/2002	Purchase Order:		
Remarks:			

Order. If you leave this field blank when you create a new RMA, the system supplies a number by appending the RMA Sales Order Prefix in RMA/RTS Control to the value in the Next RMA Sales Order field. The system increments this field.

Call ID. A pop-up window displays so that you can supply a call ID. This field is optional; RMAs do not have to reference a call. If you supply a call, several fields on the RMA default from the call: the sold-to address, which is the call customer; end user; purchase order; contract; and call service type. The call number and comments designated to print on invoices display on the invoice for the RMA.

Sold-To. If the RMA references a call, the customer associated with the call's end user displays by default. Otherwise, you must supply a valid customer code.

Bill-To. This defaults from the Sold-To value unless you define the sold-to address with a different bill-to in Customer Address Maintenance.

End User. A pop-up window displays so you can enter the end user for the items being returned or replaced. If the RMA references a call, the end user defaults from the call. If you enter a nonexistent end user, the system prompts you to create a new end user directly from RMA Maintenance. The frames for creating an end user are the same as those displayed in Call Maintenance.

▶ See “End User Selection Frame” on page 383 for details.

Ship-To. Defaults from Sold-To. You can specify a different ship-to address for this customer, or you can create a ship-to address directly in RMA Maintenance by leaving the field blank.

Order Date. Defaults from the system date and indicates the date you recorded this RMA. This can be the date you entered the RMA or the date the customer requested an RMA.

Due Date. Defaults from the system date plus the shipping lead time in Sales Order Control and indicates the date you need to ship the replacement items from your facility. This field provides the default date for each RMA issue line. The system uses the issue line due date to search for effective coverage limits for the line item.

Promise Date. Indicates the date the customer was promised delivery. The promise date can be different than the due date. Promise dates include delivery transit time, while due date is the date the items must be ready for shipment.

▶ See *User Guide Volume 6: Master Data* for information on transit times.

The header default is blank. If you leave it blank, the system automatically calculates line-item promise dates under these conditions:

- Calculate Promise Date is Yes in Sales Order Control.
- Transit time data has been defined for the ship-from site in Delivery Transit Time Maintenance (2.16).

Expected Date. Defaults from the system date. Indicates the date you expect to receive items returned from the customer on this RMA and provides the default date for each RMA receipt line.

Perform Date. Enter the date originally planned to be the due date. This date does not include transit time and can be used to evaluate the accuracy of shipment due dates.

Pricing Date. The pricing date for an RMA defaults from the order date. This is unlike a standard sales order where the default comes from the value of SO Default Pricing Date in Pricing Control (1.10.1.24). This can have five possible values: Due Date, Order Date, Required Date, Promise Date, or Performance Date. The system uses Price Date in determining the effective date for price list searches.

Whether you can change Pricing Date on individual lines depends on the setting of Vary Pricing Date by SO Line in Sales Order Control (7.1.24). When that field is Yes, you can change the date on each line. When it is No, you cannot. Instead, the system automatically updates all lines when you change the header.

Purchase Order. Defaults from the call if you specified one. You can change this field. This field is required if the current end user is defined to require a PO.

Remarks. Any remarks specified for the sold-to customer display by default. You can change these to make them specific to this RMA. Remarks display on printed documents.

Line Pricing. This field has effect only for a newly created order. If you are maintaining an existing order, the system sets this field to No and you cannot change it. For a new order, it defaults from the Price SO by Line field in Pricing Control (1.10.1.24).

If No, the system prices each line without considering other lines on the order. This may not be the best price, since additional item quantities on other lines can qualify a line for a different price list. If Yes, the system prices each line item as it is entered in relation to other lines on the order and displays the best price. In either case, if prices change because of quantity breaks, the system recalculates them at the end of order entry.

Set this field to No to improve performance during order entry, since fewer calculations are performed.

Manual. You can apply field security to this field. Manual enables you to enter a price list code to be considered for RMA issue lines. Define this price list first with Manual set to Yes in Price List Maintenance (1.10.1.1). Manual price lists do not necessarily determine the issue line price. The system uses them with the other price list search algorithms to determine the best price.

Site. The RMA header site helps determine the default tax environment associated with the RMA. You can specify a different site at the item level. At the item level, Site defaults from the Customer Spares Site/Location and Customer Return Site/Location in RMA/RTS Control. If you use site security, the person executing this transaction must have access or the system generates an error.

Channel. Specify an optional code identifying the distribution channel through which this RMA originated. Channel can be used to determine GL sales and COGs accounts affected by inventory transactions. Set up optional sales accounts with Sales Account Maintenance (1.2.17) based on product line, site, customer type, and channel.

Tip
To standardize usage, set up values in Generalized Codes Maintenance for field so_channel.

Project. Project code is one component of an account number defined in GL setup functions. Other account components are account, sub-account, and cost center. If Verify GL Accounts is Yes in System/Account Control, each component you enter must be valid on its own and in combination with other account number components. The project on the header is the default for all line items. You can change this for any line.

Confirmed. For sales orders, this field defaults from Sales Order Control. For RMAs, Confirmed always defaults to Yes since direct contact with an end user has normally already taken place. MRP processes confirmed orders as sales demand and the orders consume forecast. The header's Confirmed setting provides the default for each line item's Confirmed field.

Tip
To allocate items in RMA Maintenance, set Confirmed to Yes.

Confirmed orders are allocated, consume forecast, and create demands for Material Requirements Planning (MRP). Confirmed orders also affect the customer order total when the system reviews credit limits.

You cannot ship unconfirmed line items using RMA shipments. If unconfirmed, you must execute confirmation before shipment using RMA Confirmation.

Currency. Defaults from the currency of the customer Bill-To address. When you create an RMA, you can change this value to any valid currency. After you move to the next frame, you cannot change it.

When you specify a foreign currency, a pop-up displays the exchange rate relationship effective on the order date. You can change it or mark this rate as fixed. If the exchange rate is not fixed, the system uses the exchange rate effective on the invoice post date. If the exchange rate is fixed, the system does not change it.

For details, see the Multicurrency chapter in *User Guide Volume 4A: Financials*.

If one or both of the exchange rate components is a member of the European Monetary Union (EMU), triangulation through the euro is used to determine the exchange rate. In this case, the exchange rate relationship includes four components. The fixed rate of the EMU currency to the euro cannot be updated.

Language. Defaults from the language associated with the Ship-To address. Use this field when printing formal documents, which can be run by selecting a range of language codes. This enables you to use preprinted forms in different languages. The system stores comment information with a language code.

Taxable, Class, Effective Date. Defaults from the values for the ship-to address. Indicates whether this RMA is subject to tax. The taxable status for the order header displays as the default for each line item, but you can change it.

Tip
Fixed Price must be No for an RMA to be considered by Sales Order Repricing.

Fixed Price. Defaults from the Fixed Price setting for the sold-to address. Indicates whether the prices are fixed or subject to updates due to inflation or commodity repricing.

This use of fixed price is different from fixed prices as used in service pricing, which enable the customer to be invoiced for a fixed price regardless of the cost of items, labor, and expenses recorded.

Credit Terms. Defaults from the credit terms for the sold-to address. Credit term codes identify types of payment terms, defining the due date and discounts for early payment.

Credit Terms Interest. The implicit interest added into an item's price based on the number of days to pay defined for the credit term. Use terms interest percent in hyperinflationary environments to accrue the estimated inflation increase.

The list price for the line item displays the included interest amount, based on the list price and the credit terms. This field sets the default for each issue line. You can modify it only if Vary Pricing By SO Line

is Yes in Sales Order Control. When that field is No, you cannot modify individual lines. Instead, the system automatically updates the lines when you change the header value.

Reprice. You can edit this field only when you are maintaining an existing order. It indicates whether you can update prices for RMA issue lines or whether the prices come from current pricing data during this edit session. To change the charge type or prices for an issue line, Reprice must be Yes.

This field affects only the current maintenance session. The value of Fixed Price determines which orders are repriced by Sales Order Repricing.

Reprice also affects RMA receipt lines. If you change the header service type or credit price list, existing receipt lines are affected only if Reprice is Yes or if you change the price fields on the line.

If Reprice is Yes, it affects all lines on the order and you cannot change it at the line level. If it is No on the header, a pop-up window during issue line entry enables you change it to Yes for the line. The system reprices new lines regardless of this setting.

Tip
Set this to Yes if you are combining RMA issue lines with sales order lines to accumulate quantities for price breaks.

Second RMA Header

When you press Go on the first RMA header frame, a second frame displays.

RMA Maintenance

Order: RMA10 Sold-To: 1001000 Bill To: 1001000 Ship-To: 10010001

Sold-To		Ship-To	
Reliable Central Purchasing		Westwood Reliable	
Attention: Accounts Payable		Westwood Shopping Center	
300000020 Century Blvd		77 Sunset Strip	
Los Angeles CA 90001		Westwood CA 89029	
United States of America		United States of America	

Salesperson 1: JJP Freight List: T01-NTAX KG Consignment: ☐

Multiple: ☐ Frt Min Wgt: 1 Consume Forecast: ☒

Commission 1: 10.00% Freight Terms: ALLOW Detail Allocations: ☐

Calculate Freight: ☒ Display Weights: ☒ Allocate Days: 10 Comments: ☐

Import/Export: ☐

Fig. 21.16
Second RMA
Header Frame

Tip

To change the salesperson on a line item, set Multiple to Yes.

Salesperson. Defaults from the sales person for the sold-to address. Identifies the salesperson to receive commission and quota credit for this RMA. The salesperson information on each line item defaults from the salesperson and commission rate on the header. You can change it on each line item.

Multiple. Indicates that more than one salesperson is responsible for this RMA. If this field is Yes, a pop-up window prompts you to enter up to four salesperson codes.

Commission. Specifies the commission percentage this salesperson is to receive. Besides the normal commission rate for the salesperson, you can enter commission rates for sales to specific customers or sales of specific product lines.

Freight List. Defaults from the freight list for the sold-to address. Freight list codes identify a set of shipping rates for different zones and shipping weights or units. The freight list on the header sets the default for each line item.

Tip

For bulk freight lists, shipments that weigh less than this amount are charged based on a minimum weight charge, not the shipment weight.

Freight Minimum Weight. Defaults from the freight minimum weight for the sold-to address. This field is the minimum weight on which to base the shipping charge if the freight list type is bulk. This field does not apply to freight lists of type unit.

Freight Terms. Defaults from the freight terms for the sold-to address. The freight terms determine how the system applies freight charges. They can be added to the order trailer, added to the unit cost for each ordered item, displayed as a freight allowance, or not calculated.

Calculate Freight. Defaults to Yes for a new order; otherwise, defaults to No. If Yes, the system calculates site- and currency-specific freight charges on RMAs. Charges can be calculated for the line item's shipping weight for unit price lists or for the order's total shipping weight for bulk price lists. Calculated freight charges appear on the trailer.

Display Weights. Specifies whether to display the Freight window for each line item, which enables you to enter or modify data in the Freight Class and Freight Ship Weight fields. For inventory items, these fields default from the item master. For memo items, you must

specify them. The Freight window also shows information the system uses to calculate freight for the line item, so you can review freight amounts easily.

Consume Forecast. Defaults from RMA/RTS Control. This field specifies whether the quantity ordered on the RMA consumes available forecast. If Yes, the order consumes the forecast. If No, the system considers the order quantity abnormal and plans for it in addition to the forecast.

Detail Allocations. Defaults from RMA/RTS Control. Specifies whether you usually make detail allocations during line item entry. Detail allocations assign specific inventory lot/serial numbers and locations to be shipped on an order. The setting on the header determines each line's default.

If Yes, at the line level, a pop-up window for detail allocations displays. If you do not detail allocate during line item entry, the system detail allocates when you print the RMA packing list.

Allocate Days. Defaults from the Allocate Days field in RMA/ RTS Control. This field specifies the number of calendar days into the future for the system to use as a cutoff for allocating items on RMA issue lines. If the header's due date extends beyond the allocation window, automatic allocation does not take place for a new issue line.

Allocation is subject to two settings in Sales Order Control:

- The Quantity Available to Allocate calculation method specifies how the system determines the number of items available to allocate.
- The value for Limit Allocations to Avail to Allocate determines how the system handles shortage situations. If this field is No, the quantity allocated for an RMA issue line defaults from the quantity ordered even if a sufficient quantity to allocate does not exist. If this is Yes, quantity allocated never exceeds the quantity available. If there is no quantity available to allocate, quantity allocated defaults to 0.

♦ See "Inventory Allocations" on page 684 for more information.

Comments. Defaults from the Header Comments field in RMA/RTS Control. If this is Yes, the transaction comment frame displays for you to enter comments specific to this RMA. Enter information here that relates to the entire RMA, such as delivery information or credit comments.

Import/Export. Defaults from Imp/Exp Default in Intrastat Control and appears if Use Intrastat is Yes in the same control program. Set this field to Yes to enter or maintain import and export data for the order used to create Intrastat History Reports. If Yes, the standard Intrastat frames displays for input of appropriate data.

Additional RMA Details

The next frame requests information unique to RMA processing.

Fig. 21.17
Additional RMA
Details Frame

RMA Maintenance

Order: RMA10 Sold-To: 1001000 Bill To: 1001000 Ship-To: 10010001

Sold-To		Ship-To	
Reliable Central Purchasing		Westwood Reliable	
Attention: Accounts Payable		Westwood Shopping Center	
300000020 Century Blvd		77 Sunset Strip	
Los Angeles	CA 90001	Westwood	CA 89029
United States of America		United States of America	

Additional RMA Details

Issue Site: 10000	Receive Site: 10000
Issue Location: SPARES	Receive Location: RETURN
Call ID: CA104	Ready to Invoice: ☐
RMA Contract: 210	Invoiced: ☐
Service Type: Standard	Invoice Number:
Credit Price List: FS-CR	

Issue Site. Defaults from Customer Spares Site in RMA/RTS Control and identifies the site from which you ship replacement items to customers. This site displays as the default for each RMA issue line, but you can change it. If you use site security, you must have proper access or the system generates an error.

Issue Location. Defaults from Customer Spares Location in RMA/RTS Control and identifies the location from which you ship replacement items to customers. This location displays as the default for each RMA issue line, but you can change it.

Receive Site. Defaults from Customer Return Site in RMA/RTS Control and identifies the site where you receive returned items. This site displays as the default for each RMA receipt line, but you can change it. If you use site security, you must have proper access or the system generates an error.

Receive Location. Defaults from the Customer Return Location defined in RMA/RTS Control and identifies the location where you receive returned items. This location displays as the default for each RMA receipt line, but you can change it.

Call ID. If you reference a call ID on the header, it displays here and you can change it. If you change the call after you create the RMA, the system does not recalculate the information that defaults from the call—sold-to, end user, purchase order, contract, service type.

RMA Contract. If you select a contract from the pop-up window of contracts for the specified end user, or if a contract defaults from a referenced call, it displays here. If a contract is available, it determines the coverage percentages and the default service type, which determines other coverage terms and conditions such as the credit price list, restocking charge, and ship before return setting.

If the service type of the contract is not changed, the Charge Type, or CT, field for RMA issue lines defaults to S, indicating service contract coverage.

The contract specified on the RMA header prints on the RMA invoice for both issues and receipts if a contract service type is used for coverage.

Service Type. Defaults from the contract displayed in the previous field, or the service type on the referenced call. Otherwise, defaults from Default RMA Contract in RMA/RTS Control.

The RMA header service type determines the default credit price list for returns, restocking charge to be added for returned items, and whether or not you can ship items before you complete a return. If you do not specify a contract in the RMA Contract field or no applicable limits exist on the contract, the service type determines the coverage percent applied to line item issues. The service type also sets the default charge type for issue line item entry. The values are: S if a contract type, W if a warranty.

If you change the service type on the RMA header after lines exist, its terms and conditions apply to new lines you add. They are applied to existing lines only if you reprice them. A message displays, indicating that you may want to review the coverage and pricing for existing RMA lines.

Credit Price List. Defaults from the Credit Price List associated with the current service type. Determines the prices calculated for RMA receipt lines.

Ready to Invoice. This field is initially set to No. After you have shipped or received items, the system sets it to Yes. Invoice Print examines this field. It must be Yes before you can print the invoice. You can change the field to prevent invoicing.

Tip
To reprint an RMA invoice, reset this field.

When invoice print completes, the system prompts you to update the invoice. If you respond Yes, the system sets Ready to Invoice to No and Invoiced to Yes to indicate that you have printed the invoice. It is ready for posting to Accounts Receivable. This prevents the system from generating duplicate invoices.

Posting the invoice sets both fields to No. If you ship more items later, the system sets Ready to Invoice to Yes.

Invoiced. Invoice Print sets Invoiced to Yes, indicating that you have printed the invoice and it is ready for posting to Accounts Receivable. This prevents the system from generating duplicate invoices. After you post the invoice, the system resets Invoiced to No.

Invoice Number. If you leave this field blank, the system supplies an invoice number based on the next invoice number in Sales Order Control. To use a different set of numbers for RMAs, enter a number in this field. The system uses this reference number in Accounts Receivable.

RMA Issue Line

This frame is similar to the line item entry frame for sales orders (7.1.1). Most fields in the item detail default from values in the RMA header, and have the same effect as described previously. This section describes the fields unique to RMAs.

The screenshot shows the 'RMA Maintenance' window. At the top, it displays 'RMA: RMA10', 'Sold-To: 1001000', and 'Ln Format S/M: Single'. Below this is a table titled 'RMA Issue Line' with columns: Ln, Item Number, Qty Ordered, UM, List Price, Discount, and Net Price. The table contains one row with Ln 7, Item Number 22-100, Qty Ordered 20.0, UM FA, List Price 20.00, Discount 0.0, and Net Price 20.00. A pop-up window is open over the 'CT' (Charge Type) field, showing a selection box with 'S' highlighted. Below the selection box are two navigation arrows. At the bottom of the window, the description 'Desc: CORD,POWER,UK' is visible.

Fig. 21.18
RMA Issue Line
Entry Frames

Charge Type. After entering an item and quantity on a new line, a pop-up displays for entering a charge type. This code identifies how to bill the line item. If coverage is from a warranty type, charge type defaults to W. If coverage is from a contract or contract type, it defaults to S. You can define billable and giveaway charge types in RMA/RTS Control.

See “RMA Charge Types” on page 691.

Charge types let you determine, per line, the service type for the item. Define four charge type/service type relationships using settings in RMA/RTS Control:

- The warranty charge type, set by the system to W, identifies charges covered under warranty. If the RMA header service type is a contract type and W is specified for the charge type, the system uses the level of coverage of the warranty service type in the control program.
- The contract charge type, set by the system to S, identifies charges covered under a service contract. If the RMA header service type is a warranty, specifying S brings in the coverage levels of the Default RMA Contract specified in the first frame of RMA/RTS Control.
- The giveaway charge type that you define in the control program can be specified as an override in RMA Maintenance and brings in the coverage level of the giveaway service type. This service type normally provides full coverage.
- The billable charge type, which you define in the control program, can be specified as an override in RMA Maintenance and brings in the coverage level of the Billable Service Type. This service type normally provides no coverage—the end user is responsible for the full amount.

You can modify the charge type for an existing line item only if Reprice is Yes for the line and you have not shipped any quantity.

List Price. You can apply field security to this field. The value in this field is the unit price before applicable discounts or markups are applied. The system uses this value in calculating the net price. The system posts the list price to the sales account when posting an invoice to AR or GL. If a difference between the net price and list price exists, the system posts the difference to the sales discount account.

During order processing, the system first determines the best list price for an item by searching for applicable price lists in Price List Maintenance with a list type of Price List. If more than one price list exists, the system uses the lowest price.

If Line Pricing is No, the system prices each line without regard to other lines. When order entry is complete, the system determines if the new lines qualify for any quantity breaks and recalculates prices accordingly.

You can change the calculated list price, discount, and net price if you have access to these fields. If you do, the system records a manual discount, which reflects the difference between the system-generated price and the price entered.

Tip

You can display and enter Discount as a percent or as a factor, depending on the setting of Display SO Discounts As in Pricing Control.

Discount. You can apply field security to this field. It displays the discount calculated by the system to be applied to this item. The number of decimals comes from the SO Factor Rounding field in Pricing Control.

The system accesses each applicable Discount %, Discount Amt, Markup, and Net Price price list. It then determines the combination yielding the lowest net price. The rules for combining price lists come from Combination Type in Price List Maintenance (1.10.1.1).

Once the system determines the best discount, it adjusts the price for minimum and maximum list amount and adds the coverage percent for the contract or service type. The value in the Discount % field includes discounts calculated based on pricing structures and the discount applied due to service coverage. Maximum discount is 100%. A message at the bottom of the screen indicates the portion of the discount percent that is derived from service coverage.

Net Price. You can apply field security to this field. The system calculates this value by multiplying the list price by the discount %. If you enter a manual discount, the system recalculates net price based on it.

Product Line. When you leave the line item entry on a new line, a pop-up for Product Line displays. The default depends on the setting of Use Item Prod Line in Service Management Control. If this is Yes, Product Line defaults from the item. If No, Product Line defaults from the service type. The product line determines the GL accounts affected by shipments on this RMA.

The system determines sales-related accounts and COGs accounts using this product line. Once you ship items on a line or invoice the line, you can no longer change the product line and the pop-up does not display.

See page 688 for a discussion of product lines in RMAs.

Issue Line Details

The next frame displays information unique to RMA processing. The first five fields—Qty Shipped, Shipped Date, Product Line, Covered Amount, and Due Date—are display only.

RMA Maintenance

RMA: RMA10

Sold-To: 1001000

Ln Format S/M:Single

Ln	Item Number	Qty Ordered	UM	List Price	Discount	Net Price
1	10-10000	10.0	EA	2,100.00	0.0	2,100.00

Issue Line Details

Quantity Shipped: 0.0

Shipped Date:

Due Date: 07/30/2002

Quantity to Ship: 0.0

Multi Entry:

Receipt:

Product Line: W-10

Covered Amount: 0.00

Edit Installed Base:

Item Revision: AB

Linked Line: 2

Fig. 21.19
Issue Line
Details Frame

Quantity to Ship. Defaults to 0. Enter a number to indicate the quantity to ship from RMA Maintenance during inventory processing.

Multi Entry. Defaults to No unless detail records exist, in which case it is set to Yes and cannot be changed. Indicates whether this issue transaction involves multiple sites, locations, lot/serial numbers, or lot reference numbers. Use this field only if you plan to ship from RMA Maintenance.

If Multi Entry is Yes and Quantity to Ship is nonzero, a window pops up for you to record issue details. Specify No if this transaction involves only one site, location, and lot/serial number, and the lot reference is blank.

Edit Installed Base. Defaults from the value of Edit Installed Base in RMA/RTS Control and determines whether the Installed Base Detail frame displays. This frame enables you to change the defaults for installed base updates, such as whether to update the installed base, end user, warranty, and other details.

Item Revision. This defaults from the revision number you specified when you defined the issue line item in the Item Master.

Receipt. Specifies whether to generate a receipt line and link it to this issue line. If Yes, a pop-up window displays, enabling you to enter the item number, site, location, lot/serial, ISB reference, quantity expected, and price of the item to be returned from the customer. The system generates a receipt line and links it to the issue line. If No, you can enter and link receipt information later.

When a receipt line is linked to an issue line, the shipment cannot occur before the defective item is returned unless Ship before Return is Yes for the service type.

Linked Line. If this issue line is linked to a receipt line, the receipt line number displays in this field. The system updates this field when you set Rec to Yes to create an associated receipt line. If you add receipt lines later, you can update this field to link the receipt lines to the correct issue line.

When lines are linked, the system checks the value of Ship Before Return on the service type for the RMA. If this is No, you must process the receipt line before the shipment, or at the same time if you are shipping or receiving from RMA Maintenance. If you do not process the entire quantity expected on the return, you can ship only the number received.

Installed Base Detail

The Installed Base Detail frame displays when Edit Installed Base is Yes in the previous frame.

The screenshot shows the 'Installed Base Detail' frame with the following fields and values:

- Update Installed Base: ☒
- Installation Call: ☒
- End User: 10010003
- Installed Base Location: Building 3
- Ownership: Local
- Warranty Code: W-1
- Parent Serial: (empty)
- Parent Item: (empty)
- Warranty Start Date: (empty)

Navigation buttons (back and forward) are visible at the bottom right.

Fig. 21.20
Installed Base
Detail Frame

Update Installed Base. This field defaults to Yes if the Installed Base field in Service Item Maintenance is Yes for the item *and* the Create ISB field is Yes for the end user in End User Address Maintenance. Yes indicates that an installed base record should be created for this line item. If Yes, when you post the invoice for this RMA, the system records the item and serial number in the installed base. The system uses information in the remaining fields in the Installed Base Detail frame when the record is created.

Tip
The value of Create ISB for a new end user defaults from the Create ISB field in End User Control.

Installation Call. This field defaults to Yes if the item being issued requires an installation call and Auto Install Calls is Yes in Call Management Control. If Yes, the system creates an installation call when it adds the item to the installed base during invoice post. Use this for item installations that need an engineer's technical expertise.

Tip
If the item requires an installation call, set Installation Call to Yes in Service Item Maintenance.

End User. This field defaults from the end user on the RMA header. You can change it to another end user for this customer.

Installed Base Location. A reference-only field used for a 24-character description of the current location of this installed base item at the end-user site. This might be a building location, suite number, or floor.

Ownership. A reference-only field indicating who possesses the item. If the end-user address code refers to a large company, you can enter the department or individual using the item.

Tip
Set up values for ownership with generalized codes for field isb_owner.

Tip

Use the Parent Item field to make sure that the issued item is added as part of the original purchase.

Warranty Code. Defaults from the warranty for the item in Service Item Maintenance and determines the coverage terms and conditions including response time, credit price list, and days of coverage.

Parent Serial and Item. You can track both products and components in the installed base. This is especially true for configured products. If you maintain the entire configuration in the installed base, the customer can return a component such as a PC disk drive, and you can relate the new component issued to the original PC.

Warranty Start Date. The warranty start date defaults to blank. If you do not specify a date, the system uses the RMA ship date as the warranty start date when it creates the installed base record for the issue line item during invoice post.

The system calculates the warranty end date by adding the warranty duration to the warranty start date. If an install call is created for the item during invoice post, the system updates the warranty start and end dates again when the install call is closed based on the call closure date.

All system updates to the warranty start and end dates occur *only* if you do not specify a date. To let the system manage this date for you, leave the field blank.

RMA Receipts

RMA receipts is similar to RMA issues. Most fields in the item detail default from values in the RMA header and have the same effect as described previously. The few differences are described here.

Fig. 21.21
RMA Receipt Lines

Ln	Item Num	Turn Qty	UM	List Price	Discount	Net Price
6	10-15001	0.0	EA	0.00	0.0	0.00

List Price. You can apply field security to this field. List price comes from the RMA Credit Price List on the header, which in turn defaulted from the service type.

Discount. You can apply field security to this field. If a restocking charge exists for the service type, it displays in this field. In this case, you cannot modify Discount. A message displays indicating that a restocking charge has been applied. If you have not defined a restocking charge, you can enter a discount to be applied.

You can display and enter values in Discount as a percent or as a factor, depending on the setting of Display SO Discounts As in Pricing Control. The number of decimals is determined by the SO Factor Rounding field in Pricing Control.

Net Price. You can apply field security to this field. The system calculates net price based on the list price and discount. If you change Net Price and the discount is derived from a restocking charge, the system recalculates the list price.

Receipt Line Details

The Receipt Line Details frame contains fields unique to RMA processing. The first five fields—Qty Received, Received Date, Expected Date, Product Line, Restock—are display-only fields. Qty Received and Received Date have values if a return has been made. Expected Date and Product Line default from the header. Restock displays the restocking charge for the service type.

Repair WO, ID, RTS, and RTS line are also output-only fields that have a value only if you have released the received item to a work order or created an RTS to return the item to the supplier for repair.

Fig. 21.22
Receipt Line
Details Frame

RMA Maintenance

RMA: RMA10 Sold-To: 1001000 Ln Format S/M:single

Ln	Item Number	Return Qty	UM	List Price	Discount	Net Price
6	10-15001	0.0	EA	0.00	0.0	0.00

Receipt Line Details

Qty Received: 0.0 Product Line: W-10
 Received Date: Restock: 0.00
 Expected Date: 07/25/2002
 Qty to Receive: 0.0 Repair WO:
 Fault Code: ID:
 ISB Ref: 0 RTS:
 Processing: W Rework Work Order RTS Line: 0
 Linked Line: 5
 Multi: Update Installed Base: ☒

Qty to Receive. Defaults to 0. Specify a value to receive items directly from RMA Maintenance.

Tip
Set up fault codes for field `rmd_fault_cd` in Generalized Code Maintenance.

Fault Code. An optional code that identifies the problem or reason for the return.

ISB Reference. Each item that is not controlled by serial numbers in the installed base needs a unique ISB reference number. If you specify the ISB reference on a return, the system can identify which item to remove from the installed base if Update Installed Base is Yes.

Processing. Enter one of three values:

- *P (Pending).* Enter P if you are not sure of the item's disposition.
- *W (Work Order).* Enter W so RMA Release to Work Order can consider this line item when rework work orders are created.
- *R (RTS).* The value R is for reference only, and indicates that you plan to repair the item by returning it to the supplier.

Linked Line. If this receipt line is linked to an issue line, its line number displays in this field. If you did not link the receipt from the issue line, you can link the issue line from the receipt by specifying its line number here.

Multi Entry. Defaults to No unless detail records exist, in which case it is set to Yes and cannot be changed. Indicates whether this receipt transaction involves multiple sites, locations, lot/serial numbers or lot reference numbers. Use this field only if you receive items directly from RMA Maintenance.

If Yes and Qty to Receive is nonzero, another window pops up for you to record inventory details. Specify No if this transaction involves only one site, location, and lot/serial number, and the lot reference is blank. If you are using lot reference numbers, you must specify Yes even if only one item is being received.

Repair WO and ID. If the processing option for this line is W (work order) you can execute RMA Release to Work Order to create a work order for refurbishing the item. The work order number consists of the RMA number followed by the line number, separated by a period. The system updates this field with the work order number and ID created.

RTS and RTS Line. If you use an RTS to return the item to the supplier for refurbishment, the system keeps track of the RTS and line that shipped the item.

Update Installed Base. This field indicates if an installed base record for the item being returned should be deleted. It defaults to Yes when three conditions are true:

- The Installed Base field in Service Item Maintenance is Yes for the item.
- The Create ISB field is Yes for the end user in End User Address Maintenance.
- At least one installed base record exists for the item, lot and reference, or serial number specified.

RMA Trailer

The RMA trailer is the same as a sales order's. It displays charges and credits and information for shipping and invoicing.

Fig. 21.23
RMA Trailer
Frames

RMA Maintenance

Order: RMA10 Sold-To: 1001000 Bill To: 1001000 Ship-To: 10010001

Non-Taxable: 21,000.00	Currency: USD	Line Total: 21,000.00
Taxable: 0.00	0.00%	Disc Amt: 0.00
Tax Date:	Service: 10	: 0.00
Containers: 0.00	Taxable Service: 11	: 2,100.00
Line Charges: 0.00	Freight: 20	: 0.00
	Total Tax: 0.00	
View/Edit Tax Detail: ☐	Total: 23,100.00	

CR Initials: Print Sales Order: ☒ AR Acct: 1200

Credit Card: Print Pack List: ☒ Prepaid: 0.00

Action Status: Print Inv Hist: ☒ FOB Point: ESCONDIDO

Revision: 0 EDI Inv Hist: ☐ Ship Via: GROUND

EDI PO Ack: ☐ Partial OK: ☒ BOL:

Most fields on the trailer default from the bill-to address—Cr Initials, Credit Card, Action Status, Partial OK, Ship Via—or Sales Order Control and have the same function as in sales orders.

RMA Confirmation Screen

You can ship and receive items directly from RMA Maintenance. When you press Go after completing the trailer, you are prompted to display RMA lines. If you respond Yes, a confirmation screen displays, first for receipts, then for issues.

Fig. 21.24
RMA Receipt
Confirmation
Frame

RMA Maintenance

Order: RMA10 Sold-To: 1001000 Bill-To: 1001000 Ship-To: 10010001

Receipts

Ln	Item Number	T	Qty Expected	Qty to Receive	Qty Received	Due
2	10-10000		10.0	0.0	0.0	07/25/2002
4	10-15000		15.0	0.0	0.0	07/25/2002
6	10-15001		0.0	0.0	0.0	07/25/2002
8	22-100		20.0	0.0	0.0	07/25/2002

If you entered a quantity to receive or a quantity to ship earlier, it displays in the Qty to Receive or Qty to Ship column. The system prompts you to initiate shipment or receipt from RMA Maintenance.

The screenshot shows the 'RMA Maintenance' window. At the top, it displays 'Order: RMA10', 'Sold-To: 1001000', 'Bill To: 1001000', and 'Ship-To: 10010001'. A dialog box titled 'Ship/Receive RMA Lines?' is open, with 'Ship/Receive RMA Lines?' checked and 'Effective Date: 08/01/2002' set. Below the dialog box is a table with columns 'Ln', 'Item', and 'Due Date'. The table contains five rows of data.

Ln	Item	Due Date
1	10-10000	07/30/2002
3	10-15000	07/30/2002
5	10-15001	07/30/2002
7	22-100	07/30/2002
9	10-10000	07/30/2002

Fig. 21.25
Ship/Receipt Frame

Ship/Receive RMA Lines. Respond Yes to initiate the shipment or receipt of items with a nonzero quantity in the Qty to Ship or Qty to Receive column.

Effective Date. The default is the system date. The date in this field is the ship date for invoice generation and other accounting processes. Inventory transaction history uses the current system date and time.

Returns to Suppliers

Use the return to supplier (RTS) process to manage items received from your end users that need to be returned to a vendor for repair. Like a return material authorization (RMA), an RTS has two parts that let you set up lines for shipment to the supplier and receipt from the supplier when the repair is complete. This chapter describes RTS functionality and discusses how it fits into the service environment.

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RTS Life Cycle

See Chapter 21, “Return Material Authorizations,” on page 679.

The return to supplier process takes the return material authorization (RMA) process one step further. Sometimes you send an item returned from the end user back to a supplier, who repairs or replaces it. Use the return to supplier function to track the return to the supplier (RTS) and link the original return from your customer to it.

Fig. 22.1
RTS Flow

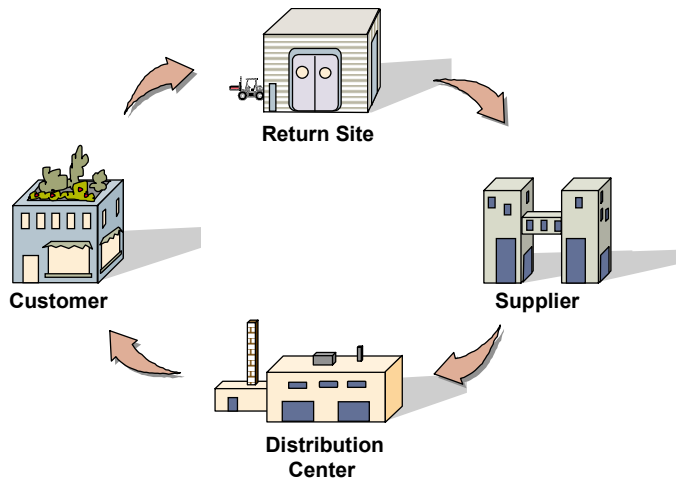


Figure 22.1 shows the full route of the item as it is received by the customer, returned to you, then returned to your supplier, who in turn returns it to you.

RTS Maintenance executes two distinct processes: you return items to the supplier, and you receive items back from the supplier. You can specify whether:

- The supplier ships the repaired item to you at your service repair site, or
- The supplier ships the repaired item to the customer.

RTSs have a life cycle similar to a standard purchase order. You create them with RTS Maintenance. You ship and receive them in separate functions: RTS Shipments and RTS Receipts.

Tracking RTS Inventory

You can use one of two methods to manage inventory for an item returned to a supplier:

- Specify the supplier as an inventory site and track the inventory within the MFG/PRO database.
- Issue the item out of inventory and not track it until it is returned.

Transferring RTS Inventory

In the first option, inventory remains within view in your MFG/PRO database, even though it is not physically present. You specify a supplier inventory site and locate the RTS item there. This approach gives you the advantage of knowing at all times how many units of the item are being repaired. Since the system supports costing by site, you can assign any cost or no cost to these RTS items while they are at your supplier's site.

The supplier site for inventory is set up in RMA/RTS Control (11.7.24).

Inventory site representing items returned to a supplier.

RMA/RTS Control

RMA Header Comments:	☐	Detail Allocations:	☐
RMA Line Comments:	☐	Allocate Days:	0
Default RMA Contract:	STANDARD	Consume Forecast:	☒
Keep Booking History:	☐	Edit Installed Base:	☒
Display Service Contracts:	☒	Print No Charge Receipts:	☐
RMA Sales Order Prefix:	RMA	Purchase Order Prefix:	RTS
Next RMA Sales Order:	9	Next RTS Purchase Order:	4
Customer Return Site:	10000	At Supplier Site:	10000
Customer Return Location:	RETURN	At Supplier Location:	ATTSUP
Customer Spares Site:	10000	Return From Supplier Site:	10000
Customer Spares Location:	SPARES	Return From Supplier Loc:	RETSUP

Fig. 22.2
RMA/RTS Control
(11.7.24)

At Supplier Site represents all your suppliers. To track the RTS when you have multiple suppliers, set up one at supplier site and define a different location for each supplier.

To track RTS items as inventory, set Inventory Issue to No in RTS Maintenance (11.7.3.1). When inventory issue is No, the system creates the RTS with a ship type of R.

Note You can use this feature only for inventory items. For memo items, inventory issue is Yes and you cannot change it.

A non-blank ship type normally indicates a memo item. Even though ship type is non-blank for an RTS, the system enforces required inventory edits and compliance features. You are moving inventory during the transaction. The R indicates inventory is being transferred rather than issued and received.

Fig. 22.3
RTS Maintenance
(11.7.3.1)

The screenshot shows the 'RTS Maintenance' window with the following details:

- Header:** Items Returned To Supplier, RMA: R3, Supplier: 00100, Ship-To: 00100, S/M: Single
- Table:**

Ln	Item Number	UM	Return Qty	Price	Disc%
2	22-110	EA	10.0	50.00	0.00%
- Item Returned To Supplier Section:**
 - Lot/Serial: (blank)
 - Inv Issue: ☐
 - Qty Shipped: 0.0
 - From Site: 10000
 - From Location: RETURN
 - To Site: 10000
 - To Location: 12000
 - Ext Price: 500.00
 - Description: (blank)
 - Required Date: 08/20/2002
 - Date Shipped: (blank)
 - Fault Code: (blank)
 - Comments: (blank)
 - Type: R
 - RMA: 0
 - Link: 0

Annotations on the left side of the screenshot:

- Items are transferred, not issued. (points to the 'Inv Issue' checkbox)
- Defaults from Customer Return Site and Location in control program. (points to the 'From Site' and 'From Location' fields)
- Defaults from At Supplier Site and Location. (points to the 'To Site' and 'To Location' fields)

Annotation on the right side of the screenshot:

- The RTS Type field is set to R when Inv Issue is No and cannot be changed. (points to the 'Type: R' field)

When Inventory Issue is No, the destination site defaults from the At Supplier Site value. Inventory is transferred from the customer return site to the supplier site and displays in inventory inquiries and reports as on-hand at the supplier site.

Table 22.1
Inventory
Transactions
Generated with
Inv Issue = No

Transaction	Description	Debit Account	Credit Account
ISS-TR	Ship from site	Goods in transit	Inventory
RCT-TR	At supplier site	Inventory	Goods in transit

Issuing Inventory for an RTS

The second option for processing RTS items is to set Inventory Issue to Yes in RTS Maintenance (11.7.3.1). This means you are issuing inventory and not tracking the returned item in the database.

Setting Inventory Issue to Yes is similar to processing a sales order shipment or RMA shipment. When the shipment occurs, the inventory is reduced and you no longer have visibility of it. When you set Inventory Issue to Yes, the inventory ships from the customer return site and is no longer visible within your MFG/PRO database.

Transaction	Debit Account	Credit Account
RCT-PO	PO Receipts	Inventory

Both a return to supplier and a receipt from supplier create the same transaction type (RCT-PO). The only difference is that the quantity is negative for a return.

Note Whether you are performing inventory issues and receipts or transferring inventory, the features of the Compliance module that affect purchase orders also apply to RTSs. This includes the ability to modify inventory attributes upon RTS receipt and lot-control level. The value of Single Lot per PO Receipt affects an RTS only when inventory issue or receipt is Yes.

Table 22.2
Inventory Transactions Generated with Inv Issue = Yes

Tip
Modify inventory attributes on RTS receipts by setting Compliance Active to Yes in Compliance Control.

Receiving an RTS Transfer from a Vendor

Use RTS Maintenance for two functions:

- Sending an item needing repair back to the supplier
- Receiving the refurbished item

Two similar frames in RTS Maintenance correspond to these functions: one for sending an item to the supplier and one for receiving an item returned from the supplier. The frame titles in RTS Maintenance indicate which function is being executed.

Fig. 22.4
Receipt from
Supplier

Items will be transferred, not received.

Defaults from Return From Supplier Site and Location in RMA/RTS Control.

Ln	Item Number	UM	Return Qty	Price	Disc%
3	22-120	EA	15.0	40.00	0.00%

Item Received From Supplier

Lot/Serial:

Description: CORD,POWER,USA

Required Date: 08/26/2002

Date Shipped:

Pur Acct: S100 2100 0100

Single Lot: ☒

Type: R

RMA:

RMA Line: 0

Link: 0

Inv Receipt: ☐

Qty Shipped: 0.0

From Site: 10000

From Location: 12000

To Site: 10000

To Location: REPAIRS

Ext Price: 600.00

The Inventory Receipt field functions like the Inventory Issue field. When you have a matching issue and receipt line on an RTS, you must set Inventory Issue and Inventory Receipt the same for both lines, so they both affect inventory in the same way.

Set Inventory Receipt to Yes to receive the item from the supplier into your inventory. No indicates you are transferring inventory from the At Supplier Site and At Supplier Location to the Return from Supplier Site and Return from Supplier Location defined in RMA/RTS Control. You can change these settings for each line.

In Figure 22.4, Inventory Receipt is No so you can transfer the item. The From Site and From Location default from the At Supplier Site and Location; the To Site and To Location default from the Return From Supplier Site and Location.

RTSs and Compliance

If you are using the Compliance module, RTSs are affected in the same fashion as purchase orders. Several control program settings in Compliance Control (1.22.24) affect an RTS.

- If Compliance Active is Yes, a pop-up appears in RTS receipts that let you modify inventory attributes during receipt.
- When inventory receipt is Yes, Single Lot per PO Receipt also affects RTSs. If this is set to Yes and you have previously received a lot, you cannot receive it again on an RTS.

Example You need to consider the implications of this carefully. You receive a lot from a supplier. Later you return two items from that lot to the supplier with an RTS. When you receive the items back, you cannot receive them to the same lot number in a controlled environment. The reason for this is that additional work has been done on them and they are no longer the same as other items in the lot.

- RTSs are also affected by the lot-control level in Compliance Control.
- If you enable automatic lot numbering for an item in Item Master Maintenance, it is effective in RTS Receipts.

RTS Maintenance

Figure 22.5 illustrates the first two frames of RTS Maintenance (11.7.3.1).

The screenshot shows the 'RTS Maintenance' window. At the top, it displays 'RTS: R3', 'Supplier: 00100', and 'Ship-To: 00100'. Below this, there are two main sections: 'Supplier' and 'Ship-To'. Both sections show the same information: 'Swift Transport', '2100 Hueneme Road', 'Port Hueneme', 'CA', '93033', and 'United States of America'. At the bottom, there is a section for 'Order Date: 07/26/2002' and 'Required Date: 08/26/2002'. Other fields include 'Expected Date: 08/20/2002', 'RMA Contract:', 'Contract Type:', 'Taxable:', 'Currency: USD', 'Price Table:', 'Discount Tbl:', 'Ln Disc: 0.00%', 'Imp/Exp:', 'Project:', 'Site:', 'Language:', 'Credit Terms: 2/10-30', and 'Comments:'. A 'Remarks' field at the bottom contains the text 'No Grade 7 shipments will be accepted'.

Fig. 22.5
RTS Maintenance
(11.7.3.1)

RTS. If you leave this field blank when you create an RTS, the system supplies a number by appending the Purchase Order Prefix in RMA/ RTS Control to the value in Next RTS Purchase Order. The system increments this field.

Supplier. Enter a supplier set up in Supplier Address Maintenance (2.3.1). This is the supplier to whom you are returning items.

Ship-To. This defaults from the Supplier address, but you can change to an alternate address.

Order Date. The default is the system date, indicating when you recorded this RTS. This can be the date when you entered the RTS or the date the customer requested an RTS.

Required Date. If left blank, defaults to the order date. This field is the date that the items are required back from the supplier and provides the default date for each RTS receipt line.

Expected Date. If left blank, defaults to the order date. Indicates the date you expect to ship the items to the supplier on this RTS and provides the default date for each RTS issue line.

RMA Contract. If you have linked this RTS to an RMA, you can enter the RMA contract number in this field. This field is for reference only.

Contract Type. If you have linked this RTS to an RMA, you can enter the RMA contract type in this field. This field is for reference only.

Remarks. Any remarks specified for the supplier display by default. You can enter remarks specific to this RTS. Remarks display on printed documents.

Taxable, Class, Effective Date. Default from the values for the Supplier address. These fields indicate whether this RTS is subject to tax. The taxable status for the order header displays as the default for each line item, but you can change it.

Currency. Defaults from the currency for the supplier. When you first create an RTS, you can change this to any currency, but once you move to the next frame, it cannot be changed. The system uses currency in the search for valid prices.

When you specify a foreign currency, a pop-up displays the exchange rate relationship effective on the order date. You can change it or mark this rate as fixed. If the exchange rate is not fixed, the system updates it at later points in the RTS life cycle. If the exchange rate is fixed, the system does not change it.

If one or both of the exchange rate components is a member of the European Monetary Union (EMU), triangulation through the euro is used to determine the exchange rate. In this case, the exchange rate relationship includes four components. The fixed rate of the EMU currency to the euro cannot be updated.

► For details, see the Multicurrency chapter in *User Guide Volume 4A: Financials*.

Price Table. Defaults from the supplier. The system uses this for automatic pricing of items on this RTS. This field must be a type L price list set up with Price List Maintenance (1.10.2.1).

Discount Table. Defaults from the supplier. The system uses this for automatic pricing of items on this RTS. This field must be a type D, M, or P price list set up with Price List Maintenance (1.10.2.1). If you are using a discount table, the system disregards the supplier discount percent.

Ln Disc. Defaults from the supplier. This field indicates the percentage discount usually offered by this supplier.

Import/Export. Defaults from Imp/Exp Default in Intrastat Control and displays if Use Intrastat is Yes in the same control program. Set this field to Yes to enter or maintain import and export data for the order used to create Intrastat History Reports. If Yes, the standard Intrastat frames display for input of appropriate data.

Project. Project code is one component of an account number defined in GL setup functions. Other account components are account, sub-account, and cost center. If Verify GL Accounts is Yes in System/Account Control, each component you enter must be valid on its own and in combination with other account number components. The project on the header is the default for all line items. You can change this for any line.

Site. Must be a valid site code. The system uses the site to determine the default tax environment. Sites for RTS issue and receipt lines default from RMA/RTS Control.

Language. Defaults from the language for the Sold-To address. Use this when printing formal documents as a selection criteria for the print function.

Credit Terms. Defaults from the credit terms for the supplier. Credit terms identify specific types of payment terms, defining the due date and any discounts for early payment.

Comments. Defaults from the RMA Header Comments field in RMA/RTS Control. When Comments is Yes, a frame displays where you can enter comments for this RTS. Enter information that relates to the entire RTS, such as delivery information or credit comments.

Items Returned to Supplier

There are two line item entry frames for an RTS: one for items returned to the supplier and one for items received from them. Many fields on this frame are the same as in standard purchase order functions and are not described here.

Fig. 22.6
Items Returned to
Supplier (11.7.3.1)

RTS Maintenance

Items Returned To Supplier

RMA: R3 Supplier: 00100 Ship-To: 00100 S/M: Single

Ln	Item Number	UM	Return Qty	Price	Disc%
2	22-110	EA	10.0	50.00	0.00%

Item Returned To Supplier

Lot/Serial: _____ Description: _____

Inv Issue: ☐ Required Date: 08/20/2002

Qty Shipped: 0.0 Date Shipped: _____

From Site: 10000 Fault Code: _____

From Location: RETURN Comments: _____

To Site: 10000 Type: R

To Location: 12000 RMA: _____

Ext Price: 500.00 RMA Line: 0

Link: 0

Item Number. Enter the number of an item to be returned to your supplier. The lookup for this field displays all RMA receipt lines with an open quantity that has not already been attached to an RTS return line. These are the items you are most likely to be returning to your supplier.

If you enter a memo item, inventory issue defaults to Yes in the lower frame and you cannot change it.

Price. List price comes from the price table or discount table in the header and indicates the credit the supplier gives you for this returned item.

Disc %. Discount percent comes from the supplier in the header and indicates the discount the supplier normally gives you for this returned item.

Inv Issue. Indicate whether to issue inventory from stock or to transfer it to a temporary supplier location when you ship items back to a supplier. If Yes, items are issued from stock and no longer appear on your inventory balance.

If No, the system transfers items to At Supplier Site and At Supplier Location in RMA/RTS Control. When the items are received back from the supplier, the system transfers them from the at-supplier site and location to the Return From Supplier Site and Return From Supplier Location.

From Site and Location. These fields default from Customer Return Site and Customer Return Location in RMA/RTS Control. Indicate the site and location where the items to be returned to the supplier currently reside.

To Site and Location. You can edit these fields only if Inventory Issue is No. In this case, the system transfers the items to another site and location for tracking instead of issuing them from inventory. The site and location default from the At Supplier Site and At Supplier Location in RMA/RTS Control.

Type. If Inventory Issue is No, the system sets Type to R and you cannot change it. If Inventory Issue is Yes, Type indicates the ship type as in a standard purchasing function.

RMA and RMA Line. If you receive an item from a customer on an RMA and are now returning it to the supplier, enter the RMA and RMA line numbers in these fields for reference. If you select the RMA line item from the lookup on the Item field, the system fills in the RMA number and line. The system verifies that:

- The RMA line exists.
- It is a receipt line, not an issue line.
- The item number matches with an open quantity not already associated with other RTS return lines.

Link. The system maintains this field. It links lines from the receipt portion of the RTS. When an RTS receipt line is linked to the RTS return—or ship—line, its number appears here.

Tip

When you have a matching issue and receipt line on an RTS, you must set Inv Issue and Inv Receipt the same for both, so they affect inventory the same way.

Items Received from Supplier

RTS receipts is similar to RTS returns. Again, most fields in the item detail have the same effect as described previously. The differences are described here.

Fig. 22.7
RTS Receipt Lines

RTS Maintenance

Items Received From Supplier

RMA: R3 Supplier: 00100 Ship-To: 00100 S/M: Single

Ln	Item Number	UM	Return Qty	Price	Disc%
3	22-120	EA	15.0	40.00	0.00%

Item Received From Supplier

Lot/Serial: Description: CORD,POWER,USA

Inv Receipt: ☒ Required Date: 08/26/2002

Qty Shipped: 0.0 Date Shipped:

From Site: 10000 Pur Acct: 5100 2100 0100

From Location: 12000 Single Lot: ☒

To Site: 10000 Type: R

To Location: REPAIRS RMA:

Ext Price: 600.00 RMA Line: 0

Link: 0

Inv Receipt. Indicate if inventory is to be received into stock or transferred from the at-supplier location when you receive items from the supplier.

No: Items are transferred from the At Supplier Site and At Supplier Location in RMA/RTS Control to the Return from Supplier Site and Return From Supplier Location.

Yes: Items are received into stock and appear on your inventory balance.

When you have a matching issue and receipt line on an RTS, you must set Inventory Issue and Inventory Receipt the same for both, so they affect inventory in the same way.

Link. If this receipt is related to a line you issued previously, enter the line number here. The system updates the issue line with this information.

Tip
Lines can only be linked if the Inventory Issue/Receipt settings are the same.

RTS Trailer

The RTS trailer is similar to a purchase order trailer. It displays charges and credits and other shipping and invoicing information.

RTS Maintenance

RTS: R3

Supplier: 00100

Ship-To: 00100

Non-Taxable: -1,900.00

Currency: USD

Line Total: - 1,900.00

Taxable: 0.00

Total Tax: 0.00

Tax Date: 08/26/2002

Total: - 1,900.00

View/Edit Tax Detail:

☐

Revision: 0

Amount Prepaid: 0.00

Print PO: ☒

Status:

EDI PO: ☐

Close Date:

AP Account: 2100

FOB:

Deliver To:

Ship Via: Air Pomona

Fig. 22.8
RTS Trailer Frames

Some fields on the trailer default from the supplier address—AP Account, Ship Via—or Purchasing Control (5.24) and have the same function as in purchase orders.

Control Programs

With its inherent flexibility, the Service/Support Management (SSM) module meets the needs of users with diverse business requirements. Settings in the 10 SSM control programs support this flexibility. This chapter discusses each control program and describes each setting and its impact on service activity.

Service Management Control **746**

Call Management Control **751**

Call Escalation Control **762**

Service Request Control **764**

Contract Control **765**

RMA/RTS Control **777**

End User Control **783**

Material Order Control **784**

Engineer Schedule Control **787**

Paging Control **791**

Service Management Control

Service Management Control (11.24) contains general settings that affect more than one kind of service activity. Most of these settings are used to manage the installed base.

Fig. 23.1
Service
Management
Control (11.24)

Service Management Control

Items in Installed Base: ☐ Ship to Installed Base: ☒
Items Must Exist: ☐ Installed Base History: ☒
Load Available Structure: ☒ Credit Hold Option: 0
System Level: S Travel UM: M
Use Item Product Line: ☐
Service Data in Item Master: ☒
Multiple Time Zones: ☐
Server Time Zone: EST/EDT
Database Time Zone: PST/PDT

Items in Installed Base. If Yes, you can record service contracts and service calls only for items in the installed base. If No, you can take calls in Call Maintenance for items not in the installed base. You can add a record for the item and end user to the installed base when you record activity in Call Activity Recording.

Use this field with Items Must Exist to define the degree of control you want over the item specified on service contracts and calls.

The four ways to combine these two fields are listed in Table 23.1.

Table 23.1
Item Control Field
Combinations

Items in Installed Base	Items Must Exist	Effect
No	No	You can add any item to a call or service contract. The installed base does not have to contain the item and it does not have to exist in the item master. With this pairing, you can take calls and generate service contracts for any item, even those your company does not sell.
No	Yes	You can take calls and generate service contracts only for items in the item master. However, the customer's installed base record does not have to contain the item. Use this pairing if you do not need an accurate installed base, but you do support only products you manufacture and sell.

Items in Installed Base	Items Must Exist	Effect
Yes	Yes	You can take calls or issue service contracts only for items that are in the installed base and in the item master. This combination gives you the most control.
Yes	No	You can take calls or issue service contracts for any item in the installed base; you may not have made or sold the item. Use this to keep accurate installed base records and if you service items you do not manufacture.

Items Must Exist. If Yes, an item must be in the item master before you can create a service contract or call for it. If your company services only products that you have manufactured and shipped, set this field to Yes. If you service products from other manufacturer or operate a walk-in type repair service, set this field to No.

Load Available Structure. The field determines whether the system adds product structures to the installed base during invoice post and in Call Activity Recording. Setting this field to Yes has an effect only if other conditions are true:

- The item is one you manufacture or configure.
- Ship to Installed Base is Yes.
- The parent and each component are service items defined with Service Item Maintenance (11.3.7), and the Installed Base field is Yes.
- The item can be added with a quantity of 1. The shipment quantity for configured items is 1, and the work order quantity for serial- or lot-controlled items is 1 for the system to identify the as-built structure. Since you seldom create lots with a quantity of 1, Load Available Structure usually has no effect on lot-controlled items.
- The parent item is serial number controlled or is a configured product. A configured product shipped on a final assembly work order can be identified without a serial number as long as it is shipped with a quantity of one.

If the situation meets these conditions, the system attempts to add components of the parent item to the installed base as derived from the sales order BOM or the work orders used to build it and its components. The system derives this information from transaction history records.

If Load Available Structure is No and Ship to Installed Base is Yes, the system creates an ISB record only for the parent and includes no component details.

Tip
Set up values in Generalized Codes Maintenance for field pt_sys_type.

System Level. This field enables you to specify a code indicating a system-level item. Associate system-level codes with installed base items in the System Type field of Service Item Maintenance (11.3.7).

The system uses the code defined in Service Management Control with the System Level On Calls field in Call Management Control. Before you can set System Level On Calls to Yes, specify a value for System Level. The system checks this code in two places:

- In Call Management, it is checked during next/previous processing on the Item field.
- In the Installed Base Report (11.3.3), selecting the System Level Only option restricts the report to items with a system type that matches the System Level value in the control program.

Use Item Prod Line. The default is Yes. If Yes, the system uses the product line of the item. If No, the system uses the product line from the service type. This setting affects the determination of the default product line in Contract Maintenance, Contract Quote Maintenance, RMAs, and Call Activity Recording. You can change the product line.

In each function, the effect of Use Item Prod Line can be different.

- In contracts and contract quotes, the product line determines the GL sales accounts.
- In RMAs, the product line determines the GL sales and cost of goods sold accounts.
- In Call Activity Recording, the setting of Use Item Prod Line determines which product line's WIP account is used for labor, expense, and item transactions. It can also affect the search for a charge product line if you have not set up one in Charge Product Line Maintenance.

Service Data in Item Master. If Yes, you can edit the service attributes of an inventory item in Item Master Maintenance (1.4.1). These are the same frames as in Service Item Maintenance (11.3.7). If No, you can edit these attributes only in Service Item Maintenance.

Ship to Installed Base. Controls the integration between sales and service. If Yes, the system updates the installed base during Invoice Post (7.13.4) of sales orders for service items. If you use the Sales Orders/Invoices module and ship to end users, set this field to Yes, since it can streamline recording installation information. If you sell through distributors or retailers, this may not be appropriate.

Installed Base History. Determines whether the system creates transaction history records for manual updates to the installed base. When Yes, a history record is created whenever a user manually creates an ISB record, deletes a record, or changes the serial number on an existing record. Review these transactions with the ISB History Report (11.3.22.3). Tracking history provides an additional level of security in managing an installed base.

Credit Hold Option (0, 1, 2). Specifies how to handle service contracts, calls, RMAs, and material orders (MO) when a customer is on credit hold.

0 (zero): Accept service calls, contracts, RMAs, and MOs regardless of the customer's credit status.

1: Accept service calls, MOs, and contracts, but display a warning. You can create MOs, RMAs, and contracts, but the action status is HD (hold). When you release a service quote to contract, the contract is put on hold.

2: Do not accept service calls. You cannot create MOs, RMAs, and contracts. An error displays and you cannot record the call or create an MO, RMA, or contract until the customer Credit Hold field is No. In addition, you cannot release contract quotes to a contract, or call quotes to a call.

Travel UM (M, KM). M indicates travel distances are in miles; KM indicates kilometers. This setting determines the default for the travel distance unit of measure in the Service Office Detail frame of End User Address Maintenance (11.9.1). This value in Call Maintenance (11.1.1.1) designates distance between the end-user installation and service office.

▶ See Chapter 4, “Multiple Time Zones,” for details.

Multiple Time Zones. This field indicates whether MTZ is active. You can update it in the control program only when its value is Yes. To activate MTZ, use the Multiple Time Zones Startup Utility (11.21.22.24), which changes the value in the control program from No to Yes.

When MTZ is active, you can associate time zones with customers, end users, and engineers. Most call-related dates and times are displayed relative to the end-user time zone.

Warning You can turn MTZ on and off, but it is not recommended. If you turn it off, you must enter call dates relative to the end-user time zone. Otherwise, data is not consistent when MTZ is reactivated.

Server Time Zone. This field displays the time zone of the server machine for the MFG/PRO database. The system uses this time zone for all time-zone conversions.

The Multiple Time Zones Startup Utility (11.21.22.24) sets this field. Do not modify it unless you change the geographical location of the server machine. In this case, use the Server Time Zone Change Utility (11.21.22.22) to make the change. This utility adjusts records to conform to the new time zone.

Note A Server Time Zone field can also be updated in System/Account Control (36.1) when MTZ is not active in SSM. Once MTZ has been activated, the field in System/Account Control cannot be updated.

Database Time Zone. You can edit this field only when Multiple Time Zones is active. Define this time zone with Multiple Time Zones Maintenance (11.21.22.1) to indicate the time zone of this MFG/PRO database. Usually, the database time zone is the same as the server time zone. It can differ if you run multiple databases on one server machine and these databases are for corporate units in separate geographical regions.

This field has no effect on the way the system stores dates and times. In most call reports and inquiries, you can view dates and times relative to database time.

Call Management Control

Call Management Control (11.1.24) manages many aspects of calls, including call statuses, defaults for call creation, call activity recording and invoicing, and call quotes.

The screenshot shows the 'Call Management Control' window with the following settings:

- Call Prefix: CA
- Default Call Queue: CUSTOMER
- Call Comments: []
- Assign Primary Engineer: [x]
- Schedule New Calls: [x]
- Dispatcher: []
- Total Call Time: [x]
- Default Call Service Type: STANDARD
- Temporary Customer: 77777777
- System Level on Calls: []
- Call Activity With Temp: []
- Fault Codes: []
- Call Time Window: [x]
- Call Structure Window: [x]
- Auto Install Calls: [x]
- Installation Days Ahead: 14
- Use Escalation: [x]
- Queue Manager: 1
- Queue Manager Pause: 60

Fig. 23.2
Call Management
Control (11.1.24)

Call Prefix. Used with the Next Call ID in a later frame to assign a default call ID number for new calls. Use prefixes to distinguish calls, quotes, RMA, service requests, and contracts.

Default Call Queue. Default queue for grouping service calls for dispatch and review with the Call Queue Manager. Define queues in Call Queue Maintenance (11.1.21.7). The system searches for a call queue default as follows. If escalations are in effect, it determines call queue by the escalation step; next, call defaults defined with Call Default Maintenance; then the call queue in Service/Support User Preferences, and, finally, the call queue in the control program.

Call Comments. Specify Yes if you normally enter transaction comments during Call Maintenance (11.1.1.1). You can enter up to 99 pages of information on a call. This field determines the default that displays in the Call Info frame of Call Maintenance when you create a call.

Assign Primary Engineer. If Yes, the system assigns the primary engineer for the end user to new calls and call quotes. You can change this value.

Tip
You must specify different prefixes for calls and call quotes.

Tip
If this field is Yes, Schedule New Calls is normally set to No.

Schedule New Calls. Specify whether to execute the engineer scheduling sequence in Call Maintenance. If Yes, the Schedule field in the Call Info frame defaults to Yes. This initiates the engineer scheduling sequence upon completion of the Call Info frame. Set this to No if you do not use engineer scheduling.

Tip

Use Yes if a call dispatcher routes incoming calls to engineers.

Dispatcher. The default is No. Sets the default for the Page Engineer field in the Call Update frame of Call Maintenance when you create a call. If the call's engineer has Field Engineer set to Yes in Engineer Maintenance and Dispatcher is Yes, the Engineer Paging frame appears so that paging can be initiated.

Tip

Telephone support organizations may want the system to calculate time spent.

Total Call Time. Indicate whether the system calculates the time spent on a call. This field determines the value for Time Spent in the Call Update frame of Call Maintenance (11.1.1.1). If this field is Yes, the system keeps track of the elapsed time in decimal hours spent maintaining the call. The system begins calculating time when you enter the Call Info frame and stops when you reach the Call Update frame. Each time you modify a call, the additional time spent displays.

If you spend time on the call outside of Call Maintenance, you must adjust the time spent manually.

When this field is No, the time spent defaults to zero and must be entered manually.

Default Call Service Type. Specify the default contract type for terms and conditions when a call item has no contract or warranty. Define contract types with Contract Type Maintenance (11.5.10). This service type determines the response time, hours of coverage, and priority. Normally, the call default has no coverage levels.

Temporary Customer. Enter a customer address defined with Customer Maintenance (2.1.1). Use this address in Call Maintenance when taking calls from end users who are not in the system. Use this feature if you service items sold through distributors or retailers and end users contact your company directly for service. If your company sells only to end users, you may not need a temporary customer number.

System Level on Calls. Default is No. Before you can enter Yes, specify a code for the System Level field in Service Management Control. Define these codes in Generalized Codes Maintenance for field `pt_sys_type`. Setting this field to Yes affects next/previous processing in the Item Number field in Call Maintenance. Only items designated as system level display.

Tip

Use this setting if you take calls only for certain items, or to ensure that calls are taken only for the parent item in a configured product structure.

Call Activity With Temp. Used with the Temporary Customer setting. Set this field to No to prevent update of a call in Call Activity Recording or Call Invoice Recording until the customer is changed. You cannot close calls recorded for the temporary customer number. You must create a valid customer/end-user record, then update the call.

Fault Codes. Sets the default for the Fault Codes field in Call Maintenance, Call Quote Maintenance, and Call Activity Recording. If Yes, the Fault Codes field defaults to Yes and the Fault Codes frame appears. In this frame, enter information about the reasons for the call and its resolution.

Call Time Window. The default is No. Determines whether the Travel and Estimated Time frame appears in Call Maintenance. Enter Yes if you normally record estimated call length, travel distance, and travel time. User preferences in Service/Support User Preferences (11.21.23) can override the control program.

Use the estimated call length to calculate engineer availability during call scheduling if Display by Calls is No in Engineer Schedule Control. Estimated call length defaults from Call Management Control settings for the various work codes.

Call Structure Window. The default is No. Determines whether the Item Service Structure Detail frame appears in Call Maintenance. If Yes, you can enter or modify the service BOM and routing for the call's first item. The BOM and routing, in turn, can determine the items and operations loaded into Call Activity Recording detail frames. User preferences in Service/Support User Preferences (11.21.23) can override this value. The service BOM and routing can also be specified later in the Call Item frame.

Auto Install Calls. Indicates whether the system generates installation calls. You can mark each item as customer installable in Service Item Maintenance (11.3.7). Schedule an engineer for items that the customer cannot install. When Auto Install Calls is Yes and an item requires installation, Invoice Post generates a call to schedule the installation.

Installation Days Ahead. Specify the number of days after an item's ship date that you want to schedule an installation call. When an item requiring an installation call is loaded into the installed base, the system calculates the call's next activity date based on the ship date plus the value of Installation Days Ahead.

Use Escalation. Enter Yes to use escalations. Set this value to Yes before you can set up other escalation parameters in Call Escalation Control. When using escalations, the first step of the escalation (sequence 0) determines the defaults in Call Maintenance for Priority, Queue, Status, Next Queue, Next Status, Next Status Date, and Next Status Time.

Queue Manager (0, 1, 2, 3). Controls the sort criteria for calls in the Call Queue Manager (11.1.6). User preferences set up in Service/Support User Preferences (11.21.23) can override this value.

0 (zero): Displays calls by Next Date and Next Time. Use Pivot to toggle the sort order by end user.

1: Groups calls by the Assigned field, then response priority. Use Pivot to toggle the sort order by queue.

2: Sorts by the Assigned field. Use Pivot to toggle the sort order by end user.

3: Sorts by the Area field. Use Pivot to toggle the sort order by customer.

Queue Manager Pause. Specify the number of seconds that the Call Queue Manager (11.1.6) waits before it refreshes the screen. When the screen refreshes, new calls are included. If this field is 0 (zero), the screen does not refresh.

Work Code Settings

Technical Work Code:	TECH	Default Call Length:	003:00
PM Work Code:	PM	PM Call Length:	002:00
Install Work Code:	INSTALL	Install Call Length:	008:00
Update Work Code:	UPDATE	Update Call Length:	001:00
Corrective Work Code:	RECALL	Corrective Call Length:	004:00

Fig. 23.3
Work Code Frame
(11.1.24)

Technical Work Code. Enter a work code defined in Work Code Maintenance (11.21.1). Defines the default work code for calls you create in Call Maintenance (11.1.1.1) and Call Quote Maintenance (11.1.1.7).

PM Work Code. Enter a work code defined in Work Code Maintenance (11.21.1). Defines the default work code for calls the system generates during preventive maintenance scheduling in Contract Maintenance. The system uses this work code for all calls it creates for a preventive maintenance schedule.

Install Work Code. Enter a work code defined in Work Code Maintenance (11.21.1). Defines the default work code used for installation calls generated during Invoice Post.

Update Work Code. Enter a work code defined in Work Code Maintenance (11.21.1). The system currently does not use this field.

Corrective Work Code. Enter a work code defined in Work Code Maintenance (11.21.1). You can use this work code with field notifications, which support the mass generation of calls for recall or other corrective action.

Default Call Length. Average call duration in hours; defaults to the Estimated Length field in the Travel and Estimated Time frame of Call Maintenance (11.1.1.1) for calls with the technical work code. The system also uses it as the default for the PM, install, update, or corrective work codes if no values exist for them. It is the general default for all other work codes. Call length affects engineer scheduling when Display by Calls is No in Engineer Schedule Control.

PM, Install, Update, and Corrective Call Length. Average call duration in hours for calls using the associated work code; defaults to the Estimated Length field in the Travel and Estimated Time frame of Call Maintenance (11.1.1.1). Call length affects engineer scheduling if Display by Calls is No in Engineer Schedule Control.

Call Statuses Frame

In the Call Statuses frame of Call Management Control, you define the status defaults for the call management programs. Define call statuses first in Call Status Maintenance (11.1.21.1).

Fig. 23.4
Call Statuses Frame
(11.1.24)

Open Status. Specify the general status for an open call and the initial status for new calls. An open call is dynamic—its line item and other data can change at any time. The system sets line items that cannot be completed or closed in Call Activity Recording to this status. In addition, a call quote must have this status to be released to recording.

Close Status. Specify the status that represents the final status of a call and indicates no more service activity for this call is needed. If the call items have not already been added to the installed base in Call Activity Recording, the system can create an installed base record when the call status is set to closed.

You cannot record activity for a closed call. For example, you cannot order service items for it or add new lines or reports. However, you can reopen it to record more activity. You can move a closed call to history and archive and delete it if it is fully invoiced.

Complete Status. The complete status means the call is ready for invoicing—that is, at least one invoiceable report with detail exists. You can still modify related data, order service items for it with a material order, and record new activity for it.

Hold Status. The hold status prevents recording new activity for a call or line in Call Activity Recording or generating an invoice from CAR. You cannot create a material order for a call on hold. For anything further to happen to the call, change its status. You can still invoice existing activity in CIR.

Cancel Status. You cannot record activity for the call or line item or order service items for it. You can cancel a call or line item only if you have not recorded activity for it. Without activity, no invoice can be generated for a canceled call. You can move a canceled call to history and archive and delete it.

Next Call ID Frame


 A rectangular frame with a light blue border. Inside, the text "Next Call Id:" is followed by a yellow-highlighted text box containing "000113". To the right of the text box are two small circular buttons with left and right arrows.

Fig. 23.5
Next Call ID Frame
(11.1.24)

Next Call ID. The next call number for system-assigned call identification numbers. The system uses the next call number in Call Maintenance if the Call ID field is blank on a new service call. Call IDs begin with a prefix, specified earlier, followed by the next sequential call number. The system increments this next call number and displays it in this field.

Call Recording/Invoicing Frame

The next frame in Call Management Control contains settings that affect recording service activity and invoicing. Figure 23.6 displays the Call Recording /Invoicing frame.

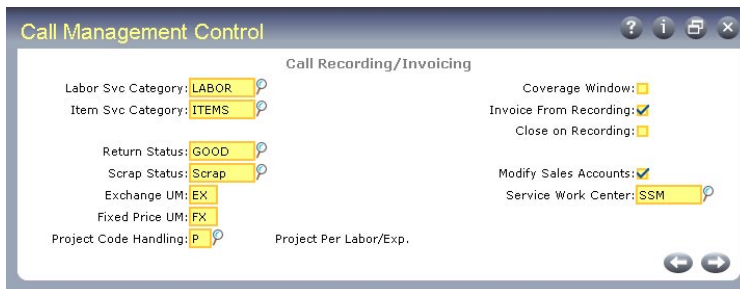

 A screenshot of a software window titled "Call Management Control". Inside, there is a sub-frame titled "Call Recording/Invoicing". It contains several settings: "Labor Svc Category:" with a dropdown showing "LABOR", "Item Svc Category:" with a dropdown showing "ITEMS", "Return Status:" with a dropdown showing "GOOD", "Scrap Status:" with a dropdown showing "Scrap", "Exchange UM:" with a dropdown showing "EX", "Fixed Price UM:" with a dropdown showing "FX", "Project Code Handling:" with a dropdown showing "P", "Coverage Window:" with a dropdown, "Invoice From Recording:" with a checked checkbox, "Close on Recording:" with a dropdown, "Modify Sales Accounts:" with a checked checkbox, and "Service Work Center:" with a dropdown showing "SSM". There are also navigation buttons at the bottom right.

Fig. 23.6
Call Recording/
Invoicing Frame
(11.1.24)

Labor Svc Category. This value is the default in the labor/expense detail of Call Activity Recording if no other value exists. It also provides the default for standard operations and routing steps. You can change the value during any CAR session. Define service categories with Service Category Maintenance (11.21.9). One of the labor or expense fields for the service category must be Yes.

Item Svc Category. This value is the default in the item detail of Call Activity Recording if no other value exists. You can also define a service category for each service item in Service Item Maintenance (11.3.7). Define service categories with Service Category Maintenance (11.21.9). One of the item fields for the service category must be Yes.

Tip

You cannot use a status with Pending set to Yes.

Return Status. Sets the default status for returned items in Call Activity Recording if that item is defined as repairable with Service Item Maintenance (11.3.7). Also sets the default return status in MO Direct/Pending Returns (11.11.8). First define the status in Return Status Maintenance (11.21.17).

Tip

You cannot use a status with Pending set to Yes.

Scrap Status. Sets the default status for returned items in Call Activity Recording if that item is not defined as repairable with Service Item Maintenance (11.3.7). First define the status in Return Status Maintenance (11.21.17).

Exchange UM. Defines the unit of measure for Service Pricing Maintenance (11.17.1) when you define repair price lists for exchanges in Call Activity Recording. When you use a return status with Exchange set to Yes in Call Activity Recording, the system searches the call price list for a price with this UM. If a price is found, it displays as the default price for the exchange credit.

Fixed Price UM. Defines the unit of measure for Service Pricing Maintenance when you define a repair price list for fixed price service in Call Activity Recording. When you use a work code with Fixed Price set to Yes in Call Activity Recording, the system searches the call price list for a price with this UM and displays it as the default fixed price. The end user is invoiced this amount, regardless of the cost of service.

Project Code Handling. Use this field to indicate how you want the system to apply project codes to the costs and revenue recorded for call service activity. There are two choices: Single Project per Line (S) and Project per Labor/Expense (P).

These two settings support two different models for using projects. The first choice lets you track both costs and revenue with the same project. This might be used for a lengthy installation of a complex system. The second model is closer to the way projects apply to standard work orders in a manufacturing environment. In this model, costs are tracked separately from revenue.

Up to three projects can be specified in Call Activity Recording:

- Project associated with the Sales account for tracking call revenue. This project is validated with the other Sales account components that display on the screen.
- Project associated with the Sales Discount account. This is typically the same as the sales account project. This project is validated with the other Sales Discount account components that display on the screen.
- Project associated with call line reports for tracking call costs. This project is validated with other Cost of Goods Sold account components during GL transaction post.

When Project Code Handling is set to Single Project per Line (S):

- One sales project and one sales discount project can be associated with each call line in Call Activity Recording. These default from the contract line providing coverage, if any, and are typically the same.
- The system sets the report project to the value entered for the sales project and it cannot be changed. The same project is used for both revenue and costs created by labor/expense transactions and material issues and receipts for this line.
- Once you have specified a project, it cannot be changed. The sales project defaults to each report and each labor, expense, and item detail record.
- When an invoice is created for the call line, either in CAR (if Invoice from Recording is Yes) or Call Invoice Recording (CIR), the sales and sales discount projects from CAR default to the call invoice. These values can be modified in CIR, if needed.

When Project Code Handling is set to Project per Labor/Expense (P):

- Each labor and expense transaction created for a call line can have a different project associated with it. The sales and sales discount project default from the contract line providing coverage and can be modified. The report project also defaults from the contract-line sales project and can be modified.
- If a contract does not provide coverage or a project is not specified on the contract line, all call line projects default to blank. Each time a new report is opened for a call line, the same defaulting logic is used.
- The report project sets the default for each labor record. For expenses, the project defaults first from the employee (engineer), if one has been defined; otherwise, the report project is used. This is similar to the way work orders handle project codes. You can modify the report project even after other reports exist, and the new project defaults to new labor and expense transactions.
- You can also modify the project on each labor and expense detail. However, the project associated with item consumption defaults from the report project and cannot be changed.
- The report project is used for costs only. When an invoice is generated, the sales and sales discount projects default to the invoice just as when Project Code Handling is set to S. The revenue projects (sales and sales discount) set the default for each line on the call invoice. The only difference in how revenue projects are handled when Project Code Handling is P is that the fields can be modified in CAR even after reports exist.

Tip

Set this field to Yes to enable service personnel to more easily analyze the billing impact of proposed service activity.

Coverage Window. This value determines the default for the Coverage field of the Call Item frame of Call Maintenance and the Item Detail frame of Call Activity Recording. If Coverage is Yes, a frame displays showing coverage information such as contract number, contract service type, start and end dates, active service type, warranty service type, and install date. Levels and limits of coverage also display; for contracts, information about limit consumption is included.

Invoice From Recording. Determines whether or not you can invoice from Call Activity Recording. If Yes, a Generate Invoice field appears in the Call Status frame of Call Activity Recording. If No, you can generate invoices only from Call Invoice Recording. Set this to No to restrict who is allowed to generate invoices.

Close on Recording. Determines how the system normally changes call statuses Call Activity Recording. If Close on Recording is No, the system attempts to set the call status to complete when you finish recording service activity. If the call cannot be completed, its status is unchanged.

If Yes, the system attempts to close the call by setting its status to the closed status in the control program. If all conditions for call closure are not met—for example, there are open MOs, reports on hold, invalid line statuses—the system attempts to set the call status to complete so that invoicing can take place.

Modify Sales Accounts. Determines whether you can modify the Sales and Sales Discount accounts in Call Invoice Recording. If No, the accounts display but you cannot change them.

Service Work Center. Enter a work center defined with Service Work Center Maintenance (11.19.13) or standard Work Center Maintenance (14.5). Used in the Call Activity Recording Labor/Expense frame to supply the cost of labor if a routing or standard operation is not used.

Call Quotes Frame

Fig. 23.7
Call Quotes Frame
(11.1.24)

Quote Prefix. Used with Next Quote ID to assign a default call quote ID number. Helps to distinguish calls, quotes, RMA, service requests, and contracts. The call quote prefix cannot be the same as the call prefix.

Next Quote ID. The next call quote number the system assigns. The next quote number is used in Call Quote Maintenance (11.1.1.6) if the Quote field is blank for a new quote. Quote IDs begin with a prefix, followed by the next sequential quote number. The system increments this next quote number and displays it here.

Default Quote Queue. Code used to group service quotes for dispatching and review with the Queue Manager. Define queues in Call Queue Maintenance (11.1.21.7). When you create a quote with Call Quote Maintenance (11.1.1.7), the system searches first for a default queue in Call Default Maintenance (11.1.21.10), then the Call Quote Queue in Service/Support User Preferences, and finally, the value in the control program.

Days Until Expire. The default is 0. The system determines the expiration date for a new call quote by adding the value in this field to the creation date. You can change the expiration date in Call Quote Maintenance (11.1.1.7).

Call Escalation Control

The Use Escalation setting in Call Management Control (11.1.24) indicates whether or not to use escalations. If this field is No and you access Call Escalation Control (11.1.13.24), a warning displays asking if you want to enable escalations.

If you respond with Yes to this message, the system changes the setting in the call control program, enabling you to modify the escalation control program. If you respond with No, you cannot specify values for these fields.

Fig. 23.8
Call Escalation
Control
(11.1.13.24)

The screenshot shows a window titled "Escalation Control" with a standard Windows-style title bar (minimize, maximize, close buttons). The window contains several text fields and a checkbox:

- Escalation Printer:** laser9
- Escalation Default:** ESC1
- Escalation Program Pause:** 10
- Use Calendar Days in Escalation:** ☐
- Escalation Prefix:** ESC
- Escalation Number:** 00010 (highlighted in yellow)

At the bottom right of the window, there are two circular navigation buttons: a left arrow and a right arrow.

Escalation Printer. Dedicated printer used by the Escalation Monitor (11.1.13.13) to print call reports. Must be defined in Printer Setup Maintenance (36.13.2). When Print is Yes for an escalation step, the system sends the call report to this printer.

Escalation Default. Must be an escalation code defined with Escalation Maintenance (11.1.13.1). If you use escalations, the system searches for a default escalation code in Call Maintenance (11.1.1.1) in the following order: escalation defined for the end user, escalation defined in Call Default Maintenance, escalation defined in Service/Support User Preferences, escalation defined in the control program.

Escalation Program Pause. Number of seconds the Escalation Monitor (11.1.13.13) pauses before restarting a cycle. Set this interval to a value less than the shortest period of time in any escalation. If the shortest amount of time between two sequences is zero days and four hours, which the system calculates by summing the Days Allowed in Status and Time Allowed in Status fields in Escalation Maintenance, then set Escalation Program Pause to a value less than four hours.

Use Calendar Days in Escalation. This field sets the default for the Use Calendar Days in Escalation field in the Escalation Monitor. It determines whether to use calendar days or workdays to calculate Next Status Date. The formula is: today's date + Days Allowed in Status from the current escalation step.

- If Yes, the system uses calendar days in the calculation. If the Next Status Date resolves to a non-workday as determined by the warranty or service type, the system advances the date to the next workday.
- If No, the system uses only work days in the calculation, excluding non-workdays. When No, the calculated date is either the same or later than the date calculated with a value of Yes.

Escalation Prefix. Used with the Next Escalation Number for automatic numbering of new escalations. Prefixes help to distinguish between different types of codes.

Escalation Number. The next number the system assigns in Escalation Maintenance (11.1.13.1) if the Escalation field is blank. Escalation numbers begin with a prefix, followed by the next sequential escalation number. The system increments this next number and displays it here.

Service Request Control

Service Request Control (11.1.15.24) contains settings that affect the life cycle of service requests.

Fig. 23.9
Service Request
Control
(11.1.15.24)

The screenshot shows a window titled "Service Request Control" with a standard Windows-style title bar (minimize, maximize, close buttons). Inside the window, there is a large text area containing the following text:

```
Service Request Prefix: SR
SR Open Status: 1000
SR Close Status: 11000
```

Below this text area is a separate field labeled "SR Number:" with the value "000002" entered. At the bottom right of the window, there are two navigation buttons: a left-pointing arrow and a right-pointing arrow.

Service Request Prefix. Used with the SR Number field to assign a default service request ID number.

SR Open Status. Enter an SR status defined in SR Status Code Maintenance (11.1.15.7). This status indicates the beginning point in the life cycle of an SR. It displays by default when you create a new SR in Service Request Maintenance.

SR Close Status. Enter an SR status defined in SR Status Code Maintenance (11.1.15.7). This status indicates no further activity can take place. You can delete or archive closed SRs.

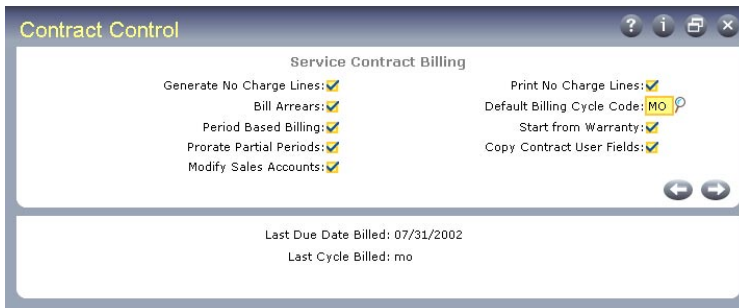
SR Number. The next service request (SR) number the system assigns in Service Request Maintenance (11.1.15.1) if the SR field is blank. Service request numbers begin with a prefix, followed by the next sequential SR number. The system increments this next SR number and displays it here.

Contract Control

Use Contract Control (11.5.24) to define defaults for streamlining the definition and printing of service contract and managing billing and invoicing issues.

Service Contract Billing Frame

The following fields determine how the system handles service billing. Carefully review each field and enter values that correspond to the way that you handle your billing.



The screenshot shows a window titled "Contract Control" with a sub-frame titled "Service Contract Billing". The frame contains two columns of settings, each with a checkbox and a label. The first column includes "Generate No Charge Lines:", "Bill Arrears:", "Period Based Billing:", "Prorate Partial Periods:", and "Modify Sales Accounts:". The second column includes "Print No Charge Lines:", "Default Billing Cycle Code:", "Start from Warranty:", and "Copy Contract User Fields:". All checkboxes are checked. The "Default Billing Cycle Code" field is set to "MO" and has a dropdown arrow. At the bottom of the frame, there is a status bar showing "Last Due Date Billed: 07/31/2002" and "Last Cycle Billed: mo".

Field	Value
Generate No Charge Lines:	☒
Bill Arrears:	☒
Period Based Billing:	☒
Prorate Partial Periods:	☒
Modify Sales Accounts:	☒
Print No Charge Lines:	☒
Default Billing Cycle Code:	MO
Start from Warranty:	☒
Copy Contract User Fields:	☒

Last Due Date Billed: 07/31/2002
Last Cycle Billed: mo

Fig. 23.10
Service Contract
Billing Frame
(11.5.24)

Generate No Charge Lines. Indicates whether to generate invoice lines for contract line items that have no associated charge. Billing Release to Invoice (11.5.18.13) examines this field when the system generates invoice lines for a contract. If No, only a contract line with an amount to be billed generates a corresponding invoice line. If no lines on the contract create a financial transaction, the system does not generate an invoice. If Yes, the system creates an invoice line for each service contract line regardless of the invoice amount.

An invoice line with a zero amount can exist when a service contract line has either a zero quantity or price.

Use this feature to generate a billing that shows items covered at no additional charge as part of some other purchased coverage.

Example The first line on a contract is for service on a computer. Lines 2 through 5 list components that are included at no charge: CPU, Memory, Disk Drive, Terminal.

When the service invoice is created, you can choose to see only line 1 by setting Generate No Charge Lines to No, or all lines by setting Generate No Charge Lines to Yes.

Use this field with Print No Charge Lines, which Invoice Print examines. If Generate is No, the setting of the Print field has no effect. If Generate is Yes, you normally set the Print field to Yes also. Set the Print field to No only to generate and print a no-charge invoice without displaying any line items on it.

Bill Arrears. This field determines the default for Bill Arrears in Contract Maintenance (11.5.13.1). This field indicates whether to bill service contracts at the beginning or the end of the service period. If Yes, service contracts are billed on the first day following the end of the billing period. After a bill is released for invoicing, the system sets the next billing date to the first day of the next billing period.

The setting of Bill Arrears affects which revenue type can be used with a contract:

- When Bill Arrears is Yes, you can choose cash basis or accrued.
- When Bill Arrears is No, you can choose cash basis or deferred.

Period Based Billing. Indicate whether contract billing is normally synchronized with calendar months:

Yes: Invoicing begins on the first day of the next calendar month, regardless of the start date of the contract. For example, a contract with a start date of January 23 is billed starting on February 1.

No: Billing periods for contract invoices use the actual start date of the contract header and line, without synchronizing to the start and end days of the month. A contract on a monthly cycle starting on January 23 is billed on January 23, February 23, March 23, and so on, assuming Bill Arrears is No.

The value you define in the control program sets the default for the same field when new contracts and quotes are created.

Period Based Billing works in conjunction with Prorate Partial Periods. If Period Based Billing is Yes, you can set Prorate Partial Periods to Yes to ensure that any partial periods are included in invoicing. If Period Based Billing is Yes and Prorate Partial Periods is No, any days in the partial period prior to the beginning of the month or after the end are essentially given away free.

▶ See “Managing Deferred and Accrued Revenue” on page 317.

Tip
If you do not want to give away the incomplete portion of the month, set Prorate Partial Periods to Yes.

Billing periods are always determined by the contract header start and end dates, in conjunction with the billing cycle code. The system then fits the line billing into those periods, based on the line start and end dates and billing cycle. If contract line start and end dates differ from the header, partial periods can result for the line even if none exist for the header.

Prorate Partial Periods. Indicate how the system normally invoices for coverage periods that are less than a complete month:

Yes: Invoices are generated for partial periods based on the percentage of a month the partial period represents.

No: If Period Based Billing is Yes, partial periods are essentially given away free and no invoice is generated for them.

The value you define in the control program sets the default for the same field when new contracts and quotes are created.

If Period Based Billing is Yes, partial periods are likely to occur. You can use the Prorate Partial Periods field to make sure that any partial periods are included in invoicing. If Period Based Billing is Yes and Prorate Partial Periods is No, any days in the partial period prior to the beginning of the month are essentially given away free.

Partial periods can also occur even if you are not using period based billing. You might have a contract that begins on January 12 and ends on March 20. The system would bill for two months, leaving a partial period from March 12 to March 20. The value of Prorate Partial Periods would determine whether billing is created for this period.

Modify Sales Accounts. Determines whether you can update the Sales and Sales Discount accounts in Contract and Contract Quote Maintenance. If No, the accounts display but you cannot change them.

Print No Charge Lines. Specifies if invoice lines with zero amounts print on service contract invoices. Invoice Print and Invoice Reprint examine this field. If Yes, an invoice line is printed even if there is no charge to the customer. If No, only nonzero invoice lines print.

This field is used with Generate No Charge Lines, which is examined by the Billing Release to Invoice function. If the Generate field is No, the setting of the Print field has no effect. If the Generate field is Yes,

Tip
Set up billing
cycles with Billing
Cycle Code
Maintenance
(11.5.18.1).

you normally set the Print field to Yes also. Set the Print field to No only to generate and print a no-charge invoice without displaying any line items on it.

Default Billing Cycle Code. Enter a code indicating how often you typically bill service contracts. For example, contract lines can be billed monthly, quarterly, or annually. This field is required.

This code defaults to the header Billing Cycle field when new contract quotes or contracts are created. The header billing cycle defaults to the next contract level, either default items or end users, based on the value of Item End Users in the contract header.

You can accept the default or specify a different billing cycle code at various levels below the contract header. However, you cannot specify a lower-level cycle that indicates less frequent billing than the cycle specified on the header.

Start from Warranty. Indicates whether a service contract normally starts only after the warranty expires. If Yes, when you enter a service contract for an installed base item, the system sets the start date to the day following the warranty expiration date. You can change this start date.

Copy Contract User Fields. If Yes, the system copies data for user-defined fields from the service contract to the pending invoice without requiring custom programming.

Last Due Date Billed. An output-only field updated when you execute Billing Release to Invoice. It displays the date in the Contracts Due Until field when you last executed Billing Release to Invoice (11.5.18.13).

Last Cycle Billed. An output-only field updated with the Billing Cycle value when you execute Billing Release to Invoice.

Contract Management Frame

The screenshot shows a window titled "Contract Control" with a standard Windows interface (help, up, print, close buttons). The window contains two columns of settings:

- Ln Format S/M:** Single
- Print Service Contracts:** ☒
- Company Address:** 10000000
- Service Header Comments:** ☐
- Service Line Comments:** ☐
- Keep Contract History:** ☒
- Contract Site:** 10000
- Items in Installed Base:** ☐
- Revenue Type:** C
- Bill End Users:** ☒
- Bill Summary:** ☐
- Quote Prefix:** Q
- Next Service Quote:** 100
- Contract Prefix:** S
- Next Service Contract:** 208
- Service SO Prefix:** S
- Create PM Calls:** ☒
- Contract Limits:** ☒
- Renew Limits From:** C
- Record Limits History:** ☐
- Item End Users:** ☐
- End User Totals:** ☒
- End User Additional Charges:** ☒
- Contract Additional Charges:** ☒
- Contract:** (blank)

At the bottom, there is a field for **Next Service Sales Order:** 0000306, with navigation buttons (back, forward) to its right.

Fig. 23.11
Contract
Management Frame
(11.5.24)

Ln Format (S/M). Indicates the preferred method for entering service quote and contract line items. Specify single to display and maintain detailed information for each line item. In multiline mode, you can enter basic information such as item, quantity, and price for up to 12 lines on a single screen. Dates, site, location, tax status, and GL accounts default. Use single-line format to access and change this information.

Print Service Contracts. Indicates whether you normally print service contracts. This field determines the default for a new service contract, but can be changed. Contract Print (11.5.13.4) includes only contracts with Print set to Yes. At the completion of printing, Print is set to No.

Company Address. Address code that normally appears on printed documents such as service quotes and contracts. This address also applies to call quotes and service marketing letters. You can change it to another address prior to printing.

Service Header Comments. Indicates whether you normally enter comments on each contract quote or contract header. Header information usually applies to the entire quote or contract and prints at the top of the document. This setting determines the default that displays when you enter or modify a contract, but can be changed.

Tip

You can change the line format at any time during order entry and alternate between single and multiline format.

Tip

If you print on pre-addressed forms, leave this field blank.

Service Line Comments. Indicates whether you normally enter comments on each order line. Line item information usually applies to a specific line item and prints following that line. This setting determines the default that displays when you enter a line, but can be changed.

Keep Contract History. Indicates whether to maintain booking history for contracts. If Yes, the system keeps an audit trail of contract billings and billing reversals in transaction history, identified as type ORD-SO. It records the service type, order quantity, price, cost, date, and user ID, among other information. Use booking inquiries and reports to review this information. Review detailed transaction history using Transaction Detail Inquiry.

Contract booking history differs from sales order booking history in that contract additions and changes are not recorded, only the billing activity.

Contract Site. The site responsible for this service quote or contract. Usually this is the site where you perform the repairs. When you release a service contract for billing, this site gets revenue credit.

Items in Installed Base. Indicate if a record of an item must exist in the end user's installed base before it can be added to a contract or contract quote. The initial value defaults from the same field in Service Management Control (11.24).

Yes: Contract quotes and contracts can reference only items that exist in the end user's installed base. Use Installed Base Item Maintenance (11.3.1) to add an installed item for the end user, if necessary.

No: You can reference an item on a contract even when it is not present in the end user's installed base. However, the system issues a warning that an installed base record does not exist.

This field supports a flexible approach to managing the installed base. For example, you can set the field in Service Management Control to No so that you can take calls for any item. Then set the field in Contract Control to Yes so you provide coverage for items in the installed base only.

You can define any combination of Yes and No values for the two Items in Installed Base fields. However, setting Items in Installed Base to Yes at the system level and No at the contract level can create

problems if you do not ensure that covered items are added to the installed base later. Otherwise, you will not be able to create a call for an end user with valid contract coverage.

Use Items In Installed Base in Contract Control and Items Must Exist in Service Management Control together to define the degree of control you want to exercise over the item codes entered on contracts. Four possible combinations exist.

Items In Installed Base is No, Items Must Exist is No:

You can add any item to a service contract. The installed base does not have to contain the item and it does not have to exist in the item master. This pairing lets you take calls and generate service contracts for any item, including items your company does not sell.

Items In Installed Base is No, Items Must Exist is Yes:

You can generate contracts only for items in the item master. However, the customer's installed base record does not have to contain the item. This pairing works best for companies that do not need to maintain an accurate installed base, but that support only products they manufacture and sell.

Items In Installed Base is Yes, Items Must Exist is Yes:

You can issue contracts only for items that are already in the installed base and that are in the item master.

Items In Installed Base is Yes, Items Must Exist is No:

You can issue contracts for any item in the end user's installed base; the item does not have to be something that you make or sell. This combination works best for companies that need to keep accurate installed base records and who also service items they do not sell.

Revenue Type. Enter the revenue type code to use as the default for billing service contracts. Valid values are A (Accrued Revenue), C (Cash Basis), or D (Deferred Revenue). The default is C.

Cash Basis: To post contract revenue upon receipt, set Revenue Type to C. In cash-basis accounting, revenue is recorded in the period it is actually received.

◆ See “Managing Deferred and Accrued Revenue” on page 317 for details.

Tip

The default setting of Bill Arrears should be appropriate for the default revenue type.

▶ See “Recognizing Revenue” on page 319.

▶ See “Billing Customers or End Users” on page 314.

▶ See “Summarized or Detail Billing” on page 315.

Accrued Revenue: To accrue revenue by default, set Revenue Type to A. You should also set Bill Arrears to Yes; otherwise, errors are generated in Contract Maintenance. In accrual-basis accounting, revenue is recorded in the period in which it is earned, regardless of whether cash is received in that period. Run Revenue Recognition (11.5.18.21) to accrue amounts, usually monthly.

Deferred Revenue: To defer revenue by default, set Revenue Type to D. You should also set Bill Arrears to No; otherwise, errors are generated in Contract Maintenance. Perform the normal invoicing procedure at the beginning of the contract coverage period. Collected revenue is held in a deferred account and is posted periodically over the contract duration when you run Revenue Recognition.

The value you define in the control program sets the default for the same field when new contracts and quotes are created.

If you plan to use deferred or accrued revenue types, you must set up appropriate accounts for the system to use either in System/Account Control (36.1) or in Product Line Maintenance (1.2.1).

Bill End Users. Indicate who normally receives invoices generated for contracts by Billing Release to Invoice:

No: Only one billing address, specified in the contract header, is associated with the contract. Billing Release to Invoice (11.5.18.13) generates all contract invoices to this address.

Yes: Multiple billing addresses can be associated with the contract, one for each contract end user. At least one invoice is generated in Billing Release to Invoice for the bill-to address associated with each end user defined on the contract.

Note The invoice for contract-wide additional charges is always sent to the header billing address, regardless of the value of Bill End Users.

This field sets the default for the same field in the header of new contract quotes and contracts.

Bill Summary. Enter Yes if you typically invoice contracts in summary format; otherwise, enter No. This field sets the default for the same field in the header of new contract quotes and contracts.

When Bill Summary is Yes for a contract, the details that are not printed on an invoice are stored in the database. You can view these details using Billing Detail Report.

Note The system limits invoices to 999 lines. If the setting of Bill Summary would result in more than 999 lines on an invoice, Billing Release to Invoice creates separate invoices as needed.

Quote Prefix. Unlike other prefix codes, the contract quote prefix is used only internally. The system does not combine it with the next contract quote number. The contract prefix cannot be the same as the contract quote prefix. Do not change the contract quote prefix after contract quotes exist in the system.

Next Service Quote. The next automatic service quote number for system-assigned numbers. When you enter a contract quote, you can leave the quote number blank to let the system set it to the next sequential number.

Contract Prefix. Unlike other prefix codes, the contract prefix is used only internally. The system does not combine it with the next contract number. The contract prefix cannot be the same as the contract quote prefix. Do not change the contract prefix after contracts exist in the system.

Next Service Contract. The next automatic contract number for system-assigned numbers. When you enter a service contract, leave the contract number blank to let the system set it to the next sequential number.

Service SO Prefix. An optional prefix code for pending invoice numbers created when a contract is released for billing. The system sets the number for this pending invoice to the prefix code followed by the next sequential number in the Next Service Sales Order field.

Tip
Use a prefix to distinguish the origin of orders and invoices.

Create PM Calls. Determines whether the system creates calls during the PM scheduling sequence in Contract Maintenance. If Yes, the system creates the first scheduled call before the Contract PM Schedule frame displays. When this call is closed, the system generates the next call on the schedule.

If No, the system does not generate the first call or subsequent calls. You can still generate a call by selecting a schedule date and pressing Go in Contract Maintenance. However, normally you use the Call Generator to create all scheduled calls within a range of dates.

◆ See “Using BOM Type” on page 342 for details.

Tip

This setting has no effect on warranty types. Limit amounts cannot be defined for them.

Set Create PM Calls to No for more control over call open dates and to use BOM types. When the first call is created in Contract Maintenance, you cannot specify a BOM type.

Contract Limits. This field determines whether limit amounts can be defined in Contract Type Maintenance and updated in Contract Quote Maintenance and Contract Maintenance.

No: You can define coverage levels in Contract Type Maintenance, but limit amounts cannot be specified. The coverage levels as defined for the service type are used without modification when a contract or contract quote is created.

Yes: You can define both coverage levels and limits in Contract Type Maintenance. When you create a new contract or contract quote, you are prompted to copy coverage limit data from the contract type to the contract header. You can copy and update coverage limits at every level of the contract: header, default end user or item, and detail lines.

Important The enforcement of limits is only possible when coverage details are copied into the contract.

When used on a contract, limit amounts are checked in addition to coverage levels. As service is recorded for an item on a contract in Call Activity Recording, the amounts are accumulated against the limit. When the limit is reached, the system suggests an over-limit charge code, although this can still be overridden on a case-by-case basis.

If you do not plan to use the limit feature but provide a level of coverage without limits, set this field to No to avoid unnecessary prompts during contract maintenance.

Tip

This field only has an effect when Contract Limits is Yes.

Renew Limits From (C/S). Possible values are C, for contract, and S, for service type. The default is C. This field determines the default for the same field in Contract Maintenance. The value for the contract supplies the default for the Renew Single Contract and Copy Contract to Contract functions. In Renewal Process/Report, the system checks the value of this field for each contract being renewed.

- When set to C during renewal or copy functions, the system copies limits as defined on the existing contract, extending the effective dates to accommodate the new contract start and stop dates.
- When set to S, the system refers to the service type for the contract and copies the limits defined there. If you set up limits on the type with effective dates, the system copies the limits effective on the new contract start date from the service type.

Record Limits History. If Yes, the system writes a history record whenever contract limits are consumed during invoice post. This record includes information about the call and the activity that consumed the limits. If No, the system does not create this history.

Item End Users. Indicate how you typically set up the relationship between items and end users on contracts. This field sets the default for the same field in the header of new contract quotes and contracts.

▶ See “Contract Design” on page 234.

No: The contract is designed to provide coverage for one or more end users with associated items.

Yes: The contract is designed to provide coverage for one or more items with associated end users.

The value you specify for this field on a contract determines the order in which frames display as you maintain the contract. You cannot change this value after a contract has been created.

End User Totals. This field controls the display of the End User Total frame in Contract Maintenance and Contract Quote Maintenance.

No: The frame is not included in the sequence of frames.

Yes: The frame is included.

This field is also checked by Contract Quote Print (11.5.1.3) and Contract Print (11.5.13.4). End-user totals are not printed when this field is No.

End User Additional Charges. This field controls the display of the End User Additional Charges frame in Contract Maintenance and Contract Quote Maintenance.

No: The frame is not included in the sequence of frames.

Yes: The frame is included.

Note If the contract being edited has end-user additional charge items, the frame displays regardless of this setting.

Contract Additional Charges. This field controls the display of the Contract Additional Charges frame in Contract Maintenance and Contract Quote Maintenance.

No: The frame is not included in the sequence of frames.

Yes: The frame is included.

Note If the contract being edited has contract-wide additional charge items, the frame displays regardless of this setting.

Next Service Sales Order. The Billing Release to Invoice function uses this number when it creates pending invoices for contracts. Each pending invoice has a unique sales order number, which the system creates by appending the Service Sales Order Prefix to the number in this field. The system increments this number and records it in the control program.

Tip

You can use a distinct range of numbers to distinguish the origin of orders and invoices.

Contract Trailer Frame

Fig. 23.12
Contract Trailer
Codes (11.5.24)

The screenshot shows a window titled "Contract Control" with a toolbar containing help, info, print, and close icons. The window displays two columns of trailer codes. The left column, labeled "Taxable Trailer Code", contains three entries: "Taxable Trailer Code 1: 11", "Taxable Trailer Code 2: 21", and "Taxable Trailer Code 3: 31". The right column, labeled "Nontaxable Trailer Code", contains three entries: "Nontaxable Trailer Code 1: 10", "Nontaxable Trailer Code 2: 20", and "Nontaxable Trailer Code 3: 30". Each code is displayed in a yellow box with a magnifying glass icon to its right. At the bottom right of the window, there are left and right arrow buttons.

Code Type	Code 1	Code 2	Code 3
Taxable	11	21	31
Nontaxable	10	20	30

Taxable Trailer Code [1,2,3]. The taxable trailer codes most frequently used on service quotes and contracts. Trailer codes identify miscellaneous non-sales charges. These codes display as the default on the trailer for taxable contracts and quotes, prompting you to enter any miscellaneous charges. You can change these charges. Miscellaneous charges can include freight, customs and import duties, setup, service, handling, or other special charges.

Each trailer code is set up with the appropriate GL account to which amounts are posted. You can enter trailer codes along with an amount on the trailer section of service quotes and contracts. The system calculates any applicable taxes. The trailer code, description, and amount print on all formal documents.

Nontaxable Trailer Code [1,2,3]. The nontaxable trailer codes most frequently used on service quotes and contracts. Trailer codes identify miscellaneous non-sales charges. These codes display as the default on the trailer for nontaxable contracts and quotes, prompting you to enter any miscellaneous charges. You can change the charges. Miscellaneous charges can include freight, customs and import duties, setup, service, handling, or other special charges.

Each trailer code is set up with the appropriate GL account to which amounts are posted. You can enter trailer codes along with an amount on the trailer section of service quotes and contracts. The trailer code, description, and amount print on all formal documents.

RMA/RTS Control

Set up RMA/RTS Control (11.7.24) to match how you normally enter RMA and RTS transactions. This is also where you designate default shipping and receiving sites and locations for returns and spares.

The screenshot shows the 'RMA/RTS Control' window with the following settings:

RMA Header Comments:	☐	Detail Allocations:	☐
RMA Line Comments:	☐	Allocate Days:	0
Default RMA Contract:	STANDARD	Consume Forecast:	☒
Keep Booking History:	☐	Edit Installed Base:	☒
Display Service Contracts:	☒	Print No. Charge Receipts:	☐
RMA Sales Order Prefix:	RMA	Purchase Order Prefix:	RTS
Next RMA Sales Order:	9	Next RTS Purchase Order:	4
Customer Return Site:	10000	At Supplier Site:	10000
Customer Return Location:	RETURN	At Supplier Location:	ATSUP
Customer Spares Site:	10000	Return From Supplier Site:	10000
Customer Spares Location:	SPARES	Return From Supplier Loc:	RETSUP

Fig. 23.13
RMA/RTS Control
(11.7.24)

RMA Header Comments. Indicates whether you normally enter comments on an RMA or RTS header. If Yes, the Comments field on the RMA and RTS header defaults to Yes. You can change this setting.

RMA Line Comments. Indicates whether you normally enter comments on each RMA or RTS line. If Yes, the Comments field on each RMA and RTS line defaults to Yes. You can change this setting.

Tip

Set up contract types with Contract Type Maintenance (11.5.10).

Default RMA Contract. This service contract type supplies default coverage information for items on RMAs without other coverage. The system also uses this service type if you change the charge type suggested for an RMA line item to the service contract charge type (S). The service type defines the default level of coverage for RMA line items, restocking charges for returns, the credit price list, and determines whether or not you can issue a replacement item before you receive an item from the customer.

Keep Booking History. Indicates whether to maintain booking history. If Yes, the system keeps an audit trail of changes to RMAs by creating transaction history records, identified as type ORD-SO. The record includes the item, order quantity, price, cost, date, user ID, and other information. You can review this information using booking inquiries and reports. Use Transaction Detail Inquiry to review detailed transaction history.

Display Service Contracts. This field determines if the Service Contract pop-up window appears when you create an RMA not referencing a call. Coverage for an RMA referencing a call defaults from the call. For RMAs without a call, the contract pop-up enables you to select coverage from available service contracts for the current end user. If this field is No, the pop-up does not display and the contract defaults from Default RMA Contract in the control program.

Detail Allocations. Enter Yes if you usually make detail allocations during RMA issue line entry, No if you do not. Detail allocations assign specific inventory lot/serial numbers and locations to be shipped on an RMA. You can change this value on each line item.

Allocate Days. Specifies the number of days into the future to use as a cutoff for allocating items on RMA issue lines. This value defaults to the corresponding field in the RMA header, which in turn defaults to each line.

Allocations reserve inventory so it is not allocated to other sales orders, RMA issue lines, intersite requests, or work orders. The system only tries to allocate available inventory to RMA issue line items due within the specified number of days, giving you more control over the allocation process. Two other control program settings affect allocations in RMAs:

- The Quantity Available to Allocate calculation method in Sales Order Control controls how the system determines the number of items available to allocate. The calculation is the same for all items and sites.
- The value for Limit Allocations to Avail to Allocate in Sales Order Control determines how the system handles shortage situations. If this field is No, Quantity Allocated defaults from Quantity Ordered even if a sufficient quantity to allocate does not exist. If this is Yes, Quantity Allocated never exceeds the quantity available. If there is no quantity available to allocate, Quantity Allocated defaults to 0.

Consume Forecast. Determines the default in the Consume Forecast field on the RMA header, which determines the default for each line item. If Consume Forecast is Yes for an RMA issue line item, it consumes forecast the same way that sales order lines do. When you enter an RMA issue line, the system decrements the available quantity in the sales forecast for the item by the RMA quantity.

Edit Installed Base. Determines the default for the Edit Installed Base field in RMA Maintenance, which controls the appearance of the Installed Base Detail frame. Use this frame to modify the defaults for the installed base for RMA issues.

Tip

This setting has no effect if Ship to Installed Base is No in Service Management Control.

Print No Charge Receipts. This field indicates if the system generates and prints invoice lines for RMA receipt lines that have no invoiceable amount. This field also affects the printing of the invoice itself if none of its lines involve a financial transaction.

- If Yes, the system generates invoices lines even if no financial transaction occurs. The system prints an invoice even if none of the lines on the RMA generate a financial transaction.
- If No, the system does not generate an invoice line for RMA receipt lines that do not involve a financial transaction. The system does not print an invoice if none of the lines create financial transactions.

RMAs normally involve two events: receiving damaged or defective goods from an end user and shipping replacements. The shipment of an item produces an invoice line even if no financial transaction

occurs. For the receipt portion of the RMA, you can use this field to control whether or not the system creates invoice lines for no-charge transactions.

If you typically use RMA receipts only to ensure that an item is returned from the end user and do not give credits or add restocking charges, set Print No Charge Receipts to No to simplify invoicing. If a receipt without financial impact is an exception, set Print No Charge Receipts to Yes to ensure visibility over the invoicing process.

RMA Sales Order Prefix. Defines the prefix for new RMAs that you create with a blank Order field. Because the system stores RMAs and sales orders in the same table, you use the prefix to distinguish RMAs from other types of sales orders.

Next RMA Sales Order. Used with the RMA Sales Order Prefix to determine the next RMA number when the Order field is blank on a new RMA. The prefix is not required. The system increments this RMA number each time you enter an RMA.

Customer Return Site/Location. This site and location display as defaults for RMA receipt lines, but you can change them. When you receive the items back from the customer, the system increases the inventory balance at this site and location. For an RTS, this site and location provides the default for items being returned to the supplier.

Customer Spares Site/Location. Site/location from which you ship replacement parts on RMAs. This site and location are the defaults for RMA issue lines, but you can change them. When you ship the items to the customer, the system decreases the inventory balance at this site and location.

Purchase Order Prefix. Defines the prefix for new RTSs that you create with a blank Order field. Since the system stores RTSs and purchase orders in the same table, use the prefix to distinguish RTSs from other types of purchase orders.

Next RTS Purchase Order. Used with Purchase Order Prefix to determine the next RTS number when the RTS field is blank in RTS Maintenance.

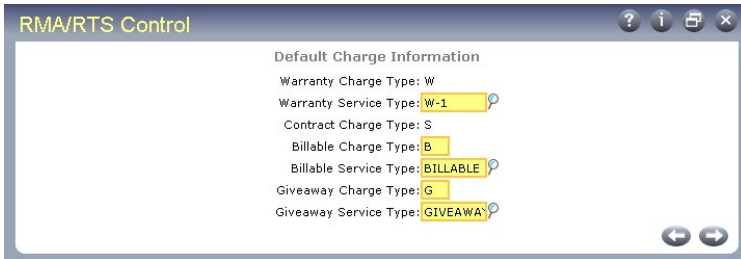
At Supplier Site/Location. This site and location display as the default To Site and To Location for RTS issue lines and From Site and From Location on RTS receipts when Inventory Issue/Receive is No.

In this case, RTS Shipments perform an inventory transfer. Rather than issuing the returned items from inventory, they are transferred to the designated At Supplier Site and Location. You still own the items and see them on your inventory. When you receive the items back from the supplier, the system transfers them from the At Supplier Site and Location to the Return From Supplier Site/Location.

If Inventory Issue/Receive is Yes on an RTS, shipping the items back to the supplier removes them from stock. The system decreases inventory at the site and location specified on the RMA. When you receive them back, the system returns them into inventory at the site and location specified on the RMA.

Return From Supplier Site/Location. Identifies the site/location into which the system transfers items received back from a supplier. This site and location display as the default To Site and To Location on the Receipts section of an RTS, but you can change them.

Default Charge Information



The screenshot shows a software window titled "RMA/RTS Control". Inside, there is a section titled "Default Charge Information" with the following fields:

- Warranty Charge Type: W
- Warranty Service Type: W-1
- Contract Charge Type: S
- Billable Charge Type: B
- Billable Service Type: BILLABLE
- Giveaway Charge Type: G
- Giveaway Service Type: GIVEAWAY

Each field has a small magnifying glass icon to its right, indicating a search or selection function. At the bottom right of the window, there are two circular arrows, one pointing left and one pointing right.

Fig. 23.14
RMA/RTS Control
(11.7.24)

Warranty Charge Type. This display-only value is always W. This charge type is the default on an RMA line item when the service type is a warranty. If you change another charge type to W, the system displays the terms and conditions for Warranty Service Type in the control program.

Warranty Service Type. Identifies the service type defined with Warranty Type Maintenance to use when you change the charge type (CT) value to W on an RMA issue line item. The system uses the level of coverage and price list for this service type instead of the default service type on the RMA header.

Contract Charge Type. This display-only value is always S. This charge type is the default on an RMA issue line when the service type in effect is a contract. If you change the charge type to S, the system displays the terms and conditions for the Default RMA Contract type specified on the previous frame of the control program.

Billable Charge Type. Specify any value other than W or C. Enter this charge type on an RMA issue line to apply the terms and conditions for the Billable Service Type defined in the control program.

Billable Service Type. Identifies the service type defined with Contract Type or Warranty Type Maintenance to use when you change the charge type (CT) field to the Billable Charge Type on an RMA issue line. The system uses this service type's level of coverage and price list instead of the service type on the RMA header. Normally, the service type provides no coverage and you bill the customer for the entire amount on this line item.

Giveaway Charge Type. Specify any value other than W or C. Enter this charge type on an RMA issue line to apply the terms and conditions for the Giveaway Service Type defined in the control program.

Giveaway Service Type. Identifies the service type defined with Contract Type or Warranty Type Maintenance to use when you change the charge type (CT) field to the Giveaway Charge Type on an RMA issue line. The system uses this service type's level of coverage and price list instead of the service type on the RMA header.

Normally, the service type provides 100 percent coverage and you do not invoice the customer for this line item.

End User Control

Settings in End User Control (11.9.24) determine the next number for new end-user records and the default value for the Create ISB field.



Fig. 23.15
End User Control
(11.9.24)

Next End User. This field indicates the next number for the system to use when numbering a new end-user record. When you create an end-user record with a blank End User field, the system supplies a number based on this value. The system increments this number after using it.

Create ISB. Sets the default for Create ISB in a new end-user record. The value of Create ISB for an end user determines whether to add items associated with the end user to the installed base.

The system considers two values to determine whether to add an item to the installed base:

- The value of Create ISB for the end user
- The value of Installed Base, specified in Service Item Maintenance, for the item

These both must be Yes before the system adds the item to the installed base. If both these fields are Yes, the Update ISB field defaults to Yes in Call Maintenance, Call Activity Recording, and RMA Maintenance.

If Ship To Installed Base is Yes in Service Management Control, the value of Create ISB in End User Control has a special effect. If the Ship To address on the sales order is not an end user, the system creates an end-user record when it posts the sales order invoice. The system uses the value of Create ISB in the control program to determine whether to add items to the installed base for the new end user.

For an undefined end user, if the item normally goes to the installed base and Create ISB is Yes in the control program, Update Installed Base defaults to Yes in Sales Order Maintenance. You can change this value in a pop-up window if SO Edit ISB Defaults is Yes in Sales

Order Control. Otherwise, it takes effect during invoice post and the item is added to the installed base when the end-user record is created.

If you are tracking the installed base, this field gives you more control over how items are added. If you normally add items to the installed base regardless of the end user, set Create ISB to Yes and this value defaults to the functions where you create ISB records. To more tightly control ISB updates so that you can create ISB records only for a predefined set of end users, set this field to No and change the field in End User Address Maintenance.

Material Order Control

Use Material Order Control (11.11.24) to define defaults for many MO input fields and establish values that affect MO processing.

Fig. 23.16
Material Order
Control (11.11.24)

Tip
Set this value to 0 (zero) to prevent automatic allocations.

Allocate MO Lines Due in Day. Specifies the number of days into the future to allocate MOs. Use allocations to control shipments, especially in shortage situations. When you enter an MO, the system compares the order quantity to the quantity available to allocate. If a shortage exists, the order cannot be filled. The system tries to allocate available inventory only to line items due within the number of days specified here, giving you more control over the process.

If you use automatic allocations, set Confirmed Orders to Yes to allocate only confirmed orders.

Detail Allocations. Determines the default in the Detail Allocations field of the MO header, which determines the default for each MO line. Detail allocations assign specific lot/serial numbers and

locations for shipping on an MO. Enter Yes if you normally make detail allocations during Material Order Maintenance. Otherwise, enter No.

Ln Format (S/M). Indicates the normal mode for entering material order line items. Use S, single-line mode, to display and maintain detailed information for each line item. Use M, multiline mode, to enter information such as item, quantity, and price for up to 12 lines on one screen. Dates, site, location, confirmed orders, comments, and other values default. Use single-line format to access and change the defaults.

Tip

You can change the line format at any time during order entry, and alternate between single and multiline format.

Keep Booking History. Indicates whether to maintain booking history. If Yes, the system keeps an audit trail of changes to MOs by creating transaction history records, identified as type ORD-MO. The record includes the item, order quantity, price, cost, date, user ID, and other information. You can review this information using booking inquiries and reports.

Tip

Review detailed transaction history using Transactions Detail Inquiry (3.21.1).

Shipping Lead Time. The usual number of calendar days between the date you enter an MO and the date you ship the items. When you create an MO, the required and due dates default to the system date plus the shipping lead time, indicating the normal delivery date. You can change this date.

Tip

If you ship orders immediately, use zero.

Ship Immediately. If Yes, a frame appears when you leave line entry so you can initiate the shipment process from Material Order Maintenance. If Ship Immediately is No, you are finished with the material order when you accept your input.

MO Header Comments. Indicates if you normally enter header comments for MOs. If Yes, the Comments field on the MO header defaults to Yes.

MO Line Comments. Indicates if you normally enter comments for MO line items. If Yes, the Comments field on each MO line defaults to Yes.

Internal Customer. Enter a customer number defined with Customer Maintenance. Values associated with the Internal Customer are used whenever an MO is created without an associated call.

When an MO has a call, the customer number and currency default from the customer associated with the call's end user. For an MO without a call, the system uses the number and currency associated with the customer specified in this field. Normally, this customer should have the base currency.

Material Order Prefix. Defines the prefix for automatic numbering of MOs when the MO field is blank in Material Order Maintenance. Because the system stores MOs, RMAs, and sales orders in the same table, use the prefix to distinguish MOs from other types of sales orders.

Next Material Order. The system uses this value with the Material Order Prefix to create the next MO number. The prefix is optional. The system increments the MO number each time you enter an MO.

Next Back Order Advice. The system uses this value when a Back Order Advice is created during MO shipments. The system increments this number each time a Back Order Advice is created.

Next Delivery Note. The system uses this value when an Material Delivery Note is generated during MO shipments. The system increments this number each time a Delivery Note is created.

Confirmed Orders. Indicates whether you normally enter MOs as confirmed. This field determines the default in Material Order Maintenance. Enter Yes if you normally enter MOs as confirmed orders. Enter No if they are not confirmed when entered, but require a separate confirmation step.

Confirmed orders are allocated, consume forecast, and create demands for material planning. Unconfirmed orders are not allocated, do not consume forecast, and do not create demands for material planning until you process a separate Material Order Confirmation function.

Consume Forecast. Determines the default in the Consume Forecast field on the MO header, which determines the default for each line item. If Consume Forecast is Yes for an MO item, it consumes forecast the same way that sales order lines do. When you enter an MO, the system decrements the available quantity in the sales forecast for the item by the MO quantity.

Ship To. Possible values are user or engineer. The value for Ship To determines the value for Ship-To on a new MO associated with a call.

- If user, the MO Ship-To defaults from the end user who called.
- If engineer, the MO Ship-To defaults from the address of the engineer assigned to the call.

Use this field to tailor the Ship-To default according to your business practices. You can change the Ship-To entry on a particular MO.

Tip

For MOs without a call, Ship-To is the engineer's address, and cannot be changed.

Engineer Schedule Control

Engineer Schedule Control (11.13.15.24) enables you to prioritize how engineers are assigned to calls. The system uses the following factors when ranking engineers for a call:

- Whether the engineer is assigned to the same area as the end user
- How much time an engineer has available to handle the call
- Whether the engineer is the end user's primary engineer
- Whether the engineer has the skills to handle the call
- Whether the engineer is in the same time zone or within a defined range of the end user on the call

The system calculates engineer points according to this formula:

$$\text{Area Points} + (\text{Available Points} * \text{available hours}) + \text{Available Points} + (2 * \text{Primary Eng Points}) + \text{Problem Points} + \text{Time Zone Points}$$

Note Time zone points are considered only if Multiple Time Zones is active.

Specify the highest value for factors that are most important to your company. The greater the value, the higher the weighting. The formula weights availability and primary engineer higher than other factors.

The engineer with the highest score displays at the top of the list in the scheduling window in Call Maintenance (11.1.1.1).

Tip

This factor is considered only if Multiple Time Zones is active.

Fig. 23.17
Engineer Schedule Control
 (11.13.15.24)

Lunch Duration. The length of time, in hours and minutes, normally taken by engineers for lunch. The system deducts this value from the total daily available time. If you change this field, rebuild the engineer schedules to update existing schedules. Run Rebuild Engineer Schedules (11.13.15.25) to recalculate available hours.

Display by Calls. Specifies whether to calculate and display engineer availability in terms of available hours or by the number of calls an engineer can take.

- If Yes, the availability window in Call Maintenance prioritizes engineers according to their point totals, and displays the number of calls each can still take.
- If No, it prioritizes engineers according to point totals, but lists the number of hours per day that each is still available.

Next Engineer Number. A number the system maintains and uses to match engineer codes and addresses. When you define an employee as an engineer, the system creates an address master record for the engineer. The system can then retrieve address information when you specify the engineer as a drop-ship address in Material Order Maintenance.

The system creates the address master using the engineer code, unless that code already identifies another address. In this case, the system uses Next Engineer Number and updates the control program.

Area Points. The number of points to add to an engineer's scheduling score if the engineer's assigned service area, defined in Engineer Maintenance, matches that of the call's end user, defined in the Service Office Detail frame of End User Address Maintenance.

Available Points. The number of points to use when calculating the scheduling score for an engineer with an available status. Statuses can have any name, but their Available field must be Yes. The system multiplies this value by the number of calls or hours the engineer has remaining for the day.

Tip
Define availability status codes in Engineer Status Maintenance (11.13.4).

Primary Eng Points. If the engineer is the primary engineer for the end user initiating a call, the system doubles these points and adds them to the scheduling score. The secondary engineer is given these points without doubling them. Define primary engineers in the Engineer Code field in the Service Office Detail frame of End User Address Maintenance.

Problem Points. The number of points to add to the scheduling score if an engineer has a skill matching the problem on the call. Assign skills to an engineer in Engineer Skills Maintenance.

Time Zone Points. You can update this field only when MTZ is active. The system uses this field with Range of Hours to Consider. The value can range from 0 to 99 and specifies the number of points to give to an engineer with a time zone that matches or falls within the specified range relative to the time zone of a call's end user. Define time zones for engineers in Engineer Maintenance.

♦ See Chapter 4, "Multiple Time Zones," for details about MTZ.

Limit by Availability. Indicates whether the engineer scheduling routines in Call Maintenance consider only engineers who have an available status and available hours or calls on the date being examined.

If Override Scheduling Options is Yes in Engineer Schedule Control, you can modify this value in Call Maintenance before the Engineer Availability window displays. Otherwise, it is always applied.

Limit by Service Area. Indicates whether the engineer scheduling routines in Call Maintenance consider only engineers with a service area that matches the call's area.

The system checks this field when you assign an engineer to an end user in End User Address Maintenance. If it is Yes, a warning displays if the area of the assigned engineer and the end user do not match.

If *Override Scheduling Options* is Yes in *Engineer Schedule Control*, you can modify the value of this field in *Call Maintenance* before the *Engineer Availability* window displays. Otherwise, it is always applied.

Limit by Problem/Skill. Indicates whether the engineer scheduling routines in *Call Maintenance* consider only engineers with a skill that matches the call problem.

If *Override Scheduling Options* is Yes in *Engineer Schedule Control*, you can modify the value of this field in *Call Maintenance* before the *Engineer Availability* window displays. Otherwise, it is always applied.

Limit by Time Zone. You can update this field only when MTZ is active. Indicates whether the engineer scheduling routines in *Call Maintenance* consider only engineers with a time zone that matches the time zone of the call's end user.

The system uses this field with *Range of Hours to Consider*. It checks both fields when you assign an engineer to an end user in *End User Address Maintenance*. If *Limit by Time Zone* is Yes, a warning displays if the time zone of the assigned engineer is not within the range of the end user's time zone.

Range of Hours to Consider. You can update this field only when MTZ is active. The system considers it only when *Limit by Time Zone* is Yes. It indicates how many other time zones you can include for scheduling.

- Blank indicates the time zone of the engineer must match the time zone of the call's end user.
- An integer value indicates any time zone within a range is considered a match. The integer represents the number of time zones more or less than the end user's that are considered a match for scheduling.

Override Scheduling Options. Indicates whether you can modify the four limiting options—and range of hours when *Multiple Time Zones* is active—when you edit a call.

- When Yes, a pop-up window with these options displays in Call Maintenance before the Engineer Availability window displays. The limit settings display with the values in the control program. You can modify them to affect the scheduling of engineers for that edit session only.
- When No, the system always applies the scheduling options in the control program in Call Maintenance.

Paging Control

Settings in Paging Control (11.13.17.24) establish the connection with your communications application.

Fig. 23.18
Paging Control
(11.13.17.24)

Pager Company. The company supplying your paging services as defined in Supplier Maintenance (2.3.1).

Telephone. Output-only field of pager company's phone number as defined in Supplier Maintenance (2.3.1).

Before Phone Number. Parameters to pass to the dialing program before the phone number string. An example for UNIX systems using the cu program:

```
-s 9600 -l tty1A
```

Pager Number. The pager number to use in Call Maintenance if the Pager field of Engineer Maintenance is blank.

After Phone Number. Parameter string to pass to the operating system after the pager phone number. Some dialing programs require an escape sequence after the phone number to hang up the line or reset the modem.

Append Call. Not used.

Waiting for Page Status. Not used.

Paged Status. Not used. The value written to paging history signifying that an engineer has been paged.

Program. Path and program name for the communications application. For UNIX systems using the cu program:

```
/usr/bin/cu
```

Parameter. Parameters that follow the Program field, if you need more space than is available in the Before Phone Number field.

User Exits

You can make customizations to Service/Support Management programs directly to MFG/PRO source code, if this is available, or through user exit points that the system supports. The advantage of the user exit method discussed in this chapter is that it reduces maintenance costs for customization. Further, when you use exit points to call custom programs rather than modifying source code, you can upgrade your system more simply.

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Introduction

MFG/PRO is an extensive system that addresses a range of customer needs and requirements. Even with the broad functionality in Service/Support Management (SSM), users with unique requirements may need to customize one or more standard functions.

In the SSM module, you can initiate calls to your own custom subroutines from many functions. When these subroutines are invoked, the system passes them one or more parameters, reflecting the Progress record identifiers for the records currently maintained by the calling routine. Design the custom subroutines invoked from user exits to accept the specific parameters in the designated order.

Setting Up User Exits

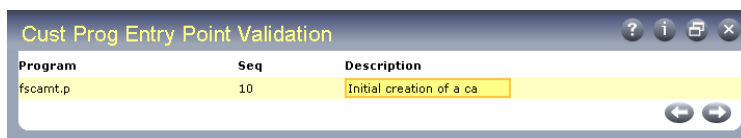
Use the following programs on the SSM Utilities menu (11.25) to set up user exits and specify the programs to be called:

- Use Custom Program Insertion Maintenance (11.25.1) to specify the program to be called at a particular exit.
- Use Custom Program Insertion Browse (11.25.2) to view the exits that have been activated.
- Use Custom Program Entry Point Validation (11.25.3) to define the exits that can be used in 11.25.1.
- Use Custom Program Entry Point Browse (11.25.4) to view the exits set up in 11.25.3.

Custom Program Entry Point Validation

Use Custom Program Entry Point Validation (11.25.3) to define the exits that can be used in Custom Program Insertion Maintenance (11.25.1).

Fig. 24.1
Custom Program
Entry Point
Validation (11.25.3)



To set up an exit, specify the program name where the exit is found and its sequence number. Enter a description in the Description field. Table 24.1 lists programs and sequence numbers that you can use.

Custom Program Insertion Maintenance

To use a custom subroutine, you specify its program name and the appropriate exit point using Custom Program Insertion Maintenance (11.25.1).

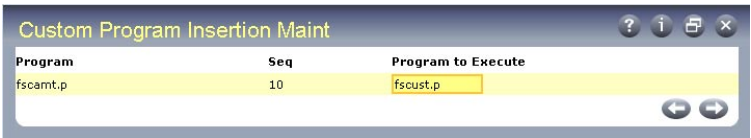


Fig. 24.2
Custom Program
Insertion
Maintenance
(11.25.1)

Program. Enter the menu-level name of an SSM program with user exits.

Seq. Enter the sequence number identifying which exit in Program you want to use.

Program to Execute. Enter the name of the custom routine you want to invoke at this user exit.

Progress Programming Rules

You must write all custom programs to accept one or more parameters. Table 24.1 describes these parameters.

Custom programs are executed within the flow of the standard programs. If your program displays any frames to the user, make sure that the way they are displayed does not interfere with the standard functions. Two important rules to follow are:

- Any frames displayed should be overlay frames.
- Do not use the “Hide All” command.

When batch processing occurs, a custom program should not solicit input from the user. The only interface should be messages. This rule applies to three of the user exits in Call Activity Recording that occur during inventory processing. These exits are numbered 50, 55, and 60.

Also, for the custom program to be found, make sure it resides in an appropriate directory in your propath. The system looks for the program in a directory that matches the first two characters of the program name. For example, place a program named `fscustom.p` in the `.../fs` directory.

List of User Exits

Table 24.1 lists the user exit points, a description of when each is activated, and the input parameters in their required order.

Table 24.1
User Exits

Program	Seq	Comments	Input Parameters
Installed Base Item Maintenance (<code>fsisbmt.p</code>)	10	Immediately after a new <code>isb_mstr</code> is created.	recid (<code>isb_mstr</code>)
	20	Immediately after an <code>isb_mstr</code> is deleted.	end user id part serial ref
	30	Immediately after the user changes the item's serial number.	recid (<code>isb_mstr</code>) old serial number
Installed Item Move (<code>fsisbm.v.p</code>)	10	Immediately before the end user number is changed on the parent level <code>isb_mstr</code> .	recid (<code>isb_mstr</code>) new end user number
	20	Immediately before the end user number is changed on a lower level component <code>isb_mstr</code> .	recid (<code>isb_mstr</code>) new end user number

Table 24.1 — *User Exits* — (Page 1 of 9)

Program	Seq	Comments	Input Parameters
Call Maintenance (fscamt.p)	10	Before the cursor enters the call ID field, fscamt.p loads variable <i>canewrun</i> with the program name to execute. This program is then executed by fscamt.p when a new call is being created just after the work code, model, service group pop-up displays to establish call defaults.	recid (ca_mstr)
	20	Before the cursor enters the call ID field, fscamt.p loads shared variable <i>carun</i> with the program name to execute. This program is then executed by fscamta.p before the user keys in name, phone, etc. in the call header lower frame.	recid (ca_mstr)
	40	This user exit is called right before calling fscammt.p to handle call comments.	recid (ca_mstr)
	50	The program is called after the Item Service Structure pop-up.	recid (ca_mstr)
	55	The program is called after the Item Service Structure pop-up if <i>ca_assign</i> has changed.	recid (ca_mstr)
	60	After the Item Service Structure pop-up, if <i>ca_status</i> has changed (fscamta1.p).	recid (ca_mstr)
	70	After the Item Service Structure pop-up, if <i>ca_queue</i> has changed (fscamtc.p).	recid (ca_mstr)
	80	After the user selects or enters a new call line number, routine fsitmcmt.p calls this exit before displaying an existing line item or creating a new one.	recid (itm_det) Logical (newitem) indicating whether line is newly created.

Table 24.1 — User Exits — (Page 2 of 9)

Program	Seq	Comments	Input Parameters
Call Maintenance (fscamt.p)	85	When a user is editing a call line item and sets Fault Codes to Yes, fsitmcmnt.p calls this exit right after the fault code frame displays. This exit requires three input parameters, but the middle one is only a place holder; it is not used in Call Maintenance.	recid (ca_mstr) recid (wo_mstr). Not used in Call Maintenance. recid (itm_det)
	90	Called right after all call data has been entered and before calling fscamt.b.p to print a call.	recid (ca_mstr)
	100	If the call is being closed, after close processing is complete (fscamt1). Note that this exit applies to all programs where calls are closed: fscarmt.p, fscamt.p, fsquemg.p, and fsegtmt.p.	recid (ca_mstr)
Call Queue Manager (fscamt.p)	100	If you close the call at the end of the update transaction (fsquem1b.p).	recid (ca_mstr)
Service Request Maintenance (fssrmt.p)	10	Executed with the creation of a new SR.	recid (srr_mstr)
	20	Executed when the value of <i>srr_status</i> has been modified.	recid (srr_mstr)
	30	Executed when the value of <i>srr_assign</i> has been modified.	recid (srr_mstr)
	40	Executed when the value of <i>srr_que</i> has been modified.	recid (srr_mstr)
	90	Executed when the value of <i>srr_status</i> is set to the closed status defined in SR Control (<i>svc_srr_close</i>).	recid (srr_mstr)

Table 24.1 — User Exits — (Page 3 of 9)

Program	Seq	Comments	Input Parameters
Contract Maintenance (fssamt.p)	10	The name of a program to run for the contract header is loaded into the <i>sarun</i> variable by <i>fssamt.m.p</i> . This program is executed between header comments and the first line item.	recid (sa_mstr)
	20	The name of a program to run for contract lines is loaded into the <i>sadrun</i> shared variable by <i>fssamt.m.p</i> . This program is executed in <i>fssama01.p</i> immediately before line item comments may be entered and in <i>fssamt.t.p</i> immediately after the comments are entered.	recid (sa_mstr) recid (sad_det)
RMA Maintenance (fsmamt.p)	10	Executed by <i>sosomt1a.p</i> immediately before header comments are entered.	recid (so_mstr) recid (rma_mstr)
	20	Executed for RMA issue lines. The name of the program to run is loaded into variable <i>solinerun</i> by <i>sosomta.p</i> , and executed right before line comments by <i>sosomt1a.p</i> .	recid (so_mstr) recid (sod_det) (<i>sosomt1a.p</i> does not pick up <i>rma_mstr</i> or <i>rmd_det</i>)
	30	Executed for RMA receipt lines. The program to run is loaded into variable <i>solinerun</i> by <i>sosomta.p</i> , and executed right before line comments by <i>sosomt1a.p</i> . Also loaded and executed by <i>fsmar02.p</i> after the linked receipt line.	recid (so_mstr) recid (sod_det) (<i>sosomt1a.p</i> does not pick up <i>rma_mstr</i> or <i>rmd_det</i>)
	100	Executed by <i>fsmamtu.p</i> right before the “Display RMA Lines” message.	recid (so_mstr) recid (rma_mstr)
	110	Right after exit 100.	recid (so_mstr) recid (rma_mstr)

Table 24.1 — User Exits — (Page 4 of 9)

Program	Seq	Comments	Input Parameters
Sales Order Maintenance (<i>sosomt.p</i>)	10	Executed by <i>sosomt1a.p</i> immediately before header comments can be entered.	recid (so_mstr)
	20	The name of a program to run is loaded into variable <i>solinerun</i> by <i>sosomta.p</i> , and executed right before line comments by <i>sosomt1a.p</i> .	recid (so_mstr) recid (sod_det)
Update ISB from Sales Order Maintenance and RMA Maintenance (<i>sosomisb.p</i>)	10	The program is called after the Update Installed Base Item pop-up.	recid (so_mstr) recid (sod_det) Logical (new_line) indicating whether line is newly created.

Table 24.1 — *User Exits* — (Page 5 of 9)

Program	Seq	Comments	Input Parameters
Call Activity Recording (fscarmt.p) Note: Call Quote Maintenance (fscqmt.p calls fscarmt.p to execute the same programs.	10	This exit is called by fscarmtm.p right after header comments, before the line items.	recid (ca_mstr)
	15	After the user selects or enters a new call line number, routine fscarmta.p calls this exit after displaying an existing line item or creating a new one.	recid (itm_det) Logical (newitem) indicating whether line is newly created
	20	This exit is called by fscarmta.p right after the Fault Codes pop-up and before the MO line selection. Only executed for call quote if not fixed price	recid (ca_mstr) recid (wo_mstr)
	50	Called by fscarmk1.p when the ISB quantity of a component item is increased. No input should be solicited from the user.	recid (wo_mstr) recid (itm_det) recid (wod_det) recid (isb_mstr) (of the component item)
	55	Called by fscarmk1.p when a new component is added to the ISB. No input should be solicited from the user.	recid (wo_mstr) recid (itm_det) recid (wod_det)
	60	Called by fscarmk2.p when a component item is deleted or has its ISB quantity reduced. No input should be solicited from the user.	recid (wo_mstr) recid (itm_det) recid (wod_det) Percentage of the ISB item that has been deleted (The delete percentage is defined like the field tr_qty_chg.)

Table 24.1 — User Exits — (Page 6 of 9)

Program	Seq	Comments	Input Parameters
Call Invoice Recording (fscaimt.p)	10	Executed by fscaimtm.p after the last header frame, before the billing summary displays.	recid (ca_mstr)
	20	Executed by fscaimtj.p, which creates the so_mstr, after tax processing completes.	recid (ca_mstr) recid (so_mstr)
	30	Program fscaimte.p, which creates the invoice, loads this exit program name into variable <i>carun</i> , then executes it after creating or updating the first sod_det (from the first invoiceable report) for the itm_det.	recid (ca_mstr) recid (so_mstr) (? if none) recid (itm_det) recid (sod_det) (? if none) recid (wo_mstr)
	50	Executed by fscaimtf.p, which does line maintenance, right before starting the labor/parts subroutines for the line.	recid (ca_mstr) recid (so_mstr) recid (itm_det) recid (sod_det)
Material Order Maintenance (fseomt.p)	10	Executed immediately before MO header comments by fseomt.p.	recid (so_mstr)
	20	Program fseomta.p (MO Line Items) loads variable <i>solinerun</i> with the name of this exit program, then fseomtla.p executes that program just before line item comments are maintained.	recid (so_mstr) recid (sod_det)
Service Contract Limits (fssalmt.p)	10	Executed by fssalmt.p after maintaining limits on a service contract or service contract lines.	recid (sal_mstr)
	20	Executed by fssalmt.p after maintaining warranty limits of isb_mstr type. (This feature has not been implemented yet.)	recid (sal_mstr)
	30	Executed by fssalmt.p after maintaining limits on contract or warranty types.	recid (sal_mstr)
Service Work Center Maintenance (fswcmt.p)	10	Executed by fswcmtm.p at the end of work center maintenance.	recid (wc_mstr)

Table 24.1 — User Exits — (Page 7 of 9)

Program	Seq	Comments	Input Parameters
Service Standard Op Maintenance (fsopmmt.p)	10	Executed by fsopmmt.p right before comments are entered.	recid (opm_mstr)
Work Code Maintenance (fsfwkmt.p)	10	Executed by fsfwkmt.p at the end of Work Code Maintenance.	recid (fwk_mstr)
Charge Product Line Maintenance (fsfcccmt.p)	10	Executed by fsfcccmt.p at the end of Charge Product Line Maintenance.	recid (fcc_mstr)
Revenue Product Line Maintenance (fsfccrmt.p)	10	Executed by fsfccrmt.p at the end of Revenue Product Line Maintenance.	recid (fcc_mstr)
Default Charge Code Maintenance (fsfcdmt.p)	10	Executed by fsfcdmt.p at the end of Default Charge Code Maintenance.	recid (fcd_mstr)
Charge Code Maintenance (fsfcgmt.p)	10	Executed by fsfcgmt.p at the end of Charge Code Maintenance.	recid (fcg_mstr)
Invoice Sort Maintenance (fsfismt.p)	10	Executed by fsfismt.p at the end of Invoice Sort Maintenance.	recid (fis_mstr)
Service Category Maintenance (fsfscmt.p)	10	Executed by fsfscmt.p at the end of Service Category Maintenance.	recid (fsc_mstr)
Service Price List Maintenance (fsfpclmt.p)	10	Executed by fsfpclmt.p at the end of Price List Maintenance.	recid (fpc_mstr)
Return Status Maintenance (fsfpstmt.p)	10	Executed by fsfpstmt.p at the end of Return Status Maintenance.	recid (fpst_mstr)

Table 24.1 — User Exits — (Page 8 of 9)

Program	Seq	Comments	Input Parameters
Contract Copy/ Renewal Routines (fsqosaa.p) (Refer to page 805 for additional details.)	10	The name of a program to run after a contract header is created by any copy/renewal routine. The exit should be attached to program fsqosaa.p and is executed in batch; no user input should be required.	recid (sa_mstr)
	20	The name of a program to run after a contract quote header is created by any copy/renewal routine. The exit should be attached to program fsqosaa.p and is executed in batch; no user input should be required.	recid (sa_mstr)
	30	The name of a program to run after a contract line is created by any copy/renewal routine. The exit should be attached to program fsqosaa.p and is executed in batch; no user input should be required.	recid (sa_det)
	40	The name of a program to run after a contract quote line is created by any copy/renewal routine. The exit should be attached to program fsqosaa.p and is executed in batch; no user input should be required.	recid (sad_det)
General Comments (gpcmnt01.p)	10	Executed after comments are defaulted, but before they are displayed for editing. Used in most places where comments are edited.	recid (cmt_det) Logical indicating whether comments are newly created
Service Comments (fscamnt.p)	10	Executed after comments are defaulted, but before they are displayed for editing. Used in service routines where comments are edited that include a date/time stamp.	recid (cmt_det) Logical indicating whether comments are newly created

Table 24.1 — User Exits — (Page 9 of 9)

User Exits for Contract Copy/Renewal Routines

Most user exits are defined for a menu-level program. The exception to this is the family of six programs used to copy and renew service contracts and contract quotes, which are all very similar internally. This program family includes the following options:

- Contract Quote Release to Contract (11.5.1.5)
- Contract Quote Copy from Quote (11.5.1.6)
- Contract Quote Copy from Contract (11.5.1.7)
- Contract Copy to Contract (11.5.13.6)
- Renew Single Contract (11.5.13.8)
- Renew Process/Report (11.5.13.10)

Rather than creating separate user exits for each menu-level program, four generic exits can be set up to take affect whenever a contract or contract quote header or line is created. This is done by attaching the exits to program `fsqosaa.p`, rather than the menu-level program name. This approach means, for example, that the same user program is called whenever a new contract line is created, regardless of the particular program that initiated the update.

Note Enter `fsqosaa.p` in the Program field of Custom Program Entry Point Validation.

The user exits for contract copy/renewal programs all execute in the background. You should make sure that the program you call does not require any user input.

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