

Test Equipment Management (QM-IT)



HELP.QMITCP

Release 4.6C



Copyright

© Copyright 2001 SAP AG. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP AG. The information contained herein may be changed without prior notice.

Some software products marketed by SAP AG and its distributors contain proprietary software components of other software vendors.

Microsoft[®], WINDOWS[®], NT[®], EXCEL[®], Word[®], PowerPoint[®] and SQL Server[®] are registered trademarks of Microsoft Corporation.

IBM[®], DB2[®], OS/2[®], DB2/6000[®], Parallel Sysplex[®], MVS/ESA[®], RS/6000[®], AIX[®], S/390[®], AS/400[®], OS/390[®], and OS/400[®] are registered trademarks of IBM Corporation.

ORACLE[®] is a registered trademark of ORACLE Corporation.

INFORMIX[®]-OnLine for SAP and Informix[®] Dynamic Server[™] are registered trademarks of Informix Software Incorporated.

UNIX[®], X/Open[®], OSF/1[®], and Motif[®] are registered trademarks of the Open Group.

HTML, DHTML, XML, XHTML are trademarks or registered trademarks of W3C[®], World Wide Web Consortium, Massachusetts Institute of Technology.

JAVA[®] is a registered trademark of Sun Microsystems, Inc.

JAVASCRIPT[®] is a registered trademark of Sun Microsystems, Inc., used under license for technology invented and implemented by Netscape.

SAP, SAP Logo, R/2, RIVA, R/3, ABAP, SAP ArchiveLink, SAP Business Workflow, WebFlow, SAP EarlyWatch, BAPI, SAPPHIRE, Management Cockpit, mySAP.com Logo and mySAP.com are trademarks or registered trademarks of SAP AG in Germany and in several other countries all over the world. All other products mentioned are trademarks or registered trademarks of their respective companies.

Icons

Icon	Meaning
	Caution
	Example
	Note
	Recommendation
	Syntax

Contents

Test Equipment Management (QM-IT)	5
Overview of a Calibration Inspection	7
Test Equipment as Equipment	8
Maintenance Plan	9
Maintenance Task List	10
Maintenance Order	11
Inspection Lot	12
Planning of the Calibration Inspection	13
Creation of Master Data	17
Creating Test Equipment as Equipment	18
Creating Measuring Points/Counters for Test Equipment.....	19
Creating a Task List with QM Data.....	21
Creating a Maintenance Plan	24
Assigning a Task List to a Maintenance Plan	28
Scheduling a Maintenance Plan for the First Time	30
Rescheduling a Maintenance Plan.....	32
Generating an Order and Inspection Lot from a Maintenance Call.....	34
Planning in the Order	36

Test Equipment Management (QM-IT)

Purpose

Test equipment is used in many companies for performing quality inspections. In order to ensure that the test equipment used always fulfils the defined performance criteria, most companies regularly test and calibrate their test equipment.

Using the functions in the component *Test Equipment Management*, you can manage equipment data, plan and schedule inspections, and perform **calibration inspections** for the equipment.

Implementation Considerations

You should use the component *Test Equipment Management* in your company if:

- Individual data is maintained for each piece of test equipment
- Test equipment is regularly calibrated
- Calibration inspections are planned and scheduled for different maintenance orders and maintenance strategies
- A results history is maintained for each piece of test equipment

Integration

The component *Test equipment management* links the following planning and processing functions of the application components *Plant Maintenance* (PM) and *Quality Management* (QM):

Plant Maintenance	Quality Management
Technical objects (PM-EQM)	Quality planning (QM-PT)
Preventive maintenance (PM-PRM)	Quality inspection (QM-IM)
Maintenance processing (PM-WOC)	



For certain planning and processing methods in a calibration inspection, you also require the cross-application component *Classification System* (CA-CL).

Features

The *Test Equipment Management* component includes many important functions for planning and performing calibration inspections:

Planning

When you plan a calibration inspection, you can:

- Create master records for each piece of test equipment
- Manage the equipment data and maintenance history in master records
- Group similar test equipment together for inspection processing
- Classify the test equipment based on the technical specifications in the classification system

Test Equipment Management (QM-IT)

- Link master inspection characteristics to class characteristics in the classification system, so that the system can record the inspection results for the measuring points of the test equipment using the relevant measurement documents
- Create inspection characteristics for operations in maintenance task lists
- Define inspection specifications for quantitative and qualitative characteristics (for example, target values, tolerances, repeat measurements and inspection catalogs)
- Define maintenance cycles in the maintenance plan (for example, to determine calibration intervals based on time or performance)



You can plan and perform a calibration inspection without using a maintenance plan by creating a maintenance order manually. For this, the inspection type must be assigned to the maintenance order type. When the maintenance order is released, the system automatically generates an inspection lot.

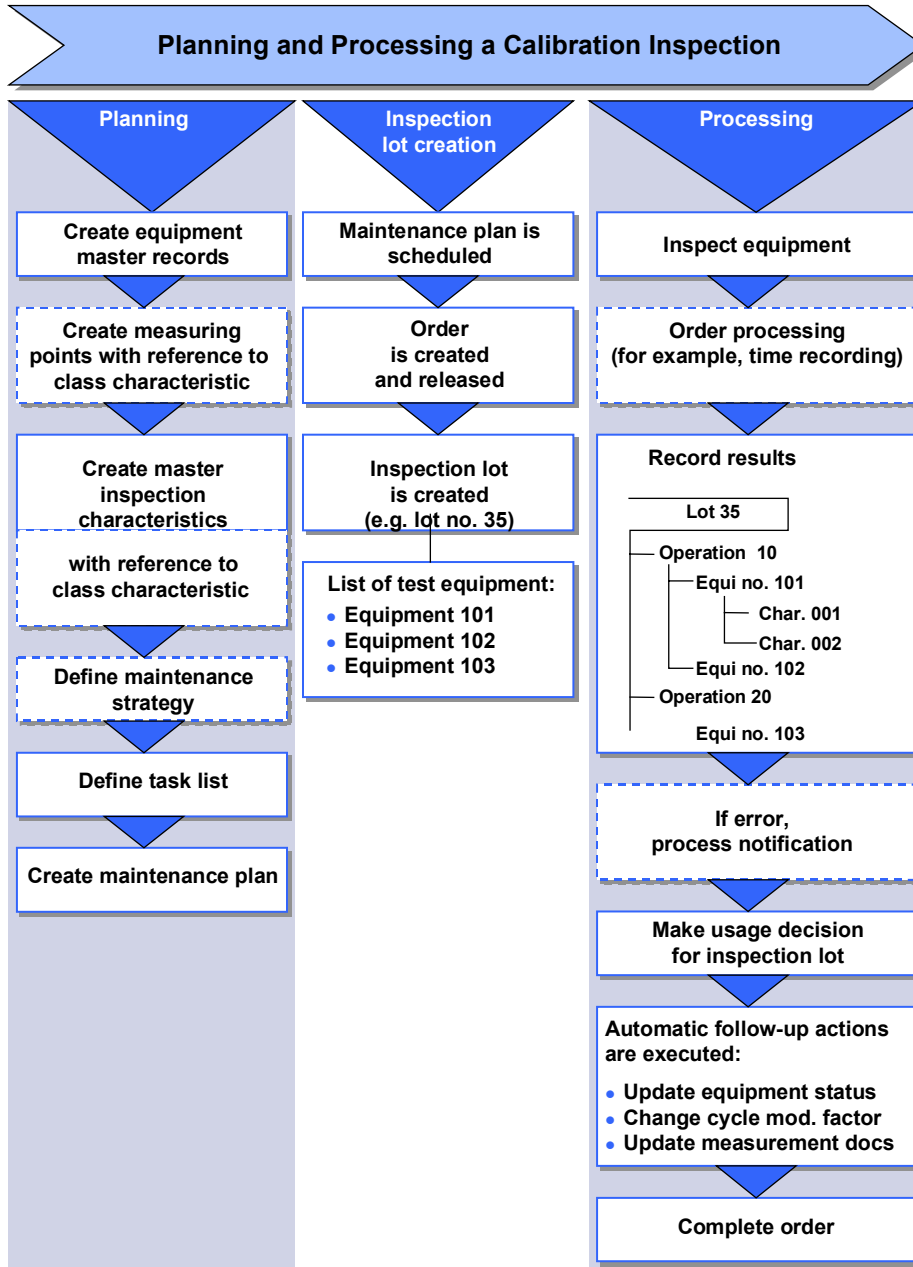
- Use time or performance-related maintenance schedules to monitor the calibration dates (for example, to determine how often a piece of test equipment was used)
- Monitor the equipment statuses (for example, whether or not equipment is released for use)
- Create and release maintenance orders, so that inspection lots are generated

Processing

When you process an inspection lot for a calibration inspection, you can:

- Record inspection results for each piece of test equipment
- Record items for a maintenance notification if you reject an inspection characteristic or confirm any other deviation
- Valuate each piece of test equipment in the inspection lot (for example, accepted or rejected)
- Confirm services for maintenance orders (for example, inspection times)
- Trigger automatic follow-up actions with the usage decision for the inspection lot (for example, update equipment statuses, change cycle modification factors, generate measurement documents)
- Update and valuate information in the Plant Maintenance Information System and the Quality Management Information System

Overview of a Calibration Inspection



Test Equipment as Equipment

Test Equipment as Equipment

Definition

The use of equipment master records in the *Plant Maintenance* (PM) application component enables you to define individual test equipment as a piece of equipment. You can then manage, monitor, maintain and calibrate test equipment.

Use

You can control the maintenance intervals depending on usage. Frequently used test equipment is maintained more often than test equipment which is used less frequently.

You can create measuring points/counters for test equipment defined as a piece of equipment and thereby measure the wear, use or decline of a piece of test equipment.

Maintenance Plan

Definition

Description of maintenance and inspection tasks to be performed on maintenance objects. The dates and scope of the tasks are also defined here.

Use

Depending on the use of the maintenance plan, the following types of maintenance plan are available:

With Maintenance Strategy

- Time-based maintenance plans
- Performance-based maintenance plans

Without Maintenance Strategy

- Multiple counter plans
- Single cycle plans (time-based)
- Single cycle plans (performance-based)

Structure

A maintenance plan contains:

- Maintenance dates
- Maintenance item(s)

A maintenance plan can either be structured with regard to time or performance, based on a maintenance strategy. If you do not use a strategy, it is a single cycle plan, otherwise it is a strategy plan. Alternatively, a maintenance plan can be a multiple counter plan, in which time-based and performance-based maintenance cycles are combined to produce maintenance dates.

Measuring points, at which counter readings are entered, form the basis for performance-based maintenance.

Integration

A maintenance plan contains one or more maintenance items, in which the maintenance objects to be maintained and the corresponding maintenance task list have been defined. The maintenance tasks to be performed on a due date are determined by the maintenance task list assigned to the maintenance item.

The necessary maintenance or service orders are automatically generated for a due maintenance date.

Maintenance Task List

Maintenance Task List

Definition

Description of the procedure for maintaining a maintenance object.

Use

Maintenance task lists is the generic term used for all task lists that can be used in Plant Maintenance.

The following types of task list exist in Plant Maintenance:

- Equipment task list
- Functional location task list
- General maintenance task list

The general maintenance task list is not linked to a particular maintenance object. It can be used as a proposal when creating maintenance orders and other maintenance task lists.

Structure

A maintenance task list contains operations that describe the individual work steps. If greater detail is required, operations can be sub-divided into sub-operations. You can assign master inspection characteristics to the operations or maintain planned inspection characteristics for the operations. This is not possible for sub-operations.

Operations can be performed sequentially, in parallel or overlapping with one another. Their chronological sequence is defined by relationships. Operations and sub-operations can be processed internally or externally. The activities defined for an external operation are requested using orders. Spare materials and resources that are required for the maintenance work can be planned in the operation.

Maintenance Order

Definition

Requirement to execute a maintenance task at a maintenance object on a specific date.

Use

In addition, the maintenance order is a means of documenting maintenance tasks.

In particular, the order is used to:

- Plan tasks specifically
- Monitor the execution of tasks
- Enter and settle the costs incurred by tasks

The order data is entered in the maintenance history. This data is extremely important for evaluations and future planning.

Structure

An order contains operations that describe the individual work steps. If greater detail is required, operations can be sub-divided into sub-operations.

Operations can be performed sequentially, in parallel or overlapping with one another. Their chronological sequence is defined by relationships. Operations and sub-operations can be processed internally or externally.

An operation or sub-operation to be processed internally refers to a work center that is responsible for performing the work. The necessary capacity requirements can be planned, in order to perform the operation or sub-operation.

Inspection Lot

Inspection Lot

Definition

Request to a plant to inspect a specific quantity of a material.

Use

Inspection lots can be created for goods movements or deliveries to customers. They can also be created based on production orders or run schedule headers, to allow the material to be inspected during production.

The inspection results recorded for an inspection lot provide the basis for making the usage decision.

Structure

Inspection lots can contain several operations. An operation defines the activity to be performed at a work center. Operations can contain several inspection characteristics. An inspection characteristic describes what is to be inspected. The sample size and the conditions under which the inspection lot should be accepted or rejected are predefined for each inspection characteristic.

Inspection operations can also contain [inspection points \[Ext.\]](#).

In addition, you can define the production resources/tools required for each operation.

Inspection lots for customer deliveries, production orders, or run schedule headers can be divided into several partial lots.

Planning of the Calibration Inspection

Purpose

A calibration inspection provides you with an enhanced measured value function for inspection results, with which you can monitor test equipment defined as pieces of equipment. This is advisable if you:

- Maintain equipment for which entries for measured values are important (for example, for spraying equipment, if you want to check whether the colors in the products were sprayed are included in the defined color palette)
- Want to monitor the accuracy calibration devices (for example, if you want to check the accuracy of measurements by a measuring device)

Prerequisites

The following prerequisites must be fulfilled so that the system automatically generates an inspection lot when the maintenance order is released:

Prerequisites at Customizing Level

- Definition of inspection type
In the Customizing of Quality Management, your system administration has defined an inspection type for Plant Maintenance which allows task list usage from Plant Maintenance under *Quality Inspection* → *Inspection Lot Processing* → *Inspection Lot Creation* → *Maintain inspection types*.
- Definition of inspection points
In the Customizing of Quality Management, your system administration has defined the inspection point of the category *Equipment* under *Quality Planning* → *Inspection Planning* → *General* → *Define identification for inspection points*.
In the standard system, inspection point “300” is defined for this.
- Definition of default values for the inspection type
In the Customizing of Quality Management, your system administration has defined the parameters for the inspection type which allows an inspection origin "Plant Maintenance" under *Quality Inspection* → *Inspection Lot Processing* → *Inspection Lot Creation* → *Define default values for inspection types*.
In the standard system, inspection type “14” is defined for this.
- Definition of order type
In the Customizing of Plant Maintenance, your system administration has defined an order type for the PM/QM coupling, this means the calibration inspection which generates maintenance orders as a maintenance call object, under *Maintenance Order Management* → *Maintenance Orders and Service Orders* → *Functions and Settings for Order Types* → *Configure order types*. The indicator *Release immediately* is set for the order.
In the standard system, order type “PM05” is defined for this.

Planning of the Calibration Inspection

- Assigning inspection types to the order type

In the Customizing of Plant Maintenance, your system administration has assigned a QM inspection type to the order type, under *Maintenance Order Management* → *Maintenance Orders and Service Orders* → *Functions and Settings for Order Types* → *Assign inspection types to maintenance/service order types*.

In the standard system, inspection type “14” is assigned to order type PM05 (calibration inspection).

Prerequisites at Application Level

This section describes the exact prerequisites that you must note when creating a calibration task list. There is a short summarized process flow at the end of this section.

- Creating master inspection characteristics

You have created master inspection characteristics in Quality Management (QM). For more information, see *Master Inspection Characteristics* in the *Quality Management* component.

The definition of master inspection characteristics is only a prerequisite if you want to update measurement documents in *Plant Maintenance (PM)* as a follow-up action for the inspection lot.

If you do not want to use this function, you can also work with task list inspection characteristics.

For more information about follow-up actions, see [Usage Decision for Inspection Lot \[Ext.\]](#)

- Creating equipment

You have created a piece of equipment as test equipment.

If you want to update the measurement documents automatically as a follow-up action for the inspection lot, you must assign a measuring point/counter to the equipment, and the characteristic of the measuring point/counter must have been created with reference to a class characteristic.

- Creating task lists

You have created a task list and

- Maintained the QM data at header and operation level
- Assigned inspection characteristics to the operations (for example, color, diameter)

- Creating maintenance plans

You have created a maintenance plan and

- Assigned a task list
- Specified an **order type** which is linked to a QM inspection type, and thereby allows orders and inspection lots to be generated

You can create the maintenance plan **with** and **without a maintenance strategy**. The maintenance strategy is not a prerequisite for the calibration inspection.

Planning of the Calibration Inspection

If you want to work **without a maintenance plan**, when creating an order, enter an order type which is linked to a QM inspection type and thereby allows orders and inspection lots to be generated.

Process Flow


1. You create [master data in Plant Maintenance \[Page 17\]](#).
2. You create master inspection characteristics in Quality Management (QM). For more information, see *Master Inspection Characteristics* in the Quality Management component.
3. You create a [task list \[Page 21\]](#).
4. You assign [master inspection characteristics in the task list \[Page 21\]](#) to the individual operations, or maintain inspection characteristics in the task list. In addition, you enter the necessary QM data.
5. You create a [maintenance plan for the equipment \[Page 24\]](#) and
 - Specify an order type which is coupled with QM
 - [Assign a task list \[Page 28\]](#)

You can assign other pieces of equipment to the maintenance plan if necessary using the object .
6. You [schedule the maintenance plan \[Page 30\]](#). For more information about scheduling, see [Rescheduling a maintenance plan \[Page 32\]](#).

There are two options for the maintenance calls generated:

 - The system releases the maintenance call **automatically** depending on the settings for the scheduling parameters.
 - You release the maintenance call **manually**.

If the maintenance call is released automatically, the system automatically generates both an order and an inspection lot, and copies the information about the procedure for the inspection and inspection characteristics (for example, diameter, color) from the assigned task list.



Inspection characteristics from other task lists that you have assigned **before** releasing the maintenance order, are likewise copied into the inspection lot. Inspection characteristics from other task lists that you have assigned **after** the release of the maintenance order (and therefore after the inspection lot has been generated), are not copied into the inspection lot.

For more information, see [Generating an Order and Inspection Lot from a Maintenance Call \[Page 34\]](#).
7. You edit the order if you want to enter or schedule costs, or monitor capacities.
8. You perform a [calibration inspection \[Ext.\]](#).

Planning of the Calibration Inspection

Creation of Master Data

Purpose

This process describes how to create a piece of test equipment for the calibration inspection and link with a measuring point/counter.

Prerequisites

- A piece of equipment can only be created as a piece of test equipment if the corresponding equipment category is defined in Customizing.
- A measuring point/counter can only be created if the corresponding measuring point category is defined in Customizing.
- If you want to update measurement documents automatically as a follow-up action for the inspection lot, the measuring point/counter characteristic must have been created with reference to a class characteristic from the classification system.

Process Flow

1. You create [test equipment as equipment \[Page 18\]](#) initially in test equipment management. You can make all the necessary entries in the equipment master record.
2. You create a [measuring point/counter with the required characteristic \[Page 19\]](#) for the test equipment. You can either do this immediately in the equipment master record or by using test equipment management.

Result

You have created a piece of equipment as test equipment that you include in a maintenance plan in the next step of the calibration inspection, and then create a general maintenance task list. However, you can also create a maintenance task list for the equipment used as test equipment and subsequently assign this to the maintenance plan.

Creating Test Equipment as Equipment

Creating Test Equipment as Equipment

Prerequisites

In the Customizing of Plant Maintenance and Customer Service, your system administration has set the production resource/tool indicator for the equipment category *Test and Measurement Equipment* under *Master Data for Plant Maintenance and Customer Service* → *Technical Objects* → *Equipment* → *Equipment Categories* → *Define Additional Business Views for Equipment Categories*.

Procedure

1. On the initial SAP screen, choose *Logistics* → *Quality Management* → *Test Equipment Management* → *Test Equipment* → *Equipment* → *Create*.

The initial screen for equipment maintenance appears.

2. Enter the equipment category test and measurement equipment. Enter a key for the equipment or activate the automatic number assignment by choosing *Continue*.



If you want to use another piece of equipment or material as a reference for the test equipment, enter its key in the reference section. You can choose in a dialog box which sub-objects should be copied from the reference.

If you choose *Continue*, the *General Data* screen appears.

4. Enter data as required.
5. Save the equipment master record for the test equipment.

For more information about maintaining equipment, see *Equipment* in the *Management of Technical Objects* component (PM-EQM).

Creating Measuring Points/Counters for Test Equipment

Prerequisites

- In the Customizing of Plant Maintenance and Customer Service, your system administration has defined the measuring point categories valid for your system under *Master Data for Plant Maintenance and Customer Service* → *Basic Settings* → *Measuring Points, Counters and Measurement Documents* → *Define Measuring Point Categories*.
- Check whether the required class characteristics which you want to assign to the measuring points/counters were assigned using the classification system or create the required characteristics yourself using *Logistics* → *Quality Management* → *Test Equipment Management* → *Equipment* → *<Edit mode>* → *Extras* → *Measuring Points/Counters* → *Environment* → *Test Equipment Management*.

Procedure

To create a measuring point/counter for the test equipment, choose one of the following options:

Creating measuring points/counters from the equipment master record

1. On the *Test Equipment Management* screen, choose *Test equipment* → *Equipment* → *<Edit mode>*.

You reach the general data for equipment screen.
2. Choose *Extras* → *Measuring points/counters*.

Creating measuring points/counters directly

1. On the *Test Equipment Management* screen, choose *Test equipment* → *Equipment* → *Measuring point for equipment* → *Create*.

You reach the initial screen.
2. Enter the key of the equipment, for which you want to create measuring points/counters. Enter the required measuring point category in the section for default values and choose *Continue*.

3. Enter the necessary data on the *Maintain Measuring Points* screen. You can specify on this screen whether your measuring point is a counter. There are two lines available for each measuring point/counter that you want to assign to the equipment.



Note the following rules for characteristics and code group:

If you want to enter **quantitative** measurement results for the measuring point (for example, 20 degrees Celsius, 10 cm, 300 ampères, 1000 candela), you must assign a class characteristic with the required unit to the measuring point.

If you want to enter **qualitative** measurement results for the measuring point (for example, satisfactory, red, scratched, too dry), you must assign a qualitative characteristic with selected set to the measuring point.

If you want to update the measurement documents automatically as a follow-up action for the inspection lot, you must use the **master inspection characteristics**. The same class characteristic in the classification system must be assigned to the

Creating Measuring Points/Counters for Test Equipment

measuring point/counter as to the master inspection characteristic. This is the only way by which the **measurement readings can be updated**.

For more information about master inspection characteristics, see *Master Inspection Characteristics* in the *Quality Management* component.

4. When you have entered all the necessary data, choose *Continue*.

The system assigns a number from an internal number range to each measuring point/counter.

If you have already entered the measurement position for each measuring point/counter, the system sorts the measuring points according to the entries in the measurement position field.

5. For further editing, you must branch into individual editing for each measuring point/counter.

To do this, select the measuring point/counter you want to edit and choose *Goto* → *Measuring point*.

You reach the detail screen for the measuring point/counter.

6. Enter the necessary data.

For more information about working with measuring points and counters, see *Measurement Readings and Counters* component (PM-EQM-SF-MPC).

Creating a Task List with QM Data

Prerequisites

To be able to make a usage decision, the following conditions must be met:

- You have created a piece of equipment as test equipment.
- The following additional prerequisites are valid if you want to update the measurement documents in Plant Maintenance as an [automatic follow-up action \[Ext.\]](#) of the inspection lot:
 - You have assigned a measuring point or counter to this piece of equipment. You must have created the characteristic of the measuring point/counter with reference to a class characteristic of the classification system.
 - You have created master inspection characteristics in Quality Management (QM). For more information, see *Master Inspection Characteristics* in the *Quality Management* component.

If you do not want to use this function, you can also work with planned inspection characteristics.

Procedure

1. On the initial SAP screen, choose *Logistics* → *Quality Management* → *Test Equipment Management* → *Calibration Planning* → *Maintenance Task Lists* → *<Equipment Task List/General Task List>* → *Create*.

The initial screen for creating task lists appears.

2. Enter the necessary data as described in the following table.

To create.....	Enter the following data:	You reach
Equipment task list	Equipment number , choose <i>Enter</i> .	a) <i>Header overview</i> , if an equipment task list already exists b) <i>General header view</i> , if no task list exists
	Equipment numbers and existing profile numbers, choose <i>Enter</i> .	a) <i>Header overview</i> , if an equipment task list already exists b) <i>General header view</i> , if no task list exists
General task list	None , choose <i>Enter</i> .	<i>General header view</i>
	Existing group numbers , choose <i>Enter</i> .	<i>Header overview</i>

Creating a Task List with QM Data

	External alphanumerical group number, choose <i>Enter</i> .	<i>General header view</i>
	Only existing profile numbers, choose <i>Enter</i> .	<i>General header view</i>

3. a) Header overview screen

On the *Header overview* screen, choose *Edit* → *New entries*.

The *General header view* screen appears.

b) General header view screen

Enter the necessary data:

- You must specify an inspection point of category *Equipment* as a prerequisite for calibration inspection in the area of *QM data*.
- Specify a maintenance strategy if you want to work with one.



- The system automatically copies the equipment short text as the short text for the task list. You can overwrite this task list short text to make it more descriptive for the task list.
- It may happen that you cannot overwrite individual values proposed as defaults by the system in the task list. These values are taken from the master record of the work center that you have specified in the task list and are located there with reference indicators. This indicator means that this value is obligatory and may not be overwritten at any point that refers to the work center (for example, in a task list or order).

4. Enter the operations that should be executed. To do this, choose *Goto* → *Operation overview*

5. Enter the necessary data.

6. Maintain the QM data if necessary. To do this, choose *Operation* → *QM data*.

The screen *Operation: QM data* appears.

Enter the necessary QM data. The data that you maintain here influences the subsequent entry of inspection results and inspection point completion (= test equipment evaluation).

Variant "2" (test equipment evaluation) is set as a default for the inspection point completion in the standard system.

7. Return to the operation overview.

8. Maintain the inspection characteristics.

- a) Select the operation or operations to which you want to assign inspection characteristics (for example, diameter, color) and choose *Operation* → *Inspection characteristic overview*.

The characteristic overview screen appears.

- b) Enter a master inspection characteristic or a planned inspection characteristic.

Master inspection characteristic

Assign a master inspection characteristic and choose *Enter*.

Inspection characteristic

Select the field *QN* (quantitative) or *QL* (qualitative). Enter a short text and choose *Enter*. The dialog box in which you can maintain the necessary data is displayed.

For more information, see [Inspection Characteristics \[Ext.\]](#)



- If you subsequently enter operations with inspection characteristics for a task list from which the system has already generated an inspection lot, the characteristics subsequently entered are **not** available in the inspection lot.
- Calibration inspection sampling procedures are flagged with a special indicator. Only these sampling procedures can be used in the task list.

9. Return to the operation overview of the task list.

10. Save the task list.

For more information on operations (internal and external processing), sub-operations and so on, see *Maintenance Task Lists* in the *Preventive Maintenance* component (PM-PRM).

Result

You have created a task list (equipment task list or general task list), to which you now assign inspection characteristics and can subsequently include in a maintenance plan.

See also:

[Creating a Maintenance Plan \[Page 24\]](#)

Creating a Maintenance Plan

Creating a Maintenance Plan

Prerequisites


- You have created [equipment as test equipment \[Page 18\]](#).
- You have [created a task list \[Page 21\]](#), to which you have assigned master inspection characteristics or inspection characteristics (for example, diameter, color).
- Your system administration has maintained an order type in Customizing which is coupled with Quality Management and allows maintenance orders and inspection lots to be generated automatically for a maintenance call.
- If you want to update the measurement documents in Plant Maintenance as an [automatic follow-up action \[Ext.\]](#) for the inspection lot, the following prerequisites also apply:
 - You have assigned a measuring point or counter to this piece of equipment. The characteristic for the measuring point/counter must have been created with reference to a class characteristic.
 - You have created master inspection characteristics in Quality Management (QM). For more information, see *Master Inspection Characteristics* in the *Quality Management* component.

If you do not want to use this function, you can also work with task list inspection characteristics.
- You can create the maintenance plan for the calibration inspection with a maintenance strategy (= [strategy plan \[Ext.\]](#)) or without (= [single cycle plan \[Ext.\]](#)). The maintenance strategy is not a prerequisite for the calibration inspection.

If you want to work **without a maintenance plan**, then specify an order type, which is linked to a QM inspection type, when you create an order. This allows orders and inspection lots to be generated.

Creating a Single Cycle Plan

1. Choose *Logistics* → *Quality Management* → *Test Equipment Management* → *Calibration Planning* → *Maintenance Planning* → *Maintenance Plan* → *Create Single Cycle Plan*.

The initial screen for creating a maintenance plan appears.
2. Enter a [maintenance plan category \[Ext.\]](#) and choose .




You must choose an order type which is coupled with QM for the calibration inspection.
The single cycle plan appears.
3. Enter data as required.

If you specify a service unit for the cycle, the system automatically selects the first suitable counter for the reference object as a default value.
4. On the *Scheduling parameters* tab page, maintain the [scheduling parameters \[Ext.\]](#) for the maintenance plan, if required.

Creating a Maintenance Plan




You can only maintain the scheduling parameters for the maintenance plan if you have entered a unit for the cycle in the *Interval* section. The system can recognize from the unit whether it is a performance-based or time-based single cycle plan and provides the appropriate scheduling parameters.



5. Enter data as required for the maintenance item.
6. Assign a task list to the maintenance plan. Note the prerequisites described in [Assigning a Task List to a Maintenance Plan \[Page 28\]](#).
 - To assign a task list, choose .
 - To create a task list, choose  with quick info *Create task list/general task list*.
7. If necessary, you can assign additional technical objects to the maintenance item using the *Object list* tab page (see [Object List \[Ext.\]](#)).
8. If you want to create additional maintenance items, choose  with quick info *Create maintenance item*.
9. Save the maintenance plan.

Creating a Time-Based Strategy Plan

1. Choose *Logistics* → *Quality Management* → *Test Equipment Management* → *Calibration Planning* → *Maintenance Planning* → *Maintenance Plan* → *Create Strategy Plan*.

The initial screen for creating a maintenance plan appears.


2. Enter data as required:
 - Enter a [maintenance plan category \[Ext.\]](#). You must choose an order type which is coupled with QM for the calibration inspection.
 - Enter a time-based [maintenance strategy \[Ext.\]](#).
3. Choose .

The strategy plan appears.
4. Enter data as required for the maintenance plan header and maintenance item.
5. Assign a task list to the maintenance plan. Note the prerequisites described in [Assigning a Task List to a Maintenance Plan \[Page 28\]](#).
 - To assign a task list, choose .
 - To create a task list, choose  with quick info *Create task list/general task list*. Assign [maintenance packages \[Ext.\]](#) to the operations for the task list.

After you have assigned a task list, the system displays the following data:

 - On the *Item* tab page – the assigned task list
 - On the *Maintenance plan cycles* tab page – the maintenance packages from the strategy which are assigned to the operations in the task list
6. If necessary, use the *Object list* tab page to assign additional technical objects to the maintenance item (see [Object List \[Ext.\]](#)).

Creating a Maintenance Plan

7. If you want to create additional maintenance items, choose  with quick info *Create maintenance item*.
8. On the *Scheduling parameters* tab page, maintain the [scheduling parameters \[Ext.\]](#) for the maintenance plan, if required.
9. Save the maintenance plan.

Creating a Performance-Based Strategy Plan

1. Choose *Logistics* → *Quality Management* → *Test Equipment Management* → *Calibration Planning* → *Maintenance Planning* → *Maintenance Plan* → *Create Strategy Plan*.

The initial screen for creating a maintenance plan appears.



2. Enter data as required:
 - Enter a [maintenance plan category \[Ext.\]](#). You must choose an order type which is coupled with QM for the calibration inspection.
 - Enter a performance-based [strategy \[Ext.\]](#).




The strategy that you enter here must contain the scheduling indicator *Performance* and a dimension other than *time*.

3. Choose .

The strategy plan appears.

4. Enter data as required for the maintenance plan header and maintenance item.
5. Assign a task list to the maintenance plan. Note the prerequisites described in [Assigning a Task List to a Maintenance Plan \[Page 28\]](#).
 - To assign a task list, choose .
 - To create a task list, choose  with quick info *Create task list/general task list*. Assign [maintenance packages \[Ext.\]](#) to the operations in the task list.

After you have assigned a task list, the system displays the following data:

 - On the *Item* tab page – the assigned task list
 - On the *Maintenance plan cycles* tab page – the maintenance packages from the strategy which are assigned to the operations in the task list
6. If necessary, use the *Object list* tab page to assign additional technical objects to the maintenance item (see [Object List \[Ext.\]](#)).
7. If you want to create additional maintenance items, choose  with quick info *Create maintenance item*.
8. On the *Scheduling parameters* tab page, maintain the [scheduling parameters \[Ext.\]](#) for the maintenance plan, if required.
9. Save the maintenance plan.

Creating a Maintenance Plan

For more information about working with maintenance plans (for example, scheduling, scheduling parameters, or the object list), see the *Maintenance Planning* component (PM-PRM-MP).

Result

You have created a maintenance plan that you can schedule.

Assigning a Task List to a Maintenance Plan

Assigning a Task List to a Maintenance Plan

Prerequisites

The following prerequisites must be fulfilled:

- You have created a piece of equipment as test equipment.
- You have created a maintenance task list (equipment task list or general maintenance task list).
- If you want to update the measurement documents in Plant Maintenance as an [automatic follow-up action \[Ext.\]](#) for the inspection lot, the following prerequisites also apply:
 - You have assigned a measuring point or counter to this piece of equipment. The characteristic of the measuring point/counter must have been created with reference to a class characteristic of the classification system.
 - You have created master inspection characteristics in Quality Management (QM). For more information, see *Master Inspection Characteristics* in the *Quality Management* component.

If you do not want to use this function, you can also work with task list inspection characteristics.

Procedure

1. Choose *Logistics* → *Quality management* → *Test equipment management* → *Calibration planning* → *Maintenance planning* → *Maintenance plan* → *Change*.
You reach the initial screen for creating a maintenance plan.
2. Enter the necessary data and choose *Enter*.
You reach the *Change Maintenance Plan: Item Data*.
3. Assign a task list to the maintenance plan and create a new general maintenance task list directly from the maintenance plan. The table describes the different options available:

Objective	Menu Path
Selecting a general task list	<i>Goto</i> → <i>Task list</i> → <i>Select general task list</i> → <i>General</i>
Selecting a task list	<i>Goto</i> → <i>Task list</i> → <i>Select task list</i>
Creating a general task list	<i>Goto</i> → <i>Task list</i> → <i>Create general task list</i>

If you have chosen one of these options, you a list of task lists appears which correspond to your selection criteria.

If only **one** task list meets the criteria, the system immediately assigns this task list.

For more information about selecting general maintenance task lists or task lists, see [PM - Maintenance Planning \[Ext.\]](#).

4. To assign a task list, select the required task list and choose *Edit* → *Choose*.

Assigning a Task List to a Maintenance Plan

The system assigns the task list to your maintenance plan. You see that the system has entered the data in the section *Task list data* on the screen.



The following prerequisites must be fulfilled in order to assign a task list to a maintenance item:

- Task list and maintenance item must have the same strategy specifications.
- The status “released” must be set in the task list.

5. Save the maintenance plan.

Result

The system schedules the maintenance plan (according to the setting of the scheduling parameters) automatically. However, you can also start the scheduling of the maintenance plan manually.

Scheduling a Maintenance Plan for the First Time

Scheduling a Maintenance Plan for the First Time

Prerequisites

The following prerequisites must be fulfilled:

- You have created a piece of equipment as test equipment.
- You have assigned a task list (equipment task list or general task list) to the maintenance plan.
- If you want to update the measurement documents in Plant Maintenance as an automatic follow-up action for the inspection lot, the following prerequisites also apply:
 - You have assigned a measuring point or counter to this piece of equipment. The characteristic of the measuring point/counter must have been created with reference to a class characteristic of the classification system.
 - You have created master inspection characteristics in Quality Management (QM). For more information, see *Master Inspection Characteristics* in the *Quality Management* component.

If you do not want to use this function, you can also work with task list inspection characteristics.

For more information about follow-up actions, see [Usage Decision for Inspection Lot \[Ext.\]](#).

Procedure

1. Choose *Logistics* → *Quality management* → *Test equipment management* → *Calibration planning* → *Maintenance planning* → *Scheduling*.

You reach the initial screen for scheduling a maintenance plan.

2. Enter the number of the maintenance plan you want to schedule and choose *Enter*.

You reach the *Schedule Maintenance Plan* screen.

3. To start the scheduling function, choose *Edit* → *Start*.

The system makes the field *Start of cycle* ready for input.

4. Enter the date for the required scheduling start and choose *Enter*.

The system now automatically calculates the task list and maintenance call dates based on the maintenance packages and scheduling parameters.

5. To display the call history, choose *Goto* → *Schedule* → *Scheduled calls*.



You can cancel scheduling. Return to the *Schedule Maintenance Plan* screen and choose *Edit* → *Cancel scheduling*.

6. Save the scheduled maintenance plan.

For more information about working with maintenance plans (for example, automatic scheduling), see [PM - Maintenance Planning \[Ext.\]](#).

Scheduling a Maintenance Plan for the First Time**Result**

The maintenance plan now contains maintenance calls which the system automatically releases for the due date (according to the setting of the scheduling parameters). You can also release the maintenance calls manually.

When a maintenance call is released, the system automatically generates an inspection lot which you can process.

See also:

[Rescheduling a Maintenance Plan \[Page 32\]](#)

Rescheduling a Maintenance Plan

Rescheduling a Maintenance Plan

Prerequisites

If you want to reschedule a maintenance plan, different prerequisites apply according to the types of maintenance plan:

Time-Based Maintenance Plan

To reschedule a time-based maintenance plan using the scheduling function, you must first confirm the maintenance plans called up, for which an order has already been created. After this confirmation, the system performs scheduling **automatically**.

Performance-Based Maintenance Plan and Multiple Counter Plan

Before you reschedule a performance-based maintenance plan, you should ensure that the overall counter reading of the counter which is assigned to the maintenance plan is current. If you reschedule a performance-based maintenance plan, the system assumes that the counter readings are current and calculates the planned dates accordingly. Before the actual scheduling, you must confirm the maintenance plans called up, for which an order has already been provided. After this confirmation, the system performs scheduling **automatically**.

Procedure

1. Choose *Logistics* → *Quality management* → *Test equipment management* → *Calibration planning* → *Maintenance planning* → *Scheduling*.

You reach the initial screen for scheduling a maintenance plan.

2. Enter the number of the maintenance plan that you want to reschedule and choose *Enter*.

You reach the *Schedule Maintenance Plan* screen.

3. To reschedule the maintenance plan, choose *Edit* → *Confirm*.

Further editing depends on the type of maintenance plan. Choose the procedure suitable for you from the following list and proceed accordingly.

Time-Based Maintenance Plans

The system highlights the field *CompConfDate* and proposes a completion confirmation date.

Change this date if necessary and confirm it by choosing *Enter*.

The system then performs the following functions automatically:

- It confirms the last due date with the status *Called, not yet confirmed* as *Called, completed*.
- It recalculates all subsequent calls based on the scheduling parameters. For this, it includes shift factors, new maintenance packages and so on.
- It ensures that there is at least one maintenance call with the status *On hold*.

Performance-Based Maintenance Plans

The system shows the field *Completion confirmation* highlighted and ready for input.

Enter the counter reading and confirm it by choosing *Enter*.

Rescheduling a Maintenance Plan

The system automatically calculates the task list and the maintenance call date based on the maintenance packages, scheduling parameters, estimated annual performance and the counter reading at the start of the cycle. It then displays the following: counter unit, counter reading at the start of the cycle, counter reading for the completion confirmation date and the next planned counter reading for the next due date.

Multiple Counter Plans

The system uses the **current** date as the completion confirmation date and automatically calculates the next planned date based on the maintenance cycles, scheduling parameters, estimated annual performance and the last counter readings. Then it displays the following: counter reading units, last counter readings, next planned counter readings and planned dates.

The planned date for which an order is created depends on the link type in the multiple counter plan. For an OR link, the system selects the earliest planned date, whereas for an AND link, it selects the latest.

4. You can cancel scheduling. Return to the *Schedule Maintenance Plan* screen and choose *Edit → Cancel scheduling*.
5. Save the maintenance plan.

For more information about working with maintenance plans (for example, automatic scheduling), see [PM – Maintenance Planning \[Ext.\]](#).

Result

The maintenance plan now contains maintenance calls which the system releases **automatically** for the due date. However, you can also [release the calls manually \[Page 34\]](#).

When a maintenance plan is released, the system automatically generates an order, and when the order is released, it generates an inspection lot.

Generating an Order and Inspection Lot from a Maintenance Call

Generating an Order and Inspection Lot from a Maintenance Call

To generate a maintenance order and an inspection lot from a maintenance call, there are the following options:

- The system generates an order and an inspection lot **automatically** within the scheduling function. You can influence the date for releasing and generating using the scheduling parameters. In this case, only the prerequisites outlined below must be fulfilled.
- You can release a maintenance call **manually**. When saving, the system generates an order and an inspection lot. The procedure describes the manual release.



If you have chosen an order type in an order which is linked with an inspection type from Quality Management, the system also generates an inspection lot without a maintenance plan when the order is released.

Prerequisites

- You have created a piece of **equipment** as test equipment.
- You have created a **task list** and:
 - Assigned inspection characteristics (for example, diameter, color) to it
 - Maintained the QM data at header and operation level
- You have created a maintenance plan and:
 - Assigned a task list
 - Specified an **order type** which is linked with an inspection type from Quality Management, and thereby allows orders and inspection lots to be generated automatically
- The order has the status *Released*.
- If you want to update the measurement documents in Plant Maintenance as an automatic follow-up action for the inspection lot, the following prerequisites also apply:
 - You have assigned a measuring point or counter to this piece of equipment. The characteristic of the measuring point/counter must have been created with reference to a class characteristic of the classification system.
 - You have created master inspection characteristics in Quality Management (QM). For more information, see *Master Inspection Characteristics* in the *Quality Management* component.



If you do not want to use this function, you can also work with task list inspection characteristics.

For more information about follow-up actions, see [Usage Decision for Inspection Lot \[Ext.\]](#).

Generating an Order and Inspection Lot from a Maintenance Call**Procedure for Manual Release**

If the order should not be released automatically by the system and you want to release it manually, proceed as follows.

1. Choose *Logistics* → *Quality Management* → *Test equipment management* → *Calibration planning* → *Maintenance planning* → *Scheduling*.

You reach the initial screen for scheduling a maintenance plan.

2. Enter the number of the maintenance plan you want to reschedule and choose *Enter*.

You reach the *Schedule Maintenance Plan* screen.

3. Select the maintenance call you want to release and choose *Goto* → *Display schedule* → *Scheduled calls* → *Release call*.



You cannot change the status of a manual call.

The system releases the call and automatically creates an order and inspection lot when you save.

4. Save the maintenance plan.

For more information about working with maintenance plans, see [PM – Maintenance Planning \[Ext.\]](#).

Result

- The system generates an order and an inspection lot which can be processed.
- The system sets the status *ILCR* (inspection lot created) in the order.

Planning in the Order

Planning in the Order

Use

You can use this function if an order was generated for the test equipment created as a piece of equipment when the maintenance call was released. This is used for further planning of work to be performed.

Detailed planning is necessary for a number of reasons, to minimize the time in which the test equipment is not available or of limited availability. Planning the task in more detail will enable the employees to perform the task more efficiently on site.

For an exact description of the individual order planning functions, see *Orders* in the *Maintenance Processing* component (PM-WOC).

Features

Individual functions available for planning in the order include the following:

Material Planning

For each operation in the order, you can schedule the materials which are needed to execute the task. The materials can be bill of material components of the reference object or materials that were created in the system within Materials Management.

Production Resource/Tool Planning

To execute specific order operations, the employees in charge of the task require utilities. These utilities are managed in the system under the term "Production resources/tools" (abbreviated to PRTs). You can plan PRTs for each order operation.

Scheduling

After you have planned an order with all operations and components, you use scheduling to determine the following data:

- The concrete execution date using the data entered in the order and the dates entered in the operations
- The capacity requirement needed to process the order using the data in the operations

Permits

When planning specific work, it may be necessary to observe particular regulations or conditions which are in the form of permits.

These permits can be recorded in the master data of the reference object or entered manually by the maintenance planner.

Cost Estimation

You can specify for an order how high you estimate the cost of executing it will be. You should do this if you still do not have any order data relevant for planning, but the processing costs can already be approximated.

Planned Costing

Many different costs can be incurred when processing an order. To obtain an overview of the costs accruing before the work is performed, you can use the system to estimate the costs automatically for the work planned, and then display them.

Budget Management

The budget is the approved, binding cost ceiling for an order. Whereas in the planning phase, the project costs must be estimated as exactly as possible, the funds are defined during the approval phase in the form of a budget.

Settlement Rules

In order that the costs incurred by executing the maintenance task can be settled correctly, you must enter the correct settlement rule into the system.

Generally, the settlement rule for an order is determined automatically by the system from the object data. However, you can also enter it manually.

Work Scheduling Using Sub-Orders

For extensive orders, involving, for example, several maintenance planner groups, you can create sub-orders for an order that functions as the superior order.

Operation Networking Using Relationships

The chronological sequence and dependency of the individual operations is of utmost importance for effective planning and execution of extensive maintenance work. Therefore, it is important to configure the individual operations for an order chronologically, this means, link and network them with each other. For this, the network function and relationships are also available in the maintenance order.

For more information about orders, see *Orders* in the *Maintenance Processing* component (PM-WOC).