QAD Adaptive Applications

User Guide

QAD EQMS Applications: Equipment Maintenance

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QAD Inc.

100 Innovation Place

Santa Barbara, CA 93108

Phone: + 1 (805) 566-6100

http://www.qad.com

Equipment Maintenance User Guide Change Summary

The following table summarizes significant differences between this document and previous versions.

Date/Version	Description	Reference	Changed By
DEC 2018/v1.2	Initial upload	--	RQT
OCT 2020/v2020.1	Updated application and process names; Updated versioning	--	RQT
MAR 2021/v2021	Updated linkage	--	RQT
MAY 2021/v2021	Added a section for Commands	p. 74	RQT
MAY 2021/v2021.1	Updated versioning	--	RQT
FEB 2022/v2022	Updated versioning	--	RQT
SEPT 2022/v2022.1	Updated versioning	--	RQT
MAR 2023/v2023	Updated versioning	--	RQT
MAR 2024/v2024	Updated versioning	--	RQT
SEPT 2024/v2024.1	Updated versioning	--	RQT
MAR 2025/v2025	Updated versioning	--	RQT

Chapter 1

Introduction

Overview

Any industry invested in mechanical, engineering, plumbing, or electrical equipment knows that part of the responsibility of owning equipment is maintaining it. With any tool or type of equipment, effective maintenance involves performing routine tasks to keep the machinery in working order and to prevent trouble from surfacing. This maintenance can be broken into two categories: preventive and reactive.

Preventive maintenance pertains to regular maintenance wherein equipment is inspected and adjusted to ensure the machinery continues to function properly and avoid breakdown; examples include changing oil and tooling, cleaning machines, sharpening blades, and so on. A subset of preventive maintenance is predictive maintenance, which uses leading indicators to detect when something is beginning to fail (usually through vibrator, temperature/infrared, and more). Reactive maintenance is unscheduled maintenance, in which equipment breaks down or malfunctions and now requires repair or replacement, such as jammed gears or broken drive belts.

Maintenance involves more than just assigning responsibilities – it requires time, money, organization, and manpower. The Equipment Maintenance module simplifies, streamlines, and automates the entire equipment maintenance process. It protects the organization's investment in and longevity of its equipment via planning and facilitation of executing on preventive and predictive maintenance activities. Maintenance costs are tracked using a cost log facility that assigns costs to specific accounts; preventive work is scheduled according to routine requirements and asset usage logs; asset tracking enables users to track equipment downtime, assign maintenance teams or individual responsibilities, and manage all aspects of equipment, from time of purchase to end of service.

About This Guide

This user guide focuses on the:

- Setup required for the Equipment Maintenance module
- Different forms of document organization in the Equipment Maintenance module
- Security and roles for the Equipment Maintenance module
- Instructions for the various Equipment Maintenance tasks

Note: This guide does not provide field descriptions for the Equipment Maintenance module fields. Field help is provided in the software.

Equipment Maintenance Module Setup Guide

This section describes the processes of the Equipment Maintenance module. The list below is arranged by the order in which the processes should be completed, starting with the setup operations and continuing with the main functions.

Setting Up the Equipment Maintenance Module

Tooling and Equipment Types

Use Tooling and Equipment Types to categorize tools and pieces of equipment that have similar characteristics. See "Tooling and Equipment Types" on page 15.

Tooling and Equipment Status

Use Tooling and Equipment Statuses to provide configurable status levels and categorize tools and equipment by in-service and out-of-service. See "Tooling and Equipment Status" on page 16.

Programs

Use Programs to identify a large project that may include many smaller projects. See "Programs" on page 17.

Maintenance Fault Codes

Use Maintenance Fault Codes to identify why equipment failed during production and provide standard categorization of this information. See "Maintenance Fault Codes" on page 18.

Maintenance Teams

Use Maintenance Teams to create a group of people who can be assigned maintenance work orders. See "Maintenance Teams" on page 19.

Maintenance Work Order Types

Use Maintenance Work Order types to define and categorize high-level groups of maintenance work orders to help with planning and assignment. See "Maintenance Work Order Types" on page 20.

Maintenance Work Order Types Responsibilities

Use Maintenance Work Order Types Responsibilities to determine who will become the responsibility of new work orders created for a specific type. See "Maintenance Work Order Types Responsibilities" on page 22.

Production Order Subsystems

Use Production Order Subsystems to supplement the categorization of work orders so that maintenance knows where to focus their attention during repairs. See "Production Order Subsystems" on page 23.

Production Order On Hold Reasons

Use Production Order On Hold Reasons to classify why a work order has been placed on hold. See "Production Order On Hold Reasons" on page 24.

Cost Accounts

Use Cost Accounts to provide billing categories for work log entries in work orders and optionally allow tracking of material quantities. See "Cost Accounts" on page 25.

Asset Meters

Use Asset Meters to configure counters to determine usage-based maintenance scheduling. See "Asset Meters" on page 26.

Using The Equipment Maintenance Module

Tooling and Equipment

Use Tooling and Equipment to document the tooling and equipment in the organization. See "Tooling and Equipment" on page 30.

Maintenance Procedures

Use Maintenance Procedures to create a standardized record for maintenance information. See "Maintenance Procedures" on page 35.

Maintenance Work Order Preventive

Use Maintenance Work Orders Preventive to assign and document preventive maintenance work for equipment. See "Maintenance Work Orders Preventive" on page 40.

Maintenance Work Orders Reactive

Use Maintenance Work Orders Reactive to assign and document the results of both preventive and reactive maintenance for assets. See "Maintenance Work Orders Reactive" on page 45.

Tooling and Equipment Downtime Logs

Use Tooling and Equipment Downtime Logs to track when and why tooling/equipment was taken out of service. See "Tooling and Equipment Downtime Logs" on page 49.

Cost Logs

Use Cost Logs to document the occurrence of a cost to the organization, typically for helping to determine a cost of quality metric. See "Cost Logs" on page 50.

Asset Usage Log

Use Asset Usage Logs to log equipment usage for the creation and tracking of preventive maintenance work orders. See "Asset Usage Log" on page 52.

Getting Started

Before you can begin using the Equipment Maintenance module, it is important to understand the basics of how to navigate and use the EQMS system. The system is intuitive, but some layouts, features, and best practices require a more thorough understanding. See the User Interface user guide for additional information about the EQMS software.

Chapter 2

Setting Up the Equipment Maintenance Module

Introduction

Some preparation is required before tooling and equipment can be added or maintenance procedures set up.

Tooling and equipment definition involves setting up the organization of tooling and equipment by type and status, as well as setting up maintenance types, fault codes (why it failed), and teams responsible for repairs. These tasks are generally performed by the roles of Tooling and Equipment Administrator, Tooling and Equipment Champion, Maintenance Champion, Equipment Maintenance, or Equipment Type Maintenance.

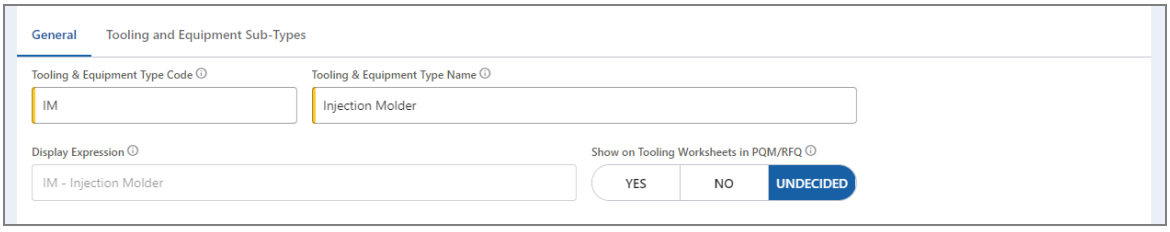
Tooling and Equipment Types

The first step to setting up tooling and equipment in the system is separating them into different types for better organization. The Tooling and Equipment Types process enables you to categorize tooling and equipment with similar characteristics (such as Conveyors) and allows for standardized reporting on categories, which can optionally be broken down further into subtypes. Tooling and equipment subtypes are more precise, such as "Flat-Belt Conveyor", and are typically used for tracking and categorizing purposes.

Tooling and equipment types are used in the following processes of the Equipment Maintenance module for categorization:

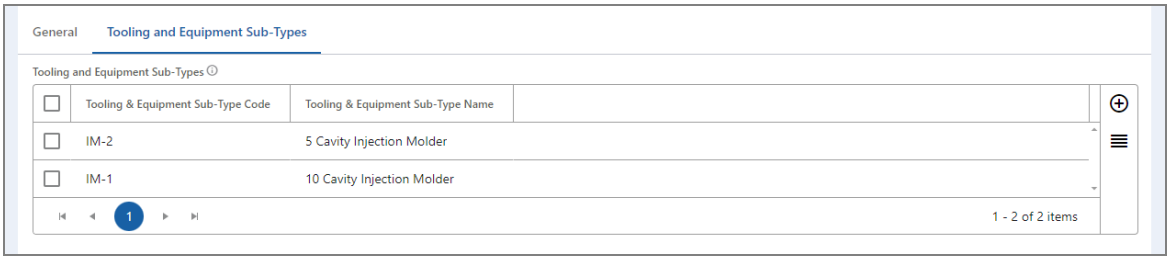
- "Tooling and Equipment" on page 30.
- "Maintenance Procedures" on page 35.
- "Maintenance Work Orders Preventive" on page 40.
- "Maintenance Work Orders Reactive" on page 45.

Fig. 1: Tooling and Equipment Types screen, General tab



The General tab is used to define the basic details of a tooling or equipment type.

Fig. 2: Tooling and Equipment Types screen, Equipment Sub-Types tab



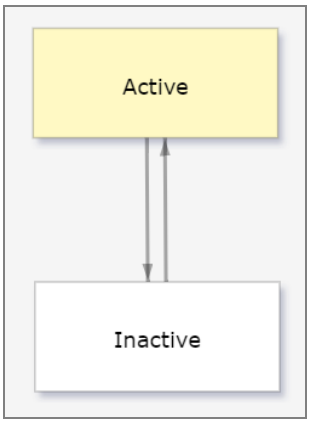
The Tooling and Equipment Sub-Types tab allows users to add a sub-type for further categorization and detail.

Tooling and Equipment Types States

This section defines each state available in the workflow for the Tooling and Equipment Types process. See "State Change Security" on page 67 to learn more about how these states transition.

Active (Default). A tooling or equipment type that is actively used.

Inactive. A tooling or equipment type that is no longer in use.



Tooling and Equipment Types Tasks

Adding a New Tooling and Equipment Type and Sub-Type

1. Select Tooling and Equipment Types from the left navigation panel. Then, click the Add Item button in the toolbar.
2. Enter values for the tooling and equipment type code and name. Notice how the Display Expression field combines the two values; this is how users will look up this type.
3. Click the Save button to save the new record. When selecting the next state, click Active.
4. Navigate to the Tooling and Equipment Sub-Type tab. Click the Add New Item button in the Tooling and Equipment Sub-Types field. A new screen opens.
5. Repeat Steps 2-3, this time in the new screen.

Note: You can toggle between Active and Inactive as needed. When the state is Inactive, the type cannot be used for new records.

Tooling and Equipment Status

The Tooling and Equipment Status process provides configurable status levels and informs the system whether equipment is considered to be in-service or out-of-service.Status examples include Active, Inactive, or Down for Regular Maintenance. If a status is considered active (meaning that the equipment is functioning and in use) then it can be defined as such to let the system know that tooling or equipment with this status is in service.

Tooling and equipment statuses are used in the Tooling and Equipment process to describe why tooling or equipment is active or inactive. See "Tooling and Equipment" on page 30.

Fig. 3: Tooling and Equipment Status process screen

Tooling and Equipment Status States

This section defines each state available in the workflow for the Tooling and Equipment Status process.

There are no states defined for this process.

Tooling and Equipment Status Tasks

Adding a New Tooling and Equipment Status

1. Select Tooling and Equipment Status from the left navigation panel. Then, click the Add Item button in the toolbar.
2. Enter values for the tooling and equipment status code and name. Notice how the Display Expression field combines the two values; this is how users will look up this status.
3. Select the "Active" check box if this status is an active status. This informs the system that any tooling or equipment this status is assigned to is in service.
4. Click the Save button to save the new record.

Programs

Programs are typically created by large organizations to identify a large project that may include many smaller projects. In the automotive vertical, it is common to see programs involving several part numbers associated with future model builds of a particular vehicle, such as the 2020 Ford Bronco. In the Life Sciences vertical, it is common to have several parts and ingredients associated with a medical device or formula.

Programs contain the overhead information for a project, including the name, location, initiated date, and people involved. The remaining fields of this process are for future functionality.

Programs are used in the Tooling and Equipment process to associate a tool or piece of equipment with a single program. See "Tooling and Equipment" on page 30.

Maintenance Fault Codes

Maintenance fault codes are used to identify why equipment failed during production and provide standard categorization of this information. Once the cause of a machine's failure is established, this information can be analyzed to improve preventive maintenance on equipment. One example could be if your equipment stopped working and you used a maintenance fault code labeled "Blown Fuse/Breaker". Later, the Tooling and Equipment Administrator can look up how many work orders were submitted under this fault code and determine if there is a bigger problem at hand.

Maintenance fault codes are used in the Maintenance Work Orders Reactive process to identify why a tool or piece of equipment failed. See "Maintenance Work Orders Reactive" on page 45.

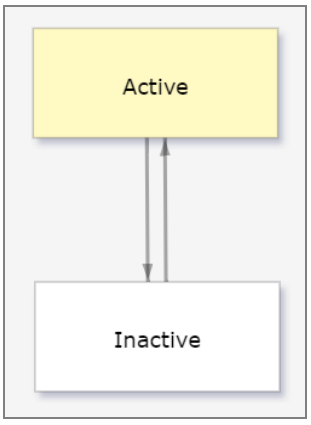
Fig. 4: Maintenance Fault Codes process screen

Maintenance Fault Codes States

This section defines each state available in the workflow for the Maintenance Fault Codes process. See "State Change Security" on page 67 to learn more about how these states transition.

Active (Default). A fault code that is actively used.

Inactive. A fault code that is no longer in use.



Maintenance Fault Codes Tasks

Adding a New Maintenance Fault Code

1. Select Maintenance Fault Codes from the left navigation panel. Then, click the Add Item ⊞ button in the toolbar.
2. Enter values for the fault code and description. Notice how the Display Expression field combines the two values; this is how users will look up this code.
3. Click the Save button to save the new record. When selecting the next state, click Active.

   Note: You can toggle between Active and Inactive as needed. When the state is Inactive, the code cannot be used for new records.

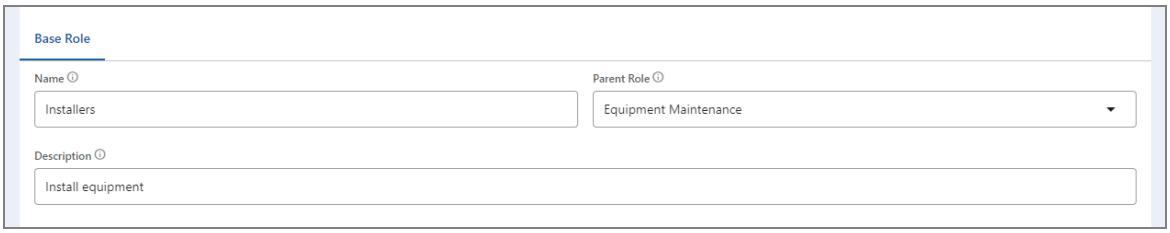
Maintenance Teams

Maintenance teams allow you to create a group of people who can be assigned maintenance work orders. These teams are based on roles and are primarily used for actions. Examples of maintenance teams include Install Equipment, Routine Maintenance, and Hazard Cleanup.

Maintenance teams are used in the Maintenance Work Orders Reactive and Preventive processes to assign the maintenance team responsible for completing the work order. See "Maintenance Work Orders Preventive" on page 40 and "Maintenance Work Orders Reactive" on page 45.

Employees are assigned to maintenance teams in the Maintenance Work Order Types Responsibilities process. See "Maintenance Work Order Types Responsibilities" on page 22.

Fig. 5: Maintenance Teams process screen

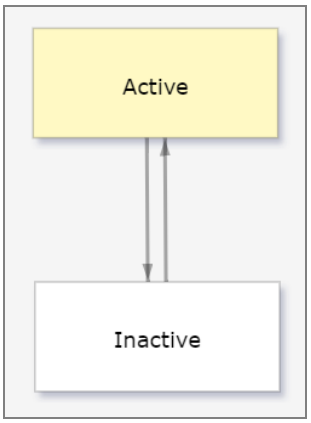


Maintenance Teams States

This section defines each state available in the workflow for the Maintenance Teams process. See "State Change Security" on page 67 to learn more about how these states transition.

Active (Default). A maintenance team that is actively used.

Inactive. A maintenance team that is no longer in use.



Maintenance Teams Tasks

Adding a New Maintenance Team

1. Select Maintenance Teams from the left navigation panel. Then, click the Add Item button in the toolbar.
2. Add a unique name and description for the maintenance team.
3. Select a parent role from the drop-down list to associate with this maintenance team.
4. Click the Save button to save the new record. When selecting the next state, click Active.

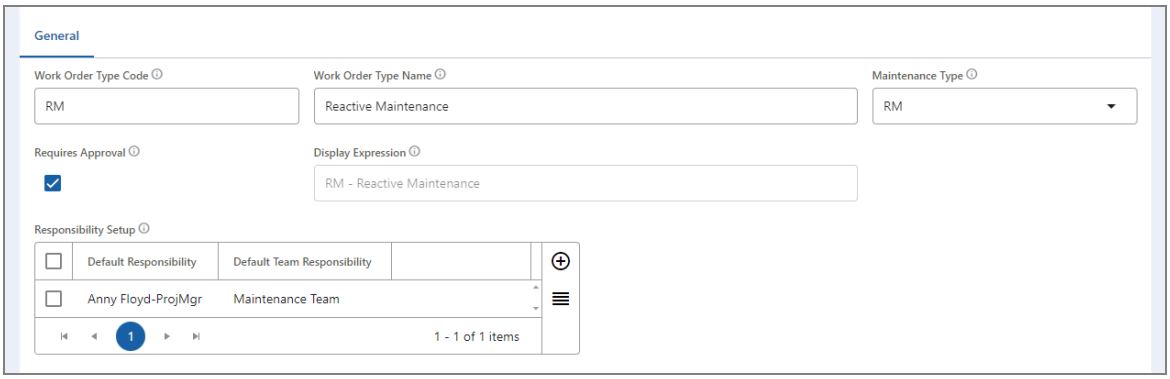
   Note: You can toggle between Active and Inactive as needed. When the state is Inactive, the maintenance team cannot be used for new records.

Maintenance Work Order Types

Maintenance work order types allow you to define and categorize high-level groups of maintenance work orders to help with planning and assignment. These work order types can refer to a general location (such as Tool Room or Facilities), a general process (such as Preventive Maintenance, Change Over, or Calibration), or anything else that may require further categorization (such as Project or Controls). A work order type can determine whether or not a work order requires approval by the owner of that work order.

Maintenance work order types are used in the Maintenance Work Orders Reactive and Preventive processes to classify what type of work order has been requisitioned. See "Maintenance Work Orders Preventive" on page 40 and "Maintenance Work Orders Reactive" on page 45.

Fig. 6: Maintenance Work Order Types process screen

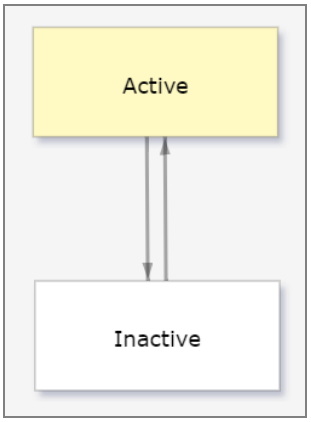


Maintenance Work Order Types States

This section defines each state available in the workflow for the Maintenance Work Order Types process. See "State Change Security" on page 67 to learn more about how these states transition.

Active (Default). A work order type that is actively used.

Inactive. A work order type that is no longer in use.



Maintenance Work Order Types Tasks

Adding a New Maintenance Work Order Type

1. Select Maintenance Work Order Types from the left navigation panel. Then, click the Add Item ⊞ button in the toolbar.
2. Enter values for the work order type code and name. Notice how the Display Expression field combines the two values; this is how users will look up this work order type.
3. Select the type of maintenance this type applies to.
   - **PM** – Preventive Maintenance
   - **RM** – Reactive Maintenance
4. Select the "Requires Approval" check box if this work order type requires approval before it can be completed.

If the "Requires Approval" check box is selected and the Maintenance Type is set to RM, a new field appears titled Responsibility Setup. See "Maintenance Work Order Types Responsibilities" below to learn more about completing this field.

5. Click the Save button to save the new record. When selecting the next state, click Active.

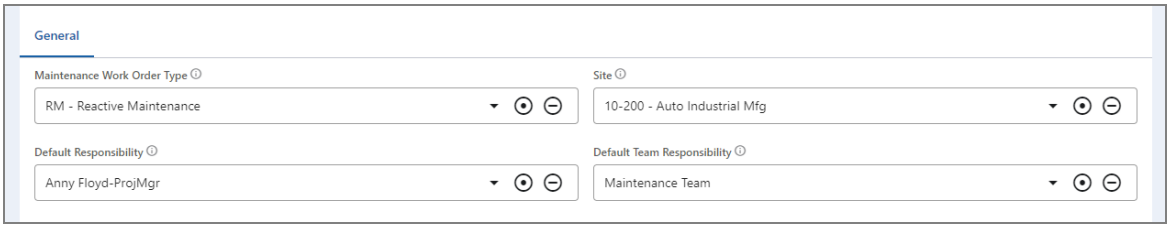
   Note: You can toggle between Active and Inactive as needed. When the state is Inactive, the work order type cannot be used for new records.

Maintenance Work Order Types Responsibilities

Maintenance work order types responsibilities determine who will become the responsibility of new work orders created for a specific type, further filtered by site. You can also use this process to assign a user to a maintenance team.

Maintenance work order types responsibilities are used in the Maintenance Work Order Types process to set up a matrix of default responsibilities for that type. See "Maintenance Work Order Types" on page 20.

Fig. 7: Maintenance Work Order Types Responsibilities process screen



Maintenance Work Order Types Responsibilities States

This section defines each state available in the workflow for the Maintenance Work Order Types process.

There are no states defined for this process.

Maintenance Work Order Types Responsibilities Tasks

Adding a New Maintenance Work Order Type Responsibility

Maintenance work order type responsibilities are typically set up in the Maintenance Work Order Types process. The field for this setup appears if the work order type's maintenance type is set to RM or if the "Requires Approval" check box is selected.

1. In the Maintenance Work Order Types detail screen, click the Add New Item button. A new screen appears.
2. Select an individual user and a maintenance team to be the default responsibility of work orders created with this type.
3. Click the Save button.

4. Back in the Maintenance Work Order Types screen, click the Save button one more time. When selecting the next state, click Active.

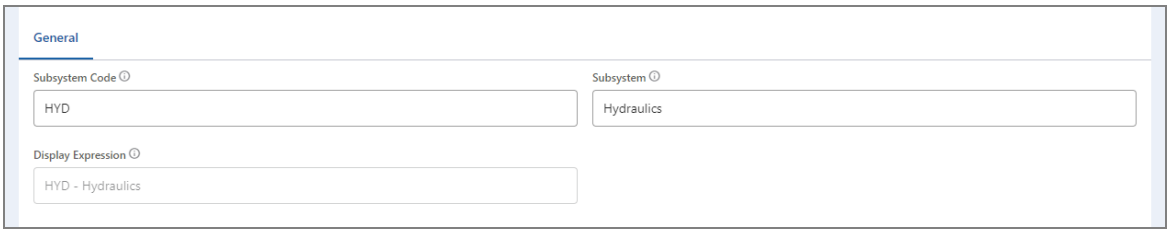
Production Order Subsystems

Production order subsystems supplement the categorization of work orders so that maintenance knows where to focus their attention during repairs. For example, if you discovered a hydraulic leak while conducting a PM on a forklift truck, the resulting reactive maintenance work order might be organized as follows:

- Equipment – *Forklift truck*
- Work Order Type – *RM*
- Fault Code – *Fluid leak*
- Production Order Subsystem – *Hydraulic*

Production Order Subsystems are used in the Maintenance Work Orders Reactive process to categorize which part of a piece of equipment requires maintenance. See "Maintenance Work Orders Reactive" on page 45.

Fig. 8: Production Order Subsystems process screen

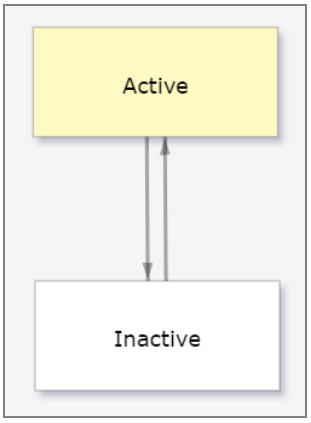


Production Order Subsystems States

This section defines each state available in the workflow for the Production Order Subsystems process. See "State Change Security" on page 67 to learn more about how these states transition.

Active (Default). A production order subsystem that is actively used.

Inactive. A production order subsystem that is no longer in use.



Production Order Subsystems Tasks

Adding a New Production Order Subsystem

1. Select Production Order Subsystems from the left navigation panel. Then, click the Add Item ⊞ button in the toolbar.
2. Enter values for the subsystem code and name. Notice how the Display Expression field combines the two values; this is how users will look up this subsystem.
3. Click the Save button to save the new record. When selecting the next state, click Active.

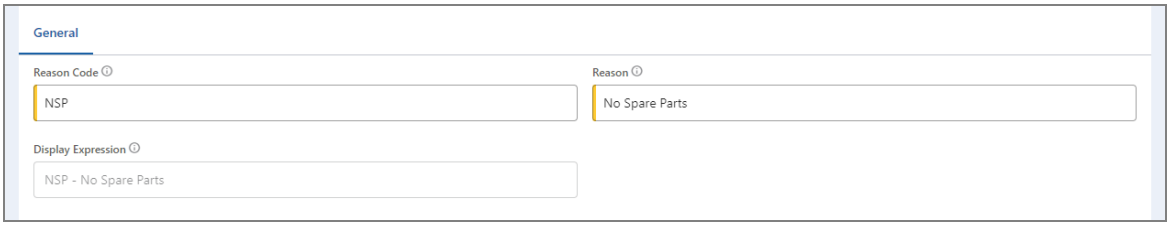
   Note: You can toggle between Active and Inactive as needed. When the state is Inactive, the subsystem cannot be used for new records.

Production Order On Hold Reasons

Sometimes unplanned setbacks make it necessary for a work order to be put on hold, preventing it from proceeding or being completed. The reasons for an on hold status vary: perhaps the repairs involve more work than was originally budgeted, or the issue requires more manpower than is available, or maybe maintenance ran out of the materials necessary for completing repairs.

Production order on hold reasons are used in the Maintenance Work Orders Reactive and Preventive processes to classify why the work order has been placed on hold. See "Maintenance Work Orders Preventive" on page 40 and "Maintenance Work Orders Reactive" on page 45.

Fig. 9: Production Order On Hold Reasons process screen

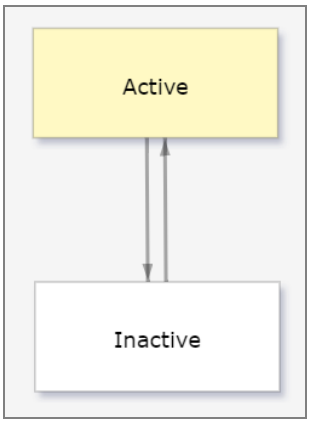


Production Order On Hold Reasons States

This section defines each state available in the workflow for the Production Order On Hold Reasons process. See "State Change Security" on page 67 to learn more about how these states transition.

Active (Default). A production order on hold reason that is actively used.

Inactive. A production order on hold reason that is no longer in use.



Production Order On Hold Reasons Tasks

Adding a New Production Order On Hold Reason

1. Select Production Order On Hold Reasons from the left navigation panel. Then, click the Add Item ⊞ button in the toolbar.
2. Enter values for the reason code and name. Notice how the Display Expression field combines the two values; this is how users will look up this reason.
3. Click the Save button to save the new record. When selecting the next state, click Active.

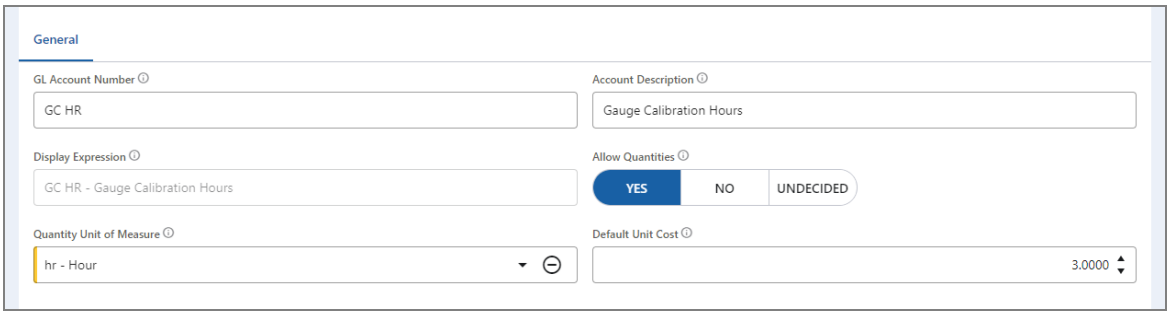
   Note: You can toggle between Active and Inactive as needed. When the state is Inactive, the reason cannot be used for new records.

Cost Accounts

Cost accounts provide billing categories for work log entries in work orders and optionally allow tracking of material quantities. They are typically tied to the general ledger and allow you to associate costs with the groups defined on the general ledger for cost tracking purposes.

Cost accounts are used by Cost Logs to configure unit quantities and costs. See "Cost Logs" on page 50.

Fig. 10: Cost Accounts process screen

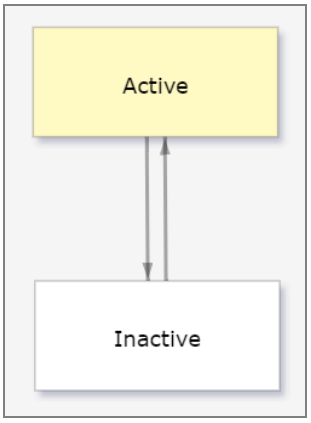


Cost Accounts States

This section defines each state available in the workflow for the Cost Accounts process. See "State Change Security" on page 67 to learn more about how these states transition.

Active (Default). A cost account that is actively used.

Inactive. A cost account that is no longer in use.



Cost Account Tasks

Adding a New Cost Account

1. Select Cost Accounts from the left navigation panel. Then, click the Add Item button in the toolbar.
2. Enter values for the general ledger account number and account description. Notice how the Display Expression field combines the two values; this is how users will look up this cost account.
3. If you want to allow quantities to be entered for log entries created using this cost account, then set the "Allow Quantities" toggle to YES.
4. If "Allow Quantities" is set to YES, a new field appears titled Quantity Unit of Measure. Select a quantity that will be used for all entries using this cost account (i.e. box).
5. In the Default Unit Cost field, indicate the cost of one unit of the indicated measure (i.e. $5 per box).
6. Click the Save button to save the new record. When selecting the next state, click Active.

Note: You can toggle between Active and Inactive as needed. When the state is Inactive, the cost account cannot be used for new records.

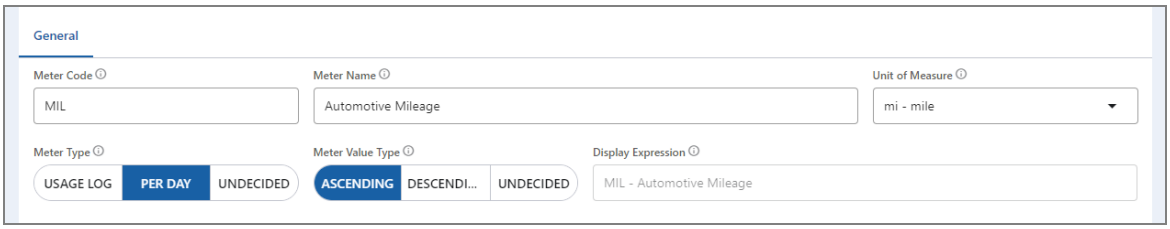
Asset Meters

Asset meters are used to configure counters to determine usage-based maintenance scheduling. They can be based on usage logs (manual usage) or a fixed amount per day. Asset meters can be associated with one or more assets, such as equipment, and can then be used to define when

preventive maintenance should occur based on meter thresholds. Examples of asset meters include Number of Parts Produced, Number of Hours Used, or a vehicle's odometer reading.

Asset meters are used by the Asset Usage Log process when usage logs have been selected in order to record equipment usage. See "Asset Usage Log" on page 52.

Fig. 11: Asset Meters process screen

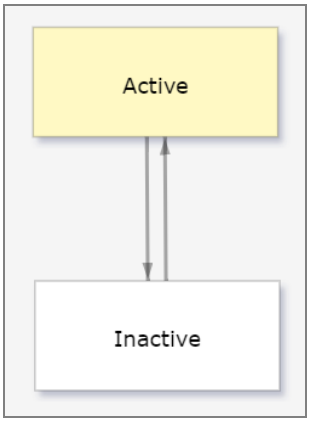


Asset Meters States

This section defines each state available in the workflow for the Asset Meters process. See "State Change Security" on page 67 to learn more about how these states transition.

Active (Default). An asset meter that is actively used.

Inactive. An asset meter that is no longer in use.



Asset Meters Tasks

Adding a New Asset Meter

1. Select Asset Meters from the left navigation panel. Then, click the Add Item button in the toolbar.
2. Enter values for the meter code and name. Notice how the Display Expression field combines the two values; this is how users will look up this asset meter.
3. Select a unit of measure for this meter.
4. Select the meter type to determine the meter's source of values.
    - **Per Day.** Each value is calculated as a fixed number per day, in instances where you know the consumption rate. An example would be the tracking of oil

for a CNC machine. The asset meter would track the amount of oil used per day, since this is used at a fixed rate.

- **Usage Log.** The meter is connected to the Asset Usage Log process, which requires users to manually add records of when equipment is used. An example would be a company car; since the car is not used on a consistent basis, a log must be entered each time the car is driven in order to determine when the oil or other fluids must be changed.

Note: The values are not set up in Asset Meters; rather, this process is used as the general configuration. The values will be set in either the Asset Usage Log or Equipment Maintenance Procedure, depending on the Meter Type that is selected.

5. Select the meter value type to determine whether the consumption rate is ascending or descending. There is also an Undecided option.
    - **Ascending.** The meter will count higher. Useful for situations where the meter increments toward a future milestone, such as an odometer.
    - **Descending.** The meter will count lower. Useful for situations where material runs out, such as a gas gauge.
6. Click the Save button to save the new record. When selecting the next state, click Active.

    Note: You can toggle between Active and Inactive as needed. When the state is Inactive, the asset meter cannot be used for new records.

Chapter 3

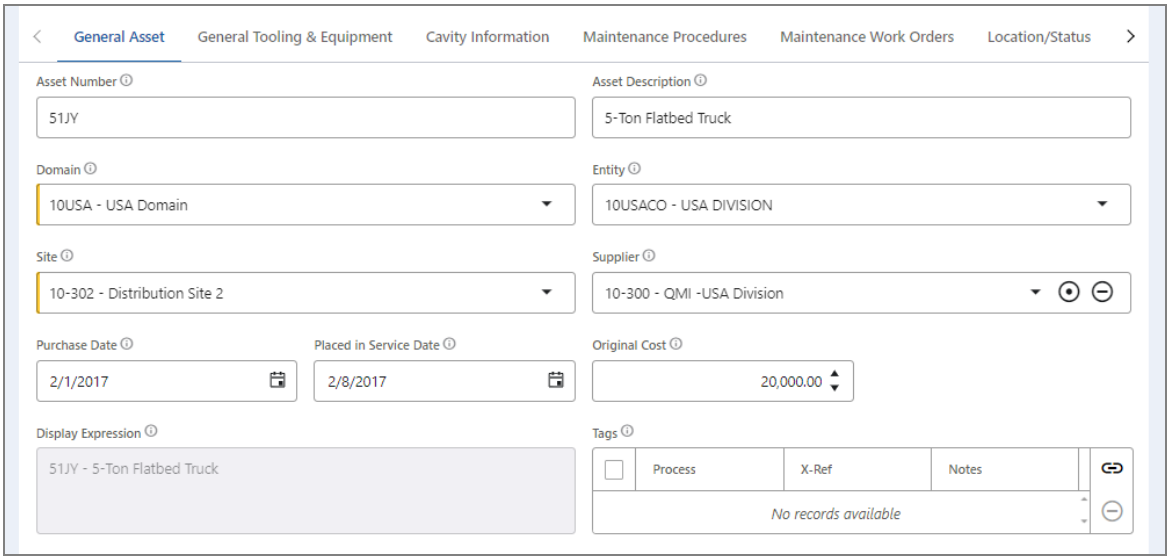
Using the Equipment Maintenance Module

Tooling and Equipment

Tooling and Equipment allows you to document the tools and equipment within your organization. This documentation includes the associated maintenance information, both preventive and reactive for tracking purposes. Tooling and equipment is used in the following processes of the Equipment Maintenance module:

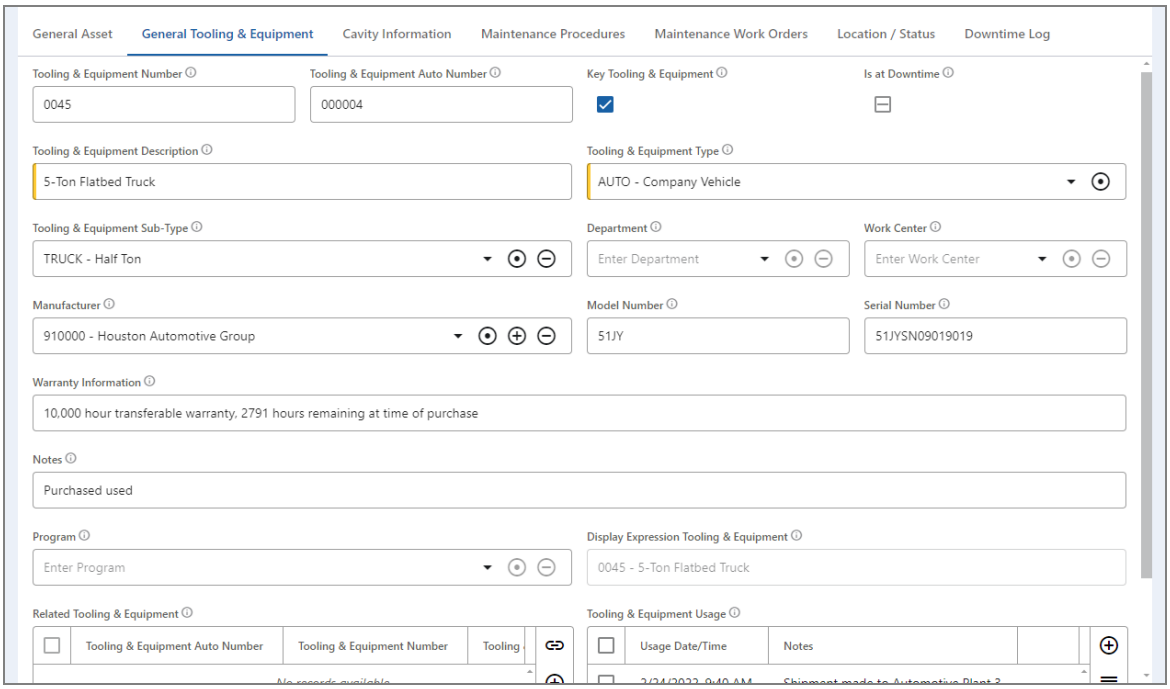
- By Maintenance Procedures to identify which tools and equipment use a specific maintenance procedure. See "Maintenance Procedures" on page 35.
- By Maintenance Work Orders Preventive and Reactive to determine which tools and equipment require maintenance. See "Maintenance Work Orders Preventive" on page 40 and "Maintenance Work Orders Reactive" on page 45.
- By Tooling and Equipment Downtime Logs to determine which tools and equipment are experiencing downtime and requires repairs. See "Tooling and Equipment Downtime Logs" on page 49.
- By Asset Usage Logs to link a tool or piece of equipment to a log that will trigger a preventive maintenance work order. See "Asset Usage Log" on page 52.

Fig. 12: Tooling and Equipment screen, General Asset tab



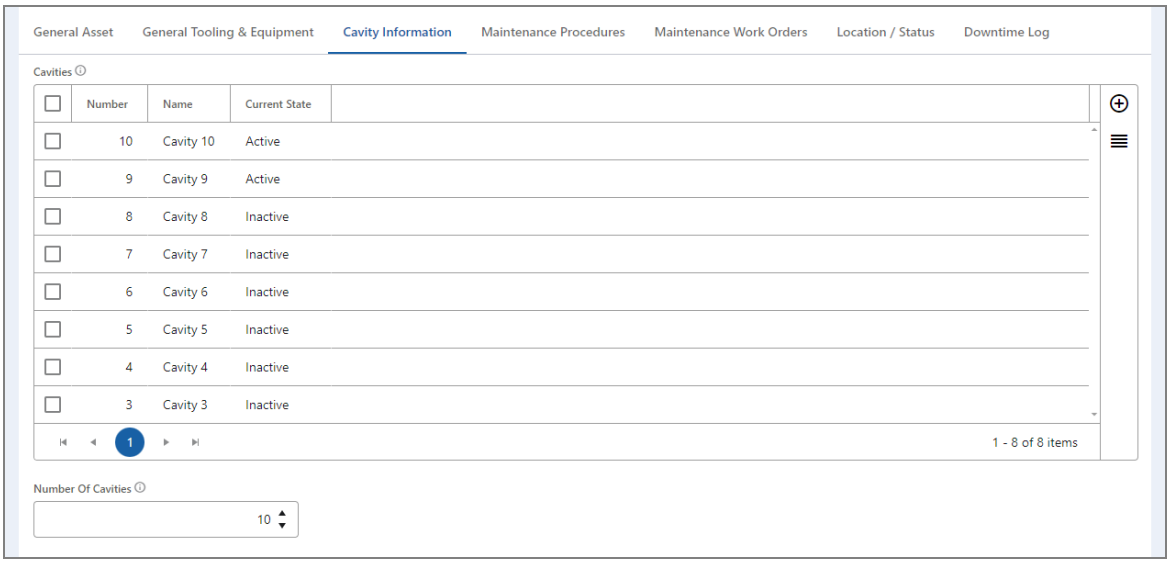
The General tab is used to define the basic details of a tool or piece of equipment.

Fig. 13: Tooling and Equipment screen, General Tooling & Equipment tab



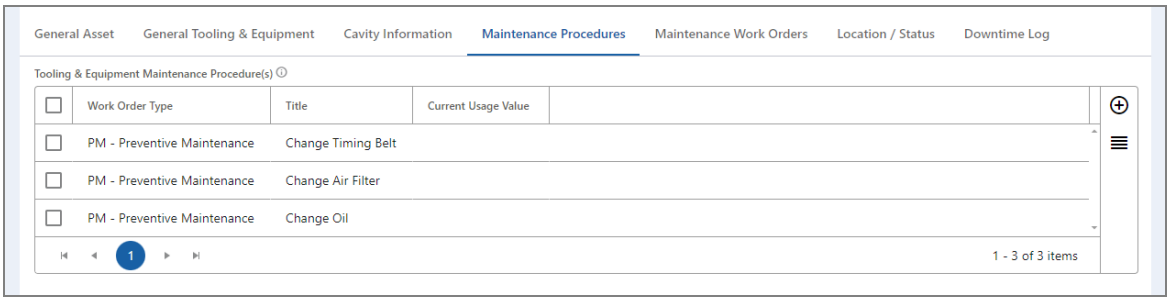
The General Tooling & Equipment tab contains most specific details of the tool or equipment, such as the type and sub-type, the manufacturer, the warranty information, and more. Use this tab to indicate if this tool or equipment is vital to the organization, is at downtime, and whether it is used for a single program.

Fig. 14: Tooling and Equipment screen, Cavity Information tab



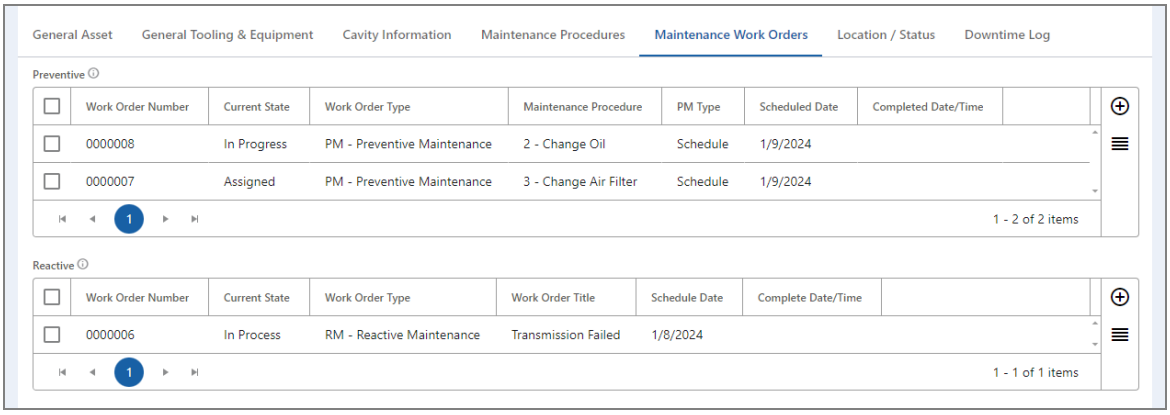
Some tools and equipment, such as an injection molding press, contain cavities. The Cavity Information tab allows you to specify how many cavities a machine has and whether they are active. You can also name each cavity, which is useful if they are not identical.

Fig. 15: Tooling and Equipment screen, Maintenance Procedures tab



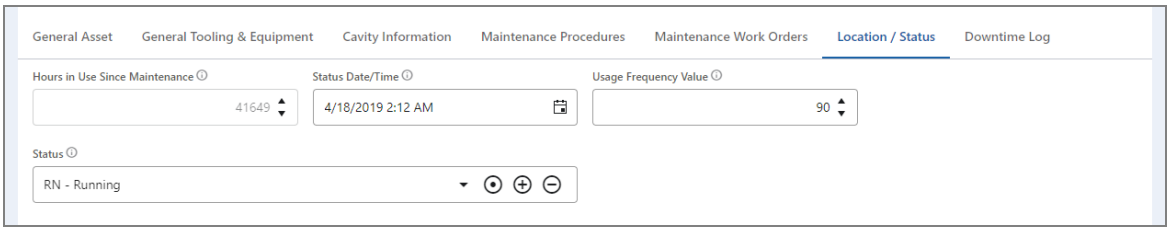
Use the Maintenance Procedures tab to set up the maintenance procedures that apply to the tool or piece of equipment. See "Maintenance Procedures" on page 35 to learn more about completing this tab.

Fig. 16: Tooling and Equipment screen, Maintenance Work Orders tab



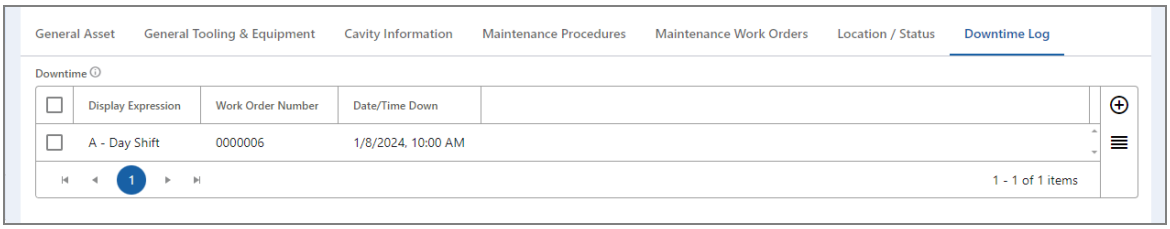
If there are any maintenance work orders (preventive or reactive) related to the tool or equipment, then list them in the Maintenance Work Orders tab. See "Maintenance Work Orders Preventive" on page 40 and "Maintenance Work Orders Reactive" on page 45 to learn more about completing this tab.

Fig. 17: Tooling and Equipment screen, Location/Status tab



Use the Location/Status tab to indicate a tool or equipment's status, frequency of usage, and how many active hours have passed since the last maintenance. This is useful for tools and equipment whose maintenance is scheduled by the number of hours active, rather than by the usage amount.

Fig. 18: Tooling and Equipment screen, Downtime Log tab



Use the Downtime Log tab to list how many, if any, times that the tool or equipment has been inactive due to a work order. See "Tooling and Equipment Downtime Logs" on page 49 to learn more about completing this tab.

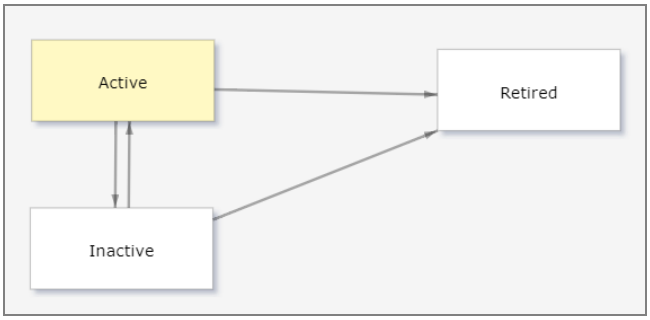
Tooling and Equipment States

This section defines each state available in the workflow for the Equipment process. See "State Change Security" on page 67 to learn more about how these states transition.

Active (Default). A piece of equipment that is actively used.

Inactive. A piece of equipment that is no longer in use.

Retired. A piece of equipment that has been retired permanently from use.



Tooling and Equipment Tasks

Adding a New Tooling and Equipment Record

1. Select Tooling and Equipment from the left navigation panel. Then, click the Add Item button in the toolbar.
2. In the General Asset tab, enter an asset number and description.
3. Select a supplier, purchase date, and the date that the tool or equipment was placed in service.
4. Navigate to the General Tooling & Equipment tab. Enter an tooling & equipment number and description, then select a tooling & equipment type and sub-type.
5. If this tool or equipment can impact product quality and the ability for the organization to deliver to the customer, then select the "Key Equipment" check box. If this tool or equipment is currently down, then select the "Is at Downtime" check box.

6. Use the remaining fields in this tab to add any additional information about the tool or equipment, such as the model and serial number, warranty information, and general notes.
7. Navigate to the Location/Status tab. Select the tooling & equipment status and the usage frequency value.

   Note: The usage frequency value determines how many "units of use" (such as hours or usage) should trigger a preventive maintenance work order.

8. Click the Save button to save the new record. When selecting the next state, click Active.

Adding Cavities to a Tooling and Equipment Record

Some items, such as an injection molding press, contain cavities. The Tooling and Equipment process has a tab for tracking these cavities.

1. In the Tooling and Equipment detail screen, navigate to the Cavity Information tab.
2. In the Number of Cavities field, select the maximum amount of cavities used by this item.
3. Click the Save button to save the record. When selecting the next state, click Active.
4. Once the screen has refreshed, note that the Cavities field has automatically populated with the same number of records as you indicated in Step 2.
5. Double-click a cavity record. A new screen appears.
6. Enter the name of the cavity.
7. Click the Save button to save the record. If this is a functioning cavity, select Active. If the cavity is not functioning or not being used, select Inactive.
8. Repeat Steps 5-7 for each cavity record.

   Note: You can add individual cavities with the Add New Item button in the Cavities field. The new record screen will open, and you can enter the cavity name and number.

Adding a New Tooling and Equipment Usage Log

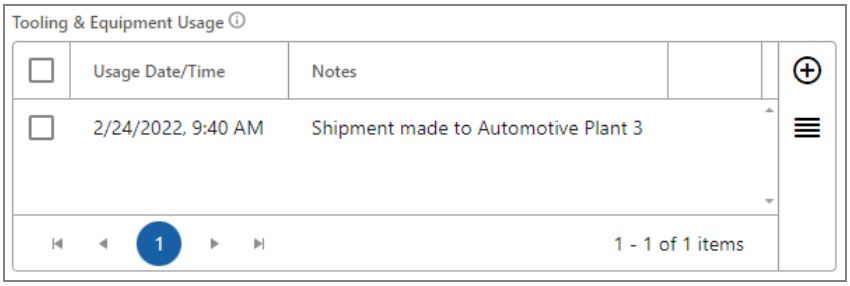
Some tools and equipment require preventive maintenance to be conducted based on its usage. This requires users to add entries to an asset usage log, which determines when the next preventive work order should be scheduled.

For information on how to add an asset usage log directly from the Asset Usage Log process, see "Adding a New Asset Usage Log" on page 53.

1. In the Tooling and Equipment process detail screen, navigate to the General Tooling & Equipment tab.
2. Click the Add New Item button in the Tooling & Equipment Usage field. A new screen appears.
3. Add the appropriate usage unit of measure and usage value. For example, if you are logging the miles driven by a company vehicle, you would select "mi" in the Usage Unit of Measure field and enter the amount of miles in the Usage Value field.
4. Enter notes to give information about this usage, such as where the company vehicle was driven.

5. Click the Save button to save the new record. When selecting the next state, click Update Asset.
6. Back in the Tooling and Equipment screen, scroll back to the Tooling & Equipment Usage field to see each entry. Once enough entries have been added, they will trigger an event that creates a preventive work order.

Fig. 19: Tooling & Equipment Usage field, Tooling and Equipment process



Maintenance Procedures

Tools and equipment requiring preventive maintenance have specific rules and procedures of how to properly conduct the maintenance. The Maintenance Procedures process provides a standardized record of this maintenance information, and allows the configuration of default usage information.

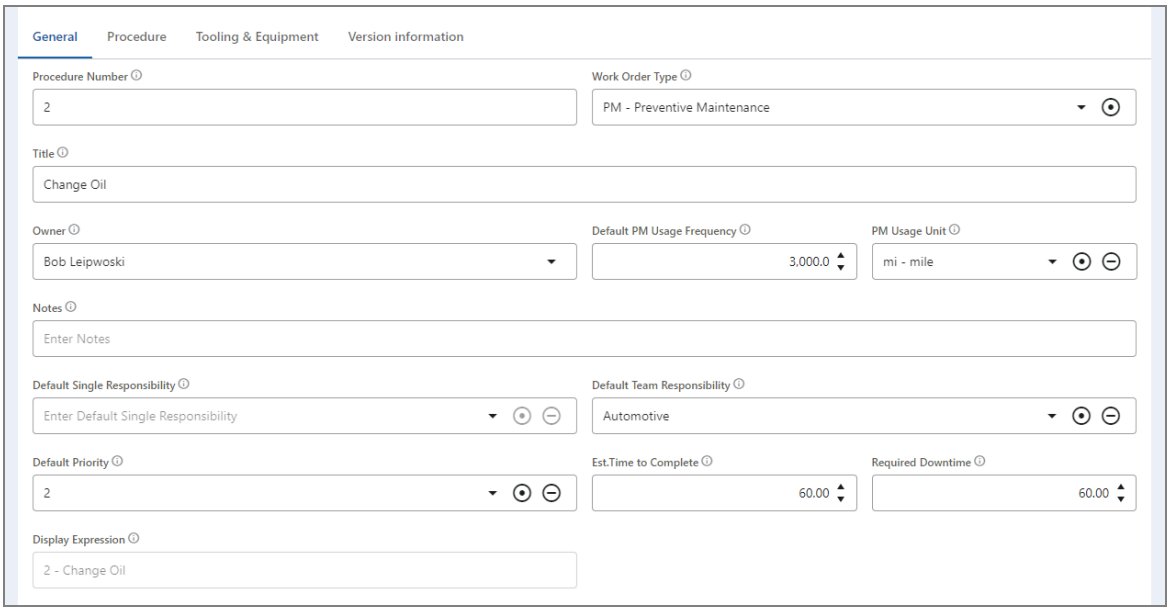
Some details that may be required for preventive maintenance include the parts required for maintenance, the amount of time required for maintenance and machine downtime, which team is responsible for conducting the maintenance, and more. You may even include the precise steps required for routine maintenance and a copy of the equipment's user manual.

Maintenance procedures are used in the following processes of the Equipment Management module:

- By Maintenance Work Orders Preventive to determine the proper procedure that must be performed during maintenance. See "Maintenance Work Orders Preventive" on page 40.
- By Tooling and Equipment to establish the PM Interval Value and determine the proper procedure that must be performed during maintenance. See "Tooling and Equipment" on page 30.

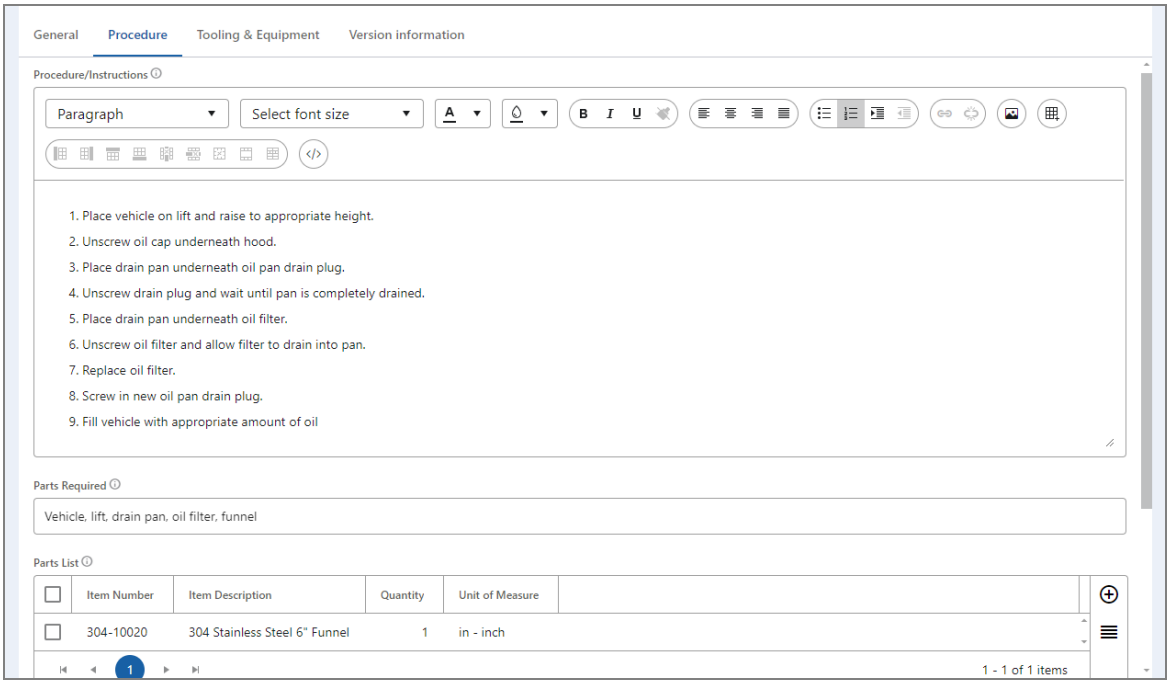
This process contains commands. See "Commands" on page 74 for more information.

Fig. 20: Maintenance Procedures screen, General tab



The General tab is used to define the basic details of a maintenance procedure. If the procedure involves tooling and equipment whose preventive maintenance is based on its usage, then the frequency and unit of usage can be included here. See "Asset Meters" on page 26 for more information about usage logs.

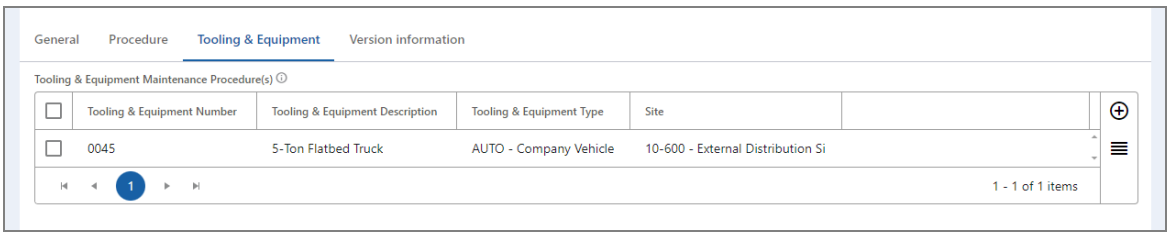
Fig. 21: Maintenance Procedures screen, Procedure tab



Use the Procedure tab to document the maintenance procedure or give detailed instructions. The Procedure/Instructions field is rich text, which means you can format the text in several ways,

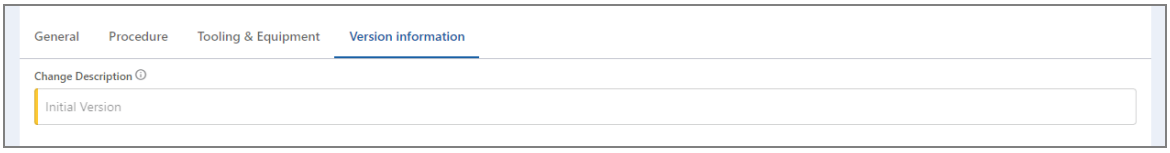
such as insert pictures and hyperlinks or adjust fonts and colors. You should also list any parts or associated documents belonging to this procedure.

Fig. 22: Maintenance Procedures screen, Tooling & Equipment tab



Use this tab to select the tooling and equipment that use this maintenance procedure.

Fig. 23: Maintenance Procedures screen, Version Information tab



When the Start New Version command is used, this tab contains the change description. The Change Description field must be populated before the record can be made official, even if the current version is the initial version.

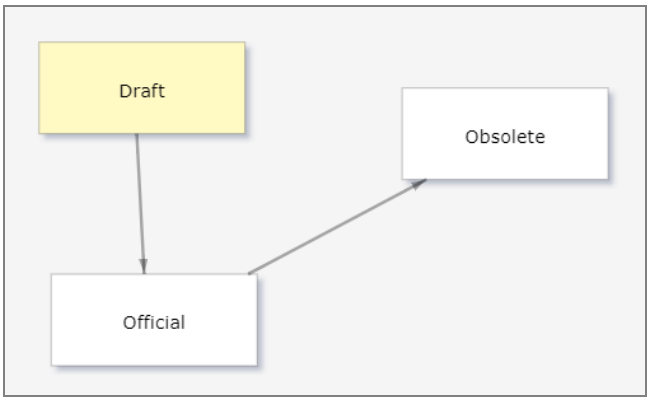
Maintenance Procedures States

This section defines each state available in the workflow for the Maintenance Procedures process. See "State Change Security" on page 67 to learn more about how these states transition.

Draft (Default). A maintenance procedure that is still being developed.

Official. An official maintenance procedure that is ready for use.

Obsolete. An obsolete maintenance procedure that shall no longer be used.



Maintenance Procedures Tasks

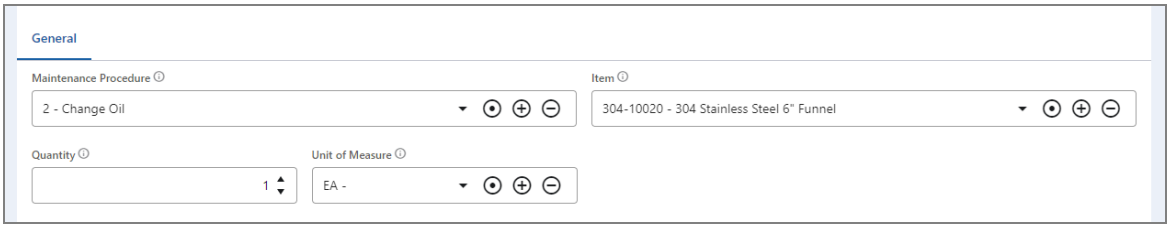
Adding a New Maintenance Procedure

1. Select Maintenance Procedures from the left navigation panel. Then, click the Add Item button in the toolbar.
2. Enter a title and select a work order type and owner.
3. If this maintenance procedure will be used in asset usage logs, then complete the Default PM Usage Frequency and PM Usage Unit fields.
4. Select the person or team responsible for completing this procedure.
5. Select a default priority.
6. Set the estimated amount of minutes the procedure will take, as well as the required downtime.
7. Navigate to the Procedure tab. Use the Procedure/Instructions field to document the maintenance instructions. It is best to add all steps and details involved.

   Note: The Procedure/Instructions tab field uses rich text, which means you can format the text with different fonts and colors, as well as insert pictures and hyperlinks. This is useful for emphasizing caution, displaying diagrams, organizing priorities, and more.

8. Click the Save button to save the new record. When selecting the next state, click Draft.
9. List the parts required for maintenance, then use the Add New Item button in the Parts List field to link specific items to the record.

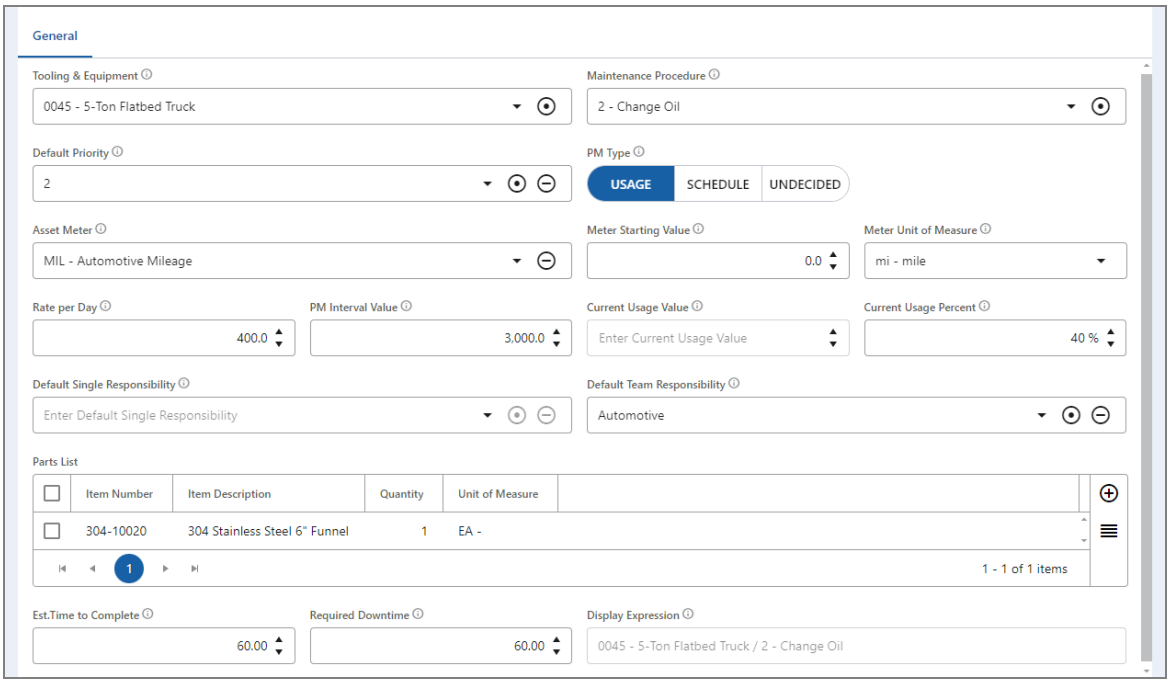
Fig. 24: Maintenance Procedures Parts screen



10. Click the Save button to save the record. When selecting the next state, click Draft.

Adding Tooling and Equipment to a Maintenance Procedure

Fig. 25: Tooling & Equipment Maintenance Procedure screen



1. There are two ways to add an equipment entry to a maintenance procedure:
    a. In the Maintenance Procedure detail screen, navigate to the Tooling & Equipment tab. Then, click the Add New Item ⊕ button in the Tooling & Equipment Maintenance Procedures field. A new screen opens.
    b. In the Tooling and Equipment detail screen, navigate to the Maintenance Procedures tab. Then, click the Add New Item button in the Tooling & Equipment Maintenance Procedures field. A new screen opens.
2. Select the associated Tooling and Equipment or Maintenance Procedure record. Whichever record the tooling & equipment maintenance procedure originated from, that field is populated by default.

    Note: You can only select the current maintenance procedure from the drop-down list if it has been saved as Official. Otherwise, it will not appear on the list.

3. Select an asset meter. This selection will automatically populate the PM Type, Meter Starting Value, Meter Unit of Measure, and PM Internal Value fields. See "Asset Meters" on page 26 for more information.
4. Enter the rate per day that should be used for the selected asset meter.
5. Select a default priority and default single or team responsibility.
6. Click the Save button to save the record. When selecting the next state, click Active.
7. Back in the Maintenance Procedures screen, navigate to the Version Information tab.
8. Enter a description in the Change Description field. If this is the first version of the maintenance procedure, then enter Initial Version.
9. Click the Save button to save the record. When selecting the next state, click Official.

Maintenance Work Orders Preventive

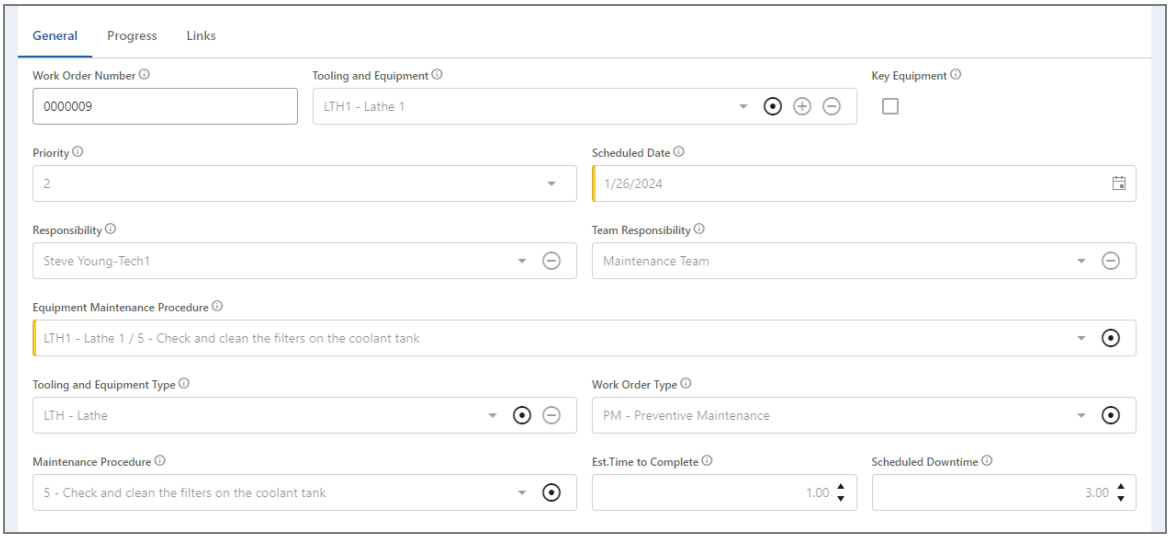
Preventive maintenance is an important part of ensuring manufacturing is not interrupted by malfunctioning equipment. It includes tasks such as changing oil, cleaning machines, sharpening blades, and any other routine maintenance that must be regularly completed. Preventive maintenance work orders are used to assign and document preventive maintenance work for equipment.

Maintenance Work Orders Preventive are used in the following processes of the Equipment Management module:

- By Tooling and Equipment to track instances when a preventive maintenance work order was required for a specific tool or equipment. See "Tooling and Equipment" on page 30.
- By Tooling and Equipment Downtime Logs to link which work orders were related to the repairs performed on a tool or piece of equipment. See "Tooling and Equipment Downtime Logs" on page 49.
- By Cost Logs to associate a preventive work order with a cost log. See "Cost Logs" on page 50.

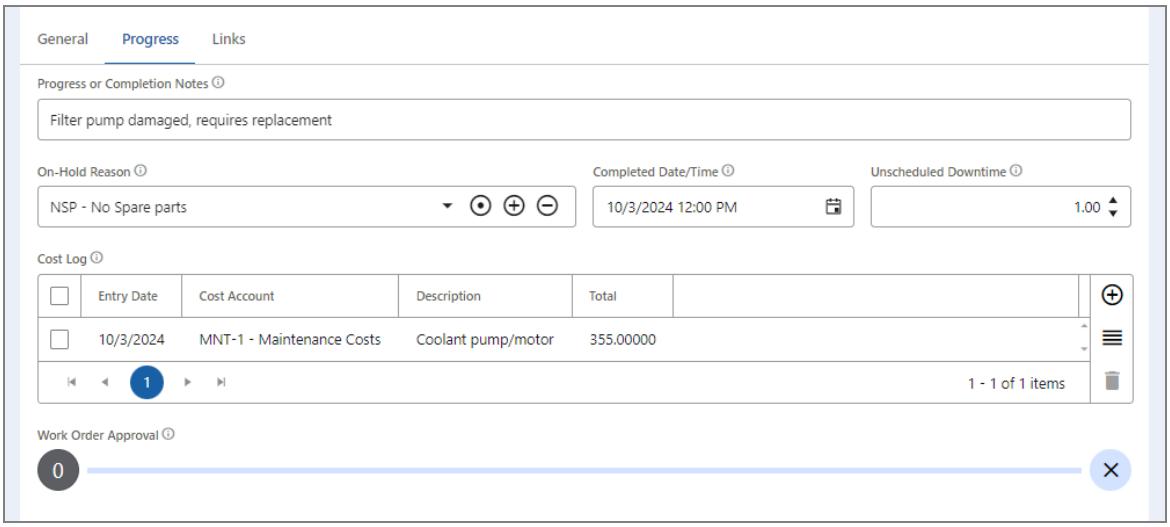
This process contains commands. See "Commands" on page 74 for more information.

Fig. 26: Maintenance Work Orders Preventive screen, General tab



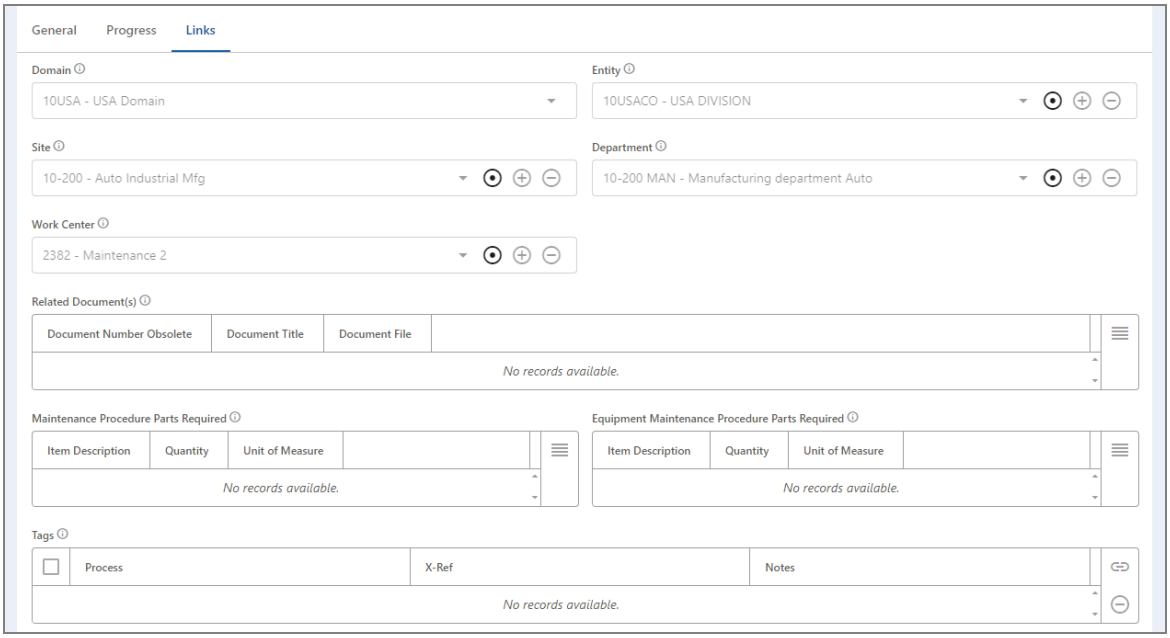
The General tab defines the basic details of a preventive work order, including the tooling and equipment involved, priority, schedule date, estimated time to completion, and more.

Fig. 27: Maintenance Work Orders Preventive screen, Progress tab



The Progress tab is used to track a work order's progress and completion. Cost logs are located in this tab. See "Cost Logs" on page 50.

Fig. 28: Maintenance Work Orders Preventive screen, Links tab



The Links tab contains information regarding the domain, site, department, and work center to which the work order is linked. This tab also links various details to the work order, including required parts and related documents (e.g. an instruction manual).

Maintenance Work Orders Preventive States

This section defines each state available in the workflow for the Maintenance Work Orders Preventive process. See "State Change Security" on page 67 to learn more about how these

states transition.

New (Default). A new work order that hasn't been assigned for completion yet.

Assigned. The work order has been assigned and is ready to be completed.

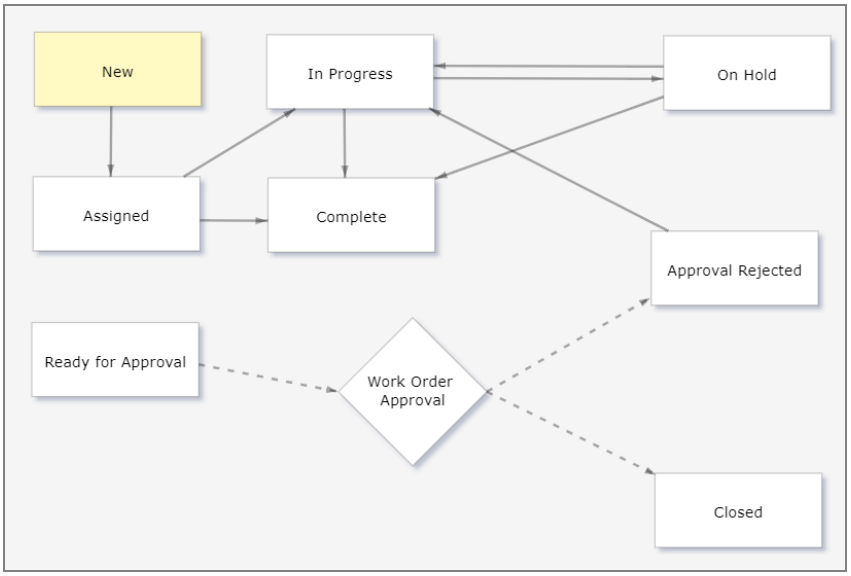
In Progress. The work order is in progress.

Complete. The work order has been completed. If the work order requires approval, it will be flagged as ready for approval at this point.

Ready for Approval. The work order is ready for approval.

Approval Rejected. The work order approval was rejected and requires additional work to be completed.

Closed. The work order has been completed and closed.



Maintenance Work Orders Preventive Tasks

Adding and Assigning a New Preventive Work Order

Note: If you created a Maintenance Procedure record and set the state to Official, then a Maintenance Work Orders Preventive record has already been created. Filter the search screen to find and open the new record, then proceed to "Scheduling a Preventive Work Order Series" on the next page.

1. Select Maintenance Work Order Preventive from the left navigation panel. Then, click the Add Item ⊞ button in the toolbar.
2. Enter the scheduled date for the work order. See "Scheduling a Preventive Work Order Series" on the next page to learn how to set up date information for a series.
3. Select the tooling or equipment associated with the work order, then select the appropriate maintenance procedure in the Equipment Maintenance Procedure drop-down

field.
    - Note that the entries available in this field are dependent on the Tooling and Equipment field.
    - Once the Equipment Maintenance Procedure field is completed, several other fields in the General and Links tabs are automatically populated.
4. Indicate scheduled downtime if necessary.
5. Click the Save button to save the new record. When selecting the next state, click Assigned.

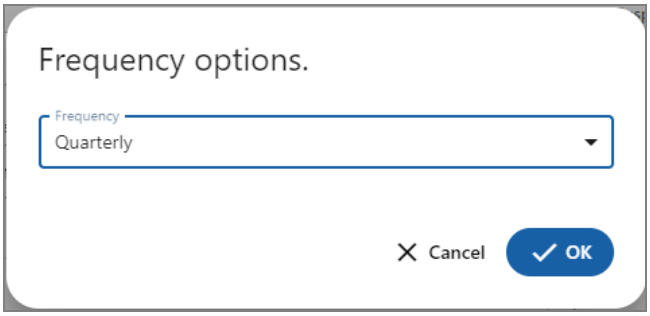
Note: If you need to set up the date information for a scheduled series, then complete that task before assigning the work order.

Scheduling a Preventive Work Order Series

Some preventive work orders repeat on a consistent basis, requiring a set frequency and an end option.

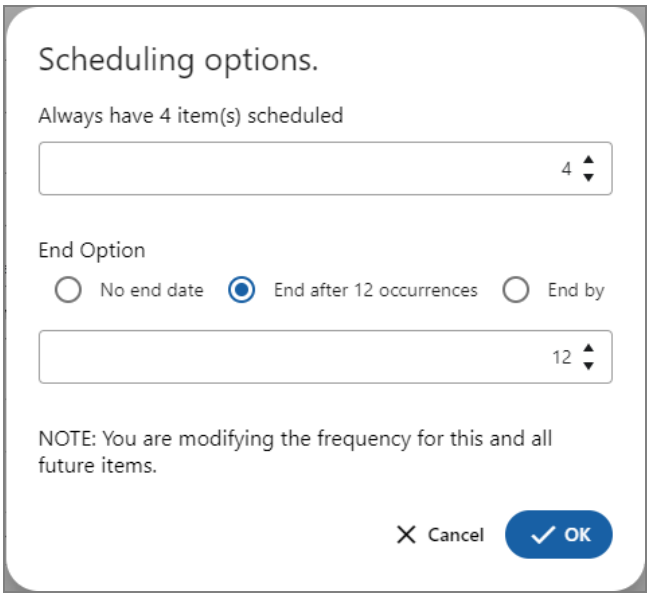
1. In the Maintenance Work Order Preventive detail screen, click the Commands button in the toolbar.
2. Select "Change Frequency". A new window opens.
    a. Choose one of the frequency options, such as Monthly or Quarterly.
    b. Click OK.

Fig. 29: Frequency Options dialog



3. Click the Commands button again. Select "Adjust Schedule Dates".
    a. Select how many items should always be scheduled.
    b. Choose one of the end options, such as ending after a set number of occurrences or after a specific date.
    c. Click OK.

Fig. 30: Scheduling Options dialog



4. See "Adding and Assigning a New Preventive Work Order" on page 42 for information on completing the rest of the Maintenance Work Order Preventive record. Once everything is complete, click the Save button to save the record. When selecting the next state, click Assigned.

Completing a Preventive Work Order

1. The person responsible for completing the work order receives a notification, which can be viewed in the Assignment tab in the Actions panel. Use the Actions panel to open the assigned work order.
2. Move the record's state to In Progress, then click the Save button. The Progress tab can now be edited.
3. Navigate to the Progress tab. Add progress notes, indicate unscheduled downtime, and add additional expenses in the Cost Log field (i.e. unplanned work hours, purchase of repair materials, etc.). See "Cost Logs" on page 50.
4. Navigate to the Links tab. Use this tab to view information specific to the tool or equipment that requires maintenance, including the location, the parts required, and related documents (such as a maintenance manual).
5. When you are ready to move the work order to a new state, click the Save button to save the record. When selecting the next state:
    - If the work order is complete, enter the time and date of completion in the Progress tab, then select the state Complete.
    - If the work order's progress is halted, select the state On Hold.
        - In the Progress tab, a new field appears titled On Hold Reason. Enter a description in this field, then click Save.
        - When you are ready to continue the work order, you can switch the state back to In Progress or to Complete.

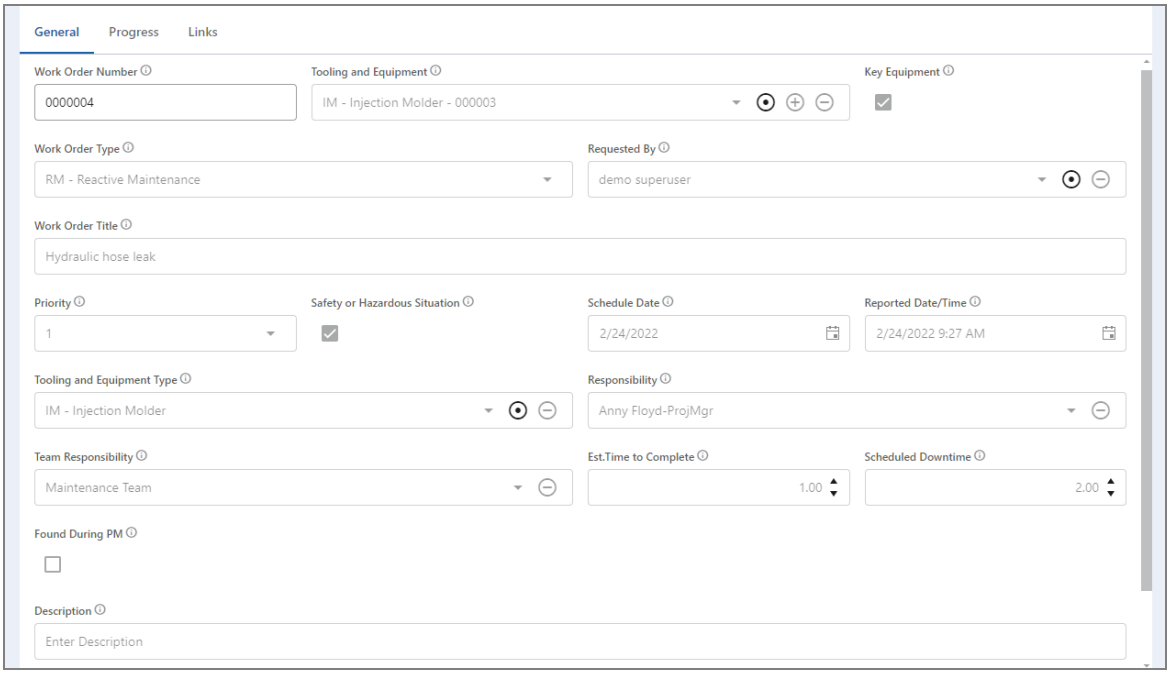
Maintenance Work Orders Reactive

Maintenance work orders are used to assign and document the results of both preventive and reactive maintenance for assets. Reactive maintenance is unplanned maintenance, such as when something breaks.

Maintenance work orders reactive are used in the following processes of the Equipment Management module:

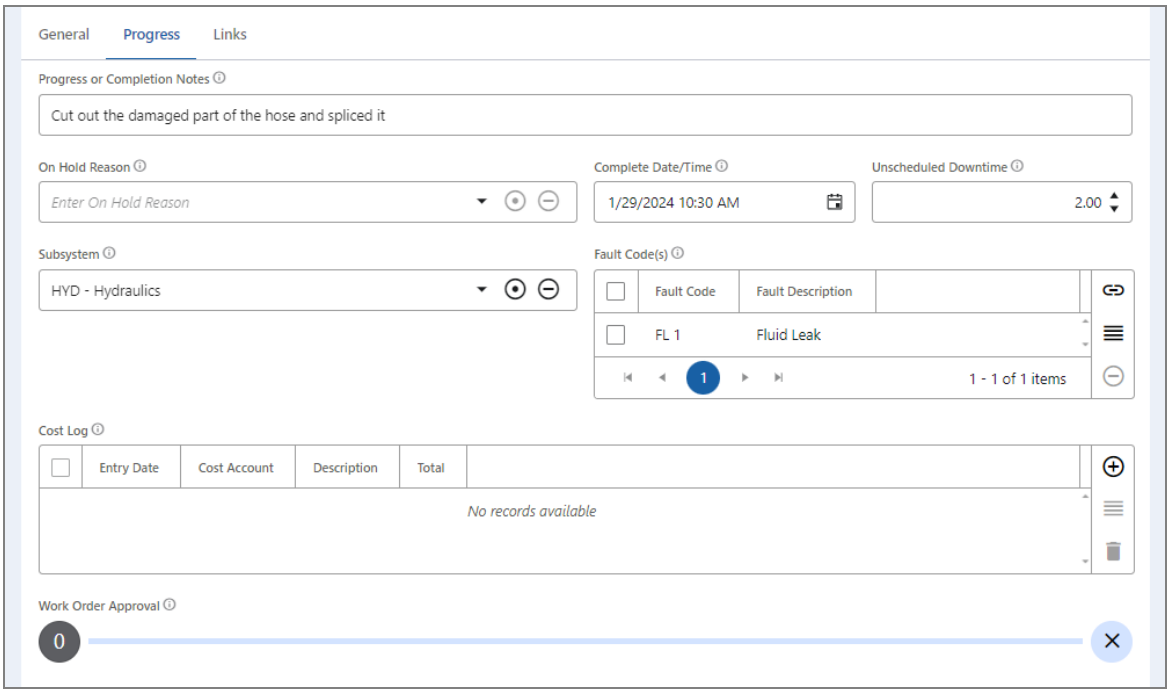
- By Tooling and Equipment to track instances when a reactive maintenance work order was required for a specific piece of equipment. See "Tooling and Equipment" on page 30.
- By Tooling and Equipment Downtime Logs to link which work orders were related to the repairs performed on a piece of equipment. See "Tooling and Equipment Downtime Logs" on page 49.
- By Cost Logs to associate a reactive work order with a cost log. See "Cost Logs" on page 50.

Fig. 31: Maintenance Work Orders Reactive screen, General tab



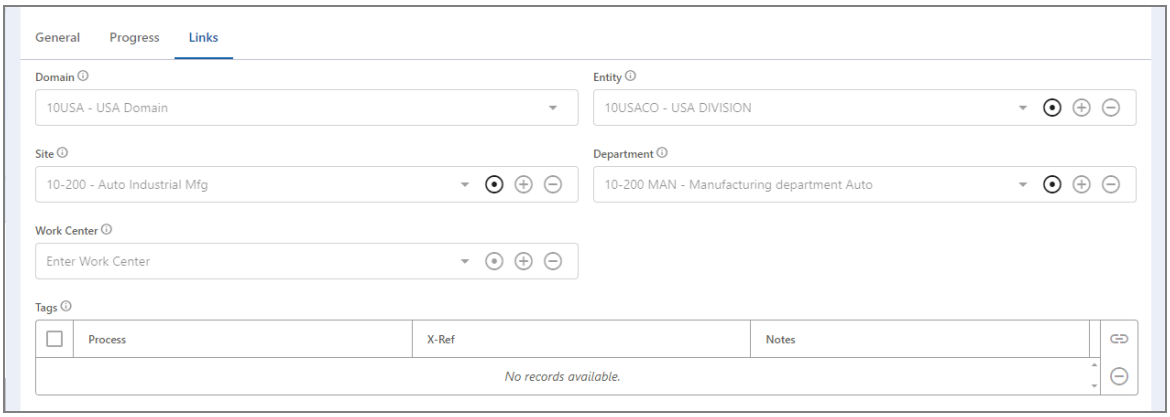
The General tab defines the basic details of a reactive work order, including the tooling and equipment involved, priority, schedule date, and more. This tab is also used to indicate whether the equipment involved is a key piece of equipment, whether there is a safety or hazardous situation, and whether this issue was found during a PM.

Fig. 32: Maintenance Work Orders Reactive screen, Progress tab



The Progress tab is used to track a work order's progress and completion. Cost logs are located in this tab; see "Cost Logs" on page 50.

Fig. 33: Maintenance Work Orders Reactive screen, Links tab



The Links tab contains information regarding the domain, site, department, and work center to which the work order is linked.

Maintenance Work Orders Reactive States

This section defines each state available in the workflow for the Maintenance Work Orders Reactive process. See "State Change Security" on page 67 to learn more about how these states transition.

New (Default). A new maintenance work order. After completing the required information, submit the work order for scheduling.

Submit. Select this state to submit the work order for rescheduling.

Assigned. The maintenance work order is assigned to be completed.

On Hold. The maintenance work order is put on hold. The reason will be noted in the On Hold notes.

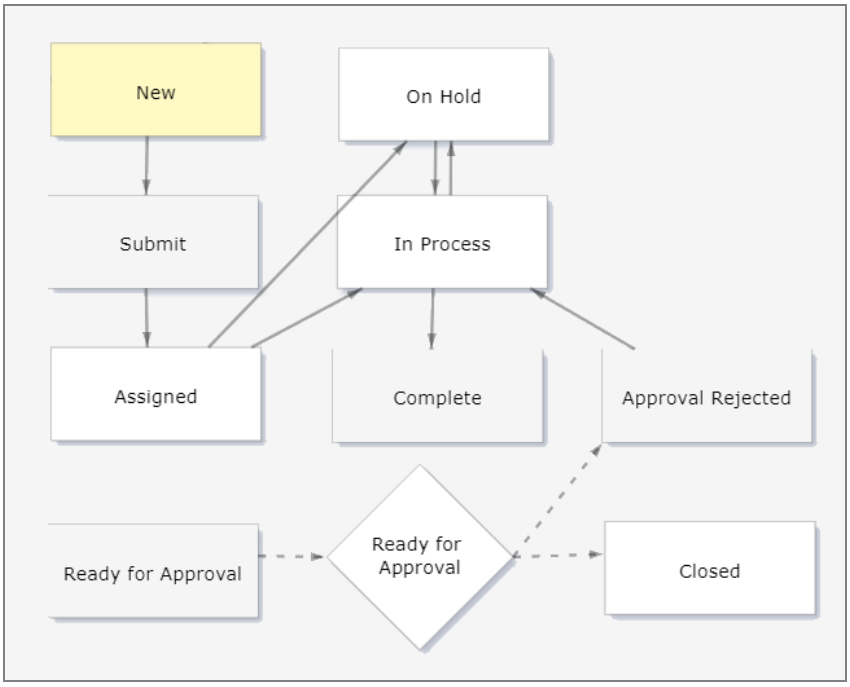
In Process. The maintenance work order is in the process of completion.

Complete. The maintenance work order has been completed by the person responsible.

Ready for Approval. The maintenance work order is ready to be reviewed and approved by the designated approvers.

Approval Rejected. The approval of the maintenance work order was rejected.

Closed. The maintenance work order is closed.



Maintenance Work Orders Reactive Tasks

Adding and Assigning a New Reactive Work Order

1. There are two ways to initiate a new reactive work order:
    a. Select Maintenance Work Order Reactive from the left navigation panel. Then, click the Add Item ⊞ button in the toolbar.

   b. In the Tooling and Equipment process detail screen, navigate to the Maintenance Work Orders tab. Click the Add New Item ⊕ button in the Reactive field. A new screen opens.
2. Add values for the following fields:
   a. Tooling and Equipment
   b. Work Order Type
   c. Work Order Title
   d. Responsibility or Team Responsibility

   Note: If the work order was created from the Tooling and Equipment process, then corresponding field is automatically populated.

3. Select a schedule date.
4. Select any check box that applies to this work order:
   - **Key Equipment.** Does this work order involve tooling or equipment that is key to the organization?
   - **Safety or Hazardous Situation.** Does this work order involve a safety or hazard situation?
   - **Found During PM.** Was this issue discovered during a preventive maintenance work order?
5. Enter a description and any recommendations about how to address the work order. If you selected the "Safety or Hazardous Situation" check box, then add the related notes to the Description field.
6. Click the Save button to save the new record. When selecting the next state:
   a. If you are the assigner, select Assigned.
   b. If you are not the assigner, select Submit.

Completing a Reactive Work Order

1. The person responsible for completing the work order receives a notification, which can be viewed in the Assignment tab in the Actions panel. Use the Actions panel to open the assigned work order.
2. Move the record's state to In Progress, then click the Save button. The Progress tab appears.
3. Navigate to the Progress tab. Select a subsystem and any applicable fault codes.
4. Add progress notes, indicate unscheduled downtime, and add additional expenses in the Cost Log field (e.g. unplanned work hours, purchase of new materials, etc.). See "Cost Logs" on page 50.
5. Navigate to the Links tab. Use this tab to view the location of the tooling and equipment that requires maintenance.
6. When you are ready to move the work order to a new state, click the Save button to save the record. When selecting the next state:
   - If the work order is complete, enter the time and date of completion in the Progress tab, then select the state Complete.
   - If the work order's progress is halted, select the state On Hold.
     - In the Progress tab, a new field appears titled On Hold Reason. Enter a description in this field, then click Save.

- When you are ready to continue the work order, you can switch the state back to In Progress or to Complete.

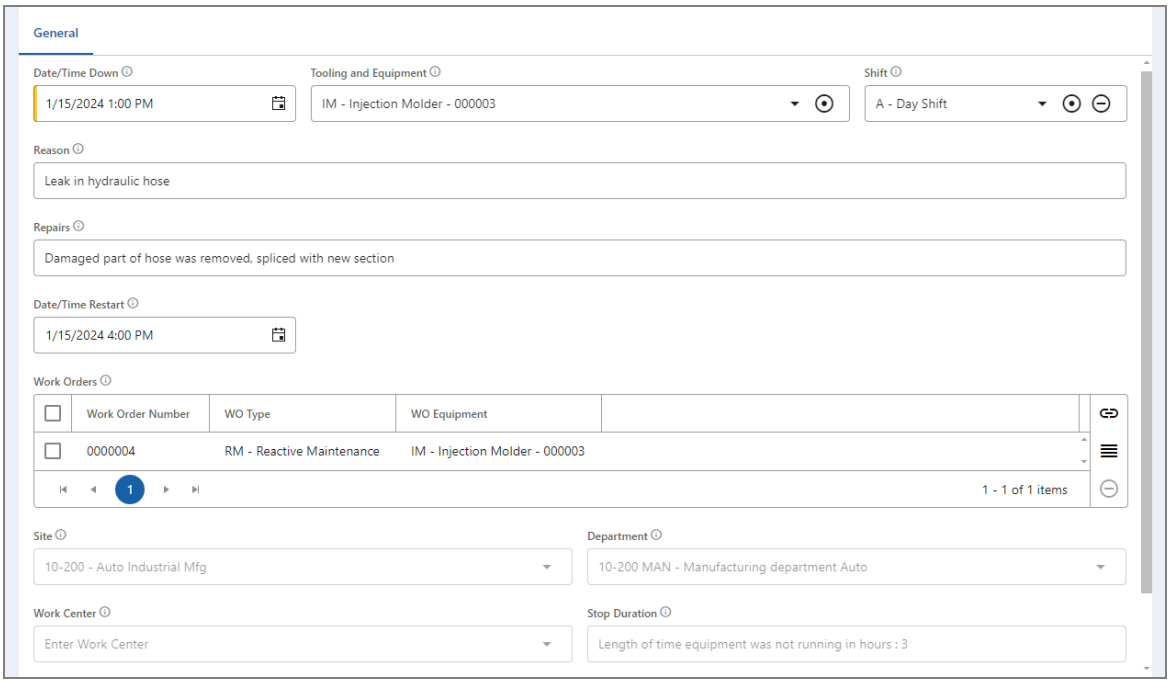
Tooling and Equipment Downtime Logs

Tooling and equipment downtime logs are used every time you take tooling or equipment out of service so you can make a note of why it was removed and which work orders are related to this decision. This manual process is best suited for a major overhaul-type situation, such as when a machine is pulled off the floor for a few weeks of refurbishment. Downtime does not apply to when the machine is offline for basic maintenance or other brief, routine work.

Tooling and equipment downtime logs are used in the following processes of the Equipment Maintenance module:

- By Tooling and Equipment to keep track of how many times a tool or equipment has been in downtime. See "Tooling and Equipment" on page 30.
- By Maintenance Work Orders Preventive and Reactive to track the amount of time needed for scheduled or unscheduled downtime. See "Maintenance Work Orders Preventive" on page 40 and "Maintenance Work Orders Reactive" on page 45.

Fig. 34: Tooling and Equipment Downtime Logs process screen



Tooling and Equipment Downtime Logs States

This section defines each state available in the workflow for the Tooling and Equipment Downtime Logs process.

There are no states defined for this process.

Tooling and Equipment Downtime Logs Tasks

Adding a New Tooling and Equipment Downtime Log

1. There are two ways to initiate a tooling and equipment downtime log:
    a. Select Tooling and Equipment Downtime Logs from the left navigation panel. Then, click the Add Item button in the toolbar.
    b. In the applicable Tooling and Equipment detail screen, navigate to the Downtime Log tab. Then, click the Add New Item button in the Downtime field. A new screen opens.
2. Select the date and time when the tool or equipment is put in downtime.
3. Assign the tool or equipment and the shift. The Tooling and Equipment field automatically populates the Site, Department, and Work Center fields.

    Note: If you created the downtime log from a Tooling and Equipment record, then the Tooling and Equipment field is automatically populated.

4. If the tool or equipment has already been repaired, use the Repairs field to explain what was done to fix the item.
5. Use the Date/Time Restart field to indicate when the repairs were completed.
6. Link any related work orders to the downtime log.
    a. Click the Link button in the Work Orders field. A new window opens.
    b. Select any items that apply.
    c. Click OK.
7. Click the Save button to save the new record.

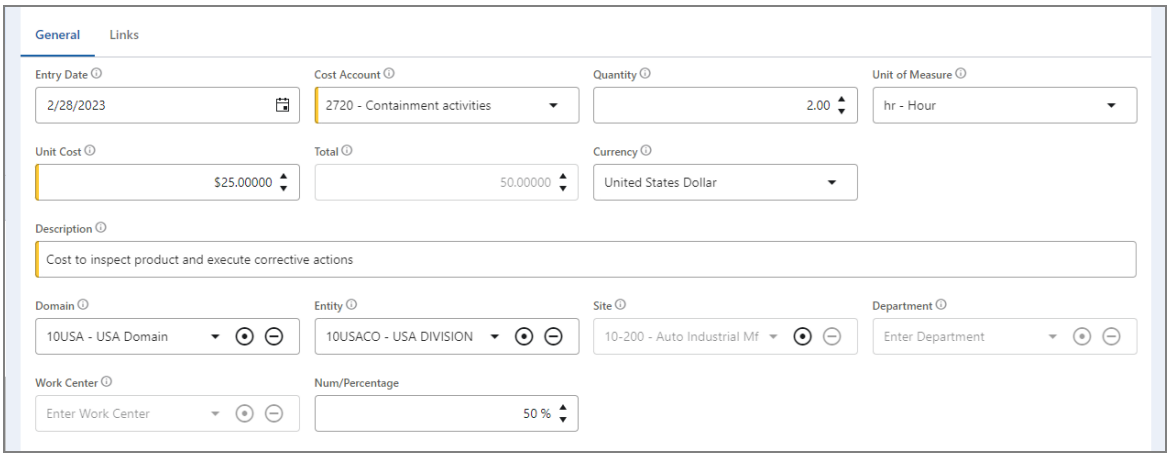
Cost Logs

Cost log records document the occurrence of a cost to the organization, typically for helping determine a cost of quality metric. A cost log entry can be initiated from several different processes:

- Gauges
- Maintenance Work Orders Preventive and Reactive
- Non-conformances
- Containment Actions
- Projects
- Project Tasks
- Training Events

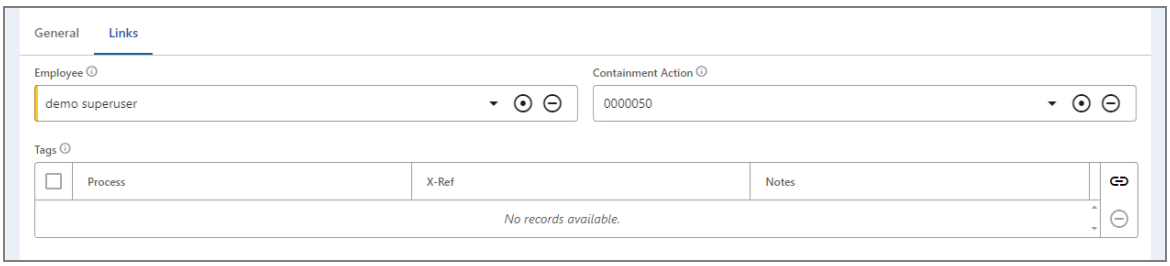
Cost logs are used in both Preventive and Reactive Work Orders to provide tracking of maintenance costs. See "Maintenance Work Orders Preventive" on page 40 and "Maintenance Work Orders Reactive" on page 45.

Fig. 35: Cost Logs screen, General tab



The General tab is used to set up a majority of the cost log details, including the cost account, unit cost, description, and more.

Fig. 36: Cost Logs screen, Links tab



The Links tab contains fields that appear when the cost log is created from another record, such as a work order, non-conformance, or project task.

Cost Logs States

This section defines each state available in the workflow for the Cost Logs process.

There are no states defined for this process.

Cost Logs Tasks

Adding a New Cost Log

1. There are two ways to initiate a new cost log:
    a. Select Cost Logs from the left navigation panel. Then, click the Add Items button in the toolbar.
    b. In the applicable process, click the Add New Item button in the Cost Logs field. A new window opens. See the Cost Logs introduction to see a list of applicable processes.
2. Select a cost account. If the cost account allows quantities, then two fields appear: Quantity and Unit of Measure. The Unit of Measure field automatically populates.

3. Select the unit cost and, if applicable, the quantity. The Total field automatically populates.
4. Enter a detailed description of the cost log entry.
5. Click the Save button to save the new record.

Asset Usage Log

Some tooling and equipment requires preventive maintenance to be conducted based on its usage. This requires users to add entries to an asset usage log, which determines when the next preventive work order should be scheduled. If you selected "Usage Log" in the asset meter applied to the Tooling and Equipment record, then you will use asset usage logs. See "Tooling and Equipment" on page 30.

Fig. 37: Asset Usage Log process screen

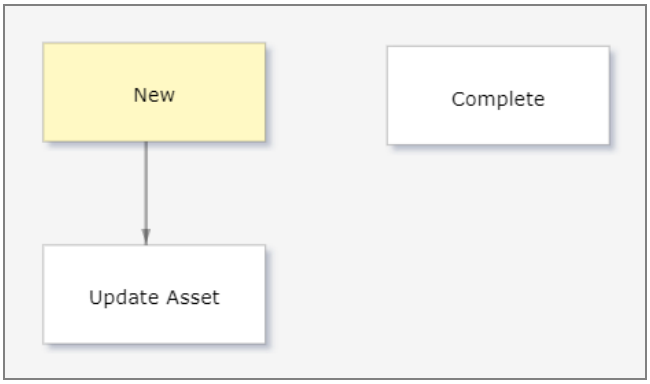
Asset Usage Log States

This section defines each state available in the workflow for the Asset Usage Log process. See "State Change Security" on page 67 to learn more about how these states transition.

New (Default). A new asset usage log item that has not yet been used to update the asset's usage.

Update Asset. Select this state to update the asset's usage.

Complete. The asset's usage has been updated. This log record can no longer be changed.



Asset Usage Log Tasks

Adding a New Asset Usage Log

For information on how to add an asset usage log directly from the Tooling and Equipment process, see "Adding a New Equipment Usage Log" on page 1.

1. Select Asset Usage Log from the left navigation panel. Then, click the Add Item button in the toolbar.
2. Select either a gauge or a tool/equipment from the respective drop-down field.
3. Add the appropriate usage unit of measure and usage value. For example, if you are logging the miles that a company car has driven, you would select "mi" in the Usage Unit of Measure field and enter the amount of miles in the Usage Value field.
4. Enter notes to give information about this usage, such as where the company car was driven to.
5. Click the Save button to save the new record. When selecting the next state, click Update Asset.

Chapter 4

Inbox Messages

Introduction to Inbox Messages

Most processes in the system require multiple people, departments, or groups to coordinate on completing a process. The inbox automates notifications sent to the appropriate users at specific times in the process.

An individual inbox action item represents a single task, approval, or notification that has been sent to you. This task will remain in your inbox until the necessary steps have been taken for completion.

Inbox messages can be separated into three different action types:

- **Assignment.** You are required to take some action in the system to move it beyond your workflow.
- **Approval.** Your approval is requested. You must approve or reject the process item.
- **Acknowledgment.** This is only for your information. You can acknowledge the notification to remove it from your inbox.

See the User Interface user guide to learn how to access inbox messages.

Inbox Messages

The table below describes each inbox action item involved in the Equipment Maintenance module. In addition to title and description, the table indicates which process each item comes from, who receives the message, and when it is sent. See the User Interface user guide to learn more about inbox messages.

Process	Title	Message	Action Type	Sent To / Sent When
Maintenance Work Orders Preventive	Responsibility and Champion – Work Order Has Been Rejected	Work Order Number: {WorkOrderNumber_f} Tooling and Equipment: {Equipment_f} Procedure: {MaintenanceProcedure_f} Scheduled Date: {ScheduledDate_f}	Assignment	Sent to the Maintenance Champion and responsible users when the current state is moved to Approval Rejected.
Maintenance Work Orders Preventive	Responsibility – Work Order is Assigned	Work Order Number: {WorkOrderNumber_f} Tooling and Equipment: {Equipment_f} Procedure: {MaintenanceProcedure_f}	Assignment	Sent to the responsible users when the work order's state is Assigned and responsibilities have been assigned.

Process	Title	Message	Action Type	Sent To / Sent When
		Scheduled Date: {ScheduledDate_f}		
Maintenance Work Orders Reactive	Responsibility and Champion – Work Order Has Been Rejected	Work Order Number: {WorkOrderNumber_f} Title: {WorkOrderTitle_f} Equipment: {Equipment_f} Scheduled Date: {ScheduleDate_f}	Assignment	Sent to the Maintenance Champion and responsible users when the current state is moved to Approval Rejected.
Maintenance Work Orders Reactive	Responsibility – Work Order is Submitted	Work Order Number: {WorkOrderNumber_f} Title: {WorkOrderTitle_f} Equipment: {Equipment_f} Scheduled Date: {ScheduleDate_f}	Assignment	Sent to the responsible users when the current state is Submitted and responsibilities have been assigned.
Maintenance Work Orders Reactive	Responsibility – Work Order is Assigned	Work Order Number: {WorkOrderNumber_f} Title: {WorkOrderTitle_f} Equipment: {Equipment_f} Scheduled Date: {ScheduleDate_f}	Assignment	Sent to the responsible users when the current state is Assigned and responsibilities have been assigned.

Chapter 5

Metrics and Reports

Introduction to Metrics and Reports

The QMS system includes reporting and metric features that let you analyze the data in each process, measuring efficiency and effectiveness. The metrics and reports available differ between each process.

Reports are generated within each process, either from the search screen or the detail screen. Metrics and key process indicators (KPIs) are gadgets that can be placed on one of your dashboards.

See the User Interface user guide to learn how to generate reports, metrics, and KPIs.

Reports

Pre-set reports are available on a process by process basis, though not every process has a pre-set report. Certain reports require additional parameters in order to be previewed. The parameters are listed on the right side of the preview window. If a report requires parameters, then this pane will automatically appear. Once you have selected the desired parameters, click the Preview button to see the report preview.

Below is a table that describes each report available in the Equipment Maintenance module. In addition to title and description, the table indicates which process each report comes from and whether it is pulled from the search screen or detail screen. Lastly, if the report requires specific parameters in order to be generated properly, a description of those parameters is included below that report. See the User Interface user guide to learn how to access reports.

Process	Pulls From	Title	Description
Tooling and Equipment Types	Detail Screen	Audit Trail – Equipment Types	Provides a path of how the record has progressed over time with changes (who, what, and when).
Tooling and Equipment Status	Detail Screen	Audit Trail – Equipment Status	Provides a path of how the record has progressed over time with changes (who, what, and when).
Maintenance Fault Codes	Detail Screen	Audit Trail – Maintenance Fault Codes	Provides a path of how the record has progressed over time with changes (who, what, and when).
Maintenance Teams	Detail Screen	Audit Trail – Maintenance Teams	Provides a path of how the record has progressed over time with changes (who, what, and when).
Maintenance Work Order Types	Detail Screen	Audit Trail – Maintenance Work Order Types	Provides a path of how the record has progressed over time with changes (who, what, and when).
Maintenance Work Order Types Responsibilities	Detail Screen	Audit Trail – Maintenance Work Order Types Resp	Provides a path of how the record has progressed over time with changes (who, what, and when).
Production Order Subsystems	Detail Screen	Audit Trail – Production Order	Provides a path of how the record has progressed over time with changes (who, what, and when).

		Subsystems	
Production Order On Hold Reasons	Detail Screen	Audit Trail – Production Order On Hold Reasons	Provides a path of how the record has progressed over time with changes (who, what, and when).
Cost Accounts	Detail Screen	Audit Trail – Cost Accounts	Provides a path of how the record has progressed over time with changes (who, what, and when).
Asset Meters	Detail Screen	Audit Trail – Asset Meters	Provides a path of how the record has progressed over time with changes (who, what, and when).
Tooling and Equipment	Detail Screen	Audit Trail – Tooling and Equipment	Provides a path of how the record has progressed over time with changes (who, what, and when).
Maintenance Procedures	Detail Screen	Audit Trail – Maintenance Procedures	Provides a path of how the record has progressed over time with changes (who, what, and when).
Maintenance Work Orders Preventive	Detail Screen	Audit Trail – Maintenance Work Orders Preventive	Provides a path of how the record has progressed over time with changes (who, what, and when).
Maintenance Work Orders Preventive	Detail and Search Screen	Preventive Work Order Report	Provides a work order report showing the details of the work order. This report can be run based on parameters that the user can define from the search screen or as an individual report from the detail screen.
Maintenance Work Orders Preventive	Search Screen	Preventive Work Order Report No Parameters	Provides the details of the work orders based on the filter applied to the search screen.
Maintenance Work Orders Preventive	Search Screen	PM Work Order Percent Used	Accepts a percentage (as a float) that will show a table of all work orders that would be due based on the equipment's current usage percentage.
Maintenance Work Orders Reactive	Detail Screen	Audit Trail – Maintenance Work Orders Reactive	Provides a path of how the record has progressed over time with changes (who, what, and when).
Maintenance Work Orders Reactive	Detail Screen	Reactive Work Order Report	Provides a work order report showing the details of the work order.
Tooling and Equipment Downtime Logs	Detail Screen	Audit Trail – Tooling and Equipment Downtime Logs	Provides a path of how the record has progressed over time with changes (who, what, and when).
Cost Logs	Detail Screen	Audit Trail – Cost Logs	Provides a path of how the record has progressed over time with changes (who, what, and when).
Asset Usage Log	Detail Screen	Audit Trail – Asset Usage Log	Provides a path of how the record has progressed over time with changes (who, what, and when).

Metrics

Below is a table that describes each metric available in the Equipment Maintenance module. In addition to title and description, the table indicates which process each metric comes from. Lastly, if the metric requires specific parameters in order to be generated properly, a description of those parameters is included below that metric. See the User Interface user guide to learn more about metrics.

Process	Pulls From	Title	Description
Maintenance Work Orders Preventive	Gadgets	On Time Completion Percentage by Month	The percentage of work orders completed on time in a given month.
Tooling and Equipment Downtime Logs	Gadgets	Sums Duration group by Department	Shows the duration of downtime by department for a given date range.
Tooling and Equipment Downtime Logs	Gadgets	Sums Duration group by Equipment	Shows the duration of downtime by an individual equipment for a given date range.
Tooling and Equipment Downtime Logs	Gadgets	Sums Duration group by Equipment Type	Shows the duration of downtime by equipment type for a given date range.

KPIs

See the User Interface user guide to learn more about KPIs.

There are no KPIs defined for this module.

Chapter 6

Security Settings

Security Roles

Security roles define how various users access and control different types of processes and data. These roles are then assigned to each user. Some roles are used by many users, while others may only be applied to one or two individuals.

Because the Equipment Maintenance module contains fields whose data pulls from other modules, some external security roles are adopted as necessary for full integration.

The following security roles apply in the Equipment Maintenance module.

All Roles

This security role is a system-controlled All Roles value. Any security applied to this special system role grants that security access to all users of the system.

APQP Administrator

This security role allows you to add, edit, and remove records in any process in the APQP module.

APQP Champion

This security role allows you to add records in any process in the APQP module.

APQP Maintenance

This security role allows you to add, edit, and remove specification names, process symbols, special symbols, FMEA detection/occurrence/severity ratings, frequency events, drawing types, and control methods. Besides being able to add and remove items for those processes, you can also view and edit all of the fields of the processes noted. Typically this maintenance account is only given to one or two individuals who are responsible for setting up this data for others to use.

APQP Navigation

This security role allows you to navigate to the APQP module.

Asset Usage Log Add/Edit

This security role allows you to add new and edit asset usage log items.

Cost Log Add/Edit

This security role allows you to add new and edit cost log items. Upon adding a cost log record you will become the person who logged the record by default. Only the person who logged the record or the Cost Log Administrator security role will be able to edit the cost log record.

Cost Log Administrator

This security role allows you to add new costs log accounts and cost logs. The Cost Log Administrator also has the ability to edit any cost log as if they were the employee who entered the cost log record.

Equipment Add

This security role allows you to add new and edit equipment.

Equipment Add/Edit

This security role allows you to add new and edit equipment.

Equipment Maintenance

This security role allows you to add, edit, and remove equipment types, equipment sub-types, equipment status, equipment cavity, equipment downtime logs, and asset meters. Typically this maintenance account is only given to one or two individuals responsible for setting up this data for others to use.

Equipment Navigation

This security role allows you to navigate to the Tooling and Equipment module.

Equipment Type Maintenance

Allows users to maintain equipment types and equipment sub-types.

Gauge Add/Edit

This security role allows you to add new and edit gauges.

Gauge Administrator

This security role allows you to add new, edit, and remove gauges, gauge calibrations, and gauge R&R studies.

Gauge Calibration Add/Edit

This security role allows you to add new and edit gauge calibrations.

Gauge Champion

This security role allows you to add records in any process in the Gauge module.

Gauge Maintenance

This security role allows you to add, edit, and remove gauge types, gauge sub-types, gauge sub-type calibration standards, and gauge statuses. Typically this maintenance account is only given to one or two individuals responsible for setting up this data for others to use.

Maintenance Champion

This security role allows you to add, edit, adn remove maintenance work orders preventive, maintenance work orders reactive, maintenance work order types, maintenance fault codes, maintenance teams, and maintenance procedures.

System Administrator

This maintenance security role allows you to add and remove security roles, domains, entities, sites, locations, generalized code types and codes, product lines, item groups, item types, review frequencies, company types, cost accounts, and units of measure. Besides being able to add and remove items, you can also view and edit all of the fields for the processes noted. Typically, this maintenance security role is only given to one or two individuals who are responsible for setting up the data for others to use.

System View

System view is a generic role that most users and modules use. This role allows you to view (but in most cases not edit) much of the non-sensitive data in the system. Being able to view the data is still subject to you having the ability to navigate to, and open, a process.

Every user should have this security role because it allows users to view non-secure data for most processes. For users who typically only have to approve data, but do not have to add or edit data, this System View role is what they need.

Tooling and Equipment Administrator

This security role allows you to add, edit, and remove records in any process in the Tooling and Equipment module.

Tooling and Equipment Champion

This security role allows you to add records in any process in the Tooling and Equipment module.

Process Security Roles

Each list below displays the security roles that provide you with permissions to add items for the indicated individual process.

Tooling and Equipment Types

- Equipment Maintenance
- Equipment Type Maintenance
- RFQ Administrator
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Tooling and Equipment Status

- Equipment Maintenance
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Maintenance Fault Codes

- Maintenance Champion
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Maintenance Teams

- Maintenance Champion
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Maintenance Work Order Types

- Maintenance Champion
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Maintenance Work Order Types Responsibilities

- Maintenance Champion
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Production Order Subsystems

- Maintenance Champion
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Production Order On Hold Reasons

- Maintenance Champion
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Cost Accounts

- Cost Log Administrator
- Gauge Administrator
- Gauge Maintenance
- System Administrator
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Asset Meters

- Equipment Maintenance
- Tooling & Equipment Administrator

- Tooling & Equipment Champion

Tooling and Equipment

- Equipment Add
- Equipment Add/Edit
- Gauge Administrator
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Maintenance Procedures

- Maintenance Champion
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Maintenance Work Orders Preventive

- Maintenance Champion
- Tooling & Equipment Administrator

Maintenance Work Order Reactive

- Maintenance Champion
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Tooling and Equipment Downtime Logs

- Equipment Maintenance
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

Cost Logs

- APQP Administrator
- APQP Champion
- Cost Log Add/Edit
- Cost Log Administrator
- Gauge Administrator
- Maintenance Champion
- Projects Add/Edit
- Projects Maintenance
- Tooling & Equipment Administrator
- Tooling & Equipment Champion
- Worksheet Administrator

Asset Usage Log

- Asset Usage Log Add/Edit
- Gauge Add/Edit
- Gauge Administrator
- Gauge Calibration Add/Edit
- Gauge Champion
- Tooling & Equipment Administrator
- Tooling & Equipment Champion

State Change Security

As you complete tasks in the system, changes occur based on your activities (such as changing a record's state) and when other events occur (such as a specific amount of time passing). The changes based on your activities are called **actions**, while the event-based changes are called **triggers**. The main difference between the two is the initiator: actions are performed by users, and triggers are managed by the system.

Each system change may depend on a number of factors, including where you are in the system, who is involved, which fields are populated, and more. It is important to know the actions and triggers for each process because these affect your ability to complete a task.

The state change security for each process is separated into two sections:

1. **Security.** Which users (by security role or field role) can change the state of a record. Field roles are indicated with an asterisk*.
2. **Transactions.** The conditions that must be met to initiate a trigger.

Security

Tooling and Equipment Types

Transitions	Tooling & Equipment Administrator	Tooling & Equipment Champion	Equipment Maintenance	Equipment Type Maintenance
Active >> Inactive	✓	✓	✓	✓
Inactive >> Active	✓	X	✓	✓

Maintenance Fault Codes

Transitions	Tooling & Equipment Administrator
Active >> Inactive	✓
Inactive >> Active	✓

Maintenance Teams

Transitions	Tooling & Equipment Administrator
Active >> Inactive	✓
Inactive >> Active	✓

Maintenance Work Order Types

Transitions	Tooling & Equipment Administrator
Active >> Inactive	✓
Inactive >> Active	✓

Cost Accounts

Transitions	Cost Log Administrator	System Administrator
Active >> Inactive	✓	✓
Inactive >> Active	✓	✓

Asset Meters

Transitions	Tooling & Equipment Administrator
Active >> Inactive	✓
Inactive >> Active	✓

Production Order Subsystems

Transitions	Maintenance Champion	Tooling & Equipment Administrator	Tooling & Equipment Champion
Active >> Inactive	✓	✓	✓
Inactive >> Active	✓	✓	X

Production Order On Hold Reasons

Transitions	Maintenance Champion	Tooling & Equipment Administrator	Tooling & Equipment Champion
Active >> Inactive	✓	✓	✓
Inactive >> Active	✓	✓	X

Tooling and Equipment

Transitions	Equipment Add	Tooling & Equipment Administrator
Active >> Inactive	✓	✓
Active >> Retired	✓	✓
Inactive >> Active	✓	✓
Inactive >> Retired	✓	✓

Maintenance Procedures

Transitions	Maintenance Champion	Tooling & Equipment Administrator	Tooling & Equipment Champion
Draft >> Official	✓	✓	✓
Official >> Obsolete	X	✓	X

Maintenance Work Orders Preventive

Transitions	Maintenance Champion	Maintenance Team	Responsibility*	Tooling & Equipment Administrator
Approval Rejected >> In Progress	✓	✓	✓	✓
Assigned >> Complete	✓	✓	✓	✓
Assigned >> In Progress	✓	✓	✓	✓
In Progress >> Complete	✓	✓	✓	✓
In Progress >> On Hold	✓	✓	✓	✓
New >> Assigned	✓	X	X	✓
On Hold >> Complete	✓	✓	✓	✓
On Hold >> In Progress	✓	✓	✓	✓

Maintenance Work Orders Reactive

Transitions	Maintenance Champion	Maintenance Team	Responsibility*	Tooling & Equipment Administrator
Approval Rejected >> In Process	✓	✓	✓	✓
Assigned >> In Process	✓	✓	✓	✓

Transitions	Maintenance Champion	Maintenance Team	Responsibility*	Tooling & Equipment Administrator
Assigned >> On Hold	✓	✓	✓	✓
In Process >> Complete	✓	✓	✓	✓
In Process >> On Hold	✓	✓	✓	✓
New >> Submit	✓	X	X	✓
On Hold >> In Process	✓	✓	✓	✓
Submit >> Assigned	✓	X	X	✓

Asset Usage Log

Transitions	Asset Usage Log Add/Edit	Gauge Add/Edit	Gauge Administrator	Gauge Calibration Add/Edit	Gauge Champion	Tooling & Equipment Administrator	Tooling & Equipment Champion
New >> Update Asset	✓	✓	✓	✓	✓	✓	✓

Transactions

Maintenance Work Order Types

Maintenance Type is Not RM

When the Maintenance Type field is not set to "RM", the Responsibility Setup field is hidden.

Cost Accounts

Hide Quantity Unit of Measure if Allow Quantities is Not True

When the "Allow Quantities" field is not selected, the following fields are hidden:

- Default Unit Cost
- Quantity Unit of Measure

Tooling and Equipment

Cavities Added

When the cavity count control is incremented, the corresponding number of cavities is inserted in the record.

Category is Empty

The Category field is hidden when empty.

Check Usage for Maintenance

When the configured amount of hours in the Usage Frequency Hours field is reached, a preventive maintenance work order is created for the tool or equipment.

Hide Location Field if it is Empty

The Location field is hidden when empty.

On Save

When a process is saved, the downtime status is updated

Status Changed

When the status is changed, the status date and time are set.

Status Changed to Inactive

When the status is changed to Inactive, the hours at last inactive are calculated.

Maintenance Work Orders Preventive

Approval Rejected

When the current state is changed to Rejected, a notification is sent to the Maintenance Champion to inform them that the work order has been rejected.

Closed

When the current state is changed to Closed, the current usage value of the equipment maintenance procedure is set back to the meter starting value.

Equipment is Empty

When the Tooling and Equipment field is blank, it is updated by the system based on the Equipment Maintenance Procedure field.

Hide the Status Field if it is Empty

The Status field is hidden when empty.

In Process

When a state is in process but was not in process prior, the Completed Date field is cleared.

Responsibility Assigned and State is Assigned

When the current state is Assigned and all responsibilities have been assigned, a notification is sent to the responsible employees to inform them that a work order has been assigned.

State is Complete and No Approval

When the current state is Complete and the work order type does not require approval, the state of the work order transitions to Closed.

State is Complete and Requires Approval

When the current state is Complete and the work order type requires approval, the state of the work order transitions to Ready for Approval.

When Complete

When the current state transitions to Complete, the Hours at Last Inactive field on the linked Tooling and Equipment record is reset to 0. Additionally, the system updates the Equipment Maintenance Procedure field if there are other work orders open for this tooling and equipment type.

When Usage Type PM

When the Equipment Maintenance Procedure's PM type is 'Usage', the record is updated to have a scheduling frequency of 'None'.

Maintenance Work Orders Reactive

Approval Rejected

When the current state is moved to Rejected, a notification is sent to the Maintenance Champion to inform them that the work order has been rejected.

Hide the Status Field if it is Empty

The Status field is hidden when empty.

Responsibility Assigned and State is Assigned

When the current state is Assigned and all responsibilities have been assigned, a notification is sent to the responsible employees to inform them that the work order is assigned to them.

Responsibility Assigned and State is Submitted

When the current state is Submitted and all responsibilities have been submitted, a notification is sent to the responsible employees to inform them that the work order has been submitted.

State is Complete and No Approval

When the current state is Complete and the work order type does not require approval, the state of the work order transitions to Closed.

State is Complete and Requires Approval

When the current state is Complete and the work order type requires approval, the state of the work order transitions to Ready for Approval.

When Complete

When the current state transitions to Complete, the Hours at Last Inactive field is reset to 0.

Cost Logs

Containment Action Field is Null

The Containment Action field is hidden when empty.

Cost Account Allow Quantity is False

If the selected cost account's "Allow Quantity" field is not selected, then the following fields are hidden:

- Quantity
- Unit of Measure

Gauge Field is Null

The Gauge field is hidden when empty.

Hide CPR Task if it is Empty

The CPR Task field is hidden when empty.

Issue is Null

The Issue field is hidden when empty.

Non-conformance Field is Null

The Non-conformance field is hidden when empty.

Preventive Work Order Field is Null

The Preventive Work Order field is hidden when empty.

Project Field is Null

The Project field is hidden when empty.

Project Task Field is Null

The Project Task field is hidden when empty.

Reactive Work Order Field is Null

The Reactive Work Order field is hidden when empty.

Training Event Field is Null

The Training Event field is hidden when empty.

Asset Usage Log

Gauge Field is Null

The Gauge field is hidden when empty.

Tooling and Equipment is Null

The Tooling and Equipment field is hidden when empty.

Update Asset

When the current state transitions to Update Asset, the current usage value for the selected Tooling and Equipment or Gauge record is updated to the current value plus the value entered in the Usage Value field. For example, if the current usage value is 5 and 10 was entered into the Usage Value field, then the new current usage value would be 15.

Once this update occurs, the current state transitions to Complete.

Commands

Some processes utilize command buttons to perform pre-defined actions. Commands can be found under the Actions icon in the top toolbar of the appropriate process.

Below is a table that describes each command available in the Equipment Maintenance module. In addition to title and description, the table indicates which process each command comes from, the roles that can execute the command, and the states when the command can be executed.

Process	Title	Description	Used By	State When Used
Maintenance Procedures	Start New Version	Initiates a new draft version of the record. The state of the previous version moves to Obsolete.	Tooling & Equipment Administrator; Tooling & Equipment Champion	Official
Maintenance Work Order Preventive	Adjust Schedule Dates	Opens the Scheduling Options dialog window, allowing you to modify the scheduling frequency for the current and future audits.	Maintenance Champion; Tooling & Equipment Administrator	New
Maintenance Work Order Preventive	Change Frequency	Opens the Change Frequency Options dialog, allowing you to change the frequency of the audit.	Maintenance Champion; Tooling & Equipment Administrator	New
Maintenance Work Order	Delete Current Work	Removes the current work order from the system and, if required, updates the	Maintenance Champion; Tooling	All States

Process	Title	Description	Used By	State When Used
Preventive	Order Pre-ventive	equipment maintenance procedure.	& Equipment Admin-istrator	

Chapter 7

Module Frequently Asked Questions

Frequently Asked Questions

Why shouldn't I delete items?

Records should only be deleted when you are sure that they are no longer needed. Even though records use a soft delete mechanism, there is still work that must be done to restore an item once it has been deleted.

The best thing to do with an item that is no longer needed is to set it to Inactive, Retired, or Obsolete, whichever state is applicable. This way, the item historically remains in the system but cannot be used.

If you do need to delete an item for good, then use the Trash button in the toolbar. Typically, only the system administrator can delete items.

I just changed the state of a process. What happens now?

When a process' state makes a transition, the system typically takes some automated steps. Details about these steps are listed in the State Transitions section of each process in this user guide.

Typically, state transition steps perform one of three functions:

1. **Notifications.** Notifications are sent to the users that are responsible for the next state of a process.
2. **Field Update.** Fields that depend on a state, date, or action are updated.
3. **Another State Transition**. A process' state may be transitioned automatically by the system, depending on a state, date, or action update.

Some processes may not have any automatic state transitions. In that case, it is useful to check the States section to view the process' state map and read the definitions of each state.

You can also review the Task list for that process. Each list typically describes which state to select when saving a process record.