Contents

[1 Purpose 1](#_Toc79006169)

[2 Scope 1](#_Toc79006170)

[3 Definitions and Acronyms 1](#_Toc79006171)

[4 Graphic 2](#_Toc79006172)

[5 Responsibilities 2](#_Toc79006173)

[6 Instruction 2](#_Toc79006174)

[7 Associated Quality Records 6](#_Toc79006175)

[8 Reference Forms / Templates / Documents 7](#_Toc79006176)

[9 Current Revision Training Requirements 7](#_Toc79006177)

[10 Revision History & Approval 7](#_Toc79006178)

# Purpose

## The purpose of this document is to define how to properly fill out a Calibration Plan to communicate the requirements for calibration.

# Scope

## This document is to be used when filling out a Calibration Plan for any of the following:

### A calibration is to be performed in the MTS Calibration and Metrology Laboratory.

### A force transducer outside of the capacity of the MTS Calibration and Metrology Laboratory is to be performed at a designated outside service provider.

# Definitions and Acronyms

## N/A

# Graphic

## N/A

# Responsibilities

## Metrology

### Maintains this document

### Maintains the Calibration Plan form

## Project Engineering

### Uses this document to properly fill out a Calibration Plan

# Instruction

## Considerations

### Macros must be enabled to interact with the calibration plan form. If not already enabled on the workstation, click “Enable Content” at the prompt towards the top of the window.



### All cells that require user input are highlighted with a red, dashed line border (required user input fields). Once an entry is made, the border will disappear. If any cells remain with a red, dashed line border, that means the calibration plan is not yet complete.

### Do not enter any information in a location that is not a required user input field as it could negatively impact the functionality of the form. The only exception to this is the “Notes” section which is not formatted as a “required user input field”.

### Do not add/remove any rows, columns, or cells to/from the form as logic is built in referencing specific locations in the document that will be negatively impact the built-in functionality.

### If at any point, the user needs to start over with the form, either close and reload the file or click the “Reset form” button located on the calibration form.

### Unless otherwise specified in the drop-down menu options of the calibration plan form, the top most entry is typically the most common selection.

### There is a <Show/Hide Revision History> button located on the “Form Selection” tab that when clicked will show or hide the “Revision History” tab. This tab contains the details of each revision level.

## Instructions

### Open the calibration plan form at the link below:

#### [\\mspdata1\Manufacturing\Masters\Metrology\Key Documents\Factory Calibration QMS and WI\Calibration Plan](file:///%5C%5Cmspdata1%5CManufacturing%5CMasters%5CMetrology%5CKey%20Documents%5CFactory%20Calibration%20QMS%20and%20WI%5CCalibration%20Plan)

### **Note:** The opening screen, “Form Selection”, is the launch point for selecting the calibration plan form for the equipment to be calibrated.

### In the drop-down menu, select the type of equipment to be calibrated.

### Click the <Create Form> button.

### **Note:** The unique calibration plan form based on the equipment selected will be made available.

### Start by filling out the header information of the calibration plan form.

#### Date

##### This is the date that the calibration plan was created.

#### Contact

##### This is the contact name of the individual that created the calibration plan.

#### WBS Element

##### This is the project number linked with this calibration.

#### Extension

##### This is the contact phone number for the creator of the calibration plan.

#### Customer Name

##### This is the name of the Customer/End User that the equipment is being calibrated for.

##### The Customer Name should be identical to the name as used in SAP, whenever possible.

### Fill out the unique calibration requirements for the equipment

#### If there are questions about the content of the calibration plan form, contact the Technician that works within the applicable calibration discipline or contact the Staff Metrologist.

### Any comments or extra information to be communicated to the Technician should be entered in the “Notes” Section.

### Once all required user input fields are filled out completely, do the following:

#### Click the <Save As PDF> button if the calibration plan is not for a single axis force transducer greater than 220kip (1000kN).

#### Click the <Save As PDF and E-mail to Vendor (Tovey)> button if the calibration is for a single axis force transducer greater than 220kip (1000 kN). See **Section 6.3.4** for further details.

### Save the file to a local location where the file can be easily retrieved such as the Desktop.

### Attach the PDF file to the applicable POND project folder.

## Logic Buttons on Form

###

#### This button is used to save the completed calibration plan form in the required PDF format.

###

#### This button is used to reset the open calibration form to the blank configuration. Alternatively, the calibration plan form file can be closed and reopened to achieve a similar result.

###

#### This button is used to provide feedback or ask questions directly to Calibration and Metrology support personnel.

###

#### **Note:** This button is only available on the calibration plan form for “Force (Single Axis)”.

#### **Note:** Logic is built into the form that will check for a compatible transducer before attaching the completed calibration plan form to the e-mail. If a transducer is selected that is not applicable, an error message will display on the screen.

#### This button is used when creating a calibration plan form for a force transducer that has a capacity exceeding that of the capability of the Calibration and Metrology Laboratory. After saving the form as a PDF, it will attach the file to an e-mail addressed to the external calibration service provider communicating the calibration requirements.

###

#### This button is used to close the current calibration form that is open and return to the original form selection view.

## Appendix

### Conditioner based calibrations versus mV/V sensitivity calibrations.

#### Conditioner based calibrations utilize MTS controller electronics.

#### Conditioner based calibrations are performed with specific MTS controller electronics and a sensor file is created.

#### mV/V sensitivity calibrations are utilized for calibrations that do not require a calibration linked to the electronics.

#### mV/V sensitivity calibrations are performed with stand-alone transducers not directly linked or used with MTS controller electronics.

### Conditioner Model

#### The most common DUC to select is a 494.16 or 494.26.

#### The 494.21 DUC is typically used for multi-range Elastomer calibrations only.

### Conditioner Configuration (8-Wire vs 6-Wire vs 4-Wire)

#### What options are available to the user are calibration discipline specific (e.g. not every discipline will offer 4-Wire).

#### The 8-Wire configuration is the standard and most recommended configuration.

#### The 4-Wire configuration is typically used with AC-Mode transducers such as LVDTs.

### Options

#### Select a non-TEDS or TEDS option depending on what connector the transducer has or, in the case of Extensometers, if a TEDS dongle is required.

### Calibration Range Maximum

#### This is defined as the full scale value required for the calibration.

#### This can be but is not always the full scale capacity of the transducer.

### Preload Requirements

#### The intent of this requirement is to replicate, during calibration, how the transducer is fixtured on the machine.

# Associated Quality Records

|  |  |
| --- | --- |
| **Required Record** | **QMS Web Location** |
| Completed Calibration Plan | POND |

# Reference Forms / Templates / Documents

|  |  |
| --- | --- |
| **Form / Template / Document Title** | **QMS Web Location** |
| Calibration Plan Form | Calibration Plan QMS |

# Current Revision Training Requirements

|  |  |  |  |
| --- | --- | --- | --- |
| **LMS Course Number** | **Read &** **Test** | **Read &** **Acknowledge** | **Functions or groups that require this training** |
|  |  | X | Project Engineering |

# Revision History & Approval

|  |
| --- |
| **Revision History** |
| **Rev** | **Description of Change** | **Author** | **Effective Date** |
| A | Implemented | JMP | 11/8/2021 |

|  |
| --- |
| **Required Approvers for Current Revision** |
| **Name**  | **Function** | **SharePoint Approval** |
| Dave Kreitlow | Calibration and Metrology Manager | 11/8/2021 |