Calibrate MASS-Tron II Flow Indicator

Tank Farm Maintenance Procedure

USQ # Routine Maintenance

<table>
<thead>
<tr>
<th>CHANGE HISTORY (≤ LAST 5 REV-MODS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rev-Mod</td>
</tr>
<tr>
<td>---------</td>
</tr>
<tr>
<td>F-1</td>
</tr>
<tr>
<td>F-0</td>
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<td>E-1</td>
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1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions to calibrate MASS-Tron II Flow Indicator.

1.2 Scope

This procedure includes MASS-Tron II Flow Indicator and associated test equipment necessary for calibration.

2.0 INFORMATION

NONE

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Personnel Safety

3.1.1 Compliance with DOE-0359, Hanford Site Electrical Safety Program is required when working with this procedure.

3.2 Radiation and Contamination Control

Work in radiological areas will be performed using a radiological work permit following review by Radiological Control per the ALARA Work Planning procedure TFC-ESHQ-RP_RWP-C-03.
4.0 PREREQUISITES

4.1 Special Tools, Equipment, and Supplies

The following supplies may be needed to perform this procedure:

- Adjustable current source capable of input range stated on Data Sheet

NOTE - Input DMM not required if input source has calibrated indicator with required accuracy.

- Digital Multimeter (DMM) capable of measuring input range and tolerance stated on Data Sheet
- Pressure measuring device capable of range and tolerance per Data Sheet (MP6KP or equivalent)
- Absolute Pressure Gauge capable of range and tolerance per Data Sheet or if not available within. Hg scale, a psi scale can be substituted with conversion calculations:
  1 in. Hg = 0.4912 psi
  1 psi = 2.036 in. Hg

- Voltage/Current generator
- Adjustable/regulated low pressure air supply
- Vacuum pump with regulator (DRUCK DPI 601 or equivalent)
- Applicable hand tools.

4.2 Field Preparation

4.2.1 ENSURE system is configured to allow calibration of instrument.

4.2.2 INFORM Shift Manager/OE before removing instrument from service.
5.0 PROCEDEURE

NOTE -  Calibration may be performed in-place or instrument returned to shop for bench calibration.

- This procedure is valid to use with MASS-Tron II, Rev. 1.1X, Rev. 3.XX, 4.XX, or 5.XX.

- If performance of any Steps in this procedure is not required for procedure completion, Steps not performed shall be indicated as such by entering "N/A" in the appropriate Data Sheet signoff space and explained in the COMMENTS\REMARKS Section of the Data Sheet.

5.1 Initial Set-Up

5.1.1 ENSURE MASS-Tron power switch is OFF per Figure 1.

5.1.2 CLOSE isolation valves.

5.1.3 REMOVE tubing.

5.1.4 REMOVE plug in type terminal strip.

5.1.5 REMOVE instrument from panel.

5.1.6 REMOVE cover (4 screws) per Figure 1.

5.1.7 REMOVE base (4 nuts) per Figure 1.

5.1.8 CONNECT tubing and test equipment per Figure 2 and the following sub-steps.

5.1.8.1 DISCONNECT tubing to pressure comp transducer (access from back side of unit).

5.1.8.2 CONNECT tubing from pump gauge to pressure comp transducer.

5.1.8.3 CONNECT tubing to “HI” input port.
5.1 Initial Set-Up (Cont.)

NOTE - Power requirement given on label below ON/OFF switch.

5.1.9 CONNECT power to terminals 14 15 and 16 per Figure 3.

5.1.10 CONNECT DMM to temperature output at terminal two (2) and terminal three (3) Common per Figure 3.

5.1.11 CONNECT temperature input at terminals eight (8) and ten (10) per Figure 3 or as directed by individual Data Sheet.

5.2 Temperature Input (Data Sheet Section 1)

5.2.1 IF calibrating MASS-Tron II, Rev. 1.1X, ENSURE S2 is in position 0 per Figure 4.

NOTE - MASS-Tron II will display warm-up routine prior to switching to normal operation display.

5.2.2 TOGGLE/SLIDE power switch to ON AND

WAIT for normal operating display to appear.

5.2.3 IF calibrating Mass-Tron II, Rev. 4XX, or 5.XX, ENSURE that initial setup information is consistent with the calibration ranges of the Data Sheet (e.g., temperature min. and max., operating span min. and max.).

5.2.4 ADJUST temperature input per Data Sheet AND

RECORD display and output values in As-Found column of Data Sheet.

5.3 Absolute Pressure (Data Sheet Section 2)

NOTE - Absolute Pressure Gauge with psi scale can be substituted with conversion calculations:

1 in. Hg = 0.4912 psi
1 psi = 2.036 in. Hg

5.3.1 ADJUST absolute pressure input per Data Sheet AND

RECORD DISPLAY data in As-Found column of Data Sheet.
## Calibrate MASS-Tron II Flow Indicator

### 5.4 Input Pressure with Minimum Hg and Maximum °F (Data Sheet Section 3)

5.4.1 CONNECT DMM to terminals (1) and (3) common per Figure 3.

5.4.2 ADJUST temperature input to maximum per Data Sheet.

5.4.3 ADJUST barometric pressure to minimum per Data Sheet.

5.4.4 ADJUST input signal (in/Hg) per Data Sheet AND RECORD output (if used) and display in As-Found column of Data Sheet.

### 5.5 Input Pressure with Minimum °F and Maximum Hg (Data Sheet Section 4)

5.5.1 ADJUST temperature input to minimum per Data Sheet.

5.5.2 ADJUST barometric pressure to maximum per Data Sheet.

5.5.3 ADJUST input signal (in/Hg) per Data Sheet AND RECORD output and display in As-Found column of Data Sheet.

### 5.6 Compare As-Founds with Allowable Tolerances

5.6.1 COMPARE As-Found readings with allowable tolerances as follows:

5.6.1.1 IF calibrating the MASS-Tron II, Rev. 1.1X, GO TO Section 5.7.

5.6.1.2 IF calibrating the MASS-Tron II, Rev.3.XX, 4.XX, or 5.XX. GO TO Section 5.12.
5.7 Rev. 1.1x Calibrate Temperature Input (Data Sheet Section 1)

5.7.1 IF As-Found readings are within tolerance specified on Data Sheet, **COPY**
As-Founds to As-Left column on Data Sheet **AND**

**GO TO** Section 5.8.

5.7.2 **TOGGLE/SLIDE** S6 (CALIB) UP per Figure 4 until display reads:

```
Transmitter
Calibration
```

5.7.3 **PRESS** MODE pushbutton until display reads:

```
Xmit Input Zero
```

5.7.4 **SCROLL** UP/DOWN pushbuttons until display reads:

```
Aux 1 Input Zero
```

5.7.5 **PRESS** MODE pushbutton until display reads:

```
Aux1 Input Zero
-- Push ENTER --
```

5.7.6 **ADJUST** temperature input to minimum per Data Sheet.
5.7 Rev. 1.1x Calibrate Temperature Input (Data Sheet Section 1) (Cont.)

5.7.7 PRESS ENTER pushbutton until display reads (count-down from 4 to 0):

- Aux1 Input Zero
- Settle Delay: 4

Display at count-down = 0:

- Input Zero Done
- -- Push MODE --

5.7.8 PRESS MODE pushbutton until display reads:

- Aux1 Input Zero

5.7.9 PRESS UP pushbutton until display reads:

- Aux1 Input Span

5.7.10 PRESS MODE pushbutton until display reads:

- Aux1 Input Span
- -- Push ENTER --

5.7.11 ADJUST temperature input to maximum per Data Sheet.
5.7 Rev. 1.1x Calibrate Temperature Input (Data Sheet Section 1) (Cont.)

5.7.12 PRESS ENTER pushbutton until display reads (count-down from 4 to 0):

Aux1 Input Span
Settle Delay:4

Display at count-down = 0:

Input Span Done
--Push MODE –

5.7.13 IF DISPLAY is:

Bad Input Span
-- Push MODE --

PRESS MODE pushbutton AND
GO TO Step 5.7.10, OTHERWISE Continue.

5.7.14 PRESS MODE pushbutton AND
TOGGLE/SLIDE S6 (CALIB) DOWN.

5.7.15 ADJUST temperature input per Data Sheet Section 1 AND
RECORD values in As-Left column of Data Sheet.
5.8 Rev. 1.1x Calibrate Output 2 (Data Sheet Section 1)

5.8.1 IF Output 2 is not used, GO TO Section 5.9.

5.8.2 IF As-Found reading is within tolerance specified on Data Sheet, COPY As-Found to As-Left column on Data Sheet AND GO TO Section 5.9.

5.8.3 CONNECT DMM to temperature output (2) per Figure 3.

5.8.4 TOGGLE/SLIDE S6 (CALIB) UP until display reads:

```
Transmitter
Calibration
```

5.8.5 PRESS MODE pushbutton until display reads:

```
Xmit Input Zero
```

5.8.6 SCROLL UP/DOWN pushbuttons until display reads:

```
Output 2 Zero
```

5.8.7 SELECT appropriate DMM scale for output per Data Sheet.

5.8.8 PRESS MODE pushbutton until display reads:

```
Output 2 Zero
Perform Zero Cal
```

5.8.9 PRESS UP/DOWN pushbuttons until output equals minimum per Data Sheet.
5.8 Rev. 1.1x Calibrate Output 2 (Data Sheet Section 1) (Cont.)

5.8.10 PRESS ENTER pushbutton until display reads:

Output 2 Zero

5.8.11 PRESS UP pushbutton until display reads:

Output 2 Span

5.8.12 PRESS MODE pushbutton until display reads:

Output 2 Span
Perform Span Cal

5.8.13 PRESS UP/DOWN pushbuttons until output equals maximum per Data Sheet.

5.8.14 PRESS ENTER pushbutton until display reads:

Output 2 Span

5.8.15 TOGGLE/SLIDE S6 (CALIB) DOWN.

5.8.16 ADJUST temperature input per Data Sheet Section 1 AND

RECORD display and output (if used) values in As-Left column of Data Sheet.
5.9 Rev. 1.1x Calibrate Atmospheric Pressure Transducer
(Data Sheet Section 2)

5.9.1 IF As-Found reading is within tolerance specified on Data Sheet, COPY
As-Found to As-Left column on Data Sheet AND

GO TO Section 5.10.

5.9.2 TOGGLE/SLIDE S6 (CALIB) UP until display reads:

Transmitter
Calibration

5.9.3 PRESS MODE pushbutton until display reads:

Xmit Input Zero

5.9.4 APPLY minimum atmospheric pressure per Data Sheet.

5.9.5 SCROLL UP/DOWN pushbuttons until display reads:

Pres Input Zero

5.9.6 PRESS MODE pushbutton until display reads:

Pres Input Zero
-- Push ENTER --
5.9 Rev. 1.1x Calibrate Atmospheric Pressure Transducer (Data Sheet Section 2) (Cont.)

5.9.7 PRESS ENTER pushbutton until display reads (count-down from 4 to 0):

```
Pres Input Zero
Settle Delay: 4
```

Display at count-down = 0

```
Input Zero Done
-- Push MODE --
```

5.9.8 PRESS MODE pushbutton until display reads:

```
Pres Input Zero
```

5.9.9 PRESS UP pushbutton until display reads:

```
Pres Input Span
```

5.9.10 PRESS MODE pushbutton until display reads:

```
Pres Input Span
-- Push ENTER --
```

5.9.11 ADJUST atmospheric pressure to maximum value per Data Sheet.
5.9 Rev. 1.1x Calibrate Atmospheric Pressure Transducer
(Data Sheet Section 2) (Cont.)

5.9.12 PRESS ENTER pushbutton until display reads (count-down from 4 to 0):

<table>
<thead>
<tr>
<th>Pres Input Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>Settle Delay: 4</td>
</tr>
</tbody>
</table>

Display at count-down = 0:

<table>
<thead>
<tr>
<th>Input Span Done</th>
</tr>
</thead>
<tbody>
<tr>
<td>-- Push MODE --</td>
</tr>
</tbody>
</table>

5.9.13 IF Display is:

<table>
<thead>
<tr>
<th>Bad Input Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>-- Push MODE --</td>
</tr>
</tbody>
</table>

PRESS MODE pushbutton AND

GO TO Step 5.9.10, OTHERWISE Continue.

5.9.14 TOGGLE/SLIDE S6 (CALIB) DOWN.

5.9.15 ADJUST atmospheric pressure input per Data Sheet Section 2 AND

RECORD display data in As-Left column of Data Sheet.
5.10 Rev. 1.1x Calibrate Transmitter Pressure Input

5.10.1 IF transmitter output is within tolerance specified on Data Sheet, COPY As-Found to As-Left column on Data Sheet AND GO TO Section 5.11.

5.10.2 CONNECT DMM to transmitter output (1) per Figure 3.

5.10.3 TOGGLE/SLIDE S6 (CALIB) UP until display reads:

   Transmitter Calibration

5.10.4 PRESS MODE pushbutton until display reads:

   Xmit Input Zero

5.10.5 TOGGLE/SLIDE S3 (AZ valve) switch UP/ZERO per Figure 4.

5.10.6 PRESS MODE pushbutton until display reads:

   Xmit Input Zero
   -- Push ENTER --
5.10 Rev. 1.1x Calibrate Transmitter Pressure Input (Cont.)

5.10.7 PRESS ENTER pushbutton until display reads (count-down from 4 to 0):

```
Xmit Input Zero
Settle Delay:4
```

Display at count-down = 0

```
Input Zero Done
-- Push MODE --
```

5.10.8 PRESS MODE pushbutton until display reads:

```
Xmit Input Zero
```

5.10.9 PRESS UP pushbutton until display reads:

```
Xmit Input Span
```

5.10.10 PRESS MODE pushbutton until display reads:

```
Xmit Input Span
-- Push ENTER --
```

5.10.11 TOGGLE/SLIDE S3 (AZ valve) switch to NORMAL position.
5.10 Rev. 1.1x Calibrate Transmitter Pressure Input (Cont.)

5.10.12 ADJUST input pressure to Full Scale value per Data Sheet Section 3.

5.10.13 PRESS ENTER pushbutton until display reads (count-down from 4 to 0):

Xmit Input Span
Settle Delay:4

Display at count-down = 0:

Input Span Done
-- Push MODE --

5.10.14 IF Display is:

Bad Input Span
-- Push MODE --

PRESS MODE pushbutton AND
GO TO Step 5.10.10, OTHERWISE Continue.

5.10.15 PRESS MODE pushbutton AND
TOGGLE/SLIDE S6 (CALIB) DOWN.
5.11 Rev. 1.1x Calibrate Output 1 (Data Sheet Section 3)

5.11.1 IF Output 1 is not used, GO TO Section 5.17.

5.11.2 IF As-Found reading is within tolerance specified on Data Sheet, COPY As-Found to As-Left column on Data Sheet AND GO TO Section 5.17.

5.11.3 CONNECT DMM to Output 1 per Figure 3.

5.11.4 TOGGLE/SLIDE S6 (CALIB) UP until display reads:

Transmitter
Calibration

5.11.5 PRESS MODE pushbutton until display reads:

Xmit Input Zero

5.11.6 SCROLL UP/DOWN pushbuttons until display reads:

Output 1 Zero

5.11.7 SELECT appropriate DMM scale for output per Data Sheet.

5.11.8 PRESS MODE pushbutton until display reads:

Output 1 Zero
Perform Zero Cal
5.11 Rev. 1.1x Calibrate Output 1 (Data Sheet Section 3) (Cont.)

5.11.9 PRESS UP/DOWN pushbuttons until output equals minimum per Data Sheet.

5.11.10 PRESS ENTER pushbutton until display reads:

```
Output 1 Zero
```

5.11.11 PRESS UP pushbutton until display reads:

```
Output 1 Span
```

5.11.12 PRESS MODE pushbutton until display reads:

```
Output 1 Span
Perform Span Cal
```

5.11.13 PRESS UP/DOWN pushbuttons until output equals maximum per Data Sheet.

5.11.14 PRESS ENTER pushbutton until display reads:

```
Output 1 Span
```

5.11.15 TOGGLE/SLIDE S6 (CALIB) DOWN.

5.11.16 ADJUST input pressure per Data Sheet (Sections 3 and 4) AND RECORD output (if used) and display in As-Left column of Data Sheet.

5.11.17 GO TO Section 5.17.
5.12 Rev. 3.xx, 4.xx or 5.xx Calibrate Temperature Input (Data Sheet Section 1)

5.12.1 IF Temperature inputs in Section 1 of data sheet, are within tolerance; GO TO Section 5.14.

5.12.2 WHILE in "Transmitter Input Calib", SCROLL to:

Temperature ZERO ==> 

5.12.3 PRESS ENTER and display will read:

Temperature Zero
-- Push ENTER --

5.12.4 ADJUST temperature signal for minimum value of temperature input per Data Sheet.

5.12.5 PRESS ENTER, and display will read:

Temperature Zero
Settle Time:4

Display at countdown = 0:

Input Zero Done
-- Push ESCAPE --
Calibrate MASS-Tron II Flow Indicator

5.12 Rev. 3.xx, 4.xx or 5.xx Calibrate Temperature Input (Data Sheet Section 1) (Cont.)

5.12.6 PRESS ESCAPE AND

SCROLL UP/DOWN pushbuttons until the display reads:

```
Temperature Span =>
```

5.12.7 PRESS ENTER, and the display will read:

```
Temperature Span
-- Push ENTER --
```

5.12.8 ADJUST temperature signal for maximum value of temperature input per Data Sheet.

5.12.9 PRESS ENTER, and display will read:

```
Temperature Span
Settle Time:4
```

Display at countdown = 0:

```
Input Span Done
-- Push ESCAPE --
```
5.12 Rev. 3.xx, 4.xx or 5.xx Calibrate Temperature Input (Data Sheet Section 1) (Cont.)

5.12.10 IF the display reads:

<table>
<thead>
<tr>
<th>Bad Input Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>-- Push ESCAPE --</td>
</tr>
</tbody>
</table>

5.12.10.1 CHECK input signal AND READJUST as necessary.

5.12.10.2 PRESS ESCAPE.

5.12.10.3 GO TO Step 5.12.7.

5.12.11 PRESS ESCAPE.

5.12.12 ADJUST input per Data Sheet AND RECORD data in As-Left column of Data Sheet.
5.13 Rev. 3.xx, 4.xx or 5.xx Calibrate Output 2 (Data Sheet Section 1)

5.13.1 IF Temperature values in Data Sheet Section 1 are within tolerance, GO TO Section 5.14.

5.13.2 IF As-Found readings are within tolerance specified on Data Sheet, COPY As-Founds to As-Left column on Data Sheet AND GO TO Section 5.14.

5.13.3 CHANGE to "Transmitter Output Calib" AND SCROLL to:

```
Output 2 ZERO ==>  
```

5.13.4 PRESS ENTER and display will read:

```
Output 2 Zero  
Perform Calibration  
```

5.13.5 IF reading is out of tolerance, USE UP/DOWN pushbuttons to ADJUST output signal for minimum value per Data Sheet.

5.13.6 PRESS ENTER.

5.13.7 SCROLL to

```
Output 2 Span ==>  
```

5.13.8 PRESS ENTER, and the display will read:

```
Output 2 Span  
Perform Calibration  
```
5.13 Rev. 3.xx, 4.xx or 5.xx Calibrate Output 2 (Data Sheet Section 1) (Cont.)

5.13.9 IF reading is out of tolerance, USE UP/DOWN pushbuttons to ADJUST output signal for maximum value per Data Sheet.

5.13.10 PRESS ENTER.

5.13.11 ADJUST input per Data Sheet AND

RECORD data in As-Left column of Data Sheet.
5.14 Rev. 3.xx, 4.xx or 5.xx Calibrate Absolute Pressure Transducer
(Data Sheet Section 2)

5.14.1 IF As-Found readings are within tolerance specified on Data Sheet, COPY
As-Founds to As-Left column on Data Sheet AND

GO TO Section 5.15.

5.14.2 PRESS AND HOLD ENTER until display reads:

```
Transmitter Scaling and
Configuration
```

5.14.3 SCROLL UP/DOWN pushbuttons until display reads:

```
Transmitter Input
Calibration
```

5.14.4 PRESS ENTER and display will read:

```
Transducer Zero
```

5.14.5 SCROLL UP/DOWN pushbuttons until display reads:

```
Abs. Pressure Zero =>
```

5.14.6 PRESS ENTER, and display will read:

```
Abs. Pressure Zero
-- Push ENTER --
```
5.14 Rev. 3.xx, 4.xx or 5.xx Calibrate Absolute Pressure Transducer
(Data Sheet Section 2) (Cont.)

5.14.7 ADJUST (as read on gauge) to minimum pressure per Data Sheet.

5.14.8 PRESS ENTER, and display will read:

<table>
<thead>
<tr>
<th>Abs. Pressure Zero</th>
</tr>
</thead>
<tbody>
<tr>
<td>Settle Time: 4</td>
</tr>
</tbody>
</table>

Display at Countdown = 0:

<table>
<thead>
<tr>
<th>Input Zero Done</th>
</tr>
</thead>
<tbody>
<tr>
<td>-- Push ESCAPE --</td>
</tr>
</tbody>
</table>

5.14.9 IF the display reads:

<table>
<thead>
<tr>
<th>Bad Input Span</th>
</tr>
</thead>
<tbody>
<tr>
<td>-- Push ESCAPE --</td>
</tr>
</tbody>
</table>

5.14.9.1 CHECK input pressure (as read on gauge) AND 

READJUST as necessary.

5.14.9.2 PRESS ESCAPE.

5.14.9.3 GO TO Step 5.14.6.

5.14.10 PRESS ESCAPE AND 

SCROLL UP/DOWN pushbuttons until the display reads:

| Abs. Pressure Span ==|
5.14 Rev. 3.xx, 4.xx or 5.xx Calibrate Absolute Pressure Transducer (Data Sheet Section 2) (Cont.)

5.14.11 PRESS ENTER, and display will indicate:

```
Abs. Pressure Span
-- Push ENTER --
```

5.14.12 ADJUST input pressure (as read on gauge) to the maximum pressure per Data Sheet.

5.14.13 PRESS ENTER, and display will read:

```
Abs. Pressure Span
Settle Time:4
```

Display at Countdown = 0:

```
Input Span Done
-- Push ESCAPE --
```

5.14.14 IF the display reads:

```
Bad Input Span
-- Push ESCAPE --
```

5.14.14.1 CHECK input pressure (as read on gauge) AND READJUST as necessary.

5.14.14.2 PRESS ESCAPE.


5.14.15 PRESS ESCAPE.
5.14 Rev. 3.xx, 4.xx or 5.xx Calibrate Absolute Pressure Transducer (Data Sheet Section 2) (Cont.)

5.14.16 ADJUST input per Data Sheet AND RECORD data in As-Left column of Data Sheet.
5.15 Rev. 3.xx, 4.xx or 5.xx Calibrate Transmitter Pressure Input

5.15.1 IF transmitter output is within tolerance specified on Data Sheet and temperature input and/or absolute pressure were NOT calibrated, COPY As-Found to As-Left column on Data Sheet AND

GO TO Section 5.16.

5.15.2 IF needed, SLIDE switch S1 - "AZ Valve" to the ZERO position per Figure 5.

NOTE - Minimum and maximum full scale differential pressure will be applied to the MASS-Tron II. The unit will be programmed to recognize these pressures as zero and span for transmitter input calibration.

5.15.3 WHILE in Main Menu, SCROLL to

Transmitter
Input Calib -->

5.15.4 PRESS ENTER, and display will read:

Transducer Zero ==> 

5.15.5 PRESS ENTER, and display will read:

Transducer Zero
-- Push ENTER --

5.15.6 VERIFY switch S1 - "AZ Valve is in the ZERO position per Figure 5.
5.15 Rev. 3.xx, 4.xx or 5.xx Calibrate Transmitter Pressure Input (Cont.)

5.15.7 PRESS ENTER, and display will read:

```
Transducer Zero
Settle Time: 4
```

Display at Countdown = 0:

```
Input Zero Done
-- Push ESCAPE --
```

5.15.8 PRESS ESCAPE AND

SCROLL UP/DOWN pushbuttons until the display reads:

```
Transducer Span ==> 
```

5.15.9 PRESS ENTER, and display will read:

```
Transducer Span
-- Push Enter --
```

5.15.10 SLIDE switch S1 - "AZ Valve" to the NORMAL position per Figure 5.

5.15.11 APPLY input pressure (as read on manometer) to the High port of the MASS-Tron II.
5.15 Rev. 3.xx, 4.xx or 5.xx Calibrate Transmitter Pressure Input (Cont.)

5.15.12 IF Rev. 3.XX, ADJUST pressure to equal the full calibrated span value per Section 3 of the Data Sheet.

5.15.13 IF Rev. 4.XX, or 5XX, ADJUST pressure to equal the full natural span value As-Found in Comment Section of Data Sheet.

5.15.14 PRESS ENTER, and display will read:

```
Transducer Span
Settle Time: 4
```

Display at Countdown = 0:

```
Input Span Done
-- Push ESCAPE --
```

5.15.15 IF the display reads:

```
Bad Input Span
-- Push ESCAPE --
```

5.15.15.1 CHECK input pressure (as read on manometer) AND READJUST as necessary.

5.15.15.2 PRESS ESCAPE.

5.15.15.3 GO TO Step 5.15.9.

5.15.16 PRESS ESCAPE.
5.16  Rev. 3.xx, 4.xx or 5.xx Calibrate Output 1 (Data Sheet Section 3)

5.16.1  IF Output 1 is not used, GO TO Section 5.17.

5.16.2  IF As-Found readings are within tolerance specified on Data Sheet, COPY As-Founds to As-Left column on Data Sheet AND GO TO Section 5.17.

5.16.3  WHILE in "Transmitter Output Calib", SCROLL to

```
Output 1 ZERO ==>  
```

5.16.4  PRESS ENTER and display will read:

```
Output 1 Zero  
Perform Calibration
```

5.16.5  IF reading is out of tolerance, USE UP/DOWN pushbuttons to ADJUST output signal for minimum value per Data Sheet.

5.16.6  PRESS ENTER.

5.16.7  SCROLL to

```
Output 1 Span ==>  
```

5.16.8  PRESS ENTER, and the display will read:

```
Output 1 Span  
Perform Calibration
```

5.16.9  IF reading is out of tolerance, USE UP/DOWN pushbuttons to ADJUST output signal for maximum value per Data Sheet.

5.16.10 PRESS ENTER.

5.16.11 PRESS ESCAPE.

5.16.12 ADJUST input per Sections 3 and 4 of Data Sheet AND RECORD the data in As-Left column of Data Sheet.
5.17 Restoration

5.17.1 **ENSURE** Mass-Tron power switch is OFF per Figure 1.

5.17.2 **IF** any problems were encountered with calibration, **INFORM** FWS.

5.17.3 **ENSURE** all test equipment is disconnected and removed.

5.17.4 **ENSURE** tubing is reconnected to pressure comp transducer.

5.17.5 **ASSEMBLE** MASS-Tron II unit.

5.17.6 **ENSURE** instrument is **MOUNTED** on panel.

5.17.7 **RE-CONNECT** plug in type terminal strip.

5.17.8 **RE-CONNECT** tubing.

5.17.9 **RETURN** instrument to service as directed by Work Package.

5.17.10 **CONFIRM** temperature reading.

5.17.10.1 **IF** temperature reading is negative, **REVERSE** the wires.

5.17.11 **INFORM** responsible Shift Manager/OE per Work Package, that calibration is complete.

5.18 Acceptance Criteria

Acceptance Criteria has been met when Steps in this procedure have been satisfactorily performed and As-Left values meet the specifications and tolerance(s) per the Data Sheet.

5.19 Review

5.19.1 **INFORM** FWS test is complete.

5.19.2 FWS REVIEW AND ENSURE the following:

- Completed Data Sheets meet the acceptance criteria.
- Comments sections are filled out appropriately.
- Work requests needed as a result of this procedure are identified and generated.
- Work request number(s) of any work documents generated as a result of this procedure, are recorded in the Comments/Remarks section of the Data Sheet, as applicable.
5.20 Records

This procedure is performed within a work package, as such, the procedure in its entirety will be maintained as a record per the Work Control process.

The record custodian identified in the Company Level, Records Inventory and Disposition Schedule (RIDS) is responsible for record retention in accordance with TFC-BSM-IRM_DC-C-02.
Calibrate MASS-Tron II Flow Indicator

Figure 1 – MASS-Tron II Assembly Drawing (Typical)
Calibrate MASS-Tron II Flow Indicator

Figure 2 – MASS-Tron II Calibration Set-up
Figure 3 – MASS-Tron II Connections (Typical)
Calibrate MASS-Tron II Flow Indicator

Figure 4 – MASS Tron II Rev. 1.1x Controls
Calibrate MASS-Tron II Flow Indicator

Figure 5 – MASS – Tron II Rev. 3.xx or 4.xx Controls
Calibrate MASS-Tron II Flow Indicator

Figure 6 – MASS–tron II Rev. 5.xx Faceplate Layout with Terminals