Table of Contents

1.0 PURPOSE AND SCOPE ................................................................................................................. 2
  1.1 Purpose ................................................................................................................................. 2
  1.2 Scope ..................................................................................................................................... 2

2.0 INFORMATION .............................................................................................................................. 2

3.0 PRECAUTIONS AND LIMITATIONS ......................................................................................... 2
  3.1 Radiation and Contamination Control .................................................................................... 2

4.0 PREREQUISITES .......................................................................................................................... 2
  4.1 Special Tools, Equipment, and Supplies ................................................................................. 2
  4.2 Field Preparation .................................................................................................................... 2

5.0 PROCEDURE ............................................................................................................................... 3
  5.1 Calibration .............................................................................................................................. 3
  5.2 Restoration ............................................................................................................................. 5
  5.3 Acceptance Criteria ............................................................................................................... 5
  5.4 Review ..................................................................................................................................... 5
  5.5 Records ................................................................................................................................... 6

Figure 1 - Adjustments and Test Jacks (Right Side View) ............................................................... 7

Figure 2 - Chart Paper in Position for Electrical Calibration ......................................................... 8
1.0 PURPOSE AND SCOPE

1.1 Purpose

This procedure provides instructions for calibrating Fisher Controls Recorder.

1.2 Scope

This procedure applies to calibrating Fisher Controls Recorder, Type’s RD221 and RD222.

2.0 INFORMATION

NONE

3.0 PRECAUTIONS AND LIMITATIONS

3.1 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:

- Digital Multimeter
- Voltage source 0 to 5 VDC.

4.2 Field Preparation

4.2.1 OBTAIN release from Operations prior to beginning performance of this instruction.
5.0 PROCEDURE

**Special Instruction**

If performance of any steps in this procedure is not required for procedure completion, steps not performed are to be marked "N/A" in appropriate Data Sheet signoff space and explained in comments/remarks section of Data Sheet.

5.1 Calibration

5.1.1 **IF** potential for radiological contamination exists, **PERFORM** equipment survey prior to beginning maintenance or prior to removal of equipment or component from its installed location.

5.1.2 **SECURE** any control systems affected by this calibration.

5.1.3 **REMOVE** recorder from case to the locked service position, allowing access to calibration and test jacks (Figure 1).

5.1.4 **IF** not already in the “OFF” position, **TURN** the CHART DRIVE SWITCH to the “OFF” position.

5.1.5 **SET** NORM/CAL SWITCH on servo module to CAL for pen to be calibrated.

5.1.6 **CONNECT** test source (+) lead to CAL TEST JACK and (-) lead to COM TEST JACK.

5.1.7 **CONNECT** Digital Multimeter between NORM and COM TEST JACKS to monitor signal source calibration signal, as required.

5.1.8 **POSITION** chart paper using MANUAL ADVANCE THUMBWHEEL so pen to be calibrated is at right-hand end of calibration reference line on chart paper (Figure 2).

5.1.9 **APPLY** test inputs specified by Data Sheet **AND**

**RECORD** output values in As-Found section of Data Sheet.

5.1.10 **IF** the instrument As-Found output values are within tolerance specified by Data Sheet, and no adjustments are desired, **RECORD** As-Found values in As-Left column **AND**

**GO TO** Section 5.2.
5.1 Calibration (Cont.)

5.1.11 ADJUST test source for 0% reading.

5.1.11.1 IF pen DOES NOT read within tolerance indicated on Data Sheet, ADJUST ZERO potentiometer.

5.1.12 ADJUST test source for 100% reading.

5.1.12.1 IF pen DOES NOT read within tolerance indicated on Data Sheet, ADJUST SPAN potentiometer.

5.1.13 APPLY inputs per Data Sheet AND CHECK output values for tolerance.

5.1.14 IF values are within tolerance per Data Sheet, RECORD As-Left values on Data Sheet AND GO TO Restoration, Section 5.2.

5.1.15 IF values are not within tolerance per Data Sheet, REPEAT Steps 5.1.11 thru 5.1.14 until values are within tolerance,

OR

IF unable to bring values into tolerance NOTIFY FWS/OE for resolution.
5.2 Restoration

5.2.1 IF any problems were encountered with calibration, INFORM FWS.

5.2.2 SET the NORM/CAL SWITCH to NORM.

5.2.3 DISCONNECT AND REMOVE test equipment as necessary.

5.2.4 SET CHART DRIVE SWITCH to speed required.

5.2.5 RECORD Test Equipment information and calibration status on Data Sheet.

5.2.6 CHECK equipment restoration by observing indications are consistent with expected conditions.

5.2.7 NOTIFY Operations that testing is complete and system may be returned to desired configuration.

5.3 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.

5.4 Review

5.4.1 INFORM FWS/Lead the test is complete.

5.4.2 FWS/Lead 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.
5.5 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 identified record custodian is responsible for record management in accordance with TFC-BSM-IRM_DC-C-02 or other applicable requirements.
Figure 1 - Adjustments and Test Jacks (Right Side View)

1. Chart speed selector module, determines chart speed selected by chart drive switch.
2. Alarm point 1 adjustment (optional) Sets high alarm point value on high and low alarm module. Sets high or low alarm point on high or low alarm module.
3. Alarm point 1 test jack (optional). Permits monitoring alarm point 1 adjustment.
4. Alarm module H/L switch (optional). Set to the H (UP) position for high alarm monitoring. Set to the L (DOWN) position for low alarm monitoring on high or low alarm module.
5. High and low alarm module (optional).
6. High or low alarm module (optional).
7. Pen 1 servo module printed wiring board.
8. 24 V Test jack permits monitoring or applying 24 V power to servo module.
11. Com test jack. Provides common (GND) connection for servo module and alarm module.
12. Alarm point 2 test jack (optional). Permits monitoring alarm point 2 adjustment.
13. Alarm point 2 adjustment (optional). Sets low alarm point value on high and low alarm module.
14. CAL test jack. Permits application of a 1 to 5 V DC calibration signal when NORM/CAL switch is in the CAL position.
15. NORM/CAL Switch. Place in NORM (UP) position for recorder normal operation. Place in CAL (DOWN) position to calibrate recorder.
16. D(DAMPING) Adjustment. Adjust to eliminate "BRUSH" effect on recording.
17. S (SPAN) Adjustment. Sets pen to 100% of span on chart with 5 V DC input.
18. Z (ZERO) Adjustment. Sets pen to 0% of span on chart with 1 V DC input.
20. Chart drive module printed wiring board.
21. Chart Drive Switch. Three position switch selects chart speed up (inch/hr). CENTER (OFF), DOWN (INCH/MIN)
Figure 2 - Chart Paper in Position for Electrical Calibration