SX 1650/2500 Recorder Calibration Procedures

8.G CALIBRATION

8.G.1 Calibration Procedure

All units are fully calibrated at the factory and should need no calibration at startup. If calibration becomes necessary, follow the steps below.

Calibration is performed using the 0 - 100 scale supplied with the recorder or with any scale that has a graduation line at 50% of travel. If any other scale is on the recorder, it must be removed and replaced with a scale suitable for calibration. See Section 9, 277724 Service Manual, for scale replacement procedure.

- Open the recorder door, release the chassis and pull it out until it locks in its forward most position.
- Pull out the chart drive latch and swing out the chart drive as far as it will go.
- Turn off the power, Fig. 8-5.
- Loosen the screw that secures the analog card cover, Fig. 8-5, and remove the cover.
- Close and latch the chart drive.
- Refer to Fig. 8-6, and disconnect the input cable from connector J1. For 2500(RTD) Recorders, disconnect the cable from connector J7 also.
- Connect a calibrating source, accurate to 0.1% over a range of 0 - 5V, to input connector J1. Connect the positive (+) lead to pin 1 (top pin). Connect the common lead to pin 2. Cable (L&N part 056888) may be used for this connection.
- Reach under the chart drive mechanism and turn the power on. The unit must be allowed to come up to temperature and stabilize before proceeding.
- Set switch S1, on the analog card, to the calibrate (CAL) position (slide it forward).
- Swing the program keyboard, Fig. 4-2, into its operating position. The CODE LED's are lit.
- Key the security code and press the **ENTER** key.

The scale display indicates — C A L — —, and remains unchanged until calibration has been completed. The indicator LED's on the program keyboard indicate, for each step, the type of input required from the calibration source (mV or V). The keyboard display format for calibration is:

STEP NO.	CALIBRATION SOURCE SETTING
XX	XXXX

Now proceed with the following calibrating instructions.

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Calibration Procedures

Calibration Instructions	Indicator Illuminated	Display Indicates
When the security code has been entered, the indicator LED's and keyboard display show.	mV •	01 1.000
Set the calibration source at 1 mV. Wait 10 seconds for stabilization. Then press the **ENTER** key.	mV •	02 2.500
Repeat the step above using the settings indicated by the indicator LED's and keyboard display for each step. The settings are 2.5, 5, 10, 25, 50, 100, 250 and 500 mV; 1, 2.5, and 5 V, for steps 2 through 12. After each setting, wait 10 seconds for stabilization before pressing the **ENTER** key.		
When the last setting (5 V) has been entered, the scale pointer will move down scale. Disconnect calibrating source.	• LOWER	13 SCALE
Using the arrow keys, move the pointer until it is exactly over the low end on the scale. Double arrows (⇑ ⇑ , ⇓ ⇓) indicate coarse adjustment. Single arrows (⇑ , ⇓) indicate fine adjustment.		
When the pointer is located over the low end line on the scale, press the • key to print a dot on the chart. Using the thumb wheel, Fig. 2-1, advance the chart. The dot should be centered on the "0" line of the chart.		
If the dot is properly centered on the chart, press the **ENTER** key and proceed with step 14.		
If the dot is not properly centered on the chart, use the arrow keys and the • key to center the dot on the "0" line of the chart. Then loosen the 5 screws that secure the scale assembly to the mainframe and center the low end line of the scale under the pointer. Retighten the 5 screws. Be sure the middle screw, on the right side of the scale assembly, is pressed against the casting before it is tightened. This screw acts as a registration point if the scale assembly is removed at a later date.		
Press the **ENTER** key. The scale pointer will move up scale.	• UPPER	14 SCALE
Using the arrow keys, position the scale pointer over the high end line on the scale. When the pointer is in position, press the **ENTER** key. The scale pointer will move to mid scale.	None	15 SCALE
Using the arrow keys, position the pointer over the graduation line on the scale that represents 50% of travel. When the pointer is in position, press the **ENTER** key.	None	16 POS 3-2
Move jumper W1, on the analog card, Fig. 8-6, to position 1 (over pins 2 and 3). Press the **ENTER** key.	None	17 POS 1-2
Move jumper W1, to position 2 (over pins 1 and 2). Press the **ENTER** key.	mV •	01 1.000
The recorder is calibrated. Press the **END** key.	None	Analog Brd
The keyboard display is indicating that switch S1, on the analog card, must be reset to the RUN position (slide it back).	None	SEL. Program
When the switch is reset, turn off the power switch, Fig. 4-5.		

- Disconnect the calibration source.
- Reconnect the input cable to J1, [also to J7 for 2500(RTD) Recorders] on the analog card.
- Replace the analog card cover.
- Restore the recorder to operating condition.

8.G.2 RTD Reference Junction Check
If it is suspected that a recorder is out of calibration on direct thermocouple input ranges, a check should first be made on the two RTD reference junction sensors (056875). They are located on the rear input terminal board(s).

On TC/emf recorders (Models 063205 and 063206), this check can be accomplished by pressing the "R" button on the keyboard while the recorder is cycling through its points. If there is no problem with the sensors, the main display will indicate ambient temperature in degrees C (for example 25° C). Should there be a problem, the display will indicate another temperature (usually much higher). To return to normal indicating and recording conditions, simply press another black key on the keyboard.

On a Speedomax 2500 RTD recorder (063204), the same check can be made by depressing the "X" key on the keyboard.

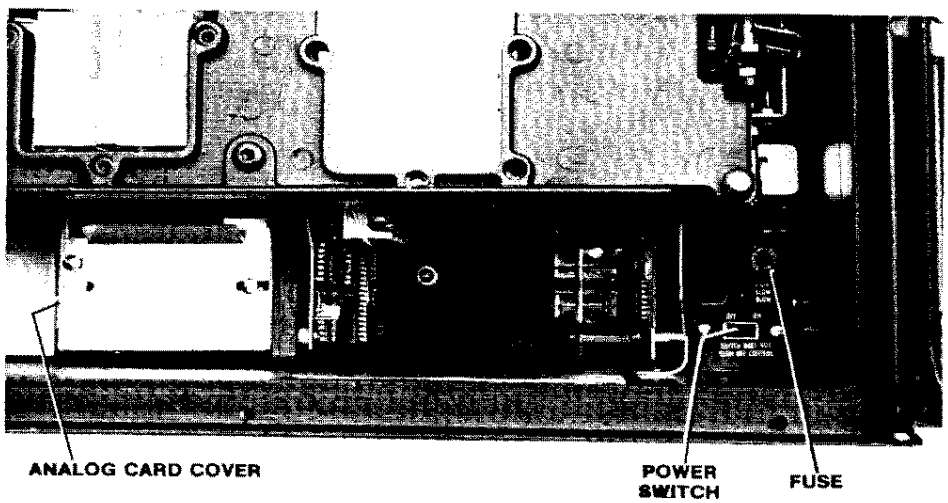

Fig. 8-5—Recorder, door open, chart drive swung open.

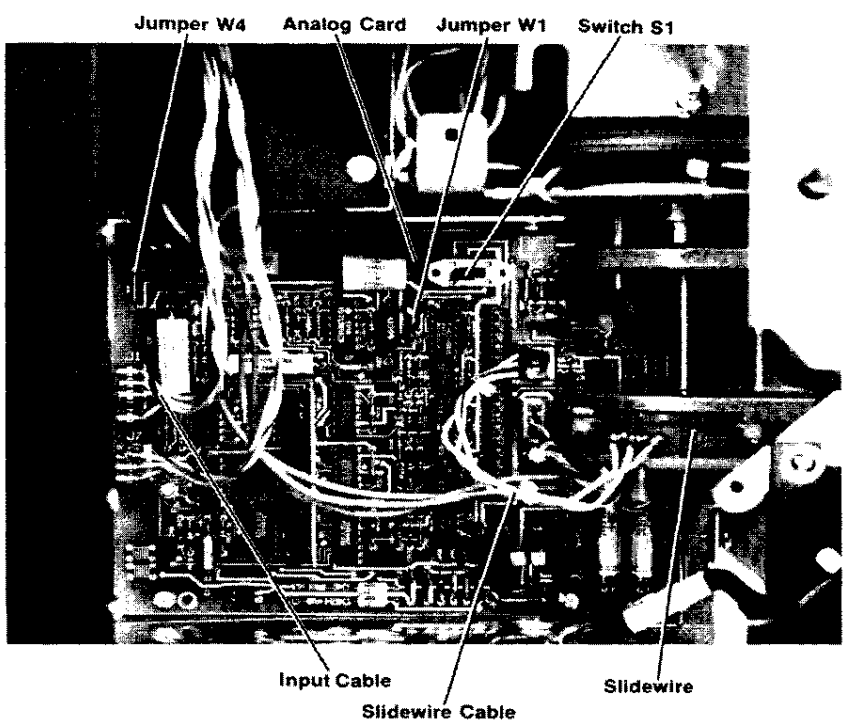

Fig. 8-6—Chassis, left side view, Analog card housing cover removed.