

Defect Detector
Calibration Procedures
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Calibration Devices

Servo Therm Function Generator (Silver with Black writing)

1. Device used in conjunction with: Servo 8808 Scanners, Servo 8909 Scanners, and Servo ACS.
2. Gating switch used when calibrating: Servo 9000 and Blue Box.
3. Device must be allowed time to achieve ambient temperature; recommend 20 minutes in shady area. If possible, reference the chopper blade temperature as ambient with a non contact thermometer.
4. Set temperature according to the detector instructions, turn power on, and allow 20 minutes for generator to stabilize at calibration temperature.
5. As the sensor cycles calibrate at highest end of heat cycle (peak).
6. Always ensure Heat Generator is turned off when not in use.
7. If Function Generator fails to achieve appropriate temperature return for repair.

Note: Do not open device, asbestos is present.

Servo Therm Function Simulator (Silver and Red)

1. Device used in conjunction with: Servo 8808 Scanners, Servo 8909 Scanners, and Servo ACS.
2. Gating switch used when calibrating: Servo 9000 and Blue Box.
3. Device must be allowed time to achieve ambient temperature; recommend 20 minutes in shady area. If possible, reference the chopper blade temperature as ambient with a non contact thermometer.
4. Set temperature according to the detector instructions, turn power on, allow no more than 5 minutes for generator to stabilize at calibration temperature.
5. As the sensor cycles calibrate at lowest end of heat cycle (valley).
6. Always ensure Function Simulator is turned off when not in use, set to lowest heat settings.
7. If Function Simulator fails to achieve appropriate temperature return for repair.

STC Calibrated Heat Sources Models 2067 and 2100-810

1. Device used in conjunction with the Sentry System 2058 with Type 1 Scanners.
2. Plug in device, place in shady area, allow 30 minutes for generator to stabilize at calibration temperature, LED on front panel of heat sources will cycle on and off.
3. Subzero switch must be in the off position at ambient temperatures above 32 degrees F.
4. As the sensor cycles calibrate at highest end of heat cycle (peak).
5. Always ensure Calibrated Heat Source is unplugged when not in use.
6. If Calibrated Heat Source fails to achieve appropriate temperature return for repair.

STC Adjustable Heat Source Generation 1 (Two Digital Displays, Model 2100-810XX)

1. Device may be used in conjunction with all Scanners when proper adapters are provided.
2. Plug in device, ensure all switches are off, place in shady area, allow 30 minutes for Heat Source Ambient Temperature (left digital display) to stabilize.
3. When left digital display (Heat Source Ambient Temperature) stabilizes use the three buttons on right display to set calibrating temperature.
 - a. Push left button on the right display twice, display will read SP (Set Point).
 - b. Display will show calibrating temperature (e.g. 240.6).
 - c. Push Right or Center button on the right display to set the calibrating temperature (Set Point).
 - d. Push the left button on the right display twice (display will read PROC).
 - e. Turn on heat switch; heat source will begin to heat toward set point.
4. Allow Heat Source to reach set point (right display), review ambient temperature (left display) for any change.

5. If ambient temperature has changed, adjustment must be made to the Set Point temperature, as necessary repeat step 3.
6. When calibration is complete turn off all switches unplug heat source.

STC Adjustable Heat Source Generation 2 (One Rotating Switch, One Meter, Model 2100-810NG)

1. Device may be used in conjunction with all Scanners when proper adapters are provided. Use only when outside temperature is between 0 and 90 degrees Fahrenheit.
2. The function connector which is not being used has live AC present, keep covered when not in use.
3. Set Gating switch as necessary for equipment to be tested. OFF for all equipment except Servo 9000, Cyberscan 2000, and UP HBD Model 250.
4. Use rotary switch to select desired calibrating temperature for equipment to be tested.
5. Plug in Heat source, allow approximately eight (8) minutes in a shady area for heat source to stabilize.
6. When meter needle centers, begin calibration.
7. When calibration is complete, unplug heat source.

Calibration Procedure

Calibration Procedure for STC Sentry System 2058 Scanner

Note: If ambient temperature is above 90 degrees F or below 32 degrees F, do not calibrate.

1. Plug in the heat source for 30 minutes. (Remove covers and clean lenses while waiting for heat source to stabilize).
2. Put the heat source firmly on Rail 1 (North or East) scanner
3. Press <CAL> on the keypad
4. Press <YES>
5. Press <NO>
6. Adjust the pot under the cursor to 180 degrees peak.
7. Press <YES>
8. Move heat source to Rail 2 (South or West) scanner.
9. Press <NO>
10. Adjust the pot under the cursor to 180 degrees peak.
11. Press <YES>
12. Remove heat source from scanners and unplug.
13. Put the covers back on scanners.
14. Perform a heat alarm test.

Note: If the unit times out while performing calibration, go to step 3 and repeat the process. (If on Rail 2, change step 5 to Yes.)

Calibration Procedure for Cyberscan 2000

Note: To activate the MENU on the hand held remote terminal, press any key on the keypad. Then push < enter > at the prompt. Press < 0 > (zero) to scroll through the menu until the TEST Menu appears. Press < 2 >. Proceed to step number 1.

1. Clean mirrors and lenses.
2. Verify current ambient temperature.
3. From the calibrate menu Press < 2 > (calibrate HBD)
4. Ambient < Y, N > IF temperature is correct press < Y >. If no temperature probe has been installed, then enter the current ambient temperature, press < enter >, then press < Y >.
5. Plug the function simulator into the D board and set dial on the function simulator to the displayed pyro-bolo temperature.
6. Turn the function simulator power ON. Let stabilize for approximately 2 to 3 minutes.
7. Press < enter >.
8. Put the simulator on Rail 1 scanner.
9. Turn function simulator gate switch on. The system will respond with (calibration under way).
10. When the gating has finished, the system will display gain for Rail 1. Enter < Y >.
11. Move the function simulator to Rail 2 and push < Y > to calibrate.
12. When the gating has finished, the system will display gain for Rail 2. Enter < Y >.
13. Remove the simulator from the scanner.
14. Turn off the simulator, gate off and disconnect the simulator from Board D.
15. Perform heat alarm test.

Calibration Procedure for STC 2300 Smartscan

Note: STC recommends that the calibrated heat source (2100-810NG) be used only when the outside (ambient) temperature is above 0°F (-18°C) and below 90°F (32°C).

1. Plug in the heat source and turn off gating switch (if equipped).
2. Remove hot wheel apertures (if equipped) and clean lenses while waiting for heat source to stabilize.
3. Put the heat source firmly on Rail 1 (North or East) scanner.
4. From Main Menu press < I > for the Setup Menu.
5. From the Setup Menu press < H > for the Systems Functions Menu.
6. From Systems Functions Menu press < E > to Auto-Calibrate.
7. When Auto-Calibration Disengaged is displayed move heat source to Rail 2 and repeat step 6.
8. When Auto-Calibration Disengaged is displayed move heat source to Rail 3 and repeat step 6.
9. When Auto-Calibration Disengaged is displayed move heat source to Rail 4 and repeat step 6.
10. Replace hot wheel apertures; marker dot must be facing rail.
11. Perform a heat alarm test on bearing scanners only.

Calibration Procedure for Harmon WCO/75 (Bolometer)

NOTE: Do not allow Servo simulator to remain on for more than five minutes before beginning calibration.

1. Clean lenses.
2. If necessary, power down and position interface board in test slot.
3. Restore power.
4. Plug in the heat source. adjust to temperature setting on calibration chart.
5. Place function switch in B position (CHOP mode) and toggle the Data Advance switch.
6. Put the heat source firmly on Rail 1 (North or East) scanner.
7. Adjust Channel 1 to 10MM using R68.
8. Move the heat source to Rail 2 (South or West) scanner.
9. Adjust Channel 2 to 10MM using R85.
10. When complete, power down and replace interface board in chassis.
11. Restore power.
12. Place function switch in E position.
13. Perform a heat alarm test.

Calibration Procedure for Harmon WCO/75 (Pyrometer)

NOTE: Do not allow Servo simulator to remain on for more than five minutes before beginning calibration.

1. Clean lenses.
2. Plug in the heat source.
3. Adjust temperature setting to 130 degrees over ambient temperature.
4. Place function switch in B position (CHOP mode) and toggle the Data Advance switch.
5. Put the heat source firmly on Rail 1 (North or East) scanner.
6. Adjust Channel 1 to 10MM using variable resistor R12.

7. Stop rotation of Chopper wheel on heat source, measure "Channel 1 IN" test point for DC voltage and record voltage.
8. Measure "Offset Channel 1" test point.
9. Adjust "Offset Channel 1" pot R14 0.2 volts more negative than the voltage recorded in step 8.
10. Move the heat source to Rail 2 (South or West) scanner.
11. Adjust Channel 2 to 10MM using pot R28.
12. Stop rotation of Chopper wheel on heat source.
13. Measure "Channel 2 IN" test point for DC voltage and record voltage.
14. Measure "Offset Channel 2" test point.
15. Adjust "Offset Channel 2" pot R30 0.2 volts more negative than the voltage recorded in step 14.
16. Place function switch in E position.
17. Perform a heat alarm test.

Calibration Procedure for Harmon WCO/32 (Model 38 preamp shutterless system)

1. Clean lenses.
2. Plug in the heat source and adjust temperature setting to 126 degrees over ambient temperature.
3. Place heat source on Rail 1 (North/East) scanner.
4. Place the switch in position B (CHOP mode), measure "Channel 1 IN" test point for DC voltage and record voltage.
5. Adjust DC BAL CH 1 (R77) for 0 volts DC +/- 0.2.
6. Adjust CH1 gain pot (R76) for 12MM.
7. Toggle reset switch to close shutters.
8. Measure "Channel 1 IN" test point again for DC voltage and record voltage.
9. Adjust DC BAL CH 1 (R77) for 0 volts DC +/- 0.2.
10. Toggle data advance switch to open shutters, recheck detector for 12MM.
11. Adjust pot (R76) if necessary.

12. If adjusted, recheck DC balance. Continue until no change is required.
13. Toggle reset switch to close shutters.
14. Measure "Offset Channel 1" test point.
15. Adjust "Offset Channel 1" pot (R14) for 0.2 volts more negative than the DC voltage measured at the "Channel 1 IN" test point.
16. Move heat source to Rail 2 (South/West) scanner.
17. Toggle date advance to display Channel 2.
18. Adjust DC BAL CH 2 (R82) for 0 volts DC +/- 0.2.
19. Adjust CH2 gain pot (R81) for 12MM.
20. Toggle reset switch to close shutters.
21. Measure "Channel 2 IN" test point again for DC voltage and record voltage.
22. Adjust DC BAL CH 2 (R82) for 0 volts DC +/- 0.2.
23. Toggle data advance switch to open shutters, recheck detector for 12MM.
24. Adjust pot (R81) if necessary.
25. If adjusted, recheck DC balance. Continue until no change is required.
26. Toggle reset switch to close shutters.
27. Measure "Offset Channel 2" test point.
28. Adjust "Offset Channel 2" pot (R30) for 0.2 volts more negative than the DC voltage measured at the "Channel 2 IN" test point.
29. Place function switch in E position.
30. Perform a heat alarm test.

Calibration Procedure for Harmon Micro HBD

Note: To perform calibration process computer must be connected.

1. Remove covers, clean lenses.
2. Plug in the Function Simulator, adjust temperature setting to 100 degrees over ambient temperature (allow five minutes for simulator to heat up), place heat source on Rail 1 (North/East) scanner.
3. From the display menu, access maintenance mode by typing < MM > <Enter> if necessary use the factory default password (Bumblebee).
4. From the maintenance menu type < C > < Enter > to begin calibration process.
5. Choose option 1 to calibrate Channel 1, detector will display ambient temperature, verify ambient is correct.
6. If ambient temperature is correct, type < Y >. If ambient is not correct type < N > and enter ambient temperature (the value must be between -40 and 120 degrees F).
7. Cover the Rail 1 (North/East) Scanner opening so that no heat is injected into the system by the simulator.
8. Press any key to continue.
9. Remove object covering scanner.
10. Press any key to start calibration.
11. If calibration is successful the Micro HBD will display new calibration value, type < Y > to accept the new value.
12. The Micro HBD will then recalibrate to new value. Type < Y > to accept new value.
13. Move Function Simulator to Rail 2 (South/West) scanner and repeat steps 5 through 7 for Rail 2
14. Perform a heat alarm test.

Calibration Procedure for Servo 9000 (Bolometer)

1. Remove covers and clean lenses
2. Replace covers
3. Power down unit in the following sequence:
 1. CPU
 2. HBD
4. Remove analog card
5. Insert card extender
6. Place analog card in extender
7. Power up unit in the following sequence:
 1. HBD
 2. CPU
8. Measure voltage at TP1 on the analog board
9. Set voltage (R4) to -0.10 volts DC
10. Measure voltage at TP9 on the analog board
11. Set voltage (R8) to -0.10 volts DC
12. Measure voltage at TP18 on the analog board
13. Set voltage (R25) to 0.40 volts DC.
14. Measure voltage at TP19 on the analog board
15. Set voltage (R73) to 0.40 volts DC.
16. Measure voltage at TP3 on the analog board
17. Set voltage (R38) to 2.50 volts DC.
18. Type < F > to check ambient temperature and refer to calibration chart for simulator setting.
19. Place Function Simulator on Rail 1 (North/East) Scanner.
20. Turn on simulator, allow to heat.
Note: Simulator has reached temperature when the red light turns off.
21. Turn on gating switch.
22. Detector will count down towards 10MM.

23. Adjust gain pot (R31) until cycle bottoms at 10MM.
24. Move Function simulator to Rail 2 (South/West) Scanner
25. Turn on gating switch.
26. Detector will count down towards 10MM.
27. Adjust gain pot (R81) until cycle bottoms at 10MM.
28. Turn off gating switch
29. Turn off Function Simulator
30. Set heat setting switches to lowest value.
31. Power down unit in the following sequence:
 1. CPU
 2. HBD
32. Remove analog card from extender card
33. Remove card extender
34. Replace analog card in chassis
35. Power up unit in the following sequence:
 1. HBD
 2. CPU
36. Perform a heat alarm test.