YORK®
ESG Service Information

File In/With: N/A
SI0041
New 11-02

Equipment Affected: YK Chillers

Proximity Probe Troubleshooting

General

The information in this letter will help the technician recognize and trouble shoot chiller shutdowns caused by promixity probe faults. The trouble shooting process is described below and as a flow chart in Figure 3.

The proximity probe is an electronic device that determines the position of the high speed thrust collar. It uses an electronic signal that is sent to the chiller micro panel. The micro panel uses this voltage signal and converts it into a position which it compares to a known reference position. The known reference position is programmed into the software during the probe calibration procedure.

During the calibration procedure the oil pump is turned on which drives the high speed assembly to its full forward position (normal operating thrust). This known position becomes the reference number that the micro panel uses for comparison. When the operating signal changes to a point exceeding allowable limits, the chiller is shut down on a proximity error.

Troubleshooting

When troubleshooting a YK chiller shut down on a proximity probe fault, an effective tool to use is a history print out of the shutdown. This provides information on the thrust collar position in relation to the reference position programmed in the micro panel at the time of shutdown. The printout data will help identify what caused the shut down, and how to correct the problem.

If the shutdown was triggered by a proximity distance, which exceeded –25 mils in relation to the reference position (-25, -26, -27, etc. mils) on a chiller with a single line micro panel, be sure the EPROM version installed is Revision 18, or greater. This is described in **Service Bulletin Form 160.49-M2 (SB18) (698).** This EPROM and later versions were changed to allow riding through a temporary low reading caused by RFI/EMI noise. Before shutting down on this type of reading, the micro panel must see this –25 mils or greater reading for 2 continuous seconds. This newer software logic is used in all graphic display micro panels.

If the shutdown was triggered by erroneous high-speed drain temps, this can be corrected by using the latest software that no longer looks at this temperature.

- On single line display micro panels install a Revision 19 or later EPROM. This is described in **Service Bulletin Forms 160.49-M2 (SB23) (300) and 160.49-M2 (SB24) (300).**
- On graphic display micro panels flash memory card version C.MLM.01.03 or later can be used to disregard this reading on the earlier version proximity probes (025-30961-000) that monitored the drain temperature.

If the only problem with the probe is incorrect temperature readings, update to the latest software and continue to use the probe in the unit.

There are 3 common types of proximity probes failure that trigger unnecessary shutdowns on thrust collar position. These faults are listed below.

- **Shorted probe failure**
  The voltage signal from the probe to the micro panel will be around 5 volts. This results in **">99 mils"** display for the thrust collar position in the history print.

- **Open probe failure**
  The voltage signal returning to the micro panel will be very low (around 0 volts). The printout will display a thrust collar position very low, somewhere around **8 to 10 mils**.

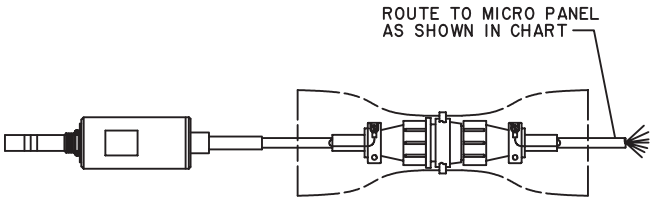
  - In both of the above faults, be sure that all electrical connections between the micro panel and the probe are secure and the fault is not being caused by an intermittent wiring connection problem. Also check that the 24 and 5 volt supplies to the probe are good at both the micro panel and at the military connector where the probe connects to the cable from the micro panel.

- **The probe does not give a proper reading of the thrust collar position**.
  This causes chiller shut down even though there is not an actual change of thrust collar position. A quick way of checking for excessive thrust is to check the high speed axial thrust by using the proximity probe reading from the micro panel.
  To do this:
  1. Rotate the compressor low speed shaft by hand a few revolutions in the direction of normal rotation.
  2. Record the reading from the micro panel for thrust collar position.
  3. After documenting the first reading, slowly rotate the compressor shaft in the opposite rotation a few revolutions and record the thrust collar position reading from the micro panel.
  4. The difference in the 2 readings is a rough estimation of the high-speed axial thrust.

  Rotating the compressor back and forth will drive the high-speed assembly in the forward and reverse thrust directions by using the pitch of the gear teeth. If after rotating the compressor the results are inconclusive, the only sure way of checking for thrust wear is to remove the refrigerant charge and inspect the thrust bearings. After checking the high speed thrust bearings and finding they are OK, then the problem is most likely the proximity probe and it should be replaced.

When the proximity probe is replaced, it is recommended the cable that comes with the new probe be installed. When replacing the probe and cable you will need to order new wiring pins and sockets for the connection of the cable to the micro panel. The part numbers of these pins and sockets along with connection drawings for the different style micro panels are shown in Figures 1 & 2. A new "O"-ring (p/n 028-12209-000) will be needed for installing the new probe.

Electrical Pin & Socket Part Numbers:
Female Sockets (4 Required) 025-28386-000
Male Pin (1 Required) 025-18443-000

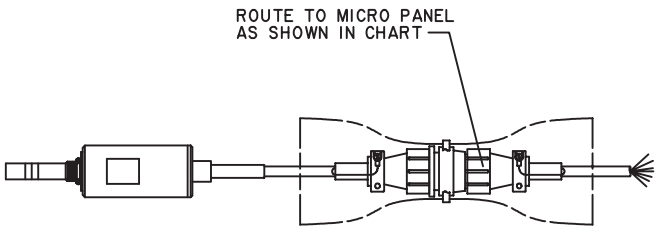


PROBE CABLE WIRE CODE	J31 PIN NO.
RED	1

PROBE CABLE WIRE CODE	P8 PIN NO.
BRN	12
BLK	2
GRN	1
BLU	15
CLR	GROUND
WHT	NOT USED

FIGURE 1 - GRAPHIC STYLE PANEL

Electrical Pin & Socket Part Numbers:
Female Sockets (4 Required) 025-28386-000
Male Pin (1 Required) 025-19674-000



PROBE CABLE WIRE CODE	P17 PIN NO.
BLU	15

PROBE CABLE WIRE CODE	P23 PIN NO.
BRN	3
BLK	2
GRN	4
RED	TO POWER SUPPLY BOARD
CLR	GROUND
WHT	NOT USED

FIGURE 2 - SINGLE LINE DISPLAY PANEL

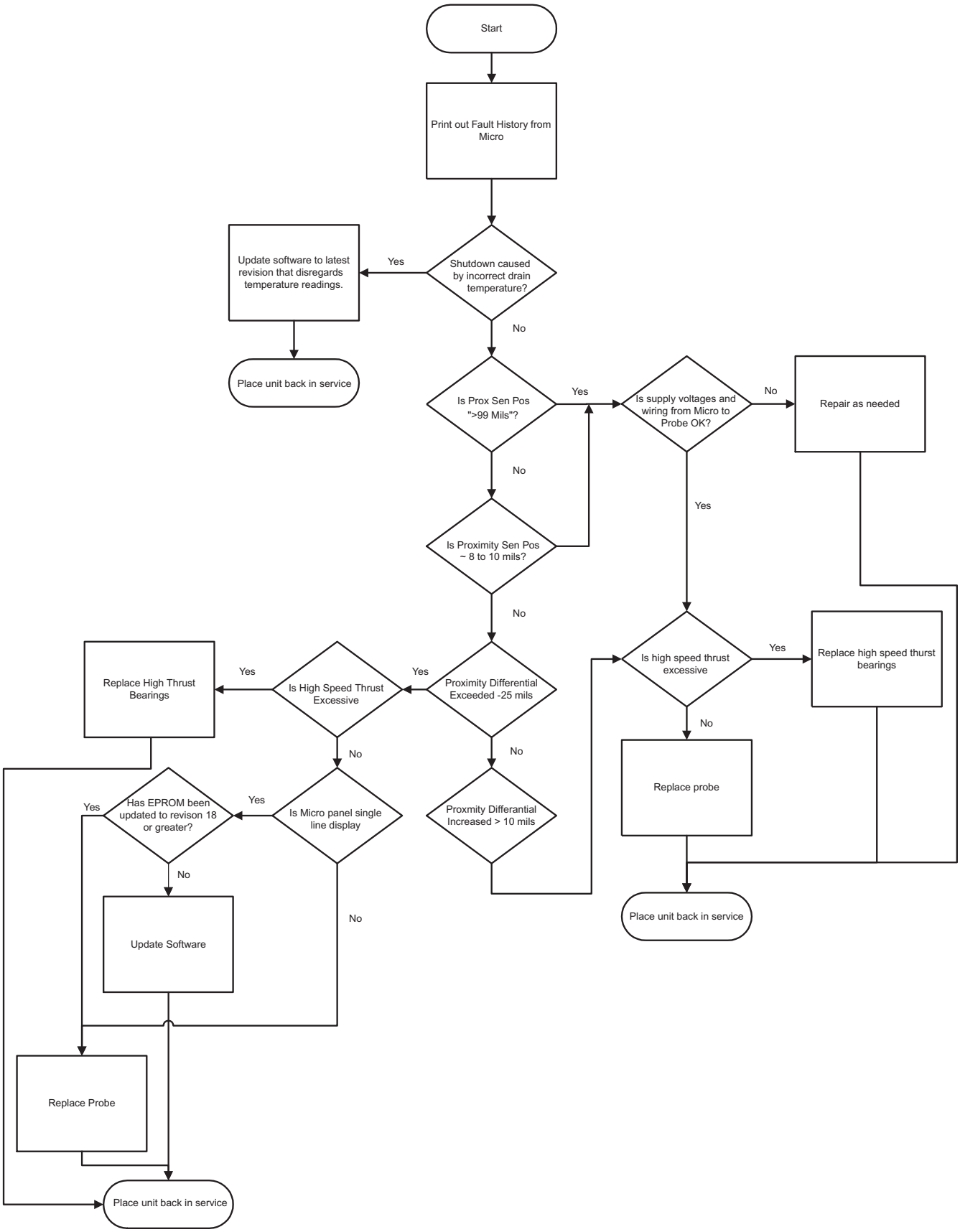


FIGURE 3 - PROXIMITY PROBE TROUBLESHOOTING