SERVICE BULLETIN

Title: Oil-Sense Set-point Change
Models Affected: Chillers with Oil-Sense

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Supersedes: New
Date:

Purpose:

To advise the Service Organization of the need to change the alert signal set-point on all 32GA400504 OIL-SENSE oil quality monitoring units in the field, to be sure they will provide a sufficiently early alert for all poor oil conditions. The set-point change should be done in all OIL-SENSE units, along with the periodic operational check, during scheduled service visits to OIL-SENSE sites.

Filing Instructions: Installation, Start-Up, Operation

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Background:

OIL-SENSE continuously monitors the overall quality of chiller lubricating oil by measuring the attenuation of specific light frequencies passed through a small stream of oil from the chiller oil supply. The relative quality of the oil is indicated by a proportional DC voltage output signal, which decreases as the oil quality deteriorates. A latching alert light and relay contacts indicate when the oil quality has become poor enough to send a sample to a laboratory for quantified analysis.

These units are run-in and calibrated in the factory, set for a signal of 5 Volts DC for good oil, and a latched poor oil alert signal at 3 Volts DC. Both settings are adjustable. The alert setting was selected from several years of prototype laboratory and field testing, but field experience with many hundreds of operating OIL-SENSE units has shown that, with some poor oil conditions, the oil quality can become quite bad before the 3 Volt DC alert level has been reached.

Because of this, the Corporate Engineering group which originally developed the OIL-SENSE technology has run additional tests and has recommended that the alert level be increased to 4 Volts DC on all units in the field. This will give an earlier alert of a deteriorating oil condition.

Procedures:

The set-point adjustment and operational check can be done only while the chiller oil pump is in operation (OIL-SENSE green run light is on). A DC volt meter is required. See the OIL-SENSE “Installation, Start-Up and Operation Instructions” for illustrations and for detailed operation and checkout procedures.

A record should be kept of the date the change is done, and a note should be placed inside the oil sense unit cover that the alert set-point was changed to 4V.

CAUTION  **CAUTION**

The OIL-SENSE monitoring function will be powered only while the chiller oil pump is in operation, but TB3 terminals will be powered (115 VAC) and part of the alert circuitry will be energized whenever the chiller control circuit is powered. This is to keep an alert condition latched and energized even when the chiller and OIL-SENSE are not in operation.

Alert Setting Change

1. With the voltmeter set at 20 volt DC range, place the meter ground probe on wiring terminal TB4-2 “GND”, and the signal probe on circuit board test point TP2 (next to the adjustment potentiometers). The signal should read 3.0 V.
2. With a small screwdriver, turn the adjustment slot on the potentiometer marked “P2” and “T-hold” until the meter reading is 4.0 VDC. The alert indicator will now latch when a poor oil condition causes the oil quality output signal to fall below 4.0 volts, and will drop out when the Reset Switch is pressed after the signal rises above 4.2 volts .

Good Oil Calibration Check

1. Slide the light and sensor assembly on the oil flow block fully to the right, to position it over the good oil sample, being sure that it is set in the detent position .
2. Place the meter ground probe on wiring terminal TB4-2 “GND” and the signal probe on TB4-1 “SIG”. The unit is in calibration when the meter reads 5.0+/-.2 VDC.
3. If not in calibration, make small adjustments to the potentiometer marked “P1” and “GAIN” (left position of the 3 potentiometers), clockwise to increase voltage an counter clockwise to decrease voltage. Wait about 2 1/2 minutes for full light cycle for signal to change after each adjustment.
4. When finished, slide the light and sensor assembly fully to the left to return it to its position over the oil sight glass tube, being sure it is set in the detent position.
5. Check the voltage signal with the chiller oil flow after at least one full sensor light cycle. If the output signal is more than 0.2 VDC higher than it was with the sample oil, the unit might have a contaminated calibration sample, and the supplier should be contacted for instructions.

Verify Sample Oil Flow

Feel the bypass oil line to the OIL-SENSE unit to be sure it is warm. Also check the position of the bypass supply and return isolation valves to be sure they are not fully closed. In most applications, the return valve must be partially closed to prevent excessive bypass around the bearings, but this valve MUST NOT be completely closed.

Check Light Cycle Time, Test Switch, and Reset Switch

Follow the test procedures in the “Performance Checks” section of the OIL-SENSE instructions to verify correct operation.