

OIL SAFETY TRIP OUT TROUBLESHOOTING GUIDE

A. OIL LEVEL LOW WHEN FOUND OFF.

1. **SHORT OF OIL (NEW SYSTEM).** Add oil once to raise comp. sight glass to 1/3 full. Do not add oil twice until checking the following.
2. **POOR SUCTION PIPING HOLDING UP OIL.**
 - a. Vertical risers must have "P" traps at bottom and additional trap for every 20' of riser.
 - b. Horizontal lines must be pitched towards compressor a minimum of ¼" per foot.
3. **STARVED EVAPORATORS HOLD UP OIL.**
 - a. Poor TXV adjustment; (High Superheat).
 - b. Plugged TXV inlet screen or strainer.
 - c. Plugged external equalizer line.
 - d. Dead TXV power element.
 - e. Shortage of refrigerant.
 - f. Plugged liquid line drier.
 - g. High liquid line riser / undersized liquid line causing flash gas at TXV inlet.
 - h. Flooded head charge not added for low ambient operation.
4. **FLOOD BACK DILUTES OIL, MAKES IT FOAM SO PUMP CAN'T DEVELOP ENOUGH PRESSURE. (ALSO CAUSES RAPID BEARING WEAR).**
 - a. Plugged evaporator coil; ice, frost, dirt; etc..
 - b. Stoppage of evaporator fans; shut off at disconnect, blown fuses, tripped on overload, broken belts, locked up in ice, door switch not interconnected with liquid solenoid valve. (Stopped fans may appear to be running but actually windmilling backwards).
 - c. TXV adjustment; superheat too low. Sensing bulb located or mounted improperly. (Refer to valve manufacturers installation instructions).
 - d. Distributor nozzle and / or TXV incorrectly sized.
 - e. Liquid solenoid valve stuck open.
 - f. Hot gas solenoid valve stuck open.
 - g. Suction solenoid valve stuck open.
 - h. Thermobank out of water or immersion heater out.
 - i. Holdback valve set to high or bellows leaking causing valve to overfeed.
 - j. Post defrost too short or post defrost control defective.
 - k. Hot gas check valve stuck open.
 - l. Thermolator ruptured internally.
5. **INCORRECT OR NO RECYCLING PUMPDOWN CONTROL.** Automatic recycling pumpdown, (room thermostat controlling liquid line solenoid valve), is mandatory on all systems and is not complete until low pressure switch is set with an accurate gauge in accordance with O & I instructions.
- c.
- d. 6. **OIL SEPARATOR OIL RETURN PORT PLUGGED OR FLOAT LEAKING.**
 - a. While compressor is operating, oil return line should be alternately hot and cool as float opens and closes.
 - b. Oil return solenoid valve stuck open.
 - c. Oil separator condensing liquid refrigerant in off cycle under low ambient conditions. Install check valve in discharge line between separator outlet and condenser inlet. Add heater to sump of oil separator.
5. 7. **SUCTION ACCUMULATOR**
 - a. Internal metering tube or oil return orifice plugged.
6. 8. **LOW PRESSURE SWITCH SET TO LOW. DOESN'T SHUT OFF COMPRESSOR OR TAKES TOO LONG TO SHUT OFF COMPRESSOR WHILE PUMPING DOWN.**

B. OIL LEVEL OK WHEN FOUND OFF.

1. **** EXCESSIVELY LOW CRANKCASE PRESSURE.**
A starved evaporator, (see A-3), low pressure switch defective or set to low, (see A-8).
2. **EXCESSIVELY HIGH CRANKCASE PRESSURE.**
Internal compressor wear causing blow-by, Inhibiting oil return to crankcase during operation.
3. **LOW OIL PRESSURE OBSERVED EVEN WITH ADEQUATE OIL LEVEL.**
 - a. Oil pump not functioning, compressor rotation reversed.
 - b. Compressor main or rod bearing(s) loose or worn, most frequently caused by long term operation with liquid floodback.
 - c. Plugged oil strainer.
4. **** SHORT CYCLING**
Causes:
 - a. T-stat calling for cooling; liquid solenoid energized
 - 1.) Incorrectly adjusted low pressure switch.
 - 2.) Plugged liquid line drier.
 - 3.) Plugged TXV inlet screen or external equalizer.
 - 4.) Defective TXV power element.
 - 5.) TXV improperly adjusted. (starving coil)
 - 6.) Evaporator fans off.
 - 7.) Evaporator coil(s) iced up.
 - 8.) Low refrigerant charge.
 - b. T-stat satisfied; liquid solenoid de-energized
 - 1.) Broken compressor discharge valve(s).
 - 2.) Broken compressor valve plate gasket.
 - 3.) Leaking liquid solenoid valve.
 - 4.) Leaking hot gas solenoid valve.
 - 5.) Thermolator leaking internally.
 - 6.) Leaking or stuck oil separator float
 - 7.) Leaking oil return solenoid valve.
 - 8.) Liquid solenoid valve located to close to condensing unit.
5. **** POST DEFROST TOO LONG.**
6. **** LIGHT FLOODBACK TO COMPRESSOR GENERATES FOAM IN OIL.**
Causes:
 - a. TXV adjustment; (superheat to low).
 - b. Frost / ice or dirt plugged evaporator.
 - c. Holdback valve set to high
 - d. Low Thermobank water level.
 - e. Thermobank too cold; (heater inoperative).
 - 1.) Heater burned out.
 - 2.) Heater t-stat set to low.
 - 3.) No power to heater; (fuses blown).
 - f. Excessive frequency of defrost cycles.
7. **** BURNED OUT CRANKCASE HEATER**
8. **OIL SAFETY CONTROL**
 - a. Control mis-wired.
 - b. Defective control.
 - c. Control voltage too high causing control to trip out prematurely.
 - d. Oil congealed in small bore cap tube of control during low ambient operation.
 - e. Missing or leaking o-ring on sensor of electronic control.

**** May also cause loss of oil resulting in low compressor oil level.**

CAUTION: REFRIGERANT MAY CONDENSE IN OIL AFTER TRIP-OUT AND RAISE OBSERVED OIL LEVEL.