

Oil Safety Switch Accessory Package No. 5F20-212

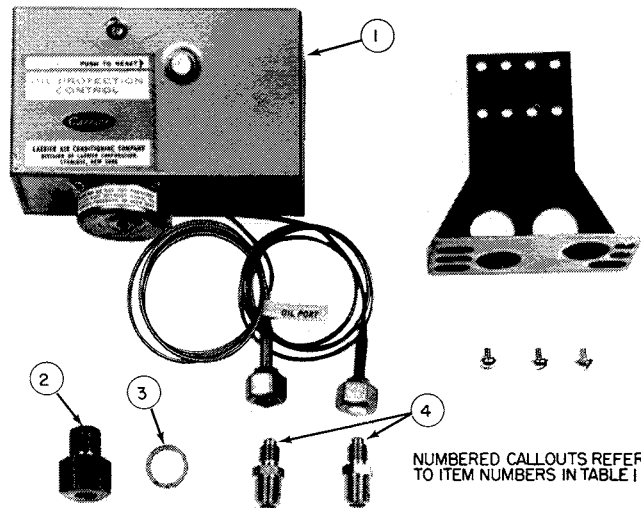


Fig. 1 — Oil Safety Switch

Table 1 — Oil Safety Switch Package

ITEM	DESCRIPTION	REQ	PART NUMBER
→ 1	Pressure Switch with Time Delay Relay	1	634-2061
2	Adapter, 1/4 in. x 5/8 in. — 18	1	5F20-1311
3	Gasket Washer, 5/8 in.	1	AU51YA011
4	Half Union Coupling 1/4-in. MPT x 1/4-in. flare	2	DD07DA051
5	Installation Instructions	1	5F,H-16SI

CAUTION: Before installing the oil safety switch, be sure ALL power to compressor motor and control circuit is OFF; also, be sure service valves are closed and pressure is removed from compressor crankcase.

Table 2 — Physical Data

OIL SAFETY SWITCH	VOLTS*	PRESS. DIFF. (psi)†		TIME DELAY (Sec)	MIN CAPIL-LARY LGTH (in.)
		Cut-in	Cutout		
→ 634-2061	115/230	15 - 19.5	11 - 15	45 ± 15	36

*Allowable voltage range 99 v to 132 v; 187 to 264 v.

†Switch operates on differential between oil pump and crankcase pressure.

MOUNTING OIL SAFETY SWITCH

Mount switch in a firm, vibrationless position close to compressor. Locate switch so condensate will not drip on it. Control must be mounted in vertical position, with pressure element casing facing down.

Safety switch low-pressure capillary senses compressor crankcase pressure. High-pressure capillary connection senses pump oil pressure.

CONNECTIONS

5F Compressors (see Table 1 and Fig. 2) — Remove oil fill plug and replace with adapter and gasket washer (items 2 and 3). Install flare coupling (item 4) in adapter and connect capillary from low-pressure side of oil safety switch.

Remove 1/4-in. plug on compressor pump end bearing head and install flare coupling (item 4). Connect capillary from high-pressure side of switch to coupling.

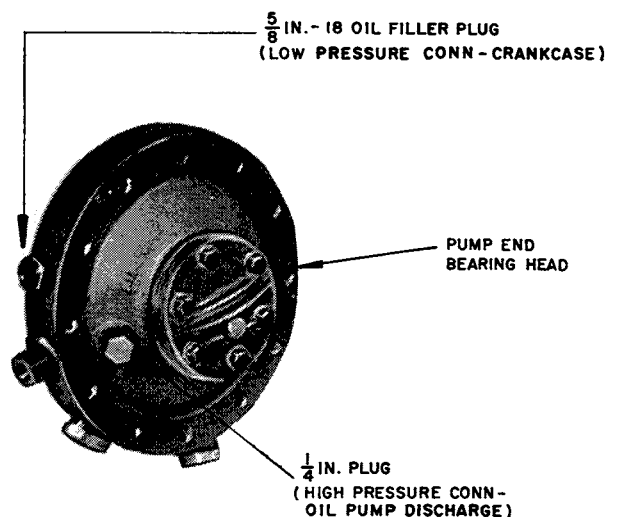


Fig. 2 — 5F Connections

5H Compressors, Except 5H120 (see Table 1 and Fig. 3) — Remove 1/4-in. plug on perimeter of pump end cover and replace with flare coupling (item 4). Connect capillary from low-pressure side of oil safety switch to coupling.

Remove control oil strainer plug and replace with adapter and gasket washer (items 2 and 3). Install flare coupling (item 4) in adapter and connect capillary from high-pressure side of switch.

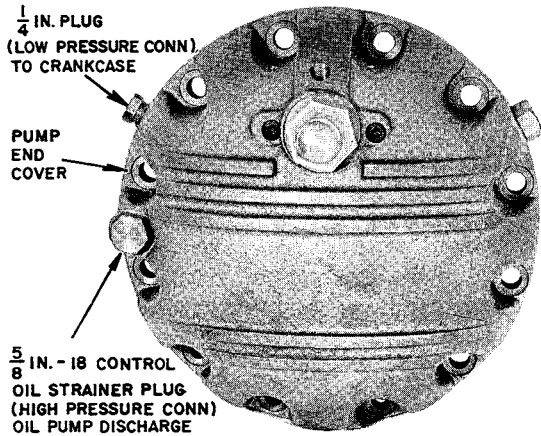


Fig. 3 — 5H Connections

5H120 Compressor (see Table 1 and Fig. 4) — Remove oil fill plug and replace with adapter and gasket washer (items 2 and 3). Install flare coupling (item 4) in adapter and connect capillary from low-pressure side of oil safety switch.

Remove 1/4-in. plug from seal end of crankcase and replace with flare coupling (item 4). Connect capillary from high-pressure side of switch to coupling.

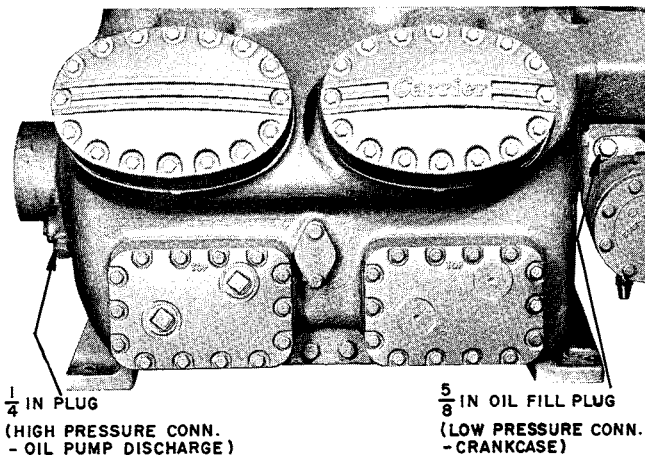


Fig. 4 — 5H120 Connections

TESTING

Check wiring and piping for tight connections.

Before putting compressor into operation always test the time delay circuit and the pressure-operated switch. If the oil safety switch fails under either test it should be replaced immediately.

Monitor oil pressure during testing. Normal pressure is 45 to 55 psi above suction pressure.

Time Delay Circuit Test is made by disconnecting main power to compressor while energizing the control circuit. Oil safety switch should de-energize compressor starter holding coil in 45 to 60 seconds.

IMPORTANT: During this test, disconnect at terminal **5** on TB2 the wire powering the liquid line solenoid (LLS). See Control Circuit Schematic, Fig. 5. It may be necessary to bypass the low-pressure switch (LPS).

This test can also be made by energizing the compressor and control circuit before connecting high side capillary of oil safety switch to compressor. The safety switch must trip control circuit in 45 to 60 seconds. After making either of these electrical tests wait at least 5 minutes before pushing reset button.

Pressure Switch Test is made with the compressor stopped. Switch is normally closed, completing the circuit thru the safety heater. When pressure bar at end of spring is raised manually with a screwdriver, the circuit thru the safety heater should open.

IMPORTANT: Be sure all service valves that were closed before installation of the accessory switch are open before restarting unit.

OPERATION

WARNING: Do not operate compressor with oil pressure safety switch bypassed, as serious compressor damage may result.

This accessory safety device provides protection for compressor in case of low oil pressure resulting from loss of oil in crankcase, excessive refrigerant in crankcase or oil pump failure.

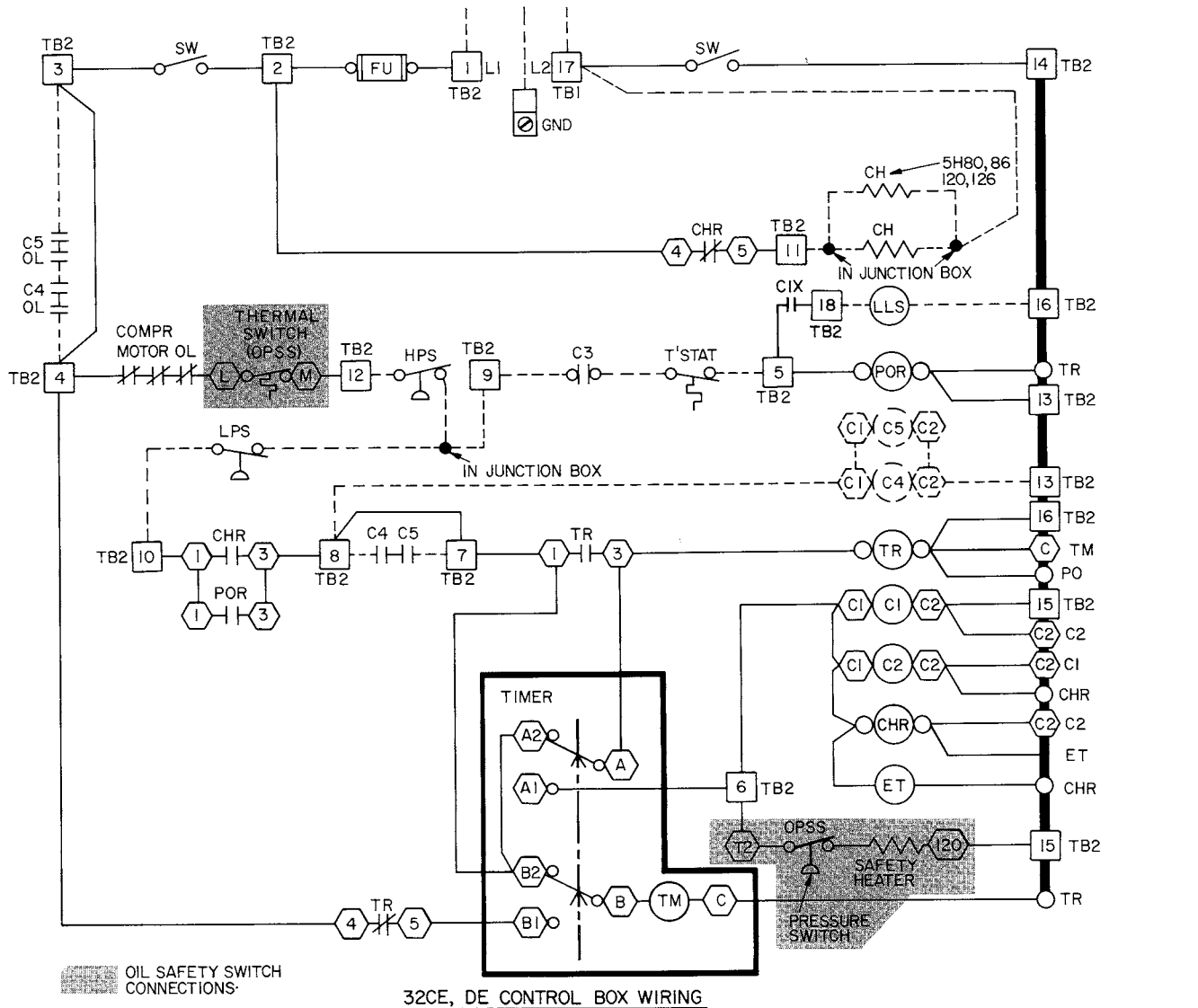
The pressure switch is factory adjusted (see Table 2) and *should not be adjusted in the field.*

Be sure the motor rotation is in the direction indicated by the arrow on the compressor oil pump cover. If motor rotation must be reversed, switch any 2 power leads to the motor.

Oil pump and crankcase pressures are transmitted by separate tubes thru the bellows to a mechanical linkage connected to a normally closed pressure switch. When sufficient oil pressure builds up, pressure switch contacts open, stopping current flow thru safety heater (see Fig. 5). Thermal switch remains closed, allowing proper compressor operation. If sufficient oil pressure is not attained, pressure switch contacts will not open. Current continues to flow thru safety heater, which causes thermal switch to open in approximately 45 seconds.

Open thermal switch breaks circuit to a compressor starter holding coil and stops compressor. Push manual reset button on face of switch to remake holding coil circuit.

WARNING: Do not reset oil pressure switch more than once without determining and correcting the cause of a trip-out.



- C1, C2** — Contactor, Compressor
- C3** — Contactor, Evaporator Fan or Chilled Water Pump
- C4** — Contactor, Air-Cooled or Evaporative Condenser Fan or Cooling Tower Pumps
- C5** — Contactor, Cooling Tower Fan or Evaporative Condenser Pump
- CH** — Crankcase Heater
- CHR** — Crankcase Heater Relay
- C1X** — Auxiliary Contactor, Compressor
- Compr** — Compressor
- Equip** — Equipment
- ET** — Elapsed Time Meter

- LEGEND**
- FU** — Fuse
 - GND** — Ground
 - HPS** — High-Pressure Switch
 - LLS** — Liquid Line Solenoid (Valve)
 - LPS** — Low-Pressure Switch
 - OPSS** — Oil Pressure Safety Switch
 - OL** — Overload
 - POR** — Pumpout Relay
 - SW** — Switch
 - TB** — Terminal Block
 - TM** — Timer Motor
 - TR** — Timer Relay
 - T'stat** — Thermostat

- Terminal Block Connection
- Unmarked Terminal
- Marked Terminal
- Factory Wiring
- - - - - Field Control Wiring
- Field Power Wiring
- Common Potential. Does not represent wiring.

→ Fig. 5 — Control Circuit Schematic; Single Pumpout Circuit

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

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Form 5F,H-16SI Supersedes 5F20-1SI

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