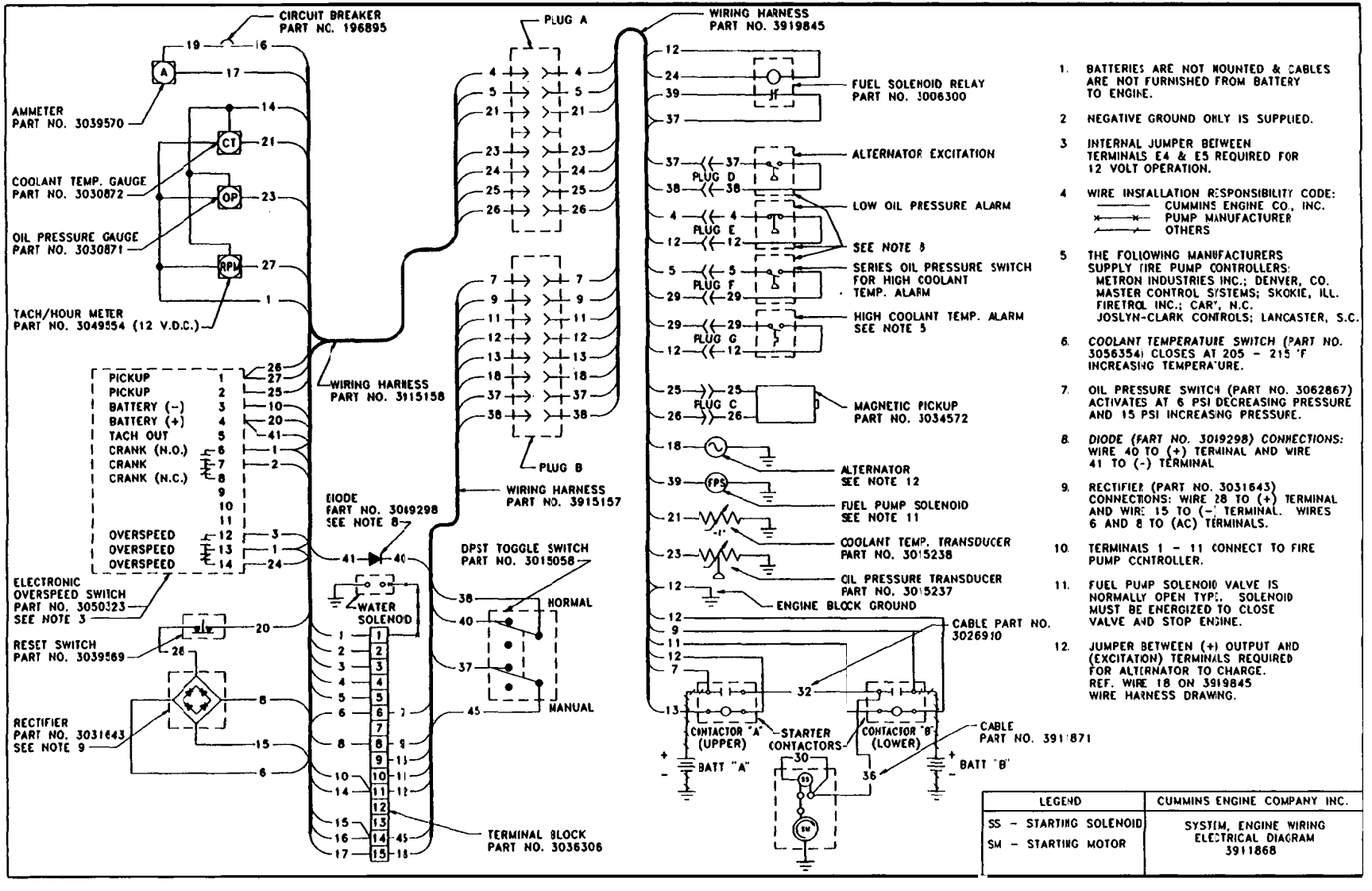

1. BATTERIES ARE NOT MOUNTED & CABLES ARE NOT FURNISHED FROM BATTERY TO ENGINE.
2. NEGATIVE GROUND ONLY IS SUPPLIED.
3. INTERNAL JUMPER BETWEEN TERMINALS E4 & E5 REQUIRED FOR 12 VOLT OPERATION.
4. WIRE INSTALLATION RESPONSIBILITY CODE:
   - ——— CUMMINS ENGINE CO., INC.
   - —×—×— PUMP MANUFACTURER
   - ——/—— OTHERS
5. THE FOLLOWING MANUFACTURERS SUPPLY FIRE PUMP CONTROLLERS:
   METRON INDUSTRIES INC.; DENVER, CO.
   MASTER CONTROL SYSTEMS; SKOKIE, ILL.
   FIRETROL INC.; CARY, N.C.
   JOSLYN-CLARK CONTROLS; LANCASTER, S.C.
6. *COOLANT TEMPERATURE SWITCH (PART NO. 3056354) CLOSES AT 205 - 215 °F INCREASING TEMPERATURE.*
7. OIL PRESSURE SWITCH (PART NO. 3062867) ACTIVATES AT 6 PSI DECREASING PRESSURE AND 15 PSI INCREASING PRESSURE.
8. *DIODE (PART NO. 3019298) CONNECTIONS:* WIRE 40 TO (+) TERMINAL AND WIRE 41 TO (-) TERMINAL
9. RECTIFIER (PART NO. 3031643) CONNECTIONS: WIRE 28 TO (+) TERMINAL AND WIRE 15 TO (-) TERMINAL. WIRES 6 AND 8 TO (AC) TERMINALS.
10. TERMINALS 1 - 11 CONNECT TO FIRE PUMP CONTROLLER.
11. FUEL PUMP SOLENOID VALVE IS NORMALLY OPEN TYPE. SOLENOID MUST BE ENERGIZED TO CLOSE VALVE AND STOP ENGINE.
12. JUMPER BETWEEN (+) OUTPUT AND (EXCITATION) TERMINALS REQUIRED FOR ALTERNATOR TO CHARGE. REF. WIRE 18 ON 3919845 WIRE HARNESS DRAWING.

LEGEND	CUMMINS ENGINE COMPANY INC.
SS - STARTING SOLENOID SM - STARTING MOTOR	SYSTEM, ENGINE WIRING ELECTRICAL DIAGRAM 3911868

Terminal Strip Functions - Diagram 3911868 (Used on 6BTA5.9F)

1. FUEL SOLENOID RELAY, WATER SOLENOID, SPEED SWITCH CONTACTS and GAUGES: A fire signal or weekly test run initiation results in the controller supplying 12 volts to Terminal No. 1. This energizes the water solenoid valve in the raw water supply line to the heat exchanger, the gauges and tachometer. Power from Terminal No. 1 also goes to the normally open, stop crank speed switch contacts and the normally closed, overspeed switch contacts. Power from the overspeed contacts goes to the coil of the fuel solenoid relay. The fuel solenoid relay contacts open. These open contacts prevent the fuel solenoid from being energized. The fuel solenoid is NORMALLY OPEN. The fuel solenoid MUST be ENERGIZED to STOP the engine.
2. CRANK TERMINATION: During a cranking cycle, when adequate engine cranking speed has been reached, the stop crank terminals in the speed switch close and energize Terminal No. 2. This signals the controller to terminate the cranking cycle.
3. OVERSPEED SHUTOFF: In the event of an overspeed condition, the normally open overspeed contacts in the speed switch close and energize Terminal No. 3 to signal an overspeed to the controller. At the same time, the normally closed overspeed switch contacts open and remove power from the fuel solenoid relay. The relay contacts close and supply power to the fuel solenoid. This shuts off fuel to the fuel pump and the engine stops.
4. LOP ALARM SIGNAL: The ground lead from the low oil pressure alarm in the controller is connected to terminal No. 4. When the engine is operating, normal oil pressure will open the normally closed contacts of the oil pressure switch. In the event of a low oil pressure condition, the normally closed contacts in the oil pressure switch will close; and the low oil pressure alarm in the controller will energize.
5. HWT ALARM SIGNAL: The ground lead from the high water temperature alarm in the controller is connected to terminal No. 5. In the event of a high water temperature condition, the normally open contact in the water temperature switch will close; and the high water temperature alarm in the controller will energize if the engine is operating.

   HIGH COOLANT TEMPERATURE ALARM ISOLATION: Because the fire pump drive engines **must** stop from full speed or full load with no idle cool down period, the engine coolant temperature will rise immediately after the engine stops. This condition can result in a high coolant temperature alarm signal while the engine is stopped and in a stand-by condition. To prevent the high water temperature alarm from sounding due to these circumstances, an oil pressure switch with normally open contacts is wired in series with the water temperature switch. When the engine is stopped, the oil pressure switch contacts are open. This prevents a high water temperature alarm signal when the engine is stopped.
6. BATTERY SET "A" LEAD: Terminal No. 6 is the positive lead from battery "A". Alternator current goes through one leg of the rectifier bridge to battery "A" through Terminal No. 6. The controller also senses battery "A" voltage through this lead. Power to the speed switch (terminal 4, wire 20) is also supplied from Terminal No. 6 through a leg of the rectifier bridge and the normally closed pushbutton reset switch. Power is supplied to the speed switch at all times except while the pushbutton reset switch is pushed open.
7. Terminal No. 7 is NOT used for engine wiring connections.
8. BATTERY SET "B" LEAD: Terminal No. 8 is the positive lead from battery "B". Alternator current goes through one leg of the rectifier bridge to battery "B" through Terminal No. 8. The controller also senses battery "B" voltage through this lead. Power to the speed switch (terminal 4, wire 20) is also supplied from Terminal No. 8 through a leg of the rectifier bridge and the normally closed pushbutton reset switch. Power is supplied to the speed switch at all times except while the pushbutton reset switch is pushed open.
9. CRANK 1: During a cranking cycle, the controller energizes the coil of starter contactor "B" through Terminal No. 9 to start the engine. If the engine does NOT start within 15 seconds, the controller will de-energize Terminal No. 9, wait 15 seconds, then begin a cranking cycle through Terminal No. 10.
10. CRANK 2: During a cranking cycle, the controller energizes the coil of starter contactor "A" through Terminal No. 10 to start the engine. If the engine does NOT start within 15 seconds, the controller will de energize Terminal No. 10, wait 15 seconds, then begin a cranking cycle through Terminal No. 9.
11. GROUND: Terminal No. 11 is a ground connection for the starter contactor coils, the speed switch, the gauges in the engine instrument panel, and the controller.
12. Terminal No. 12 is **not** used for engine wiring connections.
13. Terminal No. 13 is **not** used for engine wiring connections.

14. ALTERNATOR FLASHING: Voltage from terminal No. 6 (battery "A") and terminal No. 8 (battery B) goes through the rectifier bridge and comes out of wire 28. The voltage goes through the normally closed pushbutton switch, through wire 20 to speed switch terminal 4. Wire 41, also connected to speed switch terminal 4, takes the voltage through the Part No. 3049298 blocking diode to wire 40 which is connected to the Normal/Manual switch. When the Normal/Manual switch contacts are closed wire 40 connects to wire 38 which is connected to an oil pressure switch. While the engine is running, the oil pressure switch is closed and wire 38 is connected to wire 37. Wire 37 connects to the alternator field.

15. ALTERNATOR CHARGING CURRENT: Alternator charging current goes from the alternator through wire 18 to Terminal No. 15. From Terminal No. 15, the alternator charging current goes through wire 17 to the ammeter, then through wire 16 to Terminal No. 14. Wire 15, which is also connected to Terminal No. 14, carries the charging current to the rectifier bridge. The rectifier bridge supplies current to both batteries independently through Terminal No. 6 (Battery A), and Terminal No. 8 (Battery B).