

TC30 STARTING CIRCUIT (OPERATOR PRESENT)

NOTE: The starting circuit is shown with:

- **Operator Present**
 - **Parking Brake “Off”**
 - **Rear PTO “Off”**
 - **Transmission Range in Neutral Position**
 - **Mid PTO “Off” (Optional)**
1. Current starts at the battery, and flows through the positive (+) battery cable to the engine starter motor.
 2. From the starter motor, current flows through the fusible link wire to terminal 30 of the key switch.
 3. When the key switch is in the “Start” position, current crosses from terminal 30 to the “AC”, “50”, and “17,19” terminals.

Terminal “AC”

1. Current flows from the “AC” terminal of the key switch and reaches the fuse panel.
2. Current passes through the 5-amp fuse within the fuse panel to reach terminal 12 of the instrument panel and a wire splice.

Terminal 12 of the Instrument Panel

- Current enters terminal 12 and provides power to the charge, low oil pressure, and air restriction warning lights. The warning lights illuminate for a short time during engine startup.
- The wire splice sends current to the seat safety switch timer and the kill relay.

Seat Safety Switch Timer

- Current enters the seat safety switch timer. The seat safety switch controls the ground path for the seat safety switch timer. With the operator seated, the seat safety switch closes to complete the ground path to the seat safety switch timer. This activates the seat safety switch timer completing the ground path to the kill relay. The kill relay energizes and latches.

Kill Relay

- Current enters the coil within the kill relay. The ground path to the kill relay is controlled by the seat safety switch timer. When the seat safety switch timer is activated, the kill relay energizes and latches.
- When the kill relay latches, current flows to a wire splice. The wire splice splits the current into two different paths.
- The one path leads to the coil within the start relay. The ground path to the start relay is controlled by the diode, the rear PTO, the transmission range, and the mid PTO (optional) safety switches. Providing the safety switches are in the “Off” or “Neutral”

positions, the start relay energizes. When energized, the start relay latches and sends current to the switching terminal of the starter. The starter cranks the engine for starting.

- The other path leads to the fuel shutoff solenoid. The fuel shutoff solenoid is grounded directly to the engine, allowing it to become energized. When the fuel shutoff solenoid is energized, the needle within the fuel shutoff solenoid retracts to permit fuel flow.

Terminal 50

Current flows from the terminal 50 of the key switch and reaches the start relay and the glow plug timer.

Start Relay

- Current enters the functioning circuit of the start relay. When the start relay is energized, the relay latches. Current then flows to the starter. The starter cranks the engine for starting.

Glow Plug Timer

- Current enters the glow plug timer. The ground path to the glow plug timer is completed through the wire harness to the right side of the engine, allowing the glow plug timer to function. When the glow plug timer is activated, the timer latches for approximately four seconds. This completes the ground circuit for the glow plug indicator light within the instrument panel (terminal 10). The light illuminates.

Terminal 17, 19

Current flows from terminal 17,19 of the key switch and reaches the instrument panel (terminal 5), the glow plug timer, and the engine glow plugs.

Instrument Panel

- Current enters Terminal 5 of the instrument panel and reaches the glow plug indicator light. The ground path (Terminal 10) to the glow plug indicator light travels to the glow plug timer. When the glow plug timer is activated, the ground path to the glow plug indicator light is completed, allowing the glow plug indicator light to illuminate for approximately four seconds.

Glow Plug Timer

- Current reaches the glow plug timer. The glow plug timer becomes energized and latches to complete the ground path to the glow plug indicator light within the instrument panel. The glow plug indicator light illuminates.

Engine Glow Plugs

- Current reaches the engine glow plugs. The glow plugs are grounded directly to the engine block. Current enters the engine glow plugs and causes them to warm the pre-combustion chamber. The engine glow plugs assist tractor starting in cold climates.

