ENGINE SHUTOFF CIRCUIT OPERATION – HYDRO

Engine Shutoff Function:

To prevent the tractor from being started or left running in an unsafe condition.

Operating Conditions:

- Operator on seat.

or;

- Seat switch in DEFEAT position
- Gear range lever in NEUTRAL position.

Theory of Operation:

The starting motor will crank when current is provided from the battery. Battery current is provided through the starting motor solenoid contacts when operating conditions are met. If the operating conditions are not met, the engine will not start. (See “CRANKING CIRCUIT OPERATION” on page 32.)

Fuel is supplied to the engine through the operation of the K3 fuel relay and the Y2 Fuel shutoff solenoid, provided that operating conditions are met. If the operating conditions are not met, fuel is not supplied and the engine will not start. (See “FUEL SUPPLY OPERATION” on page 40.)

When the operating conditions exist, the control module provides battery voltage to the fuel relay, fuel shutoff solenoid, and start relay.

The energized fuel relay coil closes the relay contacts and the closed contacts provide a current path to the fuel solenoid pull-in coil. The fuel solenoid opens, fuel is provided to the engine and ignition can occur.

The control module provides a power circuit for the fuel solenoid hold-in coil. The power circuit through the control module is a 0.5 second timed delay circuit. If the operator leaves the seat for more than 0.5 second, the circuit stops voltage to the hold-in coil, the fuel solenoid deenergizes and fuel is shut off to the engine.

With the seat switch in the defeat position, current flows through the seat switch to the control module indicating the presence of an operator on the seat.

CAUTION

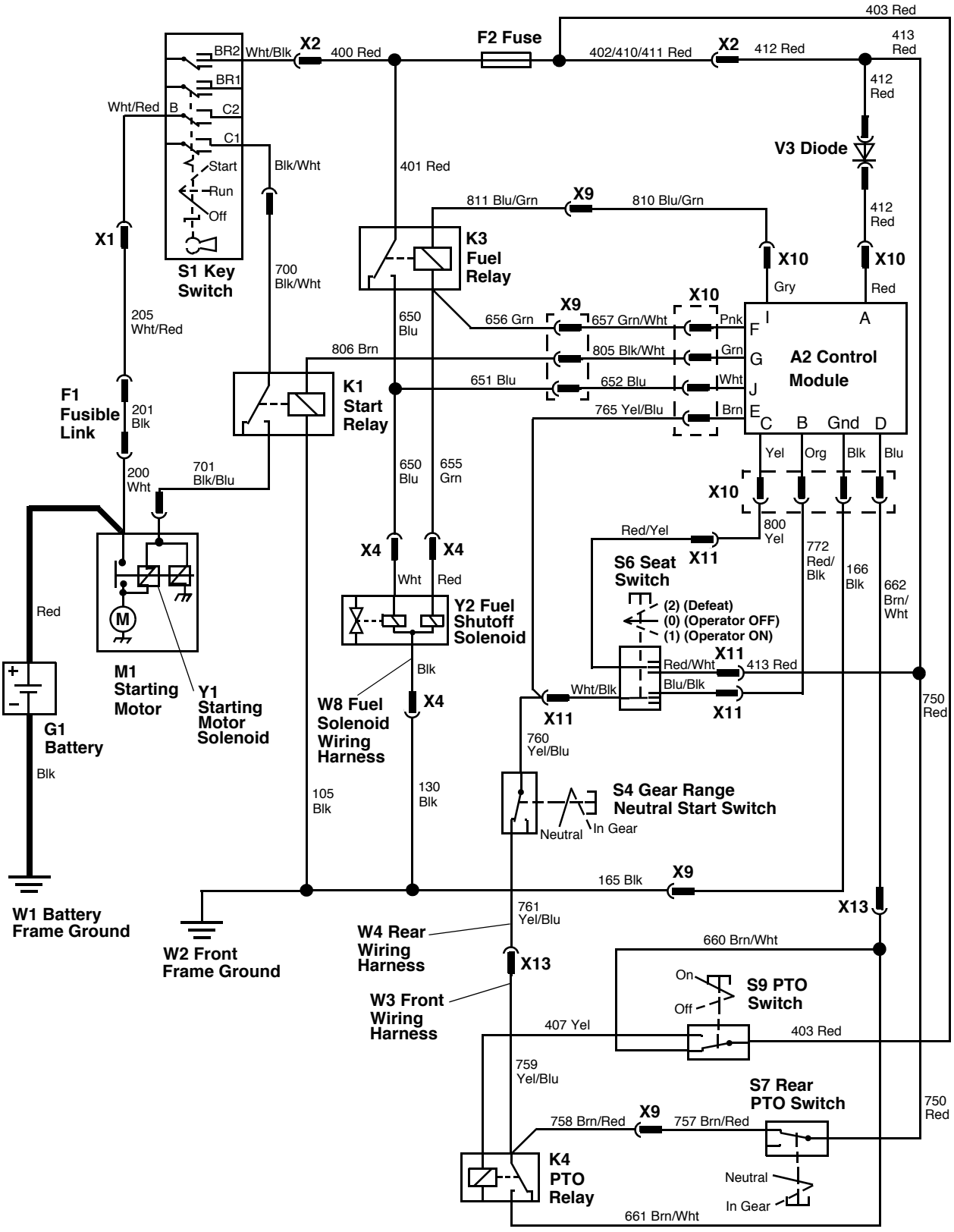
To avoid injury, ALWAYS engage park brake when starting or running the engine with the seat switch in the DEFEAT position.

Battery voltage to the control module is routed to the seat switch through the 759 Yel/Blu wire, X13 connector, 761 Yel/Blu wire, gear range neutral switch (in Neutral), and 760 Yel/Blu wire. With the seat switch in the defeat position, current flows through the seat switch and 772 Blu/Blk wire to the control module indicating the presence of an operator on the seat.

With the seat switch in the defeat position, the operator may start the tractor if the gear range selector lever is in the NEUTRAL position (gear range neutral switch closed).

With the seat switch in the defeat position, the operator, while off the seat, may engage the PTO for use with attachments if the gear range selector lever is in the NEUTRAL position.

ENGINE SHUTOFF CIRCUIT ELECTRICAL SCHEMATIC – HYDRO

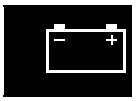


SE1 - STARTING	SE2 - IGNITION	SE5 - INTERLOCKS

ENGINE SHUTOFF CIRCUIT DIAGNOSIS – HYDRO

Test Conditions:

- Park brake ENGAGED
- Key switch in RUN position (engine OFF)
- Seat switch in DEFEAT position
- Gear range lever in NEUTRAL position
- PTO switch in OFF position



Test/Check Point	Normal	If Not Normal
1. Control Module	Battery voltage	(See “POWER CIRCUIT DIAGNOSIS” on page 26.)
2. Seat switch	Battery voltage	(See “POWER CIRCUIT DIAGNOSIS” on page 26.)
3. Rear PTO switch	Battery voltage	(See “POWER CIRCUIT DIAGNOSIS” on page 26.)
4. Rear PTO switch	Battery voltage	Ensure PTO is disengaged. Test switch. (See “REAR PTO SWITCH TEST – HYDRO” on page 86.) Replace switch.
5. PTO relay	Battery voltage	Check 757 and 758 Brn/Red wires and connections.
6. Seat switch	Battery voltage	Check 761 Yel/Blu wires and connections.
7. Seat switch	Battery voltage	Ensure switch is in DEFEAT position. Test switch. (See “SEAT SWITCH TEST” on page 83.) Replace switch.
8. Control module	Battery voltage	Check 765 Yel/Blu wire and connections.
9. Control module	Battery voltage	Check 772 Red/Blk wire and connections.
10. PTO switch	Battery voltage	(See “POWER CIRCUIT DIAGNOSIS” on page 26.)
11. PTO switch	Battery voltage	Test switch. (See “PTO SWITCH TEST – HYDRO” on page 87.) Replace switch.
12. Control module	Battery voltage	Check 661 and 662 Brn/Wht wires and connections.
13. Control module	Battery voltage	Replace control module.

Test Conditions:

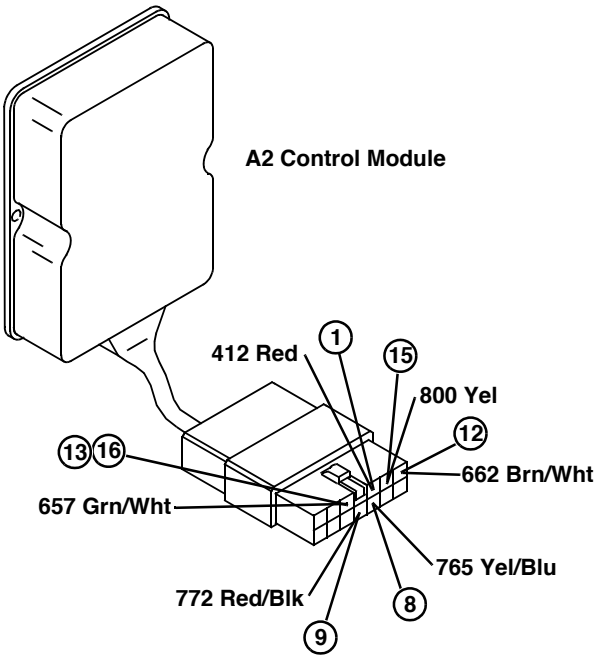
- Push and hold seat switch plunger into OPERATOR ON position

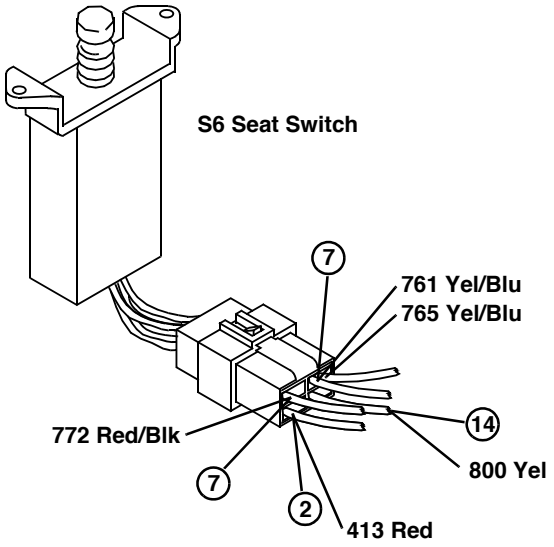
14. Seat switch	Battery voltage	Test switch. (See “SEAT SWITCH TEST” on page 83.) Replace switch.
15. Control module	Battery voltage	Check 800 Yel wire and connections.
16. Control module	Battery voltage	Replace control module.

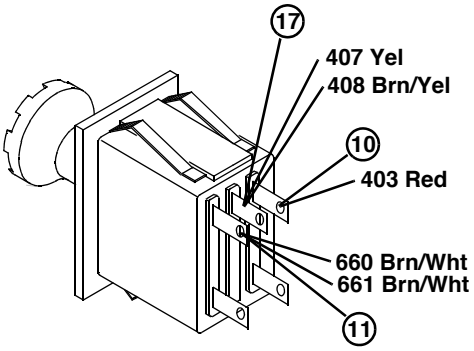
Test Conditions:

- Release seat switch plunger
- Place PTO switch in ON position

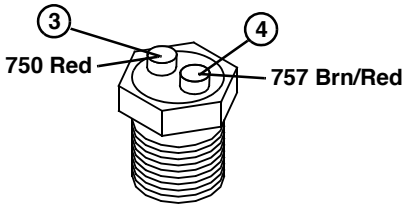
17. PTO switch	Battery voltage	(See “PTO SWITCH TEST – HYDRO” on page 87.) Replace switch.
18. PTO relay	Battery voltage	Check 407 Yel wire and connections.
19. PTO relay	Battery voltage	Test relay. (See “PARK BRAKE, SAFETY, AND PTO LIGHT RELAY TEST” on page 78.) Replace relay.



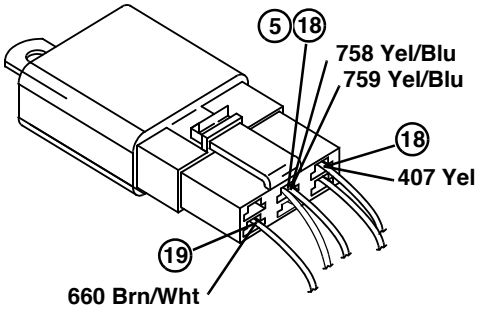




S9 PTO Switch
(Hydro Only)



S7 Rear PTO Switch



K4 PTO Relay