

## Cranking Circuit Operation

### Function:

To energize the starting motor solenoid and engage the starting motor to crank the engine.

### Operating Conditions:

- Key switch in START position
- Gear range selector lever in neutral
- PTO switch in OFF position
- Operator ON seat (Seat switch closed)

### Theory of Operation:

The power circuit (200 Wht, 201 Wht, 202 Wht, F1 fuse, and 205 Wht/Red) provides voltage to the key switch.

When placed in the START position the key switch provides current to the start relay contact (706 Blk/Wht).

Simultaneously the S6 Neutral Safety Switch (748, 749, and 750 Brn) provides current to the start relay coil if conditions are met (S2 Seat Switch Closed, S5 PTO Switch Off and K4 Safety Relay 2 open supplying current to A1 Timer Module).

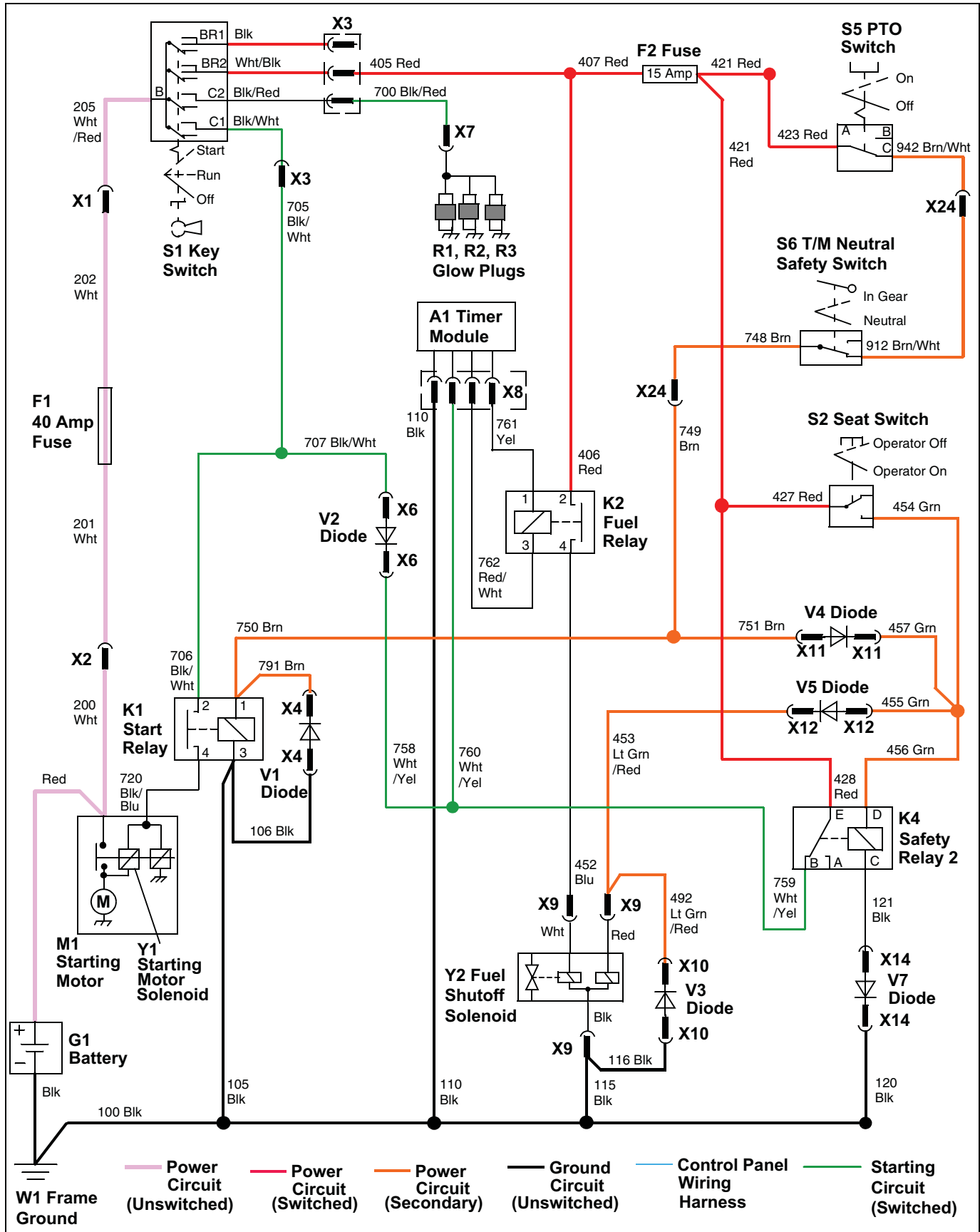
If the ground circuit is present (105/100 Blk) the K1 start relay coil is energized, the relay contacts close and current flows to the starting motor solenoid (720 Blk/Blu).

With the starting motor solenoid energized the starting motor solenoid contacts close and high current from the battery passes through the battery cable and solenoid contacts to the starting motor.

The starting motor cranks the engine.

# ELECTRICAL DIAGNOSTICS & OPERATION

## Cranking Circuit Electrical Schematic



# ELECTRICAL DIAGNOSTICS & OPERATION

## Cranking Circuit Diagnosis

### Test Procedure A:

#### Test Conditions

- Key switch in start position, engine off
- Park brake locked
- Gear range in neutral
- PTO disengaged
- Operator on seat

Test/Check Point	Normal	If Not Normal
1. S2 Seat switch	Battery voltage	Test F2 15 Amp fuse. Check 407, 421, and 427 Red wires and connections. If OK, replace Key switch.
2. S5 PTO Switch	Battery voltage	Test F2 15 Amp fuse. Check 407, 421, and 423 Red wires and connections. If OK, replace Key switch.
3. S6 Transmission Neutral Safety Switch	Battery voltage	Check 942 and 912 Brn/ Wht wires. If OK, replace PTO Switch.
4. K4 Safety Relay 2	Battery voltage	Test F2 15 Amp fuse. Check 407, 421, and 428 Red wires and connections. If OK, replace Key switch.
5. A1 Timer Module	Battery voltage	Test V2 diode. Check 758 and 760 Wht/Yel wires and connections.
6. K1 Start Relay	Battery voltage	Check 748, 749, and 750 Brn wires and connections. If OK, replace transmission neutral switch.
7. K1 Start Relay	Battery voltage	Check 705 and 706 Blk/ Wht wires and connections. If OK, replace Key switch.

# ELECTRICAL DIAGNOSTICS & OPERATION

