

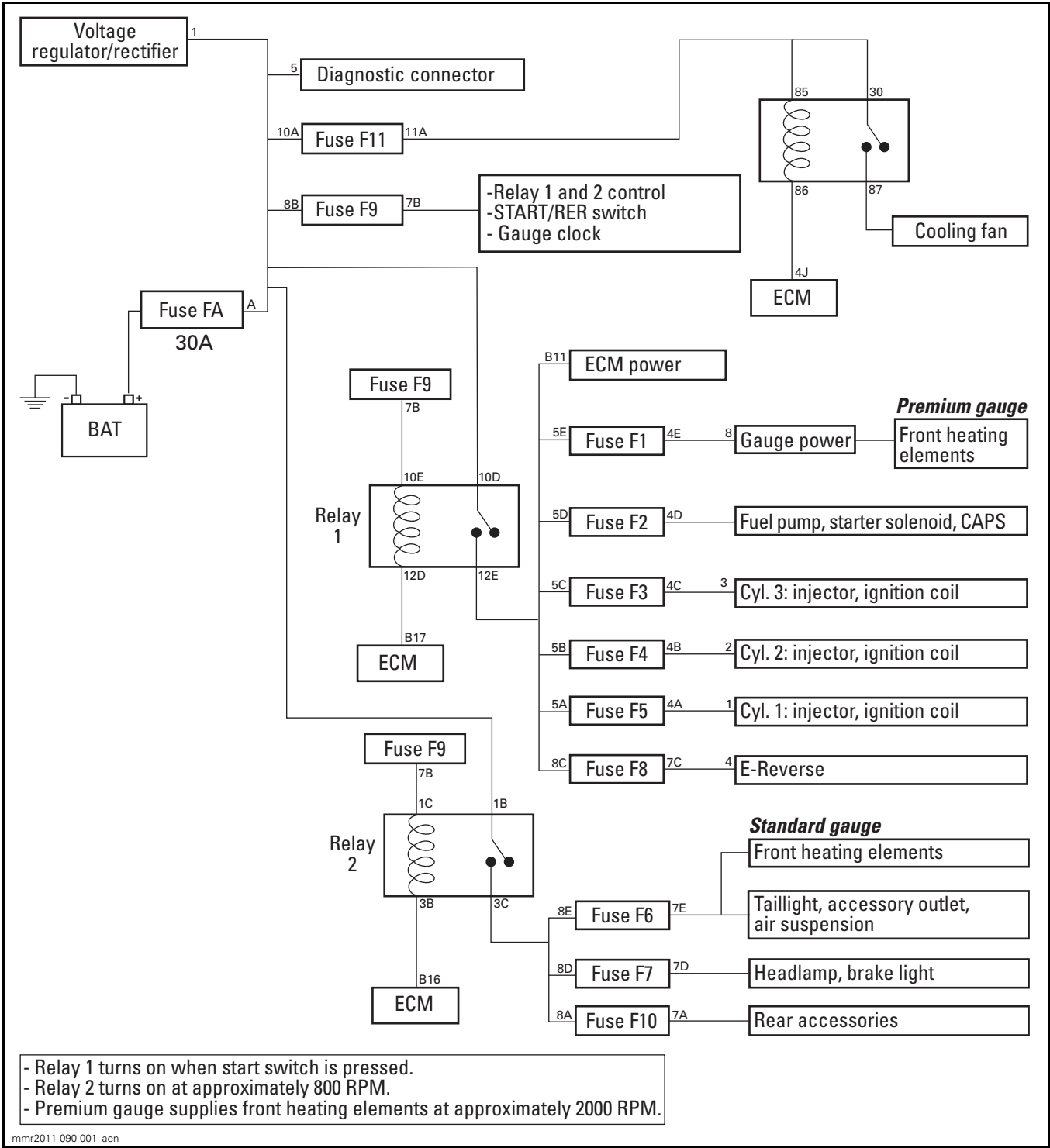
POWER DISTRIBUTION (1200 4-TEC)

SERVICE TOOLS

Description	Part Number	Page
ECM ADAPTER TOOL.....	420 277 010	5
FLUKE 115 MULTIMETER	529 035 868	5
T-HARNESS	529 035 869	5

GENERAL

POWER DISTRIBUTION
DIAGRAM



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OVERVIEW

All the electrical system is powered by DC current supplied by a 12 V battery. The battery charge is maintained by the charging system.

Electrical system is protected by fuses located in fuse box and a battery charging fuse (main) located besides the battery.

The system uses 2 relays that control different electrical components.

Relay 1 Activation

When the START/REAR button is briefly pressed or held, it wakes up the ECM that in turn, activate the relay 1 and its contacts close to deliver power.

Relay 2 Activation

When engine reaches approximately 800 RPM, the ECM activates the relay 2 and its contacts close to deliver power.

Automatic Power Cut-Off

The ECM features an automatic power cut-off that will completely turn off the ECM (after engine was running) and thus cutting all power to components. All the vehicle electrical loads will be turned off (except the clock in the multifunction gauge). This feature prevents the battery from discharging if the tether cord cap is left on the engine cut-off switch when the engine is not running.

The cut-off time is as follows.

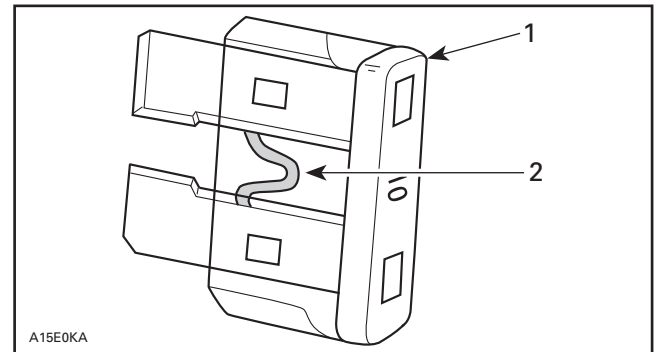
ACTION	POWER CUT-OFF TIME
Removing tether cord cap	5 seconds
Setting emergency engine stop switch to STOP (tether cord cap connected)	30 seconds (after 5 seconds, headlamp will turn off)

NOTE: The ECM will remain off until the START/REAR button is pressed.

FUSES

Fuse Inspection

Check if filament is melted. Replace as necessary.

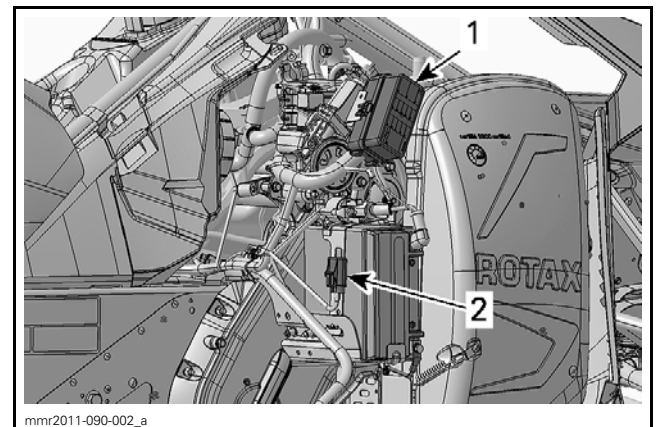


1. Fuse
2. Check if melted

WARNING

Do not use a higher rated fuse as this can cause severe damage to electric components and/or a fire. If fuse has burnt out, the cause of the malfunction should be determined and corrected before restarting.

Fuse Location



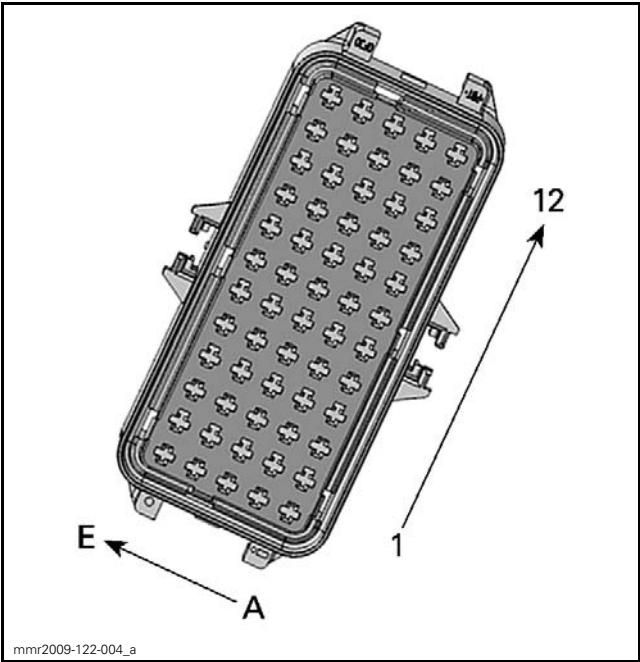
RH SIDE OF ENGINE COMPARTMENT

1. Fuse box
2. 30 A battery charging fuse (main)

Fuse Box

Fuses	F1: Gauge (pwr)	15 A
	F2: Fuel pump/starter solenoid/CAPS	10 A
	F3: Cylinder 3: Ignition coil/injector	5 A
	F4: Cylinder 2: Ignition coil/injector	5 A
	F5: Cylinder 1: Ignition coil/injector	5 A
	F6: Taillight/heating elements/acc outlet/air suspension	20 A
	F7: Headlight, brake light	15 A
	F8: E-Reverse	20 A
	F9: Start switch/clock/relays	5 A
	F10: Rear accessories	15 A
	F11: Cooling fan	15 A

Fuse box contacts are identified as seen from the top of fuse box, with letters to identify rows and numbers to identify columns. The combined letter and number identify the coordinate of a contact that is used in the wiring diagram and in procedures.

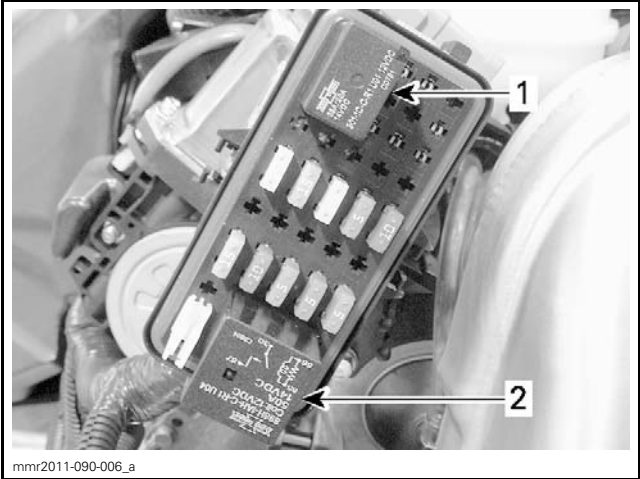


NOTICE Do not apply any lubricant or sealant product to the terminal contacts in fuse box.

RELAYS

Relay Location

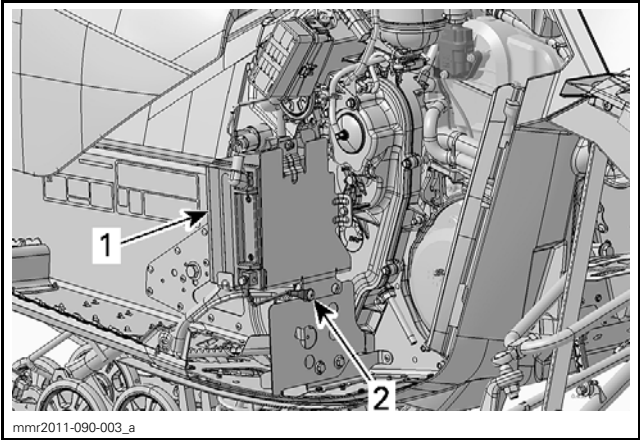
Relays are in the fuse box.



- 1. Relay 1 (R1)
- 2. Relay 2 (R2)

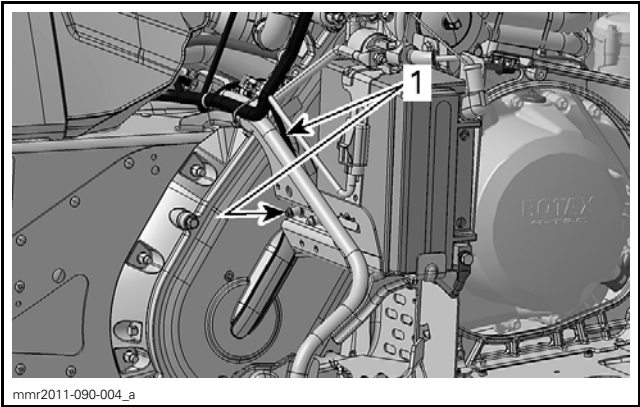
GROUND

Ground Location



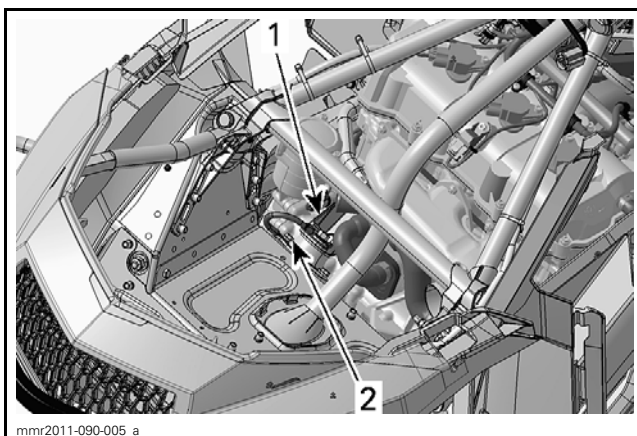
BATTERY GROUND

- 1. Battery
- 2. Ground



FRAME GROUND

- 1. Ground



ENGINE GROUND

1. Engine mount
2. Ground

PROCEDURES

RELAYS

Relay Input Voltage Test

Remove relay from fuse box.

Set the FLUKE 115 MULTIMETER (P/N 529 035 868) to Vdc and measure voltage between fuse box terminals and ground.

RELAY 1 (R1)		
PROBES		VOLTAGE
Winding input: Fuse box pin 10 E	Battery Ground	Battery voltage
Contact input: Fuse box pin 10 D	Battery Ground	

RELAY 2 (R2)		
PROBES		VOLTAGE
Winding input: Fuse box pin 1 C	Battery Ground	Battery voltage
Contact input: Fuse box pin 1 B	Battery Ground	

If input voltages are good, check the following:

- Relay, refer to *RELAY CONTINUITY TEST* in this subsection.
- ECM ground signal. Refer to *RELAY 1 (R1) GROUND SIGNAL TEST* or *RELAY 2 (R2) GROUND SIGNAL TEST*.
- ECM ground signal wire, refer to *GROUND WIRE CONTINUITY TEST (R1 AND R2)* in this subsection.
- Accessory supply wire for an open circuit. Refer to *WIRING DIAGRAM*.

If input voltages are not good, refer to *WIRING DIAGRAM* and check for an open circuit on the applicable relay winding supply wire.

Relay 1 (R1) Ground Signal Test

1. Remove relay 1.
2. Set multimeter to Vdc.
3. Quickly press on Start button to wake up ECM or install T-HARNESS (P/N 529 035 869) on diagnostic connector.
4. Measure voltage as follows to confirm ground signal:

RELAY1 (R1)		
PROBES		VOLTAGE
Fuse box pin 12 D	Battery positive terminal (+)	Battery voltage

If test fails, perform *GROUND SIGNAL WIRE CONTINUITY TEST*.

Relay 2 (R2) Ground Signal Test

1. Remove relay 2.
2. Set multimeter to Vdc.
3. Start engine.
4. Measure voltage as follows to confirm ground signal:

RELAY 2 (R2)		
PROBES		VOLTAGE
Fuse box pin 3 B	Battery positive terminal (+)	Battery voltage

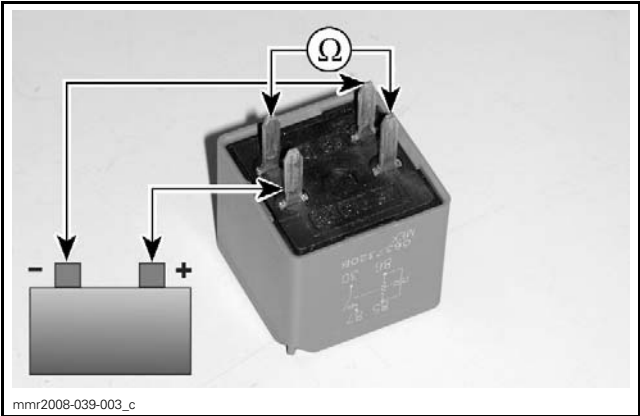
If test fails, perform *GROUND SIGNAL WIRE CONTINUITY TEST*.

Ground Wire Continuity Test (R1 and R2)

1. Disconnect ECM connector B and install it on the ECM ADAPTER TOOL (P/N 420 277 010). Refer to *ELECTRONIC FUEL INJECTION* section.
2. Remove applicable relay.
3. Set the multimeter to Ω .
4. Measure resistance as per the following table.

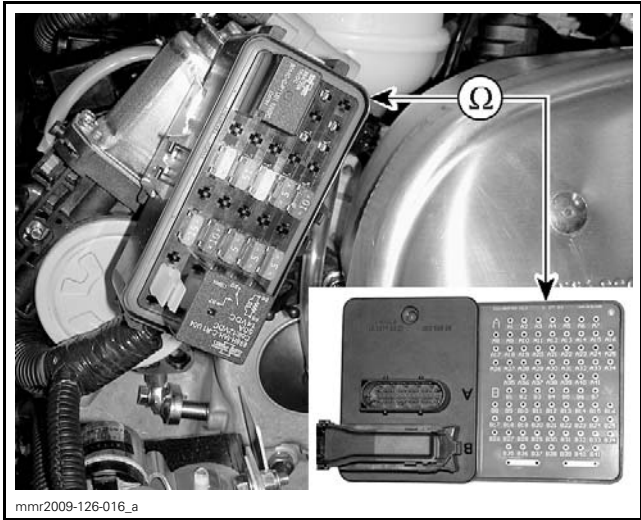
RELAY 1 (R1)		
PROBES		RESISTANCE
Fuse box pin 12 D	ECM pin B 17	Close to 0 Ω

RELAY 2 (R2)		
PROBES		RESISTANCE
Fuse box pin 3 B	ECM pin B 16	Close to 0 Ω



TYPICAL

The audible signal should be continuous. If not, replace the relay.



Relay Continuity Test

1. Remove relay to be tested from fuse box.
2. Set multimeter to the beeper position.



3. Connect a jumper from the positive post of a 12 V battery to terminals 85 and 86 of relay then place the a multimeter probe on terminal 30 and the the other probe on the terminal 87.