

## AC System function, adding relay to clutch wire

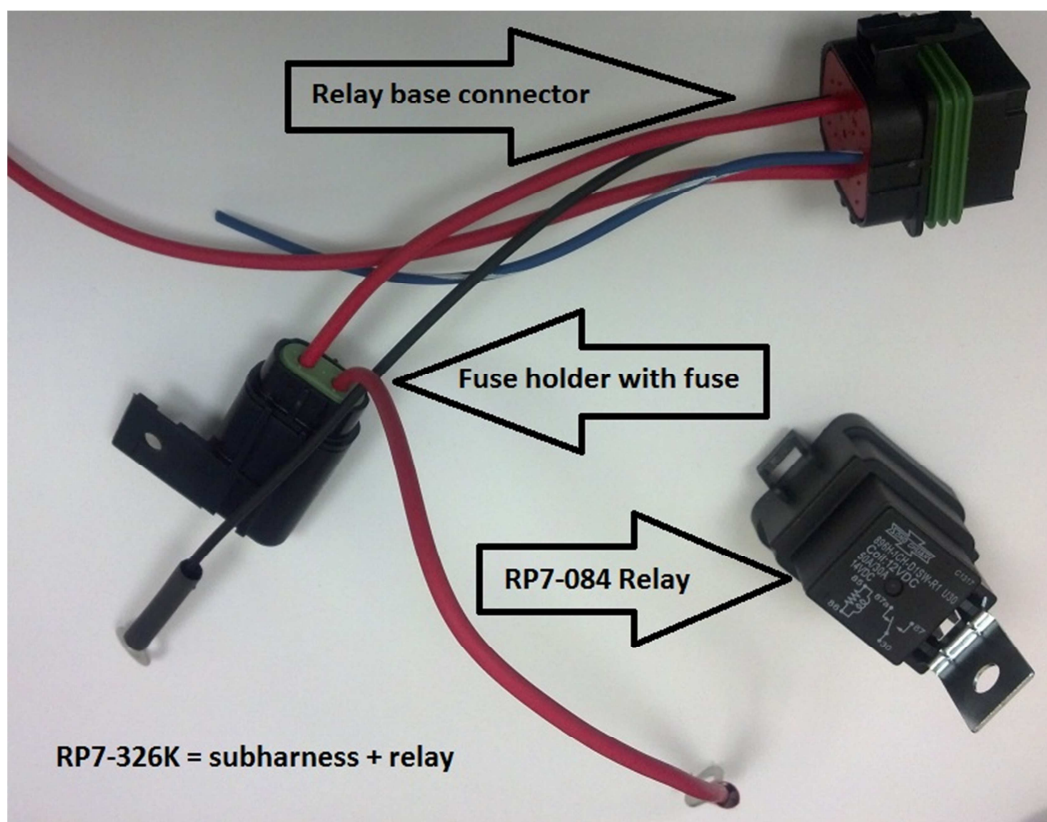
### Addition of relay to operate air conditioning compressor

In a separate PDF in this section of the website there is a wiring diagram which shows the installation of a relay in the 'Air Conditioning Compressor Clutch' circuit.

It is a helpful addition to units that have an air conditioning compressor with high hours that might be drawing more current than the Power Module can comfortably supply.

Order these two parts and have extra wire on hand to perform the installation mentioned in the PDF:  
RP7-084 Relay - 50Amp (same base plug connector as old RP7-083 relay used from 2005 RMP104's to 2012 MTS models)

RP7-326 Relay Base Connector Sub-harness



### Air Conditioning clutch circuit function:

Voltage for the air conditioning compressor clutch leaves the power module (computer under the bunk) on the green wire located in the J1 plug (labelled "10 pins output J1"), 2<sup>nd</sup> wire down on the right side of that connector.

The power goes to the thermostatic switch (freeze sensor) on the evaporator under the bunk (sensor "opens" if it senses the evaporator core icing up), power continues to the "binary sensor" (high pressure sensor on the receiver/dryer in the engine cabinet). If the binary switch senses that pressure is acceptable, power will be given to the compressor clutch.

- There is no relay for compressor clutch (though one is advised to be installed, as above)

### Notes:

- Condenser fan relay may get power from binary sensor (if so, your fan cycles with the clutch).....or, in newer RigMasters, it gets power at beginning of ac circuit before thermostatic sensor (the condenser fan would run whenever air conditioning is selected).
- If other error codes (such as “overheat/low coolant”, “oil pressure”, “safety cover open”) are accompanying a lack of power in “clutch circuit”, there may be problems in the power module itself. There are no further diagnostics for the power module, another must be installed to diagnose.

Usually, drivers can do very little to repair a failing ac system but any automotive/truck shop with conventional ac service equipment can diagnose RigMaster air conditioning.

- Many ac system failures are due to leaking hoses or fittings.
- Ac hoses can be made, usually under \$60 each.....the “receiver dryer” (about \$30 with sensor) must be replaced when unit is repaired if the system was unsealed more than 2 hours.
- Many shops charge up to \$250 to only vacuum, leak test and refill an ac system.

#### Specifications:

##### RMP's,T4-6, V10 (conventional RigMasters with Generators)

- low side pressure 15- 40 psi, high side 150-250 psi – maybe more in hot weather
- v belt driven compressors take 1.7 lbs of 134a Freon, serpentine belt driven compressors take 2.2 lbs of 134a Freon, system lubricant total is 7 oz of sp46 to 100 pag compressor oil
- with clutch engaged, compressor internal drag is 4.7 lb/ft torque
- 35 Amp fuse(s) located in engine cabinet for condenser fan (1 fuse per fan relay)
- Compressor clutch wire has a 7.5 Amp fuse
- V10 (mounted on Catwalk behind cab)- has condenser fan and bottom fan, most of this APU operates the same as a T4-6, fans operate differently (as below)

##### LG200 (RigMaster without Generator, inverter model)

- high pressure sensor mounted in ac hose (from condenser to frame)
- Freon capacity is 0.65 lbs of 134a, 4.3 oz system total

#### Relay actuation:

A close look at the relay shows a diagram of the relay terminals: 1(86) trigger wire, 2(85) trigger ground side, 3(30) 12v power from battery, 4(87a) battery volts at rest, 5(87) battery volts supplied when relay triggered.

#### Relay locations:

##### MTS-T4-6

- 4 Relays on back wall of engine cabinet
- (left to right): 1 glow plugs 2 starter 3 air cond. activates condenser fan 4 water pump ‘2 wire fan temp sensor’ activates condenser fan

##### LG and V10s with 5 Relays on back wall of engine cabinet

- (left to right): 1 glow plugs 2 starter 3 air cond. activates condenser fan 4 bottom fan activated by air conditioning 5 water pump ‘2 wire fan temp sensor’ activates condenser fan

##### V10's with 4 relays on back wall of engine cabinet

- (left to right): 1 glow plugs 2 starter 3 air cond. activates condenser fan 4 water pump ‘2 wire fan temp sensor’ activates bottom fan.