# Installation Manual for VMAC System V900077 Dodge 2004.5 5.9L 24 Valve Cummins Diesel


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**VMAC –** ***Vehicle Mounted Air Compressors***
Toll Free: 1-800-738-8622
Fax: 1-250-740-3201

**Changes and Revisions**

| Version | Revision Details | Revised by/date | Approved | Implemented |
|---|---|---|---|---|
| 00 | new format | IB 16 June 2006 | SM 19 June 2006 | 22 June 2006 |
| | | | | |

## Important Information

The information in this manual is intended for certified VMAC installers who have been trained in installation procedures and for people with mechanical trade certification who have the tools and equipment to properly and safely perform the installation. Do not attempt this installation if you do not have the appropriate mechanical training, knowledge and experience.

Follow all safety precautions for underhood mechanical work. Any grinding, bending or restructuring operations for correct fit in modified trucks must follow standard shop practices.

These instructions are a general guide for installing this system on standard production trucks and do not contain information for installation on non-standard trucks. This system may not fit special order models or those which have had other changes without additional modifications. If you have difficulty with the installation, contact VMAC.

The VMAC warranty form must be completed and mailed or faxed to VMAC at the time of installation for any subsequent warranty claim to be considered valid.

To order parts, contact your VMAC dealer. Your dealer will ask for the VMAC serial number, part number, description and quantity. To locate your nearest dealer, call 1-800-738-8622.

# General Information

## System V900077

## Before You Start

Read this manual before attempting installation so that you can familiarize yourself with the components and how they fit on the truck. Identify variations for different model years and different situations that are listed in the manual. Open the package, unpack the components and identify them.

All fasteners must be torqued to specifications. Use manufacturers torque values for OEM fasteners. Apply Loctite 242 or equivalent on all engine-mounted fasteners. Torque values are with Loctite applied unless otherwise specified.

| STANDARD GRADE 8 NATIONAL COARSE THREAD | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Size | 1/4 | 5/16 | 3/8 | 7/16 | 1/2 | 9/16 | 5/8 | ¾ |
| Foot-pounds (ft-lb) | 9 | 18 | 35 | 55 | 80 | 110 | 170 | 280 |
| Newton meter (N•m) | 12 | 24 | 47 | 74 | 108 | 149 | 230 | 379 |

| STANDARD GRADE 8 NATIONAL FINE THREAD | | | | | |
|---|---|---|---|---|---|
| Size | 3/8 | 7/16 | 1/2 | 5/8 | ¾ |
| Foot-pounds (ft-lb) | 40 | 60 | 90 | 180 | 320 |
| Newton meter (N•m) | 54 | 81 | 122 | 244 | 434 |

| METRIC CLASS 10.9 | | | | | |
|---|---|---|---|---|---|
| Size | M8 | M10 | M12 | M14 | M16 |
| Foot-pounds (ft-lb) | 19 | 41 | 69 | 104 | 174 |
| Newton meter (N•m) | 25 | 55 | 93 | 141 | 236 |

### Hose Coding

Different frame designations will affect the tank mounting position. If you have to move the tank, the lines may be too short. Measure the hose shortfall and order a *Hose Extender Kit*. The following table shows the color code used by VMAC to identify hose diameters.

| Hose Diameter | Colour-Coded Label |
|---|---|
| 1/4 inch | Yellow |
| 5/16 inch | Orange |
| 1/2 inch | Blue |
| 5/8 inch | Blue |
| 3/4 inch | Green |
| 1 inch | Green |

# Part 1: Preparing for Installation

## System V900077

***Preparation for installation is very important. Missing an item can cause problems in the installation or even damage to components. Check off each item as it is completed so that you do not miss any preparation steps.***

## 1.1 Preparing for Installation

☐ Disconnect the battery terminals.

☐ Disconnect the mass air flow sensor, remove the air cleaner assembly and the passenger side intercooler tube.

☐ Drain the coolant and remove the upper and lower radiator hoses.

☐ Disconnect the fan clutch wire and remove it from the mounting clips

☐ Remove the fan shroud from the engine locating brackets.

☐ Remove the fan and the OEM belt. Use cardboard to protect the radiator.

☐ Remove the passenger side upper fan shroud mounting bracket from the front of the engine.

☐ Remove the wire harness from the clips on the top front of the cylinder head.

☐ Remove the upper alternator mount and lifting lug, remove the lower alternator mount bolt and set the alternator aside.

☐ Remove the OEM crank pulley and scrape off the clear coat from the front face.

☐ Place the OEM crank pulley on the front of the crankshaft and rotate it to align it with the locating pin. Place the VR pulley in front of the OEM crank pulley and align it with the locating pin.

☐ Apply Loctite to the four OEM bolts and install them through the two pulleys into the crankshaft. Torque the bolts to specifications.

☐ Remove the plug from the cylinder head (Figure 1.1) and install the supplied 1/2 inch NPT to 5/8 inch hose barb in the cylinder head port.

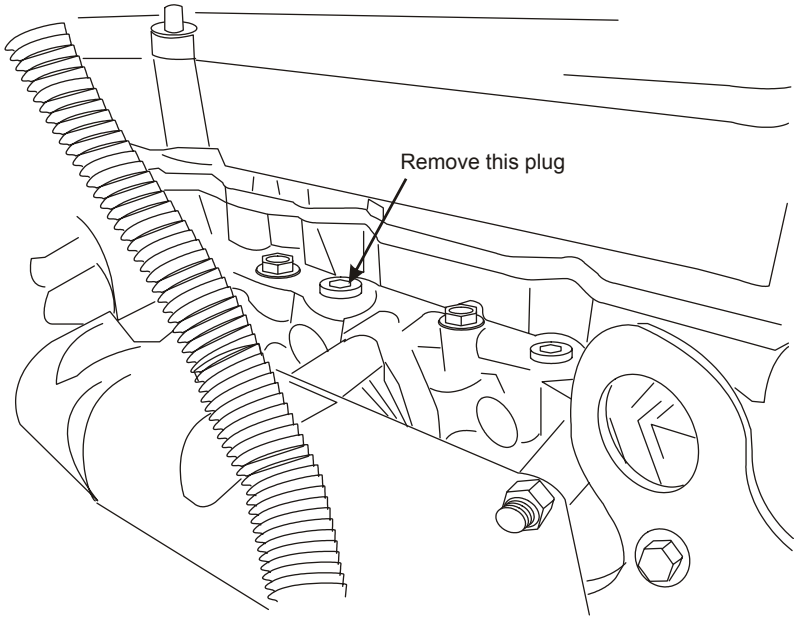



**Figure 1.1**

# Part 2: Installing the Tank

## System V900077

The tank will mount on the passenger side of the vehicle between the two cab mounts.

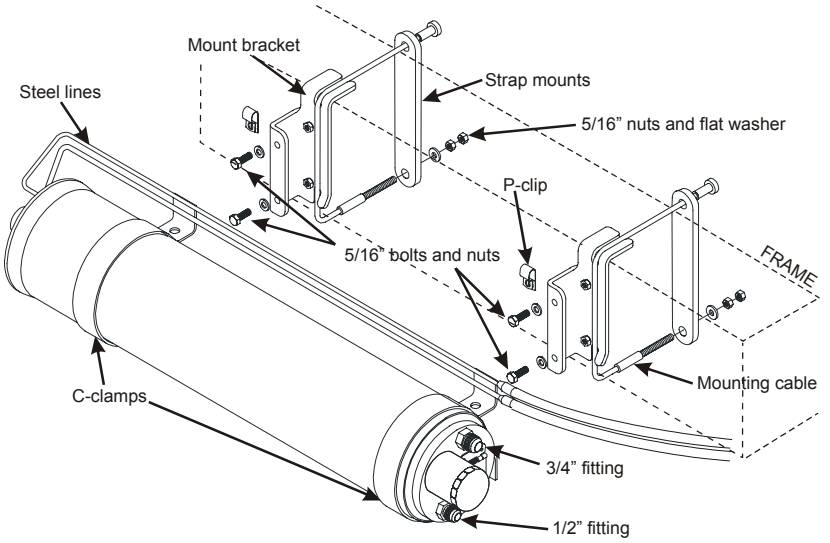



**Figure 2.1**

## 2.1 Assembling and Installing the Brackets

☐ Place the tank on a work bench with the front (oil filter end) of the tank to your left and remove the oil filter.

☐ Remove the two 1/4 inch pinch bolts from the C-clamps. Expand the clamps slightly and slide them over the front of the tank.

☐ Position the front clamp right behind the weld on the filter end of the tank and the rear clamp approximately 18 inches from the weld.

☐ Place the two L-shaped tank strap mounts under the C-clamps with the right-angle ends facing you and hanging over the edge of the work bench.

☐ Apply Loctite and insert 5/16 inch bolts with flat washers into the bottom hole on each bracket, install the nuts but do not tighten.

☐ Install the 1/4 inch pinch bolts into the C-clamps so that the heads of the bolts face toward you, apply Loctite and install the nuts but do not tighten.

☐ Rotate the tank so that the directional arrow on the end of the tank is parallel to the work bench and faces toward you.

☐ Install a 3/4 inch fitting (not supplied) in the back of the tank.

☐ Thread the 1/4 and 5/16 inch fittings on the steel lines to the matching fittings on the back end of the tank, but do not tighten the fittings. Route the lines along the top of the tank across the two C-clamps.

☐ Place the two insulated tube clips over the steel lines with the mounting holes upward and align them with the top C-clamp mounting holes (Figure 2.2).

☐ Apply Loctite and insert 5/16 inch bolts through the clips, the C-clamp and the mount brackets, install the nuts but do not tighten.

☐ Check tank alignment then tighten the C-clamp bolts.

☐ Slide the tank all the way up on the tank mount brackets (away from you) and tighten the mounting bolts.

☐ Tighten the 1/4” and 5/16” fittings on the back of the tank, then bend the two securing P-clips outward just enough to provide clearance between the lines and the tank mount brackets for the cable straps.

***You may have to bend the steel lines at the back of the tank to clear the rear cab mount.***

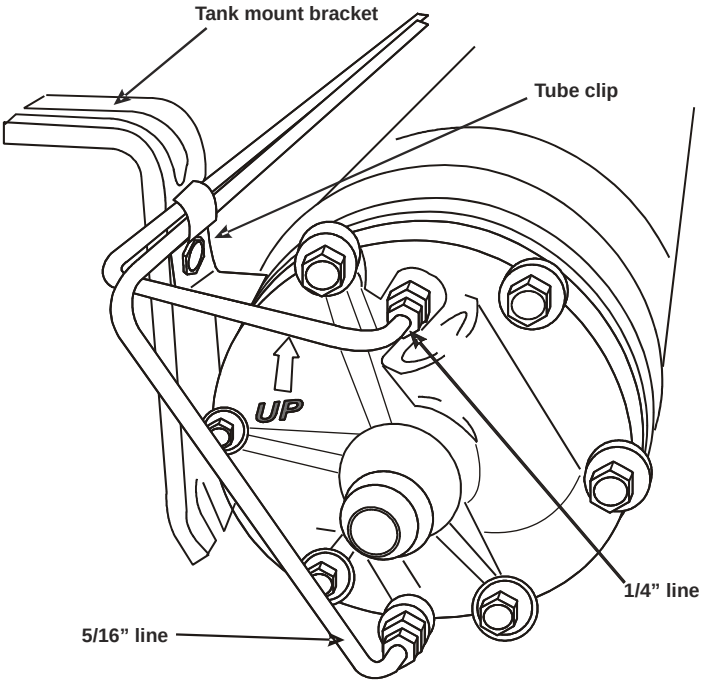



**Figure 2.2**

## 2.2 Installing the Tank Assembly

☐ Insert the threaded ends of the mounting cable through a hole on each tank strap flat bar. Route the cables over the top of the frame so that the flat bars are on the inside of the frame.

☐ Support the tank body in position against the frame rail with the tank strap mounts on the outside of the frame rail and the short arms over the top of the frame.

☐ Route the cable through the cable guide slot at the top of the tank strap mount, behind the steel lines, through the guide slot at the bottom of the tank strap mount and through the bottom hole in the flat bar (Figure 2.1).

☐ Install a 5/16 inch nut and washer on each cable, adjust the tank for best fit between the cab mounts and tighten the nuts. Install and tighten a second 5/16 inch nut on each cable as a lock.

# Part 3: Installing the Cooler and Compressor

## System V900077

## 3.1 Installing the Oil Cooler

☐ Place the cooler on the passenger side frame rail so that the brackets fit around the anti-roll bar bracket and the vertical inside face of the cooler bracket is flush with the frame rail.

☐ Loop the retaining cables from the bottom holes around the frame and back through the top holes (Figure 3.1).

☐ Install a washer and spacer on the cable closest to the rear of the truck and a washer on the cable closest to the front of the truck. Thread nuts on each cable and tighten them. Install and tighten a second nut to act as a lock.

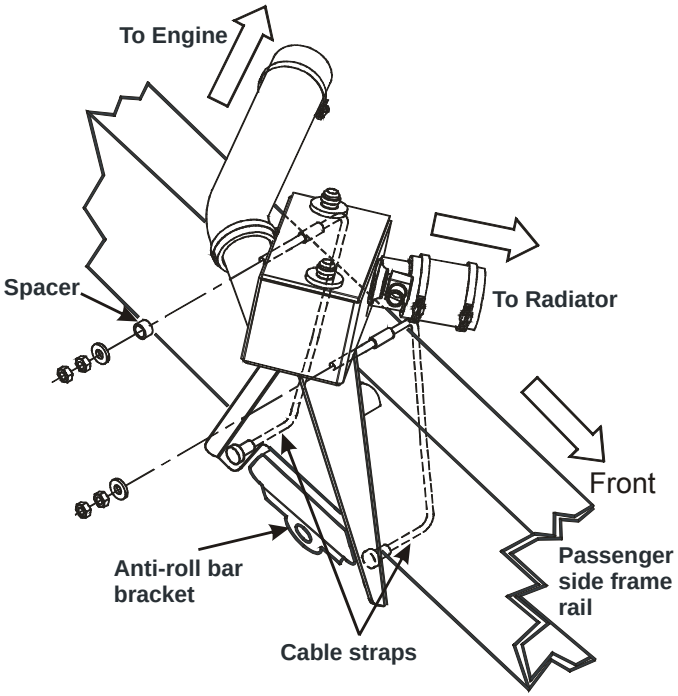



**Figure 3.1**

☐ Connect the short radiator hose from the oil cooler to the bottom radiator spigot and secure with clamps.

☐ Connect the long radiator hose from the passenger side rear of the oil cooler to the coolant intake on the side of the engine below the alternator and secure with clamps.

☐ Connect the supplied 5/8 inch heater hose to the fitting on the oil cooler, route it up the passenger side of the engine and connect it to the 5/8 inch hose barb in the cylinder head. Make sure that it does not contact any sharp surfaces or interfere with any belts or moving components by securing with nylon ties.

## 3.2 Installing the Main Bracket and Compressor

☐ Remove the belt tensioner assembly and the two idlers from the VR main bracket.

☐ Position the main bracket on the passenger side front of the engine cylinder head with the idler stubs facing forward and align holes on passenger side of the bracket with the holes from the engine lifting lug and the upper alternator mount. Make sure that the wire harness is clear of the bracket.

☐ Apply Loctite and install (Figure 3.2):

- one M8 x 30 mm hex head bolt with flat washer into the top right passenger side hole in the main bracket
- three M10 x 35 mm hex head bolts with washers in the top back hole and the two bottom holes on the passenger side of the bracket
- two M8 x 25 mm socket head bolts into the front of the bracket

☐ Snug all fasteners down equally then torque to specification.

☐ Place the compressor on the bracket and fit the two studs into the engine side holes on the main bracket. Install nuts with captive serrated lock washers to each stud and hand tighten.

☐ Apply Loctite and install the M8 x 25 mm hex head bolt with flat washer through the bracket and into the front passenger side hole on the compressor. Torque the fasteners to specifications.

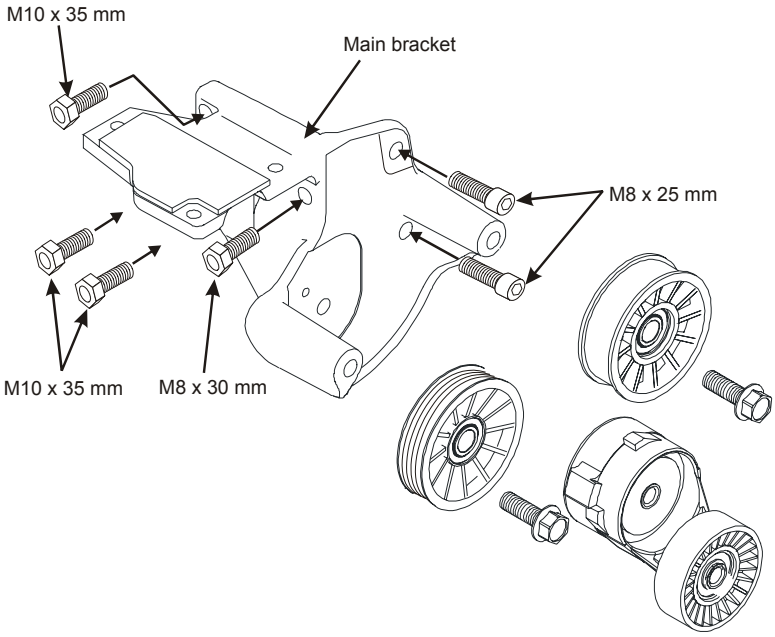



**Figure 3.2**

## 3.3 Connecting the Hoses

☐ Connect the 45 degree end of the 3/4 inch hose to the top front tank fitting, route it along the frame rail and up the passenger side of the engine and connect it to the matching fitting on the back of the compressor.

☐ Connect the straight end of the longest 1/2 inch hose to the matching fitting on the tank. Route the hose along the passenger side frame rail and attach the 90 degree fitting to the passenger side fitting on the top of the cooler.

☐ Connect the straight end of the remaining 1/2 inch oil hose to the 90 degree fitting on the driver side of the compressor, route it behind the compressor and down the passenger side of the engine. Attach the 45 degree fitting to the driver side oil fitting on the top of the cooler.

☐ Route the 1/4 and 5/16 hoses up from the tank to the compressor and connect them to the matching fittings on the inlet control valve.

## 3.4 Completing the Installation

☐ Install the alternator to the VR main bracket using the OEM fasteners and torque to specifications.

☐ Install the OEM belt (Figure 3.3).

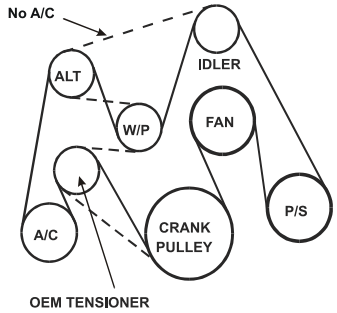



**Figure 3.3**

☐ Apply Loctite and install the VR tensioner, smooth idler and the ribbed idler. Torque all fasteners to specifications.

☐ Install the VR belt (Figure 3.4).

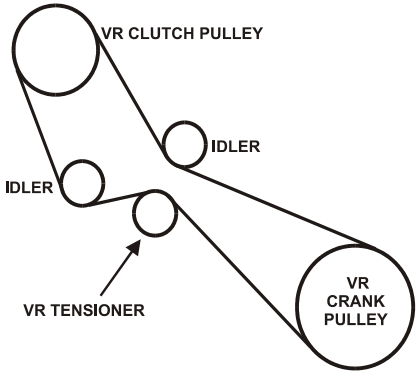



**Figure 3.4**

☐ Install the fan spacer.

☐ Remove the OEM screws holding the fan to the hub and replace them with the 5/16 x 5/8 inch button-head screws.

☐ Install the replacement passenger side upper fan shroud mounting bracket to the compressor mounting bracket with two supplied M8 socket head bolts.

☐ Place the supplied template on the fan shroud and align it with the front edge. Mark and cut the area on the passenger side for fan clearance.

☐ Cut a 2 x 1 inch rectangular hole under the original location on the driver's side of the shroud for the fan wire harness.

☐ Pry open the steel locking tab in the bottom part of the steel sheath, pull out some of the harness and reroute it to the other side of the sheath, above the locator tab.

☐ Lay the fan in the centre of the shroud and pass the fan wire harness and steel sheath through the new hole in the shroud (Figure 3.5 - viewed from the front).

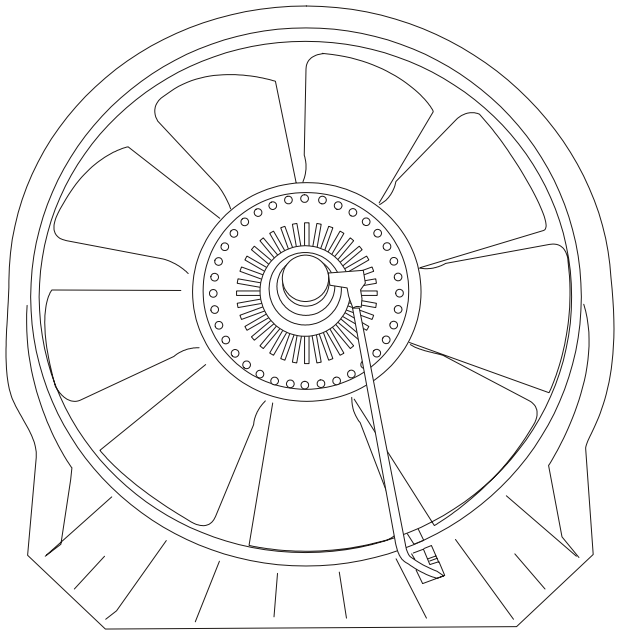


**Figure 3.5**

☐ Lower the fan and shroud in front of the engine. Thread the fan onto the spacer and tighten; then position the shroud.

☐ Install the replacement fan harness attachment bracket on the back of the lower driver side OEM fan shroud bracket. The spacer on the attachment bracket should face forward and sit below the locator (Figure 3.6). Use the OEM fastener.

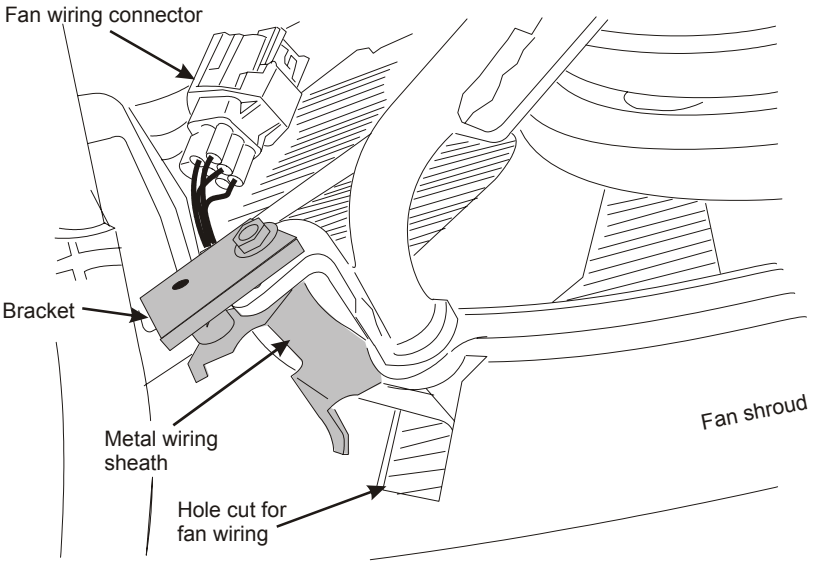



**Figure 3.6**

☐ Attach the metal wiring sheath to the spacer on the new bracket with the supplied M6 x 40 mm bolt. Route the wire around the back of the sheath and mount bracket to allow enough length harness to connect the wiring.

☐ Align the metal wiring sheath with the hole on the new bracket, install the supplied 1/4 inch bolt and nut and tighten.

☐ Locate the fan shroud on the remaining three OEM mount brackets and install the OEM nuts, then install the two supplied M6 bolts to the upper passenger side mounting bracket.

☐ Connect the fan clutch wire and make sure it is clear of the fan and all moving parts. There must be at least 5/8 inch clearance between the wire and the fan blade tips to prevent damage to the wiring.

☐ Install the two OEM fasteners holding the fan shroud and the radiator to the radiator support. One of these fasteners also holds the radiator expansion tank.

☐ Install the upper radiator hose and intercooler tube.

☐ Drill an 11/16 inch hole in the air box and install the filter gauge into the new hole. Plug the original hole that held the filter gauge with the supplied plastic grommet (Figure 3.7).

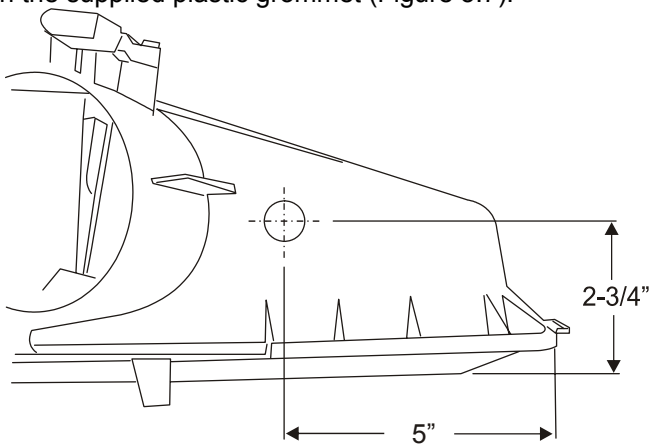



**Figure 3.7**

☐ Install the air box in its original mounting position. Secure the air box and connect the intake ducting and the mass air sensor.

☐ Insert the engine wire harness to clips where possible. Reroute the harness so that it is clear of the compressor and moving parts. Secure it as required.

☐ Route all hoses so that they do not interfere with any moving components and are not exposed to excessive heat or abrasive surfaces. Secure them with nylon ties and use plastic loom as required.

## 3.5 Adding Oil to the System

***You must use the VMAC supplied and approved compressor oil in this system. Failure to use this special oil will result in damage to the compressor and will void your warranty.***

☐ Remove the plug from the fill tube and slowly pour oil into the inlet control valve using a funnel. Turn the center of the compressor clutch clockwise to speed the fill process.

☐ Allow 5 minutes for the oil to drain into the tank, then check the level at the sight glass at the front of the tank. Continue adding oil until the level is correct.

☐ Install the fill plug in the inlet control valve and tighten it securely.

***Do not overfill the system. Overfilling the system with oil can flood the sight glass window and make the system appear empty.***

# Part 4: Installing the Control Components

## System V900077

## 4.1 Installing the Pneumatic Throttle Controller

### 4.1.1 Automatic Transmission

☐ Remove the two OEM bolts (Figure 4.1) and mount the throttle bracket with the vertical section of the bracket facing the passenger side of the vehicle using the OEM bolts.

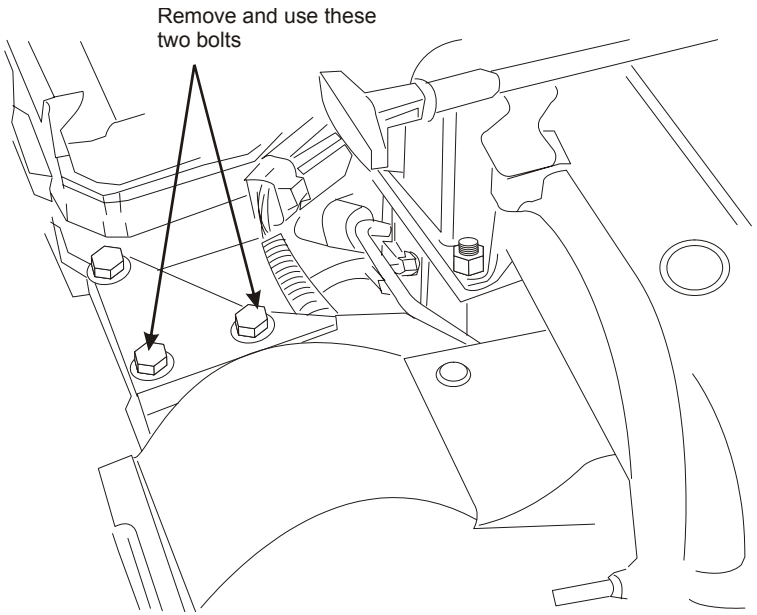



**Figure 4.1**

☐ Mount the throttle to the bracket using 1/4 x 5/8 inch screws, with the VMAC logo to the top and the throttle pull cable facing towards the rear of the truck (Figure 4.2).

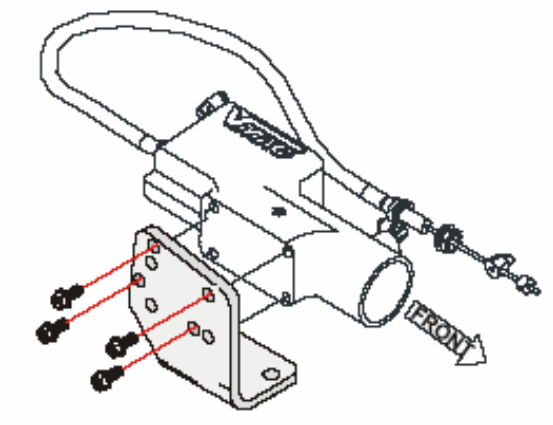



**Figure 4.2**

☐ Drill a 3/8 inch hole in the rear of the OEM throttle bracket (Figure 4.3).

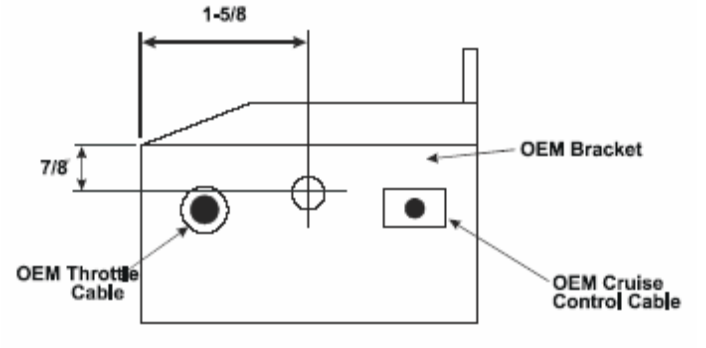



**Figure 4.3**

☐ Insert the throttle cable through the hole, install a serrated washer and thread on the securing nut (Figure 4.4).

☐ Remove the OEM cruise cable retaining clip from the inner end of the throttle spindle and remove the OEM cruise cable.

☐ Insert the wide end of the VR throttle pull bracket over the spring and over the spindle.

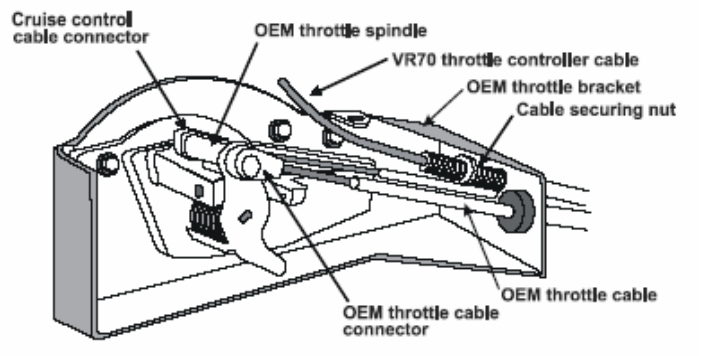



**Figure 4.4**

☐ Fit the O-clamp over the spindle to secure the pull bracket against the throttle arm and crimp both ends of the O-clamp (Figure 4.5).

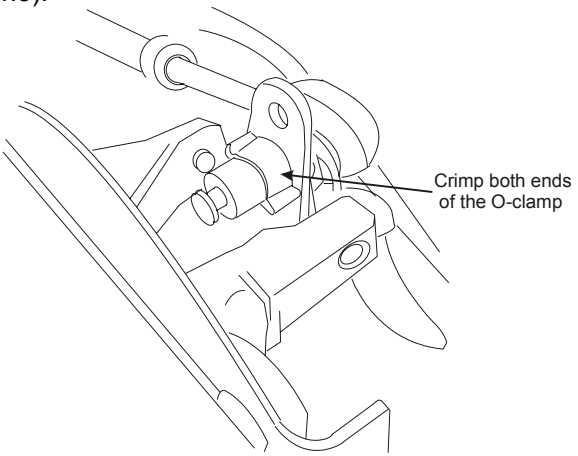



**Figure 4.5**

☐ Connect the red and black poly tubes from the throttle controller to the compressor (Figure 4.6). Route the tubes to avoid hot areas and moving parts. Fasten them in place with ties.

☐ Install the cable nipple on the throttle cable. Pull the throttle cable snug and slide the nipple up the cable until it contacts the pull bracket, but not so tight that the throttle is prevented from returning to base idle. Tighten the setscrew on the cable nipple, leaving a 1/4 inch gap between the pull bracket swivel and the cable nipple (Figure 4.7).

☐ Cut out a section of the throttle arm plastic cover to allow for movement of the throttle pull (Figure 4.7).

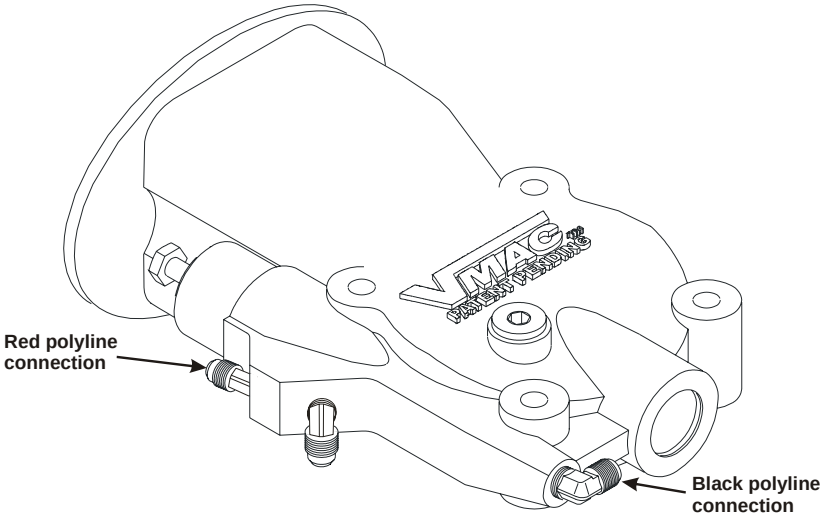



**Figure 4.6**

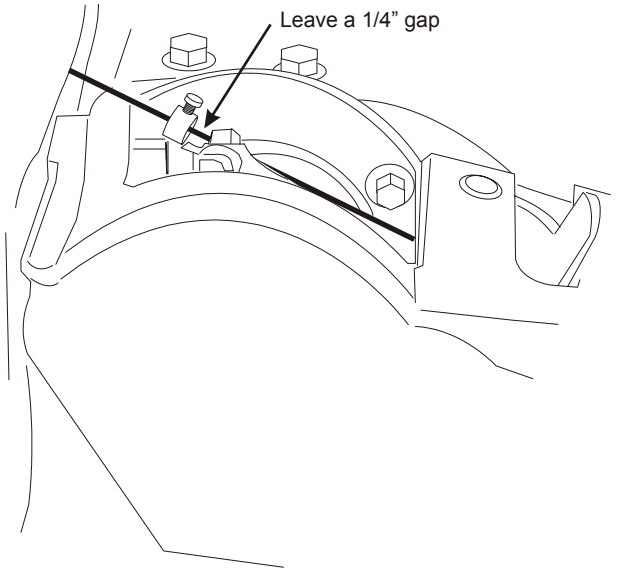



**Figure 4.7**

### 4.1.2 Manual Transmission

☐ Remove the three screws from the OEM throttle actuator housing assembly under the driver's side battery box (Figure 4.8).

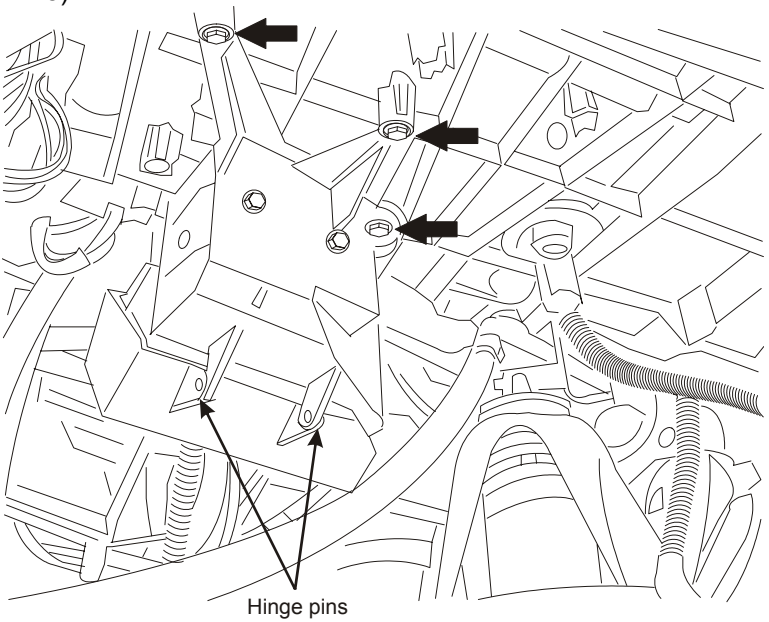



**Figure 4.8**

☐ Open the hinged lid to the throttle actuator housing and remove the lid at the hinges. Disconnect the OEM throttle cable and wiring plug from the side of the unit.

☐ Mark the lid of the throttle actuator (Figure 4.9) and cut out the marked section with a small zip wheel or similar tool.

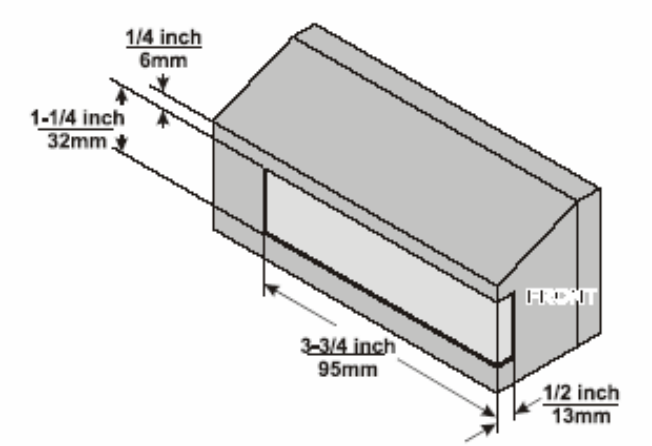



**Figure 4.9**

☐ Remove the bracket from the VMAC throttle controller and mount the VMAC throttle controller to the mounting bracket using the correct holes (Figure 4.10). Use the four 1/4 NC x 1/2 inch bolts with Loctite on the threads.

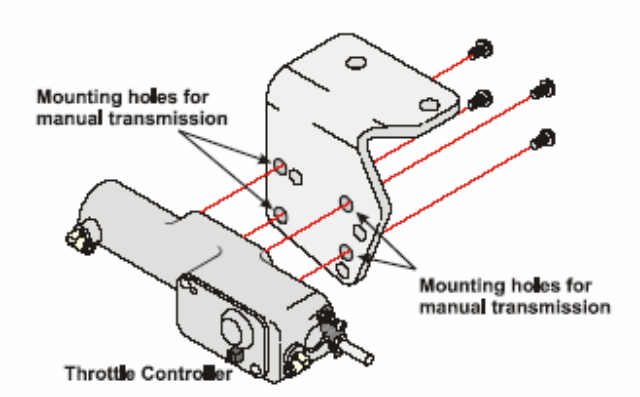



**Figure 4.10**

☐ Locate the two mounting holes on the front top driver side of the cylinder head and mount the throttle controller to this location using the two OEM bolts, with the throttle controller hanging over the side of engine (Figure 4.11). The throttle housing should sit beside the cylinder head, just above the injector pump, with the cable facing rearwards.

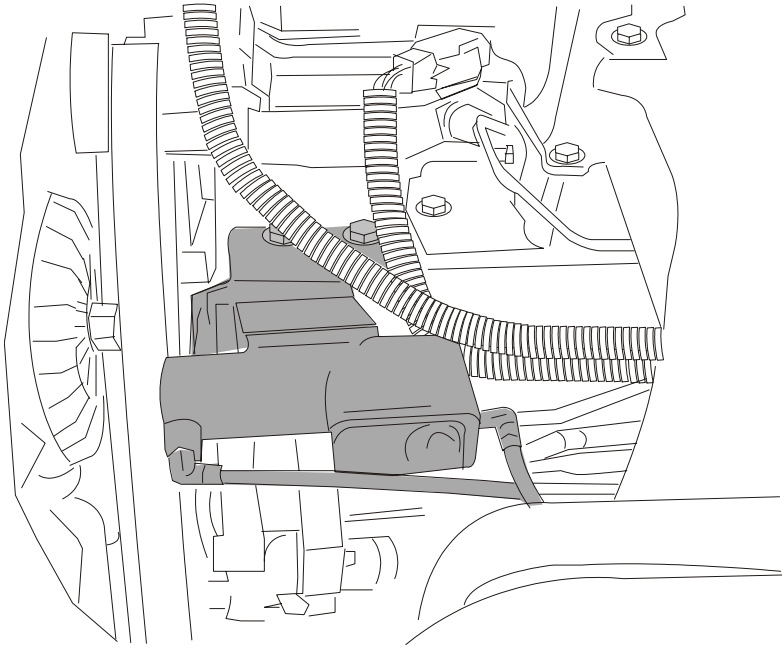


**Figure 4.11**

☐ Drill a 3/8 inch hole in the actuator housing end next to where the OEM throttle cable is located (Figure 4.12).

☐ Remove the VMAC throttle pull arm lever from the throttle control by undoing the end nipple and removing it.

☐ Remove the outer cable end nut from the VMAC throttle control. Thread the outer cable through the brass nipple on the end of the VMAC throttle pull arm and secure it with the end nipple removed earlier. Leave a gap of about 1/4 inch between the brass nipple and the securing nipple.

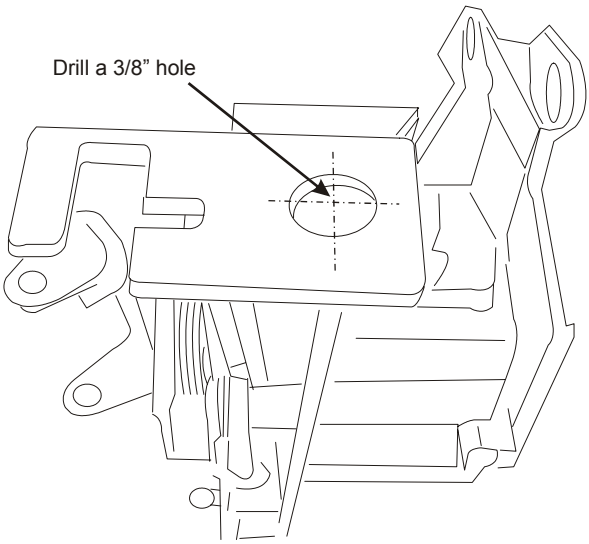



**Figure 4.12**

☐ Install the actuator housing lid at the hinges; then fit the housing assembly to the underside of the battery tray with the three OEM screws.

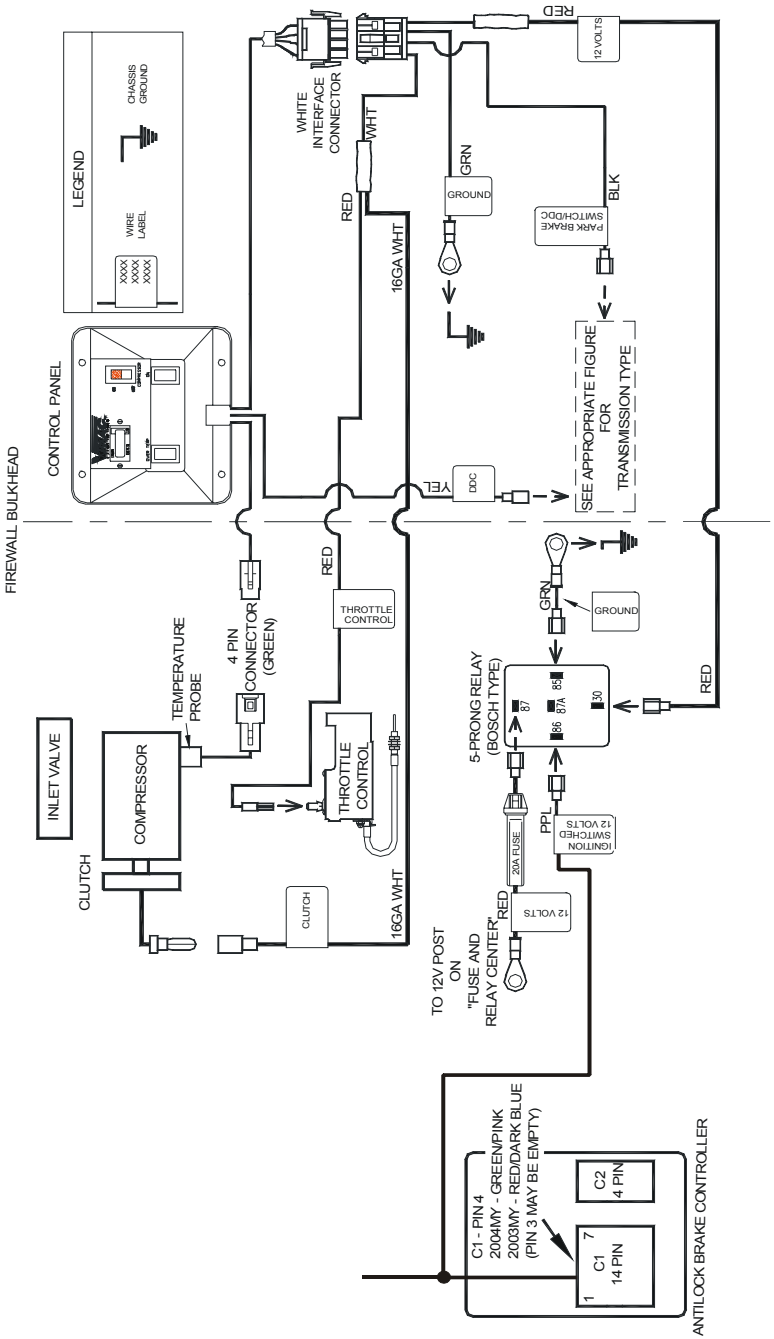
☐ Replace the inner wheel well cover.

## 4.2 Installing the Control Box

☐ Remove the plastic trim panel from the doorsill and the kick panel on the driver’s side.

☐ Mount the control box on the floor of the cab beside the driver’s seat. Use the bracket as a template, drill two 3/32 inch holes through the cab floor and fasten the bracket to the floor of the cab using two #8 pan head screws. Fasten the control box onto the bracket using the supplied #8 button head machine screws.

☐ Route the cables from the control box along the doorsill, under the trim panel, behind the kick panel and up under the dash. Replace the doorsill trim and the kick panel.


LEGEND
CHASSIS GROUND
WIRE LABEL
XXXX
XXXX
XXXX
WHITE INTERFACE CONNECTOR
RED
WHT
16GA WHT
GRN
GROUND
PARK BRAKE SWITCH/DDC
BLK
12 VOLTS
SEE APPROPRIATE FIGURE FOR TRANSMISSION TYPE
CONTROL PANEL
FIREWALL BULKHEAD
YEL
DDC
GRN
GROUND
RED
5-PRONG RELAY (BOSCH TYPE)
87
85
87A
86
30
PPL
IGNITION SWITCHED 12 VOLTS
20A FUSE
12 VOLTS
TO 12V POST ON "FUSE AND RELAY CENTER"
RED
THROTTLE CONTROL
4 PIN CONNECTOR (GREEN)
TEMPERATURE PROBE
INLET VALVE
COMPRESSOR
CLUTCH
THROTTLE CONTROL
CLUTCH
16GA WHT
C1 - PIN 4
2004MY - GREEN/PINK
2003MY - RED/DARK BLUE
(PIN 3 MAY BE EMPTY)
C2
4 PIN
C1
14 PIN
1
7
ANTILOCK BRAKE CONTROLLER

## 4.3 Connecting the Wiring

☐ Connect the interface harness to the matching connector from the control box.

☐ Attach the green wire with the ring connector to a good ground under the dash.

☐ Route the white wire, the two red wires and the wire with the four pin connector through a suitable opening in the firewall.

☐ Connect the wire with the four pin connector to the matching connector at the compressor.

☐ Connect the white wire with the bullet connector to the compressor clutch.

☐ Connect the red wire with the spade connector to the throttle controller.

☐ Remove the plastic fastener above the firewall on the driver's side of the engine. Mount the relay using the supplied bracket and fasteners (Figure 4.13).

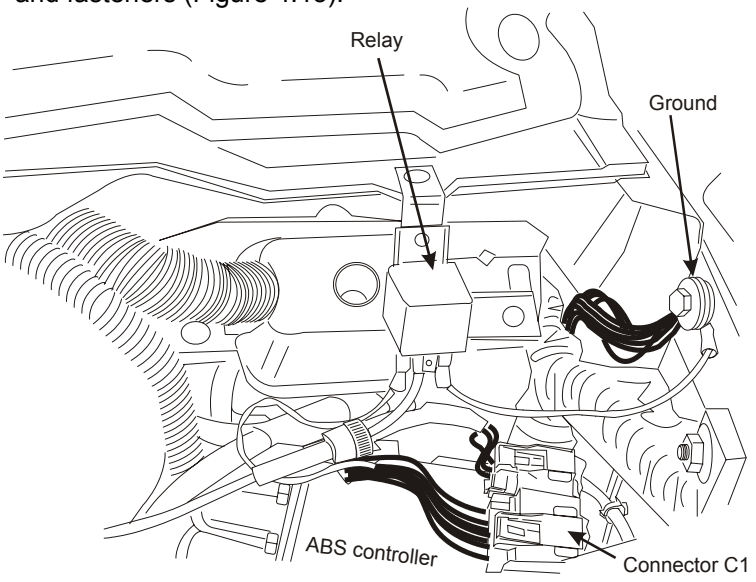



**Figure 4.13**

☐ Connect the relay ground (Pin 85) to the OEM ground point on the driver's side fender (Figure 4.13).

☐ Locate the green with a pink stripe wire at pin 4 (top row, fourth from the front) of C1 on the "Anti-lock Brake Controller" (Figure 4.13).

☐ Solder and seal the purple "Ignition switched 12 volts" wire from pin 86 of the relay to the wire in pin 4.

☐ Connect the red wire with the fuse holder from pin 87 of the relay to the 12 volt post on the side of the "Fuse and Relay Center".

☐ Connect the red "12 volts" wire from the interface harness to pin 30 on the relay.

☐ Secure all wire harnesses with split loom and ties as necessary to retain them securely and to prevent interference with moving parts or hot areas of the engine.

### 4.3.1 Automatic Transmission

☐ Remove the OEM connector from the park brake switch; connect the black wire with the piggyback connector from the DDC to the park brake switch and the OEM connector to the piggyback connector.

☐ Install the Drive Disable Circuit (DDC) under the dash using nylon ties.

☐ Connect the black wire from the interface connector to the matching black wire at the DDC. Tape the connection.

☐ Connect the yellow wire with the bullet connector from the DDC to the matching connector from the control box.

☐ Route the blue wire from the DDC to the transmission range sensor on the driver side of the transmission above the oil pan. Solder the blue wire to the yellow wire with the black stripe.

### 4.3.2 Manual Transmission

☐ Connect the “Transmission Park Brake” jumper to the black “Park Brake Switch/DDC” interface cable wire and tape the connection.

☐ Remove the OEM connector from the park brake switch; connect the black wire with the piggyback connector to the park brake switch and the OEM connector to the piggyback connector.

## 4.4 Completing and Testing the Installation

☐ Check all wiring to ensure that it will not contact any hot or moving components and will not interfere with the operation of the truck. Secure all wiring with nylon ties and protect with split loom as required.

☐ Install and connect the batteries.

### 4.4.1 Safety Test

☐ Place the transmission in Park and apply the park brake. Turn the ignition key “ON” but do not start the engine.

☐ Check the control box to see if there is a number showing in the hour-meter. If there is no display, there is no power to the control box.

☐ Turn the control box switch to the “ON” position. The green light should come on and you should hear the compressor clutch engage.

☐ Release the park brake. The green light should go out and the compressor clutch should disengage. Apply the park brake again and the light should come on and the clutch should engage.

☐ Shift the transmission out of Park. The light should go out and the compressor clutch should disengage. Check all gear selector positions to make sure that the light does not come on unless the selector is in Park or Neutral.

☐ Turn the ignition key “OFF”.

***If the truck fails the test, check the wiring to make sure that all the connections are correct and secure. If you require additional assistance, contact your local VMAC dealer. Call 1-800-738-8622 or 250-740-3200.***

# Part 5: Finishing the Installation

## System V900077

## 5.1 Before Starting the Engine Checklist

Make sure that the following have been completed:

☐ Check the coolant.

☐ Check the compressor oil level at the tank sight glass.

☐ Do a final inspection to make sure that everything has been completed and tightened.

☐ Perform a final belt alignment check.

☐ Check all wiring for security and protection. Make sure nothing is touching the compressor body.

## 5.2 After Starting the Engine Checklist

Make sure that the following have been completed:

☐ Operate the system with an air tool for at least 1/2 hour (1 hour preferred).

☐ Road test the truck for approximately 14 miles (20 km).

☐ Watch the underhood operation to make sure that belts rotate properly, pulleys rotate smoothly and nothing is rubbing or contacting hot parts.

☐ Check all components, connections and fasteners once the engine is turned off and the system has cooled.

☐ Check the coolant level after the engine has been operated.

☐ Check the compressor oil level after the engine has been shut down and the oil level has had time to stabilize.

## 5.3 Setup, Performance Testing and Adjustments

This system has been adjusted at the factory for general operation. If your operation requires different settings, refer to the owner's manual for specific instructions on how to adjust the system.

You can test the system operation using the tools that will be operated by the system or you can test operations sing an orifice in the outlet to simulate tool use (Figure 5.1).

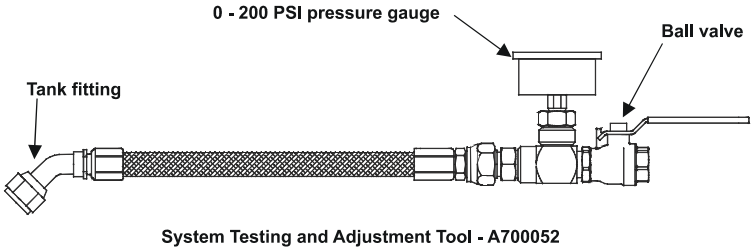



**Figure 5.1**

1. Install the test tool in the tank outlet fitting. If you are using the VMAC test tool, use the correct orifice fitting (small hole for VR70, large hole for VR140).
2. Make sure that the ball valve is closed.
3. Place the transmission in park and fully apply the park brake.
4. Allow the engine to run until it is at operating temperature.
5. Operate the air compressor system until the oil is warm.
6. Observe the pressure gauge. Pressure should be approximately 150 psi.
7. Open the ball valve on the test tool and observe the engine tachometer. Engine speed should increase to about 2,200 RPM.
8. Close the air valve slowly to allow the system pressure to rise.
9. Once the system pressure is at maximum, slowly open the ball valve on the test tool until the pressure on the gauge begins to drop. Engine speed should start to increase when air pressure drops to approximately 140 PSI.

# 5.4 System Identification and Warnings

The System Identification Number Plate must be attached to the truck at the time of installation. This plate provides information which allows VMAC to assist in customer inquiries and the ordering of parts. Mark and drill two 7/64 inch holes to the top surface of the radiator support in front of the battery, then secure the plate with self-tapping screws.

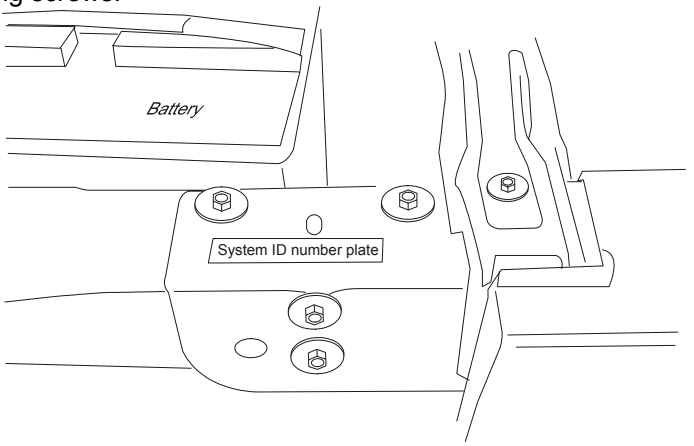



**Figure 5.2**

As part of the installation process, ensure that the safety and operational instruction decal is affixed in an obvious location so that it can be seen by truck operators (Figure 5.3).

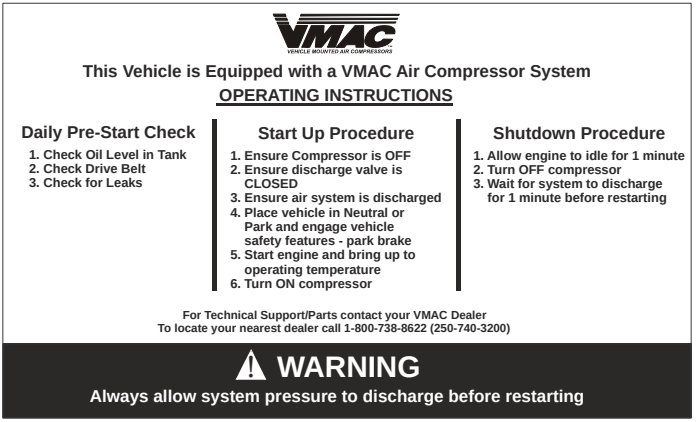



**Figure 5.3**

# 5.5 Auxiliary Air Receiver

***If you intend to use an auxiliary air receiver with this system you must observe the following installation procedure to prevent damage to the system.***

The line from the VMAC tank to the auxiliary air receiver must have a one-way check valve installed (part #3600078) to prevent blow back from the auxiliary tank and to stop moisture from entering the VMAC tank (Figure 5.4).

The line to the auxiliary tank must not be installed in the bottom of the tank, but must be installed as high as possible to prevent water from entering the line.

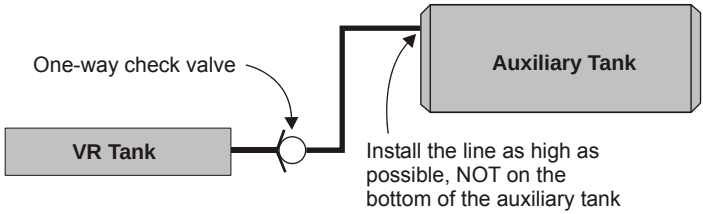
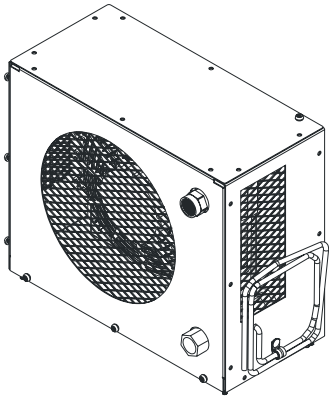



**Figure 5.4**

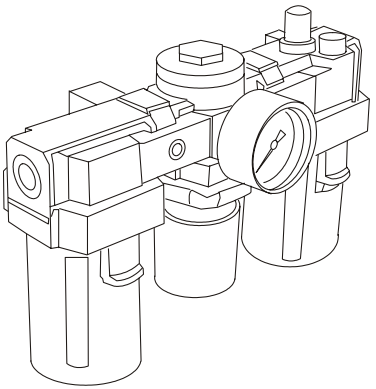
# Accessory Products from VMAC

The following accessory products for your VR compressor system are available from VMAC. For more information or to order these products, call 1-800-738-8622.



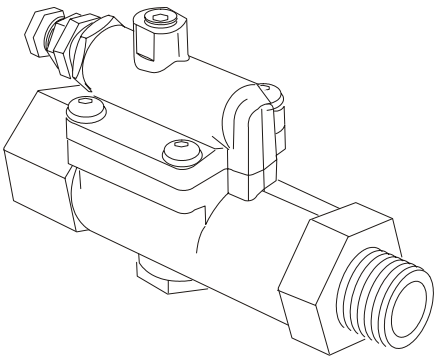
### Eliminator Aftercooler

Removes up to 80% of moisture from compressed air. Quick installation, automatic drain and compact design



### Filter Regulator Lubricator

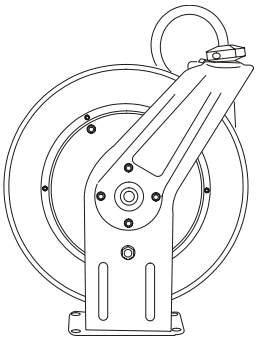
Removes lubricants, water and dirt from the air stream. Adds atomized tool oil to lubricate tools. Reduces pressure for longer tool life.



### Auxiliary Tank Valve

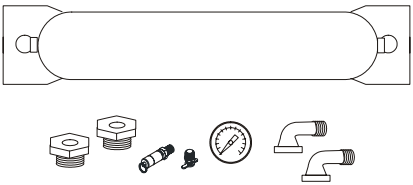
Equalizes pressure between storage tanks and the VR tank. Built-in check valve. No electrical connections or adjustments required.

**VMAC – *Vehicle Mounted Air Compressors***
Toll Free: 1-800-738-8622
Fax: 1-250-740-3201



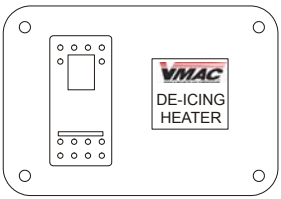
## Hose Reel

Secure, compact, retractable hose storage in a sturdy reel.



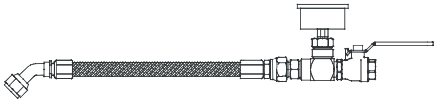
## Air Receiver Tank

Thirty-five gallon capacity in a compact tank, complete with fittings and a gauge.



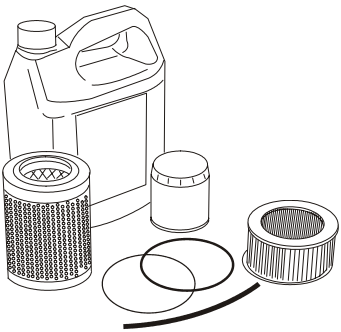

## De-icer Kit

Insulated rope heater prevents freezing of lines and regulator.



## System Testing Tool

Simulates tool use to provide for accurate system adjustments. Orifice fittings included for both VR70 and VR140 systems.



## VR Service Kits

Using OEM service products will extend the life of your system. Includes oil, filters, seals and O-rings. 200 hour and 400 hour service interval kits are available

**VMAC –** ***Vehicle Mounted Air Compressors***
Toll Free: 1-800-738-8622
Fax: 1-250-740-3201