

Installation Manual for VMAC System V900051 and V900052

Ford 1999 – 2004
Triton 6.8L V10 and 5.4L V8
F250-F550 Super Duty

General Information.....	3
Before You Start	3
Part 1: Preparing for Installation.....	4
1.1 Preparing for Installation	4
1.2 Modifying the Lower Hose.....	4
1.3 Replacing the Heater Hose Barb.....	8
1.4 Engine Oil Fill Modifications	9
Part 2: Installing the Tank and Hoses.....	11
2.1 Installing the Tank and Frame Mounts	11
2.2 Attaching Hoses to the Tank	16
Part 3: Installing the Main Bracket and Compressor	17
3.1 Installing the Crank Pulley	17
3.2 Installing the Oil Cooler	17
3.3 Installing the Main Bracket and Compressor	18
3.4 Installing Drive Belts and Components	20
3.5 Installing the Hoses	21
3.6 Adding Oil to the System.....	22
Part 4: Installing the Control Components	23
4.1 Installing the Throttle Controller	23
4.2 Installing the Control Box	29
4.3 Connecting the Wiring	30
4.4 Completing and Testing the Installation	38
Part 5: Finishing the Installation	39
5.1 Before Starting the Engine Checklist	39
5.2 After Starting the Engine Checklist.....	39
5.3 Setup, Performance Testing and Adjustments.....	40
5.4 System Identification and Warnings.....	41
5.5 Auxiliary Air Receiver	42
Accessory Products from VMAC	43

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

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Ford 1999 – 2004 Triton 6.8L V10 and 5.4L V8
F250-F550 Super Duty

Changes and Revisions

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00	Original manual	IB 18 Feb 2004		
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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 is located at the back of this manual. This 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.

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General Information

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	3/4
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	3/4
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

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Part 1: Preparing for Installation

1.1 Preparing for Installation

- Disconnect the batteries.
- Drain the coolant, disconnect the hoses, remove the expansion bottle and the upper radiator hose.
- Remove the fan and the fan shroud together.
- Remove the OEM drive belt.
- Disconnect the alternator wiring harness from the alternator and remove the harness from the engine stud on the timing cover, then remove the alternator.
- Clean the center of the OEM crank pulley.
- Replace the existing M6 bolt that secures the front right hand fuel rail with the supplied M6 x 20mm flat head socket bolt.
- Remove the OEM M10 bolt with the M8 studded end from the top right location on the timing cover.
- On the 6.8L Triton V10 remove the air intake duct and the throttle body plastic cover.

1.2 Modifying the Lower Hose



Check the model year and engine size of your truck before making any hose cut modifications.

1.2.1 6.8L Triton V10 2002 - 2004 Model Year

- Cut off the molded OEM locking ring securing the hose from the water pump to diverter valve.

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- Cut 5-1/2 inches (14 cm) from the diverter end of the water pump hose and reattach the hose from the water pump to the diverter (Figure 1.1).

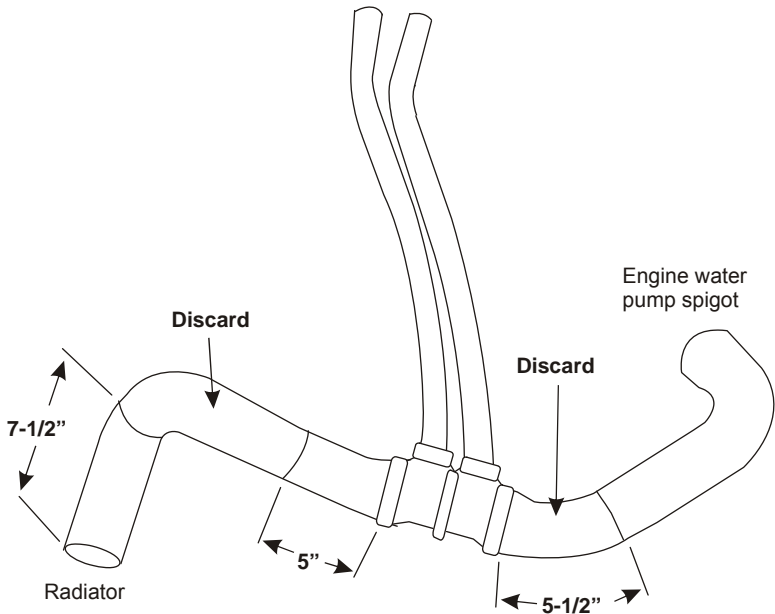


Figure 1.1

- Mark the radiator to diverter hose 7-1/2 inches (19 cm) from the radiator end of the radiator hose and mark the hose. Always measure around the longest side of any bends in the hose.
- Measure 5 inches (13 cm) from the radiator side of the diverter end of the radiator hose and mark the hose.
- Discard the center section.



Do not disconnect the 5/8 OEM oil cooler hoses to the diverter.

1.2.2 6.8L Triton V10 1999 - 2001 Model Year

- Cut off the molded OEM locking ring securing the hose from the water pump to plastic diverter and remove the diverter from this part of the hose.
- Cut 1 inch (25mm) from the diverter end of the water pump hose and discard this piece of hose (Figure 1.2).

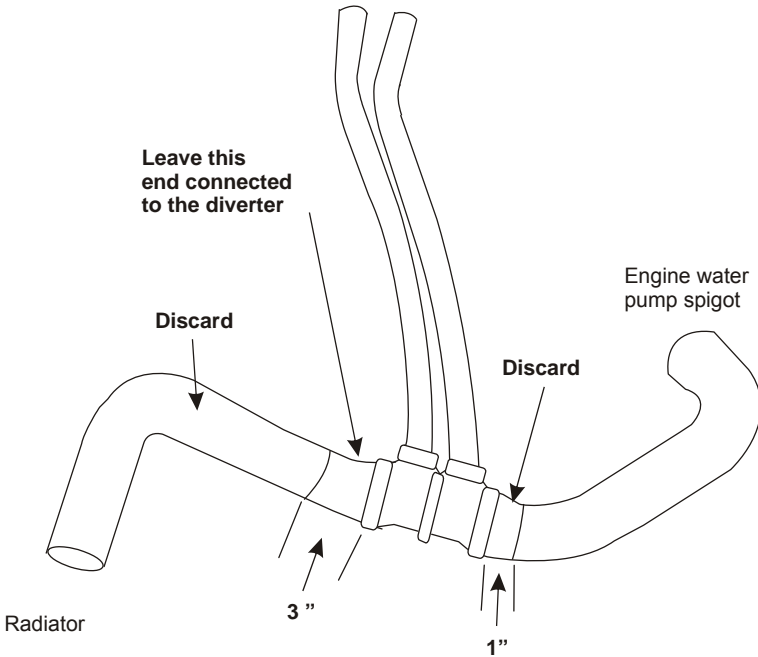


Figure 1.2

- Mark the radiator to diverter hose 3 inches (76mm) from the diverter end and cut the hose. Discard the longer section.
- Remove the lower radiator hose from the radiator.

1.2.3 5.4L Triton V8 1999 - 2004

- Remove the OEM hose clamps from the radiator end of the lower hose and the water pump end connecting the pump to the diverter.

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- Disconnect the hose ends from the radiator and the water pump.
- Cut off the OEM molded locking rings retaining the lower radiator hose and the oil filter housing hoses to the plastic diverter. Leave the locking ring on the water pump side of the diverter. Discard the hose from between the radiator and the diverter.
- Mark the water pump-to-diverter hose 4 inches (102 mm) from the diverter end and 4-1/2 inches (114 mm) from the water pump spigot end. Cut at these marks and discard the 4-1/2 inch piece (Figure 1.3).

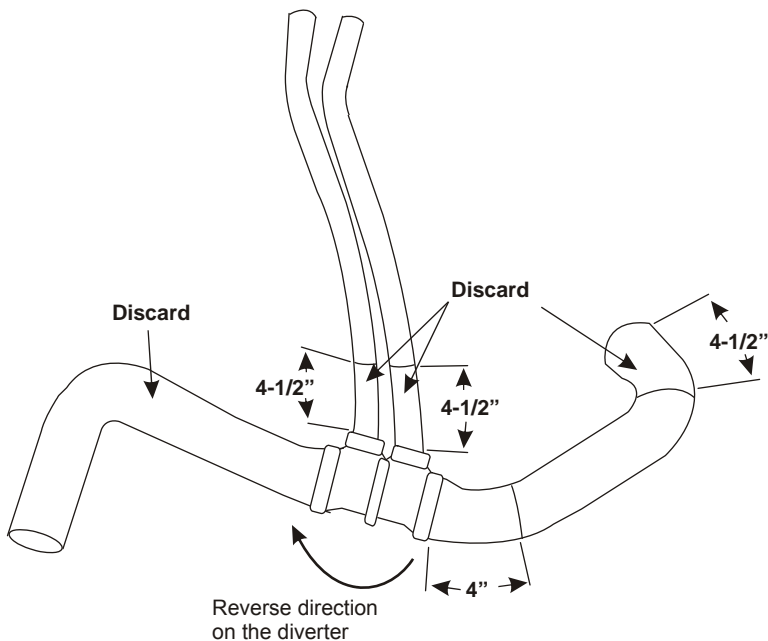


Figure 1.3

- Flip the diverter over so that the 4 inch piece points toward the radiator fitting and install the modified piece between the diverter and the water pump spigot.
- Measure 4-1/2 inches (114 mm), from the end of the 5/8 inch diverter to oil filter housing hoses. Cut off and discard these pieces.

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1.3 Replacing the Heater Hose Barb

- Remove the heater supply hose from the front right side of the intake manifold. For 2004 models with the 5.4L Triton V8 disconnect the small water supply hose to the throttle body from the side of the heater hose barb.
- Remove and discard the heater hose barb from the manifold intake (use a puller or vice grips). The tube will not be required again and can therefore be distorted if necessary.
- Identify the model year and follow the appropriate instructions. A typical installation is shown in Figure 1.4.

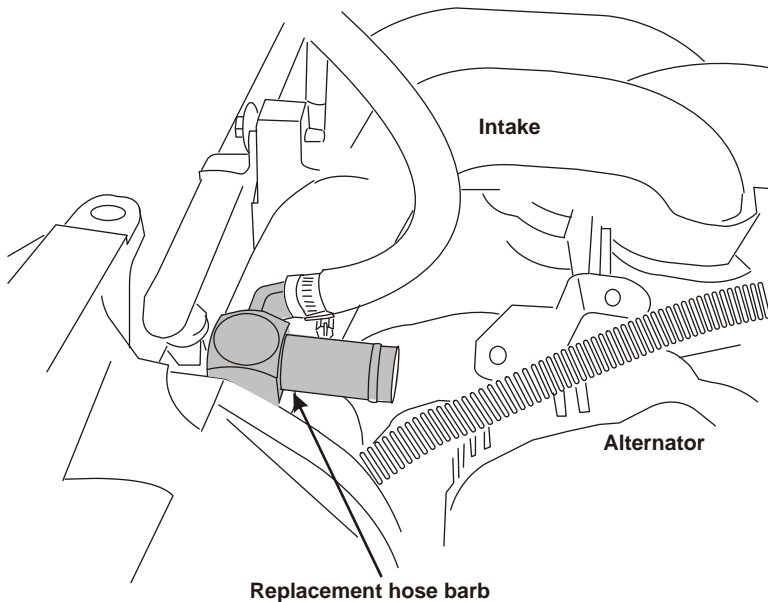


Figure 1.4

1.3.1 2004 Model Year

- Apply Loctite to the small 90° hose barb and thread it into the side of the 3/4 inch 90 degree hose barb.

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- Apply Loctite PST sealant to the 90 degree hose barb and press it into the heater hose coolant port. Make sure it is pressed all the way in to the shoulder on the fitting.
- Connect the water supply hose from the throttle body to the hose barb assembly.
- Cut the heater hose and route it for best fit. This can be routed between the intake manifold runners and brought back out at the front of the intake manifold. Tighten all clamps and fittings.



There is a restriction orifice in the heater hose under the clamp at the top of the bend. The orifice MUST be removed if it is in the piece to be discarded, placed into the remaining heater hose and clamped in place.

- Connect the heater hose (with the installed orifice) onto the hose barb.

1.3.2 1999 – 2003 Model Year

- Apply Loctite 592 to the threads of the threaded plug and install it into the side of the 3/4 inch 90 degree hose barb.
- Install in the same manner as for 2004 model year. Tighten all clamps and fittings.

1.4 Engine Oil Fill Modifications



The engine oil fill tube will require modification to clear the compressor and bracket (5.4L Triton V8 only).

1.4.1 5.4L Triton V8

- Remove the OEM oil filler cap.
- Push a clean rag into the plastic filler tube to catch cuttings.
- Mark the filler tube at the halfway point and cut the plastic filler tube off at this mark.
- Remove the rag, making sure that no cuttings enter the engine.

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- Install the supplied 45 degree rubber hose over the filler tube on the valve cover, positioning it so that it points toward the passenger fender.
- Place two hose clamps over the tube, install the cut end of the filler tube into the top of the rubber hose.
- Tighten both hose clamps and replace the filler cap.

1.4.2 6.8L Triton V10

- Replace the OEM oil fill cap with the supplied oil fill cap.

Part 2: Installing the Tank and Hoses



Apply Loctite to all fasteners before installing them.

2.1 Installing the Tank and Frame Mounts

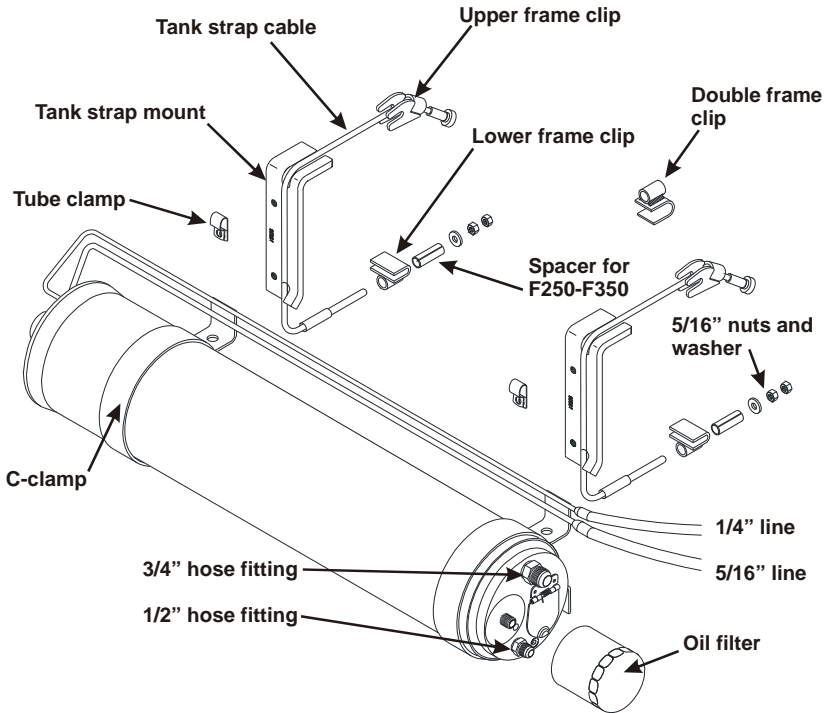


Figure 2.1

- Remove the pinch bolts from the C-clamps, spread the clamps slightly and slide them over the front of the tank.
- Rotate the C-clamps so that the flat mounting surfaces are on the right side of the tank, as viewed from the front of the tank.

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- Insert the pinch bolt from the top, then install the washer and nut, but do not tighten.
- Thread the fittings on the 1/4 and 5/16 inch steel tubes into the matching fittings on the rear of the tank. Tighten the fittings by hand, leaving them loose enough so that the tubes can move easily in the fittings (Figure 2.2).

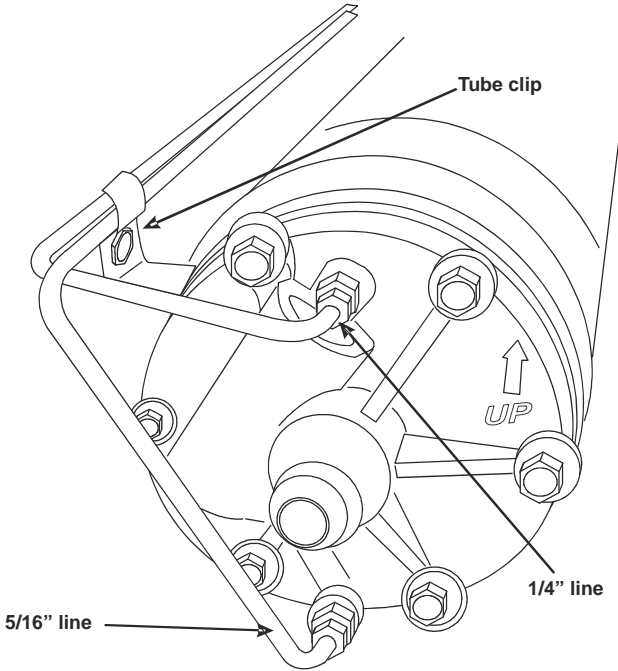


Figure 2.2

- Place the two tube clamps over the steel tubes with the flat side facing away from the tank and the end with the hole hanging down. Position the 1/4 inch steel tube above the 5/16 inch steel tube in the clamps (Figure 2.3).
- Place a tank strap mount against the one of the C-clamps on the tank with the short arm (or "L") at the top of the tank, facing away from the tank. Install a 5/16 x 1/2 inch bolt with flat washer into the bottom hole. Do not tighten.

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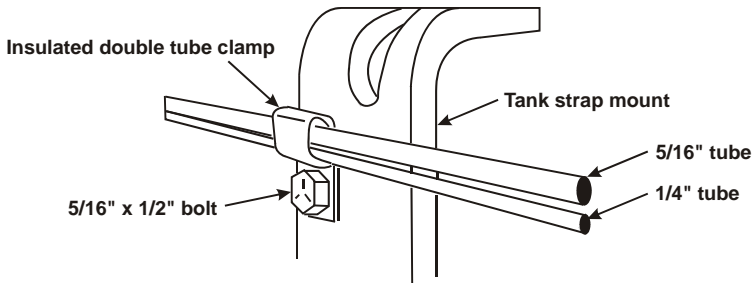


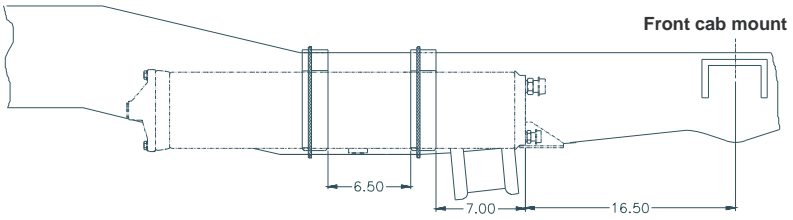
Figure 2.3

- Insert the second bolt through one of the tube clamps and install it through the top hole in the C-clamp and into the top hole on the tank strap mount. Do not tighten.
- Repeat this procedure with the second strap mount bracket, C-clamp and tube clamp.
- Make sure that the steel tubes are parallel to the tank and fit properly in the tube clamps. The flexible hoses attached to the tubes will be routed into the engine compartment when the tank is installed on the truck.
- Identify the tank mounting position which matches the vehicle (Figure 2.4). These locations are suggestions only.
- Remove the nuts and washers from the threaded end of the tank strap cables, insert them through the end of each tank flat bar strap with the single hole and pull them to the stops.
- Place the tank strap cables over the frame rail from the inside of the frame, with the tank flat bar strap on the inside of the rail and the tank strap cables hanging over the top outer edge of the frame rail (Figure 2.5).
- Support the tank and assembly in place on the outside of the frame, with the short part of the tank mount strap positioned over the top of the frame.
- Pass each tank strap cable around the tank mount strap, between the strap and the tank. Make sure that the tank strap cable fits between the cable guide and the C-clamp (Figure 2.5).

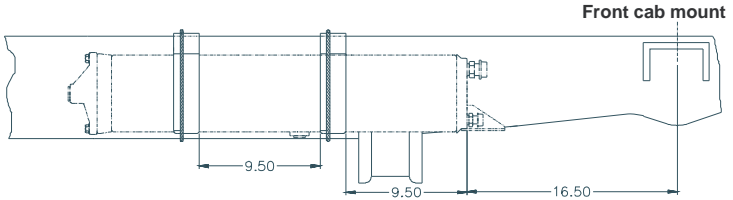
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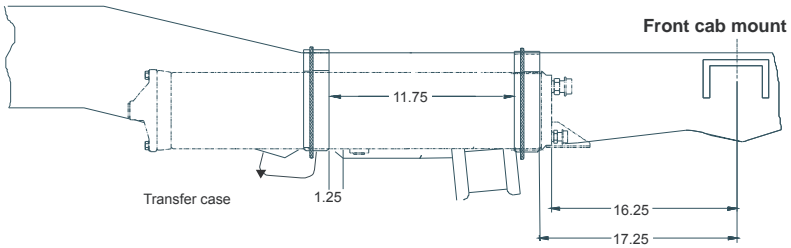
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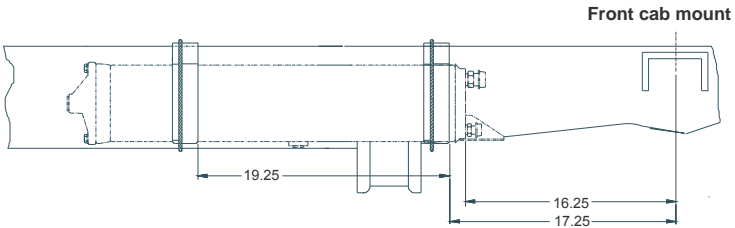
F250 & F350 standard cab 2x4 and 4x4



F250 & F350 super cab 2x4 and 4x4



F450 & F550 standard cab 2x4 and 4x4



F450 & F550 super cab and crew cab 2x4 and 4x4

Figure 2.4

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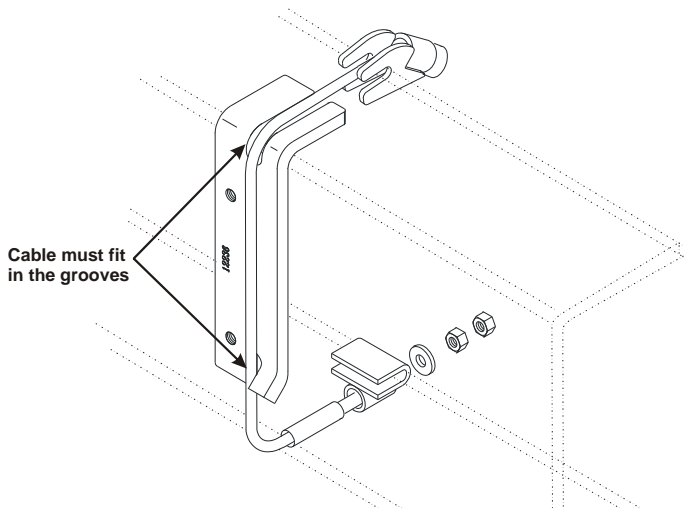


Figure 2.5



When positioning the tank on the frame, make sure that the mounting location will not pinch or damage any wiring harnesses, lines or hoses.

- Insert the threaded end of each cable strap through the tubes on the lower frame locating U-clips. A special clip is included for trucks with double frames.
- Install the appropriate spacer combination:
 - F250 and F350 trucks use the washers and spacer
 - F450 & F550 trucks use the washers and discard the spacer
- Thread a 5/16 inch nut on each tank strap cable and tighten the nuts enough to hold the tank in position.
- Check the dimensions to ensure that the positioning is correct for the appropriate model. On the F450 & F550 standard cab models position the rear tank bracket assembly so that the front edge of the tank flat bar strap is approximately 1-1/4 inches back from the forward edge of the cut-out for the transfer case.



Make sure that the threaded end of the tank strap cable is not positioned next to the transfer case housing, as torque movement will cause the transfer case housing to strike the threaded end of the securing cable.

- When the tank is correctly positioned, tighten the tank strap cable retaining nuts until the cables pull tight and snug around the frame. Do not over-tighten the nuts.
- Install a second 5/16 inch nut and tighten it securely against the first to act as a locknut.
- Check the alignment of the tank to make sure that the “UP” arrow on the end of the tank points directly upward and that the tank is aligned correctly, then tighten the C-clamp pinch bolts securely, but not so much as to distort the mounting surfaces.
- Tighten the steel tube fittings at the back of the tank.



Improper installation can result in an extremely hazardous situation, causing injury or equipment damage .

- Remove each of the bolts (one at a time) holding the C-clamp to the tank strap mount, apply Loctite and replace the cap screws.
- Make sure that the tank is level with the vehicle and tighten the bolts.

2.2 Attaching Hoses to the Tank

- Route the straight end of the 3/4 inch hose over the cab mount and thread it into the top fitting on the tank but do not tighten.
- Route the straight end of the longest 1/2 inch hose over the cab mount and thread it onto the lower fitting on the front of the tank but do not tighten.
- Bunch all hoses together and protect them where they pass over the cab mount.
- Route all the hoses into the engine compartment.

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Part 3: Installing the Main Bracket and Compressor



Apply Loctite to all fasteners before installing them.

3.1 Installing the Crank Pulley

- Clean the face of the OEM pulley to ensure a good fit.
- Install the pulley, align the bolt holes and ensure that the pulley is sitting flush.
- Install three M10 x 70mm bolts and flat washers and torque to specification.

3.2 Installing the Oil Cooler

- Fit the cooler in place under the crankshaft pulley, over the two studded fasteners at the front of the engine block (Figure 3.1).
- Attach the transmission lines to the right hand stub. This may require the bracket to be bent or modified slightly.
- Install the ground cable, thread on two M10 Nylok nuts and tighten.

3.2.1 2002-2004 Model Year (V10)

- Connect the diverter assembly to the cooler.
- Connect the lower radiator hose to the cooler. Align the hoses for best fit and tighten the clamps.

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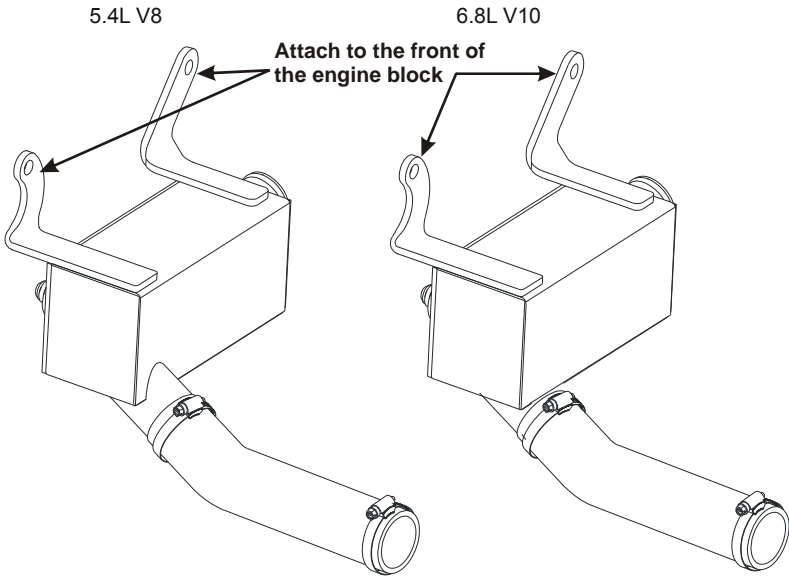


Figure 3.1

3.2.2 1999-2001 Model Year (V10)

- Connect the diverter to the spigot on the driver's side of the cooler using the modified 3" section of OEM lower radiator hose still connected to diverter.
- Connect the remaining section of the OEM coolant hose (7-1/2 inch) between the cooler and the radiator.
- Route the hose so that it clears all belts, steering components and suspension parts. Final adjustments may be required after installing the fan shroud. Align the hoses for best fit and tighten the clamps.

3.3 Installing the Main Bracket and Compressor

- Remove the idlers and the tensioner from the bracket (Figure 3.2).

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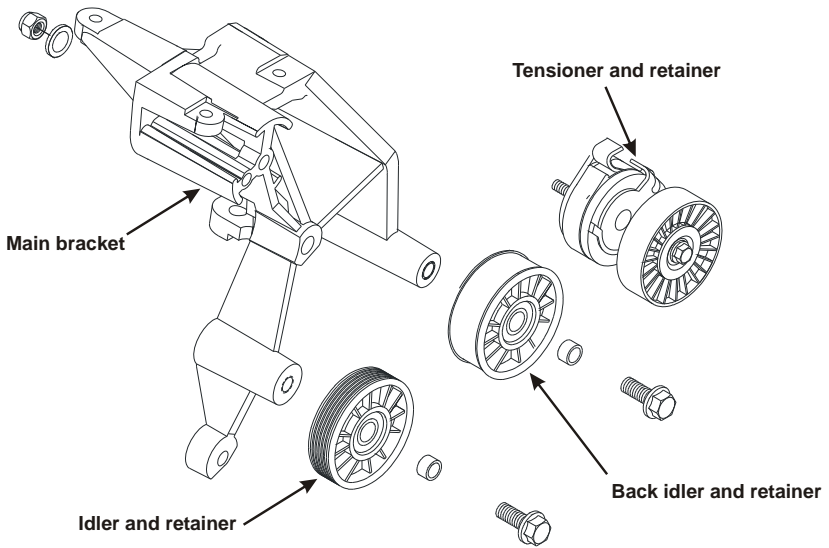


Figure 3.2

- Place the bracket in position to locate the mounting points on the engine. Make sure that the bracket clears the intake manifold.
- Route the alternator wiring up through the mounting bracket, under the tensioner mounting pad and out through the aperture at the rear of the bracket. Make sure that the wiring does not become trapped when the bracket is tightened in position.
- Insert two M10 x 35 mm socket head bolts through the bracket base mount holes and thread them into the engine block holes above the water pump, but do not tighten.
- Insert the M10 x 100 mm socket head bolt through the main bracket and thread it into the upper front hole on the right side cylinder head, but do not tighten.
- Insert the M8 hex head bolt (with the 5/16 flat washer) through the lower front of the bracket and thread it into the timing cover next to the OEM belt tensioner, but do not tighten.
- Position the bracket securely against the engine and lightly snug down all the fasteners.

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- Tighten the two M10 x 35 mm bolts, then the M10 x 100 mm bolts and finally the M8 hex bolt, then torque all fasteners to specifications.
- Install the alternator and connect the alternator wiring harness.
- Place the compressor in position on the mounting bracket (Figure 3.4). Make sure that the compressor wires do not become trapped between the engine and the compressor.
- Thread the three M8 double-serrated nuts onto the compressor mounting studs and torque to specifications.

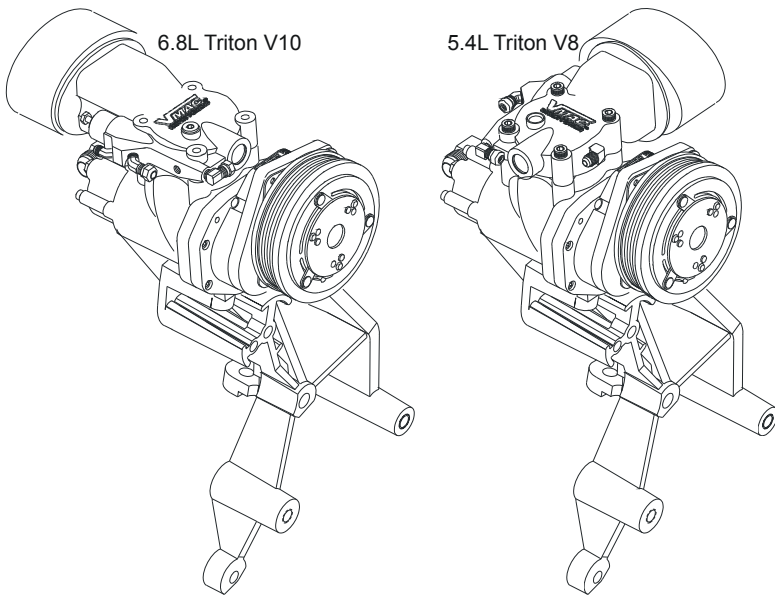


Figure 3.3

3.4 Installing Drive Belts and Components

- Install the tensioner, idler and back idler on the bracket and torque the fasteners to specifications.
- For V900051-V10 only, install the supplied fan spacer on the water pump pulley and tighten it securely.

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- Install the OEM drive belt. Make sure that the belt clears all components.
- Install the compressor drive belt (Figure 3.4). Make sure that it is aligned correctly and clears all components.
- Install all OEM components removed previously.
- Fill the cooling system with the manufacturer recommended coolant.

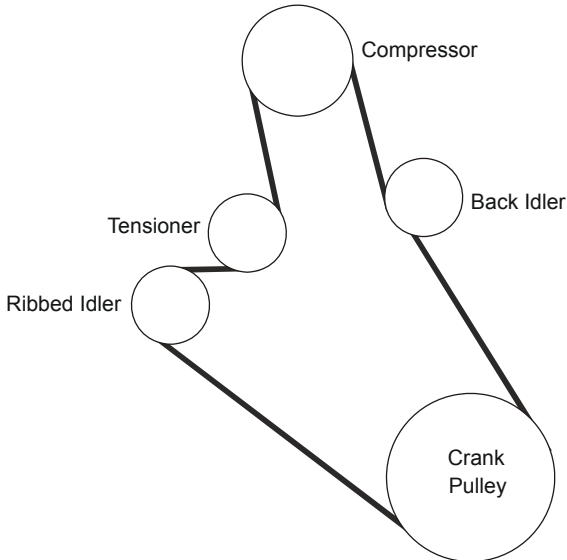


Figure 3.4

3.5 Installing the Hoses

- Route the end of the 3/4 inch hose to the rear of the compressor and connect it to the matching fitting
- Route the end of the 1/2 inch hose from the tank, along the frame rail and across to the driver side of the cooler.
- Connect the 90 degree end of the shorter 1/2 inch hose to the passenger side of the cooler.

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- Connect the straight end of the hose to the fitting in the left side of the compressor.
- Route the 5/16 hose up over the engine (clear of the exhaust manifold) and connect it to the 5/16 elbow fitting on the left side of the inlet control valve.
- Connect the 1/4 inch hose to the rear fitting on the right side of the inlet control valve on the compressor.
- Tighten all hose connections at the tank, cooler and compressor. Using two wrenches where necessary to prevent the hoses from twisting.
- Secure all hoses away from sharp or hot surfaces and protect them. Tie wrap hoses in place and use steel ties to secure hoses to the chassis.

3.6 Adding Oil to the System

- Remove the fill plug from the air inlet control valve and pour oil into the oil fill hole on the inlet control valve using a funnel.



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.

- Turn the compressor clutch clockwise with a ratchet and a 1/2 inch socket using the hex head bolt at the centre of the compressor clutch during 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.



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

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

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Part 4: Installing the Control Components

4.1 Installing the Throttle Controller

- Remove the two OEM bolts locating the vacuum pump to the passenger side inner fender just behind the vacuum tank.
- Install the throttle control bracket to the inner fender on the passenger side of the vehicle over the top of the vacuum switch and secure in place using the OEM bolts (Figure 4.1).

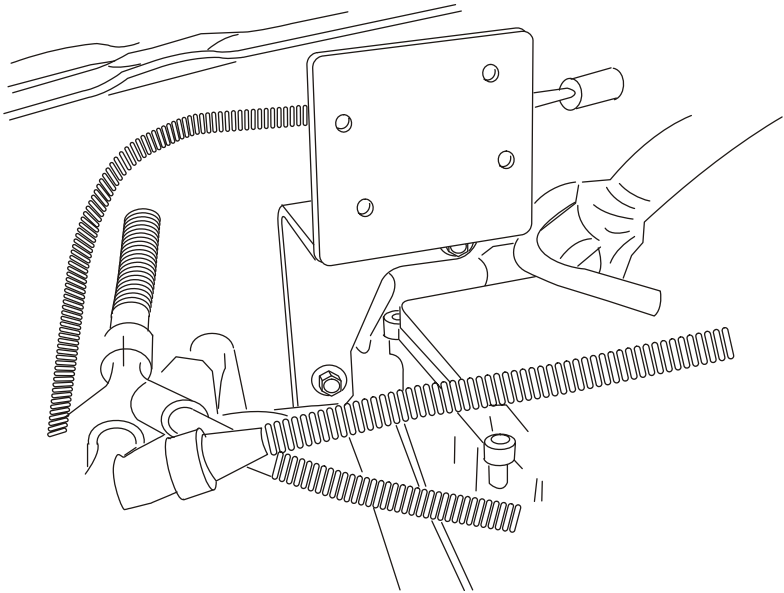


Figure 4.1

- Install the throttle controller to the engine side of the mounting bracket using the 1/4 x 5/8 inch flange lock hex head bolts.
- Route the throttle controller cable to the engine throttle body.
- Disconnect the OEM throttle cruise control linkage (if equipped).

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4.1.1 6.8L Triton V10



A diagram of the V10 controller and components is shown in Figure 4.4.

- Fasten the throttle cable anchor bracket to the slot on the outside rear of the OEM throttle cable mounting bracket. Use the two supplied socket head bolts and 1/2 inch OD washers inserted through the OEM throttle bracket slot.
- Secure the bracket with the supplied 10-24 Nylok nuts and tighten to specifications. Ensure that the top of the cable mounting bracket is angled inward (Figure 4.2).

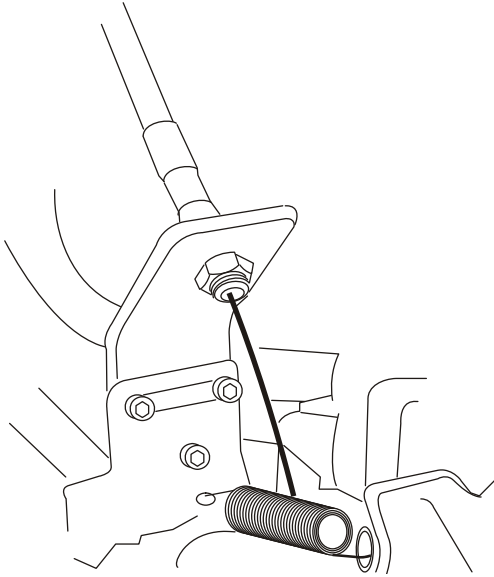


Figure 4.2

- Use the third hole at the bottom of the throttle cable mounting bracket as a template to drill a 1/4 inch hole in the OEM throttle cable mounting bracket. This hole will be used for a third screw.
- Insert the third supplied socket head bolt and 1/2 inch OD washer. Secure this third screw with the supplied 10-24 Nylok nut and tighten to specifications.

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- Insert the throttle controller cable end through the drilled 12/32 inch hole in the throttle cable anchor bracket. Install the cable outer nut and tighten the two cable nuts.
- Fit the supplied throttle pull bracket to the OEM throttle cam arm.
- Drill a 3/32 inch hole to a depth of 1/4 inch into the OEM throttle control cam.
- Line up the hole in the throttle pull bracket with the hole drilled in the OEM throttle cam arm. Use the supplied self-tapping screw to secure the throttle pull bracket to the OEM throttle cam arm (Figure 4.3).

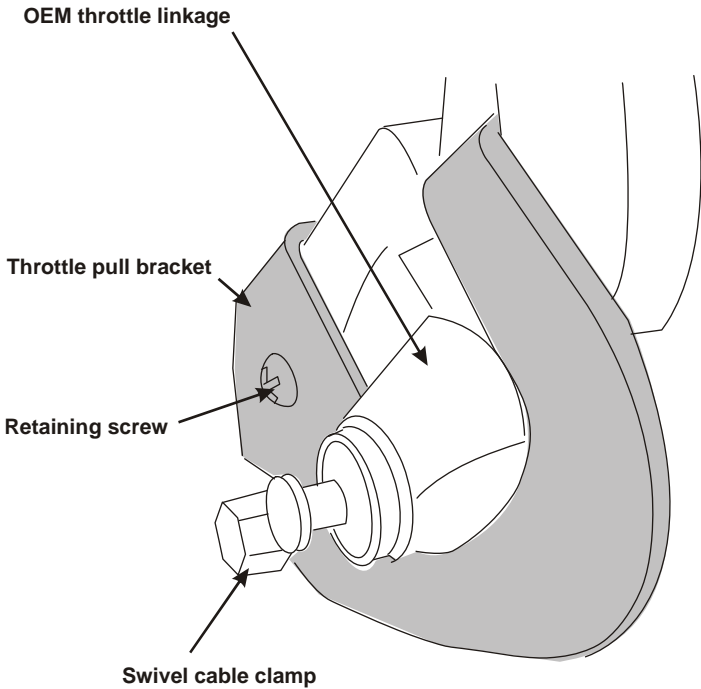


Figure 4.3

- Pass the throttle controller cable through the collar on the pull bracket.

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- Clamp the nipple to the inner cable and leave approximately 1/4 inch slack between the nipple and the pull bracket. Cut off the excess inner cable approximately 1/4 inch past the nipple.
- Connect the cruise control cable (if equipped). Check the operation of the throttle to ensure that the throttle controller cable doesn't foul on any OEM linkage and slides freely.

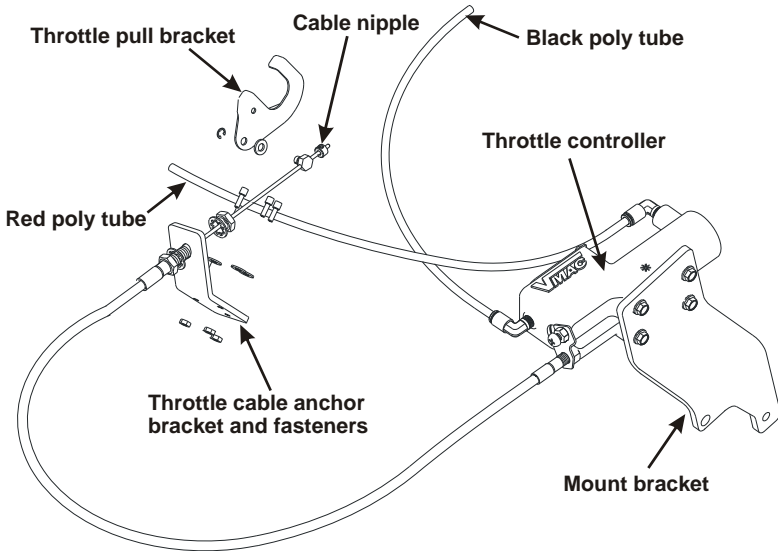


Figure 4.4

4.1.2 5.4L Triton V8



A diagram of the V8 controller and components is shown in Figure 4.6.

- Drill a 13/32 inch hole in OEM throttle cable bracket (Figure 4.5).
- Route the throttle controller cable over the vehicle heater and insert the end through the drilled 13/32 hole in the throttle cable anchor bracket.

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- Loosen the 10-32 screw on the small L bracket attached to the throttle pull bracket and slip the L bracket under the hook tab at the rear of the OEM cam arm.
- Locate the pull bracket slot under the spring connection plate, fit the supplied throttle pull bracket to the OEM throttle cam arm and fasten it in place with a 10-32 socket head bolt (Figure 4.5).

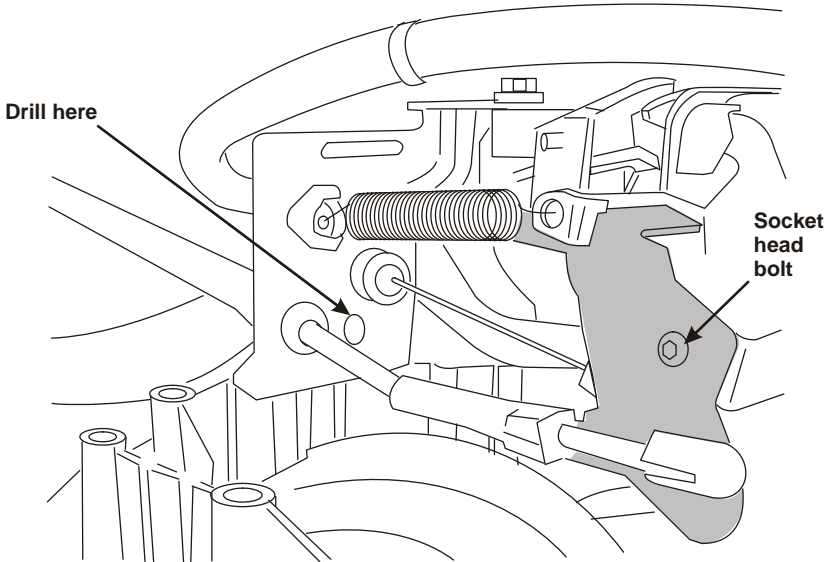


Figure 4.5

- Pass the throttle controller cable through the cable clamp on the pull bracket and allow the inner cable to sit between the intake manifold runners.
- Clamp the solderless nipple to the inner cable and leave approximately 1/4 inch slack between nipple and pull bracket. Cut off the excess inner cable approximately 1/4 inch past the solderless nipple.
- Reconnect the cruise control cable if fitted. Check the operation of the vehicle throttle to ensure the throttle controller cable doesn't foul on any components.



Bend the OEM throttle spring locating brackets to allow for unrestricted movement of the throttle pull cable.

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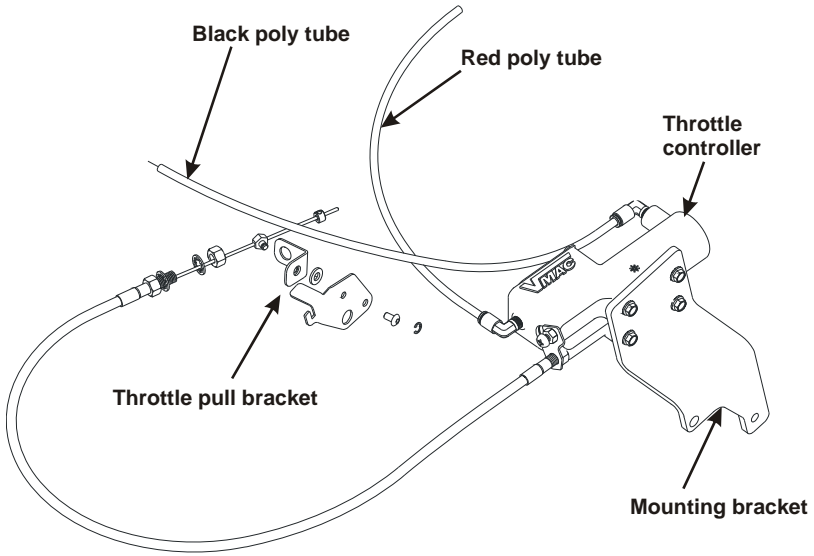


Figure 4.6

4.1.3 Connecting the Poly Lines

- Insert the red poly line into the fitting on the back of the inlet control valve (Figure 4.7, V10 shown).
- Insert the black poly line into the fitting at the front of the inlet valve at the regulator.

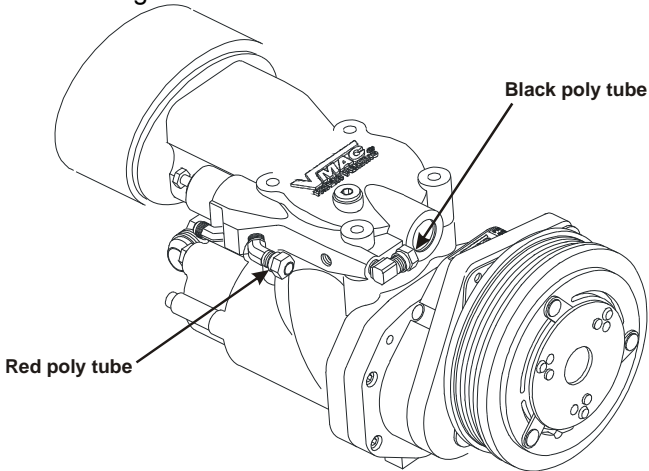


Figure 4.7

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4.2 Installing the Control Box

- Remove the driver-side plastic door frame base panel and the plastic molding ahead of the base panel.
- Mount the control box using the supplied sheet metal screws (Figure 4.8).
- Route the wire harness under the floor covering, along the inside of the door where it will be covered by the trim piece and up under the dash.

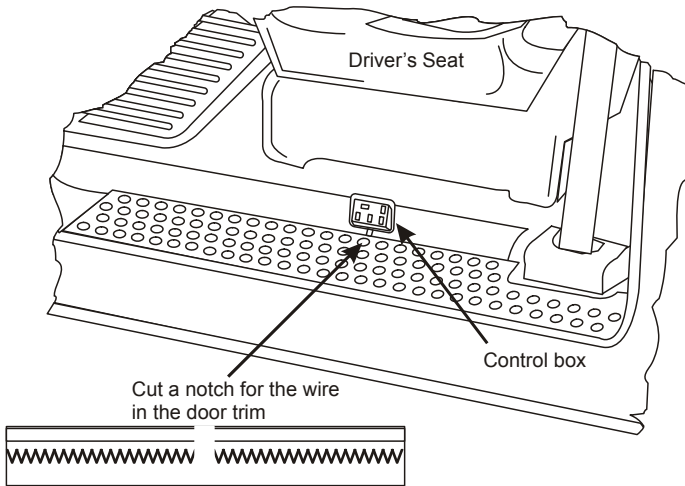


Figure 4.8



Keep wires away from the park brake mechanism.

- Place the floor covering back into position and replace the inside left kick panel.
- Cut a notch in the edge of the trim piece through the saw-tooth section just inside the edge of the trim so that the wire is not cut when the trim is installed.
- Replace the door trim piece.

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4.3 Connecting the Wiring



A wiring schematic diagram is provided in Figure 4.16 . Refer to this diagram when connecting the wiring.

- Route the harness from the temperature sensor on the compressor along the vehicle wire harness and the rear firewall to the passenger side of the vehicle.
- Identify a point on the firewall to cut a hole for the harness to pass through. The plastic plug next to the steering column with a foam rubber covering on the inside cab is a good point.
- Pass the gray harness with the small green connector from the control box through the firewall into the engine compartment and connect to the matching grey harness from the compressor temperature sensor.
- Inside the cab, connect the supplied interface harness white plug connector to the matching female plug from the control unit.
- Connect the green wire to a good chassis ground.
- Remove the panel under the dash instruments, and locate the key-switched 12V OEM wire under the dash, up from the OEM diagnostic connector:
 - For 2002-2004 models, the wire is white with a light blue stripe (Figure 4.9).
 - For 1999-2001 models, this wire is blue with a pink stripe (Figure 4.10). On some 1999 vehicles this wire is red with a yellow stripe.
- Connect the red wire with the butt connector to the key-switched 12V wire found above.
- Route the white wire through the firewall and connect it to the clutch.
- Route the red wire with the small spade connector through the firewall and connect it to the throttle control.

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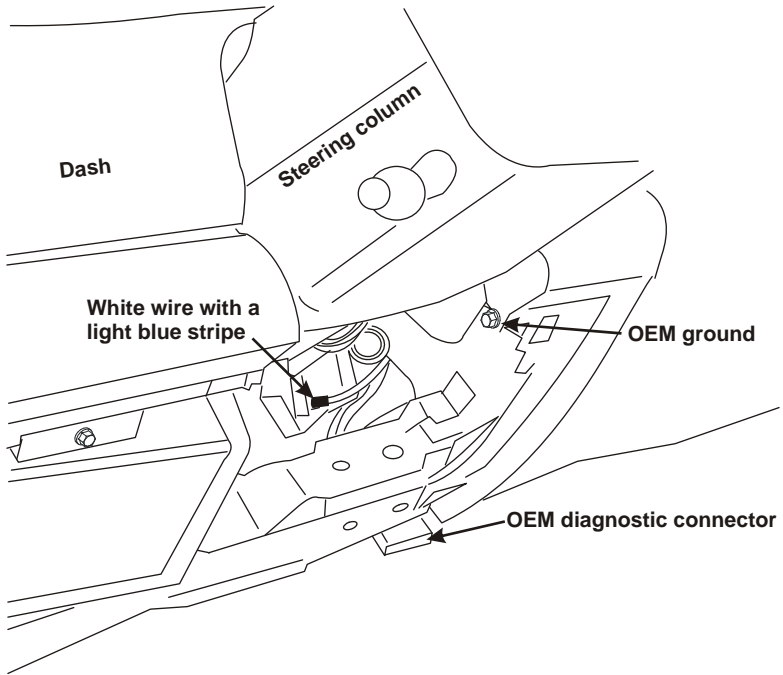


Figure 4.9

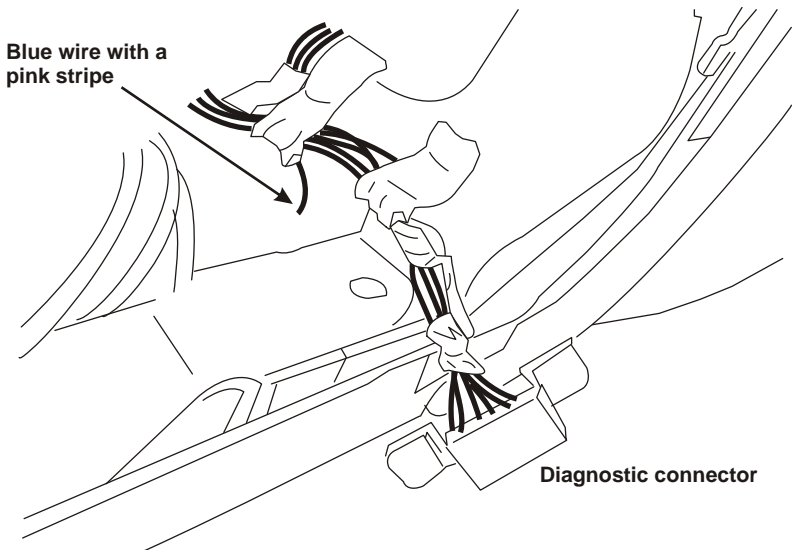


Figure 4.10

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4.3.1 Installing the Safety Switch



IF THE VEHICLE HAS AN AUTOMATIC TRANSMISSION, THE THROTTLE CONTROL MUST BE CONNECTED SO THAT IT WILL NOT FUNCTION UNLESS THE TRANSMISSION IS IN PARK OR NEUTRAL. FAILURE TO INSTALL AND VERIFY THE FUNCTION OF THIS SAFETY FEATURE CAN RESULT IN INJURY OR DEATH.

IF YOU REQUIRE A SAFETY INTERCONNECT TO PERFORM THIS TASK, ORDER THE VMAC DRIVE DISABLE CIRCUIT.

BE SURE TO PERFORM THE SAFETY TEST IN THE DDC INSTALLATION INSTRUCTIONS BEFORE PROCEEDING.

- Apply the park brake and shift the transmission into the lowest forward gear.
- Apply Blue Loctite 242 to the set-screw and mount the magnetic actuator to the transmission arm under the dash (Figure 4.11).



Do not pinch or damage the orange shift indicator harness during installation.

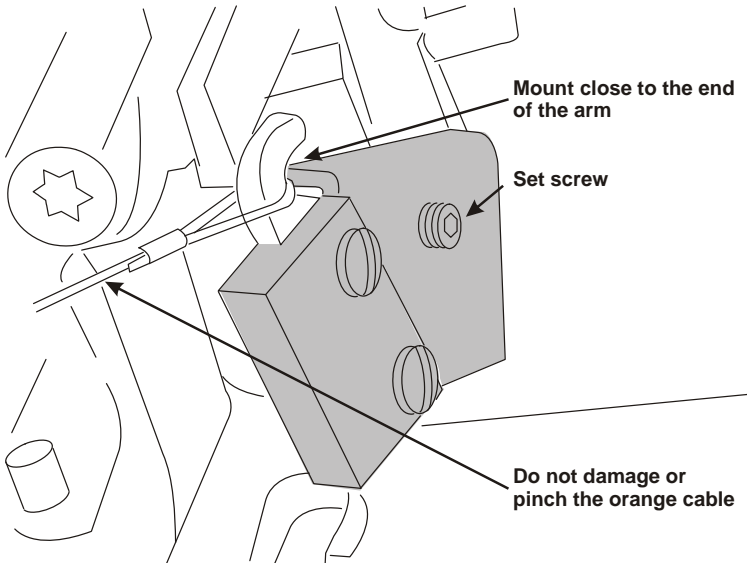


Figure 4.11

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- Mount the magnetic switch under the dash on the support near the transmission arm (Figure 4.12). Using a 1/2 inch socket wrench, install and remove the screw for the magnetic switch bracket in the hole to tap threads in the hole.

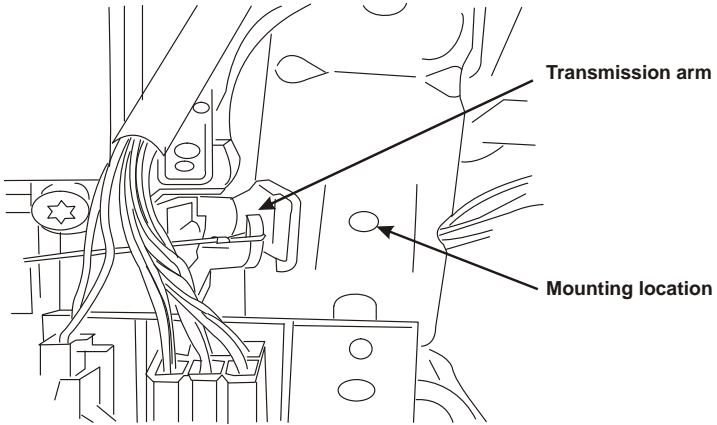


Figure 4.12

- Mount the switch bracket to the frame under the dash. Note the location of the rectangular washer, the hole is offset to provide more clearance (Figure 4.13).

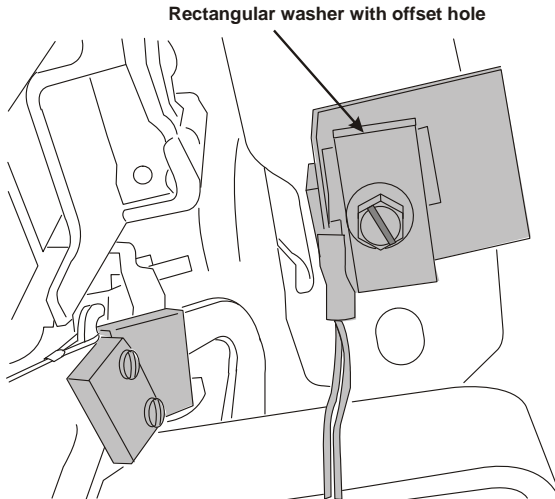


Figure 4.13

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- Slide the bracket all the way to the right. Use a screwdriver to hand-tighten the screw as a socket will push the bracket to the left.
- Shift the transmission back into park, being careful not to hit the switch.
- Slide the switch to the magnet and align the two pieces. This alignment does not need to be perfect and the magnet and switch should not quite touch (Figure 4.14). Tighten the screw with a screwdriver.

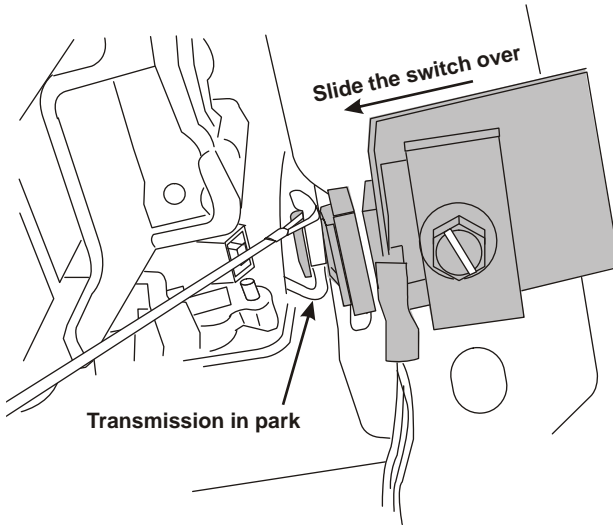


Figure 4.14



To prevent damage to the switch, check the spacing between the magnet and switch while holding the shift lever as far past the PARK position as it will go.

- Connect an Ohmmeter to the two black wires from the magnetic switch. In park, there should be less than 2 Ohms resistance. In all other gears, the resistance must be greater than 20 M-Ohms.
- If you do not have an Ohmmeter, connect 12 volts to one wire and a test light probe to the other. The light should be on in park and off in all other gears.

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Failure to properly install and verify the operation of the safety interconnect (DDC) can result in inadvertent vehicle movement during operation.

- Remove the OEM connector from the park brake switch.
- Solder and seal the black DDC wire labeled “Park Brake” to the green with red stripe wire at the park brake (Figure 4.15).
- Connect the remaining DDC wire to the black wire coming from the interface harness.

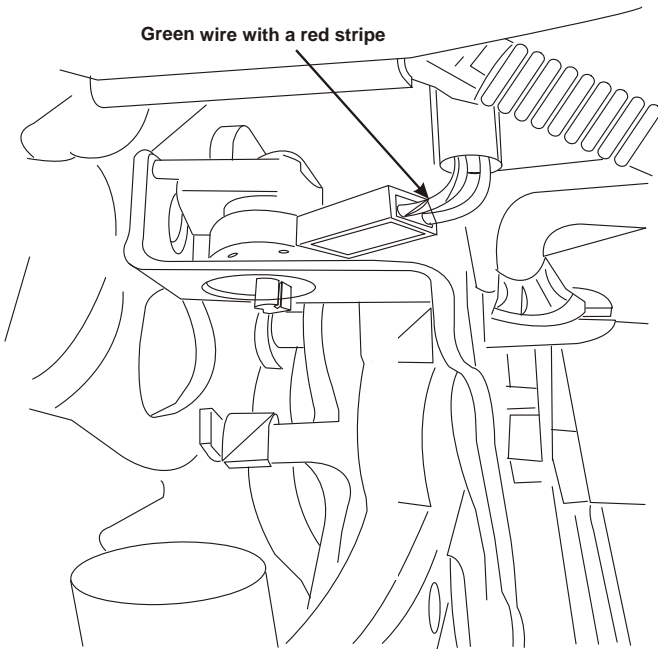


Figure 4.15

4.3.2 2003 – 2004 Manual Transmission Vehicles

- Locate the green with red stripe wire at the park brake switch.
- Attach the black wire from the throttle control (with the female spade connector) to the black “Park Brake” jumper wire with a male connector on one end and a piggy-back connector on the other. Tape this connection.

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- Cut off the piggy-back connector and connect the black wire to the green with red stripe wire at the park brake switch (Figure 4.8). Solder and seal this connection.

4.3.3 1999 – 2002 Automatic Transmission Vehicles

- Remove the OEM connector from the park brake switch.
- Crimp the supplied piggy-back connector to the DDC black wire labeled “Park Brake”.
- Route the wire to the vehicle park brake and connect the piggy-back connector to the switch.
- Connect the OEM connector to the piggy-back connector (Figure 4.9).
- Connect the remaining DDC wire to the black wire coming from the throttle control.

4.3.4 1999 – 2002 Manual Transmission Vehicles

- Remove the OEM connector from the park brake switch.
- Attach the black wire from the throttle control (with the female spade connector) to the black “Park Brake” jumper wire with a male connector on one end and a piggy-back connector on the other. Tape this connection.
- Route the wire to the vehicle park brake and connect the piggy-back connector to the switch (Figure 4.9).
- Connect the OEM connector to the piggy-back connector.

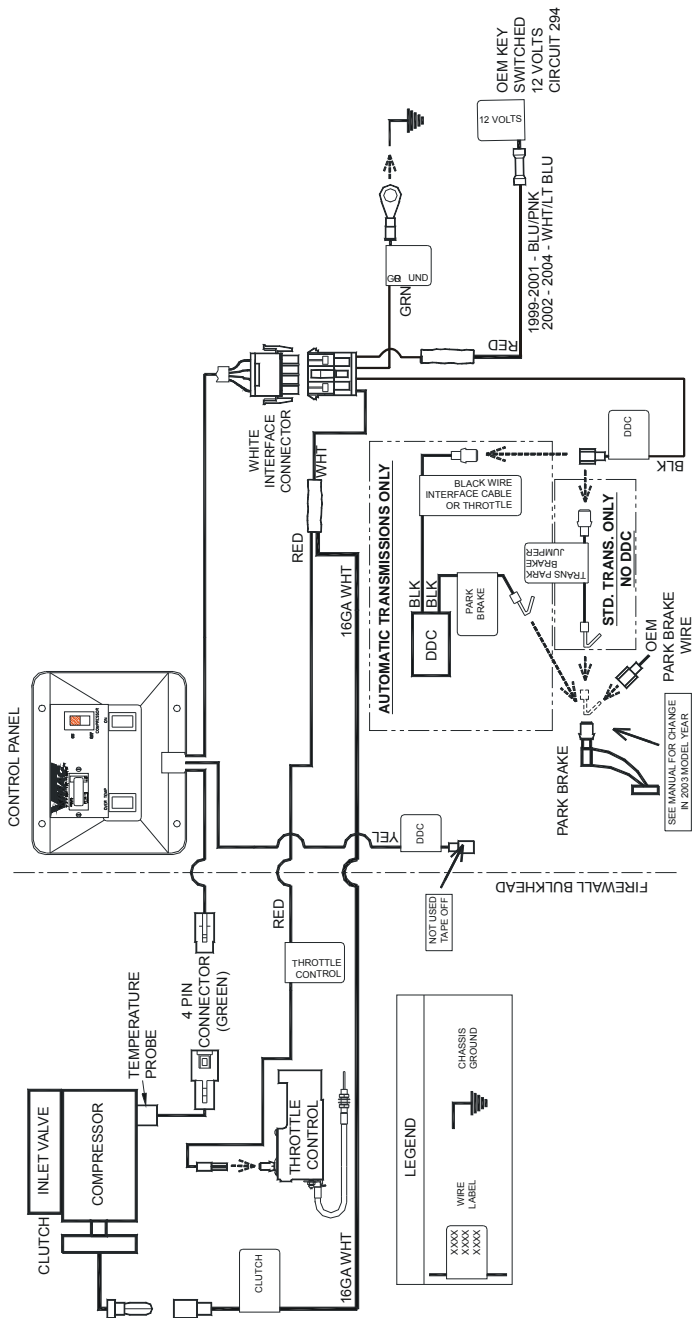


Figure 4.16

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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 vehicle. Secure all wiring with nylon ties and loom as required.
- Install and connect the batteries.

4.4.1 Operational and Safety Test

- Place the automatic transmission in Park or manual transmission in neutral 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 automatic 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.
- 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.

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Part 5: Finishing the Installation

5.1 Before Starting the Engine Checklist

Make sure that the following have been completed:

- Check the coolant.
- Check the compressor oil level.
- Do a final inspection to make sure that everything has been connected and tightened.
- Perform a final belt alignment check.
- Check all wiring for security and protection.

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 and nothing is rubbing or contacting hot parts.
- Check all components once the engine is turned off and the system has cooled
- Check the coolant after the engine reaches operating temperature.
- 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 tests indicate that adjustment is necessary, 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 using an orifice in the outlet to simulate tool use (Figure 5.1).

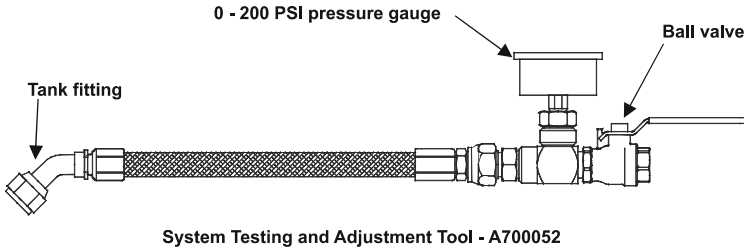


Figure 5.1

1. Install the test tool in the tank outlet fitting.
2. Make sure that the ball valve is closed.
3. Place the manual transmission in neutral or the automatic 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 1,800 to 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 ramp-up when air pressure drops to approximately 140 PSI.

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5.4 System Identification and Warnings

The System Identification Number Plate must be attached to the truck at the time of installation (Figure 5.2). 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, then secure the plate with self-tapping screws.

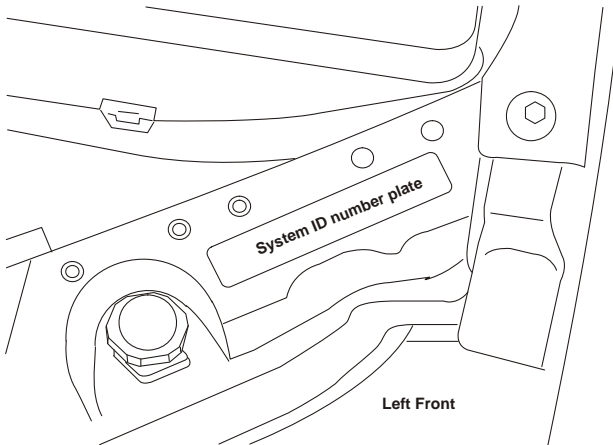



Figure 5.2

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).



This Vehicle is Equipped with a VMAC Air Compressor System

OPERATING INSTRUCTIONS

<p>Daily Pre-Start Check</p> <ol style="list-style-type: none">1. Check Oil Level in Tank2. Check Drive Belt3. Check for Leaks	<p>Start Up Procedure</p> <ol style="list-style-type: none">1. Ensure Compressor is OFF2. Ensure discharge valve is CLOSED3. Ensure air system is discharged4. Place vehicle in Neutral or Park and engage vehicle safety features - park brake5. Start engine and bring up to operating temperature6. Turn ON compressor	<p>Shutdown Procedure</p> <ol style="list-style-type: none">1. Allow engine to idle for 1 minute2. Turn OFF compressor3. Wait for system to discharge for 1 minute before restarting
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For Technical Support/Parts contact your VMAC Dealer
To locate your nearest dealer call 1-800-738-8622 (250-740-3200)


 **WARNING**
Always allow system pressure to discharge before restarting

Figure 5.3

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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 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.

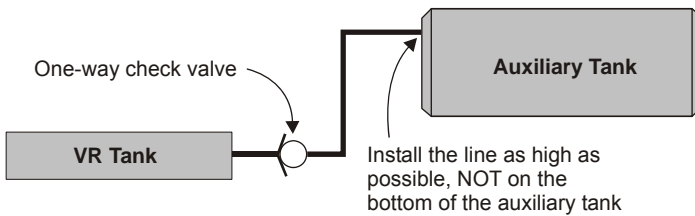
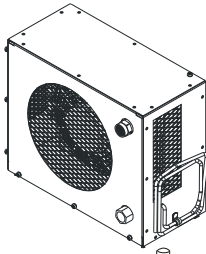


Figure 5.4

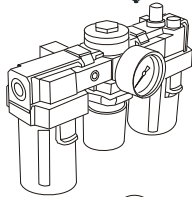
Accessory Products from VMAC

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.



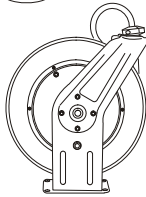
Eliminator Aftercooler

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



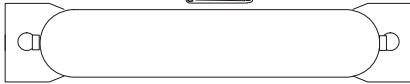
Filter Regulator Lubricator

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



Hose Reel

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



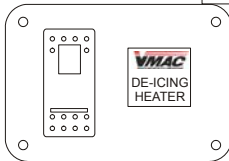
Air Receiver Tank

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



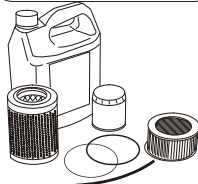
De-icer Kit

Insulated rope heater prevents freezing of lines and regulator.



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



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