Installation Manual for VMAC System V900113
2013-2011 GM 2500HD-3500HD 6.6L Duramax Diesel

VMAC – ***Vehicle Mounted Air Compressors***
Toll Free: 1-888-241-2289
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Installation Manual - Document #1930185
System V900113 – GMC 2013-2011 6.6L
Changes and Revisions

Version	Revision Details	Revised by/date	Approved by/date	Implemented
B	MY update ECN 12-034	SH 27 Jan 2012	NC 23Feb2012	27Feb2012
C	ECN 12-093	SAR 14 Jun 12	MH 21 Jun 2012	29 Jun 2012
D	MY update ECN 12-153	SAR 24 Oct 2012	MH 14 Nov 2012	16 Nov 2012
E	ECN 13-013	SH 23 Jul 2013	SM 26 Aug 2013	27 Aug 2013

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.

All hoses, tubes, and wires that are rerouted or shifted during installation must be secure so that they do not contact excessively hot areas or sharp edges. When possible, use rubber coated P-clips. Follow the routing suggestions in this manual and cover all hoses with the supplied plastic loom.

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 1-888-241-2289.

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

Additional Requirements

Special Tools

OEM crankshaft locking tool (GM #J-44643) or VMAC #5900010.

36mm 12-point socket for removing OEM crankshaft bolt.

VMAC crankshaft pin extraction tool #5900076

Pneumatic fan wrench removal set (such as Lisle 43300) or a manual fan pulley holder (such as KD3900).

Hose Information

Depending on other installed equipment, it might be necessary to move the air/oil separation tank from its intended location. The hoses used in VMAC compressor systems have a specific inner liner that is compatible with our compressor oil. Use of hoses other than those supplied or recommended by VMAC may cause compressor damage and may void your warranty. Please contact VMAC for information on replacement hoses and hose extension kits.

Part 1: Warranty and System ID

☐ Complete the warranty form. 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.

System Identification and Warnings

The System Identification Number Plate must be attached to the vehicle at the time of installation. This plate provides information that allows VMAC to assist in customer inquiries and the ordering of parts.

☐ Place the system identification number plate on the plastic upper radiator cover in an appropriate area close to the compressor.

☐ Mark and drill two 7/64-inch holes in the top of the cross member in front of the OEM air filter box. Secure the plate with supplied self- tapping screws

☐ Clean cross member beside the number plate and stick the VMAC belt routing diagram to the cross member.

☐ Affix the VMAC belt routing diagram to an appropriate place near the OEM belt diagram.

☐ 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 vehicle operators (Figure 1. 1).

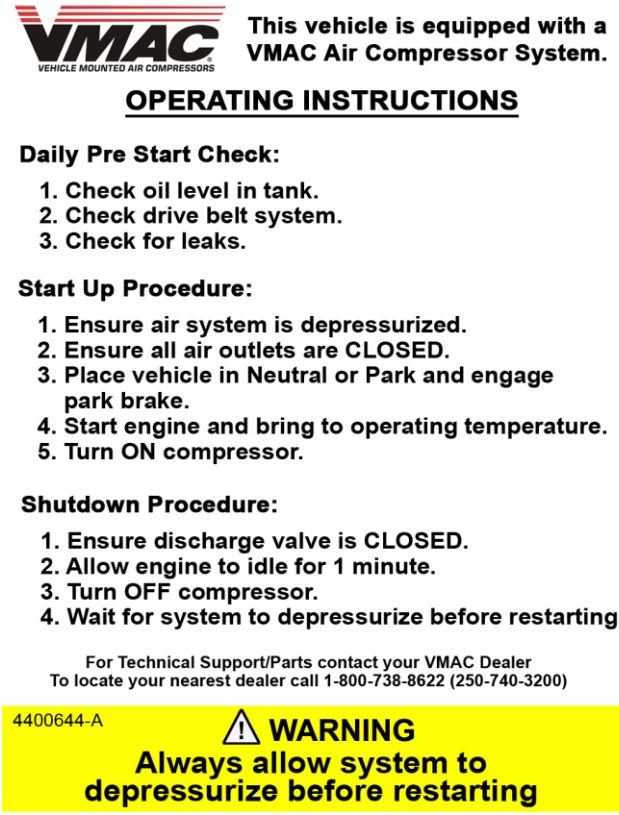

VMAC
VEHICLE MOUNTED AIR COMPRESSORS
This vehicle is equipped with a
VMAC Air Compressor System.
OPERATING INSTRUCTIONS
Daily Pre Start Check:
1. Check oil level in tank.
2. Check drive belt system.
3. Check for leaks.
Start Up Procedure:
1. Ensure air system is depressurized.
2. Ensure all air outlets are CLOSED.
3. Place vehicle in Neutral or Park and engage park brake.
4. Start engine and bring to operating temperature.
5. Turn ON compressor.
Shutdown Procedure:
1. Ensure discharge valve is CLOSED.
2. Allow engine to idle for 1 minute.
3. Turn OFF compressor.
4. Wait for system to depressurize before restarting.
For Technical Support/Parts contact your VMAC Dealer
To locate your nearest dealer call 1-800-738-8622 (250-740-3200)
4400644-A
WARNING
Always allow system to
depressurize before restarting

Figure 1. 1

☐ To alert any technicians that may service the vehicle, affix the servicing caution/contact label in the engine compartment near the hood latch in a visible location. Thoroughly clean the selected area before affixing the label (figure 1.2)

Figure 1.2

Part 2: Preparing for Installation

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.

2.1 Preparing for Installation - Electrical

☐ Locate the wiring harness on the inside of the driver side frame rail crossing from the driver side frame rail to the transmission above the driver side PTO cover. (Figure 2.1) This harness is close to connector X300.

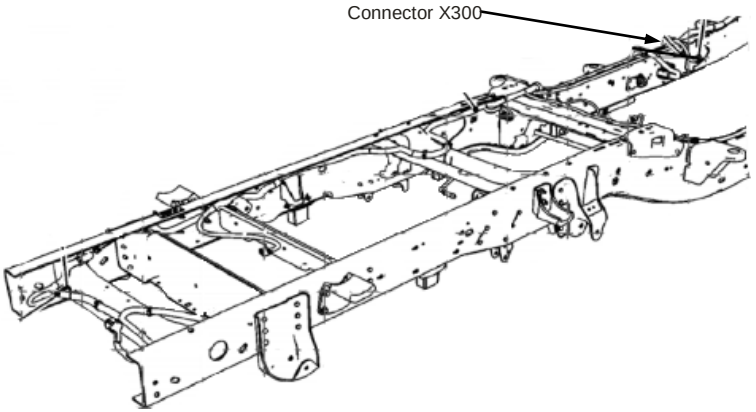


Figure 2.1

☐ Remove electrical tape and peel back plastic loom from the harness.

☐ Locate the two orange with black stripe wires in the bundle.

There are two orange wires with black stripe in the bundle. Follow the tests below to determine the correct wire.

☐ With the engine off, use a voltmeter with a bed of nails test lead and probe each orange wire with black stripe and turn the ignition switch to RUN.

☐ The correct wire will show 0 Volts in PARK or NEUTRAL and 12 Volts in all other gear selector positions.

☐ Turn the ignition switch off. Mark the wire for electrical connections later in the installation process.

☐ Remove air filter assembly and air intake tube from the front passenger side of the engine.

Whenever the engine or turbo intake is exposed, care must be taken to cover all openings to ensure that no foreign objects can enter and cause damage.

☐ Locate the wiring harness below the engine intake which runs to the bottom of the passenger side of the engine bay. (Figure 2.2)

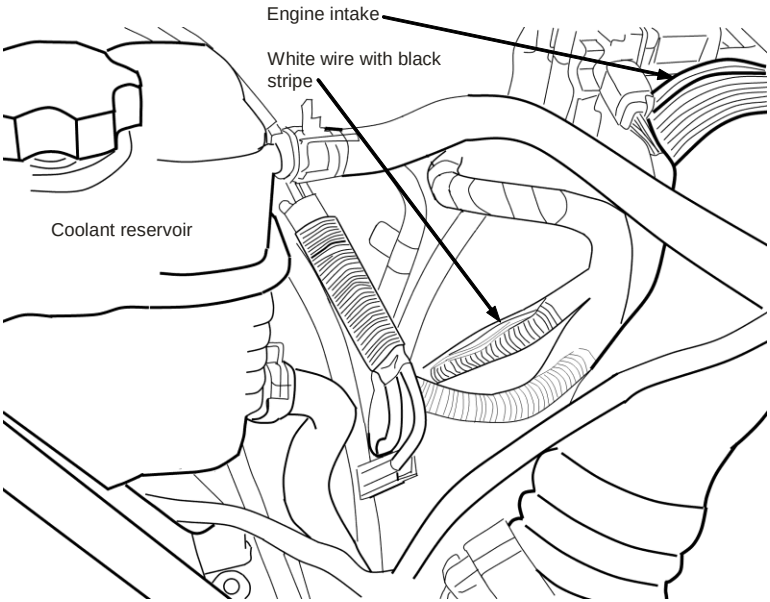


Figure 2.2

☐ Carefully open the bundle and locate the white wire with black stripe. Probe the wire using a voltmeter and a bed of nails test lead.

☐ Reassemble intake assembly and ensure that no electrical connection is left unplugged.

☐ Start the engine. The voltmeter should read a stable voltage of 2.3-2.8 Volts while the engine is idling. If the voltmeter has a frequency setting it should read the same frequency as the engine RPM.

☐ Turn the ignition switch off. Mark the wire for electrical connections later in the installation process.

☐ Locate the Air Conditioning pressure sensor located at the front driver's side of the engine. (Figure 2.3)

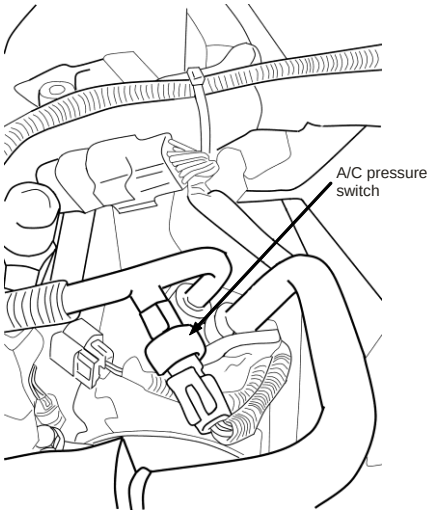


Figure 2.3

☐ Remove loom and plastic tape.

☐ Cut the OEM connector off and splice the supplied extension cable onto the harness ensuring the wire colors match. Use a heat gun to seal the heat shrink connectors. Re-wrap harness with protective loom.

2.2 Preparing for Installation - Mechanical

☐ Disconnect the batteries.

☐ Remove the air filter assembly and air intake tube.

☐ Remove the passenger side and driver side fender liner. Save the bolts and plastic clips, they will be used again to reinstall the fender liners.

☐ Remove the plastic front skid plate. Save the bolts as they will be reused later. Disconnect the OEM hose clamp holding the larger radiator hose to the small diameter hose and modify as shown (Figure 2.4) and save for reinstallation later.

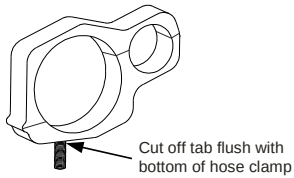


Figure 2.4

☐ Drain the coolant. Save the coolant, as it will be reused later.

☐ Remove lower radiator hose. To remove the hose it must be disconnected at;

- The engine block (water pump spigot)
- The radiator
- The surge tank
- The hard pipe running to the heater core

The last three connections can all be accessed from the passenger fender well. Do not damage the radiator hose as it will be modified and reused later.

☐ Remove the top radiator hose. Do not damage the radiator hose as it will be modified and reused later.

☐ Remove the automatic transmission control module (ATCM) mounted on the driver side of the fan shroud.

☐ Remove the upper radiator cover and upper fan shroud. Save the plastic clips to be reused later.

☐ Disconnect the fan clutch wire harness from the fan clutch and remove the fan wire harness and bracket.

☐ Remove the four bolts holding the fan stator to the engine, pull the fan stator forward and remove the fan and clutch. Lift the fan and stator out of the truck together.

☐ Modify the lower stator mount by cutting a notch to clear the VR pulley and belt that will be installed later. (Figure 2.5)

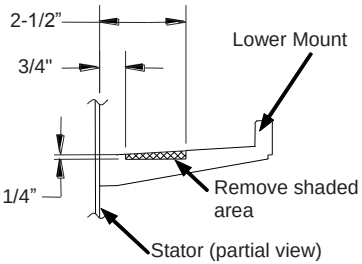


Figure 2.5

☐ Remove the OEM fan wire bracket pin from the engine block. This pin was used to connect the fan wire harness bracket to the engine.

☐ Install the supplied fan wire bracket pin replacement. Install in the threaded boss on the front of the engine to the lower right of the engine oil fill spigot. (Figure 2.6)

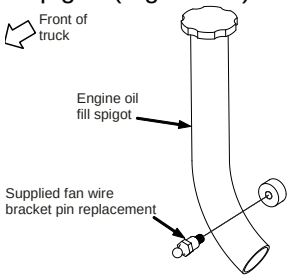


Figure 2.6

☐ Remove the OEM serpentine belt.

☐ Install a crankshaft-locking tool, (see Additional Requirements above) and remove the crank pulley bolt and OEM crank pulley. If you are using the VMAC tool:

- Put the appropriate socket on the nut
- Put the single-pin end of the tool on the front of the pulley
- Using a long flex bar turn the engine CCW until the pin makes contact with the balancing boss on the OEM pulley and the opposite end of the tool contacts the frame rail.
- Remove the bolt and pulley from the crankshaft.

☐ Remove the crankshaft pin using the VMAC extraction tool(Figure 2.7):

- Reinstall the crankshaft bolt and use the flex bar to slowly turn the engine over CW until the pin is facing upwards.
- Fit the split end of the tool (on the end of the shaft) over the crankshaft pin and tap downward with the slide-hammer to make sure that it is seated correctly
- Fit the split end of the tool (on the end of the shaft) over the crankshaft pin and tap downward with the slide-hammer to make sure that it is seated correctly
- Tighten the pinch bolt securely.
- Use the hammer action of the slider in an upward motion to remove the pin from the crankshaft
- Remove the crank bolt and discard. Save the washer for re-use later.

Be careful to support the tool and keep it aligned with the pin. If it is not the tool may slide off and damage the pin making it difficult to remove.

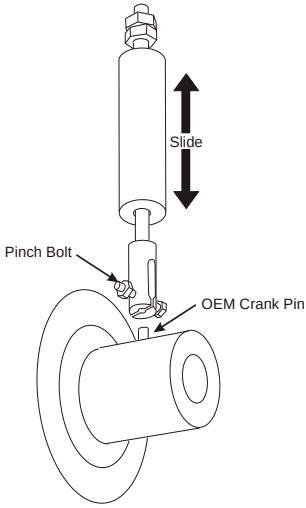


Figure 2.7

☐ Install the replacement crankshaft/harmonic balancer-locating pin and tap it home using a brass drift and a small hammer. Ensure that the head of the pin is aligned with the crankshaft by twisting it into position with a crescent wrench.(Figure 2.8)

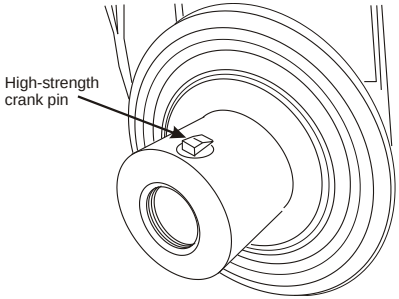


Figure 2.8

☐ Apply a light wipe of oil to the inside of the OEM crank pulley and install the pulley back onto the crankshaft.

☐ Place the VR crank pulley in position with the two roll pins on both sides of the balance weight on the OEM pulley. (Figure 2.9)

☐ Thread the M18 x 100 mm center bolt with OEM washer into the crankshaft. Install an engine-locking tool and torque the center bolt to 250 ft•lbs.(Figure 2.9) The VMAC crankshaft locking tool can be used again by fitting the two pins on the other end of the tool into the holes on the VMAC pulley.

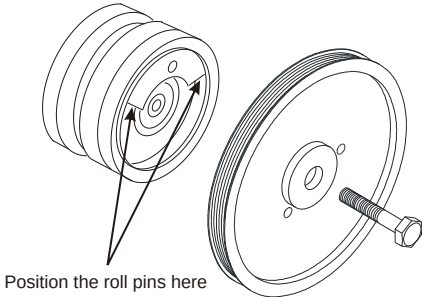


Figure 2.9

☐ Reinstall the OEM belt.

Part 3: Installing the Control Components

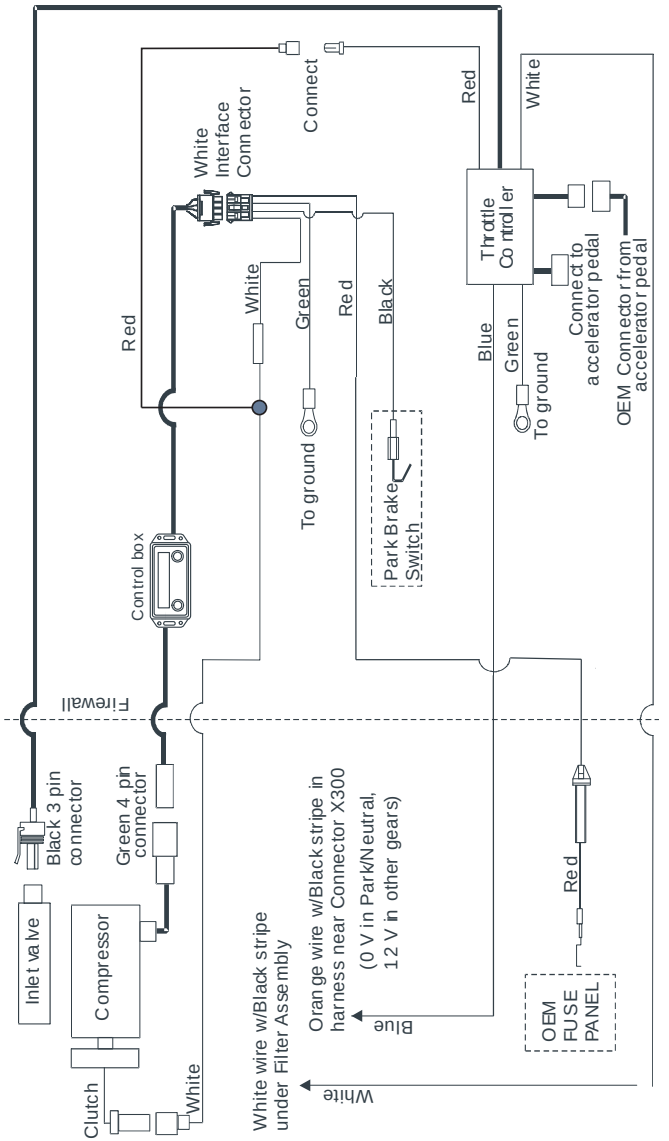


Figure 3.1

3.1 Installing the Components

☐ Install the control box in a convenient location in the cab, positioned so the wire harness will reach the compressor located at the front driver side of the engine.

☐ Mount the throttle control box under the dash using plastic ties. Select a location that will allow access to the adjusting screws.

3.2 Connecting the In-Cab Wiring

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

☐ Disconnect the multi-pin connector from the accelerator pedal and plug it into to the matching connector at the throttle control box then plug the connector from the throttle control box into the accelerator pedal.

☐ Connect the wires with the ring connector from the throttle control box and from the interface connector to a good metal ground.

☐ Connect the red wire from the control box to the red wire from the throttle control.

☐ Route the following wires through the accessory harness grommet under the dash shown in Figure 3. 2.

- Cable with the black 3 pin connector
- Cable with the green 4 pin connector
- White wire with the bullet connector
- White wire from the throttle control box
- Blue wire from the throttle control box
- Red wire from interface cable with inline fuse

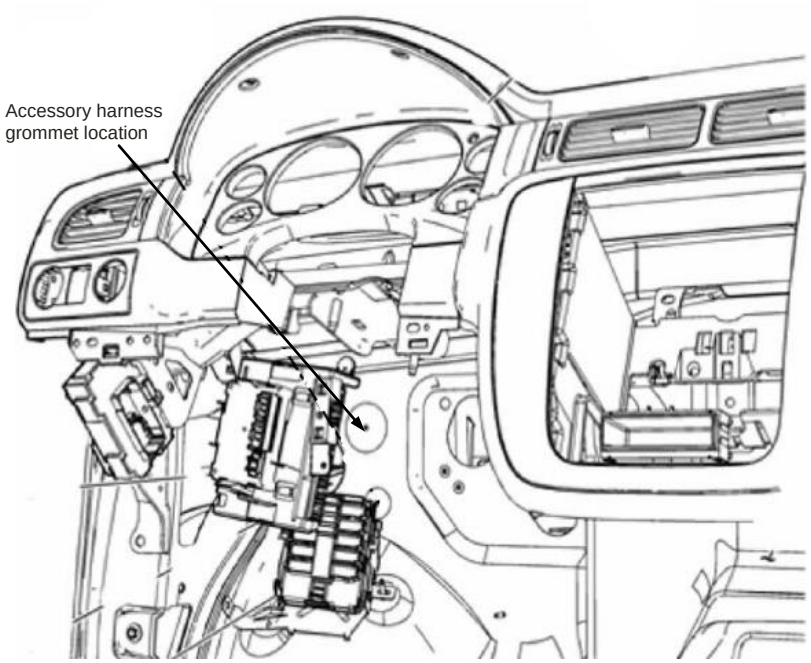


Figure 3. 2

☐ Unplug the connector from the park brake switch and connect the black wire with the piggyback connector from the interface cable to the connector on the park brake switch: then connect the OEM park brake connector to the piggyback connector.

3.3 Connecting the Under-Hood Wiring

☐ Locate the orange wire with black stripe in harness going from driver side frame rail to drive side PTO cover (harness close to connector X300, wire marked earlier during the install).

☐ Solder and seal the long blue wire from the throttle to the orange wire with black stripe as shown in Figure 3.3.

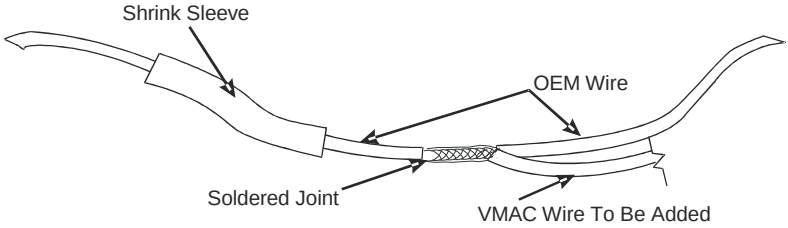


Figure 3.3

☐ Fit the loom back over the wires and replace the tape.

☐ Locate the white wire with black stripe below the throttle body (wire marked earlier during the install).

☐ Solder and seal the white wire from the throttle control to the white wire with black stripe as shown in Figure 3.4.

☐ Fit the loom back over the wires and replace the tape.

☐ Remove the cover from the fuse panel and route the red wire with the inline fuse to the panel. Refer to Part 6 for connection details.

Part 4: Installing the Tank and Hoses

Depending on other installed equipment, it might be necessary to move the air/oil separation tank from its intended location. The hoses used in VMAC compressor systems have a specific inner liner that is compatible with our compressor oil. Use of hoses other than those supplied or recommended by VMAC may cause compressor damage and may void your warranty. Please contact VMAC for information on replacement hoses and hose extension kits.

4.1 Installing the Tank and Brackets

The tank will mount to the driver's side frame rail between the two front body mounts (Figure 4.1).

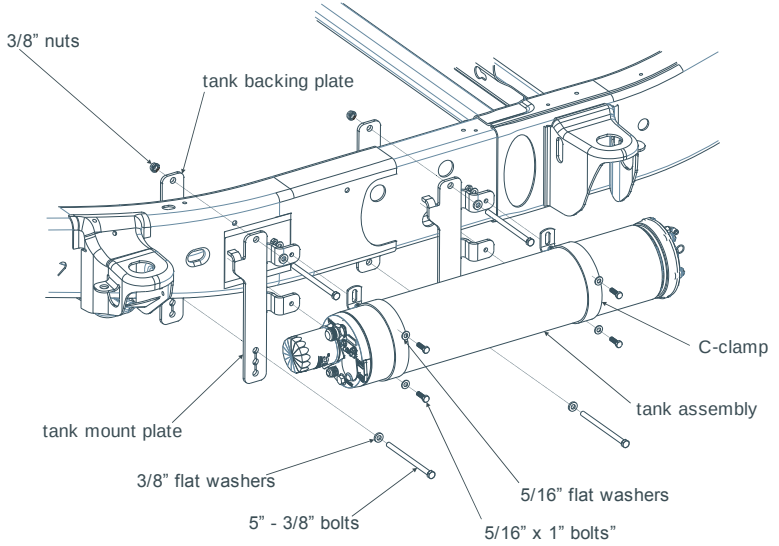


Figure 4.1

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

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

☐ Position one C-clamp about 2” away from the filter end of the tank, and the second C-clamp 23” away from the filter end of the tank.

☐ Reinstall the two 1/4” clamp bolts in the C-clamps so that the heads of the bolts face toward you and install the nuts loosely.

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

☐ Check the distance of each C-clamp from the ends of the tank and tighten the clamp bolts so that the clamps grip the tank securely.

☐ Apply Loctite pipe thread sealant and install a suitable 3/4” fitting in the outlet on the tank. A 90° fitting is required (but not supplied). Tighten it to about the seven o’clock position for testing, then reposition as required for final connections (Figure 4.2).

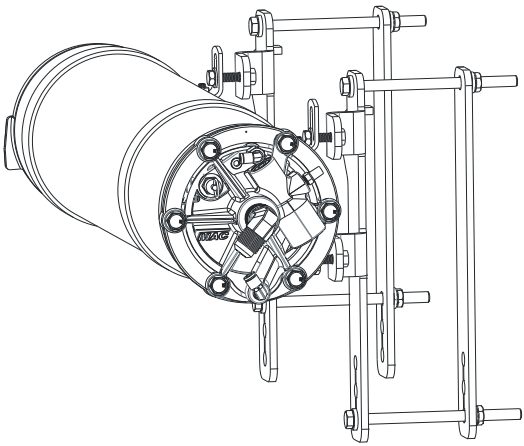


Figure 4.2

4.2 Installing the Tank Assembly

☐ Place the front F-shaped tank mount onto the outside of the frame just behind the front cab mount and the ‘tab’ resting on top of the frame. Route the emergency brake cable between the raised mounts of the F-mount. Dislodge the wiring harness plastic locator to allow the wiring harness to route above the F-mount.

☐ Place the rear F-shaped tank mount 18” towards the rear and against the frame. Route the emergency brake cable between the raised mounts of the F-mount. Dislodge the wiring harness plastic locator if necessary to allow the wiring harness to route around the F-mount.

☐ Insert the 5” long – 3/8” bolts, with flat washer through the upper hole on the tank strap flat bars. Select the appropriate lower holes that best match the frame of the truck and insert the 5” bolts.

☐ Place the backing plates in position on the inside of the frame, one in front of the transmission cross-member and one behind, (Figure 4. 3).

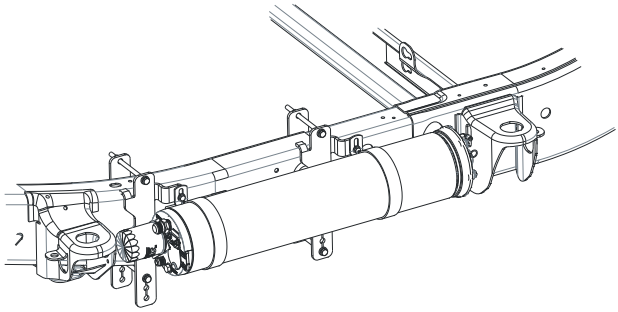


Figure 4. 3

☐ Apply loctite and place the 3/8” nuts and washers on the bolts behind the backing plate and tighten just enough to hold the tank in place but loose enough to allow the mounts to be repositioned along the frame.

☐ Lift the tank assembly and support it in position, lining up the slotted holes in the tank clamps with the raised mount holes.

Make sure that the OEM wire harness is not pinched between the mounts and the frame.

☐ Apply Loctite and install 5/16” x 1” bolts with flat washers and nuts into the two holes on each bracket, but do not tighten.

☐ Slide the tank rearward on the frame to provide clearance for attaching the hoses.

All hoses, tubes, and wires that are rerouted or shifted during installation must be secure so that they do not contact excessively hot areas or sharp edges. Where possible, use rubber coated P-clips. Follow the routing suggestions in this manual and cover all hoses with the supplied plastic loom.

☐ Route the 45° end of the 3/4” hose from the engine compartment around the body mount to the tank.

☐ Connect the 3/4” hose to the matching fitting on the tank. Angle the fitting outwards to allow the hose to easily pass around the body mount and to allow the level sight-glass cover sufficient room to lift; then tighten the fitting.

☐ Slide the tank forward, providing sufficient space for connections to the fitting on the rear of the tank and enough room to easily change the oil filter at the front.

☐ Position the tank to center the bolts in the C-clamp slots and tighten them.

☐ Tighten all the fasteners.

☐ Check for clearance around the tank and no interferences. Re-adjust as required.

If the frame allows use of the upper holes the bottom of the tank brackets can be cut off to increase ground clearance. Touch up paint after cutting to help prevent rusting.

Part 5: Installing the Main Bracket, Compressor, and Cooler

5.1 Installing the Main Bracket and Compressor

☐ Remove the tensioner and idlers from the tensioner bracket assembly.

☐ Remove the 80mm long lower OEM power steering bracket bolt below the power steering pump pulley. Discard this bolt.(Figure 5.1)

☐ Install the tensioner bracket assembly with supplied bolts and spacer as shown. Apply loctite and torque bolts to specification.(Figure 5.1)

☐ Lower the fan and stator back into the engine bay but do not attach to engine. Leave fan resting on the lower shroud.

You will not be able to lower fan and stator into place after the tensioner and idlers have been installed.

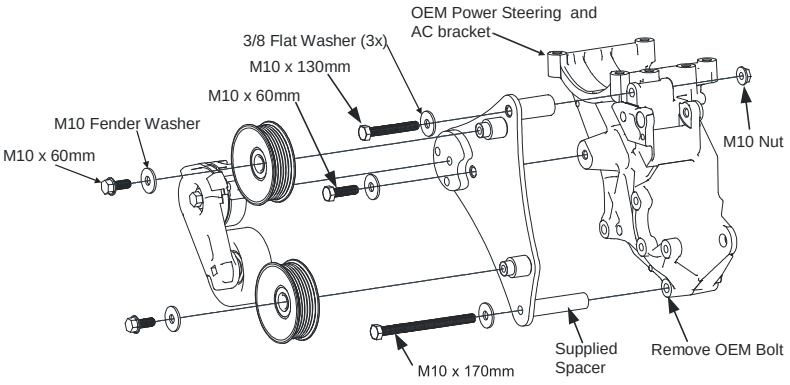
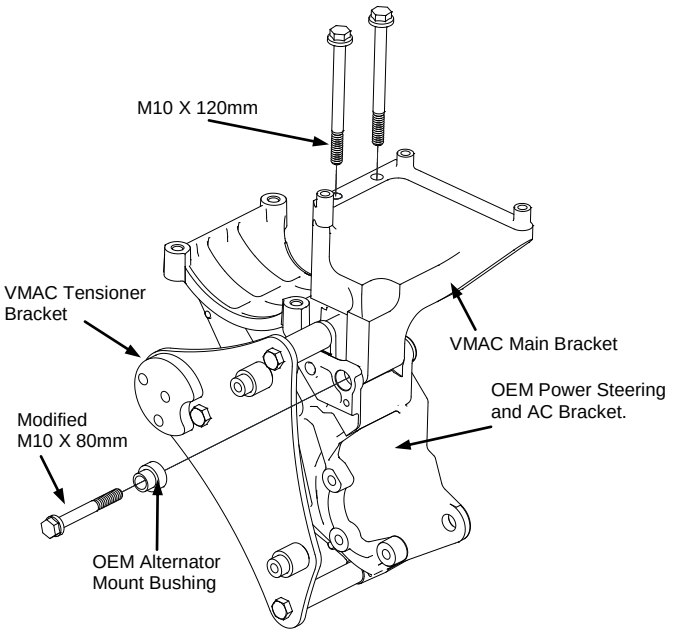


Figure 5.1

☐ Position the main bracket over the power steering / AC bracket, apply Loctite, and insert the three bolts. Make sure that any wire bundles are repositioned and not pinched under the bracket. To ensure correct bracket alignment, tighten the two upper bolts finger tight before tightening the lower bolt. Ensure the lower bushing has slid rearward enough and the bolt is holding the bracket securely.(Figure 5.2) Torque bolts to specification.

Note the OEM alternator mount bushing comes supplied from the factory in the location. You may need to slide the bushing towards the front of the truck before installing the main bracket.



(Note: the OEM alternator mount bushing is only shown in the exploded view for reference, it will come installed from the factory)

Figure 5.2

☐ Install the tensioner and idlers. (Figure 5.1)

☐ Remove the two bolts holding the EGR elbow on the top of the engine. Discard these bolts as they will not be used again. Ensure the metal gasket stays in place. (Figure 5.3)

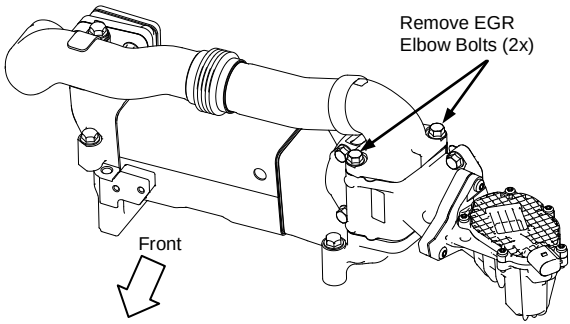


Figure 5.3

☐ Install the compressor and brace as shown with supplied fasteners. Apply loctite and torque to specifications. Ensure that any wire bundles are repositioned and not pinched underneath the compressor or bracket. (Figure 5.4)

☐ Install the VR belt.(Figure 5.6)

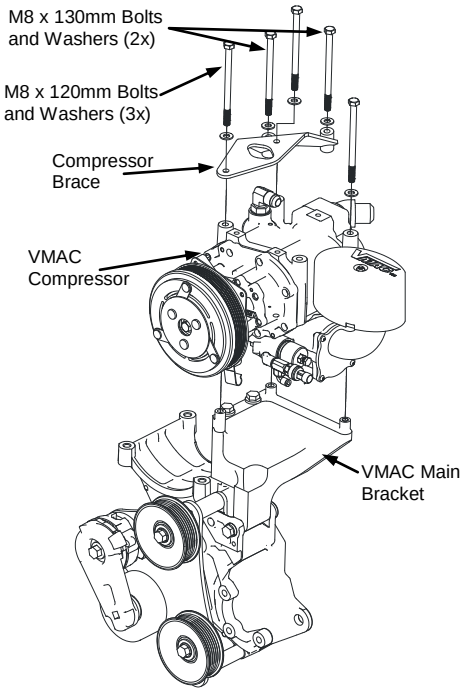


Figure 5.4

☐ Reinstall the fan and stator.

☐ Connect the OEM fan wire harness bracket to fan clutch and to the replacement fan wire bracket pin.

☐ Install the fan wire extension harness between the fan wiring bracket and the previously disconnected connector near the power steering pump. When routing harness make sure it is clear of the fan blades and belts. Secure with tie straps where appropriate.

If for any reason the inlet valve is removed it must be noted that this system use two different length bolts in the inlet valve. Two 55mm bolts go in the two holes closest to the air filter and 50mm bolts go in the holes furthest away from the air filter. (Figure 5.5)

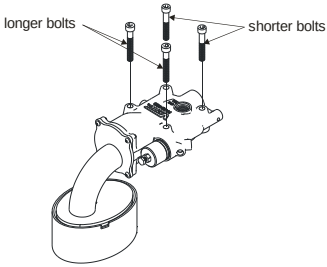


Figure 5.5

Never use an impact wrench to install inlet bolts. The torque spec for inlet bolts is 19 ft lbs.

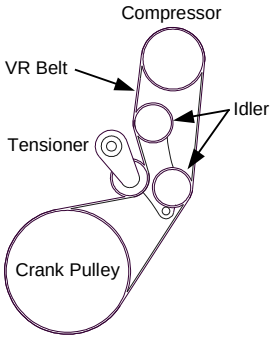


Figure 5.6

☐ Drill 1/4” hole in upper fan shroud 3 1/4" directly below existing ATCM mount hole as shown, and then use the ATCM to locate a second 1/4" hole below the first and 1” toward the center of the shroud.(Figure 5.7)

☐ Apply Loctite and install the two supplied M6 flange-head bolts and flange nuts into the holes as shown. Test fit ATCM, but, don't mount it to the shroud until it is installed on the truck. (Figure 5.7)

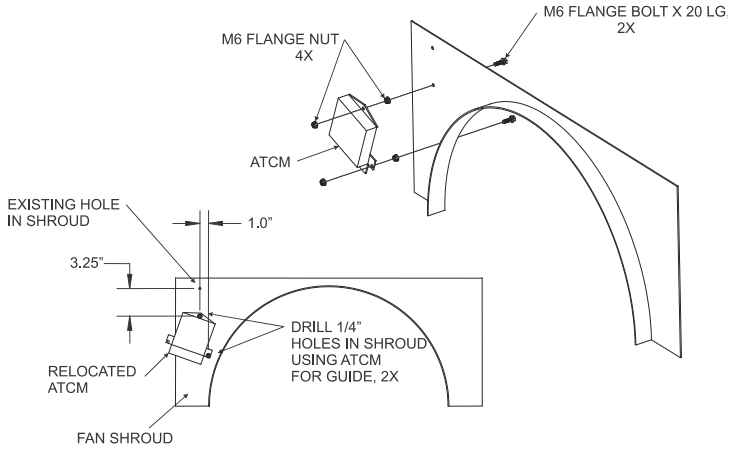


Figure 5.7

☐ Reinstall the upper fan shroud and upper radiator cover.

☐ Mount the ATCM to the two bolts on the fan shroud using the two flange nuts supplied. Ensure the wire harness connector is reattached securely. (Figure 5.7)

5.2 Installing the Oil Cooler

☐ Measure and cut the lower radiator hose 2” below the plastic molded tee on the engine side of the radiator hose. (2” will bring you to the start of bend #1 in the hose).(Figure 5.8)

☐ Measure to the end of bend #2 on the lower radiator hose and cut. Leave all the straight section after bend #2.(Figure 5.8)

Do not damage the 1” hoses coming off the plastic molded tees, as they will be used again.

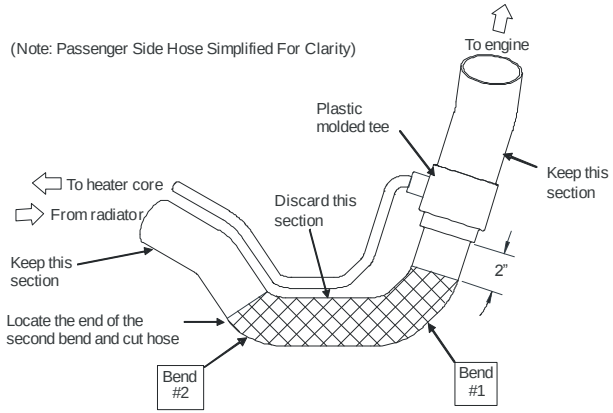


Figure 5.8

☐ Reinstall the lower radiator hose sections.

☐ Install the cooler under the tubular front cross-member ahead of the stabilizer bar with the oil ports facing forward using the OEM skid plate bolts. Leave bolts slightly loose to allow for optimal radiator hose fitment. (Figure 5.9)

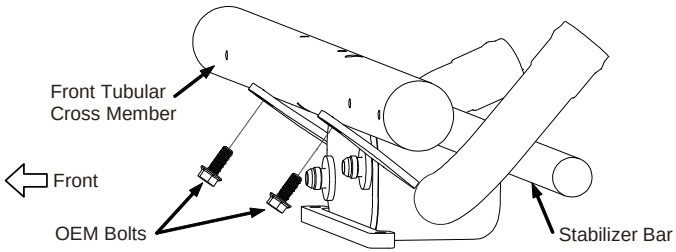


Figure 5.9

☐ Connect the lower radiator hoses to the cooler with supplied hose clamps. Reinstall the modified OEM hose clamp and ensure the smaller diameter hose is positioned so it does not come in contact with the stabilizer bar.(Figure 5.10)

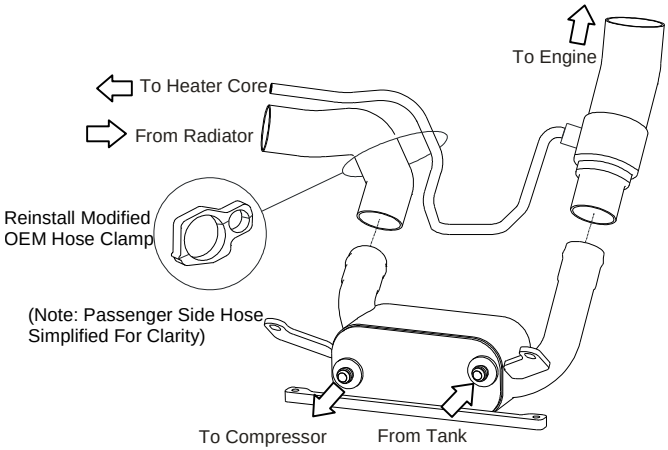


Figure 5.10

☐ Apply protective loom and route the straight end of the shorter 1/2" hose from the cooler under the shroud to the driver's side of the engine compartment, to the left of steering box, along the wire bundle and up to the fitting at the top of the compressor.

☐ Connect the 90° end of the hose to the passenger side of the cooler.

☐ Apply protective loom and route the straight end of the longer 1/2" hose from the cooler, parallel to the shorter 1/2" hose, under the shroud, to the left of the steering box, rearward along the top of the frame rail, over the upper control arm mount, and between the inner fender and the cab mount to the front of the tank.

☐ Connect the 90° end of the hose to the driver side of the cooler.

☐ Install 45° JIC #8 male to female fitting supplied to matching fitting on front of tank below the oil filter. Attach 1/2" hose to fitting and tighten all fittings.

☐ Fasten both 1/2" hoses using tie straps so that they do not contact any hot or moving parts.

☐ Tighten the cooler mount bolts and install the supplied skid plate using supplied bolts and OEM bolts. The OEM bolts will go in the OEM skid plate mounting holes. The supplied bolts will line up with the oil cooler skid plate mount bar.(Figure 5.11)

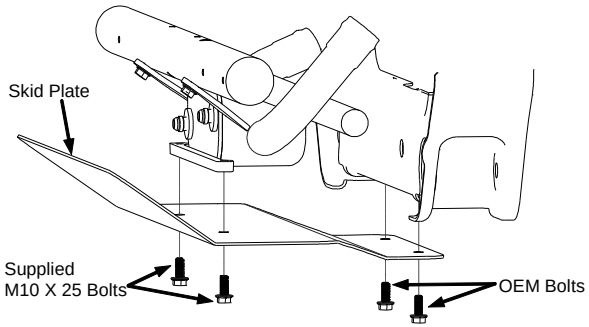


Figure 5.11

5.3 Connecting the Hoses

All hoses, tubes, and wires that are rerouted or shifted during installation must be secure so that they do not contact excessively hot areas or sharp edges. Where possible, use rubber coated P-clips. Follow the routing suggestions in this manual and cover all hoses with the supplied plastic loom.

☐ Insert the 3/16” and 1/4” tubes into the fittings on the back of the tank and cover them with protective loom. Route them with the 3/4” hose up from the cab mount and over to the compressor.

☐ Connect the 3/16” and 1/4” hoses to the matching fittings on the inlet control valve.

☐ Install the oil fill tee and cap on the compressor discharge fitting. The oil fill cap should face upwards.(Figure 5.12)

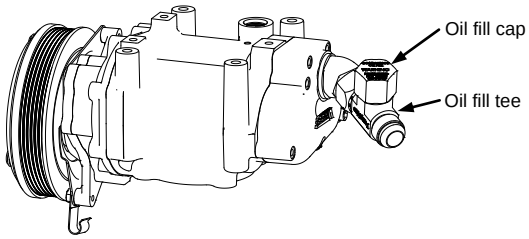


Figure 5.12

☐ Connect the 3/4” hose to the matching fitting on the back of the compressor. Figure 5.13 shows the basic layout of the hoses.

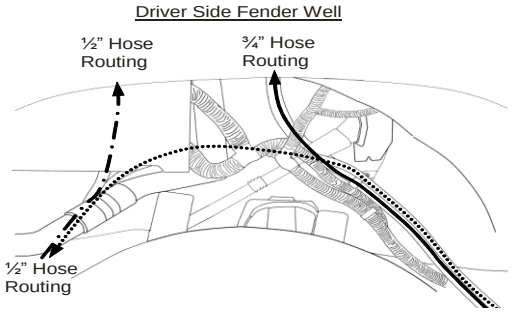


Figure 5.13

☐ Tighten all fittings.

☐ Remove the cardboard protector from the filter mount base on the tank.

☐ Apply a thin coating of compressor oil to the oil filter gasket and install the filter on the tank. Tighten the filter an additional 3/4 turn after the gasket contacts the base.

5.4 Completing the Installation

☐ Install the air filter assembly and air intake tube.

☐ Measure and cut the upper radiator hose 14-1/2” from the engine side. Save the engine-side piece.(Figure 5.14)

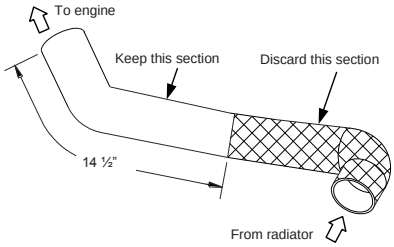


Figure 5.14

☐ Connect the modified upper radiator hose to the radiator along with supplied VMAC radiator hose and tube connector. When connecting the modified OEM upper radiator hose rotate the hose so the end that previously went to the engine before being modified will now connect to the supplied VMAC tube connector.(Figure 5.15)

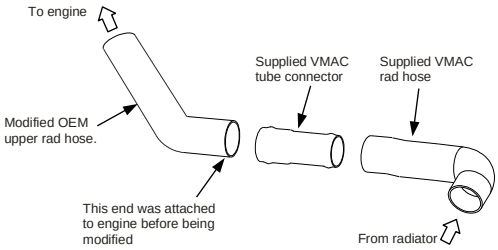


Figure 5.15

☐ Install VMAC logo plate onto the top of the compressor. Secure oil return hose and main wire harness with supplied P-clamps.(Figure 5.16)

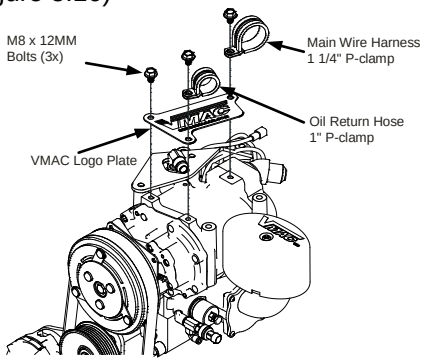


Figure 5.16

☐ Check all fasteners, clamps, fittings and retainers to make sure that they are tight and secure all OEM wire harnesses.

☐ Fill the cooling system with the recommended coolant.

☐ Install the passenger and driver side fender liners.

☐ Connect the white clutch wire with the bullet connector, the green 4 pin temperature probe connector and the black 3 pin pressure transducer connector to the compressor.

☐ Reconnect the batteries.

5.5 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 fill cap from the main discharge line tee at the rear of the compressor and pour about 4 US quarts (4 litres) of the supplied oil into the oil fill hole. Add oil slowly as it might take some time for the oil to flow down the hose and into the tank.

☐ Allow at least 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.

Overfilling the system can result in oil carryover out the air discharge. The oil level will need to be rechecked after running the system for the first time as the oil will fill the cooler and hoses and may reduce the level in the tank.

Part 6: Finishing the Installation

6.1 Connecting to Switched Power

☐ Ensure that wiring is complete according to wiring diagram in Part 3 of the installation manual.

☐ Locate a fuse in the fuse panel that provides power when the ignition switch is in the “ON” position. Remove the selected fuse from the panel and connect the fuse tap to one side. Plug the fuse back into the empty socket using needle-nose pliers to make sure that it seats properly.

Make sure that the fuse is inserted with the tap on the battery power side, not the fused side. With the fuse removed, probe each slot with a voltmeter to determine which side is switched 12V.

6.2 Securing the Wiring

☐ Under the hood, group all the wires and harnesses from the compressor and secure them together with electrical tape, then protect them from damage with plastic loom.

☐ Cover the white wire and the blue wire with loom and make sure that they are secured.

☐ Route and secure the white wire with loom along the driver side frame, continue along the front underhood panel to the air filter assembly. Ensure it does not come in contact with any moving parts.

☐ Route and secure the blue wire, with loom, along the driver side frame rail along with existing electrical harness.

☐ Pull all excess wire and harnesses into the cab of the truck so that there are no loose loops under the hood.

☐ Neatly bundle all the wiring in the cab, secure the bundles with nylon ties or electrical tape and fasten them up under the

dash, away from the steering column, brake pedal, accelerator pedal and park brake mechanism. Secure them with nylon ties.

☐ Replace the dash panel and the fuse panel cover.

6.3 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; there should be a number displayed in the hour-meter. If there is no display, there is no power to the control box.

☐ Press the “ON” button. The green LED should come on and you should hear the compressor clutch engage.

☐ Release the park brake. The green LED should flash, “PARK BRAKE” will show on the display and the compressor clutch should disengage. Apply the park brake again, wait 20 seconds and push the “ON” button. The green LED should come on and the compressor clutch should engage.

☐ 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.

6.4 Before Starting the Engine Checklist

Make sure that the following have been completed:

☐ Check the engine coolant level.

☐ Check the compressor oil level.

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

☐ Perform a final visual belt alignment check.

Check all wiring for security and protection.

6.5 After Starting the Engine Checklist

Place the truck in a safe operating position and block the wheels. Ensure that there are no people around the truck before beginning the test.

Make sure that the following have been completed:

☐ Install a test fixture or air tool to the tank outlet. Close the ball valve if you are using the test tool.

☐ Start the engine and allow it to reach operating temperature Push the “ON” button on the control box.

☐ The green light should illuminate, the clutch should engage and the engine should rev up to 1800-2200 rpm and then idle down to 900-1000 rpm.

☐ Release the park brake. The green light should flash, “PARK BRAKE” will be displayed and the clutch will disengage. Apply the park brake. Wait for the twenty second internal timer to reset, and then press the “ON” button.

☐ The green light should illuminate, the clutch should engage, and the engine should rev up to 1800-2200 rpm and then idle down to 900-1000 rpm.

☐ 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 and compressor have been shut down and the oil level has had time to stabilize. Top up or drain as required.

6.5.1 Transmission Test

☐ With the compressor operating and the engine at 900 rpm, depress the brake pedal and shift from Park to Reverse. Engine speed should drop to base idle. Shift to Park. Repeat this test for all gear selections.

☐ Push the “OFF” button on the control box. The engine should return to base idle, the compressor should be off and the green light should be off on the control box.

☐ Operate the system with an air tool for at least thirty minutes (1 hour preferred). Road test the truck for approximately 14 miles (20km).

6.6 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 sing an orifice in the outlet to simulate tool use (Figure 6.1).

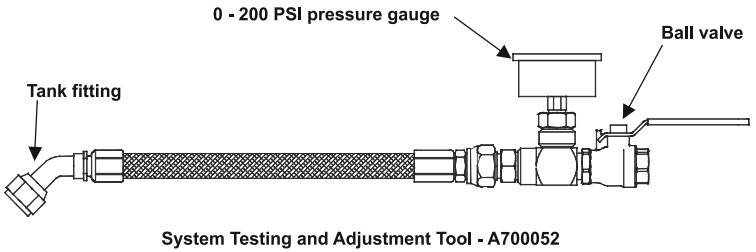


Figure 6.1

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 truck to run until the engine 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.

6.7 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 6.2).

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

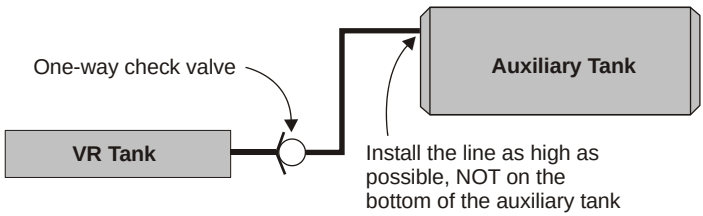
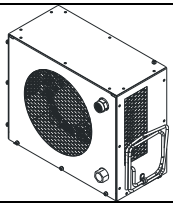
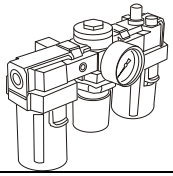
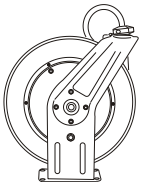
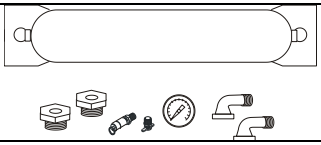
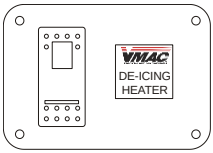


Figure 6.2

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 toll free 1-888-241-2289 or local 250-740-3200.

	**Eliminator Aftercooler** **Part Number A800070** Removes up to 80% of moisture from compressed air. Quick installation, automatic drain and compact design
	**Filter Regulator Lubricator** **Part Number A700151** Removes lubricants, water and dirt from the air stream. Adds atomized tool oil to lubricate tools. Reduces pressure for longer tool life.
	**Hose Reel** **Part Number A700007** Secure, compact, retractable hose storage in a sturdy reel.
	**Air Receiver Tank** **Part Number A300010** Thirty-five gallon capacity in a compact tank, complete with fittings and a gauge.
	**De-icer Kit** **Part Number A700031** Insulated rope heater prevents freezing of lines and regulator.
	**Service Kits** **VR150 200 hour Part Number A700059** **VR150 400 hour Part Number A700060** **VR70 200 hour Part Number A700019** **VR70 400 hour Part Number A700020** 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