

# Installation Manual for System S700173

John Deere 4045 VR70

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**VMAC – Vehicle Mounted Air Compressors**

Toll Free: 1-888-241-2289

Fax: 1-250-740-3201

Changes and Revisions

Version	Revision Details	Revised by/date	Approved	Implemented
A	ENGINEERING RELEASE	MP 04 Feb 15	JR/RD 10 Feb 2015	11 Feb 2015

## 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 vehicles must follow standard shop practices.



***All hoses, tubes, and wires which are rerouted or shifted during installation must be secure so that they do not contact excessively hot areas or sharp edges. Where possible follow the routing suggestions in this manual.***

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.



***VMAC recommends covering all hoses and wires for protection.***

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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 vehicle. Identify variations for different engine models 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 Information

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*. Depending on other installed equipment, it might be necessary to move the air/oil separator 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 replacement hoses and further information.

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# Part 1: System ID

- The System Identification Number Plate must be attached to the equipment at the time of installation. This plate provides information that allows VMAC to assist in customer inquiries and ordering of parts
- Mark and drill two 7/64-inch holes in a suitable location. This location must be easily visible, such as beside the control box or compressor. Secure the plate with the supplied self-tapping screws
- Place the S700173 belt routing and safety label beside the control box in a visible location.

## Part 2: Cooler Installation

- Disconnect the battery
- Drain engine coolant. There are two drain locations, one on the underside of the radiator and a second on the engine block located below the exhaust manifold. Save the coolant as it will be reused later.
- Remove radiator hoses from lower engine radiator spigot to water pump. These parts will not be reused.
- Remove the upper left and lower right bolts connecting the engine mount to engine block located behind the water pump. **Note do not remove the lower left bolt connecting the engine mount to engine block.** Figure 2.1 shows these mounting locations.
- Reusing the bolts just removed attach the cooler bracket to engine mounts behind the water pump. Use Loctite on bolts and torque to specification. (see Figure 2.1)

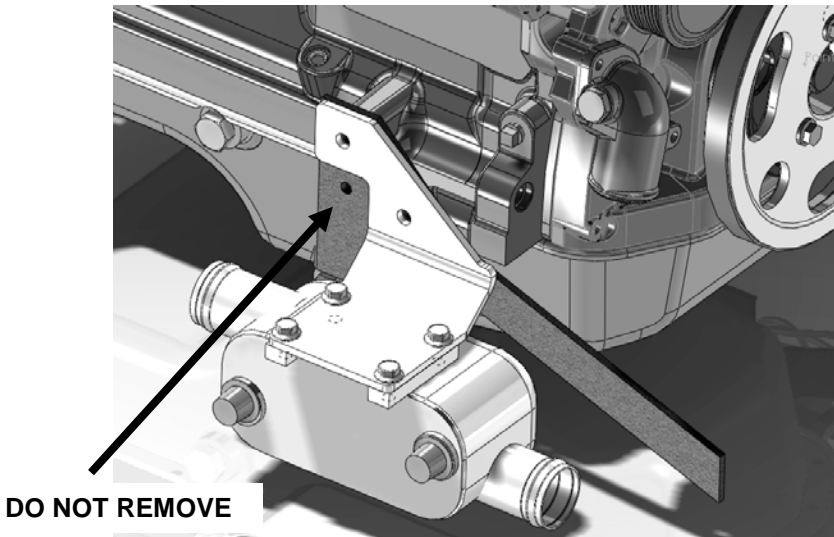
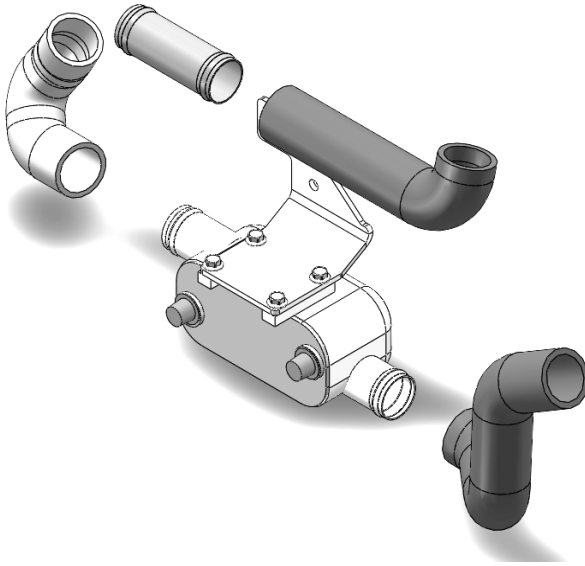


Figure 2.1

- Attach supplied cooler hoses to lower engine radiator spigot and water pump using supplied hose clamps. (See Figure 2.2)



**Figure 2.2**

- Refill the radiator with the coolant previously drained. If for any reason more coolant is required consult your John Deere 4045 engine manual for coolant requirements.

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# Part 3: Air/Oil Separator Tank (AOST) Installation

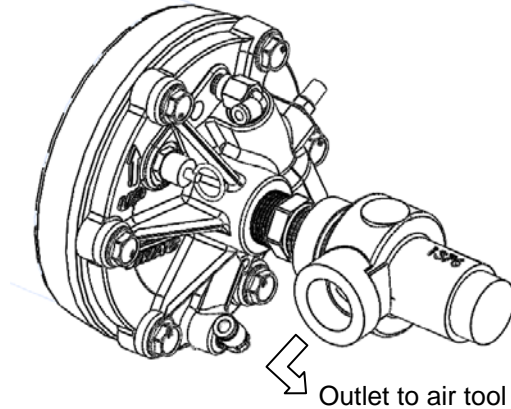
## 2.1 Assembling and Installing the Brackets

- Place the tank on a workbench with the front (oil filter end) of the tank to your left and remove the oil filter.
- Remove the two ¼" pinch bolts from the C-clamps. Expand the clamps slightly and slide them over the front of the tank.
- Position the clamps in a suitable location for attachment to piece of equipment.
- Rotate the tank so the up arrow is pointing away from you (parallel with the mounting surface of the clamps and the workbench).
- Tighten the pinch bolts on the C-clamps to secure the tank.
- Install the supplied ¾" NPT fitting in the back of the tank.

- Install the minimum pressure check valve (MPCV) in the tank (Figure 3.1).



***Tank must be mounted below level of compressor discharge.***



**Figure 3.1**

- Install the  $\frac{3}{4}$ " NPT fitting (not supplied) in the MPCV.
- Install the supplied  $\frac{1}{2}$ " 90° elbow to the oil return fitting on the tank (below sight glass).
- Install the tank on the equipment. Use bolts (not supplied) through the C-clamps into mounting points on the equipment.

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# Part 4: Installing the Compressor

## 4.1 Main Bracket

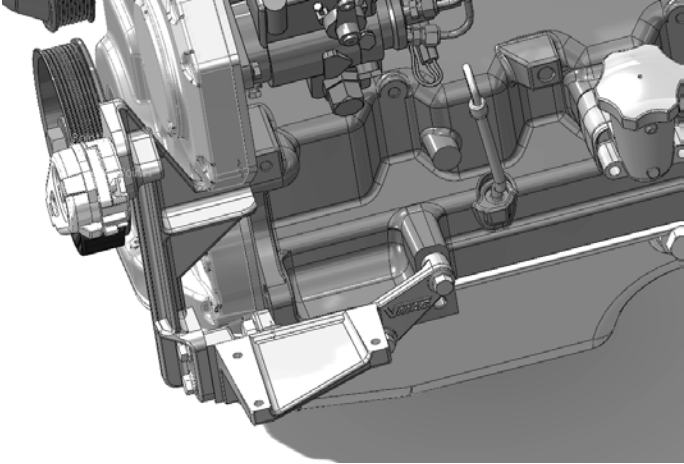


Figure 4.1

- The main bracket is attached to the engine under the fuel pump.
- Remove the tensioner assembly from the main bracket.
- Remove 2 (of the 3) engine mount bolts on the side of the engine block. **Leave the rear bottom bolt tight to hold engine during installation.**
- Apply loctite and install the provided M12x55 flange head bolts through the compressor bracket, engine mount and into the side of the engine block. **Do not tighten.**
- Apply loctite and install the provided M16 bolts in the two front block mounts. **Do not tighten.**
- Snug down the 4 engine mount bolts and torque to specifications.
- Apply loctite and re-install the tensioner assembly on the main bracket and torque fastener to specification.

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## 4.2 Installing the Compressor and Hoses

- Install crank pulley. The pulley bolts onto the OEM crank pulley. Use loctite and the three M10x35mm bolts provided and torque to specifications.
- Apply loctite and install compressor to main bracket using the three M8x25 bolts. These bolts are inserted from under the bracket into the air end. Torque to specifications.
- Install belt and route as per Figure 4.2. To remove the tensioner locking pin you can use a 3/8" drive as shown in Figure 4.2 to relieve tension on the tensioner.

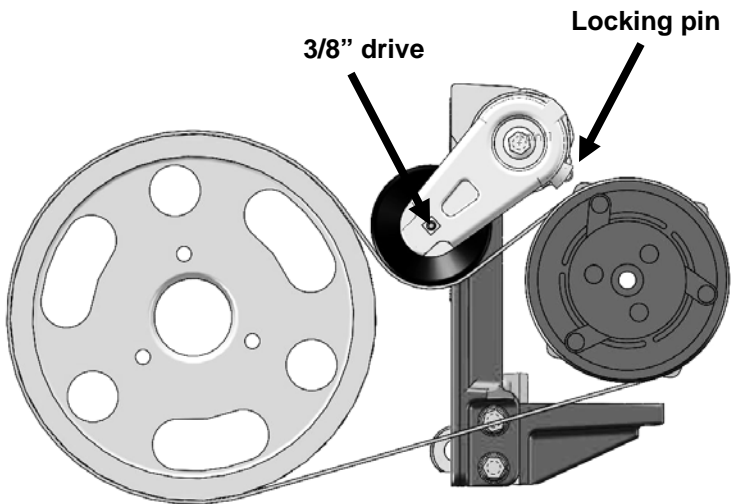
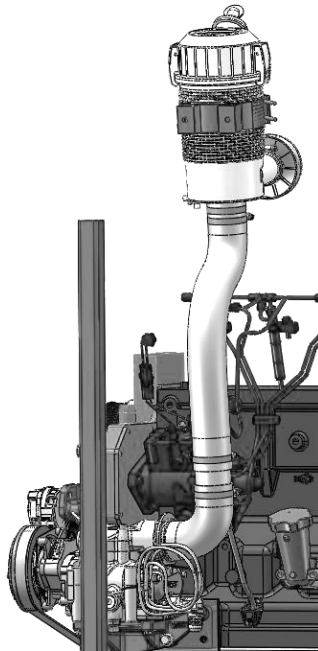


Figure 4.2



**Figure 4.3**

- Install heavy duty air filter as shown in Figure 4.3 but in location of customer's choosing.
- Tighten hose clamps on air end and air filter.
- Install the  $\frac{3}{4}$ " 45° swivel fitting at the compressor discharge. Install the remote oil fill "T" fitting and cap onto the 45° swivel.
- Attach the straight end of  $\frac{3}{4}$ " hose to rear fitting on compressor and attach the 90° end to the matching fitting on the AOST tank (on the end with the oil sight glass and oil filter). Tighten fittings on both ends of the hose.
- Cover poly-tube lines with loom and attach them to matching fittings on discharge end of tank and the inlet valve on the compressor. Ensure that the lines are not kinked and not in a position to rub through on any sharp edges.
- Attach 90° end of the longer  $\frac{1}{2}$ " hose to the bottom fitting on the cooler and the straight end to the matching fitting on the AOST (on the end

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with the oil sight glass and oil filter). Tighten fittings on both ends of the hose. (Figure 4.4)

- Attach 90° end of the shorter ½” hose to the top fitting on the cooler and the straight end to the matching fitting on the air end. Tighten fittings on both ends of the hose.(Figure 4.4)

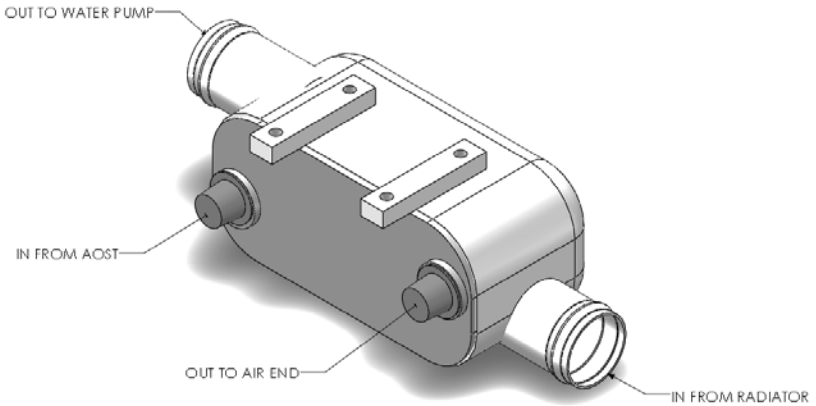


Figure 4.4

### 4.3 Filling the System with Oil

- Remove the cap on the “T” fitting and pour the supplied compressor oil into the compressor, turning the center of the compressor clutch clockwise to speed oil flow into the tank.



***Must use VMAC approved compressor oil in this system. Failure to use approved oil will result in damage to the compressor and will void warranty.***

- Allow 5 minutes for the oil to drain into the tank, and then check the level at the sight glass located at the front of the tank. Continue adding oil until the level is correct.
- Install the fill plug in the inlet control valve and tighten it securely.



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

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# Part 5: Control System

## 5.1 Control Box and Wiring

- Mount the control box in a visible, easy to access location.



**Note: Control box is not weather proof.**

- Route the interface cable and attach wire to the temperature probe on the air end, the clutch on the air end and a key switched +12V source and ground point.
- Connect the interface cable to the control box.
- Connect the battery.

## 5.2 Confirmation Test

- Turn the engine ignition key “ON” but do not start the engine.
- Check the control box to see if there is a number showing in the display. If not, there is no power to the control box.
- Press the “ON” button on the control box. The green light should come on and you should hear the air end clutch engage. Press the “OFF” button. The green light should go off and the compressor clutch will disengage.



**The engine must be running to complete the final step in the safety test. This will be done after the pre-start checks have been completed.**

If the system fails the test, check the wiring to make sure that all the connections are correct and secure. If you require additional assistance, contact VMAC. Call 1-888-241-2289 or 250-740-3200.

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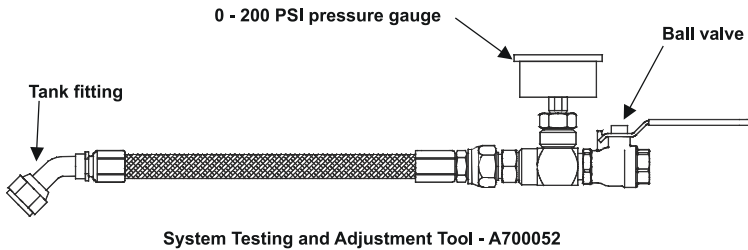
# Part 6: Finishing the Installation

## 6.1 Before Starting the Engine Checklist

- Check the compressor oil level.
- Do a final inspection to make sure that everything has been completed and tightened.
- Perform a final belt alignment check.
- Check all wiring to make sure it is secure and protected.

## 6.2 After Starting Engine Checklist

- Install a test tool (Figure 6.1) on the air tank outlet and close the ball valve.



**Figure 6.1**

- Push the control box “ON” button. Adjust engine speed up to 2550 RPM.



***Always engage air compressor at low RPM.***

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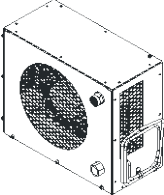
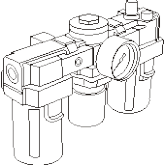
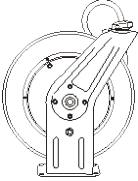
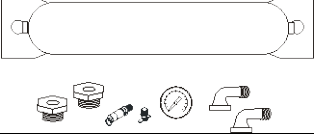
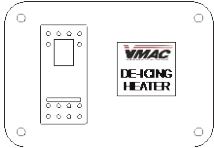
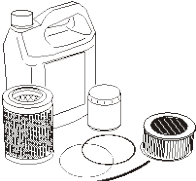
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- Operate the system with an air tool or with the test tool for at least 15min.
- Watch the engine operation to make sure that belts rotate properly and nothing is rubbing or contacting hot parts.
- Check all components once the engine is turned off and the system has cooled.
- Check the compressor oil level after the engine has been shut down and the oil level has had time to stabilize.

# 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.

	<p><b>Eliminator Aftercooler</b> Part Number A800070</p> <p>Removes up to 80% of moisture from compressed air. Quick installation, automatic drain and compact design</p>
	<p><b>Filter Regulator Lubricator</b> Part Number A700151</p> <p>Removes lubricants, water and dirt from the air stream. Adds atomized tool oil to lubricate tools. Reduces pressure for longer tool life.</p>
	<p><b>Hose Reel</b> Part Number A700007</p> <p>Secure, compact, retractable hose storage in a sturdy reel.</p>
	<p><b>Air Receiver Tank</b> Part Number A300010</p> <p>Thirty-five gallon capacity in a compact tank, complete with fittings and a gauge.</p>
	<p><b>De-icer Kit</b> Part Number A700031</p> <p>Insulated rope heater prevents freezing of lines and regulator.</p>
	<p><b>Service Kits</b> VR70 500 hour Part Number A700194 VR70 1000 hour Part Number A700195</p> <p>Using OEM service products will extend the life of your system. Includes oil, filters, seals and O-rings. 500 hour and 1000 hour service interval kits are available</p>

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