



Service Kit Instructions for OEM VR70 Compressor Systems

500 HOUR (6 MONTH) SERVICE KIT A700306

1000 HOUR (1 YEAR) SERVICE KIT A700312

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Additional Application Information

FOR VMAC OEM VR70 COMPRESSOR SYSTEMS

- 500 HOUR (6 MONTH) SERVICE KIT A700306
- 1000 HOUR (1 YEAR) SERVICE KIT A700312

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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 mechanical work. Any grinding, bending or restructuring operations for correct fit in modified vehicles must follow standard shop practices.

Notice

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Safety

Important Safety Notice

The information contained in this manual is based on sound engineering principles, research, extensive field experience and technical information. Information is constantly changing with the addition of new models, assemblies and service techniques. If a discrepancy is noted in this manual, contact VMAC prior to initiating or proceeding with installation, service or repair. Current information may clarify the issue. Any person with knowledge of such discrepancies who performs service and repair assumes all risks.

Only proven service procedures are recommended. Anyone who departs from the specific instructions provided in this manual must first assure that their safety and that of others is not being compromised and that there will be no adverse effects on performance or the operational safety of the equipment.

VMAC will not be held responsible for any liability, consequential damages, injuries, loss or damage to individuals or to equipment as a result of the failure of any person to properly adhere to the procedures set out in this manual or standard safety practices. Safety should be your first consideration in performing service operations. If you have any questions concerning the procedures in this manual or require any more information on details that are not included in this manual, please contact VMAC before beginning repairs.

Safety Messages

This manual contains various warnings, cautions and notices that must be observed to reduce the risk of personal injury during installation, service or repair and the possibility that improper installation, service or repair may damage the equipment or render it unsafe.



This symbol is used to call your attention to instructions concerning your personal safety. Watch for this symbol; it points out important safety precautions, it means, "Attention, become alert! Your personal safety is involved". Read the message that follows and be alert to the possibility of personal injury or death. Be alert; your safety is involved. As it is impossible to warn about every conceivable hazard, let good common sense be your guide.



This symbol is used to call your attention to instructions on a specific procedure that if not followed may damage or reduce the useful life of the compressor or other equipment.



This symbol is used to call your attention to additional instructions or special emphasis on a specific procedure.

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 equipment. Identify variations for different engine models and different situations that are listed in the manual. Open the package, unpack the components and identify them.

Torque Specifications

All fasteners must be torqued to specifications. Use manufacturers' torque values for OEM fasteners. **Apply Loctite 242 (blue) 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	M6	M8	M10	M12	M14	M16
Foot-pounds (ft•lb)	4.5	19	41	69	104	174
Newton meter (N•m)	6	25	55	93	141	236

Table 1 – Torque Table

Ordering Parts

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 1-877-912-6605 or online at www.vmacair.com.

Pre-Service Procedures

Shut down the compressor system. Allow the compressor system to fully depressurize. Allow sufficient time for all components to cool before commencing any servicing.



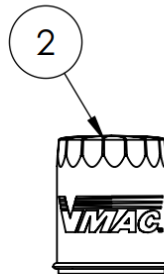
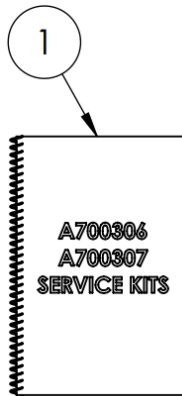
Failure to depressurize the system could cause parts to separate explosively, causing injury or death. A leak of high-pressure oil/air mixture spray can have enough force to penetrate the skin, which could cause serious injury or death.



The compressor and the compressor system get's very hot during operation. Allow the system to cool before attempting service. Contact with hot components or hot oil can cause serious burns.

Parts List for A700306 500 Hr (6 Months) Service Kit

Item No.	Contents Part No.	Quantity	Contents Description
1	1901172	1	MANUAL, A700306/312 SERVICE KIT
2	9200039	1	OIL FILTER, VR 3.250 SHORT
3	A700091	1	OIL, VR, 1L, HIGH PERFORMANCE
4	A700094	1	OIL, VR, 4L, HIGH PERFORMANCE



500 Hour Service Procedures



Confirm that the system is depressurized prior to performing any service work.



Do not use flammable solvents to clean any components. If a flammable solvent has been used, rinse the component thoroughly with water and dry it before reinstalling it to prevent the possibility of explosion.

NOTE

Do not use compressed air or perform any other tasks around the filter and cover until both are replaced. Never clean the filter element with compressed air, as this will allow some contaminants into the compressor system. Always replace the air filter element.

1. Inspect the Drive Belt (If Applicable)

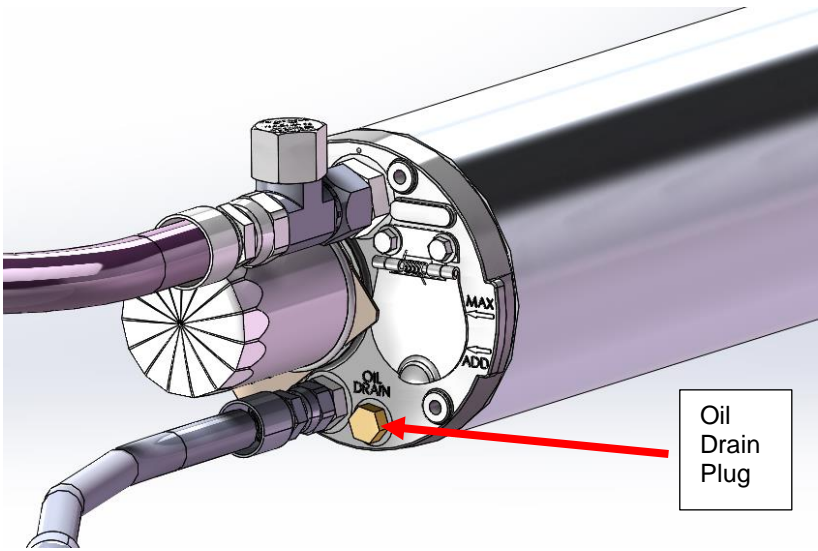
- Check the drive belt carefully for evidence of glazing, missing portions of the ribs or damage to the belt edges and surface. If the belt is damaged, install a new drive belt.
- Inspect all pulleys and idlers for damage. If any component shows cracks, chipping, impact damage or any other indications of physical damage, replace the pulley or idler.
- If the damage indicates possible misalignment, check pulley alignment. If the pulleys are not properly aligned, check all fasteners to ensure they are properly tightened and that there are no loose components.
- Inspect the belt tensioner for any signs of misalignment as this will cause the belt to misalign. Ensure the tensioner has smooth motion throughout its travel and is not binding.

2. Replace the Oil and Oil Filter



Hot oil can cause severe burns.

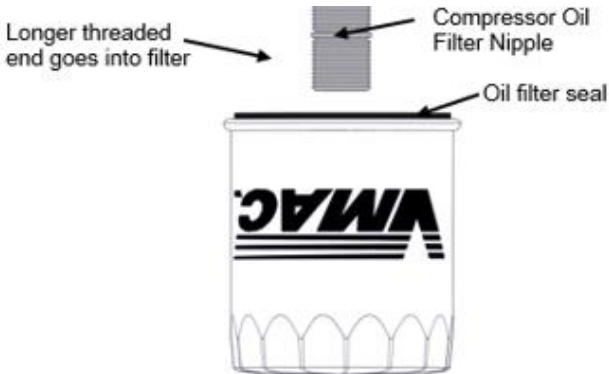
- Clean the area around the tank and the filter to prevent contamination.
- Remove the drain plug and drain the oil into a container large enough to hold the volume of oil in the service kit.



- Re-install and tighten the plug.
- Remove the oil filter by turning it counterclockwise. Before discarding the filter, check to make sure that the threaded nipple did not unscrew with the filter. If the nipple is in the filter, remove it carefully to avoid thread damage and replace it in the tank housing.




Check the filter to ensure that the threaded nipple did not unscrew the filter. If the threaded nipple is in the oil filter, remove it carefully to avoid thread damage, coat the threads that go into the manifold block (shorter threaded end) with a small amount of blue Loctite and install the nipple back into the manifold block.



Compressor Oil Filter

- Check the gasket-sealing surface on the front of the tank for contamination, old gasket material or damage and clean if necessary.

	Ensure the new filter is a VMAC filter, part number 9200039. This oil filter is a high-pressure oil filter, not an automotive oil filter, which will rupture under high pressure.
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- Apply a thin coating of compressor oil to the filter-sealing gasket and add some VMAC compressor oil to the filter.
- Spin the filter onto the threaded nipple until the gasket contacts the sealing surface on the tank, then tighten the filter an additional 3/4 to 1 turn to seat the sealing gasket.



Never over-tighten the filter, as this may damage the seal or filter.

3. Inspect the Hoses

- Inspect all hoses for any sign of wear or leaks.
- Check with supplier or VMAC Technical Support for replacement hose part numbers.

4. Checking the Compressor Oil Level



Only check the oil level when engine is off, and the air system is cool and depressurized.



Oil
Sight
Glass

Checking the Oil Level at the Sight Glass

The compressor system is a closed system. After draining oil, there will be residual oil in various components of the system. Use caution when re-filling the system with oil to ensure that the oil level does not exceed the high mark indicated on the sight glass. Overfilling could lead to oil going downstream into equipment. Start with 4 liters and waiting a few minutes for the oil to settle.



- Check the oil level again after the filter has been changed and it has been run until the operating temperature has been reached. Shut off the engine. Allow the compressor system to depressurize and all system components to cool. Ensure the system is fully depressurized and check the oil level in the air oil separator tank using the oil sight glass.

5. Adding Compressor Oil



VMAC VR high performance synthetic oil *MUST* be used. Failure to use this special oil may result in damage to the compressor and may void the warranty.

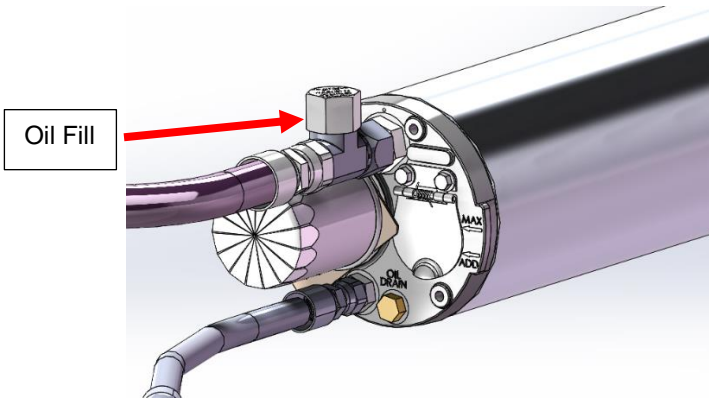
Adding oil to the Air Oil Separator Tank



5 liters of oil is required for servicing. The air compressor system holds 6 Liters of oil which includes enough to fill the oil filter.



Compressor oil is corrosive to rubber, ensure a fluorocarbon (FKM / Viton) type O-ring is used, (contact VMAC at (888) 241-2289 or tech@vmacair.com for more information.

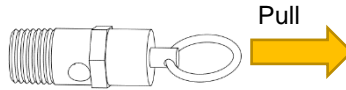


6. Completing the Service

- Start the engine and allow it to reach operating temperature.
- Turn the compressor switch on the control unit to the “ON” position and allow the system to pressurize.
- Run the system for 2 minutes in a closed loop (not using any air).
- Turn the compressor switch on the control unit to the “OFF” position.
- Turn the engine off and allow the system to settle for 5 minutes. **Ensure the system is completely depressurized**, use the sight glass and check the oil level. The level must be between the high and low markings on the sight glass. If not, add/remove oil as required to reach the correct level.
- Check all hoses and components for oil leaks.

7. Inspect the Pressure Relief Valve

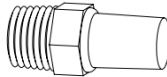
- Check the pressure relief valve for evidence of corrosion or loss of functionality. Test the pressure relief valve by pulling the ring on the pressure relief valve to ensure it is not seized. It should pull out and spring back. Confirm that it holds pressure once this test is completed. If the pressure relief valve does not pull out / spring back, or air leaks past the valve, contact your local authorized VMAC dealer for a replacement part.



Pressure relief valve

8. Inspect the Muffler

- Visually inspect the blowdown muffler for evidence of corrosion or blockages. Ensure the muffler allows the blowdown to function.
- Allow the system to build to full pressure. Turn off the compressor and listen for the pressurized air to blowdown through the muffler. The AOST should blow down in 30 - 40 seconds.



Blowdown muffler



If the blowdown time is longer than listed above, or the muffler is showing signs of blockage, contact an authorized VMAC dealer for a replacement.



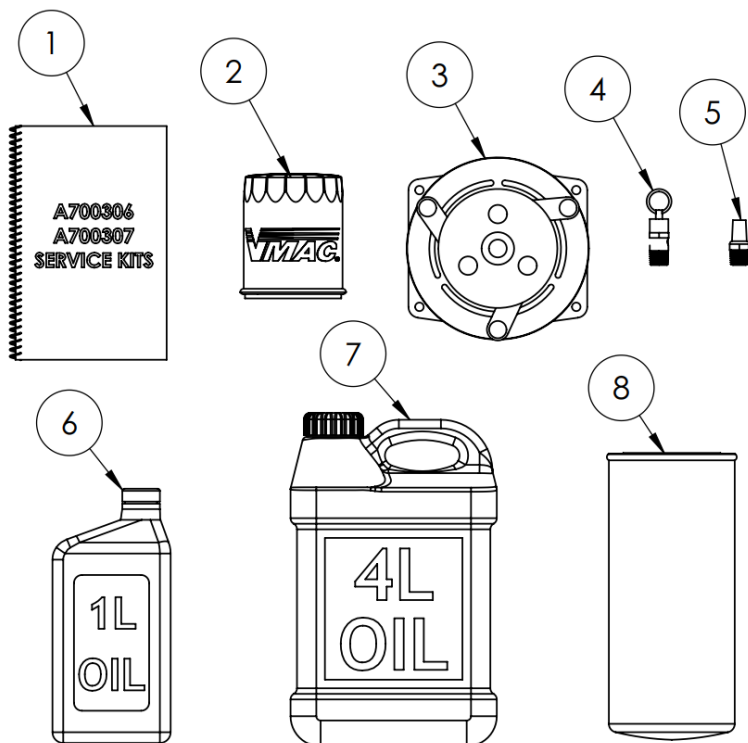
If the blowdown muffler is venting a lot of air while the compressor is running, ensure the scavenge line is not kinked, collapsed or blocked.



It is normal for a tiny amount of air to bleed out of the blowdown muffler when the system is running and the blowdown is working correctly.

Parts List for A700312 1000 Hr (1 Year) Service Kit

Item No.	Contents Part No.	Quantity	Contents Description
1	1901172	1	MANUAL, A700306/312 SERVICE KIT
2	9200039	1	OIL FILTER, VR 3.250 SHORT
3	P200056	1	CLUTCH, COMPLETE, 8 GROOVE, 5.12
4	3600054	1	VALVE, SAFETY 200 PSI
5	4500105	1	MUFFLER, SINTERED EXHAUST, 1/4"
6	A700091	1	OIL, VR, 1L, HIGH PERFORMANCE
7	A700094	1	OIL, VR, 4L, HIGH PERFORMANCE
8	3600079	1	OIL SEPARATOR, SPIN-ON



VMAC – Vehicle Mounted Air Compressors

VMAC Technical Support: 888-241-2289

VMAC Knowledge Base: <http://kb.vmacair.com>

1000 Hour Service Procedures



Confirm that the system is depressurized prior to performing any service work.



Do not use flammable solvents to clean any components. If a flammable solvent has been used, rinse the component thoroughly with water and dry it before reinstalling it to prevent the possibility of explosion.

1. General Service

Follow the procedures for the 500-hour service instructions for draining the oil and replacing the oil filter. Refer to pages 7-14 of this manual.

2. Changing the Coalescing Separator Element

If the system has been operating, turn off the compressor and engine, and wait for at least one minute to allow the system to depressurize before performing service. As in the 500-hour service instruction make sure the system has cooled down before starting this procedure.

- Clean the area around the manifold block and the filter to prevent contamination
- Using a suitable filter wrench, remove the filter by turning it counterclockwise. ***On some applications, it may be necessary to unbolt the manifold assembly to give sufficient clearance to remove the filter.***



Do not use a screwdriver punched into the side of the coalescing filter, this can damage the scavenging tube and screen.

Use caution when removing the filter, to avoid catching the scavenge screen orifice, (which is part of the bottom fitting of the scavenge tube) on the lip of the coalescing filter. The scavenge screen orifice is attached to the scavenge tube by a “push to connect” fitting. If the fitting has detached from the tube, re-insert the tube into the fitting, ensuring that the tube is fully engaged.

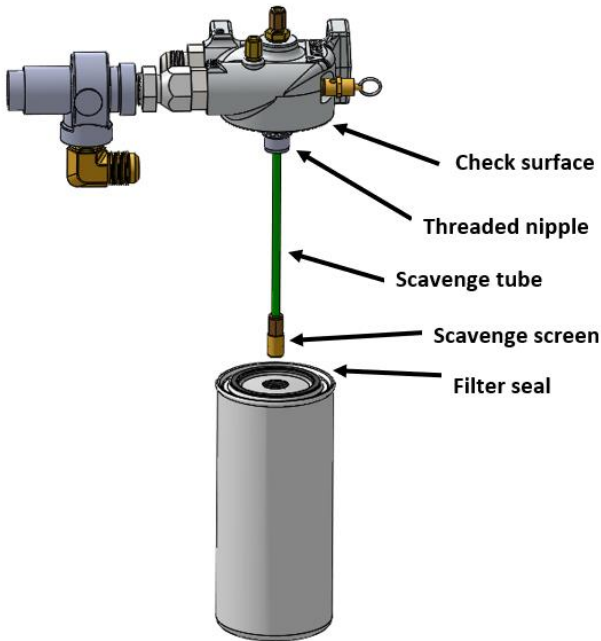


Ensure the new filter is a VMAC filter, part number 3600079. This is a high-pressure filter. Use of other filters not rated to the required pressure may cause the filter to rupture.

- Check the gasket-sealing surface of the manifold block for contamination, old gasket material or damage and clean if necessary.



Check the filter to ensure that the threaded nipple did not unscrew with the filter. If it is in the filter, remove it carefully (to avoid thread damage), coat the threads that go into the manifold block (shorter threaded end) with a small amount of Loctite blue and install it into the manifold block (Figure 15).



Coalescing filter

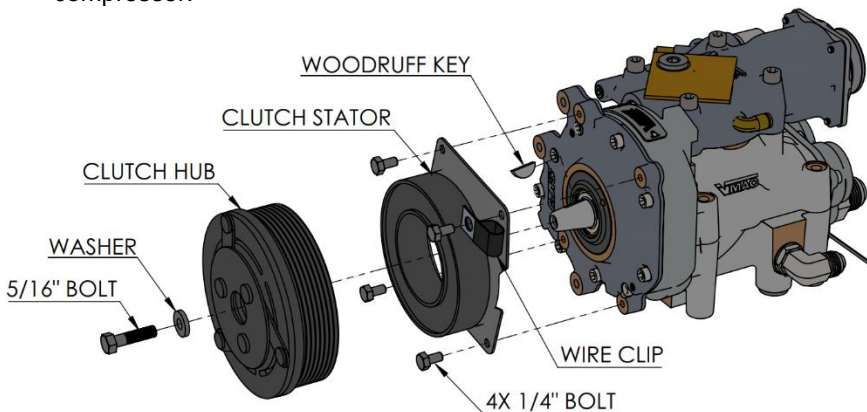
- Apply a thin coating of compressor oil to the coalescing filter sealing gasket and coat the end of the threaded nipple, as there is also an O-ring inside the coalescing filter.
- Spin the filter onto the threaded nipple until the gasket contacts the sealing surface on the tank, then tighten the filter an additional 3/4 to 1 turn to seat the sealing gasket



Never over-tighten the filter, as this may damage the seal or filter.

3. Replacing the Clutch

- Ensure power to the system is disconnected, disconnect the clutch wire, and remove the drive belt.
- Remove the central hub's 5/16" bolt and washer and set aside for re-use. Remove the hub from the clutch; if the hub is not easily removable, thread a 5/8" NC bolt into the hub and lightly tap with a hammer to dislodge it. Clean and retain the woodruff key for re-use.
- Remove the four 1/4" bolts that mount the stator onto the compressor and the wire clip and set aside for re-use. Remove the stator from the compressor.



Clutch replacement

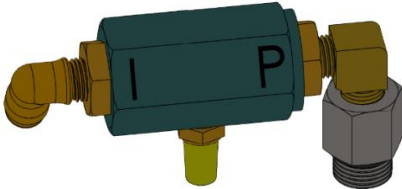
- Clean the mounting surface on the compressor and mount the new stator using the four 1/4" bolts, ensure the wire clip is in a suitable position before tightening. Ensure the bolts are clean and 242 blue Loctite is applied. Torque the bolts to 12 ft-lb.
- Clean the tapered shaft and insert the woodruff key. Install the clutch hub over the compressor shaft. Make sure the clutch rotates free without rubbing on the stator.
- Install the 5/16" bolt and washer and torque to 18 ft-lb. Ensure the bolt and washer are clean and apply 242 blue Loctite to the bolt threads.
- Reconnect the clutch wire and re-install the drive belt over the clutch.

4. Replacing the Pressure Relief Valve

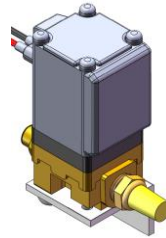
- Clean the area around the pressure relief valve. The pressure relief valve is located on the coalescer filter manifold.
- Remove the old pressure relief valve.
- Apply Loctite 567 and install the new pressure relief valve and tighten securely. Do not over torque.

5. Replacing the Blowdown Muffler

- Clean the area around the blowdown muffler. The muffler can either be tied to a pneumatically actuated blowdown on the compressor or to an electronically controlled solenoid at a remote location depending on the system configuration.
- Remove the old muffler.
- Apply Loctite 567 and install the new muffler and tighten securely. Do not over torque.



Pneumatically Actuated Blowdown



Remote Solenoid Blowdown

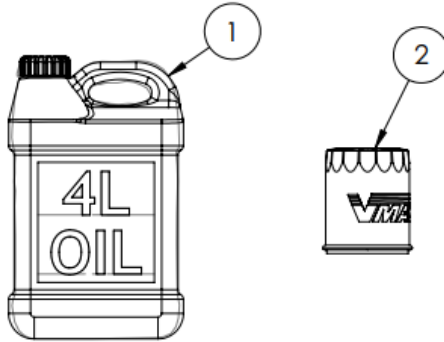
6. Completing the Service

- Start the engine and allow it to reach operating temperature.
- Turn the compressor switch on the control unit to the “ON” position and allow the system to pressurize.
- Run the system for 2 minutes in a closed loop (not using any air).
- Turn the compressor switch on the control unit to the “OFF” position.
- Turn the engine off and allow the system to settle for 5 minutes. Ensure the system is completely depressurized, then use the sight glass and check the oil level. The level must be between the high and low markings on the sight glass. If not, add/remove oil as required to reach the correct level.
- Check all hoses and components for oil leaks.



Flushing Procedure

Parts required: A700214

Item	QTY	Part #	Description
1	1	A700094	OIL, VR, 4L, HIGH PERFORMANCE
2	2	9200039	OIL FILTER, VR 3.250 SHORT



***Must be ordered with 500-hour (6 month)
Service kit A700306**

	<i>Confirm that the system is depressurized prior to performing any service work.</i>
	<i>Component failure (compressor, hose or cooler core) can leave metal filings and other foreign material in the system. This foreign material can damage the new compressor if not flushed from the system.</i>

To flush the system, follow this procedure:



Before replacing any failed component, check all other system components for evidence of contamination and clean thoroughly.

- Drain the oil into a clean bucket and look for evidence of metal or other foreign material. Tip the unit to ensure maximum oil drainage.
- Use low pressure compressed air to blow out lines and other components.
- Remove the oil filter and drain the oil from the filter into a clean bucket. Look for evidence of metal or other foreign material. If there is no metal in the oil and no metal visible in the filter, then you can skip the next 2 steps to flush the oil cooler.
- If there is metal in the oil or oil filter, look for metal in the return line to the compressor. If metal is found anywhere, the cooler as well as the lines between the compressor, cooler and air oil separator tank (AOST) must be flushed or replaced before the new compressor is installed.
- To flush the cooler, remove it from the equipment (or OEM system) and wash the cooler thoroughly in a solvent bath to remove all contaminants. Use low pressure compressed air to dry.
- Once the system has been cleaned as thoroughly as possible, replace the failed component and reconnect all lines and fittings.
- Install a new oil filter and add 4 L (1 USG) of VMAC compressor oil to the system.
- Start the engine and engage the air system. Allow the system to pressurize to maximum pressure (Factory default: 150 psi) and allow it to operate with the ball valve closed (without discharging any air) for about 5 minutes.
- Shut-down the compressor and allow the system to cool.
- Confirm that the system has depressurized.
- Change the oil and the oil filter. Refill to the correct level with VMAC compressor oil.
- After 50 hours, replace the oil filter and top up the oil level with VMAC compressor oil.

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Manufactured by



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