



Service Kit Instructions for OEM VR70 Compressor Systems

*500 HOUR (6 MONTH) SERVICE KIT A700295
1000 HOUR (1 YEAR) SERVICE KIT A700296*

www.vmacair.com

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Additional Application Information

FOR VMAC OEM VR70 COMPRESSOR SYSTEMS

- 500 HOUR (6 MONTH) SERVICE KIT A700295
- 1000 HOUR (1 YEAR) SERVICE KIT A700296

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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.



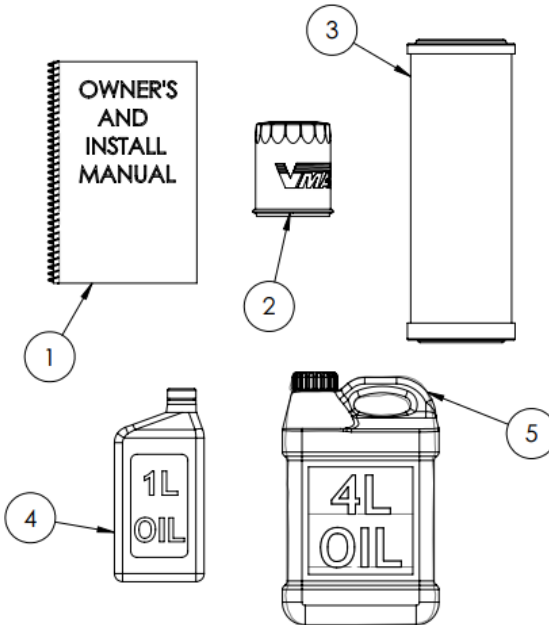
The compressor and the compressor system get's very hot during operation. Allow the system to cool before attempting service. Contact with hot components or hot oil can cause serious burns.

Parts List

A700295 500 HR (6 MONTHS)

Service Kit

Item No.	Contents Part No.	Quantity	Contents Description
1	1930442	1	Instructions / IPL
2	9200039	1	Oil Filter
3	2100107	1	Air Filter, Element
4	A700091	1	VR High Performance Oil – 1L
5	A700094	1	VR High Performance Oil – 4L



500 Hour Service Procedures

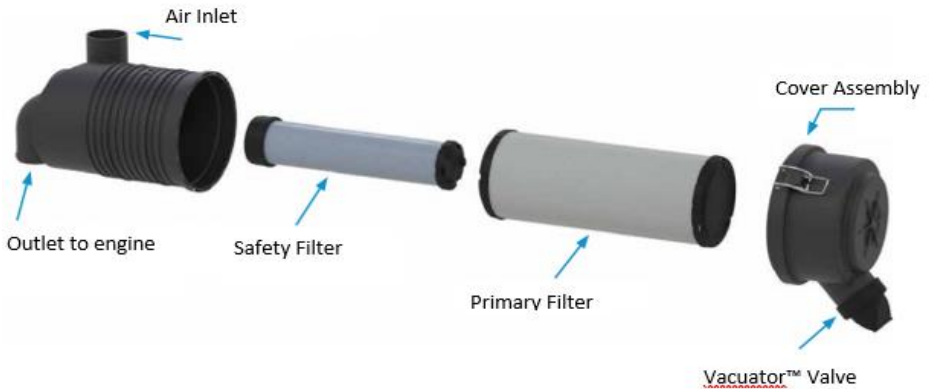
1. Inspect the Drive Belt

- 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 that they are properly tightened and that there are no loose components.

2. Replace the Air Filter

Located above the separator tank.





- Clean out the Vacuator™ valve. If your air cleaner is equipped with a Vacuator™ Valve, visually check and physically squeeze it. Make sure the valve is flexible and not inverted, damaged or plugged.
- Remove the air filter cover assembly retaining clamps and the cover.
- Remove the primary filter element from the air cleaner housing.
- Immediately cover the air inlet opening by masking with tape or with a clean cloth to prevent contamination entering the intake hose and compressor. If the Donaldson safety filter is present, then this will prevent contamination entering the intake hose.
- If your air cleaner has a safety filter, visually check it while in place for signs of damage. Do not remove the safety filter unless it is damaged or due for replacement. Also verify that the safety filter is properly seated in the housing. The safety filter should be replaced every three primary filter changes. Use a clean damp cloth to wipe both the filter sealing surface and the inside of the outlet tube. Ensure that the outlet tube sealing area is undamaged. Contaminant on the sealing surface could hinder an effective seal and cause leakage. If the safety filter is to be replaced, avoid leaving the outlet tube exposed to the air. If there is to be a delay in installing the new safety filter, cover the air cleaner outlet tube to avoid admitting any foreign debris.
- Inspect the old filter for any signs of leaks. A streak of dust on the clean side of the filter is a telltale sign. Eliminate any source of air leaks before installing the new primary filter
- Inspect the new filter for any damage that may have occurred through mishandling. NEVER install a damaged filter. Visually check the inside of the open end, which is the sealing area. Do not wipe the filter RadialSeal™ sealing area. Donaldson RadialSeal™ filters have an invisible dry lubricant on the seal to aid installation.

- First, if you are servicing the safety filter at this change-out, seat it properly into position before installing the primary filter. Insert new filters carefully. Seat the primary filter by hand, making certain it is inserted completely into the air cleaner housing. To complete a tight seal, apply pressure by hand at the outer rim of the filter, not the flexible center. No cover pressure is required to hold the seal in place, and you should NEVER use the service cover to apply pressure. This could damage the housing and fasteners and void the warranty. If the service cover presses against the filter before the cover is fully in place, remove the cover. With the cover off, push the filter farther into the air cleaner by hand and then the cover will go on with no extra force. Once the filter is in place, secure the service cover.



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.

- Clean the inside of the filter cover with a clean, dry cloth.



Do not use flammable solvents to clean the inside of the cover. If a solvent has been used rinse the cover thoroughly with water and dry it before installing the cover. Fire in the compressor can cause an explosion.

- Remove the cloth (if used) from the air cleaner housing.
- Place the filter into the air cleaner housing and secure the cover with the retaining clamps.
- Make sure service indicators are reset and in proper working order. Check that all mounting bands, clamps, bolts, and connections in the entire air cleaner system are tight. Check for holes in piping and repair or replace as needed. Any leaks in the intake piping will admit dust directly to the engine and may damage the compressor. Reset the filter service indicator if present on your system.



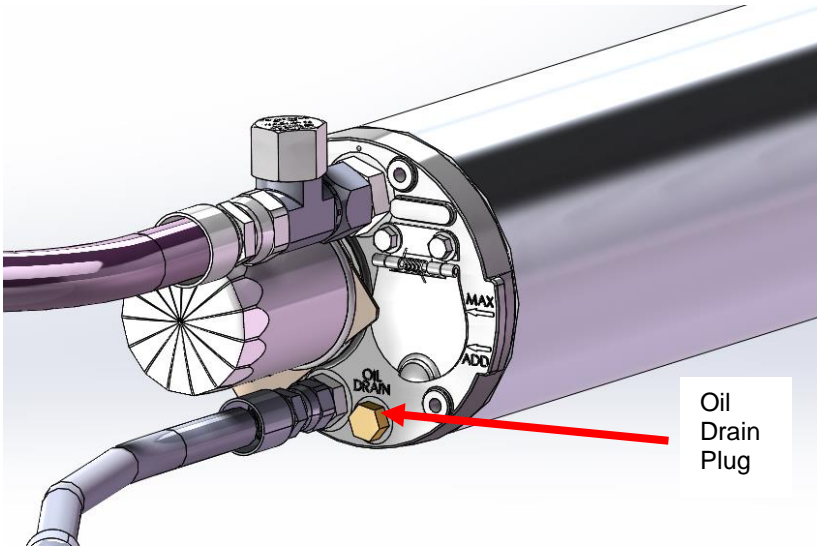
Make sure the new filter is a VMAC filter, part number 2100107.

3. Replace the Oil and Oil Filter



Hot oil can cause severe burns.

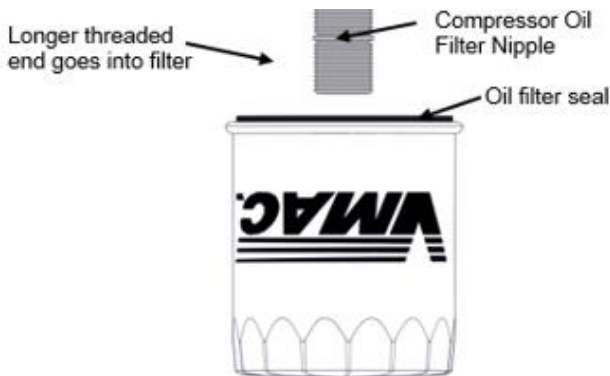
- Clean the area around the tank and the filter to prevent contamination.
- Remove the drain plug and drain the oil into a container large enough to hold the volume of oil in the service kit.



- 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 air 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.

- 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.

4. Inspect hoses

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

5. 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 and reached operating temperature. 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.

6. 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.

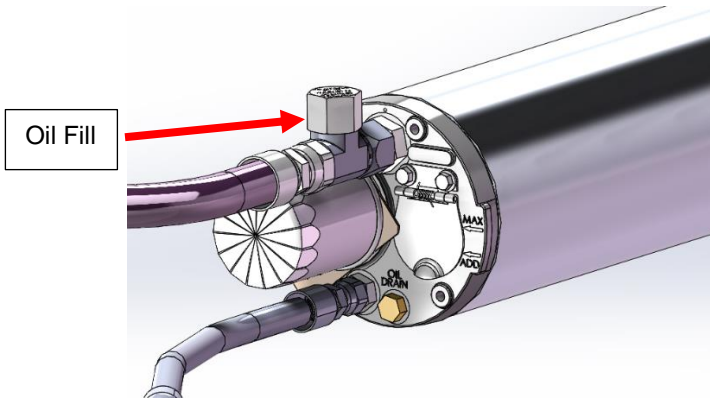
Adding oil to the Air Oil Separator Tank



4-5 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.



7. Completing the Service

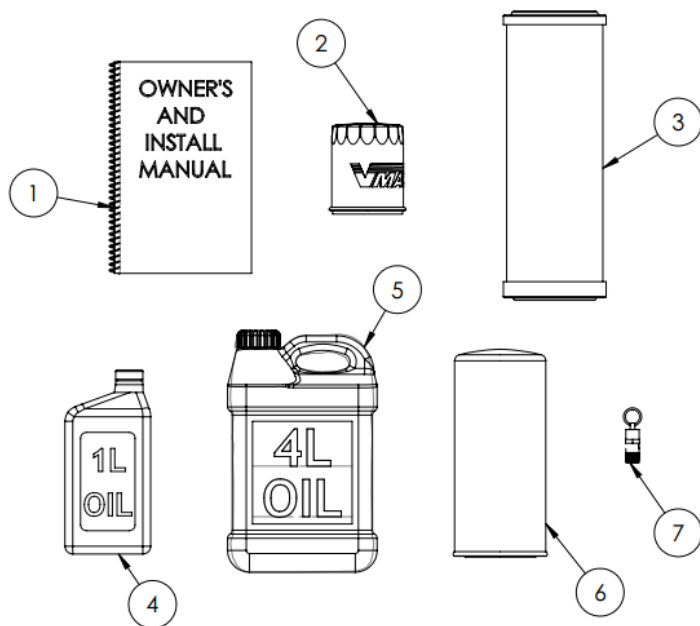
- Start the engine and allow it to reach operating temperature.
- Turn the compressor switch on the control unit to the “ON” position and allow the system to pressurize.
- Run the system for 2 minutes in a closed loop (not using any air).
- Turn the compressor switch on the control unit to the “OFF” 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.

Parts List

A700296 1000 HR (1 YEAR)

Service Kit

Item No.	Contents Part No.	Quantity	Contents Description
1	1930442	1	Instructions / IPL
2	9200039	1	Oil Filter
3	2100107	1	Air Filter, Element
4	A700091	1	VR High Performance Oil – 1L
5	A700094	1	VR High Performance Oil – 4L
6	3600079	1	Spin-on Oil Separator
7	3600054	1	Valve, safety, 200psi



1000 Hour Service Procedures



Before beginning any services, you must ensure there is no pressure left in the system. Open the discharge on the unit to release any air in the system. You can also pull the pressure relief valve ring, located on the Air Oil Separator Tank to confirm that the pressure has been released.

1. General Service

Follow the procedures for the 500-hour service instructions for replacing the air filter, 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.

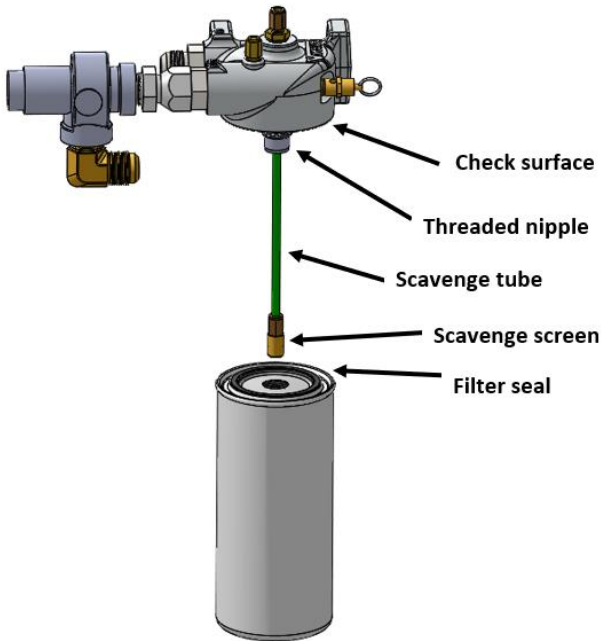


Ensure the new filter is a VMAC filter, part number 3600079. This is a high-pressure filter. Use of other filters not rated to the required pressure may cause the filter to rupture.

- 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. Inspect the Pressure Relief Valve

- Check the pressure relief valve for evidence of corrosion or loss of functionality. To test the pressure relief valve, pull on the ring on top of the 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, replace with included 200psi pressure relief valve.

4. 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.

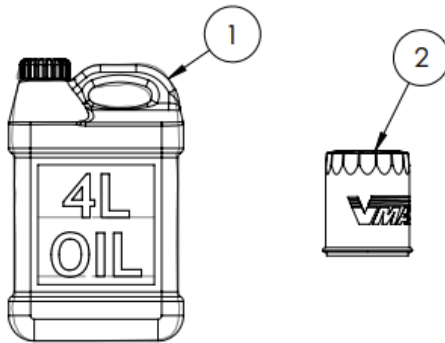
Flushing Procedure

Component failure (compressor, hose or cooler core) can leave metal filings and other foreign material in the system. This foreign material can damage the compressor if not flushed from the system.

To flush the system, follow this 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 A700295



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

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.

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 15 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.

Manufactured by



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