





Sales Rep Service Information Sheet

VMAC rotary screw compressor systems are designed and machined to exacting tolerances. They are unique in that they contain no reed-valves or other easily fouled, fatigue-prone components. However, proper maintenance is needed to ensure performance and longevity of the compressors and can reduce the need for premature repair or component replacement.

System filters also enhance performance and extend component life by reducing damage from dust and other debris. Foreign particles entering the system will drastically damage or shorten the life expectancy of the compressor and will result in damage to bearings, gears, rotors and the inside of the housing.

The following maintenance schedule should be observed to assure good performance and long service life. The hours indicated are those displayed on the Compressor Control Panel. Service interval should be whichever occurs sooner (e.g., 200 hours of operation or 6 months)

UNDERHOOD Maintenance Schedule

50 hours: Check the drive belt

200 hours or 6 months: Replace the air filter, oil filter and change oil. Use service kit #A700019 (VR70) #A700059 (VR140)

400 hours or 1 year: Replace the air filter, oil filter, coalescing element and change oil. Use service kit #A700020 (VR70) #A700060 (VR140)

PREDATAIR Maintenance Schedule

PREDATAIR (H600001)

200 hours or 6 months: Replace the air filter, oil filter and change oil

PREDATAIR (H600002 and H400001)

500 hours or every 6 months

In addition to regular servicing, be sure to check the compressor's air filter frequently to ensure that it is not restricted or damaged. Proper filter maintenance is also key to long compressor life. Regular, scheduled maintenance includes:

- inspecting the air cleaner and maintaining the oil level
- more frequent service in severe operating conditions



Service Tips

- Never run the compressor, drive the vehicle or even allow the vehicle to sit parked without the recommended air filter and filter cover installed.
- Always use a VMAC oil filter which is designed to withstand the high pressures, not an automotive filter.
- Operate the system at least every 30 days for 15 minutes at no load to ensure bearing lubrication and rotation. Impact damage and premature bearing failure may occur in the compressor bearings if the system is not operated on a regular basis due to vibration caused by truck operation.
- Never attempt to clean the filter element with compressed air. Replace the filter element.
- Do not attempt to change the oil filter until the oil has cooled. Hot oil can cause severe burns.
- Never over-tighten the filter, as this may damage the seal or the filter.
- Use only the supplied compressor oil in this system. Failure to use this special oil will result in damage to the compressor and will void your warranty.
- Do not overfill the system. Overfilling the system with oil can flood the sight glass window and make the system appear empty.
- If you use solvents for cleaning, thoroughly rinse the parts with hot water to remove all solvent residues.
- Check the inside of the tank for any evidence of metal filings or contamination; if found, flush the tank, hoses and cooler. Metal filings will damage the compressor.



Maintaining VR70 and VR140 UNDERHOOD Air Compressors



Maintaining the VR System

Organized maintenance practices will increase the life expectancy of the compressor system and maintain operation within the manufactured parameters. VMAC has recommended service intervals for their system that is based on actual testing and performance. The VR system requires regular maintenance that includes:

- inspecting and replacing the drive belt
- changing system oil
- changing filters
- cleaning filter screens

During the warranty period you must follow the maintenance schedule and only use original VMAC replacement parts to maintain the system and the warranty. Periodic maintenance service kits are available from VMAC.

The most critical aspect of compressor operation is proper air filtration. Contamination entering the intake can cause severe, rapid damage to roller bearings, gears and rotors in the compressor. Never operate the truck, the compressor or even allow the truck to remain parked without the recommended air filter and cover installed on the compressor.

Performing a pre-service inspection

Inspect the system carefully and check the following:

- look for leaks at the compressor, cooler, tank, filter and line fittings
- check the compressor and bracket to make sure that they are tight and secure
- check the cooler to make sure that it is tight and secure
- check the tank brackets and tank mounting to make sure that they are not loose
- check all fasteners for evidence of motion or vibration loosening
- examine all the lines for evidence of rubbing, chafing or other environmental damage
- using the appropriate tools, check all the line fittings to make sure that they are tight
- check electrical connections for security

- check all wiring for security and damage
- check the control units to make sure that they are secure

If you discover any problems, perform the necessary repairs to prevent further damage. Protect all wiring, lines, connections and fittings as required. Tighten any loose fasteners and replace any damaged fasteners or components.



Periodic Maintenance

The maintenance schedule for the system is shown in the following table. The hours shown on the table are those displayed on the control panel read-out. Service should be performed at the lesser of the two intervals, whichever occurs first. Following this procedure will ensure optimum performance and long life from the VR system.

PROCEDURE	SERVICE INTERVAL
Inspect the drive belt	50 hours or 6 months
Replace the air filter, oil filter and change oil	200 hours or 6 months
Replace coalescing separator element and scavenge screen filter	400 hours or 1 year

These service intervals are based on normal operation. Common sense and good maintenance practices will indicate whether these procedures should occur more frequently. For example, if the truck is continuously operating in an extremely dusty environment, the air filter and belt should be inspected more frequently. Since the compressor draws in large quantities of air during operation, the filter may become plugged and will affect operation.

Inspecting the Drive Belt

Periodic inspection of the drive belt is necessary to identify potential problems before they cause failure or damage. While VMAC recommends a 50 hour interval, if the operating environment is severe, you should inspect the belt more frequently.

Check the belt carefully for signs of glazing, missing portions of the ribs or damage to the edges or surface. If there is damage, it may indicate a problem with pulley alignment or improper use by the operator. Installing a new belt will not correct the problem, it will just result in damage to the new belt. A belt that is heat-damaged indicates that the belt is slipping on the compressor or crankshaft pulleys. This may be caused by a defective tensioner or by the operator engaging the compressor while there is pressure in the system. This can cause the compressor clutch to stall and the belt will slip. If the tensioner is applying sufficient pressure and is maintaining belt tension correctly, talk to the operator and find out how they are using the system. Inspect the idlers, pulleys and tensioner for damage. Any component that shows chips, cracks or other physical damage should be replaced.

If the belt is damaged or worn along the edges, it could indicate an alignment problem. If this occurs, check the alignment of all pulleys, idlers and tensioners with a straight edge. If there is an alignment problem, check all system fasteners to make sure that they are tight. Also check for cracking or damage on the mounting bracket and at the compressor.



Inspecting and Replacing the Air Filter

Proper air flow into the compressor is vitally important for good performance. If the filter becomes plugged, the compressor will not be able to meet the demands and will probably overheat. While VMAC recommends that you replace the filter every 200 operating hours or twice a year, you should replace the filter more frequently in severe operating conditions, where it could become contaminated more quickly.

To check the filter, follow this procedure:

1. Make sure that all air pressure has been vented from the system.
2. Clean the area around the compressor and filter cover.
3. Remove the filter cover retaining nut, the cover and the filter element.
4. Immediately cover the opening of the compressor with a clean, dry cloth or with masking to prevent contamination from entering the compressor. Do not operate the truck or the compressor until the filter and cover have been installed.
5. Clean the inside of the filter cover with a clean, dry cloth. If necessary, you can use solvent to clean the inside of the cover. If you use solvent, make sure that you rinse the cover with water and dry it thoroughly before installing it on the compressor. Solvent fumes entering the compressor could ignite during the compression process, causing an explosion.
6. Examine the filter carefully for contamination. Place a trouble-light on the inside of the filter and rotate it over the light while examining the element. The amount of light that shines through the element is a good indicator of how much air can pass through the element. If the light is dim or blocked, air will not be able to get through.
7. If the filter is dirty, remove the cloth or masking and install a new filter. Do not attempt to wash or blow the filter element clean. These are not serviceable filters, they must be replaced. Using compressed air to clean a filter element will damage the material and allow contamination to enter the system.
8. Replace the cover and the cover nut. Be careful not to overtighten the nut.



Complete Maintenance of the VR System

Complete system maintenance should be performed once each year or every 400 system operating hours, whichever occurs first. Again, as with previous service items, you may have to service more frequently in severe operating conditions.

Complete maintenance not only includes replacing oil and filters, it also includes a complete inspection of the system. This will ensure that the system continues to provide optimum performance and will extend the life expectancy of the components.

For best results, follow these steps for servicing:

1. Perform a complete pre-service inspection of the system.
2. Replace the air filter
3. Drain the oil from the system
4. Replace the oil filter
5. Replace the coalescing separator and clean or replace the scavenge filter
6. Fill the system with oil and check operation

Replacing the Air Filter

Follow the procedures outlined previously for air filter replacement.

Draining Oil from the System

The oil should be drained from the system before changing filters or cleaning the scavenge filter. Make sure that you have a suitable container that will hold approximately 2 gallons (US) before you begin.

When draining the oil, follow this procedure:

1. Make sure that all air pressure is vented from the system. If there is any pressure in the system, you could be injured when you remove the drain plug.
2. Place the drain container under the tank below the drain plug.
3. Using the correct tool, remove the drain plug from the tank. Be careful when draining the tank. If the system was operated recently, the oil may be very hot and can cause burns.
4. Clean the drain plug threads and inspect them for damage.
5. Clean and inspect the threads in the tank.
6. Install and tighten the drain plug securely.

Replacing the Oil Filter

Clean lubricating oil is vital for efficient operation and for preventing damage to components. Replacing the oil filter at regular intervals will help keep contaminants out of the compressor and the rest of the system. When replacing the oil filter, remember to:

- make sure that there is no pressure in the system
- use a proper filter wrench
- never over-tighten the filter
- check the oil level after operating the system
- check for oil leaks after service

To replace the oil filter, follow this procedure:

1. Clean the area around the filter to prevent contamination.
2. Remove the filter by turning it counter-clockwise. Make sure that you drain the oil from the filter into a suitable container and dispose of the filter and oil according to local regulations. Before you dispose of the filter, check to make sure that the threaded nipple did not unscrew with the filter. If the nipple is in the filter rather than in the compressor, tank or remote mount, remove it carefully to prevent thread damage and replace it in its original location.
3. Check the sealing surface on the compressor, tank or remote mount to make sure that it is clean and smooth.
4. Apply a light coating of compressor oil to the gasket on the new filter.
5. Spin the filter on the threaded nipple until the gasket contacts the seat.
6. Tighten the filter an additional $\frac{3}{4}$ to 1 full turn to provide a good seal.

Replacing the Coalescing Separator and Scavenge Filter

To perform this part of the service, you must remove the back cover on the tank. Before attempting to replace the coalescing separator and scavenge filter, always make sure of the following:

- there is no pressure in the system
- the oil has been drained from the tank
- the back of the tank has been cleaned to prevent contamination
- be careful of hot oil

When these conditions have been met, follow this procedure:

1. Clean the back of the tank to prevent contamination.
2. Disconnect the air outlet line, 1/4 inch and 5/16 inch lines from the back of the tank.
3. Remove the bolts holding the discharge cap from the back of the tank and remove the cap and small spring, if equipped.



To prevent damage to the tank, remove all of the bolts completely while holding the discharge cap firmly in place as the coalescing separator element is springloaded against the discharge cap.

4. Remove the coalescing separator element, large spring (and on the VR140, the spring plate) from inside the tank. Discard the coalescing separator element.
5. Remove and discard the O-ring seal and the rear cap seal.
6. Wipe out the inside of the tank

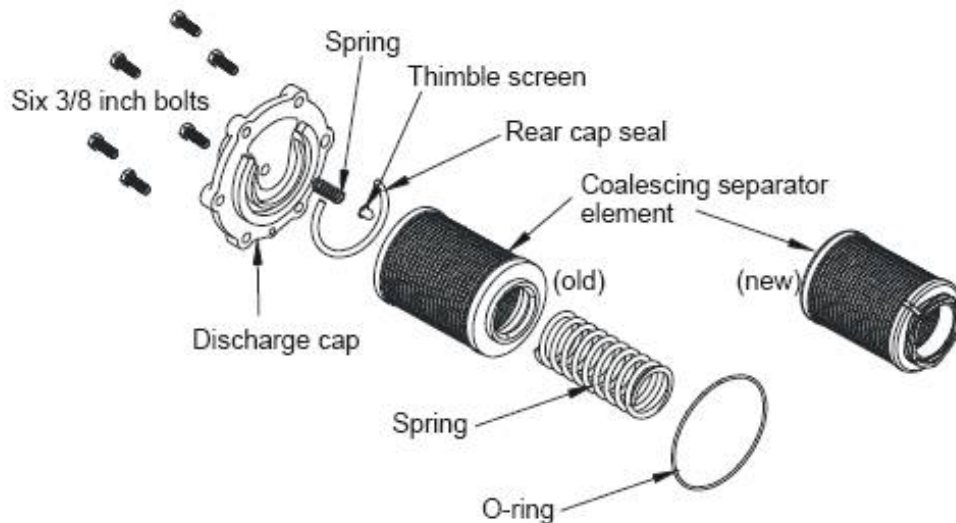


Figure 6.1 Typical VR70 System

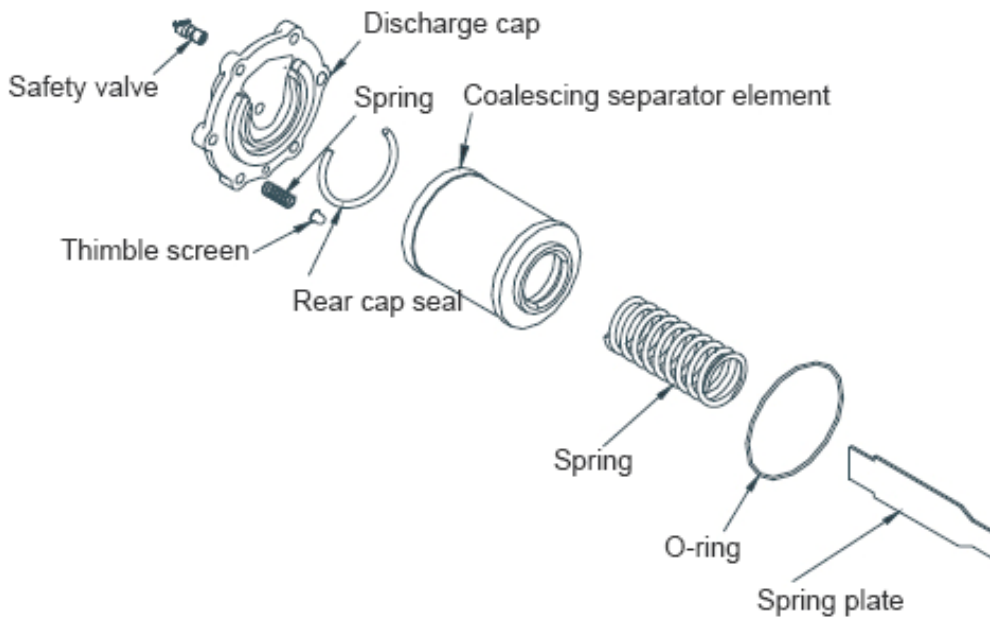


Figure 6.2 Typical VR140 System

7. If the tank has a small spring and thimble screen, the screen can be removed by carefully pushing it out of the oil scavenge hole from the inside of the tank.
8. If the system does not have a small spring, the scavenge screen will be located inside the tank coalescing chamber and is retained by a small screw.
9. Check the thimble screen or scavenge screen for contamination or damage. If contaminated, clean as necessary and blow out with compressed air. If damaged, replace the thimble screen or scavenge screen.

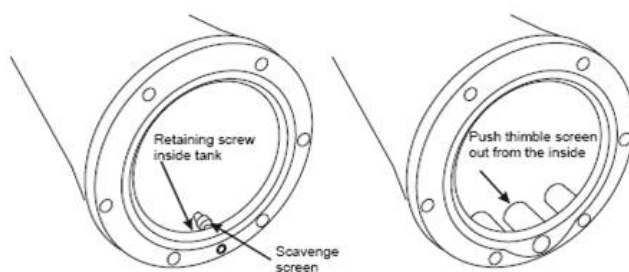


Figure 6.3 Scavenge Filter and Thimble Screen



If you use solvents for cleaning, thoroughly rinse the parts with hot water to remove all solvent residues.

10. Install new O-rings (including the small O-ring for tanks with the internal scavenge screen) and rear cap seal.
11. Thoroughly clean the large spring and the spring plate on VR140 systems. Remove any rust or contaminants.
12. Install the large spring (with spring plate on 140 systems – tapered end away from the filter) and a new coalescing separator element. Make sure that the spring is in place, as it holds the coalescing separator element tight against the rear cap seal.



The large spring also prevents electrostatic buildup by grounding the coalescing separator element. If the spring is not installed, an electric arc may occur, which could result in an explosion, potential tank rupture or fire.



The coalescing separator element service kit may include a wave-type spring (Figure 6.1). Replace the large coil spring with the wave spring and discard the coil spring.

13. Install the discharge cap and torque the bolts to specifications.
14. Install the lines on the back of the tank.
15. Remove the filler plug from the air inlet control valve.



16. Pour compressor oil into the oil filler hole on the inlet control valve using a funnel.
17. Turn the compressor clutch clockwise to speed the fill process.
18. Allow five 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.
19. Install the fill plug in the inlet control valve and tighten it securely.

Filling the System with Oil

1. Remove the fill plug from the inlet valve on the compressor.
2. Using a funnel, pour oil into the compressor while turning the compressor in a clockwise direction using the hex head cap screw at the center of the compressor clutch assembly.
3. At regular intervals, check the oil level at the sight-glass until it reaches the specified level.
4. Replace the fill plug or the inlet control valve.
5. Perform a quick inspection of the system to make sure that all lines are on and tight and that the filter is tight.

Completing the Service

1. Place the manual transmission in neutral or the automatic transmission in park and fully apply the park brake.
2. Start the engine and allow it to reach operating temperature.
3. Turn the compressor switch on the control unit to the "ON" position, allow the system to pressurize and return to preset base idle speed.
4. Turn the compressor switch on the control unit to the "OFF" position.
5. Allow the system to settle for five minutes, and then check the oil level through the sight glass. The level must be between the minimum and maximum level indicators.
6. Check for oil leaks.