

# Service Procedures for OEM VR70/VR150

500 Hour Service kit A700194 (VR70), A700197 (VR150)  
1000 Hour Service Kits & A700195 (VR70), A700198 (VR150)

## General Service Information

### Safety and Service Precautions

Observe these precautions when performing any service:

- Never attempt to clean the filter element with compressed air. Replace the filter element.
- To prevent damage to the oil filter, always use a proper filter wrench. Never over-tighten the filter, as this may damage the seal or the filter.
- You must use the supplied compressor oil in this system. Failure to use this recommended oil will result in damage to the compressor and will void your warranty.
- Do not overfill the system, as this can flood the sight glass window and make the system appear empty.
- If the system has been operating, shut it off and wait at least 30 seconds for the air pressure to vent before performing service.

 **Before beginning any services you must make sure there is no pressure left in the system. The system is designed to automatically release system pressure via the rapid blow-down cap in the end of the tank. Pull the pressure relief valve ring to double check that pressure has been released.**

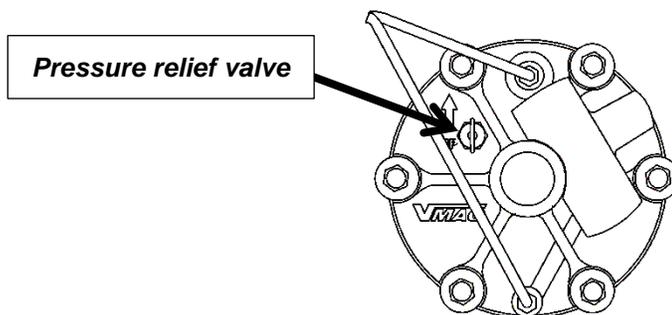


Figure 1 - Tank with rapid blow-down end cap

- If the system is cold, bring the engine to operating temperature and then operate the compressor system for a few minutes to bring the compressor oil to operating temperature. This will also help to suspend contaminants in the oil so that they can be removed from the system along with the old oil.
- Observe all safety procedures relating to moving belts, hot oil and compressed air. Use all safety equipment to protect yourself.
- Check the old oil (on 500 hour service) and the inside of the tank (on 1000 hour service) for any evidence of metallic particles or contamination; if found, flush the tank, hoses and cooler. Metallic particles typically indicate system damage, call tech support for further details, 1-800-738-8622.

### Flushing Procedure

Component failure (such as a gearbox, compressor, hose or cooler core) can leave metal filings and other foreign materials in the system. To flush the system, follow this procedure:

1. Before replacing any failed component, check all other system components for evidence of contamination and clean thoroughly. Use compressed air to blow out lines and other components. Remove the oil filter and dump out oil from the filter. If there is no metal in the oil filter, continue with the regular flush procedure, (continue to step 2).

If there is metal in the oil filter, look for metal in the return line to the compressor. If metal is found, the cooler must be flushed before the new compressor is installed. As well, the lines from the tank to the cooler and cooler to compressor need to be thoroughly checked/flushed or replaced before installing the new compressor.

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2. Once the system has been cleaned as thoroughly as possible, replace the failed component and reconnect all lines and fittings.
3. Install a new oil filter and fill the system with VMAC compressor oil to the correct level.
4. Start the engine and engage the air system. Allow the system to pressurize and allow it to operate in no-load mode for about 15 minutes without discharging any air.
5. Shut-down, allow the system to cool and change the oil and the oil filter. Refill with compressor oil to the correct level.
6. After 50 hours, replace the oil filter and top up the oil level.

## Service Kit Contents

A 500 hour service kit will contain an air filter, oil filter and sufficient oil for the system.

A 1000 hour service kit will contain the components of the 500 hour service kit plus a coalescing separator element, end-cap and coalescer O-rings, thimble-spring and thimble screen.

## 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

1. Remove the air filter cover retaining clamps and the cover.
2. Remove the filter element from the air cleaner housing.
3. Immediately cover the air inlet opening by masking with tape or with a clean cloth to prevent contamination entering the intake hose and compressor.

**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.*

4. 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.*

5. Remove the cloth from the air cleaner housing.
6. Place the filter into the air cleaner housing and secure the cover with the retaining clamps.

**!** *Make sure the new filter is a VMAC filter, part number 9500061.*

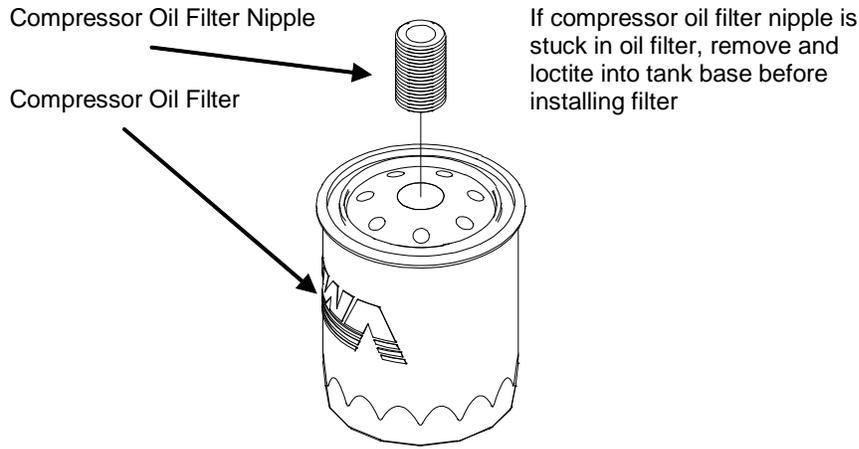
### 3. Replace the Oil Filter

**!** *Hot oil can cause severe burns.*

1. Clean the area around the tank and the filter to prevent contamination.
2. Remove the drain plug and drain the oil into a container large enough to hold at least 1.32 USG (5 liters) for a VR70 or 2.38 USG (9 liters) for a VR150.
3. 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.

**i** **Check the filter to make sure 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 Separator Tank Base with a small amount of Loctite blue and install it into the tank base.**



**Figure 2 - Compressor Oil Filter**

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

**!** **Make sure 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 fill the filter with VMAC compressor oil.
- 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.

**i** **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.
- Review the system Illustrated Parts List (IPL) for replacement hose part numbers.

## 5. Replace the Oil

- Remove the filler plug from the air inlet control valve. Pour VMAC compressor oil into the oil fill hole using a funnel. Turn the compressor clutch clockwise by hand (wrench or ratchet, **no power tools**) to speed the fill process.
- Allow 5 minutes for the oil to drain into the tank and then check the level at the sight glass at the front of the tank.
- Continue adding oil until the level is correct. Install the fill plug and tighten it securely.

## 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.
- Discharge air with a tool for 2 minutes.
- Turn the compressor switch on the control unit to the "OFF" position.

5. Allow the system to settle for 5 minutes, and then check the oil level through the sight glass. The level must be between the minimum and maximum level indicators. If not, add/remove oil as required to bring oil to the correct level.
6. Check for oil leaks.
7. For systems that show a message "HRSxxx500HR SVC" on the control box:
  - press and hold the OFF button (about 5 seconds) until "DIAGNOSTICS" appears in the display
  - release, then press and hold the OFF button (about 5 seconds) until "500 HR CLEAR" appears in the display
  - continue pressing the off button until "CLEAR OK" appears in the display

## 1000 Hour Service Procedures

### 1. General Service

Follow procedures numbered 1, 2, 3 and 4 in the 500 hour service instructions for inspecting the belt, replacing the air filter, draining the oil, replacing the oil filter and inspect hoses.

### 2. Changing the Coalescing Separator Element

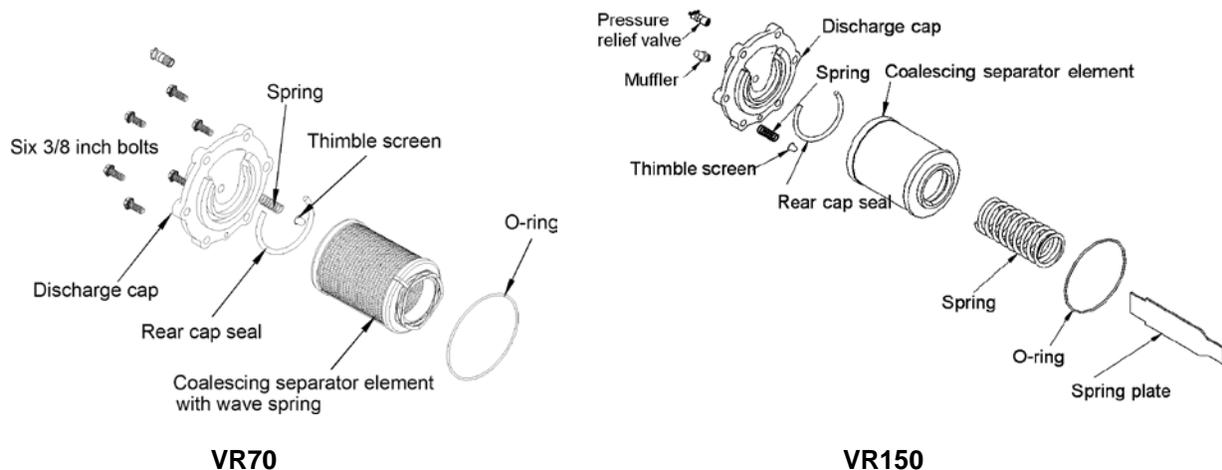


Figure 3 - Replacement coalescing element

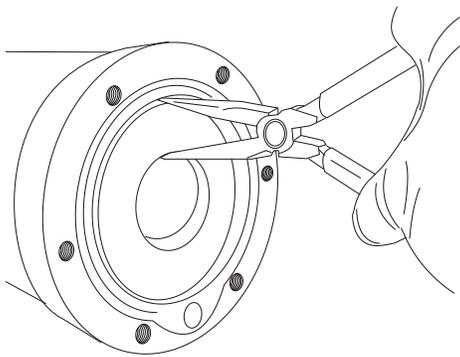
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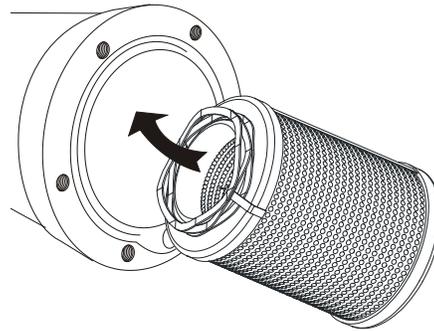
1. Clean the back of the air/oil tank before removing the lines or the end cap.
2. Remove the air outlet hose and the scavenge and system pressure lines from the end cap if required. Carefully move the scavenge and system pressure lines out of the way, making sure that they do not twist or kink. Cap the line fittings to prevent contamination.
3. Remove the bolts retaining the tank end cap to the rear of the tank. Unscrew them evenly to avoid damaging the end cap, as the coalescing element is spring-loaded against the inside of the end cap.

**!** *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 spring-loaded against the discharge cap.*

4. Use pliers to take out coalescing separator and spring from the tank.



**Remove the old coalescing element**



**Insert the new element spring first**

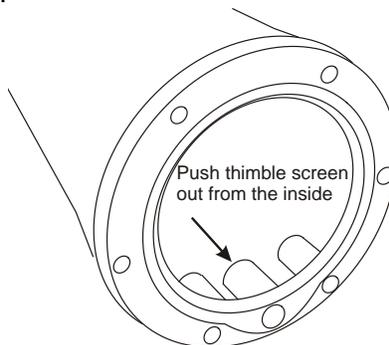
**Figure 4 - Coalescing Element**

5. On the VR150, remove the spring plate from inside the tank and discard the coalescing separator element.
6. Wipe out the inside of the tank.



***Do not use solvents as residue in the tank could result in an explosion hazard.***

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.



**Figure 5 - Thimble Screen**

8. Check the thimble screen for contamination or damage. If contaminated, clean as necessary and blow out with compressed air. If damaged, replace the thimble screen.
9. Thoroughly clean the large spring and the spring plate on VR150 systems. Remove any rust or contaminants.
10. Install the large spring with spring plate on VR150 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.
11. Insert the new coalescing filter & wave spring assembly into the tank for a VR70 system. Make sure that the element seats correctly.



***The large wave 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.***

12. Check the condition of the O-ring and rear cap seal and replace them if necessary.

13. Place the end cap in position on the end of the tank, align the bolt holes on the cover with the holes in the tank and push it into place against the spring. Install the six 3/8 inch flange bolts and tighten them down evenly to prevent damage to the cover, **then torque them to 35 ft-lb.**
14. If removed, re-install the scavenge and system pressure lines and outlet hose and tighten the fittings securely.

### 3. Replace the Oil

1. Remove the filler plug from the air inlet control valve. Pour VMAC compressor oil into the oil fill hole using a funnel. Turn the compressor clutch clockwise by hand (wrench or ratchet, **no power tools**) to speed the fill process.
2. Allow 5 minutes for the oil to drain into the tank, and then check the level at the sight glass at the front of the tank.
3. Continue adding oil until the level is correct. Install the fill plug and tighten it securely.

### 4. Replace the Muffler

1. Clean the area around the muffler.
2. Remove the old muffler.
3. Apply Loctite 567 around the threads of the new muffler as required.
4. Install the new muffler and tighten securely. *Do not over torque.*

### 5. Replace the Pressure Relief Valve

1. Clean the area around the pressure relief valve.
2. Remove the old pressure relief valve.
3. Apply Loctite 567 around the treads of the new pressure relief valve.
4. Install the new pressure relief valve and tighten securely. *Do not over torque.*

### 6. Completing the Service

1. Start the engine and allow it to reach operating temperature.
2. Turn the compressor switch on the control unit to the "ON" position and allow the system to pressurize.
3. Discharge air with a tool for 2 minutes.
4. Turn the compressor switch on the control unit to the "OFF" position.
5. Allow the system to settle for 5 minutes, and then check the oil level through the sight glass. The level must be between the minimum and maximum level indicators. If not, add/remove oil as required to bring oil to the correct level.
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A	ENGINEERING RELEASE	RR 02-JUN-2014	PD/RF 05 Jun 2014	05 Jun 2014
B	ECN 14-071 – Added VR150 service information	MPATER 27OCT2014	MP/RD 03NOV2014	03NOV2014

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