

Service Procedures for RAPT AIR-MF

200/400 Hour Service Kits A500023/24 (RAPT AIR-MF)

General Service Information

Safety and Service Precautions

Observe these precautions when performing any service:

- Never attempt to clean an air 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.
- Never use any compressor oil other than VMAC approved oil. Other oil may damage the compressor system, cause unsafe operation, and may void the warranty.
- Do not overfill the compressor oil system as this may cause oil carryover into air outlet.
- After the air system has been operating it takes about 30 seconds for the air pressure in the compressor and separator tank to automatically vent. Ensure that pressure is relieved before servicing.

 ***This system is equipped with an air pressure check valve between the coalescing manifold and the discharge line to the receiver tank. The receiver tank may still be pressurized even after the compressor has vented. You must make sure that the pressure has been relieved throughout the entire system before any servicing is performed.***

- 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 temperature up slightly. This will allow the oil to flow more freely and also help to suspend any 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 appropriate safety equipment to protect yourself.
- Check the old oil for any evidence of metallic particles or other contamination. Oil contamination may be a sign of system damage. If contamination is found, determine the cause, repair, and flush the tank, hoses and cooler. *See Flushing Procedure* below.

Flushing Procedure

If the system is being serviced as a result of replacement of a failed component, you may need to flush the system by following 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.
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 circulate the oil for about 15 minutes without discharging any air.
5. Shut system down 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.

VMAC – Vehicle Mounted Air Compressors

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Service Kit Contents

A 200 hour compressor service kit contains:

- Compressor oil filter
- 4L of VMAC high performance compressor oil
- Compressor air filter (oval filter)
- Engine air filter

A 400 hour compressor service kit contains:

- Compressor oil filter
- 4L of VMAC high performance compressor oil
- Oil separating coalescing filter
- Compressor air filter (oval filter)
- Engine air filter

200 Hour Service Procedures

1. Drain Compressor Oil



Follow all safety precautions.

- Clean debris and dust from the area around the drain port of the air/oil separator tank to prevent contamination.

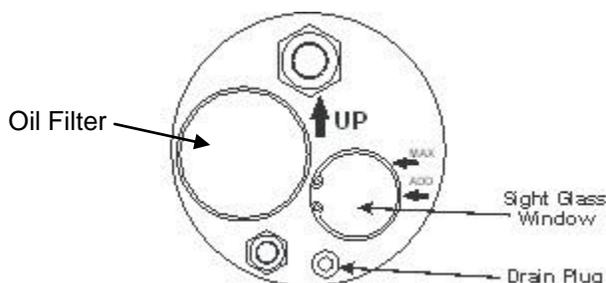


Figure 1 – Oil Drain, Filter and Sight Glass Location

- Place pan or tray under drain plug to prevent oil from spilling on battery or belt.
- Using a suitable container large enough to hold at least 4L of oil, remove the air/oil separator tank drain plug and drain the compressor oil. After the oil has drained, replace the drain plug.
- Check the old oil for any evidence of metallic particles or other contamination. Oil contamination may be a sign of system damage. If contamination is found, determine the cause, repair, and flush the tank, hoses and cooler. *See Flushing Procedure above.* Water may be present in small quantities and is a byproduct of the compression process. Any water in the system will typically evaporate out of the oil when the system reaches operating temperature. Excessive retained water can be a sign that you are not operating the compressor long enough to reach operating temperature.

NOTE Although not necessary, removing the battery will allow more access to air/oil separator drain plug area

NOTE Dispose of the oil in accordance with the environmental protection laws in your location.

2. Replacing the Compressor Oil Filter



Follow all safety precautions.

- Clean debris and dust from the area around the filter to prevent contamination.
- Remove the oil filter by turning it counterclockwise using a suitable filter wrench.



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 then clean and coat the nipple and separator tank threads with Loctite blue and install it into the tank base. Ensure Loctite does not come in contact with the oil filter side of the threaded nipple.

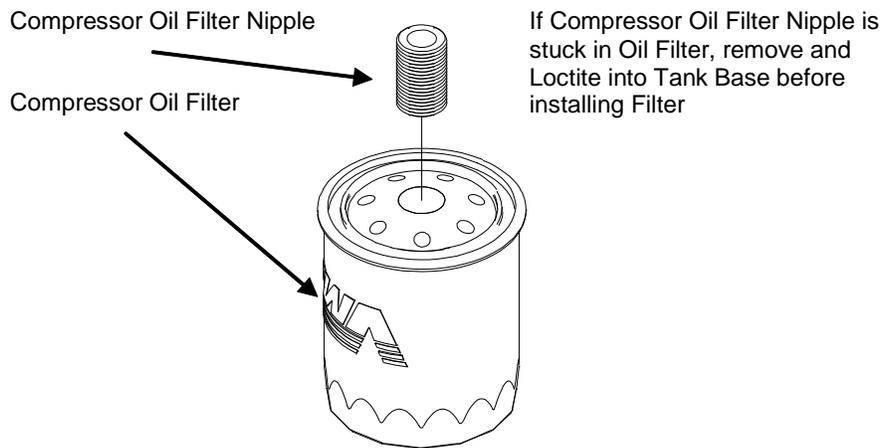


Figure 2 – Compressor Oil Filter

- Check the gasket-sealing surface of the air/oil separator 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-type oil filter, which may rupture under the high pressure of this system.

- Apply a thin coating of clean compressor oil to the filter sealing gasket.
- Spin the filter onto the threaded nipple by hand until the gasket lightly contacts the sealing surface of the air/oil separator tank.
- Tighten the filter an additional 3/4 to 1 turn.



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

3. Replacing Compressor Oil



Follow all safety precautions.

- Clean debris and dust from the area around the oil fill fitting on the air/oil separator tank to prevent contamination.



The air compressor system holds a total of 4L. The compressor and cooler hold about 0.5L that will not drain out when servicing so you may end up adding less than 4L to fill to the correct level.

- Ensure that the system pressure is discharged and remove the oil fill fitting hose connection, see Figure 3.

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- Use a funnel inserted into the oil fill fitting on the air/oil separator tank and slowly pour in VMAC compressor oil.
- Check oil level in oil sight glass while filling. Stop filling when oil level reaches just below the MAX line on the sight glass. Fresh oil is clear so be sure that you don't overfill as the sight glass might appear empty if filled past the top.

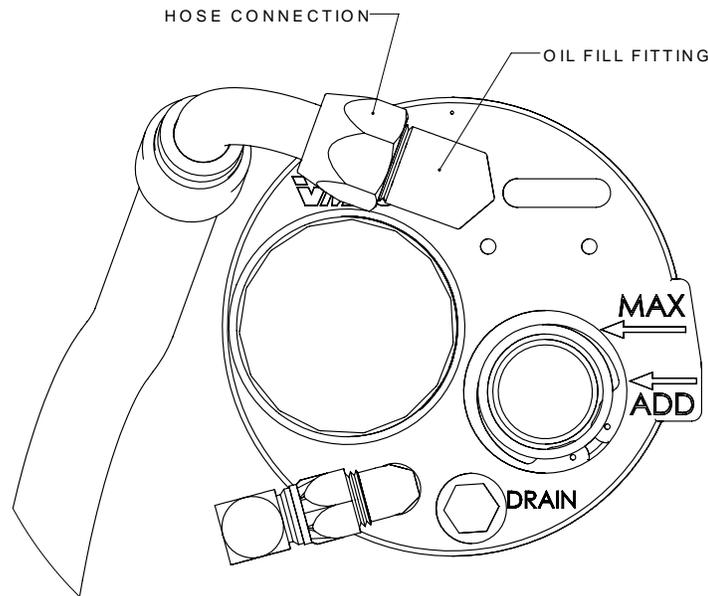


Figure 3 – Oil fill fitting location

- Reconnect the hose connection previous removed ensuring hose fitting is tightened onto the oil fill fitting
- Start the system following the start-up procedure in the User's Manual and turn on compressor switch.
- Allow the system to pressurize.
- Turn off the system using the shutdown procedure in the User's Manual
- Wait 5 minutes then drain the air fully to depressurize the system.
- Check for oil leaks and check oil level.
- Repeat until the oil level in the air/oil separator tank is at or just below the MAX line.

4. Replacing the Air Filters

4.1 Replacing the Engine Air Filter

 **Follow all safety precautions. For ease of service the air filter is located just under the roof of the RAPTAIR-MF behind the service panel. The filter is also equipped with a filter minder switch at the back, and is monitored by the control system.**

- Clean loose dust and debris from the area around the filter cover to prevent contaminants from entering the system.
- Remove the air filter cover by lifting the release lever and turning the cover counter clock wise.
- Remove the filter element from the air cleaner housing.
- Immediately cover the inner port in the air cleaner housing with a clean cloth to prevent contamination entering the intake hose.

 **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 contaminates into the compressor system. Always replace the air filter element.**

- Clean the inside of the cover and the air cleaner housing 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. Flammable gasses in the intake system may cause the engine to overrun and damage the system.**

- Remove the cloth from the air cleaner housing.
- Place the filter into the air cleaner housing.
- Secure the cover by pushing the cover against the filter housing and turn the cover clock wise until the locking latch clicks. Ensure that the dust ejection nipple is facing down.

4.2 Replacing the Compressor Air Filter

 **Follow all safety precautions. For ease of service the air filter is located just under the roof of the RAPTAIR-MF behind the service panel on the left hand side of the system.**

- Clean loose dust and debris from the area around the filter cover to prevent contaminants from entering the system.
- Remove the filter cover retaining finger nut, the filter cover and the filter element.
- Immediately cover the air inlet opening by masking with tape or with a clean cloth to prevent contamination.

 ***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 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. Flammable gasses in the intake system may cause the engine to overrun and damage the system.**

- Remove the cloth or masking from the air inlet opening.
- Place the filter into the clean air filter cover and reinstall with the finger nut. Ensure that the filter cover is aligned so that its sides overlap the air filter mounting plate. The air filter should be clamped between the air filter cover and the mounting plate, but do not over-tighten the bolt.

For 400 Hour Service, perform the 200 Hour Service and also replace the Coalescing Filter as below:

5. Replacing the Coalescing Filter



Follow all safety precautions.

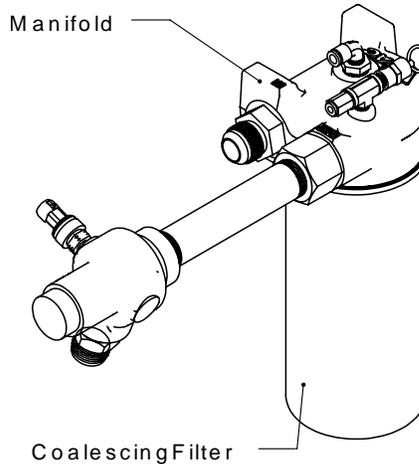


Figure 4 - Coalescing Filter Location



Do not use a screwdriver punched into the side of the filter, as this practice can damage the scavenging tube and screen. See Fig. 5.

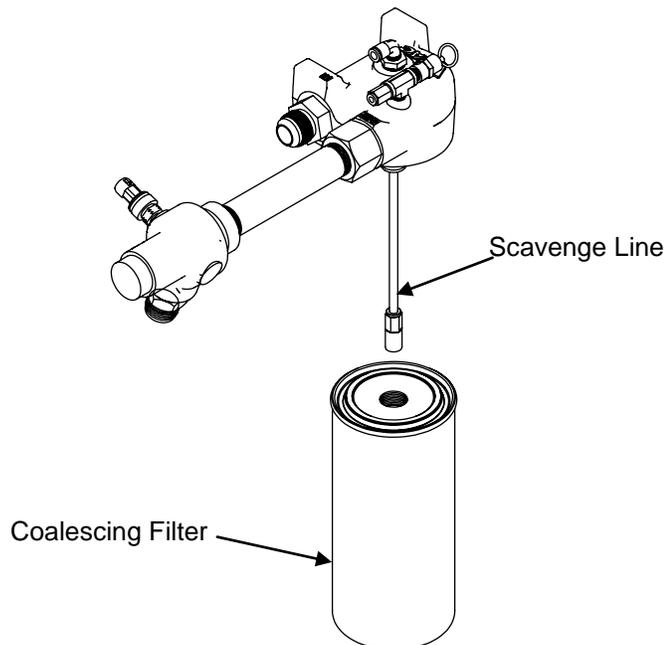


Figure 5 – Avoid Damaging the Scavenge Line



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 manifold block with a small amount of Loctite blue and install it into the manifold block. Use caution when removing the filter so as to avoid catching the scavenge screen orifice on the bottom of the scavenge tube on the lip of the coalescing filter. This scavenge screen orifice is attached to the scavenge tube by a “push to connect” fitting, if the fitting has come off of the tube re-insert the tube into the fitting ensuring that the tube is fully engaged.

- Remove the coalescing filter by turning it counterclockwise using a suitable filter wrench.
- Check the gasket-sealing surface of the manifold block for contamination, old gasket material or damage.

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

- 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 of the manifold block.
- 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.**

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