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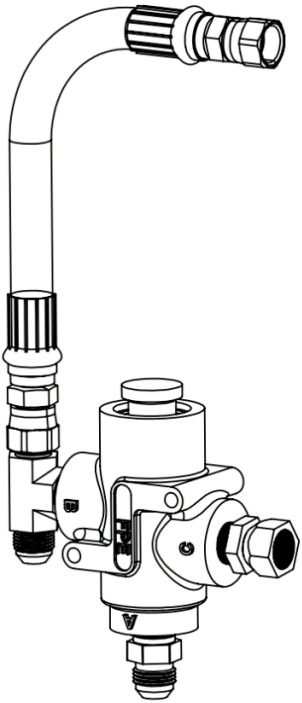

Installation Manual for VMAC Thermostatic Valve Package - A270103

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Changes and Revisions

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Important Information

The information in this manual is intended for approved VMAC installers who have been trained in installation and service procedures and/or for anyone with mechanical trade certification who have the tools and equipment to properly and safely perform the service. Do not attempt this service without the appropriate mechanical training, knowledge and experience.

Follow all safety precautions for mechanical work. Any fabrication for correct fit in equipment must follow industry standard “best practices”.

Notice

Printed in Canada

General Information

Introduction

This manual provides installation instructions for the generic Thermostatic Valve Package. Read this manual prior to servicing or operating the compressor system.

Follow all safety precautions when servicing or operating the VMAC system.

Proper service and repair are important to the safety of the operator and the safe, reliable operation of the equipment. Always use genuine VMAC replacement parts.

The procedures described in this manual are the only approved methods of service and operation.

Ordering Parts

To order parts, contact the VMAC Inside Sales department. To assist in selecting the appropriate parts, please provide the VMAC compressor serial number, part number, description, and quantity. Contact VMAC Inside Sales by calling 1 (887) 912-6605 or by email to sales@vmacair.com.

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, service techniques and running OEM changes. If a discrepancy is found in this manual, contact the VMAC OEM department prior to initiating or proceeding with installation, service or repair. Current information may clarify the issue. Anyone with knowledge of such discrepancies, who proceeds to perform 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 the operational safety or performance 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 anyone to properly adhere to the procedures set out in this manual or standard safety practices. Safety should be the first consideration when performing any service operations. If there are any questions concerning the procedures in this manual, or more information is required, please contact VMAC OEM department prior to 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 attention to instructions concerning 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 aware of the possibility of personal injury or death. As it is impossible to warn of every conceivable hazard, common sense and industry standard safety practices must be observed.***
	***This symbol is used to call 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 attention to additional instructions or special emphasis on a specific procedure.***

Safety Precautions

As it is impossible to warn of every possible hazard that may result from operating this system, common sense and industry standard safety practices must be observed.

Read this information before operating the compressor for the first time. Follow the information and procedures in this manual for operation, maintenance and repair. Observe the following items to reduce the chance of personal injury or equipment damage.

Proper service and repair are important to the safety of the service technician and the safe, reliable operation of the equipment. Always use genuine VMAC replacement parts.

The procedures described in this service manual are effective methods of service and repair. Some procedures may require the use of tools specially designed for a specific purpose. Anyone using a replacement part, service procedure or tool must first determine that neither their safety nor the safe operation of the equipment will be compromised by the replacement part, service procedure or tool selected.

Moving Parts Hazard

- Before performing service, disconnect the power source to prevent unexpected equipment start.
- Do not operate the system without guards in place. If the guards are damaged or missing, replace them before operating the equipment.

Burn Hazard

- The compressor system gets very hot during operation, contact with the components or the oil can cause serious injury. Allow sufficient time for the system to cool prior to performing service.
- Never allow any part of your body to contact the compressor components until the system has cooled sufficiently.

Compressor Air and Oil Hazard

- The compressor system is under sufficient pressure that a leak could force the air/oil mixture through the skin directly into your bloodstream. This could cause serious injury or death.
- Ensure the system is completely depressurized before attempting maintenance or repair.
- Do not use compressed air to clean off clothing or skin, compressed air can penetrate the skin causing serious injury or death.
- Do not move or service the system while it is pressurized or operating.
- Components and hoses under pressure could separate suddenly and cause serious injury or death. If equipped, the air receiver tank must be drained prior to servicing the system.
- Never adjust or attempt to make any repairs to the system while the engine is running. Components and hoses under pressure could fail and cause serious injury or death.

Burst Hazard

- Serious injury or death may result from an air tank explosion.
- Never exceed manufacturer's maximum air pressure rating.
- Do not repair components, only replace with approved parts.
- Do not tamper with, or disable factory safety equipment.

Personal Safety

- Vaporized oil is a respiratory hazard, do not breathe the compressor air.
- Always use the appropriate personal protective equipment, particularly eye and hearing protection when operating air powered equipment.

Thermostatic Valve Installation

- ***It is best practice to use the thermostatic valve in cold climate and/or low duty operations.***
- ***If starting in temperatures below -15°C (5°F), installing a thermostatic valve is highly recommended.***
- ***Improper installation orientation can result in either hot oil or little to no oil going back into the compressor leading to system failure.***

- ***For applications where a liquid to oil cooler is used, a liquid to oil cooler does not normally require a thermostatic valve. With a liquid to oil cooler, the coolant is not flowing through the oil cooler during cold start up due to the coolant line being closed within the engine and not circulating until the engine's coolant reaches the desired temperature.***
- ***In low duty cycle applications involving a liquid to oil cooler, there is no concern for overcooling as the engine coolant is usually warmer than the compressor coolant and installing a thermostatic valve would not be recommended. Installing a thermostatic valve on a liquid to oil cooler is only recommended in rare cases when the coolant being used is colder than the desired oil temperature (ex: cold water).***

☐ Refer to Figure 1 and Figure 2 for reference of the following instructions. If using a liquid to oil cooler, see the warning above.

☐ Install the thermostatic valve such that Port C on the thermostatic valve is connected to the "Oil Flow In" fitting on the cooler and Port B is connected to the tee. Improper orientation can result in either hot oil or little to no oil going back into the compressor leading to system failure.

☐ Use the hose provided to connect the "Oil Flow Out" fitting on the cooler to the top fitting on the tee. Follow the procedure laid out in the "JIC Fittings" section on the following page for proper sealing of JIC fittings. An appropriately sized hose is provided with package A270103 for air to oil coolers. As liquid to oil coolers do not normally need a thermostatic valve installed, the valve package is not offered, and the valve and a hose of appropriate length is purchased separately.

- [ ] Connect the oil line from the separator tank (hot oil) located at the bottom of the oil separator tank to the “Oil Flow In” fitting located on the bottom of the thermostatic valve (Port B). Use a second wrench to support the fitting on the component and prevent it from spinning when tightening. The recommended hose size is #8 (1/2”) hose.
- [ ] Connect the oil return line (cooled oil) located on the bottom left of the compressor to the bottom fitting on the tee. Use a second wrench to support the fitting on the component and prevent it from spinning when tightening. The recommended hose size is #8 (1/2”) hose.
- [ ] If also using a check valve, the check valve must be installed between the tee and the compressor as shown in the manual provided with the check valve.

JIC Fittings

	***Do not overtighten JIC Hydraulic fittings. Overtightening may cause reduced life or permanent deformation of the sealing area of the fitting.***
	***JIC type hydraulic fittings do not require sealing compound or teflon sealing tape. JIC fittings when properly tightened form a metal to metal seal. Adding sealing compound or teflon sealing tape may introduce gaps and prevent the formation of a seal.***

- [ ] Spin-on the swivel nut by hand until it bottoms out; do not overtighten by hand.
- [ ] Using two appropriately sized wrenches, tighten the swivel using the Flats From Wrench Resistance (FFWR) method.
- [ ] FFWR method:
  - At the bottom out position, mark a line across the two fittings
  - Note the fitting/hose size and tighten the fitting by the value indicated in the table below.
  - Turn the fitting by the number of flats indicated (1 flat = 1/6 revolution or 60° rotation) or until firm resistance is met.

Fitting (hose) size	Flats	Degrees rotation
#04 (1/4”)	2	120°
#05 (5/16”)	2	120°
#06 (3/8”)	1-1/2	90°
#08 (1/2”)	1-1/2	90°
#12 (3/4”)	1-1/4	75°
#16 (1”)	1	60°

Table 1: FFWR Method Tightening Values

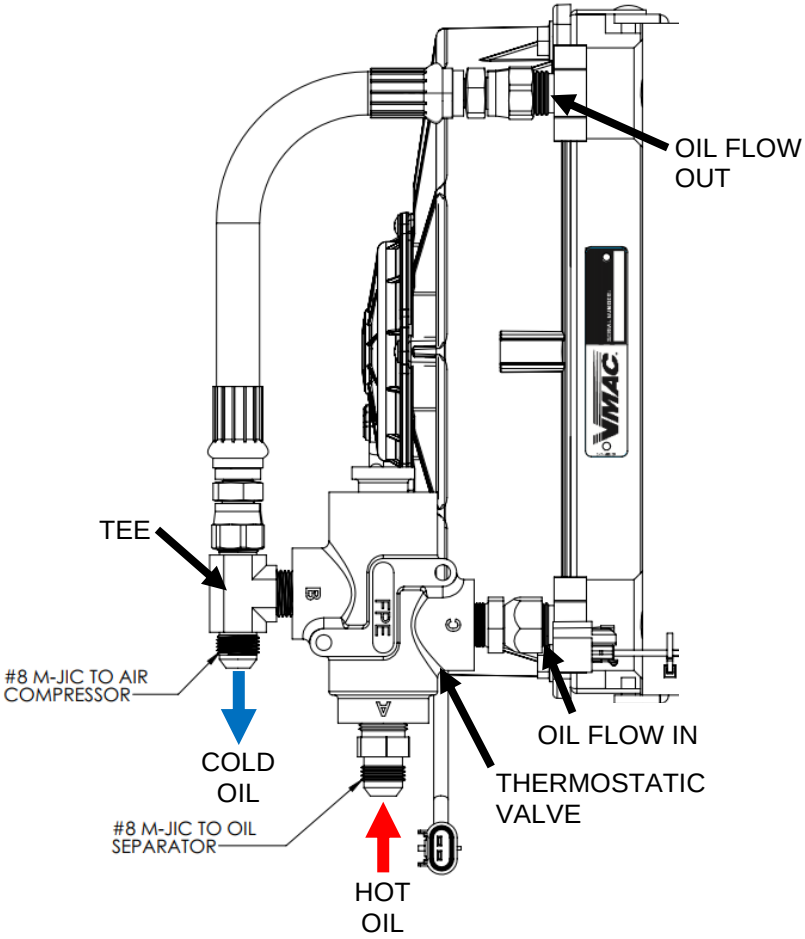

Figure 1 - Thermostatic Valve on Air to Oil Cooler

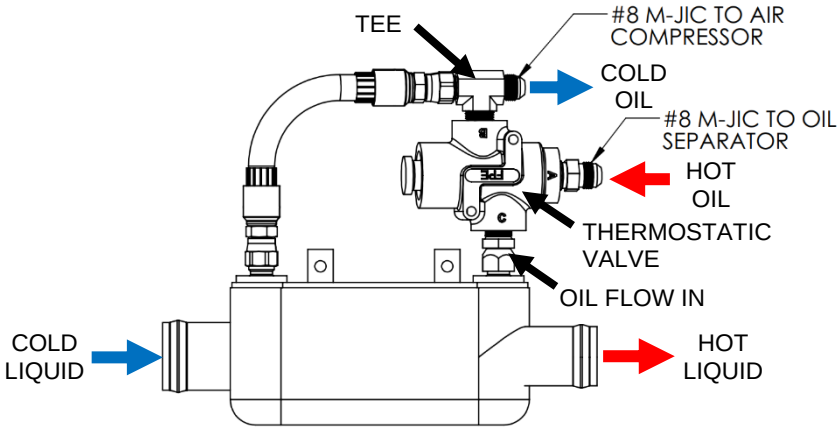

Figure 2 - Thermostatic Valve on Liquid to Oil Cooler

Check Valve Installation (As Required)

- ***It is best practice to mount the cooler below the level of the compressor to prevent oil draining into the compressor.***
- ***If mounting the cooler above the compressor is required, a check valve configured as shown in***
- ***Figure 3 or Figure 4 must be installed.***
- ***Check valve package number: A270102.***

- ☐ See the manual that comes with A270102, Check Valve Package, for detailed instructions and configurations.
- ☐ The Check Valve should be installed down stream of the cold oil out port as shown by example in Figure 3 and Figure 4 below.
- ☐ Ensure that the check valve has been mounted in the direction as indicated by the arrow on the product. Improperly installing the check valve in the opposite direction will result in no oil flow, compressor overheating, and possible system damage.

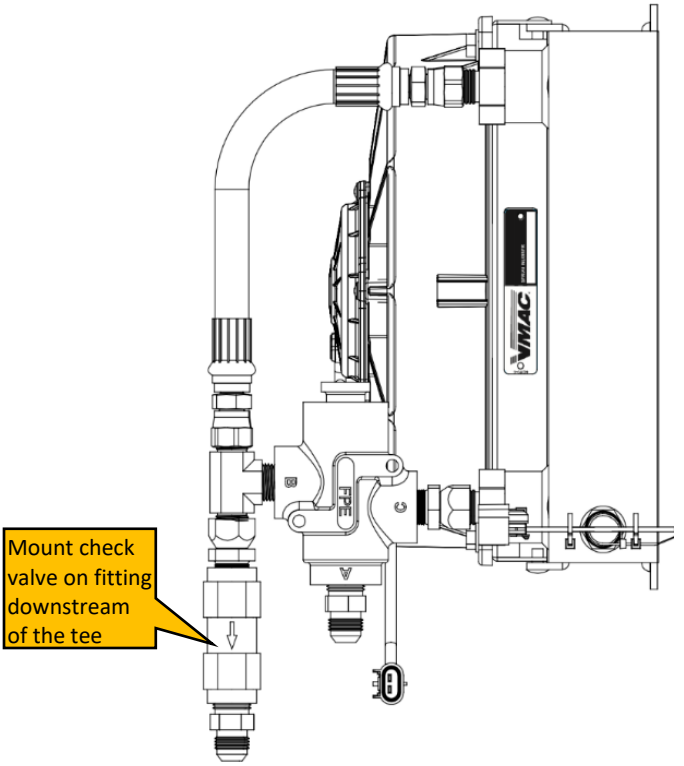

Figure 3 - Thermostatic Valve on Air to Oil Cooler with Check Valve

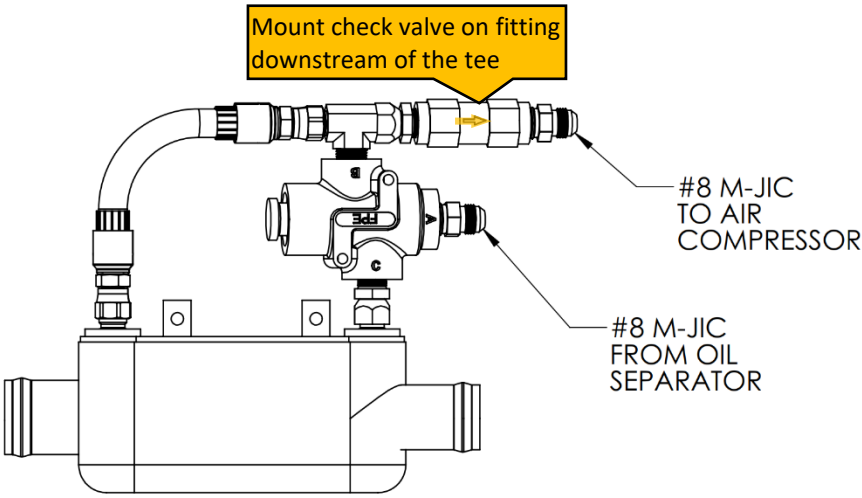

Figure 4 - Thermostatic Valve on Liquid to Oil Cooler with Check Valve

Thermostatic Valve Package – A270103

Item #	Part #	Qty	Description
1	4500131	1	VALVE,THERMO,1/2NPT,160F
2	4900167	1	FTG, STR, #8FJIC-1/2"MNPT
3	4900016	1	FTG, STR, ½"MNPT-#8MJIC
4	4900084	1	TEE, #8MJIC-1/2"MNPT-#8MJIC
5	1710786	1	HOSE, ASSEMBLY, 12.5"

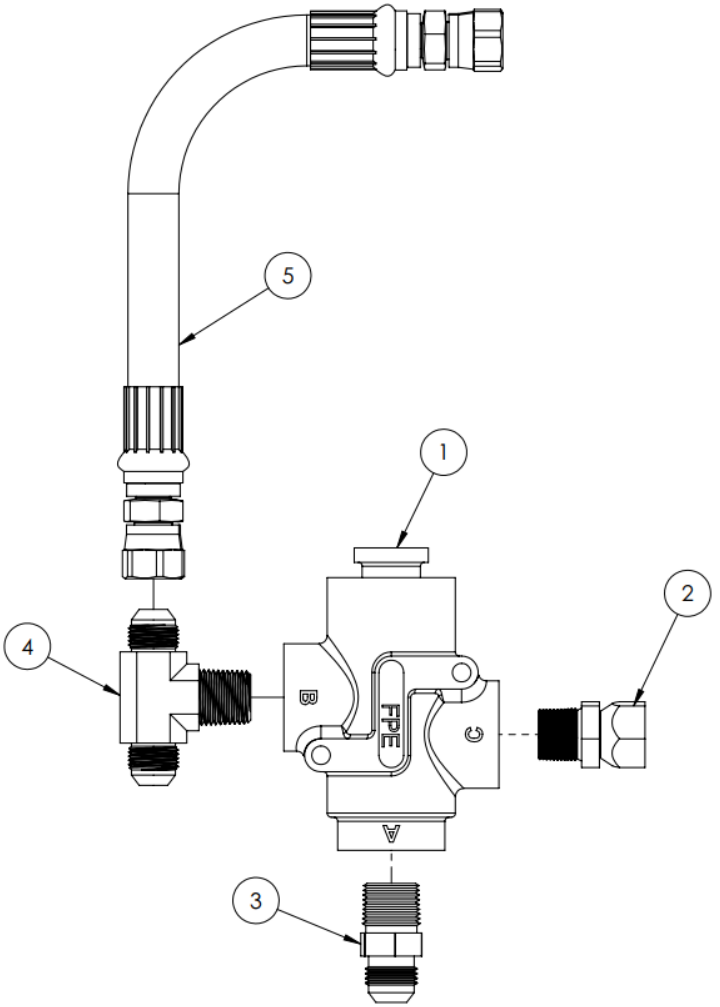

Figure 5 – A270103 Thermostatic Valve Package

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