VEHICLE MOUNTED AIR COMPRESSORS

COMPACT. POWERFUL.


# Installation Manual for VMAC Accessory

## A700031

**De-icing System**

www.vmacair.com

| Revision | Revision Details | Revised by | Checked by | | | | Implemented |
|---|---|---|---|---|---|---|---|
| | | | Eng. | | Tech. | Qual. | |
| | | | Mech. | Elec. | | | |
| 000 | Original Manual | IB | N/A | SM | N/A | N/A | 26 Oct 2005 |
| A | ECN 16-145 Update formatting | MSP | N/A | AJH | GB | AMG | 29 Nov. 2016 |

# Additional Application Information

- Installation Manual for VMAC De-icing System A700031

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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



**Printed in Canada**



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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 vehicle. 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**

## Special Tools Required

- None

## 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.

# Introduction

The VMAC de-icing system is designed for operation in cold climates. It can be applied to new installations or retro-fitted to existing systems.

Freezing will cause the system to malfunction. The de-icer is a 12 V, 80 W, 10 ft rope heater insulated by a slit rubber hose. It is installed on the Pressure Control Line (3/16 in PTFE line or on older systems, 1/4 in steel line) connected between the tank and the inlet valve or, on some applications, between the tank and the regulator.

# Installation

- ☐ Remove the fasteners holding the Air Oil Separator Tank (AOST) to the frame, lower the tank and support it as necessary.
- ☐ Disconnect the 3/16 in PTFE (or 1/4 in steel) Pressure Control Line from the AOST and control valve.
- ☐ Cut any cable ties securing the Pressure Control Line in place and lay the line out on the floor.
- ☐ Lay the heater rope and insulating hose beside the Pressure Control Line.
- ☐ Wind the heater rope onto the Pressure Control Line using evenly spaced wraps with the terminated end of the heater rope towards the AOST fitting of the Pressure Control Line.

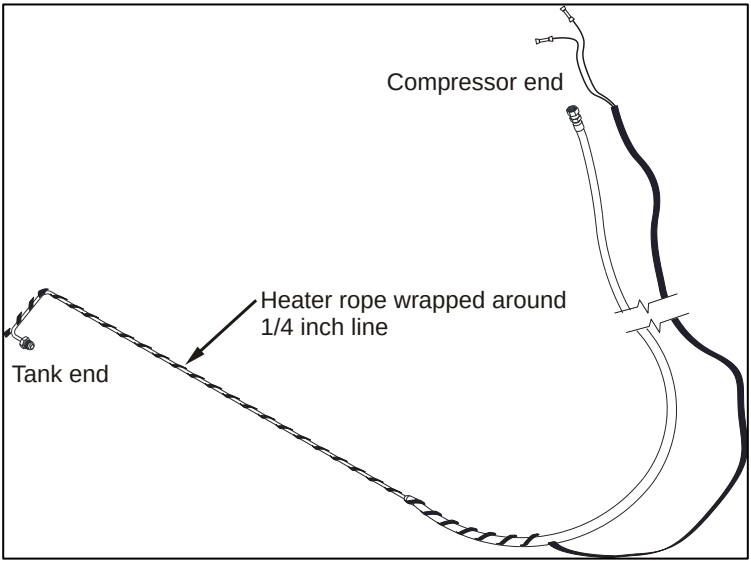


**Figure 1 – Wrapping the Pressure Control line**

☐ Install the slit rubber hose over the Pressure Control Line and heater rope; cut off the excess rubber hose. Fasten the hose securely in place using cable ties at approximately 6 in intervals.

☐ Install the Pressure Control Line with de-icing assembly back onto the vehicle following the original routing.

☐ Attach both ends of the Pressure Control Line to the appropriate fittings and tighten the connections.

☐ Secure the Pressure Control Line in place using cable ties as needed.

***On systems using 1/4 steel line at the tank, the Pressure Control Line can no longer be installed into the original stainless clamp.***

## Installing the Switch

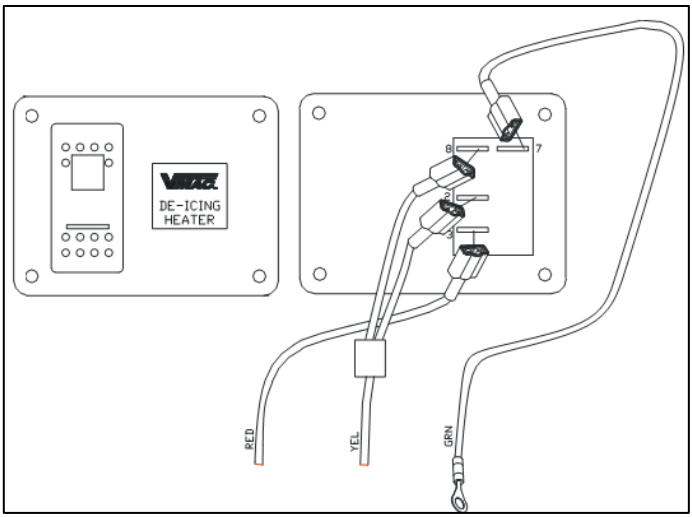


**Figure 2 – Installing the switch**

☐ Install the de-icing system switch panel in a convenient location in the vehicle cab.

☐ Connect the red wire from the switch to a key switched 12 V power source capable of supplying 10 A.

☐ Route the yellow wire through the firewall and connect it to one of the butt connectors on the heater rope.

☐ Connect the green ground wire from the switch to a good ground.

☐ Connect the ground wire with the ring connector to a good ground in the engine compartment.

☐ Protect the wires in the engine compartment and secure them with cable ties.


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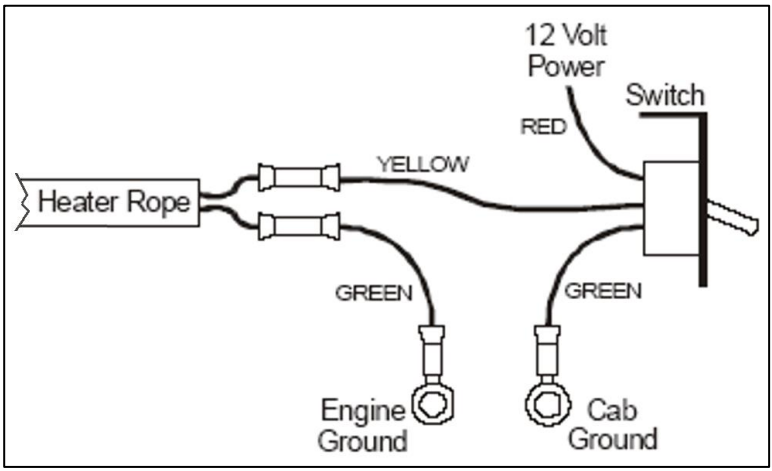


**Figure 3 – Connecting the wires**

## Usage guide

Once the compressor is operating, the de-icing system can be turned off to eliminate the 6.5 A draw on the vehicle electrical system.

| Ambient Temperature | De-icing Time |
|---|---|
| Above 0° F (-18° C) | 15 minutes |
| 0° F to -20° F (-18° C to -30° C) | 30 minutes |
| Below -20° F (-30° C) | 60 minutes |

**Table 2 – Operating Times**

***When ambient temperatures drop below freezing the VMAC pressure control system may freeze. If the pressure control system freezes, the compressor will continue to build pressure until the safety relief valve on the AOST opens.***

NOTE ***The de-icing system can be operated continuously in cold climate operations if required.***

***To prevent heat damage, do not operate the de-icing system in warm climate conditions.***

# Troubleshooting

| Problem | Cause | Corrective Action |
|---|---|---|
| **Indicator light does not illuminate when the switch is turned "ON".** | 1. Vehicle ignition not "ON". | If the ignition switch is in the "OFF" position, there is no power supplied to the switch or to the compressor system. |
| | 2. No power to the switch. | Check for 12 V at the red wire on the control panel switch.<br>Check the fuse in the supply wire to the compressor system.<br>Check the T-connector at the supply wire for a good connection. |
| | 3. Bad ground on the green wire. | Check for a bad ground by using a jumper wire between the ring terminal on the green wire and a known good ground. |
| **Indicator light illuminates but the heater does not operate.** | 1. Bad ground on the wire from the rope heater. | Check for a bad ground by using a jumper wire between the ring terminal on the wire and a known good ground.<br>Check for a good connection at the rope heater. |
| | 2. No power to the heater. | Check for 12 V at the butt connector. |
| | 3. Defective rope heater | Verify that there is 12 V across the 2 connections at the rope heater. Check for resistance of approximately 2 Ω. If these conditions are not met, replace the heater. |
| | 4. Insufficient waiting time. | Allow the heater several minutes to warm up. |
| **Does not thaw adequately.** | 1. Insufficient wait time. | Allow the times shown in the Operating Time Table. |
| | 2. Excessive power loss. | Voltage at the rope heater during operation should be within 1.5 V of the battery voltage. If less, shorten supply lines or use heavier gauge wire. |
| | 3. Defective heater rope. | Resistance should be approximately 2 Ω. If resistance is not approximately 2 Ω, replace the heater. |


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