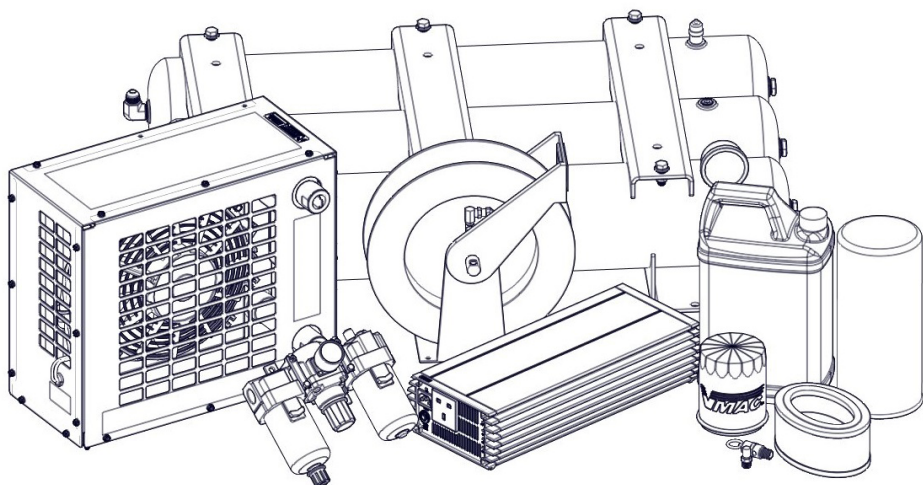




# **VMAC**<sup>®</sup>

## **AIR INNOVATED**<sup>®</sup>



## **Installation Manual for VMAC Accessory**

**A900022**

**Alternate Water Pump Adapter Kit for  
V400021**

**[www.vmacair.com](http://www.vmacair.com)**



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Revision	Revision Details	Revised by	Checked by				Implemented
			Eng.		Tech.	Qual.	
			Mech.	Elec.			
A	Initial Release	MSP	MCA	N/A	MSP	LPH	31 Mar 2020

## Additional Application Information

- 2020+ Ford Super Duty F-250 – F-550 6.7 L Diesel vehicles equipped with the alternate water pump.

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## Important Information

The information in this manual is intended for certified VMAC installers who have been trained in installation and service procedures and/or for anyone with mechanical trade certification who has the tools and equipment to properly and safely perform the installation or service. Do not attempt installation or service without the appropriate mechanical training, knowledge and experience. Follow all safety precautions. Any fabrication for correct fit in modified vehicles must follow industry standard "best practices".

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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, service techniques and running OEM changes. If a discrepancy is found in this manual, contact VMAC Technical Support 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 ensure 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 Technical Support prior to beginning work.

## 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.*

# Warranty

## VMAC Standard Warranty (Limited)

For complete warranty information, including both VMAC Standard Warranty (Limited) and VMAC Lifetime Warranty (Limited) requirements, please refer to our current published warranty located at: [www.vmacair.com/warranty](http://www.vmacair.com/warranty)



If you do not have access to a computer, please contact us and we will be happy to send you our warranty.

VMAC's warranty is subject to change without notice.

## VMAC Lifetime Warranty (Limited)

A VMAC Lifetime Limited Warranty is offered on the base air compressor only and only on UNDERHOOD, Hydraulic Driven, Transmission Mounted, Gas and Diesel Engine Driven Air Compressors, Multifunction Power Systems, and other products as defined by VMAC, provided that (i) the purchaser fully completes and submits a warranty registration form within 3 months of purchase, or 200 hours of operation, whichever occurs first; (ii) services are completed in accordance with the Owner's Manual; (iii) proof of purchase of applicable service kits are made available to VMAC upon request.



The VMAC Lifetime Warranty is applicable to new products shipped on or after 1 October, 2015.

## Warranty Registration

The VMAC warranty registration form is located near the back of this manual. This warranty registration form must be completed and sent to VMAC at the time of installation for any subsequent warranty claim to be considered valid.

There are 4 ways the warranty can be registered with VMAC:



[www.vmacair.com/warranty](http://www.vmacair.com/warranty)



[warranty@vmacair.com](mailto:warranty@vmacair.com)



(877) 740-3202



VMAC - Vehicle Mounted Air Compressors  
1333 Kipp Road, Nanaimo, BC, Canada V9X 1R3

# VMAC Warranty Claim Process



**VMAC warranty work must be pre-authorized by VMAC. Claims are processed via our dealer network. If you are not a VMAC dealer, please select one to work with via our Dealer Locator: <https://www.vmacair.com/dealer-locator/>**



1. Communicate with VMAC Technical Support at 1-888-241-2289 or [tech@vmacair.com](mailto:tech@vmacair.com) to help diagnose/troubleshoot the problem prior to repair. VMAC technical support will require the VMAC System ID, hours on the compressor and mileage on the vehicle.
2. VMAC will provide direction for repair or replacement of the failed components.
3. If requested, failed parts must be returned to VMAC for evaluation.
4. Dealers may login to the VMAC website to view the "VMAC Labour Time Guide" (under "Agreements") to see the allowable warranty labour times.
5. Warranty invoices must include the Service Ticket number, VMAC System ID#, hours on the compressor, and a detailed description of the work performed.
6. VMAC Warranty does not cover consequential damages, overtime charges, mileage, travel time, towing/recovery, cleaning or shop supplies.
7. Dealers submit warranty claims on behalf of the Vehicle Owner/End User affected by the defective part(s). The dealer ensures that all warranty credits are refunded back to the Vehicle Owner/End User who made the initial warranty claim.



***In order to qualify for Lifetime Warranty (Limited), the completed warranty registration form must be received by VMAC within 3 months of the buyer receiving the Product(s), or 200 hours of operation, whichever occurs first.***

***If the completed warranty registration form has not been received by VMAC within 3 months of the buyer receiving the Product(s), or 200 hours of operation, the warranty period will be deemed to commence 30 days from the date of shipment from VMAC.***

***Failure to follow the warranty claim process may result in denial of the warranty claim.***

VMAC Product Warranty Policies & Warranty Registration can be found on the VMAC website (see previous page for URL).

# General Information

## Optional Equipment Compatibility

While VMAC strives to design systems compatible with optional OEM equipment (such as running boards), it is impractical to develop systems that accommodate every OEM and aftermarket option or add-on. Whenever possible, VMAC endeavors to advise of compatibility issues in the "Additional Application Information" section of the manual. Even when specific optional equipment is determined by VMAC to be incompatible, it does not preclude the vehicle upfitter or end user from modifying the optional equipment to make it compatible with the installed VMAC system. VMAC does not warranty or accept responsibility or liability for the fitment, function or safety of any products modified in any way not expressly outlined in the installation manual.

## Before Starting



***Note and label all parts that are removed from the vehicle as many of the OEM parts will be reused during the installation of the VMAC system.***

Read this manual prior to beginning the installation to ensure familiarity with the components and how they will fit on the vehicle. Identify any variations from the application list such as vehicle model, engines, or optional equipment (e.g., dual alternator, active steering assist, etc.).

Open the package, unpack the components and identify them using the Illustrated Parts List (IPL) included in the Fastener Pack.

## Hose Information

Depending on other installed equipment, it might be necessary to move the air/oil separation tank from its intended location. The hoses used in VMAC compressor systems have a specific inner liner that is compatible with VMAC compressor oil. Use of hoses other than those supplied or recommended by VMAC may cause compressor damage and may void your warranty. Please contact VMAC for replacement hoses and further information.

## Ordering Parts

To order parts, contact a VMAC dealer. The dealer will ask for the VMAC serial number, part number, description and quantity. Locate the nearest dealer online at [www.vmacair.com/dealer-locator](http://www.vmacair.com/dealer-locator) or call 1-877-912-6605.





## Special Tools Required

- Pneumatic fan wrench removal set (such as Lisle® 43300) or a manual fan pulley holder (such as KD Tool® KD3900).

## Torque Specifications

All fasteners must be torqued to specifications. Use manufacturers' torque values for OEM fasteners.

The torque values supplied in Table 1 are intended for VMAC supplied components, or for use as a guide in the absence of a torque value provided by an OEM.



**Apply Loctite 242 (blue) to all fasteners (except nylon lock nuts) unless otherwise stated.**

Torque values are with Loctite applied unless otherwise specified.

Standard Grade 8 National Coarse Thread								
Size (in)	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 (in)	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 (mm)	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

# Preparing for Installation



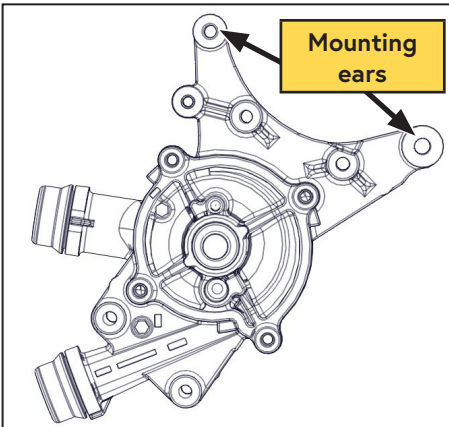
*Preparation for installation is very important. Missing a step or an item can cause problems in the installation or damage to components.*

Check off each item as it is completed so that no steps are missed.

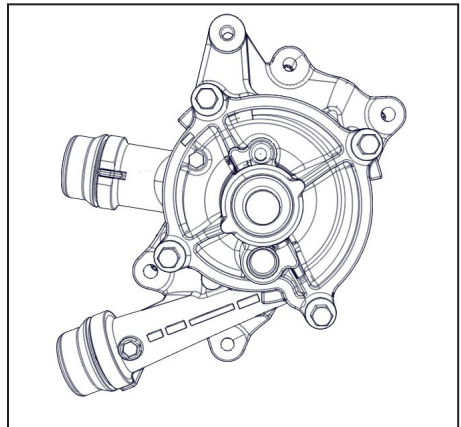


*This adaptor kit is designed to allow installation of the V400021 system on vehicles equipped with water pumps that do not have integrated mounting ears.*

Confirm that the vehicle's water pump does not have integrated mounting ears (Figure 1).



Water pump with integrated mounting ears



Water pump without integrated mounting ears

Figure 1 — Identifying compatible secondary cooling system water pump



*Complete all of the instructions from the "Preparing for Installation" chapter in the V400021 installation manual.*

# Installing the Main Bracket and Compressor



**Apply Loctite 242 (blue) to all fasteners (except nylon lock nuts) unless otherwise stated.**

- Cut the cable ties securing the OEM wiring bundle to the cable tray.
- Remove the cable tray. Retain the cable tray and bolt as they will be reused (Figure 2).

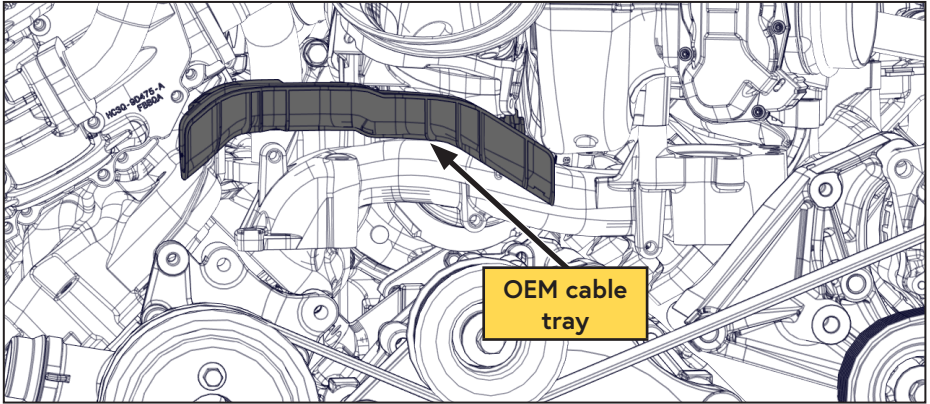


Figure 2 — OEM wiring tray

- Remove and discard the (x2) indicated water pump fasteners (Figure 3).

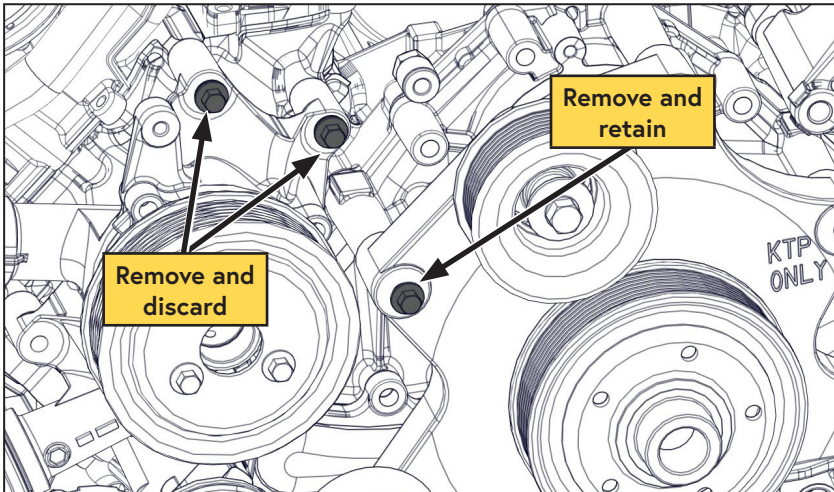


Figure 3 — Preparing for compressor installation

- Remove and retain the indicated fastener (Figure 3).

- Loosen the indicated "captive" fastener (Figure 4).

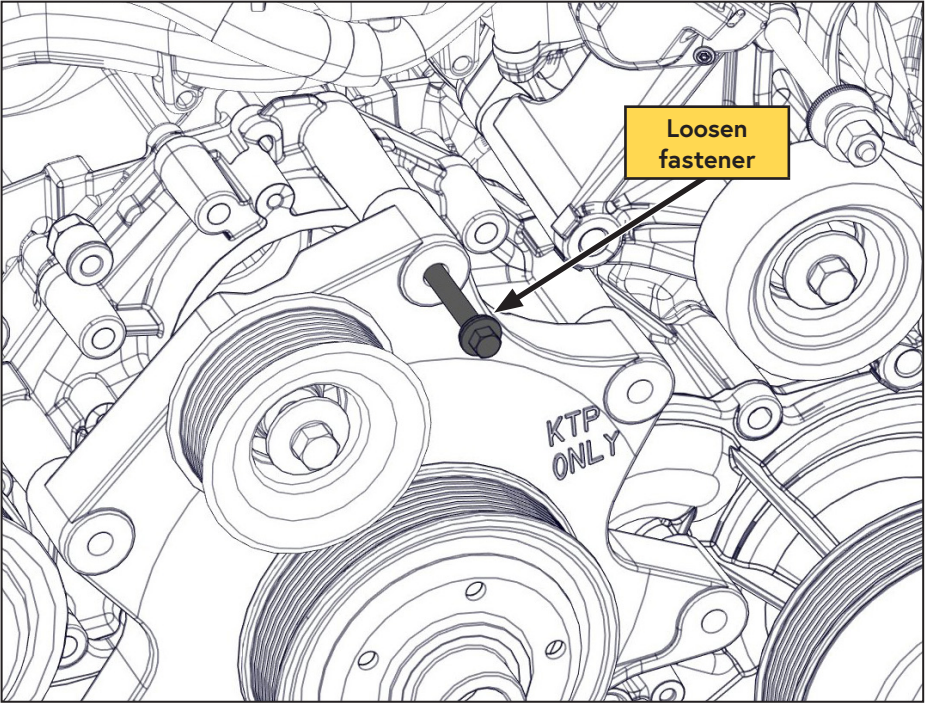


Figure 4 — Preparing for compressor installation

- The compressor discharge fitting will be oriented towards the oil return fitting, use a 3/4 in wrench to hold the fitting and a 7/8 in wrench to ensure the locking nut is tight (Figure 5).

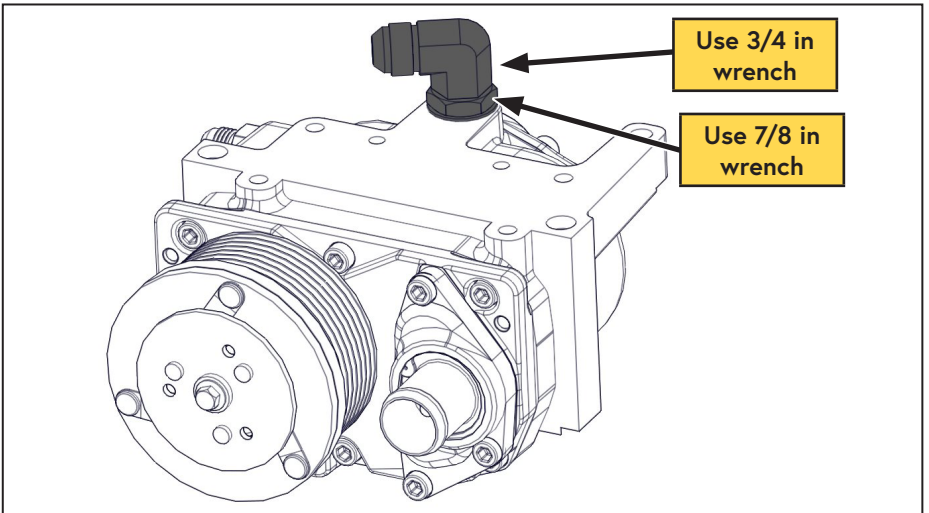


Figure 5 — Compressor discharge fitting

- Mount the compressor onto the bracket using the (x4) supplied fasteners (Figure 6).

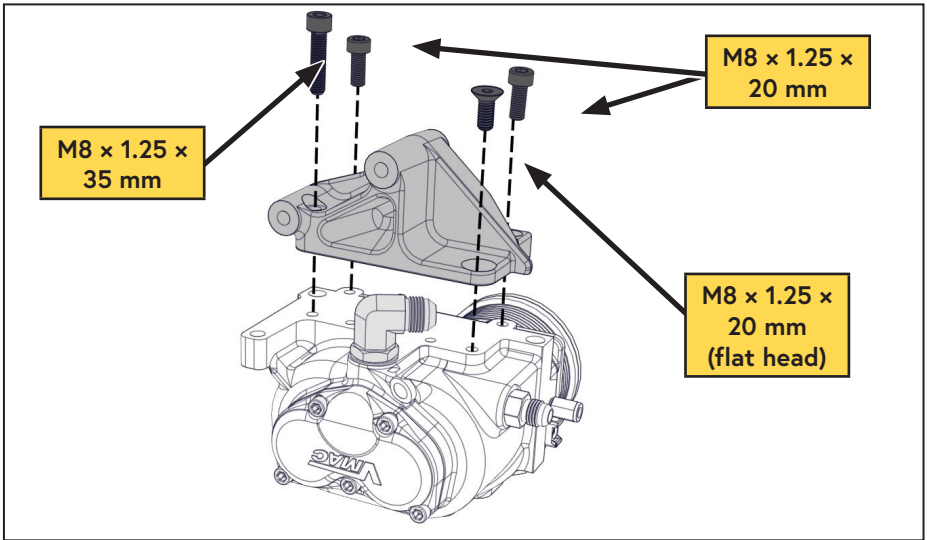


Figure 6 — Mounting the compressor to the main bracket



**Ensure the discharge fitting does not contact the main bracket and that the hose does not twist or kink while the main bracket and compressor are installed onto the engine.**

- Install the 45° fitting from the 1/2 in x 24 1/2 in discharge hose onto the compressor discharge fitting. Orient the hose in the same direction as the #6 JIC oil fitting on the side of the compressor and tighten the hose securely (Figure 7).

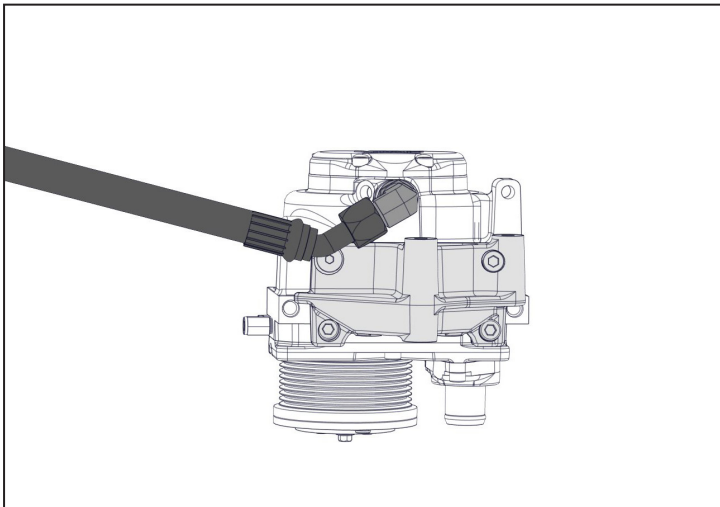


Figure 7 — Compressor discharge hose



- Mount the compressor and main bracket assembly onto the engine. It may be necessary to loosen the (x2) front passenger side intake manifold fasteners in order to slide the compressor and bracket into place (Figure 8).

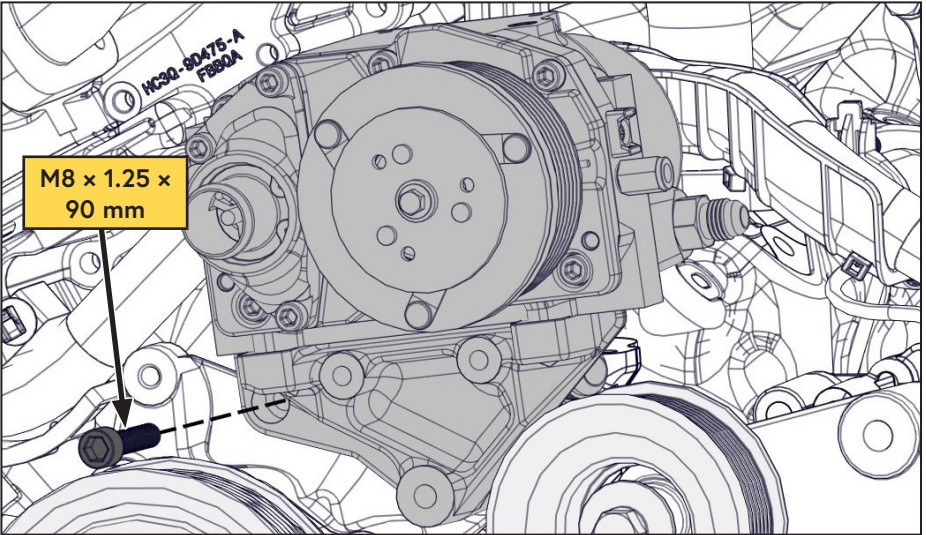


Figure 8 — Mounting the compressor to the engine

- Install the compressor brace bracket and torque to specification. Note the location of the OEM and VMAC supplied fasteners (Figure 9).

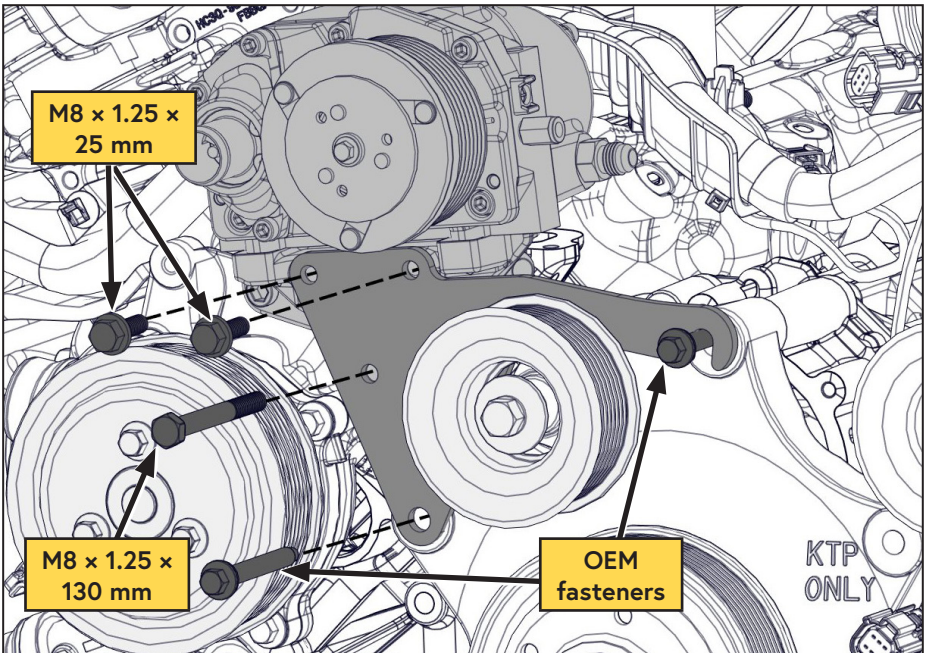


Figure 9 — Install the brace bracket

## Cable Tray Installation

- Grind the fins flush with the cable tray body (Figure 10).

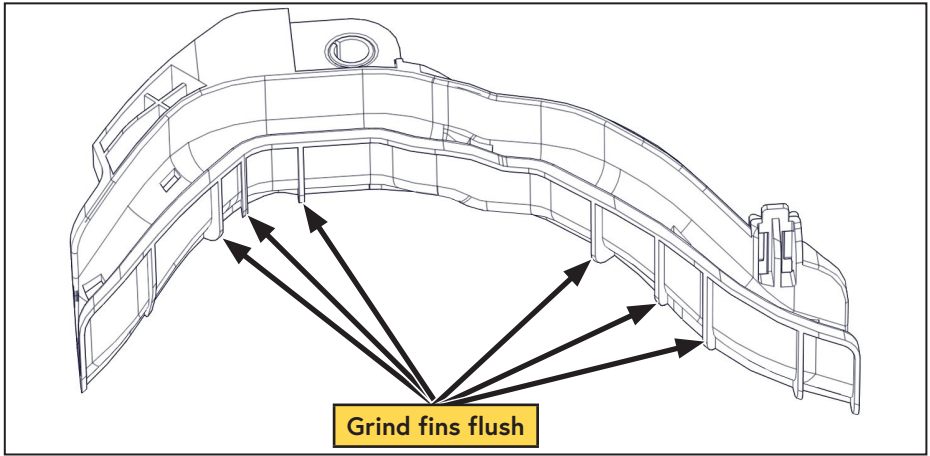


Figure 10 — Modifying the cable tray



*There may be enough clearance to fit the compressor by grinding the fins on the cable tray flush with the rest of the plastic. Try this first and reinstall the cable tray (Figure 10).*

*If the cable tray cannot be installed after removing the fins, remove the tray (do not remove the compressor) and modify as needed (see "Additional Cable Tray Modification (if required)" on page 16).*

- Install 2 cable ties into the modified cable tray (Figure 11).



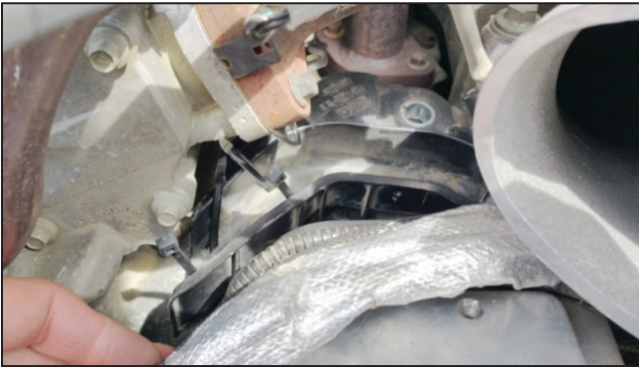
Figure 11 — Additional cable tray modifications

- Pull the OEM wiring and vacuum lines over the top of the compressor and toward the front of the vehicle (Figure 12).



**Figure 12 — Installing the cable tray**  
(V300011 compressor shown)

- Using the OEM fastener, install the cable tray back onto the engine (Figure 13).



**Figure 13 — Installing the cable tray**  
(V300011 compressor shown)

- Place the OEM vacuum lines into the cable tray (Figure 14).



**Figure 14 — Installing the cable tray**  
(V300011 compressor shown)



- Place the insulated wiring harness over the top of the vacuum lines and secure them using the 2 previously installed cable ties (Figure 15).



Figure 15 — Installing the cable tray  
(V300011 compressor shown)

- Trim the excess material off the cable ties and do a visual check to ensure no wiring or vacuum lines are contacting the compressor housing (Figure 16).



Figure 16 — Installing the cable tray  
(V300011 compressor shown)



Refer to the "Hose Requirements" chapter of the V400021 installation manual for the remainder of the system installation instructions

## Additional Cable Tray Modification (if required)

- Mark a line along the edge of the cable tie hole (Figure 17).

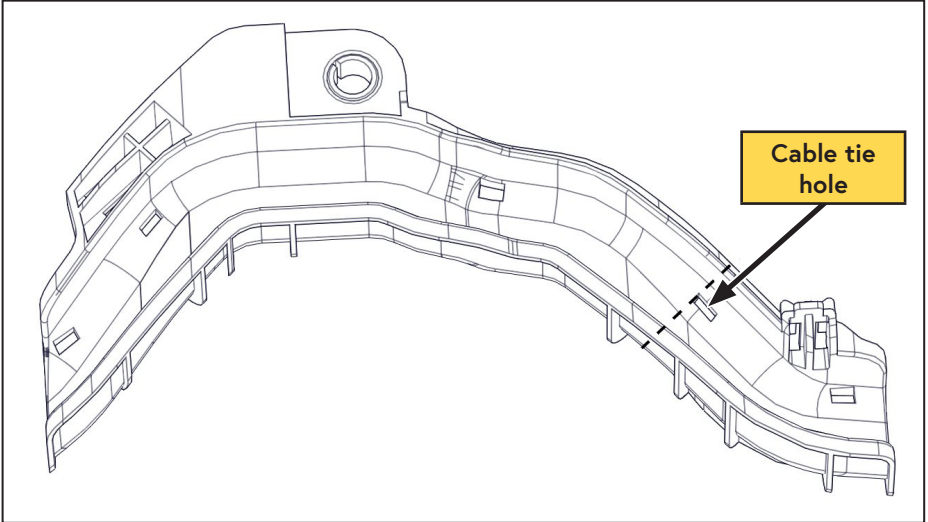


Figure 17 — Additional cable tray modifications

- Cut the cable tray along the marked line and discard the short piece.



Manufactured by



888-241-2289



877-740-3202



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