

# Installation Manual for VMAC Accessory

A700327  
Upfitter Interface Module

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



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## Additional Application Information

- For use with 2020+ Ford Transit 3.5 L Gas (Duratec and Ecoboost) equipped with electronic parking brake.

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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".

## Notice

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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

Warranty registration for VMAC systems can be completed online or by filling in the form at the back of each system installation manual. Warranty registration must be completed and sent to VMAC at the time the system is put into service 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.
- 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 "Standard" 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 warrant 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

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

- None.

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. Damage Table**

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

# Electrical System Best Practices

- To confirm a good ground, use an ohm meter to measure the resistance between the ground point and the negative battery terminal. Resistance should be less than 1  $\Omega$ .
- Route all wires to ensure they will not contact hot, sharp or moving parts (including the park brake mechanism, steering column, and pedals).
- Before drilling any holes ensure there are no OEM wires, hoses, or components that may be damaged.
- Do not use a test light to probe for power on vehicle circuits, the increased current draw of the test light may damage components.
- VMAC recommends using only sealed crimp and solder butt connectors for all electrical connections.
- To ensure a durable connection, use only good quality crimping tools.
- Apply loom to all wiring:
  - Use high temperature loom in areas where high temperatures may be expected.
  - Use spiral loom in areas with high vibration.

## In-line Butt Splice Connections

- Cut the wire approximately 2 in from the connector.
- Strip approximately 3/8 in from the end of both sides of the cut wire, as well as from the end of the wire being spliced in-line.
- Twist the wire to be spliced in-line, together with the "live" side of the wire (not the wire attached to the connector).
- Slide the butt connector onto the twisted wires and crimp it.
- Insert the "connector side" of the wire into butt connector and crimp it.
- Lightly tug the wires to ensure they are properly crimped.
- Using a heat gun, carefully apply heat to the butt connectors to seal the connection.

## Tying into OEM connectors

Some OEM connectors may have locking tabs that must be disengaged prior to inserting a crimped connector.

# Electrical Schematic

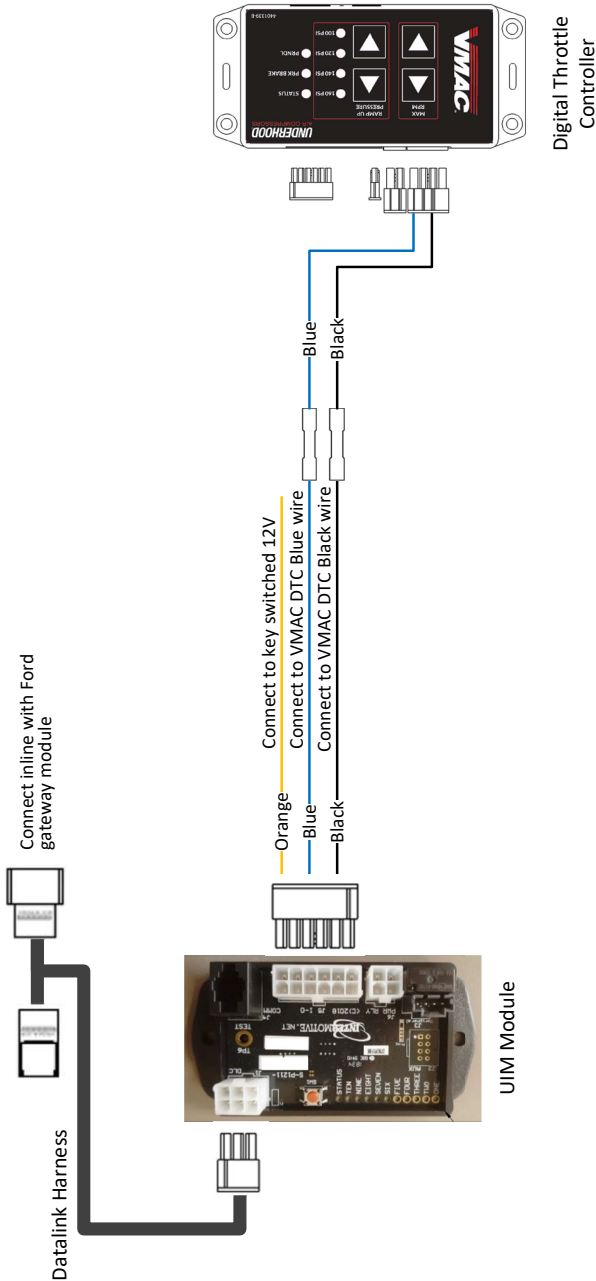


Figure 1 — Electrical schematic

VMAC - Vehicle Mounted Air Compressors

VMAC Technical Support: 888-241-2289

VMAC Knowledge Base: kb.vmacair.com

# Maintenance and Repair Safety



*Prior to performing any service, ensure the vehicle is parked on level ground and that the transmission is in "PARK" with the parking brake applied and the wheels chocked (if applicable).*



*It is impossible to warn of all the possible hazards that may result from operating, servicing, or repairing this system. Wear all appropriate Personal Protective Equipment and follow all industry standard safety practices.*



*Confirm that the system is depressurized and has cooled prior to performing any service work.*



*Never use flammable solvents to clean any components. If a flammable solvent has been used, rinse the component thoroughly with water and dry it before reinstalling it to prevent the possibility of explosion.*



*Use only genuine VMAC parts to maintain the system.*

*Genuine VMAC parts are designed to work with the high pressure and heat generated by the compressor. Substituting genuine VMAC parts may void the warranty and could cause equipment damage, injury, or death.*



*This information is intended for people with mechanical trade certification who have the tools and equipment to properly and safely perform the service or repair. Do not attempt to service or repair this system without the appropriate mechanical training, knowledge and experience.*

*Follow all safety precautions and industry standard "best practices".*

## Safety Check List

- ☐ Open the ball valve or connect an air tool to the system to ensure all the stored air is released.
- ☐ Gently pull up on the ring on the pressure relief valve (located on the WHASP Tank) to confirm the system is depressurized.



*Do not use the pressure relief valve as a means of depressurizing the compressor system. Doing so will prematurely wear the internal spring or the seat, preventing the valve from maintaining normal system pressure.*

# Installation

- ☐ Remove the lower dashboard panel (below the steering wheel).
- ☐ Locate the gateway module (C2431) (Figure 2).



**Figure 2 — Ford gateway module**

- ☐ Remove the harness from the gateway module (note there is a locking tab securing it to the module).
- ☐ Plug the female side of the supplied Datalink harness into the back of the Ford gateway module; ensure the connection is fully seated and locking tab is engaged.
- ☐ Plug the male side of the Datalink harness into the Ford gateway harness; ensure the connection is fully seated and locking tab is engaged.
- ☐ Plug the Datalink harnesses into the Upfitter Interface Module (UIM).
- ☐ Plug the harness with the 12 pin connectors into the UIM.
- ☐ Using the supplied butt connector, splice the orange wire from the 12 pin connector on the UIM to 12 V key switched power.

## **Test the UIM Interlocks**

- ☐ Observe the UIM while starting the vehicle.
- ☐ Ensure at least one of the LED's on the UIM flash within 10 seconds of the vehicle starting.

\*Using a multimeter, measure the resistance between the blue wire from the UIM and chassis ground.

- ☐ \*Resistance should be less than 30  $\Omega$  when the gear selector is in Park.
- ☐ \*Resistance should be open circuit when in any other gear.

\*Using a multimeter, measure the resistance between the black wire from the UIM and chassis ground.

- ☐ \*Resistance should be less than 30  $\Omega$  when the park brake is engaged.
- ☐ \*Resistance should be open circuit when the park brake is released.
- ☐ Shut down the engine.

## **VMAC - Vehicle Mounted Air Compressors**

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## Completing the Installation

- ☐ Splice the blue wire running from the 12 pin connector on the UIM to the blue wire running from the 8 pin connector on the VMAC throttle control<sup>1</sup>.
- ☐ Splice the black wire from the 12 pin connector on the UIM to the black wire running from the VMAC throttle control.
- ☐ Secure the UIM module and gateway harness up and out of the way of the pedals, steering column, and the park brake mechanism.

<sup>1</sup>If the blue wire running from the 8 pin connector on the VMAC throttle control is currently connected to the green wire on the gear selector:

### Option 1

- ☐ Using heat shrink tubing or electrical tape, Properly terminate the blue wire running from the 12 pin connector on the UIM such that it is unable to short out.

Or

### Option 2

- ☐ Remove the blue wire running from the VMAC throttle control to the green wire at the gear selector switch.
- ☐ Using electrical tape, ensure the old splice location on the green wire is properly insulated and protected from accidental shorts.
- ☐ Follow the instruction above for connecting the UIM blue wire.

# Testing the Installation



*The following tests confirm that the drive disable system is working correctly. The drive disable system prevents the VMAC throttle from increasing engine rpm unless the transmission is in "PARK" and the park brake is engaged.*

*2 people are required to perform this safety test. 1 person must remain in the driver seat and be prepared to actuate the service (foot) brake if necessary.*

*The second person will actuate the compressor switch and ball valve as necessary.*

- ☐ Place the vehicle in Park.
- ☐ Engage the Park Brake.
- ☐ Start the vehicle.
- ☐ Turn the VMAC system on. \*The VMAC system should run normally.

\*Release the park brake.

- ☐ \*The the compressor clutch should disengage and engine speed should reduce to OEM idle.

- ☐ Reapply the park brake.



*The following steps marked with asterisks will be repeated.*

- ☐ \*With the engine running, depress the service (foot) brake and shift the transmission out of "PARK".

\*Turn on the compressor and open the ball valve.

- ☐ \*The clutch should engage, but engine speed should NOT increase.

- ☐ \*The "STATUS" and "PRNDL" LED's on the digital throttle control will turn off.

- ☐ \*Close the ball valve.

- ☐ \*Turn off the compressor.

- ☐ \*Drain any accumulated air from the system.

- ☐ \*Shift the transmission into "PARK".

- ☐ Repeat the steps marked with asterisks for all transmission selector positions, returning the gear selector to "PARK" and cycling the compressor "OFF", then "ON" after each gear is tested.

## This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.



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[illegible]



Manufactured by



888-241-2289



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