UNDERHOOD® 40
AIR COMPRESSORS

UNDERHOOD 40
With Advanced Digital Controls
Truck and Van Series
Owner's Manual

VMACAIR.com

Table of Contents

General Information 3
Safety 4
Safety Precautions 5
Warranty 8
System Specifications 10
Identifying Your System 11
Operating Principles 12
System Components 15
Telematics Integration (Optional) 21
Remote Start Integration (Optional) 22
Display Box Operation 23
Menus and System Adjustments 26
Clearing the "Register VMAC" Notification 31
Operating the System 32
General Maintenance Information 36
Service Reminders 38
Maintenance and Repair Safety 39
Regular Inspection Instructions 40
200 Hour / 6 Month Service 46
400 Hour / 1 year Service 49
Diagnostics and Trouble Shooting 52
Performance Testing 62
System Adjustment, Optimization, and Basic Parameters 63
Air Receiver Tank 64
Recommended Accessories 65
Accessory Products from VMAC 66
Warranty Registration 72

Revision	Revision Details	Revised by	Checked by				Implemented
			Eng.		Tech.	Qual.	
			Mech.	Elec.			
B	ECN: 24-191 Add warranty clear instr.	MSP	N/A	LUB	MSP	N/A	28 Nov. 2024

Additional Application Information

This owner's manual applies to UNDERHOOD 40 with Advanced Digital Controls. For system build with analog or standard control systems, see "UNDERHOOD 40 Truck and Van Series Owner's Manual" (P/N: 1930335)

Registered Trademarks

All trademarks mentioned in this manual are the property of their respective owners. VMAC's use of manufacturers' trademarks in this manual is for identification of the products only and does not imply any affiliation to, or endorsement of said companies.

Important Information

The information contained in this manual is based on sound engineering principles, research, and extensive field experience. Information is constantly changing with the addition of new models, assemblies, service techniques and unannounced OEM changes. If a discrepancy is found in this manual, contact VMAC prior to initiating or proceeding with installation, service, repair or operation. Current information may clarify the issue. Any person 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 any person to properly adhere to standard safety practices or the procedures set out in this manual. Safety should be the first consideration when operating, or performing any service to the equipment. If there are any questions concerning the procedures in this manual, or more information is required, please contact VMAC before beginning repairs.

Notice

Printed in Canada

General Information

Introduction

This manual provides operating instructions, specifications, adjustment, maintenance and warranty information for VMAC UNDERHOOD 40 Air Compressor systems. Read this manual prior to servicing or operating the compressor system.

Follow all safety precautions when servicing or operating the VMAC system as moving drive belts, fan blades and other rotating components pose an extreme hazard.

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

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

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 specific installation 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.

Ordering Parts

To order parts, contact a VMAC dealer. The dealer will ask for the VMAC System ID (see page 11), part number, description and quantity. Locate the nearest dealer online at https://www.vmacair.com/support/find-a-dealer or call (877) 912-6605.

Additional Support

Additional resources such as installation manuals, illustrated parts lists, the VMAC Knowledge Base, air tool consumption guides, etc. are available at https://www.vmacair.com/support/.

Safety

Safety Messages

This manual contains various warnings, cautions and notices that must be observed to reduce the risk of personal injury during operation or service, and the possibility that improper operation or service 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.

Follow all safety precautions for mechanical work. Moving belts and rotating components are an extreme hazard. Stay clear of all moving parts when the system is operating. Only qualified personnel should perform maintenance and repair on system components and only while the system is properly shut down.

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.

Personal Safety

- Do not breathe the compressor air. Vaporized oil is a respiratory hazard.
- Do not breathe engine exhaust, internal combustion engines produce carbon monoxide, a poisonous odorless gas which can cause death. Do not start or operate this compressor in an enclosed area.
- Always use the appropriate personal protective equipment, particularly eye and hearing protection when operating air powered 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 before performing service.
- Never allow any part of your body to contact the engine or compressor components.
- Do not attempt to service the compressor until it has sufficiently cooled.

Fire and Explosion Hazard

- Vaporized oil propelled by high pressure air is an explosive mixture.
- Fire in the compressor can cause an explosion and flame projection. Should this occur, there is potential for serious injury or death.
- Operate the compressor in a well ventilated area free of flammable vapors, dust, or other combustible materials.
- Do not refuel the engine while the system is running or hot.
- Do not refuel the engine in an enclosed space or area with poor ventilation.
- If fuel is spilled, clean the area and wait for it to dry before starting the engine.
- Never place objects against or on top of the compressor.
- Never expose the system to extreme heat.

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 compressor while it is pressurized or operating.
- Do not move the compressor by pulling on any hoses.
- Components and hoses under pressure could separate suddenly, fly out and cause serious injury or death. If equipped, the air receiver tank must be drained before servicing any components in the compressor 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

This system is designed to generate air pressure up to 150 psi during normal operation (factory default: 135 psi):

- 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.

Moving Parts Hazard

- Before performing service, disconnect the negative battery cable.
- Avoid contact with drive belts and other moving parts while the system is in operation.

General Warnings

- Be attentive for unexplained changes in operation parameters and record any changes.
- Check the engine and compressor oil levels and condition prior to starting the system.
- Do not add or change oil while the system is running.
- Use only approved oils.
- Inspect the equipment before every use.
- The compressor may operate anytime the engine is running. Avoid contact with the compressor, hoses, or engine during operation.
- Keep hoses and wiring away from hot, sharp, or moving components.
- Use only approved hoses and replacement parts.
- Do not modify the equipment.
- Do not operate this system unless this manual has been read in its entirety.
- Do not operate this system when fatigued or under the influence of alcohol or drugs.
- Never bypass or disable any of the safety equipment.
- Never adjust or attempt to make any repairs to this system while the engine is running unless expressly instructed to do so.
- Components and hoses under pressure could fail and cause serious injury or death.

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**

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:

https://www.vmacair.com/support/warranty-registration

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/support/find-a-dealer

1) Communicate with VMAC Technical Support at (888) 241-2289 or tech@vmacair.com to help diagnose/troubleshoot the problem prior to repair. VMAC technical support will require the VMAC System ID, and 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, loss of income, 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).

System Specifications

Model
- UNDERHOOD 40 Truck/Van Series Air Compressor.

Compressor Type
- Flooded lobe, rotary screw.

Drive System
- Front End Accessory Drive (FEAD).

Control
- Electric on/off 12 V clutch control.

Maximum Air Delivery
- Up to 40 cfm @ 100 psi (dependent upon vehicle installation and engine speed).

Pressure Regulation
- Mechanical pressure switch on the air/oil separation tank signals the compressor clutch to engage/disengage in response to air demand.

Engine Control
- Single speed throttle control (Maximum rpm adjustable by the end user).
- Elevated engine speed in response to air demand.

Safety Features
- 200 psi (1380 kPa) pressure relief valve in the Waste Heat Air Oil Separation Package (WHASP) Tank.
- Thermal monitoring and electronic control.
- Rapid blowdown valve to relieve system pressure on shutdown.

Use only genuine VMAC replacement parts to maintain the system.

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

Lubrication
- VMAC High Performance Compressor Oil.

Filters
- Air filter: Replaceable paper element.
- Oil filter: High pressure spin-on.
- Coalescing filter: High pressure spin-on.

Use of an air receiver tank (minimum 6 USG) is required with this application.

Follow the instructions on page 64 of this manual to prevent damage to the system.

Identifying Your System

The System ID will be requested any time that parts are ordered, when calling for technical support or submitting a warranty claim.

The system ID is the preferred method of identifying the system as it serves as a master record of all of the components in the system. The system ID plate is generally found on the radiator cross member, or in some instances, the inner fender or firewall (Figure 1).

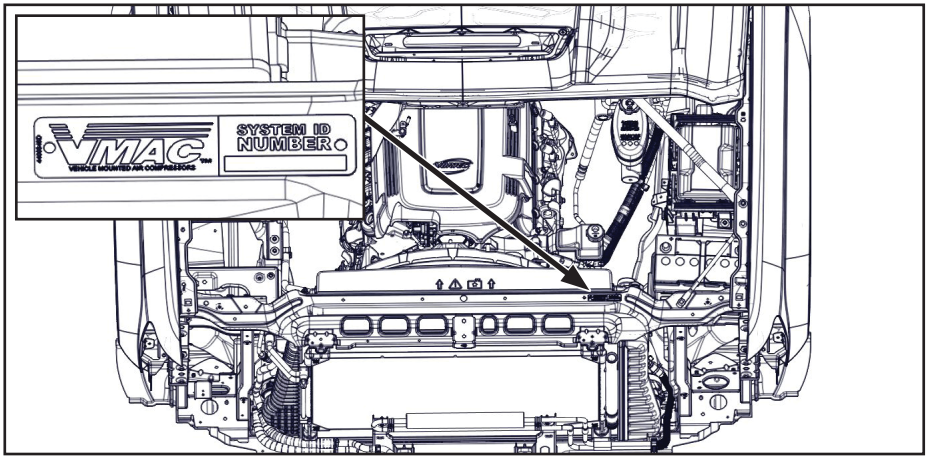


Figure 1 — System ID location

An alternative method of identifying the system is via the compressor serial number which is found on a plate attached to the compressor. This is a less desirable method of identifying the system as it may not link back to the original system if it has been replaced.

System ID breakdown

The system ID provides specific information about the system such as the model, revision, production date and the unique identifier (Figure 2).

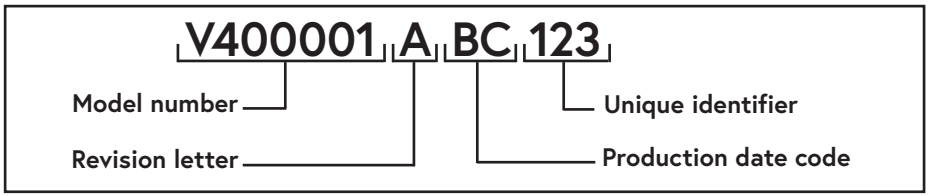


Figure 2 — System ID breakdown

Operating Principles

Air Compression

At the heart of VMAC's UNDERHOOD 40 Air Compressor systems is a flooded lobe, rotary screw compressor.

Compression occurs when filtered air, at normal atmospheric pressure, enters the chamber where it is trapped between meshing rotor lobes. Cooled oil is injected into the compressor housing during compression to seal the rotor lobes for maximum compression efficiency. The oil also lubricates the rotors and bearings and absorbs some of the heat generated during compression. As the rotors rotate, the meshing lobes compress the volume of air before sending the air/oil mixture down the discharge hose to be separated and cooled by the WHASP Tank.

Oil Separation and Cooling

The system uses a proprietary 2 stage air/oil separator and cooler called a WHASP Tank. The hot air/oil mixture from the compressor enters the cooler on top of the tank where the mixture is cooled and the majority of the oil separates from the air and settles into the tank below the cooler (this is the first separation stage). The cooled oil passes through a high pressure oil filter and is returned to the compressor via the oil return hose.

The cooled air (with any remaining oil) then passes through a coalescing filter which removes the last of the oil from the air stream. Oil from the coalescing filter is returned to the compressor via the 1/4 in PTFE scavenge tube.

The WHASP Tank is manufactured with an integrated minimum pressure check valve (MPCV) to ensure a minimum of 60 psi (415 kPa) is maintained in the tank to ensure proper oil flow while the clutch is engaged and the system is compressing air. Air will not flow out of the WHASP Tank until this pressure is reached. The MPCV is factory set and does not require service or adjustment.

The VMAC WHASP Tank has a built-in check valve. Use of an additional check valve is not required and may cause erratic performance.

Filtration

VMAC rotary screw compressors are designed and machined to exacting standards. Foreign particles entering the compressor can damage components such as rotors, bearings, seals, and the housing resulting in performance and efficiency loss and reduced system life.

The system is equipped with a replaceable paper element air filter as well as high pressure spin-on oil and coalescing filters.

Belt Alignment and Tensioning

Dependent upon the application, the UNDERHOOD 40 Air Compressor system may be driven by either the OEM FEAD belt, or a dedicated FEAD belt. On systems driven by the OEM FEAD belt, the compressor typically mounts in the secondary alternator location.

While the OEM FEAD belt may be replaced with a longer one (if required), the OEM belt tensioning system will remain the same and the OEM belt servicing interval should be followed.

Systems using a dedicated FEAD belt are equipped with an automatic tensioner and do not require manual adjustment.

Dependant upon the specific system, the compressor may be driven by a FEAD belt with up to 8 ribs. To ensure proper belt alignment, verify the belt is centered on the clutch (e.g. a 4 rib FEAD belt will sit on the middle 4 grooves of the compressor clutch with 2 grooves showing on either side of the belt).

Pressure Regulation and Engine Speed Control

When shut down, the VMAC system "blows down" or discharges all air stored in the WHASP Tank. When the system is started, it will either try to build air (if system pressure is low) or will enter standby (if already at system pressure). When the system is building air, the system will first go through a start routine to ensure the compressor starts under optimal conditions.

- The engine speed will elevate to the programmed "Starting RPM" (usually in the range of 800 rpm to 1,200 rpm). This parameter is located in the DTC status menu.
- The blowdown pressure sensor is checked to ensure pressure in the compressor is less than 10 psi.

Once the above conditions are confirmed, the compressor clutch will engage and the system will start building air.

Engine speed will elevate to "maxRPM" (this is defined by the VMAC system specific to the vehicle application). Higher engine speeds will yield higher compressor output (cfm) but will generate more noise and consume more fuel.

The system will continue to build air until system pressure is achieved (150 psi by default) and the system will enter Standby mode.

When the system is in Standby:

- Engine speed will drop to base idle.
- The compressor clutch will disengage.
- The WHASP Tank will blow down.
- The Controller will monitor the system air pressure. If the air pressure drops below 120 psi, the system will repeat the process above to build air.

The VMAC control system offers the following benefits:

- Reduced fuel consumption when not using air.
- Reduced load on the compressor cooling system.
- Reduced noise when not using air.
- Quick response to airflow demands.

Safety Features

A 200 psi pressure relief valve is installed in the WHASP Tank to prevent over pressurization. The WHASP Tank is also equipped with an integrated rapid blow down system that automatically discharges pressure from the WHASP Tank upon shutdown.

The UNDERHOOD 40 Air Compressor control logic utilizes built in safety circuits, in addition to OEM safety controls (if present), to prevent increasing engine rpm when certain conditions are not met. This helps to protect both the operator/ occupants and the vehicle should the VMAC system be inadvertently activated at an inappropriate time.

In the event that the air/oil temperature increases above a safe temperature, the temperature sensor in the compressor will signal the control module which will disengage the clutch and signal the throttle control to return the engine speed to base idle. The control module will also display the error code via the compressor status light on the interface panel.

System Components

The UNDERHOOD 40 Air Compressor system consists of the following components:

- Waste Heat Air Separation Package (WHASP) Tank.
- Compressor.
- Oil return, Air/Oil discharge hoses.
- PTFE oil scavenge tube.
- Control Module (Controller).
- Display box.
- Digital Throttle Control (DTC).

Control Components Overview

Van Layout

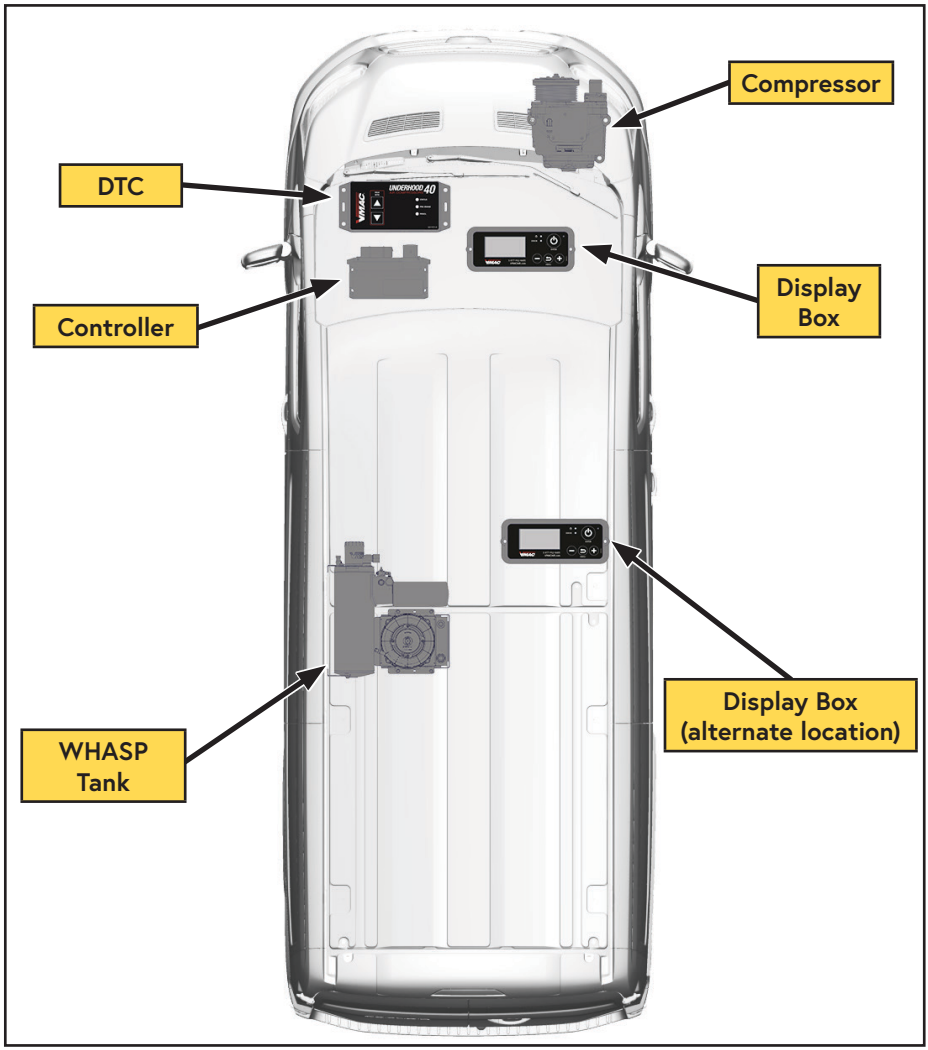


Figure 3 — General component overview
(Actual installation locations may vary)

Pickup layout

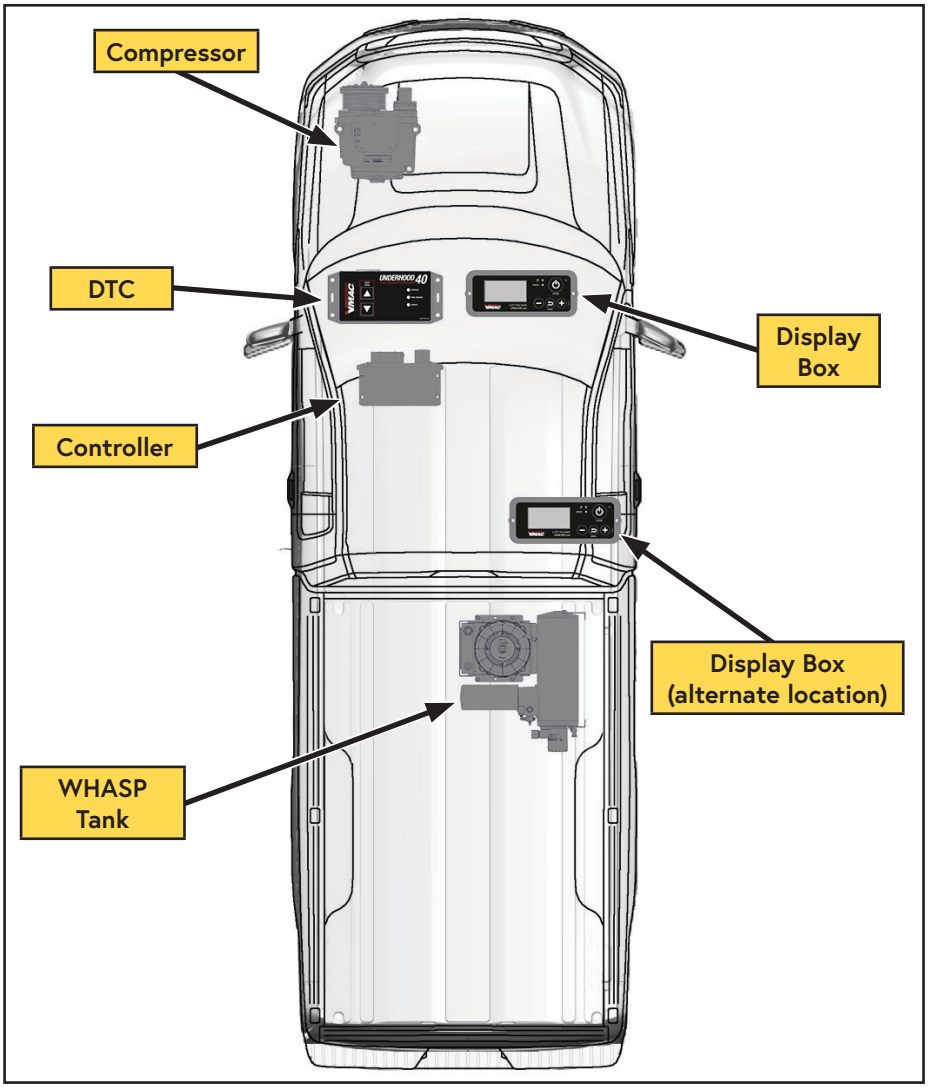


Figure 4 — General component overview
(Actual installation locations may vary)

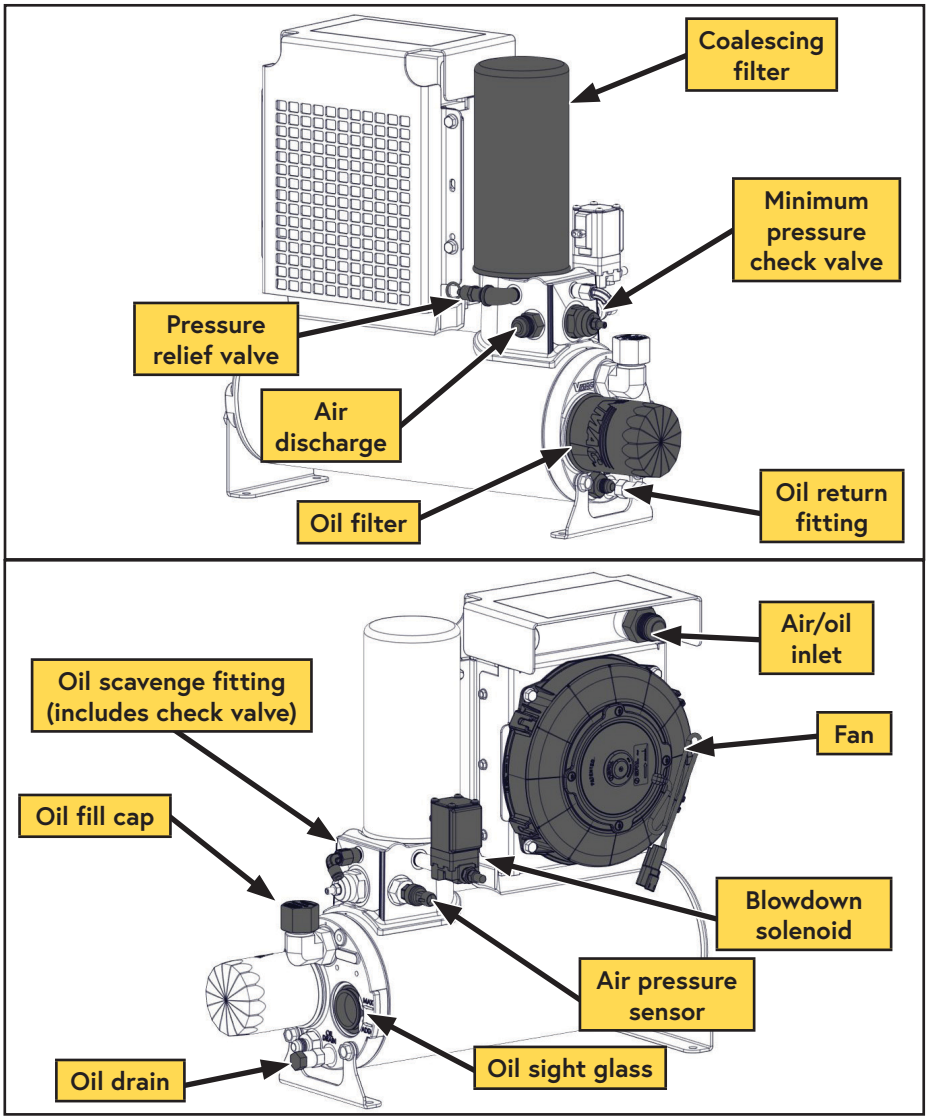


Figure 5 — WHASP Tank

Compressor

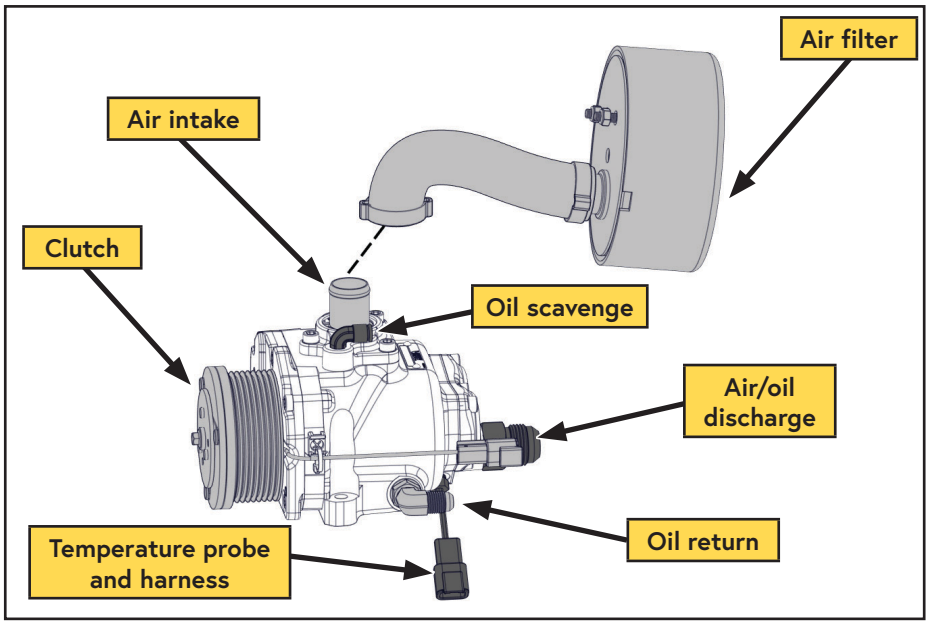


Figure 6 — Compressor
(Top inlet version)

Hoses and Tubes

The hoses used in VMAC compressor systems have an AQP inner liner that is compatible with VMAC compressor oil. The PTFE tube used in VMAC systems is rated for the high temperatures VMAC compressors generate. Use of hoses or tubes other than those supplied or recommended by VMAC may cause compressor damage and may void your warranty. Please contact VMAC for replacement hoses/ tubes or for further information.

- Hoses must have an AQP liner (or equivalent).
- Oil scavenge tubes must be PTFE.

VMAC Compressor oil will degrade rubber lined hoses, use only hoses with an AQP elastomer type liner. Refer to VMAC Knowledge Base article: https://kb.vmacair.com/help/required-vmac-hoses

Control Module (Figure 7)

The control module serves as the primary input/output interface between the vehicle and the various VMAC components (compressor, DTC, WHASP Tank, Control Interface, etc.).

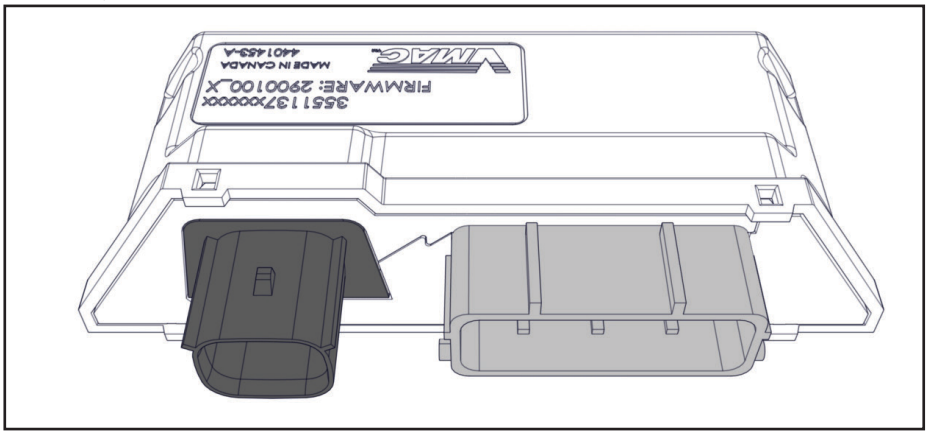


Figure 7 — Control module

Digital Throttle Control (DTC) (Figure 8)

The DTC responds to signals from the control module and commands the vehicle's throttle to increase or decrease engine speed in response to air demand.

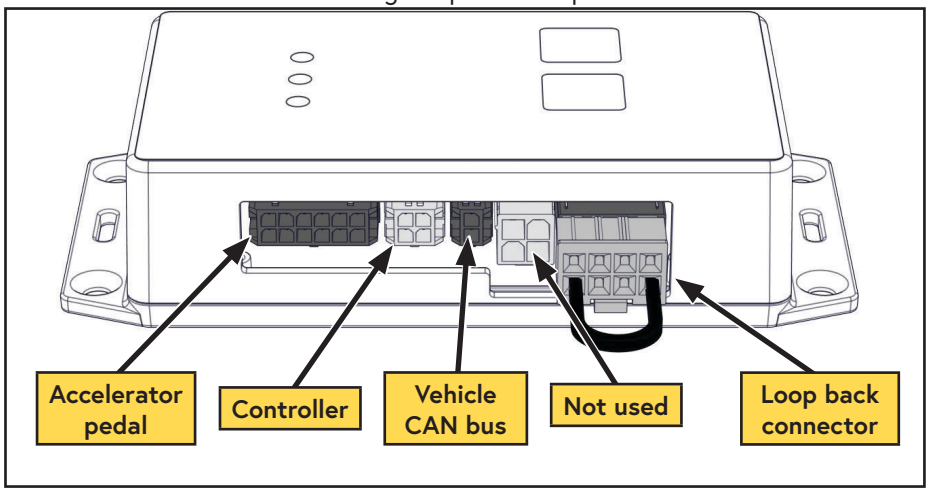


Figure 8 — VMAC DTC

Display Box (Figure 9)

The display box serves as the operator's control panel and contains the "ENTER" (compressor on/off), "–" (decrease), "MENU", and "+" (increase) buttons, power and "ERROR" indicator LEDs, and the screen which includes information such as compressor hours, service reminders, warning messages, error codes, access to the advanced settings, and diagnostic information.

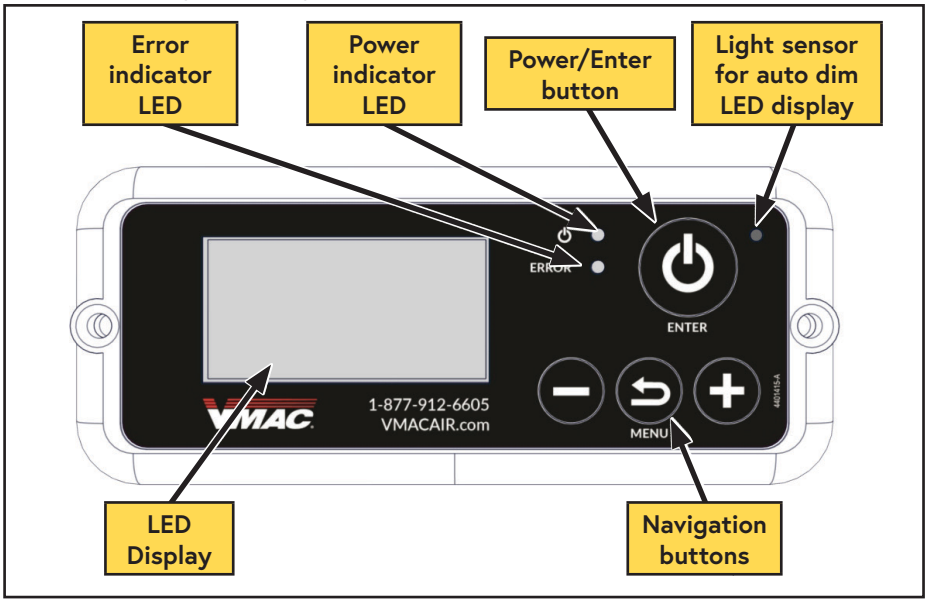


Figure 9 — Display box

Telematics Integration (Optional)

VMAC's advanced digital controls include an Upfitter harness connection for 3rd party telematics systems to read CAN data from the VMAC system.

Telematics System Requirements:

- CAN 2.0 running at 500 kbps baud.
- J1939.
- Integration of PGNs from VMAC's VCAN protocol.
  Note: *VMAC's VCAN protocol is available to telematics integration engineers upon request, please contact VMAC Technical Support.*

  If additional support is required, contact VMAC sales to book an initial consultation with a member of our engineering team.
  Phone: *(877) 912-6605*
  Email*: sales@vmacair.com*
- The supplied VMAC display box contains the 120 Ω termination resistor and has CAN packet acknowledgment.
- If the supplied VMAC display box is not used the following are required:
  - 120 Ω termination resistor across CAN signal lines.
  - CAN packet acknowledgement.
  - The 3rd party telematics system must support CAN message acknowledgment (must not operate in silent mode).

Telematics Integration

1) Connect the 3rd party telematics system (not supplied) to the VMAC system via the Upfitter harness (refer to the installation manual).
   Connect the 3rd party telematics system within 36 in of the Controller. If this is not possible, contact VMAC tech support for assistance.
   If the supplied Display is NOT used, add 120 Ω resistor between CAN H and CAN L near the 3rd party telematics system.
2) Ensure both systems share a good ground.
3) Program the 3rd party telematics system with VMAC VCAN PGNs (interpretation of VMAC CAN messages). Refer to the 3rd party telematics documentation.
4) Apply power to the system by turning the vehicle key to the "ON" position. Observe telematics data on the telematics system (regardless of whether the VMAC system is running or not).

Remote Start Integration (Optional)

The "system on" command is registered after 3 seconds. VMAC recommends programing 3rd party controls or relay actuation for 4 seconds to allow sufficient time for the command to register.

A remote start/stop option is available on a signal line provided in the upfitter harness. This signal line can be connected to a momentary switch, a low-side driver output of a 3rd party controller, or a relay.

Momentary switch

Connect a momentary switch between the green and black wires labeled "ON/OFF CTRL" on the Upfitter Interface harness. Press and hold the switch for 3 seconds to start the system. Press and release the switch to stop the system.

3rd Party Controller

Connect the black wire labeled "ON/OFF CTRL" on the Upfitter Interface harness to a low-side driver output of a 3rd party controller. To start the system, use the output to pull the signal line low for 4 seconds. To stop the system, use the output to pull the signal line low momentarily.

Relay

Connect the black wire labeled "ON/OFF CTRL" on the Upfitter Interface harness to a relay contact. Connect the other relay contact to ground. To start the system, activate the relay to pull the signal line low for 4 seconds. To stop the system, activate the relay to pull the signal line low momentarily.

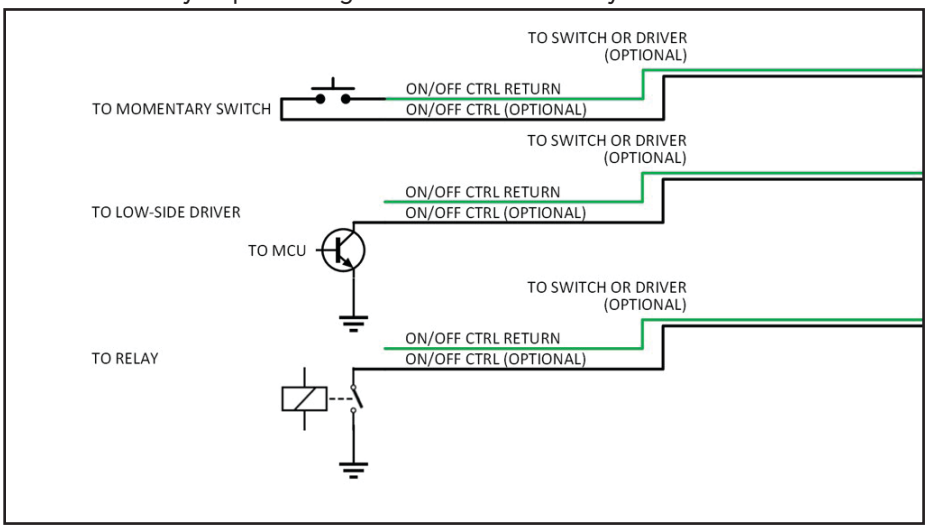


Figure 10 — Remote start integration

Display Box Operation

Splash Screen

Once power is sent to the system, the display box will briefly light up every pixel, this is useful for identifying dead pixels. A second splash screen will appear almost immediately displaying the VMAC logo, followed by the Run screen. To exit the splash screen early, press any button (Figure 11).

Figure 11 — Splash screen

Run Screen

The Run Screen is the main screen that will be visible during normal use (Figure 12).

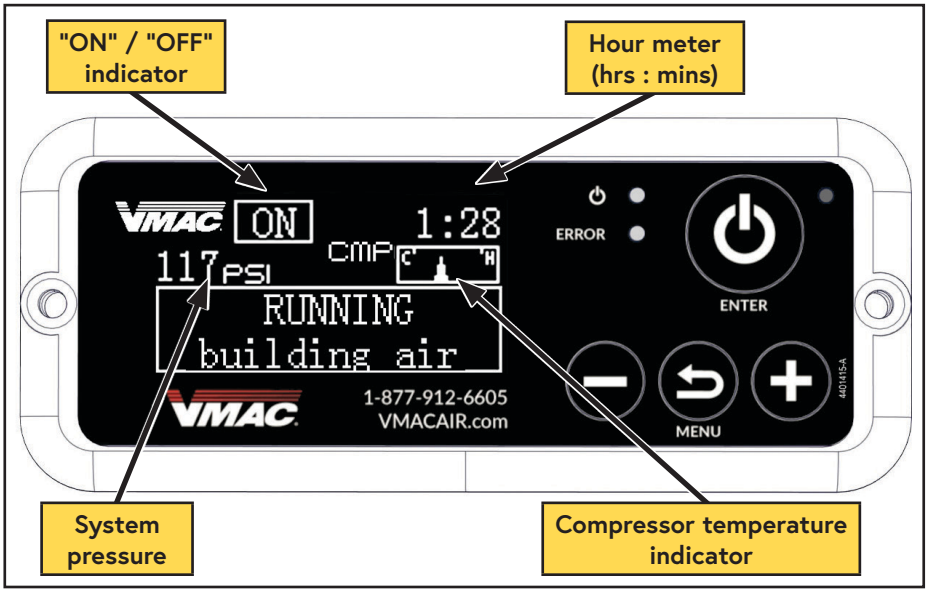


Figure 12 — Run screen

Press and hold the "ENTER" (power) button to turn the system on. Press the button once to turn it off.

Press the "MENU" (back) button to the enter the main menu (See "Main Menu" on page 26).

Run Screen (cont.) (Figure 12 on page 23)

The ON/OFF indicator displays whether the system is "ON" or "OFF". When the system is turned on (via the display box or the remote enable wire) the indicator will show "ON". If the screen displays "ON" but the compressor is not running, refer to the message window to see what mode the system is in (i.e. the system may be at system pressure in Standby mode).

The hours/minutes meter displays the running time of the compressor. The meter will flash to indicate that it is counting up and will stay solid when there is no change. The meter will only increase when the compressor is running (not necessarily when the system is on).

The pressure meter displays downstream pressure (WHASP Tank pressure sensor) during normal operation.

During the compressor start sequence, blowdown pressure is displayed (compressor pressure sensor). To prevent damage to the compressor, the Controller will not engage the compressor clutch until the blowdown pressure drops below 10 psi.

Once the compressor is running, the pressure meter reverts back to downstream air pressure.

Message Window

The message window is used to display a variety of different messages relating to running modes, service reminders, and error codes. See "Menus and System Adjustments" on page 26 for details on the various messages that may appear.

When the system is ON, the current running mode of the system will be displayed in the message window (Figure 13).

Figure 13 — Messages window

If an error causes the system to shut down, the message window will indicate that the system has been shut down/disabled, and then will flash the error that caused the shut down. The message screen will toggle back and forth between the two messages (Figure 14).

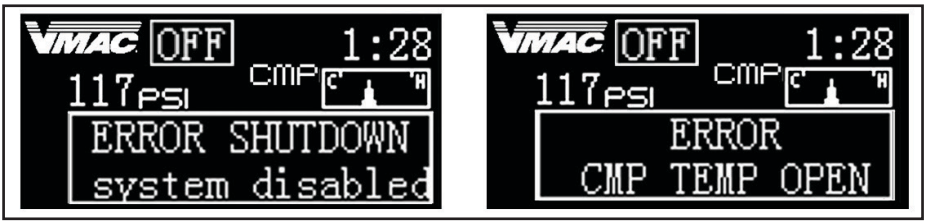


Figure 14 — Error message

Error Pop-Up

If an error occurs while the system is running, a pop-up window will appear and will remain until it is acknowledged by pressing "ENTER". The pop-up window will only appear once per unique error code, however, it will appear again if the error re-appears after being corrected (Figure 15).

Figure 15 — Error pop-up

Main menu

The Main Menu provides access to several parameters, settings, logs, and diagnostic tools. If a ">" symbol appears beside a menu item, it indicates that there is a submenu; to enter the submenu, press "ENTER". While in a submenu, use the "+" and "–" buttons to adjust the value. Press "ENTER" to accept the new value or press "MENU/BACK" to cancel and return to the old value. Messages that do not have the ">" symbol are information only and cannot be adjusted (Figure 16).

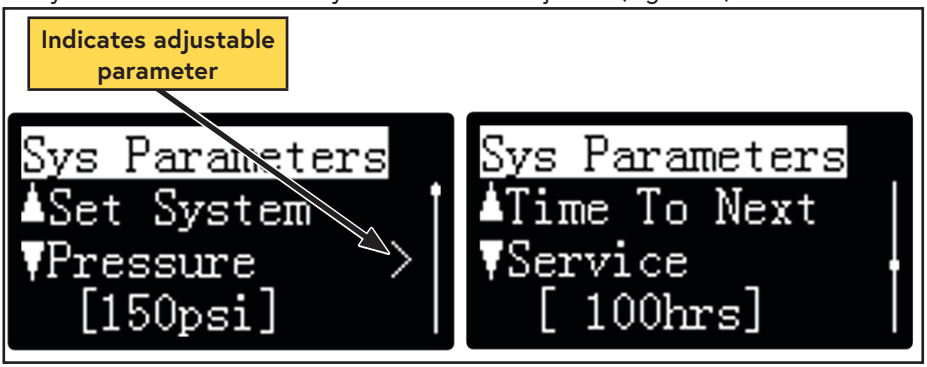


Figure 16 — Main menu

Menus and System Adjustments

Entering and Navigating the Menu/Submenus

1) Power on the system.
2) The display will go through the 2 splash screens.
3) Press the "MENU" button.
4) Use the "+" and "–" buttons to scroll through the Main Menu options.
5) Press the "ENTER" key to access the submenu.

While in the submenus, scroll through the data and variables using the "+" and "–" buttons and confirm the selection using the "ENTER" button.

Exiting the Menu/Submenu

Once changes have been made, press the "MENU" (back) button to return to the main menu.

Main Menu		
Submenu	**Action on ENTER**	**Description**
System Parameter	Go to System Parameters menu.	System adjustable parameters.
Sys Status	Go to System Status page.	System sensors and tools (diagnostics).
Service	Go to Service page.	Service reminders.
DTC Status	Go to DTC Status page.	Digital throttle sensors and tools (DTC diagnostics).
Logged Errors	Go to Logged Errors page.	Access previously logged error codes.
Disp Settings	Go to Display Settings page.	Display box specific adjustable settings.
Sys Info	Go to System Info page.	System hours, manufacture date, code revision, system type, options, and micro-processor serial numbers.

System Parameters		
Submenu	Action on ENTER	Description
Set System Pressure	Enter value adjustment.	Adjust the system pressure setpoint (default: 150 psi).
Restart Pressure	Enter value adjustment.	Adjust the system restart pressure (default: 120 psi).
Min RPM	Enter value adjustment.	Adjust the rpm at which the DTC calibration occurs.
Max RPM	Enter value adjustment.	Adjust the rpm used when the compressor is running. Default value produces optimal performance
Clear DTC Errors	Clears current DTC errors	Clear DTC errors.
DTC Factory Reset	Restores DTC to factory defaults	Factory reset DTC

System Status		
Submenu	**Action on ENTER**	**Description**
Mode	—	Operating mode.
System Pressure	—	System pressure.
Blowdown pressure	—	Blowdown pressure.
Compressor Temp	—	Compressor oil temperature.
Spare Temp	—	Not used.
Spare Temp 2	—	Not used.
Compressor Remote Signal	—	Status of remote signal: high, low, ---- (floating).
Controller Batt Volt	—	Battery voltage.
Controller VDDA Volt	—	Supply voltage inside Controller.
Controller MCU Temp	—	Temperature inside Controller.
Display MCU Temp	—	Temperature inside the display box.
VCAN Msg Rate	—	Number of VCAN messages received per second (does not include non-VCAN messages)
Controller Last Reset	—	Last reset source for the Controller. This should always be POR (power on reset), any other value indicates an issue.
Controller Test Mode	Enter value adjustment.	Controller TEST Mode ON/OFF.
Output Status	Go to Output Status page.	Status of all outputs

Service		
Submenu	**Action on ENTER**	**Description**
Time to Next Service	—	Number of running hours until next service is due. If the service is due now, "Due now" will display.
Next Service Type	—	Description of next service due.
Service Complete?	Mark service as complete (must press ENTER twice).	Mark current service reminder as complete and add to service log.
Service Log	Go to Service Log page.	Service log.

Display Settings		
Submenu	**Action on ENTER**	**Description**
Brightness	Enter value adjustment.	Adjust the Display brightness (default: 100 %).
Dim Level	Enter value adjustment.	Adjust the Display brightness during low light conditions (default: 25 %)
Ambient Light Level	—	Status of the ambient light sensor
Menu Timeout	Enter value adjustment.	Enable/disable menu timeout (default: ON).

System Info		
Submenu	**Action on ENTER**	**Description**
Running Hours	—	Number of running hours on the compressor.
Age	—	Age of the system since manufacture.
Year Manufactured	—	Year system was manufactured.
Month Manufactured	—	Month the system was manufactured.
Controller Software #	—	Controller firmware number.
Controller Software rev	—	Controller firmware revision.
Ctrl Serial #	—	Controller micro-processor 32-character serial number.
Display Software #	—	Display firmware number.
Display Software rev	—	Display firmware revision.
Dspl Serial #	—	Display micro-processor 32-character serial number.
DTC Software #	—	Digital Throttle firmware number.
DTC Software rev	—	Digital Throttle firmware revision.
System Type	—	Product type. Should be U40.

Output Status		
Submenu	**Action on ENTER**	**Description**
Blowdown Solenoid	Actuates blowdown solenoid. *(Only when system TEST Mode: ON).*	Displays solenoid output current.
Comp	Actuates clutch. *(Only when vehicle off and system TEST Mode: ON).*	Displays compressor output current.
Throttle	Powers DTC. *(Only when system TEST Mode: ON).*	Displays DTC output current.
Fan	Powers fan. *(Only when system TEST Mode: ON).*	Turns fan ON/OFF for testing.

DTC Status		
Submenu	**Action on ENTER**	**Description**
Engine RPM	—	Status of the vehicle engine RPM.
Engine Run Status	—	Status of the vehicle engine: ON, OFF.
Park Brake Signal	—	Status of the Park Brake interlock.
PRNDL Signal	—	Status of the Park interlock.
CAN Rate	—	Number of CAN messages received per second from the vehicle.
Remote RPM	—	Remote RPM setting. Normally matches Sys Start RPM.
Sys Start RPM	—	Starting RPM for the compressor.
Pedal 1	—	Accelerator pedal slope 1 output voltage.
Pedal 2	—	Accelerator pedal slope 2 output voltage
DTC POR Cycles	—	Number of power cycles.
DTC Type	—	System type. Should be U40.
DTC Mode	—	DTC mode: Off, Vary, Fixed, Remote.
DTC Relay	—	Status of DTC relay. Should be ON when compressor is running/starting.
DTC VCAN Control	—	Status of VCAN control. Should always be ON.
DTC Calibration	—	Status of the DTC calibration.
DTC Cal Value	—	DTC calibration value. This will be 1 when calibration is incomplete.

Service Log		
Submenu	**Action on ENTER**	**Description**
#	—	Displays the logged service. The most recent log entry will be 1.
Type	—	Displays the type of logged service.
(blank)	—	Displays the system hours when the service was logged.

Error Log		
Submenu	**Action on ENTER**	**Description**
#	—	Displays the logged error. The most recent log entry will be 1.
(blank)	—	Displays the error description (he error code will be in hexadecimal.
RUN	—	Displays the system hours when the error was logged.

Clearing the "Register VMAC" Notification

As the VMAC warranty commences on the warranty registration date, it should be registered by the end user, not the vehicle upfitter.

The "Register VMAC" Notification appears on new systems as a reminder to register the warranty on the system.

Once the warrant has been registered (see "Warranty" on page 8), the on screen message can be cleared.

1) With the VMAC display powered, press the "MENU" button.
2) From the "Main Menu", use the "+" or "-" buttons to scroll to the "Service" menu and press "ENTER".
3) Use the "+" or "-" buttons to scroll down to "Service Complete?"
4) Press "ENTER" twice and ensure that "[Logged]" appears.
5) Exit the "Service" menu by pressing the "MENU" button twice.

Operating the System

Before Running the UNDERHOOD 40 Air Compressor

- Ensure the vehicle is not parked on grades exceeding 20° as this will affect lubrication and air/oil separation (Figure 17).

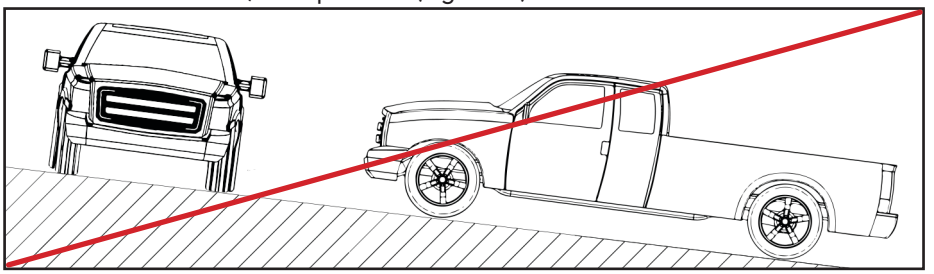


Figure 17 — Do not exceed 20° grade

- Place the vehicle transmission in "PARK" (manual transmission in "NEUTRAL") and fully apply the parking brake.
- Check the compressor drive belt.
- Start the engine and allow the vehicle to reach operating temperature.
- Ensure the oil level in the WHASP Tank is above the "ADD" line (this should be checked while parked on level ground).
- Ensure the vehicle hood is closed.
- Ensure all compressor outlets are closed.

Starting the Compressor / Normal Operation

- Press and hold the "ENTER"/Power button for 3 seconds to power the system on.
    - ***Remote Start:*** See "Remote Start Integration (Optional)" on page 22, or the documentation provided by the Upfitter for remote start instructions.
- Once the system is on, the system will either try to build air (if system pressure is low) or will enter standby (if already at system pressure).
- When the system is building air, the system will first go through a start routine to ensure the compressor starts under optimal conditions.
    - The engine speed will elevate to the programmed "Starting RPM" (usually in the range of 800 rpm to 1,200 rpm). This parameter is located in the DTC status menu.
    - The blowdown pressure sensor is checked to ensure pressure in the compressor is less than 10 psi.
- Once the above conditions are confirmed, the compressor clutch will engage, the blowdown solenoid will energize, and the system will start building air.
- Engine speed will elevate to "maxRPM" (this is defined by the VMAC system specific to the vehicle application). See "System Adjustment, Optimization, and Basic Parameters" on page 63.

- The system will continue to build air until system pressure is achieved (150 psi by default) and the system will enter Standby mode.

Standby

When the system is in Standby:

- Engine speed will drop to base idle.
- The compressor clutch will disengage.
- The WHASP Tank blowdown solenoid will de-energize and blow down the system.
- The Controller will monitor the system air pressure. If the air pressure drops below 120 psi, the system will repeat the process above to build air.

Shutting Down the Compressor

- Close all open air valves/tools and allow the system to build to full system pressure (factory default 150 psi).
- Ensure engine speed has dropped to base idle for at least 10 seconds.
- Press and release the "ENTER"/Power button.
    - ***Remote Start*** (see page 22): Actuate and release the Remote Start switch.

The automatic blowdown system only relieves pressure inside the compressor and the hoses connected to the WHASP Tank. Pressurized air stored in any downstream hoses or receiver tanks will not be evacuated.

Digital Throttle Control (DTC) Operation

While there are indicator LEDs and buttons on the front of the DTC, these do not need to be accessible as all controls, indicators, and error codes are available on the Display.

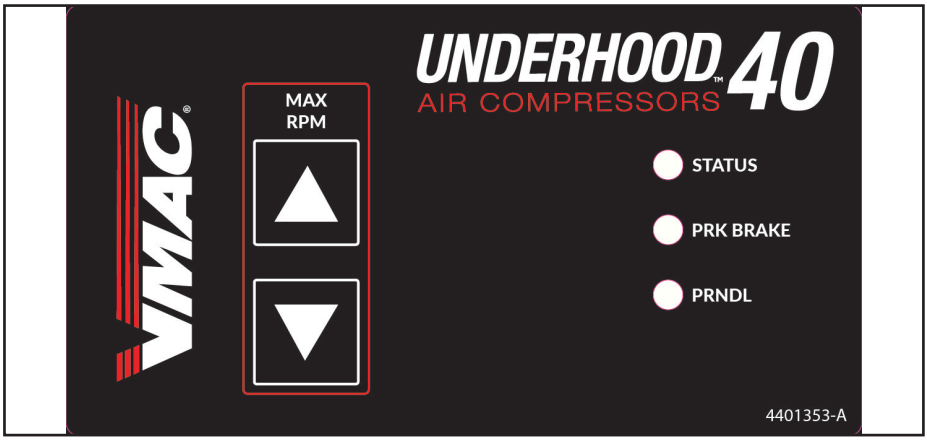


Figure 18 — Throttle control

Indicator LED's

Indicator LED	LED State	Description
STATUS	Green (Solid)	DTC is actively controlling the vehicle engine speed.
	Green (Single flash)	Calibration update, "maxRPM" adjustment, or "minRPM" adjustment successful.
	Red (Single flash)	"maxRPM" or "minRPM" is at max or min value and adjustment was unsuccessful.
	Red (Flashes 2 to 6 times)	Throttle error condition detected. DTC is deactivated until the issue is resolved (see "DTC Error Codes" on page 53).
	Off	Throttle is idle and has released control of the vehicle engine rpm, or the DTC is off.
PRK BRAKE	Green	Park brake is engaged.
	Off	Park brake is not engaged (throttle control is deactivated).
PRNDL	Green	Vehicle in Park or Neutral ***Note:*** *Neutral is vehicle dependent and could trigger either the green LED or not. The VMAC system is safe to operate provided the vehicle is not in gear.*
	Off	Vehicle is in gear (throttle control is deactivated).

If the vehicle is placed into gear, or the park brake disengaged, the "STATUS" LED and the "PRNDL" or "PRK BRAKE" LED will turn off and the throttle control will deactivate. This will reduce engine speed to base idle.

In order to activate the system again, re-engage the appropriate lockout and cycle the VMAC "OFF" then "ON" via the control box.

Safety features

The throttle control has built in safety features that will disable the system if an unsafe condition is detected, or either of the lock out parameters is not met (the vehicle must be in "PARK" and the park brake must be engaged).

If an unsafe condition is detected, the "STATUS" LED will turn off, and engine speed will return to idle. Once all unsafe conditions have been removed, the system must be cycled off, then on again to reset it. Once the system powers up, the "STATUS" LED will illuminate, and the system will operate normally.

Cold Environment Operation

Warm-up/pre-heat measures are required prior to using the UNDERHOOD 40 system in temperatures below 0° C (32° F).

Allow the vehicle to reach operating temperature prior to engaging the compressor system.

Diesel Particulate Filter (DPF) Warning

When engine driven, or PTO driven equipment is run on vehicles with DPF for extended periods of time, particulates may build up in the filter. All vehicles with a DPF have a warning light on the instrument panel or notification in the message center.

It is impossible to make recommendations regarding run time before the DPF system will require a "regeneration" cycle as this is affected by many variables. It is therefore the responsibility of the operator to monitor this and take the necessary action to maintain the DPF system.

It is suggested that if equipment is run for extended periods of time (over 1 hour) without driving, the vehicle DPF warning system must be checked after 1 hour and every 15 min thereafter. If the DPF warning light/message appears, refer to the vehicle owner's manual for methods of cleaning or regenerating.

General Maintenance Information

Routine Maintenance

In order to maintain the VMAC warranty, VMAC's maintenance schedule must be followed. Only genuine original VMAC replacement parts can be used to maintain the system.

With proper maintenance, the likelihood of premature failure or component replacement can be drastically reduced.

The most critical aspect of maintenance is proper air filtration and clean oil. If any particles enter the compressor, they can score the rotors and contaminate the roller bearings in the compressor. Any contamination will cause rapid and severe damage to components.

The compressor system must be run a minimum of once every 30 days for at least 30 minutes to provide lubrication and to prevent premature bearing failure in the compressor due to vibration from the vehicle. Regularly running the system will also help to vaporize and exhaust any water that has condensed and accumulated in the WHASP Tank.

Torque Specifications

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

The torque values supplied in Figure 19 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

Figure 19 — Torque Table

Maintenance Schedule

The following maintenance schedule must be observed to maintain both the "Standard" and "Lifetime" VMAC warranties and to assure proper performance and long service life of the system. In the event of a warranty claim, VMAC may request service records.

The hours indicated are those displayed on the interface panel hour meter. Service should be performed at the lesser of the two intervals (whichever occurs first).

To order service kits, see the ordering information on page 3.

In order to maintain the warranty on the UNDERHOOD 40 Air Compressor, use only genuine VMAC replacement parts to service the system.

Check the Illustrated Parts List for replacement part numbers or contact VMAC for more information.

Daily	
• Check compressor oil level. • Check FEAD belt.	• Check system for leaks. • Check pressure relief valve condition.

Every 6 months or 200 hours (Service Kit P/N: A700263)	
• Change compressor oil. • Change compressor oil filter. • Check hoses for wear and proper routing. • Check wires and harnesses for wear and proper routing. • Change compressor air filter.	• Check pressure relief valve condition. • Check blowdown muffler for normal operation. • The system should blowdown in approximately: 25 seconds.

Every 1 year or 400 hours (Service Kit P/N: A700264)	
• Change compressor oil. • Change compressor oil filter. • Change compressor air filter. • Check wires and harnesses for wear and proper routing.	• Check hoses for wear and proper routing. • Change pressure relief valve. • Change coalescing filter. • Change blowdown muffler.

Service Reminders

Regular servicing is required to keep the system operating properly. As the system is used, service reminders will appear on the display box when due. The message will continue to remain on the Run Screen until the service reminder is cleared (Figure 20).

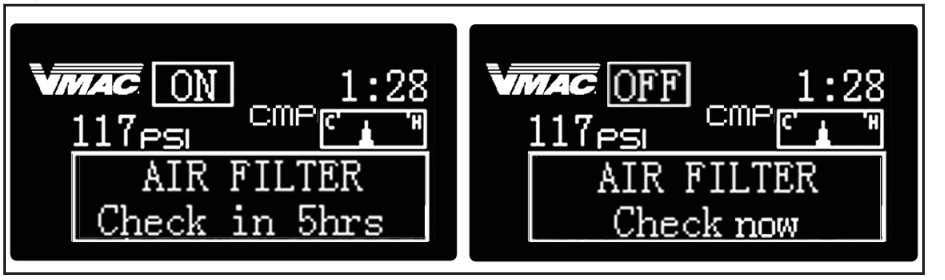


Figure 20 — Example of service reminder

Clearing Service Reminders

To clear a service reminder, go to Main Menu → Service → Service Complete? (Figure 21).

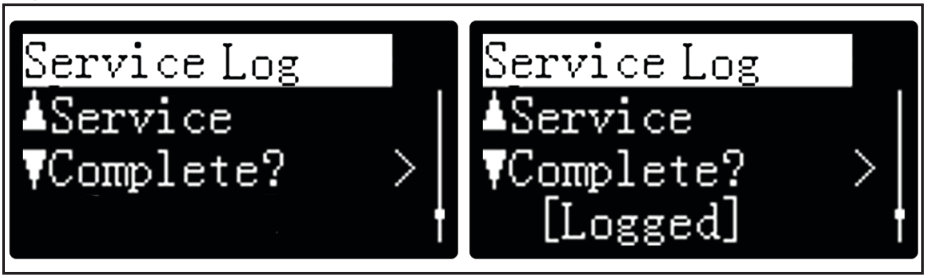


Figure 21 — Clearing service reminder

The service will automatically be logged and available to view in Main Menu → Service Log.

Maintenance and Repair Safety

It is impossible to warn of all the possible hazards that may result from operating, servicing, or repairing this system.

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

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.

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

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 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.

Regular Inspection Instructions

Read the "Maintenance and Repair Safety" section prior to performing any work on the system (beginning on page 39).

Wear appropriate Personal Protective Equipment and follow all industry standard safety practices.

The VMAC supplied and approved compressor oil must be used in this system. Failure to use this special oil will result in damage to the compressor and will void warranty.

Do not overfill the system. Overfilling the system with oil can flood the sight glass window and make the system appear empty.

Inspecting and Adding Compressor Oil

- ☐ Ensure the vehicle is parked on level ground and that the compressor system is depressurized and cool to the touch.
- ☐ Check the oil level in the sight glass and ensure that it is between the "MAX" arrow and the "ADD" arrow.

If the level is below the "ADD" mark, perform the following steps:

- ☐ Remove the fill cap on the tank (above the sight glass).
- ☐ Using a funnel, pour oil into the fill fitting until the oil level in the sight glass reaches the "MAX" arrow.
- ☐ Replace the fill cap and tighten securely.

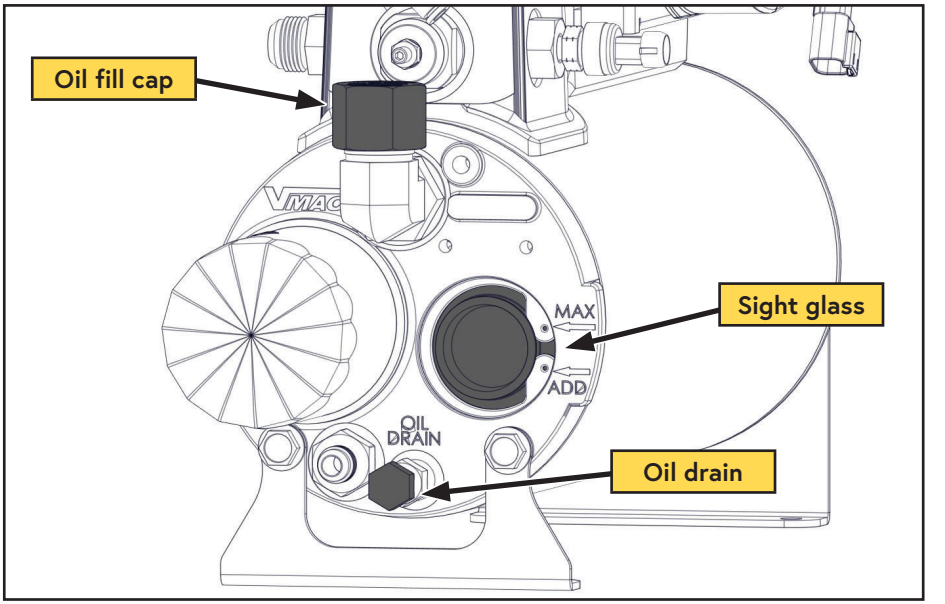


Figure 22 — Inspecting the oil

Inspecting the Hoses and PTFE Tubes

Read the "Maintenance and Repair Safety" section prior to performing any work on the system (beginning on page 39).

Wear appropriate Personal Protective Equipment and follow all industry standard safety practices.

All hoses, tubes and wires that are replaced, rerouted or shifted must be secured so that they do not contact any hot, sharp or moving parts. Use rubber coated P-clips wherever possible.

Ensure there is sufficient slack in the hose routing to allow for normal engine movement.

☐ Inspect all hoses and tubes for damage and wear.

☐ Ensure the hoses and tubes have not shifted and remain secured away from hot, sharp, or moving parts.

If any hoses or tubes need to be replaced, see "Hoses and Tubes" on page 18 for important information related to VMAC hoses.

PTFE Tubing, Loom, and Push-To-Connect Fittings

- PTFE tubing should only be cut using proper tubing cutters. Side cutters, utility knives, etc. will deform the tube, preventing a proper seal (or leave sharp edges which cut the internal O-ring).
- When applying loom to the PTFE tube, leave approximately 1 in between the loom and the fitting.
- Ensure the tube is clean, cut at 90° and that there are no sharp edges.
- Lubricate the tube and firmly push it into the fitting so that the tube fully seats in the fitting.
- Slide the collet out, away from the body of the fitting to lock the tubing in place.
- Ensure the tube does not have any "play" to prevent the O-ring from wearing.

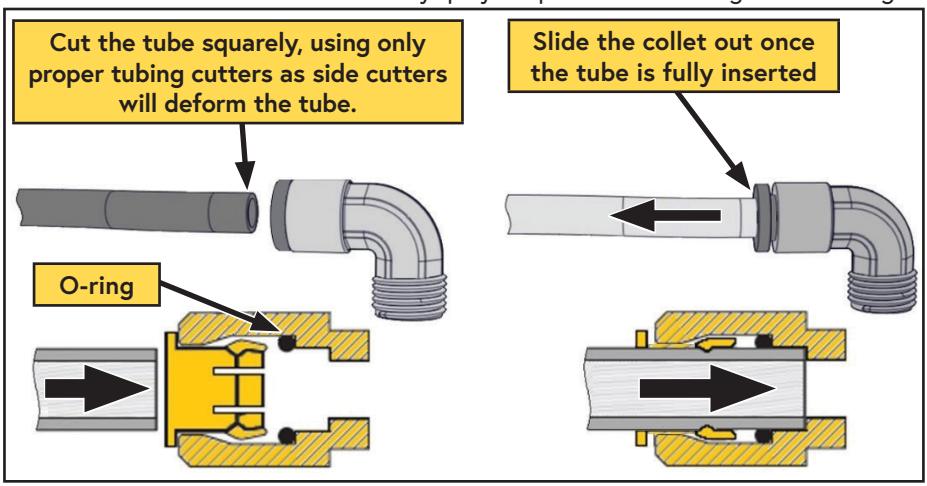


Figure 23 — Push-to-connect fittings

Inspecting and Replacing the Blowdown Muffler

Read the "Maintenance and Repair Safety" section prior to performing any work on the system (beginning on page 39).

Wear appropriate Personal Protective Equipment and follow all industry standard safety practices.

The Blowdown Muffler (or remote blowdown muffler) is a regular service item and must be replaced every 400 hours or 1 year, whichever interval occurs first.

Visually inspect the blowdown muffler for evidence of corrosion or loss of functionality. Ensure the muffler allows the system to depressurize. To test the blowdown system and muffler:

- ☐ Turn the system on and allow it reach full system pressure (factory setting 150 psi).
- ☐ Turn the switch on the interface panel to "OFF".
- ☐ Listen for the pressurized air to blowdown through the muffler on the WHASP Tank. Blowdown should be completed in approximately 25 seconds.
- ☐ If the muffler is showing signs of blockage, contact a local VMAC dealer for a replacement.

A replacement blowdown muffler is included with the VMAC 400 hour service kit.

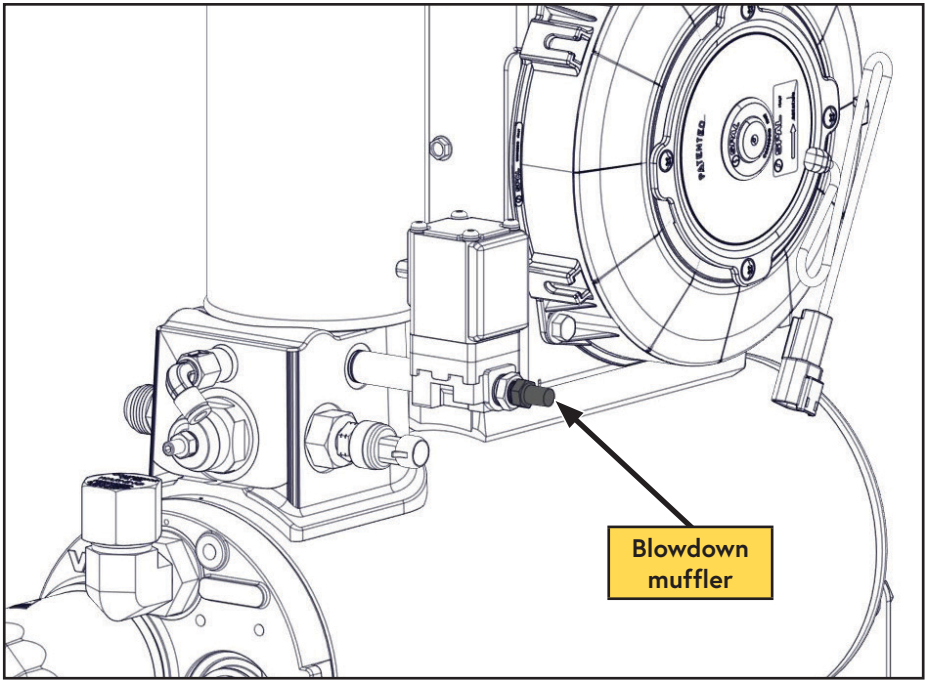


Figure 24 — Blowdown muffler

Inspecting and Replacing the Pressure Relief Valve

Read the "Maintenance and Repair Safety" section prior to performing any work on the system (beginning on page 39).

Wear appropriate Personal Protective Equipment and follow all industry standard safety practices.

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

The Pressure Relief Valve is a regular service item, and must be replaced every 400 hours or 1 year, whichever interval occurs first.

Inspect the pressure relief valve for any signs of corrosion and ensure the vents are clear of obstruction.

- ☐ Visually inspect the valve and ensure it is not corroded and that the vent holes are not plugged.
- ☐ Turn the system on and allow it reach full system pressure (factory setting 150 psi).
- ☐ Ensure that air does not leak out of the valve. Air leaking from the pressure relief valve when system pressure is at or below 150 psi indicates that the spring or seat in the valve is worn and the valve must be replaced.
- ☐ If the pressure relief valve is showing loss of functionality, contact a local VMAC dealer for a replacement.

A replacement pressure relief valve is included with the VMAC 400 hour service kit.

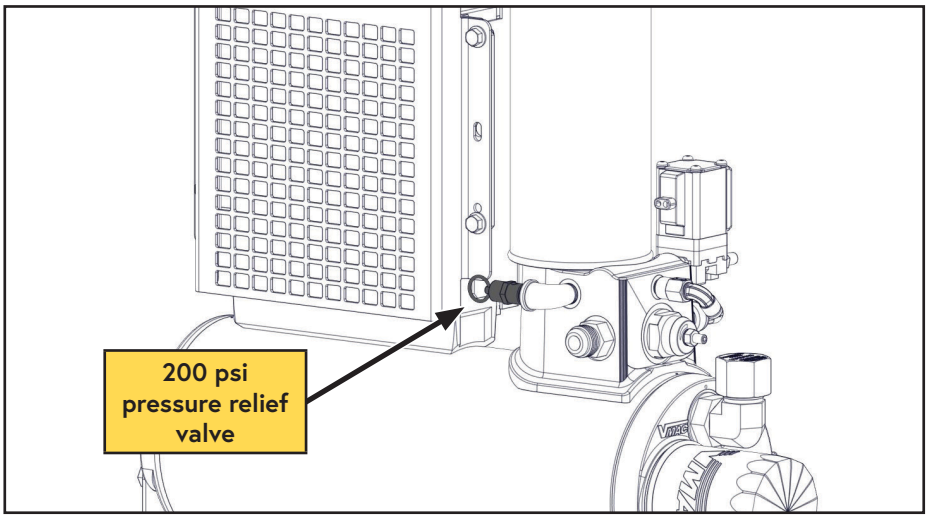


Figure 25 — Pressure relief valve

Inspecting the Drive Belt

Read the "Maintenance and Repair Safety" section prior to performing any work on the system (beginning on page 39).

Wear appropriate Personal Protective Equipment and follow all industry standard safety practices.

Check the drive belt for evidence of glazing, cracks, missing or damaged ribs or damage to the belt edges and surface. If the drive belt is damaged, install a new drive belt.

Inspect the pulley(s), idler(s), and tensioner for damage. If any of the components show cracks, chipping, impact damage or any other indications of physical damage, replace the component.

If the damage indicates possible misalignment, check the pulley/idler/tensioner alignment. If the pulleys are not properly aligned, check all fasteners to ensure that they are properly torqued and that there are no loose or worn components.

For instructions on replacing the drive belt, refer to the specific VMAC installation manual for the system in question.

See the system specific Illustrated Parts List (IPL) for VMAC supplied part numbers.

VMAC Installation Manuals and IPLs

https://www.vmacair.com/support/manuals/

Replacing the Air Filter

Read the "Maintenance and Repair Safety" section prior to performing any work on the system (beginning on page 39).

Wear appropriate Personal Protective Equipment and follow all industry standard safety practices.

To avoid any possibility of contamination, ensure the air inlet is covered with masking tape or a clean cloth whenever the air filter cover is removed.

Do not attempt to clean the filter element, or use compressed air to perform any tasks around the compressor until the filter and cover are replaced.

- ☐ Clean any loose debris from around the compressor and the air filter cover to prevent any contamination from entering the system.
- ☐ Remove the filter cover retaining nut, filter cover and the filter element. On some installations, it may be necessary to remove the filter assembly from the filter bracket to access the filter cover nut and remove the cover.
- ☐ Immediately cover the air inlet opening with masking tape or a clean cloth to prevent any contamination from entering the system.
- ☐ Clean the inside of the filter cover with a clean, dry cloth.
- ☐ Remove the cloth or masking tape from the air inlet and install the new air filter element.
- ☐ Ensure the filter element fits over the "step" on the filter plate (Figure 26).

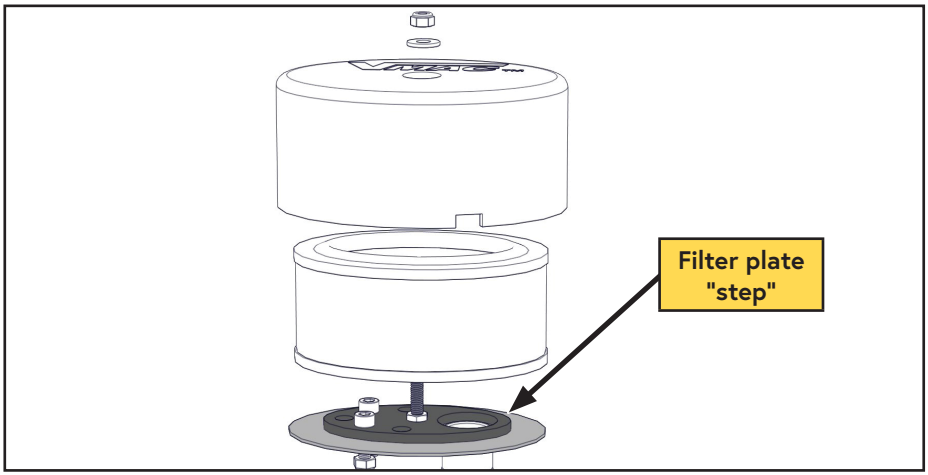


Figure 26 — Install air filter element

- ☐ Replace the air filter cover and secure it with the cover nut. Do not over tighten the nut.
- ☐ If removed for service, reinstall the filter onto the filter bracket.

200 Hour / 6 Month Service

Read the "Maintenance and Repair Safety" section prior to performing any work on the system (beginning on page 39).

Wear appropriate Personal Protective Equipment and follow all industry standard safety practices.

Do not use compressed air or perform any other tasks around the air filter and cover until both are replaced. Never clean the filter element with compressed air as this may allow contaminants to enter the compressor system. Always replace the air filter element during this service.

Do not overfill the system. Overfilling the system with oil can flood the sight glass window and make the system appear empty.

- ☐ Inspect the blowdown muffler (page 42).
- ☐ Inspect the pressure relief valve (page 43).
- ☐ Inspect the drive belt (page 44).
- ☐ Replace the air filter (page 45).
- ☐ Clean the area around the WHASP Tank and the oil filter to prevent contamination.
- ☐ Remove the oil drain plug and drain the oil into a container with a capacity of at least 4 L (1 USG) (Figure 27).

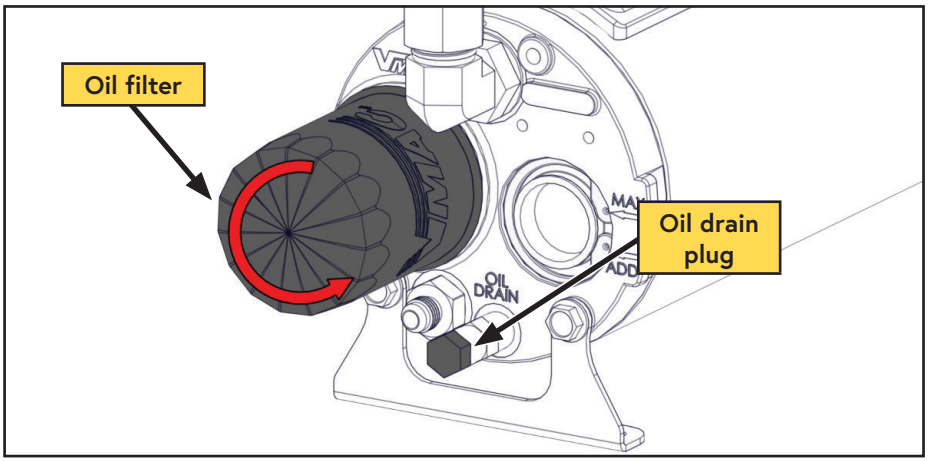


Figure 27 — Compressor oil filter

- ☐ Inspect the Viton® O-ring on the oil drain plug for damage, hardness or defects and replace if necessary.
- ☐ Install and tighten the oil drain plug.
- ☐ Remove the oil filter (Figure 27).

- ☐ Ensure the threaded nipple did not unscrew with the oil filter.
- ☐ *If the nipple came out with the oil filter, carefully remove it from the filter to avoid damaging the threads.
- ☐ *To reinstall the nipple, thoroughly clean the threads and apply Loctite 242 (blue) to the end with the short threads and replace it in the tank (Figure 28).
- ☐ Clean the gasket sealing surface on the front of the tank and inspect it for damage. The surface must be free of old gasket material and smooth to ensure a good seal (Figure 28).

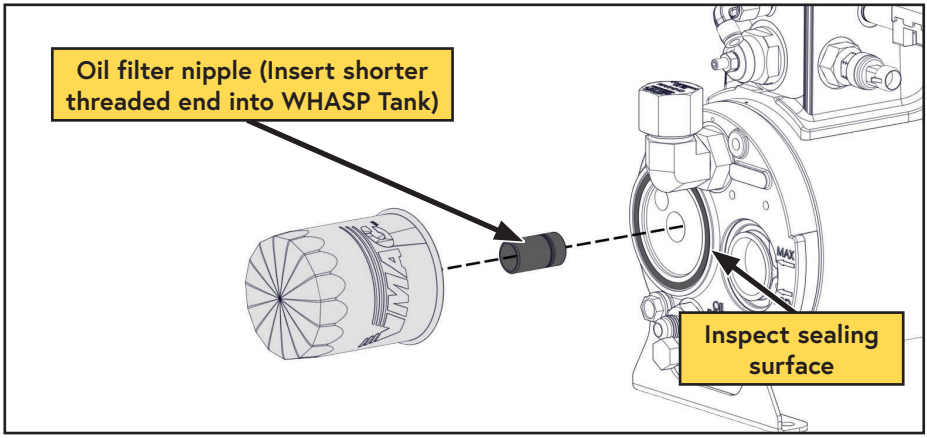


Figure 28 — Compressor oil filter

- ☐ Apply a thin coat of compressor oil to the rubber gasket on the oil filter.
- ☐ Spin the filter onto the threaded nipple until the gasket contacts the sealing surface on the tank, then tighten the filter an additional 3/4 to 1 turn to seat the gasket.
- ☐ Remove the filler cap on the WHASP Tank. Fill the WHASP Tank with VMAC compressor oil until is reaches the "MAX" mark. The air compressor system holds approximately 4 L (1 USG) of oil (Figure 29).

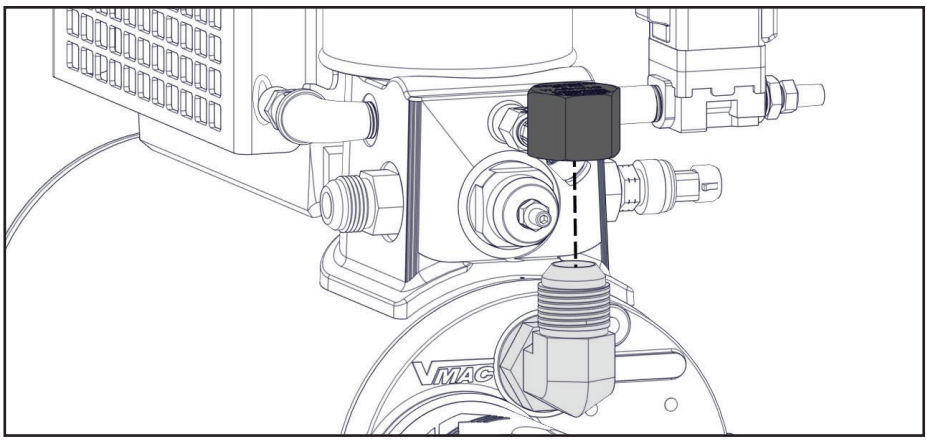


Figure 29 — Compressor oil fill

- ☐ Check the oil level at the sight glass on the front of the WHASP Tank. Continue adding oil until the level is correct.
- ☐ Reinstall the fill cap.
- ☐ Start the system and check for oil leaks.
- ☐ Allow the system to build to pressure (factory setting 150 psi) and for the engine speed to decrease to base idle.
- ☐ Turn the switch on the interface panel to "OFF".
- ☐ Once the system has sat for 5 minutes, check the oil level through the sight glass and add oil as necessary.
- ☐ Verify there are no oil leaks.
- ☐ To log the service and clear the service reminder, see "Clearing Service Reminders" on page 38.

400 Hour / 1 year Service

Read the "Maintenance and Repair Safety" section prior to performing any work on the system (beginning on page 39).

Wear appropriate Personal Protective Equipment and follow all industry standard safety practices.

Do not use compressed air or perform any other tasks around the air filter and cover until both are replaced. Never clean the filter element with compressed air as this may allow contaminants to enter the compressor system. Always replace the air filter element during this service.

Do not overfill the system. Overfilling the system with oil can flood the sight glass window and make the system appear empty.

- ☐ Apply thread sealant and replace the blowdown muffler (page 42).
- ☐ Apply thread sealant and replace the pressure relief valve (page 43).
- ☐ Inspect the drive belt (page 44).
- ☐ Replace the air filter (page 45).
- ☐ Clean the area around the WHASP Tank and the oil filter to prevent contamination.
- ☐ Remove the oil drain plug and drain the oil into a container with a capacity of at least 4 L (1 USG) (Figure 30).

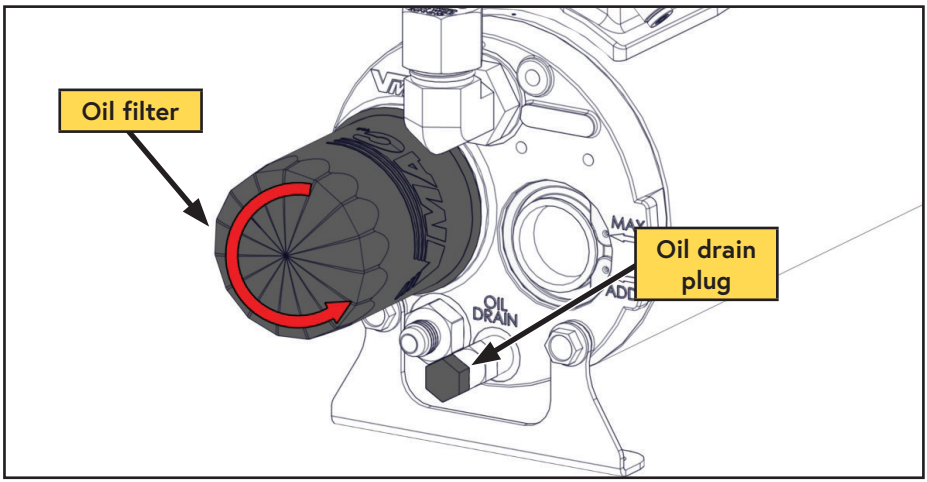


Figure 30 — Compressor oil filter

- ☐ Inspect the Viton O-ring on the oil drain plug for damage, hardness or defects and replace if necessary.
- ☐ Install and tighten the oil drain plug.
- ☐ Remove the oil filter (Figure 30).

☐ Ensure the threaded nipple did not unscrew with the oil filter.

☐ *If the nipple came out with the oil filter, carefully remove it from the filter to avoid damaging the threads.

☐ *To reinstall the nipple, thoroughly clean the threads and apply Loctite 242 (blue) to the end with the short threads and replace it in the tank (Figure 31).

☐ Clean the gasket sealing surface on the front of the tank and inspect it for damage. The surface must be free of old gasket material and smooth to ensure a good seal (Figure 31).

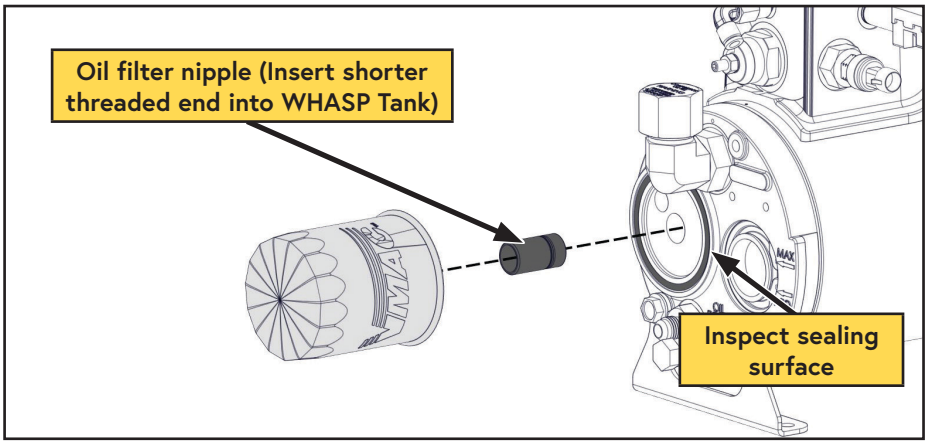


Figure 31 — Compressor oil filter

☐ Apply a thin coat of compressor oil to the rubber gasket on the oil filter.

☐ Spin the filter onto the threaded nipple until the gasket contacts the sealing surface on the tank, then tighten the filter an additional 3/4 to 1 turn to seat the gasket.

☐ Remove the filler cap on the WHASP Tank. Fill the WHASP Tank with VMAC compressor oil until is reaches the "MAX" mark. The air compressor system holds approximately 4 L (1 USG) of oil (Figure 32).

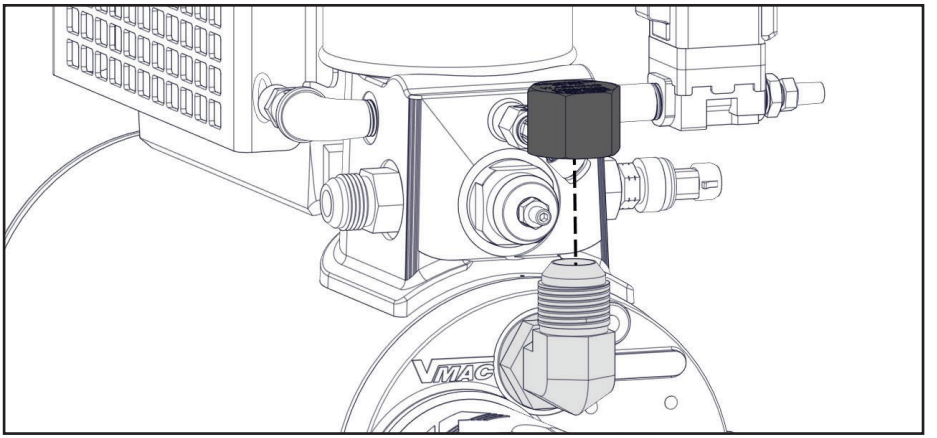


Figure 32 — Compressor oil fill

- ☐ Check the oil level at the sight glass on the front of the WHASP Tank. Continue adding oil until the level is correct.
- ☐ Reinstall the fill cap.
- ☐ Clean the WHASP Tank around the coalescing filter to prevent contamination.
- ☐ Remove the spin-on coalescing filter by turning it counterclockwise (Figure 33).

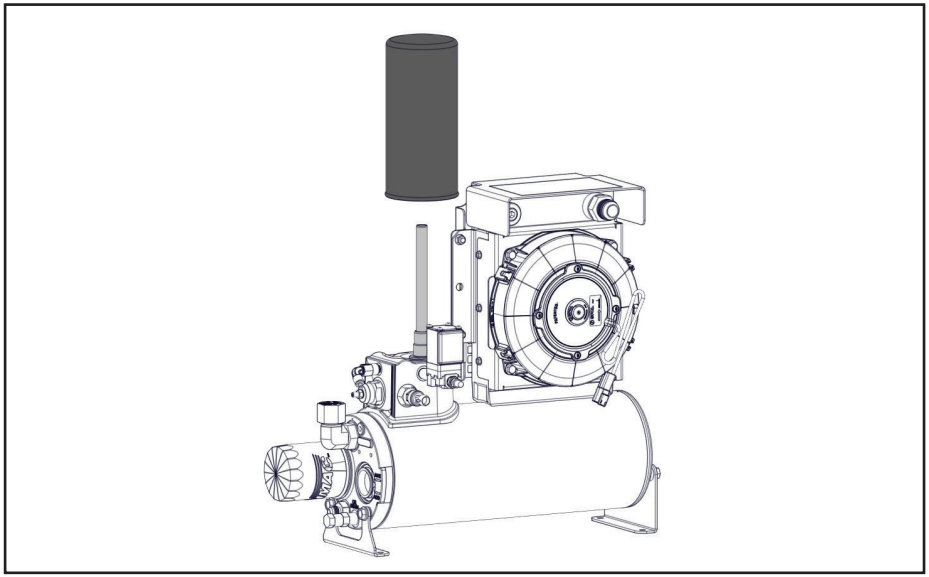


Figure 33 — Coalescing filter

- ☐ Clean the gasket sealing surface and inspect it for damage. The surface must be free of old gasket material and smooth to ensure a good seal (Figure 33).
- ☐ Apply a thin coat of compressor oil to the rubber gasket on the new coalescing filter.
- ☐ Spin the new filter onto the threaded nipple until the gasket contacts the sealing surface on the tank, then tighten the filter an additional 3/4 to 1 turn to seat the gasket.
- ☐ Start the system and check for oil leaks.
- ☐ Allow the system to build to pressure (factory setting 150 psi) and for the engine speed to decrease to base idle.
- ☐ Turn the switch on the interface panel to "OFF".
- ☐ Once the system has sat for 5 minutes, check the oil level through the sight glass and add oil as necessary.
- ☐ Verify there are no oil leaks.
- ☐ To clear the service reminder and automatically log the service, see "Clearing Service Reminders" on page 38.

Diagnostics and Trouble Shooting

Read the "Maintenance and Repair Safety" section prior to performing any work on the system (beginning on page 39).

Wear appropriate Personal Protective Equipment and follow all industry standard safety practices.

For the following tests, isolate the WHASP Tank from all downstream (customer supplied) equipment.

If the UNDERHOOD 40 Air Compressor system is still within the warranty period, see the warranty claim process on page 9 prior to commencing with any diagnostics or repairs.

Problem diagnosis should follow sound, recognized practices. Quick and accurate diagnosis of problems should involve the following:

- Follow industry standard safety practices.
- Accurately identify the problem by operating the system (provided it is safe to do so).
- Determining the possible causes for the problem by understanding how the system operates.
- Isolating the potential causes by accurate testing using the correct and recognized procedures.
- Performing proper repairs using the correct procedures and the recommended replacement parts.
- Performing proper post repair testing to ensure that the repairs were effective.
- Electrical testing should be performed according to the processes described in the troubleshooting charts and in conjunction with any documentation provided by VMAC.

DTC Error Codes

DTC error codes are presented on the display box, there is no need to observe the errors on the DTC directly.

The DTC is located under the dashboard panel near the steering wheel.

If an error is encountered, the "STATUS LED" will blink a set number of pulses corresponding to the respective error code. If multiple error codes exist, the throttle Controller will cycle through all error codes repeatedly. To clear an error code, turn the system OFF, fix the problem, and then turn the system ON again.

DTC Blink Code	Error	Controller Error Code	Possible Problem(s)
2	Rpm error.	232/ xxE8	See error "232" on page 57.
3	Pressure sensor error.	233/ xxE9	See error "233" on page 57.
4	Rpm too high.	234/ xxEA	See error "234" on page 57.
5	Voltage too high/low.	235/ xxEB	See error "235" on page 58.
6	NO VCAN.	236/ xxEC	See error "236" on page 58.

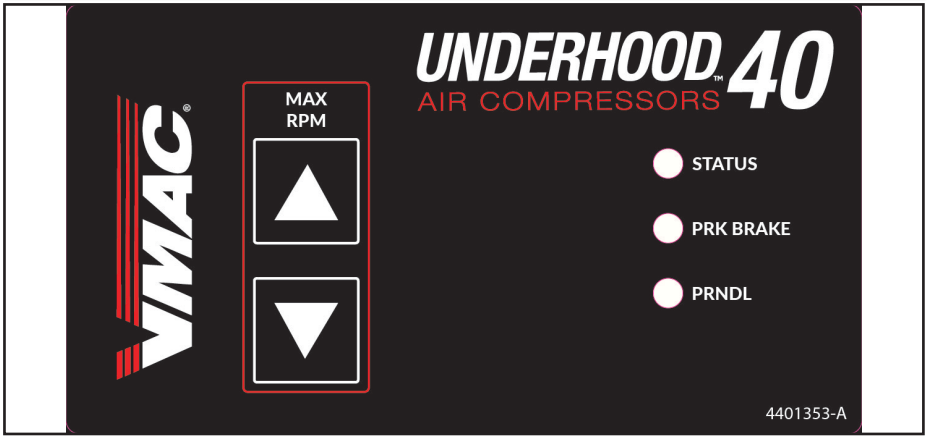


Figure 34 — Throttle control

Errors and Error Codes (Controller/Display Box)

When an error occurs, a message will appear on the display as described in the "Display" column below (Figure 35).

Some rare error codes that are not listed below will appear as a number in hexadecimal format. The last 2 digits reflect the error code while the first 2 digits reflect engineering codes. If an error code ever appears in this format, contact VMAC technical support.

Figure 35 — Error message

Error Code	Hex Error	Display	Fault	Possible Problem(s)
3	xx03	UHC NOT RESP	Controller not responding.	• Display box harness not plugged in fully or wiring/ connector damaged. • Display box cable too long. • Controller not powered. • Excessive CAN traffic due to 3rd party equipment connected to VCAN bus. • High power radio frequency interference. • VCAN bus module damaged in either the Controller or the display box.
4	xx04	UHD NOT RESP	Display not responding	
5	xx05	DTC NOT RESP	DTC not responding	• DTC harness not plugged in fully or wiring/connector damaged (including loop back connector). • DTC pedal harness not plugged in and/or damaged. • Excessive CAN traffic due to 3rd party equipment connected to VCAN bus. • High power radio frequency interference.
8	xx08	CLUTCH OPEN	No current on compressor clutch/ solenoid.	• Clutch wire unplugged or damaged. • Harness damaged. • Bad clutch ground.

Error Codes (Cont.)

Error Code	Hex Error	Display	Fault	Possible Problem(s)
9	xx09	CLUTCH SHORT	Short circuit on compressor clutch/ solenoid.	• Clutch wire damaged. • Harness damaged.
10	xx0A	CLUTCH CURRENT	High current on compressor clutch/ solenoid.	• Clutch wire damaged. • Harness damaged.
11	xx0B	CMP TEMP OPEN	Compressor temperature sensor unplugged or not detected.	• Test temperature probe. • Repair wiring to probe.
12	xx0C	CMP TEMP SHORT	Compressor temperature sensor shorted.	Repair wiring to probe.
13	xx0D	CMP OVERTEMP	Compressor oil is too hot (above 144 °C / 291 °F).	• Low compressor oil level. • Faulty or crushed cooler hoses. • Cooling fan not operating. • Insufficient air-flow or ventilation. • Failed temperature probe or faulty electrical connection. • Incorrect compressor oil used. See "Frequent Shut Down Due to Over Temperature." on page 59
14	xx0E	CMP PRESS HIGH V	Pressure sensor signal voltage too high.	• Pressure sensor damaged. • Harness damaged, unplugged, or partially connected.
15	xx0F	CMP PRESS LOW V	Pressure sensor signal voltage too low.	• Pressure sensor damaged. • Harness damaged, unplugged, or partially connected.
16	xx10	OVERPRESSURE	Pressure over 180 psi.	• Faulty pressure sensor. • Clutch is seized on. • Bent compressor shaft.
29	xx1D	RUNNING HOT	Compressor is running hot and approaching over temperature.	• Fan or cooling system not working. • Lack of service. • Internal damage to the compressor.

Error Codes (Cont.)

Error Code	Hex Error	Display	Fault	Possible Problem(s)
30	xx1E	SCAVENGE PRESS	Scavenge blowdown pressure fault.	• The two pressure sensor harnesses are reversed. • Blowdown system is damaged. • Blowdown valve blocked. • Scavenge line blocked.
31	xx1F	BLOWDOWN	Blowdown is taking too long	• Blowdown system is damaged. • Blowdown valve blocked. • Blocked or corroded blowdown muffler. • Scavenge line blocked.
68	xx44	RPM LOW	Vehicle engine rpm too low.	Vehicle engine not running.
72	xx48	THROTTLE SHORT	Short circuit on Throttle output	• Throttle output damaged. • Harness damaged. • DTC damaged.
73	xx49	VHCL NOT IN PARK	Vehicle is not in Park	Vehicle is not in Park
74	xx4A	PARK BRAKE	Vehicle Park Brake not applied.	Vehicle Park Brake not applied
75	xx4B	RPM CONTROL	• Vehicle RPM control fault. • Loss of RPM control. • Very slow RPM response.	• Wrong DTC for application • Engine at high idle due to cold temperature, charging, etc. • Vehicle elevated idle feature enabled
152	xx98	BATT LOW V	Battery voltage too low (below 10.5V).	• Voltage supply to system is excessively low. • Controller harness damaged, unplugged, or partially connected.
153	xx99	BATT HIGH V	Battery voltage too high (above 15.5V).	Voltage supply to system is too high.
154	xx9A	VDD LOW	Controller internal 5V power supply voltage too low.	• Voltage supply system excessively low. • Short circuit on one of the Controller sensors.
191	xxBF	MCU EEPROM	Data corruption detected.	Removing power from Controller while: • System is running • Adjusting parameters/ settings

Error Codes (Cont.)

Error Code	Hex Error	Display	Fault	Possible Problem(s)
193	xxC1	MCU TEMP	Controller internal temperature too high: (above 83 °C / 181 °F), or too low (below -38 °C / -36 °F).	The Controller is getting too hot or too cold.

194	xxC2	MCU RESET	System reset due to brownout, watchdog timer, or other.	• Brown-out due to:
				  ○ Voltage supplied to system is excessively low.
				  ○ Bad harness connection.
				  ○ Short circuit on Controller sensor.
				• MCU code execution froze.

224	xxE0	DEVCxxx NOT RESP	VCAN receive message timeout.	See error code 3/4 on page 54.
225	xxE1	VCAN FAULT	VCAN bus fault detected.	• VCAN signal lines shorted, or one line open. • VCAN bus heavily congested • No message acknowledgment.
226	xxE2	VCAN HB TIMEOUT	VCAN heartbeat timeout.	• If the display box was used to start the system: Disconnected/reconnect the display box. • VCAN signal lines shorted, or one line open. • VCAN bus heavily congested. • No message acknowledgment.
232	xxE8	DTC: NO RPM	DTC error: no RPM signal (either from CAN or tach input).	• DTC harness connected to incorrect vehicle CAN wires. • Bad connection on DTC harness to vehicle CAN wires. • Wrong DTC for application.
233	xxE9	DTC: NO PRESSURE	DTC error: no pressure signal (either from VCAN or analog sensor).	Harness connecting DTC to Controller is damaged.
234	xxEA	DTC:RPM TOO HIGH	DTC error: vehicle engine rpm too high.	• Compressor clutch faulty. • Wrong DTC for application.

Error Codes (Cont.)

Error Code	Hex Error	Display	Fault	Possible Problem(s)
235	xxEB	DTC: BATT V HI/LO	DTC error: Battery voltage too low or too high.	• Bad power connection. • Controller to DTC harness damaged, unplugged, or partially connected. • Vehicle battery voltage too high or too low.
236	xxEC	DTC: NO VCAN	DTC error: no VCAN communication with Controller.	Harness connecting DTC to Controller is damaged.
237	xxED	DTC: WRONG FW	DTC error: wrong DTC firmware version.	Wrong DTC for application

Diagnostic Chart.

Symptom	Possible Cause	Corrective Action
Frequent Shut Down Due to Over Temperature.	Oil level is too low.	Add oil as necessary. See page 40.
	Restriction in the compressor oil hoses.	• Check for kinked or pinched hoses. • Check hoses for internal rupture.
	Compressor oil filter plugged.	Replace oil filter.
	WHASP Tank has insufficient access to cool air.	See WHASP Tank mounting parameters in installation manual.
	High ambient temperatures.	Reduce duty cycle.
	Temperature probe faulty.	Replace if defective.
	System requires service.	Perform recommended service.

Symptom	Possible Cause	Corrective Action
Compressor does not run.	Known error code displayed.	See error codes on previous page.
	Oil level too low.	Add oil as necessary. See page 40.
	FEAD belt broken.	• Inspect pulley alignment and tensioner for wear. • Install new drive belt.
	Bad ground connection.	Check the system ground.
	Internal compressor failure / clutch shaft sheared.	Replace compressor.

Symptom	Possible Cause	Corrective Action
Frequent 200 psi relief valve operation.	Relief valve worn or defective.	Replace the relief valve.
	Pressure sensor defective.	Test pressure sensor.

Symptom	Possible Cause	Corrective Action
Excessive air significantly greater than 150 psi.	Pressure sensor defective.	Test pressure sensor.
	Clutch stuck on.	• Test for power to clutch wire. • Test if clutch seized.

Symptom	Possible Cause	Corrective Action
System pressure higher than tool requires.	No downstream pressure regulator installed.	Install downstream pressure regulator. See accessories on page 66.
	Aftermarket pressure regulator set too high.	Adjust pressure regulator to desired pressure.

Symptom	Possible Cause	Corrective Action
Low air pressure.	Air demand too high.	• Reduce air consumption. • Install air receiver tank. See accessories on page 66.
	Engine speed too low.	Adjust throttle control. See "Menus and System Adjustments" on page 26.

Symptom	Possible Cause	Corrective Action
Excessive oil in the air stream (oil carry over).	Vehicle parked on grade greater than 20°.	Level the vehicle and run the system. Oil carry over may take up to 20 minutes to dissipate.
	High oil level.	Correct oil level. See page 40.
	Failed coalescing filter.	Replace coalescing filter.

Symptom	Possible Cause	Corrective Action
Objectionable noise level.	Vehicle engine speed set higher than necessary to meet air demand requirements.	Adjust throttle control. See "Menus and System Adjustments" on page 26.
	Operating with the hood open.	Close the hood.

Symptom	Possible Cause	Corrective Action
Power fuse blows.	Short to ground in the control circuit.	• Locate and correct short. • Replace control system components.
	Incorrectly rated fuse.	Install correct fuse.
	System wired incorrectly.	Repair wiring according to installation instructions.

Symptom	Possible Cause	Corrective Action
Vehicle engine speed does not return to base idle.	Wiring fault.	Repair wiring according to installation instructions.
	Control module fault.	Replace control module.

Symptom	Possible Cause	Corrective Action
FEAD belt squeals when compressor activated.	Improper belt tension.	Replace belt tensioner.
	Belt is glazed.	Replace belt.
	Belt is contaminated with oil.	Replace belt.

Symptom	Possible Cause	Corrective Action
Vehicle engine stalls when compressor is activated.	WHASP Tank mounted above vehicle floor.	Install Oil Return Check Valve (P/N: A700308) accessory.
	Compressor issue.	Contact technical support.

Symptom	Possible Cause	Corrective Action
Oil drips from clutch after shut down.	Input shaft leaking.	Contact VMAC dealer to replace input shaft seal.

Performance Testing

System operation can be tested using the tools that will be operated by the system or by using the VMAC Test Tool (A700052) with the 40 cfm (5/32 in) orifice in the outlet to simulate tool use (Figure 36).

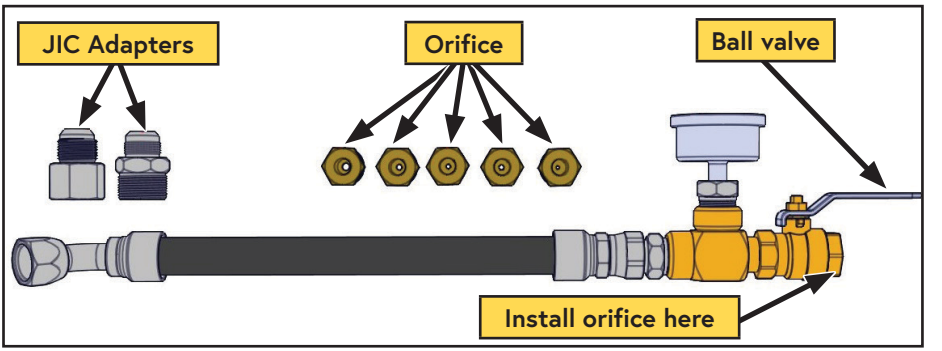


Figure 36 — A700052 VMAC Air Test Tool

Disconnect all downstream equipment (hose reels, etc.) and connect the test tool directly to the discharge fitting on the WHASP Tank.

Ensure there are no leaks in the test tool. The system may not idle down if there are leaks in the lines or fittings.

Refer to the appropriate VMAC installation manual for specific rpm values.

- ☐ Install the VMAC test tool at the system outlet with the 40 cfm (5/32 in) orifice.
- ☐ Ensure the ball valve is closed.
- ☐ Place the transmission in "PARK" and fully apply the park brake.
- ☐ Allow the engine to run until it is at operating temperature.
- ☐ Turn on the air compressor system and allow it to operate until the oil is warm.
- ☐ Observe the pressure gauge. Pressure should be approximately 150 psi.
- ☐ Open the ball valve on the test tool and observe the engine tachometer*:
  - ☐ *Engine speed should increase (see the system specific installation manual for the default rpm value).
- ☐ Close the air valve slowly to allow the system pressure to rise. When the pressure reaches the pressure switch set-point of 150 psi, the system will disengage the compressor clutch and reduce the engine speed to base idle.
- ☐ Once the system pressure is at maximum pressure, slowly open the ball valve on the test tool until the pressure on the gauge begins to drop. Engine speed should ramp up to application specific "MAX RPM" (configured at the factory) when the pressure drops approximately 40 psi below the pressure switch set-point.

System Adjustment, Optimization, and Basic Parameters

If tools are not performing as expected (low performance, tool is stalling, etc.), increase the "Max RPM" and retest.

The cfm generated by this system is directly related to the vehicle's engine speed.

VMAC configures this system for optimum performance at maximum cfm. In applications where maximum cfm is not required, or noise is a concern, the system can be adjusted to reduce the maximum VMAC rpm.

☐ With the VMAC system running and in "STANDBY", mode, navigate to "Sys Parameters".

☐ Adjust "Max RPM" to the desired value.

Parameter	Default	Description
Set System Pressure	150 psi	**Adjusts the maximum system pressure.**
Restart Pressure	120 psi	**Adjusts the system restart pressure.**
Min RPM	*Do not adjust*	**Adjust the RPM at which the DTC calibration occurs.**
Max RPM	Application dependent	Adjusts the maximum engine speed used when the compressor is building air. • The default value produces optimal performance and generates maximum cfm. • Lower "Max RPM" values will lower fuel consumption and achieve quieter operation, but will result in reduced cfm output
DTC Factory Reset (Max RPM Reset)	—	To reset: Main menu -> System Parameters -> DTC Factory Reset
Maximum cfm @ default max rpm	40 cfm	—
Normal operating temperature range	104 °C (220) to 127 °C (260° F)	—
Over temperature shut down	143 °C (290 °F)	—
Fan on/off temps:	—	The WHASP Tank cooling fan is thermostatically controlled. The fan turns on at 88 °C (190 °F) and turns off at 66 °C (151 °F).

Air Receiver Tank

Pressure in the air receiver tank will not be relieved when the compressor system blows down. This is normal operation. Prior to performing any service work on the system, discharge any stored air in the air receiver tank.

The VMAC WHASP Tank has a built-in check valve. Use of an additional check valve is not required and may cause erratic performance.

The VMAC compressor system will automatically depressurize when it is shutdown. The WHASP Tank has a built in check valve which prevents blow back and moisture from the receiver tank entering the WHASP Tank. Installation of an additional check valve will cause erratic performance.

While the air receiver tank can be installed at any height in relation to the WHASP, the discharge hose running from the WHASP must be installed as high as possible on the air receiver tank to prevent problems with condensation that may have accumulated in the receiver tank (Figure 37).

Drain the condensed water from the receiver tank daily.

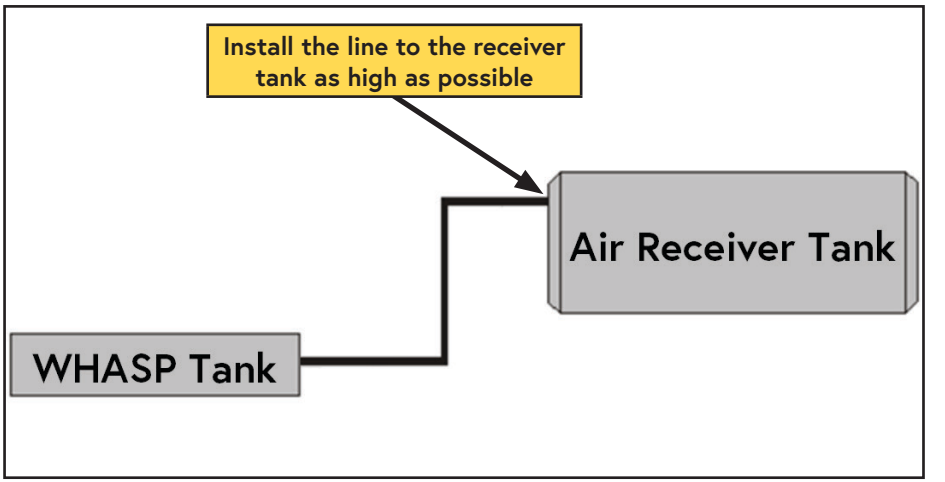


Figure 37 — Air receiver tank

Recommended Accessories

While the compressor system will function without the following accessories, VMAC strongly recommends their use for optimal performance.

See the "Accessory Product" section of this manual on page 66 for a list of products available for purchase through VMAC.

Larger Air Receiver Tank

A larger capacity air receiver tank provides a larger buffer as it gives the compressor time to react by increasing the engine speed and producing air before the tool stalls. It also has the advantage of lowering the duty cycle of the compressor system.

(This application requires a minimum air receiver tank size of 6 USG).

Pressure Gauge

While not critical to system performance, a pressure gauge is important for fine tuning the system and simplifies any potential troubleshooting.

Install a 200 psi pressure gauge downstream of the air discharge valve.

Pressure Regulator and/or Lubricator or FRL

The compressor can produce air pressures up to approximately 150 psi

(1035 kPa). It is the responsibility of the user to know the pressure and air flow requirements of the tools powered by the air compressor system.

An appropriate air pressure regulator and lubricator can be installed downstream of the air discharge valve. Failure to regulate the air pressure may cause damage to the tool.

Accessory Products from VMAC

Compressor Service Kits

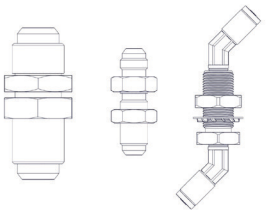
200 Hour or 6 Month Service Kit -
Part number: A700263

Includes 4 L VMAC high performance compressor oil, oil filter, air filter, and next service due decal.

400 Hour or 1-Year Service Kit -
Part number: A700264

Includes 4 L VMAC high performance compressor oil, oil filter, air filter, spin-on oil separator, safety valve, muffler, and next service due decal.

Bulkhead Fittings



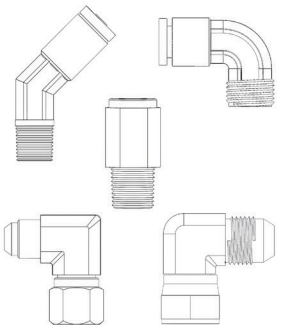
Part number: 3801095

Bulkhead fittings are used for passing the system discharge, oil, and scavenge hoses through the floor or body panels.

Includes:

- 3/4 in JIC bulkhead fitting P/N: 4900170.
- 3/8 in JIC bulkhead fitting P/N: 4900209.
- 1/8 in NPT bulkhead fitting P/N: 5000178.
- 2 × 45° 1/4 push-to-connect fittings P/N: 5000158.

Hose Fittings



45° 1/4 push-to-connect fitting P/N: 5000158.
1/4 in push-to-connect fitting For PTFE scavenge tube.

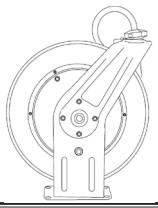
90° 1/4 push-to-connect fitting P/N: 5000020.
1/4 in push-to-connect fitting For PTFE scavenge tube.

Straight 1/4 in push-to-connect fitting P/N: 5000012.
1/4 in push-to-connect fitting For PTFE scavenge tube.

90° 3/8 in hose fitting P/N: 4900117.
3/8 in hose fitting for Oil Return Hose.

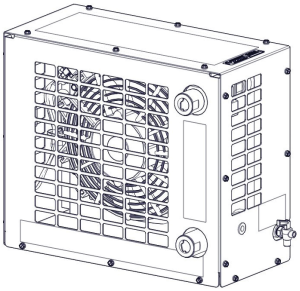
90° 3/4 in hose fitting P/N: 4900043.
3/8 in hose fitting for Compressor Discharge Hose.

1/2 in × 50 ft Hose Reel



Part number: A700007
Spring-loaded 1/2 in × 50 ft hose reel; steel construction; full flow shaft and swivel for maximum performance.

UNDERHOOD 70 Air Aftercooler

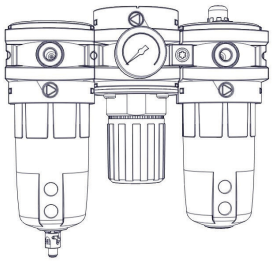


Part number: A800070

Improves tool performance and extends the life of air tools; removes up to 80% of water from compressed air; includes automatic water drain.

- Max air flow: 70 cfm / 175 psi.
- Port size: 3/4 in NPT inlet and outlet.
- Electrical: 12 V.
- Dimensions: 17 in (43.2 cm) L × 8.0 in (20.3 cm) W × 14.5 in (36.8 cm) H .
- Weight: 35 lb (15.8 kg).

Filter Regulator Lubricator (FRL) – 70 cfm

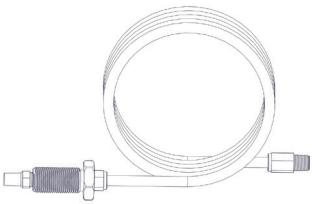


Part number: A700151

Extends the life of air tools; filter removes contaminants from the compressed air, adjustable regulator can reduce air pressure going to tools, lubricator adds atomized tool oil to the air stream to lubricate air tools (Tool oil not included).

- Max air flow: up to 70 cfm / 150 psi.
- Port size: 3/4 in NPT inlet and outlet.

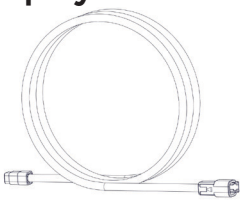
Remote Muffler



Part number: A700224

The A700224 WHASP remote mount muffler kit is designed to relocate the blowdown muffler to an external location. This is recommended for applications where the WHASP Tank will be located inside of a van or service body, the remote mounted muffler will reduce cabin noise when the compressor blowdown operates, and will ensure any oil vapor will be safely discharged outside of the vehicle.

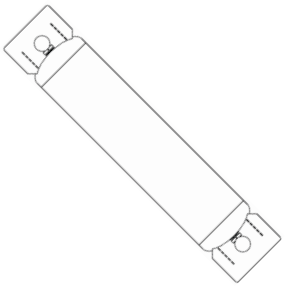
Display Harness Extension



Part number: 3530861

This display harness extension provides an additional 10 ft of cable which allows for greater flexibility in locating the display Panel.

6 Gallon Air Receiver Wing Tank



Part number: A300045

Air receiver tanks are used for lowering compressor duty cycle and removing water from compressed air; recommended for optimum operation of all VMAC Gas Driven, Diesel Driven, Hydraulic, and UNDERHOOD40 air compressors. Manufactured to FMVSS 121 standard; includes fittings, 170 psi pressure relief valve, and tank drain.

- Max pressure: up to 170 psi.
- Dimensions: 32 in (81.3 cm) L × 8 in (20.3 cm) D.
- Weight: 23 lb (10.4 kg).

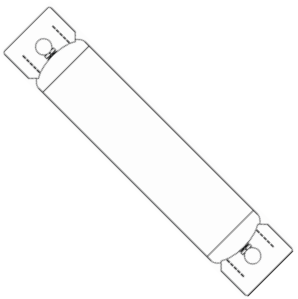
10 Gallon Air Receiver Tank w/ Mounting Feet

Part number: A300047

Air receiver tanks are used for lowering compressor duty cycle and removing water from compressed air. Recommended for optimum operation of VMAC Hydraulic Air Compressors, VMAC Diesel Driven Air Compressors, UNDERHOOD40, UNDERHOOD70 – Green Series Air Compressors, and VMAC Multifunction Power Systems, which include standby mode; ASME certified; includes fittings, 200 psi pressure relief valve, tank drain, and 200 psi pressure gauge.

- Max pressure: up to 200 psi.
- Dimensions: 30 in (76.2 cm) L × 10 in (25.4 cm) D.
- Weight: 33 lb (15 kg).

35 Gallon Air Receiver Wing Tank



Part number: A300010

Air receiver tanks are used for lowering compressor duty cycle and removing water from compressed air. Recommended for optimum operation of VMAC Diesel Air Compressors, Hydraulic Air Compressors, UNDERHOOD40, UNDERHOOD70 – Green Series Air Compressors, and VMAC Multifunction Power Systems, which include standby mode; ASME certified; includes fittings, 200 psi pressure relief value, tank drain, and 200 psi pressure gauge.

- Max pressure: up to 200 psi.
- Dimensions: 73 3/4 in (187.3 cm) L × 14 in (35.6 cm) D.
- Weight: 95 lb (43.1 kg).

Notes

Notes

Notes

Warranty Registration

This form must be fully completed and returned to VMAC at the time the vehicle is put into service. Warranty may be void if this form is not received by VMAC within 3 months of receiving the vehicle, or 200 hours of operation, whichever occurs first.

VMAC's Warranty policy and registration can be viewed online at:
www.vmacair.com/warranty

Product Information

System Identification Number: **V** _ _ _ _ _ _ _ _ _ _ _ _ _
Compressor Serial Number: **P** _ _ _ _ _ _ _ _ _ _ _ _ _

Owner / End User Information

Company Name:

City: _____ State / Province: _____

Phone: (____) _____–_____

Email Address: _____

Date vehicle was put into service: _____/_____/_____
Day Month Year

Installer Information

Installer Company Name: _____

City: _____ State / Province: _____

Submitted by

Name: _____ Phone: (____) _____–_____

Email: _____

Vehicle Information (Optional)

Unit: _____ Year: _____

Make: _____ Model: _____

Vehicle Identification Number: _____

Manufactured by

888-241-2289
877-740-3202
www.vmacair.com
tech@vmacair.com
warranty@vmacair.com
kb.vmacair.com
1333 Kipp Road, Nanaimo, B.C., V9X 1R3 Canada