VANAIR®
AIR POWER TO GO™

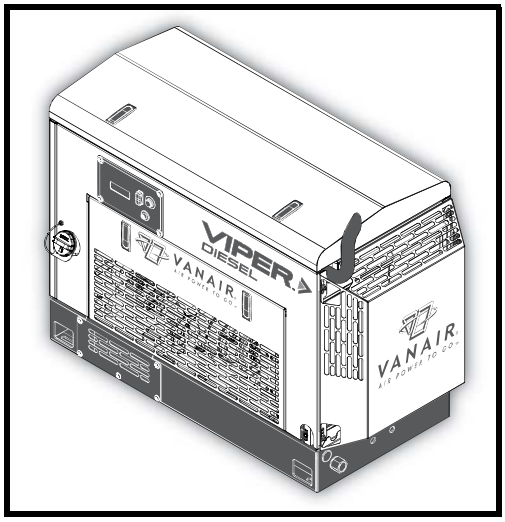
VIPER™
DIESEL

DIESEL ENGINE-DRIVEN, 60-80 CFM / 100 PSIG, ROTARY SCREW AIR COMPRESSOR

OPERATION MANUAL & PARTS LIST

NOTE

This publication contains the latest information available at the time of preparation. Every effort has been made to ensure accuracy. Vanair Manufacturing, Inc. reserves the right to make design change modifications or improvements without prior notification.



Read this manual before installing, operating or servicing this equipment. Failure to comply with the operation and maintenance instructions in this manual WILL VOID THE EQUIPMENT WARRANTY.

NOTE

Use only Vanair Vanguard™ Premium Synthetic Oil and Genuine Vanair Parts. Inspect and replace damaged components before operation. Substituting non-Vanguard™ Oil or non-genuine Vanair filter components WILL VOID THE COMPRESSOR WARRANTY!

Vanair Manufacturing, Inc.

10896 West 300 North

Michigan City, IN 46360

Telephone (toll free): (800) 526-8817
Service (toll free): (844) VAN-SERV
(844) 826-7378
Telephone: (219) 879-5100

Service Fax: (219) 879-5335
Parts Fax: (219) 879-5340
Sales Fax: (219) 879-5800

www.vanair.com

NOTE

Making unauthorized modifications to the system components WILL VOID THE WARRANTY!

Always inform Vanair Manufacturing, Inc., before beginning any changes to the Viper Diesel system.

KEEP THE MANUAL WITH THE VEHICLE

VANAIR®
AIR POWER TO GO™

P/N: 090058-OP_r2

Effective Date: December-2016

AIR N ARC®

ALL-IN-ONE POWER-SYSTEMS®

RELIANT™ SERIES

POWERFLEX™ SERIES

PRO SERIES

CONTRACTOR SERIES

VIPER™ SERIES

FST™ SERIES

VANAIR VANTAGE WARRANTY

This limited warranty supersedes all previous Vanair warranties and is exclusive with no other guarantees or warranties expressed or implied.

LIMITED WARRANTY—Subject to the expressed terms and conditions set forth below, Vanair Mfg., Inc. ("Vanair"), of Michigan City, Indiana (USA), warrants to the original retail purchaser of new Vanair equipment that such equipment is free from defects in materials and workmanship when shipped by Vanair.

For warranty claims received by Vanair within the applicable warranty periods described below, Vanair will repair or replace any warranted equipment, parts or components that fail due to defects in material or workmanship or refund the purchase price for the equipment, at Vanair's discretion. Vanair is not responsible for time or labor to gain access to the machine to preform work. WARRANTY WILL BE VOID IF GENUINE VANAIR PARTS AND FLUIDS ARE NOT USED.

Vanair must be notified in writing within thirty (30) days of any such defect or failure. No warranty work or returns without prior authorization is allowed. Vanair will provide instructions on the warranty claim procedures to be followed.

Warranty will commence upon receipt of the Warranty Registration Card. If the Warranty Registration Card is not received within six (6) months of shipment from Vanair, the warranty commencement date shall be thirty (30) days from the date of shipment from Vanair. Records of warranty adherence are the responsibility of the end user.

1. Lifetime Warranty Parts – 3 Years Labor
   - Rotary Screw Air Compressor Air End
2. 6 Years Parts – 3 Years Labor
   - Vanair Super Capacitor (VSC)
3. 3 Years Parts – 1 Year Labor
   - Reciprocating Compressor Air End
   - Generators
   - Welders
4. 2 Years Parts – 1 Year Labor
   - Hydraulic Motors
   - Hydraulic Pumps
5. 1 Year Parts – 1 Year Labor
   - All electronics including, but not limitedto:
     i) I/O Boards
     ii) Modules
     iii) Panel Boxes
     iv) Instrumentation
     v) Clutches
     vi) Solenoids
     vii) Running Gear/Trailers
     viii) Compressor/Hydraulic Coolers, including Fan and Radiator Core

This Limited Warranty shall not apply to:

1. Consumable components, such as shaft seals, valves, belts, filters, capacitors, contactors, relays, brushes or parts that fail due to normal wear and use.
2. Items furnished by Vanair, but manufactured by others, such as engines and trade accessories (these items are covered by the manufacturer's warranty, if any).
3. Equipment that has been modified by any party other than Vanair or equipment which has not been used and maintained in accordance with Vanair's specifications.
4. Equipment which has been improperly installed and/or improperly operated, based upon Vanair's specifications for the equipment or industry standards.
5. Equipment installed by non-authorized or third party personnel.

Vanair products are intended for purchase and use by commercial/industrial users and persons trained and experienced in the use and maintenance of industrial equipment.

In the event of a warranty claim covered by this Limited Warranty, the exclusive remedies shall be, at Vanair's sole discretion: (i) repair; or (ii) replacement; (iii) where authorized in writing by Vanair in appropriate cases, the reasonable cost of repair or replacement at an authorized Vanair service facility; or (iv) payment of (or credit for) the purchase price (less reasonable depreciation based upon actual use) upon return of the equipment at the warranty claimant's risk and expense. Vanair will pay standard ground freight for any warranty item shipped to and from Vanair or (Vanair designated facility) within the first year of the applicable warranty period. Any additional expedited freight cost is the responsibility of the purchaser.

TO THE GREAT EXTENT PERMITTED BY APPLICABLE LAW, THE REMEDIES PROVIDED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES APPLICABLE TO THE VANAIR EQUIPMENT. IN NO EVENT SHALL VANAIR BECOME LIABLE FOR DIRECT, INDIRECT, SPECIAL, PUNITIVE, INCIDENTAL OR CONSEQUENTIAL DAMAGES (INCLUDING LOSS OF PROFIT OR LOST BUSINESS OPPORTUNITY), WHETHER BASED ON CONTRACT, TORT OR ANY OTHER LEGAL THEORY. IN NO EVENT SHALL VANAIR BECOME OBLIGATED TO PAY MORE ON ANY WARRANTY CLAIM THAN THE PURCHASE PRICE ACTUALLY PAID BY THE ORIGINAL RETAIL PURCHASER.

THIS LIMITED WARRANTY IS MADE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER WARRANTY OR GUARANTY ARISING BY OPERATION OF LAW. ANY WARRANTY NOT EXPRESSLY PROVIDED HEREIN, IMPLIED WARRANTY, GUARANTY AND ANY REPRESENTATION REGARDING THE PERFORMANCE OF THE EQUIPMENT, AND ANY REMEDY FOR BREACH OF CONTRACT, IN TORT, OR ANY OTHER LEGAL THEORY WHICH, BUT FOR THIS PROVISION, MIGHT ARISE BY IMPLICATION, OPERATION OF LAW, CUSTOM OF TRADE, OR COURSE OF DEALING ARE EXCLUDED AND DISCLAIMED BY VANAIR.

Some states in the United States of America do not allow limitations of how long an implied warranty lasts, or the exclusion of incidental, indirect, special or consequential damages, and as such, the above limitations and exclusions may not apply to you. This warranty provides specific legal rights. Other rights may be available to you, but may vary from state to state.

In Canada, legislation in some provinces provides for certain additional warranties or remedies other than as stated herein, and to the extent that they may not be saved, the limitations and exclusions set out forth above may not apply. This Limited Warranty provides specific legal rights, and other rights may be available, but may vary from province to province.

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EFFECTIVE: JAN 8, 2016
090088_r1

VANAIR®
MOBILE POWER SOLUTIONS™

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SECTION 7: ILLUSTRATED PARTS LIST (CONTINUED)

VANAIR MANUFACTURING, INC.
(800) 526-8817 • www.vanair.com

WARRANTY CLAIMS PROCEDURE

CLAIMS PROCESS FOR WARRANTED VANAIR PARTS

This process must be used by owners of Vanair® equipment in situations where a warranted item needs repair or replacement under the terms of the purchase warranty. Do not return items to Vanair without prior authorization from the Vanair Warranty Administrator.

PROCEDURE:

When a customer needs assistance in troubleshooting a system and/or returning parts, follow the steps below.

1. **Locate the machine's serial number:**

   The machine package serial number plate is located inside the machine compartment on the floor near to the engine air filter mounting location (see ***Figure W-1***).

   The engine and the compressor also have individual serial numbers respectively (see ***Figure W-1***). For engine warranty issues, consult the Engine Operator's Manual for the engine's limited warranty details. For particular compressor unit issues, the compressor serial number may be needed. In any case, engine and/or compressor issues can be confirmed using the machine serial number as found in ***Figure W-1***.

2. **Have a list of the symptoms/condition/ malfunctions along with any applicable temperature and pressure readings, and also the number of operational hours available:**

   Note that the above information will also need to be included on the Return Material Authorization Form (per **Step #6**); this form is necessary for warranty processing if the warranty claim is deemed valid by the service case review.

3. **Contact the Vanair® Service Department by phone (1-219-879-5100) to speak with a Service Technician.**

4. **Vanair Service will troubleshoot the problem based on the information provided by the customer, and attempt to return the unit to service as quickly as possible.**

5. **If the unit cannot be returned to service, and Vanair determines this matter is a warranty issue, the Service Technician will assign an RMA (Return Material Authorization) number that will provide for the return of the item to Vanair for analysis and a final determination as to the item's warranty status.**

NOTE
The RMA number must be placed on the outside of the package being returned.

6. **Warranty Claims are solicited via a Return Material Authorization (RMA) Form. This form can be obtained via download from the web site, or requested directly from the Vanair Service Department:**

   Once a current form has been obtained, follow the instructions given on the form to fill in the information needed. This form is used for the purpose of soliciting a warranty case. All of the field information ***except*** for the bottom section block fields, which includes

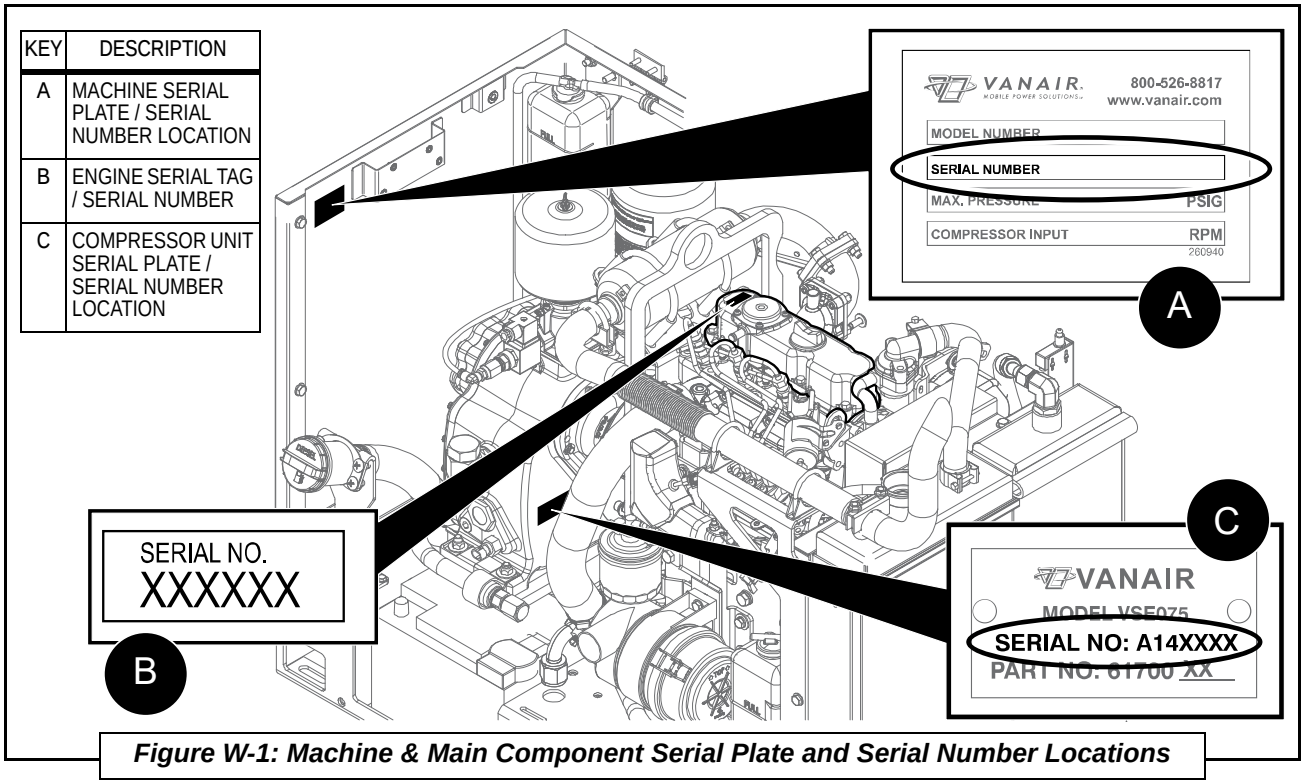

Figure W-1: Machine & Main Component Serial Plate and Serial Number Locations

Disposition of Goods, *Notifications* and *Additional Notes*, will be required.

Customers have 30 days after the RMA number is issued to return the item. If the part is not returned within this period, the RMA is void and any claims will be denied.

NOTE

All labor claims or invoices must be approved by the Vanair Warranty Administrator prior to starting repair work along with the cost of the repair. All paper work associated with the returned item and warranty repair cost must reference the RMA number issued against the part, and be forwarded to Vanair within 30 days of the completion of work.

Before sending a warranty part to a customer, Vanair® will need a P.O. or credit card number to cover the cost of the part and shipping. After the part is analyzed and deemed to be covered under warranty, Vanair will issue credit to the customer. All parts eligible for warranty must have the RMA number on the invoice at the time of purchase.

No items can be returned “freight collect”. Freight costs will be addressed at the time the claim is closed. The customer pays any additional costs for warranty parts delivered through expedited services (i.e., Next Day, Second Day).

VANAIR WILL NEVER ACCEPT ANY INVOICES FOR PARTS RETURNED: ANY PARTS RETURNED VIA INVOICE WILL BE RETURNED FREIGHT COLLECT: NO PARTS ARE TO BE RETURNED FREIGHT COLLECT!

Vanair Mfg., Inc. strives to continuously improve its customer service. Please forward any questions, comments, or suggestions to Vanair Service:

Phone: 219-879-5100, ext. 400 or toll free 844-VANSERV (826-7378)

Email: warranty@vanair.com

SECTION 1: SAFETY

1.1 ⚠ GENERAL INFORMATION

⚠ IMPORTANT

Read this manual before operating or servicing the Viper Diesel compressor system. Failure to do could result in damage equipment, bodily injury, or death.

The products provided by Vanair® Manufacturing, Inc., are designed and manufactured for safe operation and maintenance. But it is ultimately the responsibility of the users and maintainers for safe use of this equipment. Part of this responsibility is to read and be familiar with the contents of this manual before operation or performing maintenance actions.

1.2 ⚠ DANGERS, WARNINGS, CAUTIONS AND NOTES

These boxes are labeled clearly with the title block listing either Danger, Warning, Caution, or other non-safety issue. They draw attention to specific issues that are pertinent to the safe and correct operation of the machine.

The symbols shown and defined in **Section 1: Safety** are used throughout this manual and on the machine to call attention to, and identify, possible hazards.

The international warning symbol (shown above) is used on all decals, labels and signs that concern information pertaining to bodily harm. When you see the international warning symbol, **pay extremely careful attention**, and follow the given instructions or indications to avoid any possible hazard.

1.3 ⚠ SUMMARY OF DANGERS, WARNINGS, CAUTIONS AND NOTES

These boxed inserts are placed throughout this manual in the sections where they apply. This sub-section is a general summary of their contents.

1.3.1 ⚠ DANGERS

- Keep tools or other conductive objects away from live electrical parts.
- Never touch electrical wires or components while the machine is operating. They can be sources of electrical shock.

1.3.2 ⚠ WARNINGS

- **DO NOT EVER** use this compressor as a breathing air source. Vanair Manufacturing Inc., disclaims any and all liabilities for damage or loss due to fatalities, personal injuries resulting from the use of a Vanair compressor to supply breathing air.
- **DO NOT** perform any modifications to this equipment without prior factory approval.
- **DO NOT** install this compressor in a confined space that lacks proper ventilation and airflow; breathing and cooling air circulation must not be compromised.
- **DO NOT** operate the compressor or any of its systems if there is a known unsafe condition. Disable the equipment by disconnecting it from its power source. Install a lock-out tag to identify the equipment as inoperable to other personnel.
- **DO NOT** operate the compressor with any by-pass or other safety systems disconnected or rendered inoperative.

- **DO NOT** operate the equipment while you are under the influence of alcohol or drugs.
- **DO NOT** operate the equipment while you are feeling ill.
- **DO NOT** attempt to service the equipment while it is operating.
- Before performing maintenance or replacing parts, relieve the entire system pressure by opening a service valve which will vent all pressure to the atmosphere: remove all electrical power.
- **DO NOT** use the compressor for purposes other than for which it is intended. High pressure air can cause serious and even fatal injuries.
- **DO NOT** operate the compressor outside of its specified pressure and speed ratings. (See **Section 2: Specifications** or refer to the equipment data plate.)
- **DO NOT** use flammable solvents or cleaners for cleaning the compressor or it parts.
- **DO NOT** operate the compressor in areas where flammable, toxic, or corrosive fumes, or other damaging substance can be ingested by the compressor intakes.
- Keep arms, hands, hair and other body parts, and clothing away from fans, drive shafts, and other moving parts.
- **DO NOT** wear jewelry, unbuttoned cuffs, ties, or loose-fitting clothing when you are working near moving/rotating parts.
- **ALWAYS** confine long hair when working near moving/rotating parts.
- **NEVER** operate the equipment while wearing a headset to listen to music or the radio.
- Wear personal protective equipment such as gloves, work shoes, and eye and hearing protection as required for the task at hand.
- **DO NOT** operate the compressor with any guards removed or damaged, or other safety devices inoperative.
- **DO NOT** operate the compressor in enclosed or confined spaces where ventilation is restricted or closed-off.
- Ensure that hoses connected to service valves are fitted with correctly sized and rated flow limiting devices which comply with applicable codes. Pressurized broken or disconnected hoses can whip causing injuries or damage.
- Over speed is hazardous! **NEVER** tamper with the governor components or settings to increase the maximum speed without first consulting Vanair. Severe personal injury and equipment damage can result if operated at speeds above the maximum. Refer to ***Section 5.4.1*** for further details.
- **DO NOT** use tools, hoses, or equipment that have maximum ratings below that of this compressor.
- Keep metal tools, and other conductive objects away from live electrical components.
- Before performing maintenance or repair operations on the compressor, ensure that all power has been removed and been locked out to prevent accidental application.
- **DO NOT** assume that because the compressor is in a STOPPED condition that power has been removed.
- Use this compressor only to compress atmospheric air. Use of this equipment as a booster pump and/or to compress any other gaseous or aerosol substance constitutes improper use. It can also cause damage or injuries. Such misuse will also void the warranty.
- Install, operate, and maintain this equipment in full compliance with all applicable OSHA, other Federal, state, local codes, standards, and regulations.
- When lifting objects, be aware of proper lifting techniques to avoid injury.
- **ALWAYS** read and follow safety related precautions found on containers of hazardous substances.
- **DO NOT** play with compressed air. It can cause serious injury.

1.3.3 ⚠ CAUTIONS

- Check all safety devices for proper operation on a routine basis.
- Ensure that no tools, rags, or other objects are left on compressor drive systems or near intakes.
- Keep the equipment clean when performing maintenance or service actions. Cover openings to prevent contamination.

- **DO NOT** operate the compressor if cooling air is not available (fan/cooler not operating) or if lubricant levels are below their specified minimum levels.
- Ensure all plugs, hoses, connectors, covers, and other parts removed for maintenance actions are replaced before applying power to the compressor.
- Avoid touching hot surfaces and components.
- Ensure that electrical wiring, terminals; hoses and fittings are kept in serviceable condition through routine inspections and maintenance. Replace any damaged or worn components.
- **DO NOT** install safety devices and/or replacement parts other than authorized Vanair® replacement parts.
- Keep personnel out of line with, and away from discharge opening of valves, hoses and tools.
- Immediately clean up any lubricant or spills.

1.3.4 ⚠ SAFETY DECALS

Safety decals are placed onto, or located near, system components that can present a hazard to operators or service personnel. All pertinent decals listed in **Section 7.13, Decals, Part 1 and Part 2,** are located near a component, which is subject to respect in terms of safety precautions. Always heed the information noted on the safety decals.

⚠ WARNING

DO NOT REMOVE OR COVER ANY SAFETY DECAL. Replace any safety decal that becomes damaged or illegible.

1.4 ♻ DISPOSING OF MACHINE FLUIDS

Always dispose of machine fluids under the guidance of all applicable local, regional and/or federal law.

Vanair encourages recycling when allowed. For additional information, consult the container label of the fluid in question.

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SECTION 2: SPECIFICATIONS

TABLE 2A: SPECIFICATIONS FOR VIPER DIESEL ROTARY SCREW COMPRESSOR

GENERAL SYSTEM INFORMATION	SPECIFICATION
ENGINE:	Diesel 25HP [I]
Engine Speed:	**Idle Speed:** 2200 RPM // **Full Speed:** 3600 RPM
Engine Oil Capacity:	Four (4) Quarts of Kubota 15W-40 (Refer to Engine Operation Manual for Extreme Conditions)
Fuel Consumption:	1.25 GPH at Full Engine Speed / Load Nine (9) Hour Runtime (one gallon/hour @ 60% Duty Cycle)
Fuel Tank Capacity:	Nine (9) Gallons
Fuel Type:	Diesel Fuel [II]
Operating Temperature Limits:	+10 °F (-7°C) to 120 °F (49 °C) [III]
COMPRESSOR:	Single Stage, Oil Injected Rotary Screw
Model:	80 CFM / 100 PSIG 70 CFM / 125 PSIG 60 CFM / 150 PSIG High Altitude: 70 CFM / 100 PSIG
Inlet Control:	Electric
Air Filter:	Pleated Paper, Dry Type

Table continued on next page

[I] For specification and requirements regarding the Kubota® 25 HP Diesel Engine, refer to the Engine Operation Manual. **IMPORTANT:** Do not adjust the engine speed without first consulting the Vanair® Service Department (refer to ***Section 5.4.1***).

[II] Vanair recommends: Diesel Fuel Specification Type and Sulfur Content % (ppm) used must be compliant with all applicable emission regulations for the area in which the engine is operated.

Engine manufacturer recommends a fuel sulfur content of less than 0.10% (1000 ppm). For fuels with a high sulfur content 0.50% (5000 ppm) to 1.0% (10000 ppm) a more frequent engine oil and oil filter change schedule is needed (approximately half). **DO NOT USE** fuels with a sulfur content greater than 1.0% (10000 ppm). For additional information on fuel for this engine, consult **Section 6.3** (Extreme Condition Operation), and the Engine Operation Manual.

[III] With cold weather option kit temperature range expands to: -40 °F (-40 °C). Refer to **Section 7, Table 7B** for machine options list.

NOTE: Specifications are subject to change without notice.

TABLE 2A: SPECIFICATIONS FOR VIPER DIESEL ROTARY SCREW COMPRESSOR (cont.)

GENERAL SYSTEM INFORMATION	SPECIFICATION
COMPRESSOR (*specifications continued from previous page*):	
Oil Filter:	Spin-on Style
Oil Capacity / Type:	Air End - **3 Quarts** // **Machine - 4 Quarts** (1 gallon) (Vanair® Vanguard™ Premium Synthetic Oil)
Safety Relief Valve Setting:	200 PSIG
Operating Pressure Range:	75-100 (Maximum) PSI; *Pressure setting is set at factory to 100 PSI, but may be adjusted downward accordingly. Note that higher PSI machines can go up to 125 or 150, per machine-built specification.*
Electrical System:	12 VDC
Cooling System:	Air to Oil Heat Exchanger
Instrumentation Display:	Run Hours, Fuel Level, Compressor Temperature, Pressure, RPM

I For specification and requirements regarding the Kubota® 25 HP Diesel Engine, refer to the Engine Operation Manual. **IMPORTANT:** Do not adjust the engine speed without first consulting the Vanair® Service Department (refer to ***Section 5.4.1***).

II Vanair recommends: Diesel Fuel Specification Type and Sulfur Content % (ppm) used must be compliant with all applicable emission regulations for the area in which the engine is operated.

Engine manufacturer recommends a fuel sulfur content of less than 0.10% (1000 ppm). For fuels with a high sulfur content 0.50% (5000 ppm) to 1.0% (10000 ppm) a more frequent engine oil and oil filter change schedule is needed (approximately half). **DO NOT USE** fuels with a sulfur content greater than 1.0% (10000 ppm). For additional information on fuel for this engine, consult **Section 6.3** (Extreme Condition Operation), and the Engine Operation Manual.

III With cold weather option kit temperature range expands to: -40 °F (-40 °C). Refer to **Section 7, Table 7B** for machine options list.

NOTE: Specifications are subject to change without notice.

SECTION 3: INSTALLATION

3.1 MACHINE PACKAGE RECEIPT/INSPECTION

Upon receipt of the machine package, inspect the exterior of the shipping crate for signs of shipping/transit damage. Any damage should be reported immediately to the shipping company. Open the lid and inspect the component parts and supports to ensure that there has been no internal movements of assemblies or components which may have caused damage. To install the Viper Diesel Compressor System, refer to the following sections.

NOTE

Contact Vanair® at
(219) 879-5100 / (800) 526-8817
Service (toll free): (844) VAN-SERV
(844) 826-7378
Service Fax: (219) 879-5335
www.vanair.com
to report missing items, incorrect part numbers, or other discrepancies.

3.2 INSTALLATION INSTRUCTIONS

⚠ DANGER

DO NOT install in enclosed spaces.

⚠ WARNING

ELECTRICAL HAZARD! Ensure that the battery is disconnected before starting the installation.

NOTE

In order to prevent accidental damage to vehicle components (fuel tanks, lines, brake lines, wiring harnesses), note their location before drilling any holes.

Refer to ***Figure 3-1 (Parts 1 and 2)***, and the following procedure and conditions:

1. Position the machine so that there is no restriction of cooling air through the enclosure (minimum of 12 inches from front access side; minimum of eight (8) inches from rear side. Note:
   - Cooling air enters the enclosure through the front and rear panels, passes through the cooler, and exits through vents in the end shroud.
   - Ensure that adequate height and clearance exists to allow for the hood to open (minimum of 49.9 inches from mounting surface), and a clear passage for service allowance to the maintenance access panel located at the back.
2. Ensure that mounting surface or support is adequate for supporting the weight of the machine, and should be level for normal operation.
   - Mounting slots for four (4) 1/2” hold down bolts are provided. Refer to ***Section 7, Illustrations and Parts Lists*** for additional installation and system schematic drawings.
3. Note location of service connections. Service connections are conveniently grouped at the end of the unit in the base frame.
4. Employ electrical connections. System is designed for 12VDC negative ground.

Ensure all supply hoses and electrical wiring are correctly specified, adequately supported and do not touch or rest on any sharp edges. Wiring should be protected with split loom to prevent corrosion and consequently, loose due to down time.

3.3 INSTRUMENT PANEL RELOCATION

The Viper Diesel compressor allows for the instrument panel to be remote mounted if it

better-suits the vehicle's mounting allowance space or the compressor's functions. The optional extension harness must be used for remote panel installation (to order, refer to **Table 7B** in **Section 7**).

Please note that if relocating the panel, you should re-apply any zip ties that were cut to re-establish the cable wire to the new location. Tying the wire at intervals may be needed to secure the panel cable away from moving objects or sharp edges during operation.

NOTE

The dimensions listed in this diagram are the *minimum* required clearance distances needed for properly cooling the machine. Additional clearance room may be desired for easier access for control and/or maintenance functions.

DISCLAIMER

If machine package is to be mounted within a confined space such as beneath a canopy, the unit must have a minimum of eight (8) inch clearances on the front and back sides for ventilation.

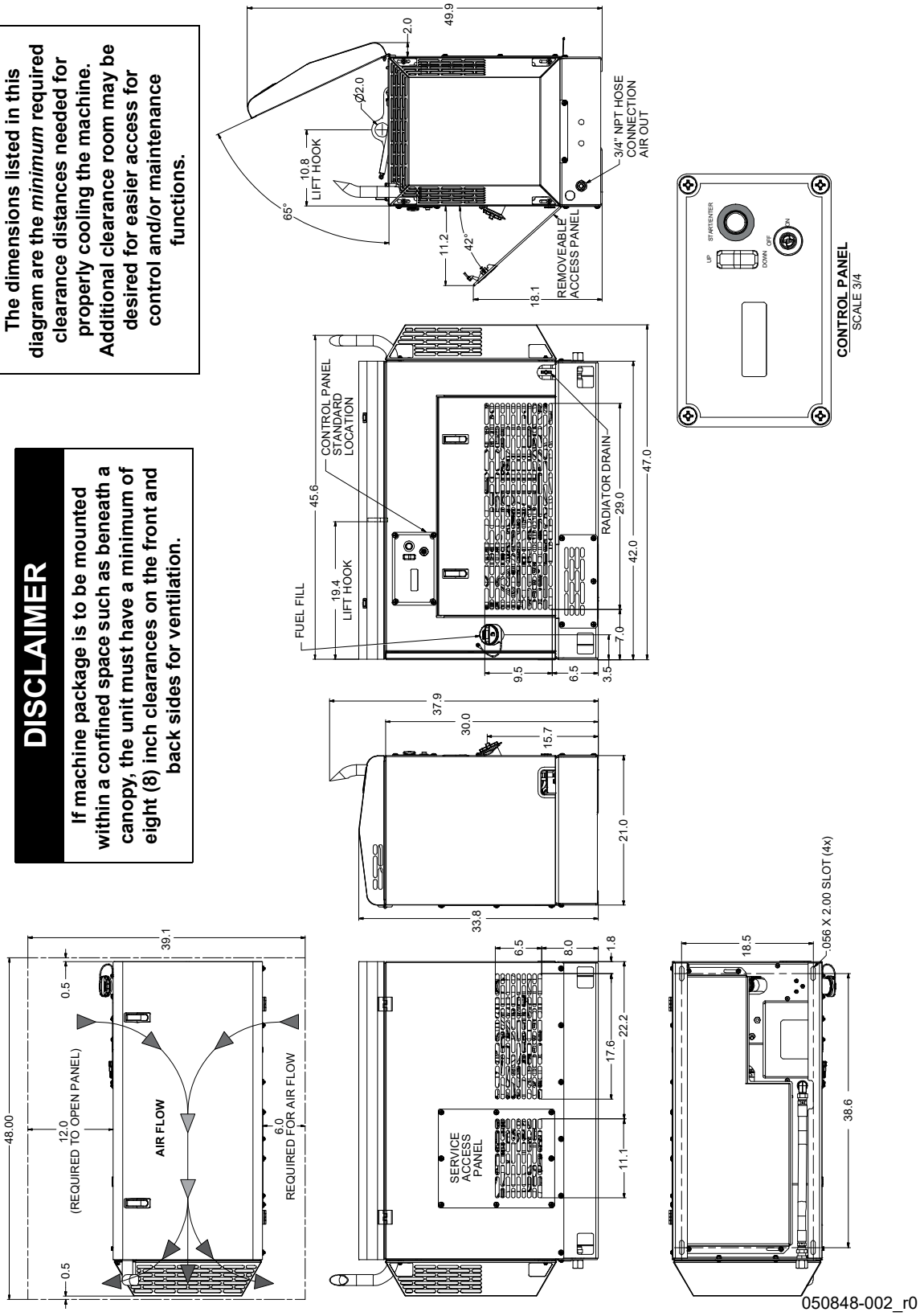
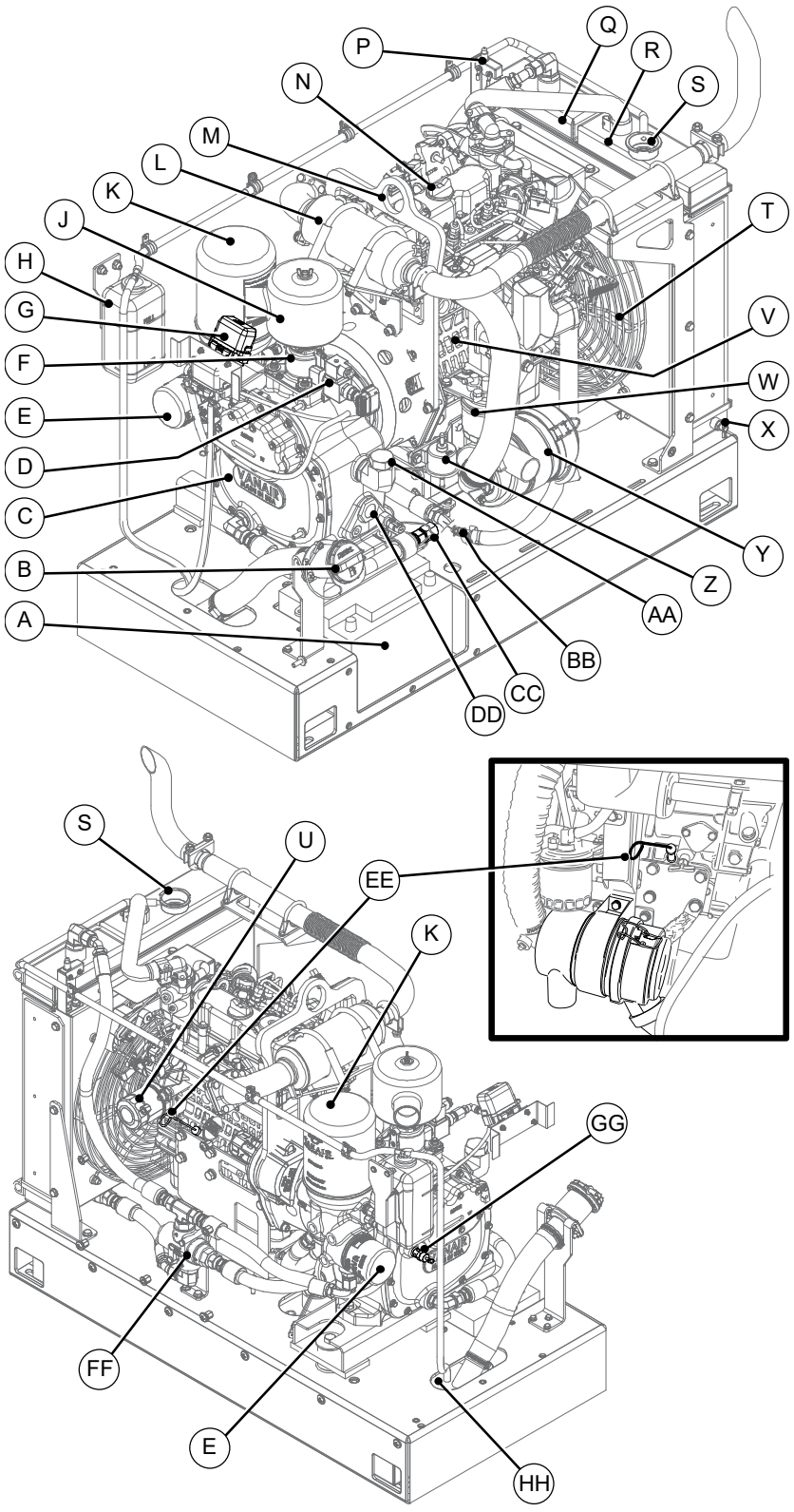


Figure 3-1: Dimension Diagram



KEY	DESCRIPTION
A	12V LEAD-ACID BATTERY
B	DIESEL FUEL CAPPED FILL PORT
C	COMPRESSOR UNIT
D	INLET VALVE INTAKE REGULATOR
E	COMPRESSOR OIL FILTER
F	COMPRESSOR AIR INLET/INTAKE VALVE
G	POWER DISTRIBUTION MODULE [I]
H	COOLANT RECOVERY TANK
J	COMPRESSOR AIR INTAKE FILTER HOUSING
K	COMPRESSOR AIR/OIL SEPARATOR
L	ENGINE EXHAUST MUFFLER
M	LIFTING BAIL
N	ENGINE OIL FILL PORT/CAP
P	OPEN HOOD SAFETY SWITCH
Q	COOLER ASSEMBLY - COMPRESSOR OIL COOLER
R	COOLER ASSEMBLY - ENGINE RADIATOR
S	RADIATOR FILL PORT
T	COOLING FAN ASSEMBLY
U	ENGINE OIL FILTER
V	ENGINE - KUBOTA DIESEL
W	ENGINE DIESEL FUEL FILTER
X	RADIATOR DRAIN VALVE
Y	ENGINE AIR FILTER HOUSING
Z	ENGINE FUEL FILTER (SUCTION)
AA	COMPRESSOR OIL FILL PORT
BB	ENGINE OIL DRAIN TUBE/CAP
CC	COMPRESSOR OIL DRAIN TUBE/CAP
DD	COMPRESSOR OIL FILL SIGHT GLASS
EE	ENGINE OI LEVEL DISPSTICK [II]
FF	THERMAL CONTROL
GG	PRESSURE RELIEF VALVE
HH	DIESEL FUEL TANK

[I] For module details refer to **Section 7.11**.

[II] There is an oil dipstick indicator located on either side of the engine allowing for accessibility.

Figure 4-1: Main Machine Component Locations

SECTION 4: OPERATION

4.1 GENERAL INFORMATION

Refer to ***Figure 4-1***. The Vanair® Viper Diesel compressor has a comprehensive array of controls and indicators for optimum machine performance. Understanding the correct operation of the system will help to distinguish between a properly functioning system and a system that may be indicating the beginning of a malfunction. The information in the Operation Section will help the operator to recognize and interpret the readings to assure that the system is performing optimally.

NOTE

Before starting the Vanair Viper Diesel compressor, read this section thoroughly and familiarize yourself with the controls and indicators - their purpose, location and use.

IMPORTANT

If start-up and shut-down procedures are not followed, damage to the system and its components may occur.

4.2 INSTRUMENTATION

Refer to ***Figure 4-2***. The standard instrument panel for the Viper Diesel compressor features a digital display screen with scrolling and operational rocker switches.

4.2.1 DIGITAL DISPLAY SCREEN

The air pressure readout monitors service air pressure and incorporates an over-pressure shutdown function.

4.2.2 SCROLL SELECTOR ROCKER SWITCH

The scroll selector rocker switch allows the operator to navigate through the settings and displays related to the machine's functions.

4.2.3 START/ENTER BUTTON

The START/ENTER button is used to turn the machine on and off, and to confirm menu selections.

4.2.4 KEY SWITCH

The key switch enables power to the control module. The engine can be stopped by turning the key switch off.

4.3 INITIAL (FIRST TIME) START-UP PROCEDURE

The following procedure should be used to make the initial start-up of the compressor.

1. Position the compressor on a level surface so that proper amounts of liquid can be added, if required.
2. Check engine and compressor oil levels and add oil, if necessary (refer to **Tables 5A** and **5C** in **Section 5, Maintenance**).
3. Fill fuel tank.
4. Connect air hose/piping to discharge.
5. Turn key switch to ON position.
6. Press and hold Start button for one (1) second to begin.
7. Allow the machine to sufficiently warm-up before operating air tools.
8. After the initial run, shut down machine allow it to de-pressurize and top off compressor oil sump, as required.

Inspect for any leaks, and tighten any loose fittings.

4.4 SHUTDOWN PROCEDURE

1. Allow engine to run at idle for approximately sixty (60) seconds.
2. Turn key switch to OFF position; NOTE: Allow the compressor to blow down prior to re-starting.

IMPORTANT

In case of emergency where immediate shutdown is required, this procedure is not necessary.
Turn key switch to OFF position immediately.

4.5 SUBSEQUENT (NORMAL) START-UP PROCEDURE

On subsequent starts, follow the procedure explained below:

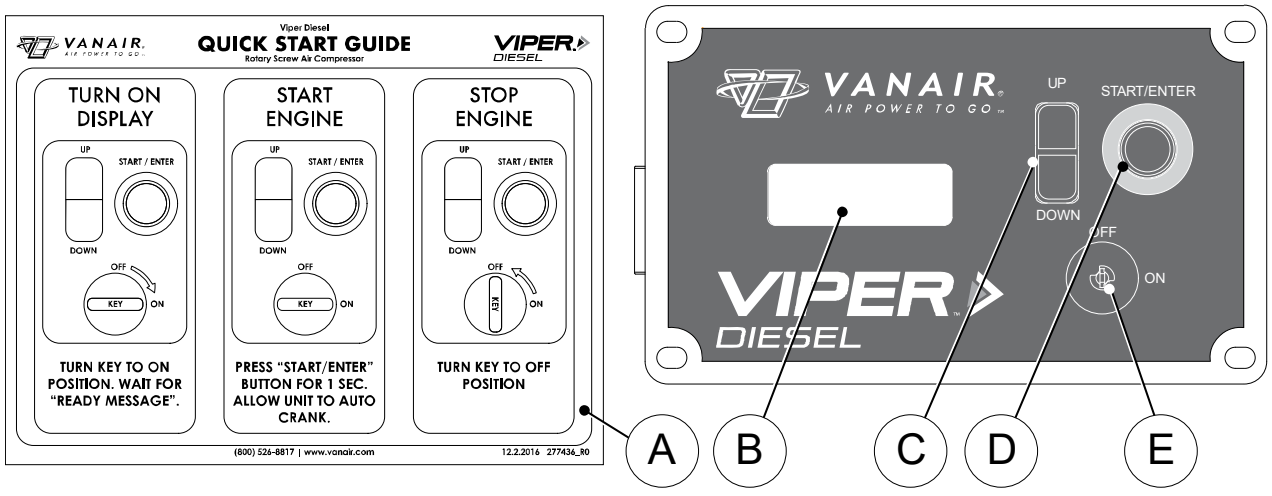
1. Check engine and compressor oils and add oil, if necessary.
2. Fill the fuel tank.
3. Turn key switch to ON position.
4. Press and hold START/ENTER button for one (1) second to start engine cranking sequence.
5. Allow the machine to warm up sufficiently before operating.

⚠ WARNING

Turn the key switch OFF prior to opening panel or servicing machine. Engine can start at any time in Auto mode.

4.6 CONTROLLER GUIDE

Refer to ***Figure 4-2*** for controller panel display features. The electronic controller supplied in the Diesel Viper package has been designed to work in conjunction with the linear actuator that operates the speed control. When used properly, they will reduce fuel consumption, remind the user when periodic service is due, extend the useful life of the package, and help diagnose any



KEY	DESCRIPTION	KEY	DESCRIPTION
A	QUICK START INSTRUCTION DECAL	D	START/ENTER BUTTON
B	INSTRUMENT PANEL MODULAR DISPLAY SCREEN	E	OFF/ON KEY SWITCH
C	SCRROLL SELECTOR ROCKER SWITCH		

Figure 4-2: Controller Panel

problems that may arise during the life of the compressor system.

4.6.1 HOME SCREEN

The home screen displays the basic information required during each state the package can exist in. Before startup, it displays fuel level and a message that helps instruct the user how to start the engine. While the engine is in its cranking sequence, it displays a message describing what it is doing (glow plugs, warm-up period, etc.). During regular operation, it displays engine RPM, compressor pressure and temperature, fuel level, and hours of operation. After shutdown, it displays the blowdown timer required to elapse before engine can be restarted.

4.6.2 SPLASH SCREEN

When the display first turns on, it displays the manufacturer information, software version, current hours, and serial number of the machine. To access this screen after the display goes to the home screen, press the Up or Down button while at the home screen and it can be accessed like the adjustable parameters.

4.6.3 ADJUSTING USER SETTINGS

The Diesel Viper controller has several settings that can be adjusted to suit each user's specific requirements. The following parameters can be adjusted as follows:

4.6.3.1 PARAMETERS

Parameter Name	Setting Limits (Increment)	Default
Auto Shutdown (min.)	0-30 (1)	5
Auto Crank	On/Off	On
Sleep State Timer (min.)	0-15 (5)	10

1. After the display is turned on, from the home screen press the Up or Down buttons on the control panel to toggle between each parameter.
2. Press START/ENTER button to select a parameter to adjust.
3. Use the Up and Down buttons to cycle between available settings.
4. Press START/ENTER button to confirm the parameter setting. This will return view access to the home screen.

4.6.3.2 AUTO SHUTDOWN

When enabled, auto shutdown will turn off the compressor package until air demand is needed again.

4.6.3.3 AUTO CRANK

When enabled (ON/OFF, default to ON), auto crank will apply the appropriate length of glow plugs, crank the engine until it starts, and allow for a brief warm-up period before making air. When off, manual crank by depressing the START/ENTER button.

4.6.3.4 SLEEP STATE TIMER

The sleep state timer is the length of time that the package can be “asleep” before it will turn off completely to reduce battery draw and reduce the possibility of accidental restart when no one is around.

4.6.4 SETTING PRESSURE

Refer to **Section 2, Specifications** for pressure range. When the machine is running, the Up and Down buttons adjust the pressure set point.

4.6.5 ⚠ SAFETY

The controller is designed with the user's safety in mind. There are several safety conditions that must be met to run the compressor package. The pressure transducer and temperature thermistor on the compressor must be plugged in and functional for the package to run. The alternator connector must be plugged in for the package to run. The hood must remain closed until after the engine has started. If any unsafe condition is present before the package is started or during its operation, the controller will alert the user with a message on the display. Once the problem is

corrected, the message can be cleared by holding the Up button.

4.6.6 SERVICE INTERVALS

The controller will remind the user of periodic service intervals. Access the current service interval remaining hours by using the UP/DOWN rocker switch while engine is not running.

To reset a service interval, press START/ENTER button to gain access to reset. Then hold UP to reset service interval.

4.7 OPERATING CONDITIONS

⚠ WARNING

Operate only in well-ventilated areas. Exhaust fumes can be lethal.

- Ensure there are no obstructions on cooling air intakes at both ends of the machine.
- Do not leave anything resting on top of the machine. Hot engine exhaust and cooling air will generate high heat.
- Be sure to leave sufficient room around the machine for cooling air. See ***Figure 3-1***.
- Operate machine with top cover closed to avoid engine exhaust fumes and heat from being deflected.
- Refer to specifications for operating parameters, speeds, etc.

4.8 EXTREME CONDITIONS

When operating in extreme cold or hot conditions, in the presence of high humidity, or at a high altitude, extra attention should be given to any indication that could lead to a serious problem. Preventative safeguards exist that can minimize the possibility of malfunctions that are prone to occur under certain ambient conditions. Refer to **Section 6.3, Extreme Condition Operation**, for additional information on variable ambient operating conditions, and adjustment adaptations that can be made accordingly.

SECTION 5: MAINTENANCE

5.1 GENERAL INFORMATION

A strict maintenance program is the key to long life for the Viper Series Compressor System package. Although the controller panel will indicate when a maintenance change is needed, a comprehensive schedule program is given in **Table 5A** (for compressor), and **Table 5B** (for engine), This program, when adhered to, should keep the package in top operating condition.

Section 5 also gives information on how to obtain parts, additional maintenance non-routine procedures, and storage preparation.

Refer to **Table 7A** in **Section 7** for part order information.

⚠ WARNING

To avoid accidental system start-ups during periods of maintenance, disconnect the positive (+) cable to the battery terminal, and place the wire aside, or tape the contact end so that it cannot accidentally contact the battery post.

NOTE

Operating the machine package in a severe environment requires more frequent service intervals.

5.2 ROUTINE MAINTENANCE SCHEDULE

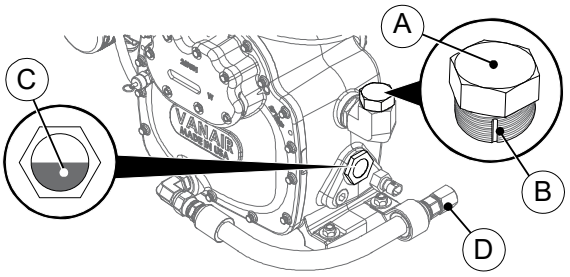
Vanair® Manufacturing, Inc. considers the maintenance schedule given in **Table 5A (compressor)** and **Table 5C (engine)**, to be part of the warranty agreement with the customer. This maintenance regimen must be followed in order to protect the warranty of the machine package.

⚠ WARNING

DO NOT remove caps, plugs and/or other components when compressor is running or pressurized. Stop compressor and de-pressurize system prior to maintenance of system. Relieve the entire system pressure by opening the air tank drain/vent valve, if equipped, which will vent all pressure to the atmosphere.

Wear personal protective equipment such as gloves, work boots, and eye and hearing protection as required for the task at hand.

Refer to *Figure 5-1*. Open fill cap SLOWLY (contents under pressure) to make sure all pressure has been relieved.



KEY	DESCRIPTION
A	COMPRESSOR FILL CAP
B	FILL CAP BLEED VENT GROOVE: Open/crack cap slightly to allow bleed vent to relieve air pressure before removing cap.
C	OIL FILL LEVEL: Full indication is the center of the sight glass (half full with machine off and parked on level surface).
D	COMPRESSOR OIL DRAIN TUBE

Figure 5-1: Compressor Pressure Relief Check

NOTE

Follow the prescribed periodic maintenance (PM) schedule as recommended. Perform the required PM schedule at recommended intervals. Failure to follow this prescribed periodic maintenance at the recommended intervals will impair the package safety, performance characteristics, shorten the package's life, and will negatively affect the warranty coverage of the package.

Vanair® Manufacturing, Inc. especially requires that a consistent service regimen be established for engine oil changes, and engine and compressor air filter servicing. The following schedule is designed so that other maintenance tasks may also be completed when the engine and compressor air filters are serviced, and the engine oil is changed.

⚠ WARNING

Follow all applicable safety recommendations as outlined in *Section 1: Safety* of this manual.

Please take a moment to become acquainted with the service schedules presented in both **Table 5A (Compressor Maintenance Schedule)**, and **Table 5C (Engine Maintenance Schedule)**, for establishing a maintenance routine log.

For assistance in obtaining routine maintenance or replacement parts, consult ***Section 7.1, Parts Ordering Procedure***, and **Table 7A: Recommended Spare Parts List.**

5.3 REPLACEMENT PARTS

Replacement parts should be purchased through your local Vanair representative or where the Viper Diesel Air Compressor System was purchased. If, for any reason, parts are not available in this manner, they can be purchased through Vanair directly.

NOTE

For assistance when ordering new replacement parts, consult *Section 7.1, Parts Ordering Procedure*, and Table 7A: Recommended Spare Parts List.

NOTE

If additional spare parts are being stored for future use, make certain that they are stored in proper containers that allow for protection against contamination, and kept in a clean area of moderate temperature reading. For information on storing the machine package for periods of non-use, consult *Section 5.6.2, Long Term Storage*.

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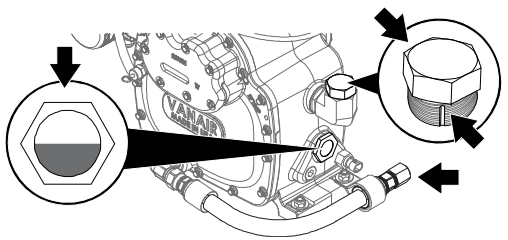
TABLE 5A: MAINTENANCE SCHEDULE - COMPRESSOR INTERVALS

⚠ WARNING	BREAK-IN PERIOD	INTERVALS Refer to footnote I in Table 5B →			
Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. **Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.**	First 50 Hours	DAILY	Every 100 Hours	Every 500 Hours or One (1) year	Every 1000 Hours or Two (2) years

KEY	TASK DESCRIPTION						ACTION TO TAKE
NOTE: MAINTENANCE INDICATIONS MAY ALSO BE INDICATED ON THE CONTROLLER PANEL. REFER TO TABLE 5C AND 5D FOR ENGINE MAINTENANCE INTERVALS							
1	Check oil level	●	●				 REFERENCE: • Compressor Sight Glass [⬇] • Compressor Oil Fill Port Cap [↘] & Vent [↖] I • Compressor Oil Drain Tube [⬅] • Oil capacity is three [3] quarts (air end) / four [4] quarts machine. I ⚠WARNING: refer to *Figure 5-1* for venting compressor unit pressure before accessing compressor oil fill port. PART REPLACEMENT: Order Vanair Vanguard™ Premium Replacement Oil (one [1] gallon container) replacement oil no. 264626-1GAL. Proper oil level is at approximately one half (1/2) of the sight glass with the machine off and resting on a level surface. Add as necessary; do not overfill..
2	Check line fittings and electrical connections	●	●				Ensure that all connections and fittings, including tubing and electrical connections, are snugly fastened without being twisted or compromised by extreme bending or contact with sharp corners or surfaces. Zip-tie any loose length of fitting if it appears to have a tendency to shift or cause wear while machine is in operation.
3	System inspection	●	●				Visually review the entire machine being mindful of any evidence of abnormal wear, including pooled oil, frayed or rubbed connection piping, loose fasteners or hardware, leaks, etc.

Continued on next page

TABLE 5B: ROUTINE REPLACEMENT KIT ORDER INFORMATION I

KEY NO.	DESCRIPTION	PART NO.	QTY
1	Kit, Compressor Service - Initial 50 Hours II	KIT1212	1
2	Kit, Compressor Lifetime Warranty Service - 500 Hours II	KIT1221	1

I If working in dusty or dirty conditions, reduce the recommended time intervals between servicing by half for engine and compressor oil replacement, and engine and compressor filter servicing.

II See key #7 below (separator). For detailed kit content descriptions refer to Section 7, Table 7A.

NOTE: Refer to Section 7, Table 7A for full replacement parts listing, including kit contents and non-routine items, and options.

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

TABLE 5A: MAINTENANCE SCHEDULE - COMPRESSOR INTERVALS

⚠ WARNING	BREAK-IN PERIOD	INTERVALS Refer to footnote I in Table 5B ➡			
Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. **Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.**	First 50 Hours	DAILY	Every 100 Hours	Every 500 Hours or One (1) year	Every 1000 Hours or Two (2) years

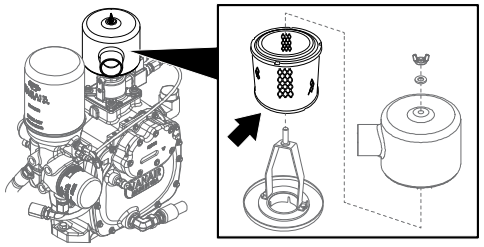
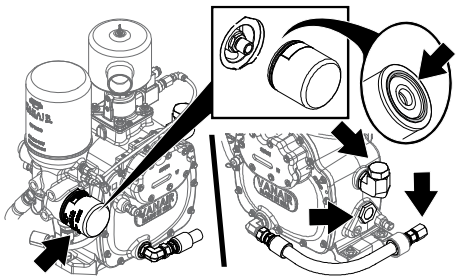
KEY	TASK DESCRIPTION						ACTION TO TAKE
NOTE: MAINTENANCE INDICATIONS MAY ALSO BE INDICATED ON THE CONTROLLER PANEL. REFER TO TABLE 5C AND 5D FOR ENGINE MAINTENANCE INTERVALS							
4	Clean cooler			I	●		Use low pressure wash down on exterior. I Check/observe cooler for cleanliness every 100 hours.
5	Change air filter element			I	●		 REFERENCE: • Compressor Air Filter Element [↗] (Housing canister pulls apart from base) I Check/observe air filter element every 100 hours. PART REPLACEMENT: Order air filter replacement element no. 265546-004. Air filter element is also included with full service kit no. KIT1221 (500 hours or annual).
6	Change compressor oil and filter **IMPORTANT** **DO NOT** mix oils; use only Vanair Vanguard Premium Replacement Oil. Mixing different oils will VOID the compressor warranty! Ensure that machine is on a level surface before performing oil maintenance.	●			●		 REFERENCE: • Compressor Oil Drain [↓] • Compressor Oil Fill Port [↙] I • Compressor Oil Filter [↘] • Compressor Oil Sight Glass [➡] • Vanguard Synthetic Compressor Oil (one [1] gallon) I ⚠WARNING: refer to *Figure 5-1* for venting compressor unit pressure before accessing compressor oil fill port. *CONTINUED ON NEXT PAGE...*

TABLE 5B: ROUTINE REPLACEMENT KIT ORDER INFORMATION I			
KEY NO.	DESCRIPTION	PART NO.	QTY
1	Kit, Compressor Service - Initial 50 Hours II	KIT1212	1
2	Kit, Compressor Lifetime Warranty Service - 500 Hours II	KIT1221	1

I If working in dusty or dirty conditions, reduce the recommended time intervals between servicing by half for engine and compressor oil replacement, and engine and compressor filter servicing.

II See key #7 below (separator). For detailed kit content descriptions refer to Section 7, Table 7A.

NOTE: Refer to Section 7, Table 7A for full replacement parts listing, including kit contents and non-routine items, and options.

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

Continued on next page

TABLE 5A: MAINTENANCE SCHEDULE - COMPRESSOR INTERVALS

⚠ WARNING	BREAK-IN PERIOD	INTERVALS Refer to footnote I in Table 5B →			
Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. **Always clearly tag the start-up instrumentation against accidental system start-ups during maintenance.**	First 50 Hours	DAILY	Every 100 Hours	Every 500 Hours or One (1) year	Every 1000 Hours or Two (2) years

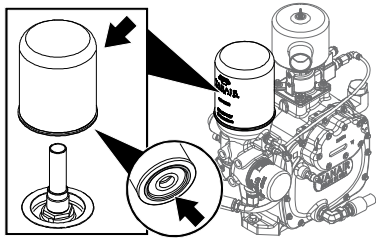
KEY	TASK DESCRIPTION	First 50 Hours	DAILY	Every 100 Hours	Every 500 Hours or One (1) year	Every 1000 Hours or Two (2) years	ACTION TO TAKE
NOTE: MAINTENANCE INDICATIONS MAY ALSO BE INDICATED ON THE CONTROLLER PANEL. REFER TO TABLE 5C AND 5D FOR ENGINE MAINTENANCE INTERVALS							
6 (CONT)	Change compressor oil and filter ***(CONTINUED FROM PREVIOUS PAGE)***	●			●		*CONTINUED FROM PREVIOUS PAGE...* PART REPLACEMENT: Order replacement kit no. KIT1212 (initial 50 Hour kit). KIT1221 (500 hours or annual kit) also includes an air filter element (see key no. 5 in this Table for air filter element reference). Coat the new filter's seal [◤] with compressor fluid before mounting to compressor. Note that the separator element change interval also requires a full service change (refer to key no. 7). When applicable (every other oil change, or 1000 hours), order separator/coalescer element no. 273080 in conjunction with kit no. KIT1221 at the separator maintenance interval.
7	Change separator element					●	 REFERENCE: • Compressor Separator/Coalescer Element [◤] PART REPLACEMENT: Order separator/coalescer element replacement no. 273080. Coat the new filter's seal [◥] with compressor fluid before mounting to compressor. NOTE: Separator/coalescer maintenance is performed during every other full oil change service (refer to key no. 6). When this becomes necessary, order the separator/coalescer element no. 273080 together with full service kit no. KIT1221 (full service kit includes, in addition, procedures noted in key no.'s 5 and 6 in this Table).

TABLE 5B: ROUTINE REPLACEMENT KIT ORDER INFORMATION I

KEY NO.	DESCRIPTION	PART NO.	QTY
1	Kit, Compressor Service - Initial 50 Hours II	KIT1212	1
2	Kit, Compressor Lifetime Warranty Service - 500 Hours II	KIT1221	1

I If working in dusty or dirty conditions, reduce the recommended time intervals between servicing by half for engine and compressor oil replacement, and engine and compressor filter servicing.

II See key #7 below (separator). For detailed kit content descriptions refer to Section 7, Table 7A.

NOTE: Refer to Section 7, Table 7A for full replacement parts listing, including kit contents and non-routine items, and options.

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

KEY	DESCRIPTION
↑	ENGINE AIR FILTER PRIMARY ELEMENT
→	ENGINE OIL DRAIN TUBE (CAPPED)
↘	ENGINE FUEL FILTER (SUCTION)
↙	ENGINE DIESEL FUEL FILTER
←	ENGINE OIL FILL PORT (CAPPED)
↖	ENGINE OIL FILTER ELEMENT
↖	DIPSTICK GAUGE: ENGINE OIL LEVEL (proper level range shown between marks)

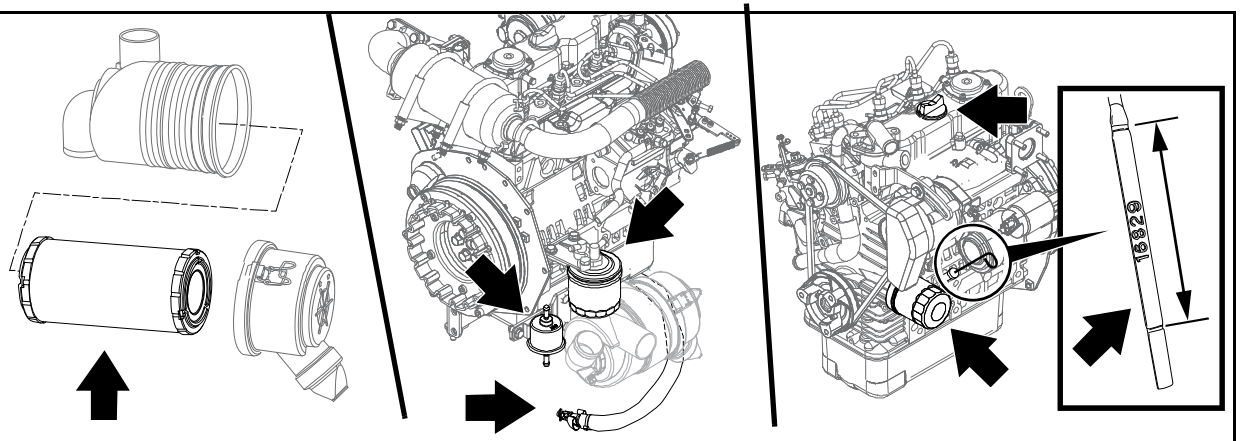


Figure 5-2: Main Engine Routine Service Components

TABLE 5C: MAINTENANCE SCHEDULE - ENGINE INTERVALS

⚠ WARNING	BREAK-IN PERIOD	MAINTENANCE SCHEDULE						
Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. **For lock-out/tag-out disconnect the negative (-) battery cable.**	First 50 Hours	Daily	Every 50 Hours	Every 100 Hours or One (1) Year	Every 200 Hours	Every 400 Hours	Every 500 Hours	Every two (2) years

KEY	TASK DESCRIPTION	First 50 Hours	Daily	Every 50 Hours	Every 100 Hours or One (1) Year	Every 200 Hours	Every 400 Hours	Every 500 Hours	Every two (2) years	ACTION TO TAKE
NOTE: MAINTENANCE INDICATIONS MAY ALSO BE INDICATED ON THE CONTROLLER PANEL. REFER TO TABLE 5A AND 5B FOR COMPRESSOR MAINTENANCE INTERVALS										
1	Check fuel lines and clamps	•		•						Ensure that all fuel hose connections and fittings are free of any telltale signs of leaking and well connected. Zip-tie any loose length of hose fitting if it appears to have a tendency to shift or contact an abrasive surface while machine is in operation.
2	Change engine oil.	•			•					Consult Engine Operation Manual for engine oil change procedure. Refer to **Table 5D** above for maintenance kit and part specification.
3	Check engine air filter element (replace if necessary), and fuel filter bowl (clean if necessary).		•		•					Refer to **Table 5D** above for maintenance kit and part specification. Consult the Engine Operator's Manual for procedures on cleaning the engine air filter and/or the engine fuel filter.

Continued on next page

TABLE 5D: ROUTINE MAINTENANCE KIT AND PART NUMBER REFERENCE

KEY NO.	DESCRIPTION	ORDER NUMBER
1	Kit, Engine Service [I]	KIT1154-01

[I] Kit contains: air filter element, Kubota 15W-40 motor oil (gallon), fuel filter element, oil filter, suction fuel filter. To order parts separately, consult Section 7, Table 7A for part order numbers.

NOTE: If working in dusty or dirty conditions, reduce the recommended time intervals between servicing by half for engine and compressor oil change, and engine and compressor filter servicing.

NOTE: For an extensive routine and non-routine replacement part listing (including individual kit component parts), consult Table 7A: Recommended Spare Parts List in Section 7 of this manual.

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KEY	DESCRIPTION
↑	ENGINE AIR FILTER PRIMARY ELEMENT
→	ENGINE OIL DRAIN TUBE (CAPPED)
↘	ENGINE FUEL FILTER (SUCTION)
↙	ENGINE DIESEL FUEL FILTER
←	ENGINE OIL FILL PORT (CAPPED)
↖	ENGINE OIL FILTER ELEMENT
↗	DIPSTICK GAUGE: ENGINE OIL LEVEL (proper level range shown between marks)

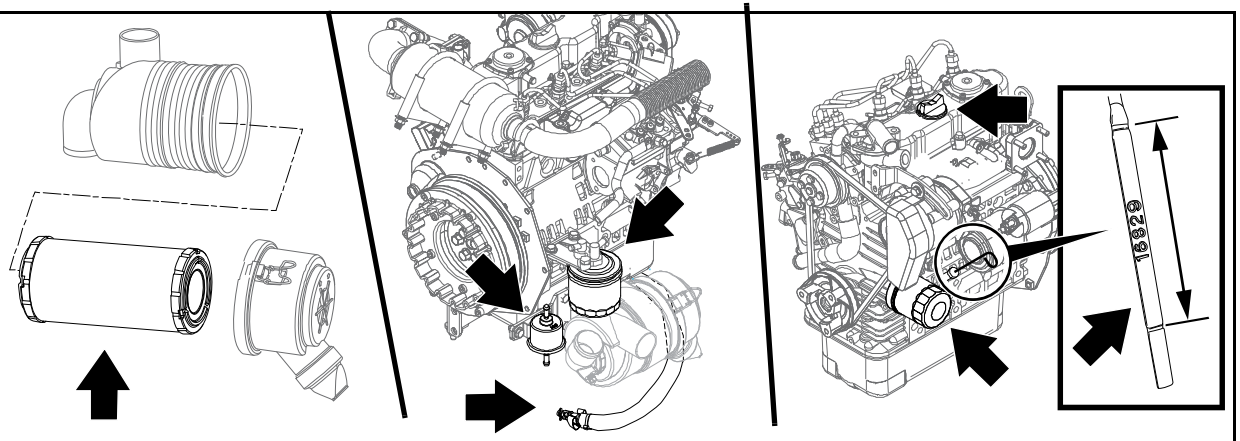

Figure 5-2: Main Engine Routine Service Components

TABLE 5C: MAINTENANCE SCHEDULE - ENGINE INTERVALS

⚠ WARNING

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

For lock-out/tag-out disconnect the negative (-) battery cable.

KEY	TASK DESCRIPTION	BREAK-IN PERIOD: First 50 Hours	MAINTENANCE SCHEDULE: Daily	Every 50 Hours	Every 100 Hours or One (1) Year	Every 200 Hours	Every 400 Hours	Every 500 Hours	Every two (2) years	ACTION TO TAKE
	NOTE: MAINTENANCE INDICATIONS MAY ALSO BE INDICATED ON THE CONTROLLER PANEL. REFER TO TABLE 5A AND 5B FOR COMPRESSOR MAINTENANCE INTERVALS									
4	Check air intake hose		•							Ensure that the intake hose is properly fastened and free from any compromises such as tears or holes.
5	Check radiator hoses and clamp bands		•			Every 200 hours or six (6) months				Ensure that the radiator hoses and clamp bands are intact, in good working order and fastened correctly. If hoses are showing signs of wear (cracking, stretching, etc.), replace hoses (refer to **Section 7.16, Hose Installation Guide** for assistance when replacing damaged hoses).

Continued on next page

TABLE 5D: ROUTINE MAINTENANCE KIT AND PART NUMBER REFERENCE

KEY NO.	DESCRIPTION	ORDER NUMBER
1	Kit, Engine Service [1]	KIT1154-01

[1] Kit contains: air filter element, Kubota 15W-40 motor oil (gallon), fuel filter element, oil filter, suction fuel filter. To order parts separately, consult Section 7, Table 7A for part order numbers.

NOTE: If working in dusty or dirty conditions, reduce the recommended time intervals between servicing by half for engine and compressor oil change, and engine and compressor filter servicing.

NOTE: For an extensive routine and non-routine replacement part listing (including individual kit component parts), consult Table 7A: Recommended Spare Parts List in Section 7 of this manual.

KEY	DESCRIPTION
↑	ENGINE AIR FILTER PRIMARY ELEMENT
→	ENGINE OIL DRAIN TUBE (CAPPED)
↘	ENGINE FUEL FILTER (SUCTION)
↙	ENGINE DIESEL FUEL FILTER
←	ENGINE OIL FILL PORT (CAPPED)
↖	ENGINE OIL FILTER ELEMENT
↖	DIPSTICK GAUGE: ENGINE OIL LEVEL (proper level range shown between marks)

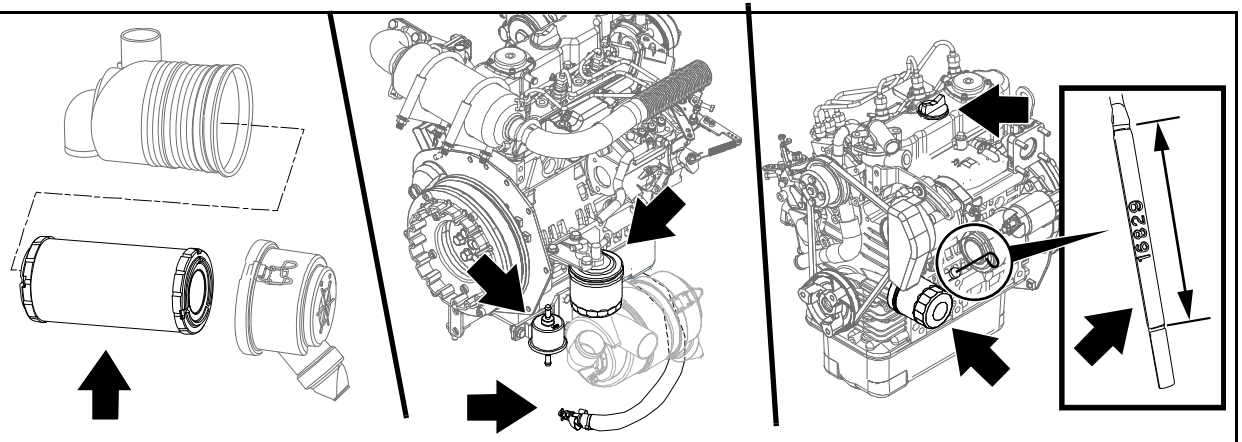

Figure 5-2: Main Engine Routine Service Components

TABLE 5C: MAINTENANCE SCHEDULE - ENGINE INTERVALS

⚠ WARNING

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

For lock-out/tag-out disconnect the negative (-) battery cable.

KEY	TASK DESCRIPTION	BREAK-IN PERIOD	MAINTENANCE SCHEDULE							ACTION TO TAKE
		First 50 Hours	Daily	Every 50 Hours	Every 100 Hours or One (1) Year	Every 200 Hours	Every 400 Hours	Every 500 Hours	Every two (2) years	
	NOTE: MAINTENANCE INDICATIONS MAY ALSO BE INDICATED ON THE CONTROLLER PANEL. REFER TO TABLE 5A AND 5B FOR COMPRESSOR MAINTENANCE INTERVALS									
6	Check alternator belt tightness				•					Tighten if necessary. Consult the Engine Operator's Manual for fan belt information.
7	Inspect fuel lines and clamps				•				I	Replace the fuel hose and clamp bands. Refer to **Section 7.16, Hose Installation Guide** for assistance when replacing worn or damaged tubing. Refer to **Table 7A: Recommended Spare Parts List** for replacement kit or part order number. I Consult Vanair® Service Department at this interval.
8	Replace air filter element				I					Refer to **Table 5D** above for maintenance kit and part specification. Consult the Engine Operator's Manual for procedures on replacing the engine air filter. I Consult the Engine Operation Manual for recommended engine service intervals.

Continued on next page

TABLE 5D: ROUTINE MAINTENANCE KIT AND PART NUMBER REFERENCE

KEY NO.	DESCRIPTION	ORDER NUMBER
1	Kit, Engine Service I	KIT1154-01

I Kit contains: air filter element, Kubota 15W-40 motor oil (gallon), fuel filter element, oil filter, suction fuel filter. To order parts separately, consult Section 7, Table 7A for part order numbers.

NOTE: If working in dusty or dirty conditions, reduce the recommended time intervals between servicing by half for engine and compressor oil change, and engine and compressor filter servicing.

NOTE: For an extensive routine and non-routine replacement part listing (including individual kit component parts), consult Table 7A: Recommended Spare Parts List in Section 7 of this manual.

KEY	DESCRIPTION
↑	ENGINE AIR FILTER PRIMARY ELEMENT
→	ENGINE OIL DRAIN TUBE (CAPPED)
↘	ENGINE FUEL FILTER (SUCTION)
↙	ENGINE DIESEL FUEL FILTER
←	ENGINE OIL FILL PORT (CAPPED)
↖	ENGINE OIL FILTER ELEMENT
↗	DIPSTICK GAUGE: ENGINE OIL LEVEL (proper level range shown between marks)

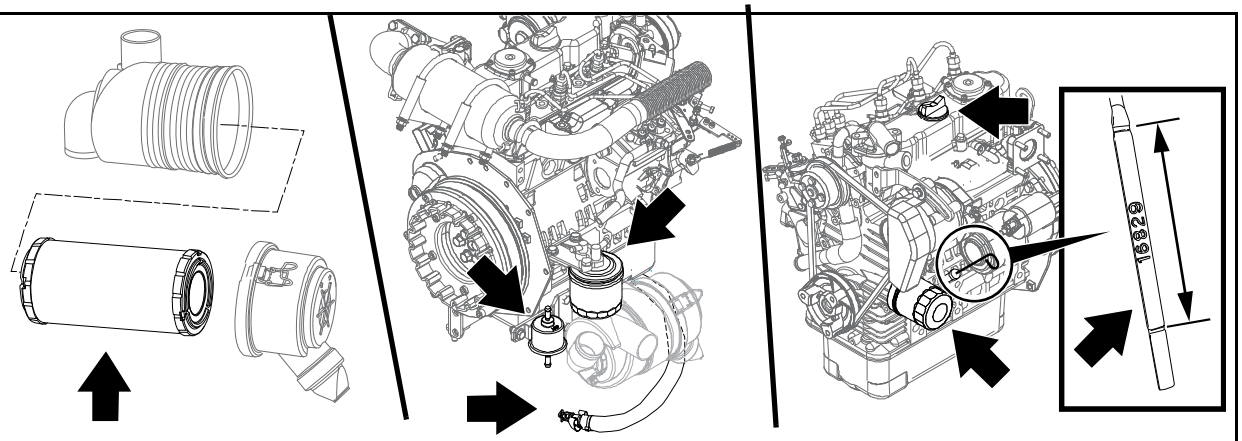

Figure 5-2: Main Engine Routine Service Components

TABLE 5C: MAINTENANCE SCHEDULE - ENGINE INTERVALS

⚠ WARNING

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

For lock-out/tag-out disconnect the negative (-) battery cable.

KEY	TASK DESCRIPTION	BREAK-IN PERIOD: First 50 Hours	MAINTENANCE SCHEDULE: Daily	Every 50 Hours	Every 100 Hours or One (1) Year	Every 200 Hours	Every 400 Hours	Every 500 Hours	Every two (2) years	ACTION TO TAKE
NOTE: MAINTENANCE INDICATIONS MAY ALSO BE INDICATED ON THE CONTROLLER PANEL. REFER TO TABLE 5A AND 5B FOR COMPRESSOR MAINTENANCE INTERVALS										
9	Change oil filter					•				Refer to **Table 5D** above for maintenance kit and part specification. Consult the Engine Operation Manual for procedures on cleaning the engine oil filter and manufacturer's recommended oil usage.
10	Replace fuel filter element						•			Refer to **Table 5D** above for maintenance kit and part specification. Consult the Engine Operation Manual for procedures on cleaning the engine fuel filter.
11	Flush cooling system							•		Consult the Engine Operation Manual for procedure on cleaning the radiator water jacket.

Continued on next page

TABLE 5D: ROUTINE MAINTENANCE KIT AND PART NUMBER REFERENCE

KEY NO.	DESCRIPTION	ORDER NUMBER
1	Kit, Engine Service [I]	KIT1154-01

[I] Kit contains: air filter element, Kubota 15W-40 motor oil (gallon), fuel filter element, oil filter, suction fuel filter. To order parts separately, consult Section 7, Table 7A for part order numbers.

NOTE: If working in dusty or dirty conditions, reduce the recommended time intervals between servicing by half for engine and compressor oil change, and engine and compressor filter servicing.

NOTE: For an extensive routine and non-routine replacement part listing (including individual kit component parts), consult Table 7A: Recommended Spare Parts List in Section 7 of this manual.

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↑	ENGINE AIR FILTER PRIMARY ELEMENT
→	ENGINE OIL DRAIN TUBE (CAPPED)
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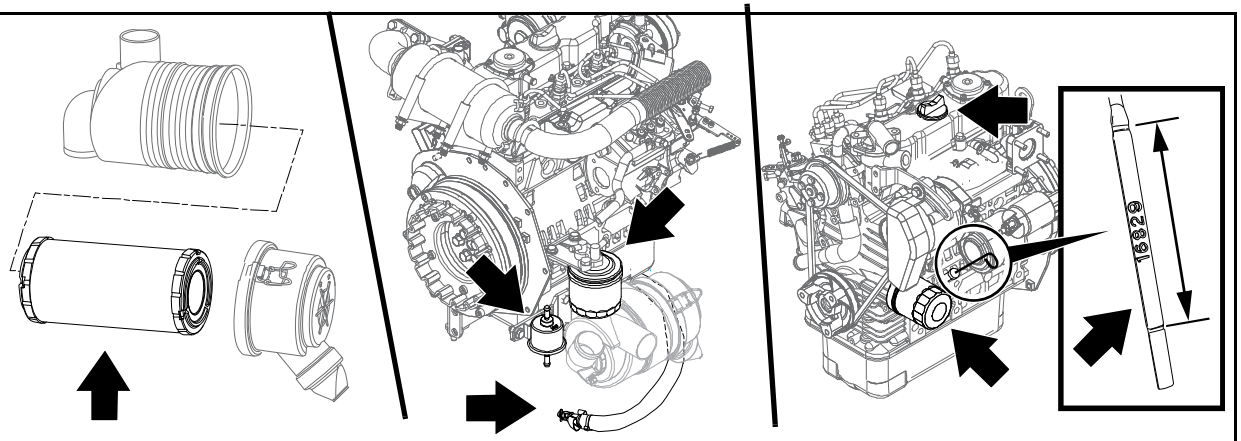

Figure 5-2: Main Engine Routine Service Components

TABLE 5C: MAINTENANCE SCHEDULE - ENGINE INTERVALS

⚠ WARNING

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

For lock-out/tag-out disconnect the negative (-) battery cable.

KEY	TASK DESCRIPTION	BREAK-IN PERIOD	MAINTENANCE SCHEDULE							ACTION TO TAKE
		First 50 Hours	Daily	Every 50 Hours	Every 100 Hours or One (1) Year	Every 200 Hours	Every 400 Hours	Every 500 Hours	Every two (2) years	
NOTE: MAINTENANCE INDICATIONS MAY ALSO BE INDICATED ON THE CONTROLLER PANEL. REFER TO TABLE 5A AND 5B FOR COMPRESSOR MAINTENANCE INTERVALS										
12	Replace fan belt							•		Refer to **Table 7A: Recommended Spare Parts List** for replacement kit or part order number for fan belt replacement. Consult the Engine Operation Manual for procedure on replacing the engine fan belt.
13	Replace radiator hoses and clamp bands								•	Replace the radiator hoses and clamp bands. Refer to **Section 7.16, Hose Installation Guide** for assistance when replacing worn or damaged hoses. Refer to **Table 7A: Recommended Spare Parts List** for replacement kit or part order number.

Continued on next page

TABLE 5D: ROUTINE MAINTENANCE KIT AND PART NUMBER REFERENCE

KEY NO.	DESCRIPTION	ORDER NUMBER
1	Kit, Engine Service [I]	KIT1154-01

[I] Kit contains: air filter element, Kubota 15W-40 motor oil (gallon), fuel filter element, oil filter, suction fuel filter. To order parts separately, consult Section 7, Table 7A for part order numbers.

NOTE: If working in dusty or dirty conditions, reduce the recommended time intervals between servicing by half for engine and compressor oil change, and engine and compressor filter servicing.

NOTE: For an extensive routine and non-routine replacement part listing (including individual kit component parts), consult Table 7A: Recommended Spare Parts List in Section 7 of this manual.

KEY	DESCRIPTION
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↙	ENGINE DIESEL FUEL FILTER
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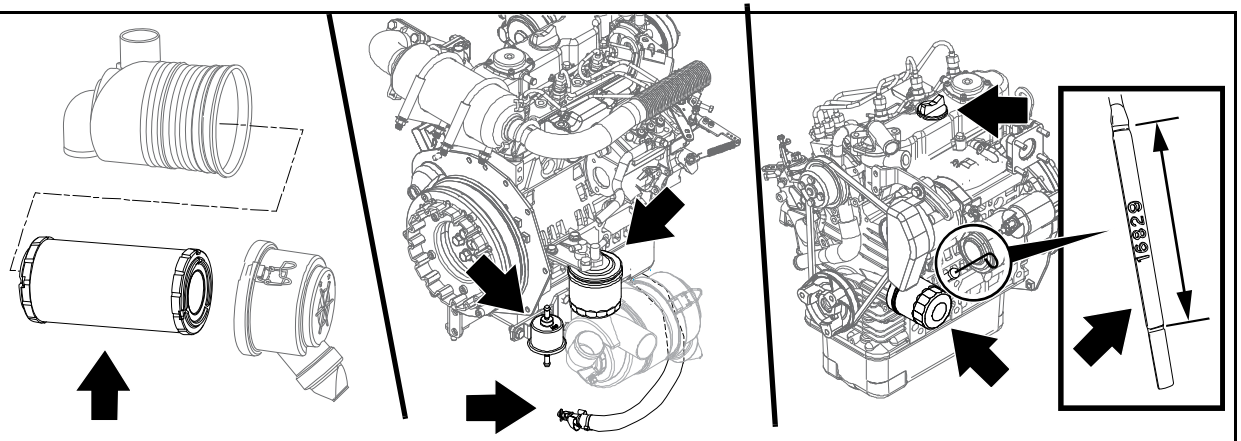


Figure 5-2: Main Engine Routine Service Components

TABLE 5C: MAINTENANCE SCHEDULE - ENGINE INTERVALS

⚠ WARNING

Before performing maintenance: Shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual.

For lock-out/tag-out disconnect the negative (-) battery cable.

KEY	TASK DESCRIPTION	BREAK-IN PERIOD: First 50 Hours	MAINTENANCE SCHEDULE: Daily	Every 50 Hours	Every 100 Hours or One (1) Year	Every 200 Hours	Every 400 Hours	Every 500 Hours	Every two (2) years	ACTION TO TAKE
NOTE: MAINTENANCE INDICATIONS MAY ALSO BE INDICATED ON THE CONTROLLER PANEL. REFER TO TABLE 5A AND 5B FOR COMPRESSOR MAINTENANCE INTERVALS										
14	Replace battery								•	Due to shipping regulations pertaining to lead acid batteries, Vanair recommends procuring a replacement battery from a localized source. Two possible replacement models include: BatteriesPlus® no. SLi96R, and NAPA battery no. BAT 7590.
15	Change radiator coolant								•	Consult the Engine Operation Manual for procedure on changing the radiator coolant. Follow Engine Operation Manual recommendations for coolant type to use.

TABLE 5D: ROUTINE MAINTENANCE KIT AND PART NUMBER REFERENCE

KEY NO.	DESCRIPTION	ORDER NUMBER
1	Kit, Engine Service [I]	KIT1154-01

[I] Kit contains: air filter element, Kubota 15W-40 motor oil (gallon), fuel filter element, oil filter, suction fuel filter. To order parts separately, consult Section 7, Table 7A for part order numbers.

NOTE: If working in dusty or dirty conditions, reduce the recommended time intervals between servicing by half for engine and compressor oil change, and engine and compressor filter servicing.

NOTE: For an extensive routine and non-routine replacement part listing (including individual kit component parts), consult Table 7A: Recommended Spare Parts List in Section 7 of this manual.

5.4 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

5.4.1 ADJUSTING THE ENGINE SPEED

The Viper Diesel was designed in such a way that the governor speeds should not need to be adjusted. Should the unit operate outside of specified speeds, consult the Vanair Service Department.

NOTE
Do not tamper with the RPM setting to increase the maximum engine speed. Overspeed is hazardous and will void the engine warranty.

5.5 SERVICING THE SYSTEM FUSES AND CIRCUIT BREAKER

Consult **Section 7.12, Electrical System**, (FUSE LAYOUT diagram insert) to determine the location of the specific fuses. Refer to ***Figure 5-3*** for reference location of the 50A circuit breaker.

NOTE
Refer to the Engine Operator's Manual for detailed maintenance and replacement procedures for the engine.

5.6 STORAGE AND INTERMITTENT USE

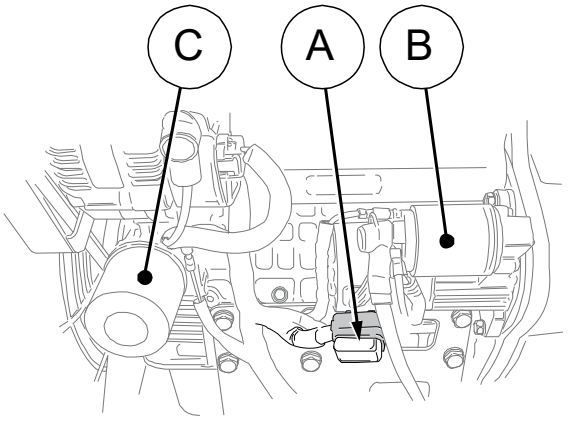
5.6.1 IINTERMITTENT USE

If the unit is not used very regularly always treat the fuel with a fuel stabilizer.

Check all belts and hoses for signs of deterioration such as visible surface cracks, stiffness or discoloration.

5.6.2 LONG TERM STORAGE

Disconnect the battery cable that is connected to the negative (-) side of the battery.



KEY	DESCRIPTION
A	50 AMP CIRCUIT BREAKER - AUTO RESET
B	ENGINE STARTER (Location reference)
C	ENGINE OIL FILTER (Location reference)

Figure 5-3: 50A Circuit Breaker Location

Cover the unit with a tarp or plastic to prevent the accumulation of dust, but leave the bottom open for air circulation.

Fill the fuel tank with fuel and fuel stabilizer to prevent moisture build-up in the tank.

SECTION 6: TROUBLESHOOTING

6.1 GENERAL INFORMATION

The information contained in this section has been compiled from years' worth of information gathered from the field. It contains symptoms and usual causes for the most common types of problems that may occur. All available data concerning the trouble should be systematically analyzed before undertaking any repairs or component replacement.

A visual inspection is worth performing for almost all problems and may avoid unnecessary additional damage to the machine. The procedures which can be performed in the least amount of time and with the least amount of removal or disassembly of parts should be performed first.

⚠ WARNING

Before starting, performing maintenance, or replacing parts, relieve the entire system pressure by opening a service valve, which will vent all pressure to the atmosphere.

Although Vanair® strives to anticipate situations that may occur during the operation life of the machine package, the Troubleshooting Guide may not cover all possible situations. Be aware that additional troubleshooting information may be found in other sources, such as the Engine Operation Manual. Should the situation remain unresolved after exhausting available sources, contact the Vanair Service Department at:

Service (toll free): (844) VAN-SERV
(844) 826-7378

Fax: 219-879-5335

NOTE

When contacting the Vanair Service Department, please have machine serial number on hand to quickly expedite service. See below for machine serial plate location.

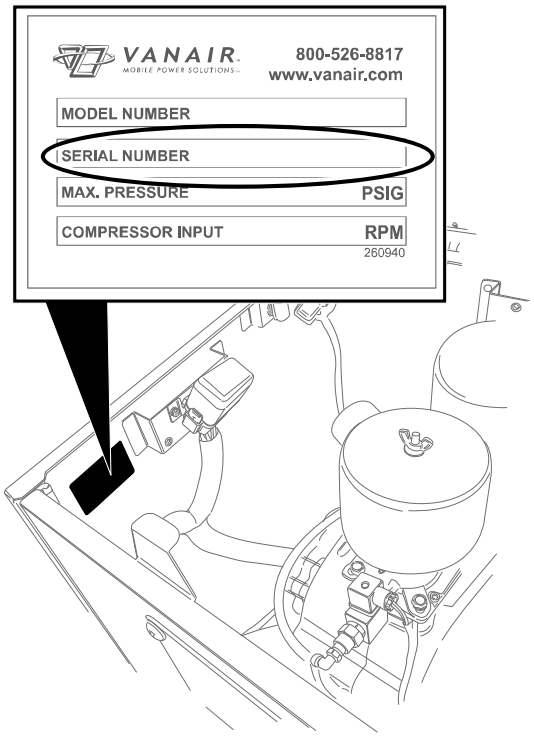


Figure 6-1: Machine Serial Plate Location

NOTE

Machine serial number also displays on instrument panel at start-up, on the hours screen.

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
Machine does not start **Fault:** **Freq Sensor Error, Machine Will Not Run**	Controller is not receiving input from alternator connector	Check connection/continuity.
		During extremely cold weather, use of heater pads is required to get engine to spin fast enough to generate a usable signal. If no heater pads are installed, change crank sequence to Manual Crank (refer to **Section 4.6.3.1, Parameters**).
ENGINE		
Engine will not crank	Faulty battery connection.	Check for proper battery connections and battery charge.
	Battery out of power	Recharge or replace battery.
	Control module fuse blown	Check fuse; refer to **Section 7.12**.
	Machine hood shutdown safety switch prevents start-up of engine	Close hood panel or check if roof switch is faulty.
	Faulty starter or starter solenoid	Replace.
	Faulty 50A circuit breaker	Replace.
Engine will not start	Low fuel and/or oil supply	Check fuel gauge. Replenish as necessary. Consult the Engine Operation Manual for additional information on engine maintenance.
	Pinched fuel line	Replace or reroute if necessary.
	Plugged fuel filter(s)	Replace if necessary. Refer to the Engine Operation Manual for additional information on engine maintenance.
	Low battery voltage	Recharge or replace if necessary.
		Loose connections; tighten connections.
		Dirty connections; clean connections.
	Plugged engine air filter	Replace engine air filter. Refer to Engine Operation Manual.
	Defective oil pressure switch	Check continuity, and replace if necessary.
	Defective engine temperature switch	Check continuity, and replace if necessary.
	Poor ground connection	Check and clean/renew connection.
Improper Control Operation: Engine does not speed up	Speed control actuator stuck	Lubricate; replace speed control actuator if necessary.
	Engine speed control lever stuck	Free lever and lubricate if necessary.

Continued on next page

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED)		
Improper Control Operation: Engine does not speed up (continued)	Fuel filter partly plugged	Replace fuel filter. Refer the Engine Operation Manual.
		Auxiliary fuel pump may be needed for remote fuel tank.
Improper Control Operation: Engine does not slow down	Speed control actuator stuck	Lubricate; replace speed control actuator if necessary.
	Engine speed control lever stuck	Free lever and lubricate if necessary. Refer to Engine Operation Manual.
	Faulty pressure transducers	Check and replace, if necessary.
Engine stops during operation **Fault:** **Engine High Temp Shutdown**	Located too close to obstruction	Move further from obstruction.
	Engine radiator plugged	Clear debris/dirt from engine radiator.
	Fault with engine cooling system	Consult Engine Operation Manual.
	Ambient temperature too high	Consult ***Section 6.3.3, High Temperature Operation***.
	Faulty temperature switch	Replace.
Engine stops during operation **Fault:** **Low Engine Oil Pressure**	Low oil level	Check engine oil level; replenish as necessary. Consult the Engine Operation Manual for additional information on engine maintenance.
	Engine shutdown switch activated	Confirm that access door is properly in place. Replace faulty engine shutdown switch.
	Faulty oil pressure switch	Replace.
	Engine oil filter plugged	Replace engine oil filter. Refer to the Engine Operation Manual.
Gradual loss of engine power	Contaminated fuel	Drain and replace fuel supply.
	Engine air filter contaminated	Check air filter. Replace if necessary (refer to the Engine Operation Manual).
	Fuel filter(s) contaminated	Check fuel filters. Refer to the Engine Operation Manual for additional information on engine maintenance.
	Low fuel level	Add fuel.
	Overload	Reduce load; check load use, and reduce

Continued on next page

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED)		
Gradual loss of engine power (continued)	Engine not warmed up	Allow engine to warm up.
For additional information concerning an engine problem, consult the Engine Operation Manual.		
COMPRESSOR		
Compressor overheats **Fault:** **Compressor High Temp Shutdown**	Low compressor oil level	Check oil level and refill to proper level if necessary (ensure machine is parked on a level surface).
	Obstructed cooler fins	Clear/clean if required.
	Insufficient air flow over cooler	Check for obstructions (frame, body, etc.) to cooling air flow.
	Defective temperature thermistor	Check sensor; replace if necessary.
	Compressor oil filter plugged	Replace compressor oil filter.
	Defective compressor thermal valve	Replace valve.
Compressor will not build up pressure	Low compressor oil level	Check oil level and refill to proper level if necessary (ensure machine is parked on a level surface).
	Unload solenoid valve defective	Replace solenoid valve.
	Air demand too high	Check for leaks and take corrective action.
		Check air tools for wear, damage, or malfunctions. Replace or repair.
	Compressor capacity too low to accommodate demand	Substitute larger capacity compressor system.
	Compressor air filter plugged	Check air filter. Replace if necessary.
	Engine does not speed up: input RPM too slow	Check engine speed control actuator.
	Engine speed control lever stuck	Free lever and lubricate if necessary. Consult the Engine Operation Manual.
	Service valve is open	Close service valve.
	Pressure transducer is malfunctioning	Replace as necessary.
		Check for proper operation with an auxiliary air source. Replace if necessary.
	Inlet valve fails to open	Repair/replace inlet valve.
	Inlet valve frozen shut	Repair/replace inlet valve.

Continued on next page

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
Compressor will not build up pressure (continued)	Leak in air control line	Check for leaks and take corrective action.
Compressor system over-pressures **Fault:** **Compressor High Press Shutdown or safety relief valve**	Unload solenoid valve defective	Replace solenoid valve.
	Restricted or plugged bleed orifice	Clean if soiled; if ice is present, clear and remove.
	Damaged/kinked control line	Check line for damage (wear, kinks, etc.). Re-route, re-tie or replace if necessary.
	Control line connections are not properly seated/poor connection quality	Check lines for proper seating/ensure line ends have been cut cleanly and are square (**DO NOT** use wire cutters: use a loom cutting tool or a clean, sharp razor blade).
	Inlet valve poppet not seating correctly.	Valve will need to be dis-assembled to check; consult with Service Department.
	Inlet valve piston is stuck in open position.	Check for proper operation with an auxiliary air source—replace or rebuild inlet valve.
	Compressor shaft seal is leaking	Replace shaft seal with available kit.
	Pressure transducer is malfunctioning	Check transducer for proper operation; replace if necessary and check controls.
	Defective safety valve	Replace safety valve.
	Plugged coalescer	Replace coalescer element.
No service air output (See also *Compressor will not build up pressure*)	If equipped, OSHA valve/velocity fuse, not functioning properly	Reset or replace OSHA valve.
	Minimum pressure/check valve is malfunctioning	Rebuild or replace check valve.
Low service air output (See also *Compressor will not build up pressure*)	Clogged compressor air filter	Check air filter. Replace if necessary.
	Solenoid valve sending continuous signal to inlet valve	Rebuild or replace solenoid valve if defective.
	Incorrect compressor speed	Adjust engine speed. Refer to ***Section 5.4.1, Adjusting the Engine Speed.***
	Minimum pressure/check valve is malfunctioning	Rebuild or replace check valve.
Compressor stalls	Idle speed is set too low	Adjust idle speed; consult factory.
Excess amount of oil in air discharge	Machine not on level surface	Move machine to level surface.

Continued on next page

6.2 TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)		
Excess amount of oil in air discharge (continued)	Compressor oil level too high	The correct oil level is to the center of the sight glass.
	Scavenger system not operating	Inspect scavenger line for obstructions or leaks. Replace if necessary.
	Coalescer element plugged or damaged	Replace the coalescer element.
Excessive moisture in the compressed air	Moisture accumulating in air tank	Drain water from air tank (if applicable to installation).
System oil appears to be cloudy or milky	Excessive moisture in system oil; defective thermal valve	Check/replace thermal valve. Consult factory for assistance.

6.3 EXTREME CONDITION OPERATION

When operating in extreme cold or hot conditions, in the presence of high humidity, or at a high altitude, extra attention should be given to any indication that could lead to a serious problem. Engine power and compressor air output will be reduced at high altitude or hot ambient temperatures.

Machine review and maintenance check schedules should be more frequent than the normal suggestions given in the Maintenance Schedule Tables (**Table 5A**, [compressor] and **Table 5B** [engine] in **Section 5**).

Become acquainted with the situation-adjusted operation approaches given in this section before operating the power system package in any type of extreme ambient condition. For additional operation information consult the Engine Operation Manual, or visit the engine manufacturer's web site given in that manual.

6.3.1 HIGH MOISTURE CONDITION: EMULSIFICATION OF OIL IN ROTARY SCREW COMPRESSOR SYSTEMS

Consult the information in **Table 6.3A** for preventative and/or repair measures. If machine is operating in a high moisture environment, water contamination may persists after following the regular preventative maintenance schedule and standard operating procedures.

TABLE 6.3A HIGH MOISTURE CONDITION OPERATION

Symptom	Cause	Prevention / Corrective Action
Emulsification of oil in compressor system: • Compressor oil is milky white in color • Compressor oil is broken down and lacks lubricity. • Compressor oil may develop solid chunks or clumps	**Operating the compressor system for short periods of time:** • Short cycling prevents the temperature of the oil from attaining a high enough temperature capable of vaporizing the moisture droplets. **Operating the compressor system unloaded without air flow from the service line for long periods of time:** • This can keep the oil temperature from getting hot enough to vaporize the moisture droplets, preventing the moisture from being able to escape the system. Additionally, there is no path for the moisture to escape the system. **The thermal valve is faulty and activating the cooling fan too soon:** • This prevents the oil from attaining a high enough temperature capable of vaporizing the moisture droplets. **The air filter is saturated with water:** • This forces moisture to be ingested by the compressor. **Any of the above causes will be exacerbated in especially humid environments.**	**RECOMMENDED CHANGES:** If the problem is not corrected by standard operating practices and regular preventative maintenance, consider the following: • Raise the average temperature of the compressor oil. • Change the operating procedure to allow for the compressor oil temperature to reach 180 °F before discharging any air. If the compressor isn't discharging any air, it's not ingesting any potentially humid air. It will build pressure upon initial startup, but then it will run closed and allow it to heat up. **REPAIR/MAINTENANCE:** Refer to **Section 5** of the Operator's Manual for inspection, cleaning, and repair instructions. 1. Once the compressor oil becomes emulsified, it must be replaced along with the oil filter. Depending on the severity, other parts might also need to be replaced. 2. Check that the separator element is in good, working condition. 3. Check that the scavenge line is working properly. If the system is badly contaminated, Vanair® recommends a lube flush that will help clean out any remaining contamination throughout the system. Consult Vanair Service Department for lube flush instructions. Check the moisture drain frequently on the air tank reservoir, to alleviate moisture build-up.

6.3.2 COLD WEATHER OPERATION

Consult the information in **Table 6.3B** for preventative and/or repair measures. The Diesel Viper's 25HP engine runs on diesel fuel, which can be more difficult to start in cold weather. Once the engine is started, the air density becomes larger and the intake efficiency also becomes higher. More output can be expected in cold areas. When the temperature is very low, extra care must be taken regarding fuel and oil changes in their viscosity, freezing of water contained in the piping, or of water adhering on the filter. Diesel fuel may gel at very cold temperatures.

TABLE 6.3B COLD WEATHER OPERATION

Symptom	Cause	Prevention / Corrective Action
Water freezes in the fuel line Lubrication oil viscosity increases Diesel fuel turns to a gel-like consistency at temperatures around 0°F (-18°C)	**WATER** Water in the fuel can freeze at temperatures below 32°F (0°C), blocking fuel lines. At an extremely cold temperature, the viscosity of lubrication oil may increase and the torque of starter may exceed its permissible value, hindering proper starting. **GELLING** The diesel forms wax crystals when the temperatures drop below 15°F (-9°C). As it gets colder, these wax crystals turn to gel. This thicker substance cannot pass the fuel filter, so the engine may run intermittently, or may not start at all.	• Park the vehicle or equipment indoors when not in use. • Use a block heater or glow plugs. • Maintain the battery; this will make it easier to start a diesel engine in cold weather. • In below zero temperatures a fuel line deicer product may need to be used. • Check the fuel filter regularly to insure that it contains no water. • Vanguard™ Premium Synthetic Oil is suitable for use from -40°F to 110°F (-40°C to 43°C). • For additional engine precautions, consult the Engine Operation Manual. • Vanair® recommends installation of the cold weather heater option kit. Consult Vanair for details. • Keep the fuel tank full to prevent condensation from forming inside the tank and lessen the chances of water getting in the fuel line. • The standard recommendation of 15W-40 engine oil is suitable for temperatures down to -4°F (-20°C). If temperatures are consistently below 30°F (-1°C), it is recommended that 5W-30 oil be used. If temperatures are below -25°F (-32°C), a high-performance, fully synthetic oil, such as AMSOIL 5W-30 should be used which is suitable to temperatures of -55°F (-48°C).

6.3.3 HIGH TEMPERATURE OPERATION

Consult the information in **Table 6.3C** for preventative and/or repair measures. Reduce load duty cycle to less than 60% when operating in ambient temperatures above 104°F (40°C).

Extra care should be taken to keep the engine and air compressor clean and to not restrict the air flow around the unit. Consult the Engine Operation Manual for fuel, lubrication oil and cooling requirements under extreme temperatures.

When operating the machine in high temperature areas, precautions should be taken to prevent overheating. At the minimum, all coolers, including air passage ways around the coolers, should be free of debris and dirt. The fan, driven by the engine,

is designed to run continuously to assure a constant flow of cooling air.

The operator should be aware that high temperatures can influence engine performance, which can directly effect some machine function capacity outputs.

TABLE 6.3C HIGH TEMPERATURE OPERATION

Symptom	Cause	Prevention / Corrective Action
Overheating/high compartment temperatures Diminished engine performance	High ambient temperatures, confined spaces, soundproof cases and other reasons. Among these the most important factor is the temperature of the intake and cooling air.	• Extra care should be taken to keep the engine and air compressor clean and to not restrict the air flow around the unit. • Consult the Engine Operation Manual for fuel, lubrication oil and cooling requirements under extreme temperatures. • At the minimum, all coolers, including air passage ways around the coolers, should be free of debris and dirt. The fan, driven by the engine, is designed to run continuously to assure a constant flow of cooling air. The operator should be aware that high temperatures can influence engine performance, which can directly effect some machine function capacity outputs.

6.3.4 HIGH DUST CONTENT OPERATION

Consult the information in **Table 6.3D** for preventative and/or repair measures. When the machine is to be used in continuously dusty environments, special care must be taken with the engine's air cleaner and radiator.

TABLE 6.3D HIGH DUST CONTENT OPERATION

Symptom	Cause	Prevention / Corrective Action
Overheating System contamination Stalling	Machine components exposed to frequent or constant dust interaction, can result in diminished system performance, or machine cessation.	• The intake air must be cleaned with the air cleaner—inspect the air filter frequently for dust build-up and replace as needed. • Ensure that the radiator and oil cooler fins are kept clean to prevent overheating. • If the machine is not being used for an extended period of time, an additional precaution, such as covering the machine with a tarp, will help to keep the inside of the machine free of dust particle accumulation. • For extreme cases of high dust content environments, machine fluids may need to be replaced at more frequent intervals. Adjust maintenance schedule accordingly.

6.3.5 HIGH ALTITUDE OPERATION

Engine horsepower will decrease by 3.5% for every 1,000 feet over 6,000 feet increase in altitude. At high altitude overall unit performance will deteriorate, and care will need to be taken not to overload the engine.

SECTION 7: ILLUSTRATED PARTS LIST

7.1 PARTS ORDERING PROCEDURE

Part orders should be placed through the distributor from whom the unit was purchased. If, for any reason parts cannot be obtained in this manner, contact the factory directly at the address or phone numbers below.

When ordering parts, always indicate the **Serial Number** of the machine package. This can be obtained from the Bill of Lading for the machine package, or from the compressor unit serial number plate. See ***Figure 7-1*** for location of machine package serial plate. Consult **Table 7A: Recommended Spare Parts List** on the next page for a listing of replacement parts.

VANAIR® MANUFACTURING, INC.

10896 West 300 N.
Michigan City, IN 46360
Toll Free: (844) VAN-SERV / [(844) 826-7378]
Telephone: (219) 879-5100
Service Fax: (219) 879-5335
Parts Fax: (219) 879-5340
Sales Fax: (219) 879-5800
www.vanair.com

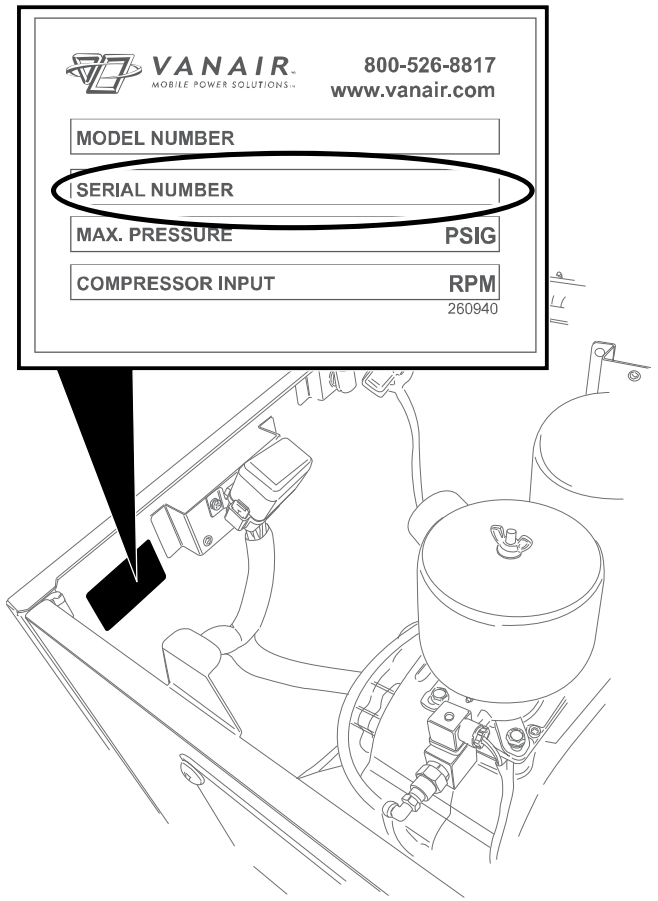


Figure 7-1: Machine Package Serial Number Plate / Serial Number Location

TABLE 7A: RECOMMENDED SPARE PARTS LIST

FULL SERVICE MAINTENANCE KITS

KEY NO.	ORDER NO.	DESCRIPTION	QTY	KEY NO.	ORDER NO.	DESCRIPTION	QTY
1	KIT1154-01	Kit, Engine Service I	1	4	273968	Kit, Hose V	1
2	KIT1212	Kit, Compressor Service - Initial 50 Hours II & III	1	5	VI	Kit, Compressor Shaft Seal Replacement	1
3	KIT1221	Kit, Compressor Service - 500 Hours II & IV	1				

I Engine kit consists of: air filter element no. 276688-002, Kubota 15W-40 (one gallon) motor oil no.276733, fuel filter element no. EN273303-01, oil filter element no. EN38480, and in-line suction fuel filter no. RC276268.

II Use only Vanair® Vanguard™ Premium Synthetic Oil and Genuine Vanair Parts. Substituting non-Vanguard™ Oil or non-genuine Vanair filter components WILL VOID THE COMPRESSOR WARRANTY! Inspect and replace damaged components before operation. System fill capacity is approximately four (4) quarts.

III Compressor initial 50 hours kit consists of Vanair Vanguard Premium Compressor Oil no. 264626-1GAL (gallon container; qty of 2), and compressor oil filter no. 266801.

IV Lifetime warranty service kit consists of: Vanair Vanguard Premium Compressor Oil no. 264626-1GAL (gallon container; qty of 2), compressor oil filter no. 266801, and compressor air filter no. 265546-004. Note that the compressor separator element (no. 273080) needs to be ordered separately for the 1000 hour routine service interval (ergo, every other 500 hour service kit interval). Refer to Table 5A in Section 5, Maintenance, for details.

V Hose kit consists of replacement hoses for: oil drain, compressor to thermal valve, thermal valve to top cooler, cooler to thermal valve, air to bulkhead upper, air out lower.

VI For component details consult the Vanair Service Department.

INDIVIDUAL MAINTENANCE ITEMS

KEY NO.	DESCRIPTION	ORDER NO.	QTY	KEY NO.	DESCRIPTION	ORDER NO.	QTY	KEY NO.	DESCRIPTION	ORDER NO.	QTY
6	Filter, replacement element engine oil	EN38480	1	12	Oil, Vanair Vanguard Compressor (gallon)	264626-1GAL	2	17	Breaker, manual reset 25A	276586-25	1
7	Filter, replacement engine fuel	EN73303-01	1					18	Breaker, circuit replacement	267306	1
8	Filter, replacement engine air	276688-002	1	13	Filter, replacement compressor oil	266801	1	19	Battery replacement	VIII	1
9	Filter, replacement fuel suction	RC276268	1	14	Element, replacement air filter	265546-004	1	20	Relay, NO/NC wthrproof with resistor	260246	1
10	Filter, replacement inline fuel VII	RC81465	1	15	Breaker, manual reset 5A	276586-05	1	21	Belt, engine replacement IX	EN270451-007	1
11	Oil, engine 15W-40 (gallon)	276733	2	16	Breaker, manual reset 20A	276586-20	1				

VII In-line fuel filter for sans-fuel tank design. Refer to Section 7.10 for details.

IX This belt replaces the engine alternator belt only. For full engine belt coverage, consult factory.

VIII Due to shipping regulations pertaining to lead acid batteries, Vanair recommends procuring a replacement battery from a localized source. Two possible replacement models include: BatteriesPlus® no. SLi96R, and NAPA battery no. BAT 7590.

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

TABLE 7B: MACHINE OPTIONS LIST

KEY NO.	DESCRIPTION	ORDER NO.	QTY	KEY NO.	DESCRIPTION	ORDER NO.	QTY
1	Aftercooler 12VDC	032894	1	4	Heater, Engine Block 120VAC	032939	1
2	Cold Weather 12VDC Pad	032895	1	5	Remote Control Module	032896-3, 032896-6, 032896-12 X	1
3	Cold Weather 120VAC Pad	032905	1	6	Bolt-on Fork Pockets	032901	1

X Replacement kit order numbers for remote control module: no. 032896-3 (3 ft extension); no. 032896-6 (6 ft extension); or no. 032896-12 (12 ft extension).

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

IMPORTANT

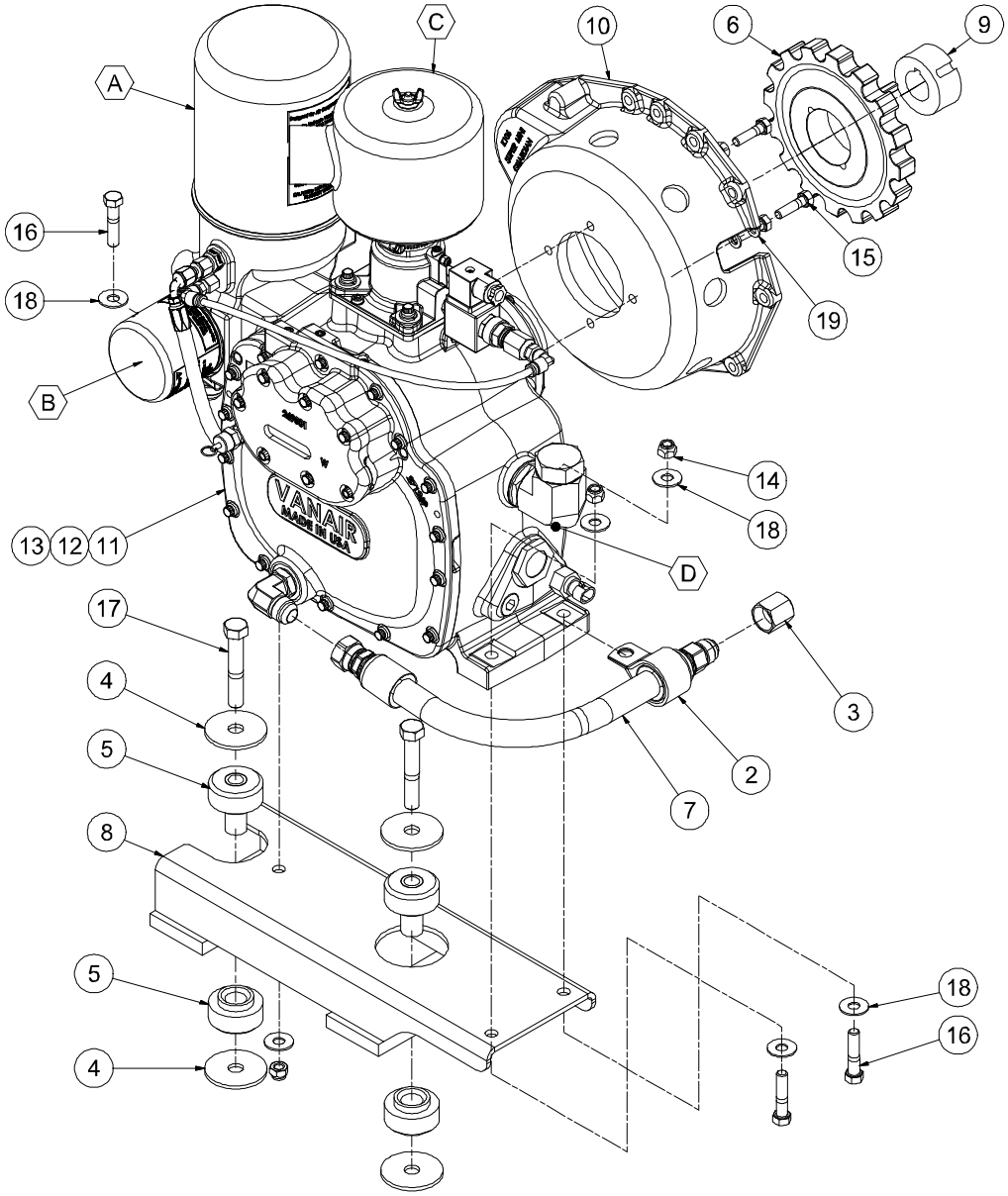
The above table listing contains items that require maintenance on a routine basis, and also those parts that may require maintenance over the course of the compressor package's performance schedule. Although this recommended list is pro-offered as a comprehensive guide to replacement parts, damage may occur to the machine beyond the scope of this listing.
Should any part of the compressor package that is not listed in Table 7A become damaged or inoperable, use the various sub-sections in Section 7 to best locate and identify the damaged part(s).

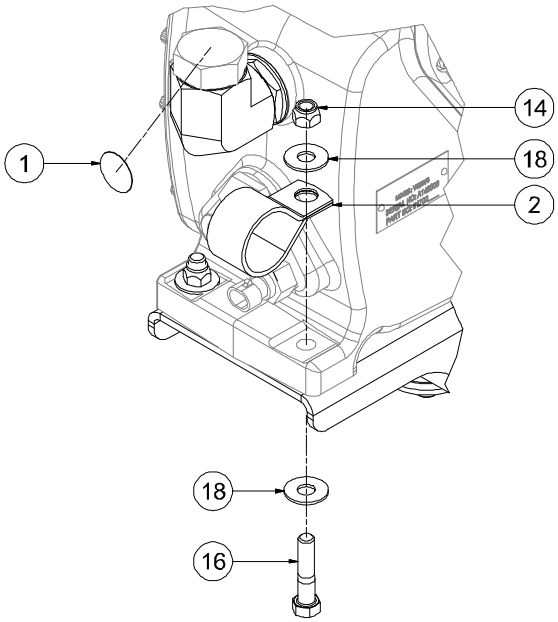
IMPORTANT

If additional spare parts are being stored for future use, ensure that they are stored in proper containers that allow for protection against contamination, and kept in a clean area of moderate temperature reading. For information on storing the machine package for periods of non-use, consult *Section 5.6.2, Long Term Storage*.

NOTES

7.2 COMPRESSOR AND PARTS





COMMONLY REPLACED PARTS			
ITEM	PART NUMBER	DESCRIPTION	QTY
A	273080	ELEMENT, COALESCING (SEPARATOR)	1
B	266801	ELEMENT, OIL FILTER	1
C	273673	ELEMENT, AIR FILTER	1
D	264626-1GAL	VANGUARD OIL	1

NOTES:

1. THIS DRAWING IS USED FOR ASSEMBLIES 6010238, 6010239, & 6010240.

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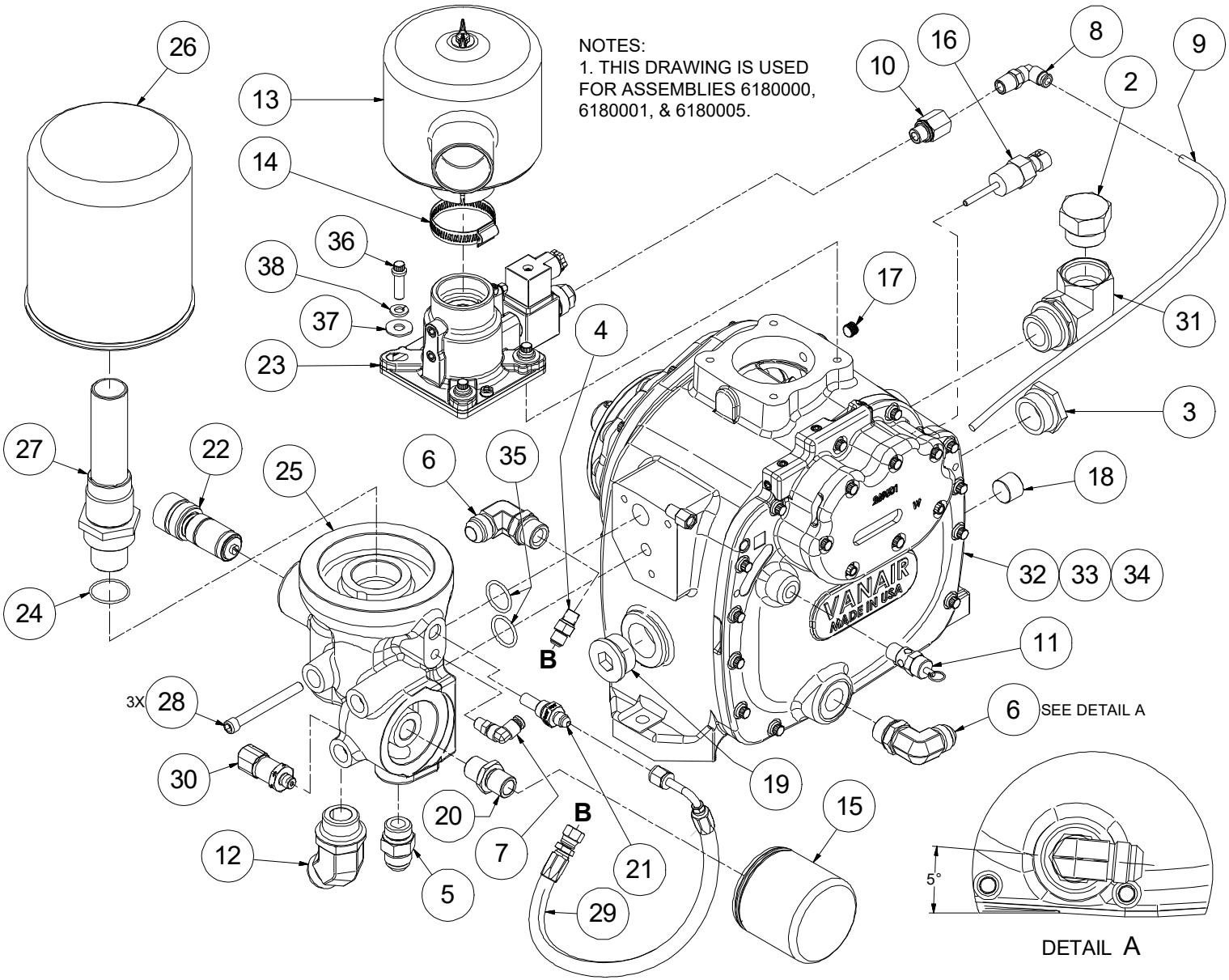
7.2 COMPRESSOR AND PARTS

KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	DECAL, VANGUARD OIL FILL CAP 1"	263533-2	1
2	CLAMP, HOSE SUPPORT 1.50 ID	263812	1
3	CAP, JIC 5/8	264322-004	1
4	WASHER, SNUBBING RUBBER MOUNT	264829	4
5	MOUNT, RUBBER ARMOR PLATED 200# GREEN	272442	2
6	ELEMENT, TORSIONAL COUPLING	273750	1
7	HOSE, COMPRESSOR DRAIN (PART OF KIT 273968)	273968-001	1
8	SUPPORT,AIREND VA DIESEL VIPER	273970	1
9	BUSHING,1610 TAPER 1-1/8 DIA SHAFT	276269	1
10	HOUSING,D902 AL. W/STARTER COVER	276270	1
11	AIREND & ATT, DIESEL VIPER	6180000	1
12	AIREND & ATT, VSE075GDSS240	6180001	1
13	AIREND & ATT, VSE075GDSS215	6180005	1
14	NUT, HEX LOCKING 3/8-16	825506-198	3
15	CAPSCREW, HEX GR8 5/16-18 x 1 1/4	829405-125	4
16	CAPSCREW, HEX GR8 3/8-16 x 1 3/4	829406-175	3
17	CAPSCREW, HEX GR8 1/2-13 x 3	829408-300	2
18	WASHER, FLAT 3/8	838206-071	6
19	WASHER, LOCK 5/16	838505-078	4

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.3 COMPRESSOR AIREND AND ATT

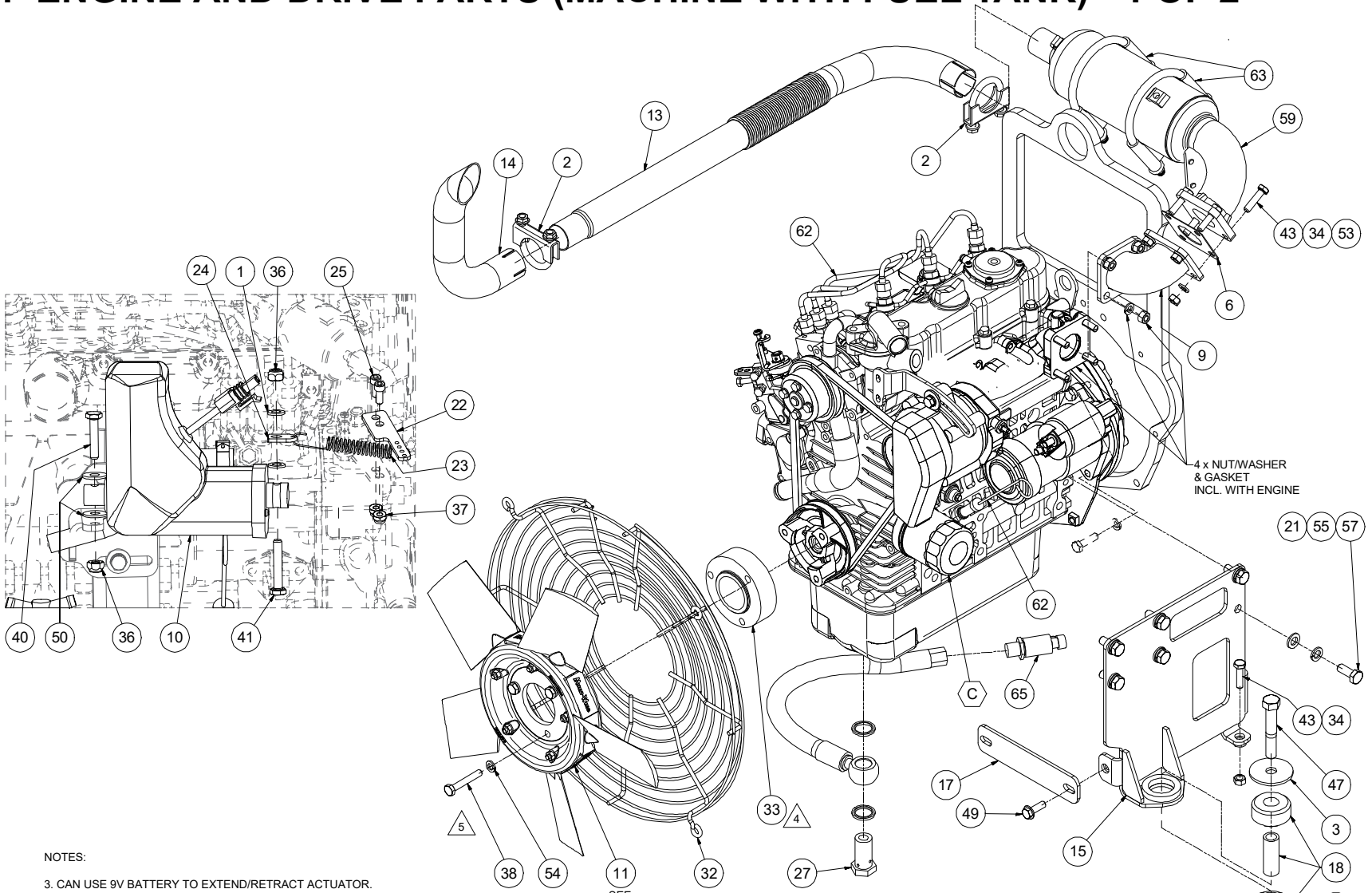


7.3 COMPRESSOR AIREND AND ATT

KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	ORIFICE,.062 1/8M X 1/8F NPT	040127	1	20	CONNECTOR, OIL FILTER VANAIR ENCAPS	270037	1
2	CAP, OIL FILL W/VENT 1 5/16	048063	1	21	ORIFICE, STRAINER 0.030 #6 MSAE X #4 MJIC	271054	1
3	SIGHTGLASS, O-RING TMBD 1 5/16"	250097-610	1	22	VALVE, MIN PRESS INTERNAL PARTS VMI80	271079	1
4	CONNECTOR, O-RING 1/4 SAE x 1/4 JIC	260387-103	1	23	VALVE, INLET 85/150 ADHD	271701	1
5	CONNECTOR, #10 MSAE x #10 MJIC	260387-109	1	24	O-RING, VITON 1/16 DIA X 1.176 ID	272689	1
6	ELBOW, 90 DEG #10 MJIC x #10 MSAE	260403-106	2	25	MANIFOLD, AIR/OIL VMI80	272920	1
7	ELBOW, 1/4T x 1/8P PUSH-ON	261309	1	26	SEPARATOR, AIR/OIL SPIN ON 106CFM	273080	1
8	ELBOW, 90 deg. PUSH ON 1/4T x 1/4P	261310	1	27	ADAPTER, AIR/OIL SEPARATOR M42 X M39	273081	1
9	TUBING, PLASTIC 1/4 WHITE	261322	1	28	CAPSCREW, HX SOC 5/16-18 X 3	273239	3
10	ADAPTER, FEMALE PIPE x BSPP 1/4	263748-004	1	29	HOSE, ASSY 0.25 X 18 JIC SWV STR X JIC SWV 90	273247	1
11	VALVE, RELIEF 200 PSI 1/4 NPT MALE	264232	1	30	TRANSDUCER, PRESS 1/8NPT 200PSI -40 to 125 C	274527	1
12	ELBOW, 45 DEG #14 MJIC x #14 MSAE	264276-015	1	31	ELBOW, 90 16MSAE X 16FSAE	274743	1
13	FILTER, AIR UNDERHOOD	265546	1	32	AIREND ASSY, VSE075GDSS193	6170000	1
14	CLAMP, HOSE #28	265560	1	33	AIREND ASSY, VSE075GDSS240	6170001	1
15	FILTER, OIL 6" TANK	266801	1	34	AIREND ASSY, VSE075GDSS215	6170004	1
16	THERMISTOR, TEMP. 1/2 NPT	266844	1	35	O-RING, VITON 1.130 OD X 3/32	826502-119	2
17	PLUG, PIPE HEX SOCKET BRASS 1/8" NPT	267258	1	36	CAPSCREW, FERRY HD 5/16-18 X 1	828405-100	4
18	PLUG, PIPE 1/2 NPT HOLLOW HEX	267942	1	37	WASHER, FLAT 5/16	838205-071	4
19	PLUG, SAE O-RING HOLLOW HEX #16	268081-010	1	38	WASHER, LOCK 5/16	838505-078	4

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.4 ENGINE AND DRIVE PARTS (MACHINE WITH FUEL TANK) - 1 OF 2



NOTES:

3. CAN USE 9V BATTERY TO EXTEND/RETRACT ACTUATOR.
5. SEE CLOSE UP VIEW FOR ACTUATOR MOUNTING TO THROTTLE LINKAGE.
10. CONCAVE SIDE OF FAN BLADE FACES AWAY FROM ENGINE.
13. TORQUE: 221 IN-LBS.

COMMON REPLACEMENT PARTS		
ITEM	PART NUMBER	DESCRIPTION
A	276688-002	ELEMENT, 6 INCH AIR FILTER
B	EN273303-01	ELEMENT, FUEL FILTER KUBOTA 25HP T4 DIESEL
C	EN38480	ELEMENT, OIL FILTER KUBOTA DIESEL

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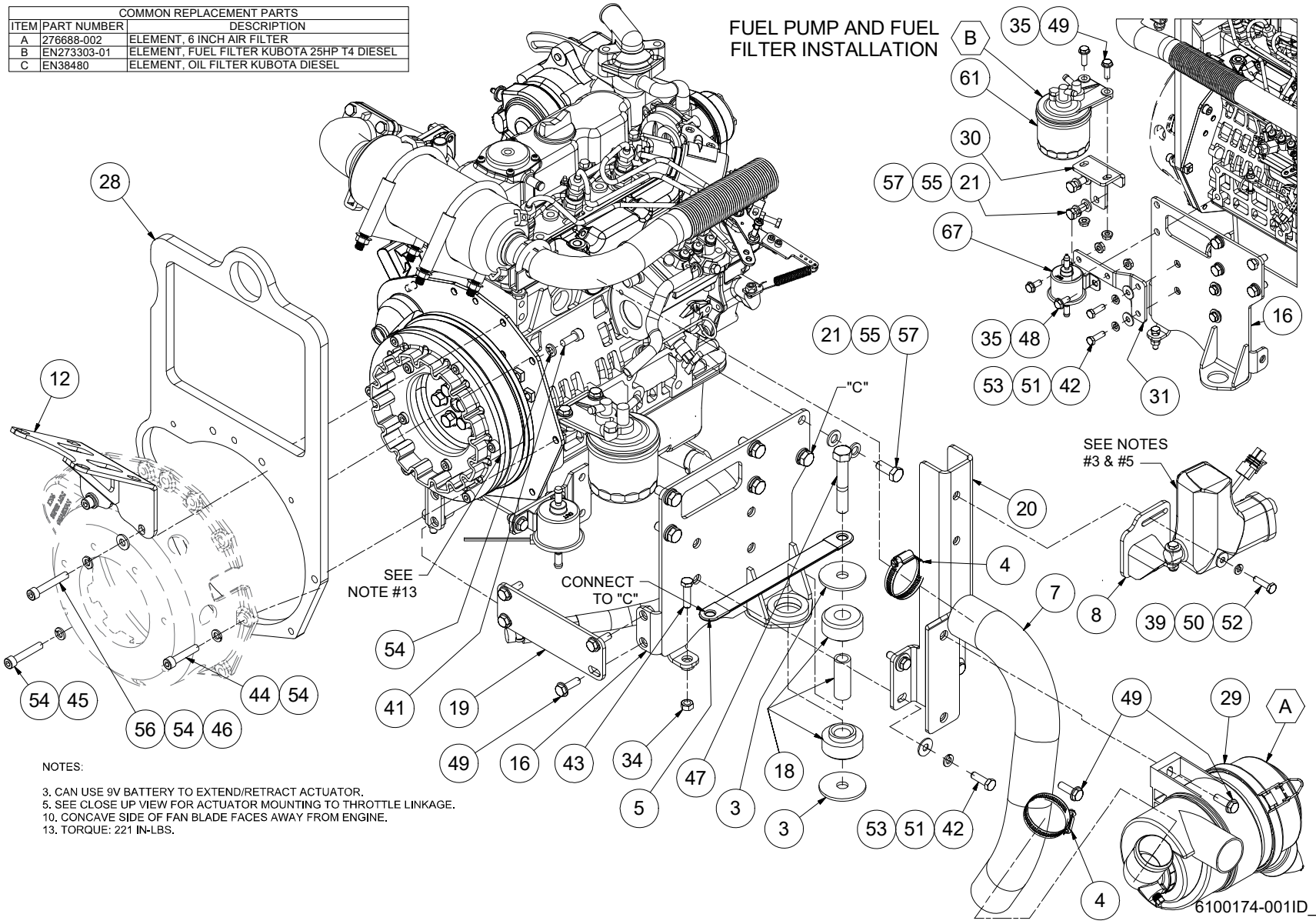
7.4 ENGINE AND DRIVE PARTS (MACHINE WITH FUEL TANK) - 1 OF 2

KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	WASHER, NYLON FLAT 1/4	262704	3	24	BRACKET, ACTUATOR ROD	273307	1	47	CAPSCREW, HEX GR8 1/2-13 x 3	829408-300	2
2	CLAMP, EXHAUST 1-3/8"	262906-138	2	25	CAPSCREW, S.H. 10-32 x 1/2 ZINC	273310	2	48	SCREW, SER WASH 5/16-18 x 0.75	829705-075	2
3	WASHER, SNUBBING RUBBER MOUNT	264829	4	26	ADAPTER, FLYWHEEL COUPLING	273660	1	49	SCREW, SER WASH 5/16-18 x 1	829705-100	10
4	CLAMP, HOSE #28	265560	2	27	HOSE, ENGINE DRAIN	274253	1	50	WASHER, FLAT 1/4	838204-071	4
5	STRAP, GROUND 8" w/ 3/8 HOLES	267498	1	28	SPACER, LIFT BALE	275755	1	51	WASHER, FLAT 5/16	838205-071	4
6	GASKET, MUFFLER 25HP DIESEL	269961	1	29	FILTER, AIR 6" 90 DEG OUT	276688	1	52	WASHER, LOCK 1/4	838504-062	2
7	HOSE, FLEX AIR INLET 1-3/4" I.D.	270698	1.5 ft	30	BRACKET, FUEL FILTER MTG	277101	1	53	WASHER, LOCK 5/16	838505-078	8
8	BRACKET, THROTTLE ADJ	272019	1	31	BRACKET, FUEL PUMP MTG	277102	1	54	WASHER, LOCK METRIC M8	838808-200	9
9	ELBOW, EXHAUST	272127	1	32	GUARD, FAN DIESEL VIPER	277416	1	55	WASHER, LOCK METRIC M10	838810-220	12
10	ACTUATOR, LINEAR 2" STROKE, 30#, 12V	272160	1	33	SPACER, FAN	277696	1	56	WASHER, FLAT METRIC M8	838908-180	2
11	FAN, 15.50" DIA PUSHER	272165	1	34	NUT, HEX 5/16-18	825205-273	6	57	WASHER, FLAT METRIC M10	838910-220	12
12	BRACKET, MUFFLER	272168	1	35	NUT, HEX FLANGE 5/16-18	825305-283	4	58	HOSE, FUEL LINE 5/16 (FT)	842315-031	1
13	EXHAUST, ENGINE OUT	272174	1	36	NUT, HEX LOCKING 1/4-20	825504-145	2	59	EXHAUST, KUBOTA (INCL. W/ ENGINE)	EN270396	1
14	ELBOW, EXHAUST OUT BACK	272211	1	37	NUT, HEX LOCKING #10-32	825702-083	2	62	ENGINE, DIESEL KUBOTA 25HP T4F	EN273303	1
15	BRACKET, ENGINE STARTER SIDE	272228	1	38	CAPSCREW, HEX 8mm 1.25 x 50	828008-050	3	61	FILTER, FUEL DIESEL (INCLUDED W/ ENG)	EN273303-01	1
16	BRACKET, ENGINE THROTTLE SIDE	272229	1	39	CAPSCREW, HEX GR5 1/4-20 x 1	829104-100	2	62	DIPSTICK, OIL	EN71817	1
17	SUPPORT, ENGINE FRONT	272230	1	40	CAPSCREW, HEX GR5 1/4-20 x 1-1/4	829104-125	1	63	CLAMP, EXHAUST 3-1/2"	FA270399	2
18	MOUNT, RUBBER ARMOR PLATED 200# GREEN	272442	2	41	CAPSCREW, HEX GR5 1/4-20 x 1-1/2	829104-150	1	64	CLAMP, HOSE, T-BOLT STYLE 14MM	FA78162	4
19	SUPPORT, ENGINE REAR	272516	1	42	CAPSCREW, HEX GR5 5/16-18 x 1	829105-100	4	65	DRAIN, ENGINE OIL	FI273012	1
20	SUPPORT, TOWER	272553	1	43	CAPSCREW, HEX GR5 5/16-18 x 1-1/4	829105-125	6	66	TIES, THERMAL STAINLESS	HA42205	4
21	CAPSCREW, HEX 10 MM 1.25 x 25 MM	272864	12	44	CAPSCREW, S.H. M8x1.25 x 40MM	829308-040	2	67	FUEL PUMP, 12V SOLID STATE, 3-5 PSI	MA57870	1
22	BRACKET, THROTTLE EXTENSION	273300	1	45	CAPSCREW, S.H. M8x1.25 x 45mm	829308-045	1	68	HEADER WRAP, HIGH TEMP 2" WIDE	PR81122	32 ft
23	SPRING, EXTENSION THROTTLE	273302	1	46	CAPSCREW, S.H. M8x1.25 x 50mm	829308-050	2	69	OIL, DIESEL 15W-40	SE271475	4.0 qt

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.4 ENGINE AND DRIVE PARTS (MACHINE WITH FUEL TANK) - 2 OF 2

COMMON REPLACEMENT PARTS		
ITEM	PART NUMBER	DESCRIPTION
A	276688-002	ELEMENT, 6 INCH AIR FILTER
B	EN273303-01	ELEMENT, FUEL FILTER KUBOTA 25HP T4 DIESEL
C	EN38480	ELEMENT, OIL FILTER KUBOTA DIESEL

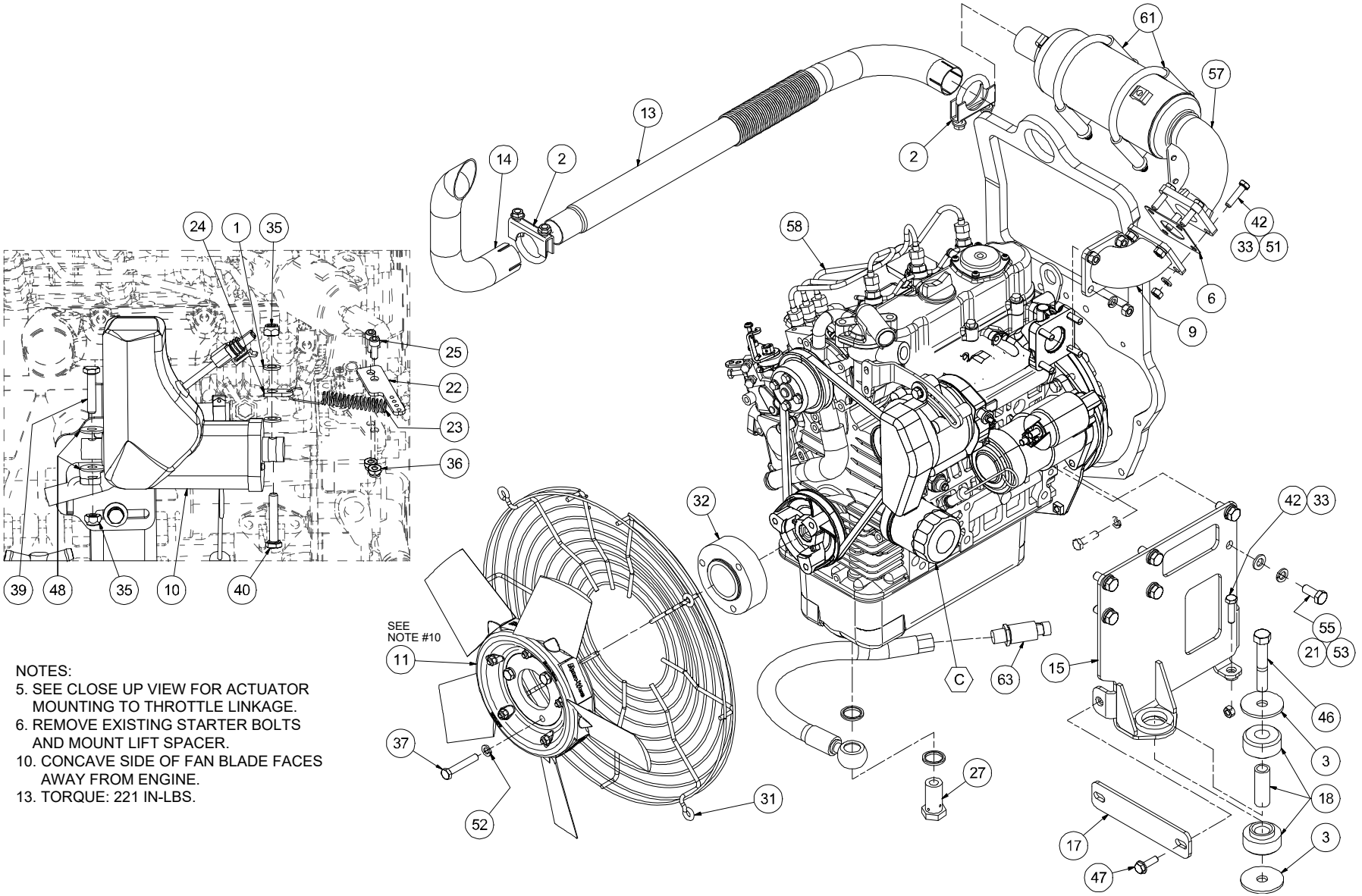


7.4 ENGINE AND DRIVE PARTS (MACHINE WITH FUEL TANK) - 2 OF 2

KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	WASHER, NYLON FLAT 1/4	262704	3	24	BRACKET, ACTUATOR ROD	273307	1	47	CAPSCREW, HEX GR8 1/2-13 x 3	829408-300	2
2	CLAMP, EXHAUST 1-3/8"	262906-138	2	25	CAPSCREW, S.H. 10-32 x 1/2 ZINC	273310	2	48	SCREW, SER WASH 5/16-18 x 0.75	829705-075	2
3	WASHER, SNUBBING RUBBER MOUNT	264829	4	26	ADAPTER, FLYWHEEL COUPLING	273660	1	49	SCREW, SER WASH 5/16-18 x 1	829705-100	10
4	CLAMP, HOSE #28	265560	2	27	HOSE, ENGINE DRAIN	274253	1	50	WASHER, FLAT 1/4	838204-071	4
5	STRAP, GROUND 8" w/ 3/8 HOLES	267498	1	28	SPACER, LIFT BALE	275755	1	51	WASHER, FLAT 5/16	838205-071	4
6	GASKET, MUFFLER 25HP DIESEL	269961	1	29	FILTER, AIR 6" 90 DEG OUT	276688	1	52	WASHER, LOCK 1/4	838504-062	2
7	HOSE, FLEX AIR INLET 1-3/4" I.D.	270698	1.5 ft	30	BRACKET, FUEL FILTER MTG	277101	1	53	WASHER, LOCK 5/16	838505-078	8
8	BRACKET, THROTTLE ADJ	272019	1	31	BRACKET, FUEL PUMP MTG	277102	1	54	WASHER, LOCK METRIC M8	838808-200	9
9	ELBOW, EXHAUST	272127	1	32	GUARD, FAN DIESEL VIPER	277416	1	55	WASHER, LOCK METRIC M10	838810-220	12
10	ACTUATOR, LINEAR 2" STROKE, 30#, 12V	272160	1	33	SPACER, FAN	277696	1	56	WASHER, FLAT METRIC M8	838908-180	2
11	FAN, 15.50" DIA PUSHER	272165	1	34	NUT, HEX 5/16-18	825205-273	6	57	WASHER, FLAT METRIC M10	838910-220	12
12	BRACKET, MUFFLER	272168	1	35	NUT, HEX FLANGE 5/16-18	825305-283	4	58	HOSE, FUEL LINE 5/16 (FT)	842315-031	1
13	EXHAUST, ENGINE OUT	272174	1	36	NUT, HEX LOCKING 1/4-20	825504-145	2	59	EXHAUST, KUBOTA (INCL. W/ ENGINE)	EN270396	1
14	ELBOW, EXHAUST OUT BACK	272211	1	37	NUT, HEX LOCKING #10-32	825702-083	2	62	ENGINE, DIESEL KUBOTA 25HP T4F	EN273303	1
15	BRACKET, ENGINE STARTER SIDE	272228	1	38	CAPSCREW, HEX 8mm 1.25 x 50	828008-050	3	61	FILTER, FUEL DIESEL (INCLUDED W/ ENG)	EN273303-01	1
16	BRACKET, ENGINE THROTTLE SIDE	272229	1	39	CAPSCREW, HEX GR5 1/4-20 x 1	829104-100	2	62	DIPSTICK, OIL	EN71817	1
17	SUPPORT, ENGINE FRONT	272230	1	40	CAPSCREW, HEX GR5 1/4-20 x 1-1/4	829104-125	1	63	CLAMP, EXHAUST 3-1/2"	FA270399	2
18	MOUNT, RUBBER ARMOR PLATED 200# GREEN	272442	2	41	CAPSCREW, HEX GR5 1/4-20 x 1-1/2	829104-150	1	64	CLAMP, HOSE, T-BOLT STYLE 14MM	FA78162	4
19	SUPPORT, ENGINE REAR	272516	1	42	CAPSCREW, HEX GR5 5/16-18 x 1	829105-100	4	65	DRAIN, ENGINE OIL	FI273012	1
20	SUPPORT, TOWER	272553	1	43	CAPSCREW, HEX GR5 5/16-18 x 1-1/4	829105-125	6	66	TIES, THERMAL STAINLESS	HA42205	4
21	CAPSCREW, HEX 10 MM 1.25 x 25 MM	272864	12	44	CAPSCREW, S.H. M8x1.25 x 40MM	829308-040	2	67	FUEL PUMP, 12V SOLID STATE, 3-5 PSI	MA57870	1
22	BRACKET, THROTTLE EXTENSION	273300	1	45	CAPSCREW, S.H. M8x1.25 x 45mm	829308-045	1	68	HEADER WRAP, HIGH TEMP 2" WIDE	PR81122	32 ft
23	SPRING, EXTENSION THROTTLE	273302	1	46	CAPSCREW, S.H. M8x1.25 x 50mm	829308-050	2	69	OIL, DIESEL 15W-40	SE271475	4.0 qt

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.5 ENGINE AND DRIVE PARTS (MACHINE WITHOUT FUEL TANK) - 1 OF 2



NOTES:
5. SEE CLOSE UP VIEW FOR ACTUATOR MOUNTING TO THROTTLE LINKAGE.
6. REMOVE EXISTING STARTER BOLTS AND MOUNT LIFT SPACER.
10. CONCAVE SIDE OF FAN BLADE FACES AWAY FROM ENGINE.
13. TORQUE: 221 IN-LBS.

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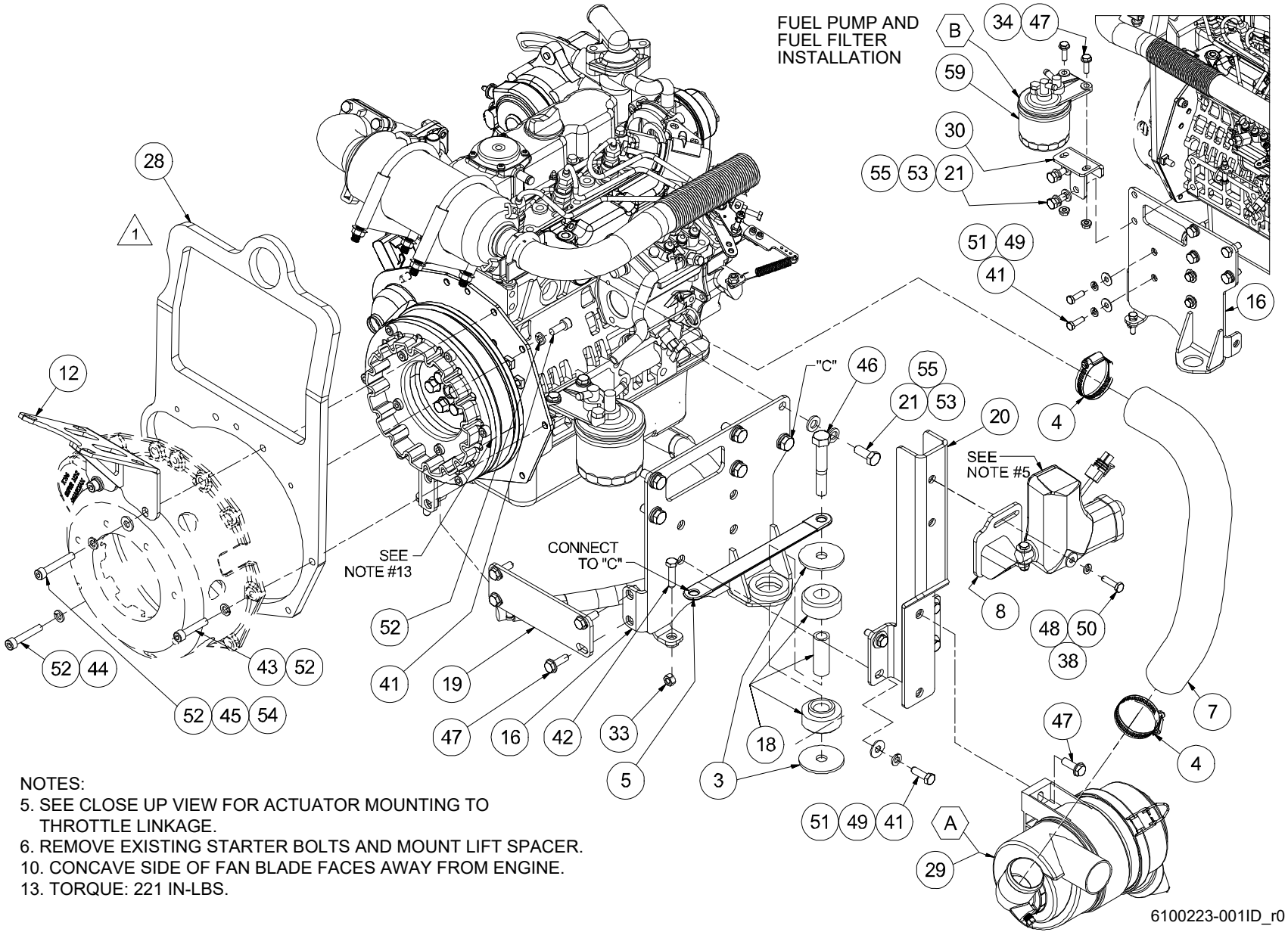
7.5 ENGINE AND DRIVE PARTS (MACHINE WITHOUT FUEL TANK) - 1 OF 2

KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	WASHER, NYLON FLAT 1/4	262704	3	23	SPRING, EXTENSION THROTTLE	273302	1	46	CAPSCREW, HEX GR8 1/2-13 x 3	829408-300	2
2	CLAMP, EXHAUST 1-3/8"	262906-138	2	24	BRACKET, ACTUATOR ROD	273307	1	47	SCREW, SER WASH 5/16-18 x 1	829705-100	10
3	WASHER, SNUBBING RUBBER MOUNT	264829	4	25	CAPSCREW, S.H. 10-32 x 1/2 ZINC	273310	2	48	WASHER, FLAT 1/4	838204-071	4
4	CLAMP, HOSE #28	265560	2	26	ADAPTER, FLYWHEEL COUPLING	273660	1	49	WASHER, FLAT 5/16	838205-071	4
5	STRAP, GROUND 8" w/ 3/8 HOLES	267498	1	27	HOSE, ENGINE DRAIN	274253	1	50	WASHER, LOCK 1/4	838504-062	2
6	GASKET, MUFFLER 25HP DIESEL	269961	1	28	SPACER, L IFT BAIL	275755	1	51	WASHER, LOCK 5/16	838505-078	8
7	HOSE, FLEX AIR INLET 1-3/4" I.D.	270698	1.5 ft	29	FILTER, AIR 6" 90 DEG OUT	276688	1	52	WASHER, LOCK METRIC M8	838808-200	9
8	BRACKET, THROTTLE ADJ	272019	1	30	BRACKET, FUEL FILTER MTG	277101	1	53	WASHER, LOCK METRIC M10	838810-220	12
9	ELBOW, EXHAUST	272127	1	31	GUARD, FAN DIESEL VIPER	277416	1	54	WASHER, FLAT METRIC M8	838908-180	2
10	ACTUATOR, LINEAR 2" STROKE, 30#, 12V	272160	1	32	SPACER, FAN	277696	1	55	WASHER, FLAT METRIC M10	838910-220	12
11	FAN, 15.50" DIA PUSHER	272165	1	33	NUT, HEX 5/16-18	825205-273	6	56	HOSE, FUEL LINE 5/16 (FT)	842315-031	1
12	BRACKET, MUFFLER	272168	1	34	NUT, HEX FLANGE 5/16-18	825305-283	2	57	EXHAUST, KUBOTA (INCL. W/ ENG)	EN270396	1
13	EXHAUST, ENGINE OUT	272174	1	35	NUT, HEX LOCKING 1/4-20	825504-145	2	58	ENGINE, DIESEL KUBOTA 25HP T4F	EN273303	1
14	ELBOW, EXHAUST OUT BACK	272211	1	36	NUT, HEX LOCKING #10-32	825702-083	2	59	FILTER, FUEL DIESEL (INCLUDED W/ ENG)	EN273303-01	1
15	BRACKET, ENGINE STARTER SIDE	272228	1	37	CAPSCREW, HEX 8mm 1.25 x 50	828008-050	3				
16	BRACKET, ENGINE THROTTLE SIDE	272229	1	38	CAPSCREW, HEX GR5 1/4-20 x 1	829104-100	2	60	DIPSTICK, OIL	EN71817	1
17	SUPPORT, ENGINE FRONT	272230	1	39	CAPSCREW, HEX GR5 1/4-20 x 1-1/4	829104-125	1	61	CLAMP, EXHAUST 3-1/2"	FA270399	2
18	MOUNT, RUBBER ARMOR PLATED 200# GREEN	272442	2	40	CAPSCREW, HEX GR5 1/4-20 x 1-1/2	829104-150	1	62	CLAMP, HOSE, T-BOLT STYLE 14MM	FA78162	4
				41	CAPSCREW, HEX GR5 5/16-18 x 1	829105-100	4	63	DRAIN, ENGINE OIL	FI273012	1
19	SUPPORT, ENGINE REAR	272516	1	42	CAPSCREW, HEX GR5 5/16-18 x 1-1/4	829105-125	6	64	TIES, THERMAL STAINLESS	HA42205	4
20	SUPPORT, TOWER	272553	1	43	CAPSCREW, S.H. M8x1.25 x 40MM	829308-040	2	65	HEADER WRAP, HIGH TEMP 2" WIDE	PR81122	32 ft
21	CAPSCREW, HEX 10 MM 1.25 x 25 MM	272864	12	44	CAPSCREW, S.H. M8x1.25 x 45mm	829308-045	1	66	OIL, DIESEL 15W-40	SE271475	4.0 qt
22	BRACKET, THROTTLE EXTENSION	273300	1	45	CAPSCREW, S.H. M8x1.25 x 50mm	829308-050	2				

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.5 ENGINE AND DRIVE PARTS (MACHINE WITHOUT FUEL TANK) - 2 OF 2



NOTES:
5. SEE CLOSE UP VIEW FOR ACTUATOR MOUNTING TO THROTTLE LINKAGE.
6. REMOVE EXISTING STARTER BOLTS AND MOUNT LIFT SPACER.
10. CONCAVE SIDE OF FAN BLADE FACES AWAY FROM ENGINE.
13. TORQUE: 221 IN-LBS.

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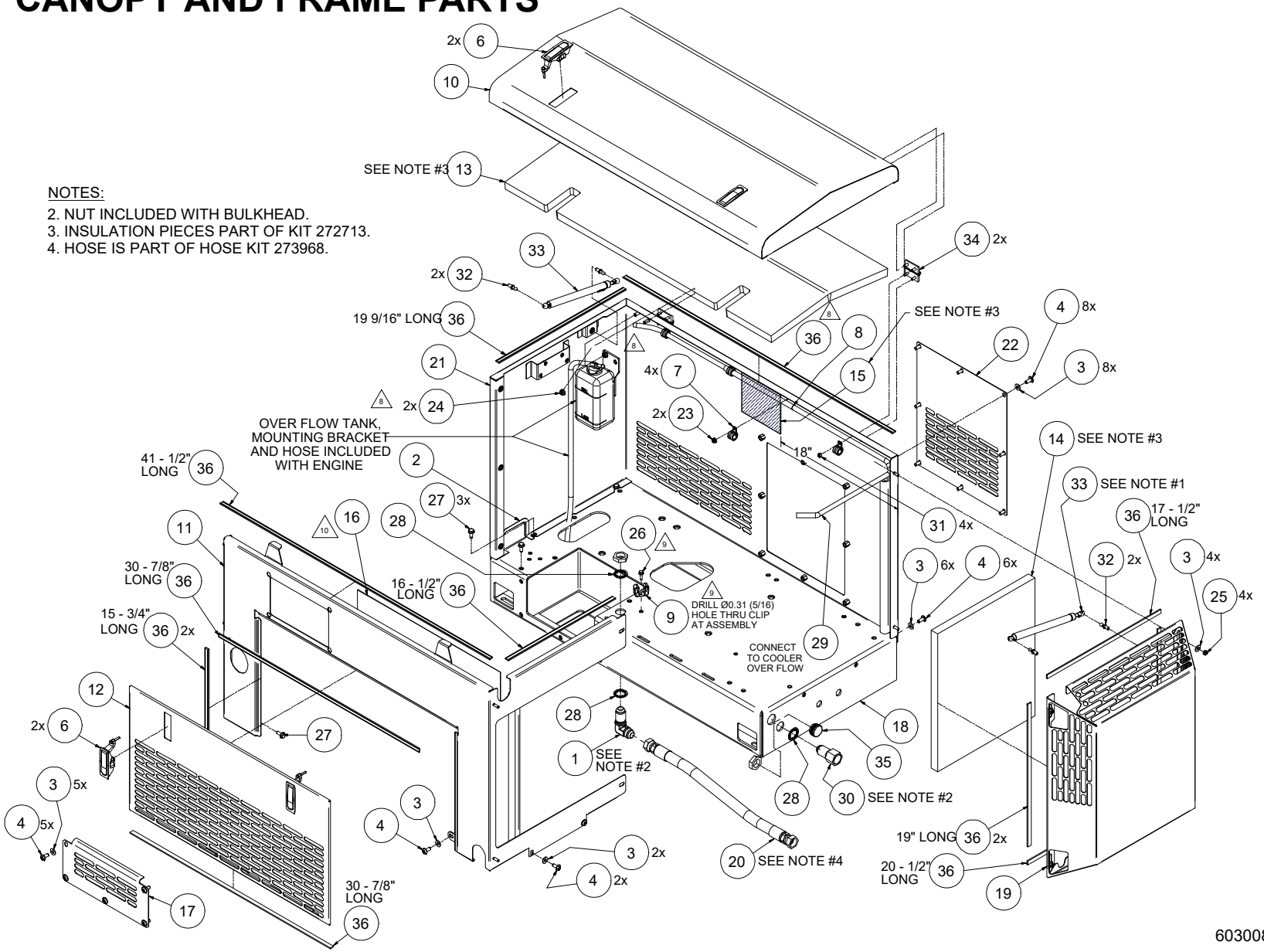
7.5 ENGINE AND DRIVE PARTS (MACHINE WITHOUT FUEL TANK) - 2 OF 2

KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	WASHER, NYLON FLAT 1/4	262704	3	23	SPRING, EXTENSION THROTTLE	273302	1	46	CAPSCREW, HEX GR8 1/2-13 x 3	829408-300	2
2	CLAMP, EXHAUST 1-3/8"	262906-138	2	24	BRACKET, ACTUATOR ROD	273307	1	47	SCREW, SER WASH 5/16-18 x 1	829705-100	10
3	WASHER, SNUBBING RUBBER MOUNT	264829	4	25	CAPSCREW, S.H. 10-32 x 1/2 ZINC	273310	2	48	WASHER, FLAT 1/4	838204-071	4
4	CLAMP, HOSE #28	265560	2	26	ADAPTER, FLYWHEEL COUPLING	273660	1	49	WASHER, FLAT 5/16	838205-071	4
5	STRAP, GROUND 8" w/ 3/8 HOLES	267498	1	27	HOSE, ENGINE DRAIN	274253	1	50	WASHER, LOCK 1/4	838504-062	2
6	GASKET, MUFFLER 25HP DIESEL	269961	1	28	SPACER, L IFT BAIL	275755	1	51	WASHER, LOCK 5/16	838505-078	8
7	HOSE, FLEX AIR INLET 1-3/4" I.D.	270698	1.5 ft	29	FILTER, AIR 6" 90 DEG OUT	276688	1	52	WASHER, LOCK METRIC M8	838808-200	9
8	BRACKET, THROTTLE ADJ	272019	1	30	BRACKET, FUEL FILTER MTG	277101	1	53	WASHER, LOCK METRIC M10	838810-220	12
9	ELBOW, EXHAUST	272127	1	31	GUARD, FAN DIESEL VIPER	277416	1	54	WASHER, FLAT METRIC M8	838908-180	2
10	ACTUATOR, LINEAR 2" STROKE, 30#, 12V	272160	1	32	SPACER, FAN	277696	1	55	WASHER, FLAT METRIC M10	838910-220	12
11	FAN, 15.50" DIA PUSHER	272165	1	33	NUT, HEX 5/16-18	825205-273	6	56	HOSE, FUEL LINE 5/16 (FT)	842315-031	1
12	BRACKET, MUFFLER	272168	1	34	NUT, HEX FLANGE 5/16-18	825305-283	2	57	EXHAUST, KUBOTA (INCL. W/ ENG)	EN270396	1
13	EXHAUST, ENGINE OUT	272174	1	35	NUT, HEX LOCKING 1/4-20	825504-145	2	58	ENGINE, DIESEL KUBOTA 25HP T4F	EN273303	1
14	ELBOW, EXHAUST OUT BACK	272211	1	36	NUT, HEX LOCKING #10-32	825702-083	2	59	FILTER, FUEL DIESEL (INCLUDED W/ ENG)	EN273303-01	1
15	BRACKET, ENGINE STARTER SIDE	272228	1	37	CAPSCREW, HEX 8mm 1.25 x 50	828008-050	3				
16	BRACKET, ENGINE THROTTLE SIDE	272229	1	38	CAPSCREW, HEX GR5 1/4-20 x 1	829104-100	2	60	DIPSTICK, OIL	EN71817	1
17	SUPPORT, ENGINE FRONT	272230	1	39	CAPSCREW, HEX GR5 1/4-20 x 1-1/4	829104-125	1	61	CLAMP, EXHAUST 3-1/2"	FA270399	2
18	MOUNT, RUBBER ARMOR PLATED 200# GREEN	272442	2	40	CAPSCREW, HEX GR5 1/4-20 x 1-1/2	829104-150	1	62	CLAMP, HOSE, T-BOLT STYLE 14MM	FA78162	4
				41	CAPSCREW, HEX GR5 5/16-18 x 1	829105-100	4	63	DRAIN, ENGINE OIL	FI273012	1
19	SUPPORT, ENGINE REAR	272516	1	42	CAPSCREW, HEX GR5 5/16-18 x 1-1/4	829105-125	6	64	TIES, THERMAL STAINLESS	HA42205	4
20	SUPPORT, TOWER	272553	1	43	CAPSCREW, S.H. M8x1.25 x 40MM	829308-040	2	65	HEADER WRAP, HIGH TEMP 2" WIDE	PR81122	32 ft
21	CAPSCREW, HEX 10 MM 1.25 x 25 MM	272864	12	44	CAPSCREW, S.H. M8x1.25 x 45mm	829308-045	1	66	OIL, DIESEL 15W-40	SE271475	4.0 qt
22	BRACKET, THROTTLE EXTENSION	273300	1	45	CAPSCREW, S.H. M8x1.25 x 50mm	829308-050	2				

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.6 CANOPY AND FRAME PARTS

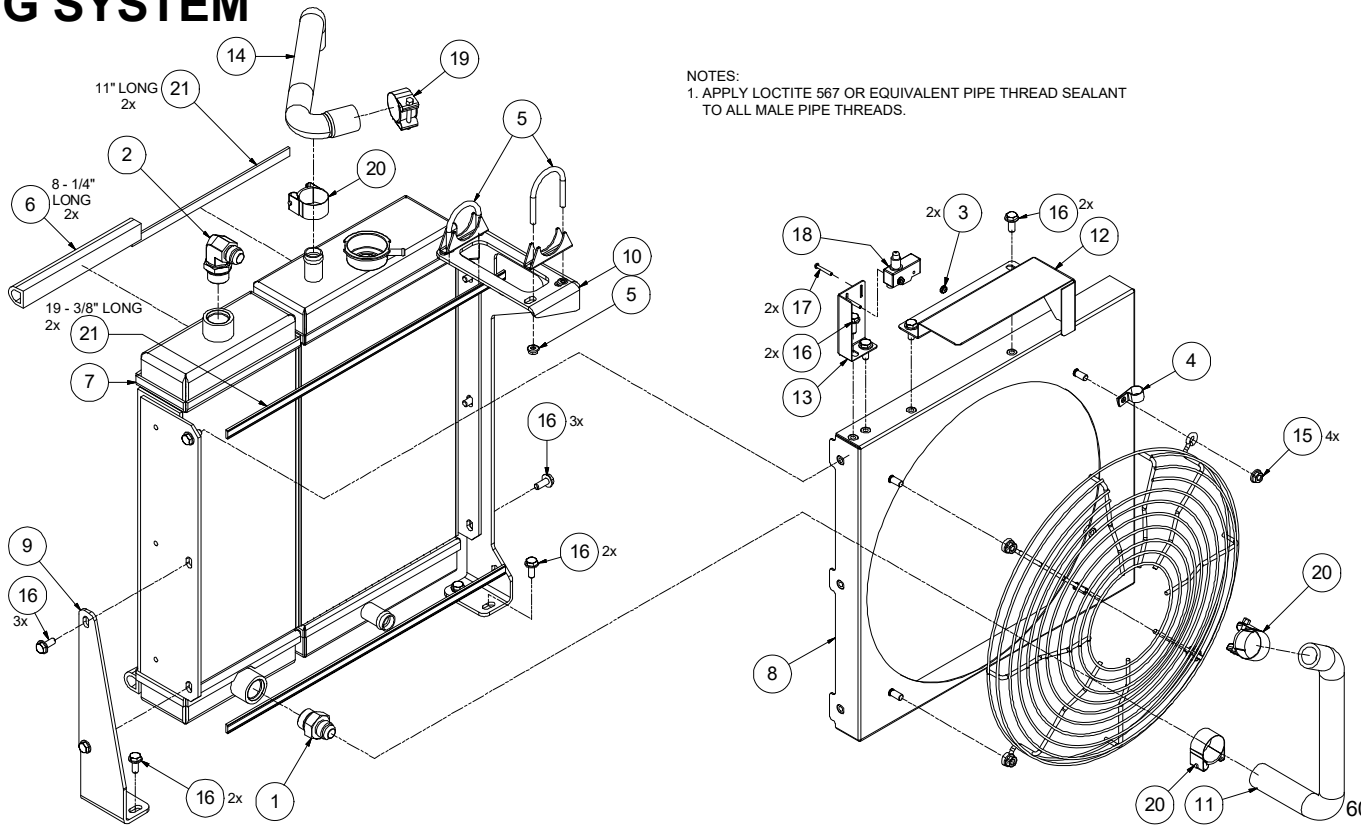


7.6 CANOPY AND FRAME PARTS

KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	BULKHEAD, 90 DEG. 3/4	250006-058	1	19	BAFFLE, SHROUD	273709	1
2	TRIM-LOK, 1/8 GROOVE	261228	1 ft	20	HOSE, AIR OUT LOWER	273968-008	1
3	WASHER, NYLON 5/16-18	262943	26	21	PANEL, REAR SIDE	274299	1
4	SCREW,TRUSS HD 5/16-18x3/4 SS	262945	22	22	PLATE, OIL FILTER ACCESS	274302	1
5	SEAL,RUBBER "D" TRIM-LOK 1" X 1"	264138	3.4 ft	23	NUT, HEX FLANGE 1/4-20	825304-236	2
6	LATCH, SENTRY PANEL	267124	4	24	NUT, HEX FLANGE 5/16-18	825305-283	2
7	CLAMP, LOOM #010 5/8"	268503	4	25	NUT, HEX LOCKING 1/4-20	825504-145	4
8	LOOM,FIBERGLASS HIGH TEMP 1/2 INCH (1200F)	270242	4 ft	26	SCREW,SER WASH 1/4-20 x 3/4 LG	829704-075	1
9	CLIP, TOOL ZINC 3/4 TO 1-1/8	272059	1	27	SCREW, SER WASH 5/16-18 x 0.75	829705-075	6
10	HOOD, CANOPY	272250	1	28	WASHER,INTERNAL TOOTH 1 INCH	837414-100	3
11	PANEL, OPEN SIDE	272253	1	29	HOSE,FUEL LINE 1/4-30R7	842315-025	5 ft
12	DOOR, FRONT ACCESS	272257	1	30	BULKHEAD, 3/4 FNPT x #12 MJIC	862012-075	1
13	INSULATION, ACOUSTICAL FOAM, HOOD	272713-001	1	31	NUT, LOCK, M6 X 1.0 PITCH	FA55272	8
14	INSULATION, ACOUSTICAL FOAM, BAFFLE	272713-002	1	32	STUD, BALL, .39DIA. X .55LG.	FA58724	4
15	INSULATION, HEAT SHIELD	272713-006	1	33	GAS SPRING, 6 STROKE, 20#	HA72205	2
16	INSULATION, HEAT SHIELD	272713-007	1	34	HINGE, 2" X 2", BLACK	HA88014	2
17	PANEL, REMOVABLE BATTERY ACCESS	273468	1	35	PLUG, PLASTIC, 1-3/8 DIA, RIBBED BLACK	PR273179	1
18	PLATFORM,VIPER DIESEL VANAIR	273469	1	36	GASKET, SEAL AND TRIM	PR35734	24 ft

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

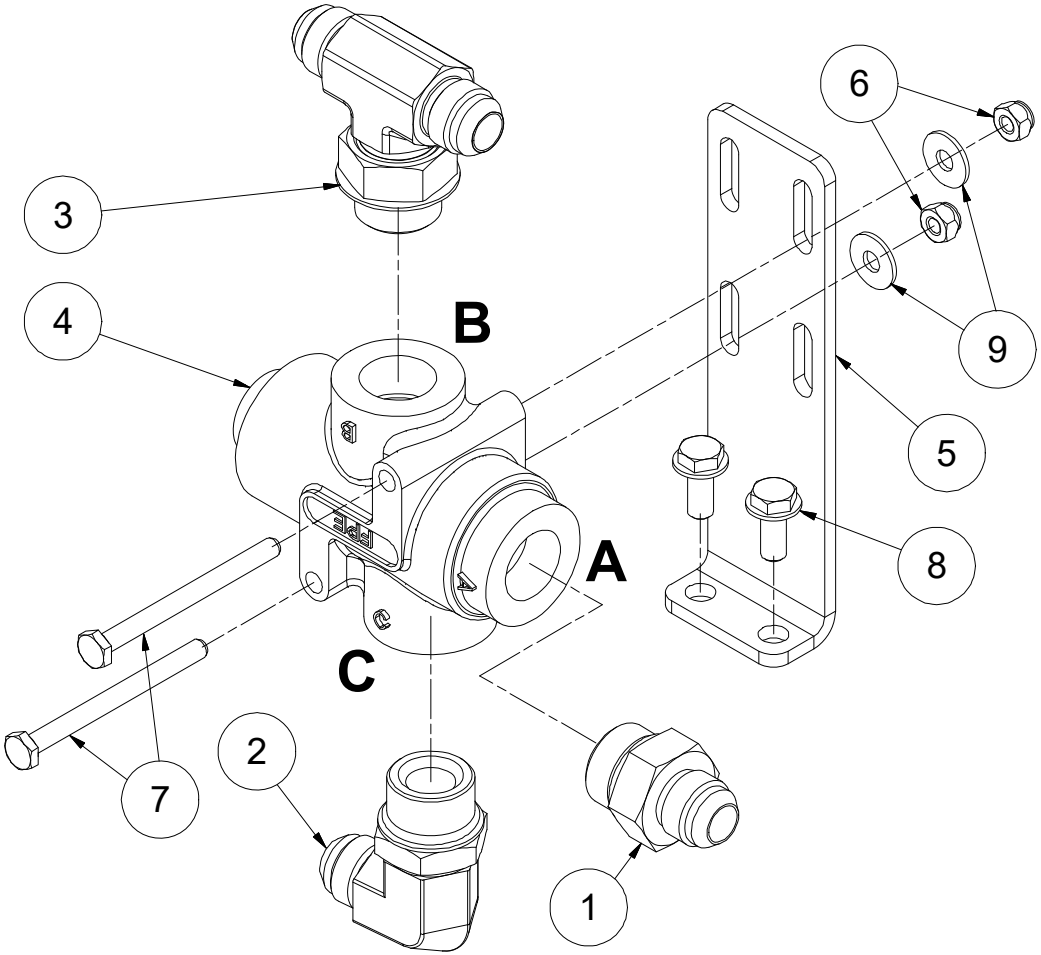
7.7 COOLING SYSTEM



KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	CONNECTOR, #12 MSAE x #10 MJIC	260387-110	1	8	SHROUD, COOLER	272169	1	15	NUT, HEX FLANGE 5/16-18	825305-283	4
2	ELBOW, 90 DEG #10 MJIC x #12 MSAE	260403-131	1	9	BRACKET, CLR SPPRT BCK SIDE	272171	1	16	SCREW, SER WASH 5/16-18 x 0.75	829705-075	14
3	NUT, HEX #6-32 KEPS	261595-632	2	10	BRACKET, CLR / EXHST SPPRT	272797	1	17	SCREW, MACHINE #6-32 x 1	831600-100	2
4	CLAMP, HOSE SUPPORT .50	261837	1	11	HOSE, RADIATOR BOTTOM	272817ID	1	18	SWITCH, HOOD SFTY NO/NC 15A-125V. AC	CO81774	1
5	CLAMP, EXHAUST 1 1/2	262906-150	2	12	BRACKET, BELT GUARD	272996	1	19	CLAMP, T-BOLT 1.22" - 1.34"	FA275849	1
6	SEAL, RUBBER "D" TRIM-LOK 1" X 1"	264138	1.375 ft	13	BRACKET, HOOD SWITCH	273289	1	20	CLAMP, T-BOLT 1.25"	FA47720	3
7	COOLER, ENGINE/COMPRESSOR	270843	1	14	HOSE, RADIATOR TOP	277300ID	1	21	GASKET, SEAL AND TRIM	PR35734	5.063 ft

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.8 COMPRESSOR THERMAL CONTROL



KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	CONNECTOR, #12 MSAE x #10 MJIC	260387-110	1
2	ELBOW, 90 DEG #10 MJIC x #12 MSAE	260403-131	1
3	TEE, JIC/JIC/SAE 5/8 x 3/4	263749-009	1
4	VALVE,THERMAL 180 DEGREE ALUM BODY 3/4" SAE FPE	273480	1
5	BRACKET, SUPPORT THERMAL VALVE	273548	1
6	NUT, HEX LOCKING 1/4-20	825504-145	2
7	CAPSCREW, HEX GR5 1/4-20 x 3	829104-300	2
8	SCREW, SER WASH 5/16-18 x 0.75	829705-075	2
9	WASHER, FLAT 1/4	838204-071	2

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

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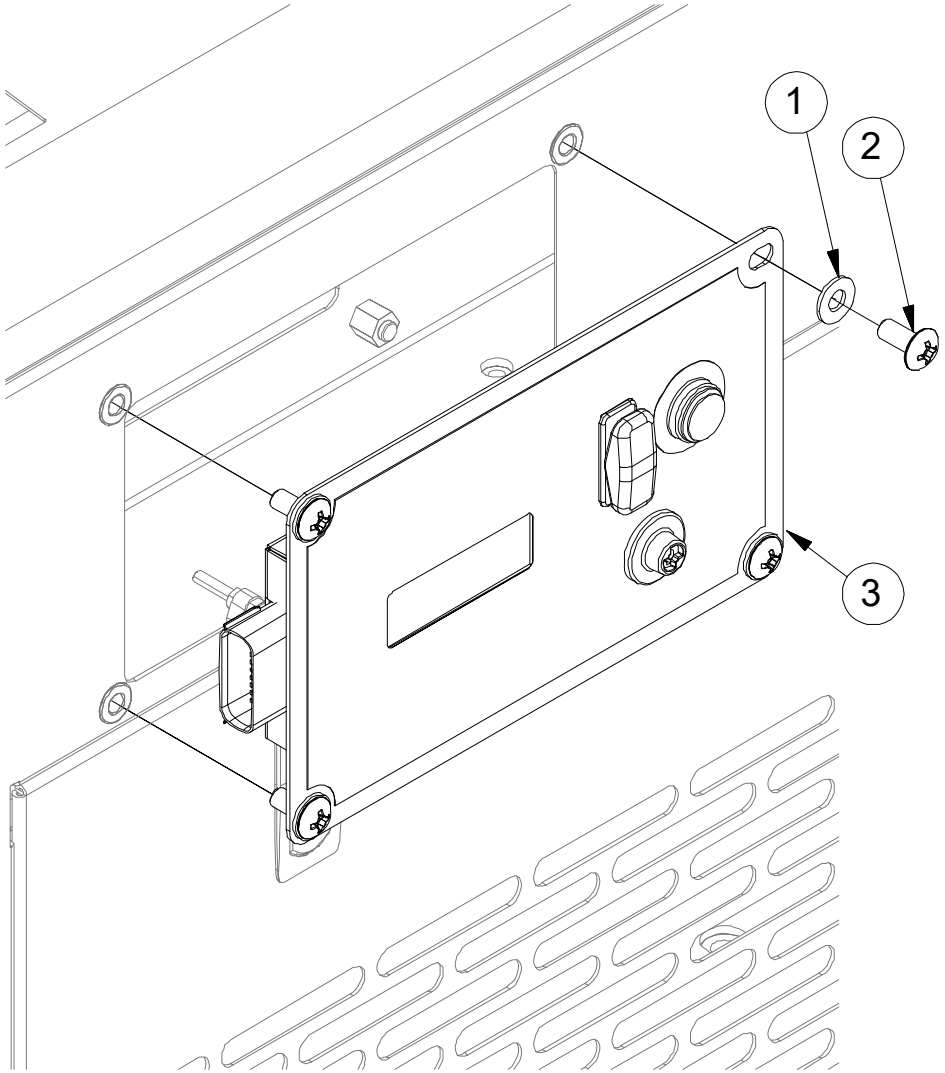
7.9 INSTRUMENT PANEL



KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	WASHER, NYLON 5/16-18	262943	4
2	SCREW,TRUSS HD 5/16-18x3/4 SS	262945	4
3	MODULE, CONTROL APU	274305	1

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

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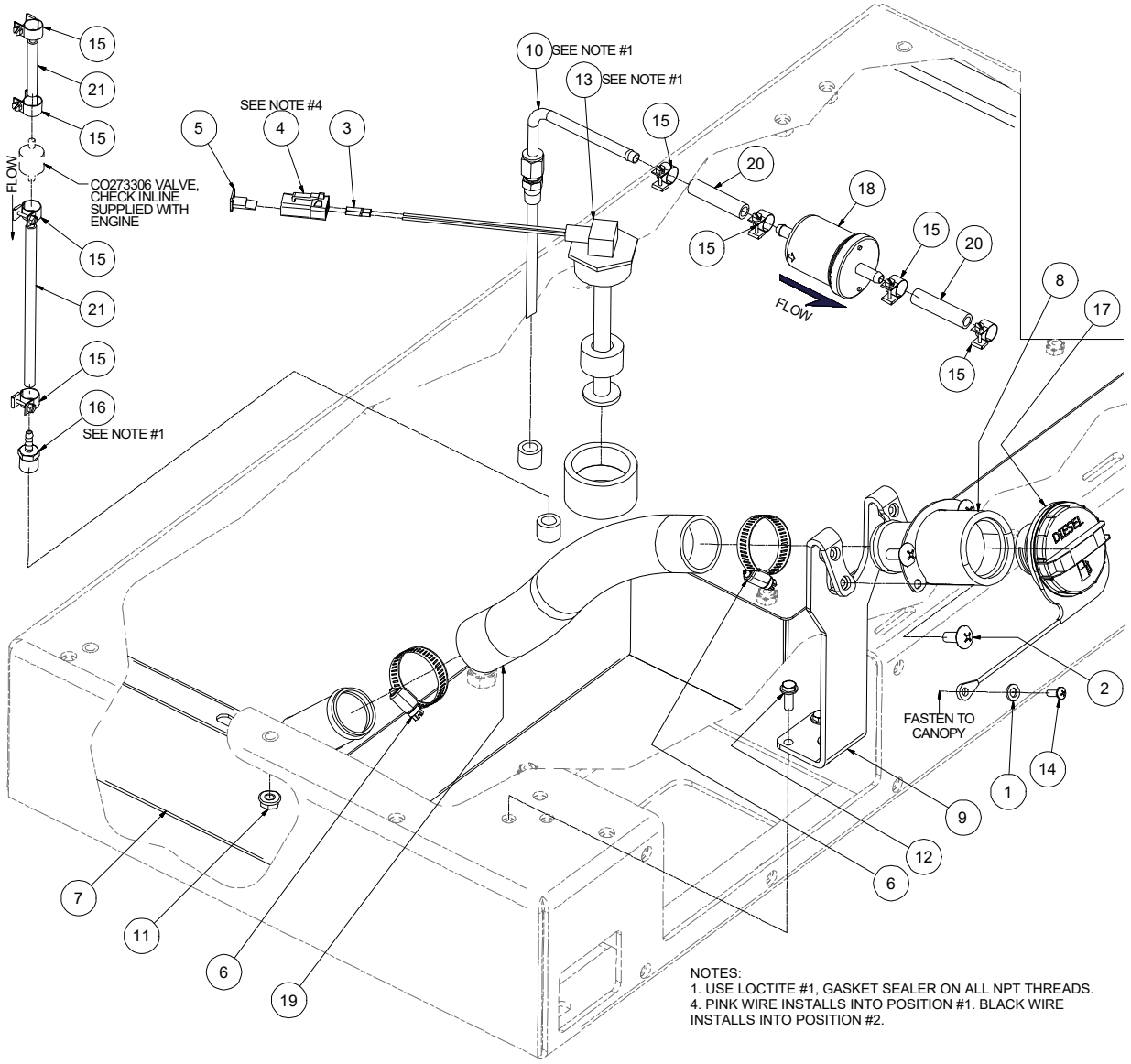
7.10 FUEL TANK ASSEMBLY



KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	WASHER, NYLON FLAT 1/4	262704	1
2	SCREW, TRUSS HD 5/16-18 x 3/4 SS	262945	4
3	TERMINAL, DEUTSCH 0462-201-16141	263582	2
4	PLUG, DEUTSCH DT06-2S	268902	1
5	WEDGELOCK, DEUTSCH W2S	268903	1
6	CLAMP, HOSE, #24, 1"-2" DIA.	270493	2
7	TANK, FUEL 9 GALLON	272236	1
8	NECK, FUEL FILL DIESEL TETHERED, NO VENT	272855	1
9	SUPPORT, FUEL NECK	272865	1
10	TUBE, FUEL PICK UP	277303	1
11	NUT, HEX FLANGE 5/16-18	825305-283	4
12	SCREW, SER WASH 1/4-20 x 0.75	829704-075	3
13	SENDER UNIT, FUEL LEVEL, 5.50 LG	CO22750	1
14	SCREW, PHILLIPS 10-32 X 1/2" SS	FA33542	1
15	CLAMP, HOSE, T BOLT STYLE 9mm	FA66533	8
16	PUSH - ON, MALE ADAPTER, 1/4 MALE X 3/16 PUSH	FI92363	1
17	CAP,DIESEL VENTED TETHERED	HA271677	1
18	FILTER, FUEL KUBOTA D902 SUCTION	RC276268	1
19	HOSE, 1-1/2 DIA. FUEL x 12-1/2" LONG	TU269928	1.04 ft
20	HOSE, FUEL 5/16" SAE 30R9 CARB APPROVED	TU270137	1.0 ft
21	HOSE, 3/16DIA. HT, FUEL	TU28641	2.2 ft

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

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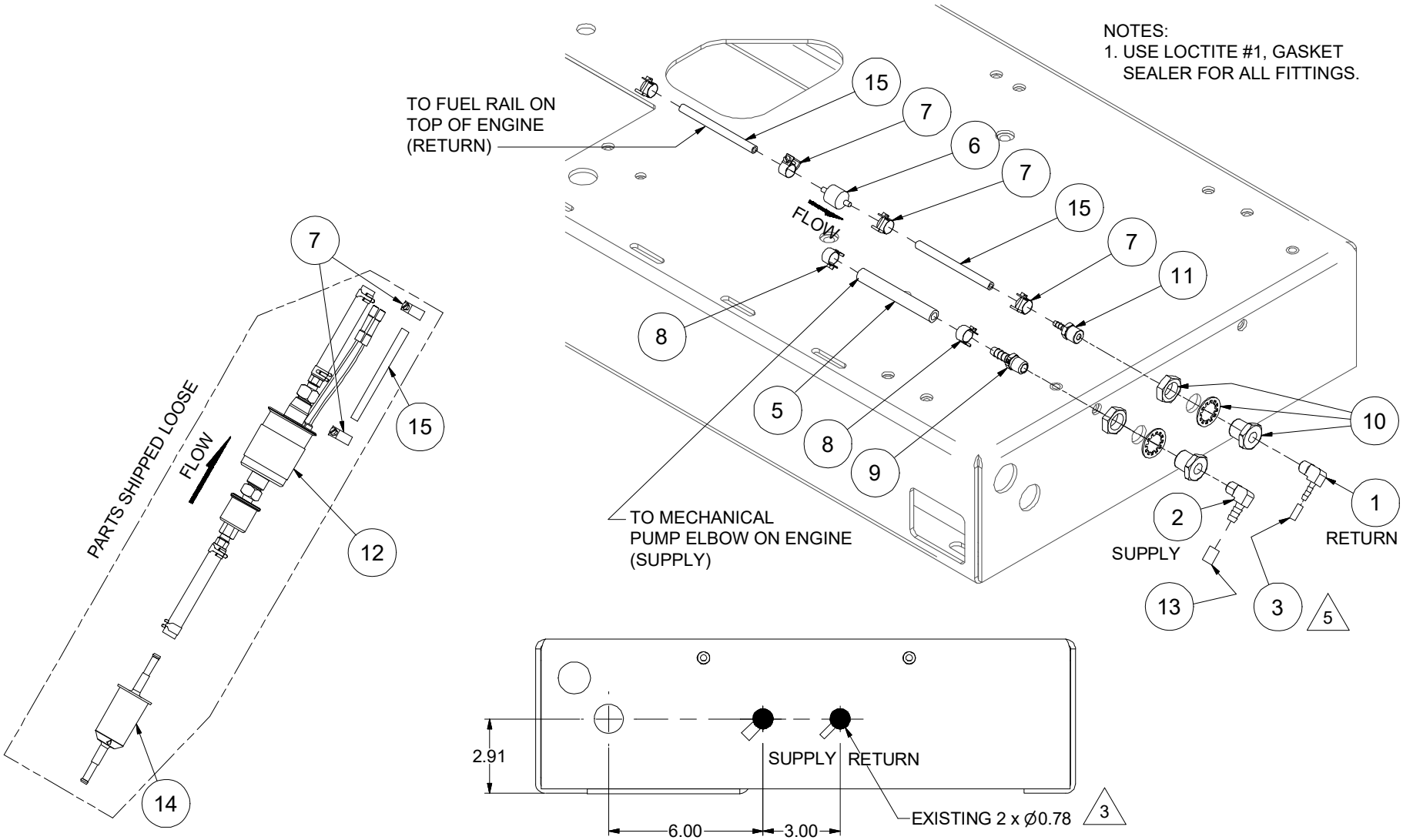
7.11 FUEL TANK ASSEMBLY WITHOUT FUEL TANK



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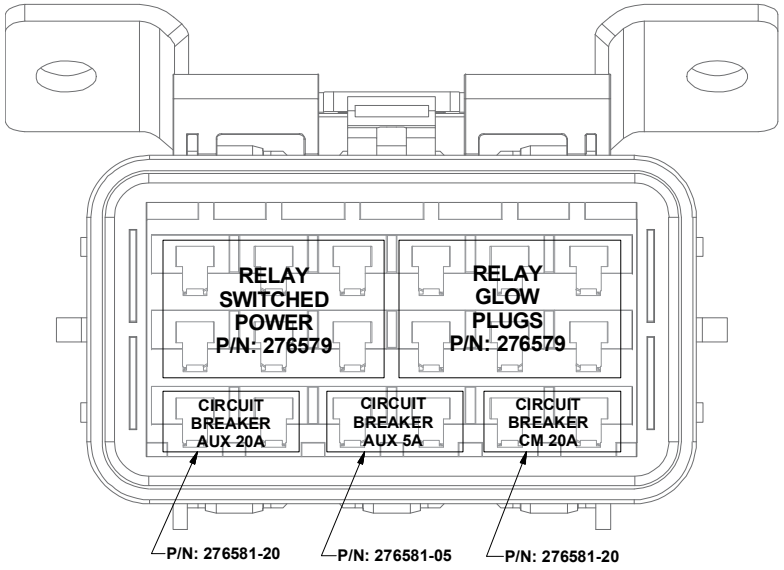
7.11 FUEL TANK ASSEMBLY WITHOUT FUEL TANK

KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	ELBOW,1/4 NPT x 3/16 HOSE BARB	270612	1
2	ELBOW,1/4 NPT x 5/16 HOSE BARB	270651	1
3	CAP,3/16" DIA X 1" LG BLACK VINYL	273520	1
4	HARNESS, WIRING REMOTE FUEL PUMP	273954	1
5	HOSE,FUEL LINE 5/16" (FT)	842315-031	3
6	VALVE, CHECK INLINE 3/16 TUBING	CO273306	1
7	CLAMP, HOSE, T BOLT STYLE 9mm	FA66533	6
8	CLAMP, HOSE, T-BOLT STYLE 14MM	FA78162	2
9	HOSEBARB,1/4MNPT X 5/16 BRASS	FI271156	1
10	PIPE BRASS, BULKHEAD 1/4 NPT	FI45068	2
11	PUSH - ON, MALE ADAPTER, 1/4 MALE X 3/16 PUSH	FI92363	1
12	PUMP,FUEL 12VDC 2.5-4.5PSI 30GPH	MA277170	1
13	CAP, VINYL, STRETCH, 1/4 DIA	PR62720	1
14	FILTER, INLINE FUEL 1/4-5/16"	RC81465	1
15	HOSE, 3/16DIA. HT, FUEL (FT)	TU28641	6

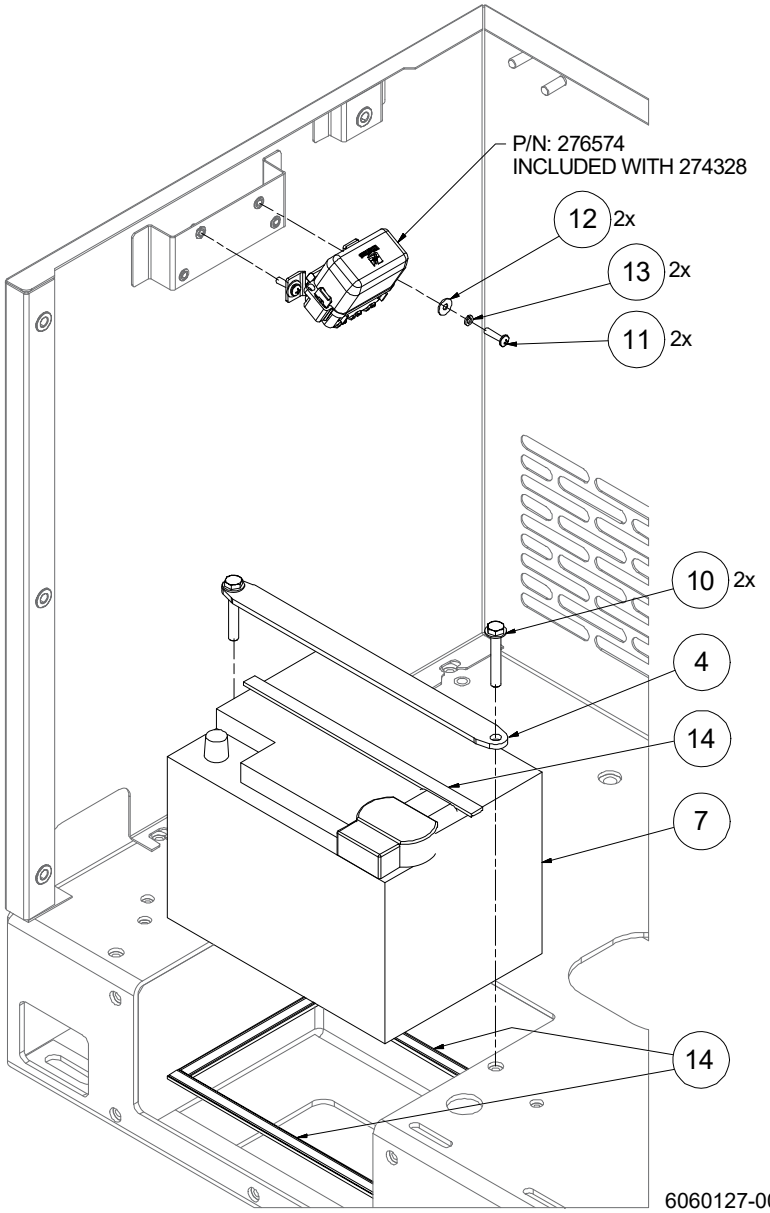
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.12 ELECTRICAL SYSTEM

NOTES:
1. DO NOT ALLOW BATTERY HOLD DOWN BRACKET TO HIT BATTERY TERMINALS.
2. ASSEMBLY 6060080 USES HARNESS 272621.
ASSEMBLY 6060127 USES HARNESS 273990.



NOTE:
REALY BLOCK, FUSES AND RELAYS INCLUDED WITH 274328

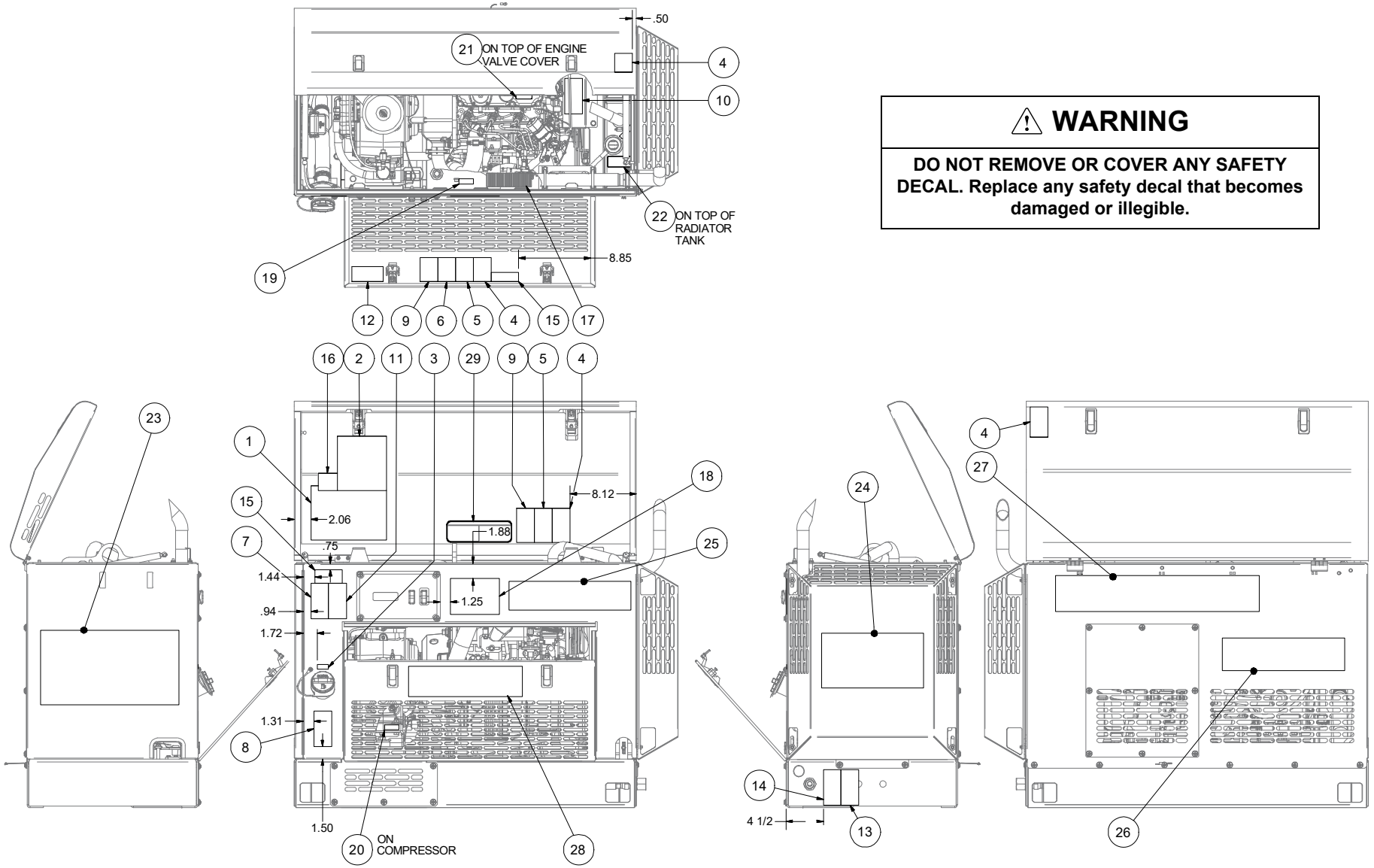


7.12 ELECTRICAL SYSTEM

KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	INSULATOR, BATTERY TERM RED 466	267208	1
2	PLUG, SEALING	269055	4
3	CONNECTOR, DEUTSCH DTP06-4S	269415	1
4	BRACKET, BATTERY HOLD DOWN	272213	1
5	CABLE, BATTERY NEGATIVE	272735	1
6	CABLE, BATTERY POSITIVE	272736	1
7	BATTERY, 12V LEAD-ACID AUTOMOTIVE 600 CCA	273937	1
8	HARNESS, DIESEL VIPER ENG TO RUN	274328	1
9	WD, DIESEL VIPER W/STARTER RELAY	277314	1
10	SCREW, SER WASH 5/16-18 x 2	829705-200	2
11	SCREW, MACHINE #10-32 x 3/4	831702-075	2
12	WASHER, FLAT #10	838202-045	2
13	WASHER, LOCK #10	838502-047	2
14	GASKET, SEAL AND TRIM	PR35734	3.5 ft

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.13 DECALS - PART 1 OF 2, LOCATIONS



⚠ WARNING

DO NOT REMOVE OR COVER ANY SAFETY DECAL. Replace any safety decal that becomes damaged or illegible.

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7.13 DECALS - PART 1 OF 2, LOCATIONS

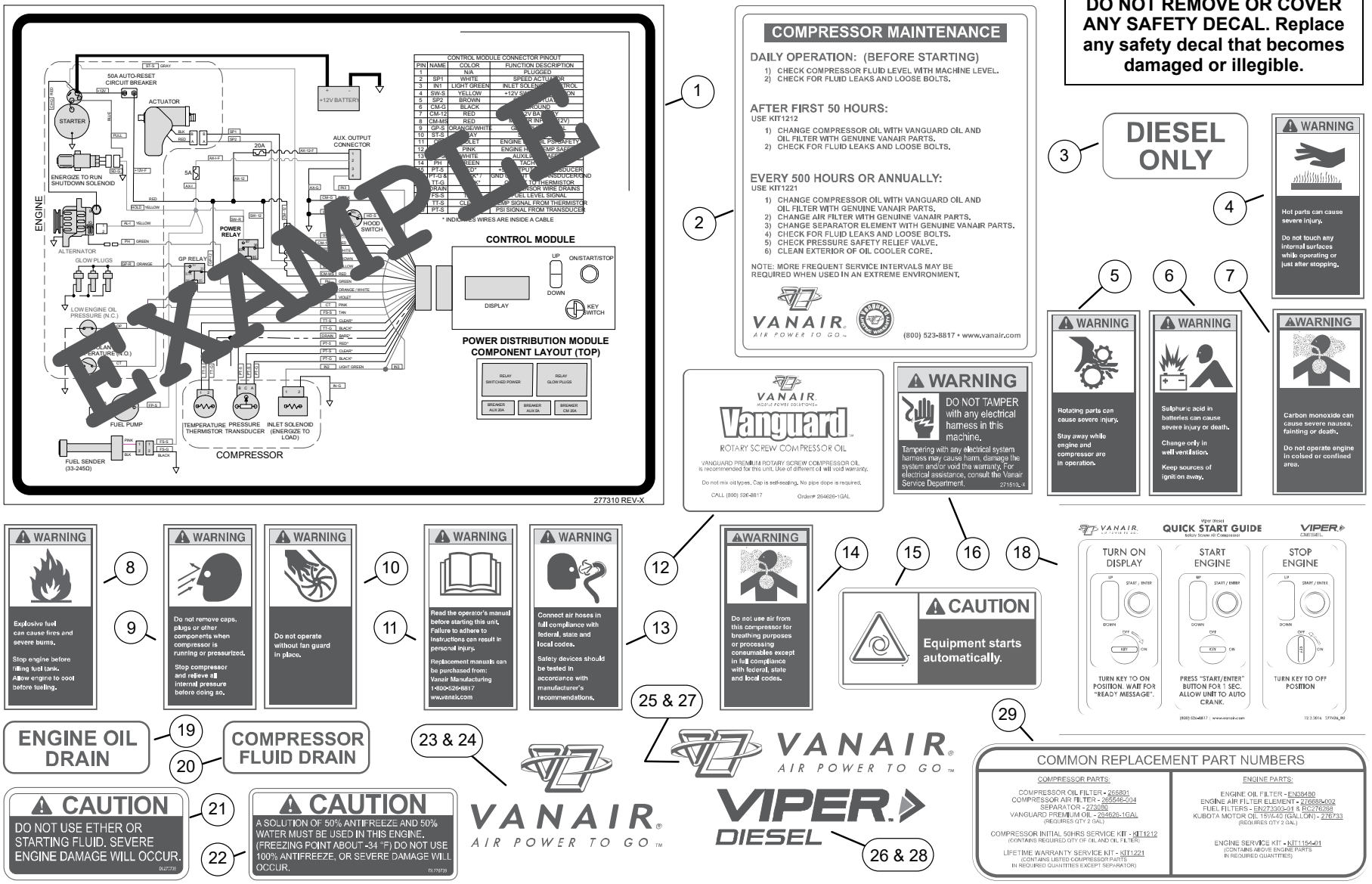
KEY NO.	DESCRIPTION	PART NUMBER	QTY	KEY NO.	DESCRIPTION	PART NUMBER	QTY
1	DECAL, WIRING DIAGRAM ETR [I]	277310	1	16	DECAL, WARNING ELECTRIC TAMPER	271510	1
2	DECAL, MAINTENANCE	274130	1	17	PLATE, SERIAL VANAIR [II]	260940	1
3	DECAL, DIESEL FUEL ONLY	275978	1	18	DECAL, QUICK START GUIDE	277436	1
4	DECAL, HOT PARTS	264372	3	19	DECAL,ENGINE OIL DRAIN	275053	1
5	DECAL, ROTATING PARTS	264374	2	20	DECAL,COMPRESSOR FLUID DRAIN	275054	1
6	DECAL, SULFURIC ACID	264375	1	21	DECAL, NO STARTING FLUID, DIESEL	DL270738	1
7	DECAL, CARBON MONOXIDE	264376	1	22	DECAL, 50/50 MIX	DL270739	1
8	DECAL, EXPLOSIVE FUEL	264377	1	23	DECAL, VANAIR "AIR" STACKED 17 x 9.1543	275039-C	1
9	DECAL, WARNING PLUGS	264378	2	24	DECAL, VANAIR "AIR" STACKED 12.5 x 6.7311	275039-C	1
10	DECAL, WARNING FAN GUARD	264383	1	25	DECAL, VANAIR "AIR" HORIZONTAL 15 x 3.5184	275038-C	1
11	DECAL, READ MANUAL	272424	1	26	DECAL, VIPER DIESEL 15 x 3.9981	275037-J	1
12	DECAL, ROTARY SCREW OIL	272501	1	27	DECAL, VANAIR "AIR" HORIZONTAL 25 x 4.3981	275038-C	1
13	DECAL, CONNECT AIR HOSE	261885	1	28	DECAL, VIPER DIESEL 14 x 3.7315	275037-J	1
14	DECAL, DO NOT USE AIR	261886	1	29	DECAL, REPLACEMENT PART NUMBERS VIPER D SERIES	278232	1
15	DECAL, CAUTION AUTO-START	272041	2				

[I] Decal shown in **Part 2** of this (decal) section is for quick identification only. For machine wiring diagram consultation, refer to decal on machine or **Section 7.15 Wiring Diagram** of this manual.

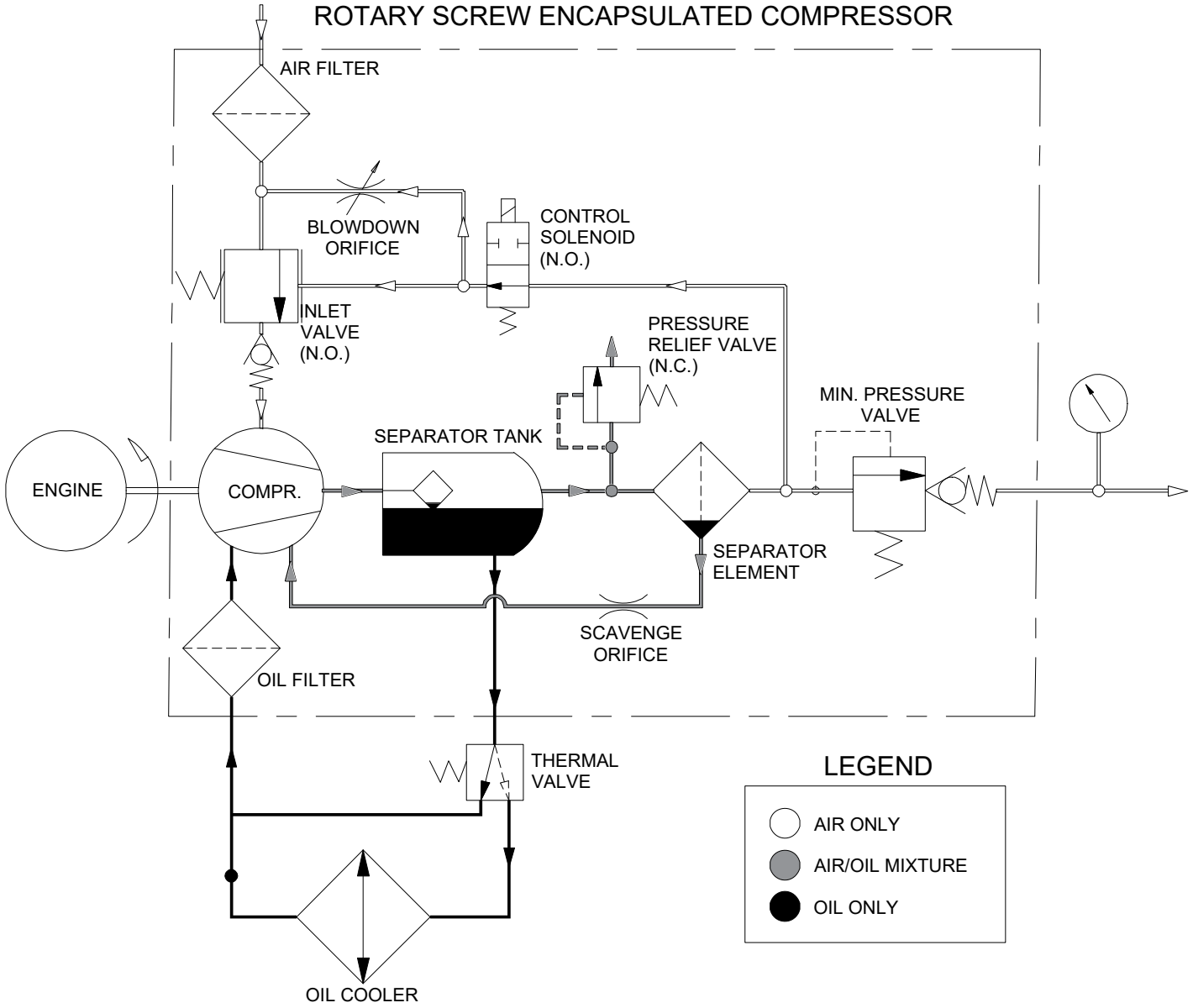
[II] Not shown. For further serial plate identification, refer to ***Figure 7-1*** in this Section.

PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.13 DECALS - PART 2 OF 2, IDENTIFICATION

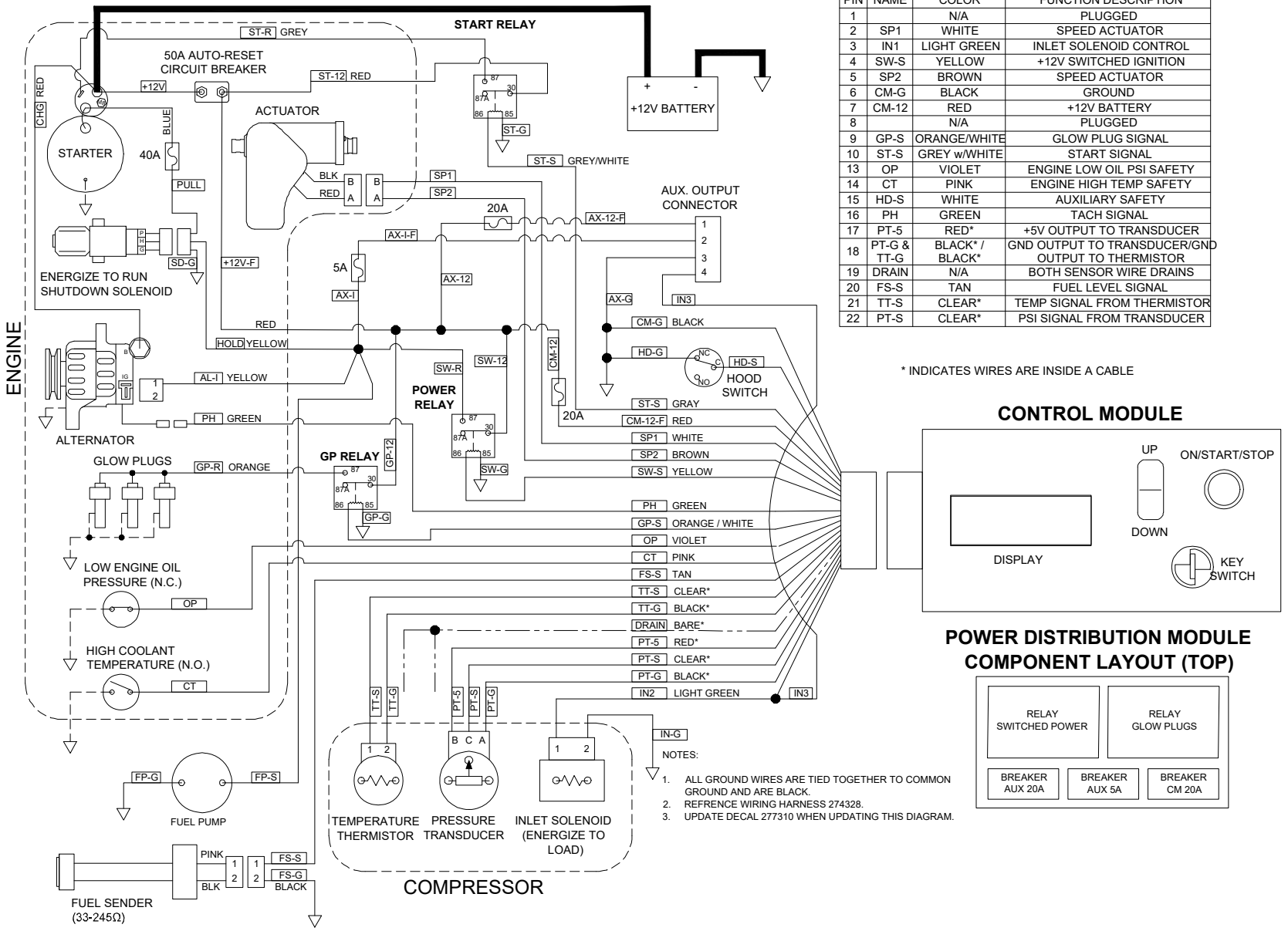


7.14 DIAGRAM - FLOW SCHEMATIC



276594_r0

7.15 WIRING DIAGRAM



CONTROL MODULE CONNECTOR PINOUT			
PIN	NAME	COLOR	FUNCTION DESCRIPTION
1		N/A	PLUGGED
2	SP1	WHITE	SPEED ACTUATOR
3	IN1	LIGHT GREEN	INLET SOLENOID CONTROL
4	SW-S	YELLOW	+12V SWITCHED IGNITION
5	SP2	BROWN	SPEED ACTUATOR
6	CM-G	BLACK	GROUND
7	CM-12	RED	+12V BATTERY
8		N/A	PLUGGED
9	GP-S	ORANGE/WHITE	GLOW PLUG SIGNAL
10	ST-S	GREY w/WHITE	START SIGNAL
13	OP	VIOLET	ENGINE LOW OIL PSI SAFETY
14	CT	PINK	ENGINE HIGH TEMP SAFETY
15	HD-S	WHITE	AUXILIARY SAFETY
16	PH	GREEN	TACH SIGNAL
17	PT-5	RED*	+5V OUTPUT TO TRANSDUCER
18	PT-G & TT-G	BLACK* / BLACK*	GND OUTPUT TO TRANSDUCER/GND OUTPUT TO THERMISTOR
19	DRAIN	N/A	BOTH SENSOR WIRE DRAINS
20	FS-S	TAN	FUEL LEVEL SIGNAL
21	TT-S	CLEAR*	TEMP SIGNAL FROM THERMISTOR
22	PT-S	CLEAR*	PSI SIGNAL FROM TRANSDUCER

277314_r2

Wiring Harness - 274328_r8

7.16 HOSE INSTALLATION GUIDE

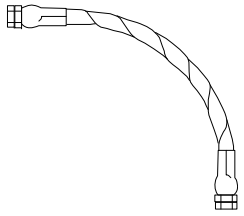
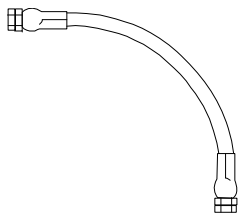
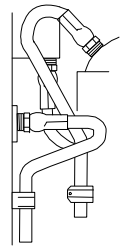
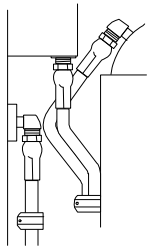
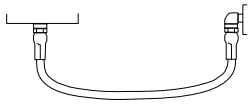
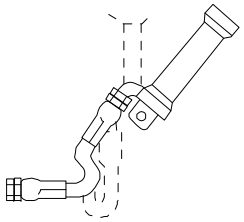
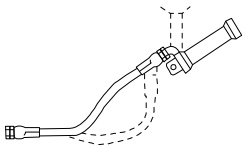
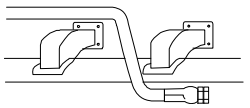
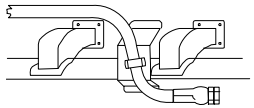
HOSE LAYOUT CONSIDERATION	WRONG	RIGHT	HOSE LAYOUT CONSIDERATION	WRONG	RIGHT
1. Hose is weakened when installed in twisted position. Pressure in twisted hose tends to loosen fitting connections. Design so that machine motion produces bending rather than twisting.			4. Use elbows or other adapters as necessary to eliminate excess hose length and to insure neater installation for easier maintenance.		
2. Ample bend radius should be provided to avoid collapsing of line and restriction of flow.			5. When hose assembly is installed in a flexing application, remember that metal hose fittings are not part of the flexible portion. Allow ample free length for flexing.		
3. Exceeding minimum bend radius will greatly reduce hose assembly life.			6. When properly routing, use clamps to secure the hose in its proper position.		

TABLE 7C: MAINTENANCE TRACKING LOG

DATE	DESCRIPTION OF MAINTENANCE	PART(S) REPLACED	DATE	DESCRIPTION OF MAINTENANCE	PART(S) REPLACED

VANAIR
AIR POWER TO GO™

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VANAIR®

AIR POWER TO GO™

Vanair Manufacturing, Inc.
10896 West 300 North
Michigan City, IN 46360
Phone: (219) 879-5100
(844) VAN-SERV [(844) 826-7378]
Service Fax: (219) 879-5335
Parts Fax: (219) 879-5340
Sales Fax: (219) 879-5800
www.vanair.com

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Specifications Subject to Change
Without Prior Notice

050847-002 050850-002
050848-002 051294-002
050849-002

DECEMBER-2016