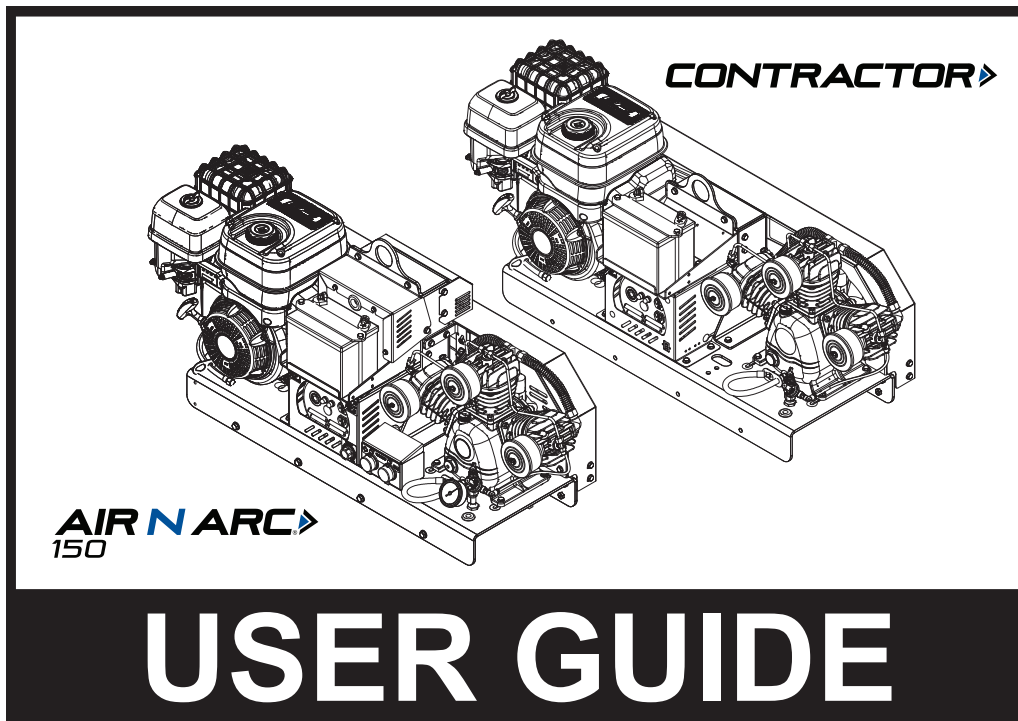


AIR N ARC®
150

CONTRACTOR®

16 HP • WELDER* • GENERATOR
AIR COMPRESSOR • BATTERY BOOST/CHARGE
Manual 090238



OPERATION MANUAL AND SERVICE PARTS LIST
KEEP THE MANUAL WITH THE VEHICLE

NOTE: 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**.

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

Making unauthorized modification to the system components **WILL VOID THE WARRANTY!** Always contact Vanair® before making any changes to the Air N Arc® or Contractor. ***NOTE:** Welder featured is on the Air N Arc® model only.

AIR N ARC®
ALL-IN-ONE POWER SYSTEMS®

RELIANT™ SERIES

POWERFLEX™ SERIES

PRO SERIES

CONTRACTOR SERIES

VIPER™ SERIES

UTILITY MOUNTS

**ALL WARRANTY OR
RETURNS MUST BE
PRE-AUTHORIZED PRIOR
TO PERFORMING
ANY WARRANTY WORK.**

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VANAIR.COM

EFFECTIVE: SEPTEMBER 9, 2022



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®, a Lincoln Electric Company ("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 perform 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. **All warranty or returns must be pre-authorized in writing prior to performing warranty work.** Call Vanair® for process and forms. 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 limited to:
 - (i) I/O Boards
 - (ii) Modules
 - (iii) Panel Boxes
 - (iv) Instrumentation
 - Solenoids
 - Clutches
 - Running Gear/Trailers
 - 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.


VANAIR®
A Lincoln Electric Company

Warranty and Claims Procedure

Warrantied Vanair® Parts

Owners of Vanair® equipment must follow this process for repair or replacement of warrantied items. Do not return items without prior authorization from the Vanair® Warranty Administrator.

PROCEDURE: Customers needing assistance in troubleshooting a system and/or returning parts, please follow the steps below.

1. Locate the machine's serial number(s).
2. Make a list of the symptoms/condition/malfunctions noticed along with any applicable temperature and pressure readings, and also the number of operational hours if available:
3. Note that the above information is required on the Return Material Authorization Form; necessary for warranty processing if the warranty claim is deemed valid by the service case review.
4. Contact the **Vanair® Service Department by phone (1-844-VANSERV or 1-219-879-5100)** to speak with a Service Technician.
5. 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.
6. If the unit cannot be returned to service, and Vanair® determines this matter is a warranty issue, the Service Technician will provide a case number for the unit. The Warranty Department will then 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.

7. Warranty Claims are solicited via a case number provided by the Vanair® Service Department.

Blank Warranty Claim forms can be found on the Vanair® website under the *Resources* section.

All of the field information including the case number, serial number and description of the work performed is required.

! IMPORTANT !

Once a Return Merchandise Authorization (RMA) has been issued, the customer has 30 days to return that item or parts to the Vanair® Service Department. After 30 days, it becomes void and any claims under it will be denied. The customer is responsible for requesting a new RMA.

All estimated labor costs, invoices, and the cost of the repair must be approved by the Vanair® Warranty Administrator prior to starting any repair work. All paperwork 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.

The RMA number must appear and be legible on the outside of the package where it can be seen before being returned.

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SECTION 1: Safety

1.1 GENERAL INFORMATION

The products provided by Vanair®, a Lincoln Electric Company, are designed and manufactured for safe operation and maintenance. Ultimately, the responsibility for the safe use of this equipment belongs to those using and maintaining the equipment. Part of that responsibility is to read and become familiar with the contents of this manual before attempting to use it or perform maintenance actions.

IMPORTANT: Read this manual before operating or servicing the Air N Arc® 150 or Contractor System. Failure to do so, could result in damage to the equipment, bodily injury or even death.

1.2 INTERNATIONAL SAFETY SYMBOL



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

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

1.3 DANGERS, WARNINGS AND NOTES

DANGER

Identifies actions or conditions which, if not avoided, will cause death or severe bodily injury.

WARNING

Identifies actions or conditions which, if not avoided, could cause death or severe bodily injury.

CAUTION

Identifies actions or conditions which, if not avoided, could cause minor or moderate bodily injury.

NOTICE

Additional information (or existing information) which should be brought to the attention of operators/maintainers affecting safety, operation, maintenance or warranty requirements.

1.4 ENGINE HAZARDS

1.4.1 BATTERY EXPLOSION CAN BLIND



- Always wear a face shield, rubber gloves, and protective clothing when working with lead-acid batteries.
- Stop engine before disconnecting, servicing or connecting battery.
- Do not allow tools to cause sparks when working on a battery.
- Do not use weld mode to charge batteries of jump start vehicles.
- Observe correct polarity (+ and –) on batteries.
- Disconnect negative (–) cable first and connect it last.

1.4.2 FUEL CAN CAUSE FIRE OR EXPLOSION



- Stop engine and let it cool off before checking or adding fuel.
- Always keep nozzle in contact with the tank when filling to avoid static arcing.
- Do not add fuel while smoking or if the unit is near any source of sparks or open flame.
- Do not overfill tank. Allow room for fuel to expand.
- Do not spill fuel. If fuel is spilled, clean up before starting engine.
- Dispose of any fuel-soaked rags in a fireproof container.



1.4.3 MOVING PARTS CAN CAUSE INJURY



- Keep hands, clothing, loose jewelry, long hair, or loose objects away from fans, belts and any rotating parts. Keep all doors, panels, covers and guards closed and securely in place.
- Stop engine before installing or connecting unit.
- Have only qualified people remove the doors, panels, covers or guards for maintenance and troubleshooting if necessary.
- Disconnect negative (–) battery cable from the battery to prevent accidental start-up during servicing.



- Keep hands, hair, loose clothing, jewelry, and tools away from any moving or rotating parts.
- Replace or close any opened or removed panels, covers, doors, or guards after service or maintenance has been completed and BEFORE starting engine.
- Before performing maintenance on the generator, remove the spark plugs or injectors to keep the engine from kicking back or starting.
- Block the flywheel so that it will not turn while working on the generator components.

1.4.4 HOT PARTS CAN CAUSE SEVERE BURNS



- Do not touch hot parts with bare hands.
- Allow unit to cool before working on equipment.

1.4.5 ENGINE EXHAUST GASES CAN KILL



- Do not use in an enclosed area unless engine exhaust is vented outside and away from any building air intakes.
- Do not use in enclosed spaces where deadly exhaust gases can build up, and cause the machine to overheat due to

poor cooling air circulation, which can lead to a fire hazard.



- Battery acid can burn skin and eyes. Do not tip battery.
- Replace battery if it is damaged.
- Flush eyes and skin immediately with water.

1.4.6 ENGINE HEAT CAN CAUSE FIRE



- Do not locate the unit on, over or near combustible liquids, surfaces or materials.
- Keep exhaust and exhaust pipes away from all flammable materials or those subject to damage from high heat (such as plastics, rubber, etc.).
- Exhaust sparks can cause fire.
- Use approved engine exhaust spark arrester in required areas, see applicable codes.



1.5 COMPRESSED AIR HAZARDS

1.5.1 DO NOT BREATHE! - SERIOUS INJURY OR DEATH



- Air from reciprocating compressors often contain carbon monoxide, oil particulates and other contaminants. Do not use compressed air from this machine as breathing air.
- Use only for cutting, gouging and operating tools.

1.5.2 ENCLOSED SPACES NOXIOUS FUMES AND OVERHEATING



- Do not use in enclosed spaces where deadly exhaust gases can build up, and cause the machine to overheat due to poor cooling air circulation.

1.5.3 COMPRESSED AIR CAN CAUSE INJURY



- Wear approved safety eye protection.
- Do not direct air stream towards self or others.

1.5.4 TRAPPED AIR PRESSURE CAN CAUSE INJURY



- Release air pressure from tools and system before servicing, adding or changing attachments, or opening compressor oil drain or oil fill cap.

1.5.5 READ INSTRUCTIONS



- Read Operation Manual before using or servicing this unit.
- Stop engine and release air pressure before servicing.
- Use only genuine Vanair®, or Vanair® approved Contractor and Air N Arc® 150 replacement parts.

1.6 ARC WELDING HAZARDS

1.6.1 ELECTRICAL SHOCK CAN KILL



- Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit are electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semi-automatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.



- Do not touch live electrical parts.
- Wear dry, hole-free insulating gloves and body protection.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.



- Do not use AC output in damp areas, if movement is confined, or if there is a danger of falling.
- Additional safety precautions are required when working in electrically hazardous conditions such as in damp locations or while wearing wet clothing; on metal structures such as floors, gratings, or scaffolds; when in cramped



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positions such as sitting, kneeling, or lying; or when there is a high risk of unavoidable or accidental contact with the work piece or ground.

- Do not work alone!
- Disconnect input power or stop engine before installing or servicing this equipment. **Lock Out/Tag Out** input power according to OSHA29 CFR1910.147. See **Section 1.9, Principal Safety Standards**.



- Properly install and ground this equipment according to this machine's manuals and follow all applicable national, state, and local codes.
- Always verify the supply ground: check and be sure that input power cord ground wire is properly connected to ground terminal in disconnect box or that cord plug is connected to a properly grounded receptacle outlet.



- When making input connections, attach proper grounding conductor first and double-check connections.
- Frequently inspect input power cord for damage or bare wiring and replace cord immediately if damaged. Bare wiring can kill.

- Turn off all equipment when not in use.
- Do not use worn, damaged, undersized, or poorly spliced cables.



- Do not drape cables over your body.
- If earth grounding of the work piece is required, ground it directly with a separate cable.

- Do not touch electrode if you are in contact with the work, ground, or another electrode from a different machine.

- Use only well-maintained equipment. Repair or replace damaged parts at once. Maintain unit according to manual.



- Do not touch electrode holders connected to two welding machines at the same time since double open-circuit voltage will be present.

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- Wear a safety harness if working above floor level.
- Keep all panels and covers securely in place.
- Clamp work cable with good metal-to-metal contact to work piece or work table as near the weld as practical.



- Insulate work clamp when not connected to workpiece to prevent contact with any metal object.
- Do not connect more than one electrode, or work cable, to any single weld output terminal.

1.6.2 FUMES AND GASES CAN BE HAZARDOUS



- Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health. Keep your head out of the fumes. Do not breathe the fumes.



- If inside, ventilate the area and/or use local forced ventilation at the arc to remove welding fumes and gases.

If ventilation is poor, wear an approved air-supplied respirator.



- Read and understand the Material Safety Data Sheets (MSDS's) and manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Always have a trained fire watch and a fire extinguisher nearby when doing hot work, or working in a confined space.
- When working in a confined space, make sure it is well ventilated with fresh, breathable air, or use an air-supplied respirator.
- Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Be sure the air you are breathing is safe.
- Do not weld near degreasing, cleaning, or spraying operations, the heat and rays of the arc can react with vapors to form highly toxic and irritating gases.



- Do not weld on coated metals, such as galvanized, lead, or cadmium-plated steel, unless the coating is removed from the weld area. Ensure the work area is well-ventilated while wearing an air-supplied respirator. The coatings and any metals containing these elements give off toxic fumes if welded.

1.6.3 BUILD UP OF GASES CAN INJURE OR KILL



- Shut off gas supply when not in use.
- Always ventilate when working in confined spaces or use an approved air supplied respirator.

1.6.4 WELDING ARCS CAN DAMAGE EYES AND BURN SKIN



- Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes from arc rays and sparks when welding or watching. See ANSI Z49.1 and Z87.1 listed in **Safety Standards**. Wear approved safety glasses with side shields under your helmet.



- Viewing electrical arcs while welding without an approved welding helmet and properly filtered lenses can cause severe damage to eyes and eyesight.

- Arcs and flying sparks can burn and damage unprotected skin.



- Use protective screens or barriers to protect others from flash, glare, and sparks; warn others not to watch the arc as the intense light can harm eyes.



- Wear protective clothing made from durable, flame-resistant natural material (leather, heavy cotton, or wool. Many synthetic fabrics, such as polyester, can melt onto your skin when exposed to fire or high heat.)

- Wear proper foot protection.

1.6.5 WELDING CAN CAUSE FIRE AND EXPLOSION



- Welding on closed containers, such as tanks, drums, or pipes, can cause them to burst. Sparks can fly off from the welding arc. Flying sparks, a hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode to metal objects can cause sparks, explosion, overheating, or fire. Check and ensure the area is safe before doing any welding.



- Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved fire blankets or covers.



- Do not weld where flying sparks can strike flammable materials.
- Protect yourself and others from flying sparks and hot metal.



- Sparks and flying metal can be caused by welding, chipping, wire brushing, and grinding. As welds cool, they can still throw off hot slag.
- Wear approved safety glasses with side shields under your welding helmet.

1.6.6 ABOUT PACEMAKERS



- **IMPORTANT:** An operator who uses a pacemaker should consult his/her doctor before welding or going near welding operations. Once a doctor's consent has been acquired, follow the recommended Safety Procedures.

1.6.7 EMF INFORMATION



- Considerations about welding and the effects of low frequency electric and magnetic fields: Welding current, as it flows through welding cables, will cause electromagnetic fields.
- There has been and still is some concern about such fields. However, after examining more than 500 studies spanning seventeen years of research, a special blue ribbon committee of the National Research

Air N Arc® 150/Contractor 16 HP Series

Council concluded that: *“The body of evidence, in the committee’s judgment, has not demonstrated that exposure to power frequency electric and magnetic fields is a human health hazard.”* However, studies are still going forth and evidence continues to be examined. Until the final conclusions of the research are reached, you may wish to minimize your exposure to electromagnetic fields when welding or cutting.



To reduce magnetic fields in the workplace, use the following procedures:

- Keep cables close together by twisting or taping them.
- Arrange cables to one side and away from the operator.
- Do not coil or drape cables around your body.
- Keep welding power source and cables as far away from operator as possible.
- Connect work clamp to workpiece as close to the weld as possible.



1.7 ADDITIONAL SYMBOLS

1.7.1 FALLING UNIT CAN CAUSE INJURY

- Use unit's lifting bail to lift machine and its properly installed accessories only.
- Lift and support unit only with proper equipment and correct procedures.
- If using fork lifts to move unit, be sure the forks are long enough to extend beyond the opposite side of the unit.



1.7.2 OVERHEATING CAN DAMAGE MOTORS



- Turn off or unplug attached equipment before starting or stopping the engine.
- Low engine speed due to overheating, can result in low voltage and frequency which can damage electric motors.

1.7.3 FLYING SPARKS CAN CAUSE FIRE AND INJURY



- Wear a face shield to protect eyes and face.



- Shape tungsten electrode only on grinder with proper guards in a safe location wearing proper face, hand and body protection.
- Sparks can cause fires, keep away from flammables.

1.7.4 OVERUSE CAN CAUSE OVERHEATING



- Allow the unit to cool and follow the rated duty cycle.
- Reduce current or reduce duty cycle before starting to weld again.
- Do not block airflow to the unit.

1.7.5 TILTING OF TRAILER CAN CAUSE INJURY



- If using a trailer, use a tongue jack or blocks to support weight to prevent the trailer from tipping.
- Properly install unit onto trailer according to instructions supplied with the trailer.

1.8 CALIFORNIA PROPOSITION 65 WARNING



- **WARNING:** This product contains or produces a chemical known to the State of California to cause cancer and birth defects (or other reproductive harm). (California Health & Safety Code §25249.5 et seq.)

1.9 PRINCIPAL SAFETY STANDARDS



- Safety in Welding, Cutting, and Allied Processes, ANSI Standard Z49.1, from Global Engineering Documents (phone: 1-877-413-5184, website: www.global.ihc.com).
- Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping, American



Welding Society Standard AWSF4.1, from Global Engineering Documents (phone: 1-877-413-5184, web site: www.global.ihc.com).



- National Electrical Code, NFPA Standard 70, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (phone: 617-770-3000, website: www.nfpa.org and www.sparky.org).



- Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1735 Jefferson Davis Highway, Suite 1004, Arlington, VA 22202-4102 (phone: 703-412-0900, web site: www.cganet.com).

- Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3 (phone: 800-463-6727 or in Toronto 416-747-4044, web site: www.csainternational.org).



- Practice For Occupational And Educational Eye And Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 11 West 42nd Street, New York, NY 10036-8002 (phone: 212-642-4900, web site: www.ansi.org).



- Standard for Fire Prevention During Welding, Cutting, and Other Hot Work, NFPA Standard 51B, from National Fire Protection Association, P.O. Box 9101, 1 Battery March Park, Quincy, MA 02269-9101 (phone: 617-770-3000, web site: www.nfpa.org).



- OSHA, Occupational Safety and Health Standards for General Industry, Title 29, Code of Federal Regulations (CFR), Part 1910, Subpart Q, and Part 1926, Subpart J, from U.S. Government Printing Office, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250 (there are 10 Regional Offices; (phone for Region 5, Chicago, is 312-353-2220, web site: www.osha.gov)).

1.10 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 7.18, Decals – Location and Identification**, are located near components or access paths.
- All information given on these decals is respect in terms of safety precaution and awareness of hazardous conditions. Always heed the information noted on the safety decals.

WARNING

**DO NOT REMOVE OR COVER
ANY SAFETY LABELS**

IMPORTANT: Replace any safety label that becomes damaged or illegible.

1.11 DISPOSING OF MACHINE FLUIDS



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

- Vanair® encourages recycling when allowed. For additional information, consult the fluid product container.
- Consult **Section 5: Maintenance**, of this manual for additional information on the safe operation and maintenance of the Vanair® VNR460 16 HP engine.



SECTION 2: Specifications

2.1 GENERAL INTRODUCTION

The tables and figures in this section list the specifications (including operational, output and dimensional) of the overall machine. Contact the Vanair® Service Department if additional specifications are needed that cannot be found in this manual.

Refer to “Figure 2-1: Contractor Main Components” and “Figure 2-2: Air N Arc® 150 Main Components” for general machine component locations. For additional measurement specifications refer to the full Identification Assembly Drawing Figure 3-2 **through** Figure 3-4 **in Section 3, Installation.**

TABLE 2A: GENERATOR AND ENGINE SPECIFICATIONS

SYSTEM INFORMATION	SPECIFICATION
AC Generator	4.200 Watts Continuous Duty
AC Generator 120V Power Rating	60 Hz, Single Phase, 17.5 Amp Outlets (Qty 2)
AC Generator 240V Power Rating	60 Hz, Single Phase, 17.5 Amp Outlets
Engine	16 HP, Vanair® VNR460 ⁱ gasoline
Engine Oil Capacity	1.16 quarts (1.1L) 10W30
Fuel Consumption	0.526 GPH at 3600 rpm (no load) at 100 PSI
Fuel Tank Capacity	1.585 Gallon (6.0L)
Fuel Type	87 Octane or higher unleaded gasoline ⁱⁱ
Operating Temperature Limits	-20°F to 110°F (-28.8°C to 43.3°C)
Valve Clearance	Intake valve clearance: 0.10-0.15mm; Exhaust valve clearance: 0.10-0.15mm

ⁱFor more information regarding the Vanair® VNR460 engine, refer to the Maintenance Section.

ⁱⁱEthanol blended fuels, such as E85, are prohibited from use with the Vanair® VNR460.

TABLE 2B: AIR COMPRESSOR SPECIFICATIONS

COMPRESSOR INFORMATION	SPECIFICATION
Compressor Type	Reciprocating, Single-Stage
Air Compressor Capacity	20 CFM @ 100 PSI
Air Filter	Pleated Paper, Dry Type
Oil Capacity/Type	Service Fill: 0.875 Quarts (0.828 L) ISO68 Premium Non-Detergent Lubricant ⁱⁱⁱ
Air Tank Capacity	10 Gallon, 30 Gallon, or Remote Tank
Tank Pressure Rating	200 PSI (max.)
Safety Relief Valve Setting	150 PSI (12VDC)
Pilot Valve Factory Setting	95 to 125 PSI
Ambient Temperature Operating Range	-20°F to 110°F (-29°C to 43°C)
Cooling System	Air-Cooled
Instrument Gauges	Pressure Gauge
Adjustable Air Pressure Control Settings	Factory Preset Pressure: 90 PSI (Cut-In)/125 PSI (Maximum Cut-Out)
Air Service Outlets	One (1) 3/8" NPT Ball vValve

ⁱⁱⁱAlways use the sight glass level to verify oil fill; for system oil change. Run compressor momentarily to distribute oil, then check oil level again. Do not overfill the oil on the compressor.

TABLE 2C: ACCEPTABLE TESTING OUTPUT RANGES

Function	Acceptable Value
Engine No-Load Hi RPM	3650
Engine Idle Speed (RPM)	1900
Air cut-In Pressure	98 ±8
Air Cut-Out Pressure	129 ±8
AC Generator Hz (No Load)	240 ±8
AC Generator 240 Plug	123 ±8
AC Generator 120 (top) Plug	123 ±8
AC Generator 120 (bottom) Plug	190A High Frequency DC/CC; 100% Duty Cycle @ 150A
Rated Welder Output	20 Ft
12V Charge Voltage (Air N Arc® only)	15 ±0.8 (Rated welder output, welding leads)
24V Charge Voltage (Air N Arc® only)	28.5 ±0.8 (Rated welder output, welding leads)

TABLE 2D: CONTRACTOR UNIT WEIGHT AND DIMENSIONS

Dimensions (Overall Package)	Length (In)	Width (In)	Height (In)	Weight Wet (lbs)	Weight Dry (lbs)
Skid Mount: ^I	49.4	16.9	21.6	272	251
Dual Tank Mount: ^{II}	49.3	21.0	27.6	309	288
Tank Mount (with 30 Gallon Air Tank): ^{III}	49.4	19.4	38.2	396	375

^IRefer to **Figure 3-2** for full dimension drawing with additional circulation and service requirements.

^{II}Refer to **Figure 3-3** for full dimension drawing with additional circulation and service requirements.

^{III}Refer to **Figure 3-4** for full dimension drawing with additional circulation and service requirements.

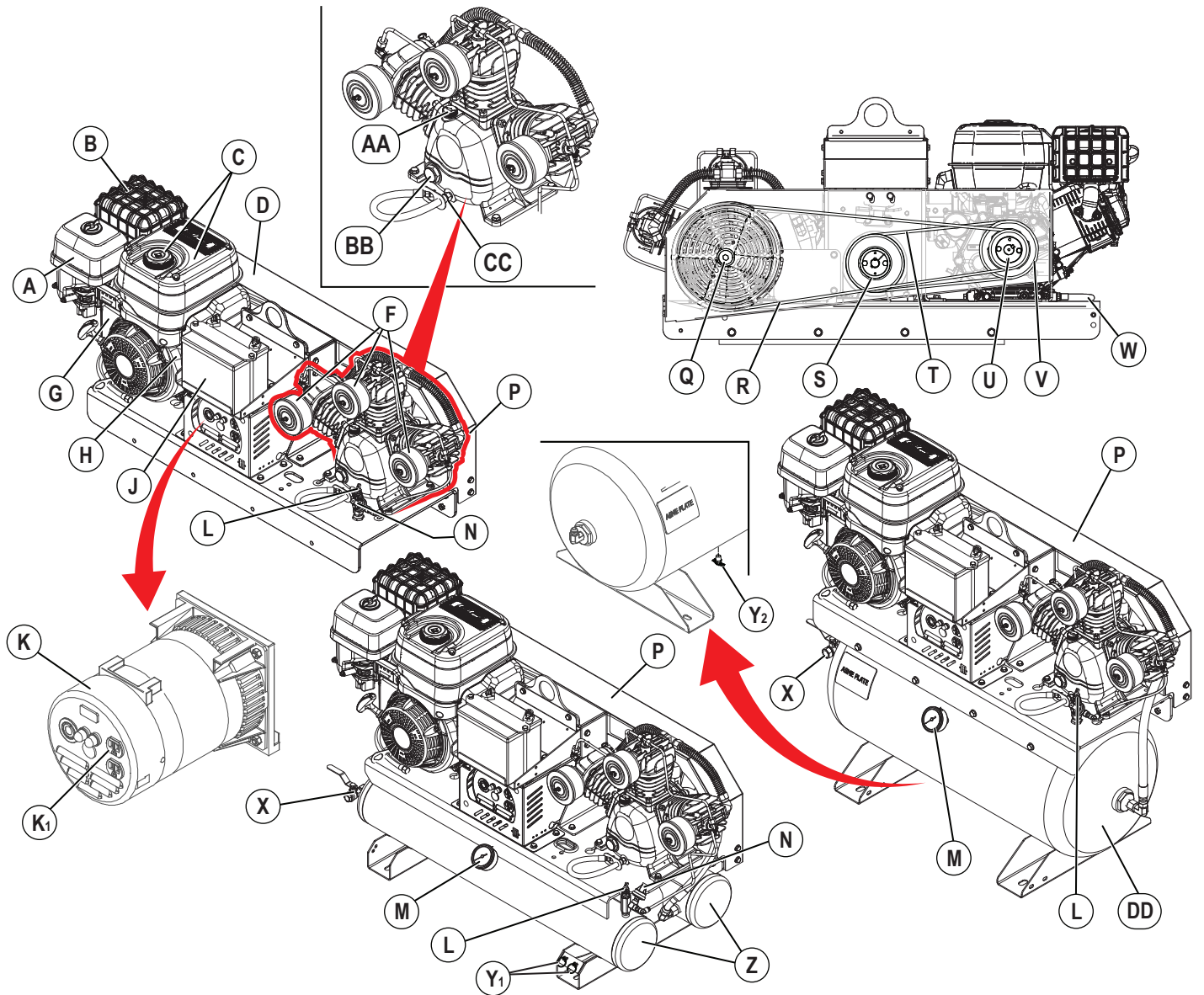
TABLE 2E: AIR N ARC® 150 UNIT WEIGHT AND DIMENSIONS

Dimensions (Overall Package)	Length (In)	Width (In)	Height (In)	Weight Wet (Lbs)
Skid Mount: ^I	50.34	18.20	24.24	425
Tank Mount with 30 Gallon Air Tank: ^{II}	50.74	19.00	40.75	565
Tank Mount with 10 Gallon Air Tank: ^{III}	50.50	21.00	30.25	510

^IRefer to **Figure 3-3** for full dimension drawing with additional circulation and service requirements.

^{II}Refer to **Figure 3-5** for full dimension drawing with additional circulation and service requirements.

^{III}Refer to **Figure 3-4** for full dimension drawing with additional circulation and service requirements.

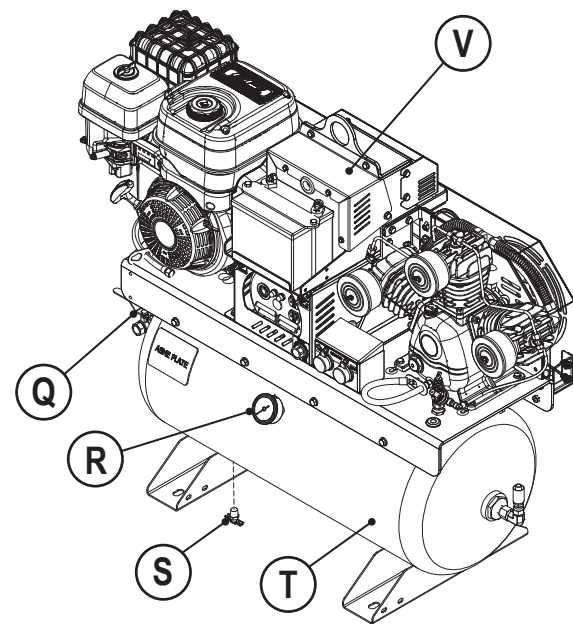
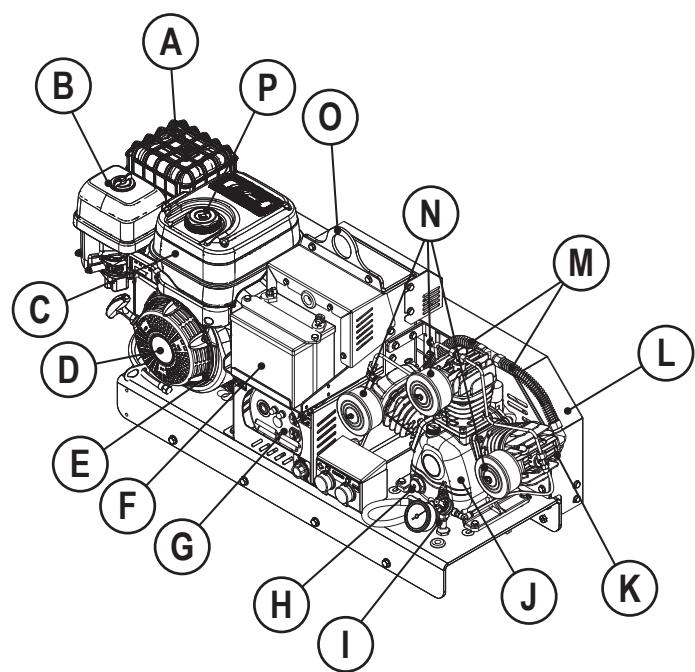


KEY	DESCRIPTION	KEY	DESCRIPTION	KEY	DESCRIPTION
A	ENGINE AIR FILTER HOUSING	L	PILOT VALVE	X	AIR SERVICE VALVE
B	ENGINE MUFFLER SHIELD	M	AIR PRESSURE GAUGE	Y ₁	TANK MOISTURE DRAIN-PULL RINGS (10 GALLON TANKS ONLY)
C	ENGINE FUEL TANK AND FUEL CAP	N	PRESSURE SWITCH	Y ₂	TANK MOISTURE DRAIN PLUG (30 GALLON TANK ONLY)
D	MACHINE LIFTING BAIL	P	BELT GUARD/CANOPY	Z	AIR TANK, 10 GALLON
E	AC GENERATOR TOWER/BATTERY SUPPORT	Q	COMPRESSOR PULLEY	AA	COMPRESSOR OIL FILL PORT
F	COMPRESSOR AIR FILTER HOUSING (X 3)	R	COMPRESSOR DRIVE BELT	BB	COMPRESSOR OIL LEVEL SIGHT GLASS
G	ENGINE ⁱ	S	AC GENERATOR PULLEY	CC	COMPRESSOR OIL DRAIN PLUG
H	IGNITION SWITCH ^{ix}	T	GENERATOR DRIVE BELT	DD	AIR TANK, 30 GALLON
J	BATTERY	U	COMPRESSOR DRIVE SHEAVE		
K	AC GENERATOR	V	GENERATOR DRIVE SHEAVE		
K ₁	AC OUTLETS (2)	W	ENGINE OIL DRAIN TUBE		

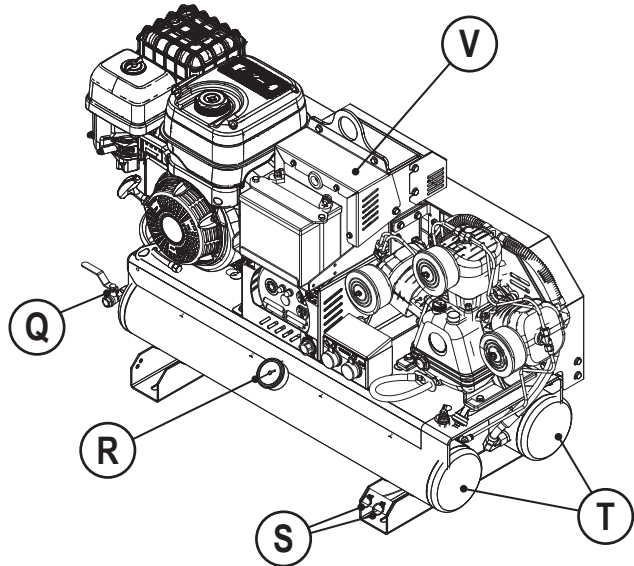
ⁱ For additional engine information, refer to the *Engine Operation Manual*.

^{ix} For instrumentation details refer to **Section 4, Operation, Figure 4-2**.

Figure 2-1: Contractor Main Components



KEY	DESCRIPTION
A	MUFFLER
B	ENGINE AIR FILTER HOUSING
C	FUEL TANK
D	ENGINE
E	IGNITION STARTER
F	12V BATTERY
G	INSTRUMENTATION PANEL - AC GENERATOR
H	COMPRESSOR OIL LEVEL SIGHT GLASS
I	PILOT VALVE (WARM-UP)
J	AIR COMPRESSOR UNIT
K	DISCHARGE LINE CONNECTION
L	DRIVE BELT GUARD
M	INNER STAGE TUBING
N	COMPRESSOR AIR FILTER(S)
O	LIFTING BAIL
P	FUEL FILL PORT CAP
Q	AIR OUT SERVICE VALVE
R	PRESSURE GAUGE
S	MOISTURE DRAIN(S)



KEY	DESCRIPTION
T	AIR RESERVIOR TANK(S)
U	TANK RELIEF VALVE ¹ (not shown)
V	WELDER UNIT

¹ Not shown - Air reservior tanks contain relief valves: consult **Figure 7.16, callout #14** for 10 gallon model tank valve location, and **Figure 7.18, callout #6** for 30 gallon tank model valve location.

Figure 2-2: Air N Arc® 150 Main Components

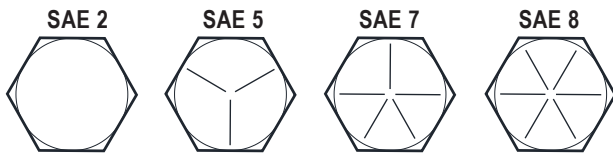


TABLE 2F: U.S. BOLT TORQUE SPECIFICATIONS										(Torque in foot-pounds)	
SAE BOLT GRADE		2	2	5	5	7	7	8	8	Socket Head Cap Screw	Socket Head Cap Screw
Bolt Diameter	Threads Per Inch	Dry	Oiled	Dry	Oiled	Dry	Oiled	Dry	Oiled	Dry	Oiled
1/4	20	4	3	8	6	10	8	12	9	14	11
1/4	28	6	4	10	17	12	9	14	10	16	13
5/16	18	9	7	17	13	21	16	25	18	29	23
5/16	24	12	9	19	14	24	18	29	20	33	26
3/8	16	16	12	30	23	40	30	45	35	49	39
3/8	24	22	16	35	25	45	35	50	40	54	44
7/16	14	24	17	50	35	60	45	70	55	76	61
7/16	20	34	26	55	40	70	50	80	60	85	68
1/2	13	38	31	75	55	95	70	110	80	113	90
1/2	20	52	42	90	65	100	80	120	90	126	100
9/16	12	52	42	110	80	135	100	150	110	163	130
9/16	18	71	57	120	90	150	110	170	130	181	144
5/8	11	98	78	150	110	140	140	220	170	230	184
3/4	10	157	121	260	200	320	240	380	280	400	320
3/4	16	180	133	300	220	360	280	420	320	440	350
7/8	9	210	160	430	320	520	400	600	460	640	510
7/8	14	230	177	470	360	580	440	660	500	700	560
1	8	320	240	640	480	800	600	900	680	980	780
1	12	350	265	710	530	860	666	990	740	1060	845

Bolt Torque Specifications.ai

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 there are no unexpected loose parts or assemblies that may have shifted and caused damage during shipping. Contact Vanair® Customer Service to report any missing items, incorrect parts or other discrepancies.

3.2 MACHINE PACKAGE PREP

Refer to Figure 3-3 *through* Figure 3-5 for mounting hole layout and dimension diagrams. Follow the instructions below.

1. Remove packing and inspect the machine and control panel for shipping damage.
2. Check fluids levels. If needed, refer to **Section 5: Maintenance** under the paragraphs referring to engine maintenance.

DANGER

Unit must be electrically grounded between the instrument panel, the machine and the vehicle chassis - using a minimum 8 AWG size grounding wire.

DANGER

Do NOT install in an enclosed space!

WARNING

ELECTRICAL HAZARD!
Be sure the battery is disconnected before starting the installation.

WARNING

Installation must adhere to the safety precautions listed in the Safety Section of this manual pertaining to cooling, ventilation and noxious fume exhaust. If mounting footprint is tighter than the minimum requirements, consult with the Vanair® Service Department for application installation recommendations.

NOTICE

Install electrical components (circuit breakers, pressure switches, toggle switches, etc.) in locations where exposure to water or moisture will be minimized.

NOTICE

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

NOTICE

For guidance on machine start-up procedure and control panel functions, consult **SECTION 4: Operation**.

3.3 SERVICE BODY PREP

Referring to MOUNTING HOLE DIMENSIONS shown in Figure 3-3 *through* Figure 3-5, find the correct mounting hole diagram for your machine. (Skid Mount, 10 Gallon or 30 Gallon).

- A minimum of 7 In (17.8 cm) all-around the machine clearance is required from the outermost physical dimensions of the machine. Allow this clearance for air intake and exhaust. Refer to "Figure 3-1: Minimum Machine Clearances".
- Before drilling, ensure all required machine clearances will be maintained once machine is installed. Using the correct mounting hole layout, drill four (4) ½ In diameter mounting holes in the service body floor in a rectangular pattern at the desired mounting location.

3.4 OVERVIEW OF INSTALLATION

1. Read this manual.
2. Allow for proper ventilation.
 - Machines are air-cooled and an adequate supply of cool air to the engine, compressor and generator is necessary. Machine hot air exits must have sufficient clearance for exhausting air to prevent recirculation back into the cool-air intake.
 - The Air N Arc® 150 and Contractor needs a minimum of 180 cubic inches cold air in, 210 cubic inches hot air out,
3. If a roof above the machine is required, it must be retractable to allow for proper air circulation.
 - Roof above the machine to have a switch so the machine will not start or run with the roof closed.
 - A kill switch can be installed by adding a second ring terminal to the engine oil temperature switch located opposite of the oil drain port.
 - Reference Vanair® switch part number CO81774 or 276847.
4. If remote mounting the instrument panel, all pass through wiring in the frame or body should be at least 4 In DIA hole. All openings must have a grommet installed to protect the wiring. Large Anderson-type connections should be zip-tied together. Reference Vanair® part number 279232 trunk-line boot or 279672 grommet and 279673 support.
5. Machine should be mounted to truck using four isolators to reduce vibration. Reference Vanair® part number 278485.
6. Machine frame must be grounded to truck chassis with a 2 GA minimum. (Reference Vanair® ground strap: 2674998.
7. Instrument panel must be grounded to truck chassis - 8 GA minimum.

3.4.1 REMOTE AIR TANK INSTALLATION INSTRUCTIONS:

1. If tank is larger than 6 In OD (outside diameter), it must be ASME rated.
2. Reciprocating compressor discharge. Refer to the drawing in **Figure 3-2**.
 - 150 PSI relief valve installed in any tank. Reference Vanair® part no.: C093614.
 - 1/2 In min. S-TW series hose (Meets SAE 100R14A) extruded tube with stainless steel single wire braid.
 - Reference Vanair® part number TU272986-01 (12 In long) and PA 42858 (16 In long)
 - Working pressure and temperature: 150 PSI @ 400°F.
 - A discharge check valve is required. Reference Vanair® part number C035980.

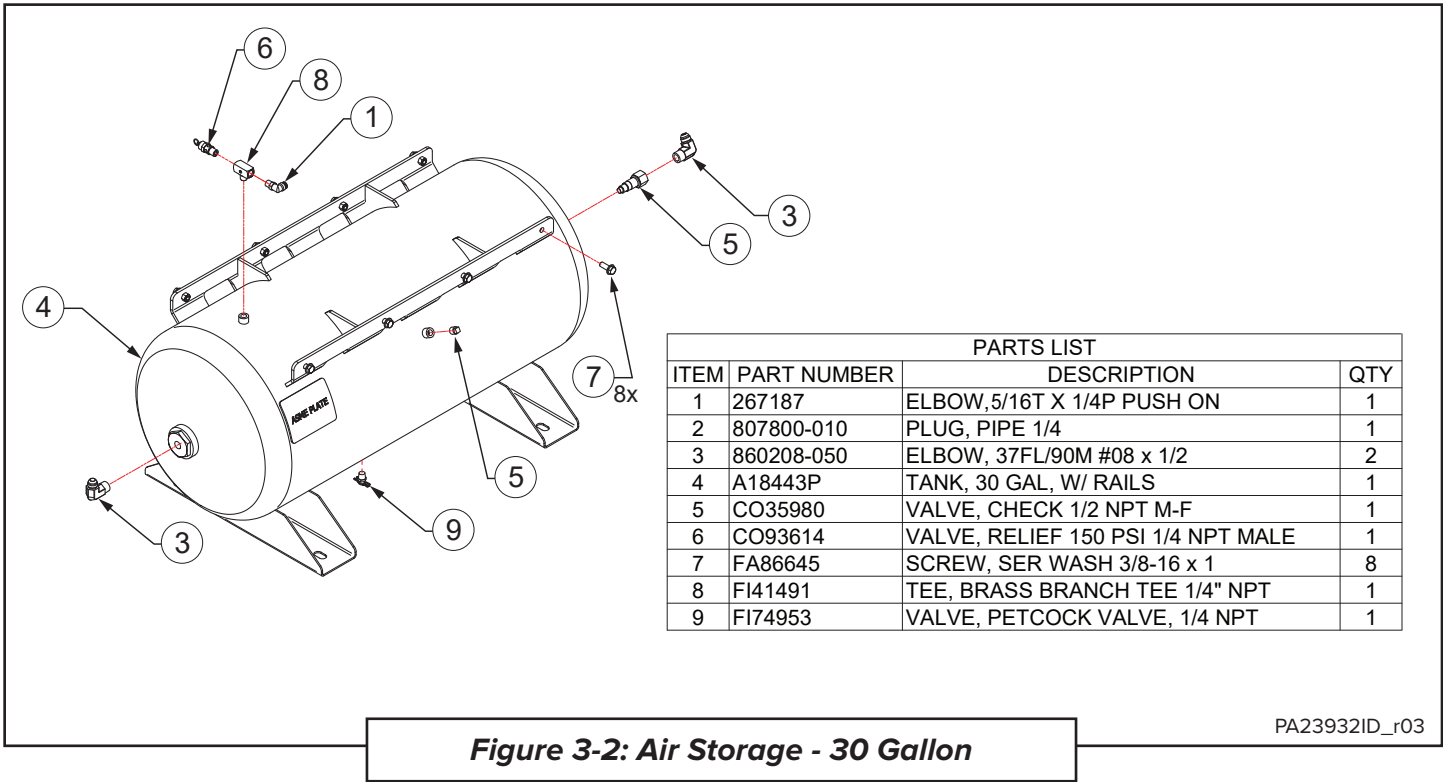
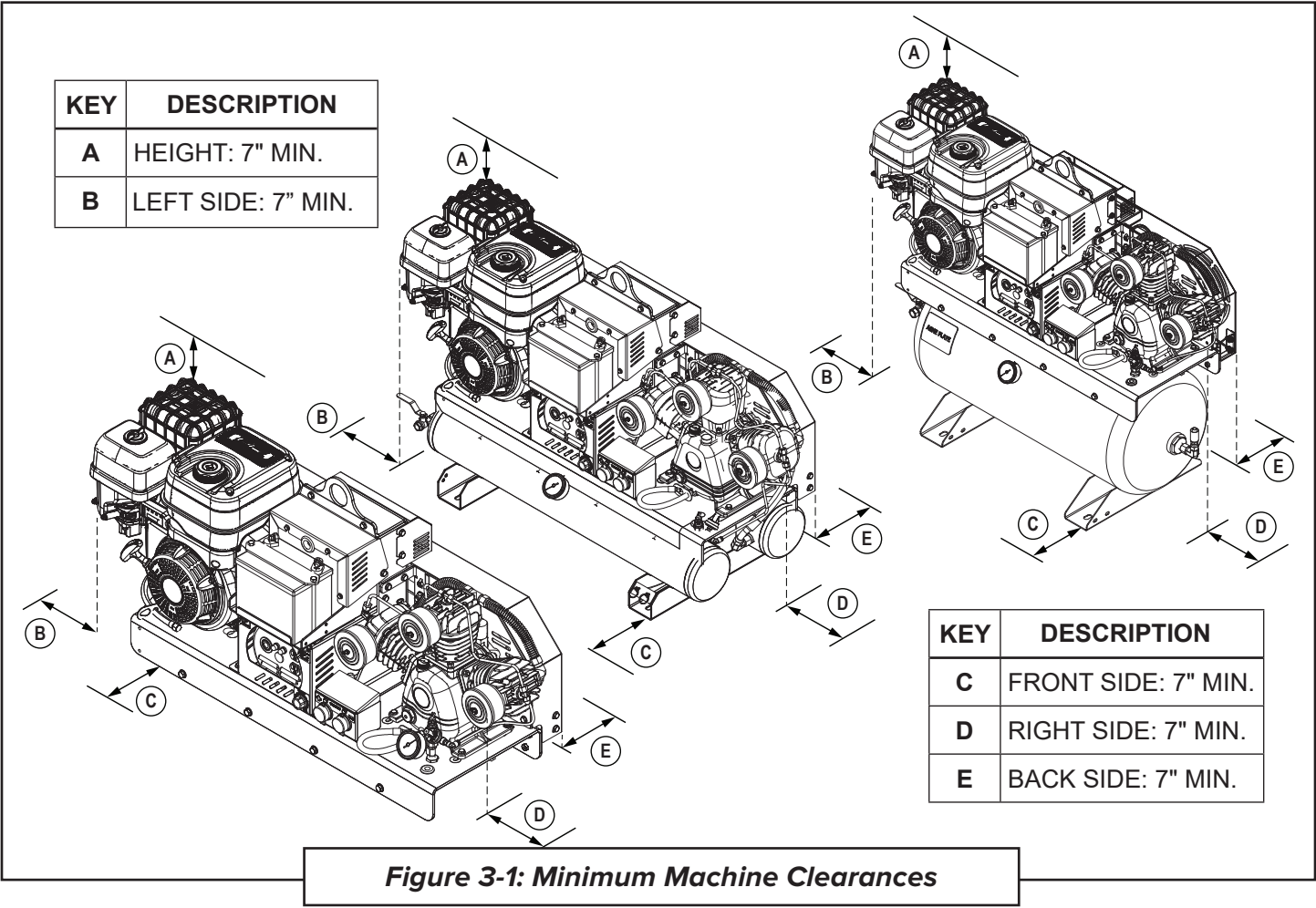
3.4.2 COLD WEATHER KIT: (Option 0327710) Reference *Wire Diagram ID270839*

1. This kit is designed to pull power from the vehicle battery (use switched power) so that the fluids in the machine stay warm while traveling to the job site.
2. A 20A fuse is included in the machine but a 12 AWG (minimum) wire is required to connect to a 20A switch (lighted preferred) inside the cab and then to the vehicle battery.

3.4.3 REMOTE FUEL TANK INSTALLATION INSTRUCTIONS:

1. Refer to the Vanair® manual for more fuel pump location information.
 - Pump to be located no greater than 2 feet above the bottom of tank.
 - Pump must have a 70+ micron filter located between the pump and the tank.
2. Customer connection: The 12V+ wire to power the fuel pump is located in the machine platform and is labeled "**FUEL PUMP IN**". The ground wire on most

Continued on page 18



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machines is also on this connector or it can be connected to the vehicle chassis or battery ground. The only option for the Air N Arc® 150 or Contractor unit is a 12V heater pad connection.

3. Route fuel line so that it never drops below the bottom of the tank. Avoid any dips in the fuel line if at all possible.
4. For gasoline engines:
 - Use SAE J30R9 CARB approved fuel line (1/4 In or 5/16 In) for fuel supply: Reference Vanair® part number TU269439 or TU270137.
 - EPA requires a vent line to be run from the engine to the tank. Reference Vanair® part number TU28641 3/16 In SAE30R7 fuel line for this vent line. *Reference Vanair®* part number 270956.

3.4.4 TRUCK CHASSIS FUEL TANK INSTALLATION INSTRUCTIONS:

1. Refer to the vehicle manual for tying into the fuel system, Vanair® can assist.
 - **Do Not** tee into the vehicle's engine fuel lines! A separate pick-up tube must be used.
 - Make sure fuel pick-up tube does not extend to the bottom of the truck's fuel tank. (This is so the machine will never run the truck's fuel tank empty.)
 - Ford document Q-196 explains further details.
 - For additional information please contact Vanair® Service Department.

NOTICE

It is recommended that the machine be mounted on a vibration isolating material, such as ¼ In thick neoprene pads. Isolating Dampeners (Part number PR93969) are available by calling your local dealer.

CAUTION

Reciprocating Air Compressors can generate high heat during use. Never touch the compressor or output air hose while it is hot or running.

3.5 MACHINE PACKAGE MOUNTING

- Proper clearance is important, so it bears repeating. When determining machine position on the vehicle, be aware of the minimum space requirements needed for cooling and circulation. Additionally, make sure to leave adequate room for performing maintenance.
 - Keep in mind, the machine can become hot during normal operation.
 - Use caution as this heat can radiate to surrounding areas near the unit, such as vehicle windows and vinyl seats nearby
1. Unbolt the unit from the skid: remove the mounting nut, washers and bolts securing the unit to the shipping crate.
 2. Refer to **Figure 3-3**, **Figure 3-4** and **Figure 3-5** for mounting hole dimensions and spacing.
 3. Using a proper hoist, lift and place the unit in a preliminary position on the service body of the vehicle so access can be easily attained and there is enough space surrounding the unit to maintain required clearances for cooling and ventilation. See "Figure 3-1: Minimum Machine Clearances".
 4. Leaving the unit in the preliminary position, connect the ground cable to the unit battery and check all fluid levels. (Note: vehicle should be on a level surface when checking fluid levels for accuracy.)
 5. Move the unit into its final placement for mounting while positioning the control trunk line and all other connections.
 6. Bolt the machine down with the four (4) 3/8 In mounting bolts inserted from the bottom through the four (4) mounting bolt holes in the base frame.
 7. **Installation Safety Notes:** Reciprocating Air Compressors generate high heat during use. Never touch the compressor or output line while it is running or prior to it cooling down.
 - Vanair® recommends the use of **braided Stainless-Steel (SS) Air Hose** for

connecting the output air from the air compressor to the air receiver tank. Braided Stainless hose is suitable for this application as it is rated for high heat.

- **IMPORTANT: *Non-Stainless-Steel hoses for compressed output air should be avoided*** for durability and safety reasons. The heat rating of hoses made from materials other than braided Stainless-Steel, may be exceeded during regular use of a reciprocating air compressor.
- If nearby objects, surfaces, or materials are combustible or may be damaged due to high heat, use heat shielding to prevent damage or combustion.
- Optional output air hose heat shielding is available from your dealer or directly

Air N Arc® 150/Contractor 16 HP Series

from the manufacturer: Order Vanair® part number 284210-060 (60 in) or 284210-120 (120 in) Comes with 60 in, or 120 In heat shield sleeve and two (2) stainless end ties.

8. Once machine is installed and all fluids are filled to recommended levels, start the unit and fully test all functions. Run the machine for 3-5 minutes to warm the unit to full operating temperature. Shut down. Allow the unit to cool then check all fluid levels again. Be sure to check both the compressor oil and engine oil levels.
9. If engine or compressor oil level is low after running the machine, add any additional fluids as needed to bring them to proper levels.



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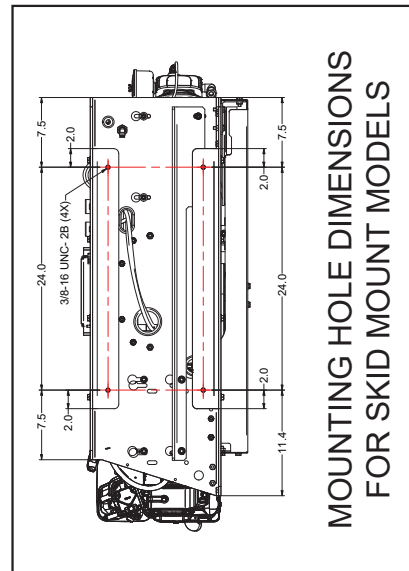
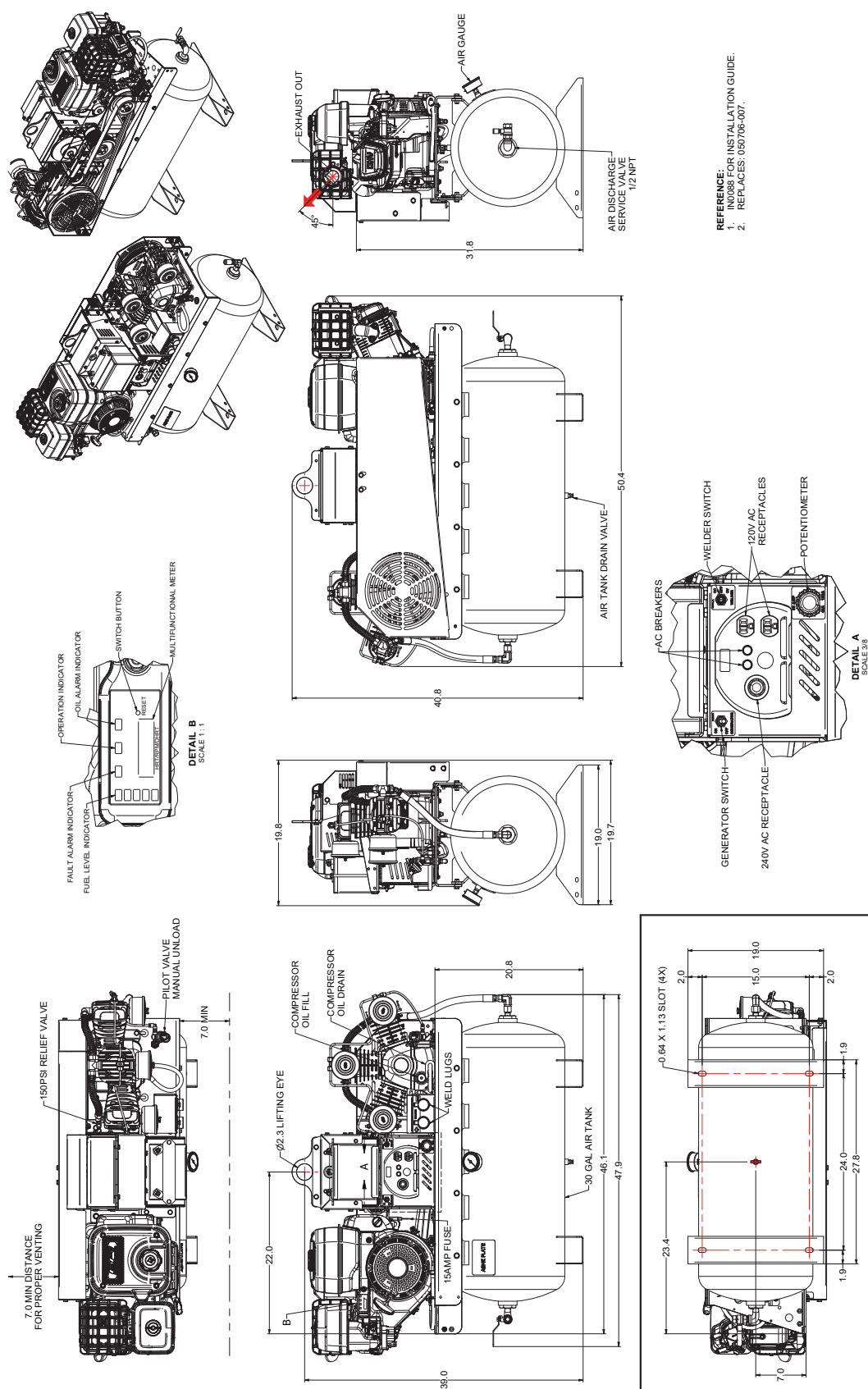


Figure 3-3: Mounting Dimensions - Skid

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SECTION 4: Operation

4.1 GENERAL INFORMATION

Consult Figure 4-1 **and** Figure 4-2. The Air N Arc® 150 and the Contractor 16 HP models have a comprehensive array of controls and indicators for each function of the power system. Understanding the correct operation of these systems will help you to understand and recognize when the system is operating optimally. The information in the Operation section will help the operator to recognize and interpret the readings, and any indicators that call for service or identify the beginning of a malfunction.

DANGER

DO NOT OPERATE IN AN ENCLOSED SPACE.

Running any combustion engine in an enclosed space may result in Carbon Monoxide (CO) poisoning and may cause overheating, which may result in fire

and/or an explosion. Carbon monoxide (CO) build-up may cause death!

Overheating can ignite surrounding materials resulting in fire and/or explosion which may cause injury, death and equipment damage.

DANGER

Grounding must consist of a minimum of an eight (8) Gauge wire between the instrument panel, the machine, and the truck chassis.

NOTICE

Before starting the Air N Arc® 150 or Contractor System, read this section thoroughly and familiarize yourself with the controls and indicators and their purpose, location and use.

NOTICE

If the generator switches are set to ON prior to starting, and/or the air pressure in the receiver tank is less than 10 PSI, the machine will start at full speed.

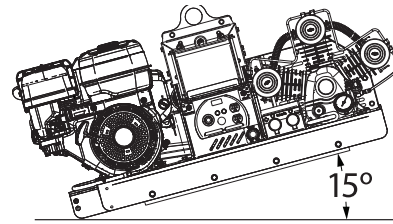
NOTICE

The air compressor will automatically start when the machine is started.

NOTICE

Maximum operation angles of tilt for ALL packages

is fifteen degrees (15°).



WARNING

Before performing maintenance or repair operations on the machine, disconnect battery and relieve air pressure.

WARNING

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

4.2 ENGINE START-UP PROCEDURE

Consult Figure 4-1, **or** Figure 4-2.

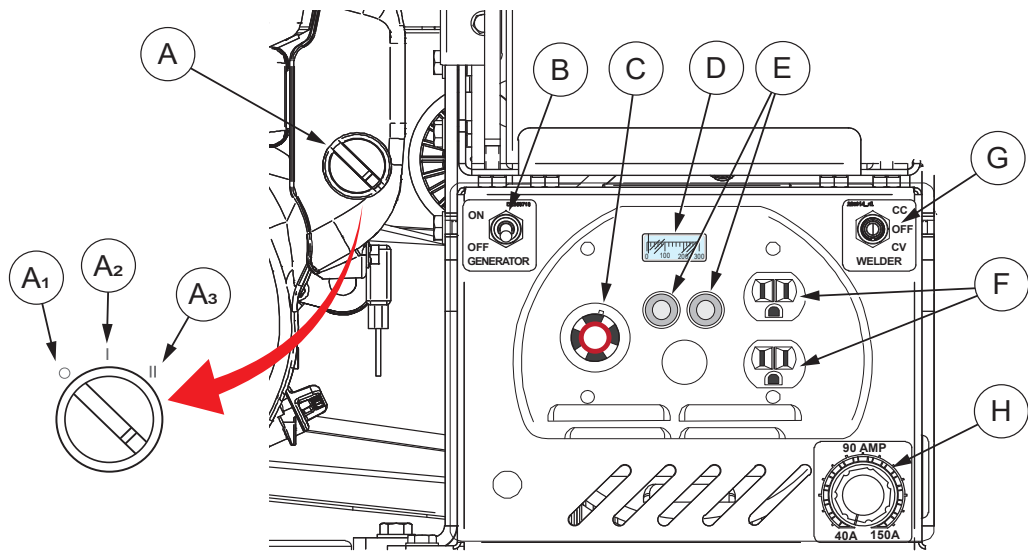
1. Check to make sure Generator switch [B] is in the OFF position prior to starting.
2. NOTE: Air Compressor will start automatically with machine start-up.
3. Turn the engine control switch [A] from the OFF to the center or ON position.
4. After 2-3 seconds continue turning the control switch to the START position (similar to a key-operated vehicle ignition) until the engine starts. When the switch is let go it will revert back to the ON position.
5. Let the engine run at idle for 3-5 minutes to allow for warm-up sequence.

CAUTION

Compressors and engines generate heat and create extremity hot surfaces. Use caution when operating and servicing this equipment.

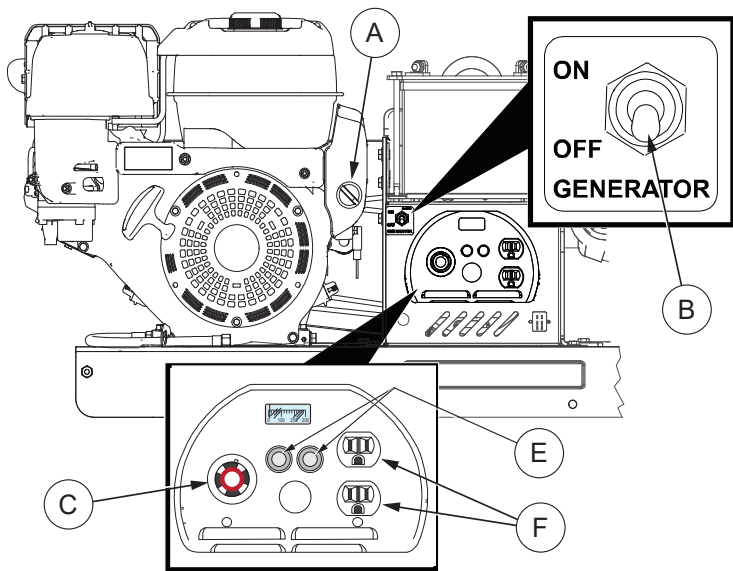
NOTICE

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



KEY	DESCRIPTION	KEY	DESCRIPTION
A	ELECTRIC ENGINE START SWITCH	D	VOLTS DISPLAY METER
A ₁	OFF POSITION	E	RESETTABLE CIRCUIT BREAKERS (15A)
A ₂	ON POSITION	F	AC VOLTAGE OUTLETS (120V)
A ₃	START POSITION	G	DC WELDER GENERATOR ON/OFF SWITCH
B	AC GENERATOR ON/OFF	H	POTENTIOMETER
C	AC VOLTAGE OUTLET (240V)		

Figure 4-1: Air N Arc® 150 Instrumentation/Controls



KEY	DESCRIPTION	KEY	DESCRIPTION
A	ENGINE CONTROL SWITCH	D	HOUR METER
B	AC GENERATOR ON/OFF	E	AC BREAKERS (15A, x 2)
C	240V AC RECEPTACLE	F	120V AC RECEPTACLES (x 2)

Figure 4-2: Contractor Instrumentation/Controls

NOTICE

Section 5: Maintenance provides additional information for preparing and starting engine.

4.3 ENGINE SHUT DOWN PROCEDURE

- Consult “Figure 4-1: Air N Arc® 150 Instrumentation/Controls”. To shut the engine off at any time, turn the engine control switch [A] to the OFF position. However, this method is best reserved for Emergency Shut Down situations only.
- For best practice, Vanair® recommends the following procedures be used for routine shutdowns to keep the system in optimal condition, and minimize unnecessary stress that may occur during the next start up session.

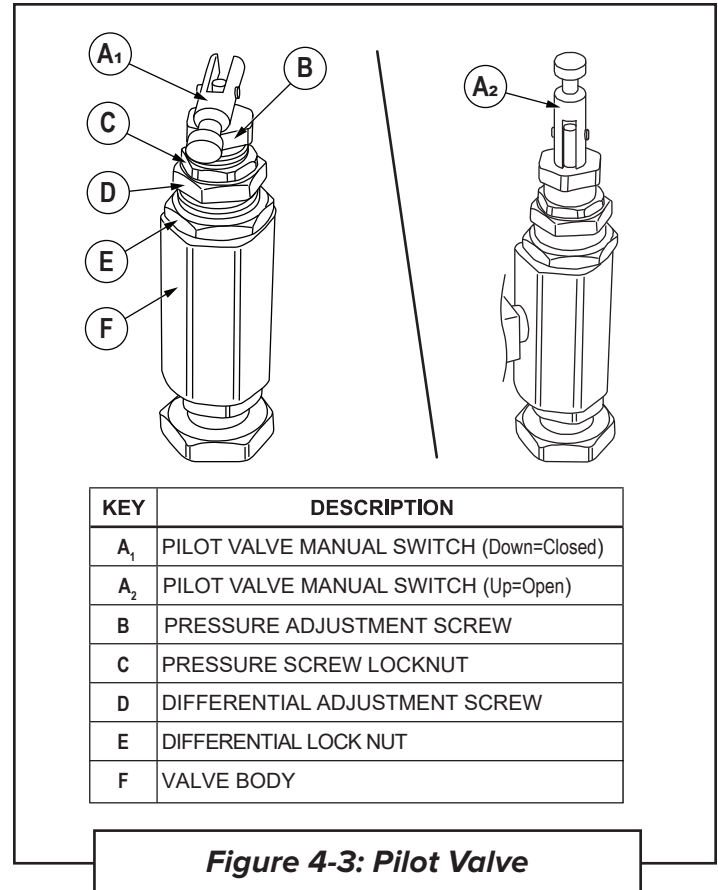
To prepare the machine for shutdown:

- Shut off any tool or other items that are drawing power from the generator, or compressed air from the air receiver tank.
- Close all service valves.
- Unplug any power cords that are plugged into the generator panel.
- Turn the generator switch located on the control panel “Figure 4-1: Air N Arc® 150 Instrumentation/Controls”/**Controls**, [B] to the OFF position.
- Allow machine to run at idle for a 3-5 minutes to allow for a cool down sequence.
- Turn the Engine Control Switch “Figure 4-2: Contractor Instrumentation/Controls”/**Controls**, [A]) to the OFF position. If no leaks are present, the engine should start normally at idle speed the next time it is started.

4.4 ENGINE THROTTLE CONTROL FUNCTIONS

The engine speed is controlled by these factors:

- The level of air pressure in the tank and the



position of the pilot valve adjustment. Refer to “Figure 4-3: Pilot Valve”.

- The position of the generator switch on the control panel.
- The position of the welder switch (**Found on Air N Arc® 150 Models only**).
- Consult Table 4A to understand how the engine speeds relate to the demand(s) of the machine system’s output functions.

NOTICE

For the Boost mode to operate, the Power button must be held down in addition to the Boost button.

WARNING

Before attempting any welding procedure, the operator must be aware of general Safety Practices, and particularly those pertaining to welding. See Section 1.6 of this manual.

NOTICE

If a longer welding lead is needed, optional 50 ft lead segments may be available for purchase from your local dealer, for a total length of 100 feet.

TABLE 4B: ENGINE THROTTLE CONTROL FUNCTION CONDITIONS

Air Pressure	Generator Switch	Engine Speed Condition Result
Tank Pressure Below (<) 150 PSI or Set Pressure ^{xx}	OFF	Engine runs at full throttle (3650 RPM).
Tank Pressure Above (>) 150 PSI or Set Pressure ^{xx}	OFF	Engine runs at idle speed (1900 RPM), ready for application.
	ON	Engine runs at full throttle speed (3650 RPM); generator is ready for use.
	ON	Full speed and all items available for use.

^x The Air N Arc® 150 and Contractor output functions (generator, air compressor, or welder) when used simultaneously at full capacity may have an adverse effect on engine running at full throttle.

^{xx} Factory set pressure: 150 PSI = ON / 175 PSI = OFF

4.5 OPERATING THE WELDER (AIR N ARC® 150 ONLY)

4.5.1 OPERATING PROCEDURE:

1. With the engine shut off, insert the large plug on the welding lead into the welding lead receptacle.
2. Properly align the 6-pin plug on the welding lead, and insert it into the 6-pin receptacle.
3. Select the appropriate electrode for the material and process being performed. See “Table 4C: Electrode Specifications”, for selecting an electrode.
4. Place the ground clamp on the work piece and insert the appropriate welding rod into the electrode clamp.
5. Start the engine. See **Section 4.2, Engine Startup and Shutdown Procedure**.
6. Turn the Welder switch on the control panel to the ON position.
7. Adjust the power dial on the welding lead to a mid-range setting (approximately 40% to 50% for a 1/8” rod).
8. Push and hold the power button on the welding lead. Power will be supplied to the welding lead and the engine will increase in speed. The power button must be held down for the duration of the weld.
9. If there is difficulty in starting the arc on the work piece due to rust or paint, push the **Boost Button** momentarily for 100% power while starting the arc. Release the **Boost Button** once a stable arc is achieved, and the amperage level will return to the power setting set by the power dial.

10. At any time during welding, **the weld amperage my be adjusted**, to the desired level using the power dial.
11. When completed with a weld, release the power button. Power to the welding lead will be turned off and the engine speed will slow to idle speed after a 30-second delay.

HOW TO IDENTIFY WELDING ELECTRODES

For example: E6010

The “E” indicates Electrode because some welding rods are NOT electrodes.

The “60” in 6010 indicates tensile strength in PSI. In this case 60 means 60,000 lbs.

The last two digits “10” in this example, indicate position and polarity, with what type of flux. See “Table 4D: Welding Rod Type, Polarity And Flux Codes”.

4.6 OPERATING THE AC GENERATOR

IMPORTANT: While the Air N Arc® 150 and Contractor Systems are designed to be multi-function machines, note that if the generator is operating near its rated capacity while the welder (Air N Arc® 150 only) and/or compressor are being used simultaneously, a drop in engine speed may result in a lowered voltage condition that may damage the generator and power tools being used.

4.6.1 TO OPERATE THE GENERATOR:

1. Start the engine.
2. Turn the generator switch on the control panel to the ON position.

3. For general information on the power requirements of common power tools, motors and extension cords, check the desired power tool, motor or extension cord's manufacturer's specifications.
4. If the thermal overload circuit breakers on the generator are tripped due to an overload condition, press the white reset buttons on the generator panel to reset the breakers. See "Figure 4-3: Pilot Valve" **and** "Figure 4-2: Contractor Instrumentation/Controls".

NOTICE

Only plug power cords into the generator receptacles AFTER the engine is running at full speed.

WARNING

If one of the generator circuit breakers has tripped, the cause of the overload must be determined before the circuit breaker is reset and work is resumed.

WARNING

Do Not rely on the thermal overload circuit breakers on the generator to protect personnel, power tools or the generator.

TABLE 4C: ELECTRODE SPECIFICATIONS

METAL THICKNESS	ELECTRODE SIZE	WELDING AMPS
1/16 - 1/8"	3/32"	50-90A
1/8 - 1/4"	1/8"	90-140A
1/4 - 3/8"	5/32"	120-180A
3/8 - 1/2"	3/16"	150-230A

TABLE 4D: WELDING ROD TYPE, POLARITY AND FLUX CODES

DIGIT	TYPE OF COATING	WELDING CURRENT
10	High Cellulose Sodium	DC+
11	High Cellulose Potassium	AC, or DC+ or DC-
12	High Titania Sodium	AC or DC-
13	High Titania Potassium	AC or DC+
14	Iron Powder Titania	AC or DC- or DC+
15	Low Hydrogen Sodium	DC+
16	Low Hydrogen Potassium	AC or DC+
27	Iron Powder Iron Oxide	AC or DC- or DC+
18	Iron Powder Low Hydrogen	AC or DC+
20	High Iron Oxide	AC or DC- or DC+
22	High Iron Oxide	AC or DC-
24	Iron Powder Titania	AC or DC- or DC+
28	Low Hydrogen Potassium Iron Powder	AC or DC+

4.7 OPERATING THE AIR COMPRESSOR

- The air compressor, on the Air N Arc® 150 and Contractor systems, is a continuous-run compressor. This means that the compressor continues to turn at all times, even when it is not building pressure in the air storage tank. The compressor is controlled by a pilot valve that provides an air pressure signal to the pressure switch, which activates the throttle solenoid.
- When the air tank pressure builds to 175 PSI, a spring valve opens. This provides an air pressure signal to the head unloader valves of the compressor, causing the air in the compressor to vent to the atmosphere. This air signal is also sent to the throttle pressure switch, energizing the solenoid, reducing the engine's throttle.
- When the air tank pressure falls below 150 PSI, the pilot valve will close, stopping the air signal to the unload valves, allowing the compressor to start pumping air to the tank. This signal also causes the pressure switch to de-energize the throttle solenoid, allowing the engine to run at full speed.
- A lever on the top of the pilot valve allows the operator to manually stop the compression of air to the compressor during initial engine start-up or if the operation does not require the use of compressed air. See "Figure 4-3: Pilot Valve". Since the head unloader valves require a minimum of 10 PSI in the air tank to allow the valves to operate properly.
- Use air tools that operate within a rated capacity of the compressor (20 CFM up to 150 PSI). Check the desired power tool manufacturer's specifications to ensure that the tool capacity is within range of the compressor's operating scope. See "Table 4A: Typical Air Tool Reference".

NOTE

The leading cause of component failure of the air control system is moisture. Air tanks must be drained **DAILY** (or more frequently as needed) to eliminate condensation.

TABLE 4A: TYPICAL AIR TOOL REFERENCE

AIR TOOL	AVG CFM @ 90 PSI	AVG OPERATING PSI
1/2" In Impact Wrench	9	90-100
Air Hammer	4	90-100
Tire Inflator	2	125-150
Drill	4	70-90
Angle Grinder	5-8	90-100
Paint Sprayer	4-8	90-100
Disk Sander	20	90-100
Brad Nailer	0.5	70-90
Nail Gun	2	100-130

4.8 EXTREME CONDITION OPERATION

- When operating in extreme temperatures, extra attention should be given to any indications that could lead to a serious problem. Machine review and maintenance check schedules should be done more frequently than the standard recommendations shown in "Table 5A: Maintenance Schedule".
- Become familiar with the alternative operation procedures given in this section before operating the power system package in any type of extreme temperature conditions.

NOTICE

Be careful not to overload the rated capacity of the generator, 4200 Watts (17.5A @ 240V, or 17.5A @ 120V) for each outlet, continuous.

NOTICE

Do NOT use ethanol-based fuels. Ethanol-blended fuels such as E85, are NOT to be used with Vanair® VNR460 engines.

NOTICE

For additional information on the Vanair® VNR460 engine, consult **Section 5: Maintenance**.

4.8.1 COLD WEATHER OPERATION

- Additional care should be taken into consideration when operating this system in extreme cold weather environments or ambient temperatures.
- Run the machine (with no loads) at full speed using the generator switch to warm up the machine. Refer to Figure 4-1 **or** Figure 4-2, **callout [B]**.
- An optional heater blanket is available for warming the air inlet solenoid when operating in cold environments. Contact your dealer or Vanair®.

4.8.2 ENGINE OPERATION

- The standard recommended weight of engine oil is 10W-30, suitable for temperatures as low as -5°F (-20.5° C).
- If temperatures are consistently below 30°F, it is recommended that 5W-30 oil be used. The recommended temperature range of 5W-30 oil is from 32°F down to -55°F (0°C to -48.3°C). SAE 30 for temperatures regularly exceeding 50°F (10° C).
- When temperatures are below 0°F (-17.7°C), a fuel de-icer product may be used.
- Please note that any water that collects inside the air receiver tank can freeze in low temperatures. If this happens, place the unit in an environment above freezing temperature until any water in the air tank thaws, then drain moisture from the tank.

4.8.3 HIGH TEMPERATURE OPERATION

- The standard recommendation of 10W-30 engine oil is suitable for operation in temperatures up to 110°F (43.3°C).
- Extra care should be taken to keep the engine and air compressor clean and to make sure the air flow around the unit is not obstructed in any way.

4.8.4 HIGH ALTITUDE OPERATION

- Effective engine horsepower will decrease about 3.5% for every 1,000 feet, (304.8 m) of altitude. At high altitudes, overall performance will decline. If this happens, take care not to overload the engine, limiting its use to only one function at a time.



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SECTION 5: Maintenance

5.1 GENERAL INFORMATION

Adhering to a strict maintenance program is the key to long life for the Air N Arc® 150 and Contractor machines. Below is a program that, when followed, should keep the equipment in top operating condition. Refer to **Sub-Sections 5.3, 5.4 and 5.5** in this section of the manual for procedures and detailed descriptions of specific compressor and engine components.

Vanair® considers the maintenance schedule given in “Table 5A: Maintenance Schedule” to be part of the warranty agreement with the customer. This scheduled regimen must be followed in order to maintain the warranty of the machine package.

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

Please take a moment to acquaint yourself with the service schedule presented in Table 5A.

For assistance in obtaining routine maintenance or replacement parts, consult **Section 7.1, Parts Ordering Procedure, and Tables 7A and 7B.**

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.

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

WARNING

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

NOTICE

Follow the prescribed Periodic Maintenance (PM) schedule as recommended at the recommended intervals.

Failure to do so will impair the package safety, performance characteristics, shorten the package's lifespan, and will negatively affect the warranty coverage of the unit.

WARNING

Before performing maintenance on the Air N Arc® 150 or Contractor, shut down the 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 positive (+) battery cable.

NOTICE

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



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WARNING

Before performing maintenance on this unit, shut down the machine, relieve all system air pressure and lock out all power, as per the safety section of this manual. For lock out/tag out, disconnect the positive (+) battery cable.

TABLE 5A: MAINTENANCE SCHEDULE

Engine (See Section 5.5)*		Regular Service Period*
Engine Oil	Check	Each Time Before Use
	Replace	After Initial 20 Hours/Every 6 Months or 100 Hours
Fuel Filter	Check	Every 3 Months or 50 Hours ¹
	Replace	Every 6 Months or 100 Hours ¹
Engine Air Filter	Inspect/clean	Every 3 Months or 50 Hours ¹
	Replace	Annually or 300 Hours ¹
Spark Plug	Check/Adjust	Every 6 Months or 100 Hours ¹
	Replace	Annually or 300 Hours
Spark Arrester (If Equipped)	Clean	Every 6 Months or 100 Hours ¹
Fuel/Oil	Drain	When Storing Unit for 2+ Months
Valve Clearance	Check/Adjust	Annually or 300 Hours ²
Cooling Fins	Check/Clean	Annually or 100 Hours ¹
Fuel Lines	Check	Every 2 Years (Replace As Needed) ²
Idle Speed	Check/Adjust	Annually or 300 Hours ²
Air Compressor (See Section 5.4)		Regular Service Period
Compressor Oil	Check	Each Time Before/Use Maintain Proper Oil Level
	Change	After Initial 100 Hours/Then Every 300 Hours
Compressor Air Filter	Check/Clean	Every 50 Hours
	Replace	If Clogged With Dirt Or Filter Element Is Damaged
Tension of Both Compressor Poly-link Drive Belts	Check	After Initial 20 Hours; Check Daily; Tighten As Needed
Compressor Drive Belts (Includes Air N Arc® 150 Serpentine Belt for Welder).	Inspect	Every 100 Hours or Yearly
	Replace	Every 600 Hours, or If Damaged or Shows Signs of Cracks
Cut-in and Cut-out Pressure Settings	Check	Every 600 Hours, or As Needed
Compressor Head Valves. Clean the Carbon From Valves and Head If Necessary	Inspect/Clean	Every 600 Hours. Check Table 7a For Recommended Spare Parts and Service Information.
Check Compressor Unloader Valve Operation	Check	Every 600 Hours. Check Table 7a For Recommended Spare Parts. Contact Vanair® Service Department.

* Perform at interval that comes first in the table. (Months or Hours.)

¹ Service more frequently under severe, dusty or dirty conditions.

² To be performed by knowledgeable, experienced, maintenance technician or the dealer.

CAUTION

Always wear personal protective equipment such as gloves, safety shoes or boots, eye and hearing protection as required for the task at hand.

CAUTION

Compressors and engines generate heat and create extremely hot surfaces. Use caution when operating or servicing equipment.

TABLE 5A: MAINTENANCE SCHEDULE (cont.)

Miscellaneous		Regular Service Period*
Drain Water From Air Tank	Check	Daily or After Each Use. (See Section 5.3.5)
Inspect for Oil Leaks or Damage	Inspect	Daily Before Use. Tighten or Replace Any Loose or Damaged Fittings As Needed.
Inspect and Clean Debris From Vents, Cooling Fins, and Surrounding Area	Clean	Daily Before Use
Check/Clean All External Parts of The Compressor and Driver	Clean	Daily Before Use
Blow Out the Welding Generator and DC Generator	Clean	Every 100 Hours or Yearly. Blow Out With Compressed Air to Clear Out Loose Dirt and Debris.
Check Battery Cables and Connections. (Also Check the Welding Leads For The Air N Arc® 150.)	Inspect	Annually or 300 Hours. Clean or Tighten As Needed. Replace Damaged Cables and Leads. Be Sure to Connect Battery Cables Properly. (Positive to Positive, Negative to Negative.)
Mounting Bolts	Check	Every 200 Hours or When Loose. Tighten Any Loose Bolts When Needed.
Check and Tighten All Bolts, Nuts, Fittings, etc.	Inspect	Every 600 Hours. With Machine Off, Carefully Check All Nuts, Bolts, and Fittings to Make Sure They Are Still In Place and Securely Fastened. Tighten or Replace Any Broken or Missing Fasteners.
Inspect Generators and Belt Tensioner	Inspect	Every 600 Hours. Ensure Automatic Belt Tensioner Is Free of Rough, Noisy or Worn Bearings. Replace As Needed. See Section 5.3.3 .
Inspect Welding Electrode Clamp and Ground Clamp (Air N Arc® 150 only.)	Check	Annually or Every 300 Hours

* Perform at interval that comes first in the table. (Months or Hours.)

¹ Service more frequently under severe, dusty or dirty conditions.

² To be performed by knowledgeable, experienced, maintenance or the dealer.

NOTICE

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 5.6.5.2, Long Term Storage**.

NOTICE

Use only Genuine Air N Arc® 150 and Contractor parts. Inspect and replace damaged components before operation. Substituting non-Air N Arc® 150/Contractor components WILL VOID THE COMPRESSOR WARRANTY!

5.2 REPLACEMENT PARTS

Replacement parts should be purchased through your local Vanair® representative or dealer where the Vanair® Air N Arc® 150 or Contractor 16 HP machine was purchased. If for any reason, parts are not available in this manner they can be purchased directly:

5.3 PART REPLACEMENT AND ADJUSTMENT PROCEDURES

IMPORTANT: Do not stop the engine suddenly unless it's an emergency. Stop the engine after approximately five (5) minutes of unloaded idling.

NOTICE

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

NOTICE

Refer to the paragraphs pertaining to Engine Maintenance in this section for additional information.

Continued on the next page -

Maintenance - 33

5.3.1 ADJUSTING THE ENGINE SPEED

The engine speed is controlled by three factors:

- The level of air pressure in the tank along with the position of the pilot valve adjustment switch. See **Figure 5-1**.
- The position of the welder switch on the unit control panel (**for Air N Arc® 150 models only**).
- The position of the generator switch on the control panel.

NOTICE

DO NOT tamper with the governor setting to increase the maximum engine speed. Overspeed is hazardous and will void the engine warranty. The maximum allowable high idle speed for the engine, with no load, is 3650 RPM.

5.3.2 COMPRESSOR CUT-IN/ CUT-OUT PRESSURE

The pilot valve regulates the unit's air pressure.

Cut-in pressure is defined as the pressure in which the compressor starts pumping. Anytime the pressure in the tank falls below this pressure setting, the compressor is allowed to start pumping.

The **Cut-out pressure** is defined as the pressure in which the compressor stops pumping. When the pressure in the air tank rises above this pressure the compressor is signaled to stop pumping.

Pressure settings for both the minimum and maximum rated capacity levels for this machine are adjusted at the factory before shipping and should not require adjustment.

However, a situation may occur where it is necessary to manually adjust or reset either or both settings. For such cases, consult the following procedure:

1. Refer to "Figure 5-1: Pilot Valve Adjustment". Locate the pilot valve assembly on the base frame, near the compressor, and use the following procedure to make adjustments.
2. With a marker or scoring object, make a mark [G] on the pressure adjustment screw [B], pressure differential adjustment nut [D], and the valve body [F] to indicate the original positions.

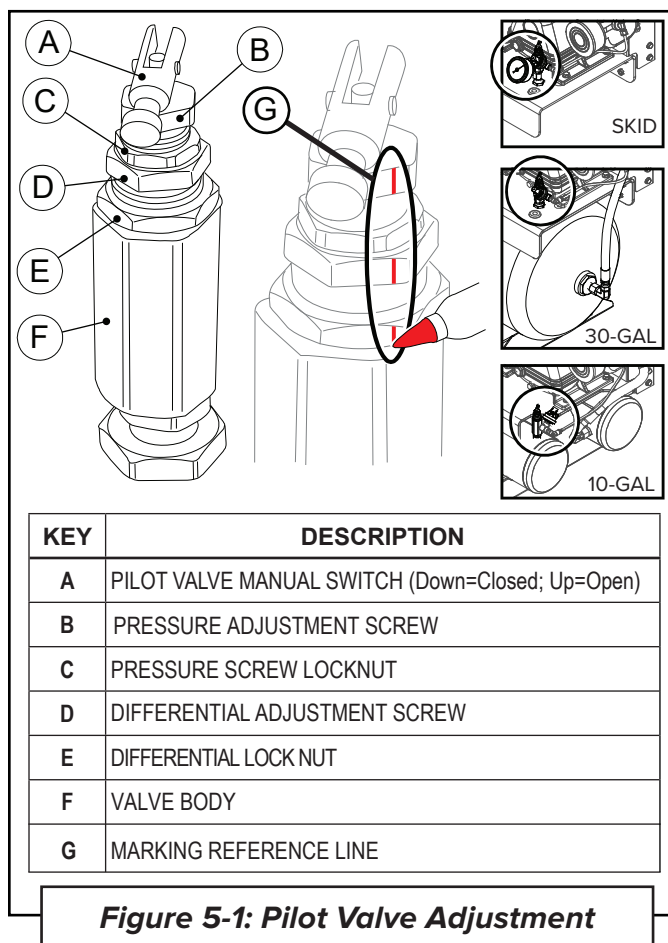


Figure 5-1: Pilot Valve Adjustment

3. With the machine in the OFF position, loosen the pressure adjustment locknut [C], and adjust the pressure adjustment nut [B] clockwise (in) to raise the cut-in/cut-out pressure, and counter-clockwise (out) to lower the cut-in/cut-out pressure. Using the reference mark made in **Step #1**, adjust the pressure adjustment nut by a 1/4 to a 1/2 turn interval, and tighten the locknut.
4. Start the engine and check the air pressure gauge reading after the engine has returned to idle speed.
5. Repeat **Steps #2 and #3** as needed until proper pressure is achieved.

NOTICE

DO NOT adjust the factory set pressure differential adjustment nut [D]. Reference the mark made on the differential adjustment screw nut, and the valve body [F] to ensure it has not changed position.

! IMPORTANT !

Do Not adjust the compressor cut-in/cut-out pressure unless necessary.

5.4 REPLACING AND RE-TENSIONING DRIVE BELTS

The engine drives the compressor and the generator via the use of two poly-link, chain-type belts. When replaced, these belts are sized to fit by removal of their individual links. The belts are designed for long life but should be periodically checked. If it is determined to be damaged, it should be replaced. In addition, over time they become loose and may need to be tightened. See “Figure 5-3: Compressor Belt Deflection Test” **and Section 5.3.3.3** on how to check the compressor belt(s) tension.

WARNING

Never under any circumstances operate the machine with the belt guard removed. When performing service with the belt guard removed, always ensure that the negative battery cable is disconnected.

5.4.1 REMOVING THE BELT GUARD

The belt guard must be removed to access the drive belts. The Contractor System utilizes a poly-link belt to drive the compressor unit, and a shorter poly-link belt to drive the generator. Refer to “Figure 5-2: Belt Drive Access” and the following procedure to access the drive belts:

- Remove the six (6) serrated washer/screws (5/16-18 x 3/4) securing the belt guard panel to the brackets.
- Remove the panel and place it in a safe location.

5.4.2 REPLACING THE BELT GUARD

- Position the guard panel in place on the machine.
- Re-install the six (6) serrated washer/screws (5/16-18 x 3/4) securing the belt guard panel to the brackets.

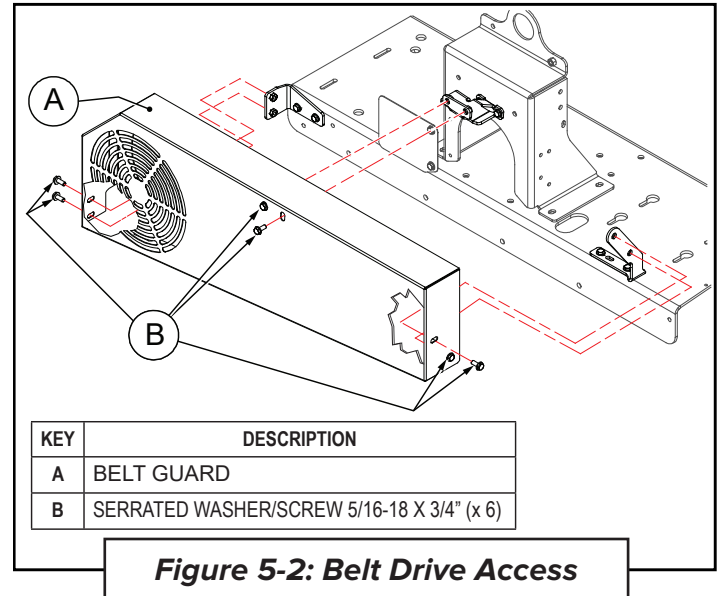


Figure 5-2: Belt Drive Access

WARNING

Turn OFF and relieve pressure from the compressor system before performing maintenance on any components.

WARNING

Before performing maintenance or repair operations on the machine, ensure that all power has been removed and locked out to prevent accidental start-up.

5.4.3 RE-TENSIONING THE AIR COMPRESSOR DRIVE BELT

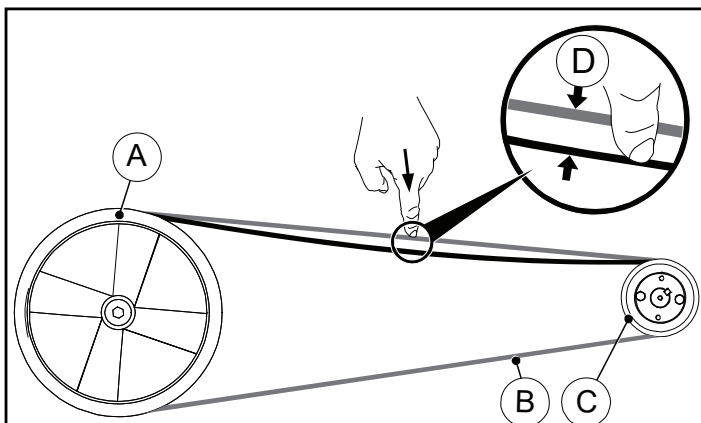
The poly-link belt used for the compressor drive does not require a separate tensioner. The proper tension on a poly-link belt is 3/8" to 1/2" deflection. Consult Figure 5-2 **through** Figure 5-5, **and the following procedure:**

! IMPORTANT !

The compressor drive belt is tensioned by the number of links in the belt. Never attempt to adjust the compressor belt tension by repositioning either the compressor unit or the engine from its mounted position, as the alignment of these components are factory set.

1. With the machine turned OFF and the ground wire disconnected from the battery, remove the belt guard per **Section 5.3.3.1**.
2. Check the deflection of the belt for looseness by applying pressure with a

Continued on the next page -



KEY	DESCRIPTION
A	COMPRESSOR PULLEY
B	COMPRESSOR DRIVE BELT
C	MOTOR SHEAVE
D	OPTIMAL DEFLECTION RANGE: 3/8-1/2 IN

Figure 5-3: Compressor Belt Deflection Test

finger at the center location between the pulleys, as shown in “Figure 5-3: Compressor Belt Deflection Test”. The “give” should be in the range of 3/8” to 1/2” for each.

5.4.4 COMPRESSOR DRIVE BELT REMOVAL:

If any number of links need to be removed, or if the belt needs to be replaced, the belt must first be removed from the pulleys. Refer to: “Figure 5-4: Poly-Link Belt Removal” for belt removal.

1. Grip the outer belt with the right hand while twisting the belt outward [A], and
2. Manually rotate the compressor pulley with the left hand [B]. The belt will slide free. If the belt is too loose, then it will need to be resized. Consult **Section 5.3.3.4** to re-size a poly-link belt.

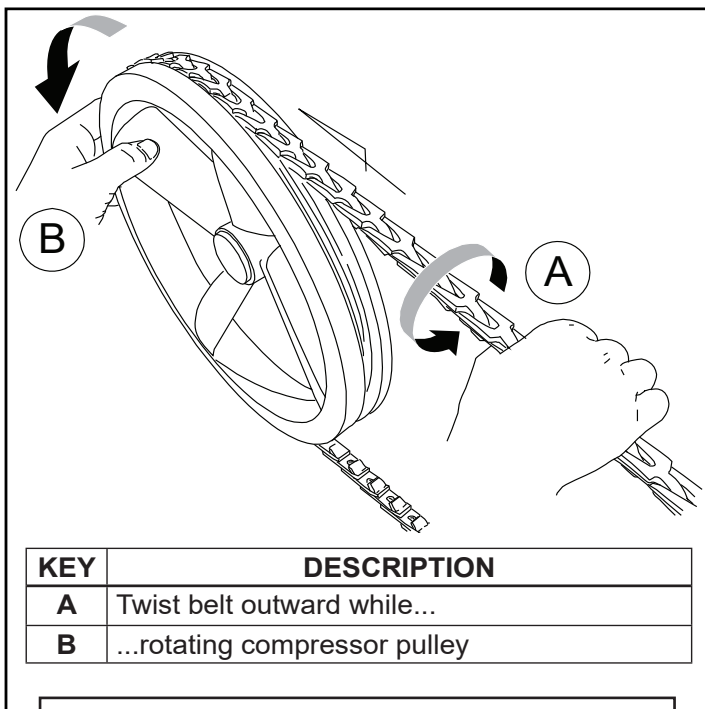


Figure 5-4: Poly-Link Belt Removal

! IMPORTANT !

Over-tightening the compressor poly-link belt will result in overloading the motor and possible belt failure, while a loose belt will slip and result in an unstable speed, overheating of the belt, and high amp draw.

5.4.4.1 POLY-LINK BELT SIZING

When sizing a new drive belt, first remove the worn belt as explained in **Section 5.4**.

Then consult “Figure 5-5: Sizing the Compressor Drive Belt” and the following procedure:

NOTE: The poly-link belt is placed so that the tab ends of the links are facing inward, toward the pulleys.

1. Wrap new belt as shown in Figure 5-5, and pull it tight around the pulleys, ensuring that the arrow indications on the belt face the same direction as the compressor pulley arrow(s) [D].
2. To determine the length, overlap the last two holes of one end of the belt with two tabs at the other end, matching links as shown in [E].

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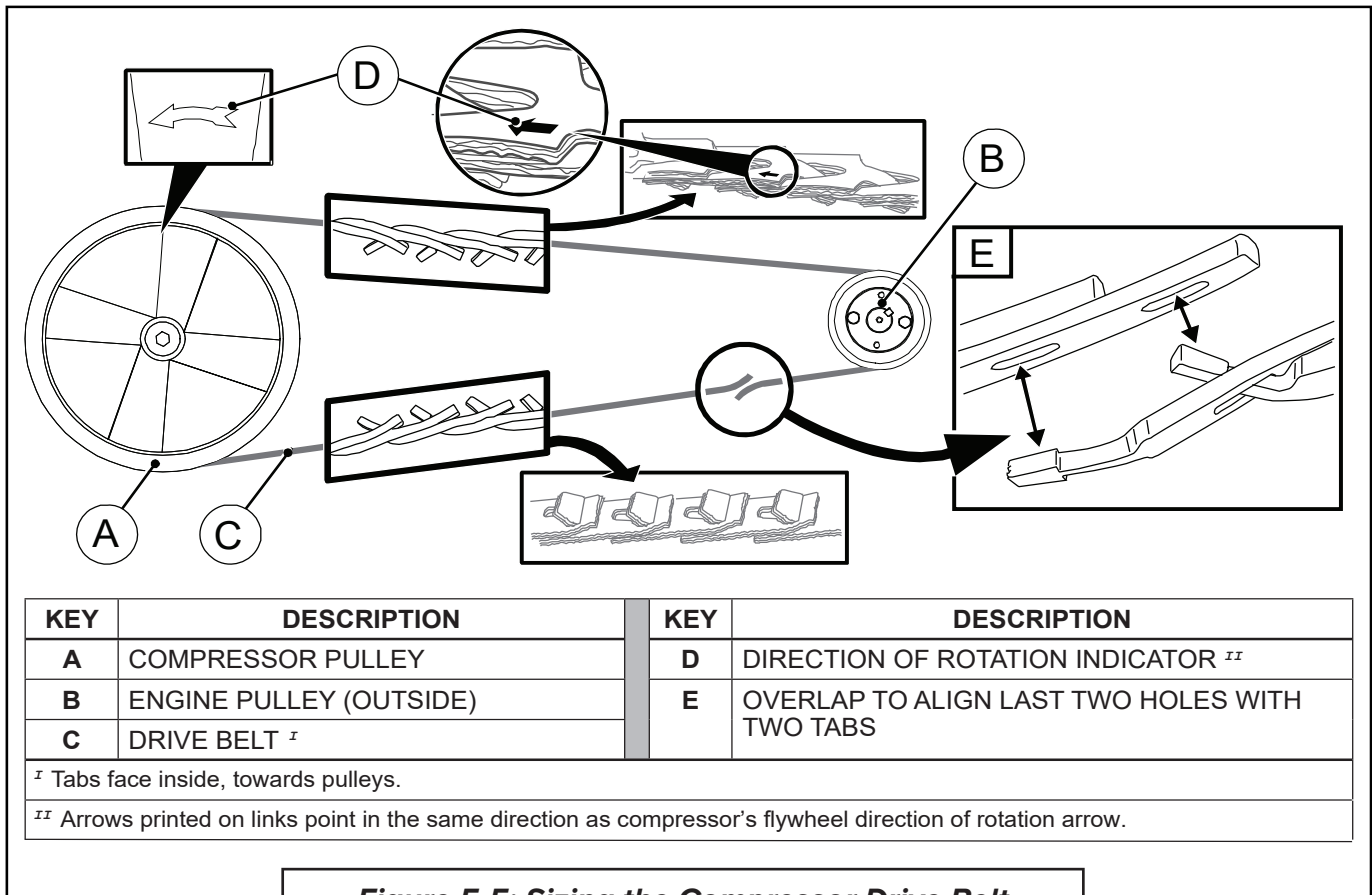


Figure 5-5: Sizing the Compressor Drive Belt

- Use a marker to place an identifying mark where the excess link begins.
- Once the belt is sized correctly, the excess overlapping link(s) will need to be removed before assembling the sized belt into a completed loop. Follow the procedure given in **Section 5.4.4.3, Compressor Belt Assembly**.

5.4.4.2 COMPRESSOR BELT LINK DISENGAGEMENT

Refer to "Figure 5-6: Sizing the Compressor Drive Belt", and the following procedure:

- Hold belt tab-side up with one hand; bend back as far as possible to expose tab [B1].
- With the tab now turned parallel to the slot, push down on the tab [C] while pulling up on the link's end [D].
- Rotate the belt end with tab [B2] so that the tab is turned parallel to the slot.

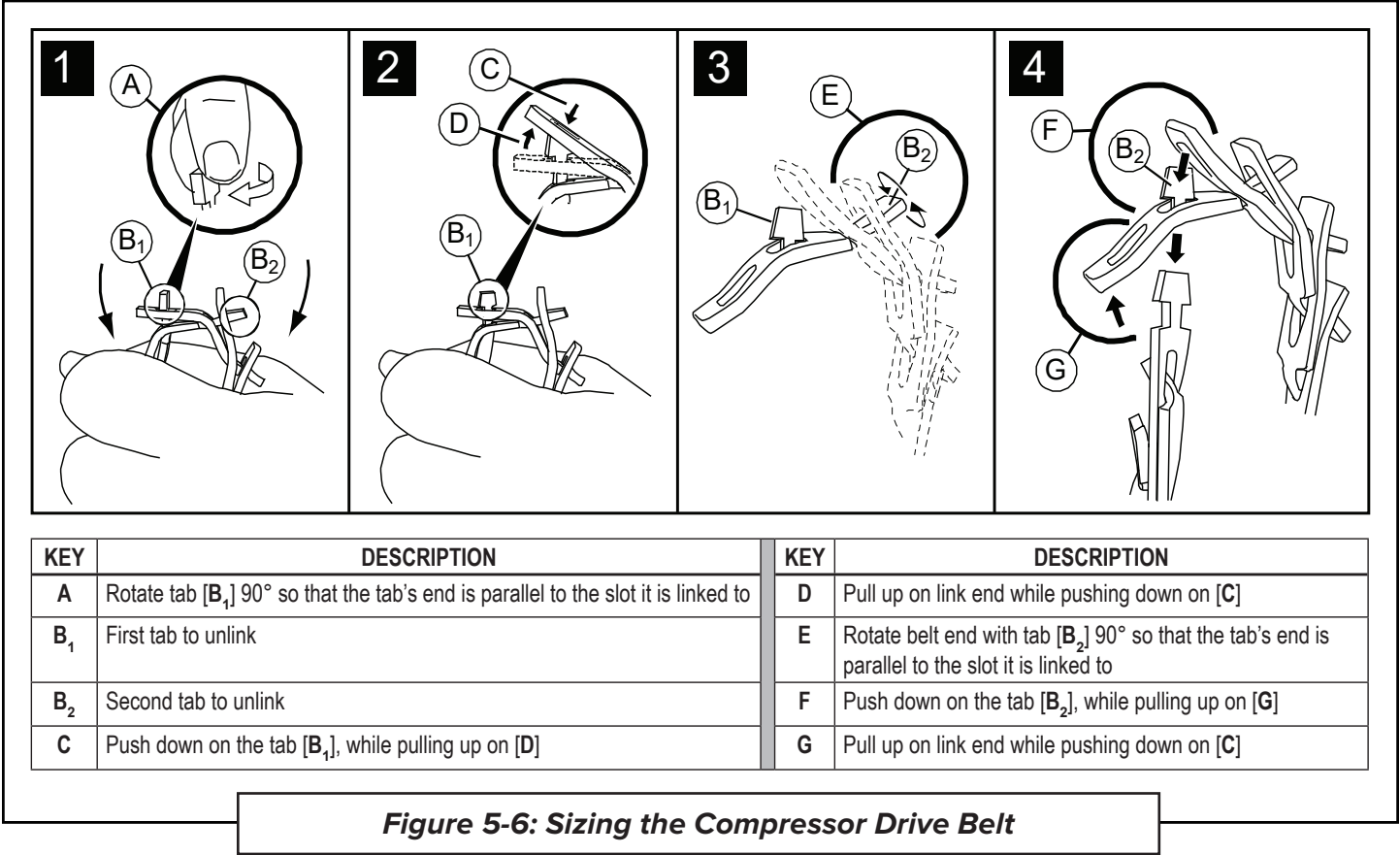
- Push down on the tab [B2], while pulling up on the link's end [G].

5.4.4.3 COMPRESSOR BELT ASSEMBLY

Once the proper length of the belt has been determined, and the belt is shortened to its fitted length, then the belt's ends are linked together to form the completed belt loop. Refer to "Figure 5-7: Attaching Compressor Belt Link", and the following procedure:

- Place tab [A] corner against the inside of the link hole [B] (nearest to thumb [D]).
- With thumb [C], push on the tab's edge in the direction indicated.
- Simultaneously, push on link end [B] with thumb [D] in the direction indicated.
- NOTE:** Inset [E] shows how the pressure applied from both thumbs causes the tab to "rotate" toward the slot position.
- When tab is positioned parallel with the slot, push it/pull it through the slot.

Continued on the next page -



6. After the tab is through the slot, twist it 90°, as shown in [F], to secure it into place.

5.5 INSTALLING BELT ONTO PULLEY GROOVE

- Refer to “Figure 5-8: Compressor Drive Poly-Link Belt” and the following procedure to mount the compressor link drive belt onto the compressor and engine pulleys.
- Make certain that the belt is sized correctly before setting it into place on the pulleys. Consult **Sections 5.3.3.4 through 5.3.3.6** to size and assemble the belt.
- The belt should be assembled as a completed loop prior to setting it onto the pulley tracks. Run the belt around the proper belt groove on the engine pulley (compressor belt tracks to outside engine pulley), taking care that the belt’s tabs are facing inward toward the pulley, and the arrows on the belt point in the same direction as the arrow of rotation on the compressor pulley. See Figure 5-5 [D].

- Start at the bottom edge of the pulley as per Figure 5-8, **Step #1**. Continue to set the belt into the proper groove on the compressor pulley and engine pulley.
- After the belt is seated into the compressor pulley groove, hold the belt and the pulley with the left hand Figure 5-8, **Step #2**, while rotating the pulley in the direction shown. At the same time, feed the belt upward with the right hand as the pulley is turned Figure 5-8, **Step #3**.

5.5.1 RE-TENSIONING THE GENERATOR DRIVE BELT

The poly-link link-belt used for the generator drive does not require a separate tensioner. Proper tension on a poly-link belt is 3/8” to 1/2” give. Consult Figure 5-9 **through** Figure 5-12, and the following procedure:

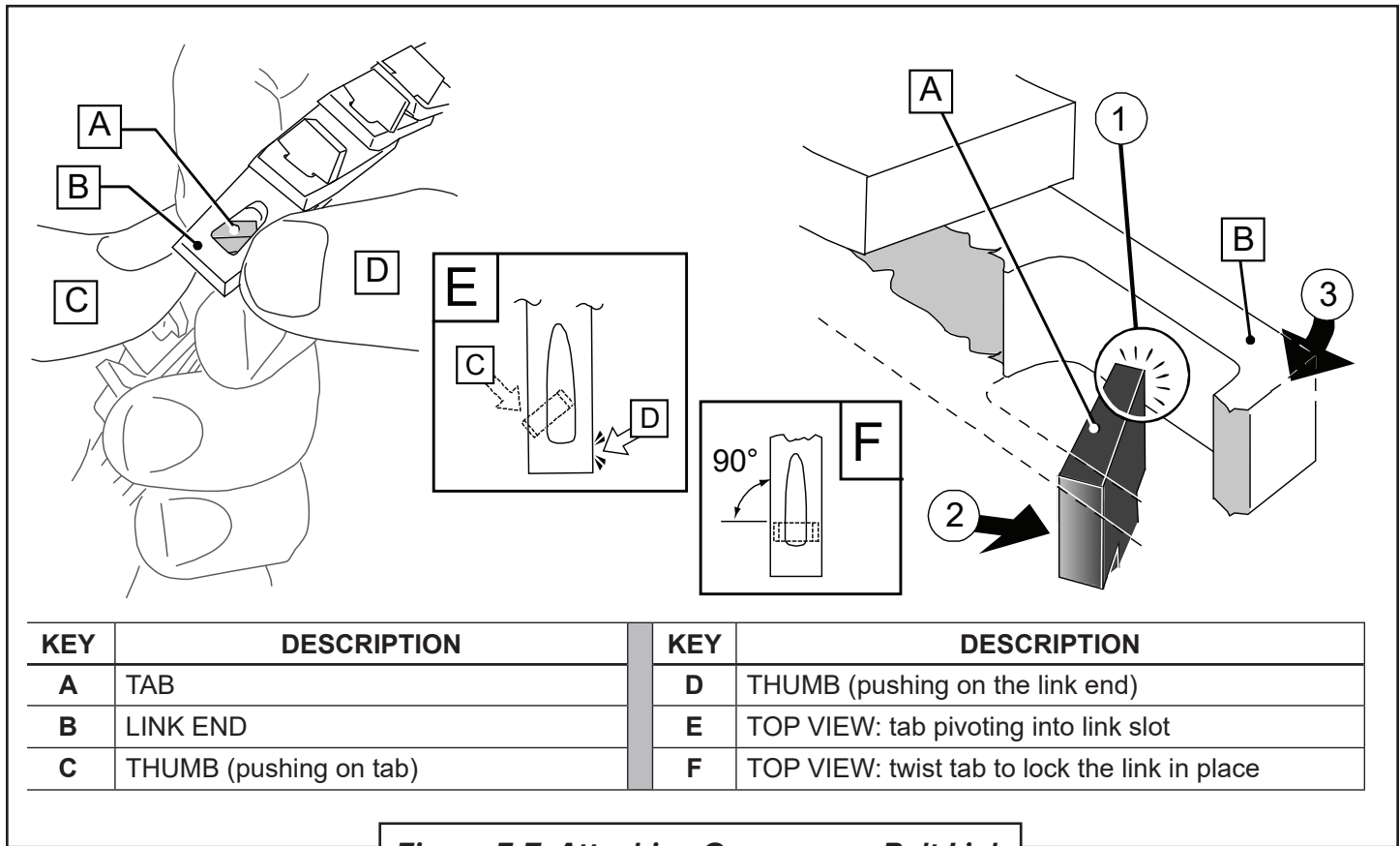


Figure 5-7: Attaching Compressor Belt Link

! IMPORTANT !

The generator drive belt is tensioned by the number of links in the belt. Never attempt to adjust the generator belt tension by repositioning either the generator unit or the engine from its mounted position, as these components are alignment-set at the factory.

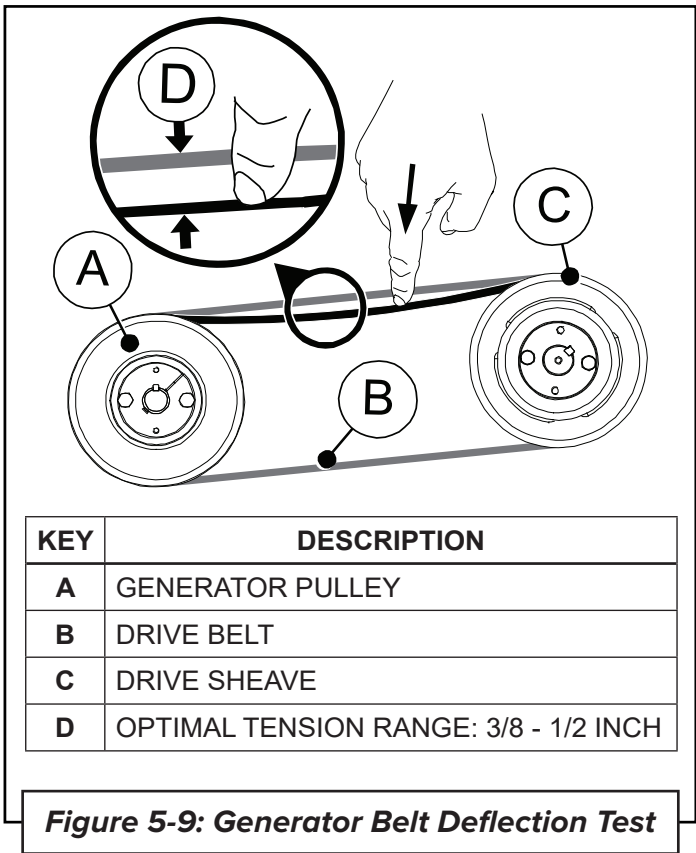
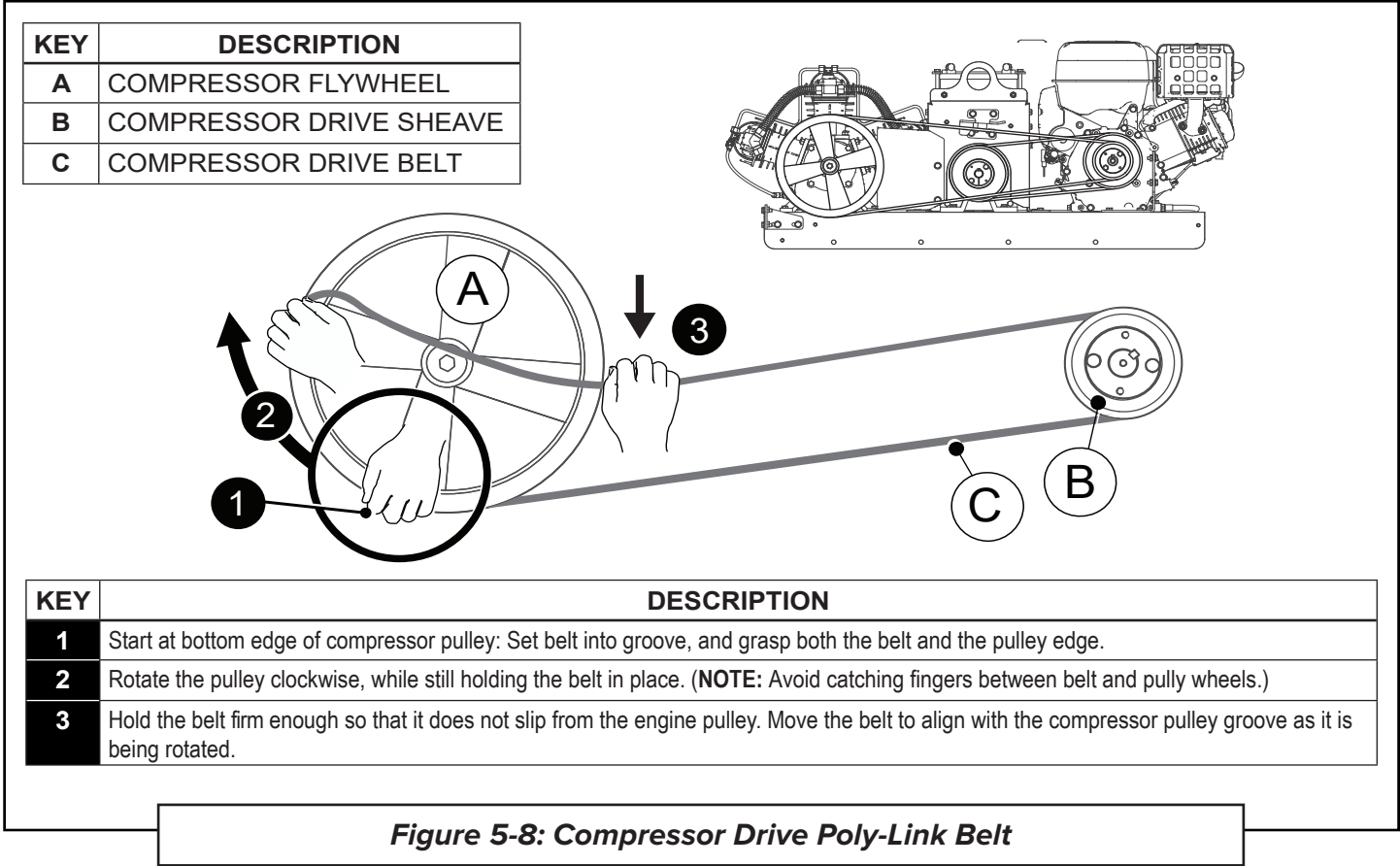
1. With the machine OFF and the ground wire disconnected from the battery, remove the belt guard per **Section 5.4.3.1**.
2. Check the deflection of the belt for looseness by applying pressure with a finger at the center location between the pulleys, as shown in "Figure 5-9: Generator Belt Deflection Test". The "give" should be in the range of 3/8" to 1/2" for each belt when sized properly.

5.5.2 GENERATOR DRIVE BELT REMOVAL:

- If any number of links needs to be removed, or if the belt needs to be replaced, then belt must first be removed from the pulleys.
- For poly-link belt removal, refer to Figure 5-4. Grip the outer belt with the right hand while twisting the belt outward [A], and manually rotate the generator pulley with the left hand [B]. The belt will slide free.
- If the belt is too loose, then it will need to be resized. Consult **Figure 5-6 Sizing the Compressor Drive Belt** to re-size a poly-link belt.

NOTICE

Although the compressor drive belt is situated in front of the generator drive belt, it is not necessary to remove the compressor belt in order to perform maintenance on the generator drive belt.



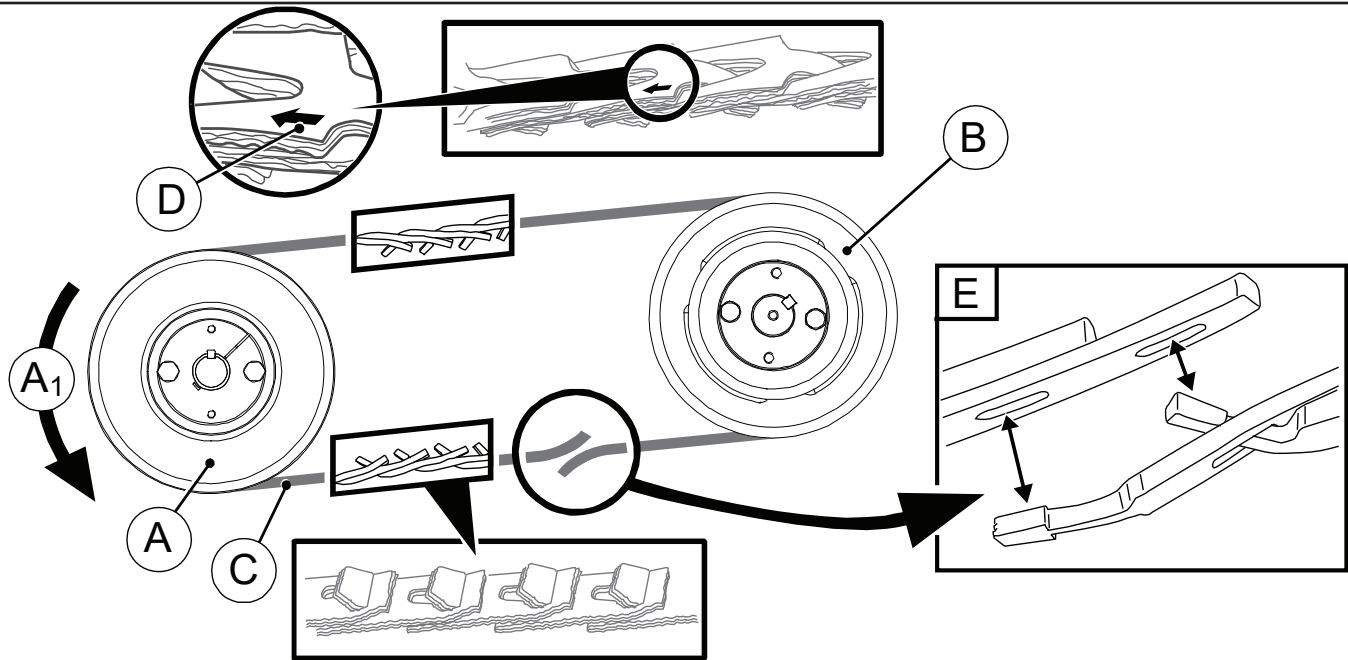
5.5.3 GENERATOR BELT SIZING

When sizing a new generator drive belt, remove the worn belt as explained in **Section 5.3.3.8, Step #3 and Step #4**. Then consult “Figure 5-11: Sizing the Generator Drive Belt - Linking Belt Loop” and the following procedure:

! IMPORTANT !

Over-tightening the generator poly-link belt may result in overloading the motor and causing belt failure, while a loose belt will slip and result in an unstable speed, overheating of the belt, and high amp draw.

- The poly-link belt is placed so that the tab ends of the links are facing inward, toward the pulleys.*
1. Wrap the new belt as shown in “Figure 5-10: Sizing the Contractor Generator Belt”, and pull it tight around the pulleys, ensuring that the arrow indications on the belt face the same direction as the generator pulley arrow(s) [D].



KEY	DESCRIPTION	KEY	DESCRIPTION
A	GENERATOR PULLEY	C	DRIVE BELT ⁱ
A ₁	GENERATOR PULLEY ROTATION DIRECTION	D	DIRECTION OF ROTATION INDICATOR ⁱⁱ
B	ENGINE PULLEY (OUTSIDE)	E	OVERLAP TO ALIGN LAST TWO HOLES WITH TWO TABS

ⁱ Tabs face inside, towards pulleys.

ⁱⁱ Arrows printed on links point in the same direction as compressor flywheel direction of rotation arrow.

Figure 5-10: Sizing the Contractor Generator Belt

- To determine the length, overlap the last two holes of one end of the belt with two tabs of the other end, matching links as shown in [E].
- Use a marker to place an identifying mark where the excess link begins.
- Once the belt is sized correctly, the excess overlapping link(s) will need to be removed before assembling the sized belt into a completed loop. Follow the procedure given in **Section 5.3.3.2, Generator Belt Assembly**.

5.5.3.1 GENERATOR BELT LINK DISENGAGEMENT

Refer to "Figure 5-11: Sizing the Generator Drive Belt - Linking Belt Loop", and the following procedure:

- Hold belt tab-side up with one hand; bend back as far as possible to expose tab [B1].

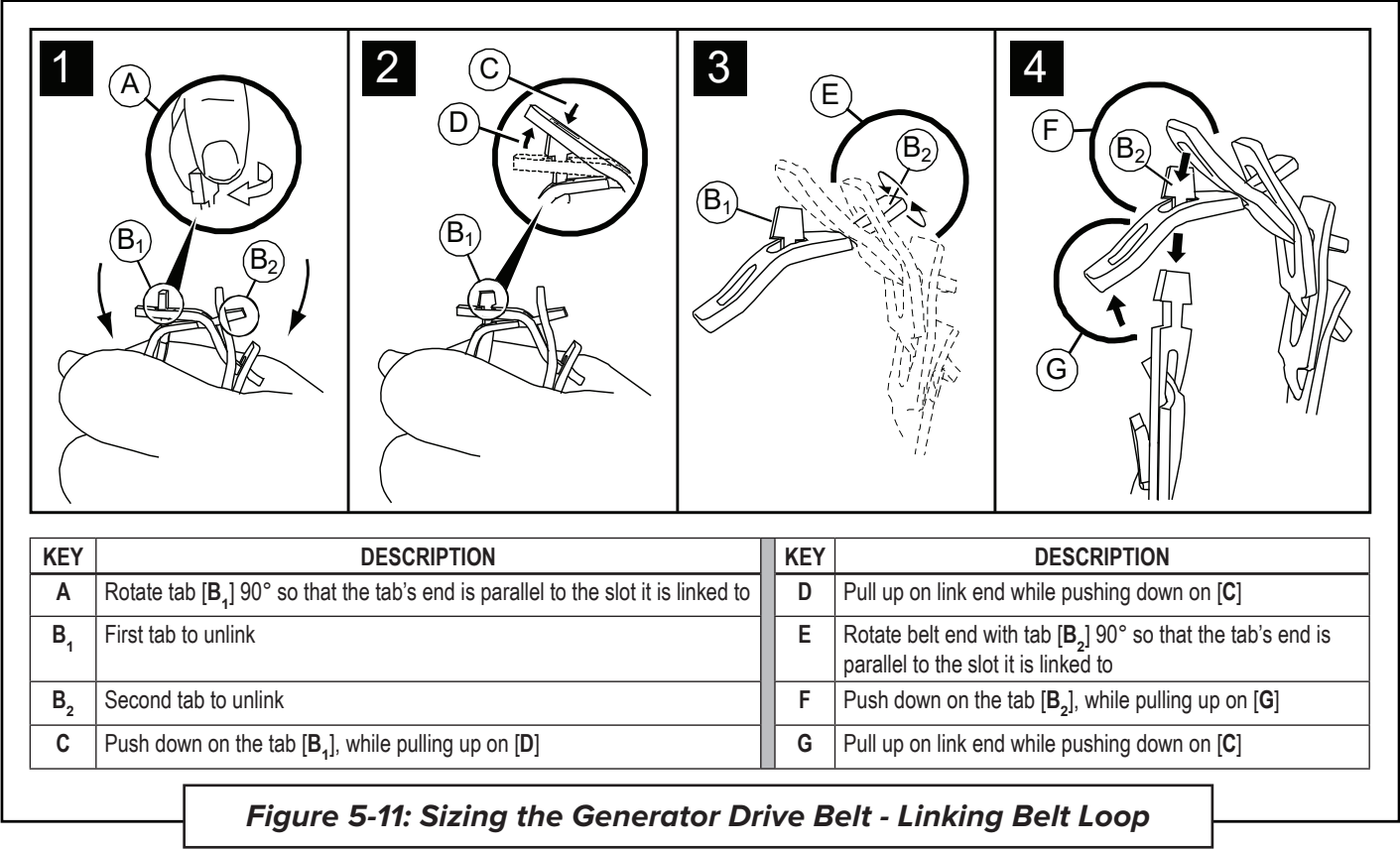
- With the tab now turned parallel to the slot, push down on the tab [C] while pulling up on the link's end [D].
- Rotate the belt end with tab [B2] so that the tab is turned parallel to the slot.
- Push down on the tab [F], while pulling up on the link's end [G].

5.5.3.2 GENERATOR BELT ASSEMBLY

Once the proper length of the belt has been determined, and the belt is shortened to its correct length, then the belt's ends are linked together to form the completed belt loop. Refer to Figure 5-11, and the following procedure:

- Place tab [A] corner against the inside of the link hole [B] (nearest to thumb [D]).
- With thumb [C], push on the tab's edge in the direction indicated.

*Continued on next page -
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- 3. Simultaneously with **Step #2** above, push on link end [B] with thumb [D] in the direction indicated. **NOTE:** Inset [E] shows how the pressure applied from both thumbs causes the tab to “rotate” toward the slot position.
- 4. When tab is positioned parallel with the slot, push it/pull it through the slot.
- 5. After the tab is through the slot, twist it 90°, as shown in [F], to secure it into place.

5.5.3.3 INSTALLING GENERATOR BELT ONTO PULLEY GROOVE

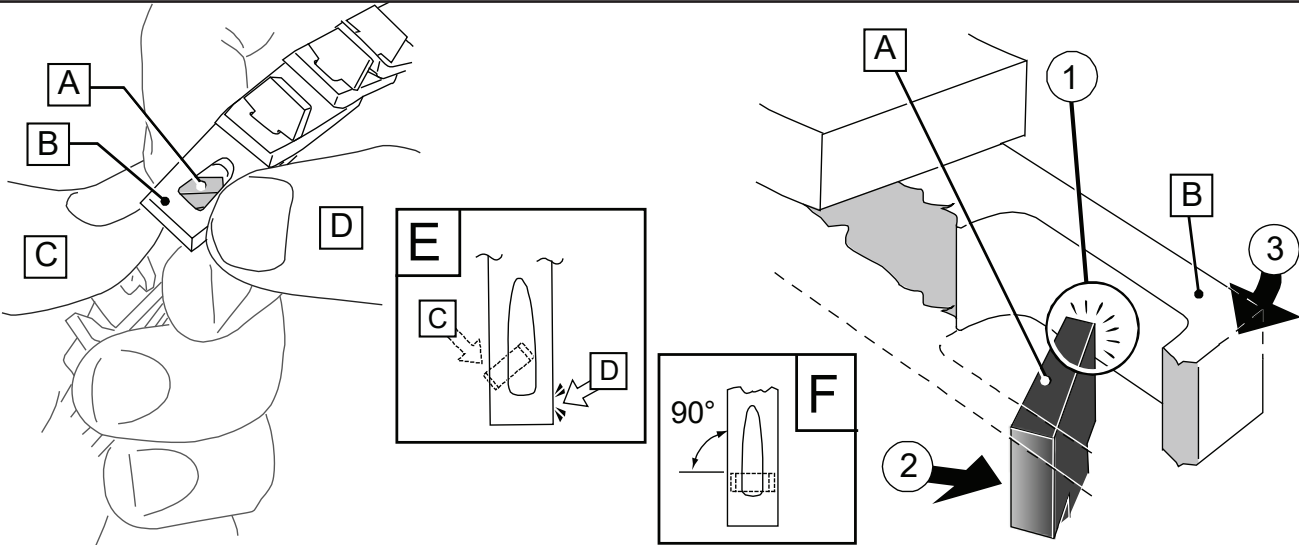
Refer to Figure 5-12 **and** Figure 5-14 and the following procedure to mount the generator link drive belt onto the generator and engine pulleys.

- 1. Make certain that the belt is sized correctly before setting it into place on the pulleys. The belt should be linked as a completed loop prior to setting it onto the pulley tracks. Run belt around the proper belt groove on the engine pulley (generator belt tracks to outside engine pulley), taking care that the belt’s tabs are facing inward toward the pulley, and the arrows on the belt point in the same rotational direction as the on the

- generator pulley. **See** Figure 5-11.
- 2. Start at the bottom edge of the pulley as per Figure 5-12, **Step #1**. Continue to set the belt into the proper groove on the generator pulley and engine pulley.
- 3. After the belt is seated into the generator pulley groove, hold the belt and the pulley with the left hand, Figure 5-14, **Step #2**), while rotating the pulley in the direction shown. At the same time, feed the belt upward with the right hand as the pulley is turned. Figure 5-12, **Step #3**).
- 4. The belt will slip into place once the left hand, which is holding the belt, reaches near the top of the generator pulley.

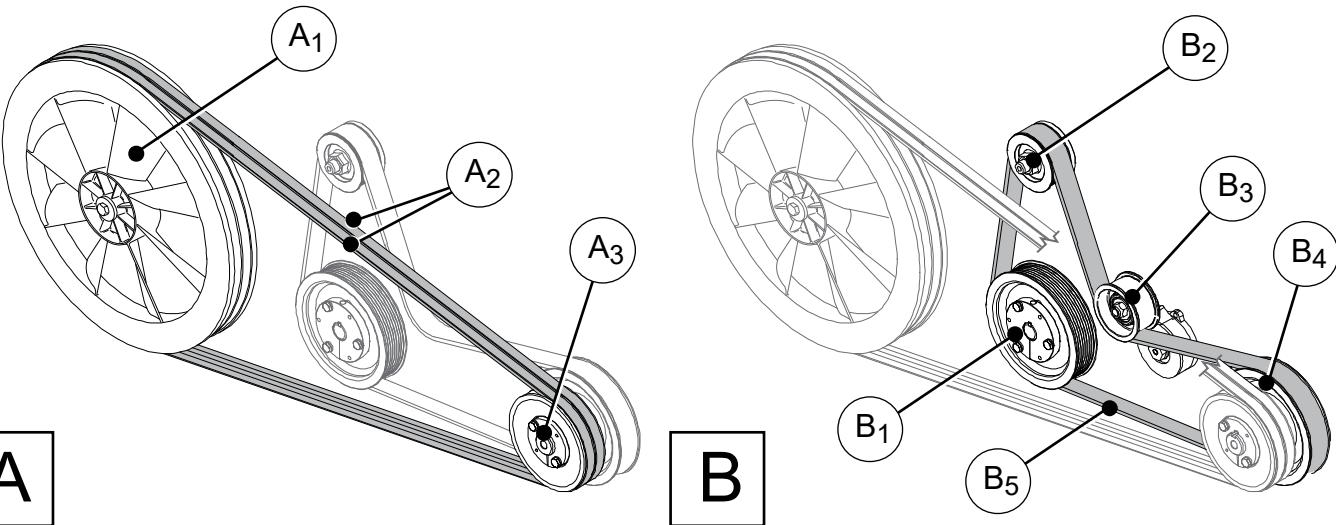
5.5.3.4 AIR N ARC® 150 SERPENTINE BELT

While the Contractor uses a simple belt to drive the AC generator, the Air N Arc® 150 uses a serpentine belt to drive both the AC generator and the welder unit. See Figure 5-13 [B] and Figure 5-15.) Proper maintenance of the serpentine belt supports these two functions. **See the following pages.**



KEY	DESCRIPTION	KEY	DESCRIPTION
A	TAB	D	THUMB (pushing on the link end)
B	LINK END	E	TOP VIEW: tab pivoting into link slot
C	THUMB (pushing on tab)	F	TOP VIEW: twist tab to lock the link in place

Figure 5-12: Attaching Generator Belt Link

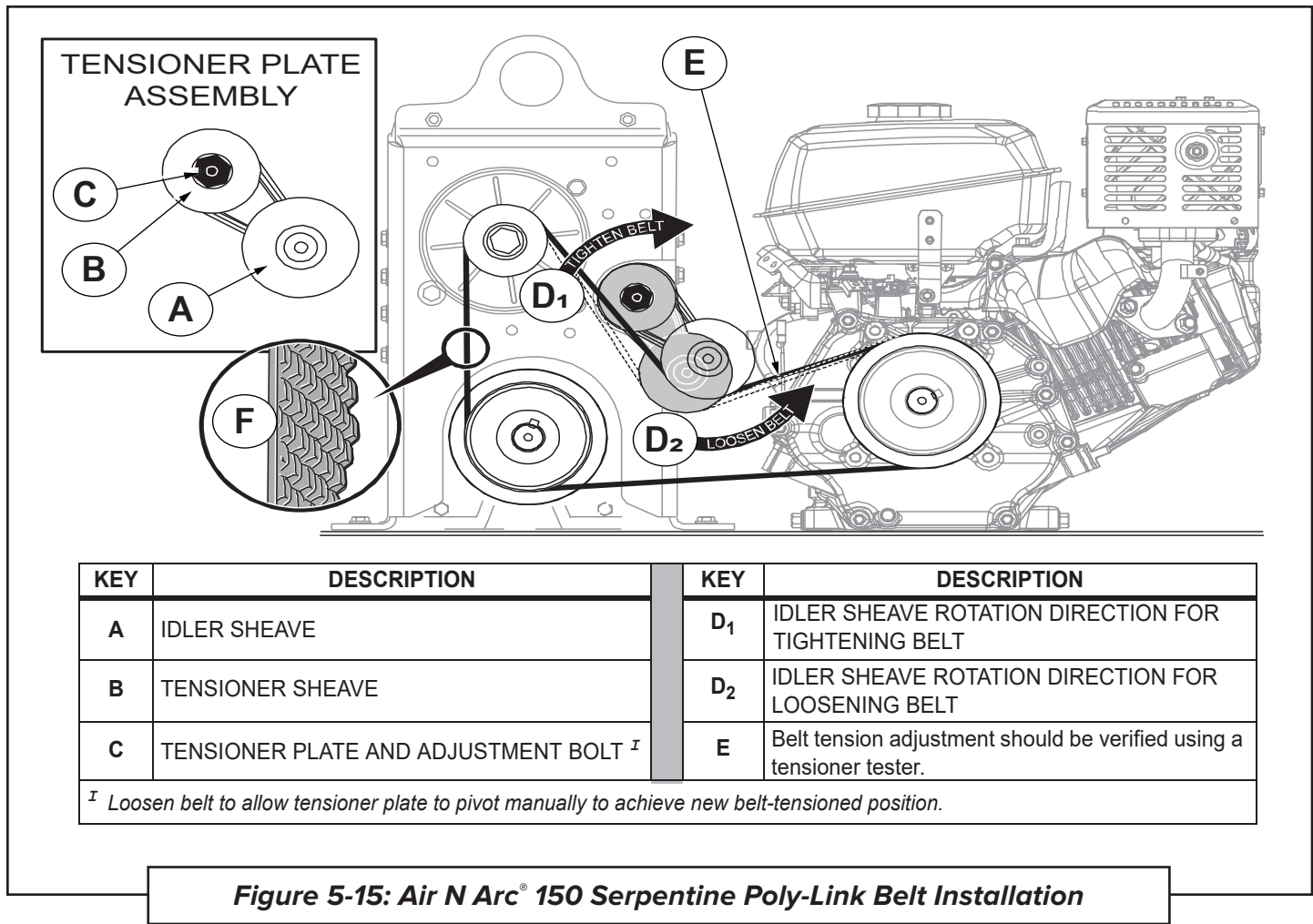
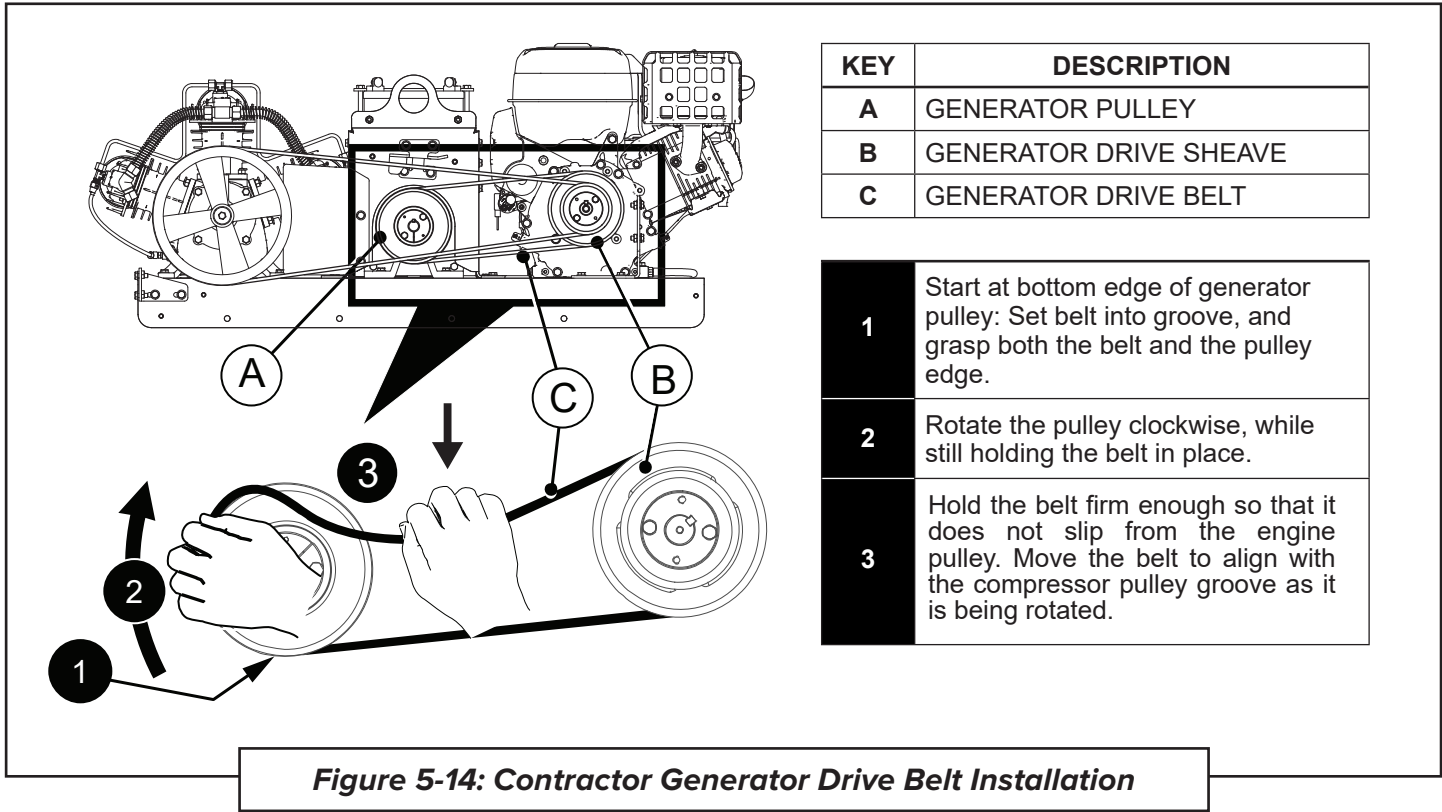


KEY	DESCRIPTION	KEY	DESCRIPTION	KEY	DESCRIPTION
A	COMPRESSOR DRIVE SYSTEM:	B	GENERATOR DRIVE SYSTEM:		
A ₁	COMPRESSOR FLYWHEEL SHEAVE	B ₁	AC GENERATOR SHEAVE		
A ₂	COMPRESSOR DRIVE V-BELT (X 2) ^I	B ₂	DC WELDER/GENERATOR SHEAVE	B ₄	GENERATOR (INNER) DRIVE SHEAVE
A ₃	COMPRESSOR (OUTER) DRIVE SHEAVE	B ₃	GENERATOR IDLER PULLEY	B ₅	GENERATOR SERPENTINE DRIVE BELT ^{II}

^I For compressor twist-link drive V-belt maintenance, order replacement belt no. **EN270451-007** (quantity of two [2]).

^{II} For generator serpentine drive belt maintenance, order replacement belt no. **DR62184**.

Figure 5-13: Sizing Air N Arc® 150 Compressor and Generator Drive Belts



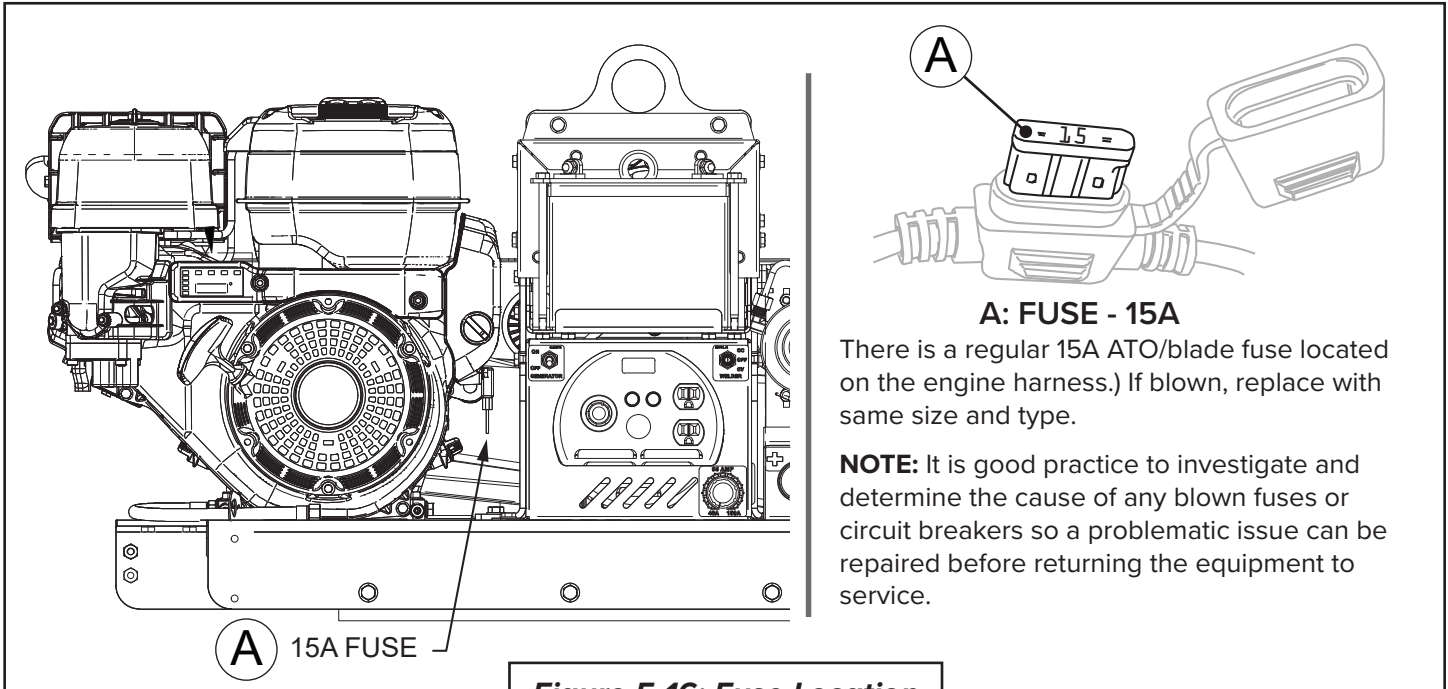


Figure 5-16: Fuse Location

5.6 SERVICING THE FUSE

1. Refer to “Figure 5-16: Fuse Location”. The fuse location shown in the figure are approximate physical locations. To verify the fuse, refer to wiring diagram. (See **Section 7.22**). This is a 15 Amp fuse.
2. Locate the fuse holder positioned below the engine control housing on the engine harness. Open the cap to expose the fuse.
3. Pull out the blown fuse and replace with a new one.

DANGER

The system fuse will need to be replaced if blown when tripped. When changing a fuse, or dealing directly with any function of the electrical system maintenance, always be aware of the safety warnings given in **Section 1, Safety**.

5.7 DRAINING THE AIR TANK

- Humidity in the intake air is a normal occurrence. When air is compressed it heats up. The hot air molecules expand - allowing more water vapor to be trapped. As the hot, compressed air cools, the air contracts and expels excess water vapor as condensate.
- Refer to Figure 5-17. Condensation is likely

to accumulate within compressed air tanks.

- Air tanks should be checked daily and allowed to drain by opening the drain cock on the tank. Close it when done. Water trapped in tanks and compressors can cause corrosion and blockages. Excess moisture in the compressed air can also cause issues with tools, and work procedures that rely on a dry air supply.
- When working in areas with high humidity, the valves may need to be checked more than once per day. This valve may be accessed at any time, including while the machine is in operation.

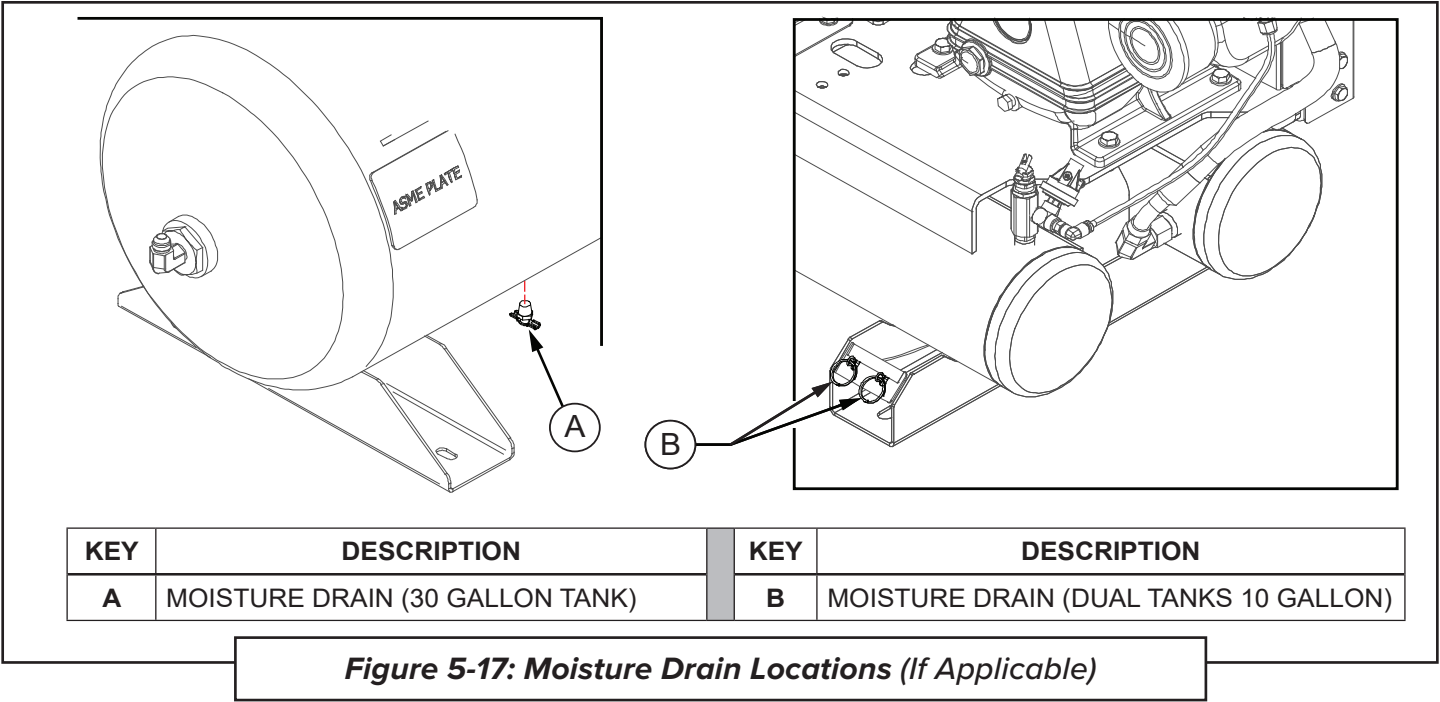
5.8 MAINTAINING THE AIR N ARC® 150 COMPRESSOR

Refer to **KIT1156** for the Air N Arc® 150 or Contractor compressor maintenance parts.

5.8.1 COMPRESSOR OIL

Before each use, always check that the oil level is between 1/4 and 3/4 of the sight glass. Ideally, the oil level should be at the halfway mark in the sight glass. See **Inset on** Figure 5-18.

Do Not operate if the oil level is at or below 1/4, or above 3/4, as equipment damage may result.



If oil needs to be added, use Vanguard™ Vanair® Reciprocating Compressor Oil. Add oil via the oil fill cap access as shown in Figure 5-20.

Likewise, the oil should be changed according to the schedule shown on “Table 5A: Maintenance Schedule”.

1. To change the oil, run compressor for 2-3 minutes to warm the oil. Disconnect power from the compressor.
2. Remove the oil fill cap. Remove the plug from the oil drain and empty used oil into an appropriate container. Use oil drain hose, attached to drain engine oil, (preferred).
3. Replace plug and slowly add fresh Vanguard™ Vanair® Compressor Oil, until the level in the oil sight glass is half-way full.
4. Replace the fill cap.
5. Dispose of used oil in accordance with local regulations for recycling and disposal of oil products. Do not discard in trash bin, sewer or water.

5.8.2 COMPRESSOR AIR FILTERS

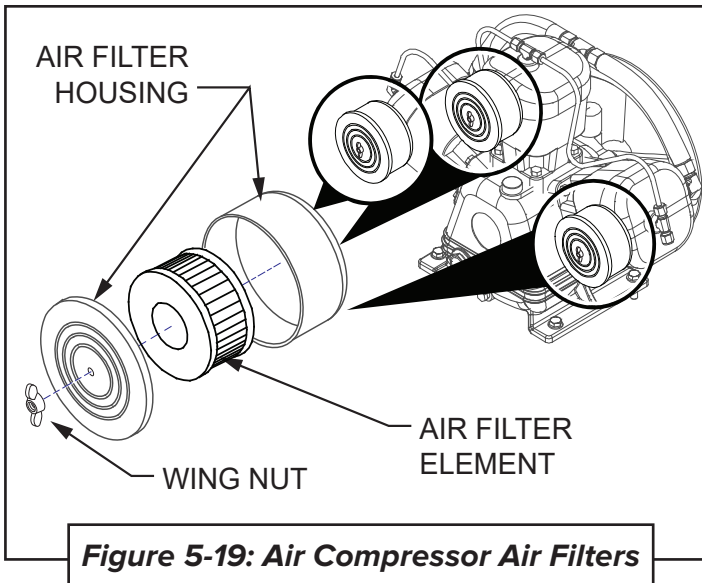
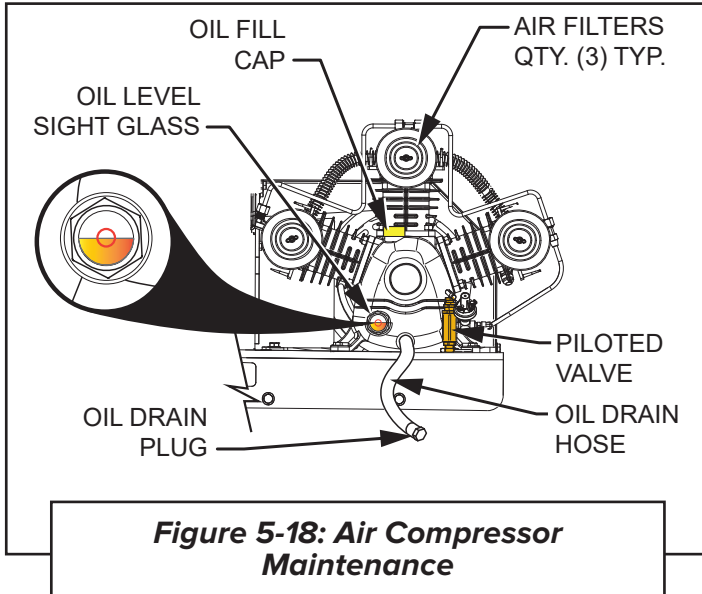
Air filters should be checked once per week. Clean or replace them if there is heavy dirt build-up.

1. To check the air filters, remove the wing nuts from the (3) filter housings. See Figure

- 5-19. The air filter element can be removed simply by pulling it out.
2. Gently tap the air filters on a hard, flat surface to dislodge any loose dust and dirt. (Avoid using a brush or compressed air to remove dust and dirt as this may cause small tears, resulting in damage to the filter that then must be replaced.
 3. Check for loose dust, dirt and debris in the filter housings. If needed, wipe them out with a clean cloth.
 4. To inspect the air filters, hold the element in front of a light source and look for holes, tears or obstructed areas. Check the flexible outer seal of the filter for signs of damage. **(Avoid holding above head as dirt may fall into eyes!)**
 5. Return the cleaned filters (or new filter elements) to their housings and secure the covers back in place with the wing nuts.

5.9 MAINTAINING THE VANAIR® VNR460 ENGINE

Before servicing or performing maintenance on the engine, turn OFF the engine and disconnect all electrical devices and battery (as applicable), and allow the engine to cool down.



5.9.1 ENGINE OIL

- 10W-30 is recommended for general all ambient temperature use between 0°F and 100°F.
(See Vanair® Part number. **274439** /qt.)
- 5W-30 is suggested when ambient temperatures are colder- and temps may fall below -20°F up to 30°F.

5.9.1.1 ADDING OIL

1. Place the Air N Arc® 150 or Contractor machine on a level surface.
2. Remove oil fill cap/dipstick and check the oil level - which should fall within the hatched area indicated the level indicator, near the

circle shown in Figure 5-21.

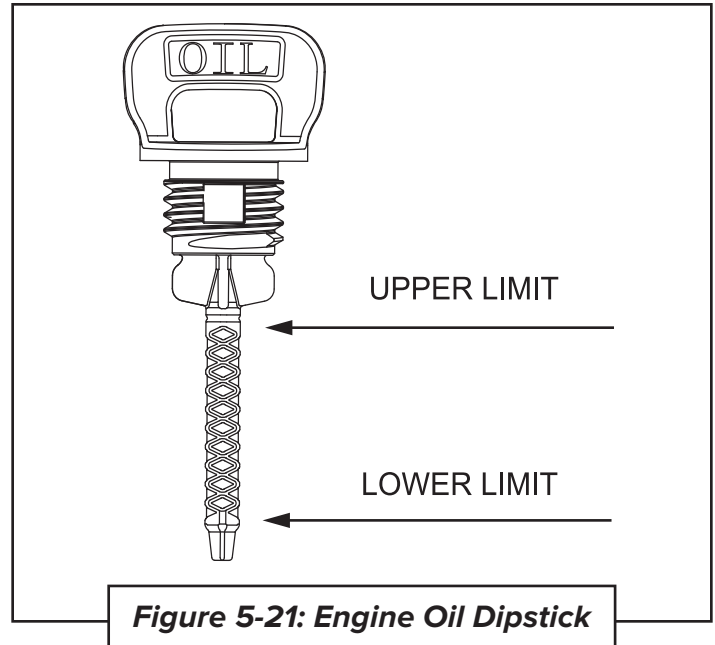
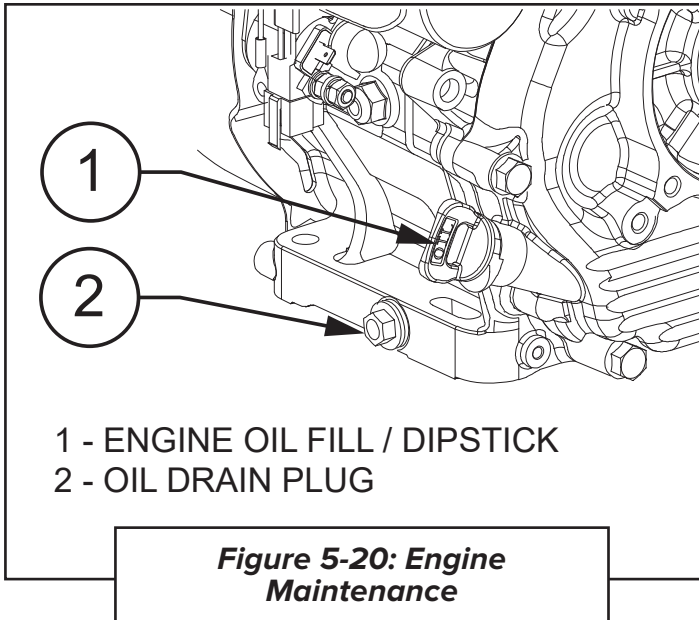
3. Slowly pour oil into the oil fill port as needed to bring the level to the upper limit on the dipstick.
4. Replace oil fill cap/dipstick. See “Figure 5-21: Engine Oil Dipstick”.

5.9.1.2 CHANGING OIL

1. The engine oil should be changed every 100 hours of operation or semi-annually. (Whichever occurs first.) See “Table 5A: Maintenance Schedule”.
2. Change the oil while the engine is still warm for easy drainage.
3. Wipe any dust and dirt away from the oil fill cap, drain plug and dipstick areas.
4. Remove the oil fill cap. Place an appropriate container at the outlet of the oil drain hose, then remove the oil drain plug to capture the used oil. See Figure 5-20.
5. Once the oil has completely drained, re-install the drain plug. Tighten to 13 ft-lb (17.6 Nm).
6. As a matter of convenience, it is advisable to change the engine oil filter while changing the engine oil, after the oil is drained from the engine.
7. With the unit sitting on a level surface, fill the reservoir with 10W-30 motor oil, Vanair® Part number 274439. Fill oil to the upper limit [H] indicated by the circle shown on the dipstick. (See Figure 5-21). **Do not** over-fill.
8. Replace the oil fill cap/dipstick on the engine.
9. Wipe up any excess or oil that may have dripped. Dispose of used oil, oily rags or towels in accordance with applicable regulations for oil waste and recycling.
Do Not discard in trash bins, sewers or water resources.

NOTICE

Operating the equipment with damaged or loose air cleaner parts can lead to premature wear and failure. Repair or replace any damaged components.



NOTICE

Do Not blow out the air cleaner's paper element using compressed air. This may cause small tears in the element and damage the integrity and effectiveness of the filter.

5.9.2 ENGINE AIR CLEANER

To check and clean the air cleaner elements follow the instructions below. Refer to Figure 5-22.

1. Unscrew the cap gasket and remove the air cleaner cover.
2. Remove the wing nut holding the air filter in place and remove the air filter elements.
3. Place the foam filter element in a solution of warm water and liquid detergent. Wash thoroughly and rinse well with clean water. Wrap it in a clean cloth and squeeze it dry. Then soak it in clean engine oil. Take it out of the oil and wrap it in another clean cloth and squeeze out all excess oil.
4. Tap the edge of the paper air filter element against a hard surface to dislodge any loose dirt and debris. **Do Not** use a brush or air compressor (this could cause damage or small tears and ruin the filter).
5. Hold the clean paper element in front of a light source. Light should be able to pass through. If any areas of the filter are clogged with dirt and covered, it should be replaced with a new paper filter element.

6. After cleaning, replace both air filter elements back in their assembly.
7. Replace the wing nut and hand-tighten.
8. Replace the air cleaner cover and cap gasket. Tighten by hand.

WARNING

Gas fumes are highly flammable. Keep all ignition sources away from the unit (lit cigarettes, electrical/grinding sparks, open flames, etc.) Do NOT operate machine with the gas cap OFF.

When changing the fuel filter, make certain the machine is turned OFF and has cooled prior to removing the gas fill cap and servicing the fuel filter.

5.9.3 ENGINE FUEL SYSTEM

- Fuel specifications:
- **Do Not** use ethanol fuels such as E15, E20, E85, or old, stale or contaminated fuels. Use of these fuels are NOT approved for this engine and will void the engine's warranty.
- Use gas with Octane (R+M)/2 rating of **87** or higher
- Methyl Tertiary Butyl Ether (MTBE) and unleaded blended gasolines, up to 15%. MTBE maximum, are approved.
- **Do Not** add or mix oil with the gas.

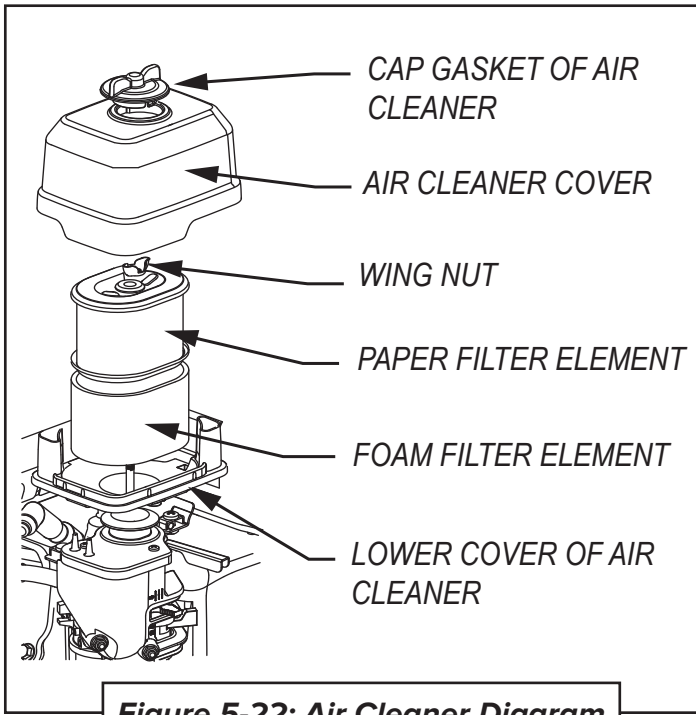


Figure 5-22: Air Cleaner Diagram

- **Do Not** over fill the gas tank. Allow room in the tank for gasoline to expand due to temperature changes.

5.9.3.1 FUEL FILTER

This engine uses a fuel tank filter.

1. Shut off engine and allow to cool.
2. Remove the fuel tank cap and find the cup-shaped fuel filter, seated just inside the opening of the gas tank.
3. Pull out and clean the filter with liquid cleaning solvent and pat dry with a lint-free cloth. If needed, simply replace the element.
4. Replace filter in the neck of the gas tank and tighten the gas fill cap in place properly.

5.9.4 ENGINE SPARK PLUG

Inspect the spark plug after every 100 hours of use, or 6 months. Replace with a new one every 300 hours or annually.

1. Find the spark plug boot (located above and behind the valve cover). See “Figure 5-23: Engine Spark Plug”.
2. Firmly but carefully pull the rubber boot off to expose the spark plug beneath.
3. Use a spark plug socket and socket wrench to remove the spark plug.

4. Visually inspect plug for dirt, cracks in the insulator, wear and corrosion. If excessively worn or damaged, replace the spark plug with a new one.
5. Superficial corrosion and carbon build-up can be removed with a solvent such as alcohol or carburetor cleaner, and gentle brushing with a small wire brush. Wipe clean with a clean cloth.
6. Use a feeler gauge or wire gauge to set gap at 0.030 in (0.76 mm). See “Figure 5-24: Spark Plug Gap”.
7. Install spark plug and tighten to 20 ft-lb (27 Nm). If a torque wrench is not available, tighten snug, but do not over-tighten.
8. Push spark plug boot securely into place, down over the spark plug. Refer to “Figure 5-23: Engine Spark Plug”.

! TIPS & TRICKS !

Using **DIELECTRIC GREASE** on the outside of the spark plug, connection and the boot will help seal and protect the electrical connection from water and the elements. **Do NOT** put on metal mating surfaces needing connectivity.

CAUTION

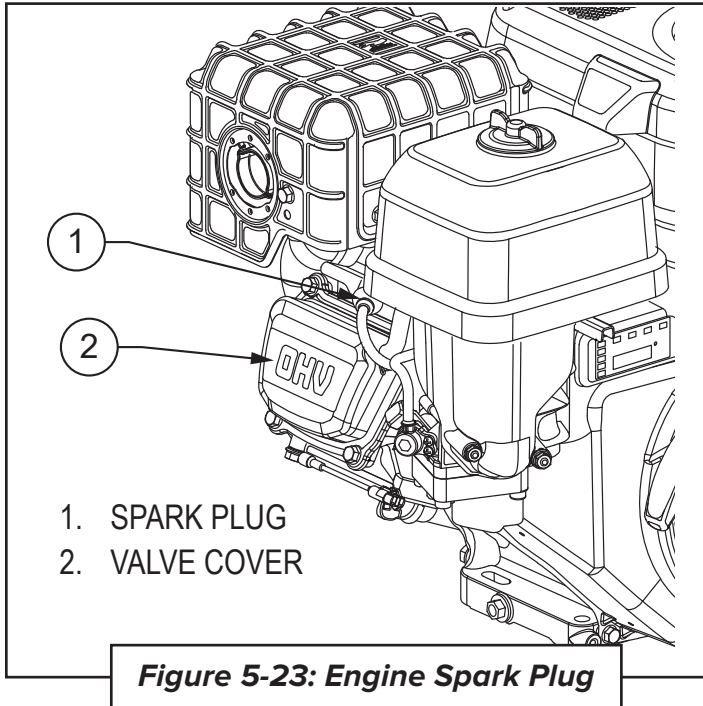
Electrical shock can cause injury. **Do NOT** touch wires or ignition components while machine is running.

CAUTION

Parts can wear or degrade over time. **Do NOT** operate equipment with worn or damaged parts. Replace as needed.

NOTICE

When using a cleaning solvent, always follow the directions for proper use and safety precautions listed on the product.



5.10 INTERMITTENT USE

If the unit is not used on a regular basis 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.

5.10.1 LONG TERM STORAGE

- Disconnect the battery cable from the positive (+) side of the battery.
- Depressurize the air tank, then open drain valve to allow any condensation to drain from the air tank.
- Add fuel stabilizer to the gas tank and fill with fuel to prevent moisture build-up in the tank.
- Cover the unit with a tarp or plastic to prevent the accumulation of dust but leave the bottom open for air circulation.

CHECKING / SETTING SPARK PLUG GAP

0.6 - 0.8mm
(0.024 - 0.031 in)

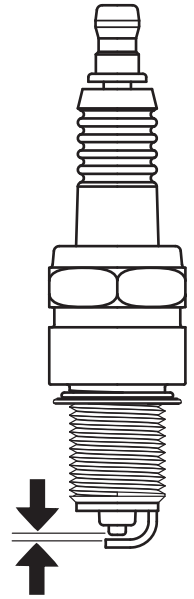


Figure 5-24: Spark Plug Gap

5.11 ENGINE VALVE CLEARANCE

After 300 hours of operation it is suggested to have a trained service technician check the engine valve clearance. Adjust as needed. (Refer to **Table 2C: under Engine Specifications in Section 2.**)

SECTION 6: Troubleshooting

6.1 GENERAL INFORMATION

The information contained in this section has been compiled over the years from the field. It contains symptoms and known causes for the most common types of issues which may occur. Each situation should be analyzed before making repairs or replacing components to help ensure the best known course of action is taken.

A visual inspection is worth performing when analyzing any issue and may identify and prevent unintended damage to the machine or components. Procedures which can be accomplished with the least amount of time and effort should be performed first as they may resolve the problem most quickly.

Vanair® strives to anticipate most circumstances that may occur during the operation of these machines. However, it is inevitable an issue may occur that was not anticipated or covered in this **Troubleshooting Guide**. Should a problem arise that remains unresolved after referring to this troubleshooting information, please contact the Vanair® Service Department for assistance.

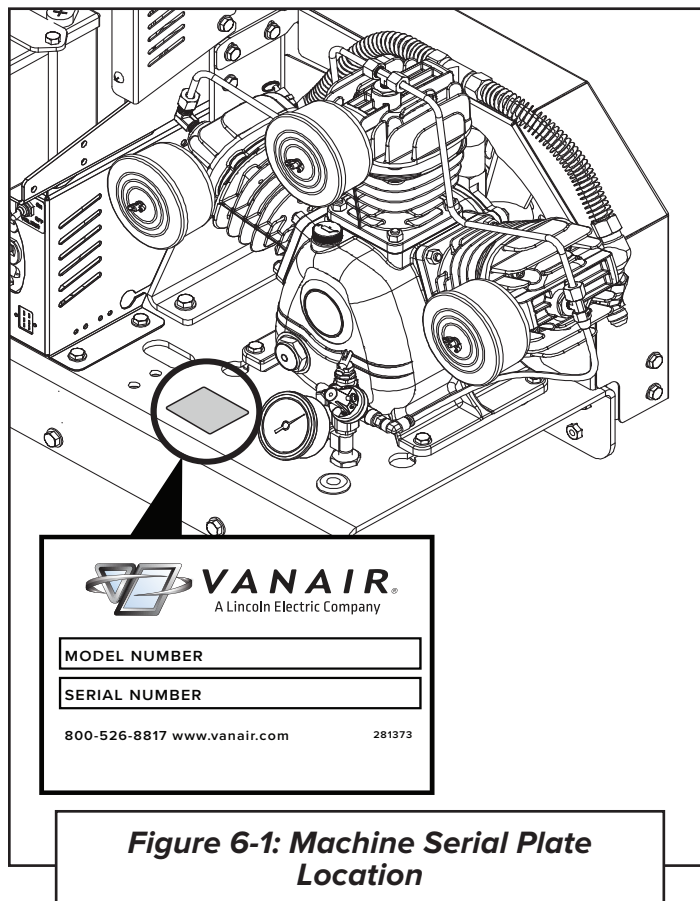


Figure 6-1: Machine Serial Plate Location

NOTICE

When contacting the Vanair® Service Department, please have the machine model and serial number available to expedite service. See **Figure 6-1** for the location of your machine's serial number. The machine's serial number is shown on the display panel at Start-Up.

WARNING

Before starting the unit, performing maintenance, or replacing parts, relieve the system air pressure by opening Service Valve and the air tank's drain valve. This will vent the air pressure to the atmosphere.



10896 West 300 North
Michigan City, IN 46360

Toll Free: (800) 526-8817
Telephone: (219) 879-5100

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

vanair.com

6.2 EXTREME CONDITIONS

Machine review and tasks on the maintenance schedule should be done more frequently when operating the equipment under harsh conditions or in a dusty or dirty environment.

See **Table 6A: Troubleshooting Guide** and **Table 5A: Maintenance Schedule**.

For additional information on the safe operation of this equipment under extreme conditions, consult **Section 4.7 Extreme Condition Operation** in this manual.

WARNING

Do Not operate this machine when there are known unsafe conditions. Disable the machine by turning the engine OFF, depressurizing the air tank(s), relieving system pressure, and disconnecting the battery power. Lock and Tag Out to prevent others from using the machine until safe repairs can be made.

6.3 VISUAL INSPECTION

When something is not working as expected with your Air N Arc® 150 or Contractor, take a moment to visually inspect the machine. Before other troubleshooting operations such as cleaning, disassembly or replacing parts, look at the external appearance of the machine. There may be visible clues as to what may be causing an issue.

Is there oil present beneath the machine, or a leak? Lots of dust and dirt on the surface? Are any hoses or fittings loose or disconnected? Are any screws, nuts or bolts missing? Are vents and cooling fins obstructed or covered by any debris? Are there any signs of damaged, broken parts or loose wires? All observations offer clues of possible problems during your troubleshooting process.

After checking the external appearance of the machine, clean it of excess dust, dirt, debris, grease and oil spills using a clean soft cloth or soft brush as needed. Then proceed with the guidance in **Table 6A: Troubleshooting Guide**.

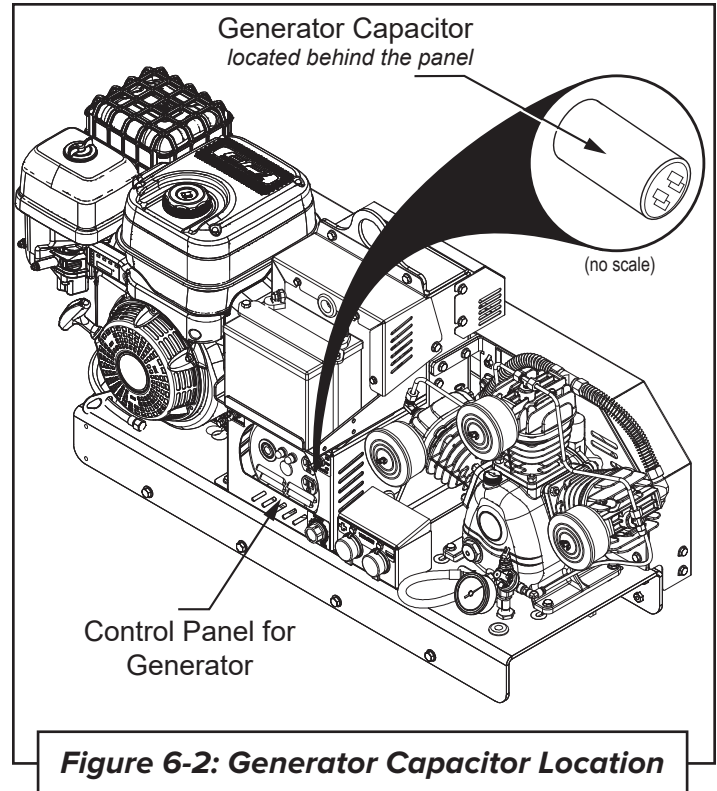


Figure 6-2: Generator Capacitor Location

6.3.1 AC GENERATOR CAPACITOR

- The main capacitor is an important component of all portable generators. If this goes bad, often the generator will not operate properly, or not at all. The capacitor should be diagnosed by a trained technician and if it is bad the capacitor should be replaced.
- When troubleshooting the AC generator unit, **Table 6A: Troubleshooting Guide**, may point to a faulty or failed capacitor. When working with capacitors, be aware these electrical components may hold a substantial electrical charge even when the machine is not running. There is a risk of electrical shock. Please follow safety procedures to avoid personal injury and possible damage to other electrical components.
- When a capacitor goes bad it can result in either an electrical short (electrical signal follows an unintended path) or an electrical open condition (path is broken and the electrical signal is unable to reach its intended destination).

6.3.1.1 STEPS TO CHECK THE HEALTH OF THE CAPACITOR:

1. Ensure that the engine is OFF.
2. The generator's capacitor is a small electrical component in the shape of a cylinder located behind the front control panel. See Figure 6-2. The generator panel cover must be removed to access this.
3. After removal of the panel cover, look inside and visually locate the capacitor.
4. The capacitor used for this machine is a small cylinder type with 2 or 4 connectors at one end. See the ***Inset in*** Figure 6-2.
5. Visually check the capacitor. This alone may be sufficient to indicate whether the capacitor needs to be replaced or not.

What to look for:

- If the terminal end of the capacitor cylinder is deformed or shows a bulge, this is a good indication it has failed.
- The connectors on the end of a bad capacitor may appear loose or pushed out from the rest of the capacitor.
- Gel or oil is leaking from the capacitor.
(Do not touch this substance with bare hands.)
- You may also notice a smell of burnt plastic from an overheated capacitor.

WARNING

SHOCK RISK: The capacitor for the generator may hold a substantial electric charge, even when the machine is not running. Never touch the conductors of a capacitor with bare hands before it has been safely discharged. Use caution and follow the Discharge directions in **Section 6.3.1 item #3.**

If any of the above conditions exist, the capacitor is likely bad and will have to be replaced. If no such visual indicators exist, the capacitor can be tested electrically. **See the following:**

1. When working with capacitors that have been in use, do not touch or bridge its connectors with bare hands. Any stored energy in the component may discharge, resulting in an electric shock.

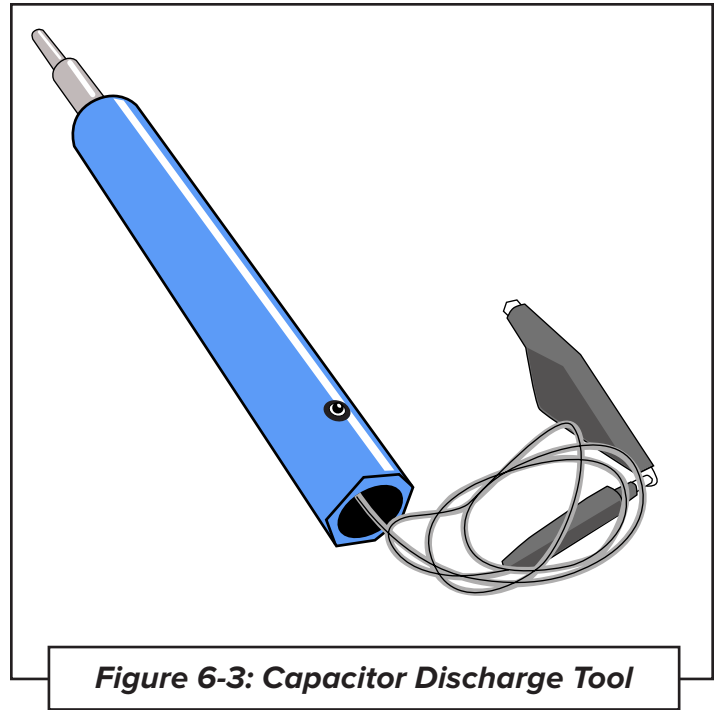


Figure 6-3: Capacitor Discharge Tool

2. Carefully disconnect wires, one at a time from the connectors and remove the capacitor from the circuit.
(For added protection, wear non-conductive gloves and safety glasses.)
3. Discharge any residual electrical charge using an inexpensive capacitor discharge tool. See **Figure 6-3.**
4. Follow the manufacturer's directions for its use. If no discharge tool is available, use a screwdriver with an insulated handle to short the connectors manually. **Do Not touch the bare metal of the screwdriver. You will experience an electrical shock where your skin comes in contact with the metal.**
5. Connect or touch the discharge tool's connectors (or the metal part of the screwdriver) between both connectors on the capacitor. Hold in place for about 5 seconds. (There may be a spark if using a screwdriver, be aware of this.) Once the capacitor has been safely discharged, proceed to the following tests.

6.3.1.2 TEST THE CAPACITANCE.

The capacitor's rating should be printed on the side of the component in micro farads (μF).

- Use a multimeter or capacitance meter to measure the capacitance between the connectors. **Red to Positive** (anode) lead, **Black to Negative** (cathode). Measured capacitance should be within $\pm 5 \mu\text{F}$ of the component's rating. If the reading does not fall within this tolerance, it may be time to replace the capacitor.
- (If the measured capacitance is slightly more than $\pm 5 \mu\text{F}$, connect a multimeter or an analog ohmmeter (with a needle) across the terminals. Set the meter to measure resistance (Ohms) with scale at Rx100.)
- If capacitance falls within the $\pm 5 \mu\text{F}$ range, and also passed the visual checks, a faulty capacitor may not be the issue. Carefully reconnect wires, one at a time, to the connectors on the capacitor and reinstall the component.

- Use a 9 Volt battery and jumper wires to charge the capacitor. (**Positive to Positive - Negative to Negative**.) If the needle moves towards the right side, this indicates that there is an increase in resistance as the capacitor charges. Once fully charged (up to +9V), the resistance should remain constant, an indication that the capacitor is healthy. If so, disconnect from 9 Volt battery, discharge the capacitor and reinstall.
- If resistance does not hold steady, the capacitor is bad and should be replaced.

6.4 ENGINE TROUBLESHOOTING

There are a number of abnormal machine behaviors that can arise from basic engine issues. If an engine fault is not covered in **Table 6A: Troubleshooting Guide**, please refer to the **VNR Engine Manual, Section 5: Troubleshooting** for additional troubleshooting information about the Vanair® VNR460 engine.

TABLE 6A: TROUBLESHOOTING GUIDE

FAULT/MALFUNCTION	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Engine Will Not Crank	- Faulty battery connection - Battery out of power - Engine fuse is blown	- Check for proper battery connections and battery charge - Re-charge or replace the battery - Check the engine fuse (See 5.4.4)
Engine Cranks, But Will Not Start	- Low fuel and/or oil level(s) - Plugged fuel filter - Low battery voltage/Poor connection - Clogged engine air filter - Key/Ignition switch in OFF position - Faulty spark plug - Spark plug wire not connected - Bad/old fuel or water in fuel tank	- Add fuel and/or engine oil (See 5.5.1 and 5.5.3) - Clean or replace fuel filter (See 5.5.3.2) - Recharge or replace battery, Check and clean electrical connections - Clean and/or replace engine air cleaner (See 5.5.2) - Turn Key/Ignition switch to the ON position - Check the spark plug; clean, check gap, replace as needed (See 5.5.4) - Make sure the spark plug wire and boot are securely in place (Figure 5-23) - Siphon to remove bad fuel. Replace with fresh fuel
Improper Control Operation: Engine Does Not Speed Up	- Throttle solenoid stuck - Governor stuck - Dirty fuel filter - Operating pressure too high - Faulty pilot valve - Faulty pressure switch	- Lubricate; replace throttle solenoid if needed - Free governor and lubricate if necessary - Clean or replace fuel filter (See 5.5.3.2) - Adjust compressor cut-in/cut-out pressure (See 5.3.2) - Readjust or replace the pilot valve - Replace pressure switch
Improper Control Operation: Engine Does Not Slow Down	- Leak in control line - Faulty pressure switch - Faulty pilot valve - Governor stuck	- Check for leaks; replace line if needed - Replace pressure switch - Readjust or replace pilot valve - Free governor and lubricate as necessary
Engine Overheats	- Oil level too low or too high - Air flow is being obstructed - Engine overloaded - Cooling system components clogged or restricted	- Check for proper engine oil level (See 5.5.1) - Move unit to unobstructed location, away from walls/buildings - Reduce load and demand; or use only one function at a time - Clear debris/dirt from cooler core, cooling fins and vents
Engine Stops During Operation	- Low oil level - Engine temperature too high - Engine overloaded - Dirty fuel filter	- Check for proper engine oil level (See 5.5.1) - Allow engine to cool (See above for Engine overheats) - Reduce load and demand; or use only one function at a time - Clean or repair fuel filter (See 5.5.3.2)
Severe Vibration	- Bent crankshaft - Loose compressor flywheel - Loose mounting bolts - Internal engine damage	- Remove and replace (Contact Vanair® for details.) - Inspect and secure flywheel - Check and tighten bolts as needed (Contact Vanair® Service Department)
Knocking Noise	- Loose valve assembly - Piston hitting cylinder head - Worn connecting rod bearing - Worn crank shaft bearing	- Tighten valve bolt and lock nut (Contact Vanair® Service Department) - Replace connecting rod bearing - Replace crank shaft bearing

TABLE 6A: TROUBLESHOOTING GUIDE (CONT.)

FAULT/MALFUNCTION	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Basic Compressor Troubleshooting		
Compressor Overheats	• Low compressor oil level • Unloader valve(s) sticking or faulty • Obstructed or restricted air flow	• Check for proper compressor oil level (See 5.4.1) • Valves may need to be cleaned, rebuilt or replaced (Consult Vanair® Service Department for details) • Check for obstructions that may limit air flow to compressor, check, clean, or replace compressor air filter elements (See 5.4.2.)
Compressor Will Not Build-Up Air Pressure	• Worn or broken valve plate • Valve plate dirty • Leaks from safety valve • Leaks from bolt holes • Uneven valve seat surface • Excessive blow by on piston rings • Pressure control out of adjustment or malfunctioning • Obstructed or restricted intake air flow • Belt(s) slipping • RPM is too slow • Leak in the air system • Service valve is open • Faulty pilot valve • Pilot valve switch open	• Valve may need to be replaced (Consult Vanair® Service Department for details) • Valves may need to be cleaned, rebuilt or replaced (Consult Vanair® Service Department for details) • Repair or replace safety valve • Evenly tighten nuts to ensure a good seal with gasket • Remove and lap the surface • Replace with new rings (Consult Vanair® Service Department for details) • Pressure setting may need to be reset (See 5.3.2.) • Check for dirty or clogged air filter elements. Clean or replace. • Check compressor belt(s) for wear and proper sizing. (See 5.3.3.) • Bring engine speed up to proper RPM setting. • Inspect air system for leaks, loose fittings, or fasteners, and correct • Close service valve • Replace or rebuild the pilot valve • Check pilot valve, make sure it is closed during operation
Compressor Belts Slipping	• Working pressure too high • Improper belt tension • Oil on belt(s) • Worn belt(s)	• Lower working pressure • Adjust belt tension (size); Check for wear, replace as needed (See 5.3.3.) • Clean and dry belts, sheave and pulley treads • Replace old, worn belts with new ones (See 5.3.3.)
Pressure Gauge Not Accurate	• Pressure gauge malfunctioning	• Check connections; replace gauge as needed
Excessive Moisture in the Compressor Air	• Water accumulation in the tank	• Drain water from the tank (See 5.3.5.)
Compressor System Over-Pressures and/or Relief Valve Opens	• Damaged or kinked control line • Restriction in control line • Control line connections not properly seated or poor connection • Pilot valve out of adjustment or malfunctioning • Defective safety valve • Unloader Valve sticking • Damaged reed valve • Internal compressor damage	• Check line for signs of damage or kinks; re-route, re-tie, or replace as needed. (See 7.23 "Hose Installation Guide") for assistance in running or checking hose lines). • Clean if soiled; if ice is present, clear and remove • Check the lines for proper seating, ensure line ends have been cut cleanly and are squared not angled (Do Not use wire cutters; use a loom cutting tool or a clean, razor-sharp blade). • Pressure settings may need to be reset (See 5.3.2.) • Replace safety valve • (Check air filters) Free the unloader, clean or replace as needed. • Replace reed valve • (Consult Vanair® Service Department for more information.)

TABLE 6A: TROUBLESHOOTING GUIDE (CONT.)

FAULT/MALFUNCTION	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Basic Compressor Troubleshooting (Cont.)		
No Service Air Output	- If equipped, valve/velocity valve, not functioning properly - Pinched or plugged service line - Damaged check valve	- Reset or replace the OSHA (service) valve - Eliminate the kink in the line, or remove obstacle in line - Replace check valve
System Operating Pressure is Below Specified Minimum	- Pressure control out of adjustment or malfunctioning - Compressor capacity too low to accommodate demand - Clogged compressor air filter(s) - System leaks or damaged - Input RPM is too low - Pilot valve is stuck open - Unloader valve sticking	- Pressure settings may need to be reset. See 5.3.2, Adjusting Cut-in/Cut-out pressure. - Reduce demand, or use a larger compressor system with higher capacity - Clean or replace compressor air filter elements (See 5.4.2) - Inspect unit for leaks, repair and/or replace damaged parts as needed - Adjust to proper setting - Inspect valve, clean or replace if needed (Check air filters) Free the unloader valve, clean or replace as needed
Excessive Amount of Oil in the Air Discharge	- Compressor oil level is too high - Worn piston rings	- Check oil level and drain enough to bring to proper level. See 5.4.1 - Replace piston rings (Consult Vanair® Service Department for more information)
Excessive Compressor Oil Consumption	- Worn piston rings - Oil leaks - Wrong oil being used	- Replace piston rings (Consult Vanair® Service Department for more information) Note: This may indicate that the compressor unit itself may need to be replaced) - Check for any source of oil leaks, and repair - Use correct oil for the compressor; drain and refill with proper compressor oil
Basic AC Generator Troubleshooting		
No AC Generator Output	- Generator belt slipping or damaged, Serpentine belt slipping or damaged, Air N Arc® 150 only) - Faulty AC generator relay - Failed capacitor - Tripped breaker - Faulty generator	- Re-seat belt in track, adjust belt tension if needed. If belt is damaged, replace; make sure the belt and pulleys are clean and free of oil, See 5.3.3.7 through 5.3.3.12 and Figures 5-12 and 5-14. - Check, replace if necessary - Check, replace if necessary (See 6.3) - Inspect and correct any obvious causes; reset breaker. See 4.5.1 and Figures 4-1 or 4-2, callout [E]. - Consult Vanair® Service Department - generator may need to be replaced.
Low AC Voltage	- Engine speed too low for demand - Faulty capacitor - Generator belt slipping	- Adjust speed control (See 5.3.1) - Check; replace if necessary. See 6.3.1. - Check generator belt for wear or damage; See 5.3.3.8.
High AC Voltage	Engine speed too high for demand	Adjust engine speed control. See 5.3.1.

TABLE 6A: TROUBLESHOOTING GUIDE (CONT.)

FAULT/MALFUNCTION	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
DC Generator - Basic Welder Troubleshooting (Air N Arc® Only)		
Welder and/or Battery Charger Behaves Erratically	• Connection cables or receptacles are soiled or contaminated • Welding function is not drawing enough operating power	• Check for twisted cables, dirty or loose connections; Untwist and straighten any suspected cable tensions; Carefully wipe off any contaminants on cable connectors before reconnecting; Replace worn or damaged receptacles (<i>if function continues to be erratic, Contact Vanair® Service Department for more information</i>). • If running more than one function together, avoid use of another function during welding
No Welder Output	• Check power to welder • Incorrect voltage from battery • Serpentine belt out of position or malfunctioning • Welder 6-pin connector not making proper connection • Loose or bad welder connections • Internal fuse blown in welder module	• Press power button on welder lead • Check battery voltage for minimum output of 11VDC • If belt is damaged, replace. Otherwise, re-seat belt. Adjust belt to proper tension. See 5.3.3.12 and 5.3.3.13, Figure 5-12 [B]. • Check the welder's 6-pin connector. Make sure it is fully inserted. Look for bent or broken pins in plug; Clean connection as needed. • Inspect and re-seat all welder connections • (Contact Vanair® Service Department for more information)
Display Not Working	• Loose or faulty wiring/connections • Display is damaged, or faulty	• Check wiring and connectors are secure; Replace if faulty • Check for damage; If wires and connections appear good, the display may need to be replaced.

SECTION 7: Illustrated Parts List

7.1 PARTS ORDERING INFORMATION

Part orders for the Contractor or the Air N Arc® 150 16 HP Series, 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 your machine. This can be obtained from the Bill of Lading for the machine package, or from the unit's serial number plate. The serial plate should be located on the frame in front of the air compressor - in front of the oil level sight glass. See "Figure 7-1: Machine Serial Number Plate Location" for location of machine package serial plate.

Consult "Table 7A: FULL MAINTENANCE KITS" and others on the next several pages for a listing of replacement parts.

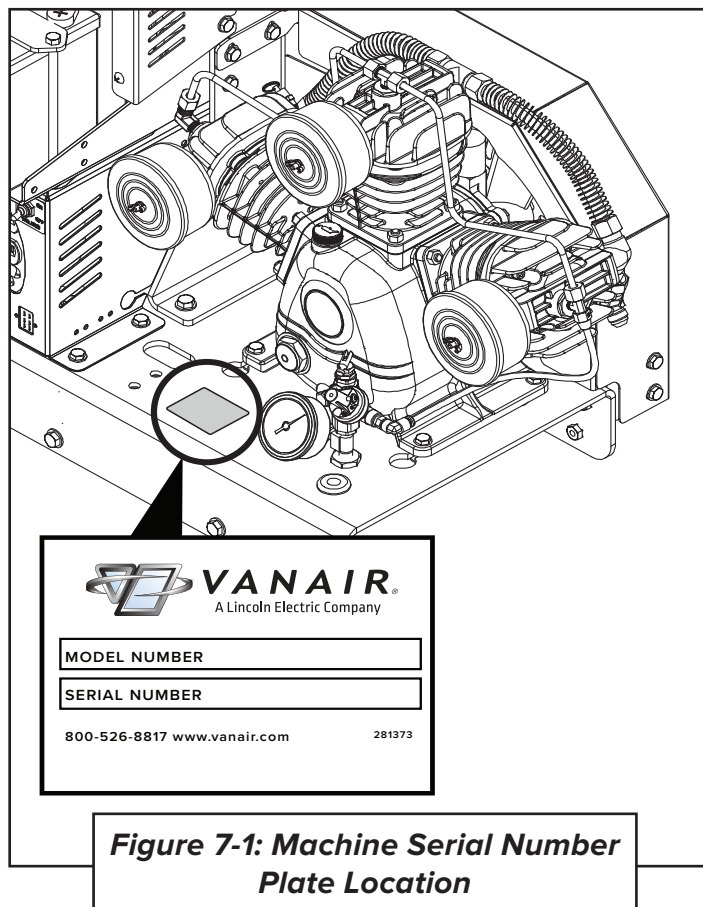


Figure 7-1: Machine Serial Number Plate Location



10896 West 300 North
Michigan City, IN 46360

Toll Free: (800) 526-8817
Telephone: (219) 879-5100

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

vanair.com

TABLE 7A: FULL MAINTENANCE KITS				NON-ROUTINE MAINTENANCE KITS			
KEY NO.	ORDER PART NUMBER	DESCRIPTION	QTY	KEY NO.	ORDER PART NUMBER	DESCRIPTION	QTY
1	KIT1136	Kit, Engine Service (engine routine)	1	3	KIT1109	Kit, Compressor Valve Plate Assembly ^x	1
2	KIT1168	Kit, Full Service (compressor and engine routine)	1	^x Includes plates and gaskets - order one kit per cylinder			
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.							
TABLE 7B: INDIVIDUAL MAINTENANCE ITEMS				NON-ROUTINE MAINTENANCE ITEM PARTS (CONTINUED) (FOR FULL NON-ROUTINE KITS REFER TO TABLE 7A)			
KEY NO.	ORDER PART NUMBER	DESCRIPTION	QTY	KEY NO.	ORDER PART NUMBER	DESCRIPTION	QTY
1	CM271646-02	Element, Compressor Air Filter	3	11	C047028	Gauge, Air 0-300 PSIG	1
2	271856-1QT	Oil, Compressor Reciprocating ^{xx}	1	12	EL62049	Fuse, ATO 10 Amp Red ^{xv}	1
3	285374-01	Element, Engine Air Filter	1	13	264316	Fuse, ATO 25 Amp Clear ^{xv}	1
4	844300-001-QT	Oil, VNR460 Engine	1	14	267880	Fuse, ATO 20 Amp Tan ^{xv}	1
5	EN270163-01	Element, Engine Fuel Filter	1	15	CO27785	Breaker, Circuit 15 Amp	2
6	285374-02	Spark Plug, Engine	1	16	267306	Breaker, Circuit 50 Amp Auto-Reset with Studs	2
7	DR52382	Belt, Drive (16 HP) - Generator ^{xxx}	1	17	CO62617	Breaker, manual reset 20A (panel mount)	2
8	DR273286	Belt, Drive (16 HP) - Compressor ^{xxx}	1	18	PR270548	Boot, circuit breaker (instrument panel location)	2
9	287477	Belt, 1/2" In A-Groove, 2-Band	1	19	CO25331	Valve, Pilot Replacement	1
10	DR79108	Belt, Serpentine, 6K Rib	1	20	^v	Battery, 12V Replacement	1
^{xx} Use only Vanair® Reciprocating Oil and Genuine Vanair® Parts. Inspect and replace damaged components before operation. Substituting non-Vanair® oil or non-genuine Vanair® aftermarket components WILL VOID THE COMPRESSOR WARRANTY! Compressor service oil capacity is approximately 0.875 quarts (0.828L).							
^{xxx} The Contractor is driven by two poly-link belts. When a belt needs to be replaced, Vanair® recommends changing both drive belts at the same time regardless of only one needing to be replaced							
^{xv} Some standard components, such as fuses, may be obtained quicker and more economically from local sources such as an Auto Supply Store, etc.							
^v Due to shipping regulations pertaining to lead acid batteries, Vanair® recommends purchasing a replacement battery from a localized source.							

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 preferred 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 5.5.2, Long Term Storage**.

TABLE 7C: SERVICE/MAINTENANCE LOGS

[illegible]

[illegible]

PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	287477	BELT, 1/2" A-GROOVE 2-BAND V BELT	1
2	828302-100	CAPSCREW,S.H. #10-24UNC X 1	6
3	829104-100	CAPSCREW, HEX GR5 1/4-20 X 1	2
4	829807-100	CAPSCREW, HEX GR5 7/16-20 X 1	1
5	838502-047	WASHER, LOCK #10	6
6	838504-062	WASHER, LOCK 1/4	2
7	A12924Z	SHEAVE, SERPENTINE, 6 GROOVE	2
8	DR23056Z	BUSHING, JA, QD, 7/8 DIA., 3 BO	1
9	DR31603Z	SHEAVE,2 GROOVE 3.95 SPLT TAPR	1
10	DR57469Z	BUSHING, JA, QD, 1 DIA., 3 BO	1
11	DR61062Z	BUSHING, L, QD, 1 DIA, 2 BOLT	1
12	DR79108	BELT,SERPENTINE 6K RIB X 53.9 LG ANA150	1
13	FA55453	WASHER,FLAT 7/16 DIA., ZINC P	1

6100380ID_r1 ANA150

NOTES:

1. ALL BOLTS TO BE TORQUED TO THEIR RESPECTIVE SAE TORQUE SPEC FOR ITS GRADE AND SIZE UNLESS OTHERWISE SPECIFIED.
2. DRAWING REPLACES PA6100128-001ID

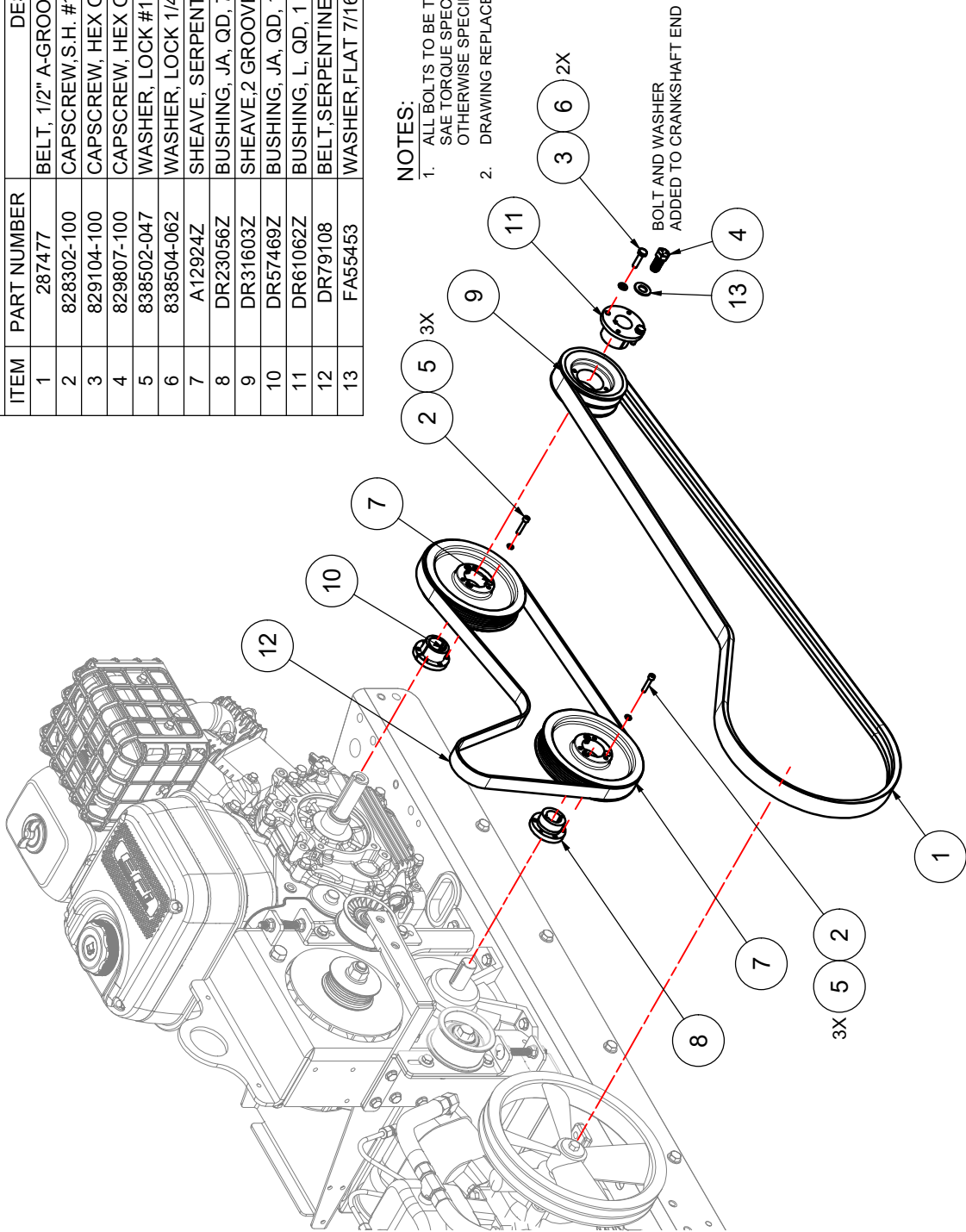
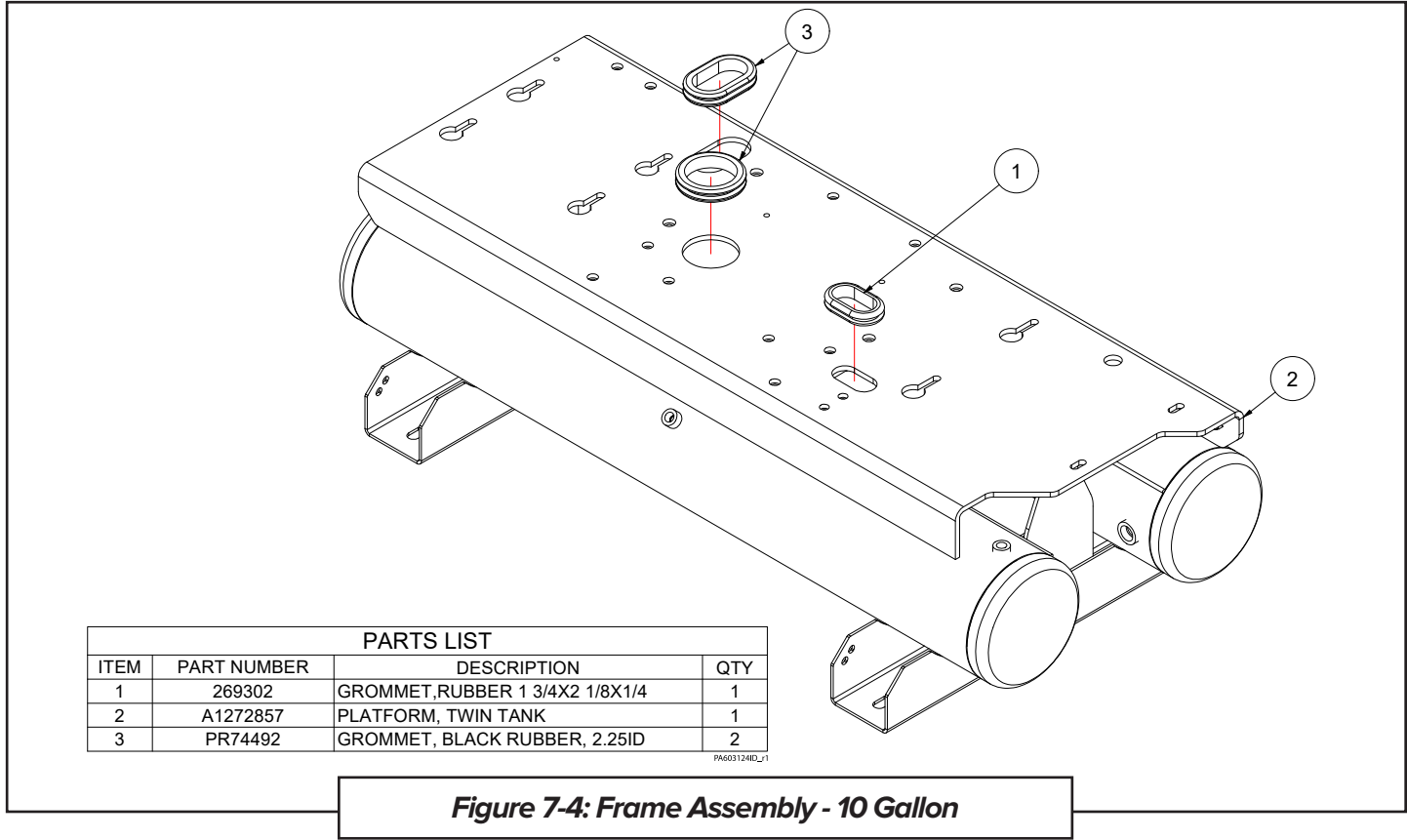
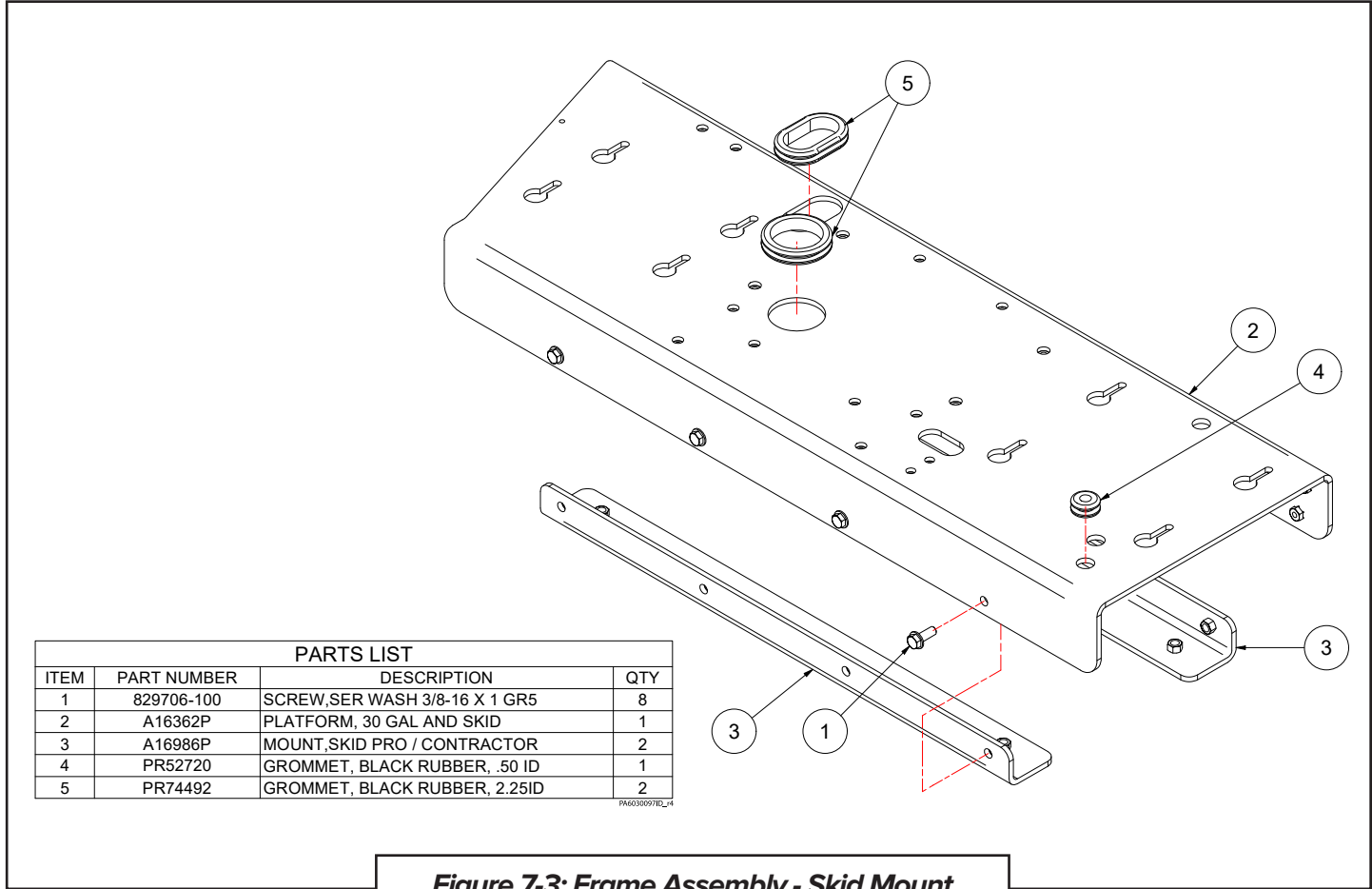
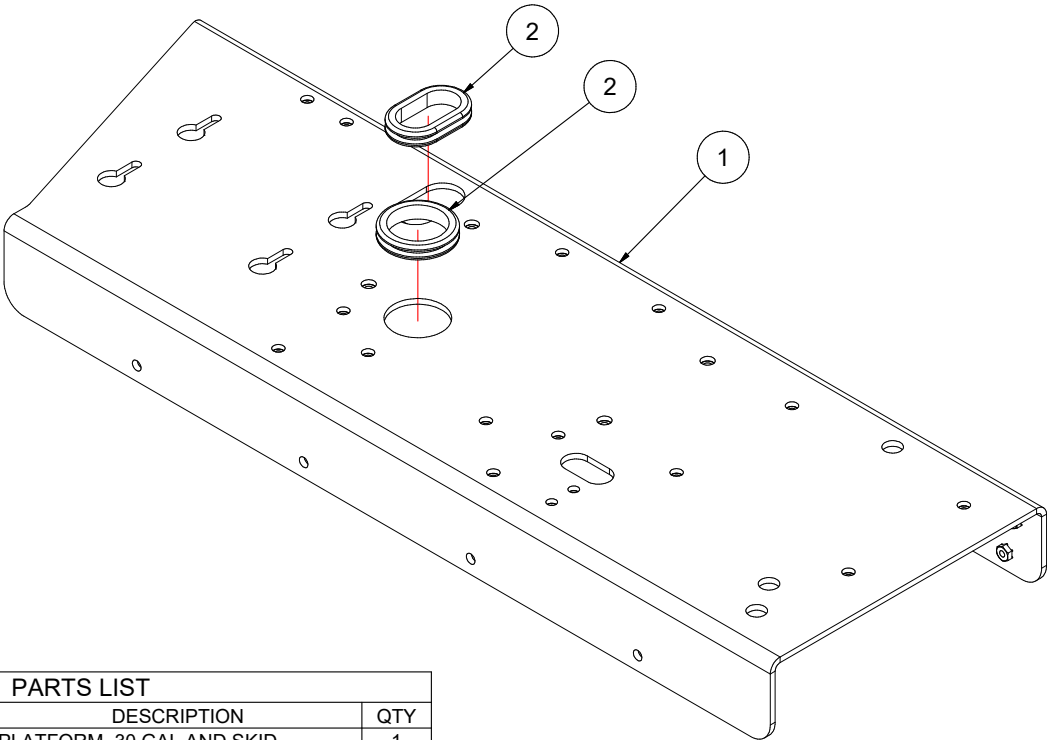


Figure 7-2: Air N Arc® 150 Drive Components

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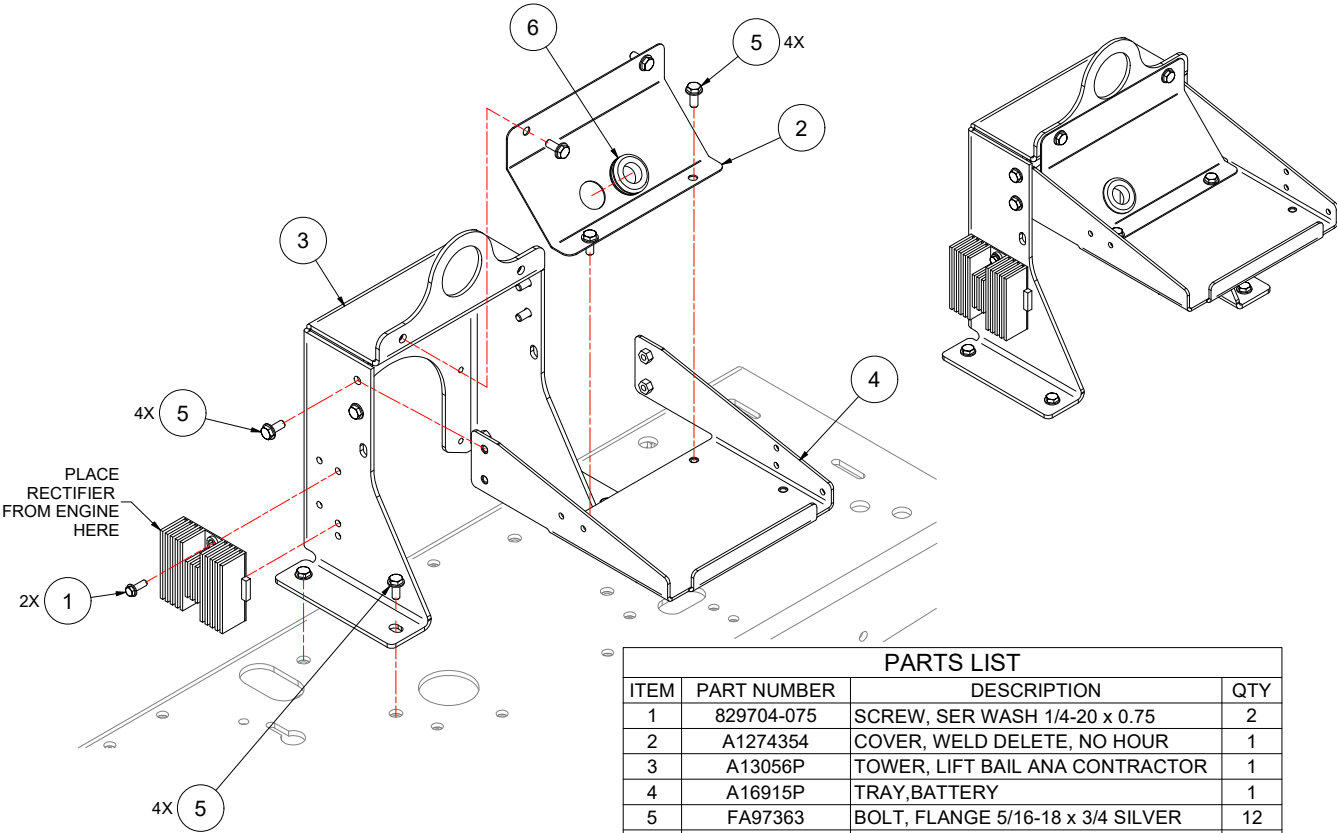




PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	A16362P	PLATFORM, 30 GAL AND SKID	1
2	PR74492	GROMMET, BLACK RUBBER, 2.25ID	2

PA603123ID_0

Figure 7-5: Frame Assembly - 30 Gallon Tank



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	829704-075	SCREW, SER WASH 1/4-20 x 0.75	2
2	A1274354	COVER, WELD DELETE, NO HOUR	1
3	A13056P	TOWER, LIFT BAIL ANA CONTRACTOR	1
4	A16915P	TRAY, BATTERY	1
5	FA97363	BOLT, FLANGE 5/16-18 x 3/4 SILVER	12
6	PR22730	GROMMET, BLACK RUBBER, .875ID	1

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Figure 7-6: Tower Assembly

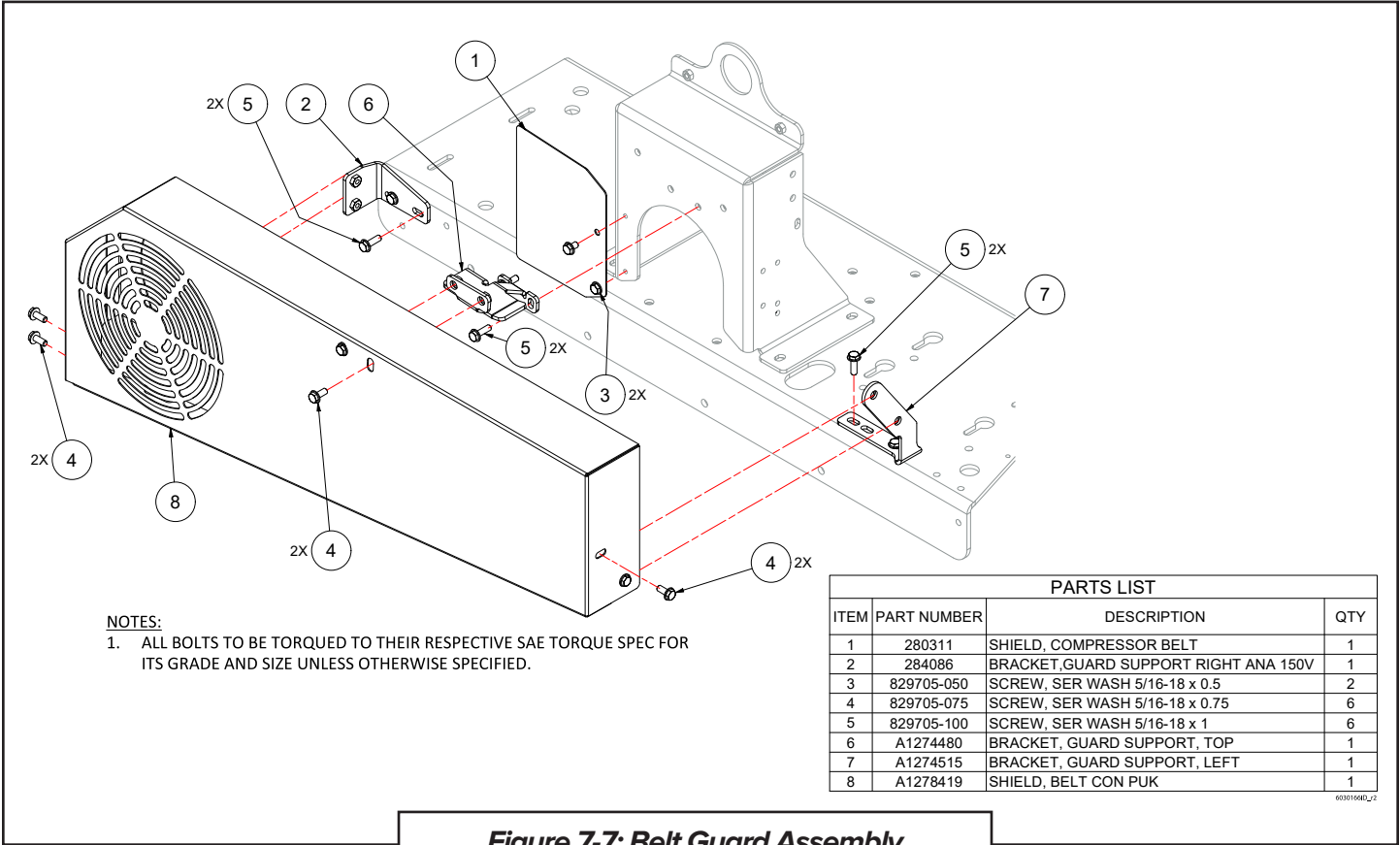


Figure 7-7: Belt Guard Assembly

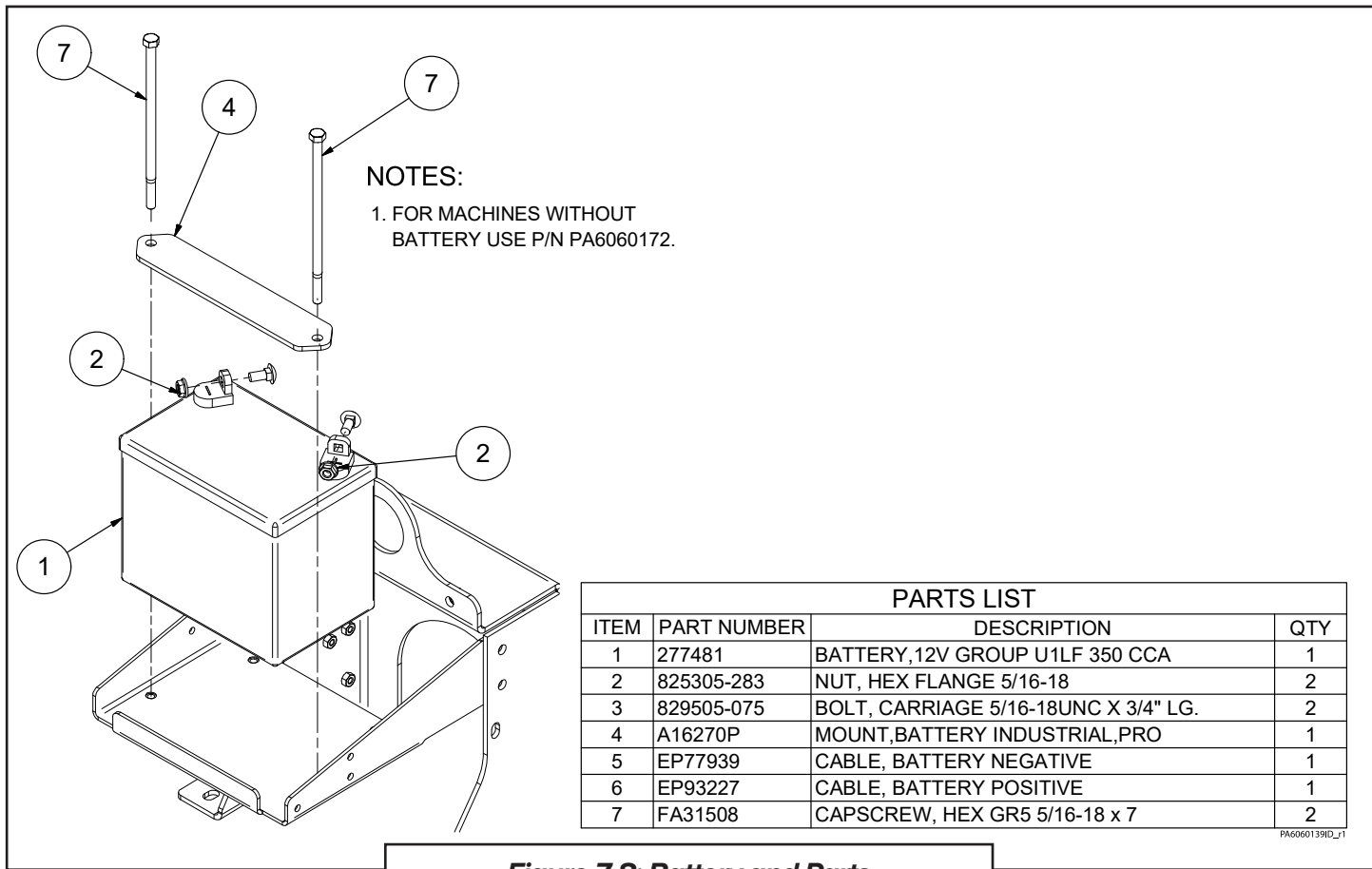
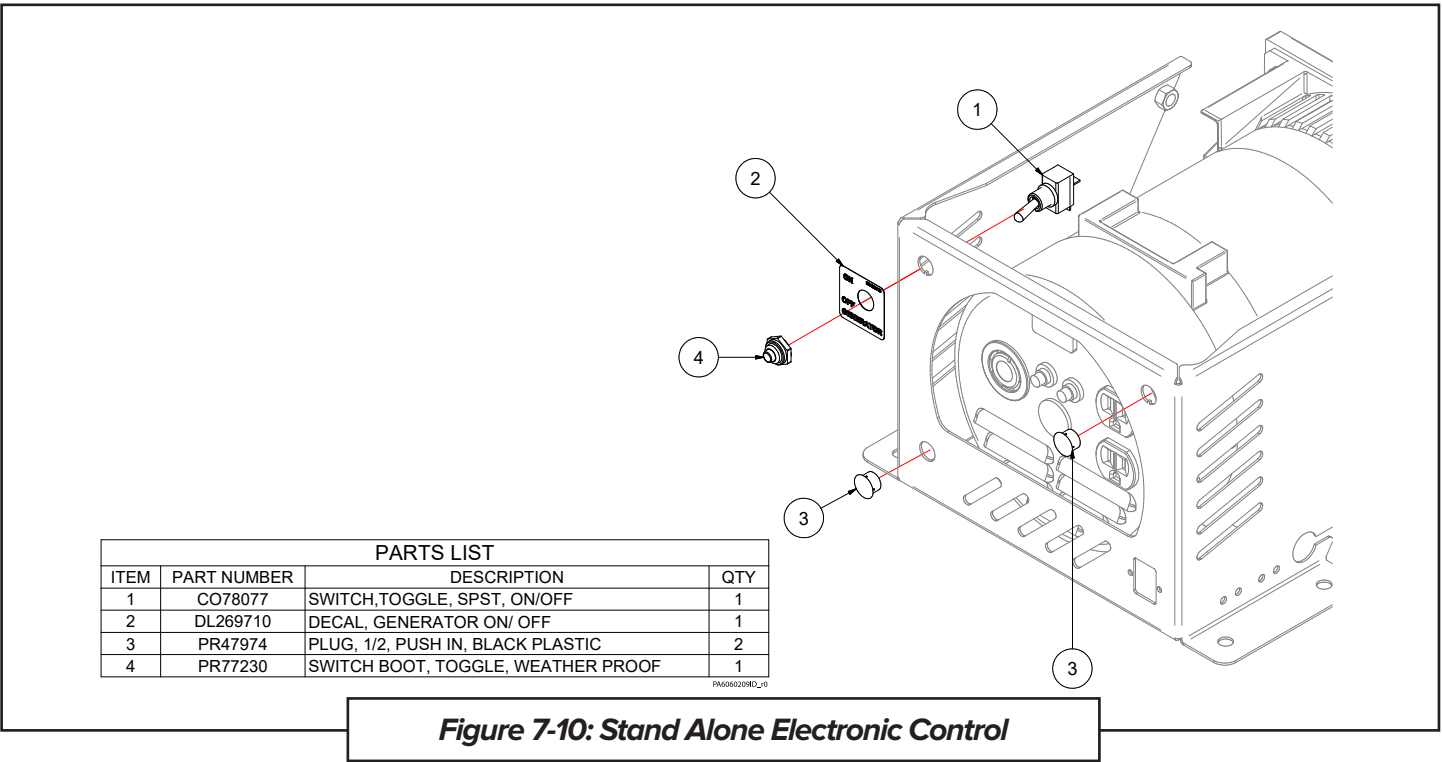
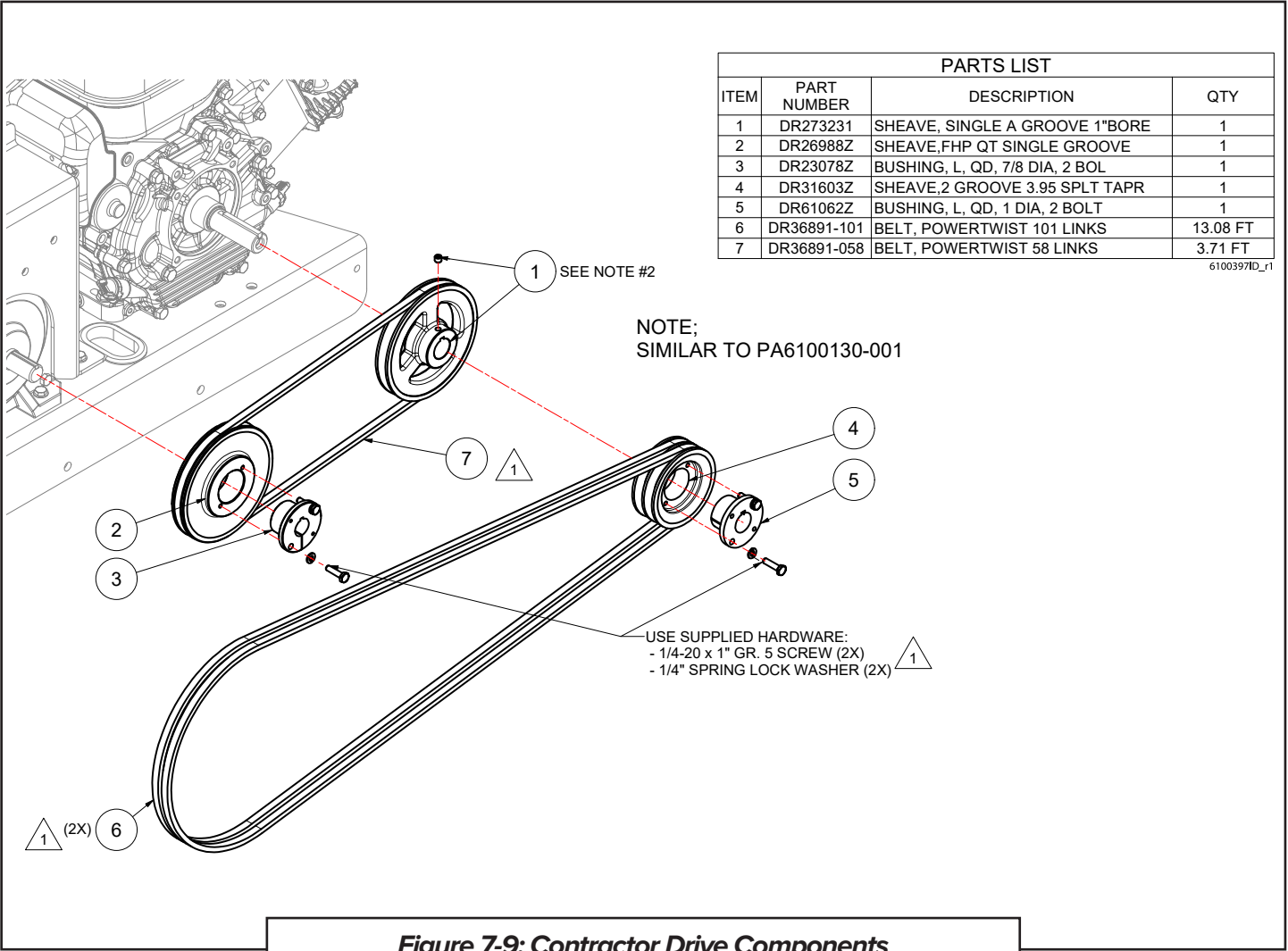
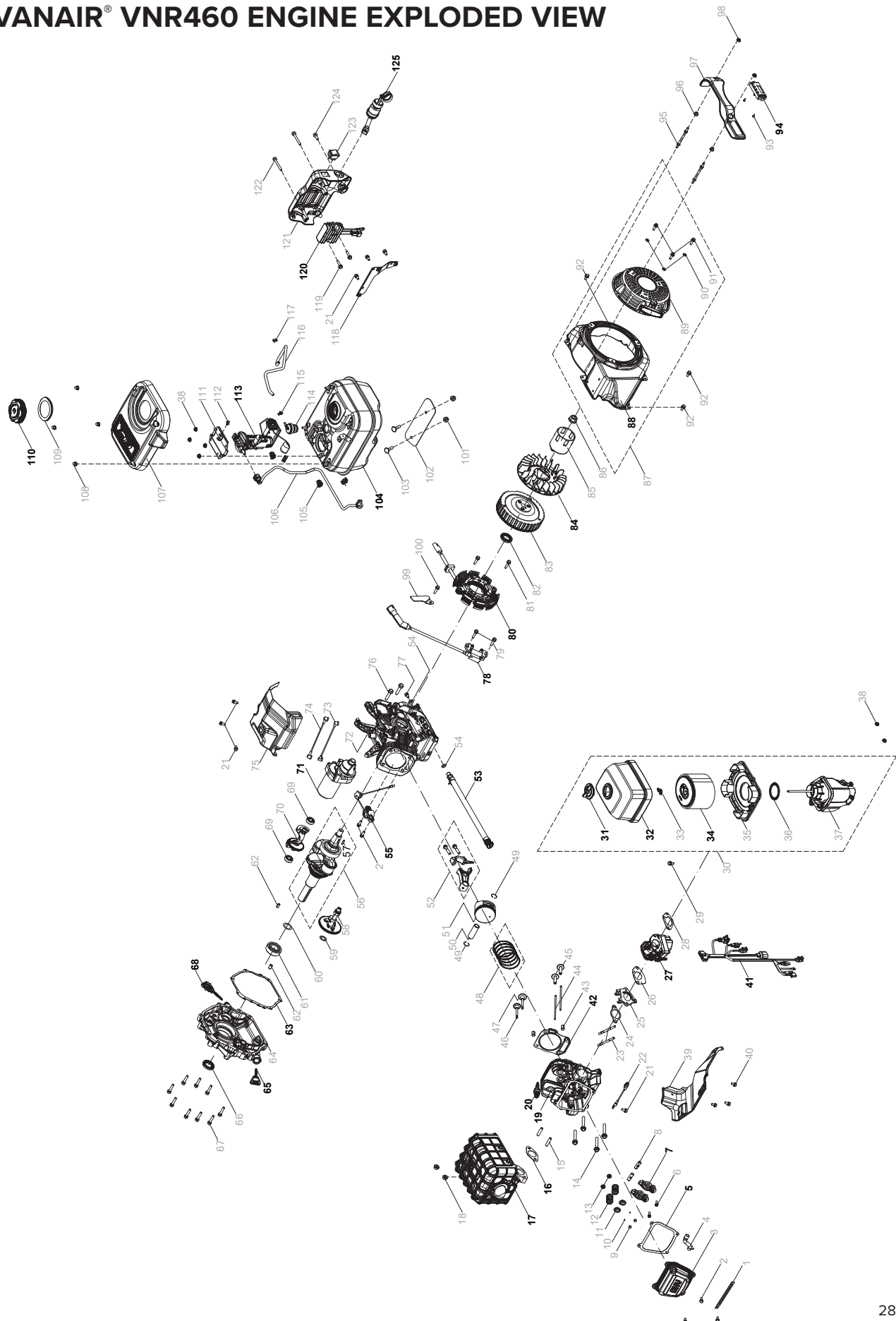


Figure 7-8: Battery and Parts



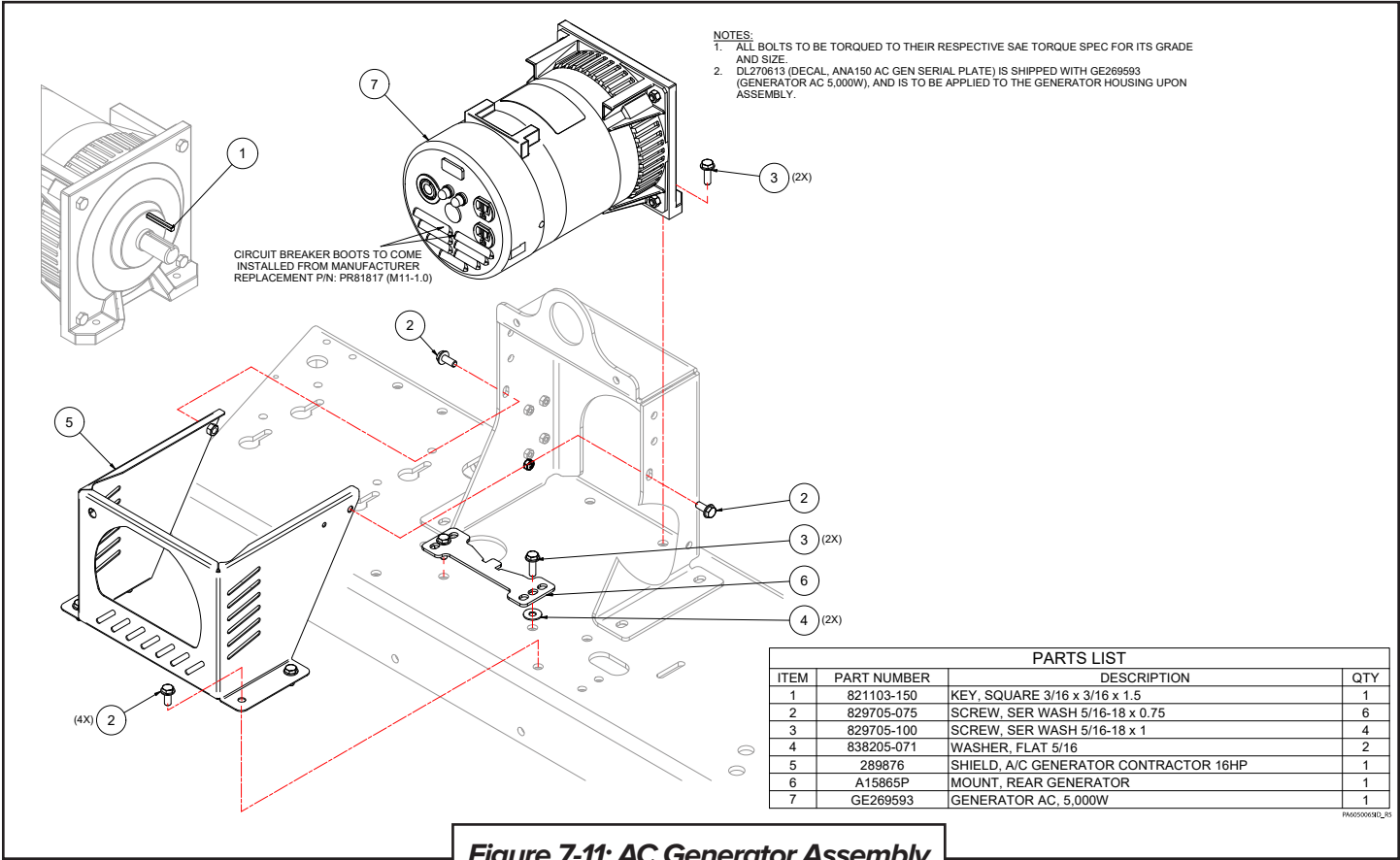
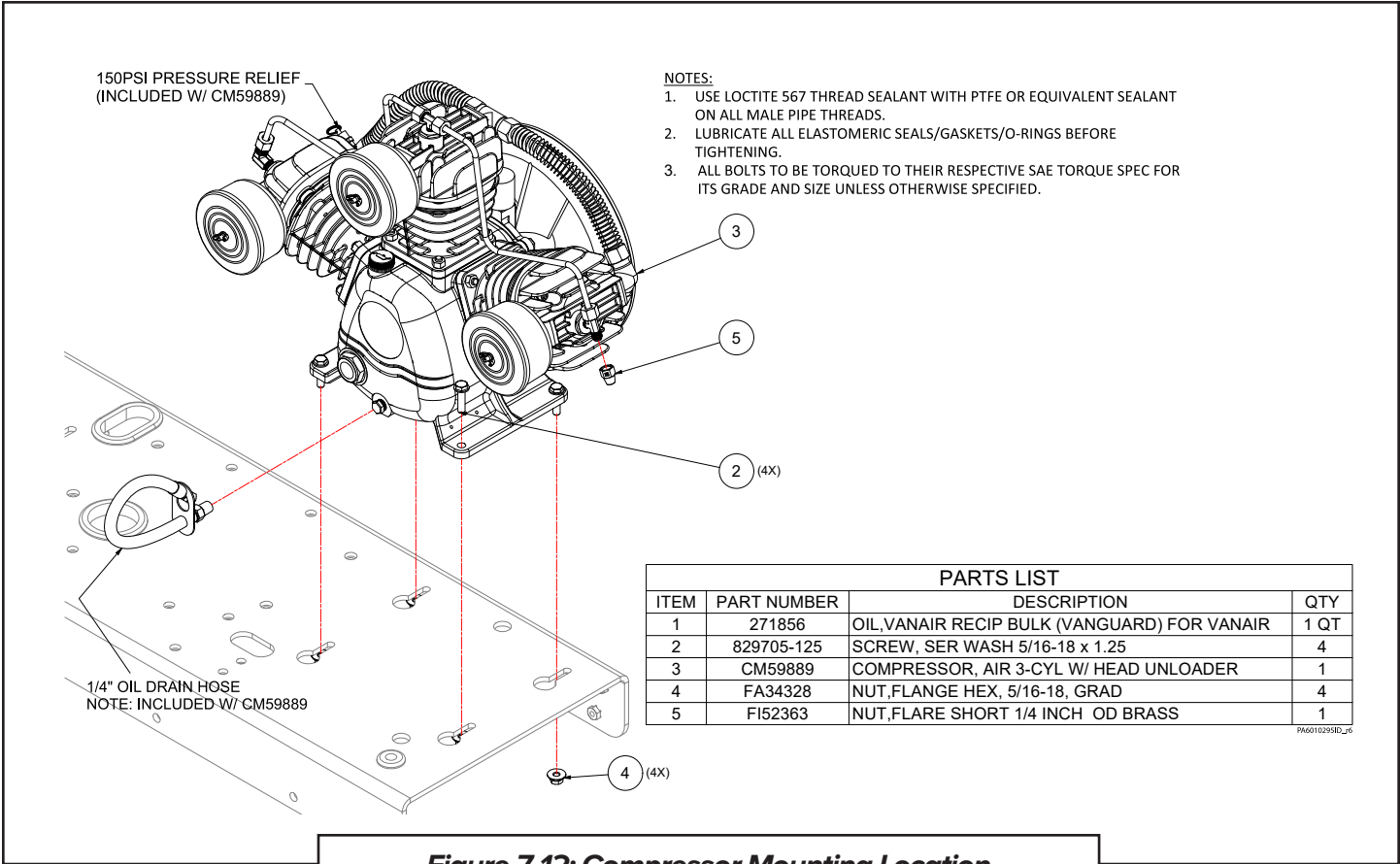
7.2 VANAIR® VNR460 ENGINE EXPLODED VIEW

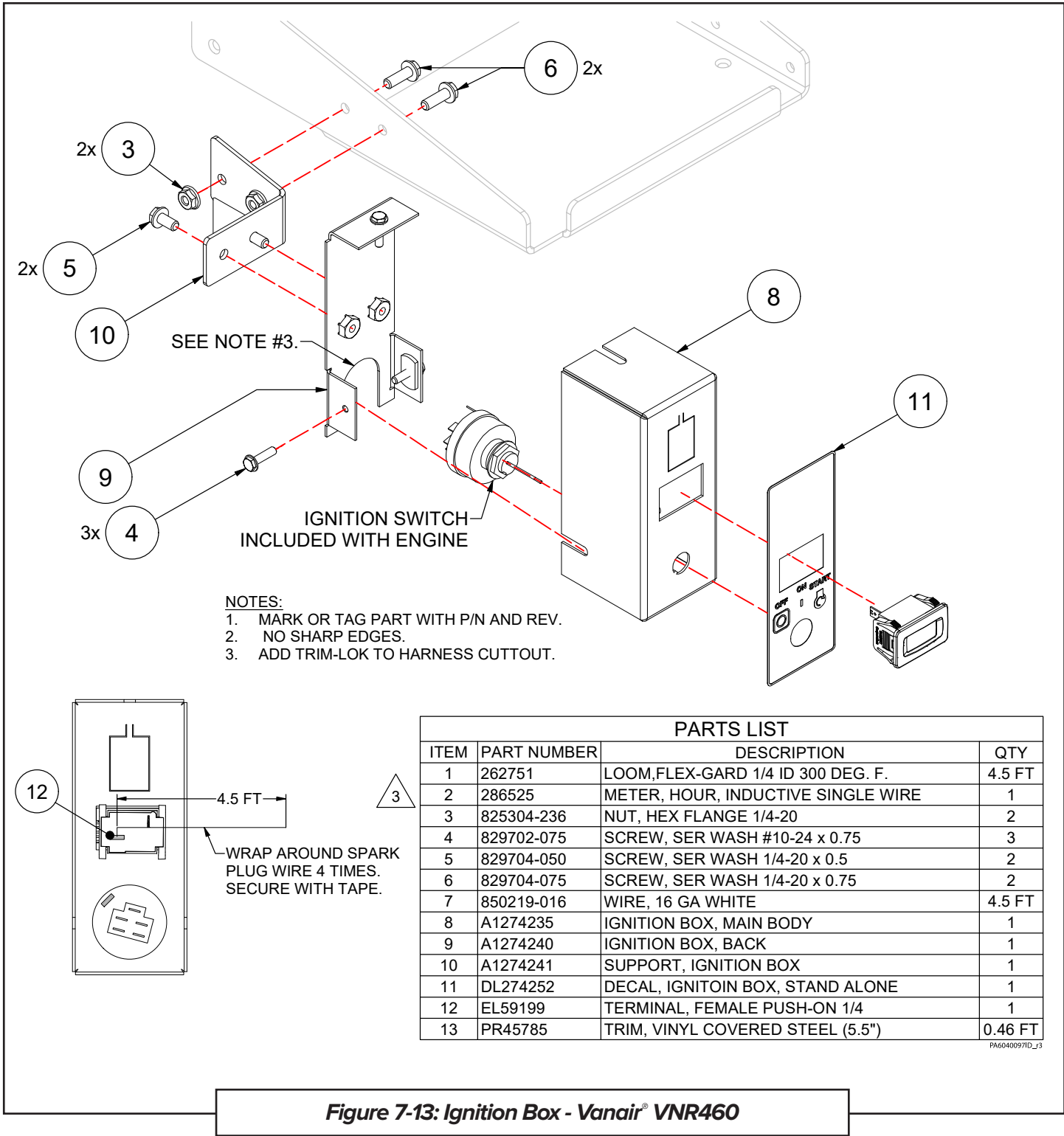


VNR460 16 HP Engine 285374, all Exploded View

TABLE 7D: ENGINE REPLACEMENT PART NUMBERS

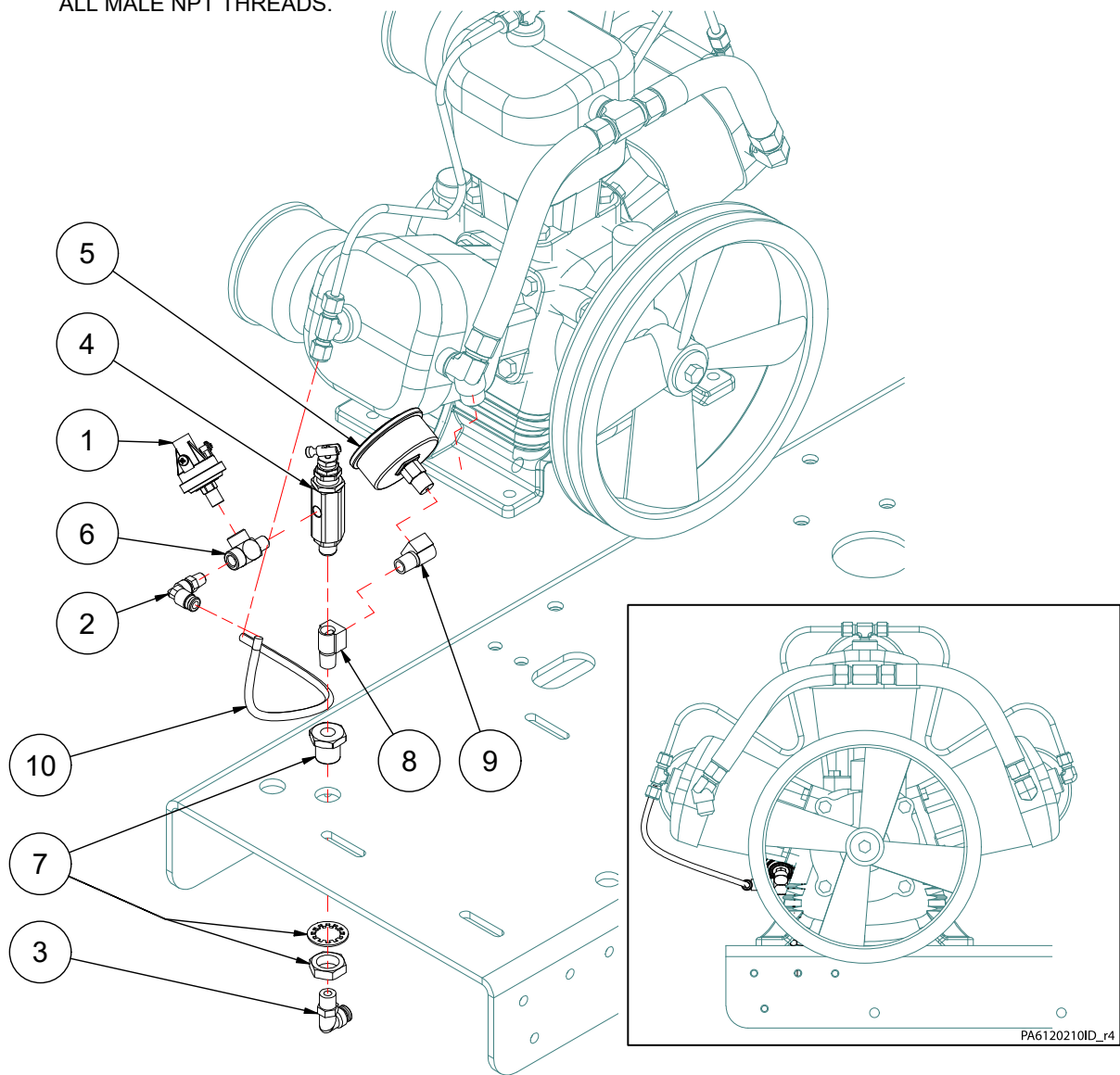
EXPLODED VIEW NUMBER	VANAIR® PART NUMBER	DESCRIPTION	INCLUDED IN KIT
-	265909	FUSE, ATO 15 AMP BLUE	
34	285374-01	FILTER, AIR VANAIR® VNR460	KIT 1536
20	285374-02	PLUG, SPARK VANAIR® VNR460	KIT 1536
113	285374-05	PUMP, FUEL INJECTOR VANAIR® VNR460	
16	285374-06	GASKET, ENGINE EXHAUST VANAIR® VNR460	
42	285374-07	GASKET, HEAD VANAIR® VNR460	
65	285374-09	CAP, OIL FILL VANAIR® VNR460	
68	285374-10	DIPSTICK, OIL ENGINE VANAIR® VNR460	
7	285374-11	ROCKER ARM, VALVE ASSY VANAIR® VNR460	
19	285374-12	GUIDE, PLATE PUSHROD VANAIR® VNR460	
5	285374-14	GASKET, VALVE COVER VANAIR® VNR460	
71	285374-16	STARTER, ENGINE VANAIR® VNR460	
55	285374-17	SOLENOID, STARTER VANAIR® VNR460	
78	285374-18	COIL, IGNITION MODULE + WIRE VANAIR® VNR460	
27	285374-19	MODULE, ECU (THROTTLE BODY) VANAIR® VNR460	
120	285374-22	COIL, RECTIFIER CHARGE VANAIR® VNR460	
80	285374-23	STATOR, CHARGING (20A) VANAIR® VNR460	
41	285374-24	HARNESS, WIRE ENGINE VANAIR® VNR460	
32	285374-25	COVER, AIR FILTER VANAIR® VNR460	
88	285374-26	ASSY, PULL START VANAIR® VNR460	
53	285374-27	HOSE, ENGINE OIL DRAIN 15IN (381MM) VANAIR® VNR460	
17	285374-28	MUFFLER, ENGINE VANAIR® VNR460 (INCLUDES GUARD)	
63	285374-40	GASKET, CRANKCASE VANAIR® VNR460	
-	285374-44	KEY, ENGINE VANAIR® VNR460	
125	285374-45	SWITCH, IGNITION VANAIR® VNR460	
110	285374-46	CAP, GAS VANAIR® VNR460	
31	285374-47	KNOB, AIR FILTER COVER VANAIR® VNR460	
104	285374-49	TANK, FUEL VANAIR® VNR460	
94	285374-50	DISPLAY, DIGITAL FUEL/OIL VANAIR® VNR460	
84	285374-51	FAN, COOLING VANAIR® VNR460	





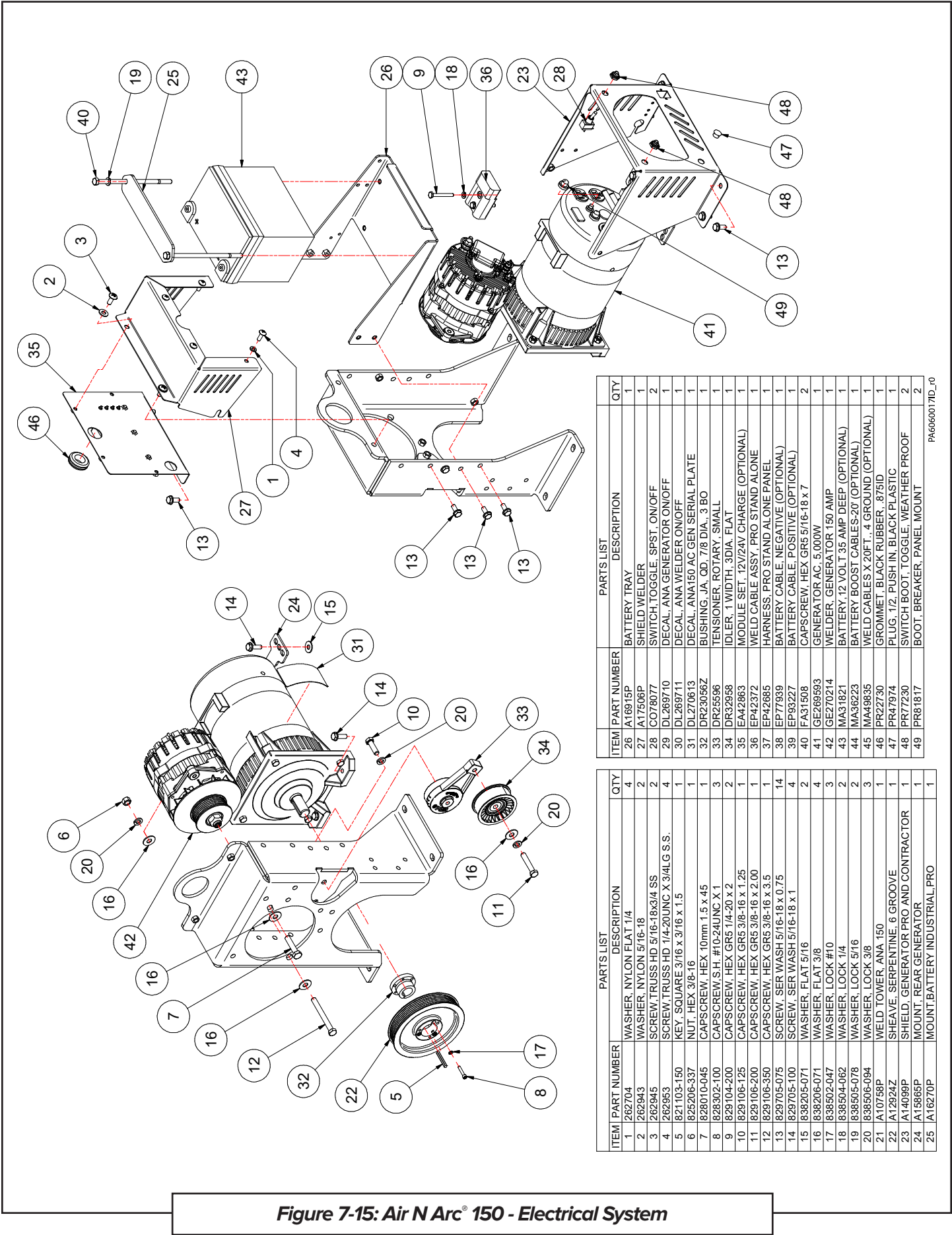
NOTES:

1. USE LOCTITE 567 OR EQUIVALENT HIGH TEMP THREAD SEALANT ON ALL MALE NPT THREADS.



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	260818	SWITCH, PRESSURE N.C. 10 PSI HOBBS	1
2	261309	ELBOW, 1/4T x 1/8P PUSH-ON	1
3	267187	ELBOW,5/16T X 1/4P PUSH ON	1
4	CO25331	VALVE, PILOT, 95-125 PSI, 1/4	1
5	CO47028	GAUGE, AIR 0-300 PSI 2.5 DIA 1/4 NPT BACK MTG	1
6	FI31152	TEE, MALE STREET 1/8 x 1/8 x 1/8	1
7	FI45068	PIPE BRASS, BULKHEAD 1/4 NPT	1
8	FI53603	TEE,STREET 1/4 NPT BRASS	1
9	FI65532	PIPE BRASS, 1/4 NPT, 90 DEG. STREET ELBOW	1
10	TU67293	TUBE,UNLOADER 1/4 COPPER	.804 Ft

Figure 7-14: Compressor Air Control Assembly



PARTS LIST		
ITEM	PART NUMBER	DESCRIPTION
26	A16915P	BATTERY TRAY
27	A17506P	SHIELD WELDER
28	C078077	SWITCH TOGGLE, SPST, ON/OFF
29	DL269710	DECAL, ANA GENERATOR ON/OFF
30	DL269711	DECAL, ANA WELDER ON/OFF
31	DL270613	DECAL, ANA150 AC GEN SERIAL PLATE
32	DR230562	BUSHING, JA, OD, 7/8 DIA., 3 BO
33	DR25596	TENSIONER, ROTARY, SMALL
34	DR32958	IDLER, 1 WIDTH, 3DIA, FLAT
35	EA42863	MODULE SET, 12V/24V CHARGE (OPTIONAL)
36	EP42372	WELD CABLE ASSY, PRO STAND ALONE
37	EP42885	HARNES, PRO STAND ALONE PANEL
38	EP77939	BATTERY CABLE, NEGATIVE (OPTIONAL)
39	EP93227	BATTERY CABLE, POSITIVE (OPTIONAL)
40	FA31508	CAPSCREW, HEX GR5 5/16-18 x 7
41	GE269593	GENERATOR AC, 5.000W
42	GE270214	WELDER, GENERATOR 150 AMP
43	MA31821	BATTERY, 12 VOLT 35 AMP DEEP (OPTIONAL)
44	MA36223	BATTERY BOOST CABLES-20' (OPTIONAL)
45	MA49835	BATTERY CABLES X 20FT., 4 GROUND (OPTIONAL)
46	PR22730	GROMMET, BLACK RUBBER, .875ID
47	PR47974	PLUG, 1/2, PUSH IN, BLACK PLASTIC
48	PR77230	SWITCH BOOT, TOGGLE, WEATHER PROOF
49	PR81817	BOOT, BREAKER, PANEL MOUNT

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PARTS LIST		
ITEM	PART NUMBER	DESCRIPTION
1	262704	WASHER, NYLON FLAT 1/4
2	262943	WASHER, NYLON 5/16-18
3	262945	SCREW TRUSS HD 5/16-18x3/4 SS
4	262953	SCREW TRUSS HD 1/4-20UNC X 3/4LG S.S.
5	821103-150	KEY, SQUARE 3/16 x 3/16 x 1.5
6	825206-337	NUT, HEX 3/8-16
7	828010-045	CAPSCREW, S.H. #10-24UNC X 1
8	828302-100	CAPSCREW, HEX GR5 1/4-20 x 2
9	829104-200	CAPSCREW, HEX GR5 3/8-16 x 1.25
10	829106-125	CAPSCREW, HEX GR5 3/8-16 x 2.00
11	829106-200	CAPSCREW, HEX GR5 3/8-16 x 3.5
12	829106-350	CAPSCREW, HEX GR5 3/8-16 x 7.5
13	829705-075	SCREW, SER WASH 5/16-18 x 0.75
14	829705-100	SCREW, SER WASH 5/16-18 x 1
15	838205-071	WASHER, FLAT 5/16
16	838206-071	WASHER, FLAT 3/8
17	838502-047	WASHER, LOCK #10
18	838504-062	WASHER, LOCK 1/4
19	838505-078	WASHER, LOCK 5/16
20	838506-094	WASHER, LOCK 3/8
21	A10758P	WELD TOWER, ANA 150
22	A12924Z	SHEAVE, SERPENTINE, 6 GROOVE
23	A14089P	SHIELD, GENERATOR PRO AND CONTRACTOR
24	A15865P	MOUNT, REAR GENERATOR
25	A16270P	MOUNT, BATTERY INDUSTRIAL, PRO

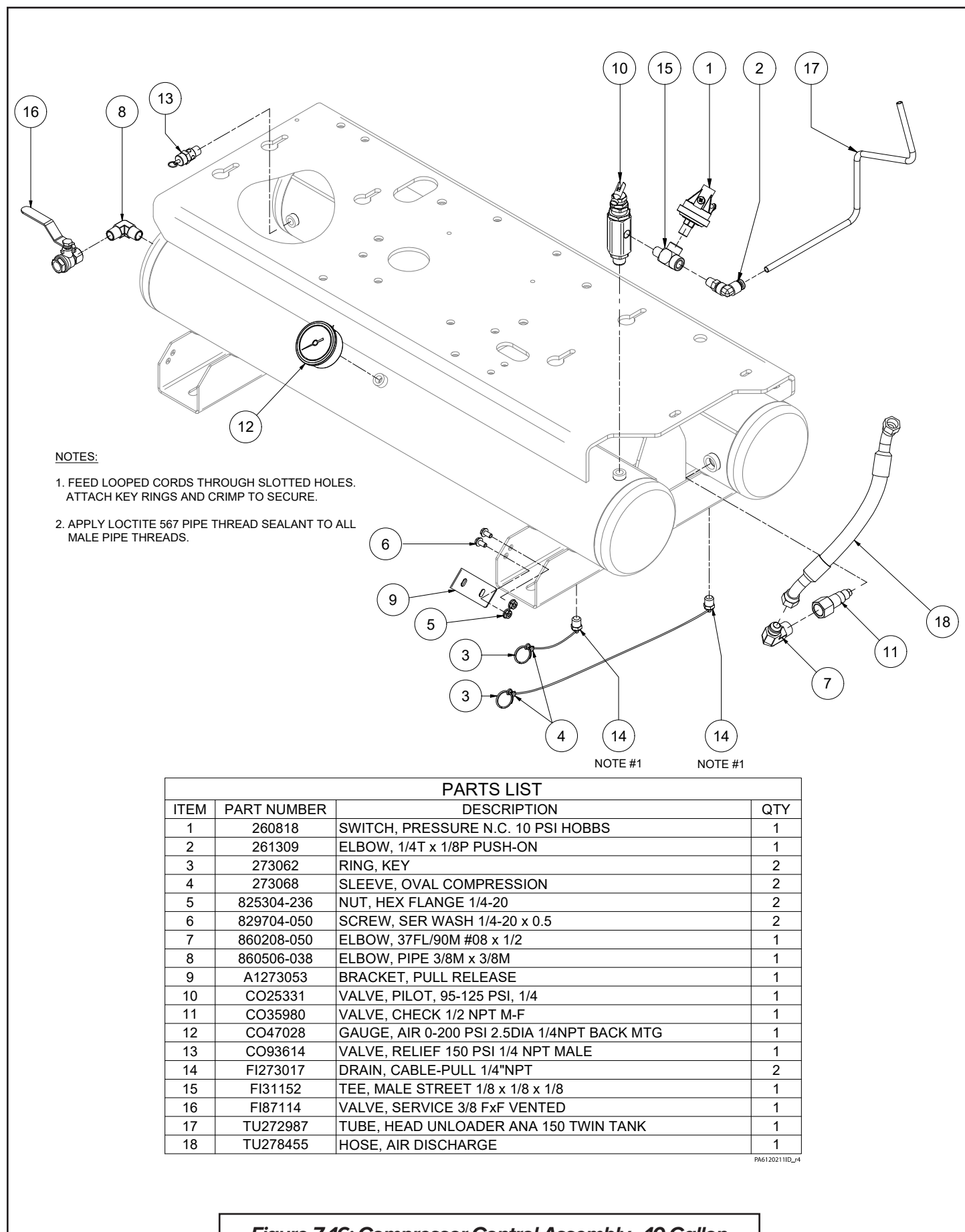
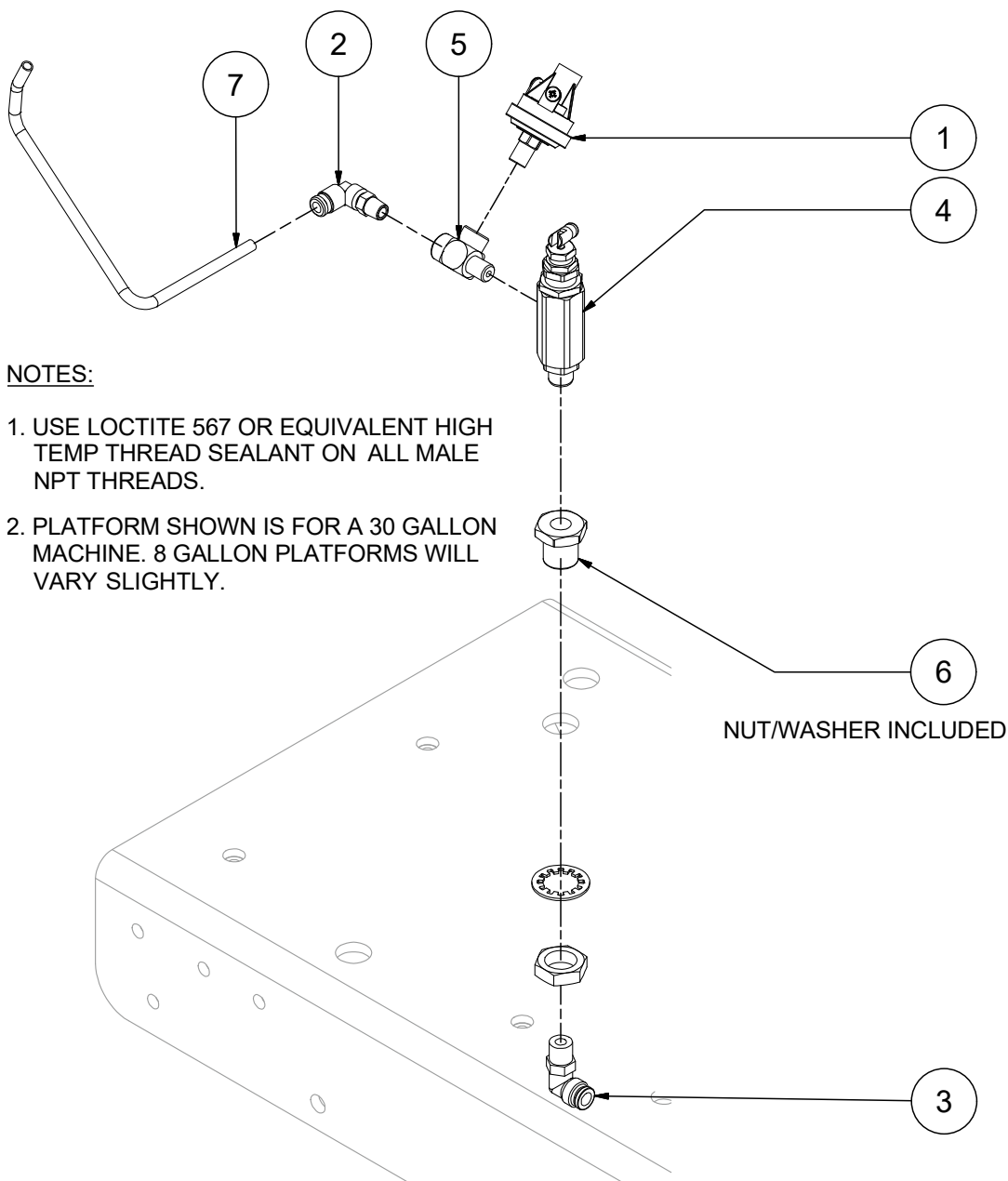


Figure 7-16: Compressor Control Assembly - 10 Gallon



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	260818	SWITCH, PRESSURE N.C. 10 PSI HOBBS	1
2	261309	ELBOW, 1/4T x 1/8P PUSH-ON	1
3	267187	ELBOW,5/16T X 1/4P PUSH ON	1
4	CO25331	VALVE, PILOT, 95-125 PSI, 1/4	1
5	FI31152	TEE, MALE STREET 1/8 x 1/8 x 1/8	1
6	FI45068	PIPE BRASS, BULKHEAD 1/4 NPT	1
7	TU67293	TUBE,UNLOADER 1/4 COPPER	0.804 ft

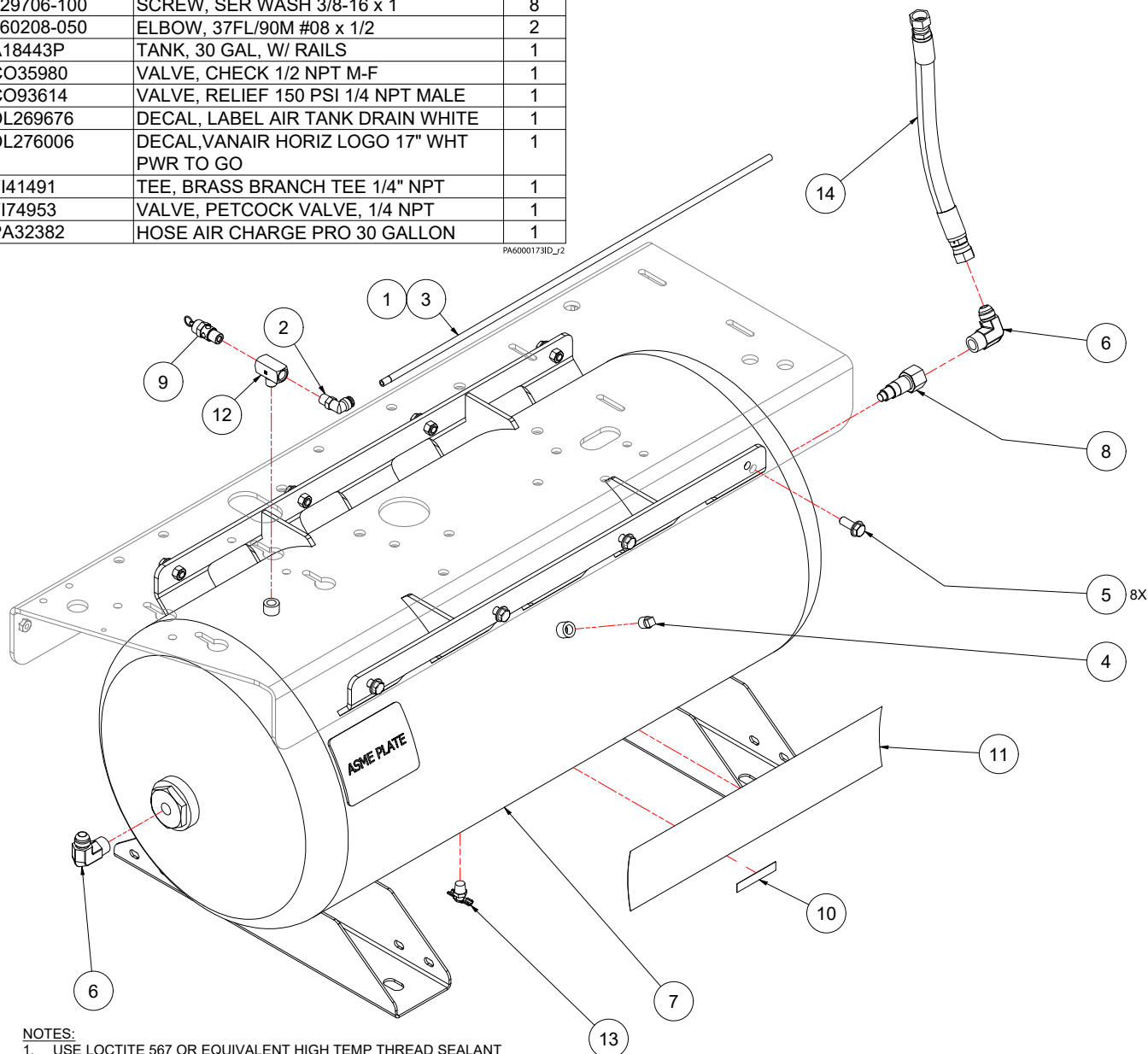
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Figure 7-17: Compressor Control Assembly - Remote, and 30 Gallon

Air N Arc® 150/Contractor 16 HP Series

PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	261410	LOOM, FLEX-GARD 3/8 ID 300 DEG. F.	2.5FT
2	267187	ELBOW, 5/16T X 1/4P PUSH ON	1
3	267189	TUBING, NYLON 5/16 RED	2.5FT
4	807800-010	PLUG, PIPE 1/4	1
5	829706-100	SCREW, SER WASH 3/8-16 x 1	8
6	860208-050	ELBOW, 37FL/90M #08 x 1/2	2
7	A18443P	TANK, 30 GAL, W/ RAILS	1
8	CO35980	VALVE, CHECK 1/2 NPT M-F	1
9	CO93614	VALVE, RELIEF 150 PSI 1/4 NPT MALE	1
10	DL269676	DECAL, LABEL AIR TANK DRAIN WHITE	1
11	DL276006	DECAL, VANAIR HORIZ LOGO 17" WHT PWR TO GO	1
12	FI41491	TEE, BRASS BRANCH TEE 1/4" NPT	1
13	FI74953	VALVE, PETCOCK VALVE, 1/4 NPT	1
14	PA32382	HOSE AIR CHARGE PRO 30 GALLON	1

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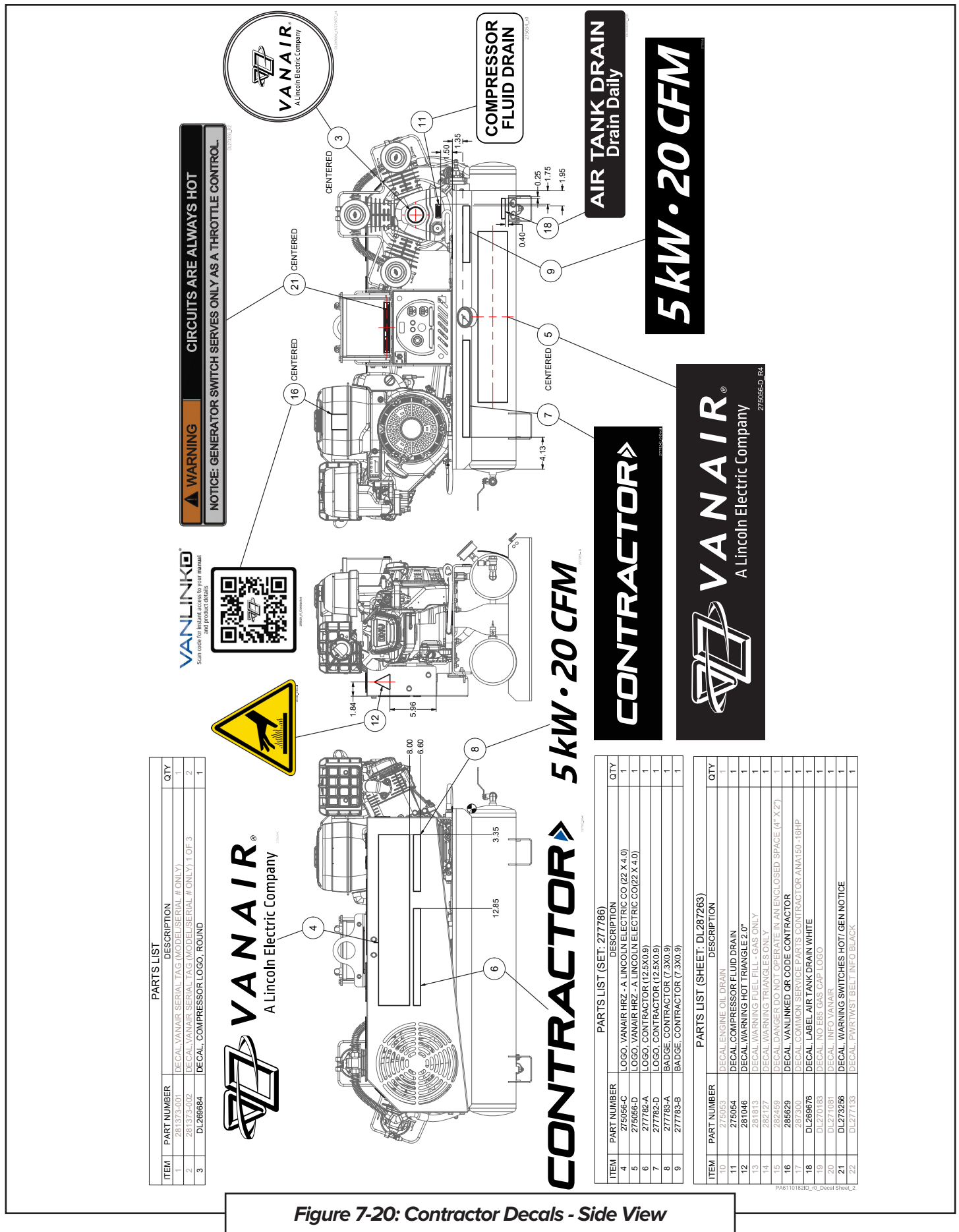
NOTES:

1. USE LOCTITE 567 OR EQUIVALENT HIGH TEMP THREAD SEALANT ON ALL MALE NPT THREADS.
2. PLATFORM SHOWN IS FOR A 19 HP MACHINE. 14 HP PLATFORMS MAY DIFFER SLIGHTLY.

Figure 7-18: Air Tank Assembly - 30 Gallon

WARNING

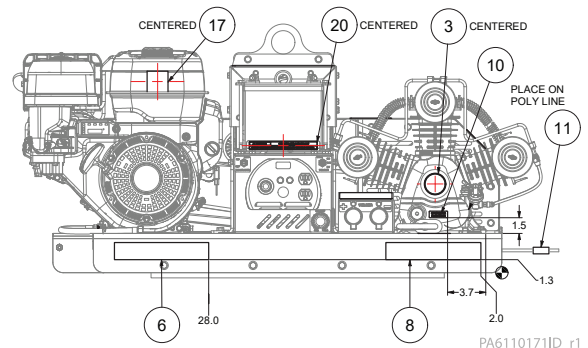
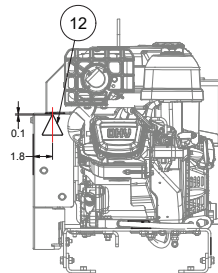
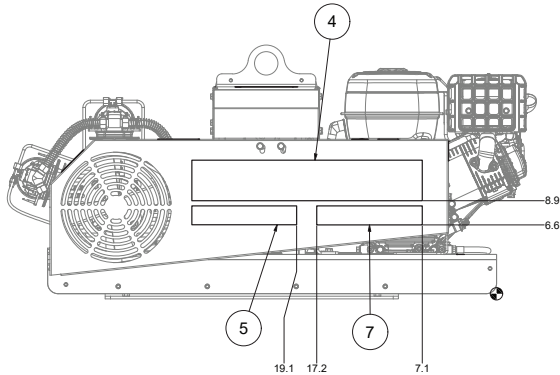
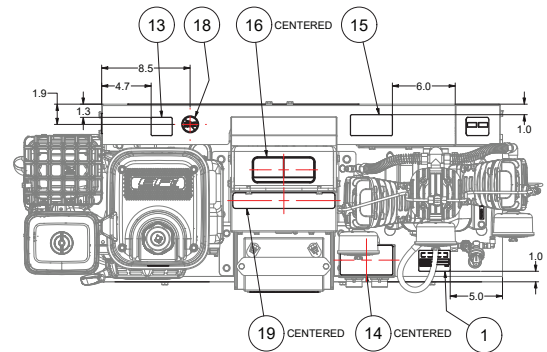
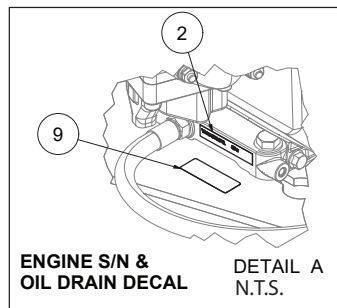
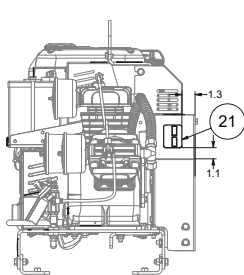
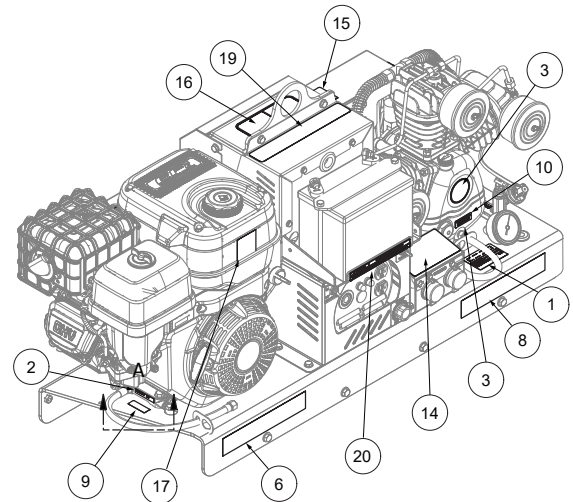
**Do Not Remove or Cover any Safety Decal.
Replace decals that become
damaged or illegible.**



PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	281373-001	DECAL,VANAIR SERIAL TAG (MODEL/SERIAL # ONLY)	1
2	281373-002	DECAL,VANAIR SERIAL TAG (MODEL/SERIAL # ONLY) 1 OF 3	2
3	DL269684	DECAL, COMPRESSOR LOGO, ROUND	1

PARTS LIST(SET: 286585)			
ITEM	PART NUMBER	DESCRIPTION	QTY
4	275056-C	LOGO, VANAIR HRZ - MOBILE POWER SOLUTIONS (22 X 3.9)	1
5	277616-A	LOGO, AIR N ARC 150 (10 X 1.8)	1
6	277616-D	LOGO, AIR N ARC 150 (11 X 2)	1
7	277617-A	BADGE, AIR N ARC 150 (10 X 1.8)	1
8	277617-B	BADGE, AIR N ARC 150 (11 X 2)	1

PARTS LIST (SHEET: DL287263)			
ITEM	PART NUMBER	DESCRIPTION	QTY
9	275053	DECAL,ENGINE OIL DRAIN	1
10	275054	DECAL,COMPRESSOR FLUID DRAIN	1
11	280079	DECAL,TO AIR TANK	1
12	281046	DECAL,WARNING HOT TRIANGLE 2.0"	1
13	281813	DECAL,WARNING FUEL FILL - GAS ONLY	1
14	282127	DECAL,WARNING TRIANGLES ONLY	1
15	282459	DECAL,DANGER DO NOT OPERATE IN AN ENCLOSED SPACE (4" X 2")	1
16	287300	DECAL,COMMON SERVICE PARTS CONTRACTOR ANA150 -16HP	1
17	289427	DECAL, QR CODE LOGO ANA150	1
18	DL270183	DECAL, NO E85 GAS CAP LOGO	1
19	DL271081	DECAL, INFO VANAIR	1
20	DL273256	DECAL, WARNING SWITCHES HOT/ GEN NOTICE	1
21	DL277133	DECAL, PWRTWST BELT INFO BLACK	1



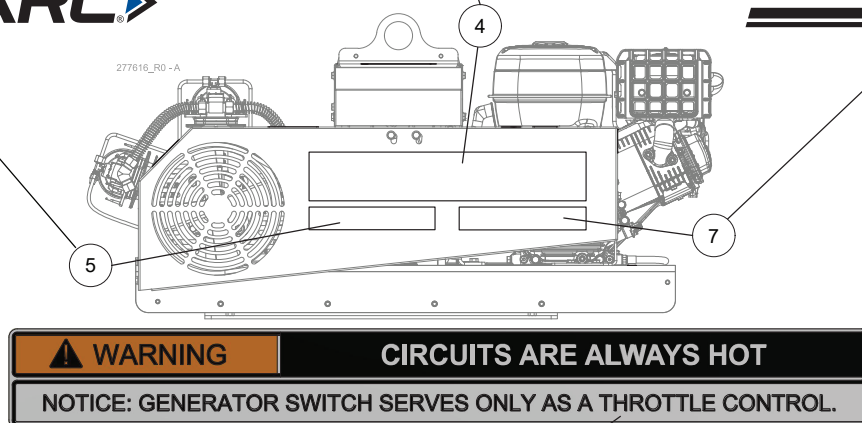
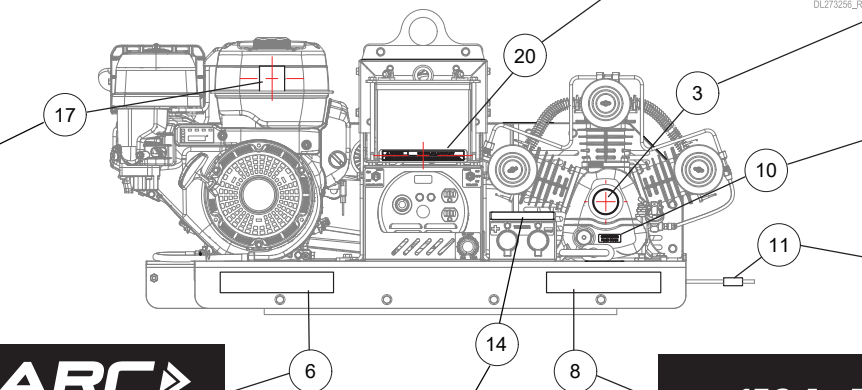
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Figure 7-21: Air N Arc® 150 Decal Parts List

WARNING

Do Not Remove or Cover any Safety Decal.
Replace decals that become
damaged or illegible.

WARNING
Do Not Remove or Cover any Safety Decal. Replace
decals that become damaged or illegible.

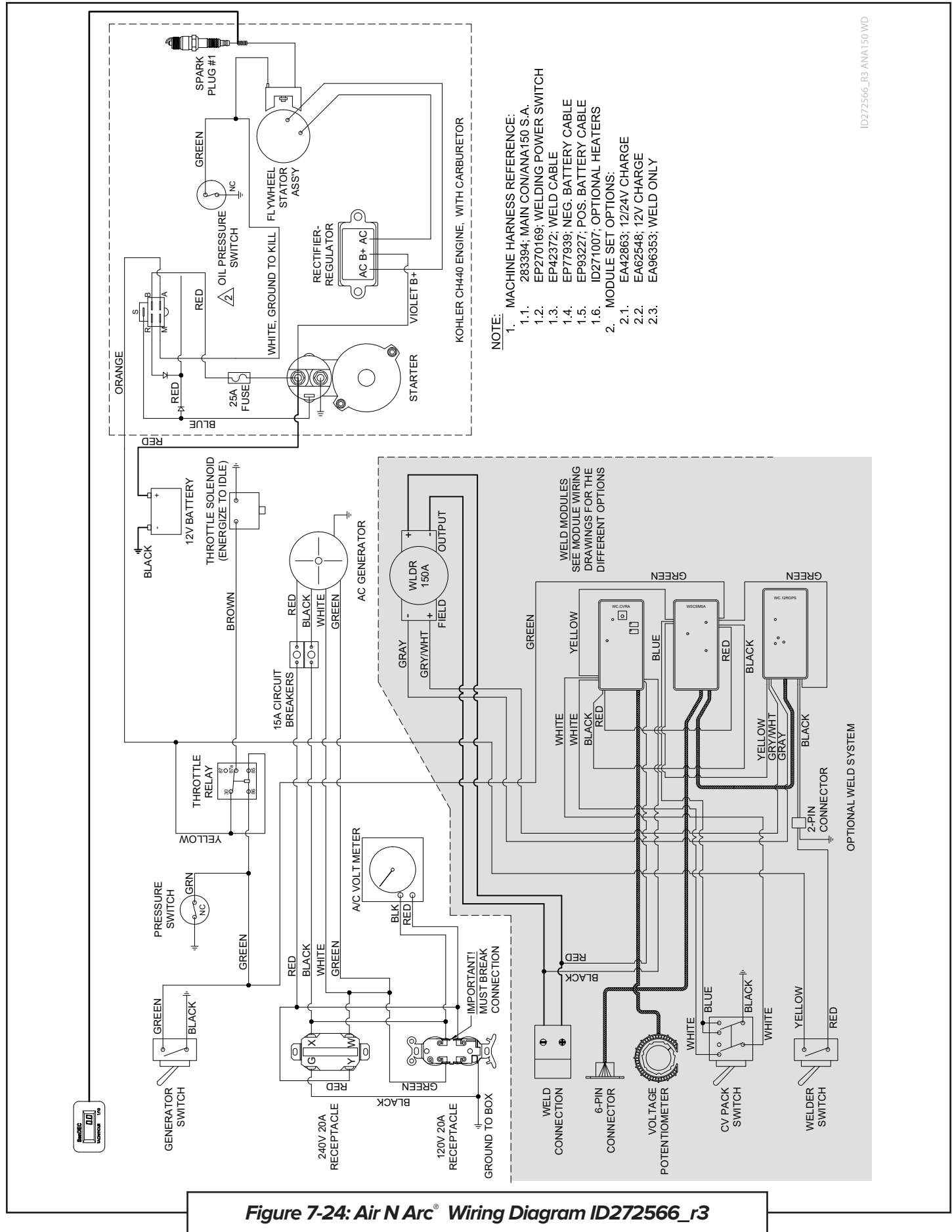

AIR N ARC
150
150 A • 5 kW • 20 CFM
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**COMPRESSOR
FLUID DRAIN**
TO AIR TANK
AIR N ARC
150
150 A • 5 kW • 20 CFM
ALL-IN-ONE Power Systems®


PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	281373-001	DECAL,VAN AIR SERIAL TAG (MODEL/SERIAL # ONLY)	1
2	281373-002	DECAL,VAN AIR SERIAL TAG (MODEL/SERIAL # ONLY) 1 OF 3	2
3	DL269684	DECAL, COMPRESSOR LOGO, ROUND	1

PARTS LIST (SET: 286585)			
ITEM	PART NUMBER	DESCRIPTION	QTY
4	275056-C	LOGO, VAN AIR HRZ - MOBILE POWER SOLUTIONS (22 X 3.9)	1
5	277616-A	LOGO, AIR N ARC 150 (10 X 1.8)	1
6	277616-D	LOGO, AIR N ARC 150 (11 X 2)	1
7	277617-A	BADGE, AIR N ARC 150 (10 X 1.8)	1
8	277617-B	BADGE, AIR N ARC 150 (11 X 2)	1

PARTS LIST (SHEET: DL287263)			
ITEM	PART NUMBER	DESCRIPTION	QTY
9	275053	DECAL,ENGINE OIL DRAIN	1
10	275054	DECAL,COMPRESSOR FLUID DRAIN	1
11	280079	DECAL,TO AIR TANK	1
12	281046	DECAL,WARNING HOT TRIANGLE 2.0"	1
13	281813	DECAL,WARNING FUEL FILL - GAS ONLY	1
14	282127	DECAL,WARNING TRIANGLES ONLY	1
15	282459	DECAL,DANGER DO NOT OPERATE IN AN ENCLOSED SPACE (4" X 2")	1
16	287300	DECAL,COMMON SERVICE PARTS CONTRACTOR ANA150 -16HP	1
17	289427	DECAL, QR CODE LOGO ANA150	1
18	DL270183	DECAL, NO E85 GAS CAP LOGO	1
19	DL271081	DECAL, INFO VAN AIR	1
20	DL273256	DECAL, WARNING SWITCHES HOT/ GEN NOTICE	1
21	DL277133	DECAL, PWRTWST BELT INFO BLACK	1

Figure 7-23: Air N Arc® Decals - Side View



ID272566_r3 ANA150 WD

Figure 7-24: Air N Arc® Wiring Diagram ID272566_r3

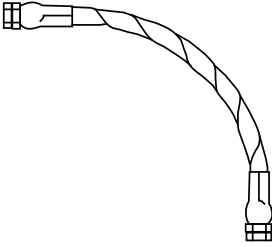
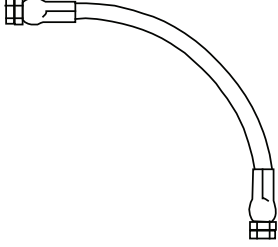
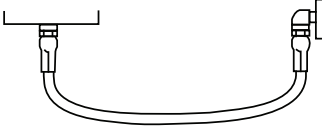
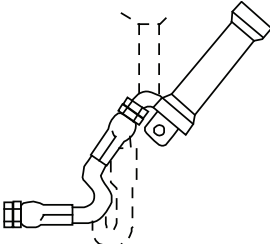
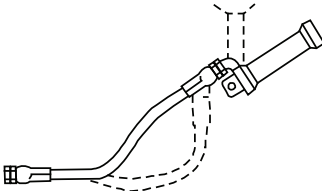
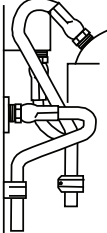
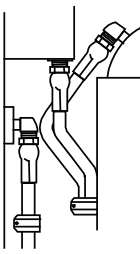
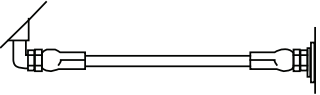
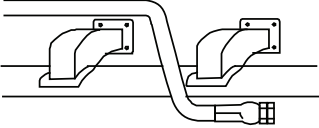
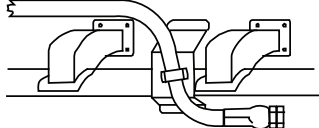
HOSE LAYOUT CONSIDERATION	WRONG	RIGHT
1. Hose is weakened when installed in a twisted position. Pressure in a twisted hose tends to loosen the fitting connections. Design so the machine motion produces bending rather than twisting.		
2. Ample bend radius should be provided to avoid collapsing of the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

Figure 7-25: Hose Installation Guide



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Manual No. 090238-OP_r1 (June 30, 2026)