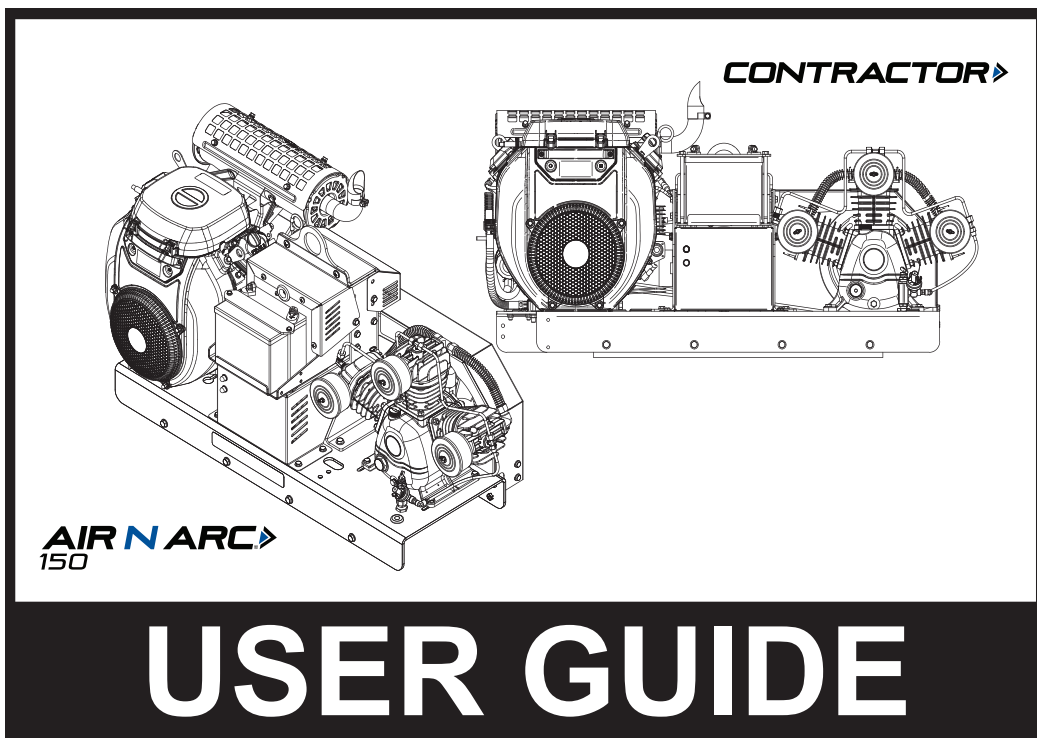




AIR N ARC 150 / CONTRACTOR

**20 HP • WELDER • GENERATOR
AIR COMPRESSOR • BATTERY BOOST/CHARGE**

Manual Part No. 090200



USER GUIDE

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 system. * Welder feature 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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EFFECTIVE: AUGUST 10, 2020



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

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

PROCEDURE:

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

1. Locate the machine's serial number(s).
See **Section 5.9, Figure 5-23**.
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 available:
3. Note that the above information will also need to be included on the Return Material Authorization Form; this form is 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 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. This form can be obtained via download from the web site, or requested directly from the Vanair® Service Department.

Once a Case Number has been obtained, follow the instructions given on the form to fill in the information needed. This form is used for the purpose of requesting a warranty case.

! IMPORTANT !

If the part is not returned by the customer to the Vanair® Service Department within 30 days, the RMA becomes void and any claims will be denied.

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

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

NOTICE

Before sending a warranty part to a customer, Vanair® will need a P.O. or credit card number to cover the initial cost of the part and shipping.

After the part is analyzed and it is deemed to be covered under warranty, Vanair® will issue a credit back to the customer. All parts eligible for warranty must have the RMA number on the order at the time of purchase.

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

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SECTION 1: Safety

1.1 SAFETY/WARNING SYMBOLS AND MEANINGS

	WEAR EYE PROTECTION (Flying debris or other eye hazard may be present).		EXPLOSIVE MATERIAL OR EXPLOSIVE HAZARD (Conditions or materials may exist that can cause explosion).
	WEAR HEARING PROTECTION (Harmful sound volume may be present).		HOT SURFACE WARNING (Surfaces may be hot - use caution, proper protection or allow to cool before handling).
	READ INSTRUCTIONS OR MANUAL		ROTATING OR MOVING PARTS WARNING (Moving/rotating parts present, may cause damage or physical injury).
	DISCONNECT POWER (Disconnect from power to avoid accidental start or avoid electrical current).		HAND ENTANGLEMENT WITH BELT DRIVE WARNING (Belt drive present, use caution to avoid pinch points and personal injury).
	WEAR PROTECTIVE GLOVES (Chemical, thermal or harmful conditions may exist that may be harmful to bare hands).		AUTOMATIC START UP WARNING (Equipment can start up/run automatically without warning).
	Do Not USE WATER TO EXTINGUISH ELECTRICAL FIRES (Water conducts electricity. This may spread, cause harm or added damage when used on certain types of fires. Use a Class C rated fire extinguisher for electrical fires.)		BURST/PRESSURE RELEASE WARNING (High pressure condition may exist that can cause equipment to burst or cause bodily injury).
	GENERAL CAUTION OR WARNING (Important information regarding cautions or warnings).		BATTERY CHARGING WARNING (Beware of heat, leaks and harmful gas around certain types of batteries being charged).
	ELECTRICAL SHOCK/ELECTROCUTION HAZARD (Electricity and electrical circuits present that may cause electrical shock or sparking).		FLAMMABLE MATERIAL/FIRE HAZARD WARNING (Conditions and/or materials exist that may be flammable or cause a fire).

SAFETY/WARNING SYMBOLS AND MEANINGS (CONT.)

	WEAR EAR and EYE PROTECTION (Loud noise level and flying debris or other eye hazard may be present).
	WEAR WELDING MASK (While welding, always use a proper welding helmet to protect face and eyes from hot metal and intense light).
	ASPHYXIATING ATMOSPHERE (DANGER - Area is/or may contain a dangerous gas that creates an unbreathable environment. Ventilate area.)
	HEALTH HAZARD (Magnetic fields produced by this machine may affect Pacemakers).
	BEWARE FALLING UNIT CAN CAUSE INJURY (When transporting or moving, please note falling unit can cause severe injury or death).
	ARC FLASH An electrical arc flash or flying sparks may ignite combustibles and cause fire and/or explosion.

1.2 GENERAL INFORMATION

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

1.2.1 DANGERS, WARNINGS, CAUTIONS, AND NOTES

NOTICE

Additional information (or existing information) which should be brought to the attention of operators/maintenance technicians affecting Safety, Operation, Maintenance or Warranty requirements.

DANGER

Identifies action or conditions which, if not avoided, will result in serious bodily injury or death.

WARNING

Identifies actions or conditions which, if not avoided, may result in serious bodily injury or death.

CAUTION

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

1.3 INTERNATIONAL SAFETY SYMBOL



Many of the symbols and meanings shown in **Section 1: Safety** are used to call attention to and identify possible hazards that may be encountered using powered equipment.

International Warning Symbols are used on all decals, labels and signs that concern information pertaining to bodily harm. When you see the International Warning Symbol, pay extremely careful attention, and follow the given instructions or indications to avoid any possible hazard.



1.4 ARC WELDING HAZARDS

1.4.1 ELECTRICAL SHOCK CAN KILL

- Contact with live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is 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 an electrical shock hazard.
- 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 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. Lockout/Tagout input power according to OSHA29 CFR1910.147 (See **Section 1.9, Principal Safety Standards**).
- Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
- **Do Not** drape power 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.
- Utilize a properly anchored and fitted 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 welder output terminal.
- Always verify the supply ground to be properly connected to a ground terminal in a disconnect box or that the power cord plug is connected to a properly grounded receptacle outlet.
- When making input connections, attach grounding conductor first and double-check all connections.
- Frequently inspect input power cord for damage or exposed wiring. 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.



1.4.2 FUMES AND GASES CAN BE HAZARDOUS

- Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.
- **Do Not** breathe fumes produced during welding operations.
- 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.
- **Do Not** block filter or airflow to unit.
- Read and understand the Material Safety Data Sheets (MSDS) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasing agents.

DANGER

Do Not OPERATE IN AN ENCLOSED SPACE.

Running any combustion engine in an enclosed space may result in

Carbon Monoxide (CO) poisoning.

Carbon Monoxide (CO) build-up may cause death!

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

- Welding fumes and gases can displace air and lower the oxygen level causing injury or death.
- **Do Not** use compressed air from this machine as a source of breathable air as it may contain traces of compressor oil. Ensure there is proper ventilation and that the breathing air is safe.
- **Do Not** weld in locations near degreasing, cleaning, or spraying operations.
- If welding in an elevated location, ensure to protect any combustible materials below the work area from hot slag/sparks that may drop below.

- 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, the area is well-ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.



1.4.3 BUILD UP OF GAS CAN INJURE OR KILL

1. Shut off shielding gas supply when not in use.
2. Always ventilate confined spaces or use approved air-supplied respirator.



1.4.4 ARC RAYS CAN BURN EYES/SKIN

- Arc rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin. Sparks fly off from the weld.
- 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.
- Use protective screens or barriers to protect others from flash, glare, and sparks; warn others to avoid looking at the light emitted from the arc.
- Wear protective clothing made from durable, flame-resistant material (leather, heavy cotton, or wool) and foot protection.



1.4.5 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. The flying sparks, 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-resistant covers.
- Do Not** weld where flying sparks can strike flammable materials.
- Protect yourself and others from flying sparks and hot metal.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
- Watch for fire, and keep a fire extinguisher nearby. A dedicated fire watch person is suggested.
- Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Do Not** weld on closed containers such as tanks, drums, or pipes, unless they are properly prepared according to AWSF4.1. (See **Section 1.10, Principal Safety Standards**).
- Connect ground cable as close to the welding area as practical to prevent welding current from traveling long, possibly unknown paths and causing electric shock, sparks, and fire hazards.
- Do Not** use welder to thaw frozen pipes.
- Remove the stick electrode from holder or cut off the welding wire at contact tip when not in use.

- Wear oil-free protective garments such as leather gloves, heavy shirt, cuff-less trousers, boots, and a cap.
- Remove any combustibles, such as a butane lighter or matches from your person before doing any welding.
- Follow requirements in OSHA1910.252 (a) (2) (iv) and NFPA 51B for hot work and have a fire watcher and extinguisher nearby.



1.4.6 FLYING METAL CAN INJURE EYES

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



1.4.7 HOT PARTS CAN CAUSE SEVERE BURNS

- Do Not** touch hot parts bare-handed.
- Allow all hot work and equipment to cool before handling or working on equipment. To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.



1.4.8 NOISE CAN DAMAGE HEARING

- Noise from some processes or equipment can damage hearing.
- Wear approved ear protection when exposed to high noise levels.



1.4.9 MAGNETIC FIELDS CAN AFFECT PACEMAKERS

- Pacemaker wearers keep away.
- Wearers should consult their doctor before going near arc welding, gouging, or spot welding operations.



1.4.10 CYLINDERS CAN EXPLODE IF DAMAGED

- Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, Ensure to treat them carefully.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Keep cylinders away from any welding or other electrical circuits.
- Never drape a welding torch over a gas cylinder.
- Never allow a welding electrode to touch any cylinder.
- Never weld on a pressurized cylinder; an explosion will result.
- Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
- Turn face away from valve outlet when opening cylinder valve to protect eyes from any flying debris.
- Keep protective cap in place over valve except when cylinder is in use or connected for use.

- Use the right equipment, correct procedures, and sufficient number of persons to lift. and move cylinders.
- Read and follow instructions on compressed gas cylinders, associated equipment, and Compressed Gas Association (CGA) publication P-1 listed in Safety Standards.



1.4.11 BATTERY EXPLOSION CAN BLIND

- Always wear a face shield, rubber gloves, and protective clothing when working on a battery.
- Stop engine before disconnecting or connecting battery cables or servicing battery.
- Avoid touching terminals with metal tools that may cause sparks when working on a battery.
- **Do Not** use weld mode to charge batteries or jump-start vehicles.
- Observe correct polarity (+ and -) on batteries.
- Connect **Negative** (-) cable first and Disconnect it last to reduce risk of electrical arcing.



1.5 ENGINE HAZARDS

1.5.1 GASOLINE CAN BE A SOURCE OF FIRE OR EXPLOSION

- Stop engine and let it cool off before checking or adding fuel.
- Keep gas nozzle in contact with unit's fuel tank when filling to reduce risk of static electric arc.
- **Do Not** add fuel while smoking or if unit is near any sparks or open flames.
- **Do Not** fuel equipment while using

electronic devices, these can ignite gas fumes.

- **Do Not** overfill tank, or fill to the very top of tank. Allow room for fuel to expand.
- **Do Not** spill fuel. If fuel is spilled, clean up before starting engine.
- Dispose of rags in a fireproof container.



1.5.2 MOVING PARTS CAN CAUSE INJURY

- Keep away from fans, belts, and rotors. Keep all doors, panels, covers, and guards closed and securely in place.
- Stop engine before installing or connecting unit.
- Have only qualified people remove doors, panels, covers, or guards for maintenance and trouble-shooting as necessary.
- Disconnect **Negative** (–) battery cable from battery to prevent accidental starting during servicing.
- Keep hands, hair, loose clothing, and tools away from moving parts.
- Reinstall doors, panels, covers, or guards when servicing is finished and before starting engine.
- Before working on generator, remove spark plugs or injectors to keep engine from kicking back or starting.
- Block flywheel so that it will not turn while working on generator components.



1.5.3 ENGINE EXHAUST GASES CAN KILL

- If equipment is used in an enclosed area, vent the engine exhaust outside and away from any building air intakes.



1.5.4 ENCLOSED SPACES/NOXIOUS FUMES AND OVERHEATING

- **Do Not** install or operate the unit in an enclosed space.



1.6 BATTERY ACID CAN BURN SKIN AND EYES

- Wear protective gloves and eye protection
- **Do Not** tip the battery.
- Replace damaged battery.
- If fumes or liquid from battery get in your eyes or on your skin immediately flush with water.



1.6.1 ENGINE HEAT CAN CAUSE FIRE

- **Do Not** locate unit on, over, or near combustible surfaces or flammables.
- Keep exhaust and exhaust pipes way from flammables.



1.6.2 EXHAUST SPARKS CAN CAUSE FIRE

- Use an approved engine exhaust spark arrester in required areas.
(See all applicable codes.)



1.7 COMPRESSED AIR CAN CAUSE INJURY OR DEATH

1.7.1 DO NOT BREATHE COMPRESSED AIR

- This compressor uses oil during operation. **Do Not** use compressed air from this equipment for breathing.
- Use only for cutting, gouging, inflating, and operating tools.



1.7.2 COMPRESSED AIR CAN CAUSE INJURY

- Wear approved safety goggles.
- Compressed air can propel debris.
- **Do Not** direct the air stream toward self or others.
- Release air pressure from tools and system before servicing, adding or changing attachments, or opening compressor oil drain or oil fill cap.



1.7.3 CUTTING/GOUGING SPATTER CAUSE FIRE OR EXPLOSION

- **Do Not** cut or gouge near flammables.
- Watch for fires; keep current working fire extinguisher nearby.



1.7.4 READ OPERATING INSTRUCTIONS

- Read Owner's Manual before using or servicing unit.

- Stop engine and release air pressure before servicing.
- Use only genuine Air N Arc® or Contractor replacement parts.

1.8 ADDITIONAL SYMBOLS



1.8.1 FALLING UNIT CAN CAUSE INJURY

- Use lifting bail to lift unit and properly installed accessories only.
- Lift and support unit only with proper equipment and correct procedures.
- If using fork lift to move unit, Ensure forks are long enough to extend beyond opposite side of unit.



1.8.2 OVERHEATING CAN DAMAGE MOTORS

- Turn off or unplug equipment before starting or stopping engine.
- **Do Not** let low voltage and frequency caused by low engine speed damage electric motors.



1.8.3 FLYING SPARKS CAN CAUSE 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 flammables away from work area.



1.8.4 OVERUSE CAN CAUSE OVERHEATING

- Allow cooling period. Follow rated duty cycle for the unit.
- Reduce current or reduce duty cycle before starting to weld again.



1.8.5 TILTING OF TRAILER CAN CAUSE INJURY

- Use tongue jack, chocks and/or blocks to support weight.
- Properly install unit onto trailer according to instructions supplied with trailer.



1.8.6 HIGH FREQUENCY (HF) RADIATION CAN CAUSE INTERFERENCE

- High-frequency (HF) can interfere with radio navigation, safety services, computers, and communications equipment.
- Have only qualified persons familiar with electronic equipment perform this installation.
- The user is responsible for having a qualified electrician promptly correct any interference problem resulting from the installation.
- If notified by the FCC about interference, stop using the equipment at once.
- Have the installation regularly checked and maintained.
- Keep high-frequency unit doors and panels tightly shut, keep spark gaps at correct setting, use grounding and shielding to minimize interference.



1.8.7 ARC WELDING CAN CAUSE INTERFERENCE

- Electromagnetic energy can interfere with sensitive electronic equipment such as microprocessors, computers, and computer driven equipment such as robots.
- Ensure all equipment in the welding area is electromagnetically compatible.
- To reduce possible interference, keep weld cables as short as possible, close together, and on the ground or floor.
- Locate welding operation 328 ft. (100 m) from any sensitive electronic equipment.
- Ensure this welding machine is installed and grounded according to this manual.
- If interference still occurs, the user must take additional measures to reduce this such as moving the welding machine, using shielded cables, line filters, or shielding the work area.



1.9 CALIFORNIA PROPOSITION 65 WARNING

- Welding or cutting equipment produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health and Safety Code Section 25249.5 et seq.)



1.10 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.ihs.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.ihs.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, web site: **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**).



1.11 EMF INFORMATION

- Considerations: While welding, low frequency electromagnetic fields are created as current flows through welding cables.
- 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 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.



1.11.1 TO REDUCE MAGNETIC FIELDS IN THE WORKPLACE:

- 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.



1.11.2 ABOUT PACEMAKERS:

- Pacemaker wearers consult your doctor before welding or going near welding operations.
- If cleared by your doctor, then following the above procedures is recommended.

WARNING

DO NOT REMOVE OR COVER ANY SAFETY LABEL OR DECAL.

Replace any Safety labels that become damaged or illegible.

For machine packages that ship with labels, these are to be affixed upon arrival. All Safety decals **MUST** be placed on the machine in their proper locations, as shown on the decal pages in *Section 7* of this machine's manual.

1.12 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 7.53 through 7.55, Decals/Labels** are located near components or access paths. All information provided on these decals is provided for the safe operation of the unit, for the safety of the operator and the public. Decals also inform operators of safety precautions and/or hazardous conditions that may exist while using this product. Always heed the information noted on the unit's safety decals.



1.13 DISPOSING OF MACHINE FLUIDS

- Always dispose of machine fluids under the guidance of all applicable local, regional and/or federal law.
- Vanair® encourages recycling when permitted. Consult the product's container labeling for more information.

SECTION 2: Specifications

2.1 GENERAL INTRODUCTION

The tables and figures in this section list the specifications (including operational, output and dimensions) 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: Air N Arc® 150 General Components** and **Figure 2-2: Contractor Main Component Locations** for machine component locations. For additional measurement specifications refer to the full Identification Assembly Drawing, (**Figures 3-3: Control Panel Mounting Pattern** in **Section 3, Installation**.)

2.1.1 SPECIFIC AND SHARED SPECIFICATIONS

TABLE 2A: AIR N ARC® 150/CONTRACTOR COMPRESSOR SPECIFICATIONS

SYSTEM INFORMATION	SPECIFICATION
AC Generator	4.200 Watts Continuous Duty; 5000 Watt Peak
AC Generator 120V Power Rating	60 Hz, Single Phase, 17.5 Amps Per Outlet
AC Generator 240V Power Rating	60 Hz, Single Phase, 17.5 Amps
Engine	20 HP, Vanair® VNR680, Gasoline ¹
Engine Oil Capacity	1.8 Quart (1.2L) 10W-30 Oil (Refer to Section 5.7 for Extreme Conditions)
Engine Valve Clearance	Advance Valve Clearance: 0.10-0.15mm; Emission Valve Clearance: 0.10-0.15mm
Fuel Consumption	1.2 GPH @ Full Engine Speed
Fuel Tank Capacity	Skid (No Fuel Tank), 4 Gallon, or 11.5 Gallon
Fuel Type	87 Octane or Higher Unleaded Gasoline ²
Operating Temperature Limits	-20°F to 110°F (-28.8°C to 43.3°C)

¹For more information regarding the Vanair® VNR680 engine, refer to Maintenance Section.

²Ethanol blended fuels, such as E85, are prohibited for use with the Vanair® VNR680.

TABLE 2B: AIR N ARC® 150/CONTRACTOR GENERATOR/ENGINE SPECIFICATIONS

SYSTEM INFORMATION	SPECIFICATION
Pilot Valve	Factory Setting 95-125 PSI
Instrument Gauges	Air Pressure and Hour Meter
Adjustable Air Pressure Control Settings	Factory Preset Pressure: 90 PSI (Cut-In) and 125 PSI (150 PSI Maximum Cut-Out).
Generator Receptacles	One (1) 120V Receptacle and one (1) 240V Receptacle located on the Generator Panel.
Compressor Type	Reciprocating Single-Stage, 3 Cylinder
Air Compressor Capacity	20 CFM @ 100 PSI (Includes Air Tank)
Air Filter	Pleated Paper, Dry Type
Oil Capacity/Type	0.9 Quart (0.85L) Vanguard™ Premium Reciprocating Oil ISO68 (Premium Non-Detergent Lubricant)
Air Tank Capacity	10 Gallon, 30 Gallon or Remote tank
Tank Pressure Rating	200 PSI (max.)
Safety Relief Valve Setting	150 PSI

SPECIFICATIONS (CONT.)**TABLE 2B CONTINUED: AIR N ARC® 150/CONTRACTOR COMPRESSOR SPECIFICATIONS**

Operating Range	-20°F to 110°F (-29°C to 43°C)
Cooling System	Air Cooled
Instrument Gauges	Pressure and Hour Meter
Air Service Outlet	3/8" NPT Ball Valve
<i>^lEthanol blended fuels, such as E85, are prohibited for use with the Vanair® VNR680.</i>	
<i>^hAlways 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.</i>	

Table 2C: AIR N ARC® 150 WELDER AND ELECTRICAL SPECIFICATIONS

SYSTEM INFORMATION	SPECIFICATIONS
Rated Welder Output	150 Amps High Frequency DC/CC; 100% Duty Cycle @ 150 Amps
Welding Leads	25 ft. (50 ft. Optional) Refer to <i>Table 8E Available Options</i> .
AC Generator	4,200 Watts Continuous Duty; 5,000 Watts Peak
AC Generator 120V Power Rating	60Hz, Single Phase, 17.5 Amps Per Outlet
AC Generator 240V Power Rating	60Hz, Single Phase, 17.5 Amps

TABLE 2D: FUNCTION AND TESTING OUTPUTS

FUNCTION	ACCEPTABLE VALUE
Engine No-Load High RPM	3650
Engine Idle RPM	1900
Air Cut-In Pressure	98 ±8
Air Cut-Out Pressure	129 ±10
AC Generator Hz (No Load)	61.5 ±0.5
AC Generator 240V Plug	240 ±8
AC Generator 120V (Top) Plug	123 ±8
AC Generator 120V (Bottom) Plug	123 ±8
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 2E: CONTRACTOR UNIT WEIGHT AND DIMENSIONS

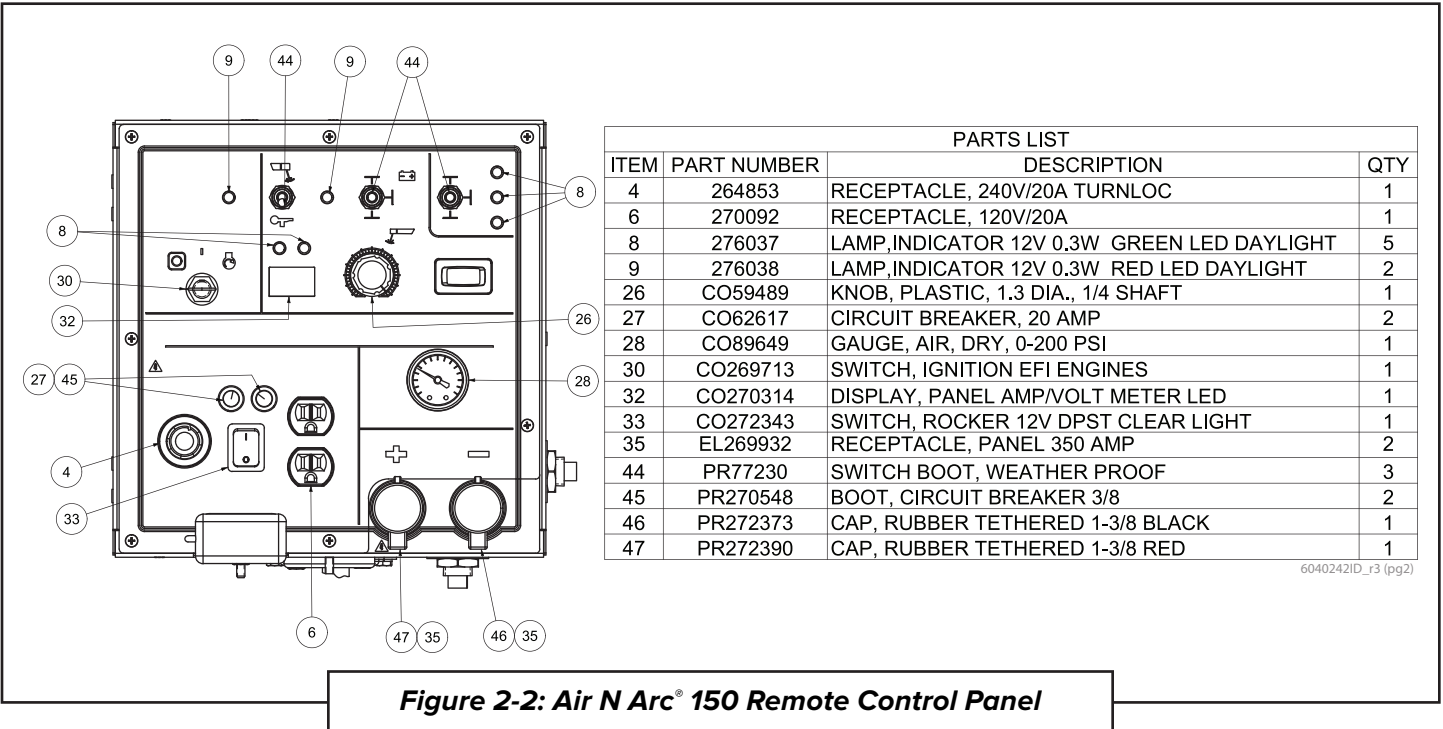
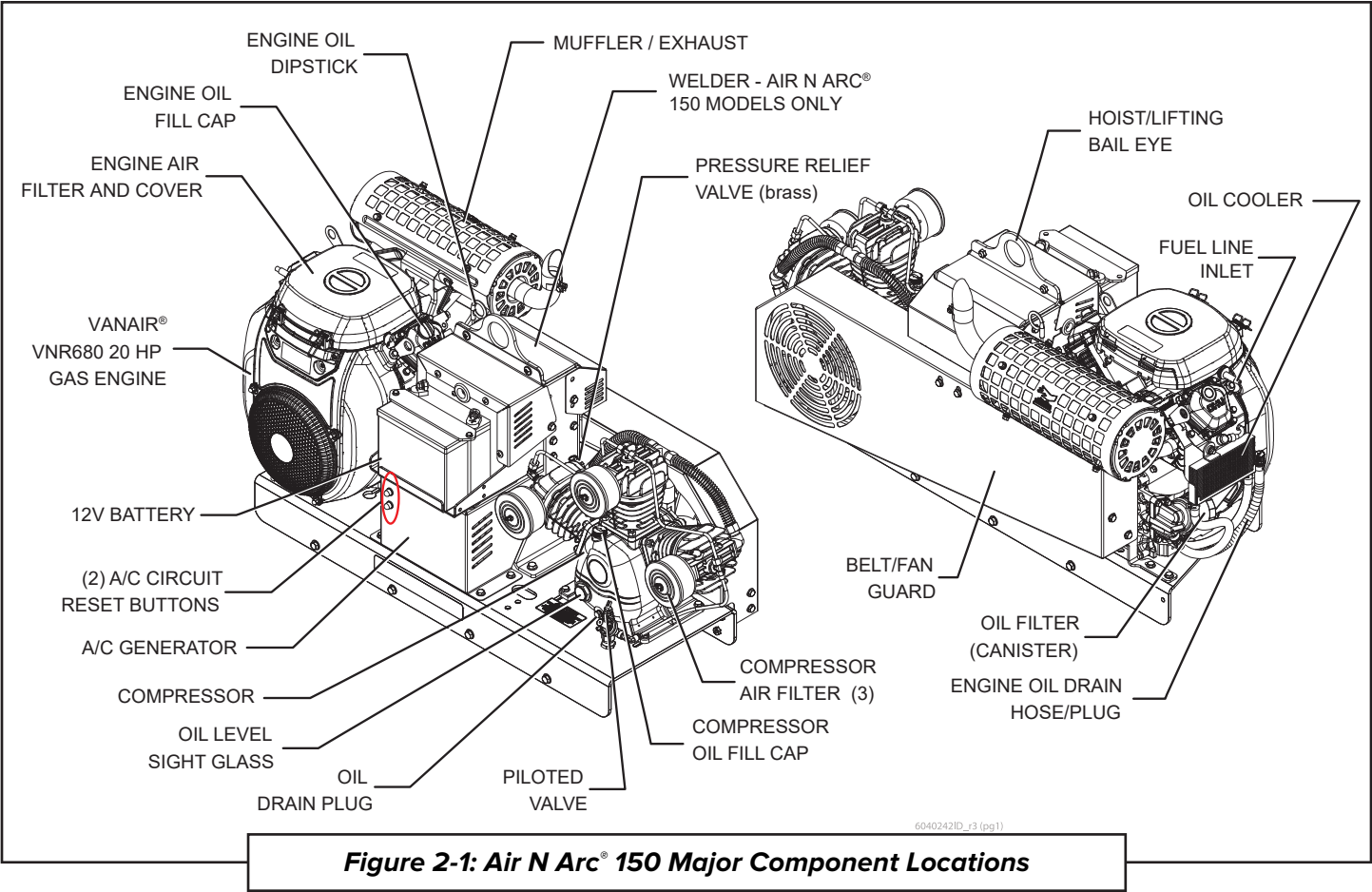
NOTE: This table refers to the Contractor series. For specifications for the Air N Arc® 150, see additional specifications on the following pages.

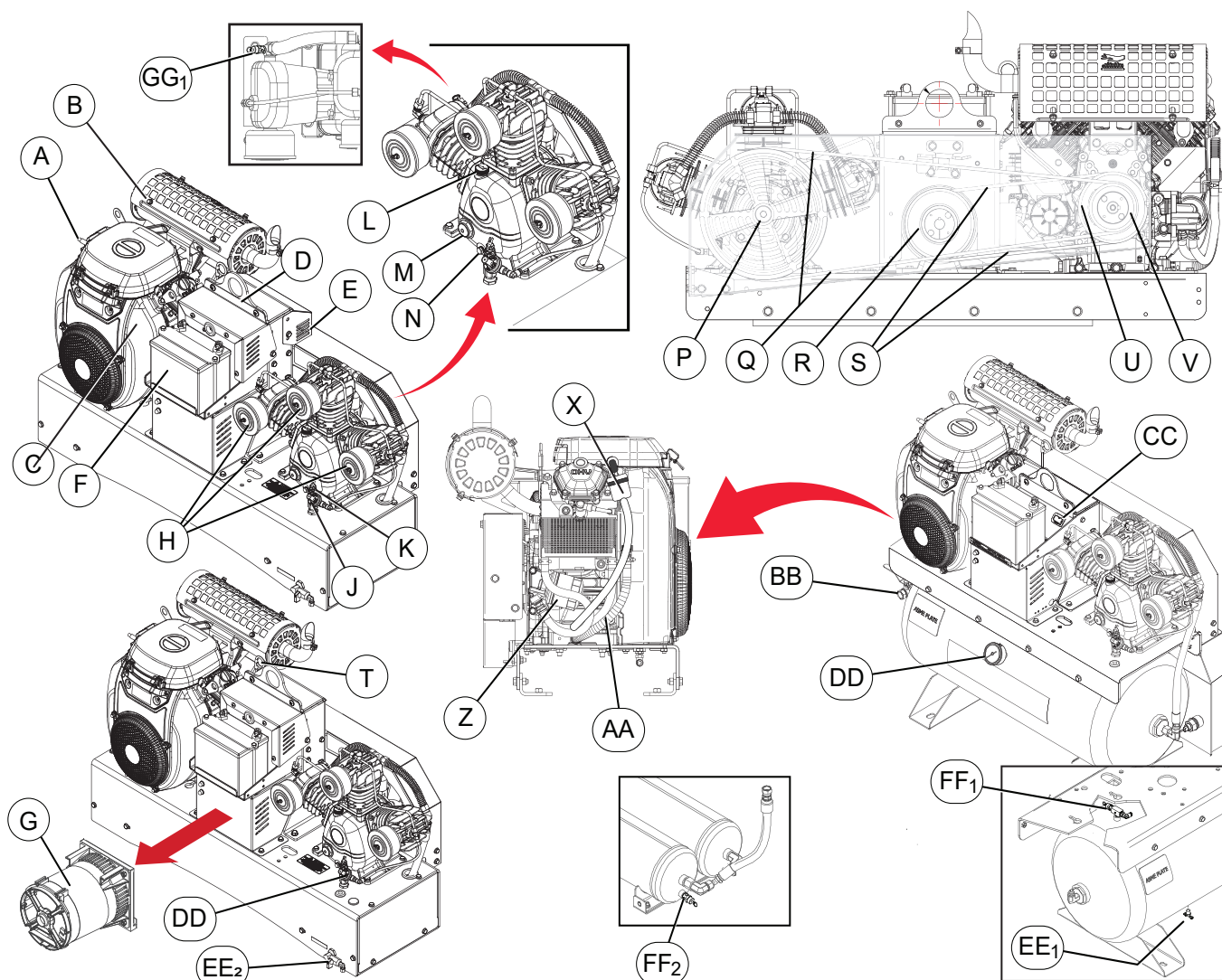
DIMENSIONS (Overall Package)	LENGTH (In)	WIDTH (In)	HEIGHT (In)	WEIGHT (lbs wet)	WEIGHT (lbs dry)
Skid-Mounted ⁱ	49.4 In	16.9 In	21.6 In	272 lbs	251 lbs
Dual Tank-Mounted ⁱⁱ	49.3 In	21.0 In	27.6 In	309 lbs	288 lbs
Tank-Mounted (with 30 Gallon Air Tank) ⁱⁱⁱ	79.4 In	19.4 In	38.2 In	396 lbs	375 lbs

ⁱ Refer to **Figure 3-2** for full dimension drawing, along with additional circulation and service space requirements.

ⁱⁱ Refer to **Figure 3-3** for full dimension drawing, along with additional circulation and service space requirements.

ⁱⁱⁱ Refer to **Figure 3-4** for full dimension drawing, along with additional circulation and service space requirements.





KEY	DESCRIPTION	KEY	DESCRIPTION	KEY	DESCRIPTION
A	ENGINE AIR FILTER HOUSING	N	COMPRESSOR OIL DRAIN PORT/PLUG	AA	ENGINE OIL DRAIN TUBE
B	ENGINE MUFFLER AND SHIELD	P	COMPRESSOR PULLEY	BB	AIR SERVICE VALVE (30 GALLON TANK)
C	GASOLINE ENGINE ^I	Q	COMPRESSOR DRIVE BELT	CC	TACHOMETER (LOCATION MAY ALTER DEPENDING ON MODEL TYPE)
D	LIFTING BAIL	R	AC GENERATOR PULLEY	DD	PRESSURE GAUGE (LOCATION MAY ALTER DEPENDING ON MODEL TYPE)
E	BELT SHROUD CANOPY	S	GENERATOR DRIVE BELT	EE ₁	MOISTURE DRAIN VALVE (30 GALLON)
F	BATTERY	T	ENGINE OIL LEVEL GAUGE/DIP STICK	EE ₂	MOISTURE DRAIN VALVE (8 GALLON)
G	GENERATOR - AC; 4.2 kW CONT.; 5 kW PEAK	U	GENERATOR DRIVE SHEAVE	FF ₁	RELIEF VALVE 200 PSI (30 GALLON)
H	COMPRESSOR AIR FILTER HOUSING (3X)	V	COMPRESSOR DRIVE SHEAVE	FF ₂	RELIEF VALVE 200 PSI (8 GALLON)
J	PRESSURE SWITCH	W	INSTRUMENTATION ^{II}	GG ₁	RELIEF VALVE (COMPRESSOR)
K	PILOT VALVE	X	ENGINE FUEL FILTER		
L	COMPRESSOR OIL FILL PORT/CAP	Y	ENGINE FUEL PORT/CAP		
M	COMPRESSOR OIL FILL LEVEL GAUGE	Z	ENGINE OIL FILTER		

^I For additional engine information, refer to the Vanair® VNR Engine Operation Manual 090234.

^{II} For instrumentation details refer to **Section 4, Operation, Figure 4-1 or Figure 4-2.**

reference: 050688-007ID_r0.pdf, 050687-007ID_r0.pdf

Figure 2-3: Contractor Main Component Locations

TABLE 2F: SPECIFICATIONS - UNIT WEIGHT AND DIMENSIONS

DIMENSIONS (Overall Package)	LENGTH (In)	WIDTH (In)	HEIGHT (In)	WEIGHT (Lbs Dry)	WEIGHT (Lbs Wet)
Skid-Mounted	47.7 In	20.6 In	25.3 In	350 lbs	360 lbs
Skid-Mounted (Vanair® VNR680)	47.8 In	21.3 In	25.3 In	350 lbs	360 lbs
Tank-Mounted 30 Gallon (Vanair® VNR680)	47.9 In	22.8 In	41.8 In	490 lbs	565 lbs
Tank-Mounted 8 Gallon (Vanair® VNR680)	47.9 In	21.3 In	27.6 In	425 lbs	460 lbs

TABLE 2G: BOLT AND TORQUE SPECIFICATIONS

					SOCKET HEAD CAP SCREW
	2	5	7	8	
ID. Marks	No Markings	3 Lines	5 Lines	6 Lines	Allen Head
Material	Low Carbon	Medium - Carbon, Tempered	Medium - Carbon, Quenched and Tempered	Medium - Carbon, Quenched and Tempered	High - Carbon, Quenched and Tempered
Tensile Strength (Minimum)	74,000 PSI	120,000 PSI	133,000 PSI	150,000 PSI	160,000 PSI

TABLE 2H: US BOLT TORQUE SPECIFICATIONS

NOTE: Torque Specification are in Foot/Pounds

BOLT GRADES:		2	2	5	5	7	7	8	8	SOCKET HEAD CAP SCREW	SOCKET HEAD CAP SCREW
Bolt Diameter (In)	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

SPECIFICATIONS (CONT.)**TABLE 2I: UNIT WEIGHT AND DIMENSIONS**

DIMENSIONS (Overall Package)	LENGTH (In)	WIDTH (In)	HEIGHT (In)	WEIGHT (Lbs/Dry)
Skid-Mounted	49.4 In	16.9 In	21.6 In	304 lbs
Dual Tank-Mounted	49.3 In	21.0 In	27.6 In	399 lbs
Tank-Mounted (with 30 Gallon Air Tank)	49.4 In	19.4 In	38.2 In	446 lbs

¹ Refer to **Figures 3-3A through 3-3C** for full dimension drawing, along with additional circulation and service space requirements.

TABLE 2J: GENERATOR AND ENGINE SPECIFICATIONS

SYSTEM INFORMATION	SPECIFICATION
AC Generator	4,200 Watts Continuous Duty; 5000 Watts Peak
AC Generator 120V Power Rating	60Hz, Single Phase, 17.5 Amps Per Outlet
AC Generator 240V Power Rating	60Hz, Single Phase, 17.5 Amps Per Outlet
Engine	20 HP Vanair® VNR680 Gasoline ¹
Engine Oil Capacity	1.58 Quart (1.5L), 10W-30 (Refer to Section 5.76 and 5.77 under Maintenance for Extreme Conditions.)
Fuel Consumption	1.2 GPH at Full Engine Speed/Load (Approx. 9.2 Hour Runtime with 11 Gallon Tank)
Fuel Tank Capacity	Skid (No Fuel Tank), 4 Gallons, or 11.5 Gallons
Fuel Type	87 Octane or Higher Regular Unleaded Gasoline ¹¹
Operating Temperature Limits	0°F to 110°F (-17.8° to 43°C)

¹For additional information and maintenance requirements regarding the gasoline engine. (See **Section 5.7 Maintenance.**)

¹¹Ethanol blended fuels, such as E85, are prohibited from use with the Vanair® VNR680 engine.

TABLE 2K: AIR COMPRESSOR SPECIFICATIONS

COMPRESSOR INFORMATION	SPECIFICATION
Compressor Type	Reciprocating, Single-Stage
Air Compressor Capacity	20 CFM @ 100 PSI (Includes 8+ Gallon Air Tank)
Air Filter	Pleated Paper, Dry Type
Oil Capacity/Type	Service Fill: 1.75 Quart (1.65L), Vanguard™ Premium Synthetic Oil
Air Tank Capacity	8 Gallon, 30 Gallon, or Remote Tank
Tank Pressure Rating	200 PSI
Safety Relief Valve Setting	150 PSI
Operating Range (Ambient)	-20°F to 110°F (-29° to 43°C)
Electrical System	12VDC
Cooling System	Air-Cooled
Instrument Gauges	Pressure Gauge and Hour Meter
Adjustable Air Pressure Control Settings	Factory Preset Pressure: 90 PSI (Cut-In) and 125 PSI (150 PSI Maximum Cut-Out)
Air Service Outlets	One (1) on Control Panel (Panel Version), One (1) on Machine

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. Should any damage be discovered during package inspection, contact and notify the shipping company immediately.

NOTICE

Before fully unpacking the unit, inspect the component parts, supports and loose-packed items to ensure that none of the assemblies or components have been damaged during shipping.

To report missing or damaged items or other discrepancies, contact Vanair® at: (219) 879-5100/(800) 526-8817

1. Refer to **Figures 3-4 through 3-9, Installation and Dimensions Diagrams** for your machine, and the following instructions.
2. Remove packing and inspect the machine and control panel for shipping damage.
3. Check fluid levels, if needed. Refer to **Section 5, Table 5A: Maintenance Schedule and Procedure Table** for compressor and engine oil maintenance assistance.

3.2 IMPORTANT INFORMATION BEFORE INSTALLATION

Before beginning installation, please note the following listed dangers, warnings and notes to ensure safety and proper equipment operation.

During installation, provide the minimum clearances shown in the dimension diagrams for your machine to allow for proper ventilation. See **Figures 3-4 through 3-9.**

DANGER

Ground wire size between the instrument panel, the machine, and the vehicle chassis to be a minimum of 10 AWG.

DANGER

DO NOT OPERATE IN AN ENCLOSED SPACE. 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.

3.3 SERVICE BODY PREPARATION

See drawings on following pages for dimensional requirements and measurements, and the following instructions. (Excludes Skid Mount.)

- Drill four (4) 1/2 inch diameter holes to accommodate the mounting bolts in the service body floor using a rectangular pattern; 10.2 x 24.0 inches (On Center), at the desired mounting location. Ensure that all proper machine clearances will be maintained.

For units without a fuel tank, follow these steps:

1. Mount the included electric fuel pump at the desired location on the service body keeping it as close to the truck fuel tank as possible. Mount the electric fuel pump a maximum distance of 24 inches from the bottom of the tank (**Figure 3-1**).
2. Install 1/4 inch fuel line from the auxiliary port on your vehicle's fuel tank to the input of the Air N Arc® 150 or Contractor machine's inline 1/4 inch fuel filter, located on or near the gas engine. Consult with the vehicles' manufacturer if there is no auxiliary fuel port available.
3. Units must have a 75μ (micron) fuel filter in line before the pump. (See **Figure 3-1, [B]**.)
4. Install remote control panel at the desired location on the service body and route the control trunk line to where the unit will mount.
5. Ensure any sharp edges the trunk-line comes in contact with, are shielded or grommeted with no excessively sharp bends in the trunk-line.

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6. Ensure the trunk line does not come in contact with exhaust parts.

NOTICE

Mounting brackets are available set the panel off from the truck body. (See *Figure 3-4*) Contact Vanair® for additional information.

WARNING

Ensure that fuel lines Do Not make contact with sharp edges, moving parts or exhaust heat! (Consult *Section 7.20, Hose Installation Guide* for assistance in running hose lines.)

3.4 MACHINE PACKAGE MOUNTING

1. When determining package position on vehicle, be aware of the minimum space requirements needed for cooling and circulation requirements, and also package access for performing maintenance. (Refer to *Figures 3-4 through 3-9*.)
2. Unbolt and separate the machine unit from the shipping crate pallet.
3. Place the unit in a preliminary position on the service body so that the front panel access (front) is easily accessible, and the control trunk line and all other connections will reach the unit.
4. Route the control trunk-line through the grommeted opening. Connect the ½ inch air line via the JIC fitting on the end of the air tank, and connect and secure the weather proof connectors.
5. Connect and clamp the fuel line to the inline fuel filter located on the engine (near the left valve cover as you are looking at the motor) if using truck tank. (See *Figure 3-1, Fuel Pump Clearance*.)
6. Leaving the unit in the preliminary position, connect the ground cable to the unit battery, check all fluid levels. Replace the front access panel.
7. Turn the control panel Ignition Switch to “ON”.
8. Wait 30 seconds for the fuel pump to prime the fuel system. Start and run the unit for

a few minutes, then turn the machine off. Check fuel connections for leaks, verify all connections, and replace access panel and close hood.

9. Move the unit into its final location for mounting, while positioning the control trunk line and all other connections.
10. For the 30 Gallon model, mount the unit using four (4) 1/2 inch diameter nuts and bolts. (Refer to *Figures 3-7 and 3-9*.) For all other Air N Arc® models, bolt the machine down using (4) 3/8 inch-16 bolts inserted from the bottom into the attached weld-nuts.
11. Refer to the drawings shown in *Figures 3-4 through 3-8* for mounting hole spacing and dimensions required for your Air N Arc® model.
12. Mount Control Panel. (See *Figure 3-3*.)
13. Once unit is mounted, start the unit and fully test all functions. Warm the unit to full operating temperature. After the unit has cooled, check all fluid levels and add as needed.

NOTICE

While much of the information within the Installation Section is comprehensive, these guidelines should be considered as reference material only in light of the vehicle make and model specifications and year.

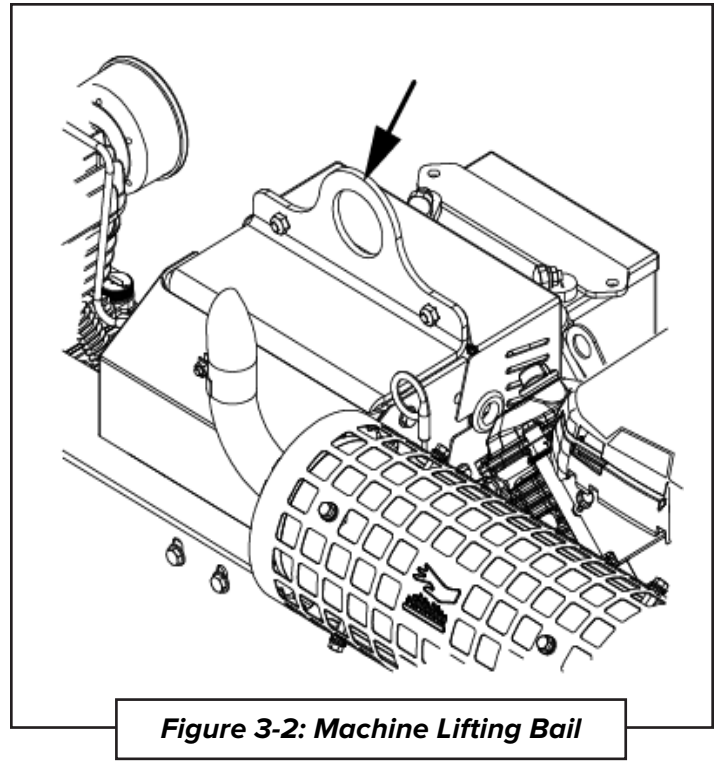
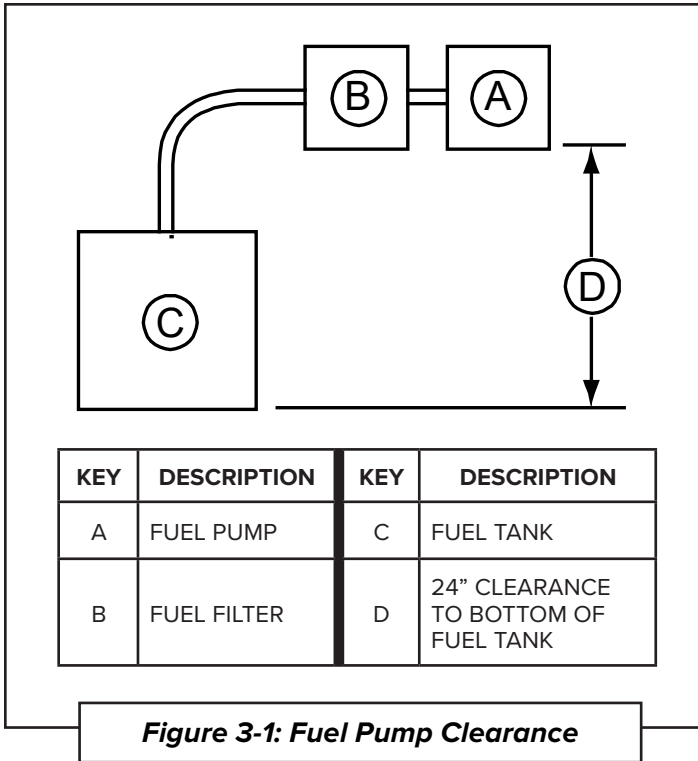
Avoid exposure to water and moisture when installing electrical components, switches and connections. Please note the locations of the vehicle fuel lines, tanks, brake lines and wiring harnesses prior to drilling any holes to avoid damaging these items.

WARNING

ELECTRICAL HAZARD!
Disconnect the battery prior to starting the installation.

WARNING

If mounting clearance is tighter than the minimum recommended requirements, consult with Vanair® Service Department for application installation recommendations.



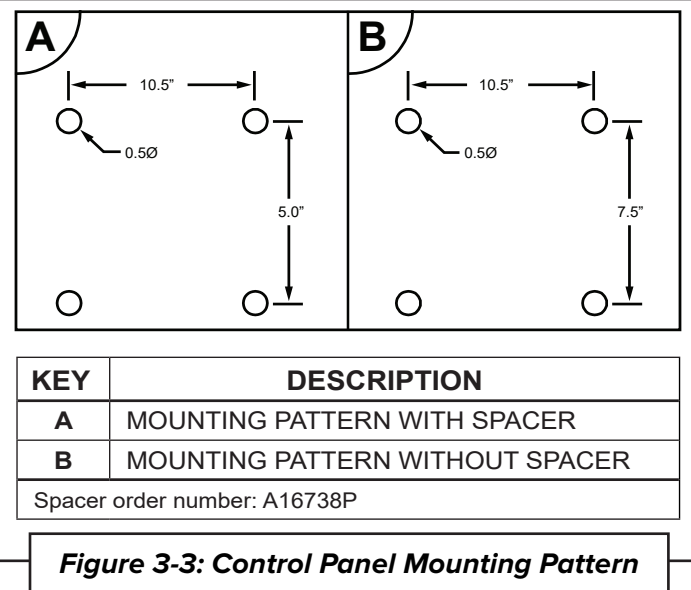
NOTICE

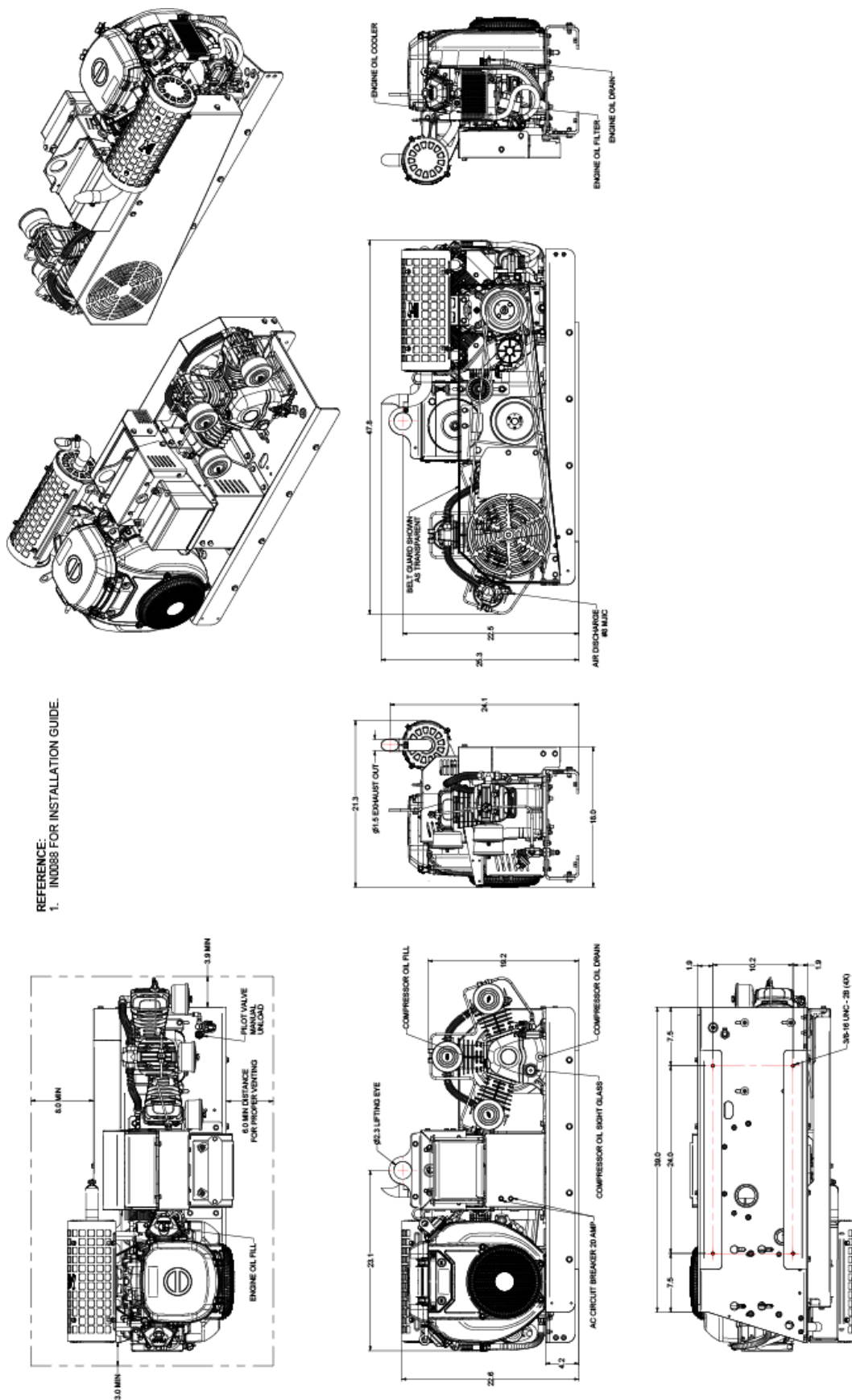
Vanair® Recommends mount the machine on vibration isolators or Isolating dampeners. These are available from the Vanair® Customer Service Department. Request (KIT 1203-001).

For guidance on the machine start-up procedure and control panel functions, See Section 4, Operation.

CAUTION

Lift the machine package in accordance within the safety guidelines given in Section 1.8.1, *Falling Unit Can Cause Injury.* (See Figure 3-2: Machine Lifting Bail location.)





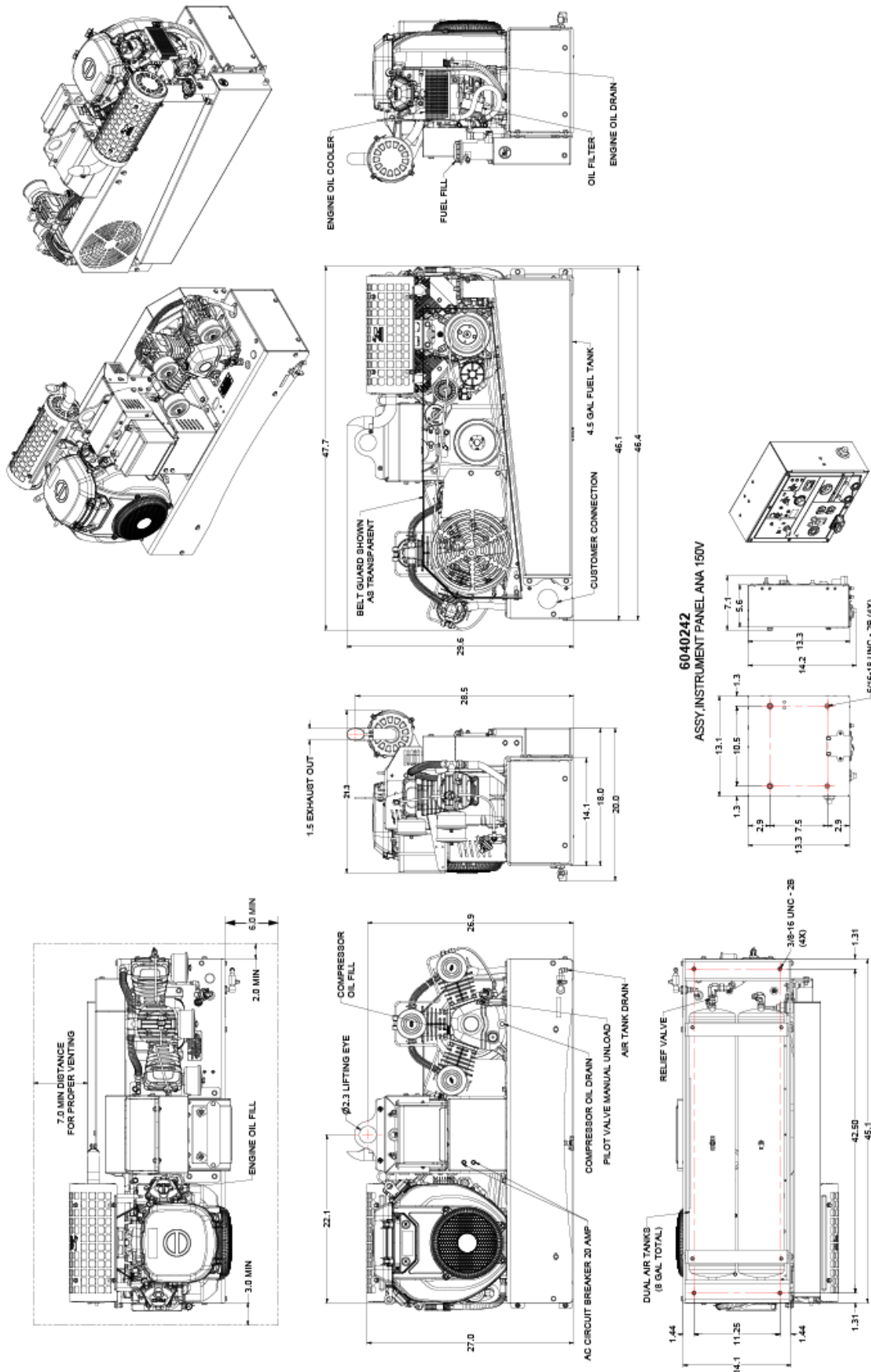
REFERENCE:
1. IN0088 FOR INSTALLATION GUIDE.

DISCLAIMER

If machine package is to be mounted within a confined space, such as beneath a canopy, the area must be determined to allow for adequate air flow to take place for cooling purposes. Consult factory for assistance in ensuring adequate air flow before mounting the machine.

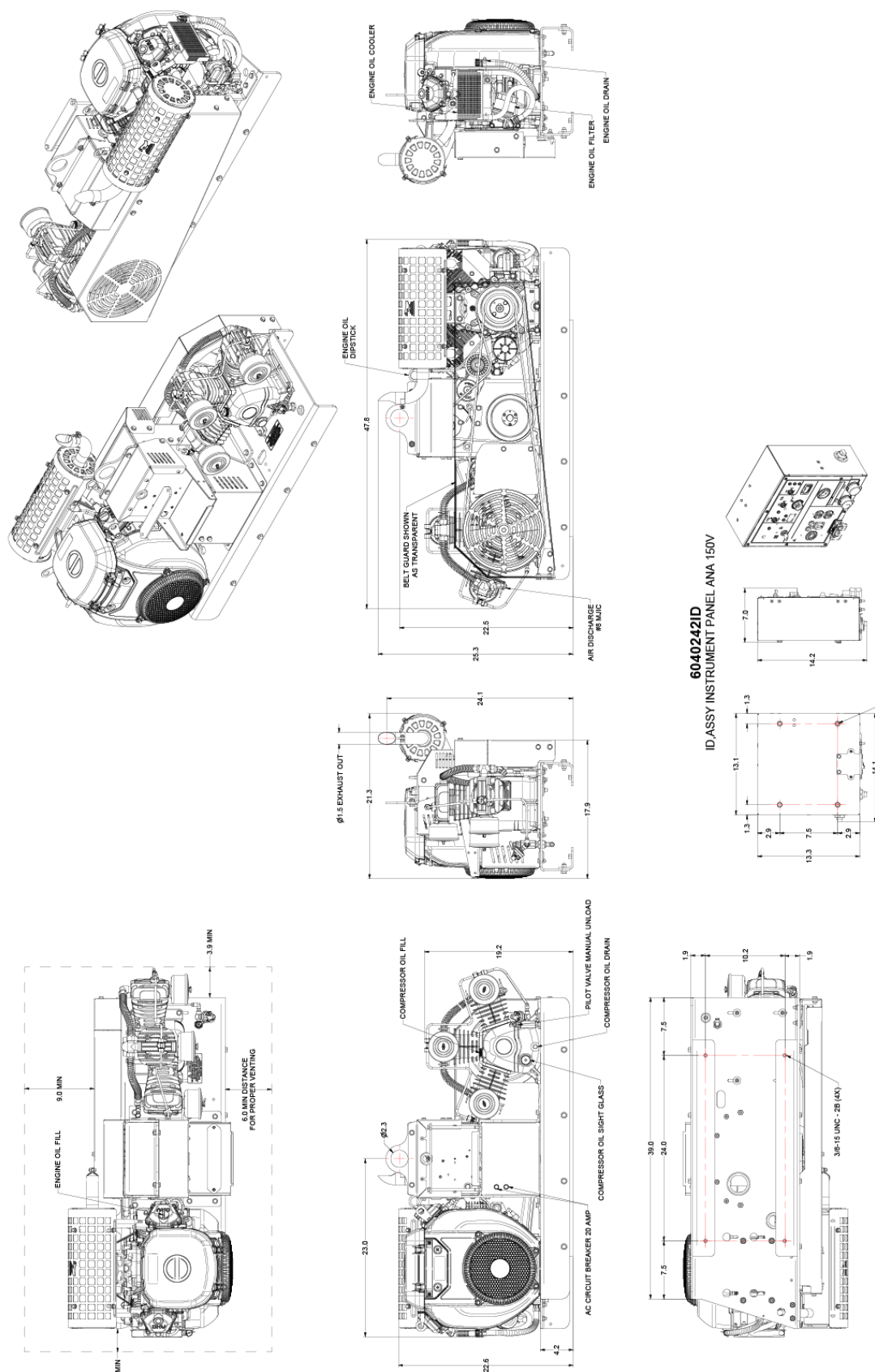
Figure 3-4: Air N Arc® 150 Dimension Diagram (Skid Mount)

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**DISCLAIMER**

If machine package is to be mounted within a confined space, such as beneath a canopy, the area must be determined to allow for adequate air flow to take place for cooling purposes. Consult factory for assistance in ensuring adequate air flow before mounting the machine.

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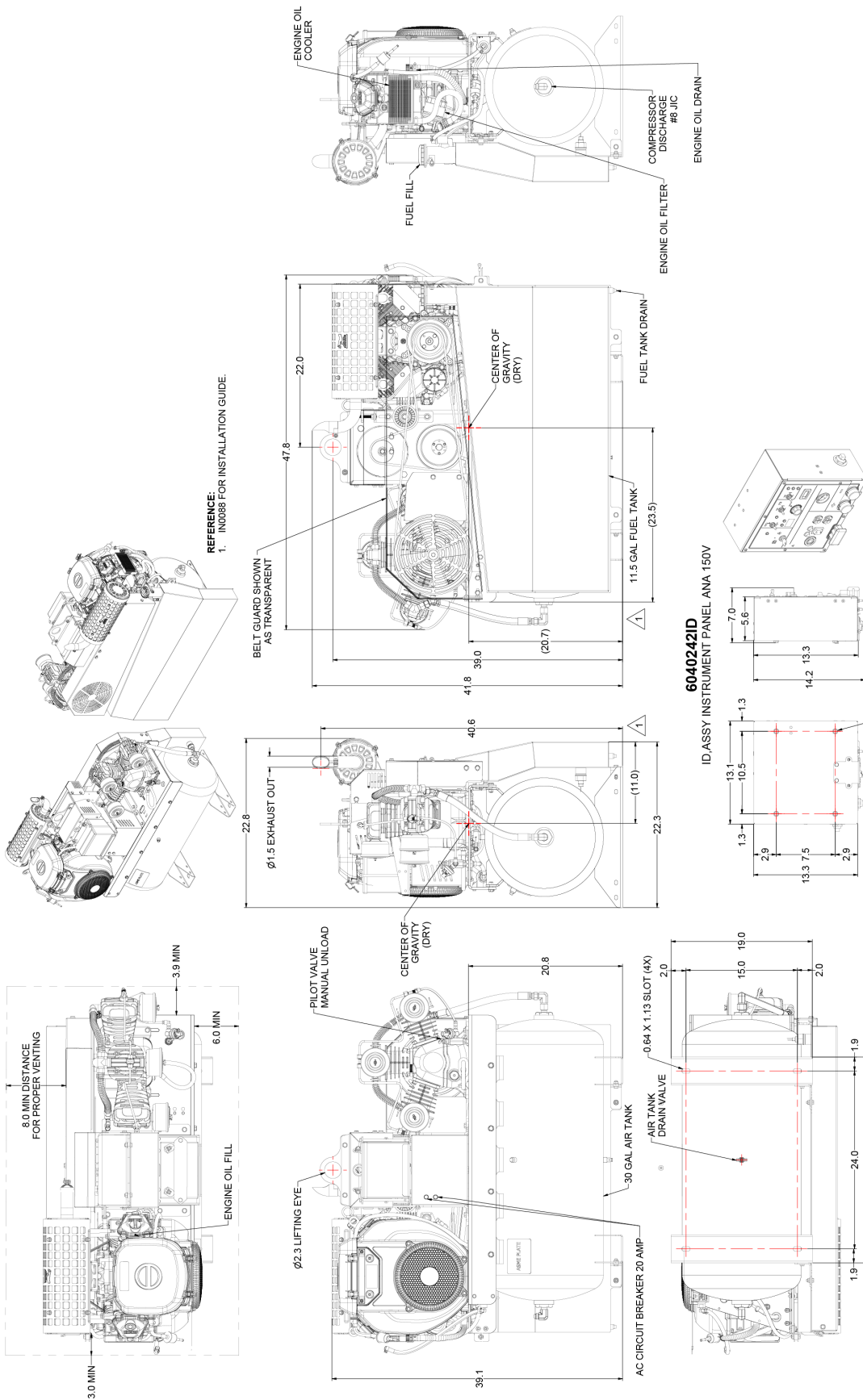


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Figure 3-6: Air N Arc® 150 Dimension Diagram (Skid Mount - No Battery)

DISCLAIMER

If machine package is to be mounted within a confined space, such as beneath a canopy, the area must be determined to allow for adequate air flow to take place for cooling purposes. Consult factory for assistance in ensuring adequate air flow before mounting the machine.

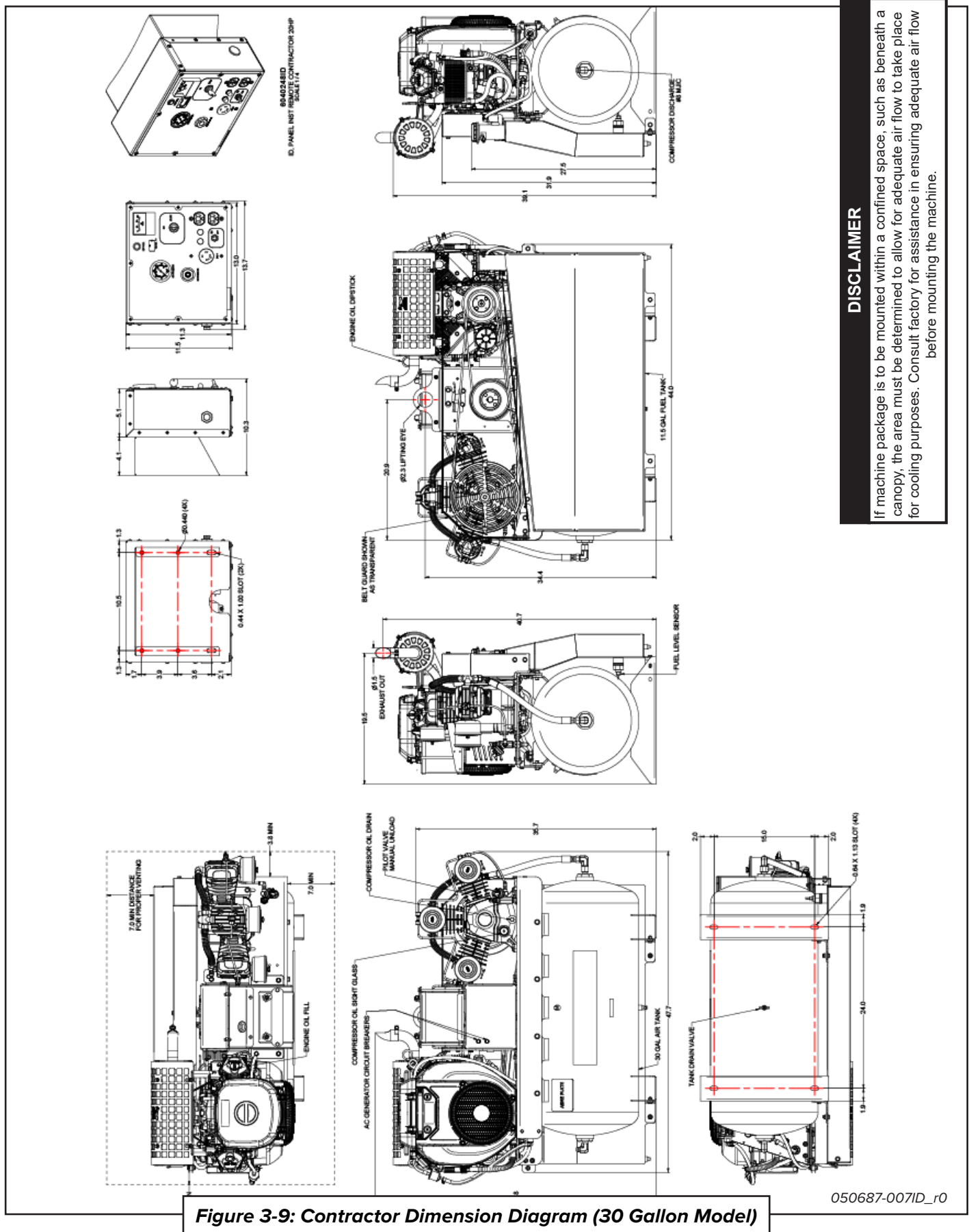


DISCLAIMER

If machine package is to be mounted within a confined space, such as beneath a canopy, the area must be determined to allow for adequate air flow to take place for cooling purposes. Consult factory for assistance in ensuring adequate air flow before mounting the machine.

Figure 3-7: Air N Arc® 150 Dimension Diagram (30 Gallon Model)

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SECTION 4: Operation

4.1 GENERAL INFORMATION

The Vanair® Air N Arc® 150 and Contractor Series have comprehensive arrays of controls and indicators for optimum machine performance. Understanding the correct operation of the system will help to distinguish between a properly functioning system, and possible system issues. The information in the **Operation Section** will help the operator to recognize and interpret the readings to assure that the system is performing optimally.

! IMPORTANT !

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

NOTICE

If the generator or welder switches on the Air N Arc® 150 are set to the ON position prior to starting, and/or the pressure in the tank is less than 10 PSI, the machine will start at full speed.

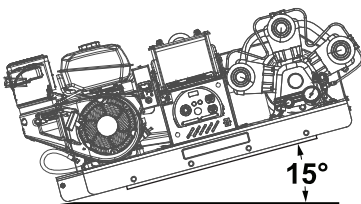
NOTICE

Once the machine has built up full air pressure, the engine will immediately idle down.

NOTICE

The air compressor will start automatically when the machine starts up.

NOTICE



The maximum operation angle of tilt for this machine package is fifteen degrees (15°).

4.2 ENGINE START-UP AND SHUTDOWN PROCEDURE

- Consult **Figure 4-1: Control Panel Functions** for use with operating procedures detailed in this section.
- Please note that the engine is designed to run in a level position.
- Before servicing, always stop the engine first. Disconnect all electrical devices and battery that are attached and allow the engine to cool.

4.2.1 AIR N ARC® 150 ENGINE START-UP

Consult **Figures 4-1**, and the following steps:

1. Check to make sure all switches (for Welder and/or Generator) are in the OFF position prior to starting.
2. Turn the engine control switch from the OFF to the ON position; wait 3-5 seconds for the fuel pump to prime the system.
3. Continue turning control switch to the START position until the engine starts (when the switch is let go, it will revert back to ON position).
4. Let engine run at idle for a 3-5 minutes to allow for warm up sequence. Engine may run at full speed until air pressure builds up in the tank.

WARNING

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

WARNING

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

4.2.2 AIR N ARC® 150 ENGINE SHUT DOWN

Consult **Figure 4-1**. To shut the engine off at any time, turn the Engine Control Switch [N] to the OFF position. However, this method is best reserved for emergency shut down situations only.

While the engine can be shut off quickly using the Engine Control Switch only, Vanair® recommends the following procedure be used for routine shutdowns to keep the system in optimal condition. This minimizes undue stress that may occur during the next start up session if some of the machine conditions were left in working mode(s) or had auxiliary power draws left intact (such as a tool receptacle left plugged into the generator, etc.).

To prepare the machine for recommended shutdown:

1. Shut off any tools or other items that are drawing power from the generator, or compressed air from the air tank.
2. Close all service valves.
3. Turn the Generator and Welder/Charger switches on the control panel to their OFF positions.
4. Unplug any power cords that are plugged into the generator panel.
5. Finally turn the Engine Control Switch [N] to the OFF position.

4.2.3 CONTRACTOR ENGINE START UP

Refer to **Figure 4-2** for the Contractor instrumentation control diagram.

1. Check to make sure Generator switch [L] is in the OFF position prior to starting.
2. Turn the engine control switch [H] to the ON position.
3. Continue turning control switch to the START position until the engine starts. (When the switch is released, it will return to the ON position.)
4. Allow the engine to run at idle for 3-5 minutes to warm up.

CAUTION

Compressors and engines generate considerable heat and create hot surfaces. Use caution when operating and servicing the unit. Some surfaces and components may be HOT.

4.2.4 CONTRACTOR ENGINE SHUT DOWN

Consult **Figure 4-2**. To shut off the engine at any time, turn the ignition switch to the OFF position. This is the fastest method to turn off the engine, however it should be used only in emergency shutdowns. Vanair®, a Lincoln Electric Company, recommends the following procedure to be used for routine shutdowns to keep the system in optimal condition and minimize undue stress that may occur during the next start up session.

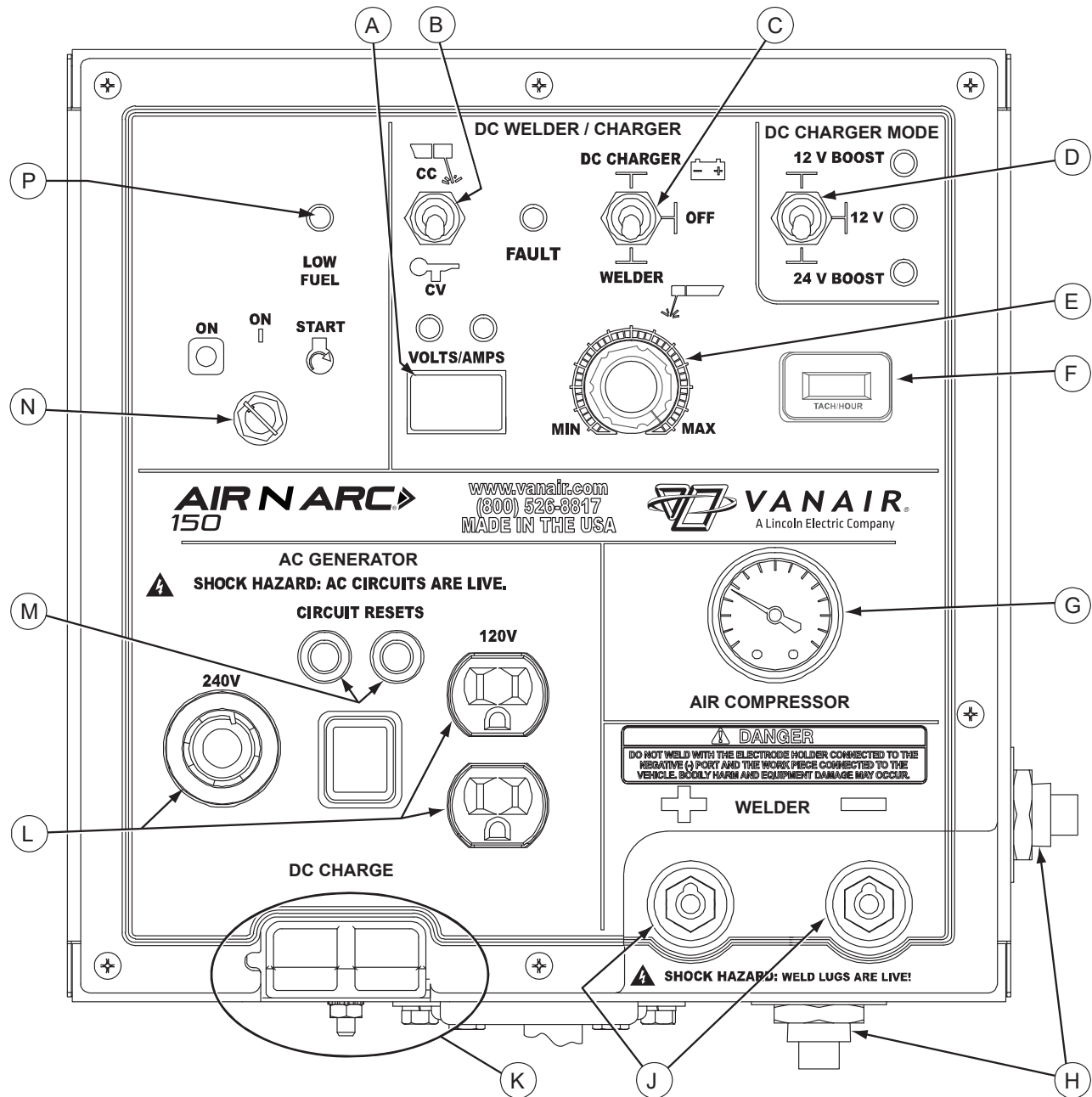
1. Shut off any tools or other items that are drawing power from the generator, or compressed air tank.
2. Close all service valves.
3. Unplug any power cords that are plugged into the generator panel.
4. Turn the generator switch [L] to the OFF position. Refer to **Figure 4-2**.
5. Allow the machine to cool down by running at idle for 3-5 minutes.
6. Turn the Engine Control Switch [H] to the OFF position.

4.3 ENGINE THROTTLE CONTROL FUNCTIONS

The engine speed is controlled by these factors:

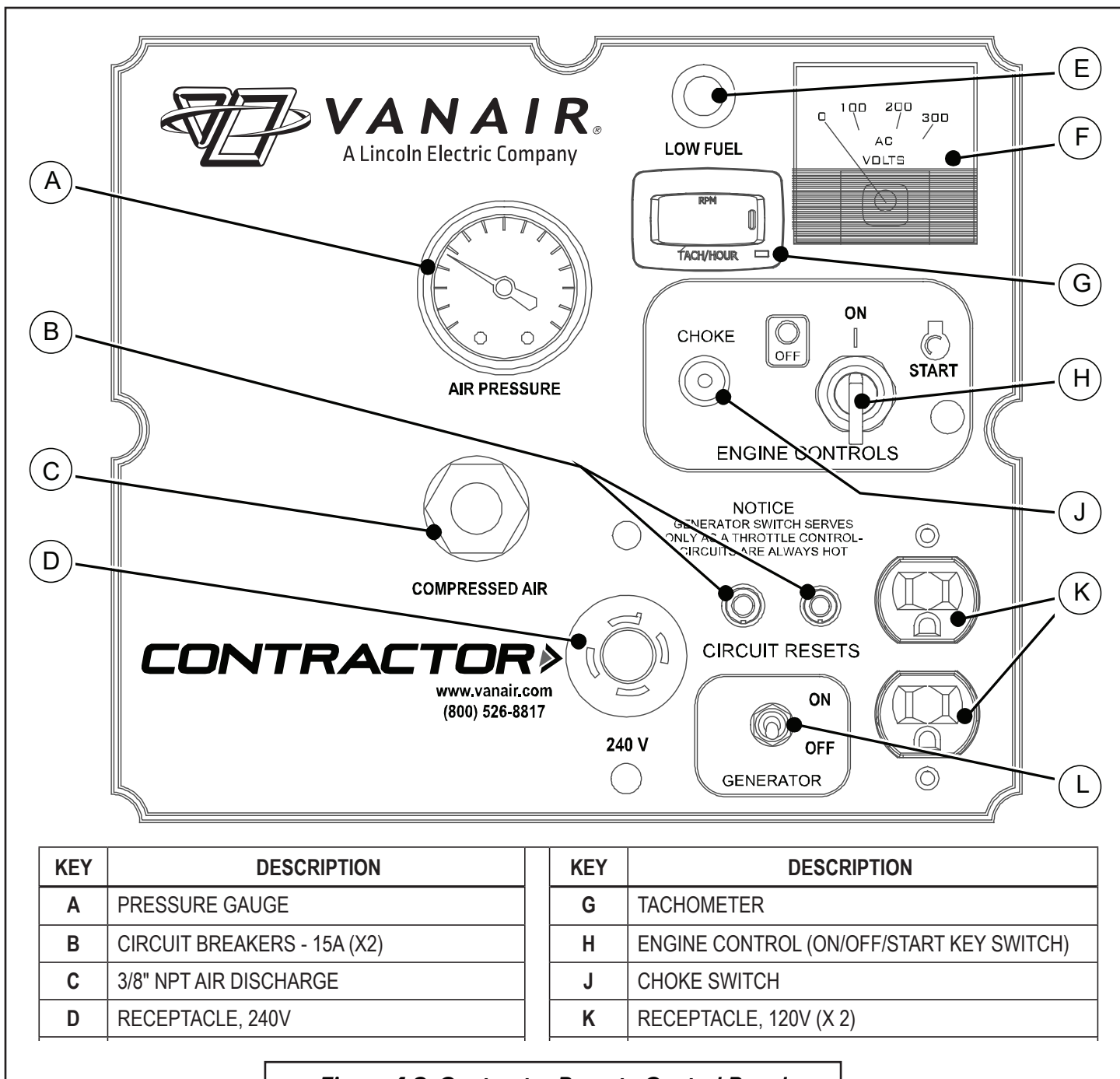
7. The level of air pressure in the tank and the position of the pilot valve switch, if applicable.
8. The position of the generator switch on the control panel.
9. The position of the welder switch on the unit control panel, and the use of the welder. (For Air N Arc® 150 only)

Consult **Table 4A: Engine Throttle Control Function Conditions** to understand how the engine speed relates to the demand(s) of the machine system's output functions.



KEY	DESCRIPTION	KEY	DESCRIPTION
A	VOLTS/AMPS METER	J	WELD LEAD CONNECTION
B	WELDER CC/CV TOGGLE SWITCH	K	BATTERY CABLE RECEPTACLE
C	DC CHARGER/WELDER TOGGLE SWITCH	L	AC VOLTAGE OUTLETS
D	DC CHARGER 12V/24 VOLT TOGGLE SWITCH	M	CIRCUIT BREAKER TRIP/RESET SWITCH
E	VOLTS/AMPS MANUAL ADJUSTMENT	N	ENGINE POWER SWITCH/KEY
F	TACHOMETER/HOUR METER	P	LOW FUEL INDICATOR LAMP
G	AIR PRESSURE GAUGE		
H	AIR OUTLET SERVICE PORTS		

Figure 4-1: Air N Arc® 150 Remote Control Panel



NOTICE

See **Section 5.7** for additional information on the Vanair® VNR680 engine.

4.4 OPERATING THE WELDER

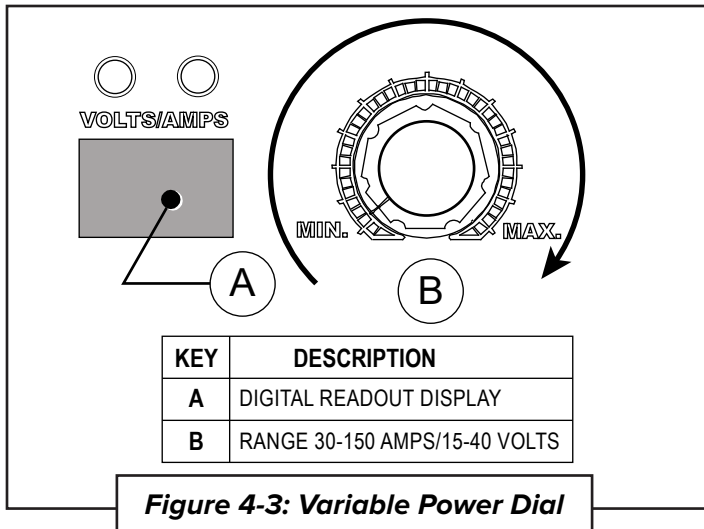
(AIR N ARC® 150 ONLY)

- Consult **Figure 4-3**. The variable power dial adjusts the welder amperage (0 to 150 Amps), or voltage (15 to 40 Volts) for the desired weld heat.

- Turning the power dial clockwise increases the amperage or voltage, and turning the power dial counterclockwise decreases the amperage or voltage.
- The power dial may be adjusted while welding.

NOTICE

If a longer welding lead is needed, optional 50 ft. lead segments may be purchased from Vanair® for a maximum lead length of 100 ft.

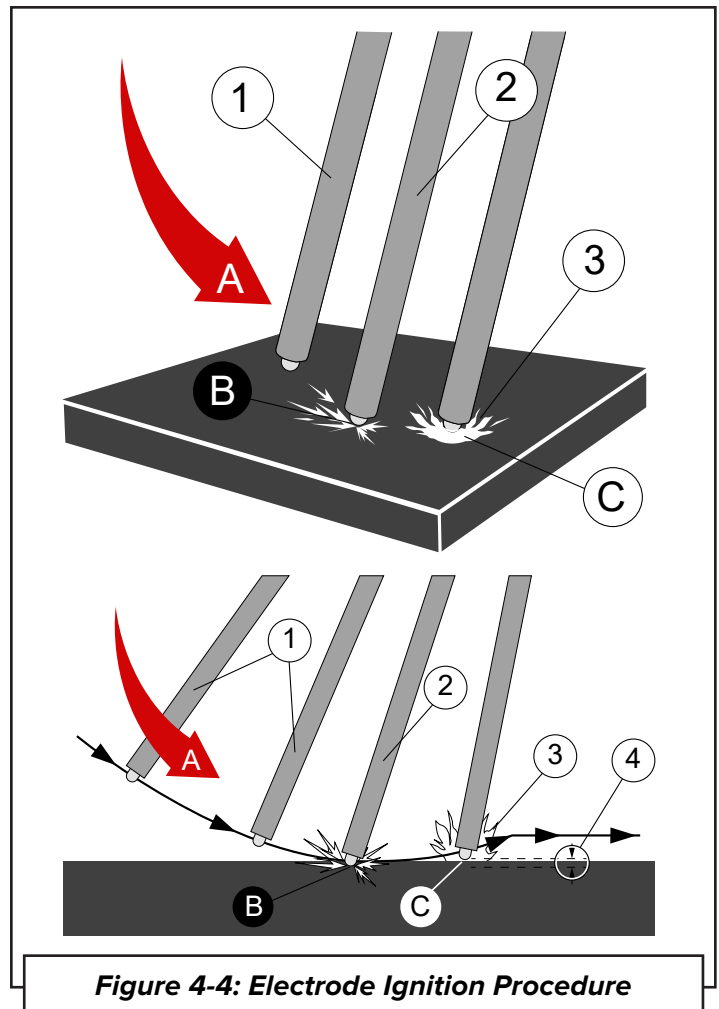


4.4.1 WELDER OPERATING PROCEDURE (AIR N ARC® 150 ONLY)

4.4.1.1 CC MODE (CONSTANT CURRENT)

CC (**Constant Current**) Mode is commonly referred to as Stick Welding, Arc Welding, or Shielded Metal Arc Welding (SMAW).

1. With the engine shut off, insert the twist lock connections of the ground clamp and the electrode holder cables into the welder connection ports on the control panel. For Direct Current Electrode Positive (DCEP) connect the electrode holder to the positive (+) port, and the ground clamp to the negative (–) port. For Direct Current Electrode Negative (DCEN) connect the electrode holder to the negative (–) port, and the ground clamp to the positive (+) port.
2. Select the appropriate electrode for the material and process being performed. See **Table 4B: Electrode Specifications**, for selecting an electrode.
3. Place the ground clamp on the work piece and insert the appropriate welding rod into the electrode clamp.
4. Start the engine. Refer to **Section 4.2, Engine Start-up and Shutdown Procedure**.
5. On the control panel, place the CC/CV switch in CC mode. Place the DC Charger/ Welder switch in welder mode.
6. Adjust the power dial to the appropriate Voltage/Amperage setting for the material



KEY	DESCRIPTION
1	ELECTRODE ABOVE THE WORK PIECE
2	ELECTRODE SCRATCHING THE WORK PIECE
3	AN ESTABLISHED ARC
4	DISTANCE MAINTAINED (approximate width of electrode)
A	Direction of striking/scratching: electrode is lowered and dragged across the work piece in a similar manner to striking a match.
B	As electrode is dragged, sparks indicate the electrode is making contact with the work piece.
C	As the arc is established, the electrode is then lifted to approximately the thickness of the electrode (4).

NOTE

If the arc goes out, the electrode was lifted too high; repeat the Scratch Ignition process with the electrode closer to the work piece surface. If the electrode sticks to the work piece, the current is too low. Quickly twist the electrode to free it and increase the amperage.

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and the electrode being used. See **Table 4B for electrode amperage ratings**. At anytime during welding, the power dial may be adjusted to the desired amperage level.

7. When you strike the electrode against the material being welded, the engine will go to high idle and deliver the selected amperage

through the electrode. Now you may begin to weld.

8. After a weld has been completed, and there is no contact between the electrode and the metal for 30 seconds, the engine will return to idle.

TABLE 4A: ENGINE THROTTLE CONTROL/CONDITIONS

Air Pressure	Generator Switch	Welder Switch	Engine Speed Condition Result
Tank Pressure Below (<) 90 PSI or Set Pressure ¹	OFF	OFF	Engine runs at full throttle (3600 RPM).
Tank Pressure Above (>) 125 PSI or Set Pressure ¹	OFF	OFF	Engine runs at idle speed (2000 RPM), ready for application.
	OFF	ON	Welder can be activated by striking an arc; Engine runs at idle speed (2000 RPM) unless CV Mode, ready for application.
	ON	OFF	Engine runs at full throttle speed (3600 RPM); generator is ready for use. ¹¹
	ON	ON	Full speed and all items are available for use.

NOTE: Any combination of the Air N Arc® ALL-IN-ONE Power System® output functions (compressor, generator, welder) used simultaneously (at the same time) at capacity will have an adverse affect on the engine running at full throttle.

¹ Factory set pressure: 90 PSI = ON/125 PSI = OFF

¹¹ Consult **Appendix A, Section A.3 Wattage Requirements for Common Receptacle Units** for listing of wattage requirements of various implements, electrical devices and tools.

TABLE 4B: ELECTRODE SPECIFICATIONS

Metal Thickness	Electrode Size	Welding Amperes
1/16-1/8	3/32	50-90
1/8-1/4	1/8	90-140
1/4-3/8	5/32	120-180

TABLE 4C: 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+
17	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+

NOTICE

What do the letters and numbers indicate that are used to identify a stick welding electrode?

E6010 for example: (E-60-10)

The “E” indicates Electrode.

Some welding rods are not electrodes.

The “60” indicates the tensile strength in PSI, 60,000 lbs. while the last two digits indicate position and polarity along with the type of flux used.

See **Table 4C: Type, Polarity, and Flux Code** [10 through 28].

4.4.1.2 USING A VOLTAGE SENSING SUITCASE FEEDER (CV)

CV (**Constant Voltage**) Mode, commonly referred to as Wire Welding, MIG welding, or Gas Metal Arc Welding (GMAW)

1. With the engine shut off, insert the twist lock connection of the ground clamp into the negative (-) welder connection port on the control panel. Insert the power lead segment from the suitcase feeder into the positive (+) welder connection port on the control panel.
2. Place the ground clamp from the suitcase feeder and the ground clamp from the Air N Arc® 150 on the work piece.
3. Start the engine. (See **Section 4.2, Engine Start-up and Shutdown Procedure.**)
4. On the control panel, place the DC Charger/Welder switch in welder mode. Place the CC/CV switch in CV mode.
5. Adjust the welding Voltage/Amperage dial on the Air N Arc® 150 and the suitcase feeder for the material being welded. You may adjust the Voltage/Amperage dial at any time while welding.

NOTICE

When using a Spool Gun, with the Contractor, an adapter must be used. Consult the Spool Gun manufacturer for the appropriate adapter.

4.4.1.3 USING A SPOOL GUN (CV)

CV (**Constant Voltage**) Mode, commonly referred to as Wire Welding, MIG welding, or Gas Metal Arc Welding (GMAW).

1. With the engine shut off, insert the twist lock connection of the ground clamp into the negative (-) welder connection port on the control panel. Insert the power lead segment from spool gun adapter into the positive (+) welder connection port on the control panel.
2. Place the ground clamp from the Air N Arc® 150 on the work piece.
3. Start the engine. See **Section 4.2, Engine Start-up and Shutdown Procedure.**
4. On the control panel, place the DC Charger/Welder switch in welder mode. Place the CC/CV switch in CV mode.

NOTICE

The pressurized air system requires routine maintenance. See Table 5A: Maintenance Schedule and Procedures for important maintenance information.

NOTICE

The leading cause of component failure of the air control system is moisture. Air tanks must be drained daily at a minimum to eliminate condensation. Consult Section 5.4 for maintenance information.

4.5 OPERATING THE AC GENERATOR

IMPORTANT: The Air N Arc® System is designed to support a multi-function project. However, if the generator is operating at a high percentage of its rated capacity, and the welder and air compressor are also being used, the resulting drop in engine speed may produce a low voltage condition that will damage the generator and power tools being used.

AC Generator Continued on the next page -

To operate the generator:

1. Start the engine.
2. Turn the Generator switch located on the control panel to the ON position. (See **Figure 4-1 or 4-2.**)
3. The total electric output is limited to the total rated generator capacity, regardless of how many of the generator's outlets are being used.
4. Reference **Section 8: Appendix A.3: Wattage Requirements for Common Receptacle Units**, for general information on the power requirements of common power tools, motors and extension cords. If the equipment is not listed in **Section A.3**, check the desired power tool, motor or extension cord manufacturer's specifications.
5. 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. (For the Air N Arc® 150, see **Figures 5-13 and 5-14** for location. For the Contractor, refer to **Figure 4-2 [B].**)

WARNING

Do not rely on the Thermal Overload circuit breakers on the generator to protect personnel, power tools, or the generator. The Thermal Overload circuit breakers on the generator require time to overheat when the generator is operating in an overloaded condition, they do not provide instant protection against short-circuiting or overload conditions.

Always use GFCI protected extension cords and power strips when using the generator.

NOTICE

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

Be careful not to overload the rated capacity of the generator of 4,200W (17.5A @ 240V) or (35A @ 120V) continuous.

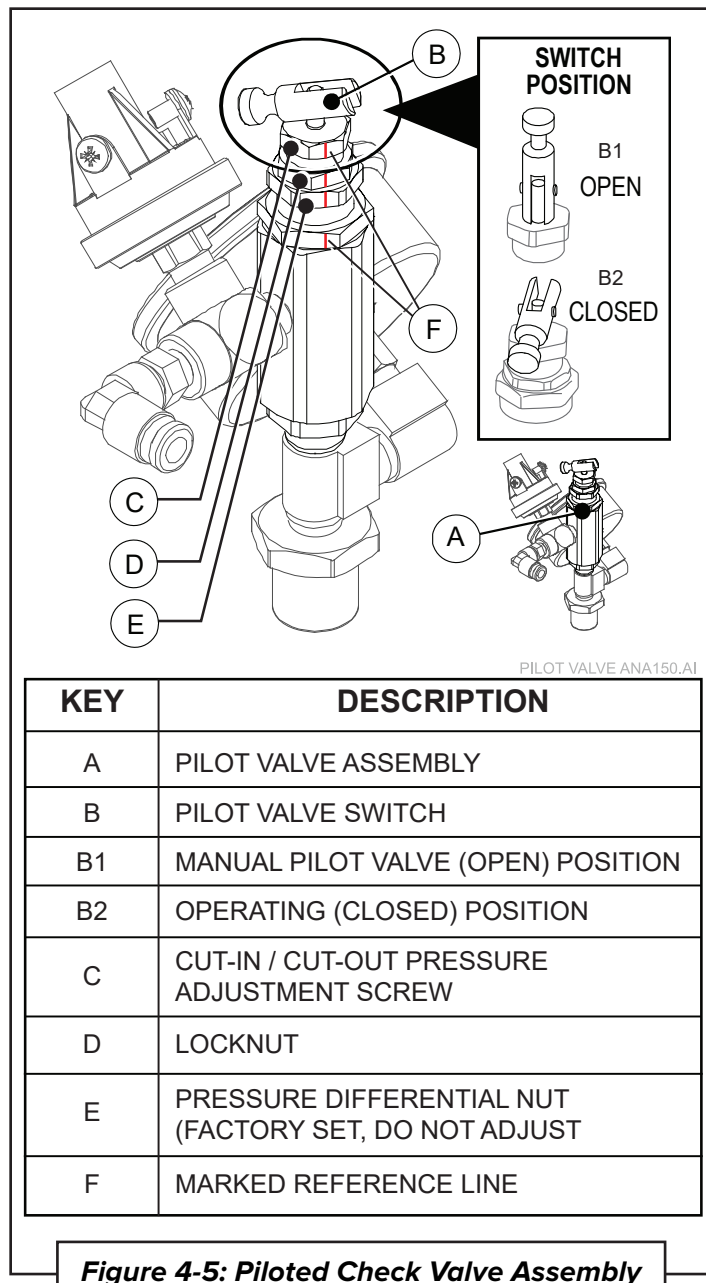


Figure 4-5: Piloted Check Valve Assembly

4.6 OPERATING THE AIR COMPRESSOR

The Contractor and Air N Arc® 150 feature a 20 CFM, 100 PSI air system. Check the maximum air pressure rating on the air tools being used. The operator is responsible for regulating the air pressure when necessary. See **Section 5.4.1. Adjusting Compressor Cut-In/Cut-Out Pressure.**

The air compressors on these systems are continuous-run compressors. This means that the compressor continues to always turn, 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 compressor head unloader valves.

When the air tank pressure builds to **125 PSI**, a valve within the pilot valve opens, providing an air signal to the head unloader valves of the compressor. This causes the air in the compressor to vent to the atmosphere. This air signal is also sent to the throttle pressure switch, energizing the throttle solenoid.

When the air tank pressure falls below **95 PSI**, the pilot valve will close, stopping the air signal to the unload valves, allowing the compressor to start pumping air to the tank.

A lever on the top of the pilot valve will allow the operator to manually stop the compression of air by the compressor during initial engine start-up or if operation does not require the use of compressed air. (See **Figure 4-4**.) Since the head unloader valves require air pressure to operate, there must be a minimum of **10 PSI** in the air tank to allow the valves to operate properly.

For additional information on manually controlling the pilot valve function, consult **Section 5.4.1, Adjusting Compressor Cut-in/Cut-out Pressure, and Figure 5-1**.

When purchasing air tools or planning a project, see **Appendix A, Section A.4: Air Tool Air Consumption Chart** for information on the compressed air requirements of common tools.

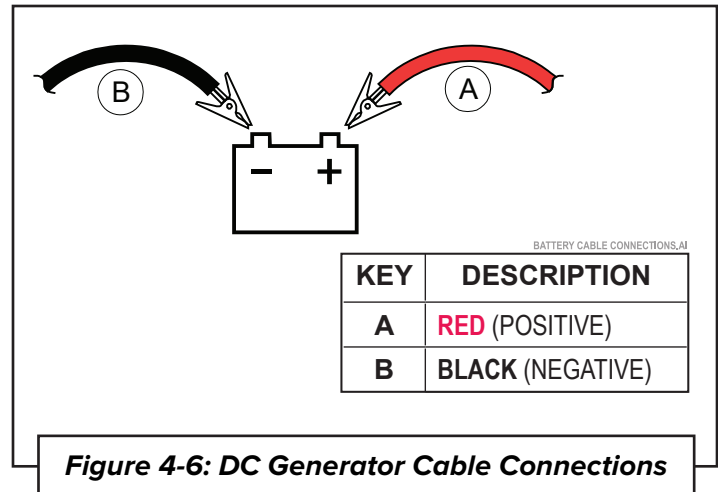
If the air tool is not listed in **Section A.4**, check the manufacturer's specifications for the tool you wish to use. An air storage tank (30 gallon available) can allow additional air CFM output for intermittent use.

WARNING

DO NOT use Battery Charge or Battery Boost operation while in Weld mode. Personal injury or damage may occur.

WARNING

If one of the generator circuit breakers is tripped, the cause of the overload should be investigated and resolved before the circuit breaker is reset and work is resumed.



WARNING

NEVER disconnect boosting connections or cables while charging or boosting. This will cause a voltage spike on the machine. Failure to follow this Warning can result in personal injury, damage and or failure to electronic components, voiding the Warranty of the machine.

WARNING

Always wear a face shield when connecting or disconnecting battery charging cables. Connect Positive leads first and Negative leads last. Electrical sparks can cause a battery to explode, resulting in serious injury. DISCONNECT THE NEGATIVE LEAD FIRST.

4.7 OPERATING THE BATTERY BOOSTER/CHARGER

The Vanair® state-of-the-art battery charging module and the optional battery charging cables add further versatility to the Contractor and Air N Arc® 150 Series. The battery charging system operates off the welding generator, and not the main AC power generator.

IMPORTANT: To prevent damaging voltage spikes, the battery cables must be disconnected from the battery to be charged in any vehicle equipped with a computer, or any equipment with sensitive electronic components. Failure to follow this warning can result in damage or failure of any or all electronic components, thus voiding the warranty of the machine.

! IMPORTANT !

Never leave the machine unattended while charging a battery. Always carefully monitor the charging system while it is in use; the high amperage level that the unit produces can damage the battery being charged, or the other components, if the unit is left connected for an extended period of time. The module output has been set at 14VDC for the 12V charge option, 16VDC for 12V boost, and 30VDC for the 24V option.

NOTICE

During charging, if the machine begins to cycle between high and low idle, then the battery is fully charged.

4.8 CONNECT/DISCONNECT SEQUENCE AND OPERATION

1. With the engine off, confirm that the welder, DC charger switch, and any other engine control switch is in the OFF position.
2. Attach the clamps of the battery charge cable to the battery to be charged. **RED** to the positive terminal first, **BLACK** to the negative terminal last. (See **Figure 4-5**.)
3. Plug the battery charge cables into the battery cable connection.
4. Start the engine and wait for all indicator lights to turn off. Place the DC Welder/Charger selector toggle switch in the DC Charger position, and then the DC Charger Mode switch to the correct position. The engine should come up to operating speed; the battery is being charged.
5. If the engine speed does not increase, check for residual battery voltage. No residual voltage indicates a battery not capable of accepting a charge, and will not allow the charge function to energize.
6. When machine begins to cycle between high and low idle then the battery is fully charged.

7. To disconnect the charging system, place the DC Welder/Charger selector toggle switch to the OFF position.
8. Allow engine to idle down, then shut OFF the engine.
9. Now it is safe to disconnect the clamps from the battery being charged, and the battery cable connection on the front of the machine.

4.9 EXTREME OPERATING CONDITIONS

When operating in extreme hot or cold conditions, extra attention should be given to any indications that could lead to a serious problem. Machine review and maintenance check schedules should be more frequent than the normal suggestions given in **Section 5, Table 5A: Maintenance Schedule and Procedure Table**.

Become familiar with the alternative operation procedures given in this section before operating the power system package in any type of extreme ambient conditions.

4.9.1 COLD WEATHER OPERATION

SPECIAL NOTE: For cold weather option augmentations, consult **Section 8: Appendix, A.5** (options list) and Vanair® for details. Additional care should be taken under consideration when operating the package in extreme cold weather environments or ambient temperatures.

Cold weather starting: Vanair® recommends using a MA31821 equipment battery in weather below 32°F (0°C).

CAUTION

Exposed high pressure air lines on the unit can become **HOT** during operation.
Keep Everyone Clear!

NOTICE

Ethanol blended fuels such as E86, are not to be used with the Air N Arc® 150 and Contractor engines.

4.9.2 HIGH TEMPERATURE OPERATION

The standard recommendation of 10W-30 engine oil is suitable for operation in temperatures up to 110°F.

Extra care should be taken to keep the air filters, of the engine and air compressor clean. Keep the unit clean and to not restrict the air flow around the unit. (See **Section 5.7.7**.)

4.9.3 HIGH ALTITUDE OPERATION

Engine horsepower will decrease by 3.5% for every 1,000 ft. increase in altitude. At high altitude overall unit performance will deteriorate, and care will need to be taken not to overload the engine by using more than one function of the unit.

See more information about high altitude operation under **Section 5.7.6**.

4.10 ENGINE OPERATION

1. The standard recommendation of 10W-30 engine oil is suitable for temperatures down to -5°F. If temperatures are consistently below 30°F, it is recommended that 5W-30 oil be used. If temperatures are below -25°F, a high-performance, fully synthetic oil, such as AMSOIL 5W-30 should be used which is suitable to temperatures of -40°F.
2. In below zero temperatures a fuel line deicer product may need to be used.
3. Check the fuel filter regularly to insure that it contains no water.
4. Drain the moisture from the tank when it is still warm from extended operation. (Condensation accumulated in the receiver air tank should be drained after use as it reduces the volume available for air and can freeze in low temperatures.)

4.10.1 12V DC ELECTRIC FUEL PUMP INFORMATION

1. Machines using the supplied 12VDC electric fuel pump (as found on **Skid Mount and 30 Gallon models**), are wired to the keyed ignition. Anytime the key is in the ON position, the fuel pump is also ON. This feature offers the benefit of priming the engine with fuel prior to startup
2. Please be aware that if the unit runs out of fuel and the key is left in the ON position, the fuel pump will continue to run. The electronic fuel pump uses the liquid fuel for cooling, and may become damaged due to overheating if it continues to run in dry state for over 10 minutes.
3. Most failure modes are that the pump still builds the required pressure but has a loss of proper flow. If the engine loses power after the fuel pump has been run under dry conditions, replace the pump.

WARNING

Be aware that if the unit runs out of fuel and the key is left in the ON position, the fuel pump will continue to run. With fuel being the primary lubricant for the pump, operating in this state for more than 10 minutes could result in overheating and damaging the pump.

NOTICE

For additional information regarding engine operation and performance, see *Section 5.7* for the Vanair® VNR680 engine.

SECTION 5: Maintenance

5.1 GENERAL INFORMATION

A strict maintenance program is the key to long life for the Air N Arc® and Contractor Series. Below is a program designed to keep your equipment in top operating condition. Refer to **Table 5A, Maintenance Schedule** and Procedure Table as well as **Section 5.4, Parts Replacement and Adjustment Procedures** for detailed instructions/ For specific power unit systems component locations. (See **Section 2; Figures 2-1 and 2.2.**)

WARNING

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

WARNING

Always wear personal protective equipment (PPE) such as gloves, work boots, eye and ear protection as required when maintaining or servicing the equipment.

WARNING

Do NOT remove caps, plugs, and/or other components when compressor is running or pressurized. Stop the compressor and de-pressurize the system prior to maintenance or service. Relieve all system pressure by opening the main service valve. Open the air tank drain/vent valve allowing the air pressure to vent to atmosphere.

NOTICE

Operating the machine in a dusty, dirty or harsh environment will require more frequent maintenance intervals.

5.2 ROUTINE MAINTENANCE SCHEDULE

Vanair®, a Lincoln Electric Company, considers the maintenance schedule in **Table 5A**, to be a part of our warranty agreement with the customer. This maintenance schedule and procedures must be followed to protect the warranty of the machine package.

Vanair®, a Lincoln Electric Company, requires a consistent service regimen be established for engine maintenance. The following schedule is designed so that many of the engine air filter is serviced and the engine oil is changed.

Please take a moment to acquaint yourself with the service schedule presented in **Table 5A** on the next few pages. This schedule will help you to establish a maintenance routine log.

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

5.3 REPLACEMENT PARTS

Replacement parts should be purchased through your local Vanair® representative or where the Air N Arc® 150 or Contractor was purchased. If for some reason parts are not available at your point of purchase, they can be purchased directly from Vanair®. (See **Figure 5-23** for **Serial Number** locations.)

NOTICE

Follow the prescribed Periodic Maintenance (PM) schedule at recommended intervals. Failure to follow this prescribed maintenance schedule will impair the safety, performance, and lifespan of the machine package and negatively affect the warranty coverage.

CAUTION

All parts wear and degrade with use over time. Do not operate with worn-out or degraded equipment parts. Replace as needed.

WARNING

Improper maintenance or failure to correct a problem before use can result in damage to the equipment, personal injury or death.

TABLE 5A: MAINTENANCE SCHEDULE AND PROCEDURE TABLE

 WARNING		BREAK-IN PERIOD	MAINTENANCE SCHEDULE						
Before performing maintenance, shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. (For lock out/tag out, disconnect the positive (+) battery cable.)		First 20 Hours of Operation	Daily or after 8 Hours of Operation	After 40 Hours or Weekly	Yearly (or 100 Hours)	Every 200 Hours	Every 600 Hours	Every 1000 Hours	
KEY	TASK DESCRIPTION								ACTION TO TAKE
1	Check Tension of Both Compressor Poly-link Drive Belts	✓	✓	✓	✓				Tighten belts if needed. Consult Section 5.4.3 for test, tightening and replacement procedures.
2	Change Engine Oil and Filter	✓			✓				REFERENCE: • Engine Oil Dipstick/Gauge • Engine Oil Fill Port/Cap • Engine Oil Filter Element (replace at 200 Hours) • Engine Oil Filter Seal Ring (Coat With Oil Before Mounting) • Engine Oil Drain Tube/Plug PART REFERENCE: Vanair® VNR680 Engine: KIT1504 See Section 5.7
3	Check, Clean or Replace Engine Air Filter		✓	✓	✓	✓	✓		REFERENCE: • Refer to Section 5.7
4	Change Compressor Oil	✓					✓		REFERENCE: • Compressor Oil Fill Port • Oil Sight Glass • Oil Drain Port Proper compressor oil level is approximately halfway when viewed in the sight glass. PROCEDURE: Compressor must operate at oil levels between 1/4 and 3/4, as seen thru sight glass. Check before operating and add oil via the fill port as needed and replace the fill cap. DO NOT operate if oil is too low or too full. Drain or add oil as needed. Refer to Section 5.5, and Figure 5-15.

TABLE 5A: MAINTENANCE SCHEDULE AND PROCEDURE TABLE (CONT.)

 WARNING		BREAK-IN PERIOD	MAINTENANCE SCHEDULE						
Before performing maintenance, shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. (For lock out/Tag out, disconnect the positive (+) battery cable.)		First 20 Hours of Operation	Daily or After 8 Hours of Operation	After 40 Hours or Weekly	Yearly (or 100 Hours)	Every 200 Hours	Every 600 Hours	Every 1000 Hours	
KEY	TASK DESCRIPTION								ACTION TO TAKE
5	Check Engine Oil Level	✓							REFERENCE: • Engine Oil Dipstick/Gauge • Engine Oil Fill Cap See Section 5.7.1 and Figure 5-17. PART REFERENCE: For Vanair® VNR680 Engine, 10W-30 motor oil. Order Vanair® part number 276041 (Vanair® recommends ordering a quantity of 2).
6	Check and Maintain Compressor Oil Level at Proper Amount Shown in the Sight Glass	✓							Compressor must operate within the oil levels shown, optimally between 1/2 and 3/4 full, when viewed thru sight glass. Do not overfill, or operate at low levels as this can damage the compressor. Section 5.5.1 and Figure 5-15 and Key #4 in this Table.
7	Check Air Tank for Water Accumulation	✓							Drain any water from the air tank per procedure in Section 5.4.15.
8	Inspect Unit for Oil Leaks or Damage	✓							Visually note any leaks or evidence of leaks around the compressor unit and hose connections. Tighten any loose connection point where needed. Repair or replace any damaged part.
9	Inspect Cooler Fins (Both Engine and Compressor for Dirt and Debris)	✓							Clean or clear as necessary. With machine shut off, use a cloth or flexible brush to wipe or brush the fins clean of dirt and debris to allow proper air flow and cooling.
10	Inspect Ventilation Areas and Surroundings	✓							Ensure ventilation areas and surroundings are not blocked or clogged with debris. Clean or clear as needed.
11	Check/Clean All External Parts of Compressor and Driver	✓							A daily visual inspection will help prevent dirt and debris build-up, which can affect machine operation. When cleaning external parts, always allow machine surfaces to cool down before cleaning.
12	Clean and Inspect Engine Air Filter		✓						REFERENCE: For Vanair® VNR680 engines, order Engine Air Filter part number 283769-02 . Vanair® VNR680 Engine Air Filter included in engine maintenance KIT1504 . See more information in Section 5.7.

TABLE 5A: MAINTENANCE SCHEDULE AND PROCEDURE TABLE (CONT.)

 WARNING		BREAK-IN PERIOD	MAINTENANCE SCHEDULE						
Before performing maintenance, shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. (For Lock out/Tag out, disconnect the positive (+) battery cable.)		First 20 Hours of Operation	Daily or After 8 Hours of Operation	After 40 Hours or Weekly	Yearly (or 100 Hours)	Every 200 Hours	Every 600 Hours	Every 1000 Hours	
KEY	TASK DESCRIPTION	ACTION TO TAKE							
13	Clean and Inspect Compressor Air Filter		✓						REFERENCE: • Compressor Air Filter(s); Clean or replace air filter elements. See Section 5.5.2 . FOR PART REPLACEMENT: Order Compressor Air Filter replacement number KIT1156 , which includes 3 filter elements.
14	Inspect Air Compressor Drive Belts, Generator Drive Belt, and Serpentine Welder Drive Belt for Wear, Damage or Excessive Cracking			✓					Ensure the drive belts are in satisfactory operating condition, and are tensioned properly. (Refer to Section 5.4.3) Should the compressor and/or generator drive belts need to be replaced, consult the sub sections for the belt in question under Section 5.4 .
15	Replace Engine Fuel Filter			✓					REFERENCE: • Engine Primary Fuel Filter (7Qμ) • Engine Fuel Pump • Engine Inline Fuel Filter (75 μ) Location Reference: Engine Oil Filter PART REFERENCE: Vanair® VNR680 Engine: KIT1504 See Section 5.7 how to change Vanair® VNR680 engine fuel filter, oil filter and air filter.
16	Replace Engine Air Filter			50 Hours					REFERENCE: Refer to figure in Key #12 of this table for access information. FOR PART REPLACEMENT: For the Vanair® VNR680, see KIT1504 , which includes an engine air filter element.
17	Check Battery Cables and Connections				✓				Clean and tighten as necessary. Replace and cracked, worn, or otherwise damaged cables. Always ensure the battery is connected properly, Negative to Negative and Positive to Positive.

TABLE 5A: MAINTENANCE SCHEDULE AND PROCEDURE TABLE (CONT.)

 WARNING		BREAK-IN PERIOD	MAINTENANCE SCHEDULE						
Before performing maintenance, shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. (For Lock out/Tag out, disconnect the positive (+) battery cable.)		First 20 Hours of Operation	Daily or After 8 Hours of Operation	After 40 Hours or Weekly	Yearly (or 100 Hours)	Every 200 Hours	Every 600 Hours	Every 1000 Hours	
KEY	TASK DESCRIPTION								ACTION TO TAKE
18	Inspect Unit Mounting Bolts				✓				With machine turned off, check all mounting bolts and tighten any loose bolts if discovered. A scheduled inspection should be performed at least once every 200 hours however, any loose bolts or nuts should be tightened upon discovery regardless of the scheduled time frame.
19	Blow Out the DC Welding Generator and OC Generator				✓				Use compressed air to clear out the generators. (NOTE: Clean out more frequently when using the equipment in a dusty or dirty environment.)
20	Check Compressor Cut-in and Cut-out Pressure Settings					✓			Ensure the cut-in and cut-out pressure settings are correct. Adjust as needed, per Section 5.4.1 .
21	Check Engine Spark Plugs at 100 Hours. **Replace after 300 Hours			✓	** 300 Hours				Inspect spark plugs every 100 hours of operation or 6 months. Recommended to replace every year, or 300 hours of operation. See Section 5.7.4 for more information. Spark plugs for Vanair® VNR680 engine: Order Vanair® part number 283769-03 . Vanair® recommends ordering a quantity of 2.
22	Check the Engine Speed					✓			Ensure the engine speed is running at the correct interval. Adjust as needed per Section 5.4.2 .
23	Inspect the Welding Leads and Battery Charging Cables					✓			Inspect welding cables if using an Air N Arc® 150. Also inspect the battery charging cables for any cracks, damage or excessive wear. Repair or replace as needed.
24	Inspect Welding Electrode Clamp and Ground Clamp (Air N Arc® 150 only)					✓			Ensure the welding electrode and ground clamps are in satisfactory condition. (No cracks, damage or excessive wear.) Repair or replace as needed.
25	Replace Drive Belts on the Air Compressor and Generator					✓			Consult Section 5.4.3 and applicable sub-sections regarding replacement and re-tensioning of the drive belts.
26	Inspect the Generators and the Automatic Belt Tensioner					✓			Ensure the automatic belt tensioner is free of rough, noisy or worn bearings. Consult Section 5.4.8 and Figure 5-8 . Replace if needed.
27	Change the Compressor Oil (After the Initial 100 hours*, then Every 300 hrs** of Operation)			* 100 Hours	** 300 Hours				Check the oil level before each use. It is recommended to change the compressor oil after every 300 hours of operation**. (Change more frequently when machine is used in dusty or dirty environments.)
28	Inspect Compressor Head Valves and Clean Carbon from Valves and Head if Necessary.					✓			Refer to Table 7A: Recommended Spare Parts List for compressor head valve maintenance service kit information.

TABLE 5A: MAINTENANCE SCHEDULE AND PROCEDURE TABLE (CONT.)

 WARNING		BREAK-IN PERIOD	MAINTENANCE SCHEDULE						
Before performing maintenance, shut down machine, relieve all system pressure and lock out all power, as per the Safety Section of this manual. (For Lock out/Tag out, disconnect the positive (+) battery cable.)		First 20 Hours of Operation	Daily or After 8 Hours of Operation	After 40 Hours or Weekly	Yearly (or 100 Hours)	Every 200 Hours	Every 600 Hours	Every 1000 Hours	
KEY	TASK DESCRIPTION								ACTION TO TAKE
29	Check and Tighten all Bolts, Nuts, etc. as Necessary.					✓			Refer to Table 7A: Recommended Spare Parts List for compressor head valve maintenance service kit information.
30	Check Compressor Unloader Valve Operation					✓			Refer to Table 7A: Recommended Spare Parts List for compressor head valve maintenance service kit information.
31	Check Engine Valve Clearance				** 300 Hours				Check engine valve clearance after every 300 hours of operation.** See Section 5.7.5 .

TABLE 5B: REPLACEMENT KIT ORDER INFORMATION

KEY	DESCRIPTION	PART NO.	QTY
1	Kit, Vanair® VNR680 Engine	KIT1504	1
2	Kit, Engine Maintenance	KIT1119	1
3	Motor Oil (10W-30) Quart (Vanair® VNR680)	276041	2
4	Vanguard™ Reciprocating Compressor Oil	271856-1QT	1

5.4 PARTS REPLACEMENT AND ADJUSTMENT PROCEDURES

5.4.1 ADJUSTING COMPRESSOR CUT-IN/CUT-OUT PRESSURE

The 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 will 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 setting 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 need to be adjusted.

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

IMPORTANT: Do Not adjust the compressor Cut-in/Cut-out pressure unless necessary.

(See **Figure 5-1.**) Locate the piloted check valve assembly on the base frame near the compressor and use the following procedure to make adjustments.

1. With a marker or scoring object, make a corresponding mark [F] on the pressure adjustment screw [C], pressure differential adjustment nut [E], and the valve body [A] for initial reference settings.
2. With the machine off, loosen the locknut [D], and adjust the pressure adjustment nut 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 turning a quarter to a half turn interval, and tighten the locknut.
3. Start the engine and check the air pressure gauge reading after the engine has returned to idle speed. Repeat **Steps #2 and #3** if further adjustment is needed.

5.4.2 ADJUSTING THE ENGINE SPEED

Consult the Vanair® Service Department for issues relating to adjustment of engine speed.

5.4.3 REPLACE AND RE-TENTION THE DRIVE BELTS

(Refer to **Figure 5-3**.) The compressor and generator are driven by the engine via the use of two (2) drive belt types. The compressor utilizes a poly-link, chain-type belt, whereas the generator uses a serpentine V-belt. The belts will generally not need replacement during the service life of the system. However, over time they become loose and need to be tightened. Refer to **Section 5.4.6** for instruction on how to check the tension of the compressor belt(s).

5.4.4 ACCESSING THE DRIVE BELTS

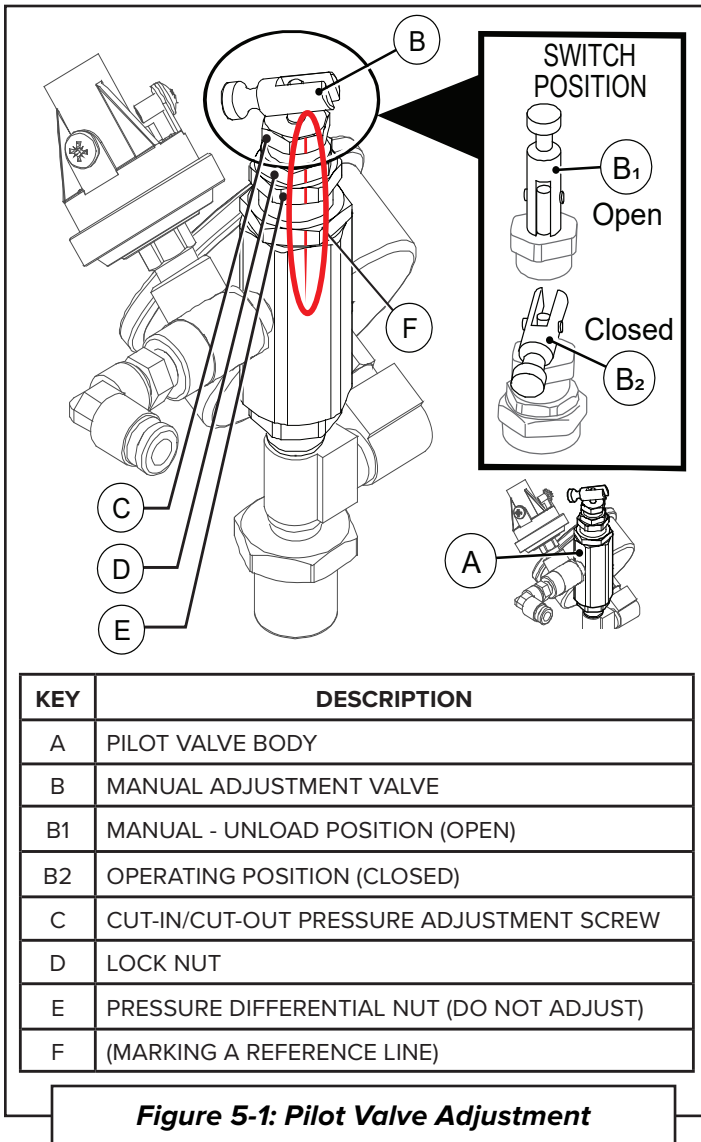
The belt guard must first be removed to access the drive belts. (See **Figure 5-2**.) The Contractor and the Air N Arc® 150 Series utilize two (2) poly-link series V-belts to drive the compressor unit, and a single or serpentine V-belt to drive the generator system. Consult **Figures 5-3 and 5-9** and use the following procedure to access the drive belts:

1. Disconnect the battery ground cable.
2. Remove the flange bolts securing the belt guard to the frame.
3. Remove the belt guard shield and place it in a safe location with the flange bolts.

5.4.5 REPLACING THE BELT GUARD SHIELD

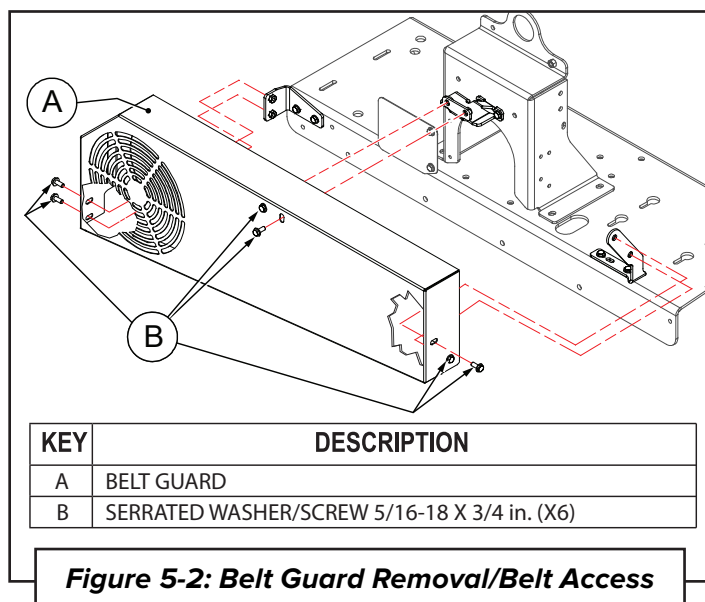
After the belts have been serviced, the belt guard must be secured back into position before operating the machine. To re-secure the belt guard, refer to **Figure 5-2** and follow these instructions:

1. Align shield's holes with holes in brackets.
2. Secure the shield to the frame by replacing the six flange bolts through the holes to secure the guard into place.
3. Tighten all screws snug using a socket or wrench.
4. Reconnect the ground wire to the battery.
5. Remember to log any maintenance work into the **Maintenance and Service Log** found in **Appendix B**.

**NOTICE**

Do Not adjust the factory set pressure differential adjustment nut. Make a reference mark on the pressure variation adjustment nut [E] and the valve body to visually ensure that it does not change position. Do Not tamper with the governor setting to increase the maximum engine speed (RPM) of 3600 with no load. Overspeeding the factory set engine speed is hazardous and will void the engine warranty.

5.4.6 RE-TENTIONING THE COMPRESSOR DRIVE BELT(S)



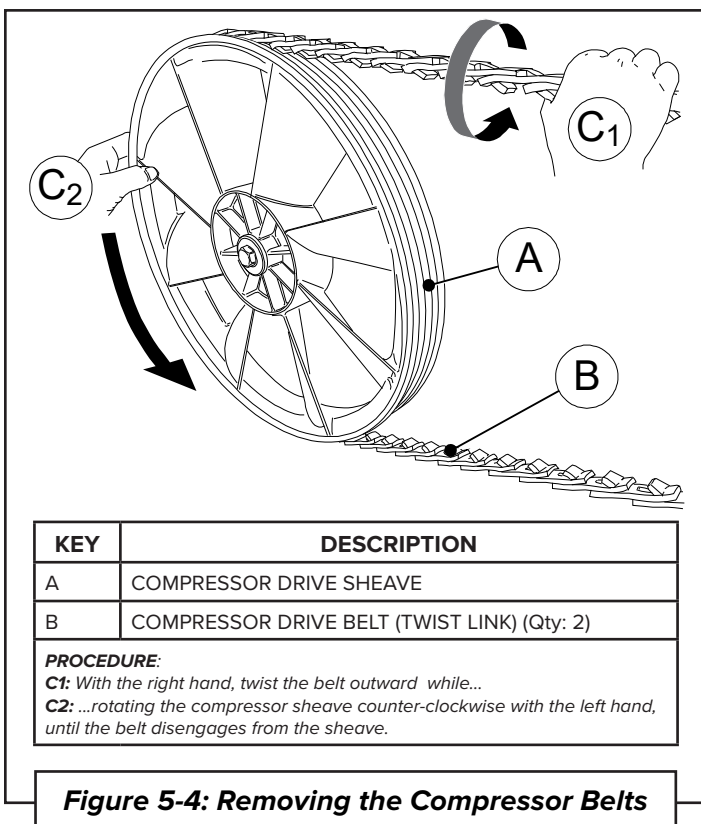
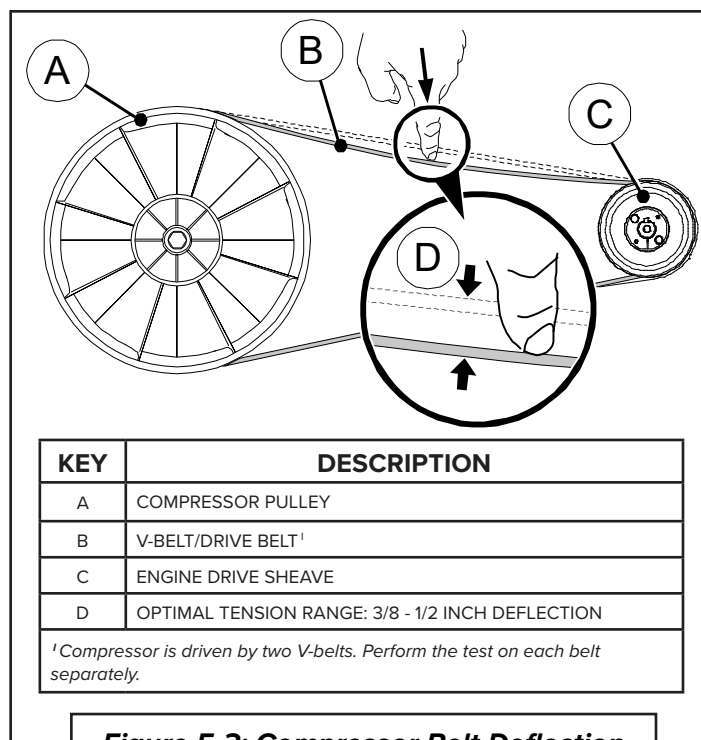
The poly-link V-belts used for the compressor drive do not require a separate tensioner. Rather, the belts are directly sized by the number of links in the belt. Proper tension on a poly-link V-belt is 3/8 to 1/2 inch “give”. Consult **Figures 5-2, through 5-11**, and the following procedure:

1. With the machine off and the ground wire disconnected from the battery, remove the belt guard shield per **Section 5.4.4**.
2. Check the deflection of each belt for looseness by applying pressure with a finger at the center location between the pulleys. Refer to **Figure 5-3**. The “give” should range from 3/8 to 1/2 inch for each belt.

REMOVING A BELT: In order to remove a link or replace the belts, they must be removed from the pulleys. Refer to **Figure 5-4** for belt removal.

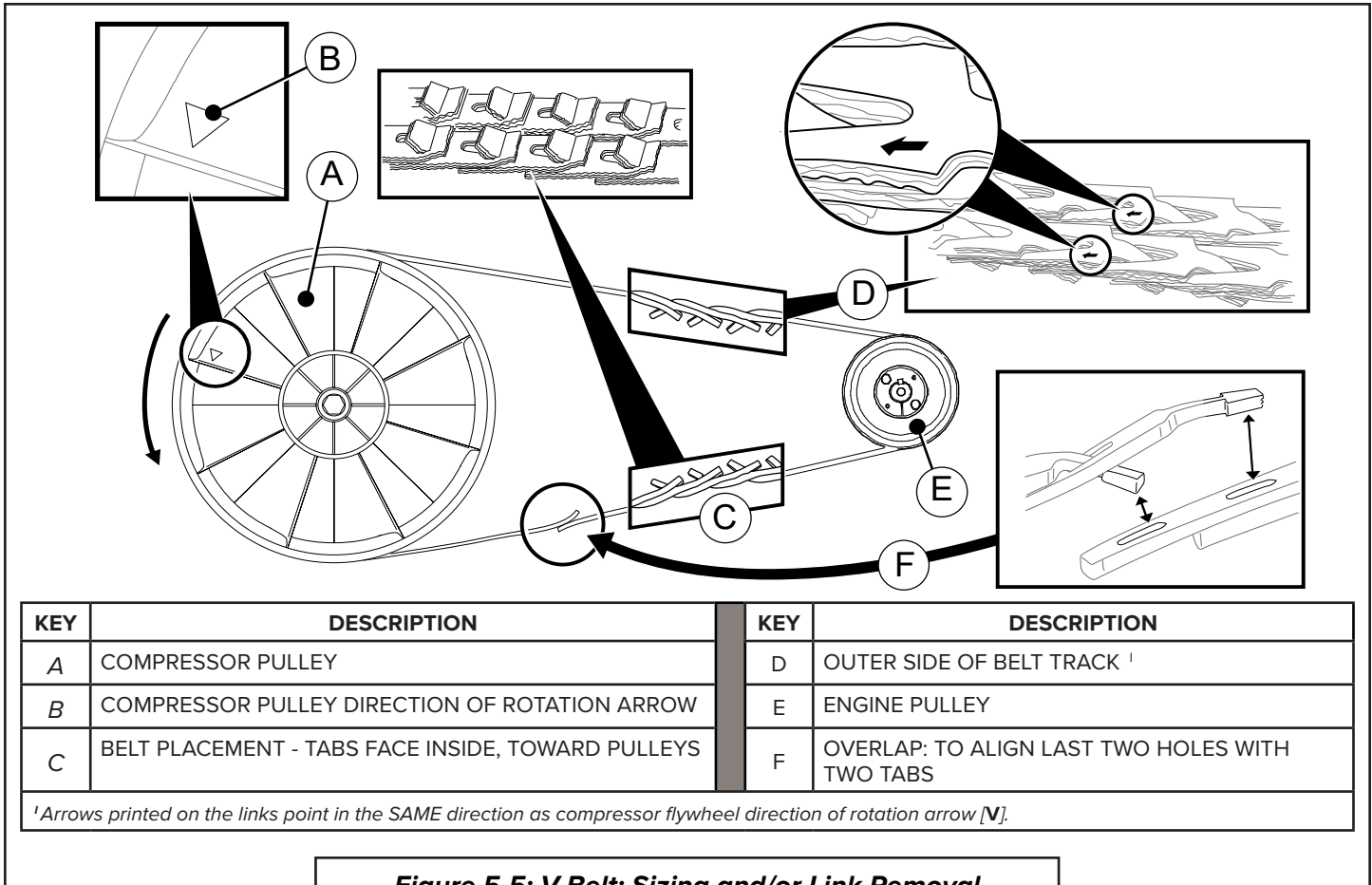
3. Grip the outer belt with the right hand (perform procedure on one belt at a time).
4. While twisting the belt outward [C1], manually rotate the compressor pulley with the left hand [C2] in the direction indicated in the figure. The belt will slide free.

Repeat **Steps #3 and #4** to remove the second, or inner belt. If a belt is too loose, it will need to be resized. Consult **Section 5.4.7 and Figure 5-5** to re-size a poly-link belt.



NOTICE

Always re-check the compressor belt tension after reinstalling the compressor belts on the pulleys. (Refer to Table 5B).



NOTICE

In order to replace the generator serpentine drive belt, the compressor belts will need to be removed. Refer to **Figure 5-5**, and consult **Section 5.4.6 Steps #3, 4 and 5** to remove the compressor belts.

NOTICE

Every tenth link is designated with an arrow ([D]) in **Figure 5-5**. For multiple belt drives, ensure that each belt has the same number of links.

5.4.7 COMPRESSOR BELT SIZING

When sizing a new compressor drive belt, first remove the worn belt as explained in **Section 5.4.6, Step #3 through Step #4**. Consult **Figures 5-5 through 5-6**, and the following procedure:

1. Place the poly-link belts so that the tab ends of the links are facing inward, toward the pulleys, as shown in [C] and [D].

IMPORTANT: Over-tightening the compressor poly-link belt(s) overloads the motor and may cause belt failure, while a loose belt will slip and cause unstable speed, overheating of the belt and high Amp draw.

2. Wrap new belt as shown in **Figure 5-7**, and pull it tight around the pulleys. 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 [F].
3. Use a marker to place an identifying mark where the excess link begins.
4. 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 5.4.8, Compressor Belt Assembly**, to remove excess belt links.

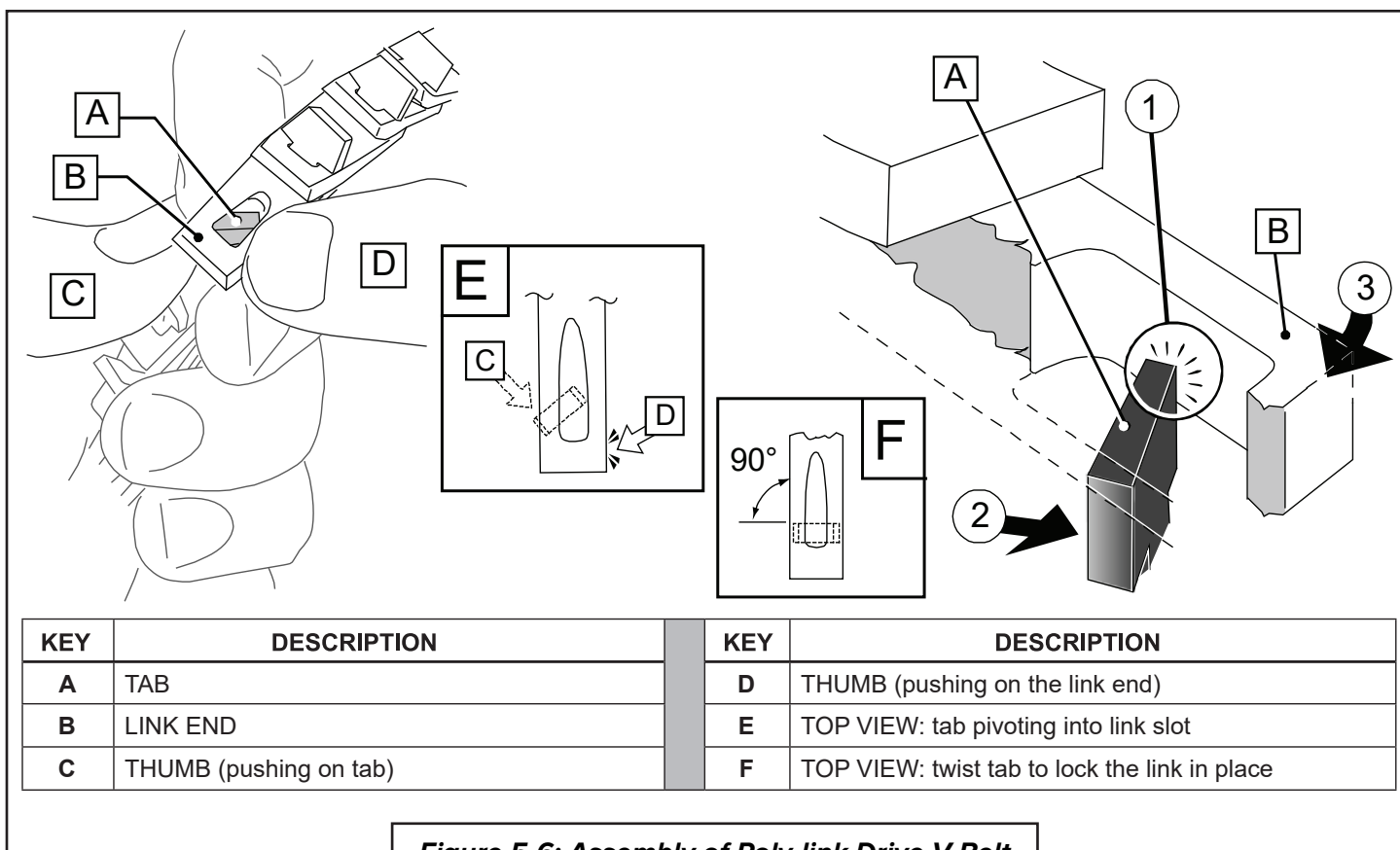


Figure 5-6: Assembly of Poly-link Drive V-Belt

NOTE

Since there are two (2) compressor drive belts, assemble the inner belt first. The drive belt tracks closest to the compressor and engine. Ensure that the first and second belt align properly to the grooves of the compressor pulley and drive sheave.

5.4.8 POLY-LINK COMPRESSOR BELT ASSEMBLY

Once the proper length of the belt has been determined (Refer to **Section 5.4.7**), and the belt is sized to its fitted length, then the belt's ends are linked together to form the completed belt, making sure there are no twists in the belt when assembling. Refer to **Figure 5-6** and the following procedure:

ASSEMBLING THE BELT:

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

5.4.9 INSTALLING COMPRESSOR BELTS

Refer to **Figure 5-7** and the following procedure to install the compressor link drive belts onto the compressor and engine pulleys.

5.4.10 ROUTING COMPRESSOR BELTS ONTO PULLEY GROOVES

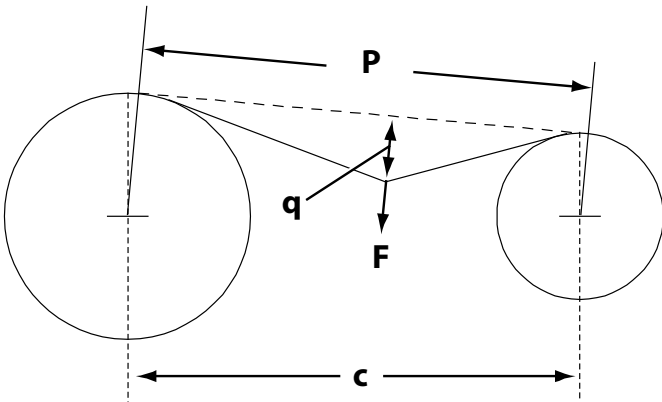
Refer to **Figure 5-6** and the following procedure to mount the compressor link drive belts onto the compressor and engine pulleys.

1. Make certain that the belt is sized correctly before setting it into place on the pulleys. Consult **Sections 5.4.7 and 5.4.8** to size and assemble the belt.

2. The belt should be linked as a completed loop prior to setting it onto the pulley tracks. Run the belt around the proper belt groove on the engine pulley, the belt's tabs facing inward toward the pulley, and the arrows on the belt match the same direction as the arrow of rotation on the compressor pulley. (See **Figure 5-7**).
3. Start at the bottom edge of the pulley. (See **Figure 5-7**.) Continue to set the belt into the proper groove on the compressor pulley (inside belt to inside track; outside belt to outside track).
4. After the belt is seated into the compressor pulley groove, hold the belt and the pulley with the left hand, 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.
5. The belt will slip into place once the left hand (holding the belt) nears the top of the compressor pulley.

TABLE 5C: MEASURING BELT DEFLECTION

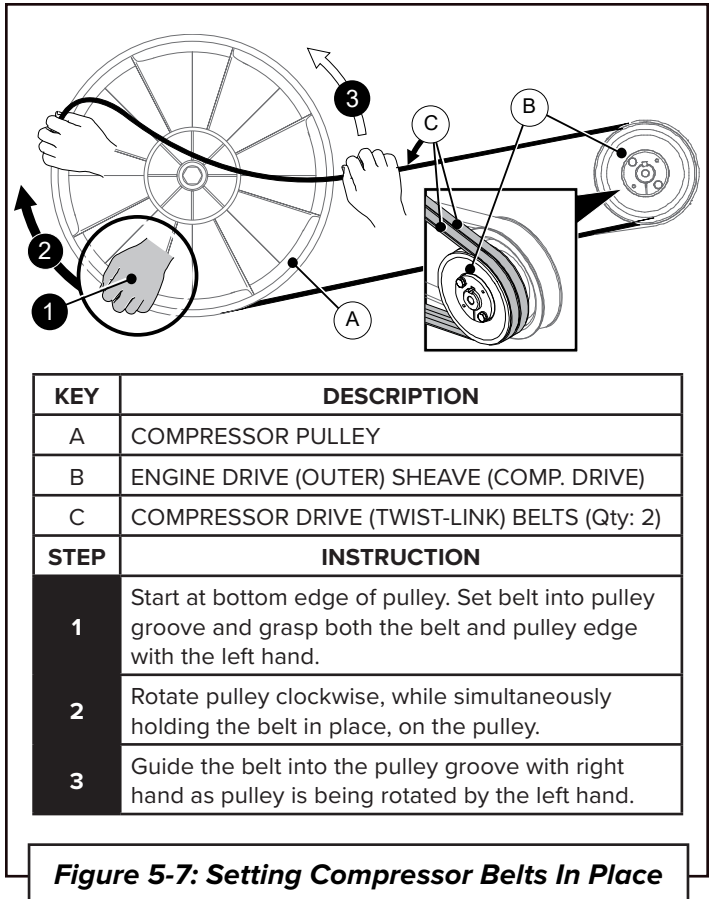
P	Span Length	F	Deflection Force
c	Center Distance	q	Deflection Distance .375 - .5 in



SPAN LENGTH (in)	DEFLECTION DISTANCE (in)	DEFLECTION FORCE (lbs)			
		ALL RIBS		TORQUE TO INCH- LBS TENSION	
		RE- TENSION	NEW INSTALL	RE- TENSION	NEW INSTALL
14.286	0.223	10.725	17.074	51	79

5.4.11 RE-TENSIONING OR REPLACING THE SERPENTINE BELT

The Air N Arc® 150 and Contractor Series utilize a single serpentine V-belt to drive the generator system. This belt will generally not need replacement during the service life of the generator system. However, over time it may become loose and need to be tightened. The proper tension can be determined by using a tension tester to measure the deflection from a given force. The belt guard must be removed to access the drive belt. Consult **Section 5.4.4, Accessing the Drive Belts** for instructions on how to remove the belt guard.



KEY	DESCRIPTION
A	GENERATOR PULLEY
B	GENERATOR DRIVE SHEAVE
C	GENERATOR DRIVE BELT
1	Start at bottom edge of generator pulley. Set belt into groove, and grasp both the belt and the pulley edge.
2	Rotate the pulley clockwise, while still holding the belt in place.
3	Hold the belt firm enough so it does not slip from the engine pulley. Move the belt to align with the compressor pulley groove as it is being rotated.

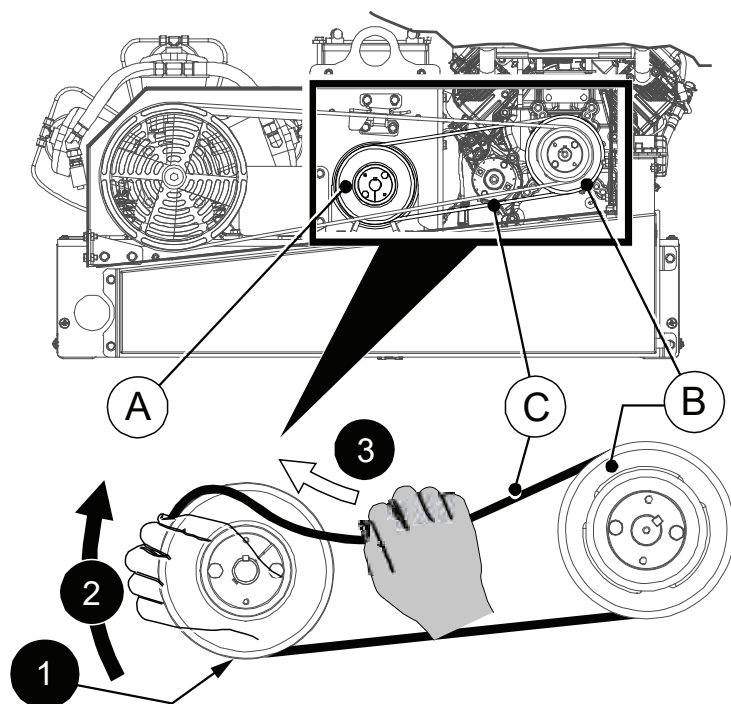
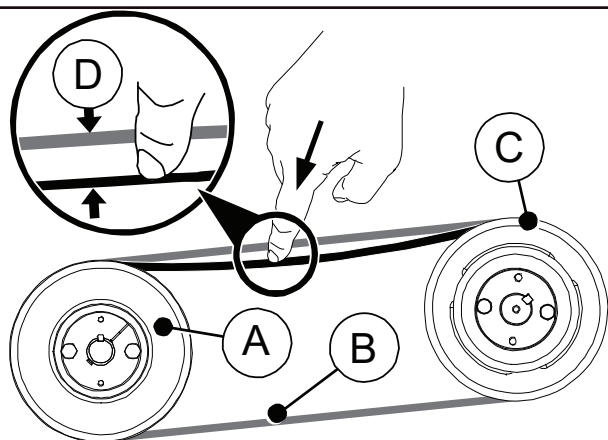


Figure 5-8: Contractor Generator Belt



KEY	DESCRIPTION
A	GENERATOR PULLEY
B	DRIVE BELT
C	DRIVE SHEAVE
D	OPTIMAL TENSION RANGE: 3/8 - 1/2 INCH

Figure 5-9: Contractor Generator Belt Deflection

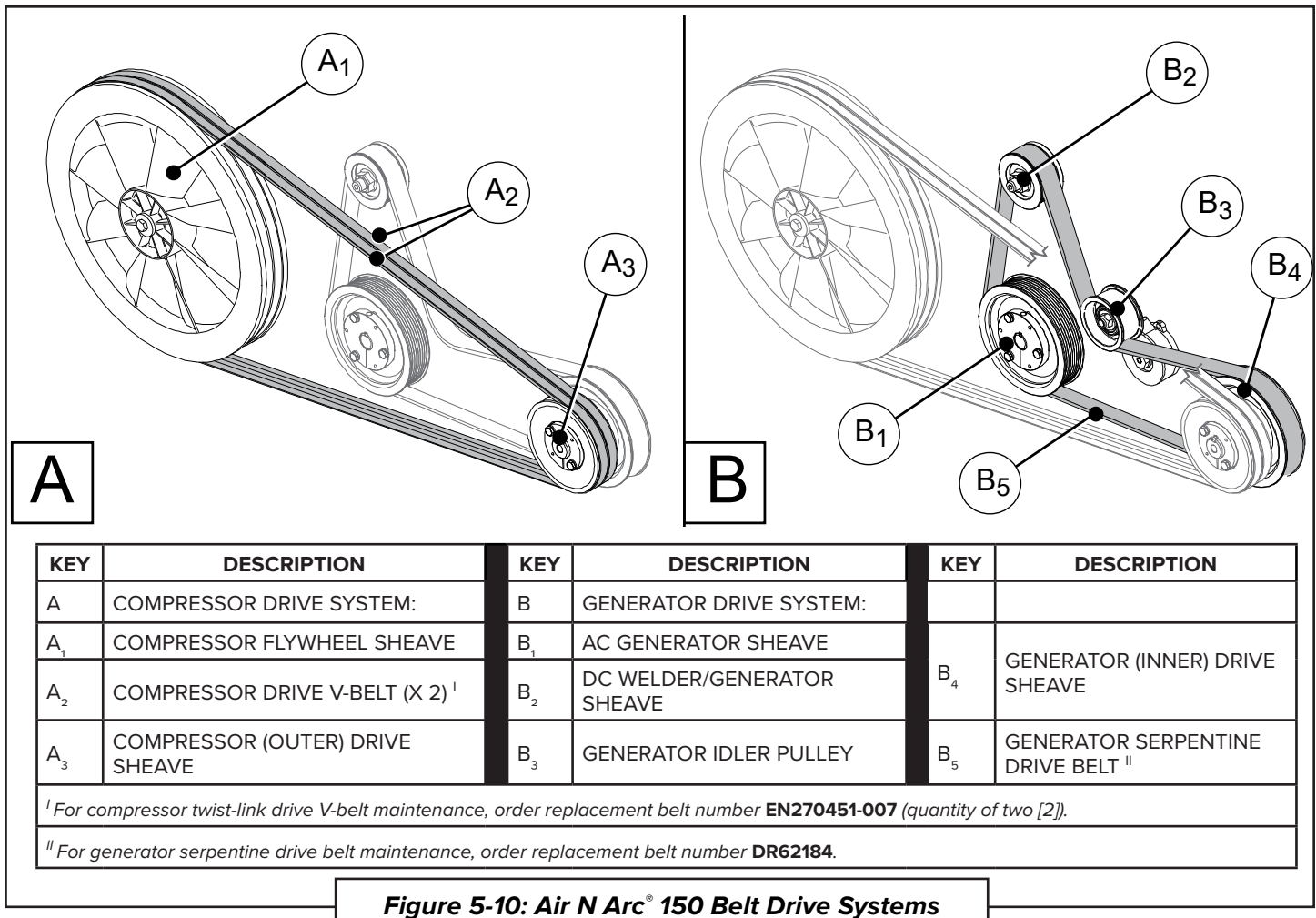
5.4.12 RE-TENSIONING OR REPLACING THE SERPENTINE DRIVE BELT

To re-tension the generator serpentine belt, consult **Figure 5-8** and the following procedure:

1. With the machine off and the ignition key removed, locate the generator belt idler pulley [A] on the generator tensioner plate. (See **Figure 5-8**.)
2. Loosen, but do not remove, the tensioner plate mounting and adjustment bolt [C]; Loosen enough to allow the tensioner plate to pivot while still retaining belt path position.
3. As the tensioner plate is manually pivoted about the loosened, but still anchored mounting bolt, use a tension tester on the belt, at various increments, to determine the correct position of the plate. Consult **Table 5C: Measuring Belt Deflection** for the proper tension measurement.
4. Once a position is achieved that accounts for a satisfactory tension in the belt, torque the bolt [C] to 12 ft-lbs (16.3 Nm) to secure the tensioner plate [B] into position.

NOTICE

If a new generator belt is installed, re-check the belt tension after 10-20 hours of operation. Re-tension as needed.



5.4.13 REPLACING THE SERPENTINE DRIVE BELT

Once the compressor drive belt is removed, the worn generator serpentine belt can be replaced. Refer to **Figures 5-3 and 5-9**.

Note the following steps:

1. Locate the generator auto-tensioner. (Refer to **Figure 5-12 [B]**.) Using a socket wrench, apply pressure downward to loosen the belt tension, as shown.
2. When belt is loose enough to clear the sheave(s), retain pressure on the socket wrench (auto-tensioner) in order to remove the belt from the drive track.
3. Obtain a replacement belt and ensure that the grooved side of the belt runs on the inside to directly contact the drive pulleys, then position and route the new generator serpentine belt as shown in **Figure 5-11**. Note that the auto-tensioner will need to

be positioned with the aid of the socket wrench in order to allow the belt to fit to the generator drive system.

4. Replace the compressor V-drive belts.
5. After the compressor belts have been reset and their tensions confirmed, replace the belt guard shield per **Section 5.4.5. Replacing the Belt Guard**.

The Contractor System is similar to the Air N Arc® 150, but has no welder or welder generator. A serpentine belt is not used for the Contractor generator and uses a poly-link drive belt between the generator pulley and the drive sheave. (Refer to **Figures 5-7**.) Like the compressor belt, the poly-link V-belt used for the generator does not require a tensioner.

Before performing repairs or maintenance work on the Contractor, be certain it is shut off, and the ground wire from battery is disconnected to prevent accidents. Be sure to reconnect battery AFTER work is completed and it is safe to do so.

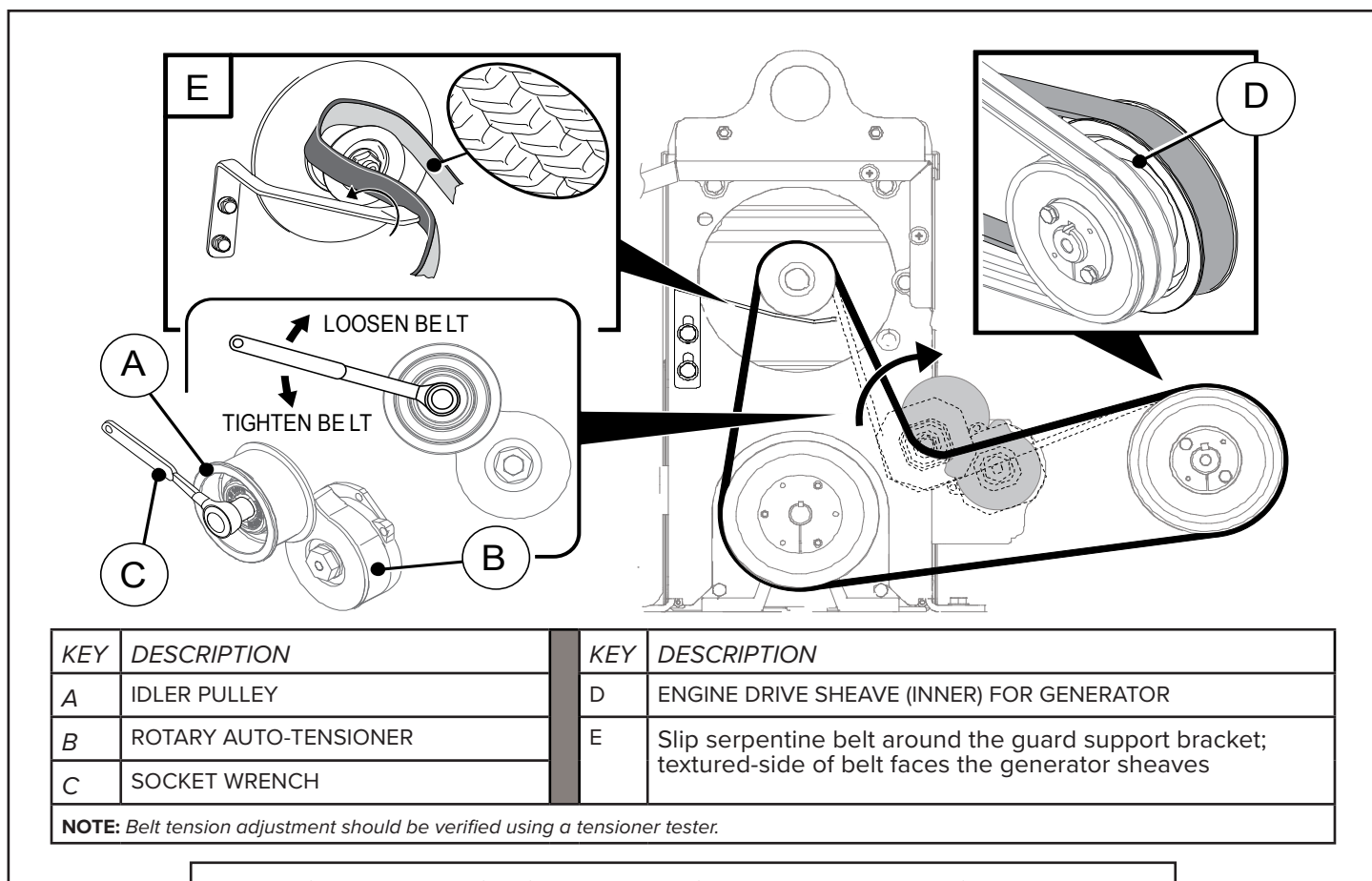


Figure 5-11: Adjusting or Replacing the Generator Drive V-belt

The Contractor generator drive belt follows the same sizing instructions as the compressor poly-link drive belt. Refer to **Figures 5-6 and 5-7** and **Section 5.4.8** for resizing and link removal directions. Proper belt deflection for the Contractor generator is 3/8" to 1/2" as shown in **Table 5C**.

WARNING

Before performing maintenance: Shut down the machine, relieve all system air pressure and lock-out all power as per the Safety Section of this manual. If the machine is hot, allow the unit to cool before removing any canopy or cover panel. Always Tag-Out and label the controller of the unit against system start-up during maintenance.

5.4.14 DRAINING THE AIR TANK

The air tank reservoir may accumulate moisture inside due to the compression and expansion of air. (See **Figure 5-12**.) The air tank should be checked daily and allowed to drain by opening the drain valve on the air tank. For areas of high ambient moisture content the valve may need to be checked more than once per day. This valve may be accessed at any time, including while in operation.

Keep in mind during freezing temperatures, any condensation in the air tanks may freeze. Bring unit into a warmer location and then drain the condensation once it thaws.

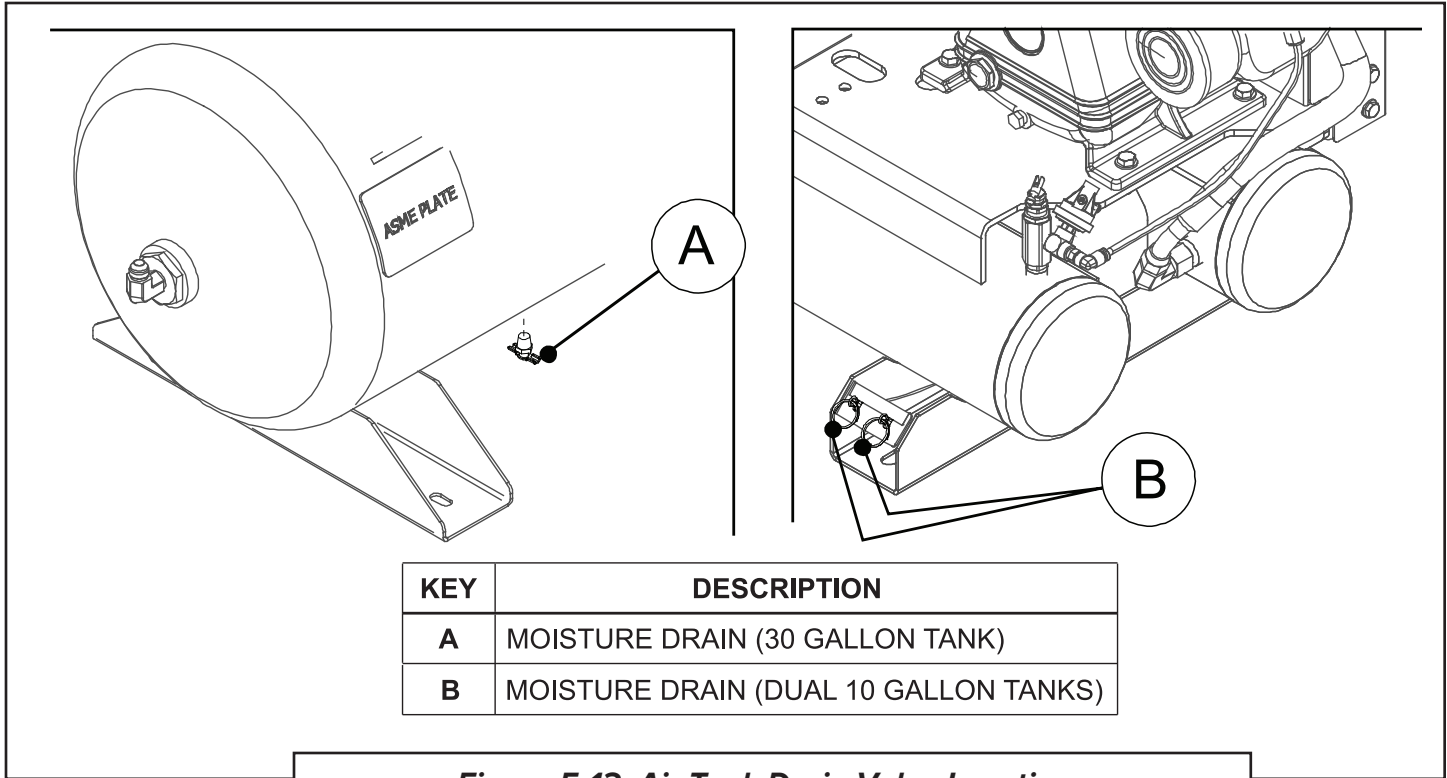


Figure 5-12: Air Tank Drain Valve Locations

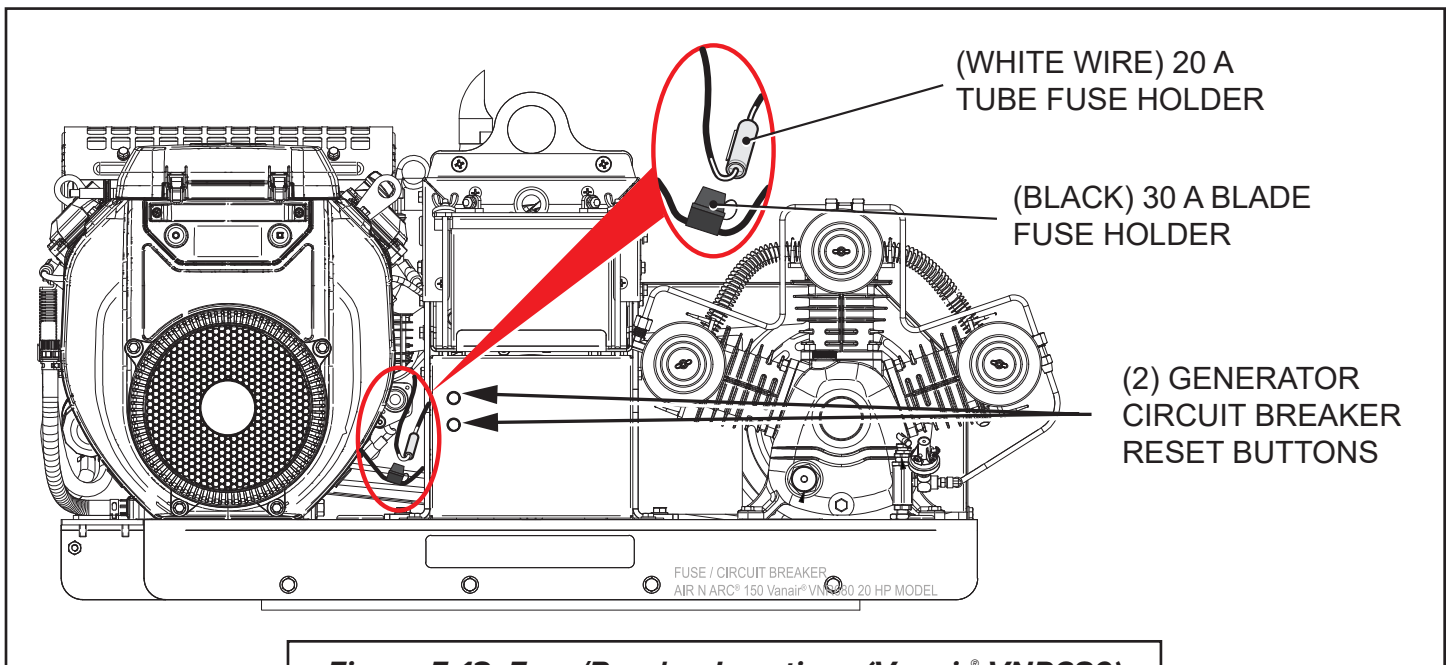


Figure 5-13: Fuse/Breaker Locations (Vanair® VNR680)

DANGER

Fuses will need to be replaced if they are blown. When changing a fuse, working on or maintaining any electrical component, always be aware of the Safety warnings provided in **Section 1, Safety** of this manual.

NOTICE

There are two (2) 20A circuit breakers located on the instrument panel. Refer to **Section 4, Figures 4-1 and 4-2**.

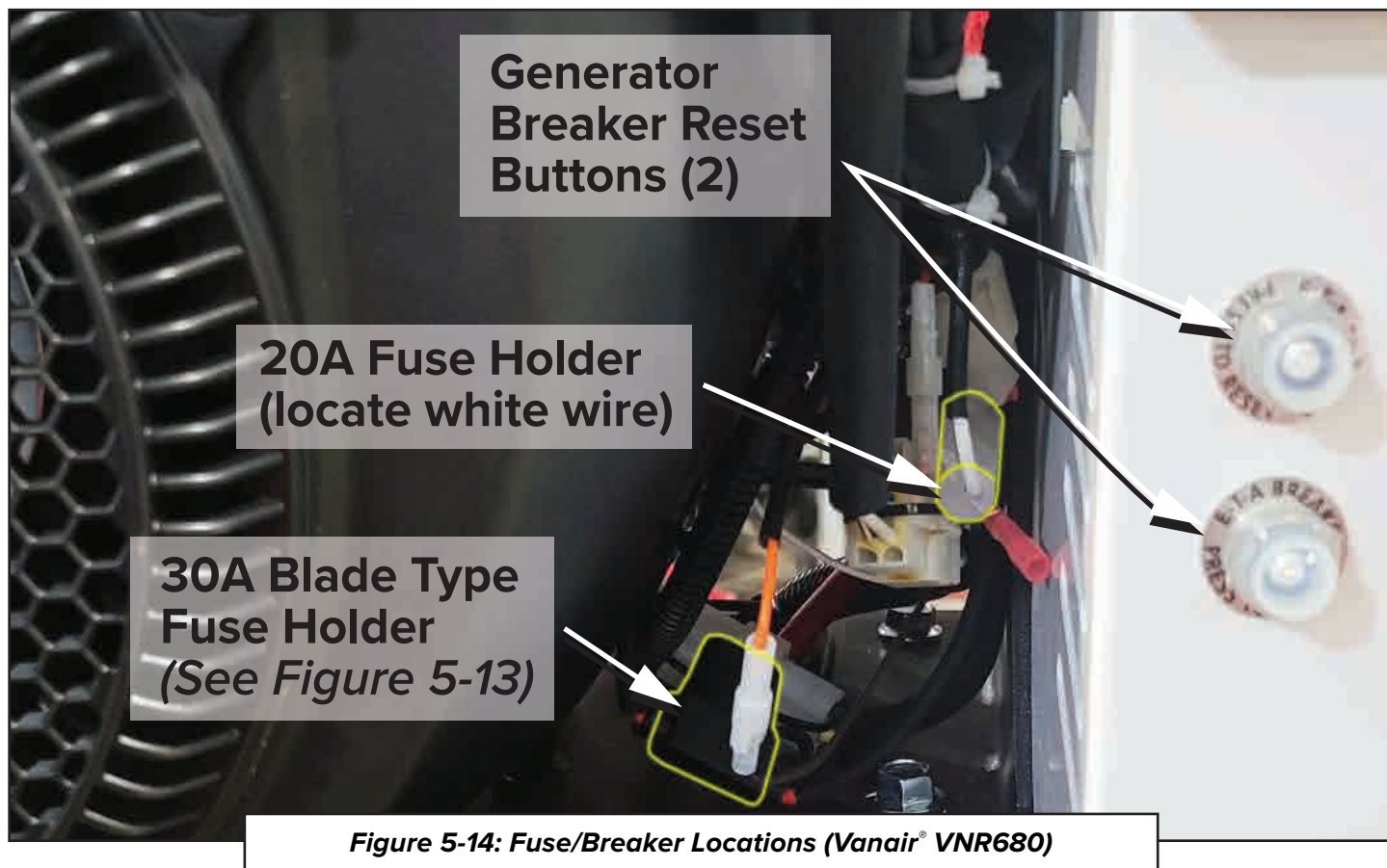


Figure 5-14: Fuse/Breaker Locations (Vanair® VNR680)

5.4.15 SERVICING FUSES AND CIRCUIT BREAKERS

1. Make sure unit is turned off, and all power to the system has been de-energized.
2. There are two (2) main fuses to check on the Vanair® VNR680 Engine Model. To check and change these fuses on the Vanair® VNR680 model, (Refer to **Figure 5-13** and **Figure 5-14**).
3. For the 30A blade fuse, locate the black, rectangular fuse holder, located between the engine and the assembly tower. Open the cap to reveal the blade fuse inside.
4. Pull the fuse out. Visually check the fuse to see if the metal element is burned or broken inside. If it has been blown, replace with new 30A blade fuse as needed. Securely close the cap on the black blade fuse holder.
5. There is also a 20A fuse that needs to be checked. Look for an in-line tube type fuse holder that is connected to the WHITE wire.

Refer to **Figure 5-14** to locate the fuse holder attached to the WHITE wire. Once located, open and check the glass fuse inside to see if the thin metal conductor inside the 20A fuse has been blown. If this has, replace with new fuse. Close the holder securely.

6. The circuit breaker reset for the generator are located on the front of the generator. (See **Figures 5-13** and **5-14**.)

5.5 MAINTAINING THE UNIT'S AIR COMPRESSOR

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

NOTICE

See the oil specifications by various ambient temperature ranges listed in *Section 4.8.2*.

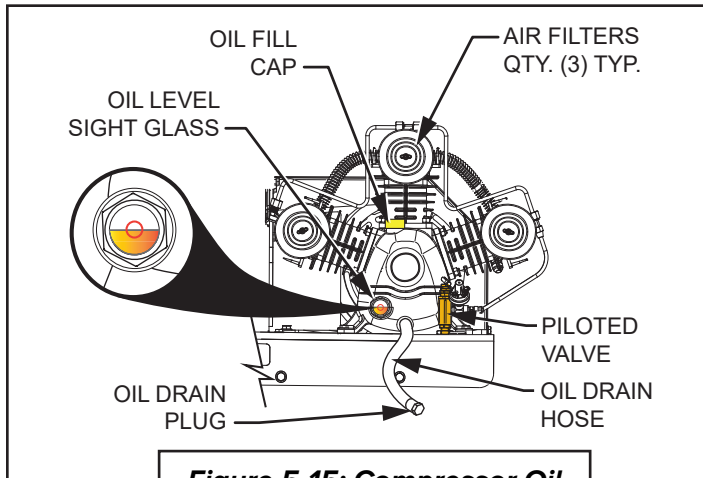


Figure 5-15: Compressor Oil

5.5.1 COMPRESSOR OIL

Before each use, always check that the oil level is between 1/4 and 3/4 by viewing the oil level sight glass. Ideally, the oil level should be at 50%. (See **Figure 5-15**.)

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

If oil needs to be added, use Vanair® Vanguard™ Reciprocating Compressor Oil. Add oil via the oil fill cap access, as shown in **Figure 5-15**.

Compressor oil should be changed according to the schedule shown on **Table 5A: Maintenance Schedule and Procedure**.

1. To change the oil, run compressor for 2-3 minutes to warm the oil. Disconnect power from the compressor.
2. Relieve all system air pressure.
3. Relieve compressor air pressure
4. Remove the oil fill cap.
5. Remove the plug from the oil drain hose and empty used oil into an oil-safe container.
6. Replace plug and slowly add fresh Vanair® Vanguard™ Reciprocating Compressor Oil, until the level in the oil sight glass appears 50% full or at the half-way point on the sight glass.
7. Replace the oil fill cap.
8. Wipe up any drips or spills. Dispose of used oil in accordance with local regulations concerning the recycling and disposal of oil products. Do not discard in trash bin, sewer or water.

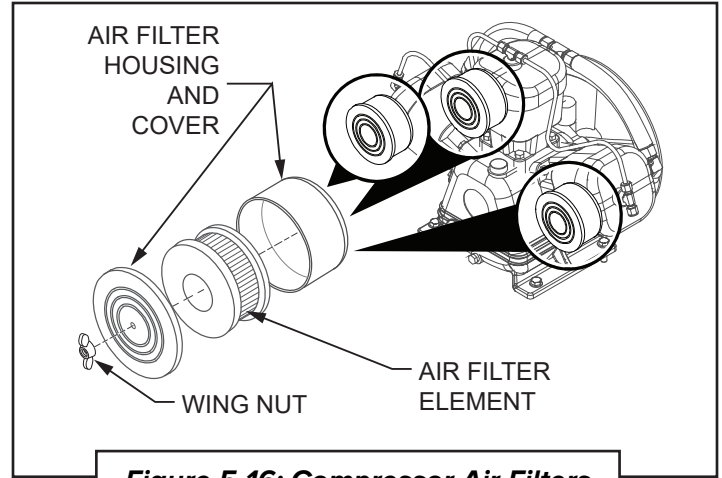


Figure 5-16: Compressor Air Filters

5.5.2 COMPRESSOR AIR FILTERS

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

1. To check the air filters, remove the wing nuts from the three (3) filter housings. (See **Figure 5-16**.) The air filter elements can be removed simply by pulling them out.
2. Gently tap the air filters on a hard, flat surface to dislodge any loose dust and dirt. Don't use compressed air to blow them out as small tears can result in damaged to the filter, and then they 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 them in front of a light source and look for holes, tears or areas with heavy dirt build-up. Also check the filters' seal on the outer edges for signs of damage.
5. Return the cleaned filters (or new filter elements) to their housings and secure the covers back in place with the wing nuts.

5.6 STORAGE AND INTERMITTENT USE

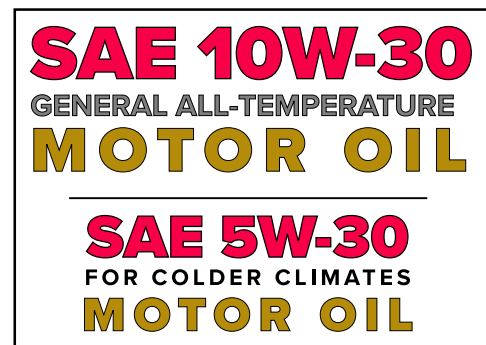
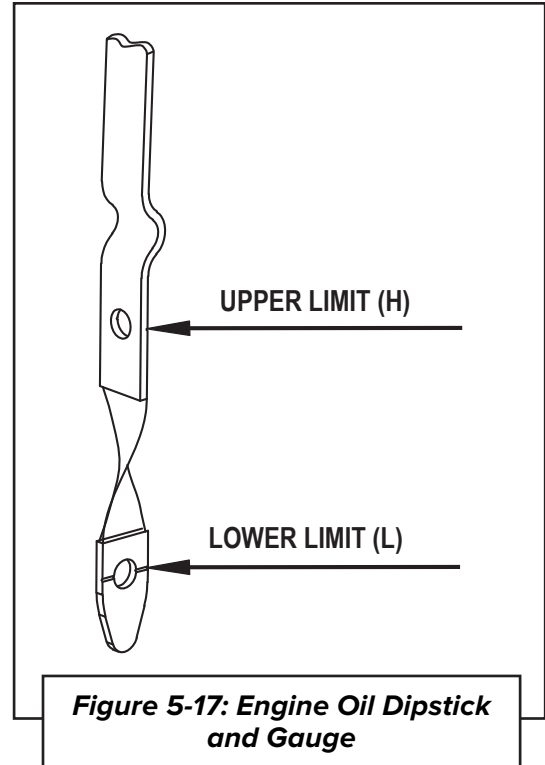
5.6.1 INTERMITTENT USE

- If the unit is not used very regularly, always treat the fuel with a fuel stabilizer. Do not mix oil and gasoline.
- Engine should be started and allowed to run at least 20 minutes every two weeks.
- Check all belts and hoses for signs of deterioration such as visible surface cracks, stiffness or discoloration.

5.6.2 LONG TERM STORAGE

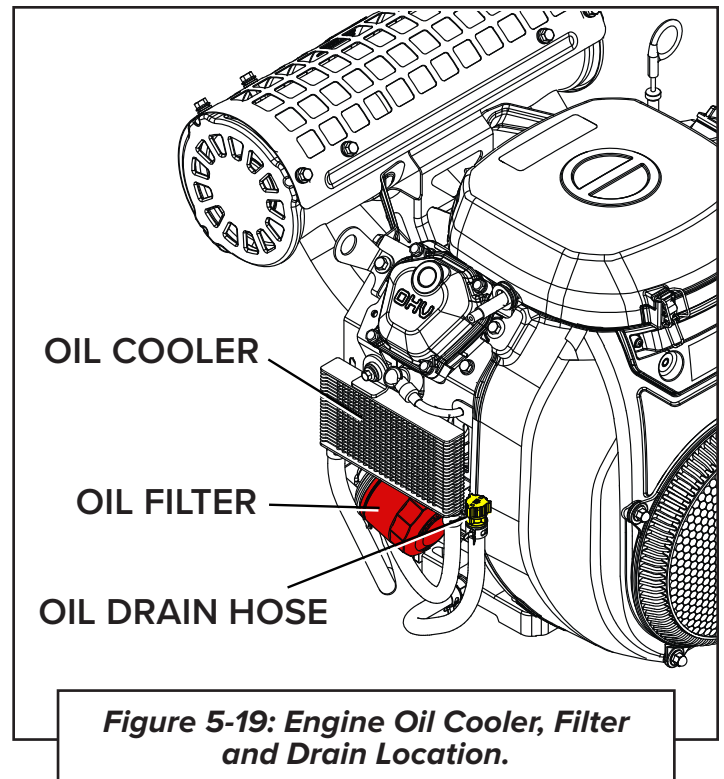
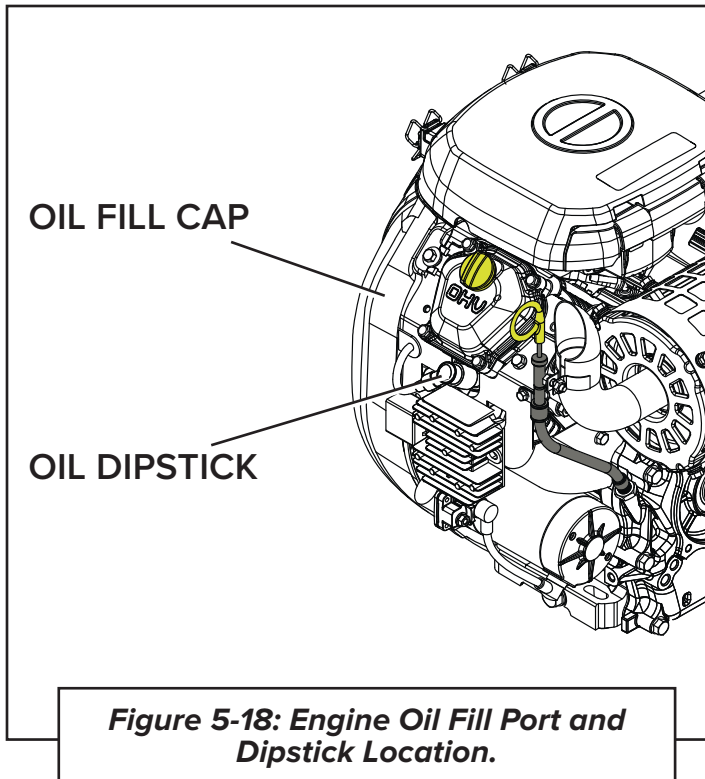
- If the unit will not be used for a period of 2 months or more, please use the following recommendations for storing the gas powered Air N Arc® 150 or Contractor.
- Preparing the Air N Arc® 150 or Contractor machine for long-term storage is also a convenient time to complete some standard maintenance, such as changing the engine oil, the oil filter, spark plugs, fuel filter, and air filter. This will help keep your Air N Arc® 150 or Contractor unit ready to go for the next season.
- See Vanair® **KIT1504** for Vanair® VNR680 engines.
- Set new Engine Spark Plug gap. (See **Figure 5-18.**)
- De-pressurize the air tank then open the drain valve on the air tank and allow any condensation to drain out. Close the drain valve when done. (The drain valve is normally located near the bottom of the air tank. (Refer to **Figure 5-12.**)
- While the engine is still warm is a good time to change the engine oil and oil filter.
- Drain all fuel completely from the fuel tank, fuel lines and carburetor.
- Remove the spark plugs and add a about an ounce of engine oil in each opening. Replace the spark plugs and crank engine a few times to distribute the oil and lubricate the cylinders.

- Disconnect the battery cable connected to the negative (-) battery terminal.
- Cover the unit with a tarp or plastic to prevent the accumulation of dust, but leave the bottom open for air circulation.
- Store in a clean, dry place away from heat.



5.7 MAINTAINING THE VANAIR® VNR680 ENGINE

Before servicing or performing maintenance on the engine, turn off the engine, disconnect all electrical devices and battery (if applicable) and allow the engine to cool down. (For maintenance information for the Vanair® VNR680 engine, see the following Sections).



5.7.1 ENGINE OIL FOR THE VANAIR® VNR680

- Vanair® part number **276041** - SAE 10W-30 is recommended for general all temperature use for the Vanair® VNR680 engine.
- SAE 5W-30 is suggested in colder climates where ambient temperatures are colder and fall below 30°F to -20°F (-1°C to -28°C).

5.7.1.1 ADDING OIL

1. Place the Air N Arc® 150 or Contractor on a level surface.
2. Please see **Section 2: Figure 2-1** for engine part locations.
3. Remove engine oil fill cap from engine.
4. Remove dipstick and check the oil level which should be at or just below the second hole from the end of the level indicator. (See **Figure 5-18 through 5-20**.)
5. Return the dipstick.
6. Slowly pour oil into the oil fill port as needed and re-check oil level using the dipstick until the oil level reaches the upper limit on the dipstick. (See **Figure 5-18**.)

5.7.1.2 CHANGING OIL

1. To change the oil - idle the engine for a few minutes to warm the oil for easy drainage. Turn OFF the engine before proceeding.
2. Place an appropriate container for the used oil at the outlet of the oil drain hose. Loosen and remove the drain plug, and allow the used oil to drain into the container. (See **Figure 5-20**.)
3. Once the oil has completely drained, re-install the drain plug and re-tighten.
4. As a matter of convenience, it may be suitable to change the oil filter when changing the oil. (Refer to **5.7.1.3**)
5. With the unit sitting on a level surface, fill the oil reservoir with 10W-30 motor oil, Vanair® part number **276041**. Fill oil to the upper limit indicated by the second hole from the end on the dipstick. (See **Figure 5-17: Vanair® VNR680 Engine Oil Dipstick and Gauge**.)
6. Replace the oil fill cap on the engine.
7. Wipe up any excess or spilled oil from the engine and work area.
8. Dispose of used oil in accordance with local regulations for oil waste and recycling.

Air N Arc® 150/Contractor 20 HP Series

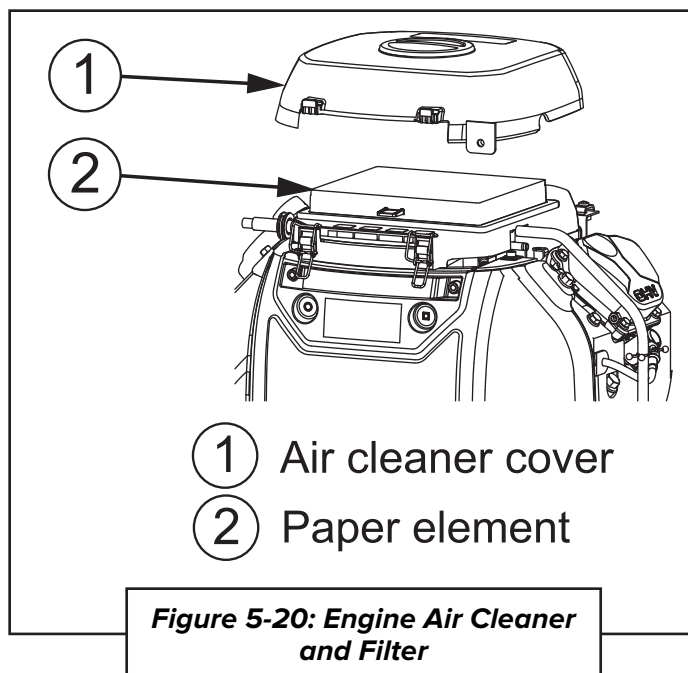
9. **Do Not** dispose of used oil in trash bins, sewers or water!

5.7.1.3 CHANGING THE OIL FILTER

1. Follow the previous steps for changing the oil. After draining the oil during an oil change, replace the drain plug and tighten. Remove the oil filter. (See **Section 2: Figure 2-1** for location.)
2. With the old oil filter in hand, pour any oil inside the oil filter into the container used during the oil change. Wipe up any excess oil or drips. Set the used filter and oil aside.
3. Clean the base and threads of the new filter, and coat the ring seal with fresh oil.
4. Install and tighten the new filter by hand until the seal ring presses against the engine. Tighten the filter canister to **9.5 to 11 ft. lbs. (13-15 Nm)**
5. Proceed to fill the engine with oil according to the previous oil changing instructions outlined in **5.7.1.2**.

5.7.2 VANAIR® VNR680 ENGINE AIR FILTER

1. Clean the air filter cover and surrounding area on the engine. See **Figure 5-18: Vanair® VNR680 Engine Air Cleaner and Filter** for location.
2. Release the retaining clips and remove the cover and lift the filter element from the engine.
3. Check the condition of the rubber seal and replace if needed.
4. Clean the air filter element by tapping it gently on a hard surface to dislodge any loose dirt and dust. Do not use a brush to clean the air filter as the filter may be damaged. If the filter has heavy dirt deposits, replace it with a new one. See Vanair® part number **283769-02** for the Vanair® VNR680 engine.
5. Install the new or cleaned filter element into place and reinstall the air cleaner cover.
6. Tilt the cover and slide the rear tabs into the slots. Press the cover down and secure with its retaining clips.



7. **Do Not** run the engine without the air filter installed.

5.7.3 VANAIR® VNR680 FUEL FILTER

- When working with fuel and fuel components – always be sure the equipment is cool, not running and the work area is safe with no open flame, high heat or fire source nearby.
- Wear eye protection when removing or inspecting a filter to protect eyes from liquid gasoline or fuel vapors. Keep an absorbent cloth handy to handle the filter and catch any dripping gas.
- The small canister fuel filter can be found installed in the fuel line near the oil cooler side of engine. (See **Section 2: Figure 2-1; Fuel Inlet.**)
- Remove the metal clips on each side of the filter using small pliers, and slide the filter out of the fuel line on both sides. (Refer to **Subsection 7.2 Vanair® VNR680 (20 HP) Engine and Drive Parts**; see callout [4] for location.)
- Be aware there will likely be a small amount of gasoline in the line after removing the fuel filter.

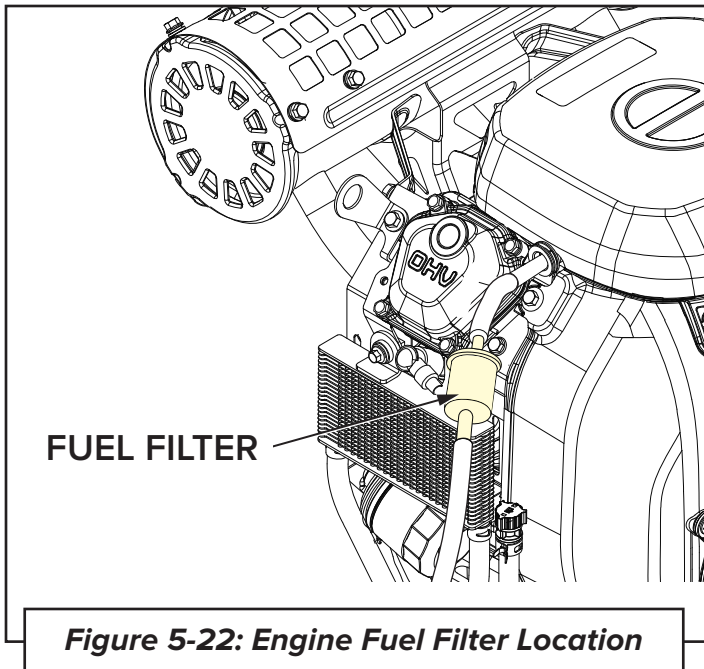


Figure 5-22: Engine Fuel Filter Location

NOTICE

When servicing the fuel filter, notice if the fuel line has any damage, dry-rot, or cracking. If this is the case, replace the fuel line to ensure there are no fuel leaks.

- Once removed, tap the filter onto a clean cloth to remove excess gas remaining inside. Use a cloth to wipe down the outside of the filter and fuel line.
- Keeping the filter at arm's length away from your face (not above), look through one end. You should see light from the other side. (This method will not work for all fuel filter types).
- If the filter's screen, pleated paper, or the inside of the casing is obstructed with dirt or debris, replace the old filter with a new fuel filter.
- When installing a new filter - be sure to reconnect the fuel line clips on both sides of the filter. Some filters have a direction of fuel flow indicated on it. The filter must be installed properly for it to work as intended.
- Check for fuel leaks. Do not operate the unit if any leaks are discovered.

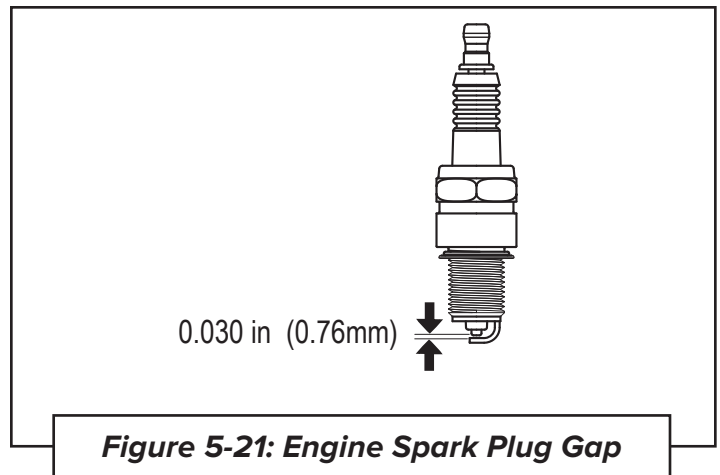


Figure 5-21: Engine Spark Plug Gap

5.7.4 VANAIR® VNR680 SPARK PLUGS

- Both spark plugs should be checked and cleaned every 6 months or 100 hours of operation.
 - The recommended spark plugs for the Vanair® VNR680 engine are Vanair® part number **283769-03** (Quantity of 2). They can be found directly under the "OHV" (over-head valve) covers.
1. Using non-recommended spark plugs may cause damage to the engine.
 2. Clean and remove dirt and debris from the surrounding area on the engine near the spark plugs to avoid dirt falling into the cylinders.
 3. Remove the rubber spark plug cap.
 4. Using a deep well socket, loosen and remove the spark plug.
 5. Inspect the condition of the spark plug and the washer. If they are old, damaged or worn, replace with a new one.
 6. If re-using existing plug, clean the spark plug threads and electrode with a small wire brush to remove any carbon deposits that have built up.
 7. Check the spark plug gap using a spark plug gap tool, and adjust as needed by bending the electrode carefully to the proper distance, which is a 0.6mm to 0.8mm gap. (See **Figure 5-22**.)
 8. Install the spark plugs and tighten by hand, making sure the threads are straight and engage properly. Tighten to **20-25Nm (14.75 ft. lbs – 18.4 ft. lbs.)** using a wrench.

9. **Option:** Wipe inside of the spark plug boot with a thin amount of dielectric or spark plug boot grease, taking care **NOT** to get it on the metal contacts inside the boot. It is inexpensive and can be found at most auto parts and hardware stores. This helps protect the connection from the elements and aids to keep the rubber boot from sticking to the ceramic of the spark plug.
10. Securely reattach the spark plug boot wires.
11. Start engine and run to make sure the spark plugs are firing properly and do not require further adjustment. Shut off engine.

5.7.5 ENGINE VALVE CLEARANCE

While each gas engine is inspected and properly set at the factory, it may be necessary, over time, to readjust the engine valve's clearance.

1. Remove the spark plugs from both cylinders.
2. Rotate the engine by hand, turning the engine counter-clockwise from the back of the engine, moving a piston up to top dead center (TDC). *This is the point where the piston is neither moving up or going down.* The rocker arm for the valve to be adjusted should have a slight amount of play in it.
3. Hold the valve clearance adjusting screw and loosen the locking nut.
4. Rotate the valve clearance adjusting screw to the following specified clearance:
Intake Valve Clearance: 0.10 - 0.15mm
Exhaust Valve Clearance: 0.15 - 0.20mm
5. Hold the valve clearance screw in place and tighten the locking nut.
6. Check valve clearance once more, adjust until the clearance falls within the standard shown above.
7. Repeat the process on the other piston.

5.7.6 HIGH ALTITUDE USE

NOTICE

For extended use in altitudes 3,300 feet or greater above sea level, the Vanair® VNR460/ VNR680 Engine may require a special High Altitude Carburetor Kit for more efficient high altitude operation. Contact Vanair® Service or Parts Department and request part number 283769-31.

5.7.7 EXTREME TEMPERATURE USE

- In extremely cold weather, allow the engine to run at full speed with no load using the generator switch to warm up the machine.
- A fuel line de-icer may be used in extreme conditions to prevent fuel from freezing in the lines.
- If required, run 12VDC heaters for ~30 minutes prior to start.
- In below freezing weather, **SAE 5W-30** oil may be used.
- In high heat conditions, extra care should be taken to keep the engine and compressor clean and to make sure there is good air flow around the unit.
- In constant ambient temperatures above 50°F, **SAE 30** oil may be used.

CAUTION

Operating the Vanair® VNR680 engine at altitudes below 5,000 ft (1,500 m) WITH a High Altitude carburetor kit installed may cause the engine to overheat, resulting in serious engine damage.

5.8 POPULAR MAINTENANCE KITS

Vanair® offers convenient maintenance kits which contain the most often needed service and maintenance parts and supplies. You must provide the unit *Serial Number* when ordering parts. (See **Figure 5-23**) for *Serial Number* locations.

5.8.1 VANAIR® VNR680 20 HP ENGINE

- Vanair® **KIT1504** contains the most often used service and maintenance items for the Vanair® VNR680 20 HP Engine:
- 276041 Motor Oil for Vanair® VNR680 10W-30 (QTY 2 quarts)
- 283769-01 Oil Filter, Air N Arc®150 (QTY 1)
- 283769-02 Air Filter, Air N Arc®150 (QTY 1)
- 283769-03 Spark Plug, Air N Arc®150 (QTY 2)
- 283769-04 Fuel Filter, Air N Arc®150 (QTY 1)



Vanair® KIT1504

5.8.2 AIR N ARC® 150 (20 CFM) COMPRESSOR

- Vanair® **KIT1156** contains service and maintenance items for the Air N Arc® 150 Compressor.
- **KIT1156** contains 1 quart of Vanair® Vanguard™ Reciprocating Compressor Oil, and (3) air filter element replacements for the Air N Arc®150 Air Compressor.

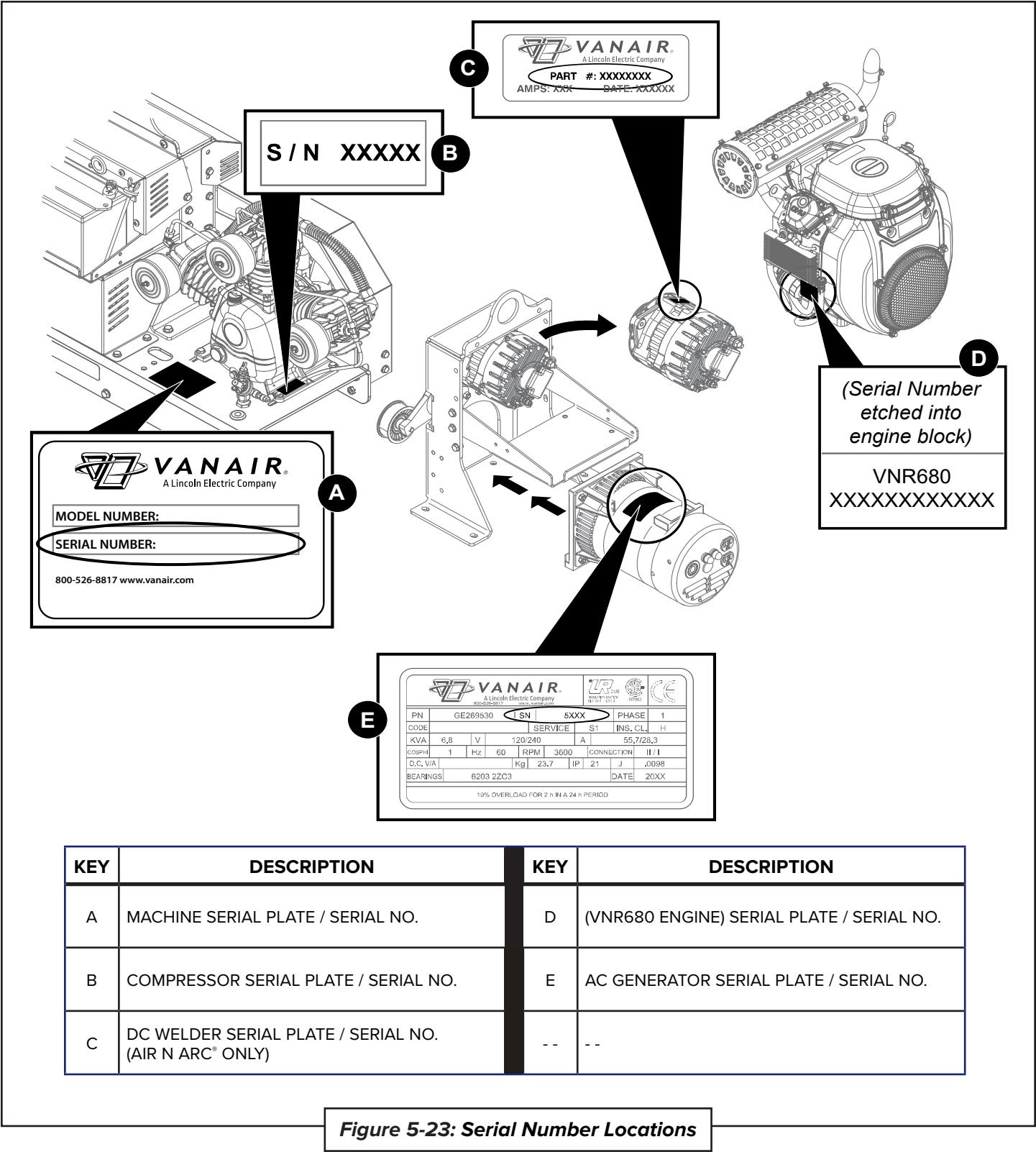
5.8.3 OPTIONAL PURCHASES:

- **271856-1QT** Vanair® Vanguard™ Reciprocating Compressor Oil (QTY 1 quart)
- **271856-1GAL** Vanair® Vanguard™ Reciprocating Compressor Oil (QTY 1 gallon)
- **RC81465** Inline Fuel Filter, 1/4 in to 5/16 in. 75 µm
- **283769-31** Vanair® High Altitude Vanair® VNR680 Engine kit



Vanguard™ Reciprocating Compressor Oil (1 Gallon)

5.9 Serial Number Locations - Machine, Compressor, Engine, Welder, and Generator



SECTION 6: Troubleshooting

6.1 GENERAL INFORMATION

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

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

Although Vanair® strives to anticipate situations that may occur during the operation life of the machine package, the **Troubleshooting Guide** may not cover all possible situations. Should the situation remain unresolved after exhausting available sources, contact the Vanair® Service Department.

Note: When contacting the Vanair® Service Department, please have machine serial number on hand to quickly expedite service. (See Figure 6-1) for machine serial plate location.



10896 West 300 North
Michigan City, IN 46360

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

vanair.com

NOTE: The machine serial number also displays on the instrument panel at start-up, and on the hours screen.

WARNING

Do Not operate any of the Air N Arc® 150 or Contractor Series functions if there is a known safety condition or component issue. Disable the equipment by disconnecting it from its power source. Install a Lock-out tag to identify the equipment is inoperable/out of service to other personnel to prevent accidental operation.

WARNING

Before starting, performing maintenance, or replacing parts, relieve all system air pressure by opening the air tank drain/vent valve. This will vent all air pressure to atmosphere.

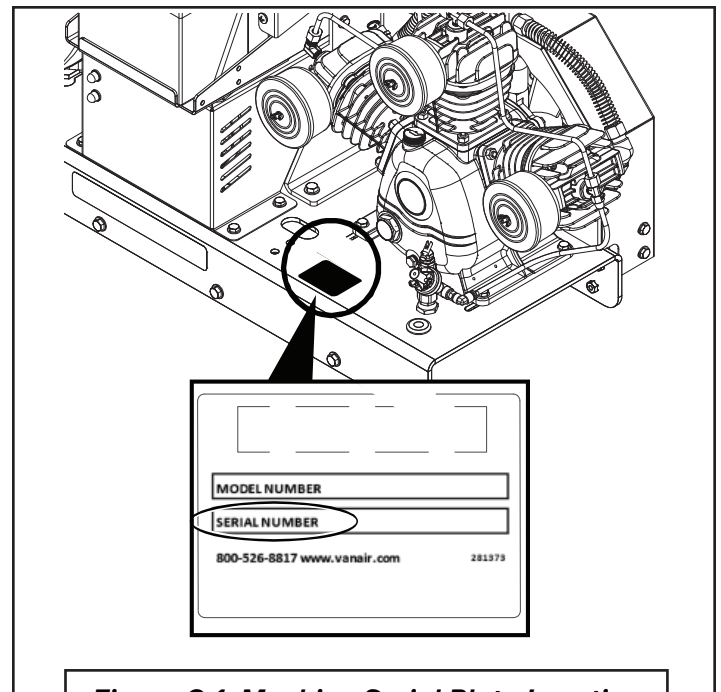


Figure 6-1: Machine Serial Plate Location

TABLE 6A: TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE¹		
Engine Will Not Crank	Faulty battery connection.	Check for proper battery connections and battery charge.
	Battery out of power	Recharge or replace battery.
	Engine fuse blown or faulty	Check engine fuse: See Section 5.4.16, Servicing the System Fuses and Circuit Breakers , and/or consult the Engine Operation Manual.
	Faulty starter connection	Check for proper electrical connections at starter.
	Kill Switch and/or wiring	Inspect and replace if necessary
Engine Will Crank, But Not Start	Low fuel and/or oil supply	Check fuel level. Check engine oil level; refer to Table 5A, Key #5 . Replenish as necessary.
	Wrong fuel type fuel used	Use only clean, automotive grade gasoline—do not use E85, etc.
	Pinched fuel line	Replace or reroute if necessary.
	Fuel filter(s) and/or fuel lines partly plugged	Replace fuel filter or lines. Refer to sub-section Section 5.7 for assistance with replacing the engine gas and inline filters.
	Low battery voltage	Recharge or replace if necessary.
		Loose connections; tighten connections.
		Dirty connections; clean connections.
	Restricted engine air filter	Check that the air filter elements, and all components are properly secured. Clean or replace air filter element(s) necessary. (See Section 5.7 .)
	Defective oil pressure switch	Check continuity, and replace the oil pressure switch, if necessary. Refer to parts illustrations and tables for 7.4a and 7.4b .
		Disconnect the wire from switch. If the engine runs, the switch is faulty and needs replaced.
	Blown fuse	Check continuity, and replace if necessary. See Section 5.4.16, Servicing the System Fuses and Circuit Breakers , and/or consult the Engine Operation Manual.
	Poor ground connection	Check and clean/renew ground connection.
	Fouled spark plug	Check spark plug and replace if necessary. See sub-Section 5.7.4 .
	Engine choke not operating properly	Check engine choke position on control panel.
	Broken or faulty wiring	Check harness connections and wiring condition.
Improper Control Operation: Engine Does Not Speed Up	Stepper motor (Vanair® VNR680)	Check stepper motor
		Check throttle relay; replace if necessary. Refer to Section 5.4.16, Servicing the System Fuses and Circuit Breakers .
	Faulty stepper motor (Vanair® VNR680 model)	Faulty stepper. Replace if necessary.
		Refer to Section 5.4.16, Servicing the System Fuses and Circuit Breakers .
	Governor stuck	Free governor and lubricate if necessary.
¹ Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. Contact your Dealer or Vanair® Support. For additional information concerning the engine, consult the Vanair® VNR Engine Operation Manual.		
Continued on next page...		

TABLE 6A: TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED)¹		
Improper Control Operation: Engine Does Not Speed Up (continued)	Fuel filter(s) and/or fuel lines partly plugged	Replace fuel filter or lines. View sub-section 5.7.3 for assistance with replacing the engine gas and inline filters.
	Unloader valve(s) sticking or faulty	Consult the Vanair® Service Department.
	Blown system fuse	Check system fuse; replace if necessary. See Section 5.4.16, Servicing the System Fuses and Circuit Breakers , and/or consult the Engine Operation Manual.
	Broken or faulty wiring	Check harness connections and wiring condition.
Improper Control Operation: Engine Does Not Slow Down	Leak in control line	Check for leaks; replace line if necessary.
	Pressure control out of adjustment or malfunctioning	Pressure settings may need to be reset. Consult Section 5.4.1, Adjusting Compressor Cut-in/Cut-out Pressure .
	Unloader valve(s) sticking or faulty	Valves may need to be cleaned, rebuilt or replaced. Consult the Vanair® Service Department.
	Throttle stuck	Restart the engine.
	Defective air pressure switch (stock open)	Check continuity and replace switch, if necessary.
	Throttle solenoid	Check throttle solenoid. Replace if necessary.
		Check throttle relay; replace if necessary. Refer to Section 5.4.16, Servicing the System Fuses and Circuit Breakers .
	Broken or faulty wiring	Check harness connections and wiring condition.
Engine Overheats	Located too close to obstruction	Move further from obstruction, or move obstructing obstacle(s).
	Restricted engine oil filter	Replace engine oil filter. Refer to Table 5A, Key #2 . Also refer to sub-section 5.7
	Low oil level	Check engine oil level; refer to Table 5A, Key #5 . Replenish as necessary. Also refer to sub-sections 5.7 for engine oil issues.
	Restricted engine air filter	Check that the air pre-cleaner and filter elements, and all components are properly secured (air pre-cleaner: Table 5A, Key #3 , and air filter: Table 5A, Key #12 . Clean or replace as necessary.
	Restricted cooling air in or out	Clean engine intake grill; Clean oil cooler fins (Vanair® VNR680)
	Engine oil cooler plugged	Clear debris/dirt from cooler core/flush shroud. (See 7.4a and 7.4b .)
Engine Stops During Operation	Low oil level; or oil level too high	Check engine oil level; refer to Table 5A, Key #5 . Replenish as necessary. See sub-section 5.7 for more information.
	Low fuel	Check fuel level. Fill as necessary.
	Defective oil pressure switch	Check continuity and replace switch, if necessary.
	Fuel filter(s) and/or fuel lines partly plugged	Replace fuel filter or lines. Refer to sub-section 5.7 for more information.
¹ Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. Contact your Dealer or Vanair® Support. For additional information concerning the engine, consult the Vanair® VNR Engine Operation Manual.		
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TABLE 6A: TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
ENGINE (CONTINUED)¹		
Engine Stops During Operation (continued)	Wrong fuel type fill	Use only clean, automotive grade gasoline. Do not use E85 or other fuel alternatives.
	Restricted engine air filter	Replace. Refer to sub-section 5.7 for more information.
	Restricted cooling air in or out	Clean engine air filter cover and intake grill. Check engine air filter.
	Fouled spark plug	Check spark plug and replace if necessary. See sub-section 5.7 for additional information.
Gradual Loss Of Engine Power	Contaminated fuel	Drain and replace fuel supply with fresh gasoline.
	Wrong fuel type fill	Use only clean, automotive grade gasoline—do not use E85, etc.
	Engine air filter contaminated	Check air pre-cleaner and filter elements, and all components are properly secured (air pre-cleaner: Table 5A, Key #3 , and air filter: Table 5A, Key #12 . Clean or replace air filter element(s) necessary. See 5.7
	Fuel filter(s) and/or fuel lines partly plugged	Replace fuel filter or lines. See sub-section 5.7 for additional information.
	Vapor lock	Machine overloading. Allow to cool. Refer to “ Engine Overheats ” section in this Troubleshooting Guide.
	Fouled spark plug	Check spark plug and replace if necessary. See sub-section 5.7.4 .
	Engine choke not operating properly	Check engine choke position on controller.
COMPRESSOR		
Flywheel Rotation Slows Down	Belt(s) slipping	Re-tension or replace belts.
Severe Vibration	Bent crankshaft	Remove and replace. Contact Vanair® Service Department.
Abnormal Noise	Worn or damaged belt	Check and replace belt as needed
	Knocking noise	Compressor or bearing worn; Contact Vanair® Service Department.
	Worn connecting rod bearing.	Replace compressor.
Compressor Overheats	Low compressor oil level	Check oil level and refill to proper level if necessary. Refer to Table 5A, Key #4 . Do not overfill.
	Obstructed or restricted intake air flow	Check for obstructions (frame, body, etc.) to air filter vents. Clean, or replace air filter if necessary. See Table 5A, Key #13 .
	Duty cycle too high	Reduce the duty cycle.
	Unloader valve(s) sticking or faulty	Valves may need to be cleaned, rebuilt or replaced. Consult the Vanair® Service Department.
Compressor Will Not Build Up Air Pressure	Broken valve plate	Repair or replace the valve plate.
	Pilot valve malfunction	Replace the pilot valve.
	Dirt on the valve plate	Remove and clean it.
¹ Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. Contact your Dealer or Vanair® Support. For additional information concerning the engine, consult the Vanair® VNR Engine Operation Manual.		
Continued on next page...		

TABLE 6A: TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)¹		
Compressor Will Not Build Up Air Pressure (continued)	Leaks from safety valve	Repair or replace safety valve.
	Leaks from bolt holes	Tighten the nuts even with packing.
	Uneven valve seat surface	Remove and lap the surface.
	Excessive blow by on piston rings	Replace with new ones.
	Bad packing (gasket too thick)	Replace packing (gasket).
	Excessive air leaks	Eliminate air leaks.
	Compressor system is not receiving enough operating power	If running more than one function simultaneously, turn off competing function.
	Air demand too high	Check for leaks and take corrective action.
		Check air tools for wear, damage, or malfunctions. Replace or repair. Make sure tools are rated properly for this machine.
	Pressure control out of adjustment or malfunctioning	Pressure settings may need to be reset. Consult Section 5.4.1, Adjusting Compressor Cut-in/Cut-out Pressure.
	Compressor capacity too low to accommodate demand	Substitute larger capacity compressor system.
	Obstructed or restricted intake air flow	Check for obstructions (frame, body, etc.) to air filter vents. Replace air filter if necessary. Refer to Table 5A, Key #13.
	Belt(s) slipping	Re-situate and adjust belts for tension, or replace belts if necessary. Consult Section 5.4.3, Replace and Re-tension the Compressor and/or Generator Drive Belts , and its sub-sections.
	Engine governor stuck	Free governor and lubricate if necessary. Consult Vanair® Service
	Unloader valve(s) sticking or faulty	Valves may need to be cleaned or rebuilt/replaced. Consult with Vanair® Service Department.
	Pressure relief valve not operating properly	Replace if necessary.
	Leak in air system	Inspect air system for leaks.
	Faulty throttle solenoid	Check throttle solenoid; replace if necessary.
		Check throttle relay; replace if necessary. Refer to Section 5.4.16, Servicing the System Fuses and Circuit Breakers.
	Service valve is open	Close service valve.
Slipping Of Belts	Pressure gauge is malfunctioning	Check pressure gauge function/control line routing; adjust, repair or replace as necessary.
	Pressure gauge is malfunctioning (continued)	Check for proper operation with an auxiliary air source. Replace if necessary.
	Discharge piping leaks	Tighten connections; replace faulty piping.
	Working pressure too high	Lower working pressure.
	Improper belt tension	Re-situate and adjust belts for tension, or replace belts if necessary. Consult Section 5.4.3, Replacing and Re-tensioning the Compressor and/or Generator Drive Belts , and its sub-sections.
¹ Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. Contact your Dealer or Vanair® Support. For additional information concerning the engine, consult the Vanair® VNR Engine Operation Manual.		
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TABLE 6A: TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)¹		
Slipping of Belts <i>(continued)</i>	Worn belt	Replace with new ones.
Inaccuracy Of Pressure Gauge	Pressure gauge damaged	Replace.
Excessive Moisture In The Compressed Air	Moisture accumulating in air tank	Drain water from air tank. Refer to Section 5.4.15, Draining the Air Tank .
Compressor System Over-pressures and/or Relief Valve Opens	Damaged/kinked control line	Check line for damage (wear, kinks, etc.). Re-route, re-tie or replace if necessary. (Refer to Section 7.10, Hose Installation Guide for assistance in running or checking hose lines).
	Restriction in control line	Clean if soiled; if ice is present, clear and remove.
	Control line connections are not properly seated/poor connection quality	Check lines for proper seating/ensure line ends have been cut cleanly and are square (Do Not use wire cutters: use a loom cutting tool or a clean, sharp razor blade).
	Pilot valve out of adjustment or malfunctioning	Pressure settings may need to be reset. Consult Section 5.4.1, Adjusting Compressor Cut-in/Cut-out Pressure .
	Pressure gauge is malfunctioning	Check for proper operation with an auxiliary air source. Replace if necessary.
		Check pressure gauge function/control line routing: adjust, repair or replace as necessary.
	Defective safety valve	Replace safety valve.
No Service Air Output	If equipped, OSHA valve/velocity fuse not functioning properly	Reset or replace OSHA valve.
	Head unloader blocked open	Inspect/clean unloader valve.
	Belt(s) not adjusted properly, worn or slipping	Belt(s) out of position or malfunctioning. Consult Section 5.4.3, Replacing and Re-tensioning the Compressor and/or Generator Drive Belts , and its sub-sections.
System Operating Pressure Below Specified Minimum	Air tools not performing adequately	Use air tools that match compressor capabilities. Check air tools for wear, damage, or malfunctions. Replace or repair.
	Compressor capacity too low to accommodate demand	Use a larger capacity compressor system.
	Pressure control out of adjustment or malfunctioning	Pressure settings may need to be reset. Consult Section 5.4.1, Adjusting Compressor Cut-in/Cut-out Pressure .
	System leaking, or is damaged	Inspect for leaks. Repair and/or replace damaged parts as necessary. Use Section 9, Illustrated Parts List to visually confirm/identify any part that needs to be replaced before ordering part.
	Pressure switch set too low/malfunction	Pressure settings may need to be reset. Consult Section 5.4.1, Adjusting Compressor Cut-in/Cut-out Pressure .
	Input RPM too low	Adjust to proper setting.
	Clogged compressor air filters	Check air filters. Replace if necessary; See Table 5A, Key #13 .
	Incorrect engine speed	Reduce load. See Section 5.4.2, Adjusting the Engine Speed .
	Pilot valve stuck open	Check valve; clean or replace if necessary.
¹ Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. Contact your Dealer or Vanair® Support. For additional information concerning the engine, consult the Vanair® VNR Engine Operation Manual.		
Continued...		

TABLE 6A: TROUBLESHOOTING GUIDE

Fault/Malfunction	Possible Cause	Corrective Action
COMPRESSOR (CONTINUED)¹		
Excess Amount Of Oil In Air Discharge	Compressor oil level too high	The correct oil level is the half-way mark on the sight glass with the compressor shut down, and the machine on a level surface. Drain excess oil to correct level. See Table 5A, Key #4 .
Excessive Oil Consumption/ Low Oil Level	Worn piston rings or cylinder	Replace. Consult Vanair® Service Department for piston ring and cylinder maintenance procedures.
	Oil leaks	Check for any source of oil leaks; correct and repair.
	Wrong oil being used	Use correct oil; Drain and refill with recommended oil.
DC GENERATOR		
Welder and/or Battery Charger Behaves Erratically	Poor connections	Check for twisted cables or loose receptacle connections. Check weld board connections.
	Connection cables or receptacles are soiled/contaminated (continued)	Untwist and/or straighten out any suspected cable tensions. Carefully wipe off any contaminants to receptacle connectors before re-connecting. Replace any worn or damaged cables or receptacles. Contact Vanair® Service Department if behavior persists.
	Power level too low	If running more than one function simultaneously, turn off competing function.
Display Not Working	Loose or faulty wiring/connections	Check wiring and connectors: If loose, secure; If faulty, replace.
GENERATOR		
No AC Generator Output	Serpentine belt out of position or malfunctioning	Re-situate and adjust belt tension, or replace belt if necessary. Consult Section 5.4.3, Replacing and Re-tensioning the Compressor and/or Generator Drive Belts , and its sub-sections.
	Loose or faulty wiring	Check wiring: Loose - secure; faulty - replace.
	Circuit breaker blown	Reset the circuit breaker. Refer to Section 5.4.16, Servicing the System Fuses and Circuit Breakers . Replace if faulty. (See Figures 2-1 and Figures 5.13 and 5.14).
Low AC Voltage	Engine speed too low for demand	Adjust speed control. Consult Section 5.4.2, Adjusting the Engine Speed .
	Faulty capacitor	Replace capacitor.
High AC Voltage	Engine speed too high for demand	Adjust speed control. Consult Section 5.4.2, Adjusting the Engine Speed , and the Engine Operation Manual.
¹ Do not attempt to service or replace major engine components, or any items that require special timing or adjustment procedures. Contact your Dealer or Vanair® Support. For additional information concerning the engine, consult the Vanair® VNR Engine Operation Manual.		

SECTION 7: Illustrated Parts List

7.1 PARTS ORDERING INFORMATION

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

When ordering parts always indicate the Serial Number of the machine package.

The machine's serial number can be obtained from the Bill of Lading for the machine package, or from the unit's serial number plate. See **Figure 7-1** for location of machine serial plate. Consult **Table 7A: Recommended Spare Parts List** on the next several pages for a listing of replacement parts for your system.

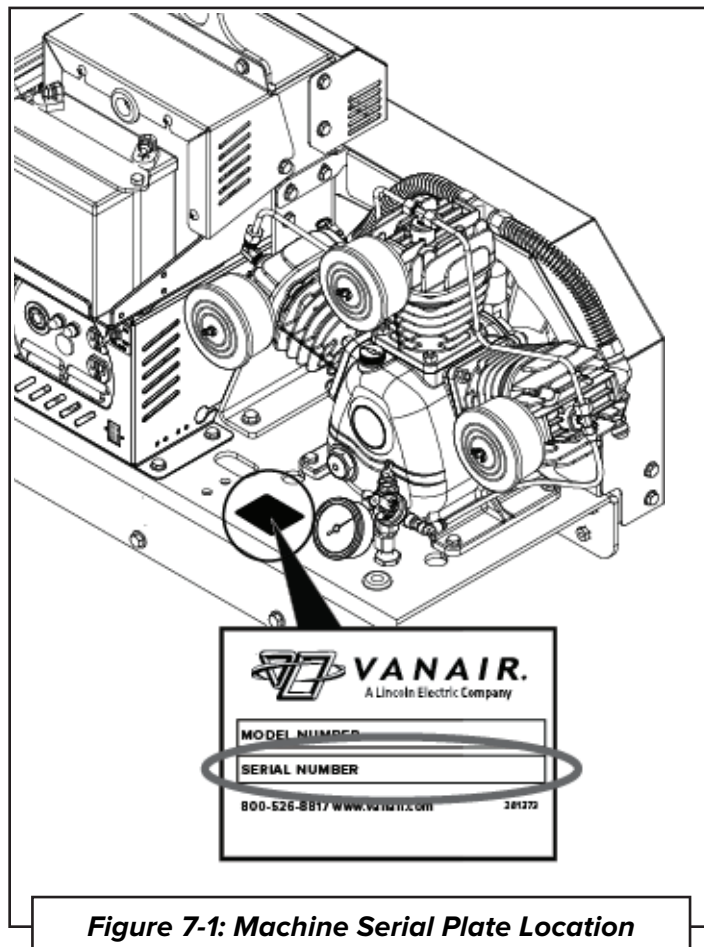


Figure 7-1: Machine Serial Plate Location



10896 West 300 North
Michigan City, IN 46360

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

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

vanair.com

TABLE 7A: AIR N ARC® 150/CONTRACTOR RECOMMENDED SPARE PARTS LIST							
NOTE: For a complete list of available options parts for order, refer to Section 8, Table A5 in the Appendix Section of this manual.							
KEY NO.	DESCRIPTION	PART ORDER NO.	QTY.	KEY NO.	DESCRIPTION	PART ORDER NO.	QTY.
MAINTENANCE/SERVICE KITS							
1	KIT, MAINTENANCE FOR VANAIR® VNR680 ENGINE	KIT1504	1	3	KIT, COMPRESSOR VALVE PLATE ASSEMBLY	KIT1109	1
2	KIT, COMPRESSOR MAINTENANCE (INCL: 1QT VANAIR® VANGUARD™ RECIPROCATING OIL; 3 PUK65 AIR FILTER ELEMENTS)	KIT1156	1	N/A			
REPLACEMENT FILTERS AND ELEMENTS							
4	AIR FILTER, VANAIR® VNR680 ENGINE	283769-02	1	6	OIL FILTER, VANAIR® VNR680 ENGINE	283769-01	1
5	FUEL FILTER, VANAIR® VNR680 ENGINE	283769-04	1	7	AIR FILTER ELEMENTS, AIR COMPRESSOR	RC76291	3
OILS/FLUIDS							
8	MOTOR OIL, 10W-30 FOR VANAIR® VNR680 ENGINE (1QT)	276041	2	10	COMPRESSOR OIL, VANAIR® VANGUARD™ RECIPROCATING OIL (1GAL)	271856-1 GAL	1
9	COMPRESSOR OIL, VANAIR® VANGUARD™ RECIPROCATING OIL (1QT)	271856	1	N/A			
INDIVIDUAL MAINTENANCE ITEMS							
11	12V DC STANDARD BATTERY	277481	1	21	BELT, COMPRESSOR TWIST LINK DRIVE REPLACEMENT	DR270922P	2
12	12V DC DEEP CYCLE BATTERY (BELOW 32°F CONDITIONS)	MA31821	1	22	BELT, SERPENTINE DRIVE REPLACEMENT (ANA150)	DR270926	1
13	SPARK PLUGS, VANAIR® VNR680 ENGINE	283769-03	2	23	VALVE, PILOTED CHECK ASSEMBLY	278211	1
14	CIRCUIT BREAKER W/ STUDS 40A W/O BRACKET	270492	1	24	PRESSURE SWITCH - N.O. (Normally Open)	264690	1
15	BREAKER, 25A (GENERATOR)	CO270786	2	25	BOOT, CIRCUIT BREAKER (INSTR PANEL LOCATION)	PR240548	2
16	BREAKER, MNJAL RESET 20A (PANEL MOUNT)	CO62617	2	26	BOOT, BREAKER GENERATOR PANEL MOUNT (7/16")	PR81817	2
17	RELAY, MICRO 20A/35A 14V DC	EL274682	4	27	FUSE, MINI 5A	EL270936	1
18	RELAY, 500A (CONTROL PANEL)	EL270483	1	28	FUSE, MINI 15A	EL59018	1
19	GAUGE, FUEL / HOUR METER	CO269748	1	29	FUSE, MINI 10A	EL41538	1
20	GAUGE, AIR DRY (0-200 PSI)	CO89649	1	N/A			

NOTES

<i>^I Compressor oil capacity at oil change is approximately 24oz. (Order one (1) quart). This oil is sold in both quart and gallon containers. Use the oil sight glass as a visual indicator and Do Not overfill.</i>	<i>^{III} The compressor is driven by two (2) Twist-link V-belts. Whether removing a link or replacing a belt, Vanair® recommends changing both belts at the same time.</i>
	<i>^{IV} Some standard components, such as fuses, are readily available and may be obtained quicker and more economically from local sources such as a hardware, or auto supply store, etc.</i>
<i>^{II} Vanair® VNR680 Engine Maintenance Kit - KIT1504 (Includes, Air Filter, Oil Filter, Spark Plugs, Fuel Filter and two (2) quarts Vanair® motor oil.)</i>	
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.	

IMPORTANT

The above table listing contains items that require maintenance on a routine basis, and also those parts that may require maintenance over the course of the compressor package's performance schedule. Although this recommended list is proffered 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 5.7.2, Long Term Storage**.

TABLE 7B: CONTRACTOR RECOMMENDED SPARE PARTS LIST

(CHECK FOR KOHLER OR VANAIR® VNR680 MODEL)

NOTE: For a complete list of available option parts for order, refer to **Table A5** in the Appendix Section of this manual.

KEY NO.	DESCRIPTION	PART ORDER NO.	QTY	KEY NO.	DESCRIPTION	PART ORDER NO.	QTY
MAINTENANCE/SERVICE KITS							
1	KIT, MAINTENANCE FOR KOHLER ENGINE	KIT1119	1	2	KIT, MAINTENANCE FOR VANAIR® VNR680 ENGINE	KIT1504	1
3	KIT, COMPRESSOR VALVE PLATE ASSEMBLY	KIT1109	1	4	KIT, AIR COMPRESSOR MAINTENANCE; (INCLUDES: 1 qt VANAIR RECIPROCATING OIL AND 3 PUK65 AIR FILTERS)	KIT1156	1
REPLACEMENT FILTERS/ELEMENTS							
5	AIR FILTER ELEMENT - REPLACEMENT (KOHLER)	274368	1	6	AIR FILTER, VANAIR® VNR680 ENGINE	283769-02	1
7	FUEL FILTER, (10µ) - KOHLER ENGINE	RC77662	1	8	FUEL FILTER, VANAIR® VNR680 ENGINE	283769-04	1
9	FUEL FILTER, IN-LINE (70µ) - KOHLER ENGINE	RC81465	1	10	OIL FILTER, VANAIR® VNR680 ENGINE	283769-01	1
11	OIL FILTER, KOHLER ENGINE	262723	1	12	AIR FILTER ELEMENT, FOR AIR COMPRESSOR	RC76291	3
OILS/FLUIDS							
13	MOTOR OIL, 10W-30 FOR KOHLER ENGINE (1 QUART)	274439	1	14	COMPRESSOR OIL, VANAIR RECIPROCATING (1 QUART)	271856-1QT	1
15	MOTOR OIL, 10W-30 FOR VANAIR® VNR680 ENGINE (1 QT)	276041	2	16	COMPRESSOR OIL, VANAIR RECIPROCATING (1 GALLON)	271856-1GAL	1
INDIVIDUAL MAINTENANCE ITEMS							
17	12V DC STANDARD BATTERY	277481	1	18	12V DC DEEP CYCLE BATTERY (BELOW 32°F CONDITIONS)	MA31821	1
19	12V DC DEEP CYCLE BATTERY (BELOW 32°F CONDITIONS)	MA31821	1	20	BELT, COMPRESSOR TWIST-LINK DRIVE REPLACEMENT	DR270922P	2
21	SPARK PLUGS, VANAIR® VNR680 ENGINE	283769-03	2	22	BELT, SERPENTINE DRIVE REPLACEMENT	DR270926	1
23	SPARK PLUGS, KOHLER ENGINE	264306	2	24	VALVE, PILOTED CHECK ASSEMBLY	278211	1
25	CIRCUIT BREAKER W/ STUDS 40A WITHOUT BRACKET	270492	1	26	PRESSURE SWITCH, (N.O.)	264690	1
27	BREAKER, 25A (GENERATOR)	CO270786	2	28	BOOT, CIRCUIT BREAKER (INSTR PANEL LOCATION)	PR240548	2
29	BREAKER, MANUAL RESET 20A (PANEL MOUNT)	CO62617	2	30	BOOT, BREAKER GENERATOR PANEL MOUNT (7/16")	PR81817	2
31	RELAY, MICRO 20A/35A 14V BC	EL274682	4	32	FUSE, MINI 5A	EL270936	1
33	RELAY, 500A (CONTROL PANEL)	EL270483	1	34	FUSE, MINI 15A	EL59018	1
35	GAUGE, FUEL / HOUR METER	CO269748	1	36	FUSE, MINI 10A	EL41538	1
37	GAUGE, AIR DRY (0-200 PSI)	CO89649	1		N/A		

NOTES

- I Compressor oil capacity at oil change is approximately 24 oz. (Order 1 quart); This oil is sold in both quart and gallon containers. Use the oil sight glass as a visual indicator and **Do Not** overfill.

III Vanair® VNR680 Engine Maintenance Kit - **KIT1504** (Includes, Air Filter, Oil Filter, Spark Plugs, Fuel Filter and 2 quarts Vanair® motor oil.)
- II Some standard components, such as fuses, are readily available and may be obtained quicker and more economically from local sources such as a hardware, or auto supply store, etc.

IV The compressor is driven by two (2) Twist-link V-belts. Whether removing a link or replacing a belt, Vanair® recommends changing both belts at the same time.

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

IMPORTANT

The above table listing contains items that require maintenance on a routine basis, and also those parts that may require maintenance over the course of the compressor package's performance schedule. Although this recommended list is proffered 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 5.7.2, Long Term Storage**.

TABLE 7C: VANAIR® VNR680 20 HP ENGINE AND DRIVE PARTS

ITEM	DESCRIPTION	PART NUMBER	QTY	ITEM	DESCRIPTION	PART NUMBER	QTY
1	FILTER, OIL AIR N ARC® 150 (PRIVATE LABELED)	283769-01	1	25	ROCKER, VALVE/ARM ASSY AIR N ARC® 150	283769-25	1
2	FILTER, AIR AIR N ARC® 150	283769-02	1	26	GUIDE, PLATE PUSH ROD AIR N ARC® 150	283769-26	1
3	PLUG, SPARK AIR N ARC® 150	283769-03	2	27	GUARD, FAN COVER AIR N ARC® 150	283769-27	1
4	FILTER, FUEL AIR N ARC® 150	283769-04	1	28	HOSE, ENGINE OIL DRAIN AIR N ARC® 150	283769-28	1
5	FUSE, 30A AIR N ARC® 150 (See Figure 5-10a)	283769-05	1	29	MUFFLER, ENGINE (INCLUDES GUARD) AIR N ARC® 150	283769-29	1
6	PUMP, FUEL L.P. AIR N ARC® 150 (LOCATED NEAR TANK SIDE)	283769-06	1	30	PIPE, MUFFLER TAIL AIR N ARC® 150	283769-30	1
7	GASKET, ENGINE EXHAUST AIR N ARC® 150	283769-07	1	Not Shown	HIGH ALTITUDE CARBURETOR KIT	288719-31	1
8	GASKET, VALVE COVER AIR N ARC® 150	283769-08	1				
9	GASKET, HEAD AIR N ARC® 150	283769-09	1				
10	SENSOR, TEMPERATURE AIR N ARC® 150	283769-10	1				
11	SENSOR, OIL PRESS AIR N ARC® 150	283769-11	1				
12	STARTER, MOTOR AIR N ARC® 150	283769-12	1				
13	SOLENOID, STARTER RELAY AIR N ARC® 150	283769-13	1				
14	COIL, IGNITION MODULE + WIRE AIR N ARC® 150	283769-14	1				
15	MODULE, ECU (THROTTLE & CHOKE CONTROL) AIR N ARC® 150	283769-15	1				
16	CONTROL, THROTTLE AND CHOKE (STEP MOTOR ASSY) AIR N ARC® 150	283769-16	1				
17	CARBURETOR, ENGINE AIR N ARC® 150	283769-17	1				
18	COIL, RECTIFIER CHARGE AIR N ARC® 150	283769-18	1				
19	STATOR, CHARGING (20A) AIR N ARC® 150	283769-19	1				
20	HARNES, WIRE ENGINE AIR N ARC® 150	283769-20	1				
21	CAP, OIL FILL AIR N ARC® 150	283769-21	1				
22	COVER, AIR CLEANER AIR N ARC® 150	283769-22	1				
23	COVER, ENGINE BLACK AIR N ARC® 150	283769-23	1				
24	DIPSTICK, OIL ENGINE AIR N ARC® 150	283769-24	1				
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.							

IMPORTANT

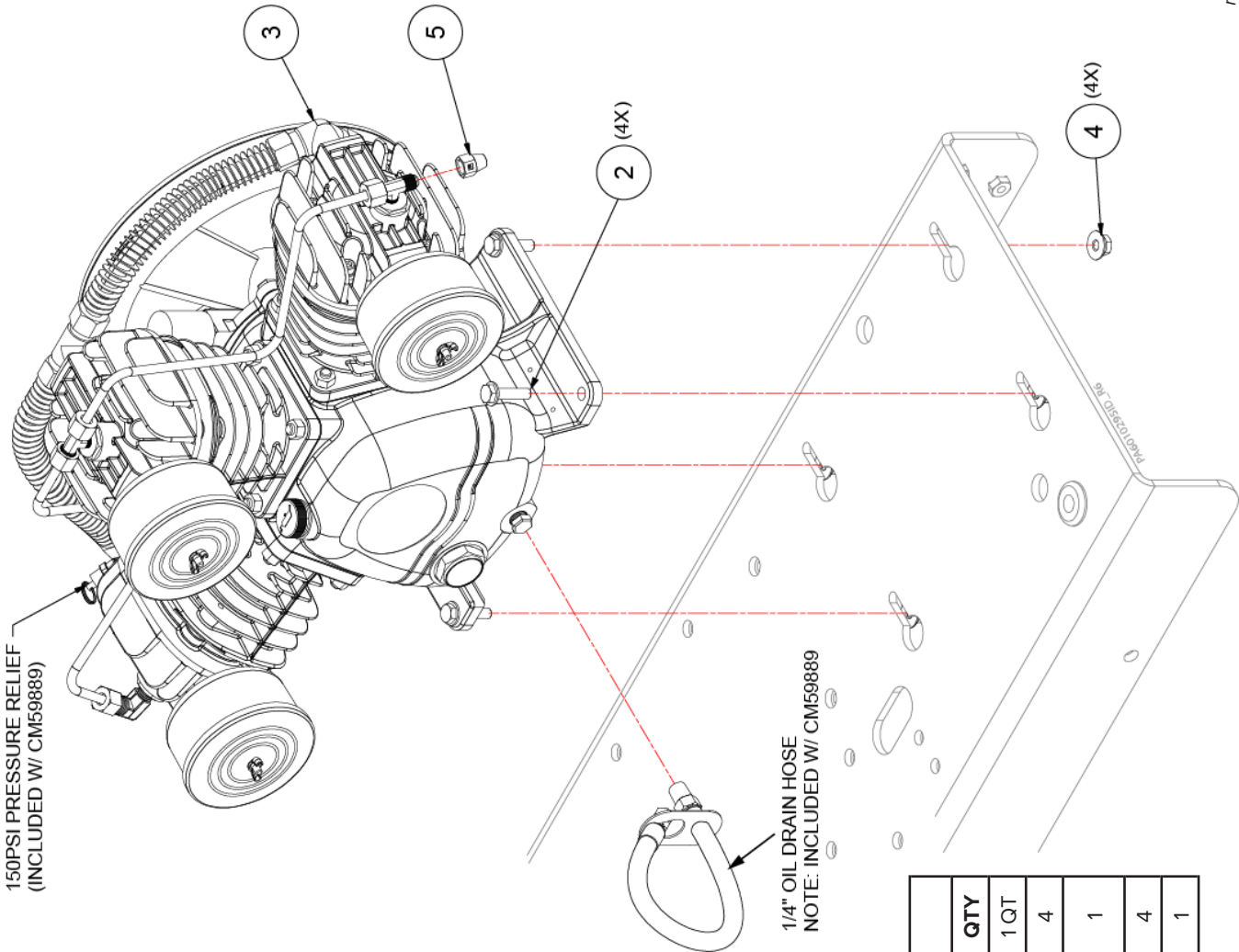
The above table listing contains items that require maintenance on a routine basis, and also those parts that may require maintenance over the course of the compressor package's performance schedule. Although this recommended list is pro-offered as a comprehensive guide to replacement parts, damage may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

IMPORTANT

If additional spare parts are being stored for future use, ensure that they are stored in proper containers that allow for protection against contamination, and kept in a clean area of moderate temperature reading. For information on storing the machine package for periods of non-use, consult **Section 5.7.2, Long Term Storage**.

NOTES/RECORDS

7.1 COMPRESSOR AND PARTS ASSEMBLY - TYPE II

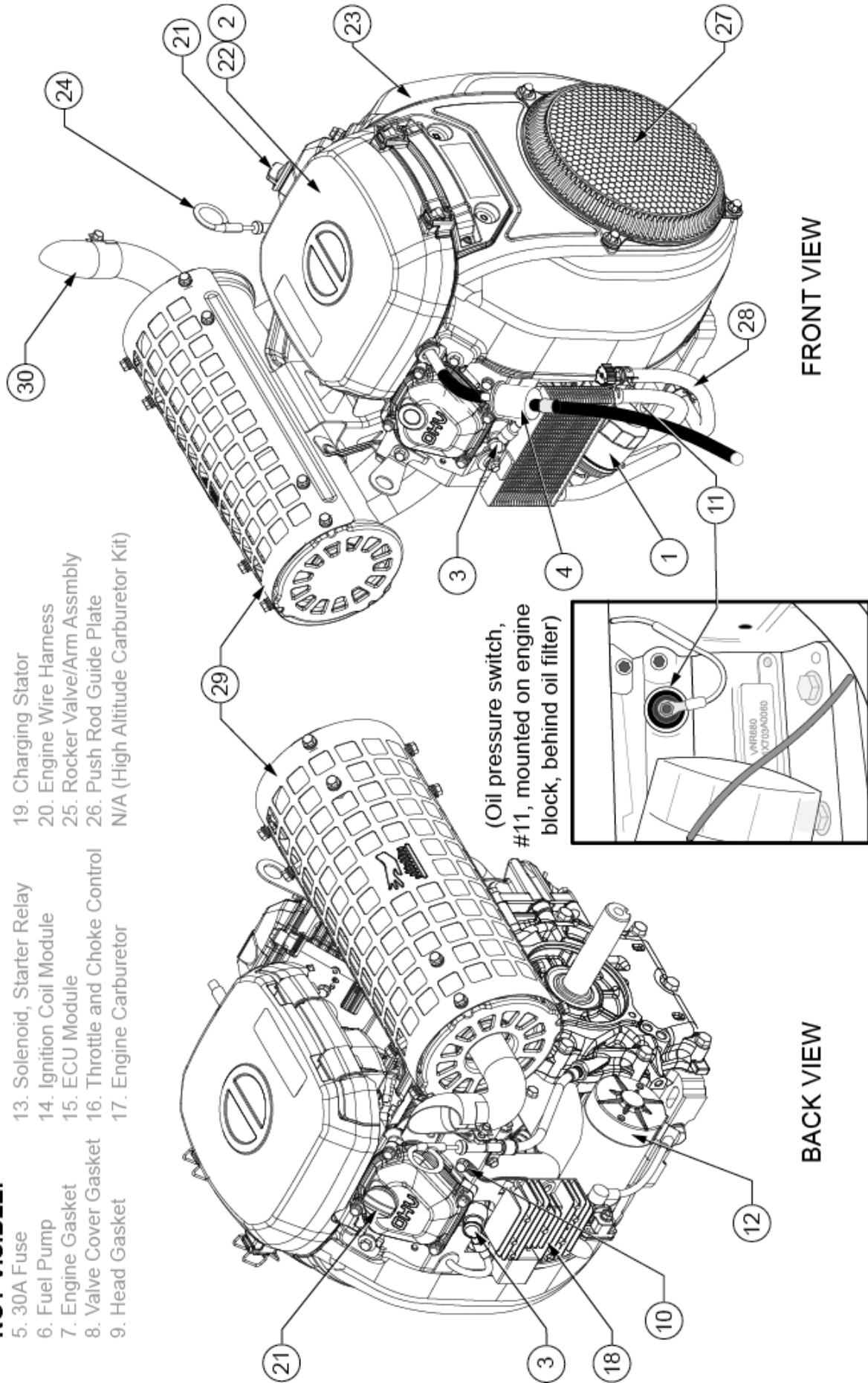


PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	271856	OIL, VANAIR® RECIP BULK (VANGUARD™)	1 QT
2	829705-125	SCREW, SER WASH 5/16-18 X 1.25	4
3	CM59889	COMPRESSOR, AIR 3-CYL W HEAD UNLOADER	1
4	FA34328	NUT, FLANGE HEX, 5/16-18, GRAD	4
5	FI52363	NUT, FLARE SHORT 1/4 IN OD BRASS	1

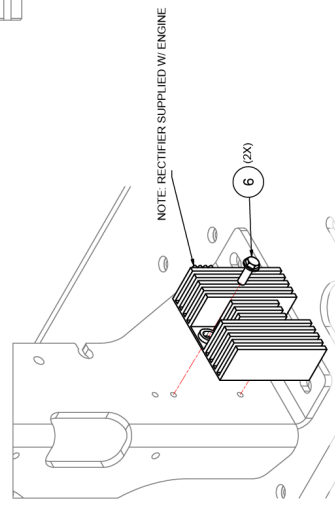
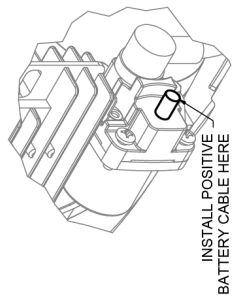
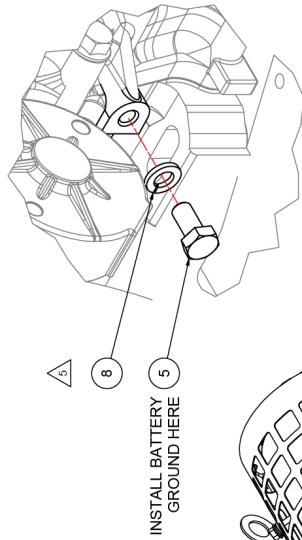
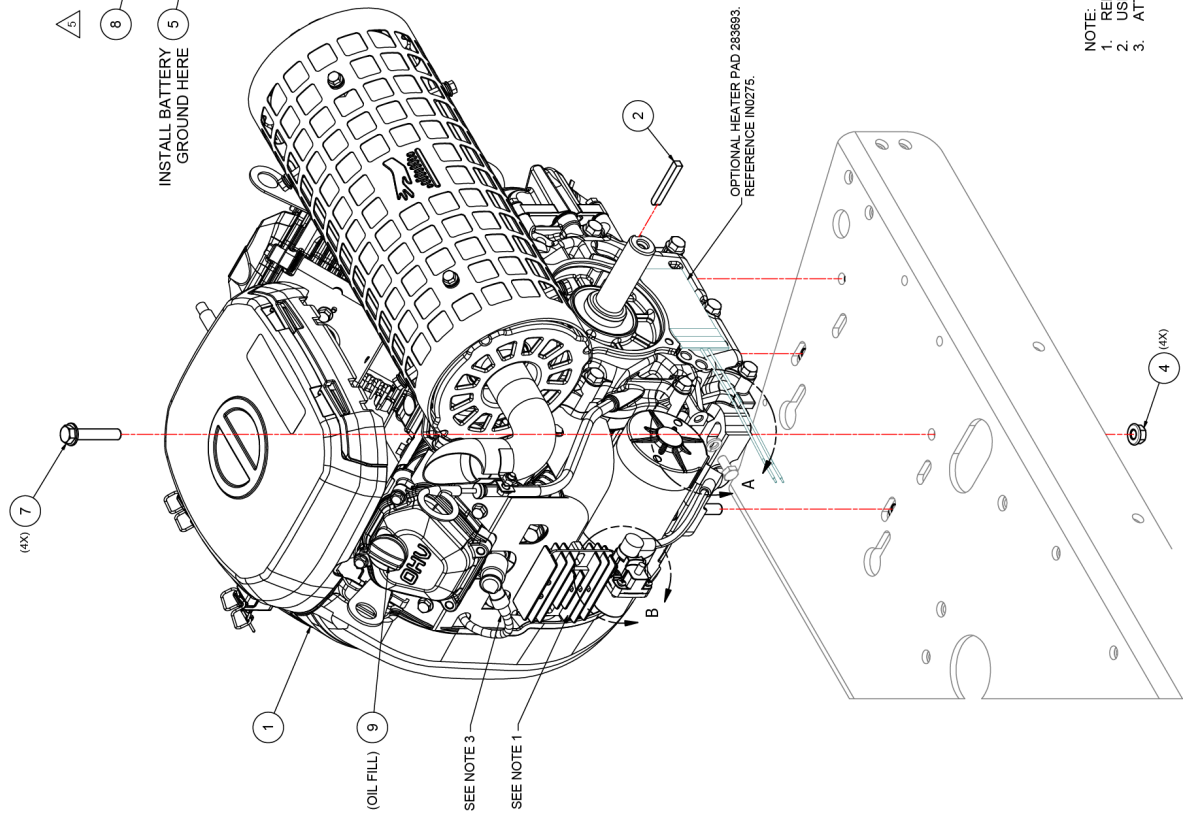
7.2 VANAIR® VNR680 20 HP ENGINE AND DRIVE PARTS

NOT VISIBLE:

- | | | |
|-----------------------|--------------------------------|------------------------------------|
| 5. 30A Fuse | 13. Solenoid, Starter Relay | 19. Charging Stator |
| 6. Fuel Pump | 14. Ignition Coil Module | 20. Engine Wire Harness |
| 7. Engine Gasket | 15. ECU Module | 25. Rocker Valve/Arm Assembly |
| 8. Valve Cover Gasket | 16. Throttle and Choke Control | 26. Push Rod Guide Plate |
| 9. Head Gasket | 17. Engine Carburetor | N/A (High Altitude Carburetor Kit) |



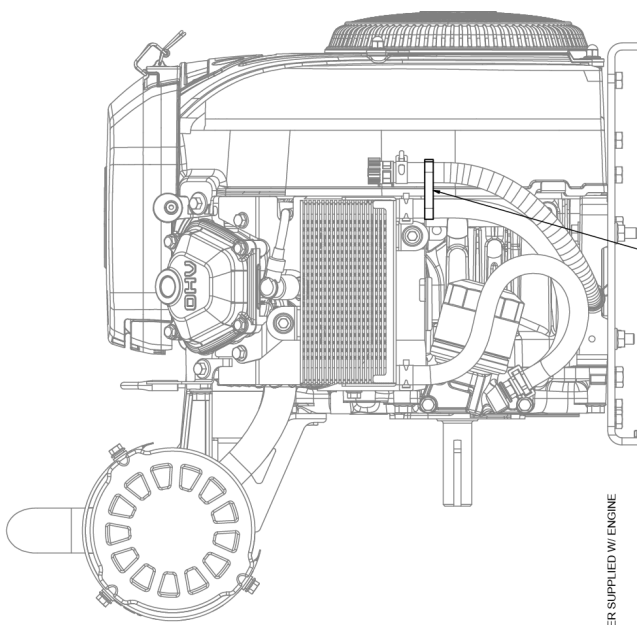
7.3 VANAIR® VNR680 20 HP ENGINE DETAILS



- NOTE:**
- 1. REMOVE RECTIFIER AND PLACE ON WELD TOWER.
 - 2. USE LIQUID ELECTRICAL TAPE ON OPEN CONNECTORS NEAR ENGINE.
 - 3. ATTACH HOUR METER WIRE THIS SIDE WRAPPED AROUND SPARK PLUG 4 TIMES.

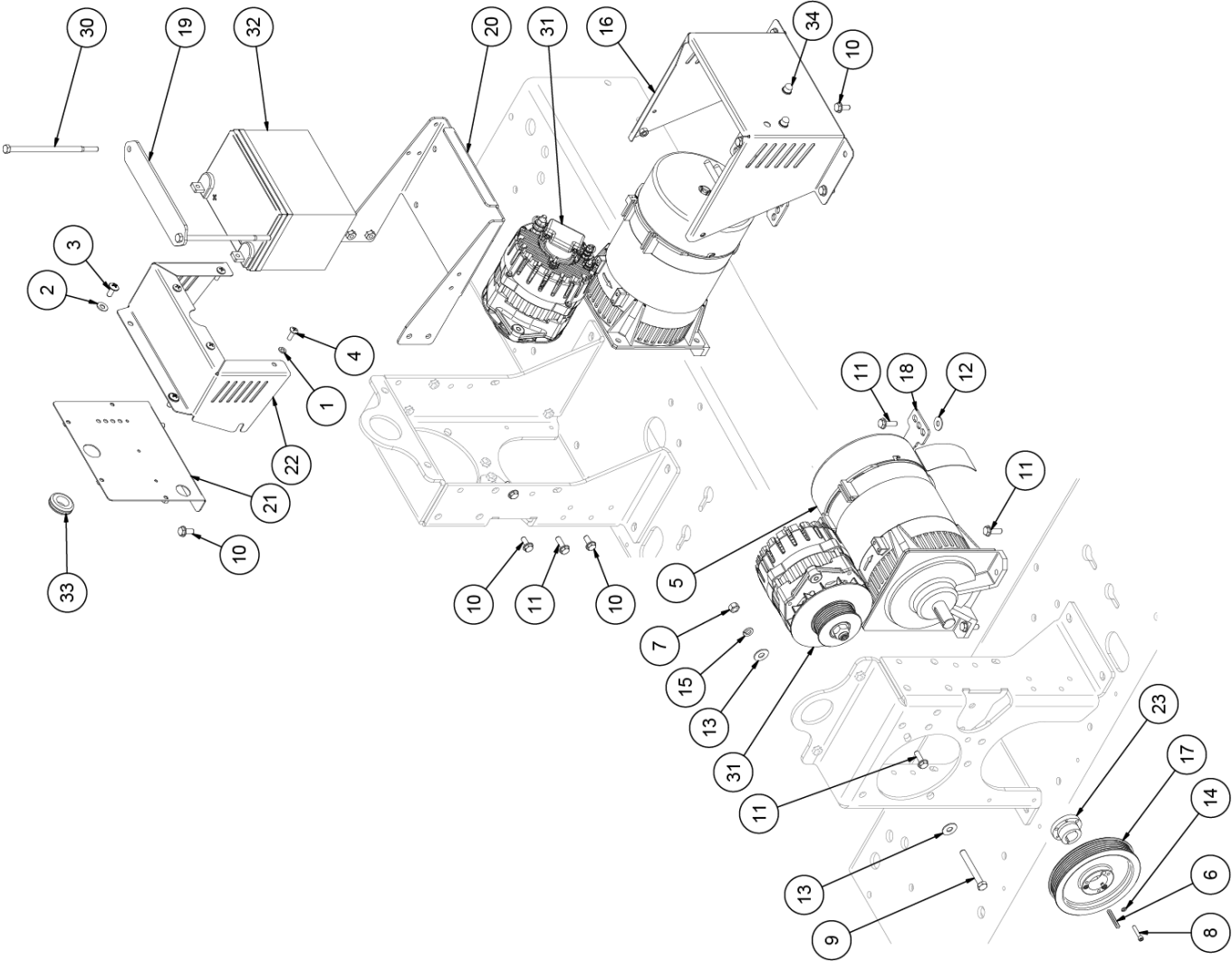
PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	283769	ENGINE, GAS VANAIR® VNR680 20 HP	1
2	284298	KEY, MACHINED 1/4 X 1/4 X 2 ROUNDED END	1
3	284382	STRAP, VELCRO 3/4 X 8" BLACK	1
4	825306-347	NUT, HEX FLANGE 3/8-16	4
5	828008-016	CAPSCREW, HEX 8mm 1.25 x 16	1
6	829704-075	SCREW, SER WASH 1/4-20 x 0.75	2
7	829706-200	SCREW, SER WASH 3/8-16 x 2	4
8	838808-200	WASHER, LOCK METRIC M8	1
9	844300-001	OIL MOTOR 10W-30	1.6 QTS

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NOTE: STRAP SUPPLIED WITH ENGINE. REPLACEMENT PART 284382

7.4 AIR N ARC® 150 ELECTRICAL SYSTEM - REMOTE CONTROL



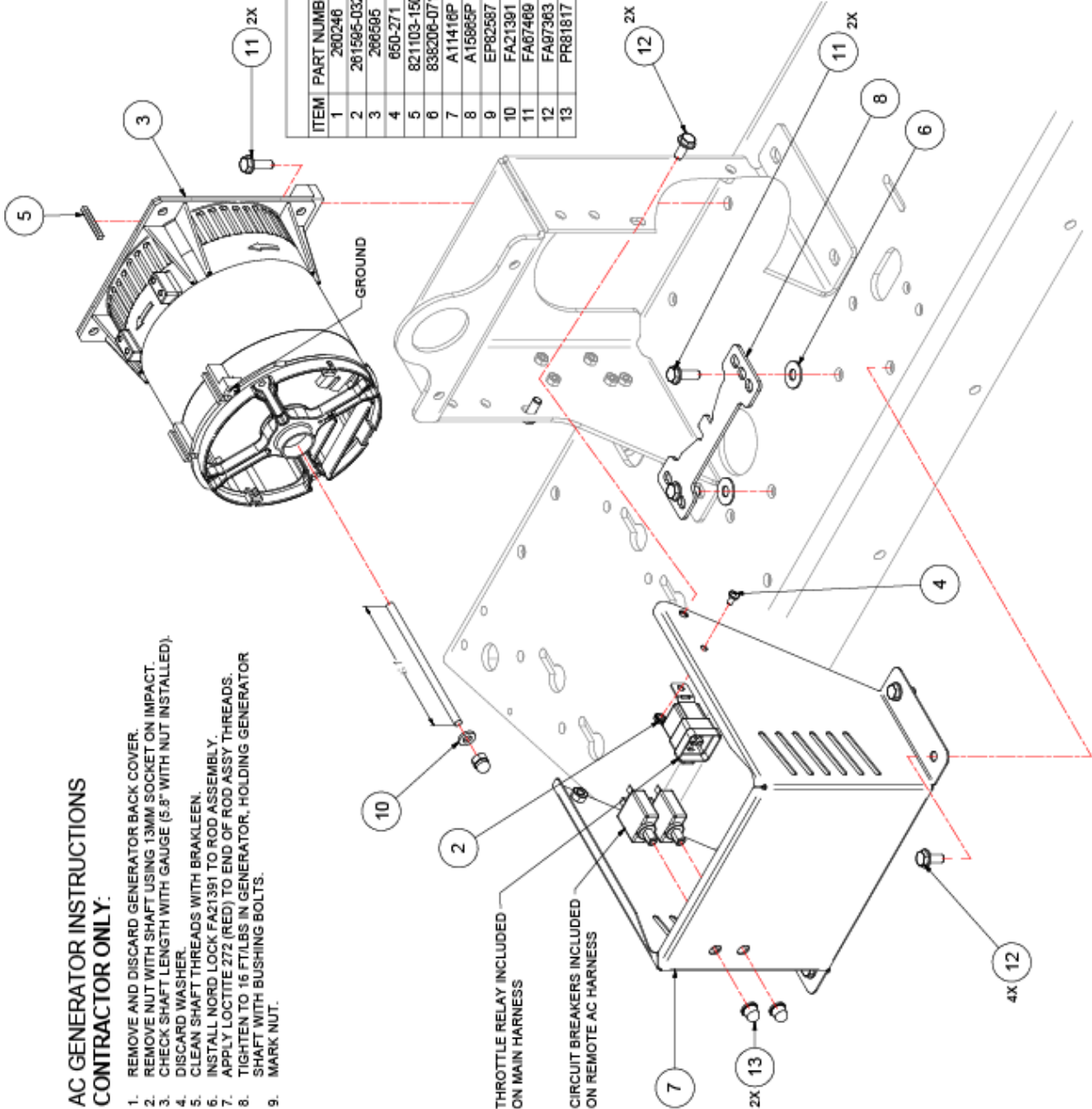
PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	262704	WASHER, NYLON FLAT 1/4	4
2	262943	WASHER, NYLON 5/16-18	2
3	262945	SCREW, TRUSS HD 5/16-18x3/4 SS	2
4	262953	SCREW, TRUSS 1/4-20 X 3/4 SS	4
5	266595	GENERATOR, 4.2 KW SENTRY	1
6	821103-150	KEY, SQUARE 3/16 x 3/16 x 1.5	1
7	825206-337	NUT, HEX 3/8-16	1
8	828302-100	CAPSCREW, S.H. #10-24UNC X 1	3
9	829106-300	CAPSCREW, HEX GR5 3/8-16X 3	1
10	829705-075	SCREW, SER WASH 5/16-18 x 0.75	10
11	829705-100	SCREW, SER WASH 5/16-18 x 1	9
12	838205-071	WASHER, FLAT 5/16	2
13	838206-071	WASHER, FLAT 3/8	2
14	838502-047	WASHER, LOCK #10	3
15	838506-094	WASHER, LOCK 3/8	1
16	A11416P	SHIELD, GENERATOR CON & PRO	1
17	A12924Z	SHEAVE, SERPENTINE, 6 GROOVE	1
18	A15865P	MOUNT, REAR GENERATOR	1
19	A16270P	MOUNT, BATTERY INDUSTRIAL, PRO	1
20	A16915P	TRAY, BATTERY	1
21	A17026P	MOUNT, MODULE	1
22	A17506P	SHIELD WELDER	1
23	DR23056Z	BUSHING, JA, QD, 7/8 DIA., 3 BO	1
24	EP270920	HARNES, ANA 150 18HP, REMOTE	1
25	EP55031	WELD CABLE, REMOTE ASSEMBLY	1
26	EP61281	TACH SENSOR WIRE	1
27	EP77939	BATTERY CABLE, NEGATIVE	1
28	EP82587	A/C REMOTE HARNESS	1
29	EP93227	BATTERY CABLE, POSITIVE	1
30	FA31508	CAPSCREW, HEX GR5 5/16-18 x 7	2
31	GE273695	WELDER, GENERATOR 190A DC ISO GRD	1
32	MA31821	BATTERY, 12 VOLT 35 AMP DEEP	1
33	PR22730	GROMMET, BLACK RUBBER, .875ID	1
34	PR81817	BOOT, BREAKER, PANEL MOUNT	2

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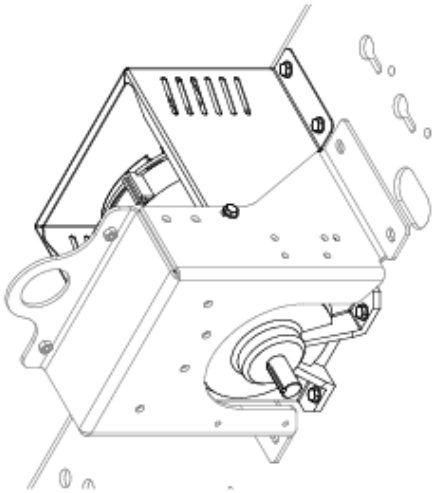
7.5 CONTRACTOR AC GENERATOR - REMOTE CONTROL

AC GENERATOR INSTRUCTIONS
CONTRACTOR ONLY:

- 1. REMOVE AND DISCARD GENERATOR BACK COVER.
- 2. REMOVE NUT WITH SHAFT USING 13MM SOCKET ON IMPACT.
- 3. CHECK SHAFT LENGTH WITH GAUGE (5.8" WITH NUT INSTALLED).
- 4. DISCARD WASHER.
- 5. CLEAN SHAFT THREADS WITH BRAKLEEN.
- 6. INSTALL NORD LOCK FA21391 TO ROD ASSEMBLY.
- 7. APPLY LOCITE 272 (RED) TO END OF ROD ASSY THREADS.
- 8. TIGHTEN TO 16 FT/LBS IN GENERATOR, HOLDING GENERATOR SHAFT WITH BUSHING BOLTS.
- 9. MARK NUT.

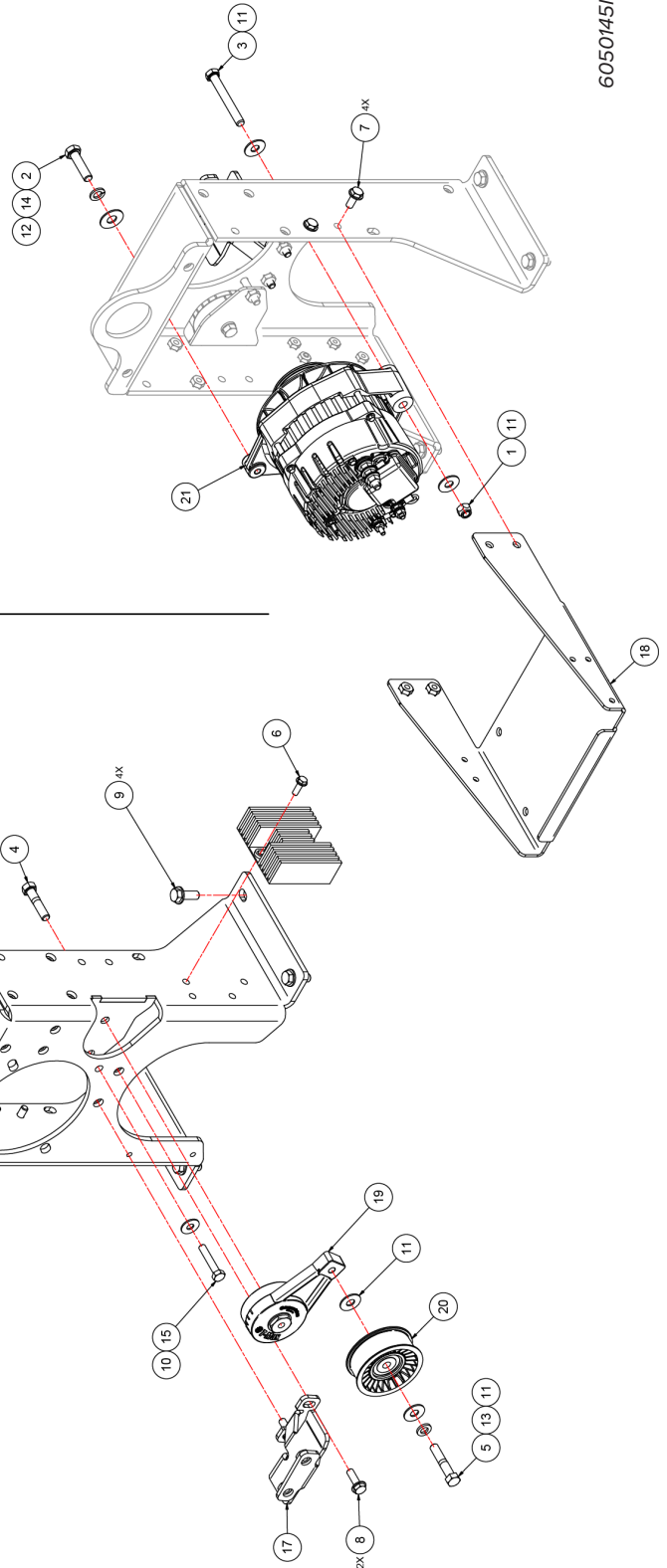
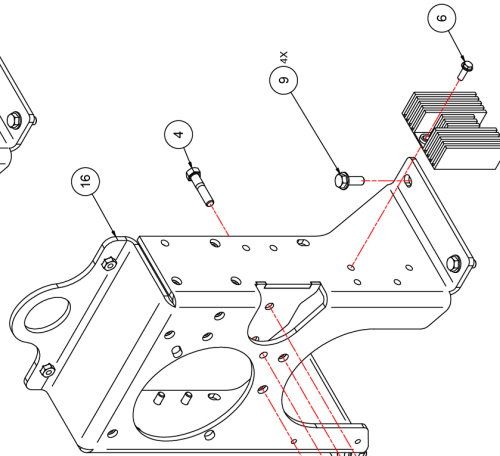
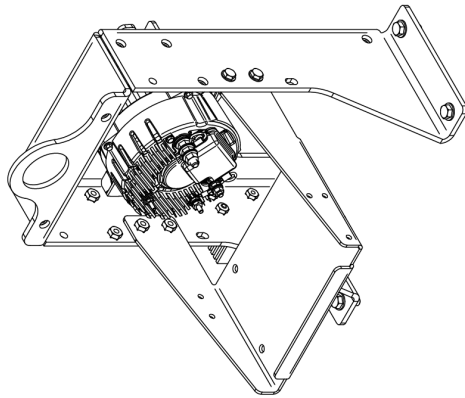
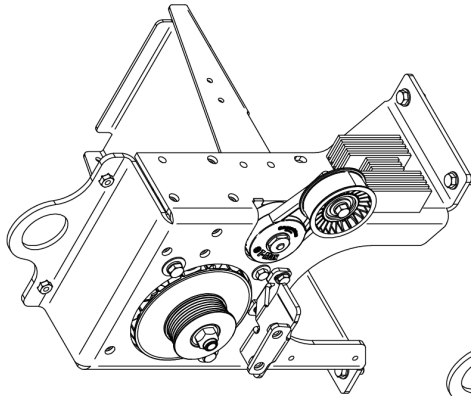


PARTS LIST		
ITEM	PART NUMBER	DESCRIPTION
1	260246	RELAY NO/NC WEATHERPROOF W/RESISTOR
2	261595-032	NUT, HEX #10-32 KEPS
3	266595	GENERATOR 4.2 KW SENTRY
4	650-271	SCREW 10-32 X 3/8" PPH
5	821103-150	KEY, SQUARE 3/16 x 3/16 x 1.5
6	838206-071	WASHER, FLAT 3/8
7	A11416P	SHIELD, GENERATOR CON & PRO
8	A15685P	HARNESS, REMOTE AC
9	EP82567	MOUNT, REAR GENERATOR
10	FA21391	WASHER, 5/16ID X 21/32OD, 2 PIECE LOCKING (NORD-LOCK)
11	FA67468	SCREW, SER WASH 5/16-18 X 1 GRADE 5 (ZINC PLATED)
12	FA97363	BOLT, FLANGE 5/16-18 x 3/4 SILVER
13	PR81817	BOOT, BREAKER, PANEL MOUNT
		QTY
		1
		1
		1
		1
		1
		2
		1
		1
		1
		4
		6
		2



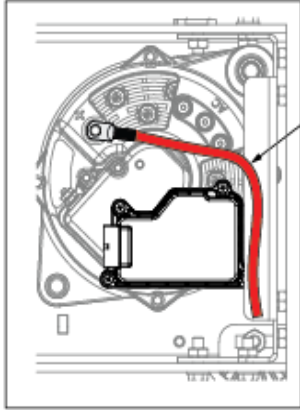
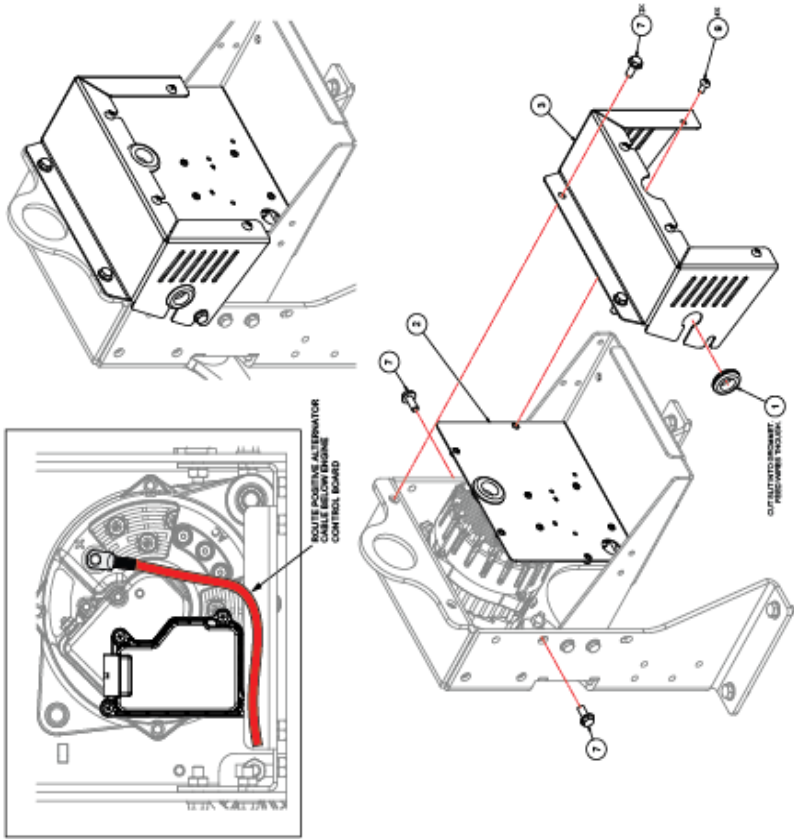
7.6 AIR N ARC® 150 TOWER ASSEMBLY

PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	825506-198	NUT, HEX LOCKING 3/8-16	1
2	828010-040	CAPSCREW, HEX 10mm 1.5 x 40	1
3	829106-300	CAPSCREW, HEX GR5 3/8-16 x 3	1
4	829406-175	CAPSCREW, HEX GR8 3/8-16 x 1.75	1
5	829406-200	CAPSCREW, HEX GR8 3/8-16 x 2	1
6	829704-075	SCREW, SER WASH 1/4-20 x 0.75	1
7	829705-075	SCREW, SER WASH 5/16-18 x 0.75	4
8	829705-100	SCREW, SER WASH 5/16-18 x 1	2
9	829706-100	SCREW, SER WASH 3/8-16 x 1	4
10	838205-071	WASHER, FLAT 5/16	1
11	838206-071	WASHER, FLAT 3/8	4
12	838207-071	WASHER, FLAT 7/16	1
13	838506-094	WASHER, LOCK 3/8	2
14	838810-220	WASHER, LOCK METRIC M10	1
15	843505-017	BOLT, TAP 5/16 X 1.75	1
16	A10758P	WELD TOWER, 8 & 30 GAL	1
17	A1274480	BRACKET, GUARD SUPPORT, TOP	1
18	A16915P	TRAY, BATTERY	1
19	DR25596	TENSIONER, ROTARY - SMALL	1
20	DR32958	IDLER, 1 WIDTH, 3DIA. FLAT	1
21	GE273695	WELDER, GENERATOR 190A DC ISO GRD	1

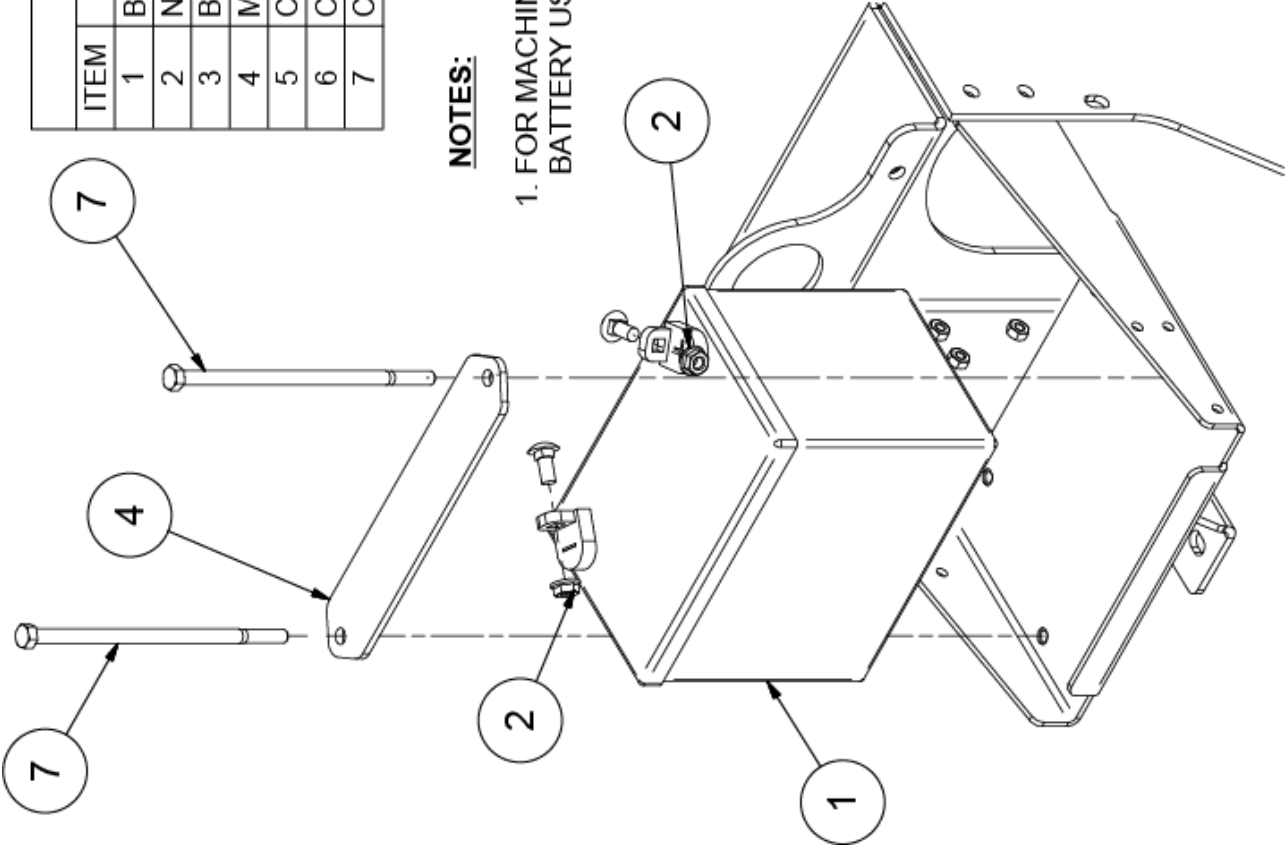


7.7 AIR N ARC® 150 REAR COVER ASSEMBLY - WELDER

PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	680-093	GROMMET, RUBBER 3/4 ID X 1-3/8 OD	1
2	284083	MOUNT, MODULE ANA 150V	1
3	284084	SHIELD, WELDER ANA 150V	1
4	284207	SPACER, NYLON 0.171 ID X 0.313 OD X 0.625 LG OFF-WHITE	4
5	825501-070	NUT, HEX LOCKING #8-32	4
6	829705-062	SCREW, SER WASH 5/16-18 x 0.625	2
7	829705-075	SCREW, SER WASH 5/16-18 x 0.75	4
8	831601-125	SCREW, ROUND HD #8-32 X 1 1/4 ZINC	4
9	831604-050	SCREW, ROUND HD PHILLIPS DRIVE 1/4-20 X 1/2	4
10	PR22730	GROMMET, BLACK RUBBER, .875ID	1



7.8 BATTERY AND PARTS



NOTES:

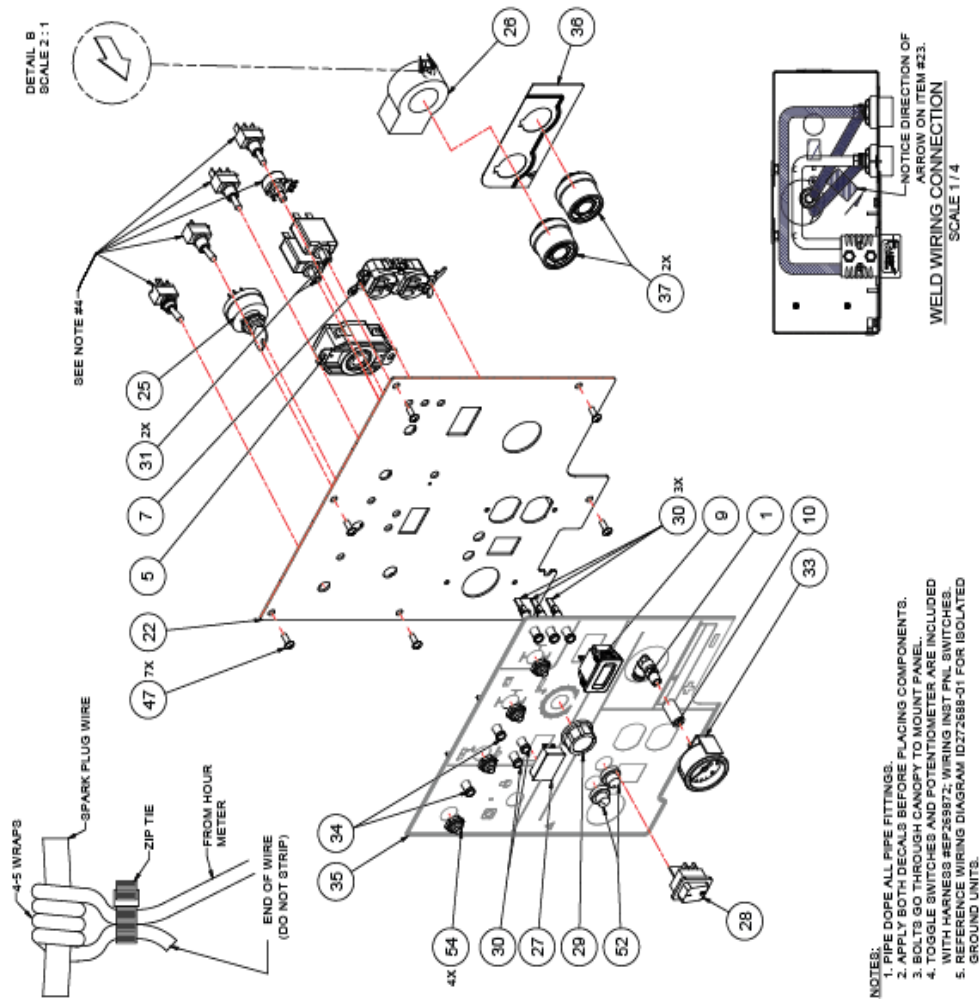
1. FOR MACHINES WITHOUT
BATTERY USE P/N PA6060172.

PARTS LIST			
ITEM	DESCRIPTION	PART NO	QTY
1	BATTERY, 12V GROUP U1LF 350 CCA	277481	1
2	NUT, HEX FLANGE 5/16-18	825305-283	2
3	BOLT, CARRIAGE 5/16-18UNC X 3/4" LG.	829505-075	2
4	MOUNT, BATTERY INDUSTRIAL, PRO	A16270P	1
5	CABLE, BATTERY NEGATIVE	EP77939	1
6	CABLE, BATTERY POSITIVE	EP93227	1
7	CAPSCREW, HEX GR5 5/16-18 x 7	FA31508	2

SERIAL
2°F),
A31821

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7.9 INSTRUMENT PANEL ASSEMBLY



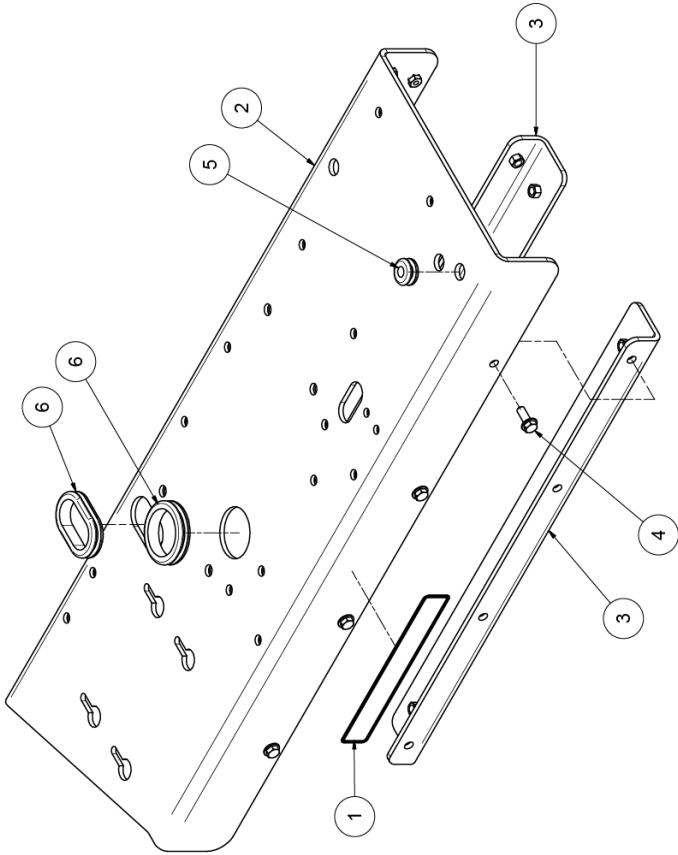
Instrument Panel Part Numbers
are located on the following page

TABLE 7D: INSTRUMENT PANEL ASSEMBLY

ITEM	DESCRIPTION	PART NUMBER	QTY	ITEM	DESCRIPTION	PART NUMBER	QTY
1	ELBOW, 1/4T x 1/8P PUSH-ON	261309	1	29	KNOB, PLASTIC, 1.3 DIA., 1/4 SHAFT	CO59489	1
2	ELBOW, 90 deg. PUSH ON 1/4T x 1/4P	261310	1	30	LAMP, INDICATOR, LED, GREEN	CO59966	5
3	WASHER, NYLON 5/16-18	262943	2	31	CIRCUIT BREAKER, 20 AMP	CO62617	2
4	TUBING, 1/4DIA., NYLON, 230 PSI X 1.25 FT	264480	1	32	SWITCH, TOGGLE, SPST, ON/OFF MOMENTARY, 15AMP, 12VDC	CO64073	1
5	RECEPTACLE, 240V/20A TURNLOC	264853	1	33	GAUGE, AIR, DRY, 0-200 PSI	CO89649	1
6	WASHER, FLAT REDUCING 3/4 x 1 ELECT.	267994	2	34	LAMP, INDICATOR, LED, RED	CO89659	2
7	RECEPTACLE, 120V/20A	270092	1	35	DECAL, FACEPLATE	DL272684	1
8	NUT, LOCK W/TOOTH LKWSHR, 1/4-20	270970	6	36	DECAL, CONTROL PANEL, WELDER	DL272786	1
9	METER, HOUR, INDUCTIVE SINGLE WIRE	286525	1	37	RECEPTACLE, PANEL 350 AMP	EL269932	2
10	COUPLING, PIPE 1/8	806230-005	1	38	RELAY, 500 AMP 12V COIL NO	EL270483	2
11	PLUG, PIPE 1/2	807800-020	2	39	HARNESS, WIRE INST PNL LIGHTS	EP269871	1
12	NUT, HEX #10-24	825202-130	4	40	HARNESS, WIRE INST PNL SWITCH	EP269872	1
13	CAPSCREW, HEX GR5 1/4-20 x 0.75	829104-075	6	41	HARNESS, WIRE INST. PNL DISPLAY	EP270315	1
14	CAPSCREW, HEX GR5 1/4-20 X 1 1/2 LG.	829104-150	2	42	HARNESS, WIRE INST PNL	EP272686	1
15	SCREW, SER WASH 5/16-18 x 0.75	829705-075	2	43	HARNESS, CHARGE CABLE CONNECTION	EP273388	1
16	WASHER, FLAT 1/4	838204-071	2	44	HARNESS, WELD CABLE MACH TO PANEL	EP273389	1
17	WASHER, LOCK 1/4	838504-062	6	45	CABLE, CHARGE RELAY JUMPER	EP273742	1
18	ELBOW, 37FL/90M #08 x 1/2	860208-050	1	46	HARNESS, A/C PANEL TO MACHINE	EP273939	1
19	PANEL, CONTROL BOX	A1269489	1	47	SCREW, PHILLIPS #10-32 X 1/2" LG. SS	FA33542	7
20	CLAMP, CONTROL PANEL CABLE	A1269491	1	48	PIPE BRASS, BULKHEAD 1/2 NPT	FI23542	2
21	COVER, CONTROL PANEL CABLES	A1269492	1	49	PIPE BRASS, CROSS, 1/2 NPT.	FI25405	1
22	FACEPLATE, CONTROL PANEL	A1272685	1	50	NIPPLE, PIPE XS CLOSE 1/2, BRASS	FI34220	2
23	FACEPLATE, CONTROL PANEL	A1272685-01	1	51	BUSHING, PIPE BRASS 1/4 x 1/2	FI75068	1
24	MODULE, WELD CONTROL SYS ASSY	CO269598-01	1	52	BOOT, CIRCUIT BREAKER 3/8	PR270548	2
25	SWITCH, IGNITION EFI ENGINES	CO269713	1	53	GROMMET, BLACK RUBBER, 2.25ID	PR74492	1
26	SENSOR, HALL EFFECT WELD CONTROLS	CO269900	1	54	SWITCH BOOT, WEATHER PROOF	PR77230	4
27	DISPLAY, PANEL AMP/VOLT METER LED	CO270314	1	55	HOSE, INSTRUMENT PANEL	TU278417	1
28	SWITCH, ROCKER 12V DPST CLEAR LIGHT	CO272343	1				

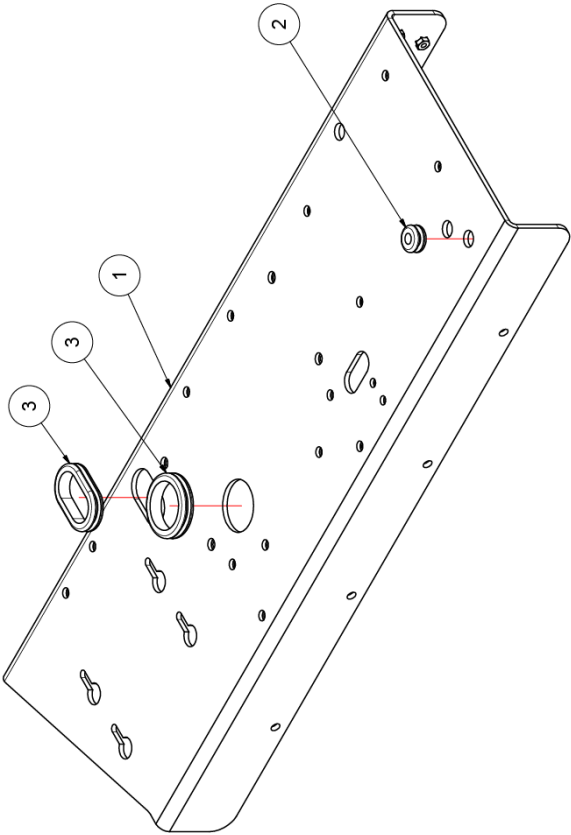
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.10 FRAME ASSEMBLY - PLATFORMS



ITEM	DESCRIPTION	PART NUMBER	QTY
1	DECAL, INFO VANAIR ¹	277074	1
2	PLATFORM, SKID	A1270964	1
3	MOUNT,SKID PRO/CONTRACTOR ¹	A16986P	2
4	SCREW, SER WASH 3/8-16 x 1'	FA86645	8
5	GROMMET, BLACK RUBBER, .50 ID	PR52720	1
6	GROMMET, BLACK RUBBER, 2.25ID	PR74492	2
¹ This part is not used with the 30 gallon model.			
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.			

PA6030096_r3



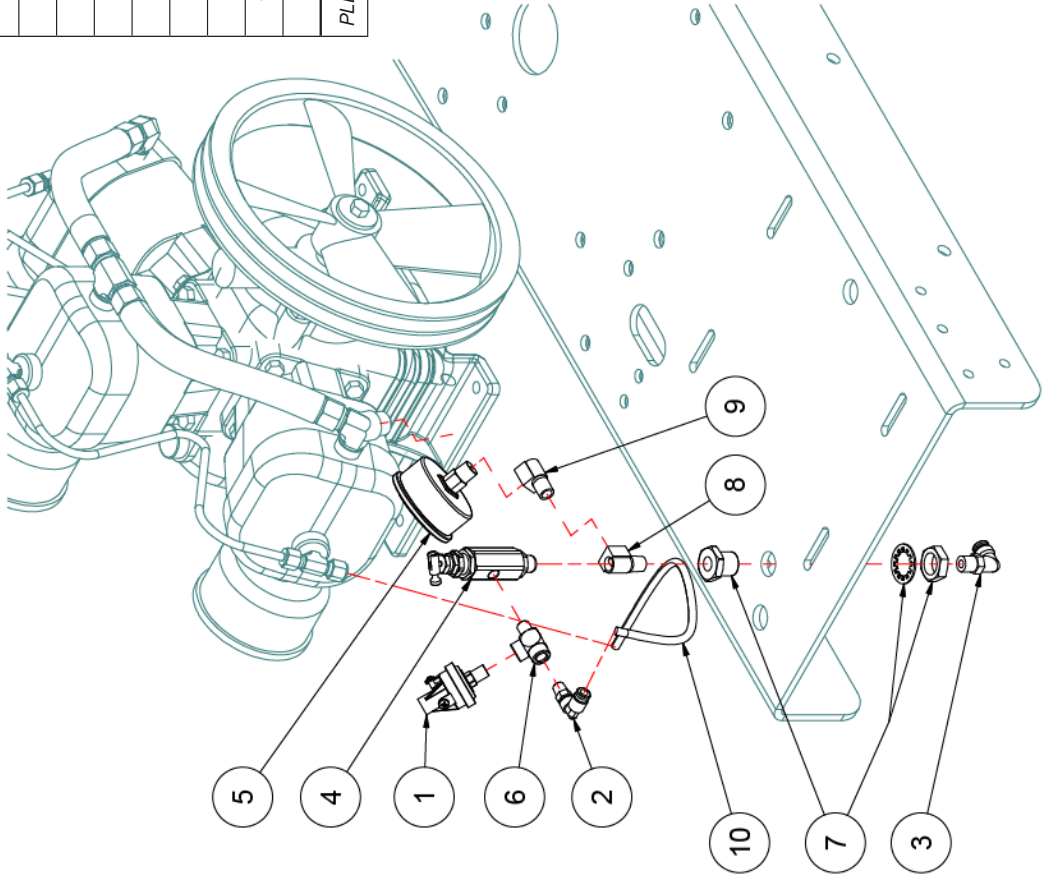
ITEM	DESCRIPTION	PART NUMBER	QTY
1	PLATFORM, 30 GAL AND SKID	A1270964	1
2	GROMMET, BLACK RUBBER, .50 ID	PR52720	1
3	GROMMET, BLACK RUBBER, 2.25ID	PR74492	2
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.			

PA6030122_r1

7.11 CONTROL ASSEMBLY - ALL 20 HP MODELS

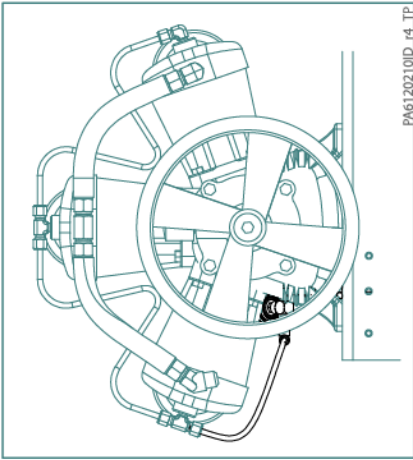
ITEM	DESCRIPTION	PART NUMBER	QTY
1	SWITCH, PRESSURE N.C. 10 PSI HOBBS	260818	1
2	ELBOW, 1/4T x 1/8P PUSH-ON	261309	1
3	ELBOW, 45 DEG #8 FJIC SWIVEL x #8 MJIC	265070-004	1
4	ELBOW, 5/16T X 1/4P PUSH ON	267187	1
5	VALVE, PILOT, 95-125 PSI, 1/4	CO25331	1
6	GAUGE, AIR 0-300 PSI 2.5 DIA 1/4 NPT BACK MTG	CO47028	1
7	TEE, MALE STREET 1/8 x 1/8 x 1/8	FI31152	1
8	PIPE BRASS, BULKHEAD 1/4 NPT	FI45068	1
9	TEE, STREET 1/4 NPT BRASS	FI53603	1
10	PIPE BRASS, 1/4 NPT, 90 DEG. STREET ELBOW	FI65532	1
11	TUBE, UNLOADER 1/4 COPPER	TU67293	.804 ft

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

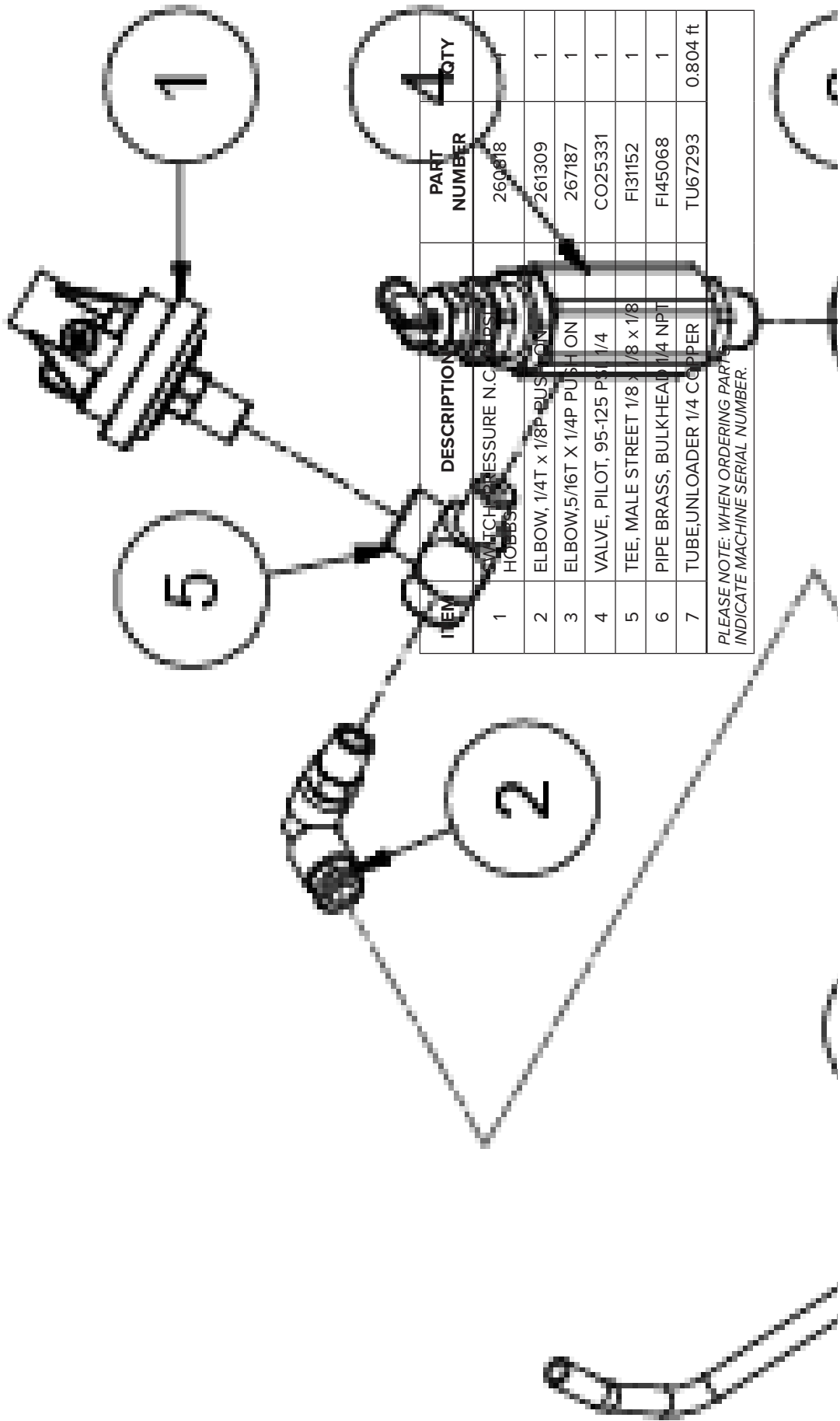


NOTES:

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



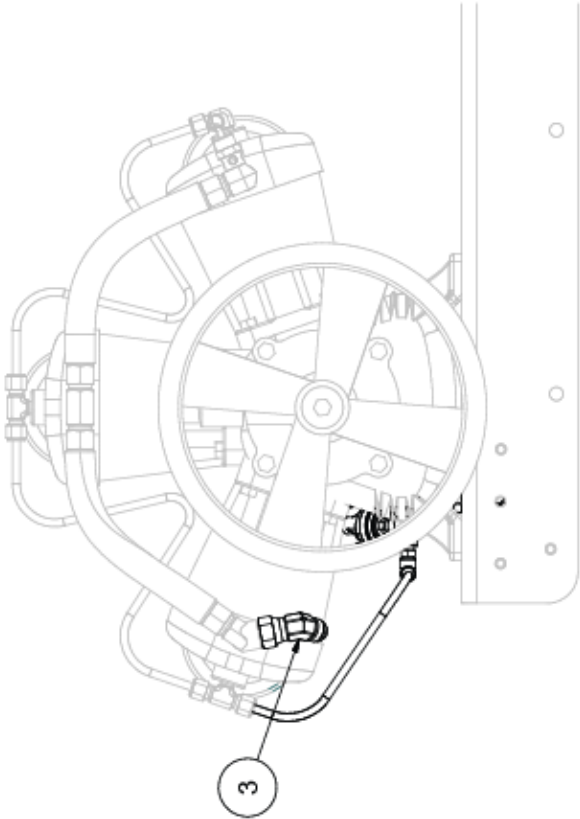
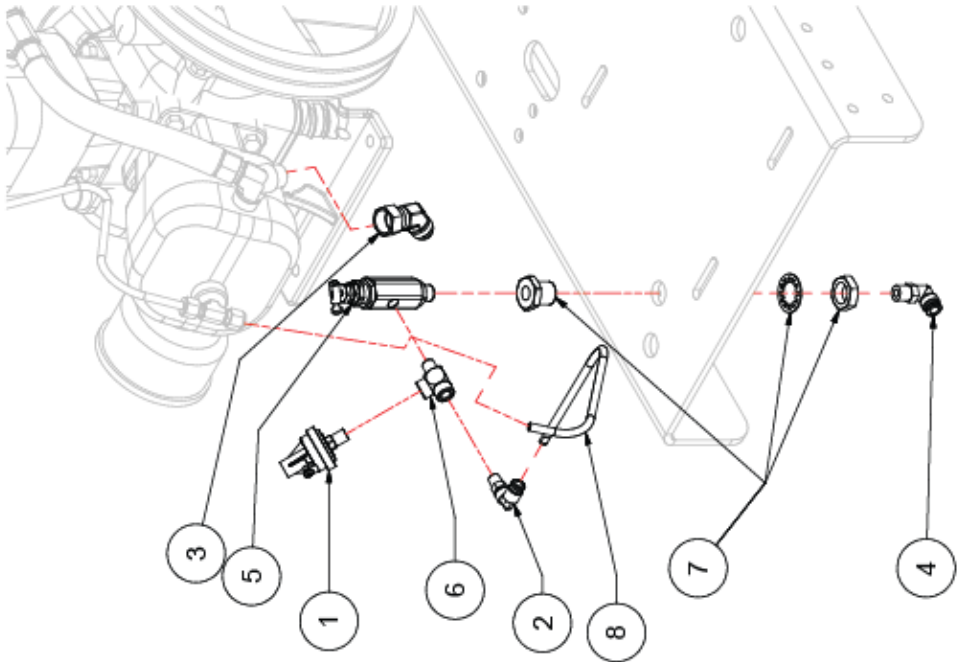
7.12 CONTROL ASSEMBLY - 30 GALLON MODELS



ITEM	DESCRIPTION	PART NUMBER	QTY
1	SWITCH, PRESSURE N.C. 125 PSI, 1/4" NPT, HOBBES	2600618	1
2	ELBOW, 1/4T x 1/8P PUSH ON	261309	1
3	ELBOW, 5/16T x 1/4P PUSH ON	267187	1
4	VALVE, PILOT, 95-125 PSI 1/4"	CO25331	1
5	TEE, MALE STREET 1/8 x 1/8	FI31152	1
6	PIPE BRASS, BULKHEAD 1/4 NPT	FI45068	1
7	TUBE, UNLOADER 1/4 COPPER	TU67293	0.804 ft
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.			

7.13 CONTROL ASSEMBLY - REMOTE PANEL SKID MOUNT MODELS

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	265070-004	ELBOW, 45 DEG #8 FJIC SWIVEL x #8 MJIC	1
4	267187	ELBOW, 5/16T X 1/4P PUSH ON	1
5	CO25331	VALVE, PILOT, 95-125 PSI, 1/4	1
6	F131152	TEE, MALE STREET 1/8 x 1/8 x 1/8	1
7	F145068	PIPE BRASS, BULKHEAD 1/4 NPT	1
8	TU67293	TUBING, COPPER 1/4 OD	1.15 ft



NOTES:

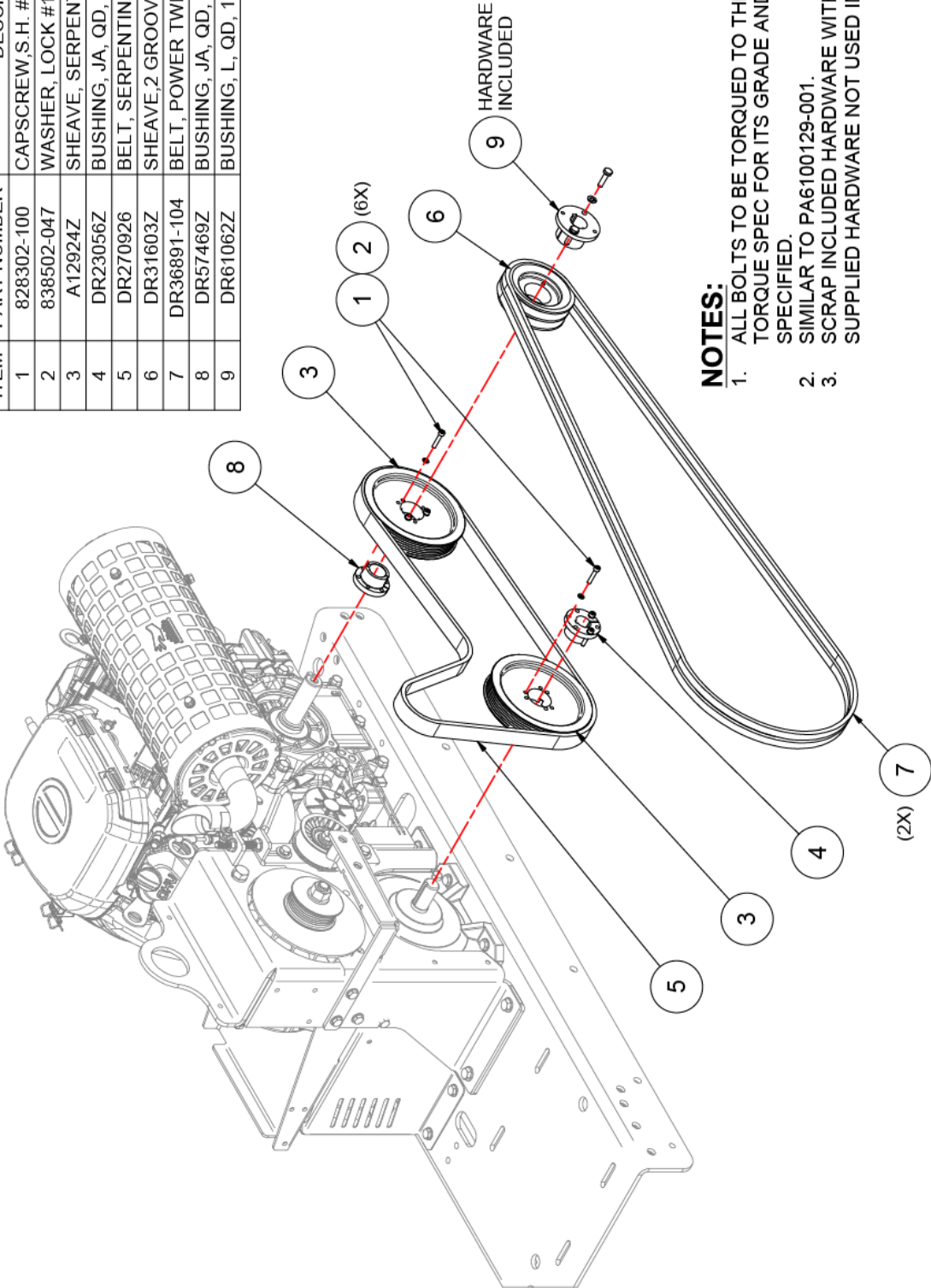
- 1. USE LOCTITE 567 OR EQUIVALENT HIGH TEMP THREAD SEALANT ON ALL MALE NPT THREADS.

7.14 DRIVE COMPONENTS VANAIR® VNR680 MODEL

PARTS LIST

ITEM	PART NUMBER	DESCRIPTION	QTY
1	828302-100	CAPSCREW,S.H. #10-24UNC X 1	6
2	838502-047	WASHER, LOCK #10	6
3	A12924Z	SHEAVE, SERPENTINE, 6 GROOVE	2
4	DR23056Z	BUSHING, JA, QD, 7/8 DIA., 3 BO	1
5	DR270926	BELT, SERPENTINE, 6 RIB X 56.0"	1
6	DR31603Z	SHEAVE, 2 GROOVE 3.95 SPLT TAPR	1
7	DR36891-104	BELT, POWER TWIST 104 LINKS	13.33 FT
8	DR57469Z	BUSHING, JA, QD, 1 DIA., 3 BO	1
9	DR61062Z	BUSHING, L, QD, 1 DIA, 2 BOLT	1

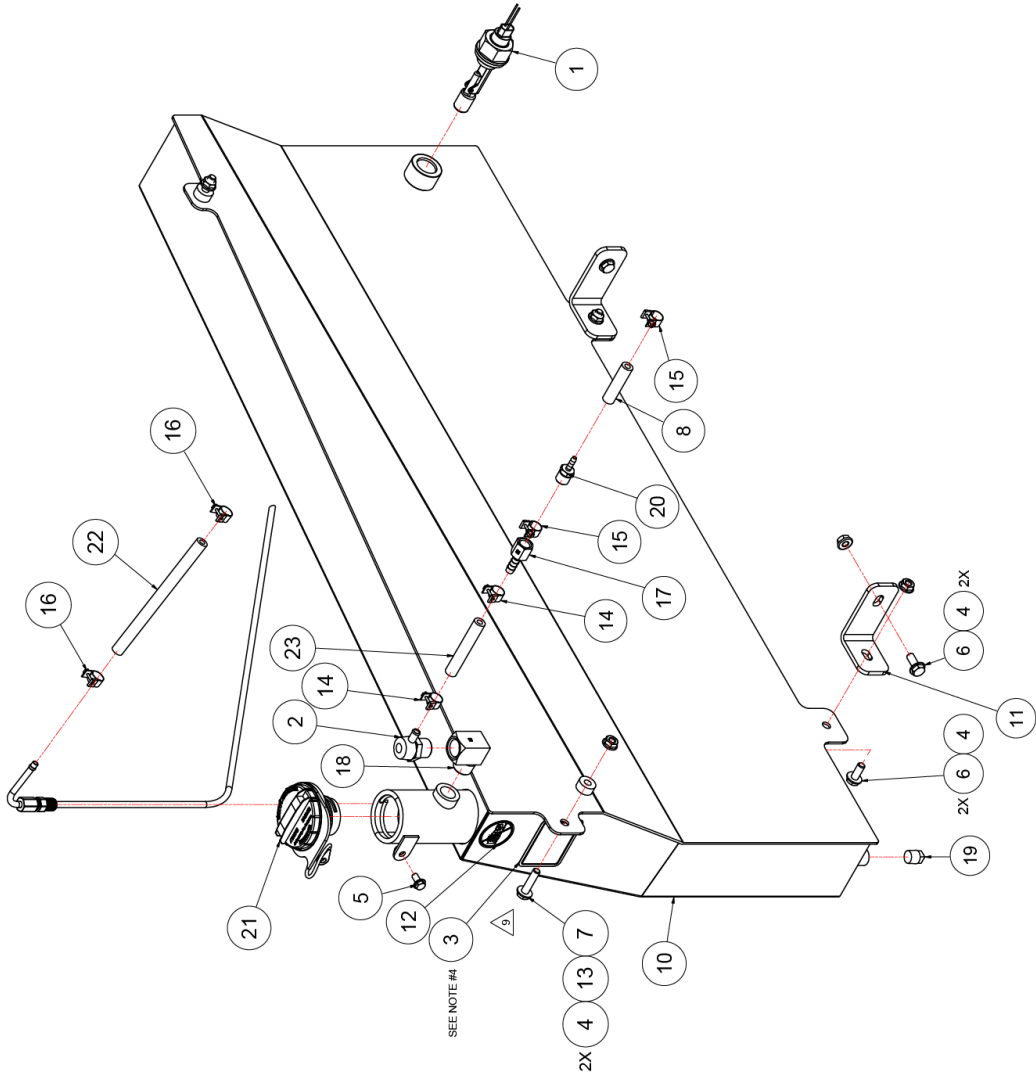
6100323D_r2



NOTES:

1. ALL BOLTS TO BE TORQUED TO THEIR RESPECTIVE SAE TORQUE SPEC FOR ITS GRADE AND SIZE UNLESS OTHERWISE SPECIFIED.
2. SIMILAR TO PA6100129-001.
3. SCRAP INCLUDED HARDWARE WITH ITEM NUMBER'S 4 & 8; SUPPLIED HARDWARE NOT USED IN ASSY.

7.15 FUEL TANK ASSEMBLY - 11.5 GALLON MODEL

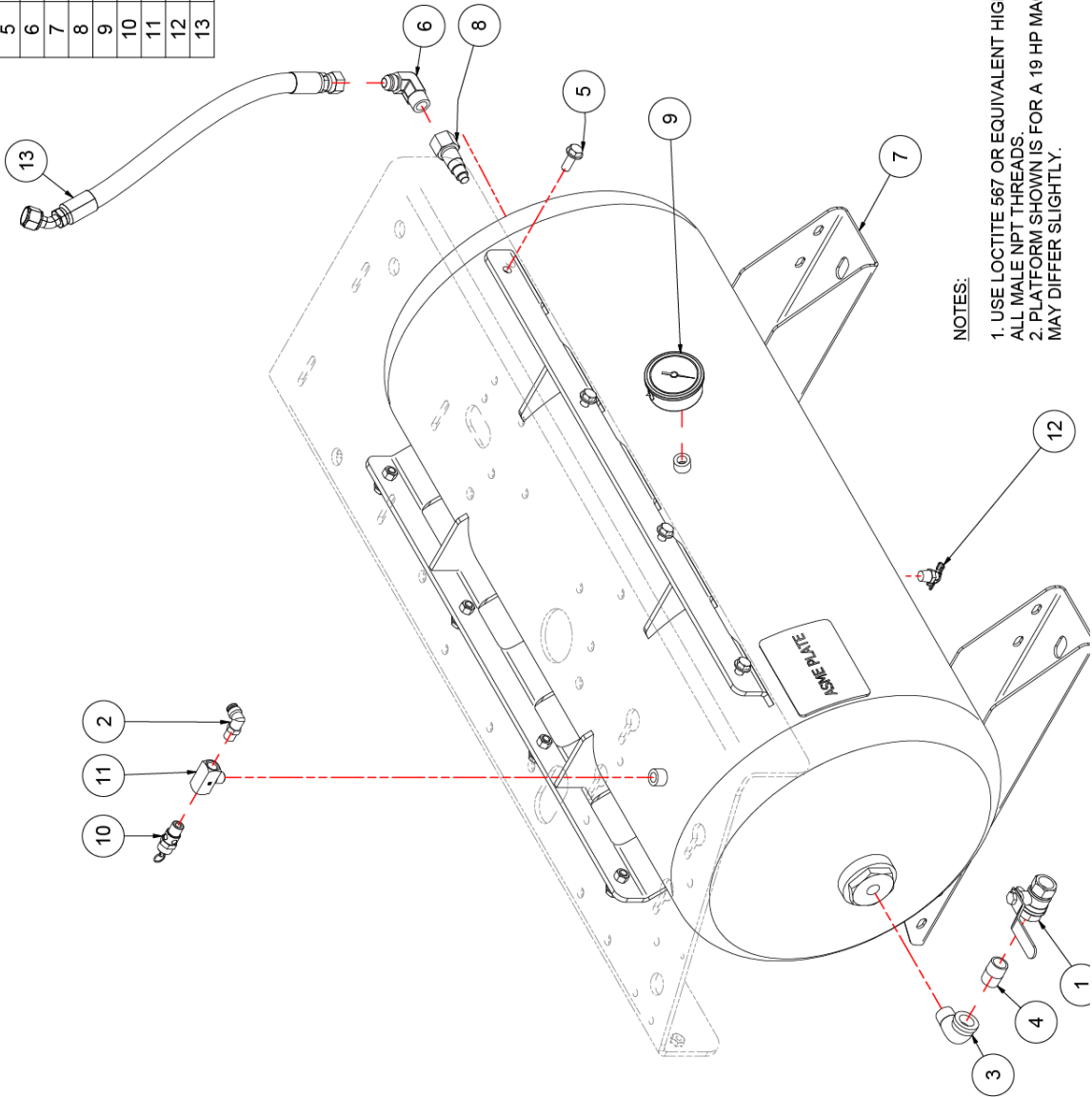


PARTS LIST		
ITEM	PART NUMBER	DESCRIPTION
1	269203	SWITCH, LIQUID LEVEL SIDE MOUNT
2	270956	VALVE, ROLLOVER FUEL VENT 1/2 NPT
3	271790-XXX	LABEL, EPA
4	825305-283	NUT, HEX FLANGE 5/16-18
5	829704-050	SCREW, SER WASH 1/4-20 x 0.5
6	829705-075	SCREW, SER WASH 5/16-18 x 0.75
7	829705-125	SCREW, SER WASH 5/16-18 x 1.25
8	842315-019	HOSE, FUEL LINE 3/16 IN-ID SAE-30R7 (FT)
9	A1270944	TUBE, FUEL PICK UP
10	A1271617	TANK, FUEL 11GAL
11	A17492P	MOUNT, FUEL TANK LOWER EXTENDED
12	DL270183	DECAL, NO E85 GAS CAP LOGO
13	FA273428	3/8 SPACER, 5/16 ID
14	FA38355	CLAMP, HOSE T-BOLT STYLE 13MM
15	FA66533	CLAMP, HOSE T-BOLT STYLE 9MM
16	FA86779	CLAMP, HOSE, T-BOLT STYLE, 12mm
17	FI271131	HOSEBARB, 1/4FNPT X 5/16 BRASS
18	FI77644	ELBOW, PIPE BRASS 1/2 INCH NPT
19	FI87905	PLUG, PIPE 1/4
20	FI92363	HOSEBARB, 1/4MNPT X 3/16 BRASS
21	HA271571	CAP, GAS VENTED TETHERED
22	TU269439	HOSE, FUEL 1/4 INCH SAEJ30R14T2 (FT)
23	TU270137	HOSE, FUEL 5/16 INCH SAEJ30R14T2 (FT)
		QTY
		1
		1
		1
		6
		1
		4
		2
		0.17 FT
		1
		1
		2
		1
		2
		2
		2
		1
		1
		1
		1
		1
		1 FT
		0.33 FT

- NOTES:
- CAPACITY: 11.5 GALLONS.
 - USE LOCTITE #567, GASKET SEALER FOR ALL FITTINGS.
 - TANK MUST BE THOROUGHLY LEAK TESTED BEFORE SHIPPING.
 - PLUG ALL HOSE FITTINGS AND PRESSURIZE TO 2 PSI.
 - BRUSH WITH SOAPY WATER INTO ALL FITTINGS AND INSPECT FOR LEAKS.
 - REPAIR ALL LEAKS AN RE-PRESSURIZE AND INSPECT TANK.
 - 271790 'XXX' RELATIVE TO MANF YEAR FOR EXAMPLE '025' IS FOR 2025

7.16 AIR TANK ASSEMBLY - 30 GALLON STAND ALONE

PARTS LIST		
ITEM	PART NUMBER	DESCRIPTION
1	260448	VALVE, SERVICE 1/2
2	267187	ELBOW, 5/16T X 1/4P PUSH ON
3	801115-020	ELBOW, PIPE STREET 1/2
4	822208-000	NIPPLE, PIPE XS CLOSE 1/2
5	829706-100	SCREW, SER WASH 3/8-16 X 1 GR5
6	860208-050	ELBOW, 37FL/90M #08 x 1/2
7	A18443P	TANK, 30 GAL, W/ RAILS
8	CO35980	VALVE, CHECK 1/2 NPT M-F
9	CO47028	GAUGE, AIR 0-200 PSI 2.5DIA 1/4NPT BACK MTG
10	CO93614	VALVE, RELIEF 150 PSI 1/4 NPT MALE
11	FI41491	TEE, BRASS BRANCH TEE 1/4" NPT
12	FI74953	VALVE, PETCOCK VALVE, 1/4 NPT
13	TU278067	HOSE AIR CHARGE PRO 30 GALLON

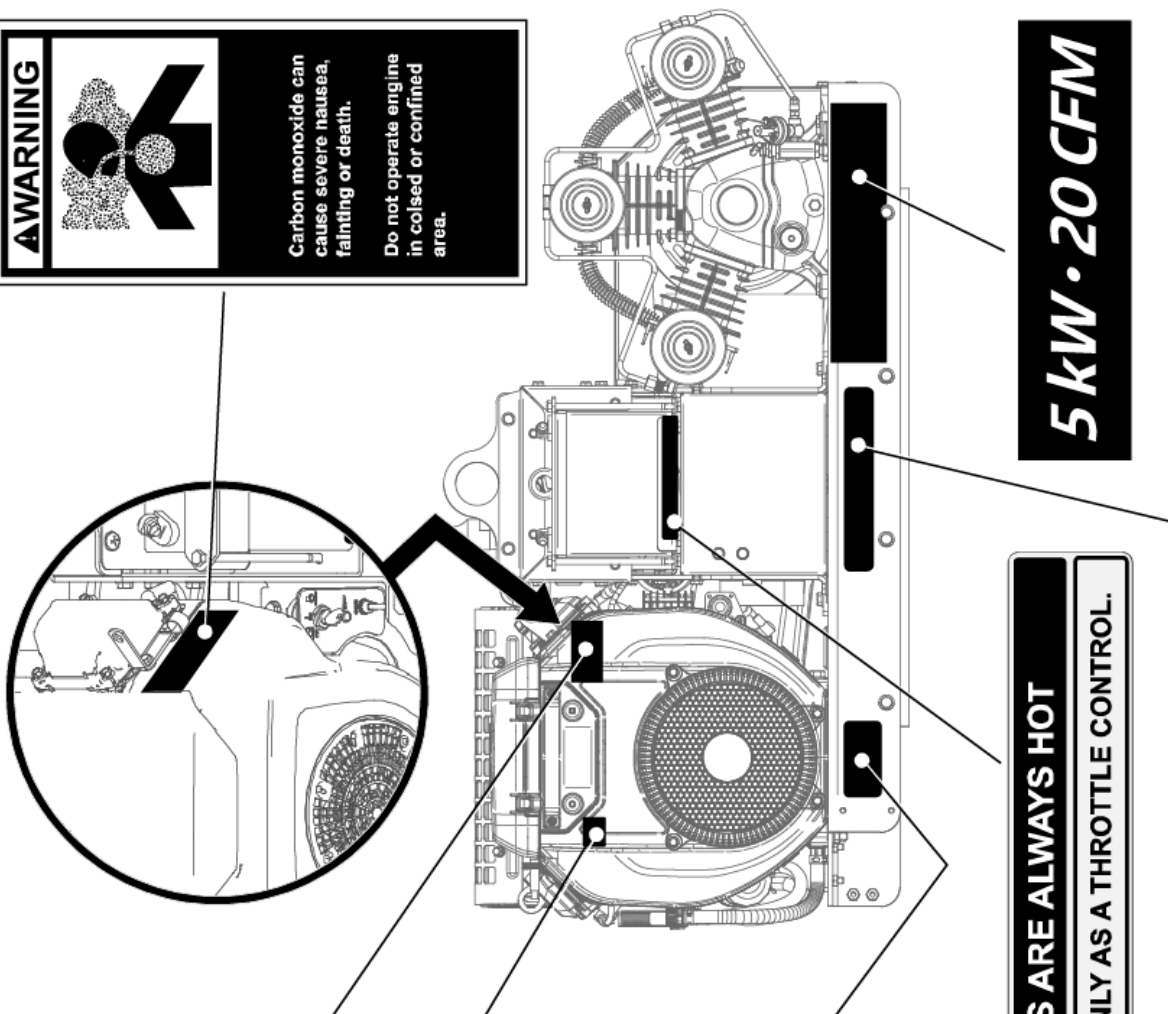


NOTES:

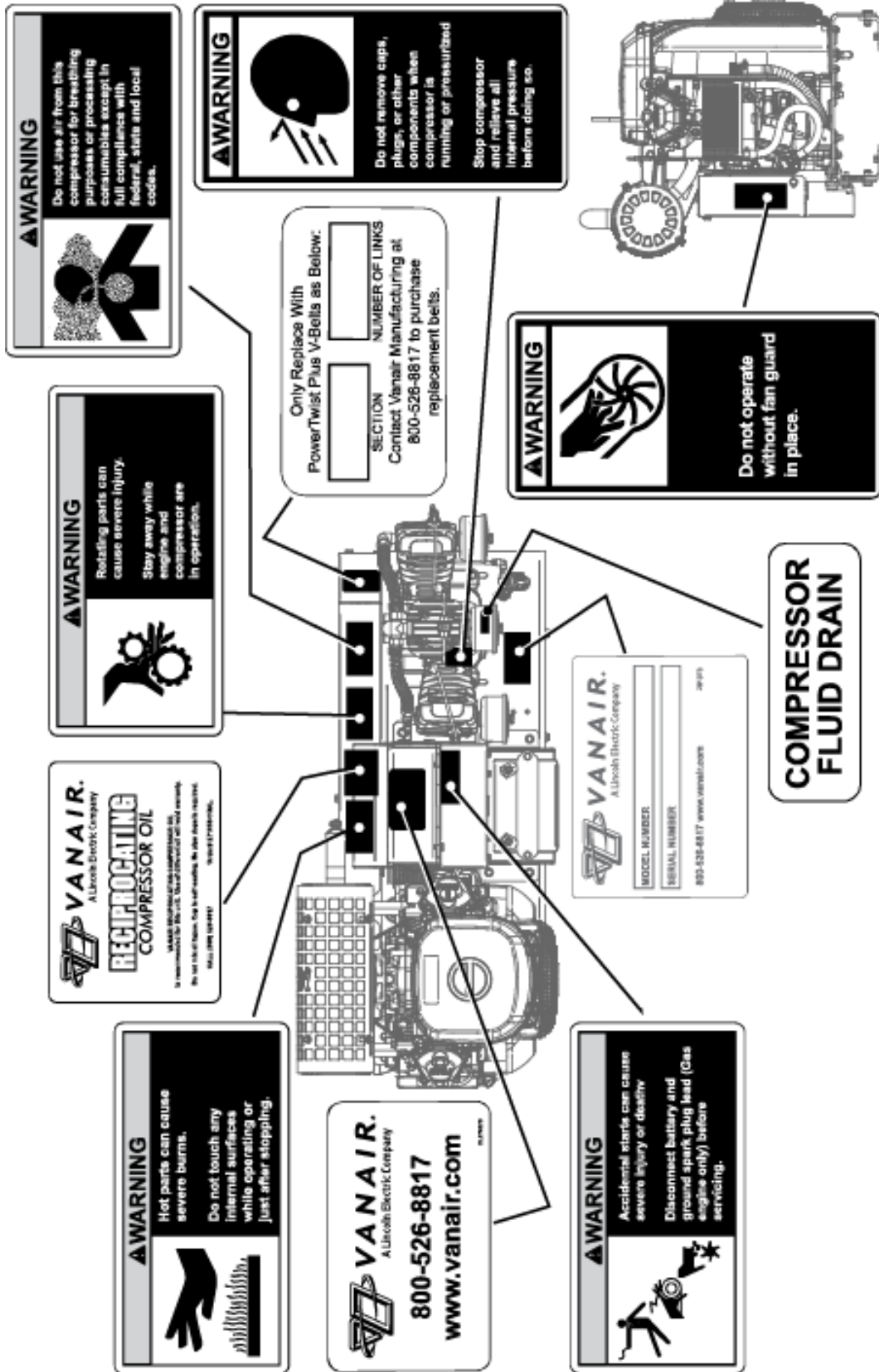
- 1. USE LOCTITE 567 OR EQUIVALENT HIGH TEMP THREAD SEALANT ON ALL MALE NPT THREADS.
- 2. PLATFORM SHOWN IS FOR A 19 HP MACHINE. 14 HP PLATFORMS MAY DIFFER SLIGHTLY.



7.18 DECALS/LABELS 1 OF 3



7.19 DECALS/LABELS 2 OF 3



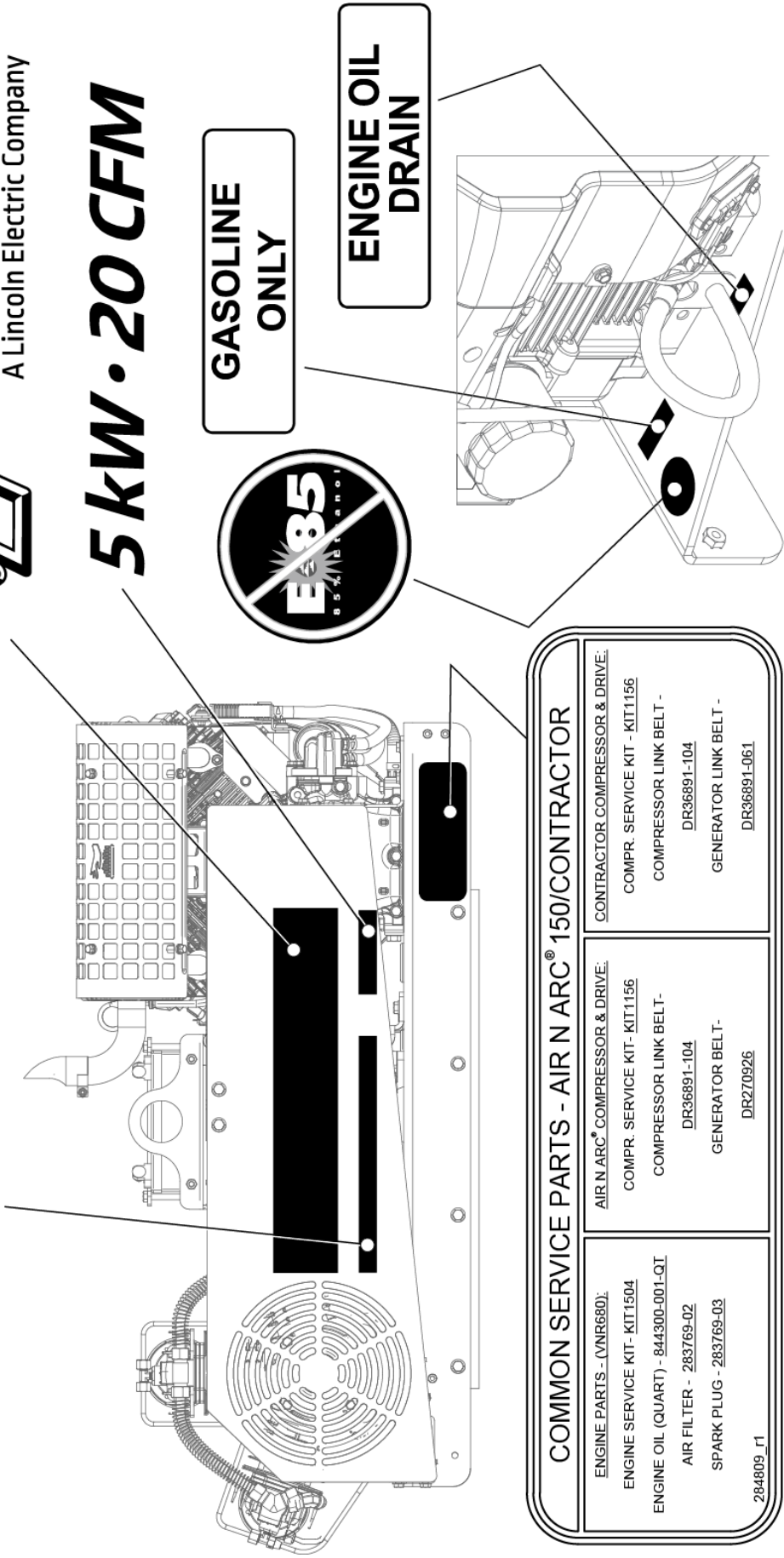
7.20 DECALS/LABELS 3 OF 3

AIR N ARC®
150 or

CONTRACTOR®



5 kW • 20 CFM



COMMON SERVICE PARTS - AIR N ARC® 150/CONTRACTOR		
ENGINE PARTS - (VNR680): ENGINE SERVICE KIT - KIT1504 ENGINE OIL (QUART) - 844300-001-QT AIR FILTER - 283769-02 SPARK PLUG - 283769-03 284809_r1	AIR N ARC® COMPRESSOR & DRIVE: COMPR. SERVICE KIT - KIT1156 COMPRESSOR LINK BELT - DR36891-104 GENERATOR BELT - DR270926	CONTRACTOR COMPRESSOR & DRIVE: COMPR. SERVICE KIT - KIT1156 COMPRESSOR LINK BELT - DR36891-104 GENERATOR LINK BELT - DR36891-061

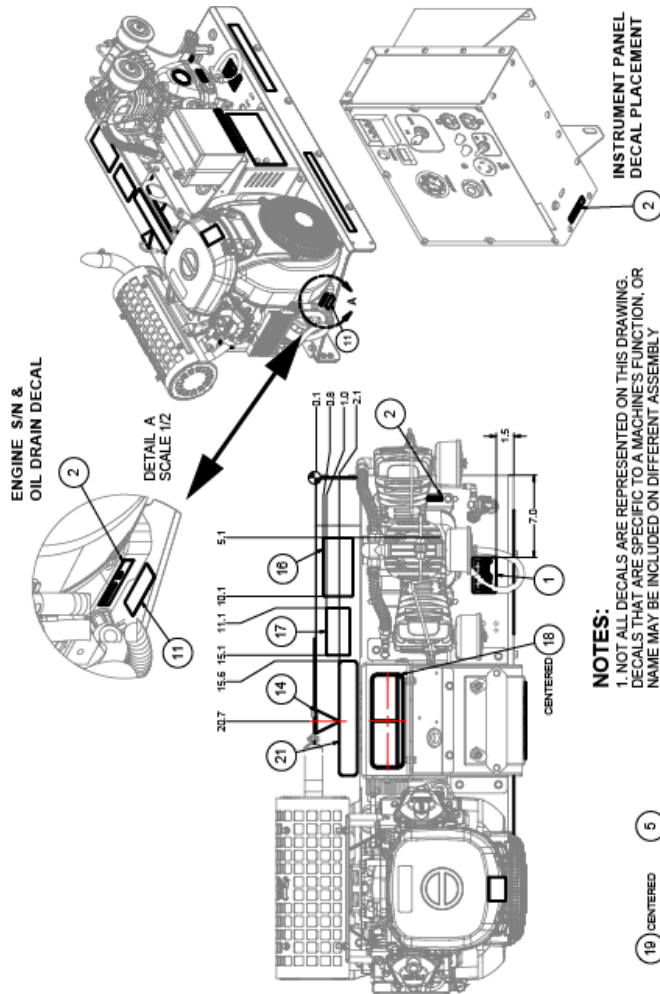
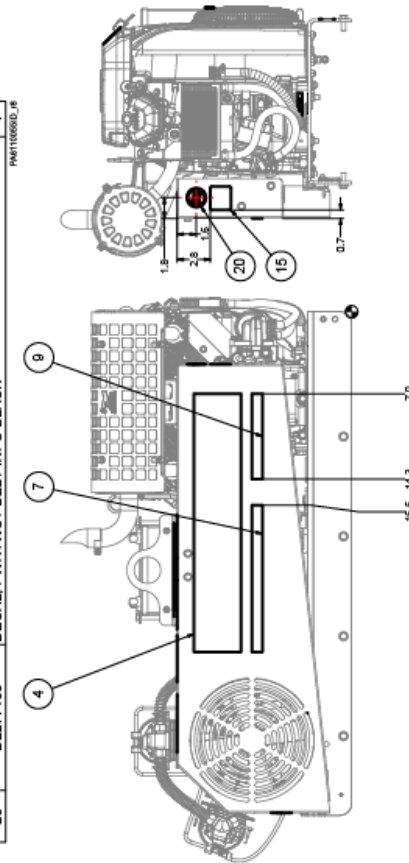
7.21 DECAL LOCATIONS - TYPE I

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)	3
3	DL280684	DECAL, COMPRESSOR LOGO, ROUND	1

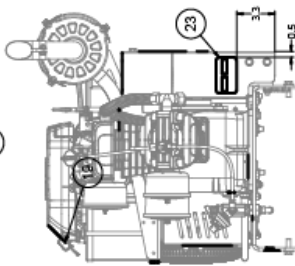
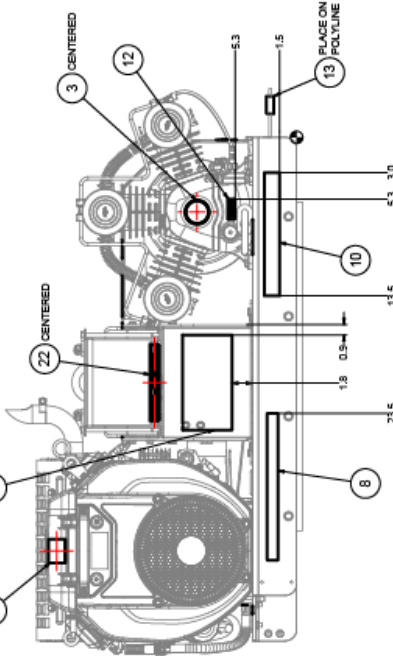
PARTS LIST (SET: 286610)			
ITEM	PART NUMBER	DESCRIPTION	QTY
4	275058-C	LOGO, VANAIR HRZ - A LINCOLN ELECTRIC CO (22 X 4)	1
5	275057-C	LOGO, VANAIR STK - A LINCOLN ELECTRIC CO (8.1 X 4.4)	1
6	277074	DECAL, INFO VANAIR	1
7	277782-A	LOGO, CONTRACTOR (12.5X0.9)	1
8	277782-D	LOGO, CONTRACTOR (12.5X0.9)	1
9	277783-A	BADGE, CONTRACTOR (7.3X0.9)	1
10	277783-B	BADGE, CONTRACTOR (7.3X0.9)	1

PARTS LIST (SHEET: DL276007)			
ITEM	PART NUMBER	DESCRIPTION	QTY
11	275063	DECAL, ENGINE OIL DRAIN	1
12	275064	DECAL, COMPRESSOR FLUID DRAIN	1
13	280076	DECAL TO AIR TANK	1
14	281046	DECAL, WARNING HOT TRIANGLE 2.0"	1
15	281813	DECAL, WARNING FUEL FILL - GAS ONLY	1
16	282127	DECAL, WARNING TRIANGLES ONLY	1
17	282459	DECAL, DANGER DO NOT OPERATE IN AN ENCLOSED SPACE (4" X 2")	1
18	284600	DECAL, REPLACEMENT PARTS VNR680	1
19	285620	DECAL, VANLINKED QR CODE CONTRACTOR	1
20	DL270183	DECAL, NO E85 GAS CAP LOGO	1
21	DL271081	DECAL, INFO VANAIR	1
22	DL273256	DECAL, WARNING SWITCHES HOT/ GEN NOTICE	1
23	DL277133	DECAL, PWRTWIST BELT INFO BLACK	1

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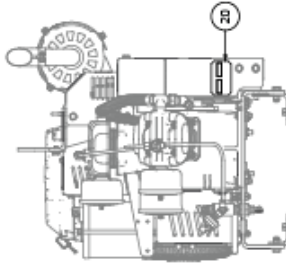
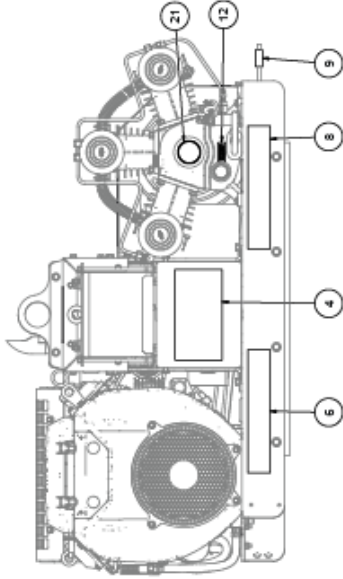
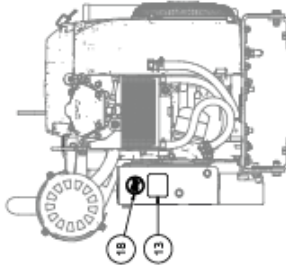
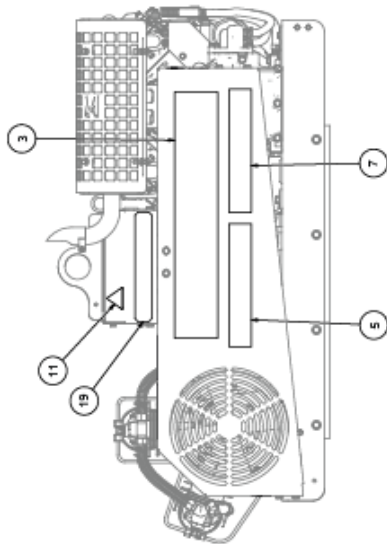
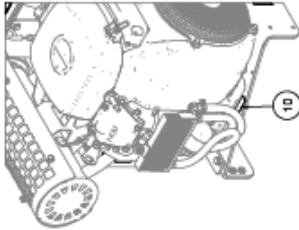
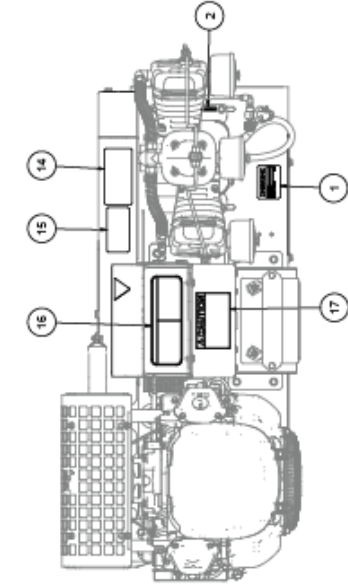
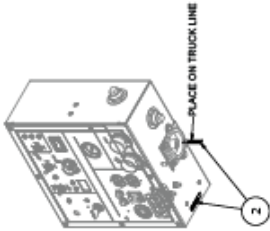


NOTES:
1. NOT ALL DECALS ARE REPRESENTED ON THIS DRAWING. DECALS THAT ARE SPECIFIC TO A MACHINE'S FUNCTION, OR NAME MAY BE INCLUDED ON DIFFERENT ASSEMBLY



7.22 DECALS - LOCATION AND IDENTIFICATION (1 OF 2)

PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	281373-01	DECAL, VANAIR SERIAL TAG (MODEL/SERIAL # ONLY)	1
2	281373-02	DECAL, VANAIR SERIAL TAG (MODEL/SERIAL # ONLY) 1 OF 3	3
PARTS LIST (SET: 285385)			
ITEM	PART NUMBER	DESCRIPTION	QTY
3	275056-C	LOGO, VANAIR HRZ - MOBILE POWER SOLUTIONS (22 X 3.9)	1
4	275057-C	LOGO, VANAIR STK - MOBILE POWER SOLUTIONS (8.1 X 4.2)	1
5	277616-C	LOGO, AIR N ARC 150 (11 X 2)	1
6	277616-D	LOGO, AIR N ARC 150 (11 X 2)	1
7	277617-A	BADGE, AIR N ARC 150 (11 X 2)	1
8	277617-B	BADGE, AIR N ARC 150 (11 X 2)	1
PARTS LIST (SHEET: DL276007)			
ITEM	PART NUMBER	DESCRIPTION	QTY
9	260079	DECAL TO AIR TANK	1
10	275063	DECAL, ENGINE OIL DRAIN	1
11	281046	DECAL, WARNING HOT TRIANGLE 2.0"	1
12	275064	DECAL, COMPRESSOR FLUID DRAIN	1
13	281613	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	284809	DECAL, REPLACEMENT PARTS VNR680	1
17	DL270120	DECAL, CAUTION ANA	1
18	DL270163	DECAL, NO E85 GAS CAP LOGO	1
19	DL271081	DECAL, INFO VANAIR	1
20	DL277133	DECAL, PARTWIST BELT INFO BLACK	1
PARTS LIST (COMPRESSOR SUBBOM)			
ITEM	PART NUMBER	DESCRIPTION	QTY
21	DL269684	DECAL, COMPRESSOR LOGO, ROUND	1



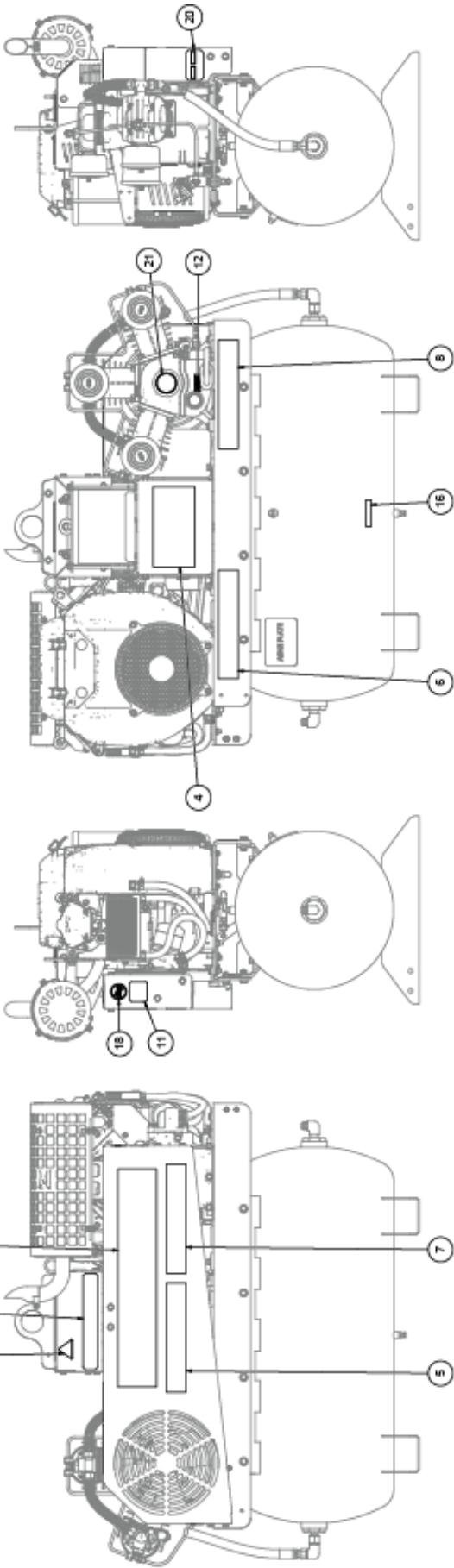
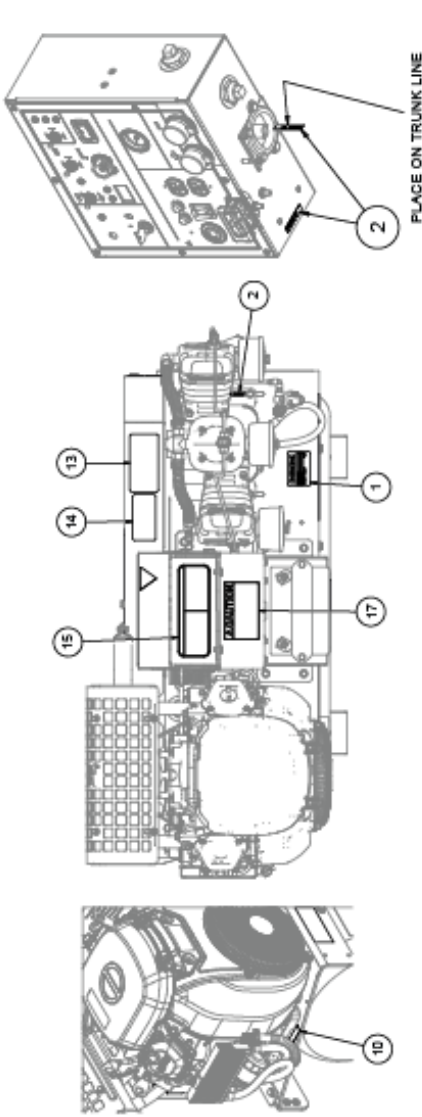
⚠ WARNING

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

7.23 DECALS - LOCATION AND IDENTIFICATION (2 OF 2)

PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	281373-01	DECAL VANAIR SERIAL TAG (MODEL/SERIAL # ONLY)	1
2	281373-02	DECAL VANAIR SERIAL TAG (MODEL/SERIAL # ONLY) 1 OF 3	3
PARTS LIST (SET: 285385)			
ITEM	PART NUMBER	DESCRIPTION	QTY
3	275056-C	LOGO, VANAIR HRZ - MOBILE POWER SOLUTIONS (22 X 3.9)	1
4	275057-C	LOGO, VANAIR 8TK - MOBILE POWER SOLUTIONS (8.1 X 4.2)	1
5	277616-C	LOGO, AIR N ARC 150 (11 X 2)	1
6	277616-D	LOGO, AIR N ARC 150 (11 X 2)	1
7	277617-A	BADGE, AIR N ARC 150 (11 X 2)	1
8	277617-B	BADGE, AIR N ARC 150 (11 X 2)	1
PARTS LIST (SHEET: DL276007)			
ITEM	PART NUMBER	DESCRIPTION	QTY
9	281045	DECAL WARNING HOT TRIANGLE 2.0"	1
10	275053	DECAL ENGINE OIL DRAIN	1
11	281813	DECAL WARNING FUEL FILL - GAS ONLY	1
12	275054	DECAL COMPRESSOR FLUID DRAIN	1
13	282127	DECAL WARNING TRIANGLES ONLY	1
14	282459	DECAL DANGER DO NOT OPERATE IN AN ENCLOSED SPACE (4" X 2")	1
15	284809	DECAL REPLACEMENT PARTS VNR680	1
16	DL265676	DECAL LABEL AIR TANK DRAIN WHITE	1
17	DL270120	DECAL CAUTION ANA	1
18	DL270183	DECAL NO FEE GAS CAP LOGO	1
19	DL271081	DECAL INFO VANAIR	1
20	DL277133	DECAL PARTWIST BELT INFO BLACK	1
PARTS LIST (COMPRESSOR SUBBOM)			
ITEM	PART NUMBER	DESCRIPTION	QTY
21	DL265684	DECAL COMPRESSOR LOGO, ROUND	1

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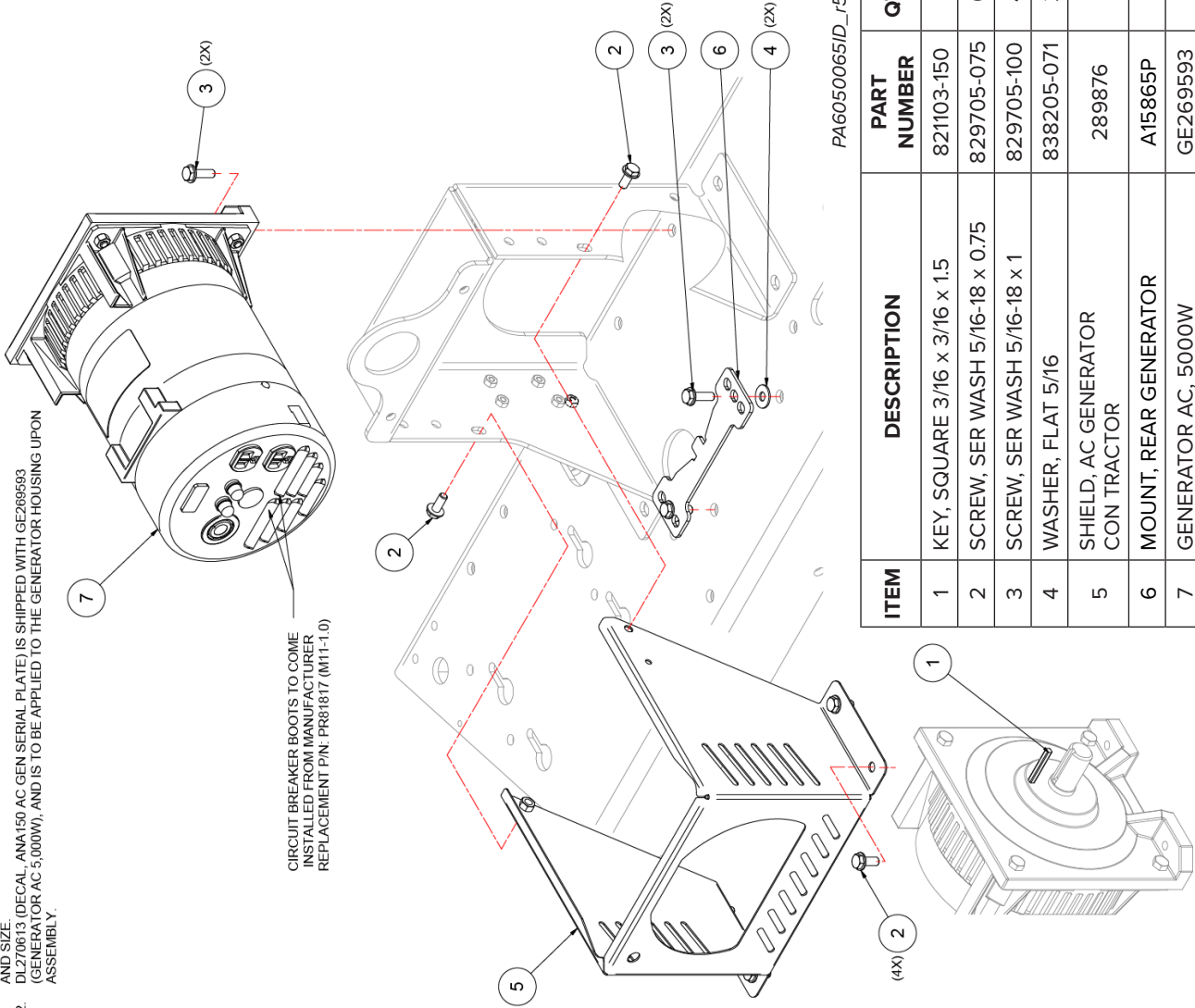


⚠ WARNING

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

7.25 CONTRACTOR AC GENERATOR ASSEMBLY - STAND ALONE

- NOTES:
1. ALL BOLTS TO BE TORQUED TO THEIR RESPECTIVE SAE TORQUE SPEC FOR ITS GRADE AND SIZE.
DL270613 (DECAL, ANA150 AC GEN SERIAL PLATE) IS SHIPPED WITH GE269593 (GENERATOR AC 5,000W), AND IS TO BE APPLIED TO THE GENERATOR HOUSING UPON ASSEMBLY.
 - 2.

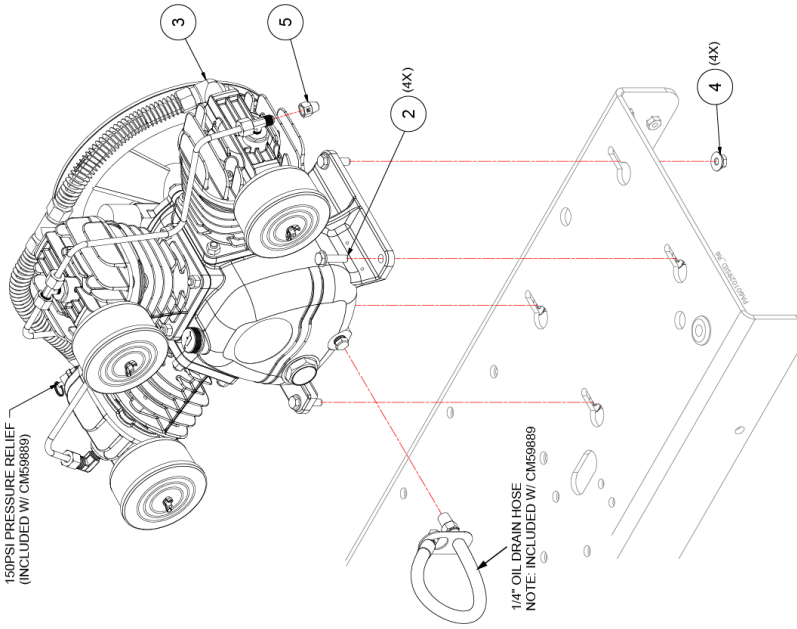


PA6050065ID_r5_TP

ITEM	DESCRIPTION	PART NUMBER	QTY
1	KEY, SQUARE 3/16 x 3/16 x 1.5	821103-150	1
2	SCREW, SER WASH 5/16-18 x 0.75	829705-075	6
3	SCREW, SER WASH 5/16-18 x 1	829705-100	4
4	WASHER, FLAT 5/16	838205-071	2
5	SHIELD, AC GENERATOR CON TRACTOR	289876	1
6	MOUNT, REAR GENERATOR	A15865P	1
7	GENERATOR AC, 5000W	GE269593	1

NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

7.24 COMPRESSOR ASSEMBLY



Refer to Table 7C: Compressor Unit Parts
List for compressor part list order numbers.

ITEM	DESCRIPTION	PART NUMBER	QTY
1	OIL, VANAIR RECIP BULK (VANGUARD)	271856	1 qt
2	SCREW, SER WASH 5/16-18 x 1.25	829705-125	4
3	COMPRESSOR, AIR 3-CYL W/ HD UNLOADER	CM59889	1
4	NUT, HEX LOCKING 5/16-18 GRAD	FA34328	4
5	NUT, FLARE SHORT 1/4 INCH OD BRASS	F152363	1

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

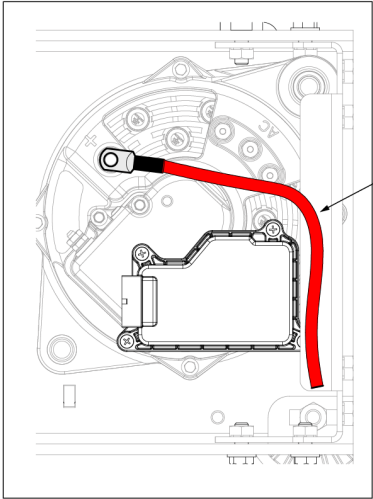
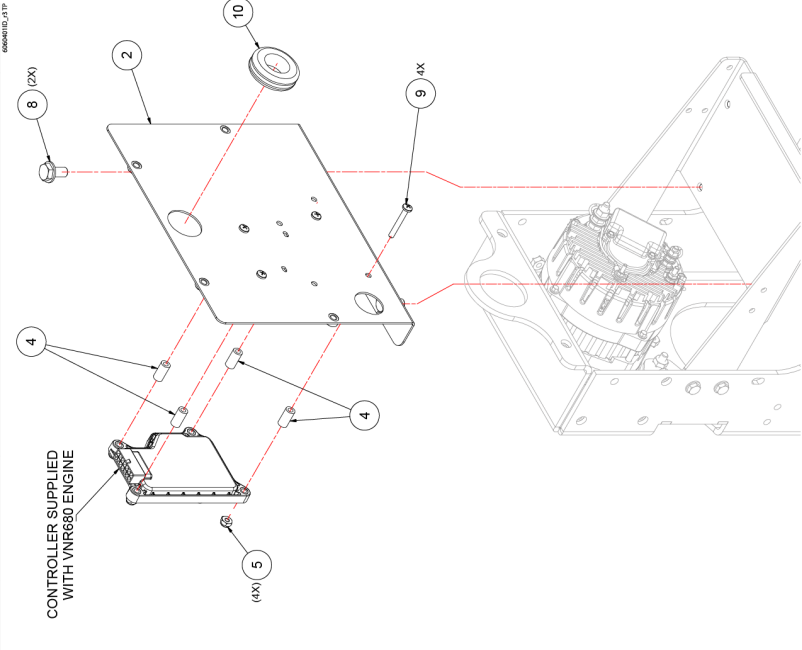
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7.26 AIR N ARC® 150 ASSEMBLY - ELECTRICAL COMPONENTS

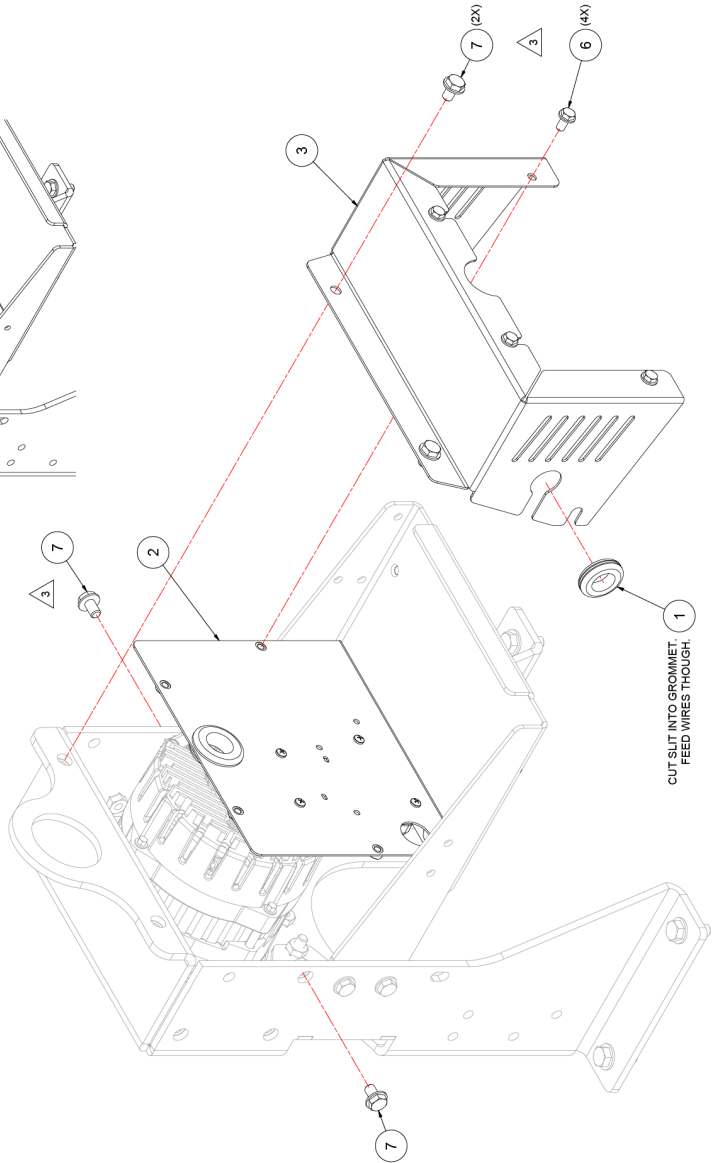
NOTES:

- 1. USE LOCTITE 567 THREAD SEALANT WITH PTFE OR EQUIVALENT SEALANT ON ALL MALE PIPE THREADS.
- 2. LUBRICATE ALL ELASTOMERIC SEALS/GASKETS/O-RINGS BEFORE TIGHTENING.
- 3. ALL BOLTS TO BE TORQUED TO THEIR RESPECTIVE SAE TORQUE SPECIFICATIONS, FOR THEIR GRADES AND SIZES, UNLESS OTHERWISE SPECIFIED.

PARTS LIST			
ITEM	PART NO	DESCRIPTION	QTY
1	680-093	GROMMET,RUBBER 3/4 ID X 1-3/8 OD	1
2	284083	MOUNT,MODULE ANA 150V	1
3	284084	SHIELD,WELDER ANA 150V	1
4	284207	SPACER, NYLON 0.171 ID X 0.313 OD X 0.625 LG OFF-WHITE	4
5	825501-070	NUT, HEX LOCKING #8-32	4
6	829704-050	SCREW, SER WASH 1/4-20 x 0.5	4
7	829705-050	SCREW, SER WASH 5/16-18 x 0.5	4
8	829705-062	SCREW, SER WASH 5/16-18 x 0.625	2
9	831601-125	SCREW,ROUND HD #8-32 X 1 1/4 ZINC	4
10	PR22730	GROMMET, BLACK RUBBER, .875ID	1

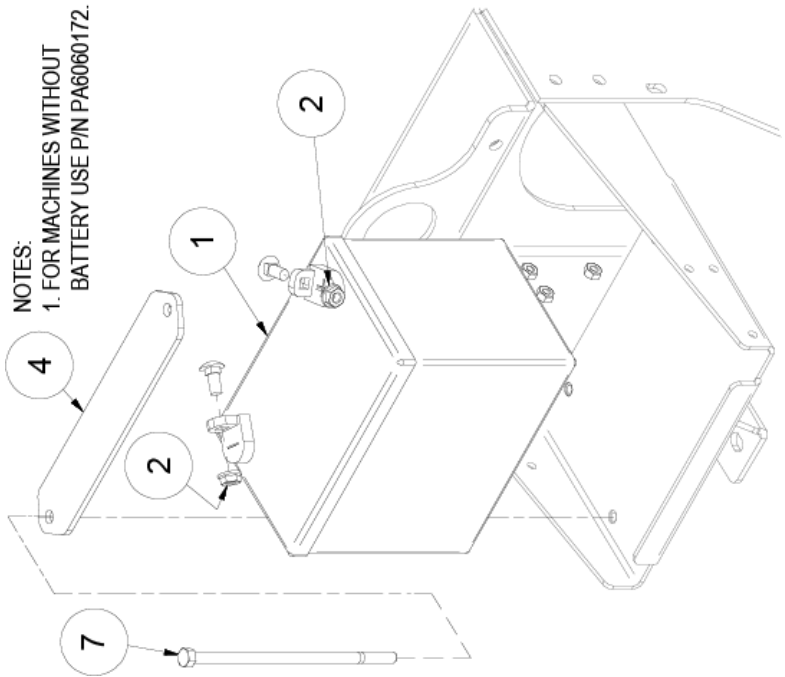


ROUTE POSITIVE ALTERNATOR
CABLE BELOW ENGINE
CONTROL BOARD



CUT SLIT INTO GROMMET.
FEED WIRES THROUGH.

7.28 BATTERY AND PARTS

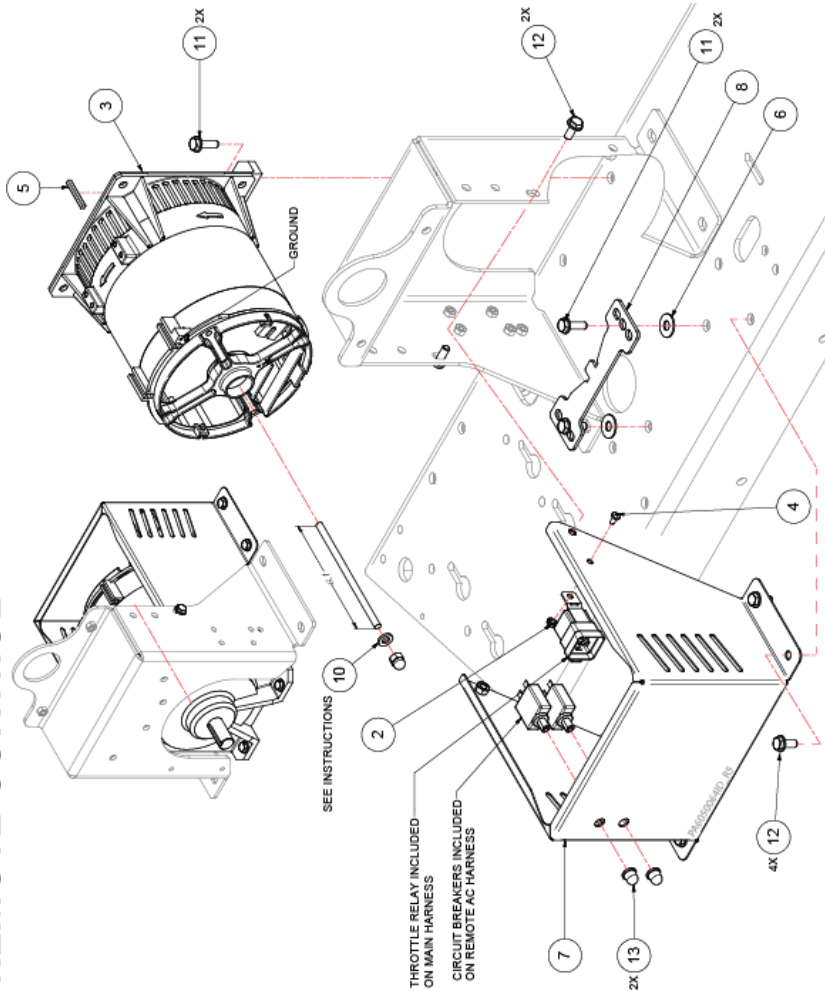


ITEM	DESCRIPTION	PART NUMBER	QTY
1	BATTERY, 12V GROUP U1LF 350 CCA	277481	1
2	NUT, HEX FLANGE 5/16-18	825305-283	2
3	BOLT, CARRIAGE 5/16-18UNC X 3/4" LG.	829505-075	2
4	MOUNT, BATTERY INDUSTRIAL, PRO	A16270P	1
5	CABLE, BATTERY NEGATIVE	EP77939	1
6	CABLE, BATTERY POSITIVE	EP93227	1
7	CAPSCREW, HEX GR5 5/16-18 x 7	FA31508	2

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

PA6060139ID_r1

7.27 CONTRACTOR AC GENERATOR ASSEMBLY - REMOTE CONTROL



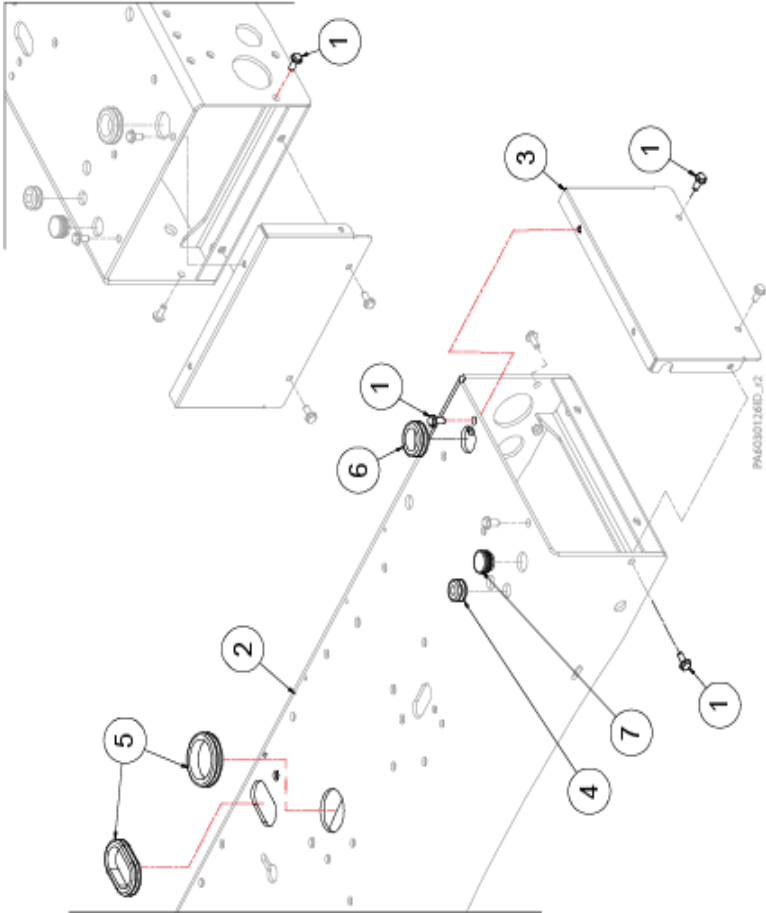
ITEM	DESCRIPTION	PART NO	QTY	ITEM	DESCRIPTION	PART NO	QTY
1	RELAY, NO/NC WEATHERPROOF W/ RESISTOR	260246	1	8	MOUNT, REAR GENERATOR	A15865P	1
2	NUT, HEX #10-32 KEPS	261595-032	1	9	HARNESS, REMOTE AC	EP82587	1
3	GENERATOR, 4.2 KW SENTRY	266595	1	10	WASHER, 5/16ID x 21/32 OD, 2-pc LOCKING (NORD-LOCK)	FA21391	1
4	SCREW, 10-32 X 3/8" PPH	650-271	1	11	SCREW, SER WASH 5/16-18 x 1 GRADE 5 (ZINC PLATED)	FA67469	4
5	KEY, SQUARE 3/16 x 3/16 x 1.5	821103-150	1	12	BOLT, FLANGE 5/16 x 3/4 SILVER	FA97363	6
6	WASHER, FLAT 3/8	838206-071	2	13	BOOT, BREAKER, PANEL MOUNT	PR81817	2
7	SHIELD, GENERATOR CON & PRO	A1	A1				

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

PA6050064ID_r5

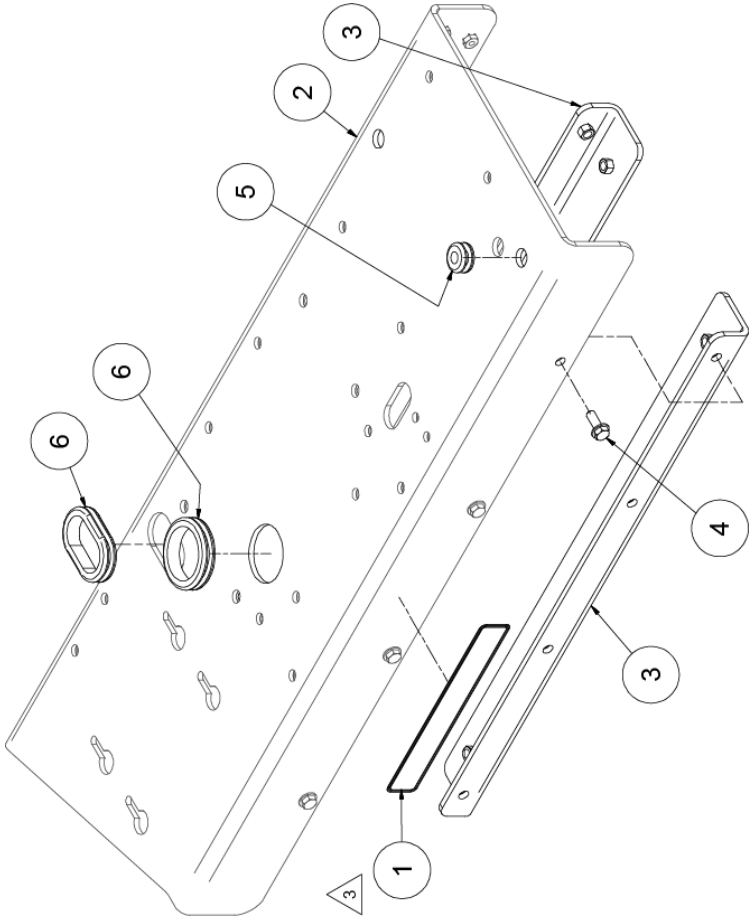
7.30 FRAME ASSEMBLY - 8 GALLON
REMOTE CONTROL

7.29 FRAME ASSEMBLY - SKID MOUNT



ITEM	DESCRIPTION	PART NUMBER	QTY
1	SCREW, SER WASH 5/16-18 x 0.75	829705-075	12
2	PLATFORM, 8 GAL	A1270877	1
3	COVER, PLATFORM END	A17510P	2
4	GROMMET, BLACK RUBBER, .50 ID	PR52720	1
5	GROMMET, BLACK RUBBER, 2.25ID	PR74492	2
6	GROMMET, BLACK RUBBER, 1.25ID	PR75487	1
7	PLUG, 1-1/4 DIA, RIBBED BLACK	PR96951	1
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.			

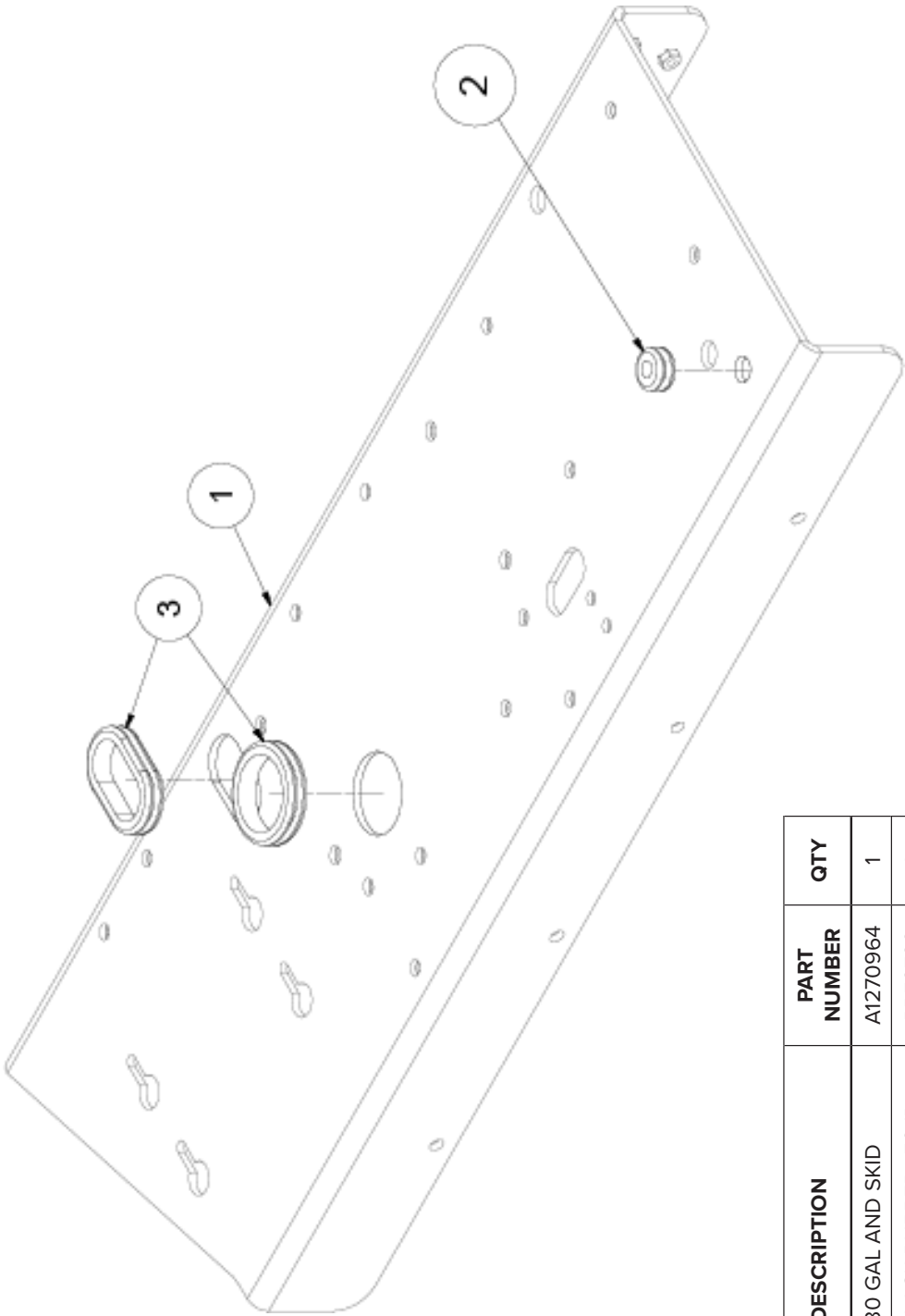
PA6030126ID_r2



ITEM	DESCRIPTION	PART NUMBER	QTY
1	DECAL, INFO VANAIR	277074	1
2	PLATFORM, 30 GAL AND SKID	A1270964	1
3	MOUNT,SKID PRO/CONTRACTOR	A16986P	2
4	SCREW, SER WASH 3/8-16 x 1	FA86645	8
5	GROMMET, BLACK RUBBER, .50 ID	PR52720	1
6	GROMMET, BLACK RUBBER, 2.25ID	PR74492	2
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.			

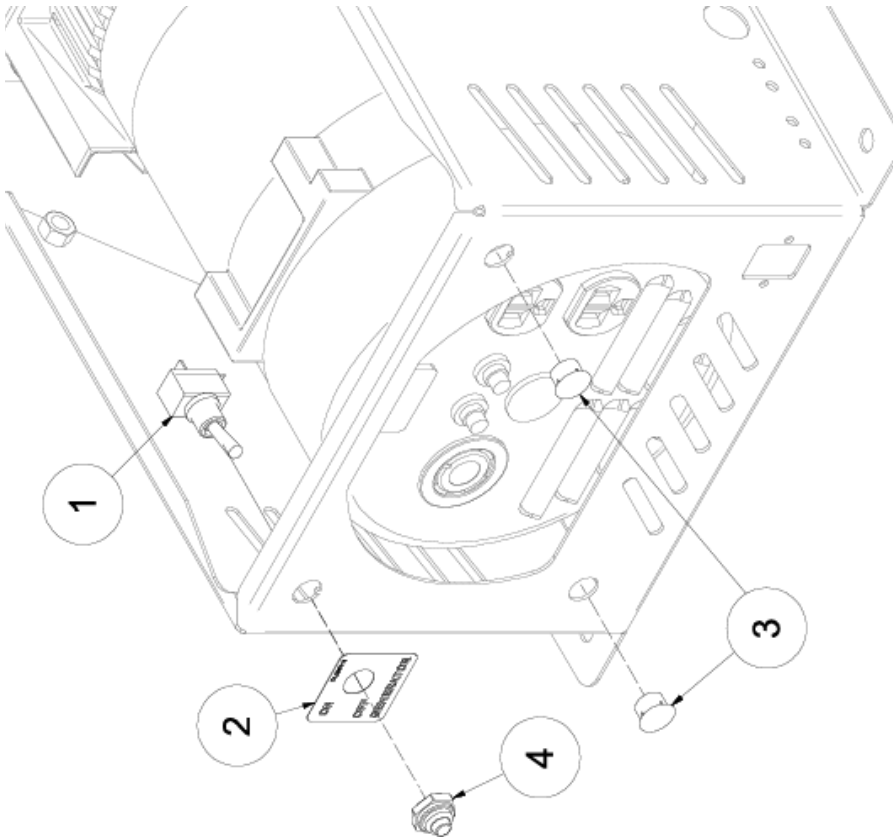
PA6030096ID_r3

7.31 FRAME ASSEMBLY - 30 GALLON



ITEM	DESCRIPTION	PART NUMBER	QTY
1	PLATFORM, 30 GAL AND SKID	A1270964	1
2	GROMMET, BLACK RUBBER, .50 ID	PR52720	1
3	GROMMET, BLACK RUBBER, 2.25ID	PR74492	2
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.			

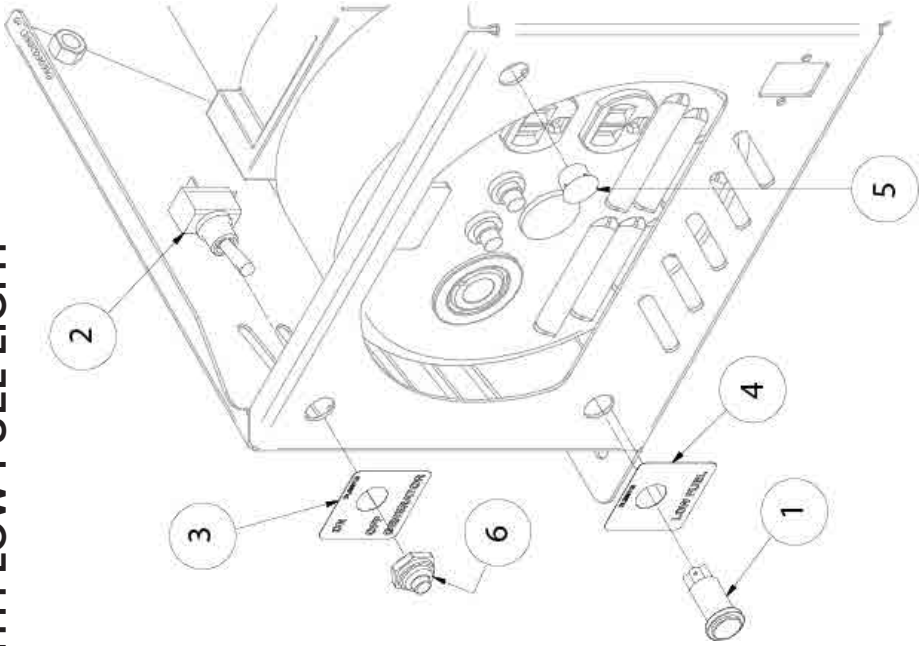
7.33 STAND ALONE CONTROL, WITHOUT
LOW FUEL LIGHT



ITEM	DESCRIPTION	PART NUMBER	QTY
1	SWITCH,TOGGLE, SPST, ON/OFF	CO78077	1
2	DECAL, GENERATOR ON/ OFF	DL269710	1
3	PLUG, 1/2, PUSH IN, BLACK PLASTIC	PR47974	2
4	SWITCH BOOT, TOGGLE, WEATHER PROOF	PR77230	1
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.			

PA6060209ID_r0

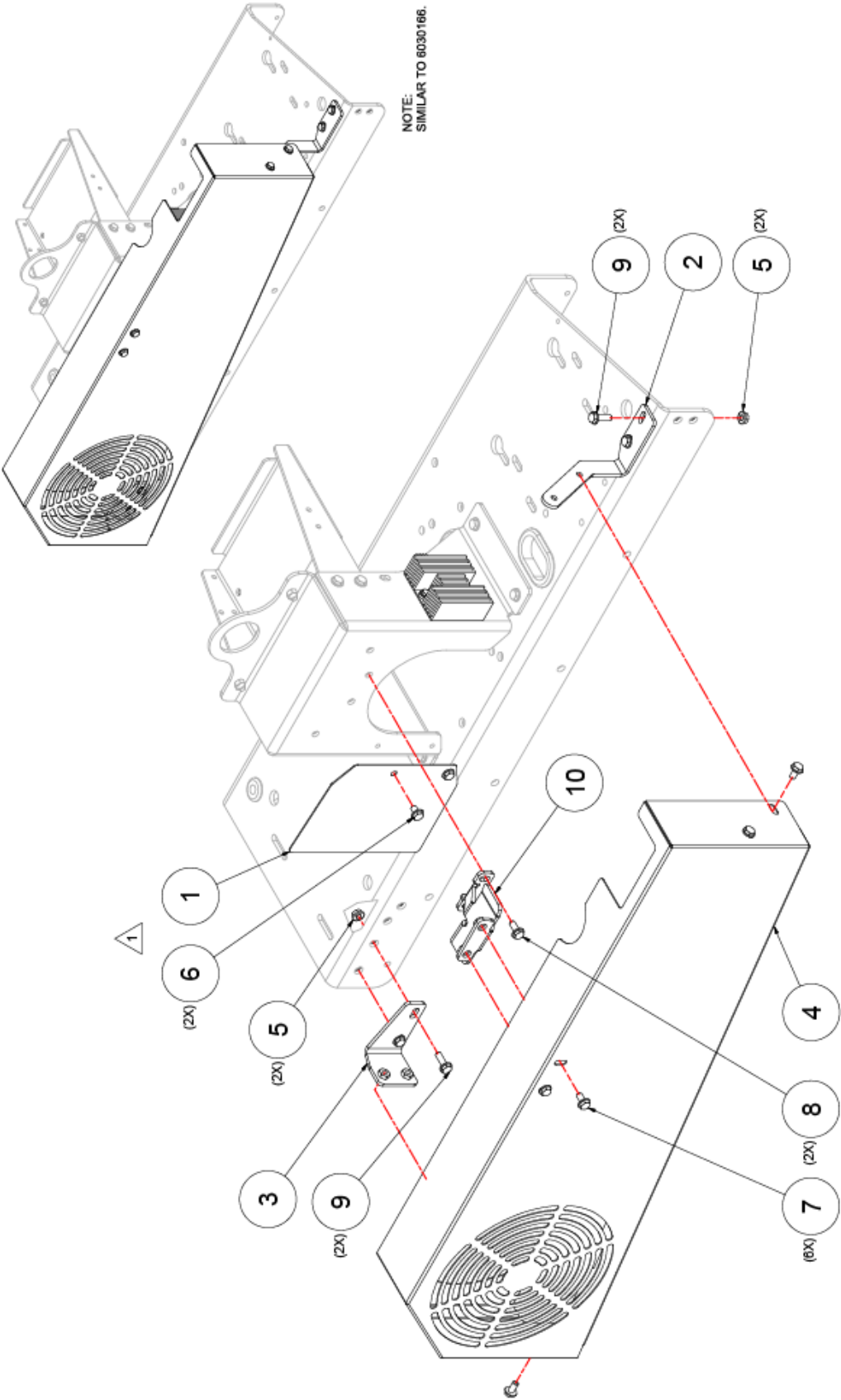
7.32 STAND ALONE CONTROL
WITH LOW FUEL LIGHT



ITEM	DESCRIPTION	PART NUMBER	QTY	ITEM	DESCRIPTION	PART NUMBER	QTY
1	LAMP, INDICATOR, AMBER	CO36951	1	4	DECAL, LOW FUEL	DL269712	1
2	SWITCH,TOGGLE, SPST, ON/OFF	CO78077	1	5	PLUG, 1/2, PUSH IN, BLACK PLASTIC	PR47974	1
3	DECAL, GENERATOR ON/ OFF	DL269710	1	6	SWITCH BOOT, TOGGLE, WEATHER PROOF	PR77230	1
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.							

PA6060208ID_r0

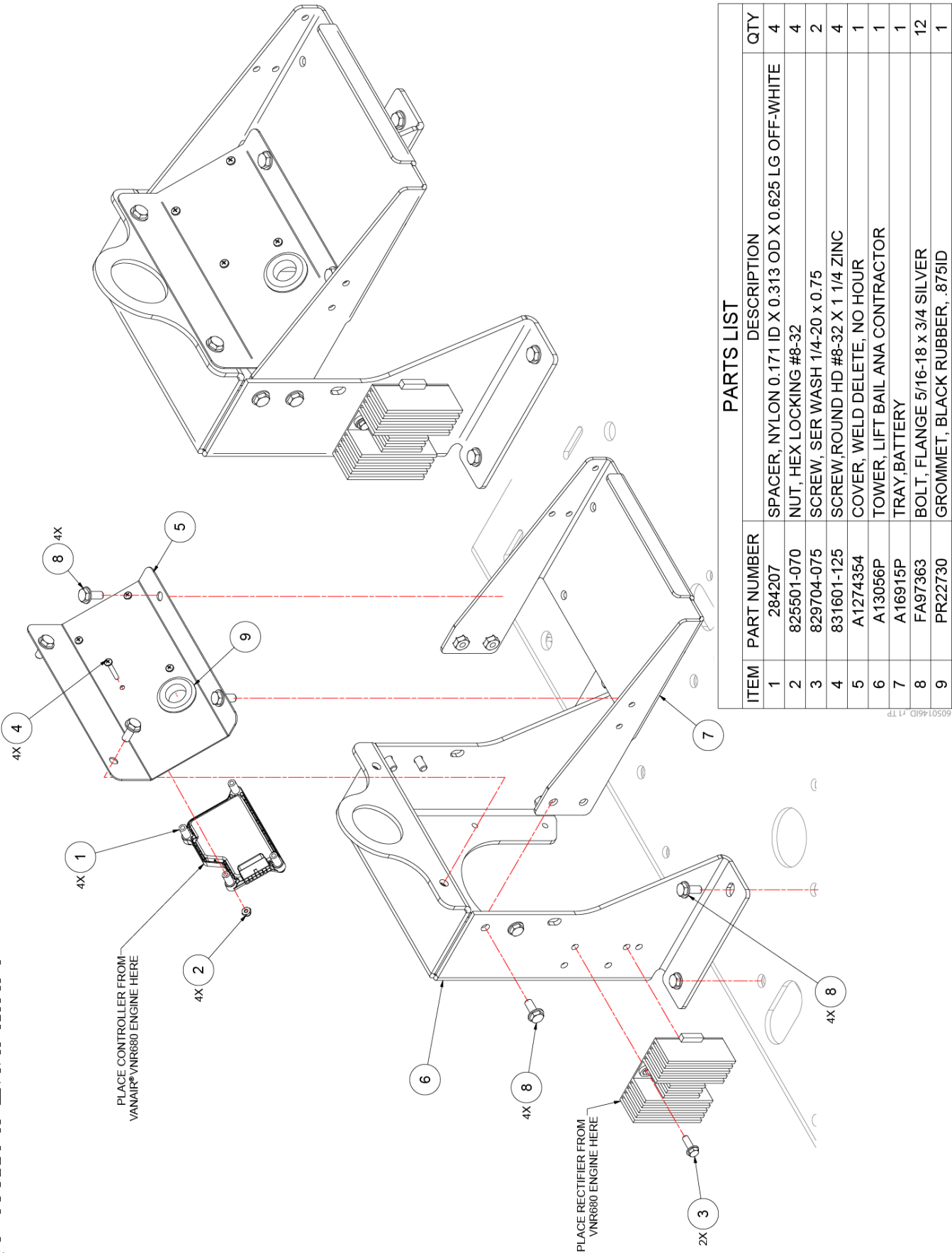
7.34 BELT SHIELD ASSEMBLY



6030257_r1

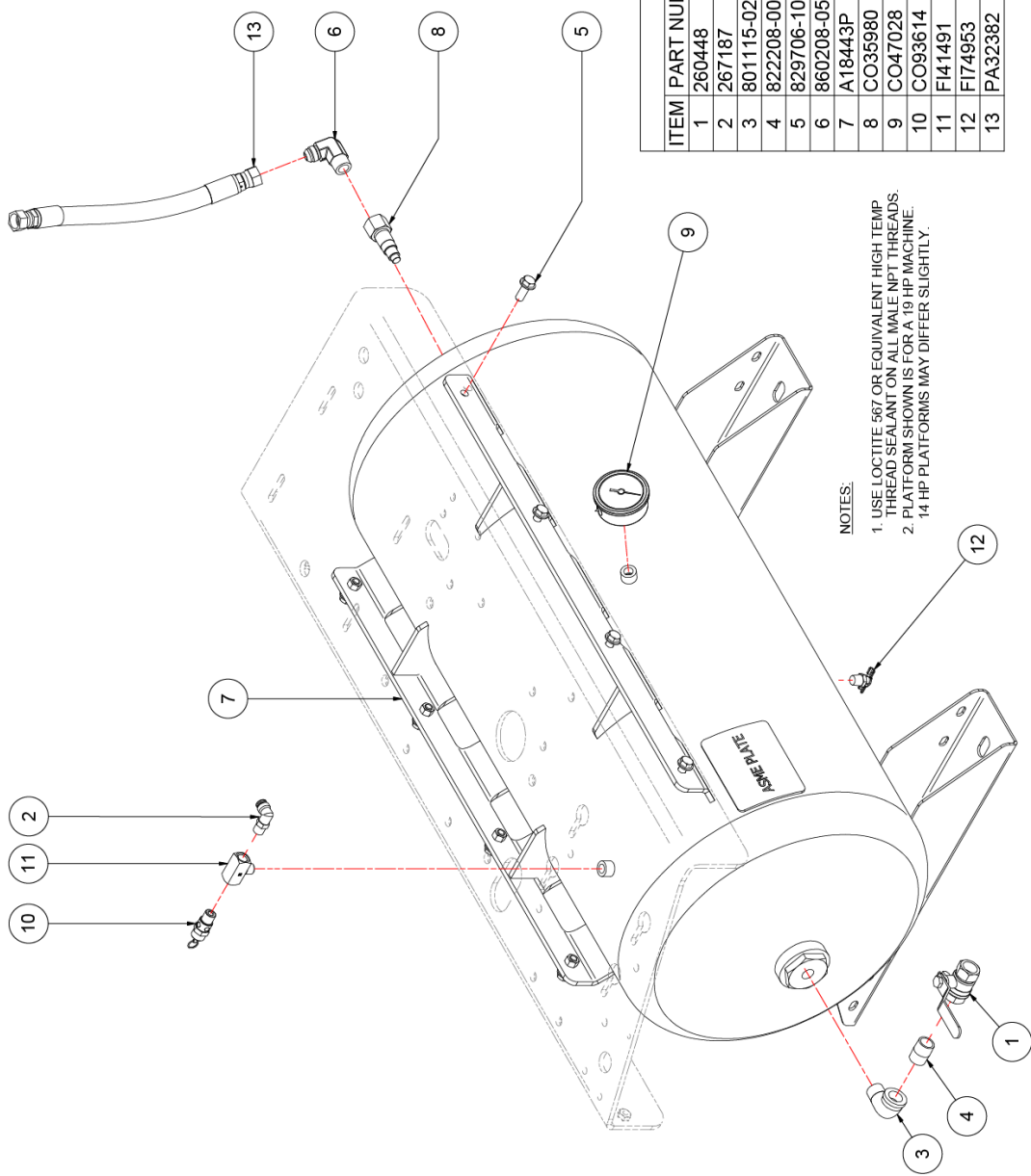
ITEM	DESCRIPTION	PART NUMBER	QTY	ITEM	DESCRIPTION	PART NUMBER	QTY
1	SHIELD, COMPRESSOR BELT	280311	1	6	SCREW, SER WASH 5/16-18 X 0.05	829705-050	2
2	BRACKET, GUARD SUPPORT LEFT 150V	284085	1	7	SCREW, SER WASH 5/16-18 X 0.625	829705-062	6
3	BRACKET, GUARD SUPPORT RIGHT 150V	284086	1	8	SCREW, SER WASH 5/16-18 X 0.75	829705-075	2
4	SHIELD, BELT GUARD CONTRACTOR	284654	1	9	SCREW, SER WASH 5/16-18 X 1	829705-100	4
5	NUT, HEX FLANGE 5/16-18	825305-283	4	10	BRACKET, GUARD SUPPORT, TOP	A1274480	1
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.							

7.35 TOWER ASSEMBLY



6050146ID_r1

7.36 AIR TANK ASSEMBLY - 30 GALLON WITH SERVICE VALVE



PARTS LIST		
ITEM	PART NUMBER	DESCRIPTION
1	260448	VALVE, SERVICE 1/2
2	267187	ELBOW, 5/16T X 1/4P PUSH ON
3	801115-020	ELBOW, PIPE STREET 1/2
4	822208-000	NIPPLE, PIPE XS CLOSE 1/2
5	829706-100	SCREW, SER WASH 3/8-16 X 1 GR5
6	860208-050	ELBOW, 37FL90M #08 x 1/2
7	A18443P	TANK, 30 GAL, W/ RAILS
8	CO35980	VALVE, CHECK 1/2 NPT M-F
9	CO47028	GAUGE, AIR 0-200 PSI 2.5DIA 1/4NPT BACK MTG
10	CO93614	VALVE, RELIEF 150 PSI 1/4 NPT MALE
11	FI41491	TEE, BRASS BRANCH TEE 1/4\" NPT
12	FI74953	VALVE, PETCOCK VALVE, 1/4 NPT
13	PA32382	HOSE AIR CHARGE PRO 30 GALLON

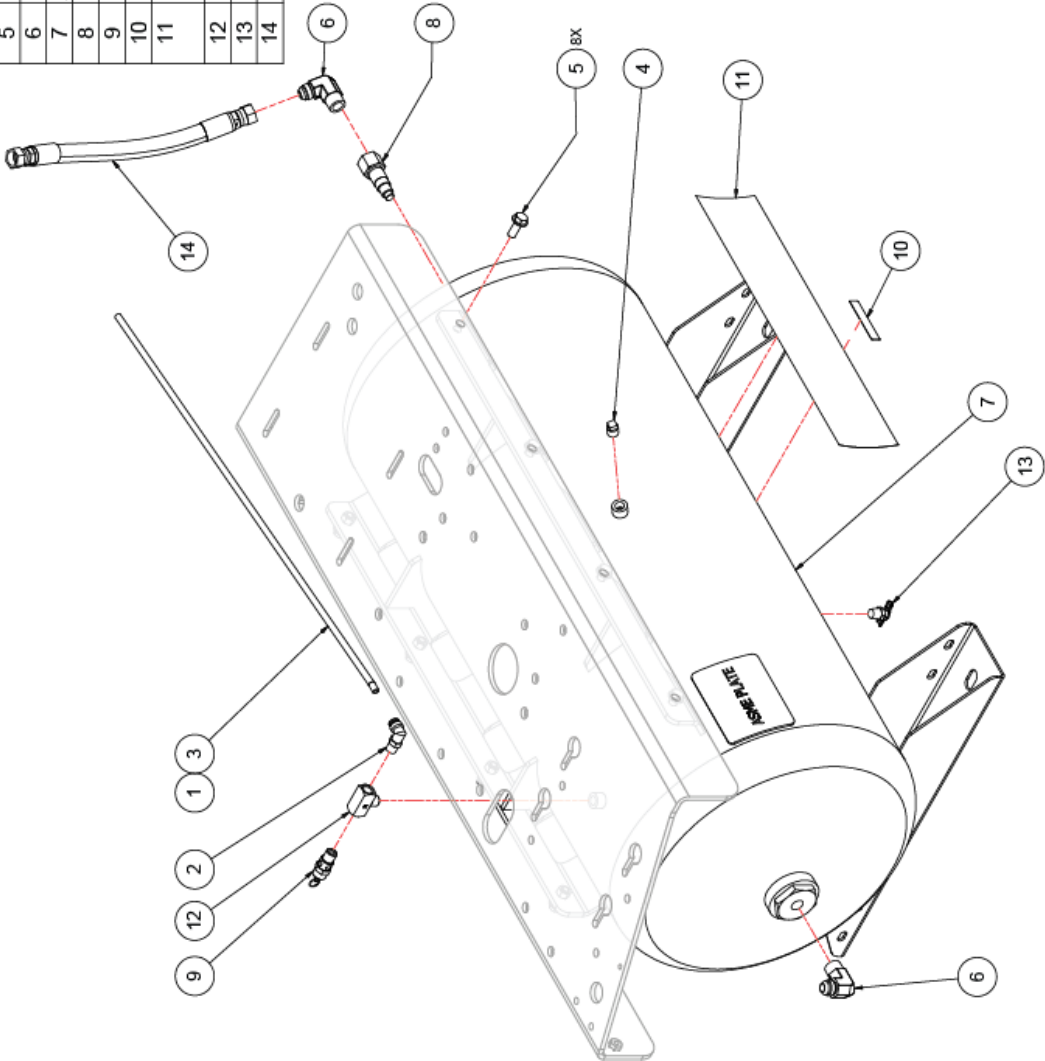
NOTES:
1. USE LOCTITE 567 OR EQUIVALENT HIGH TEMP
THREAD SEALANT ON ALL MALE NPT THREADS.
2. PLATFORM SHOWN IS FOR A 19 HP MACHINE.
14 HP PLATFORMS MAY DIFFER SLIGHTLY.

7.37 AIR TANK ASSEMBLY - TYPICAL FOR 30 GALLON

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	1
		PWR TO GO	
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

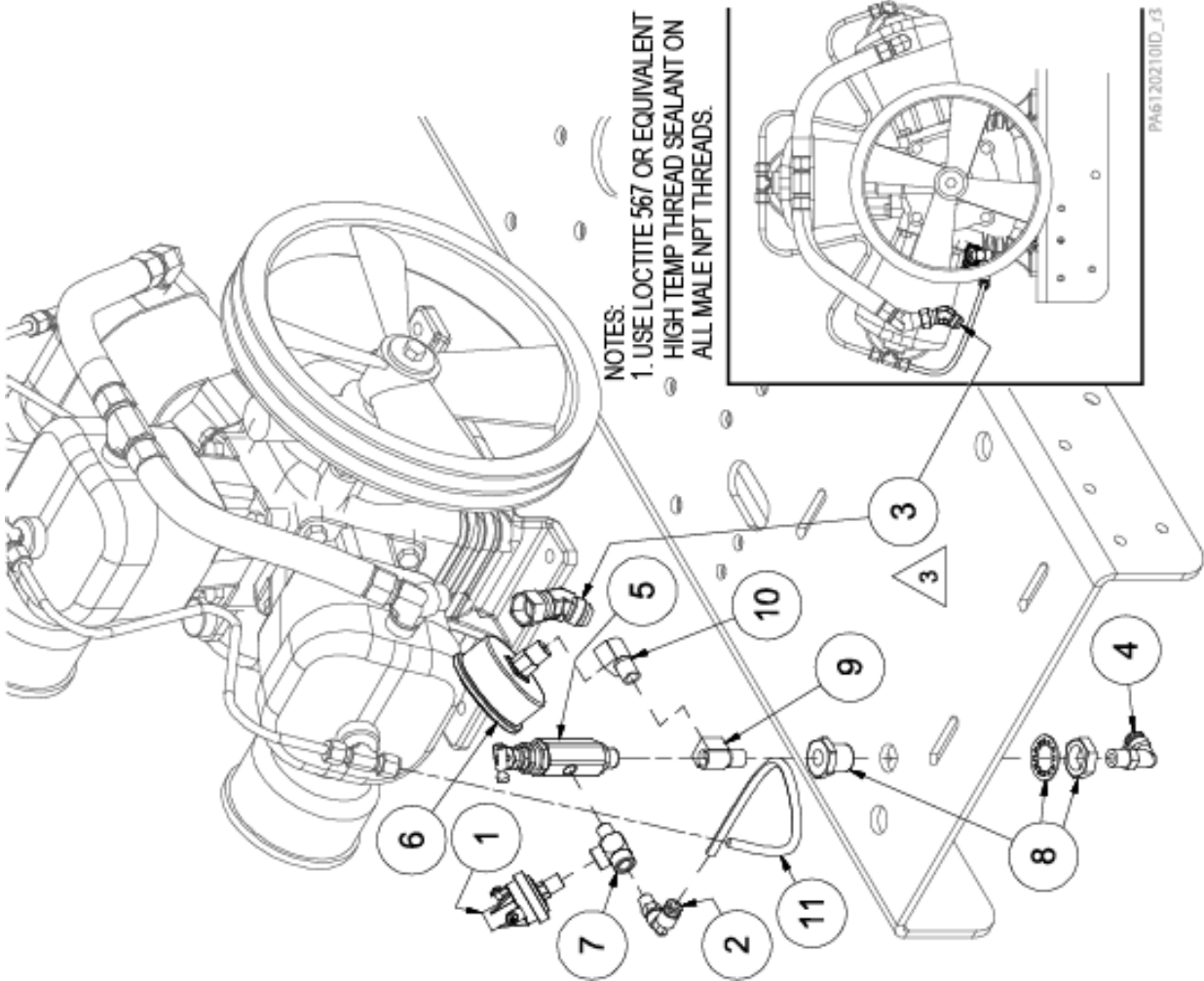
PA600173ID_r2

- NOTES:
1. USE LOCTITE 587 OR EQUIVALENT HIGH TEMP THREAD SEALANT ON ALL MALE NPT THREADS.
 2. PLATFORM SHOWN IS FOR A 18 HP MACHINE. 14 HP PLATFORMS MAY DIFFER SLIGHTLY.

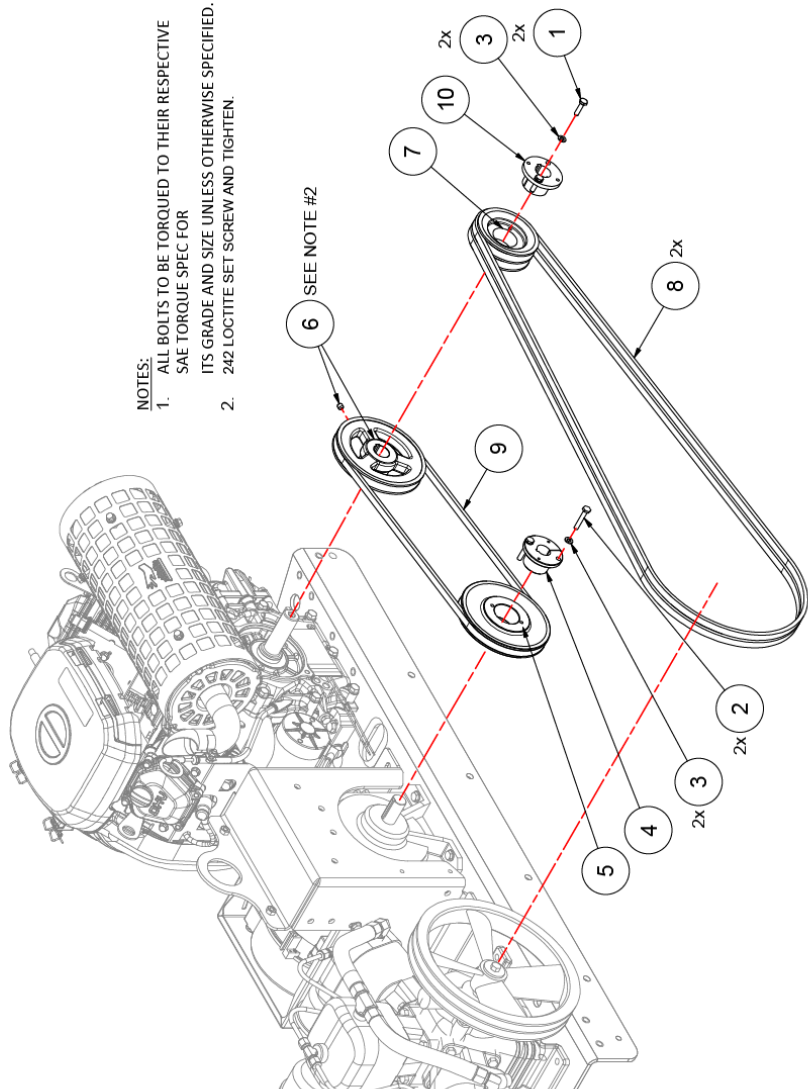


7.38 CONTROL - SKID MOUNT STAND ALONE

ITEM	DESCRIPTION	PART NUMBER	QTY
1	SWITCH, PRESSURE N.C. 10 PSI HOBBS	260818	1
2	ELBOW, 1/4T x 1/8P PUSH-ON	261309	1
3	ELBOW, 45 DEG #8 FJIC SWIVEL x #8 MJIC	265070-004	1
4	ELBOW, 5/16T X 1/4P PUSH ON	267187	1
5	VALVE, PILOT, 95-125 PSI, 1/4	CO25331	1
6	GAUGE, AIR 0-300 PSI 2.5 DIA 1/4 NPT BACK MTG	CO47028	1
7	TEE, MALE STREET 1/8 x 1/8 x 1/8	FI31152	1
8	PIPE BRASS, BULKHEAD 1/4 NPT	FI45068	1
9	TEE, STREET 1/4 NPT BRASS	FI53603	1
10	PIPE BRASS, 1/4 NPT, 90 DEG. STREET ELBOW	FI65532	1
11	TUBE, UNLOADER 1/4 COPPER	TU67293	.804 ft
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.			



7.40 CONTRACTOR DRIVE COMPONENTS

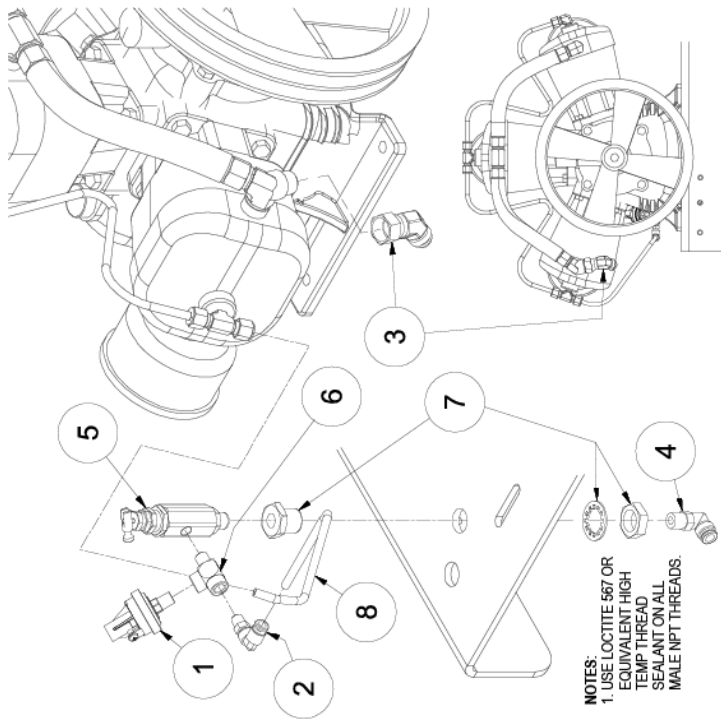


ITEM	PART NUMBER	DESCRIPTION	QTY
1	829104-100	CAPSCREW, HEX GR5 1/4-20 x 1	2
2	830104-150	SCREW, MACHINE 1/4-20 x 1 1/2	2
3	838504-062	WASHER, LOCK 1/4	4
4	DR23078Z	BUSHING, L, QD, 7/8 DIA, 2 BOL	1
5	DR26988Z	SHEAVE, FHP QT SINGLE GROOVE	1
6	DR273231	SHEAVE, SINGLE A GROOVE 1"BORE	1
7	DR31603Z	SHEAVE, 2 GROOVE 3.95 SPLT TAPR	1
8	DR36891-104	BELT, POWER TWIST 104 LINKS	13.33FT
9	DR36891-061	BELT, POWER TWIST 61 LINKS	3.92 FT
10	DR61062Z	BUSHING, L, QD, 1 DIA, 2 BOLT	1

CONTRACTOR PA6100131-001ID_r3

PA6100131-001ID_r2

7.39 CONTROL - SKID MOUNT REMOTE



ITEM	DESCRIPTION	PART NUMBER	QTY
1	SWITCH, PRESSURE N.C. 10 PSI HOBBS	260818	1
2	ELBOW, 1/4T x 1/8P PUSH-ON	261309	1
3	ELBOW, 45 DEG #8 FJIC SWIVEL x #8 MJIC	265070-004	1
4	ELBOW, 5/16T X 1/4P PUSH ON	267187	1
5	VALVE, PILOT, 95-125 PSI, 1/4	CO25331	1
6	TEE, MALE STREET 1/8 x 1/8 x 1/8	FI31152	1
7	PIPE BRASS, BULKHEAD 1/4 NPT	FI45068	1
8	TUBING, COPPER 1/4 OD	TU67293	1 ft

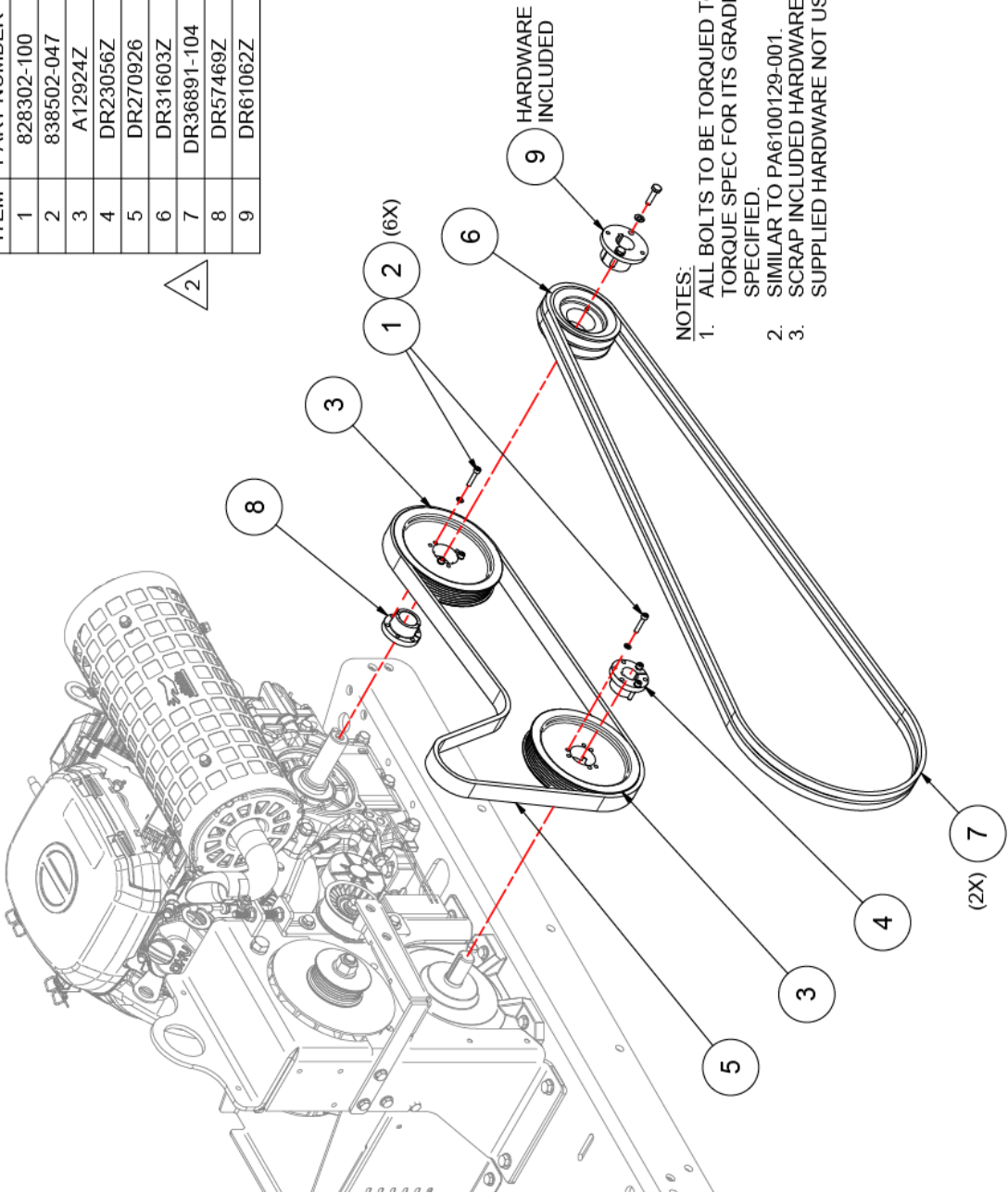
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.

PA6120083ID_r6

7.41 AIR N ARC® 150 DRIVE COMPONENTS

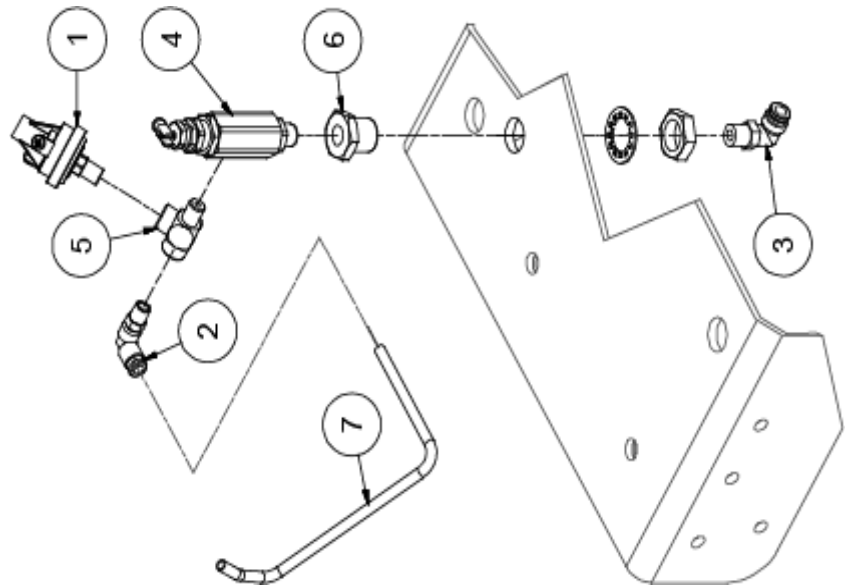
PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	828302-100	CAPSCREW,S.H. #10-24UNC X 1	6
2	838502-047	WASHER, LOCK #10	6
3	A12924Z	SHEAVE, SERPENTINE, 6 GROOVE	2
4	DR23056Z	BUSHING, JA, QD, 7/8 DIA., 3 BO	1
5	DR270926	BELT, SERPENTINE, 6 RIB X 56.0"	1
6	DR31603Z	SHEAVE,2 GROOVE 3.95 SPLT TAPR	1
7	DR36891-104	BELT, POWER TWIST 104 LINKS	13.08 FT
8	DR57469Z	BUSHING, JA, QD, 1 DIA., 3 BO	1
9	DR61062Z	BUSHING, L, QD, 1 DIA, 2 BOLT	1

ANA150 6100323ID_r2_BELTS



- NOTES:
1. ALL BOLTS TO BE TORQUED TO THEIR RESPECTIVE SAE TORQUE SPEC FOR ITS GRADE AND SIZE UNLESS OTHERWISE SPECIFIED.
 2. SIMILAR TO PA6100129-001.
 3. SCRAP INCLUDED HARDWARE WITH ITEM NUMBER'S 4 & 8; SUPPLIED HARDWARE NOT USED IN ASSY.

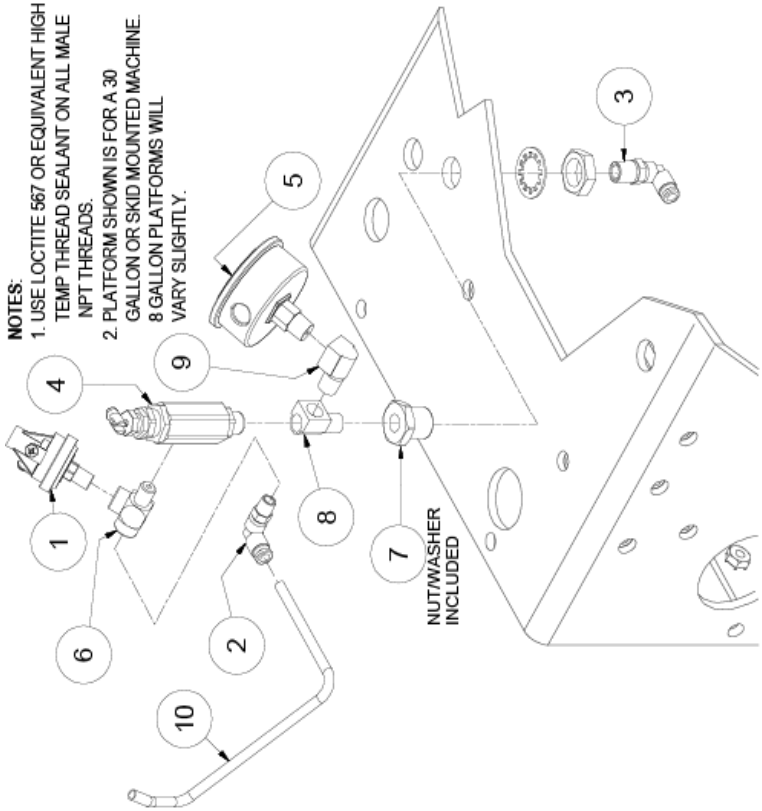
7.43 CONTROL - 8 GAL REMOTE AND 30 GALLON



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

PA6120201ID_r2

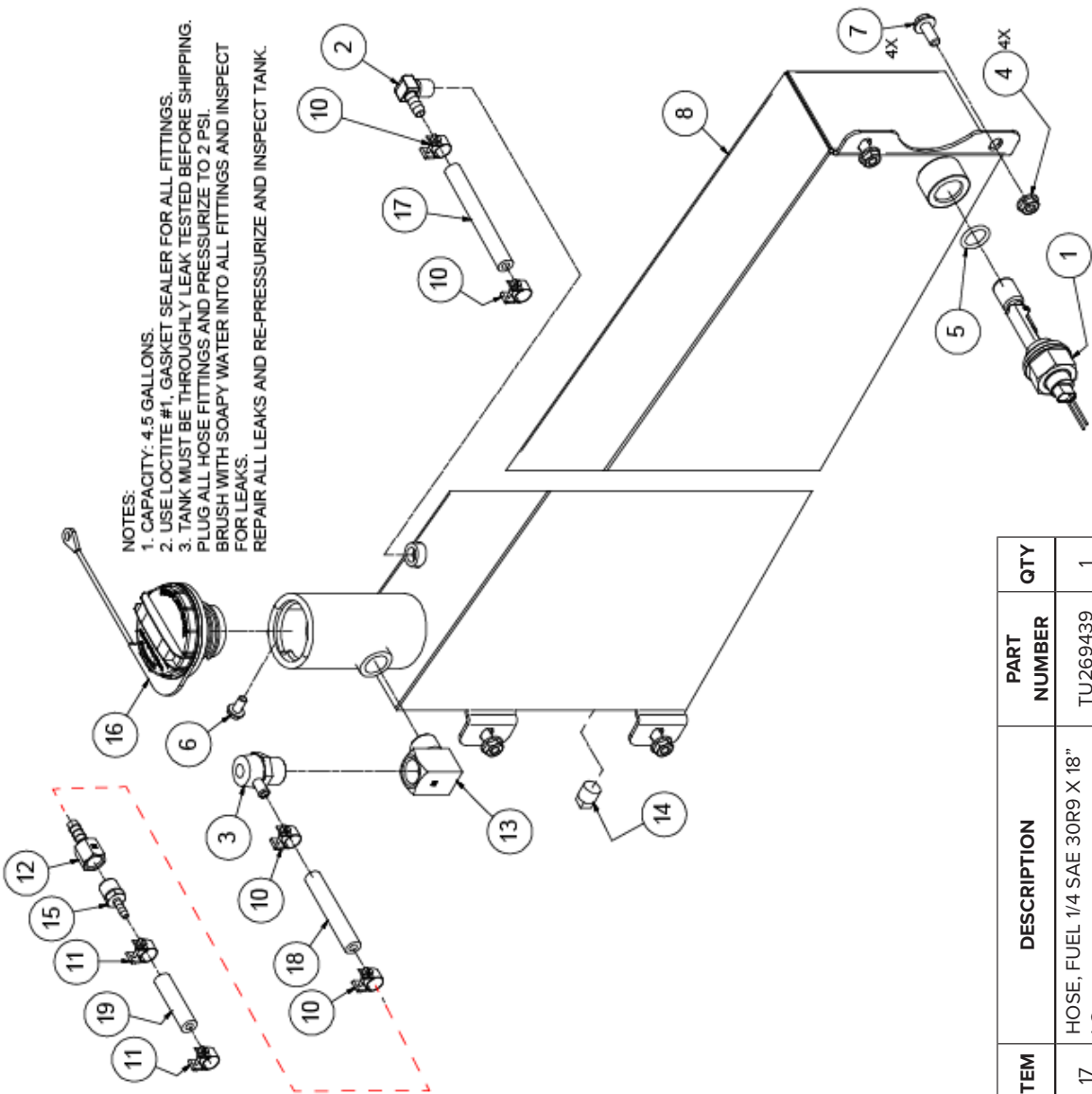
7.42 CONTROL - 8 GALLON STAND ALONE



ITEM	DESCRIPTION	PART NUMBER	QTY
1	SWITCH, PRESSURE N.C. 10 PSI HOBBS	260818	1
2	ELBOW, 1/4T x 1/8P PUSH-ON	261309	1
3	ELBOW, 90 deg. PUSH ON 1/4T x 1/4P	261310	1
4	VALVE, PILOT, 95-125 PSI, 1/4	CO25331	1
5	GAUGE, AIR DRY 0-300 PSI	CO47028	1
6	TEE, MALE STREET 1/8 x 1/8 x 1/8	FI31152	1
7	PIPE BRASS, BULKHEAD 1/4 NPT	FI45068	1
8	TEE, STREET 1/4 NPT BRASS	FI53603	1
9	PIPE BRASS, 1/4 NPT, 90 DEG. STREET ELBOW	FI65532	1
10	TUBE, UNLOADER 1/4 COPPER	TU274736	0.804 ft
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.			

PA6120091ID_r3

7.44 FUEL TANK ASSEMBLY - 4.5 GALLON



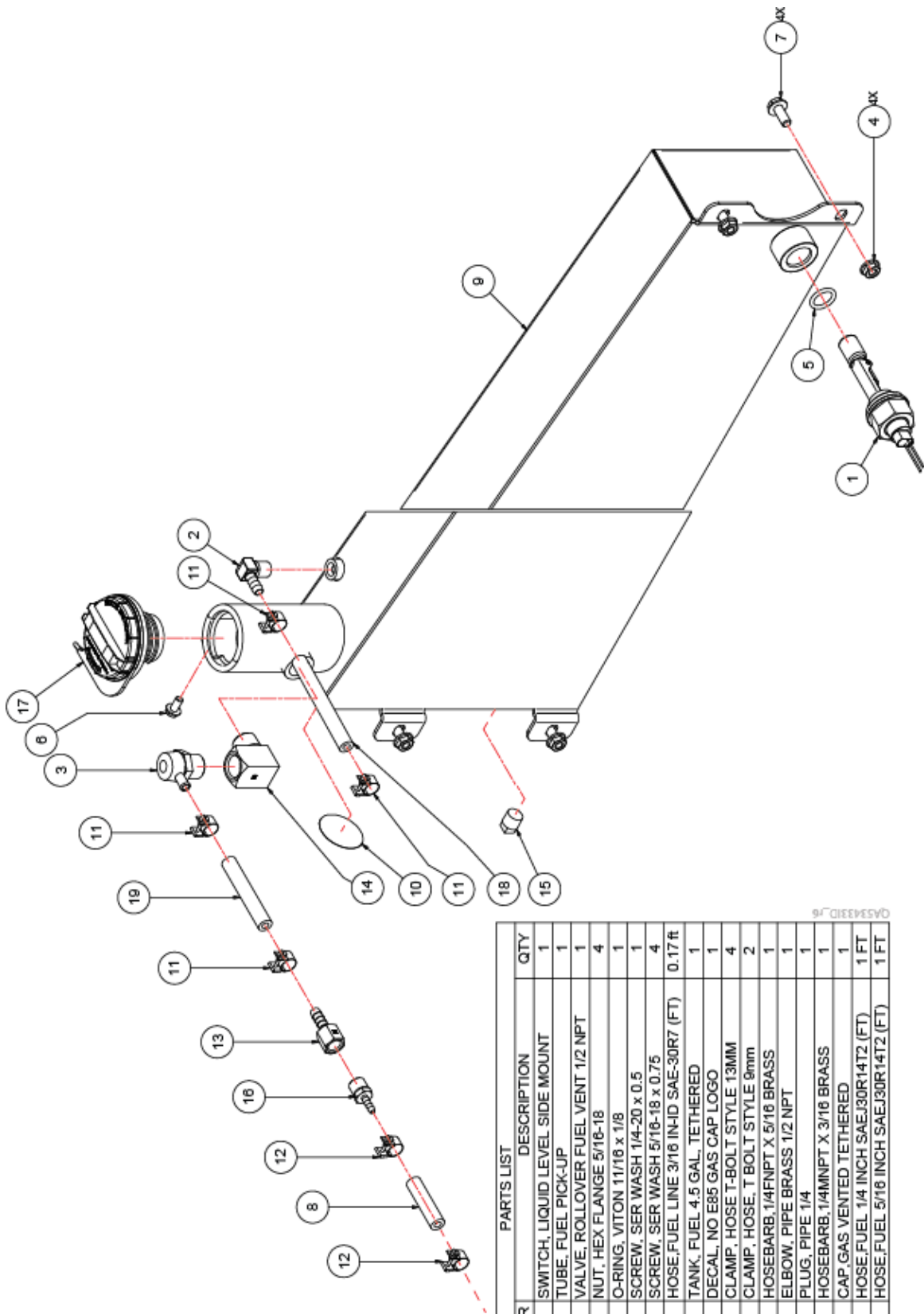
ITEM	DESCRIPTION	PART NUMBER	QTY
1	SWITCH, LIQUID LEVEL SIDE MOUNT	269203	1
2	TUBE, FUEL PICK-UP	269359	1
3	VALVE, ROLLOVER FUEL VENT 1/2 NPT	270956	1
4	NUT, HEX FLANGE 5/16-18	825305-283	4

ITEM	DESCRIPTION	PART NUMBER	QTY
5	O-RING, VITON 11/16 x 1/8	826502-209	1
6	SCREW, SER WASH 1/4-20 x 0.5	829704-050	1
7	SCREW, SER WASH 5/16-18 x 0.75	829705-075	4
8	TANK, FUEL 4.5 GAL., TETHERED	A1271616	1
9	HARNESS, FUEL LEVEL	EP44840	1
10	CLAMP, HOSE, T-BOLT STYLE, 13mm SS	FA38355	4
11	CLAMP, HOSE, T BOLT STYLE 9mm	FA66533	2
12	HOSEBARB, 1/4FNPT X 5/16 BRASS	FI271131	1
13	ELBOW, PIPE BRASS 1/2 NPT	FI77644	1
14	PLUG, PIPE 1/4	FI87905	1
15	PUSH - ON, MALE ADPTR, 1/4 MALE X 3/16 PUSH	FI92363	1
16	CAP, GAS VENTED TETHERED	HA271571	1

ITEM	DESCRIPTION	PART NUMBER	QTY
17	HOSE, FUEL 1/4 SAE 30R9 X 18" LG	TU269439	1
18	HOSE, FUEL 5/16 SAE 30R7	TU270137	1
19	HOSE, FUEL 3/16 SAE 30R7	TU28641	1

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

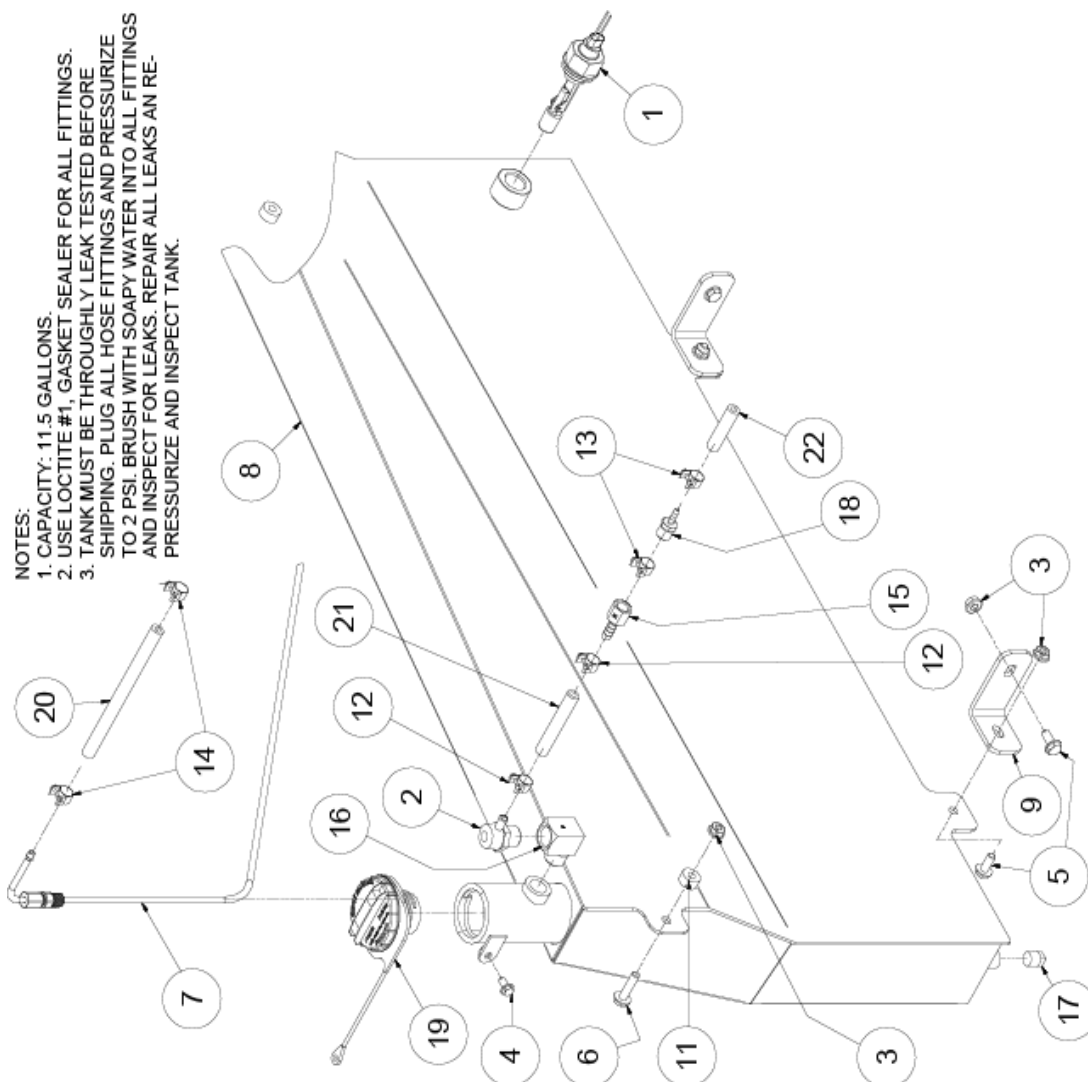
7.45 FUEL TANK ASSEMBLY - 4.5 GALLON

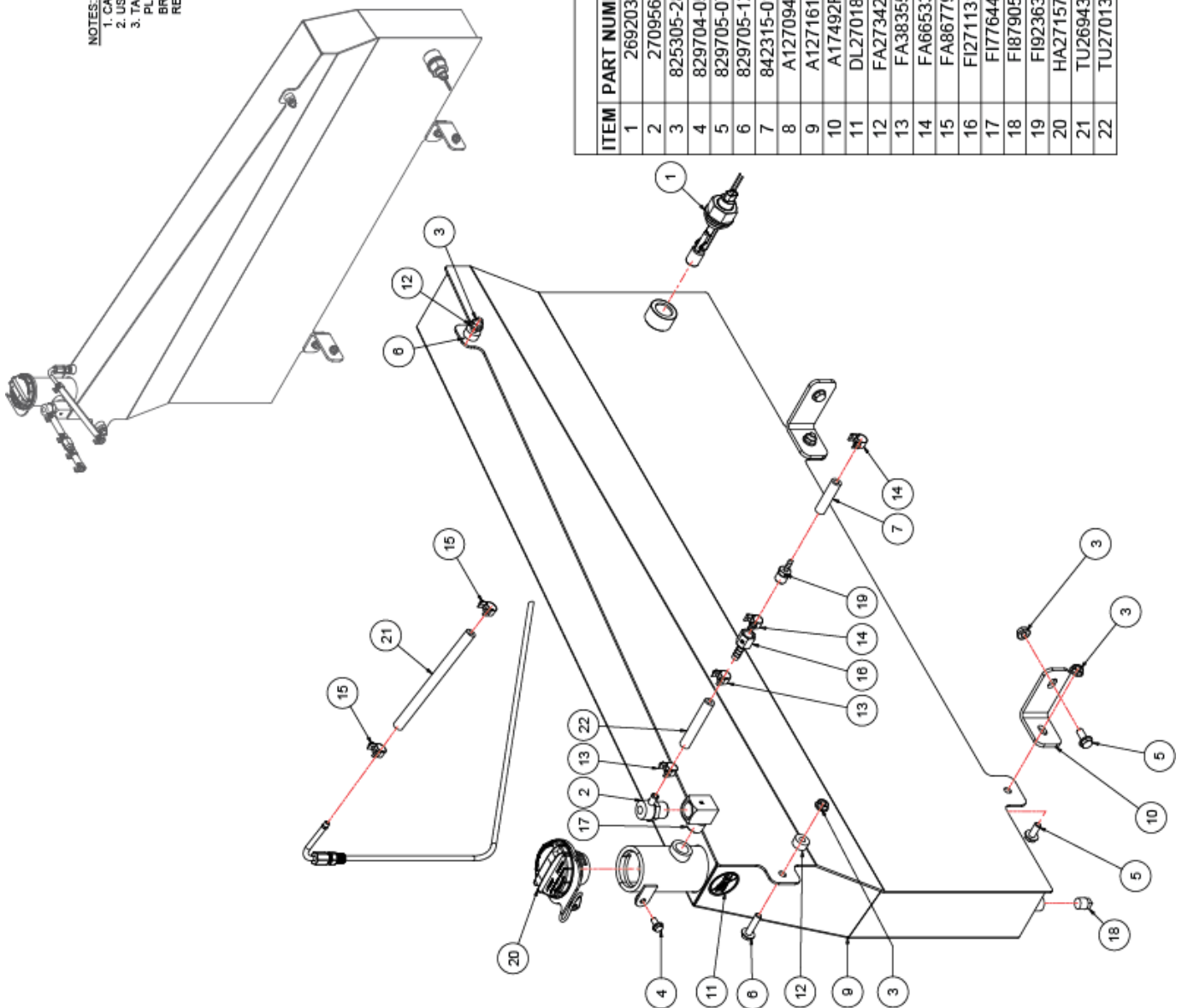


PARTS LIST		
ITEM	PART NUMBER	DESCRIPTION
1	289203	SWITCH, LIQUID LEVEL SIDE MOUNT
2	286359	TUBE, FUEL PICK-UP
3	270956	VALVE, ROLLOVER FUEL VENT 1/2 NPT
4	825305-283	NUT, HEX FLANGE 5/16-18
5	826502-209	O-RING, VITON 11/16 x 1/8
6	826704-050	SCREW, SER WASH 1/4-20 x 0.5
7	829705-075	SCREW, SER WASH 5/16-18 x 0.75
8	842315-019	HOSE, FUEL LINE 3/16 IN-ID SAE-30R7 (FT)
9	A1271616	TANK, FUEL 4.5 GAL, TETHERED
10	DL270183	DECAL, NO E85 GAS CAP LOGO
11	FA38355	CLAMP, HOSE T-BOLT STYLE 13MM
12	FA86533	CLAMP, HOSE, T BOLT STYLE 9mm
13	FI271131	HOSEBARB, 1/4 FNPT X 5/16 BRASS
14	FI77644	ELBOW, PIPE BRASS 1/2 NPT
15	FI87905	PLUG, PIPE 1/4
16	FI82363	HOSEBARB, 1/4 MNPT X 3/16 BRASS
17	HA271571	CAP, GAS VENTED TETHERED
18	TU269439	HOSE, FUEL 1/4 INCH SAEJ30R14T2 (FT)
19	TU270137	HOSE, FUEL 5/16 INCH SAEJ30R14T2 (FT)

7.46 FUEL TANK ASSEMBLY - 11.5 GALLON

ITEM	DESCRIPTION	PART NUMBER	QTY
1	SWITCH, LIQUID LEVEL SIDE MOUNT	269203	1
2	VALVE, ROLLOVER FUEL VENT 1/2 NPT	270956	1
3	NUT, HEX FLANGE 5/16-18	825305-283	6
4	SCREW, SER WASH 1/4-20 x 0.5	829704-050	1
5	SCREW, SER WASH 5/16-18 x 0.75	829705-075	4
6	SCREW, SER WASH 5/16-18 x 1.25	829705-125	2
7	TUBE, FUEL PICK UP	A1270944	1
8	TANK, FUEL 11GAL	A1271617	1
9	MOUNT, FUEL TANK LOWER EXTENDED	A17492P	2
10	HARNES, FUEL LEVEL	EP44840	1
11	3/8 SPACER, 5/16 ID	FA273428	2
12	CLAMP, HOSE, T-BOLT STYLE, 13mm SS	FA38355	2
13	CLAMP, HOSE, T BOLT STYLE 9mm	FA66533	2
14	CLAMP, HOSE, T-BOLT STYLE, 12mm	FA86779	2
15	HOSEBARB, 1/4FNPT X 5/16 BRASS	FI271131	1
16	ELBOW, PIPE BRASS 1/2 INCH NPT	FI77644	1
17	PLUG, PIPE 1/4	FI87905	1
18	PUSH - ON, MALE ADAPTER, 1/4 MALE X 3/16 PUSH	FI92363	1
19	CAP, GAS VENTED TETHERED	HA271571	1
20	HOSE, FUEL 1/4" SAE 30R9 CARB	TU269439	1
21	HOSE, FUEL 5/16 SAE 30R7	TU270137	1
22	HOSE, FUEL 3/16 SAE 30R7	TU28641	1
PLEASE NOTE: WHEN ORDERING PARTS, INDICATE MACHINE SERIAL NUMBER.			



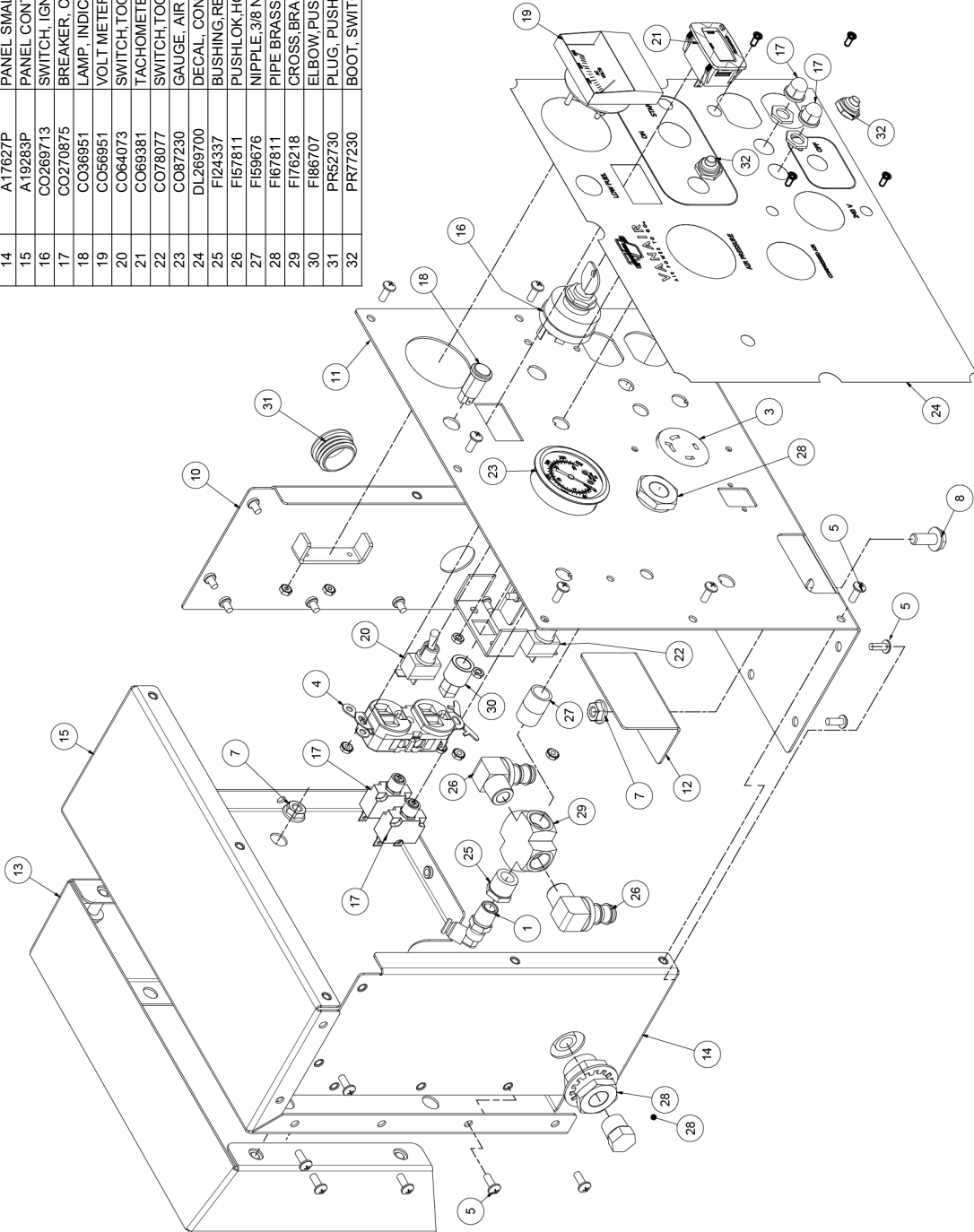


PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	269203	SWITCH, LIQUID LEVEL SIDE MOUNT	1
2	270956	VALVE, ROLLOVER FUEL VENT 1/2 NPT	1
3	825305-283	NUT, HEX FLANGE 5/16-18	6
4	829704-050	SCREW, SER WASH 1/4-20 x 0.5	1
5	829705-075	SCREW, SER WASH 5/16-18 x 0.75	4
6	829705-125	SCREW, SER WASH 5/16-18 x 1.25	2
7	842315-019	HOSE FUEL LINE 3/16 IN-ID SAE-30R7 (FT)	0.17 ft
8	A1270944	TUBE, FUEL PICK UP	1
9	A1271617	TANK, FUEL 11GAL	1
10	A17492P	MOUNT, FUEL TANK LOWER EXTENDED	2
11	DL270183	DECAL, NO E85 GAS CAP LOGO	1
12	FA273428	3/8 SPACER, 5/16 ID	2
13	FA38355	CLAMP, HOSE T-BOLT STYLE 13MM	2
14	FA68533	CLAMP, HOSE, T BOLT STYLE 9mm	2
15	FA86779	CLAMP, HOSE, T-BOLT STYLE, 12mm	2
16	FI271131	HOSEBARB, 1/4FNPT X 5/16 BRASS	1
17	FI77644	ELBOW, PIPE BRASS 1/2 INCH NPT	1
18	FI87905	PLUG, PIPE 1/4	1
19	FI92363	HOSEBARB, 1/4MNPT X 3/16 BRASS	1
20	HA271571	CAP, GAS VENTED TETHERED	1
21	TU269439	HOSE, FUEL 1/4 INCH SAEJ30R14T2 (FT)	1 FT
22	TU270137	HOSE, FUEL 5/16 INCH SAEJ30R14T2 (FT)	0.33 FT

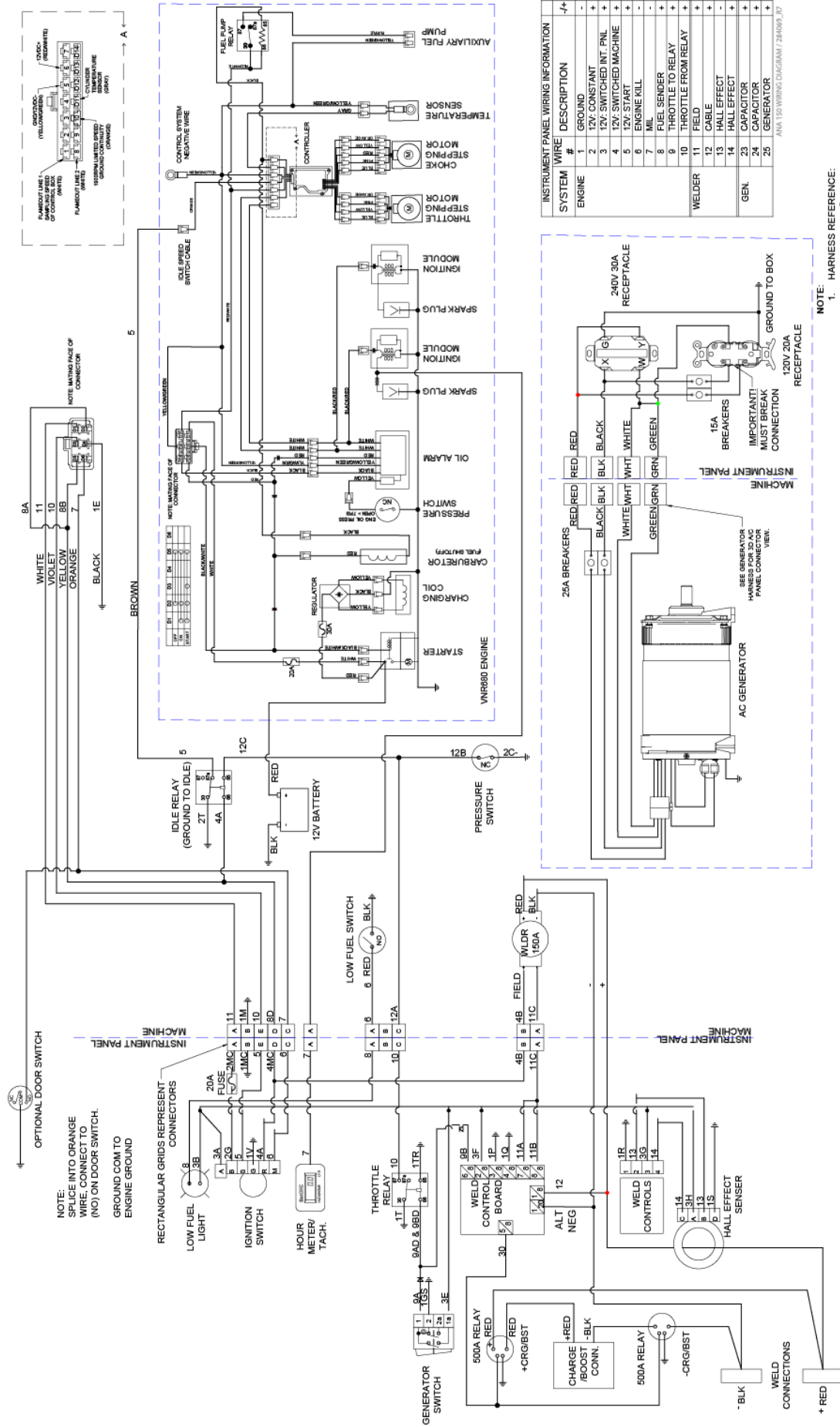
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7.48 REMOTE CONTROL PANEL

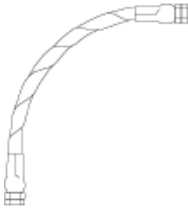
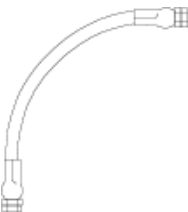
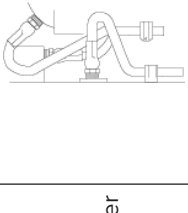
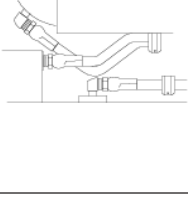
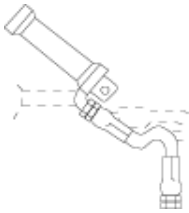
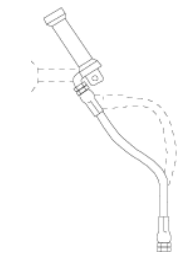
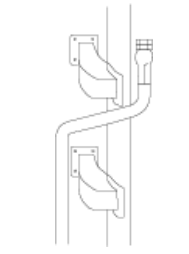
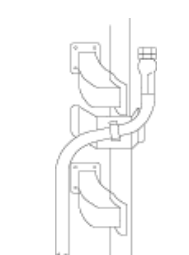
PARTS LIST			
ITEM	PART NUMBER	DESCRIPTION	QTY
1	261310	ELBOW, 90 deg. PUSH ON 1/4T x 1/4P	1
2	261595-632	NUT, HEX #6-32 KEPS	4
3	264853	RECEPTACLE, 240V/20A TURNLOK	1
4	270092	RECEPTACLE, 120V/20A	1
5	270426	SCREW,PAN HD #10-24 x 1/2 STAINLESS	25
6	274864-015	PLUG,HEX HEAD 3/8 NPT	1
7	825305-283	NUT, HEX FLANGE 5/16-18	5
8	829705-075	SCREW, SER WASH 5/16-18 x 0.75	5
9	860208-038	ELBOW, 37FL/90M #08 x 3/8	1
10	A11853P	PANEL, SMALL RIGHT SIDE REMOTE	1
11	A15491P	PANEL, FACE & BOTTOM INDUSTRIAL	1
12	A16158P	COVER WELDER CONNECTIONS REMCO	1
13	A16738P	MOUNT PANEL REMOTE	1
14	A17627P	PANEL SMALL LEFT SIDE REMOTE	1
15	A19283P	PANEL CONTROL BACK REMOTE SMALL	1
16	CO269713	SWITCH, IGNITION EFI ENGINES	1
17	CO270875	BREAKER, CIRCUIT 15AMP PNL MTG	2
18	CO36951	LAMP, INDICATOR, AMBER	1
19	CO56951	VOLT METER, 0-300 AC	1
20	CO64073	SWITCH,TOGGLE SPST ON/OFF MTRY	1
21	CO69381	TACHOMETER, HOUR, 12V SINGLE	1
22	CO78077	SWITCH,TOGGLE, SPST, ON/OFF	1
23	CO87230	GAUGE, AIR 0-300 PSI 2 DIA PANEL MTG	1
24	DL269700	DECAL, CONTROL PANEL	1
25	F124337	BUSHING,REDUCING BRASS 3/8 x 1/4 NPT	1
26	F167811	PUSHLOK HOSEBARB 90 DEG EL 3/8MPT X 1/2DIA HOSE BARB	2
27	F159676	NIPPLE, 3/8 NPT CLOSE BRASS	1
28	F167811	PIPE BRASS, BULKHEAD 3/8 NPT	2
29	F167218	CROSS, BRASS 3/8 FNPT	1
30	F166707	ELBOW,PUSH 1/4 FNPTx 1/4 90DEG BRASS	1
31	PR52730	PLUG, PUSH-IN, VINYL, 1/2DIA	1
32	PR77230	BOOT, SWITCH WEATHER PROOF	2



7.49 WIRING DIAGRAM - AIR N ARC® 150



NOTE:
1. HARNESS REFERENCE:
1.1. 284070 = MAIN @ MACHINE
1.2. EP272056 = MAIN @ INSTRUMENT PANEL
1.3. EP82587 = GENERATOR @ MACHINE
1.4. EP273030 = GENERATOR @ INSTRUMENT PANEL
1.5. EP268872 = HARNESS, WIRING INST PNL SWITCHES
2. SEE ID270925 FOR SWITCHES, LIGHTS AND DISPLAY WD.
3. OPTIONAL DOOR SWITCH ADDED

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

SECTION 8: APPENDIX

8.1 GENERAL DESCRIPTION

The maintenance and service log given in this appendix can be used to track and keep a record of the maintenance intervals of the machine, as well as any non-routine repairs or changes made, throughout the productive life of the machine package.

The Service Log generally gives two types of login periods of operation—by hours, and by date intervals. Service should adhere to whichever occurs first between the two types.

Keeping such a record is *extremely beneficial* when considering a solution to any troubleshooting problem that might occur. For additional assistance in setting up a routine and orderly schedule to track machine maintenance and repair, refer to **Section 5, Maintenance**, and particularly **Table 5A: Maintenance Schedule Table**.

The following pages include blank maintenance schedules to help track Service and Maintenance on your Vanair® equipment, as well as several reference tables for your convenience.

NOTICE

When determining a Service Schedule, always take into account the environment and conditions where the unit is operating. Extreme working conditions usually call for more frequent service checks. For more information consult Section 4.8.

[illegible]

TABLE 8A: MAINTENANCE TRACKING LOG

[illegible]

[illegible]

[illegible]

TABLE 8B: ELECTRIC MOTOR CHART - STARTING WATTS¹

HORSEPOWER	RUNNING WATTS	UNIVERSAL MOTOR (Small Appliance)	INDUCTION MOTOR	CAPACITOR MOTOR	SPLIT PHASE MOTOR	N/A
1/6	275	400	600	850	1200	-
1/4	400	500	850	1050	1700	-
1/3	450	600	950	1350	1950	-
1/2	600	750	1300	1800	2600	-
3/4	850	1000	1900	2600	X	-
1	1000	1250	2300	3000	X	-
1 1/2	1600	1750	3200	4200	X	-
2	2000	2350	3900	5100	X	-
3	3000	X	5200	6800	X	-
5	4800	X	7500	9800	X	-

¹ Approximate current requirements.**NOTE:** For pumps, air compressors, air conditioners, inverters add at least 25% to starting current.**TABLE 8C: EXTENSION CORD CHART**

CONTINUOUS LOAD (Use either Amps or Watts below)			MINIMUM GAUGE (AWG)			N/A
Amps	@ 120 Volts	@ 240 Volts	0-50 Feet	50-100 Feet	100-150 Feet	-
2	240	480	22	20	18	-
3	360	720	22	18	16	-
4	480	960	20	16	16	-
5	600	1200	18	16	14	-
6	720	1440	18	16	14	-
8	960	1920	16	14	12	-
10	1200	2400	16	12	12	-
12	1440	2880	16	12	10	-
14	1680	3660	14	12	10	-
16	1920	3840	14	10	10	-
18	2160	4320	14	10	8	-
20	2400	4800	12	10	8	-
22	2640	5280	12	10	8	-
25	3000	6000	12	10	6	-
30	3600	7200	10	8	6	-
35	4200	8400	10	8	4	-
40	4800	9600	8	6	2	-
50	6000	12000	6	4	2	-
60	7200	14400	4	2	2	-

TABLE 8D: WATTAGE REQUIREMENTS FOR COMMON RECEPTACLE UNITS

COMMON RECEPTICAL UNIT		WATTAGE	
		STARTING	RUNNING
Battery Charger, 10 Amps		—	200
Drill	- 1/4"	400	300
	- 3/8"	650	475
	- 1/2"	900	750
	- 1"	1250	1000
Welder 100 Amps DC		—	3600
Floodlight		—	1000
Grain Cleaner, 1/4 HP		1000	650
Grain Elevator, 3/4 HP		3000	1400
Grinders (By Motor Size)			
Heater Radiant Portable		—	1300
Heater Portable Liquid Fuel	- 50,000 btu	675	225
	- 100,000 btu	1260	420
	- 150,000 btu	1875	625
Impact Wrench	- 1/2"	750	600
	- 3/4"	900	750
	- 1"	1400	1200
Milk Cooler		1800	1100
Mixer, 3 ½ Cubic Feet		2300	1000
Motors			
Belt Sander		2600	1200
Disc Sander		2600	1200
Orbital Sander		2600	1200
Chain Saw			
6" Circular Saw		2200	950
7 ¼" Circular Saw		2600	1200
8 ½" Circular Saw		3000	1500
10" Circular Saw		3900	2000
Sump Pump		1300	400
Water Pump Submersible	- 3000 gph	1750	500
	- 5000 gph	2500	650
	- 10000 gph	3750	1000
	- 15000 gph	5000	1500
Water Pump Non-Submersible	- 3000 gph	2250	600
	- 5000 gph	2850	750
	- 10000 gph	4100	1100
	- 15000 gph	5250	1600

TABLE 8E: AIR TOOL CONSUMPTION CHART

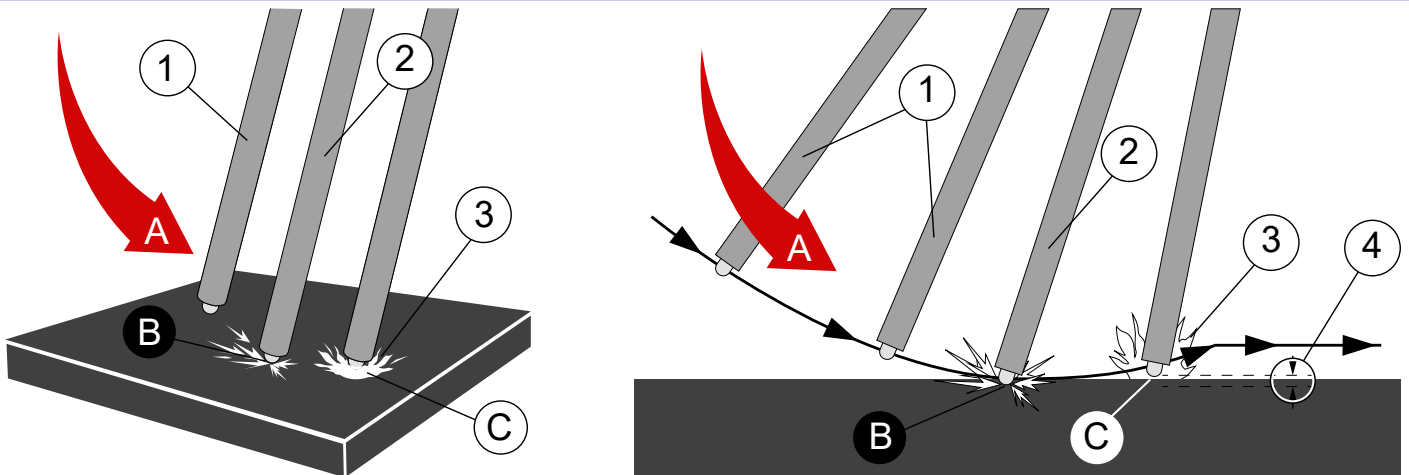
TOOL	AIR REQUIRED CFM @ 90 PSI
Dual Action (DA) Sanders	28.8 - 43.2 SCFM
5" High Speed Sanders	28.8 - 43.2 SCFM
Jitterbug Sanders	28.8 SCFM
Straight Line Sanders	28.8 SCFM
Air Belt Sanders	28.8 - 43.2 SCFM
Gasket Scrapers	43.2 SCFM
Air Punch and Flange Tool	28.8 SCFM
3/8" Drill	28.8 SCFM
1/2" Drill	28.8 SCFM
Screw Driver	18 SCFM
Impact Screw Driver	28.8 SCFM
Speed Saw	36 - 43.2 SCFM
Body Saw	57.6 SCFM
Jigsaw	43.2 SCFM
16 Gauge Nibbler	28.8 SCFM
Cut off Tool	28.8 SCFM
150 mm Air Hammer	28.8 SCFM
190 mm Air Hammer	30.24 SCFM
High Speed Grinder	57.6 SCFM
Mini Air Grinder	21.6 SCFM
Mini Angle Head Grinder	21.6 SCFM
1/4" Angle Head Grinder	57.6 SCFM
Tire Buffer	28.8 SCFM
1/4" Ratchet Wrench	21.6 SCFM
3/8" Ratchet Wrench	28.8 SCFM
3/8" Butterfly Impact Wrench	21.6 SCFM
1/2" Impact Wrench	28.8 SCFM
1/2" Heavy Duty Impact Wrench	39.60 SCFM
3/4" Impact Wrench	54 SCFM
3/4" Impact Wrench with 6" Anvil	54 SCFM
30 lb Pavement Breaker	37 SCFM
60 lb Pavement Breaker	48 SCFM
90 lb Pavement Breaker	68 - 85 SCFM
4" Piercing Tool	60 SCFM
60 lb 1650 BPM Rock Drill	95 SCFM
50 lb 1800 BPM Rock Drill	123 SCFM
Chipping Hammer	26 - 33 SCFM

Air N Arc® 150/Contractor 20 HP Series

TABLE 8F: AIR N ARC® 150 SERIES AVAILABLE OPTIONS		
Air N Arc® 150 - 20 CFM Air Compressor 5 kW Generator 150 Amp Welder Models	Part a	N/A
Air N Arc® 150 - 20 HP, Remote Control Panel, 12/24V Battery Boost/Charge		-
Air N Arc® 150 - No Air Storage, No Fuel	050681	-
Air N Arc® 150 - 30 Gallon Air Storage, 11.5 Gallon Fuel Storage	050680	-
Required Harness for Remote Control - Air N Arc® 150 - 20 HP with Remote Control		
Remote Mount Control Panel Connection Harness - 6'	TLPI-6	-
Remote Mount Control Panel Connection Harness - 10'	TLPI-10	-
Remote Mount Control Panel Connection Harness - 14'	TLPI-14	-
Remote Mount Control Panel Connection Harness - 18'	TLPI-18	-
Harness, Kits, Options and Accessories Options		
California CARB Compliance Kit (Fuel Vapor Carbon Canister)	032851	
Optional Weld Cable Set 25' 1/0	033020-25	
Optional Weld Cable Set 50' 1/0	033020-50	
Weld Cable Reel, Manual Rewind with 50' Leads, 400 Amp	033136	
Weld Cable Reel, Spring Forward with 50' Leads, 400 Amp	033137	
Optional Battery Boost Cables - 20' (2 GA with Quick Connect Ends)	MA36223	
Cold Weather Kits - Air N Arc® 150		
Cold Weather Kit 12VDC (Compressor Oil and Engine Oil Pan Heater*)	032793	
Cold Weather Kit 120VAC (Compressor Oil and Engine Oil Pan Heater*)	032927	
* installed at time of machine build. (Note: 12V utilizes chassis battery)		
Standard Service Kits and Oil		
Compressor Service Kits (Three Air Filters and Vanguard™ Oil)	KIT1156	
Engine Service Kit, Vanair® VNR680 20 HP (Two Quarts Oil, Air Filter, Two Spark Plugs, Fuel Filter)	KIT1504	
Vanguard™ Reciprocating Oil (One Gallon)	271856-1GAL	
Vanguard™ Reciprocating Oil (One Quart)	271856-1QT	

TABLE 8G: PROCESS/CONTACTOR SWITCH SETTINGS

Switch Setting	Process	Output On/Off Control
Electrode Hot - Wire	MIG (GMAW)	Electrode Hot
Electrode Hot - Stick	Stick (SMAW)	
Select Preferred Dig	Electrode Hot	
Electrode Hot - Stick	Air Carbon Arc (CAC-A) Cutting and Gouging Select Any Dig	Electrode Hot
Electrode Hot - Lift Arc with Auto-Crater	TIG (GTAW) Lift Arc with Auto-Crater (GTAW)(DC only)	Electrode Hot
Electrode Hot - Lift Arc with Auto-Stop	TIG (GTAW) Lift Arc with Auto-Stop (GTAW)(DC only)	Electrode Hot
TIG - Remote On/Off	TIG (GTAW) With HF Unit, Pulsing Device, or Remote Control (AC or DC)	At Remote Receptacle
Stick - Remote On/Off	Stick (SMAW) with Remote On/Off	At Remote Receptacle
Wire - Wire Feeder (CV) Using Remote	MIG (GMAW)	At Remote Receptacle



KEY	DESCRIPTION	KEY	DESCRIPTION
1	ELECTRODE ABOVE THE WORK PIECE	A	Direction of striking/scratching: electrode is lowered and dragged across the work piece in a similar manner to striking a match.
2	ELECTRODE SCRATCHING THE WORK PIECE	B	As electrode is dragged, sparks are followed by an established arc.
3	AN ESTABLISHED ARC	C	Electrode is then lifted to approximately the thickness of the electrode (4) from the work piece. Establish a weld pattern at this time.
4	DISTANCE MAINTAINED (approximate width of electrode)		

NOTES

If arc goes out, the electrode was lifted too high; repeat with electrode closer to work piece surface.

If the electrode sticks to work piece surface, the current is too low. Quickly twist the electrode to free it and increase the amperage.

Figure 8-1: Electrode Ignition Scratch Process



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