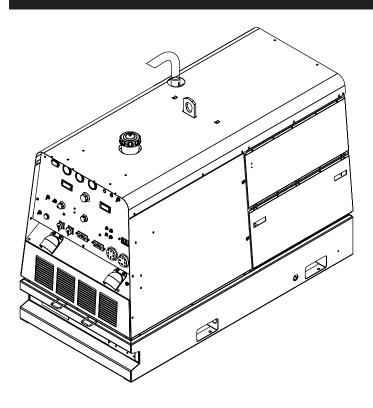


Operator's Manual

VANTAGE® 500 Deutz



For use with machines having Code Numbers:

11468, 11931, 11932, 11960

Equipped with VRD (VOLTAGE REDUCTION DEVICE) See Installation and Operation sections for an explanation.



Register your machine:

www.lincolnelectric.com/register

Authorized Service and Distributor Locator:

www.lincolnelectric.com/locator

Save for future reference

ate Purchased	
	\neg
Code: (ex: 10859)	
erial: (ex: U1060512345)	

Need Help? Call 1.888.935.3877

to talk to a Service Representative

Hours of Operation:

8:00 AM to 6:00 PM (ET) Mon. thru Fri.

After hours?

Use "Ask the Experts" at lincolnelectric.com A Lincoln Service Representative will contact you no later than the following business day.

For Service outside the USA:

Email: globalservice@lincolnelectric.com

THANK YOU FOR SELECTING A QUALITY PRODUCT BY LINCOLN ELECTRIC.

PLEASE EXAMINE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

When this equipment is shipped, title passes to the purchaser upon receipt by the carrier. Consequently, claims for material damaged in shipment must be made by the purchaser against the transportation company at the time the shipment is received.

SAFETY DEPENDS ON YOU

Lincoln arc welding and cutting equipment is designed and built with safety in mind. However, your overall safety can be increased by proper installation ... and thoughtful operation on your part. DO NOT INSTALL, OPERATE OR REPAIR THIS EQUIPMENT WITHOUT READING THIS MANUAL AND THE SAFETY PRECAUTIONS CONTAINED THROUGHOUT. And, most importantly, think before you act and be careful.

WARNING

This statement appears where the information must be followed exactly to avoid serious personal injury or loss of life.

! CAUTION

This statement appears where the information must be followed to avoid minor personal injury or damage to this equipment.

KEEP YOUR HEAD OUT OF THE FUMES.

DON'T get too close to the arc. Use corrective lenses if necessary to stay a reasonable distance away from the arc.

READ and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

USE ENOUGH VENTILATION or exhaust at the arc, or both, to

keep the fumes and gases from

your breathing zone and the general area.

IN A LARGE ROOM OR OUTDOORS, natural ventilation may be adequate if you keep your head out of the fumes (See below).

USE NATURAL DRAFTS or fans to keep the fumes away from your face.

If you develop unusual symptoms, see your supervisor. Perhaps the welding atmosphere and ventilation system should be checked.



WEAR CORRECT EYE, EAR & BODY PROTECTION

PROTECT your eyes and face with welding helmet properly fitted and with proper grade of filter plate (See ANSI Z49.1).

PROTECT your body from welding spatter and arc flash with protective clothing including woolen clothing, flame-proof apron and gloves, leather leggings, and high boots.

PROTECT others from splatter, flash, and glare with protective screens or barriers.

IN SOME AREAS, protection from noise may be appropriate.

BE SURE protective equipment is in good condition.

Also, wear safety glasses in work area **AT ALL TIMES.**



SPECIAL SITUATIONS

DO NOT WELD OR CUT containers or materials which previously had been in contact with hazardous substances unless they are properly cleaned. This is extremely dangerous.

DO NOT WELD OR CUT painted or plated parts unless special precautions with ventilation have been taken. They can release highly toxic fumes or gases.



Additional precautionary measures

PROTECT compressed gas cylinders from excessive heat, mechanical shocks, and arcs; fasten cylinders so they cannot fall.

BE SURE cylinders are never grounded or part of an electrical circuit.

REMOVE all potential fire hazards from welding area.

ALWAYS HAVE FIRE FIGHTING EQUIPMENT READY FOR IMMEDIATE USE AND KNOW HOW TO USE IT.



SECTION A: WARNINGS



CALIFORNIA PROPOSITION 65 WARNINGS



WARNING: Breathing diesel engine exhaust exposes you to chemicals known to the State of California to cause cancer and birth defects. or other reproductive harm.

- Always start and operate the engine in a well-ventilated area.
- If in an exposed area, vent the exhaust to the outside.
- Do not modify or tamper with the exhaust system.
- Do not idle the engine except as necessary.

For more information go to www.P65 warnings.ca.gov/diesel

WARNING: This product, when used for welding or cutting, produces fumes or gases which contain chemicals known to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety Code § 25249.5 et seq.)



WARNING: Cancer and Reproductive Harm www.P65warnings.ca.gov

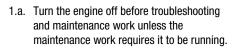
ARC WELDING CAN BE HAZARDOUS. PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS SHOULD CONSULT WITH THEIR DOCTOR BEFORE OPERATING.

Read and understand the following safety highlights. For additional safety information, it is strongly recommended that you purchase a copy of "Safety in Welding & Cutting -ANSI Standard Z49.1" from the American Welding Society, P.O. Box 351040, Miami, Florida 33135 or CSA Standard W117.2-1974. A Free copy of "Arc Welding Safety" booklet E205 is available from the Lincoln Electric Company, 22801 St. Clair Avenue, Cleveland, Ohio 44117-1199.

BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS.



FOR ENGINE POWERED EQUIPMENT.





- 1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.
- 1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact



- with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.
- 1.d. Keep all equipment safety quards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing equipment.



- 1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.
- 1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.
- 1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.
- 1.h. To avoid scalding, do not remove the radiator pressure cap when the engine is hot.



ELECTRIC AND MAGNETIC FIELDS MAY **BE DANGEROUS**



- 2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines
- 2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician
- 2.c. Exposure to EMF fields in welding may have other health effects which are now not known.
- 2.d. All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:
 - 2.d.1. Route the electrode and work cables together Secure them with tape when possible.
 - 2.d.2. Never coil the electrode lead around your body.
 - 2.d.3. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.
 - 2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.
 - 2.d.5. Do not work next to welding power source.



ELECTRIC SHOCK

- 3.a. The electrode and work (or ground) circuits are electrically "hot" when the welder is on. Do not touch these "hot" parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.
- 3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (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, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:

- Semiautomatic DC Constant Voltage (Wire) Welder.
- DC Manual (Stick) Welder.
- AC Welder with Reduced Voltage Control.
- 3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically "hot".
- 3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
- Ground the work or metal to be welded to a good electrical (earth) ground.
- Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
- 3.g. Never dip the electrode in water for cooling.
- 3.h. Never simultaneously touch electrically "hot" parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
- 3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
- 3.j. Also see Items 6.c. and 8.



ARC RAYS CAN BURN.



- 4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87. I standards.
- 4.b. Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- 4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.



FUMES AND GASES CAN BE DANGEROUS.



fumes and gases. When welding, keep your head out of the fume. Use enough ventilation and/or exhaust at the arc to keep fumes and gases away from the breathing zone. When welding hardfacing (see instructions on container or SDS) or on lead or cadmium plated steel and other metals or coatings which produce highly toxic fumes, keep exposure as low as possible and within applicable OSHA PEL and ACGIH TLV limits using local exhaust or mechanical ventilation unless exposure assessments indicate otherwise. In confined spaces or in some circumstances, outdoors, a respirator may also be required. Additional precautions are also required when welding

on galvanized steel.

- 5. b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.
- 5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.
- 5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
- 5.e. Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the Safety Data Sheet (SDS) and follow your employer's safety practices. SDS forms are available from your welding distributor or from the manufacturer.
- 5.f. Also see item 1.b.



WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION.

- G
- 6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.
- 6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.
- 6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- 6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).
- Vent hollow castings or containers before heating, cutting or welding. They may explode.
- 6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- 6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.
- 6.h. Also see item 1.c.
- Read and follow NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, MA 022690-9101.
- 6.j. Do not use a welding power source for pipe thawing.



CYLINDER MAY EXPLODE IF DAMAGED.

7.a. Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.



- 7.b. Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.
- 7.c. Cylinders should be located:
 - Away from areas where they may be struck or subjected to physical damage.
 - A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.
- 7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.
- Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.
- 7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.
- 7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-I, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association, 14501 George Carter Way Chantilly, VA 20151.



FOR ELECTRICALLY POWERED EQUIPMENT.



- 8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.
- 8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.
- 8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

Refer to http://www.lincolnelectric.com/safety for additional safety information.

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TECHNICAL SPECIFICATIONS - VANTAGE® 500 DEUTZ (K2405-2, K2405-3, K2405-4)

	INPUT - DIESEL ENGINE									
Make /Model	Description	Speed (RPM)	Displacement	Starting System	Capacities					
DEUTZ D 2011 L4i Diesel Engine EPA Tier 4 interim Compliant	4 cylinder 48HP (36 kw) @ 1800 RPM	High Idle 1890 Low Idle 1425 Full Load 1800	190 cu. in (3.1L) Bore x Stroke 3.70" x 4.41" (94mm x 112mm)	12VDC battery & Starter	Fuel 25 US gal. (94.6L) Oil: 2.5 US gal. (9.5L)					

RATED OUTPUT @ 104°F(40°C) - WELDERDuty CycleWelding OutputVolts at Rated Amps100%500 Amps (DC multi-purpose)40 Volts60%550 Amps (DC multi-purpose)36 volts50%575 Amps (DC multi-purpose)35 volts

OUTPUT @ 104°F(40°C) - WELDER AND GENERATOR

Welding Range

30 - 575 Amps CC/CV 20 - 250 Amps TIG

Open Circuit Voltage

60 Max OCV @ 1900 RPM

Auxiliary Power (1)

120/240 VAC

12,000 WATTS, 60 Hz., Single Phase 20,000 WATTS, 60 Hz., Three Phase

PHYSICAL DIMENSIONS									
Height (2)	Weight								
42.0 in (1066.8 mm)	31.5 in. (800.1mm)	63.1 in. (1603mm)	1532lbs. (695kg) (Approx)						

^{1.} Output rating in watts is equivalent to volt-amperes at unity power factor.

Output voltage is within +/- 10% at all loads up to rated capacity. When welding, available auxiliary power will be reduced.

^{2.} Top of Enclosure. Add 8.9" (226mm) for exhaust.

Read this entire installation section before you start installation.

SAFETY PRECAUTIONS

A WARNING

Do not attempt to use this equipment until you have thoroughly read all operating and maintenance manuals supplied with your machine. They include important safety precautions, detailed engine starting, operating and maintenance instructions and parts lists.

ELECTRIC SHOCK can kill.



- Do not touch electrically live parts such as output terminals or internal wiring.
- Insulate yourself from the work and ground.
- Always wear dry insulating gloves.

ENGINE EXHAUST can kill.



Use in open, well ventilated areas or vent exhaust outside

X

MOVING PARTS can injure.

- Do not operate with doors open or guards off.
- Stop engine before servicing.
- Keep away from moving parts

Only qualified personnel should install, use or service this equipment.

LOCATION / VENTILATION

The welder should be located to provide an unrestricted flow of clean, cool air to the cooling air inlets and to avoid restricting the cooling air outlets. Also, locate the welder so that the engine exhaust fumes are properly vented to an outside area.

A CAUTION

DO NOT MOUNT OVER COMBUSTIBLE SURFACES Where there is a combustible surface directly under stationary or fixed electrical equipment, that surface should be covered with a steel plate at least .06"(1.6mm) thick, which should extend not less than 5.90"(150mm) beyond the equipment on all sides.

STORING

- Store the machine in a cool, dry place when it is not in use. Protect it from dust and dirt. Keep it where it can't be accidentally damaged from construction activities, moving vehicles, and other hazards.
- Drain the engine oil and refill with fresh 10W30 oil. Run the engine for about five minutes to circulate oil to all the parts. See the MAINTE-NANCE section of this manual for details on changing oil.
- 3. Remove the battery, recharge it, and adjust the electrolyte level. Store the battery in a dry, dark place.

STACKING

VANTAGE® 500 DEUTZ machines cannot be stacked.

ANGLE OF OPERATION

To achieve optimum engine performance the VAN-TAGE® 500 DEUTZ should be run in a level position. The maximum angle of operation for the Deutz engine is 30 degrees in all directions. When operating the welder at an angle, provisions must be made for checking and maintaining the oil level at the normal (FULL) oil capacity. Also the effective fuel capacity will be slightly less than the specified 25 gal.(94.6 ltrs.).

LIFTING

The VANTAGE® 500 DEUTZ lift bale should be used to lift the machine. The VANTAGE® 500 DEUTZ is shipped with the lift bale retracted. Before attempting to lift the VANTAGE® 500 DEUTZ the lift bale must be secured in a raised position. Secure the lift bale as follows:

- a. Open the engine compartment door.
- b. Locate the 2 access holes on the upper middle region of compartment wall just below the lift bale.
- c. Use the lifting strap to raise the lift bale to the full upright position. This will align the mounting holes on the lift bale with the access holes.
- d. Secure the lift bale with 2 thread forming screws. The screws are provided in the shipped loose parts bag.

A WARNING



- Lift only with equipment of adequate lifting capacity.
- Be sure machine is stable when lifting.
- Do not lift this machine using lift bale if it is equipped with a heavy accessory such as trailer or gas cylinder.

FALLING EQUIPMENT can

- Do not lift machine if lift bale is damaged.
- cause injury.
- Do not operate machine while suspended from lift bale.

HIGH ALTITUDE OPERATION

At higher altitudes, output derating may be necessary. For maximum rating, derate the welder output 5% for every 300 meters (984 ft.) above 1500 meters (4920 ft.). For output of 500A and below, derate the welder output 5% for every 300 meters (984 ft.) above 2100 meters (6888 ft.).

Contact a Deutz Service Representative for any engine adjustments that may be required.

HIGH TEMPERATURE OPERATION

At temperatures above 104°F (40°C), output voltage derating may be necessary. For maximum output current ratings, derate welder voltage rating 2 volts for every 21°F (10°C) above 104°F (40°C).

TOWING

The recommended trailer for use with this equipment for road, in-plant and yard towing by a vehicle (1) is Lincoln's K2636-1. If the user adapts a non-Lincoln trailer, he must assume responsibility that the method of attachment and usage does not result in a safety hazard nor damage the welding equipment. Some of the factors to be considered are as follows:

- 1. Design capacity of trailer vs. weight of Lincoln equipment and likely additional attachments.
- 2. Proper support of, and attachment to, the base of the welding equipment so that there will be no undue stress to the trailer's framework.
- Proper placement of the equipment on the trailer to insure stability side to side and front to back when being moved and when standing by itself.
- 4. Typical conditions of use, such as travel speed, roughness of surface on which the trailer will be operated, and environmental conditions.
- 5. Proper preventative maintenance of trailer.
- 6. Conformance with federal, state and local laws $\ensuremath{^{\mbox{\tiny (1)}}}$
- (1) Consult applicable federal, state and local laws regarding specific requirements for use on public highways.

VEHICLE MOUNTING

A WARNING

Improperly mounted concentrated loads may cause unstable vehicle handling and tires or other components to fail.

- Only transport this Equipment on serviceable vehicles which are rated and designed for such loads
- Distribute, balance and secure loads so vehicle is stable under conditions of use.
- Do not exceed maximum rated loads for components such as suspension, axles and tires.
- Mount equipment base to metal bed or frame of vehicle.
- · Follow vehicle manufacturer's instructions.

PRE-OPERATION ENGINE

READ the engine operating and maintenance instructions supplied with this machine.

A WARNING



- Keep hands away from the engine muffler or HOT engine parts.
- Stop engine and allow to cool before fuelling.
- · Do not smoke when fuelling.
- Fill fuel tank at a moderate rate and do not overfill.
- Wipe up spilled fuel and allow fumes to clear before starting engine.
- · Keep sparks and flame away from tank.

OIL



The VANTAGE® 500 DEUTZ is shipped with the engine crankcase filled with high quality SAE 10W-30 oil (API class CD or better). Check the engine oil level before starting the engine. If it is not up to the full mark on the dip stick, add oil as required. Check the oil level every four hours of running time during the first 35 running hours. Refer to the engine Operator's Manuals for specific oil recommendations and break-in information. The oil change interval is dependent on the quality of the oil and the operating environment. Refer to the engine Operator's Manuals for the proper service and maintenance intervals.

FUEL



DIESEL FUEL ONLY-Low sulphur fuel or ultrallow sulphur fuel in U.S.A. and Canada.

Fill the fuel tank with clean, fresh diesel fuel. The capacity of the fuel tank is approximately 25 gallons (95 liters). See engine Operator's Manual for specific fuel recommendations. Running out of fuel may require bleeding the fuel injection pump. NOTE: Before starting the engine, open the fuel shutoff valve (pointer to be in line with hose).

FUEL CAP

Remove the plastic cap covering from the Fuel Tank Filler neck and install the Fuel Cap.

ENGINE COOLING SYSTEM

The Deutz engine is air cooled by the belt driven axial blower. The oil cooler and engine cooling fins should be blown out with compressed air or steam to maintain proper cooling. (See the engine Owners Manual for procedures and frequency).

ENGINE BREAK-IN

Lincoln Electric selects high quality, heavy-duty industrial engines for the portable welding machines we offer. While it is normal to see a small amount of crankcase oil consumption during initial operation, excessive oil use, wet stacking (oil or tar like substance at the exhaust port), or excessive smoke is not normal.

Larger machines with a capacity of 350 amperes and higher, which are operated at low or no-load conditions for extended periods of time are especially susceptible to the conditions described above. To accomplish successful engine break-in, most diesel-powered equipment needs only to be run at a reasonably heavy load within the rating of the welder for some period of time during the engine's early life. However, if the welder is subjected to extensive light loading, occasional moderate to heavy loading of the engine may sometimes be necessary. Caution must be observed in correctly loading a diesel/generator unit.

- Connect the welder output studs to a suitable resistive load bank. Note that any attempt to short the output studs by connecting the welding leads together, direct shorting of the output studs, or connecting the output leads to a length of steel will result in catastrophic damage to the generator and voids the warranty.
- Set the welder controls for an output current and voltage within the welder rating and duty cycle. Note that any attempt to exceed the welder rating or duty cycle for any period of time will result in catastrophic damage to the generator and voids the warranty.
- Periodically shut off the engine and check the crankcase oil level.

BATTERY CONNECTION

A WARNING



GASES FROM BATTERY can explode.

 Keep sparks, flame and cigarettes away from battery.

To prevent EXPLOSION when:

 INSTALLING A NEW BATTERY disconnect negative cable from old battery first and connect to new battery last.

- CONNECTING A BATTERY CHARGER remove battery from welder by disconnecting negative cable first, then positive cable and battery clamp. When reinstalling, connect negative cable last. Keep well ventilated.
- USING A BOOSTER connect positive lead to battery first then connect negative lead to negative battery lead at engine foot.

BATTERY ACID can burn eyes and skin.



- Wear gloves and eye protection and be careful when working near battery.
- Follow instructions printed on battery.

IMPORTANT: To prevent ELECTRICAL DAMAGE WHEN:

- a) Installing new batteries.
- b) Using a booster.

Use correct polarity — **Negative Ground.**

The VANTAGE® 500 DEUTZ is shipped with the negative battery cable disconnected. Before you operate the machine, make sure the Engine Switch is in the OFF position and attach the disconnected cable securely to the negative (-) battery terminal.

Remove the insulating cap from the negative battery terminal. Replace and tighten negative battery cable terminal. NOTE: This machine is furnished with a wet charged battery; if unused for several months, the battery may require a booster charge. Be sure to use the correct polarity when charging the battery.

MUFFLER OUTLET PIPE

Remove the plastic plug covering the muffler outlet tube. Using the clamp provided secure the outlet pipe to the outlet tube with the pipe positioned such that it will direct the exhaust in the desired position.

SPARK ARRESTOR

Some federal, state or local laws may require that petrol or diesel engines be equipped with exhaust spark arresters when they are operated in certain locations where unarrested sparks may present a fire hazard. The standard muffler included with this welder does not qualify as a spark arrestor. When required by local regulations, a suitable spark arrestor, must be installed and properly maintained.

A CAUTION

An incorrect arrestor may lead to damage to the engine or adversely affect performance.

WELDING TERMINALS

The VANTAGE® 500 DEUTZ is equipped with a toggle switch for selecting "hot" welding terminals when in the "WELD TERMINALS ON" position or "cold" welding terminals when in the "REMOTELY CONTROLLED" position.

WELDING OUTPUT CABLES

With the engine off, route the electrode and work cables thru the strain relief bracket provided on the front of the base and connect to the terminals provided. These connections should be checked periodically and tightened if necessary.

Listed in Table A.1 are copper cable sizes recommended for the rated current and duty cycle. Lengths stipulated are the distance from the welder to work and back to the welder again. Cable sizes are increased for greater lengths primarily for the purpose of minimizing cable voltage drop.

Table A.1 Combined Length of Electrode and Work Cables.

	TOTAL COMBINED LENGTH OF ELEC- TRODE AND WORK CABLES							
AMPS @100% Duty Cycle	Up to 150ft Up to 492m	150-200ft 492-656m	200-250ft 656-820m					
500	3/0 AWG 3/0 AWG 4/0 AWG							

MACHINE GROUNDING

Because this portable engine driven welder creates its own power, it is not necessary to connect its frame to an earth ground, unless the machine is connected to premises wiring (home, shop, etc.).

To prevent dangerous electric shock, other equipment powered by this engine driven welder must:

- a) be grounded to the frame of the welder using a grounded type plug, or
- b) be double insulated.

When this welder is mounted on a truck or trailer, its frame must be securely connected to the metal frame of the vehicle. When this engine driven welder is connected to premises wiring such as that in a home or shop, its frame must be connected to the system earth ground. See further connection instructions in the section entitled "Standby Power Connections" as well as the article on grounding in the latest National Electrical Code and the local codes.

In general, if the machine is to be grounded, it should be connected with a #8 or larger copper wire to a solid earth ground such as a metal ground stake going into the ground for at least 10Ft.(3.1m) or to the metal framework of a building which has been effectively grounded. The National Electric Code lists a number of alternate means of grounding electrical equipment. A machine grounding stud marked with the symbol is provided on the front of the welder.

REMOTE CONTROL

OUTPUT

The VANTAGE 500 DEUTZ is equipped with a 6-pin and a 14-pin connector. The 6-pin connector is for connecting the K857 or K857-1 Remote Control or for TIG welding, the K870 foot Amptrol or the K936-2 hand Amptrol. When in the CC-STICK, DOWNHILL PIPE, or CV-WIRE modes and when a remote control is connected to the 6-pin Connector, the auto-sensing circuit automatically switches the OUTPUT control from control at the welder to remote control.

When in TOUCH START TIG mode and when a Amptrol is connected to the 6-Pin Connector, the OUTPUT dial is used to set the maximum current range of the CURRENT CONTROL of the Amptrol.

The 14-pin connector is used to directly connect a wire feeder control cable. In the CV-WIRE mode, when the control cable is connected to the 14-pin connector, the auto-sensing circuit automatically makes the Output Control inactive and the wire feeder voltage control active

NOTE: When a wire feeder with a built in welding voltage control is connected to the 14-pin connector, do not connect anything to the 6-pin connector.

When in the DOWNHILL PIPE mode and when a remote control is connected to the 6-Pin or 14-Pin connector, the output control is used to set the maximum current range of the remote.

EXAMPLE: When the OUTPUT CONTROL on the welder is set to 200 amps the current range on the remote control will be 40-200 amps, rather than the full 40-300 amps. Any current range that is less than the full range provides finer current resolution for more fine tuning of the output.

The 14-pin connector is used to directly connect a wire feeder control cable. In the CV-WIRE mode, if the feeder being used has a voltage control when the wire feeder control cable is connected to the 14-Pin Connector, the autosensing circuit automatically makes OUTPUT CONTROL inactive and the wire feeder voltage control active. Otherwise, the OUTPUT CONTROL is used to preset the voltage.

NOTE: When a wire feeder with a built in welding voltage control is connected to the 14-pin connector, do not connect anything to the 6-pin connector.

AUXILIARY POWER RECEPTACLES

The auxiliary power capacity of the VANTAGE® 500 DEUTZ is 12,000 watts of 60 Hz, single phase or 20,000 watts of 60Hz, three phase power. The auxiliary power capacity rating in watts is equivalent to volt-amperes at unity power factor. The maximum permissible current of the 240 VAC output is 50 A. The 240 VAC single phase output can be split to provide two separate 120 VAC outputs with a maximum permissible current of 50 A per output to two separate 120 VAC branch circuits. The output voltage is within ± 10% at all loads up to rated capacity.

The VANTAGE® 500 DEUTZ has two 20 Amp-120VAC single phase(5-20R) GFCI duplex receptacles, one 50 Amp-120/240 single phase VAC (14-50R) receptacle and one 240VAC three phase (15-50R) receptacle. The auxiliary power receptacles should only be used with three wire grounded type plugs or approved double insulated tools with two wire plugs. The current rating of any plug used with the system must be at least equal to the current capacity of the associated receptacle.

A 240VAC 3 phase plug is provided loose with the machine.

Note: The two 120V GFCI receptacles and the two 120 volt circuits of the 120/240V receptacle are connected to different phases and can not be paralleled.

STANDBY POWER CONNECTIONS

The VANTAGE® 500 DEUTZ is suitable for temporary, standby or emergency power using the engine manufacturer's recommended maintenance schedule.

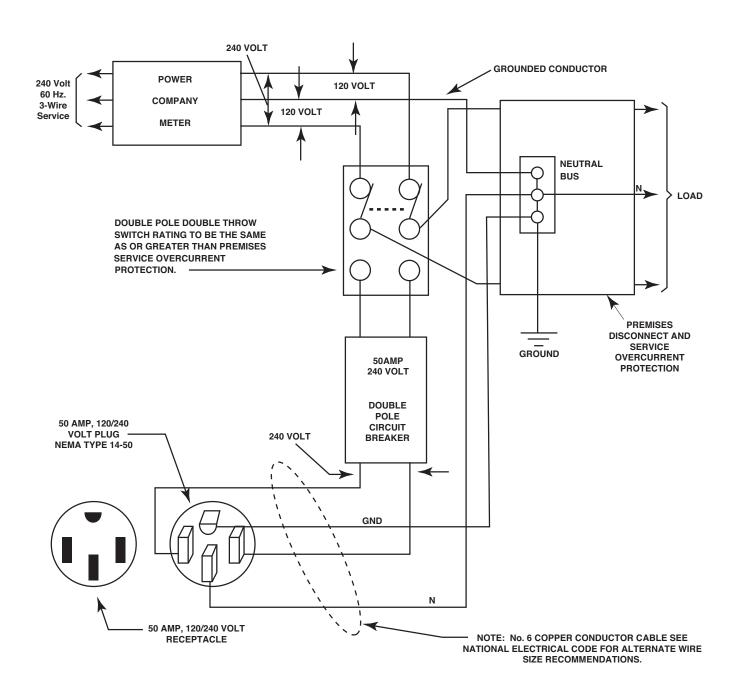
The VANTAGE® 500 DEUTZ can be permanently installed as a standby power unit for 240 volt-3 wire, 50 amp service. Connections must be made by a licensed electrician who can determine how the 120/240 VAC power can be adapted to the particular installation and comply with all applicable electrical codes. The following information can be used as a guide by the electrician for most applications. Refer to the connection diagram shown in Figure A.2.

 Install the double-pole, double-throw switch between the power company meter and the premises disconnect.

Switch rating must be the same or greater than the customer's premises disconnect and service over current protection.

- 2. Take necessary steps to assure load is limited to the capacity of the VANTAGE® 500 DEUTZ by installing a 50 amp, 240 VAC double pole circuit breaker. Maximum rated load for each leg of the 240 VAC auxiliary is 50 amps. Loading above the rated output will reduce output voltage below the allowable -10% of rated voltage which may damage appliances or other motor-driven equipment and may result in overheating of the VANTAGE® 500 DEUTZ engine.
- Install a 50 amp 120/240 VAC plug (NEMA Type 14-50) to the double-pole circuit breaker using No. 6, 4 conductor cable of the desired length. (The 50 amp, 120/240 VAC plug is available in the optional K802R plug kit.)
- 4. Plug this cable into the 50 Amp 120/240 Volt receptacle on the VANTAGE® 500 DEUTZ case front.

Figure A.2 Connection of the VANTAGE® 500 DEUTZ to Premises Wiring



CONNECTION OF LINCOLN ELECTRIC WIRE FEEDERS

A WARNING

Shut off welder before making any electrical connections.

CONNECTION OF LN-7, LN-8 OR LN-742 TO THE VANTAGE® 500 DEUTZ

- · Shut the welder off.
- Connect the LN-7, LN-8 OR LN-742 per instructions on the appropriate connection diagram in the DIA-GRAMS section.
- Set the "WIRE FEEDER VOLTMETER" switch to either "+" or "-" as required by the electrode being used.
- Set the "SELECTOR" switch to the "CV-WIRE" position.
- Adjust the "ARC CONTROL" knob to desired Crispness. SOFT for MIG and CRISP for Innershield.
- Set the "WELDING TERMINALS" switch to the "REMOTELY CONTROLLED" position.
- · Set the "IDLE" switch to the "HIGH" position.

CONNECTION OF LN-15 TO THE VAN-TAGE® 500 DEUTZ

These connections instructions apply to both the LN-15 Across-The-Arc and Control Cable models. The LN-15 has an internal contactor and the electrode is not energized until the gun trigger is closed. When the gun trigger is closed the wire will begin to feed and the welding process is started.

- · Shut the welder off.
- For electrode Positive, connect the electrode cable to the "+" terminal of the welder and work cable to the "-" terminal of the welder. For electrode Negative, connect the electrode cable "-" terminal of the welder and work cable to the "+" terminal of the welder.

· Across The-Arc Model:

Attach the single lead from the front of the LN-15 to work using the spring clip at the end of the lead. This is a control lead to supply current to the wire feeder motor; it does not carry welding current.

· Control Cable Model:

Connect Control Cable between Engine Welder and Feeder.

Set the MODE switch to the "CV-WIRE" position.

· Across The-Arc Model:

Set the "WELD TERMINALS" switch to "WELD TERMINALS ON"

· Control Cable Model:

Set the "WELD TERMINALS" switch to "REMOTELY CONTROLLED"

Set the "WIRE FEEDER VOLTMETER" switch to either "+" or "-" as required by the electrode polarity being used.

Set the "ARC CONTROL" knob to "0" initially and adjust to suit.

Set the "IDLE" switch to the "AUTO IDLE" position

CONNECTION OF THE LN-25 TO THE VANTAGE® 500 DEUTZ

The LN-25 with or without an internal contactor may be used with the VANTAGE® 500 DEUTZ. See the appropriate connection diagram in the DIAGRAMS section.

- · Shut the welder off.
- For electrode Positive, connect the electrode cable from the LN-25 to the "+" terminal of the welder and work cable to the "-" terminal of the welder. For electrode Negative, connect the electrode cable from the LN-25 to the "-" terminal of the welder and work cable to the "+" terminal of the welder.
- Attach the single lead from the front of the LN-25 to work using the spring clip at the end of the lead. This is a sense lead to supply current to the wire feeder motor; it does not carry welding current.
- Set the SELECTOR switch to the "CV-WIRE" position.
- Set the "WELDING TERMINALS" switch to "WELD TERMINALS ON"
- Adjust the "ARC CONTROL" knob to desired crispness. Generally, welding is best if the "ARC CONTROL" is set to SOFT for MIG and CRISP for INNERSHIELD. You may however, want to start in the middle and adjust (as needed) from there.
- Set the "IDLE" switch to the "AUTO" position. When not welding, the VANTAGE® 500 DEUTZ engine will be at the low idle speed. If you are using an LN-25 with an internal contactor, the electrode is not energized until the gun trigger is closed.

A CAUTION

If you are using an LN-25 without an internal contactor, the electrode will be energized when the VANTAGE® 500 DEUTZ is started.

 When the gun trigger is closed, the current sensing circuit will cause the wire to begin to feed and the welding process is started.

CONNECTION OF AN NA-3 AUTOMATIC WELDING SYSTEM TO THE VANTAGE® 500 DEUTZ

For connection diagrams and instructions for connecting an NA-3 Welding System to the VANTAGE® 500 DEUTZ, refer to the NA-3 Welding System instruction manual. The connection diagram for the LN-8 can be used for connecting the NA-3.

• Set the Wire Feeder Voltage Switch to 115V.

CONNECTION OF MAGNUM SG SPOOL GUN TO THE VANTAGE® 500 DEUTZ (SEE SECTION F)

SAFETY INSTRUCTIONS

Read and understand this entire section before operating your VANTAGE® 500 DEUTZ.

A WARNING

Do not attempt to use this equipment until you have thoroughly read all operating and maintenance manuals supplied with your machine. They include important safety precautions, detailed engine starting, operating and maintenance instructions and parts lists.

ELECTRIC SHOCK can kill.



- Do not touch electrically live parts such as output terminals or internal wiring.
- Insulate yourself from the work and ground.
- Always wear dry insulating gloves.

ENGINE EXHAUST can kill.



- Use in open, well ventilated areas or vent exhaust outside
- Do not stack anything near the engine.



MOVING PARTS can injure.

- Do not operate with doors open or guards off.
- · Stop engine before servicing.
- Keep away from moving parts

Only qualified personnel should operate this equipment.

ADDITIONAL SAFETY PRECAUTIONS

Always operate the welder with the sliding door closed and the side panels in place as these provide maximum protection from moving parts and insure proper cooling air flow.

GENERAL DESCRIPTION

The VANTAGE® 500 DEUTZ is a diesel engine-driven welding power source. The machine uses a brush type alternating current generator for DC multi-purpose welding, for 120/240 VAC single phase and 240V three phase auxiliary standby power. The welding control system uses state of the art Chopper Technology™.

RECOMMENDED APPLICATIONS

WELDER

The VANTAGE® 500 DEUTZ provides excellent constant current DC welding output for stick (SMAW) and TIG welding. The VANTAGE® 500 DEUTZ also provides excellent constant voltage DC welding output for MIG (GMAW), Innershield (FCAW), Outershield (FCAW-G) and Metal Core welding. In addition the VANTAGE® 500 DEUTZ can be used for Arc Gouging with carbons up to 3/8"(10mm) in diameter.

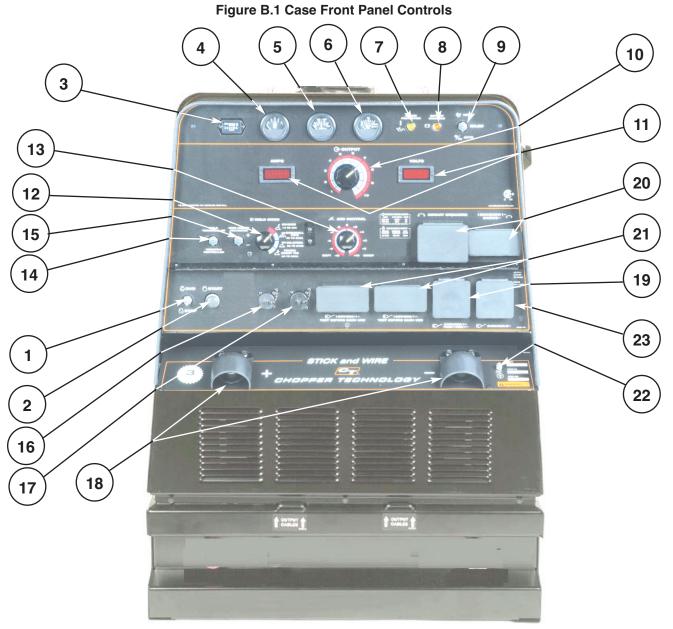
The VANTAGE® 500 DEUTZ is **not recommended** for pipe thawing.

GENERATOR

The VANTAGE® 500 DEUTZ provides smooth 120/240 VAC single phase and 240V three phase output for auxiliary power and emergency standby power.

CONTROLS AND SETTINGS

All welder and engine controls are located on the case front panel. Refer to Figure B.1 and the explanations that follow.



ENGINE CONTROLS (Items 1 through 9)

1. RUN 🖏 STOP 🖔 SWITCH

Toggling the switch to the RUN position energizes the fuel solenoid for approximately 30 seconds. The engine must be started within that time or the fuel solenoid will degenerize, and the switch must be toggled to reset the timer.

2. START PUSHBUTTON



Energizes the starter motor to crank the engine. With the engine "Run / Stop" switch in the "Run" position, push and hold the Start button to crank the engine; release as the engine starts. Do not press while engine is running since this can cause damage to the ring gear and/or starter motor

3. HOUR METER

The hour meter displays the total time that the engine has been running. This meter is a useful indicator for scheduling preventive maintenance.

4. FUEL LEVEL GAUGE



Displays the level of diesel fuel in the fuel tank.

The operator must watch the fuel level closely to prevent running out of fuel and possibly having to bleed the system.

5. ENGINE TEMPERATURE GAUGE



The gauge displays the engine coolant temperature.

6. OIL PRESSURE GAUGE



The gauge displays the engine oil pressure when the engine is running.

7. ENGINE PROTECTION

The yellow engine protection light remains off with proper oil pressure and under normal operating temperatures. If the light turns on, the engine protection system will stop the engine. Check for proper oil level and add oil if necessary. Check for loose or disconnected leads at the oil pressure sender located on the engine. The light will remain on when the engine has been shut down due to low oil pressure or over-temperature condition.

8. BATTERY CHARGING LIGHT



The yellow engine alternator light is off when battery charging system is functioning normally. If light turns on, the engine protection system will shut down the engine. Check the Engine cooling blower belt. Also, the alternator or the voltage regulator may not be operating correctly. The light may also come on due to a faulty flashing circuit. The light will remain on when the engine is stopped and the run/stop switch is in the run position.

9. IDLER SWITCH

Has two positions as follows:

- A) In the "High" position , the engine runs at the high idle speed controlled by the governor.
- B) In the "Auto" position, the idler operates as follows:
 - a. When switched from "High" to "Auto" or after starting the engine, the engine will operate at full speed for approximately 12 seconds and then go to low idle speed.
 - b. When the electrode touches the work or power is drawn for lights or tools (approximately 100 Watts minimum) the engine accelerates and operates at full speed.

- c. When welding ceases and the AC power load is turned off, a fixed time delay of approximately 12 seconds starts.
- d. If the welding or AC power load is not restarted before the end of the time delay, the idler reduces the engine speed to low idle speed.
- e. The engine will automatically return to high idle speed when the welding load or A.C. power load is reapplied.

Idler Operational exceptions

When the WELDING TERMINALS switch is in the "Remotely Controlled" position the idler will operate as follows:

- a. When the triggering device (Amptrol, Arc Start Switch, etc.) is pressed the engine will accelerate and operate at full speed provided a welding load is applied within approximately 12 seconds.
- If the triggering device remains pressed but no welding load is applied within approximately 12 seconds the engine may return to low idle speed.
- If the triggering device is released or welding ceases the engine will return to low idle speed after approximately 12 seconds.

WELDING CONTROLS (Items 10 through 19)

10. OUTPUT CONTROL: The OUTPUT dial is used to preset the output voltage or current as displayed on the digital meters for the four welding modes. When in the CC-STICK, DOWNHILL PIPE or CV-WIRE modes and when a remote control is connected to the 6-Pin or 14-Pin Connector, the auto-sensing circuit automatically switches the OUTPUT CONTROL from control at the welder to the remote control. In the CV-WIRE mode, when the wire feeder control cable is connected to the 14-Pin Connector, the auto-sensing circuit automatically makes OUTPUT CONTROL inactive and the wire feeder voltage control active.

When in the TOUCH START TIG mode and when a Amptrol is connected to the 6-Pin Connector, the OUT-PUT dial is used to set the maximum current range of the CURRENT CONTROL of the Amptrol.

11. DIGITAL OUTPUT METERS:

The digital meters allow the output voltage (CV-WIRE mode) or current (CC-STICK, DOWNHILL PIPE and TIG modes) to be set prior to welding using the OUTPUT control knob. During welding, the meters display the actual output voltage (VOLTS) and current (AMPS). A memory feature holds the display of both meters on the seven seconds after welding is stopped. This allows the operator to read the actual current and voltage just prior to when welding was ceased. While the display is being held the left-most decimal point in each display will be flashing. The accuracy of the meters is \pm 3%.

12. WELD MODE SELECTOR SWITCH:

(Provides four selectable welding modes)

CV-WIRE

DOWNHILL PIPE

CC-STICK

TOUCH START TIG

13. ARC CONTROL:

The ARC CONTROL WIRE/STICK knob is active in the WIRE and STICK modes, and has different functions in these modes. This control is not active in the TIG mode.

CC-STICK mode: In this mode, the ARC CONTROL knob sets the short circuit current (arc-force) during stick welding. Increasing the number from -10(Soft) to +10(Crisp) increases the short circuit current and prevents sticking of the electrode to the plate while welding.

This can also increase spatter. It is recommended that the ARC CONTROL be set to the minimum number without electrode sticking. Start with a setting at 0.

DOWNHILL PIPE mode: In this mode, the ARC CONTROL knob sets the short circuit current (arc-force) during stick welding to adjust for a soft or a more forceful digging arc (Crisp).

Increasing the number from -10(Soft) to +10(Crisp) increases the short circuit current which results in a more forceful digging arc. Typically a forceful digging arc is preferred for root and hot passes. A softer arc is preferred for fill and cap passes where weld puddle control and deposition ("stacking" of iron) are key to fast travel speeds. It is recommended that the ARC CONTROL be set initially at 0.

The OUTPUT dial is used to preset the output voltage or current as displayed on the digital meters for the five welding modes. When in the CC-STICK, ARC GOUGING or CV-WIRE modes and when a remote control is connected to the 6-Pin or 14-Pin Connector, the auto-sensing circuit automatically switches the OUTPUT CONTROL from control at the welder to the remote control.

When in the DOWNHILL PIPE mode and when a remote control is connected to the 6-Pin or 14-Pin connector, the output control is used to set the maximum current range of the remote.

EXAMPLE: When the OUTPUT CONTROL on the welder is set to 200 amps the current range on the remote control will be 40-200 amps, rather than the full 40-300 amps. Any current range that is less than the full range provides finer current resolution for more fine tuning of the output.

In the CV-WIRE mode, if the feeder being used has a voltage control when the wire feeder control cable is connected to the 14-Pin Connector, the auto-sensing circuit automatically makes OUTPUT CONTROL inactive and the wire feeder voltage control active. Otherwise, the OUTPUT CONTROL is used to preset the voltage

14. WELDING TERMINALS SWITCH

In the WELD TERMINALS ON position, the output is electrically hot all the time. In the REMOTELY CONTROLLED position, the output is controlled by a wire feeder or amptrol device, and is electrically off until a remote switch is depressed.

15. WIRE FEEDER VOLTMETER SWITCH:

Matches the polarity of the wire feeder voltmeter to the polarity of the electrode.

16. 6 - PIN CONNECTOR

For attaching optional remote control equipment. Includes auto-sensing remote control circuit.

17. 14 - PIN CONNECTOR

For attaching wire feeder control cables. Includes contactor closure circuit, auto-sensing remote control circuit, and 120VAC and 42VAC power.

NOTE: When a wire feeder with a built in welding voltage control is connected to the 14-pin connector, do not con-

18. WELD OUTPUT TERMINALS + AND -

These 1/2" - 13 studs with flange nuts provide welding connection points for the electrode and work cables. For positive polarity welding the electrode cable connects to the "+" terminal and the work cable connects to this "-" terminal. For negative polarity welding the work cable connects to the "+" terminal and the electrode cable connects to this "-" terminal.

AUXILIARY POWER CONTROLS

(Items 19-23)

19. 120/240 VAC SINGLE PHASE RECEPTACLE

This is a 120/240VAC (14-50R) receptacle that provides 240VAC or can be split for 120VAC single phase auxiliary power. This receptacle has a 50 amp rating. Refer to the AUXILIARY POWER RECEPTACLES section in the installation chapter for further information about this receptacle. Also refer to the AUXILIARY POWER OPERATION section later in this chapter.

20. CIRCUIT BREAKERS

These circuit breakers provide separate overload current protection for each 120V circuit at the 240V single phase receptacle, each 120V single phase receptacle, the 240V three phase receptacle, the 120VAC in the 14-Pin connector, the 42VAC in the 14-Pin connector and battery circuit overload protection.

21. 120VAC SINGLE PHASE RECEPTACLES

These two 120VAC (5-20R) receptacles with ground fault circuit interruption protection provide 120VAC single phase for auxiliary power. Each receptacle has a 20 amp total rating. They are designed to protect the user from the hazards of ground faults. When the GFCI has tripped there will be no voltage available from the receptacle. If the GFCI has tripped, any device plugged into the GFCI receptacle should be unplugged and the reason for tripping the GFCI should be determined. If the device is found to be damaged or defective, it should be repaired or replaced before any further use. The GFCI should be checked for proper operation prior to each use by pressing the test button. The GFCI can be reset by pushing the reset button. Refer to the AUXILIARY POWER RECEPTACLES section in the installation chapter for further information about these receptacles. Also refer to the AUXILIARY POWER OPERATION section later in this chapter.

22. GROUND STUD

Provides a connection point for connecting the machine case to earth ground. Refer to "MACHINE GROUNDING" in the Installation chapter for proper machine grounding information.

23. 240VAC THREE PHASE RECEPTACLE

This is a 240VAC (15-50R) receptacle that provides 240VAC three phase auxiliary power. This receptacle has a 50 amp rating.

ENGINE OPERATION

STARTING THE ENGINE

- Open the engine compartment door and check that the fuel shutoff valve located to the left of the fuel filter housing is in the open position (lever to be in line with the hose).
- 2. Check for proper oil level. Close engine compartment door.
- 3. Remove all plugs connected to the AC power receptacles.
- 4. Set IDLER switch to "AUTO".
- Set the RUN/STOP switch to "RUN". Observe that the engine protection and battery charging lights are on. After 10 seconds, the engine protection light will turn off.
- 6. Within 30 seconds, press and hold the engine START button until the engine starts.
- 7. Release the engine START button when the engine starts.
- Check that the engine protection and battery charging lights are off. The engine protection light is on after starting, the engine will shutdown in a few seconds. Investigate any indicated problem.
- Allow the engine to warm up at low idle speed for several minutes before applying a load and/or switching to high idle. Allow a longer warm up time in cold weather.

COLD WEATHER STARTING

With a fully charged battery and the proper weight oil, the engine should start satisfactorily even down to about 0°F(-18°C). If the engine must be frequently started below 10°(-12°C), it may be desirable to install the optional ether start kit (K887-1). Installation and operating instructions are included in the kits.

STOPPING THE ENGINE

Switch the RUN/STOP switch to "STOP". This turns
off the voltage supplied to the shutdown solenoid. A
backup shutdown can be accomplished by shutting
off the fuel valve located on the fuel line.

BREAK-IN PERIOD

The engine used to supply power for your welder is a heavy duty, industrial engine. It is designed and built for rugged use. It is very normal for any engine to use small quantities of oil until the break-in is accomplished. Check the oil level twice a day during the break-in period. In general this takes 50 to 100 hours of operation.

IMPORTANT

IN ORDER TO ACCOMPLISH THIS BREAK-IN, THE UNIT SHOULD BE SUBJECTED TO HEAVY LOADS, WITHIN THE RATING OF THE MACHINE. AVOID LONG IDLE RUNNING PERIODS.

TYPICAL FUEL CONSUMPTION

Refer to Table B.2 for typical fuel consumption of the VAN-TAGE® 500 DEUTZ Engine for various operating scenarios.

WELDER OPERATION

Table B.2
DEUTZ F4L2011 Engine Fuel Consumption

	DEUTZ D2011L04 48HP(36Kw) @1800 RPM	Running Time for 25GAL.(94.6L) (Hours)
Low Idle - no load 1425 RPM	.47 Gal./hour (1.8 L/hour)	53
High Idle - no load 1900 RPM	.63 Gal./hour (2.4 L/hour)	40
DC CC Weld Output 500 Amps @ 40 Volts	1.99 Gal./hour (7.53 L/hour)	12.6
Auxiliary Power 12,000 VA	1.25 Gal./hour (4.73 L/hour)	20.0
Auxiliary Power 20,000 VA	1.76 Gal./hour (6.66 L/hour)	14.2

DUTY CYCLE

Duty cycle is the percentage of time the load is being applied in a 10 minute period. For example, a 60% duty cycle represents 6 minutes of load and 4 minutes of no load in a 10 minute period.

STICK WELDING MODE

The VANTAGE® 500 DEUTZ can be used with a broad range of DC stick electrodes.

The MODE switch provides two stick welding settings as follows:

CC-STICK MODE

The CC-STICK position of the MODE switch is designed for horizontal, vertical-up and over head welding with all types of electrodes, especially low hydrogen. The OUTPUT CONTROL knob adjusts the full output range for stick welding.

The ARC CONTROL knob sets the short circuit (arc-force)

current during stick welding. Increasing the number from -10(Soft) to +10 (Crisp) increases the short circuit current and prevents sticking of the electrode to the plate while welding. This can also increase spatter. It is recommended that the ARC CONTROL be set to the minimum number without electrode sticking. Start with the knob set at 0.

DOWNHILL PIPE MODE

This slope controlled setting is intended for "out-of-position" and "down hill" pipe welding where the operator would like to control the current level by changing the arc length. The OUTPUT CONTROL knob adjusts the full output range for pipe welding.

The ARC CONTROL knob sets the short circuit current (arcforce) during stick welding to adjust for a soft or a more forceful digging arc (Crisp). Increasing the number from -10(Soft) to +10(Crisp) increases the short circuit current which results in a more forceful digging arc. Typically a forceful digging arc is preferred for root and hot passes. A softer arc is preferred for fill and cap passes where weld puddle control and deposition ("stacking" of iron) are key to fast travel speeds. It is recommended that the ARC CONTROL be set initially at 0.

TOUCH START TIG MODE

The VANTAGE® 500 DEUTZ can be used in a wide variety of DC TIG welding applications.

The TOUCH START TIG setting of the MODE switch is for DC TIG (Tungsten Inert Gas) welding. To initiate a weld, the OUTPUT CONTROL knob is first set to the desired current and the tungsten is touched to the work. During the time the tungsten is touching the work there is very little voltage or current and, in general, avoids tungsten contamination. Then, the tungsten is gently lifted off the work in a rocking motion, which establishes the arc.

To stop the arc, simply lift the TIG torch away from the work piece. When the arc voltage reaches approximately 30 volts, the arc will go out and the machine will automatically reset to the touch start current level. The tungsten may then be retouched to the work piece to restrike the arc. The arc may also be started and stopped with an Amptrol or Arc Start Switch

The ARC CONTROL is not active in the TIG mode.

In general the 'Touch Start' feature avoids tungsten contamination without the use of a Hi-frequency unit. If the use of a high frequency generator is desired, the K930-2 TIG Module can be used with the VANTAGE® 500 DEUTZ. The settings are for reference.

The VANTAGE® 500 DEUTZ is equipped with the required R.F. bypass circuitry for the connection of high frequency generating equipment.

The VANTAGE® 500 DEUTZ and any high frequency generating equipment must be properly grounded. See the K930-2 TIG Module operating manuals for complete instructions on installation, operation, and maintenance.

When using the TIG Module, the OUTPUT control on the VANTAGE® 500 DEUTZ is used to set the maximum range of the CURRENT CONTROL on the TIG Module or an Amptrol if connected to the TIG Module.

VANTAGE® 500 DEUTZ SETTINGS WHEN USING THE K930-2 TIG MODULE

- Set the WELD MODE switch to the "Touch Start TIG 20-250 Setting".
- Set the IDLER switch to the "AUTO" position.
- Set the WELDING TERMINALS switch to the "Remotely Controlled" position. This will keep the solid state contactor open and provide a "cold" electrode until the triggering device (Amptrol or Arc Start Switch) is pressed.

Table B.3 TYPICAL CURRENT RANGES (1) FOR TUNGSTEN ELECTRODES (2)

Tungsten	DCEN (-)	DCEP (+)	Approximate Arg		
Electrode Diameter mm (in)	1%, 2% Thoriated Tungsten	1%, 2% Thoriated Tungsten	Aluminum	Stainless Steel	TIG TORCH Nozzle Size (4), (5)
.25 (0.010)	2-15	(3)	2-4 (3-8)	2-4 (3-8)	#4, #5, #6
.50 (0.020)	5-20	(3)	3-5 (5-10)	3-5 (5-10)	
1.0 (0.040)	15-80	(3)	3-5 (5-10)	3-5 (5-10)	
1.6 (1/16)	70-150	10-20	3-5 (5-10)	4-6 (9-13)	#5, #6
2.4 (3/32) 3.2 (1/8)	150-250 250-400	15-30 25-40	6-8 (13-17) 7-11 (15-23)	5-7 (11-15) 5-7 (11-15)	#6, #7, #8
4.0 (5/32) 4.8 (3/16)	400-500 500-750	40-55 55-80	10-12 (21-25) 11-13 (23-27)	6-8 (13-17) 8-10 (18-22)	#8, #10
6.4 (1/4)	750-1000	80-125	13-15 (28-32)	11-13 (23-27)	

- (1) When used with argon gas. The current ranges shown must be reduced when using argon/helium or pure helium shielding gases.
- (2) Tungsten electrodes are classified as follows by the American Welding Society (AWS):

Pure EWP
1% Thoriated EWTh-1
2% Thoriated EWTh-2

Though not yet recognized by the AWS, Ceriated Tungsten is now widely accepted as a substitute for 2% Thoriated Tungsten in AC and DC applications.

- (3) DCEP is not commonly used in these sizes.
- (4) TIG torch nozzle "sizes" are in multiples of 1/16ths of an inch:

#4= 1/4 in. 6 mm #5= 5/16 in. 8 mm #6= 3/8 in. 10 mm #7= 7/16 in. 11 mm #8= 1/2 in. 12.5 mm #10 = 5/8 in.

(5) TIG torch nozzles are typically made from alumina ceramic. Special applications may require lava nozzles, which are less prone to breakage, but cannot withstand high temperatures and high duty cycles.

CV-WIRE MODE

Connect a wire feeder to the VANTAGE® 500 DEUTZ and set welder controls according to the instructions listed earlier in this section.

The VANTAGE® 500 DEUTZ in the "CV-WIRE" position, permits it to be used with a broad range of flux cored wire (Innershield and Outershield) electrodes and solid wires for MIG welding (gas metal arc welding). Welding can be finely tuned using the "ARC CONTROL". Turning the ARC CONTROL clockwise from -10(soft) to +10(crisp) changes the arc from soft and washed-in to crisp and narrow. It acts as an inductance/pinch control. The proper setting depends on the procedure and operator preference. Start with the knob set at 0.

For any electrodes, including the above recommendations, the procedures should be kept within the rating of the machine. For additional electrode information, See www.lincolnelectric.com or the appropriate Lincoln publication.

ARC GOUGING

For optimal performance when arc gouging, set the VANTAGE® 500 DEUTZ "WELD MODE" switch to the "CC - STICK" position, and the "ARC CONTROL" to 10.

Set the "OUTPUT" knob to adjust output current to the desired level for the gouging electrode being used according to the ratings in the following table:

ELECTRODE DIAMETER	CURRENT RANGE (DC, electrode positive)
(1/8")	30-60 Amps
(5/32")	90-150 Amps
(3/16")	200-250 Amps
(1/4")	300-400 Amps
(5/16")	350-450 Amps
(3/8")	450-575 Amps*

NOTE: If desired the CV mode can be used for Arc Gouging.

* Maximum current setting is limited to the VAN-TAGE® 500 DEUTZ maximum of 575 Amps.

PARALLELING

When paralleling machines in order to combine their outputs, all units must be operated in the CC-STICK mode only at the same output settings. To achieve this, turn the WELD MODE switch to the CC-STICK position. Operation in other modes may produce erratic outputs, and large output imbalances between the units.

AUXILIARY POWER OPERATION

Start the engine and set the IDLER control switch to the desired operating mode. Full power is available regardless of the welding control settings, if no welding current is being drawn.

The auxiliary power of the VANTAGE® 500 DEUTZ consists of two 20 Amp-120VAC single phase (5-20R) GFCI duplex receptacles, one 50 Amp-120/240VAC single phase (14-50R) receptacle and one 50 Amp 240VAC three phase (15-50R) receptacle. The 120/240VAC receptacle can be split for single phase 120 VAC operation.

The auxiliary power capacity is 12,000 watts of 60 Hz, single phase power or 20,000 watts of 60Hz, three phase power. The auxiliary power capacity rating in watts is equivalent to volt-amperes at unity power factor. The maximum permissible current of the 240 VAC output is 50 A. The 240 VAC single phase output can be split to provide two separate 120 VAC outputs with a maximum permissible current of 50 A per output to two separate 120 VAC branch circuits. Output voltage is within ± 10% at all loads up to rated capacity.

NOTE: The two 120V GFCI receptacles and the two 120V circuits of the 120/240V receptacle are connected to different phases and <u>cannot</u> be paralleled.

The auxiliary power receptacles should only be used with three wire grounded type plugs or approved double insulated tools with two wire plugs.

The current rating of any plug used with the system must be at least equal to the current capacity of the associated receptacle.

SIMULTANEOUS WELDING AND AUXILIARY POWER LOADS

It must be noted that the above auxiliary power ratings are with no welding load.

Simultaneous welding and power loads are specified in table B.4. The permissible currents shown assume that current is being drawn from either the 120 VAC or 240 VAC supply (not both at the same time).

TABLE B.4 VANTAGE® 500 DEUTZ SIMULTANEOUS WELDING AND POWER LOADS

WELD		1 PHASE			3 PHA	\SE]	BOTH 1	I AND 3 PHASE
<u>AMPS</u>		WATTS	AMPS		<u>WATTS</u>	AMPS		WATTS	<u>AMPS</u>
0		12,000	50		20,000	50			50
100		12,000	50		17,800	43			50
200	PLUS	12,000	50	<u>OR</u>	14,000	34	OR		50
250		12,000	50		12,000	29		12,000	
300		10,000	42		10,000	24		10,000	
400		5,600	23		5,600	13		5,600	
500		0	0		0	0		0	0

TABLE B.5 VANTAGE® 500 DEUTZ Extension Cord Length Recommendations

Current	Voltag		Maximum Allowable Cord Length in ft. (m) for Conductor Size											
(Amps)	е	Load	14 /	AWG	12 <i>A</i>	AWG	10 A	AWG	8 A	WG	6 A	WG	4 A	AWG
	(Volts)	(Watts)												
15	120	1800	30	(9)	40	(12)	75	(23)	125	(38)	175	(53)	300	(91)
15	240	3600	60	(18)	75	(23)	150	(46)	225	(69)	350	(107)	600	(183)
20	120	2400			30	(9)	50	(15)	88	(27)	138	(42)	225	(69)
20	240	4800			60	(18)	100	(30)	175	(53)	275	(84)	450	(137)
25	240	6000					90	(27)	150	(46)	225	(69)	250	(76)
30	240	7200					75	(23)	120	(37)	175	(53)	300	(91)
38	240	9000							100	(30)	150	(46)	250	(76)
50	240	12000									125	(38)	200	(61)

Conductor size is based on maximum 2.0% voltage drop.

OPTIONAL FIELD INSTALLED ACCESSORIES

K802N POWER PLUG KIT - Provides four 120V plugs rated at **20 amps** each and one dual voltage, full KVA plug rated at 120/240V, 50 amps. 120V plug may not be compatible with NEMA common household receptacles.

K802-R POWER PLUG KIT - Provides four 120V plugs rated **15 amps** each and one dual voltage, full KVA plug rated at 120/240V, 50 amps, 120V plug is compatible with NEMA common household receptacles.

K857 25 ft. (7.5 m) or K857-1 100 ft. (30.4 m) REMOTE CON-

TROL - Portable control provides same dial range as the output control on the welder from a location up to the specified length from the welder. Has convenient plug for easy connection to the welder. The VANTAGE 500 DEUTZ is equipped with a 6-pin connector for connecting the remote control.

K704 ACCESSORY SET - Includes 35 feet (10 m) of electrode cable and 30 feet (9 m) of work cable, headshield, Filter plate, work clamp and electrode holder. Cable is rated at 500 amps, 60% duty cycle.

K2641-2 FOUR WHEELED STEERABLE YARD TRAILER

For in plant and yard towing. Comes standard with a Duo-Hitch™, a 2" Ball and Lunette Eye combination hitch.

K2636-1 TRAILER - Two-wheeled trailer with optional fender and light package. For highway use, consult applicable federal, state, and local laws regarding possible additional requirements. Comes standard with a Duo-Hitch™, a 2" Ball and Lunette Eye combination hitch.

Order:

K2636-1 Trailer

K2639-1 Fender & Light Kit

K2640-1 Cable Rack

K887-1 ETHER START KIT - Provides maximum cold weather starting assistance for frequent starting below 10°(-12°C). Required Ether tank is not provided with kit.

K899-1 SPARK ARRESTOR KIT - Easily mounts to standard muffler.

K1816-1 Full KVA Adapter Kit - Plugs into the 120/240V NEMA 14-50R receptacle on the case front (which accepts 4-prong plugs) and converts it to a NEMA 6-50R receptacle (which accepts 3-prong plugs) for connection to Lincoln Equipment with a NEMA 6-50P plug,

T12153-9 Full-KVA Power Plug-One dual voltage plug rated at 120/240V, 50 amps, single phase.

A WARNING

Pipe Thawing with an arc welder can cause fire, explosion, damage to electric wiring or to the arc welder if done improperly. The use of an arc welder for pipe thawing is not approved by the CSA, nor is it recommended or supported by Lincoln Electric.

K2356-1 Control Panel Cover Kit-Clear plexiglass cover to protect control panel from dirt and debris, and to visually monitor machine operation. Lockable to deter vandalism.

K2340-1 Lockable Fuel Cap / Flash Arrester Kit-For use in locations where flash arrester safety is required. Lockable fuel cap prevents tampering with fuel. Green cap color provides a visual reminder to use diesel when refueling.

TIG OPTIONS

K1783-9 PTA-26V TIG Torch

Air Cooled 200 amp torch (2 piece) equipped with valve for gas flow control. 25 ft. (7.6m) length.

KP509 Magnum Parts Kit for PTA-26V TIG Torch Magnum Parts Kit provides all the torch accessories you need to start welding. Parts kit provides collets, collet bodies, a black cap, alumina nozzles and tungstens in a variety of sizes, all packaged in an easy to carry reclosable sack.

K870 Foot Amptrol®-Varies current while welding for making critical TIG welds and crater filling. Depress pedal to increase current. Depressing pedal fully achieves maximum set current. Fully raising the pedal finishes the weld and starts the after flow cycle on systems so equipped. Includes 25 ft. (7.6m) control cable.

K963-2 Hand Amptrol®-Varies current for making critical TIG welds. Fastens to the torch for convenient thumb control. Comes with a 25 ft. (7.6m) cable. (For larger handle 18 or 26 series torches.)

K2535-1 Precision TIG 225 Ready-Pak

For AC TIG Welding with square wave performance use the AC generator of the Engine-Driven Welder to supply the power. Easy setup. Includes torch, foot amptrol, gas regulator and hose. Requires the K1816-1 Full KVA adapter kit.

K2350-2 Invertec® V205-T AC/DC One-Pak™ Package For AC TIG welding with square wave performance, use the AC generator of the engine-driven welder to supply the power. Easy setup. Includes torch, parts kit, regulator and hose kit, Twist-Mate™ torch adapter, work cable with Twist-Mate end and foot Amptrol®.

WIRE FEEDER OPTIONS

K2613-1 LN-25 PRO PORTABLE WIRE FEEDER-The MAXTRAC® wire drive enhances performance, while the replacement case, and many other upgrade options that can be installed in less then five minutes aid in the serviceability.

KP1697-5/64 Drive Roll Kit- Includes: 2 polished U groove drive rolls, outer wire guide and inner wire guide for solid core wire. (Used on LN-25 Pro)

KP1697-068 Drive Roll Kit- Includes: 2 polished U groove drive rolls, outer wire guide and inner wire guide for solid core wire. (Used on LN-25 Pro)

KP1696-1 Drive Roll Kit- Includes: 2 V groove drive rolls and inner wire guide for Steel Wires. (Used on LN-25 Pro)

K449 LN-25 Wire Feeder

Portable CC/CV unit for flux-cored and MIG welding. Includes Gas Solenoid & Internal Contactor.

K126-2 Magnum® 350 Innershield Gun (for LN-25) For self-shielded wire with 15 ft. (4.5m) cable. For .062-3/32" (1.6-2.4mm) wire.

KP653-3/32 Drive Roll and Guide Tube Kit (for LN-25) For .068-3/32" (1.8-2.4mm) cored or solid steel wire.

K1802-1 Magnum® 300 MIG Gun

For .035-.045 (0.9-1.2mm) gas shielded wire. Includes 15 ft. gun and cable assembly and connector kit.

KP653-035S Drive Roll and Guide Tube Kit (for LN-25) For .035-.040" (0.9-1.0mm) solid steel wire.

K487-25 Magnum SG Spool Gun

Hand held semiautomatic wire feeder. Requires SG Control Module and Input Cable.

K488 SG Control Module

The Interface between the power source and the spool gun. Provides control of the wire speed and gas flow. For use with a spool gun.

K691-10 Input Cable (For SG Control Module) For Lincoln engine power sources with 14-pin MStype connection, separate 115V NEMA receptacles and output stud connections.

PLASMA CUTTING

K1581-1 Pro-cut 80

Cuts mild steel using the 3-phase AC generator power from the engine driven welder.

SAFETY PRECAUTIONS

A WARNING

- Have a qualified technician do the maintenance and troubleshooting work.
- Turn the engine off before working inside the machine.
- Remove guards only when necessary and replace them when the maintenance requiring their removal is complete.
- Always use the greatest care when working near moving parts.

Read the Safety Precautions in front of this manual and the engine instruction manual before working on this machine.

Keep all equipment safety guards, covers and devices in position and in good repair. Keep hands, hair, clothing and tools away from V-belts, gears, fans and all other moving parts when starting, operating or repairing the equipment.

ROUTINE AND PERIODIC MAINTENANCE

DAILY

- · Check the Engine oil level.
- Refill the fuel tank to minimize moisture condensation in the tank.
- Open the water drain valve located on the bottom of the water separator element 1 or 2 turns and allow to drain into a container suitable for diesel fuel for 2 to 3 seconds. Repeat the above drainage procedure until diesel fuel is detected in the container.

WEEKLY

Blow out the machine with low pressure air periodically. In particularly dirty locations, this may be required once a week.

ENGINE MAINTENANCE

Refer to the "SERVICE PLAN" section of the Engine Operator's Manual for the recommended maintenance schedule of the following:

- a) Engine Oil and Filter
- b) Air Cleaner
- c) Fuel Filter and Delivery System
- d) Alternator Belt
- e) Battery
- f) Cooling System

Refer to Table D.1 at the end of this section for various engine maintenance components.

AIR FILTER

A CAUTION

 Excessive air filter restriction will result in reduced engine life.

A WARNING

 Never use gasoline or low flash point solvents for cleaning the air cleaner element. A fire or explosion could result.

A CAUTION

 Never run the engine without the air cleaner.
 Rapid engine wear will result from contaminants, such as dust and dirt being drawn into the engine.

The diesel engine is equipped with a dry type air filter. Never apply oil to it. Service the air cleaner as follows:

Replace the element as indicated by the service indicator. (See Service Instructions and Installation Tips for Engine Air Filter.)

Service Instructions

Single- and Two-Stage Engine Air Cleaners

Remove the Filter



Rotate the filter while pulling straight out.

Unfasten or unlatch the service cover. Because the filter fits tightly over the

outlet tube to create the critical seal, there will be some initial resistance, similar to breaking the seal on a jar. <u>Gently</u> move the end of the filter back and forth to <u>break</u> the seal then rotate while pulling straight out. Avoid knocking the filter against the housing.

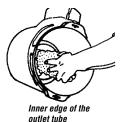
If your air cleaner has a safety filter, replace it every third primary filter change. Remove the safety filter as you would the primary filter. Make sure you cover the air cleaner outlet tube to avoid any unfiltered contaminant dropping into the engine.

Clean Both Surfaces of the Outlet Tube and Check the Vacuator™ Valve

Use a clean cloth to wipe the filter sealing surface and the inside of the outlet tube. Contaminant on the sealing surface could hinder an effective seal and cause leakage. Make sure that all contaminant is removed before the new filter is inserted. Dirt accidently transferred to the inside of the outlet tube will reach the engine and cause wear. Engine manufacturers say that it takes only a few grams of dirt to "dust" an engine! Be careful not to damage the sealing area on the tube.



Wipe both sides of the outlet tube clean.



If your air cleaner is equipped with a Vacuator Valve Visually check and physically squeeze to make sure the valve is flexible and not inverted, damaged or plugged.



Inspect the Old Filter for Leak Clues

Visually inspect the old filter for any signs of leaks. A streak of dust on the clean side of the filter is a telltale sign. Remove any cause of leaks before installing new filter.



Inspect the New Filter for Damage

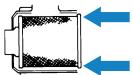
Inspect the new filter carefully, paying attention to the inside of the open end, which is the sealing area. NEVER install a damaged filter. A new Donaldson radial seal filter may have a dry lubricant on the seal to aid installation.



Insert the New Radial Seal Filter Properly

If you're servicing the safety filter, this should be seated into position before installing the primary filter.

Insert the new filter carefully. Seat the filter by hand, making certain it is completely into the air cleaner housing before securing the cover in place.



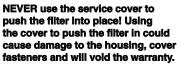
The critical sealing area will stretch slightly, adjust itself and distribute the sealing pressure evenly. To complete a tight seal, apply pressure by hand at the outer rim of the filter, not the flexible center. (Avoid pushing on the center of the urethane end cap.) No cover pressure is required to hold the seal. NEVER use the service cover to push the filter into place! Using the cover to push the filter in could cause damage to the housing, cover fasteners and will void the warranty.

If the service cover hits the filter before it is fully in place, remove the cover and push the filter (by hand) further into the air cleaner and try again. The cover should go on with no extra force.

Once the filter is in place, secure the service cover.



Caution





6 Check Connectors for Tight Fit

Make sure that all mounting bands, clamps, bolts, and connections in the entire air cleaner system are tight. Check for holes in piping and repair if needed. Any leaks in your intake piping will send dust directly to the engine!

FUEL FILTERS

WARNING

When working on the fuel system



- · Keep naked lights away, do not smoke!
- · Do not spill fuel!

The VANTAGE® 500 DEUTZ is equipped with a **Fuel Filter** located after the lift pump and before fuel injectors. The procedure for changing the filter is as follows.

- 1. Close the fuel shutoff valve.
- 2. Clean the area around the fuel filter head. Remove the filter. Clean the gasket surface of the filter head and replace the o-ring.
- 3. Fill the clean filter with clean fuel, and lubricate the o-ring seal with clean lubricating oil.
- Install the filter as specified by the filter manufacturer.

WARNING

Mechanical over tightened will distort the threads, filter element seal or filter can.

COOLING SYSTEM

The cooling system of the Deutz engine needs to be checked and cleaned periodically. (Consult the engine Owners Manual for the proper procedures and frequency).

BATTERY HANDLING

GASES FROM BATTERY can explode.



 Keep sparks, flame and cigarettes away from battery.

To prevent EXPLOSION when:

 INSTALLING A NEW BATTERY - disconnect negative cable from old battery first and connect to new battery last.



- · CONNECTING A BATTERY CHARGER
- Remove battery from welder by disconnecting negative cable first, then positive cable and battery clamp. When reinstalling, connect negative cable last. Keep well ventilated.
- USING A BOOSTER connect positive lead to battery first then connect negative lead to engine foot.



BATTERY ACID CAN BURN EYES AND SKIN.

 Wear gloves and eye protection and be careful when working near battery.
 Follow instructions printed on battery.

PREVENTING ELECTRICAL DAMAGE

- When replacing, jumping, or otherwise connecting the battery to the battery cables, the proper polarity must be observed. Failure to observe the proper polarity could result in damage to the charging circuit. The positive (+) battery cable has a red terminal cover.
- 2. If the battery requires charging from an external charger, disconnect the negative battery cable first and then the positive battery cable before attaching the charger leads. Failure to do so can result in damage to the internal charger components. When reconnecting the cables, connect the positive cable first and the negative cable last.

PREVENTING BATTERY DISCHARGE

Turn the RUN/STOP switch to stop when engine is not running.

PREVENTING BATTERY BUCKLING

Tighten nuts on battery clamp until snug.

CHARGING THE BATTERY

When you charge, jump, replace, or otherwise connect battery cables to the battery, be sure the polarity is correct. Improper polarity can damage the charging circuit. The VANTAGE® 500 DEUTZ positive (+) battery terminal has a red terminal cover.

If you need to charge the battery with an external charger, disconnect the negative cable first, then the positive cable before you attach the charger leads. after the battery is charged, reconnect the positive battery cable first and the negative cable last. Failure to do so can result in damage to the internal charger components.

Follow the instructions of the battery charger manufacturer for proper charger settings and charging time.

NAMEPLATES / WARNING DECALS MAIN-TENANCE

Whenever routine maintenance is performed on this machine - or at least yearly - inspect all nameplates and labels for legibility. Replace those which are no longer clear. Refer to the parts list for the replacement item number.

WELDER / GENERATOR MAINTENANCE

STORAGE

Store the Air Vantage® in a clean, dry protected areas.

CLEANING

Blow out the generator and controls periodically with low pressure air. do this at least once a week in particularly dirty areas.

BRUSH REMOVAL AND REPLACEMENT

It is normal for the brushes and slip rings to wear and darken slightly. Inspect the brushes when a generator overhaul is necessary.

Do not attempt to polish slip rings while the engine is running.

REPLACEMENT SERVICE ITEMS										
ITEM	MAKE	PART NUMBER	SERVICE INTERVAL							
AIR CLEANER ELEMENT	DONALDSON FLEETGUARD	P822768 AF25436	CLEAN AS NEEDED, REPLACE EVERY 200 HOURS.							
OIL FILTER ELEMENT	DEUTZ	01174416	SEE							
FUEL FILTER/ WATER SEPARATOR ELEMENT	DEUTZ	01174482	DEUTZ MAINTENANCE							
FUEL PUMP STRAINER (NOT ON ALL MACHINES)	DEUTZ		DECAL							
IN-LINE FUEL PRE-FILTER (NOT ON ALL MACHINES)	DEUTZ	01178753	REPLACE EVERY 500 HOURS.							
COOLING BLOWER BELT	DEUTZ	01179564	INSPECT EVERY 500 HOURS							
BATTERY		BCI GROUP 34	INSPECT EVERY 500 HOURS							

WARRANTY WORK PERFORMED ON THE ENGINE CONTAINED IN THIS MACHINE, IF NOT BILLABLE TO THE ENGINE MANUFACTURER, SHOULD BE PRE-APPROVED BY CALLING THE LINCOLN ELECTRIC COMPANY AT 888-935-3877

S25951 VM

HOW TO USE TROUBLESHOOTING GUIDE

WARNING

Service and Repair should only be performed by Lincoln Electric Factory Trained Personnel. Unauthorized repairs performed on this equipment may result in danger to the technician and machine operator and will invalidate your factory warranty. For your safety and to avoid Electrical Shock, please observe all safety notes and precautions detailed throughout this manual.

This Troubleshooting Guide is provided to help you locate and repair possible machine malfunctions. Simply follow the three-step procedure listed below.

Step 1. LOCATE PROBLEM (SYMPTOM).

Look under the column labeled "PROBLEM (SYMP-TOMS)". This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting.

Step 2. POSSIBLE CAUSE.

The second column labeled "POSSIBLE CAUSE" lists the obvious external possibilities that may contribute to the machine symptom.

Step 3. RECOMMENDED COURSE OF ACTION

This column provides a course of action for the Possible Cause, generally it states to contact your local Lincoln Authorized Field Service Facility.

If you do not understand or are unable to perform the Recommended Course of Action safely, contact your local Lincoln Authorized Field Service Facility.

A CAUTION

TROUBLESHOOTING

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS	POSSIBLE	RECOMMENDED
(SYMPTOMS)	CAUSE	COURSE OF ACTION
(Crant Conto)		
M : Di i la El la i la	ENGINE PROBLEMS	
is Evident.	 Contact your Local Lincoln Authorized Field Service Facility. 	
Engine will not crank	Battery low.	
Engine will crank but not start.	 Dattery low. Loose battery cable connections which may need Inspected, cleaned or tighten. Faulty wiring in engine starting circuit. Faulty engine starter. Contact authorized local Engine Service Shop. Out of fuel. Fuel shut off valve is in the off position make sure the valve lever is in the open position (lever in-line with the Hose). Engine shut down solenoid not pulling in. On/Off switch on for more than 30 sec. before starting, the On/Off switch will need to be switch off and turned back on. Fuel Filters dirty/clogged, main filter element and/or Inline Fuel Filter may need to be replaced. High oil temperature or low oil pressure. (engine protection light 	If all recommended possible areas of misadjustment have been checked and the problem persists, Contact your local Lincoln Authorized Field Service Facility.
Engine shuts down shortly after starting.	lit) 1. Low oil pressure (engine protection light lit). Check oil level (Consult engine service dealer). 2. High oil temperature. Check engine cooling system. (engine protection light lit). 3. Faulty oil pressure switch.	
Engine shuts down while under a load. Engine runs rough.	 Faulty oil temperature switch. Contact authorized local Engine Service Shop. High oil temperature. Dirty fuel or air filters may need 	
	cleaned/replaced. 2. Water in fuel.	
Engine will not shut off.	 Fuel Shutdown solenoid not functioning properly. 	

A CAUTION

TROUBLESHOOTING

Observe all Safety Guidelines detailed throughout this manual

PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Battery does not stay charged.	FUNCTION PROBLEMS 1. Faulty battery . 2. Faulty engine alternator. 3. Loose or broken lead in charging circuit. 4. Loose fan belt may need tightening.	
Engine will not idle down to low speed.	 Idler switch in HIGH idle position, make sure switch is set to AUTO. External load on welder or auxiliary power. Mechanical problem in idler solenoid linkage. Faulty wiring in solenoid circuit. No or low voltage @ idle solenoid Faulty idler solenoid. Faulty, Weld Control PCB (Printed Circuit Board), Pull Coil/Battery PCB. 	your local Lincoln Authorized Field Service Facility.
Engine will not go to high idle when attempting to weld.	 Poor work lead connection to work. Broken idler solenoid spring. Welding Terminals switch in wrong position. No open circuit voltage at output studs. Faulty, Pull Coil/Battery PCB. or Weld Control PCB. 	
Engine will not go to high idle when using auxiliary power.	 Broken wire in auxiliary current sensor wiring. Auxiliary power load is less than 100 watts. Faulty Pull Coil/Battery PCB. or Weld Control PCB. 	

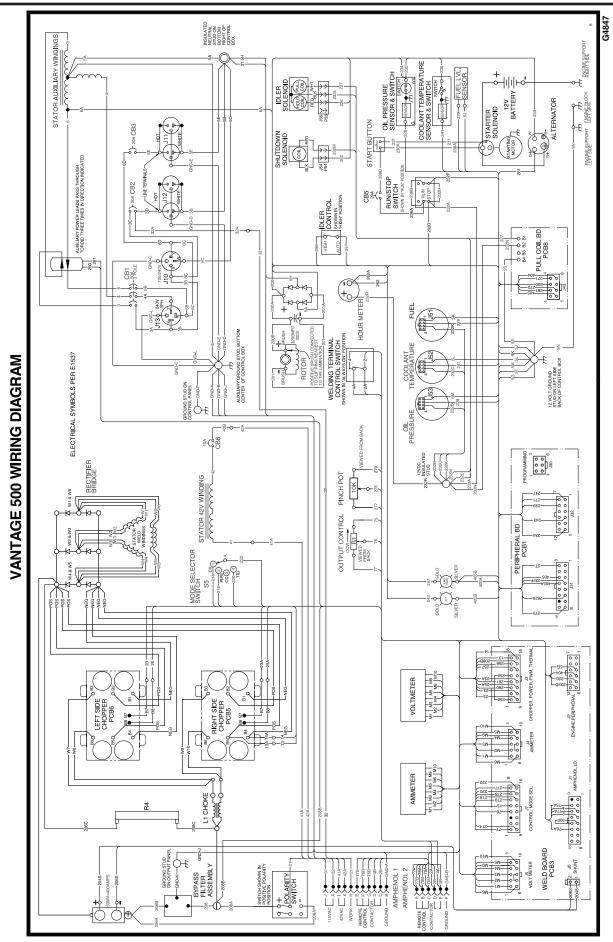
A CAUTION

TROUBLESHOOTING

Observe all Safety Guidelines detailed throughout this manual

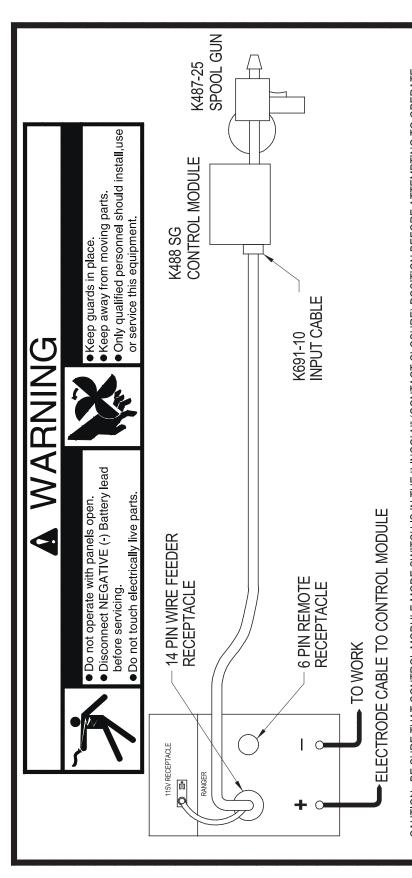
PROBLEMS (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
	FUNCTION PROBLEMS	
Engine goes to low idle but does not stay at low idle.	 Faulty Peripheral PCB, Idler/Engine Protection PCB or Weld Control PCB. 	
No welding output or auxiliary output.	 Broken lead in rotor circuit. Faulty field diode module. Faulty Weld Control PCB. Faulty rotor. 	
Welder has some/ no output and no control. Auxiliary output OK		If all recommended possible areas of misadjustment have been checked and the problem persists, Contact your local Lincoln Authorized Field Service Facility.
No welding output. Auxiliary output OK.	 WELDING TERMINALS switch in wrong position, be sure switch is in WELDING TERMINALS ALWAYS ON position. Faulty Weld Control PCB, Idler/Engine Protection PCB or Chopper PCB. 	
No auxiliary power.	 Open breakers may need to be reset. Faulty receptacle. Faulty auxiliary circuit wiring. GFCI tripped. 	

A CAUTION



NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment code number.

ENGINE WELDERS / K691-10 / K488 / K487 SPOOL GUN CONNECTION DIAGRAM



CAUTION: BE SURE THAT CONTROL MODULE MODE SWITCH IS IN THE "LINCOLN" (CONTACT CLOSURE) POSITION BEFORE ATTEMPTING TO OPERATE CONTROL MODULE. INCORRECT SWITCH POSITION COULD RESULT IN DAMAGE TO THE CONTROL MODULE AND/OR POWER SOURCE.

ANY INCREASE OF THE HIGH IDLE ENGINE RPM BY CHANGING THE GOVERNOR SETTING OR OVERRIDING THE THROTTLE LINKAGE WILL CAUSE AN INCREASE IN THE AC WIRE FEEDER VOLTAGE, WHICH CAN DAMAGE THE CONTROL CIRCUIT. THE ENGINE GOVERNOR SETTING IS PRE-SET AT THE FACTORY – DO NOT ADJUST ABOVE RPM SPECIFICATIONS LISTED IN THE ENGINE WELDER OPERATING MANUAL.

- WELDING CABLES MUST BE SIZED FOR CURRENT AND DUTY CYCLE OF APPLICATION.
- CONNECT WELDING CABLES TO OUTPUT STUDS FOR DESIRED POLARITY.

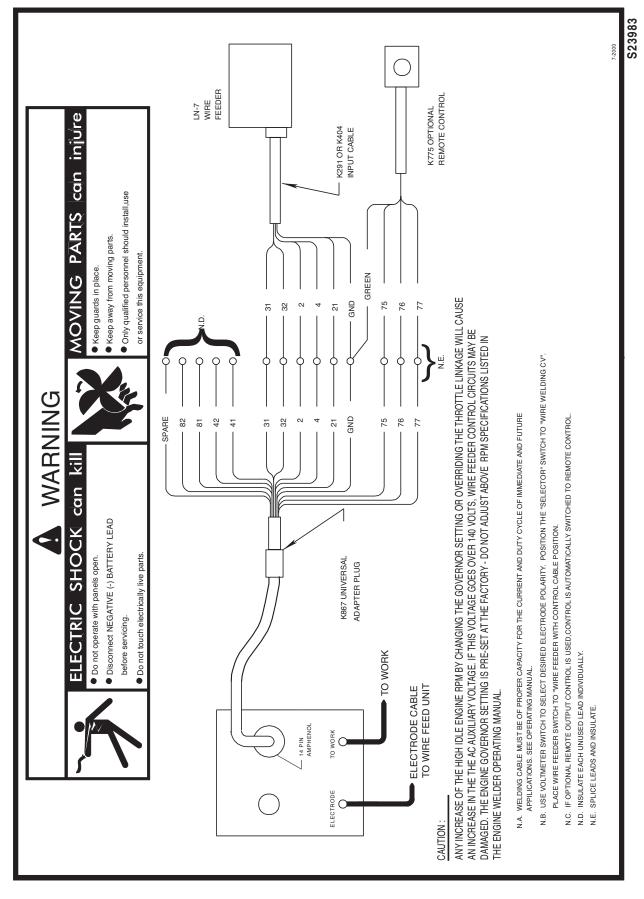
 PLACE THE MODE SWITCH IN THE "CV-WIRE" POSITION. PLACE WELDING TERMINALS SWITCH TO "REMOTELY CONTROLLED" POSITION N N N
 - PLACE IDLER SWITCH IN "HIGH" IDLE POSITION O N

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VANTAGE® 500 DEUTZ LINCOLN ELECTRIC

VANTAGE / K867 / K775 / LN-7 CONNECTION DIAGRAM

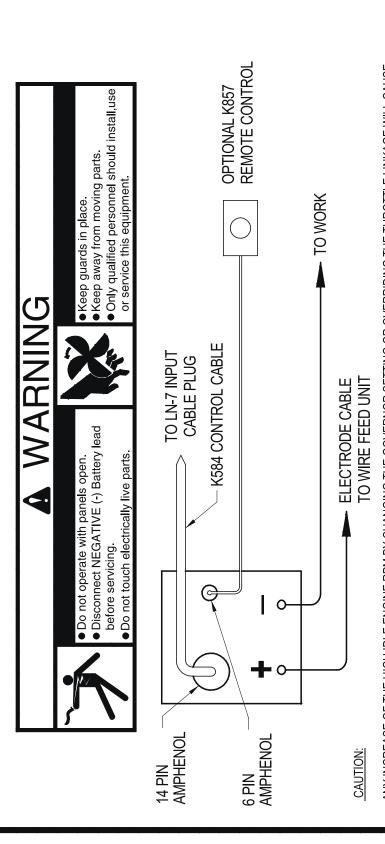


VANTAGE® 500 DEUTZ

INCOLN.

ELECTRIC

ENGINE WELDERS /LN-7 CONNECTION DIAGRAM



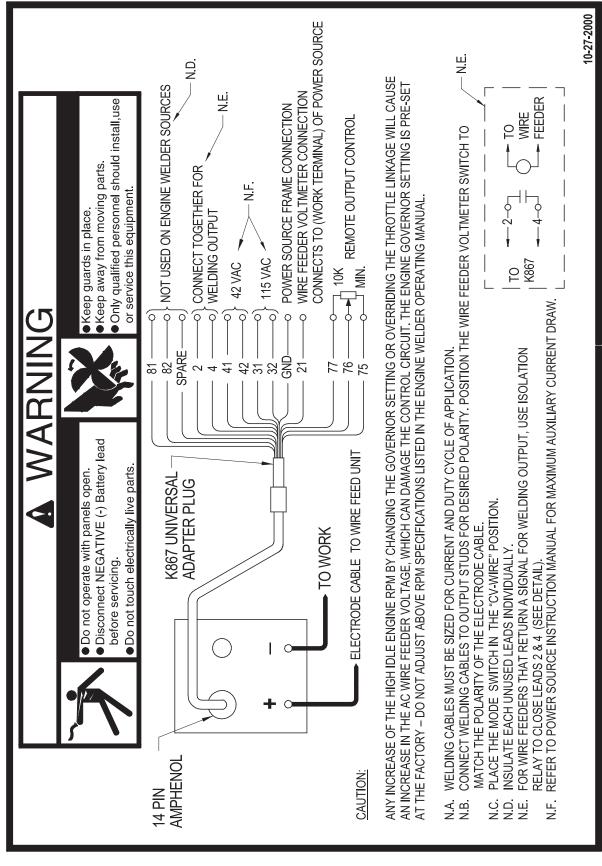
ANY INCREASE OF THE HIGH IDLE ENGINE RPM BY CHANGING THE GOVERNOR SETTING OR OVERRIDING THE THROTTLE LINKAGE WILL CAUSE AN INCREASE IN THE AC WIRE FEEDER VOLTAGE, WHICH CAN DAMAGE THE CONTROL CIRCUIT. THE ENGINE GOVERNOR SETTING IS PRE-SET AT THE FACTORY – DO NOT ADJUST ABOVE RPM SPECIFICATIONS LISTED IN THE ENGINE WELDER OPERATING MANUAL

- N.A. WELDING CABLES MUST BE OF PROPER CAPACITY FOR THE CURRENT AND DUTY CYCLE OF IMMEDIATE AND FUTURE APPLICATIONS. SEE OPERATING MANUAL
 - CONNECT WELDING CABLES TO OUTPUT STUDS FOR DESIRED POLARITY. POSITION THE WIRE FEEDER VOLTMETER SWITCH TO MATCH THE POLARITY OF THE ELECTRODE CABLE.
 - N.C. PLACE THE MODE SWITCH IN THE "CV-WIRE" POSITION.
 - PLACE IDLER SWITCH IN "HIGH" POSITION.

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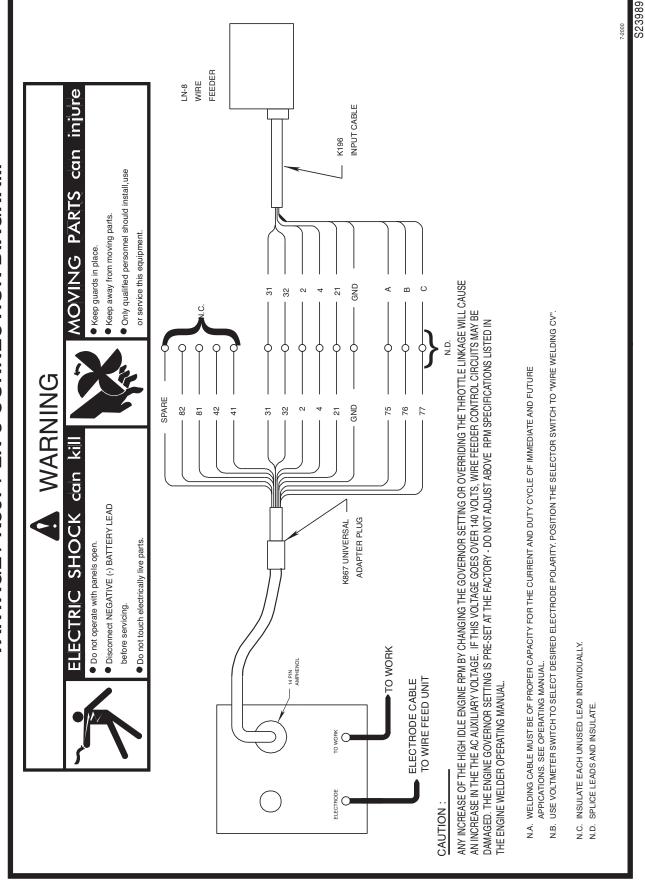
ENGINE WELDERS TO K867 CONTROL CABLE ADAPTER CONNECTION DIAGRAM



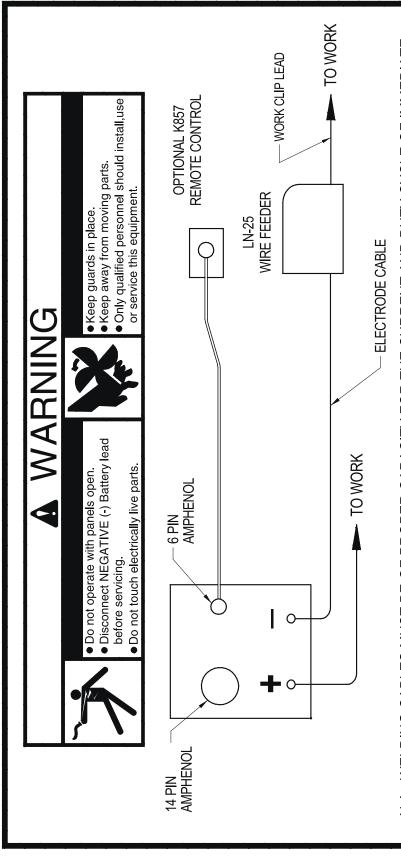
VANTAGE® 500 DEUTZ

S24787-7

VANTAGE / K867 / LN-8 CONNECTION DIAGRAM



WITH OPTIONAL K857 REMOTE CONTROL



WELDING CABLES MUST BE OF PROPER CAPACITY FOR THE CURRENT AND DUTY CYCLE OF IMMEDIATE AND FUTURE APPLICATIONS. SEE OPERATING MANUAL.

CONNECT WELDING CABLES TO OUTPUT STUDS FOR DESIRED POLARITY. POSITION THE WIRE FEEDER VOLTMETER SWITCH TO MATCH THE POLARITY OF THE ELECTRODE CABLE. B Z

PLACE THE MODE SWITCH IN THE "CV-WIRE" POSITION. N N N

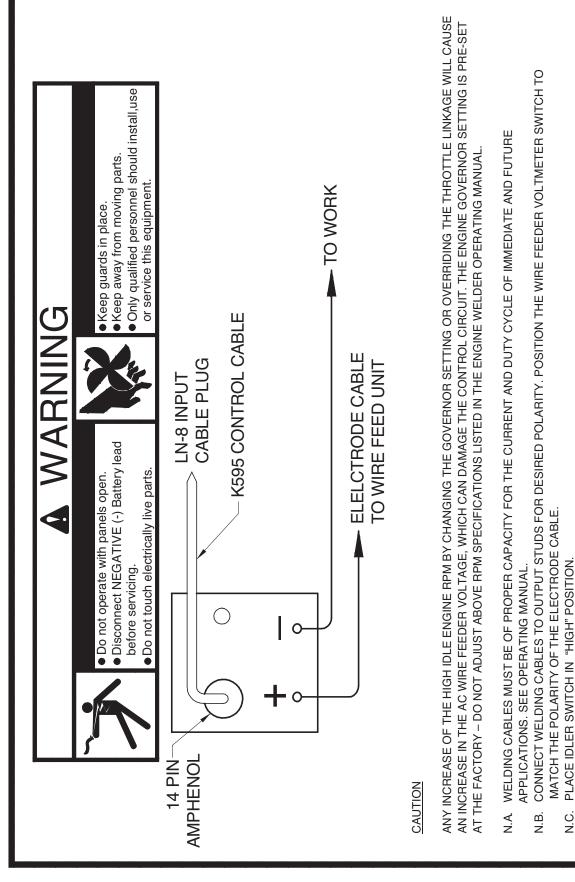
PLACE THE WELDING TERMINALS SWITCH IN THE "WELD TERMINALS ON" POSITION.

PLACE IDLER SWITCH IN "AUTO" OR "HIGH" IDLE POSITION AS DESIRED.

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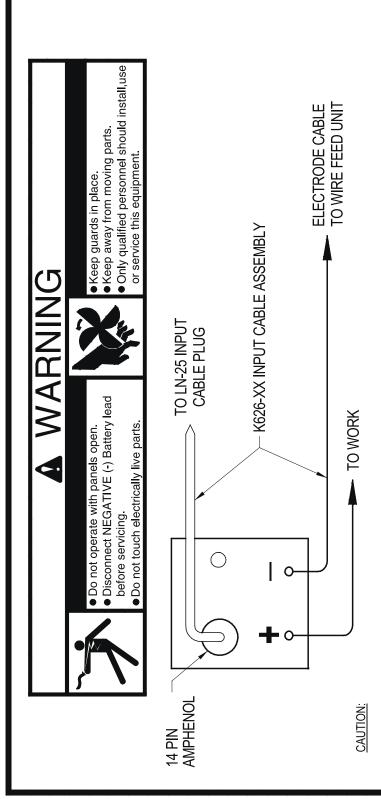
ENGINE WELDERS / LN-8 CONNECTION DIAGRAM



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ENGINE WELDERS /LN-25 WITH K624-1 42 VOLT REMOTE OUTPUT CONTROL MODULE CONNECTION DIAGRAM



ANY INCREASE OF THE HIGH IDLE ENGINE RPM BY CHANGING THE GOVERNOR SETTING OR OVERRIDING THE THROTTLE LINKAGE WILL CAUSE AN INCREASE IN THE AC WIRE FEEDER VOLTAGE, WHICH CAN DAMAGE THE CONTROL CIRCUIT. THE ENGINE GOVERNOR SETTING IS PRE-SET AT THE FACTORY – DO NOT ADJUST ABOVE RPM SPECIFICATIONS LISTED IN THE ENGINE WELDER OPERATING MANUAL.

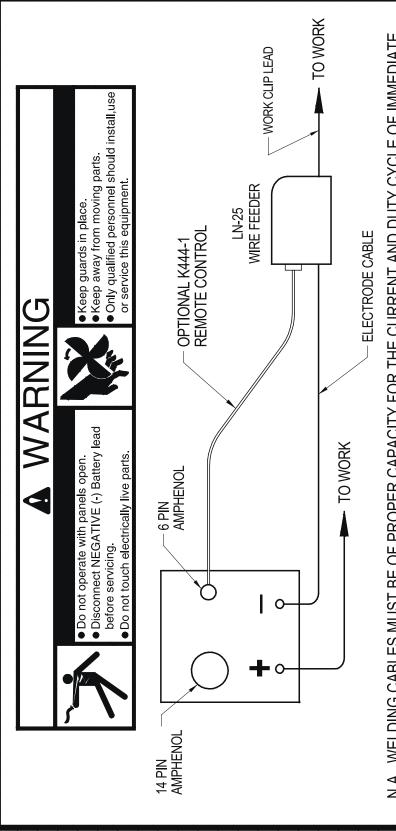
- PLACE THE MODE SWITCH IN THE "CV-WIRE" POSITION. PLACE WELDER TERMINALS SWITCH TO "REMOTELY CONTROLLED" POSITION. ď Z
- CONNECT WELDING CABLES TO OUTPUT STUDS FOR DESIRED POLARITY. POSITION THE WIRE FEEDER VOLTMETER SWITCH TO MATCH THE POLARITY OF THE ELECTRODE CABLE. N B
 - WELDING CABLES MUST BE OF PROPER CAPACITY FOR THE CURRENT AND DUTY CYCLE OF IMMEDIATE AND FUTURE APPLICATIONS. SEE OPERATING MANUAL. S
- N.D. PLACE IDLER SWITCH IN "AUTO" OR "HIGH" IDLE POSITION AS DESIRED

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VANTAGE® 500 DEUTZ
LINCOLN.
ELECTRIC

ENGINE WELDERS /LN-25 ACROSS THE ARC CONNECTION DIAGRAM **WITH OPTIONAL K444-1 REMOTE CONTROL**



WELDING CABLES MUST BE OF PROPER CAPACITY FOR THE CURRENT AND DUTY CYCLE OF IMMEDIATE AND FUTURE APPLICATIONS. SEE OPERATING MANUAL.

CONNECT WELDING CABLES TO OUTPUT STUDS FOR DESIRED POLARITY. POSITION THE WIRE FEEDER VOLTMETER SWITCH TO MATCH THE POLARITY OF THE ELECTRODE CABLE. B N

N.C. PLACE THE MODE SWITCH IN THE "CV-WIRE" POSITION.

PLACE THE WELDING TERMINALS SWITCH IN THE "WELD TERMINALS ON" POSITION.

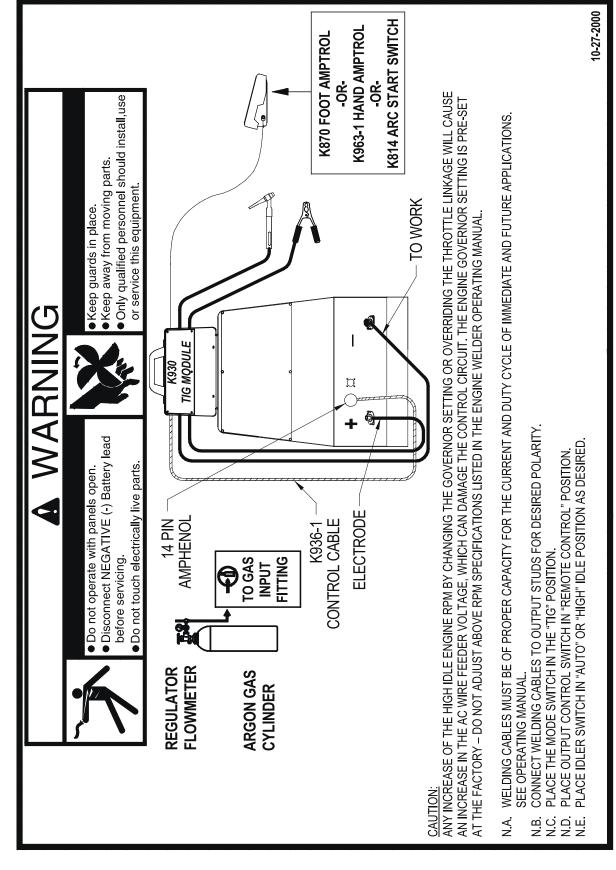
N.E. PLACE IDLER SWITCH IN "AUTO" OR "HIGH" IDLE POSITION AS DESIRED.

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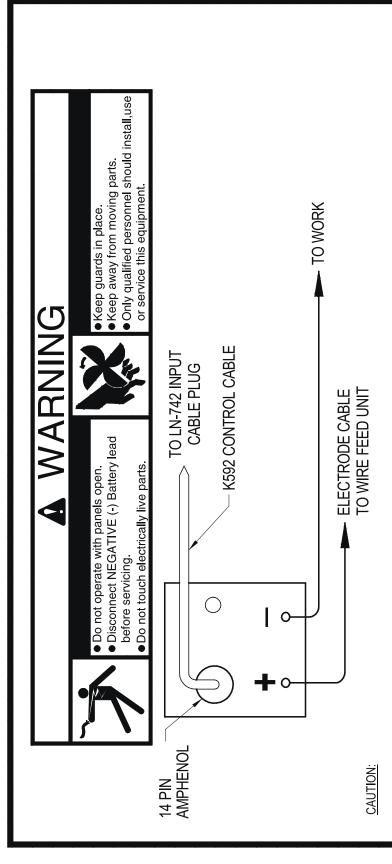
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ENGINE WELDERS / K930 TIG MODULE / CONNECTION DIAGRAM



VANTAGE® 500 DEUTZ

ENGINE WELDERS /LN-742 CONNECTION DIAGRAM



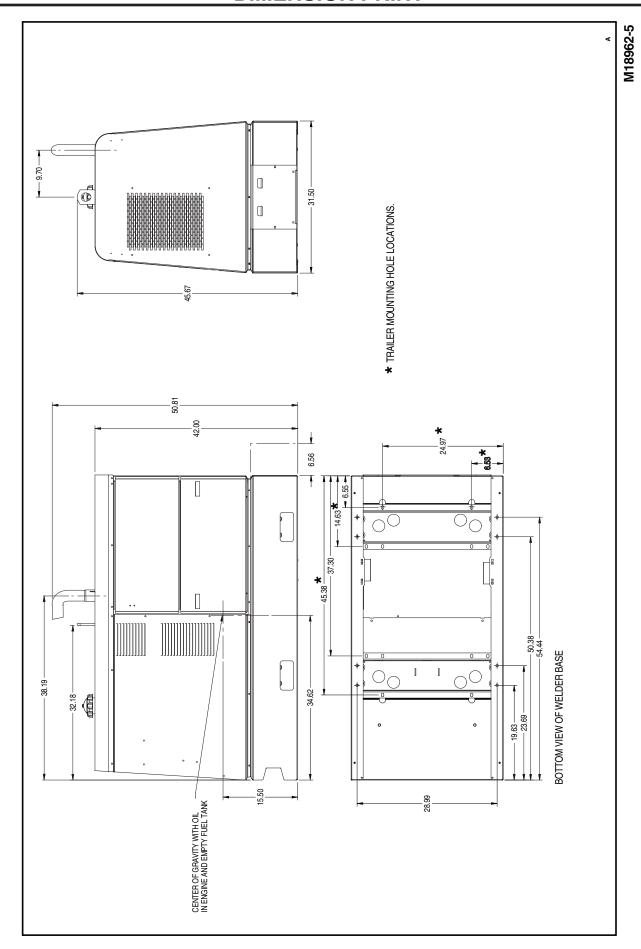
ANY INCREASE OF THE HIGH IDLE ENGINE RPM BY CHANGING THE GOVERNOR SETTING OR OVERRIDING THE THROTTLE LINKAGE WILL CAUSE AN INCREASE IN THE AC WIRE FEEDER VOLTAGE, WHICH CAN DAMAGE THE CONTROL CIRCUIT. THE ENGINE GOVERNOR SETTING IS PRE-SET AT THE FACTORY – DO NOT ADJUST ABOVE RPM SPECIFICATIONS LISTED IN THE ENGINE WELDER OPERATING MANUAL.

- WELDING CABLES MUST BE OF PROPER CAPACITY FOR THE CURRENT AND DUTY CYCLE OF IMMEDIATE AND FUTURE APPLICATIONS. SEE OPERATING MANUAL. ∠ Z
- CONNECT WELDING CABLES TO OUTPUT STUDS FOR DESIRED POLARITY. POSITION THE WIRE FEEDER VOLTMETER SWITCH TO PLACE THE MODE SWITCH IN THE "CV-WIRE" POSITION. MATCH THE POLARITY OF THE ELECTRODE CABLE. B N N N N

 - PLACE WELDER TERMINALS SWITCH TO "REMOTELY CONTROLLED" POSITION.
 - PLACE IDLER SWITCH IN "AUTO" OR "HIGH" IDLE POSITION AS DESIRED

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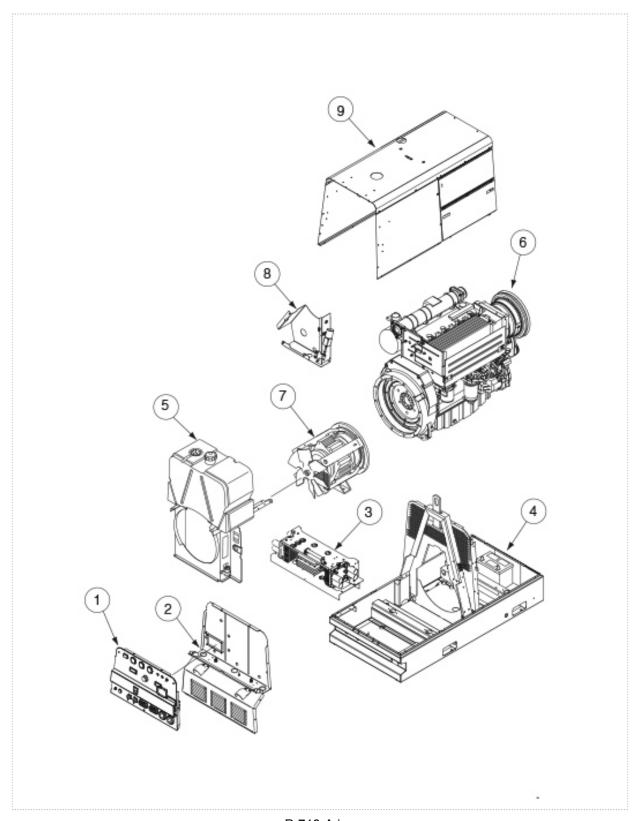
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Index of Sub Assemblies - 11960

KEY	PART NUMBER	DESCRIPTION	QTY
	P-718-A	INDEX OF SUB ASSEMBLIES	AR
	P-718-B.2	MISCELLANEOUS ITEMS	AR
1	P-718-C	CONTROL PANEL ASSEMBLY	AR
2	P-718-D	CONTROL BOX & OUTPUT PANEL	AR
3	P-718-E	POWER MODULE ASSEMBLY	AR
4	P-718-F	BASE & LIFT BALE ASSEMBLY	AR
5	P-718-G	FUEL TANK & MOUNTING	AR
6	P-718-H	ENGINE ASSEMBLY	AR
7	P-718-J	GENERATOR ASSEMBLY	AR
8	P-718-K	SOLENOID & BRACKET ASSEMBLY	AR
9	P-718-L	COVERS & CASE BACK	AR

Index of Sub Assemblies - 11960



P-718-A.jpg



Miscellaneous Items

KEY	PART NUMBER	DESCRIPTION	QTY
	9SG4854	CONTROL HARNESS	1
	9ST12153-10	PLUG 4 WIRE GROUNDING	1

Miscellaneous Items

NO IMAGE AVAILABLE

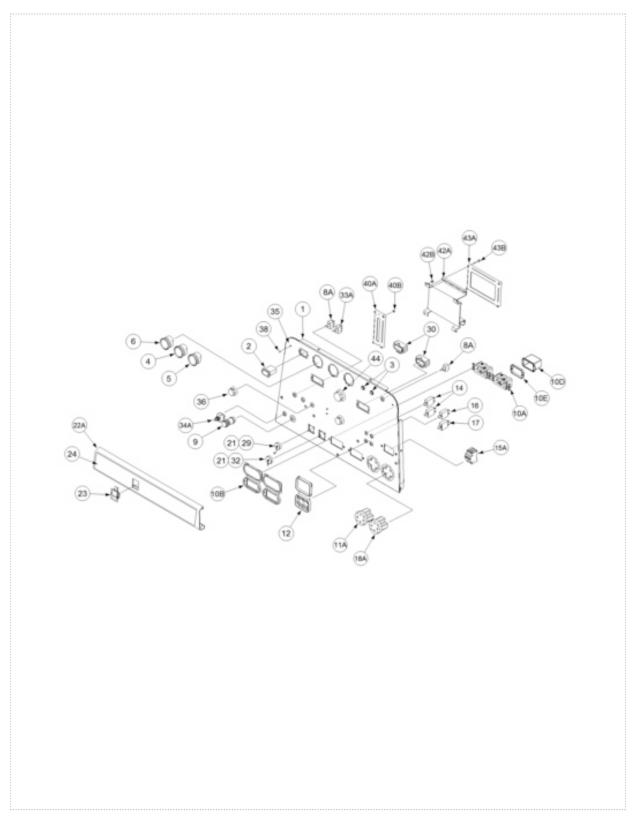
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KEY	PART NUMBER	DESCRIPTION	QTY
	9SG4852-1	CONTROL PANEL ASSEMBLY	1
1	9SG4467-1	CONTROL PANEL WELDMENT	1
2	9SS17475-3	HOURMETER	1
3	9ST13534-13	PILOT LIGHT	2
4	9SS20564-1	OIL TEMPERATURE GAUGE	1
5	9SS20206-3	PRESSURE GAUGE	1
6	9SS17585-1	FUEL GAUGE	1
8A	9ST10800-38	SWITCH-TOGGLE	2
	9SS22061-4	SEALING BOOT	2
9	9SS13146-1	START BUTTON	1
10A	9SS24410	RECEPTACLEDUPLEXGFCI	2
10B	9SM16996	RECEPTACLE COVER	2
	9SS21088	RECEPTACLEGASKET	2
10D	9SL13286	GFCI HOUSING	2
10E	9SS27167	MOUNTING BRACKET	2
	9SS24738-3	THERMOPLASTIC SCREW	4
	9SS27176	RECEPTACLE SEAL	2
11A	9SS18907-2	RECEPTACLE-SINGLE	1
	9ST9596-3	LOCK WASHER	4
	9SCF000042	#8-32HN	4
	9SM18861	RECEPTACLE COVER	1
12	9SM19161	CIRCUIT BREAKER COVER	1
	9SS24672-2	DECAL	1
14	9ST12287-38	CIRCUIT BREAKER	2
15A	9SM20586-1	CIRCUIT BREAKER50A3 POLE	1
	9SS26335	MOUNTING PLATE	1
	9ST10082-12	SEMS SCREW	6
	9SM16996	RECEPTACLE COVER	1
	9SS21088	RECEPTACLEGASKET	1
	9SS9225-63	THREAD FORMING SCREW (CUTTING)	2
	9SS26336	SPACER	1
16	9ST12287-31	CIRCUIT BREAKER-20A250VAC32VDC	1
17	9ST12287-20	CIRCUIT BREAKER-10A250VAC	1
18A	9SS18907-3	RECEPTACLE 250v 50A	1

KEY	PART NUMBER	DESCRIPTION	QTY
	9ST9695-1	LOCKWASHER	4
	9SCF000042	#8-32HN	4
	9SM18861	RECEPTACLE COVER	1
	9SS9225-63	THREAD FORMING SCREW (CUTTING)	1
	9ST9695-1	LOCKWASHER	2
	9SCF000010	#10-24HN	2
21	9SS8025-96	SELF TAPPING SCREW	8
22A	9SM20043	CONTROL PANEL DOOR ASBLY	1
	9SS8025-92	SELF TAPPING SCREW	4
23	9SS25569	DOOR PADDLE LATCH	1
24	9SG4331	FRONT DOOR NAMEPLATE	1
	9SS24659	CATCH BRACKET	1
	9SS8025-98	SELF TAPPING SCREW	2
29	9SS17062-10	CABLE CONNECTOR CAP	1
30	K2467-1	DIGITAL WELD METER KIT	1
	9SL11160	METER HOUSING ASBLY	2
	9SS24630	METER HOUSING SEAL	2
	9SM19368	METER BEZEL	2
	9ST14807-9	FILTER LENS	2
	9SCF000389	#4-40X.375SS-PPNHS-FULL-GR2-3147	4
	9SS9262-3	PLAIN WASHER	4
	9SCF000005	#6-32HN	4
32	9SS17062-3	CABLE CONNECTOR CAP	1
33A	9ST10800-39	SWITCH-TOGGLE	1
	9SS22061-4	SEALING BOOT	1
34A	9ST10800-47	SWITCH;TOGGLEDPST	1
	9SS22061-4	SEALING BOOT	1
35	9SG6973	NAMEPLATE	1
36	9ST10491	KNOB	2
38	9ST14659-2	FASTENER BUTTON	2
40A	9SG4662-2	PERIPHERAL CONTROL PC BD ASBLY	1
40B	9ST9187-13	#10-24HLN-1817/1-NYLON INSERT	4
42A	9SL11924-1	PC BD MOUNTING BRKT	1
42B	9ST9187-13	#10-24HLN-1817/1-NYLON INSERT	4

KEY	PART NUMBER	DESCRIPTION	QTY
43A	9SG5507-3	WELD CONTROL PC BD ASBLY	1
43B	9SS8025-100	SELF TAPPING SCREW	4
44	9ST10491	KNOB	1
	9ST13483-7	O RING 011	3
	9SM19685-5	CONNECTOR AND LEAD ASBLY	1
	9SM19685-30	CONNECTOR & LEAD ASBLY	1

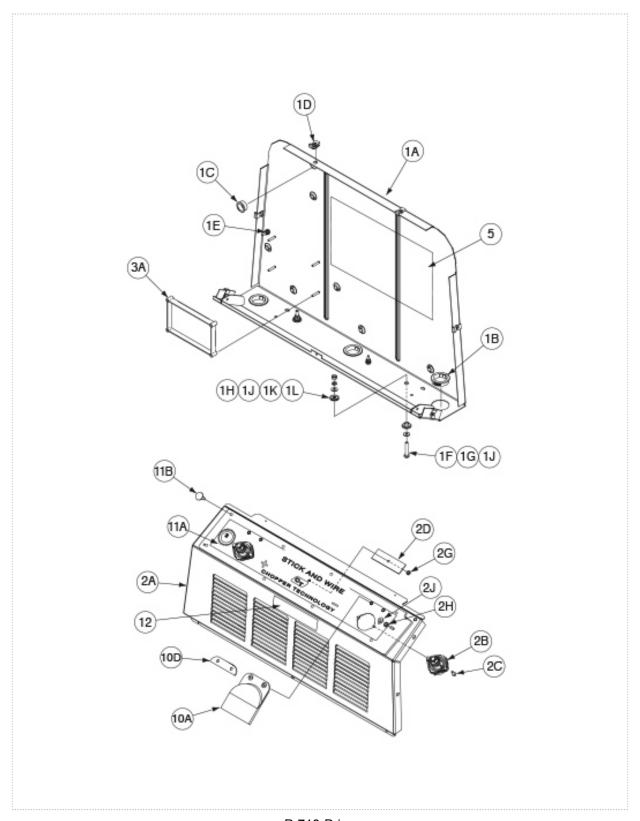


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Control Box & Output Panel

KEY	PART NUMBER	DESCRIPTION	QTY
	9SM21503	CONTROL BOX ASSEMBLY	1
1A	9SL8893-2	CONTROL BOX	1
1B	9ST12380-1	BUSHING	3
1C	9ST12380-4	BUSHING	1
1D	9ST11525-5	SPEED NUT1/4-20	6
1E	9SS18922-5	GROUND SCREW ASSEMBLY	2
1F	9SCF000356	1/4-20X1.50HHB-FULL-GR2-E1817/1	2
1G	9ST11267-A	INSULATOR	2
1H	9ST11267-B	INSULATOR	2
1J	9SS9262-98	PLAIN WASHER	4
1K	9SE106A-2	LOCKWASHER	2
1L	9SCF000017	1/4-20HN	2
	9SS9225-68	THREAD FORMING SCREW (CUTTING)	2
	9SM18926-5	OUTPUT PANEL ASBLY	1
2A	9SL10649-4	OUTPUT PANEL ASBLY	1
2B	9SM13900	OUTPUT TERMINAL ASBLY	2
2C	9SS8025-91	SELF TAPPING SCREW	4
2D	9SS24982	BYPASS FILTER ASBLY	1
	9SS9262-27	PLAIN WASHER	1
	9SE106A-1	LOCKWASHER	1
2G	9SCF000010	#10-24HN	1
2H	9SCF000017	1/4-20HN	2
2J	9ST9187-1	1/4-20HJLN	2
3A	9SL11768-1	PULL COIL/BATTERY PC BD ASBLY	1
	9ST9187-13	#10-24HLN-1817/1-NYLON INSERT	4
5	9SG6848	WIRING DIAGRAM	1
	9SS24097-2	SHUNT & LEAD ASBLY	1
10A	9SM20007	OUTPUT STUD COVER	2
	9SS9225-66	SELF TAPPING SCREW	4
	9SE106A-2	LOCKWASHER	4
10D	9SS25669	OUTPUT STUD COVER PLATE	2
11A	9SG3343-1	NAMEPLATE-OUTPUT PANEL	1
11B	9ST14659-1	FASTENER BUTTON	2
12	9SS25830	SIMULTANEOUS WELDING & POWER DECAL	1

Control Box & Output Panel



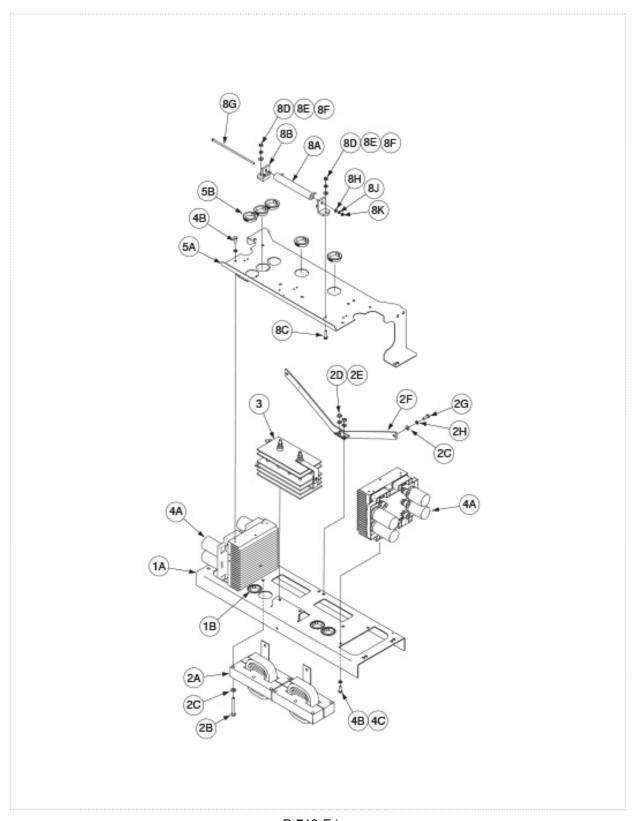
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Power Module Assembly

KEY	PART NUMBER	DESCRIPTION	QTY
	9SG3864	POWER MODULE ASBLY	1
1A	9SM19139-2	POWER MODULE BRKT	1
1B	9ST12380-1	BUSHING	3
2A	9SM19416-1	CHOKE ASBLY	2
2B	9SCF000187	5/16-18X2.50HHCS	4
2C	9SS9262-121	PLAIN WASHER	6
2D	9SE106A-14	LOCKWASHER	4
2E	9SCF000029	5/16-18HN	4
2F	9SM20057	HEAT SINK BRACE	1
2G	9SCF000014	1/4-20X.75HHCS	2
2H	9SE106A-2	LOCKWASHER	2
3	9SL11132-2	THREE PHASE BRIDGE RECTIFIER	1
4A	9SL11845-1	CHOPPER HEATSINK ASBLY	2
4B	9SCF000014	1/4-20X.75HHCS	8
4C	9SE106A-2	LOCKWASHER	8
5A	9SM19140-2	POWER MODULE TOP BRKT	1
5B	9ST12380-1	BUSHING	5
8A	9SS10404-138	RESISTOR-WW100W505%	1
8B	9SS22168	HEAT SINK HOLDER	2
8C	9SS9225-17	THREAD FORMING SCREW (ROLLING)	2
8D	9SS9262-98	PLAIN WASHER	2
8E	9SE106A-2	LOCKWASHER	2
8F	9SCF000017	1/4-20HN	2
8G	9SCF000191	#10-24X7.50RHS	1
8H	9SS9262-27	PLAIN WASHER	2
8J	9SE106A-1	LOCKWASHER	1
8K	9SCF000010	#10-24HN	1
	9SS9225-66	SELF TAPPING SCREW	4
	9SS9262-98	PLAIN WASHER	6
	9SE106A-2	LOCKWASHER	3
	9SCF000017	1/4-20HN	3
	9SCF000015	1/4-20X1.00HHCS	3

Power Module Assembly



P-718-E.jpg

Base & Lift Bale Assembly

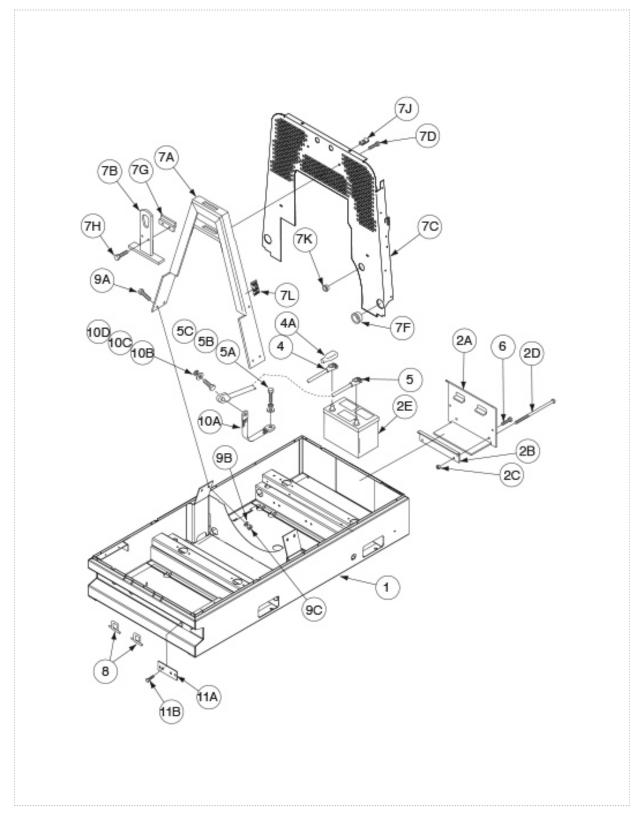
KEY	PART NUMBER	DESCRIPTION	QTY
1	9SG3473-3	BASE ASBLY	1
	9SL8904-3	BATTERY HOLD DOWN ASBLY	1
2A	9SM17798-2	BATTERY PANEL	1
2B	9SS22018	BATTERY BRKT	1
2C	9ST9187-6	LOCKNUT	2
2D	9ST11827-31	CARRIAGE BOLT	2
2E	9SM9399-11	BATTERY	1
4	9SS8070-50	BATTERY CABLE (POSITIVE)	1
4A	9SS20191-1	BATTERY TERMINAL COVER	1
5	9SS8070-49	BATTERY CABLE (NEGATIVE)	1
5A	9SS9225-53	THREAD FORMING SCREW	1
5B	9SS9262-4	PLAIN WASHER	1
5C	9SE106A-16	LOCKWASHER	1
6	9SS9225-66	SELF TAPPING SCREW	2
	9ST11525-5	SPEED NUT1/4-20	2
	9SS9262-98	PLAIN WASHER	2
	9SE106A-2	LOCKWASHER	2
	9SG3098-2	LIFT FRAME ASSEMBLY	1
7A	9SL8897	LIFT FRAME WELDMENT	1
7B	9SM16888	LIFT BALE ASBLY	1
7C	9SG3972	FIRE WALL	1
7D	9SS9225-8	THREAD FORMING SCREW (ROLLING)	2
7F	9ST12380-1	BUSHING	2
7G	9SS20689	BALE SUPPORT BRACKET	1
7H	9SS9225-45	THREAD FORMING SCREW	2
7J	9ST11525-5	SPEED NUT1/4-20	8
7K	9ST12380-8	BUSHING	2
7L	9ST13086-62	DECAL-WARNING	2
8	9SS23736-1	STRAIN RELIEF	2
9A	9ST8833-24	HEX HD CAP SCREW	4
9B	9SE106A-15	LOCKWASHER	4
9C	9SCF000027	1/2-13HN	4
	9ST12380-4	BUSHING	1
10A	9SS15017-16	GROUND STRAP	1

Base & Lift Bale Assembly

KEY	PART NUMBER	DESCRIPTION	QTY
10B	9ST14731-13	METRIC HD SCREW-M10 X 1.5	1
10C	9SS17400-1	LOCKWASHER-METRIC	1
10D	9SS9262-120	PLAIN WASHER	1
11A	9SS25757	COVER PLATE	2
11B	9SS9225-66	SELF TAPPING SCREW	4

LINCOLN ...

Base & Lift Bale Assembly



P-718-F.jpg

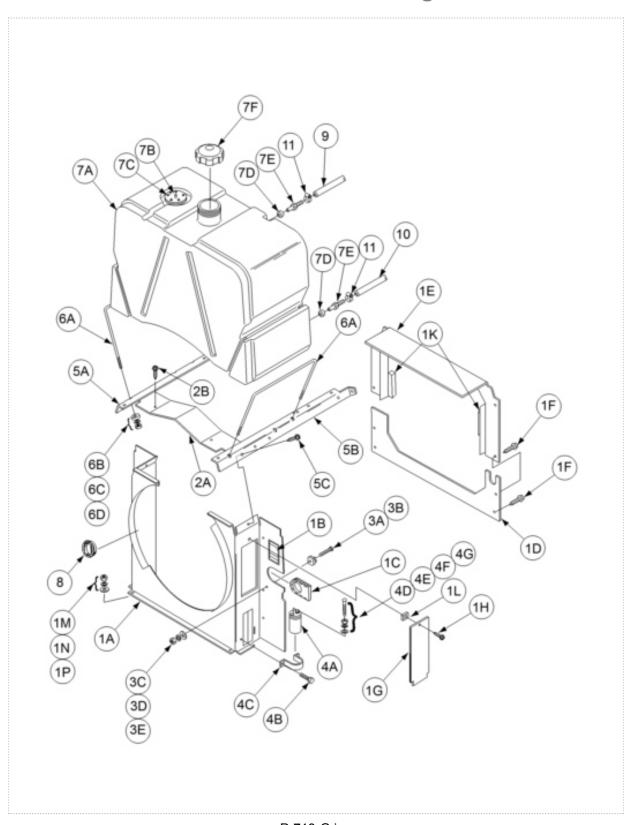
Fuel Tank & Mounting

KEY	PART NUMBER	DESCRIPTION	QTY
1A	9SG3568	FAN BAFFLE	1
1B	9ST13086-62	DECAL-WARNING	2
1C	9SS18543-5	GROMMET	2
1D	9SM19177	LOWER STATOR BAFFLE	1
1E	9SL10999-1	UPPER STATOR BAFFLE	1
1F	9SS8025-92	SELF TAPPING SCREW	6
1G	9SS24327	BRUSH COVER	1
1H	9SS9225-66	SELF TAPPING SCREW	1
	9SS18543-2	INPUT CABLE GROMMET	1
1K	9SM15045-77	ACOUSTICAL FOAM	2
1L	9ST11525-5	SPEED NUT1/4-20	1
1M	9SS9262-98	PLAIN WASHER	2
1N	9SE106A-2	LOCKWASHER	2
1P	9SCF000017	1/4-20HN	2
2A	9SM16891	TANK FAN GUARD	1
2B	9SS8025-91	SELF TAPPING SCREW	2
3A	9ST13637-1	SILICON BRIDGE ASBLY	1
3B	9SCF000072	#10-24X.75RHS	1
3C	9SS9262-27	PLAIN WASHER	1
3D	9SE106A-1	LOCKWASHER	1
3E	9SCF000010	#10-24HN	1
4A	9SS13490-171	FILTER CAPACITOR	1
4B	9SS8025-94	SELF TAPPING SCREW	1
4C	9SS22747	CAPACITOR BRKT ASBLY	1
4D	9SS9262-98	PLAIN WASHER	2
4E	9SE106A-2	LOCKWASHER	2
4F	9SS11604-65	SET SCREW	2
4G	9SCF000198	1/4-28HN	2
5A	9SM16889-1	FUEL TANK SUPPORT	1
5B	9SM16889-2	FUEL TANK SUPPORT	1
5C	9SS9225-26	THREAD FORMING SCREW (ROLLING)	6
6A	9SS20746	FUEL TANK STRAP	2
6B	9ST11135-18	RUBBER WASHER	4
6C	9SS9262-120	PLAIN WASHER	4

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Fuel Tank & Mounting

KEY	PART NUMBER	DESCRIPTION	QTY
6D	9ST9187-10	3/8-16HLN-1817/1-NYLON INSERT	4
	9SG2500-1	FUEL TANK ASBLY	1
7A	9SG2499-1	FUEL TANK	1
7B	9SM16893	FUEL LEVER SENDER	1
7C	9ST10082-4	SEMS SCREW	5
7D	9SS19563	RUBBER PLUG	2
7E	9SS19564-1	FUEL FITTING (PUSH-IN)	2
7F	9SS20541	FUEL CAP	1
8	9ST12380-1	BUSHING	1
10	9ST10642-187	FLEX TUBE	2
11	9ST13777-7	HOSE CLAMP	1
	9ST13777-1	HOSE CLAMP	3



P-718-G.jpg

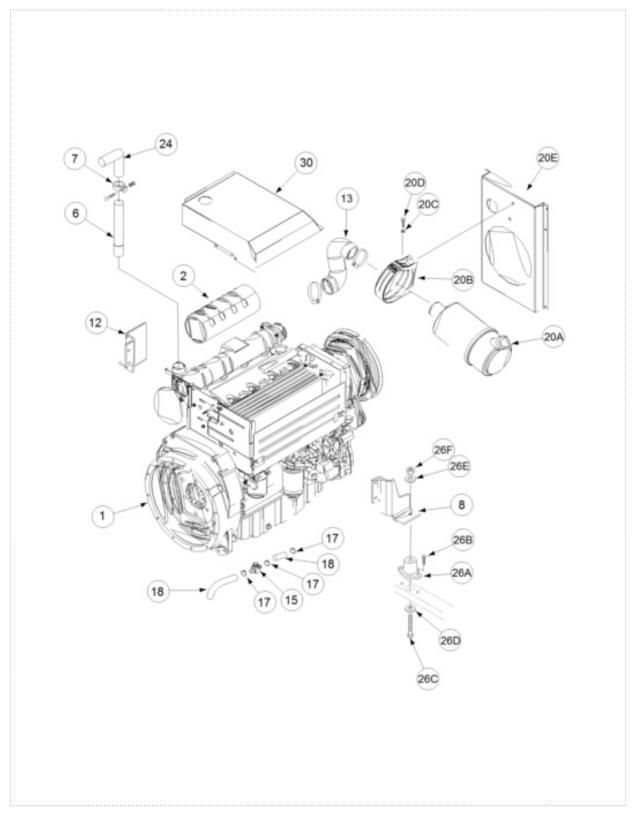
Engine Assembly

KEY	PART NUMBER	DESCRIPTION	QTY
	9SG3889-10	ENGINE ASSEMBLY	1
1	9SM24688	ENGINE	1
2	9SM20521	MUFFLER BLANKET	1
	9SS23024	OIL DRAIN VALVE	1
	9ST10642-218	FLEX HOSE	1
	9SS10888-27	HOSE CLAMP	1
6	9SM17875-3	PIPE EXTENSION	1
7	9SS20470-2	CLAMP	1
8	9SM20423	ENGINE FOOT (RIGHT)	1
	9SS9262-41	PLAIN WASHER	4
	9SE106A-12	LOCKWASHER	4
12	9SM20433	ENGINE FOOT (LEFT)	1
13	9SG4840	AIR INTAKE HOSE	1
	9SS10888-33	HOSE CLAMP	2
15	9SS24068	FUEL SHUT-OFF	1
	9ST13777-7	HOSE CLAMP	1
17	9ST13777-1	HOSE CLAMP	3
18	9ST10642-187	FLEX TUBE	2
	9SM21321-4	AIR CLEANER & BRACKET ASBLY	1
20A	9SM20281	AIR FILTER	1
20B	9SM20282	MOUNTING BAND	1
20C	9ST9695-8	LOCKWASHER	2
20D	9SCF000344	HEX HD SCREW	2
20E	9SM20467	AIRBOX	1
	9ST11525-5	SPEED NUT1/4-20	4
	9SS20470-2	CLAMP	1
24	9SM16980	OUTLET PIPE ELBOW	1
	9SS9225-45	THREAD FORMING SCREW	2
	9SM8859-79	MOUNTING KIT	2
26A	9SS24485	RUBBER MOUNT	4
26B	9SS9225-26	THREAD FORMING SCREW (ROLLING)	8
26C	9SCF000123	1/2-13X2.75HHCS	4
26D	9ST9054	WASHER	4
26E	9SS9262-5	PLAIN WASHER	4

Engine Assembly

KEY	PART NUMBER	DESCRIPTION	QTY
26F	9ST9187-4	LOCKNUT	4
30	9SG4689	OIL COOLER BAFFLE	1

Engine Assembly



P-718-H.jpg

Generator Assembly

KEY	PART NUMBER	DESCRIPTION	QTY
1	9SG3088-10	STATOR TIE BAR ASBLY	1
	9SL13110-3	ROTOR & COUPLING DISC ASBLY	1
2A	9SL10501-5	ROTOR & SHAFT ASBLY	1
3	9SS22657	FAN COUPLE	1
4	9SL9551	FAN BLADE	1
5A	9SCF000025	3/4-10HN	1
5B	9SE106A-7	LOCKWASHER	1
6A	9SS9225-22	THREAD FORMING SCREW (ROLLING)	4
6B	9SE106A-14	LOCKWASHER	4
7A	9SM9300-85	BEARING	1
7B	9SS18044-5	TOLERANCE RING	1
7C	9SL11614	STATOR COWLING	1
7D	9SS9225-8	THREAD FORMING SCREW (ROLLING)	8
7E	9SS22415-4	TRIM SEAL	2
7F	9SM15045-64	ACOUSTICAL FOAM	2
7G	9SL11614-1	STATOR COWLING	1
	9SL9552-2	COUPLING ASSEMBLY	1
8A	9SS11868-1	BLOWER SEGMENT	4
8B	9SS17400-1	LOCKWASHER-METRIC	8
8C	9ST14731-5	METRIC HEX HD SCREW-M10 X 1.5	8
8D	9SM19796	COUPLING DISC	1
8E	9SS8042	COUPLING DISC BACKING PLATE	2
8F	9SS14233	COUPLING CLAMP RING-INSIDE	1
8G	9ST8833-2	HEX HD CAP SCREW	8
8H	9SE106A-8	LOCKWASHER	8
8J	9ST14731-5	METRIC HEX HD SCREW-M10 X 1.5	8
8K	9SS17400-1	LOCKWASHER-METRIC	8
	9SM21315-1	BRUSH HOLDER & BRACKET ASBLY	1
9A	9SM18323-1	BRUSH HOLDER BRKT	1
9B	9SM16158	BRUSH & BRUSH HOLDER ASBLY	1
	9SG2114	BRUSH HOLDER CARTRIDGE	1
	9SS19480	BRUSH ASBLY	2
	9SM16157	BRUSH ASBLY RETAINER	1
9C	9SS8025-91	SELF TAPPING SCREW	2

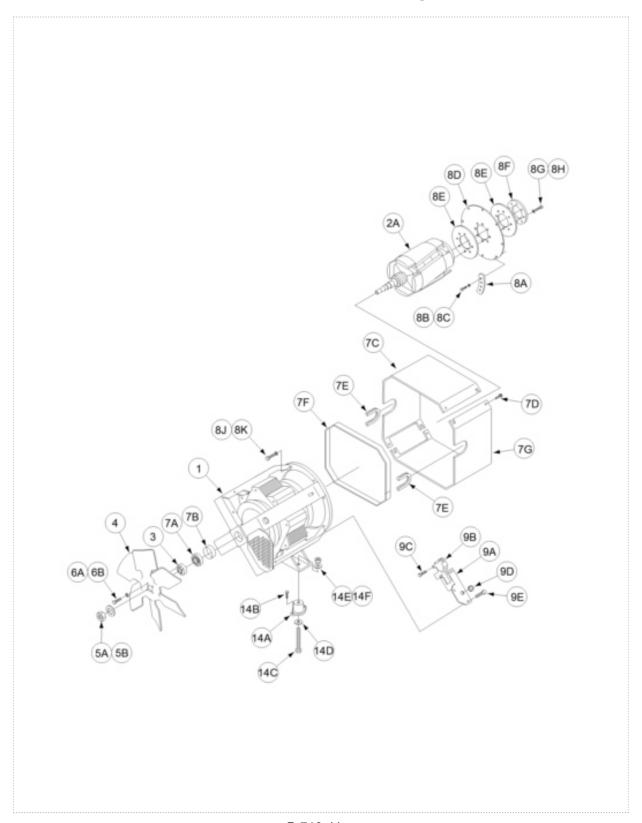
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Generator Assembly

KEY	PART NUMBER	DESCRIPTION	QTY
9D	9ST12380-4	BUSHING	1
9E	9SS9225-8	THREAD FORMING SCREW (ROLLING)	2
	9SM8859-79	MOUNTING KIT	2
14A	9SS24485	RUBBER MOUNT	4
14B	9SS9225-26	THREAD FORMING SCREW (ROLLING)	8
14C	9SCF000123	1/2-13X2.75HHCS	4
14D	9ST9054	WASHER	4
14E	9SS9262-5	PLAIN WASHER	4
14F	9ST9187-4	LOCKNUT	4

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Generator Assembly



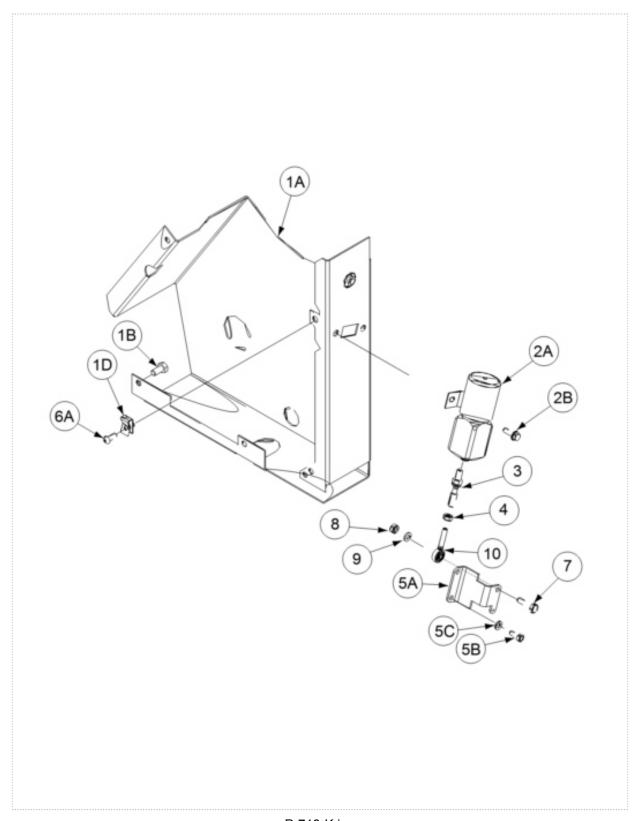
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LINCOLN ...

Solenoid & Bracket Assembly

KEY	PART NUMBER	DESCRIPTION	QTY
	9SL12417	SOLENOID & BRACKET ASBLY	1
1A	9SG4711	PULLEY GUARD	1
1B	9ST14731-31	METRIC HEX HD SCREW-M8 X1.25	2
	9SS9262-121	PLAIN WASHER	1
1D	9ST11525-5	SPEED NUT1/4-20	3
2A	9SS20140-4	SOLENOID ASBLY	1
2B	9SS9225-66	SELF TAPPING SCREW	2
3	9SS22070	IN-LINE SWIVEL	1
4	9SCF000198	1/4-28HN	1
5A	9SS22521	IDLER ARM BRKT	1
5B	9ST14731-38	METRIC HEX HD SCREW-M6 X1.0	2
5C	9SE106A-2	LOCKWASHER	2
6A	9ST11551-4	BUTTON HEAD SOCKET SCREW	1
7	9SCF000015	1/4-20X1.00HHCS	1
8	9SCF000017	1/4-20HN	1
9	9SE106A-2	LOCKWASHER	1
10	9SS22232	ROD END SWIVEL	1
	9ST13086-62	DECAL-WARNING	1

Solenoid & Bracket Assembly



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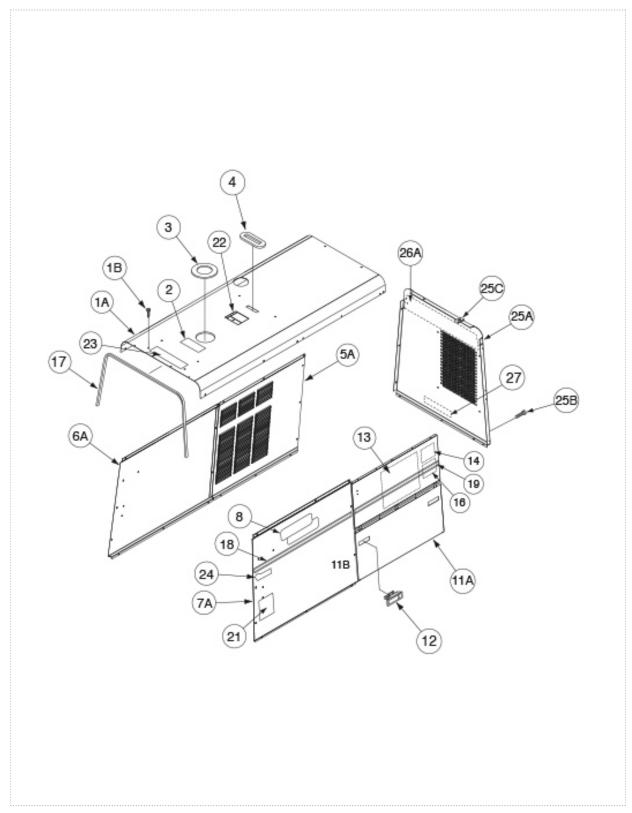
Covers & Case Back

KEY	PART NUMBER	DESCRIPTION	QTY
1A	9SG3472-2	ROOF	1
1B	9SS24739-31	1/4-20 STAINLESS STEEL SCREW	17
	9ST11827-46	CARRIAGE BOLT	1
	9SS9262-27	PLAIN WASHER	1
	9SE106A-1	LOCKWASHER	1
	9SCF000010	#10-24HN	1
2	9ST13086-205	FUEL WARNING DECAL	1
3	9SS10437-F	GASKET	1
4	9SS12934-1	COVER SEAL	1
5A	9SL12093-1	ENGINE CASE SIDE ASBLY	1
	9SS24739-31	1/4-20 STAINLESS STEEL SCREW	6
	9ST11525-5	SPEED NUT1/4-20	3
6A	9SL10648-3	LEFT SIDE PANEL	1
	9SS24739-31	1/4-20 STAINLESS STEEL SCREW	10
	9ST11525-5	SPEED NUT1/4-20	3
7A	9SL10646-3	RIGHT SIDE PANEL	1
	9SS24739-31	1/4-20 STAINLESS STEEL SCREW	10
	9ST11525-5	SPEED NUT1/4-20	3
8	9SS11893-6	LOGO DECAL	
11A	9SL10237-4	DOOR ASBLY	1
	9SS18095-1	DOOR SUPPORT ROD	1
	9ST15085	RETAINING CLIP	1
	9SCF000047	#10-24X.50RHS	2
	9SE106A-1	LOCKWASHER	2
	9SCF000010	#10-24HN	2
	9ST11827-46	CARRIAGE BOLT	3
	9SS9262-27	PLAIN WASHER	3
	9SE106A-1	LOCKWASHER	3
	9SCF000010	#10-24HN	3
12	9SS22075	ADJUSTABLE LEVER LATCH 2	
13	9SG4847	WIRING DIAGRAM 1	
14	9SS25951	ENGINE SERVICE DECAL	1
17	9SS20555	EDGE PROTECTOR 1	
18	9SG3317	SIDE DECAL	2

Covers & Case Back

KEY	PART NUMBER	DESCRIPTION	QTY
19	9SG3317	SIDE DECAL	2
21	9SM16197	DECAL-WARNING	1
22	9SS25896	DECAL-WARNING	1
23	9SM21436	CARBON MONOXIDE WARNING DECAL	1
24	9SS28039-1	DECAL GREEN INITIATIVE	1
25A	9SG4807	CASE BACK	1
25B	9SS9225-66	SELF TAPPING SCREW	3
25C	9ST11525-5	SPEED NUT1/4-20	5
26A	9SG4332	REAR NAMEPLATE	1
	9ST14659-1	FASTENER BUTTON	4
27	9SM16679	DECAL-WARNING	1

Covers & Case Back



P-718-L.jpg

WARNING	Do not touch electrically live parts or electrode with skin or wet clothing. Insulate yourself from work and ground.	Keep flammable materials away.	Wear eye, ear and body protection.
AVISO DE PRECAUCION	 No toque las partes o los electrodos bajo carga con la piel o ropa moja- da. Aislese del trabajo y de la tierra. 	Mantenga el material combustible fuera del área de trabajo.	 Protéjase los ojos, los oídos y el cuerpo.
ATTENTION	 Ne laissez ni la peau ni des vêtements mouillés entrer en contact avec des pièces sous tension. Isolez-vous du travail et de la terre. 	Gardez à l'écart de tout matériel inflammable.	Protégez vos yeux, vos oreilles et votre corps.
WARNUNG	 Berühren Sie keine stromführenden Teile oder Elektroden mit Ihrem Körper oder feuchter Kleidung! Isolieren Sie sich von den Elektroden und dem Erdboden! 	Entfernen Sie brennbarres Material!	 Tragen Sie Augen-, Ohren- und Kör- perschutz!
ATENÇÃO	 Não toque partes elétricas e electrodos com a pele ou roupa molhada. Isole-se da peça e terra. 	 Mantenha inflamáveis bem guardados. 	 Use proteção para a vista, ouvido e corpo.
注意事項	● 通電中の電気部品、又は溶材にヒ フやぬれた布で触れないこと。 ● 施工物やアースから身体が絶縁さ れている様にして下さい。	● 燃えやすいものの側での溶接作業 は絶対にしてはなりません。	● 目、耳及び身体に保護具をして下 さい。
Chinese 整 生 言 ロ	● 皮肤或濕衣物切勿接觸帶電部件及 銲條。● 使你自己與地面和工件絶縁。	●把一切易燃物品移離工作場所。	●佩戴眼、耳及身體勞動保護用具。
Rorean 위험	● 전도체나 용접봉을 젖은 헝겁 또는 피부로 절대 접촉치 마십시요. ● 모재와 접지를 접촉치 마십시요.	●인화성 물질을 접근 시키지 마시요.	● 눈, 귀와 몸에 보호장구를 착용하십시요.
Arabic	 ♦ لا تلمس الاجزاء التي يسري فيها التيار الكهرباني أو الالكترود بجلد الجسم أو بالملابس المبللة بالماء. ♦ ضع عاز لا على جسمك خلال العمل. 	 ضع المواد القابلة للاشتعال في مكان بعيد. 	 ضع أدوات وملابس واقية على عينيك وأذنيك وجسمك.

READ AND UNDERSTAND THE MANUFACTURER'S INSTRUCTION FOR THIS EQUIPMENT AND THE CONSUMABLES TO BE USED AND FOLLOW YOUR EMPLOYER'S SAFETY PRACTICES.

SE RECOMIENDA LEER Y ENTENDER LAS INSTRUCCIONES DEL FABRICANTE PARA EL USO DE ESTE EQUIPO Y LOS CONSUMIBLES QUE VA A UTILIZAR, SIGA LAS MEDIDAS DE SEGURIDAD DE SU SUPERVISOR.

LISEZ ET COMPRENEZ LES INSTRUCTIONS DU FABRICANT EN CE QUI REGARDE CET EQUIPMENT ET LES PRODUITS A ETRE EMPLOYES ET SUIVEZ LES PROCEDURES DE SECURITE DE VOTRE EMPLOYEUR.

LESEN SIE UND BEFOLGEN SIE DIE BETRIEBSANLEITUNG DER ANLAGE UND DEN ELEKTRODENEINSATZ DES HERSTELLERS. DIE UNFALLVERHÜTUNGSVORSCHRIFTEN DES ARBEITGEBERS SIND EBENFALLS ZU BEACHTEN.

	*		
Keep your head out of fumes. Use ventilation or exhaust to remove fumes from breathing zone.	Turn power off before servicing.	Do not operate with panel open or guards off.	WARNING
 Los humos fuera de la zona de respiración. Mantenga la cabeza fuera de los humos. Utilice ventilación o aspiración para gases. 	Desconectar el cable de ali- mentación de poder de la máquina antes de iniciar cualquier servicio.	No operar con panel abierto o guardas quitadas.	AVISO DE PRECAUCION
 Gardez la tête à l'écart des fumées. Utilisez un ventilateur ou un aspirateur pour ôter les fumées des zones de travail. 	Débranchez le courant avant l'entre- tien.	 N'opérez pas avec les panneaux ouverts ou avec les dispositifs de protection enlevés. 	ATTENTION
 Vermeiden Sie das Einatmen von Schweibrauch! Sorgen Sie für gute Be- und Entlüftung des Arbeitsplatzes! 	Strom vor Wartungsarbeiten abschalten! (Netzstrom völlig öff- nen; Maschine anhalten!)	 Anlage nie ohne Schutzgehäuse oder Innenschutzverkleidung in Betrieb setzen! 	WARNUNG
 Mantenha seu rosto da fumaça. Use ventilação e exhaustão para remover fumo da zona respiratória. 	 Não opere com as tampas removidas. Desligue a corrente antes de fazer serviço. Não toque as partes elétricas nuas. 	 Mantenha-se afastado das partes moventes. Não opere com os paineis abertos ou guardas removidas. 	ATENÇÃO
ヒュームから頭を離すようにして下さい。換気や排煙に十分留意して下さい。	● メンテナンス・サービスに取りか かる際には、まず電源スイッチを 必ず切って下さい。	● パネルやカバーを取り外したままで機械操作をしないで下さい。	注意事項
● 頭部遠離煙霧。 ● 在呼吸區使用通風或排風器除煙。	●維修前切斷電源。	●儀表板打開或沒有安全罩時不準作 業。	Chinese 警 告
● 얼굴로부터 용접가스를 멀리하십시요. ● 호흡지역으로부터 용접가스를 제거하기 위해 가스제거기나 통풍기를 사용하십시요.	● 보수전에 전원을 차단하십시요.	● 판넬이 열린 상태로 작동치 마십시요.	Rorean 위 험
 ابعد رأسك بعيداً عن الدخان. استعمل التهوية أو جهاز ضغط الدخان للخارج لكي تبعد الدخان عن المنطقة التي تتنفس فيها. 	 ● اقطع التيار الكهربائي قبل القيام بأية صيانة. 	 ♦ لا تشغل هذا الجهاز اذا كانت الإغطية الحديدية الواقية ليست عليه. 	Arabic

LEIA E COMPREENDA AS INSTRUÇÕES DO FABRICANTE PARA ESTE EQUIPAMENTO E AS PARTES DE USO, E SIGA AS PRÁTICAS DE SEGURANÇA DO EMPREGADOR.

使う機械や溶材のメーカーの指示書をよく読み、まず理解して下さい。そして貴社の安全規定に従って下さい。

請詳細閱讀並理解製造廠提供的説明以及應該使用的銀捍材料,並請遵守貴方的有関勞動保護規定。

이 제품에 동봉된 작업지침서를 숙지하시고 귀사의 작업자 안전수칙을 준수하시기 바랍니다.

اقرأ بتمعن وافهم تعليمات المصنع المنتج لهذه المعدات والمواد قبل استعمالها واتبع تعليمات الوقاية لصاحب العمل.

CUSTOMER ASSISTANCE POLICY

The business of The Lincoln Electric Company is manufacturing and selling high quality welding equipment, consumables, and cutting equipment. Our challenge is to meet the needs of our customers and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for advice or information about their use of our products. We respond to our customers based on the best information in our possession at that time. Lincoln Electric is not in a position to warrant or guarantee such advice, and assumes no liability, with respect to such information or advice. We expressly disclaim any warranty of any kind, including any warranty of fitness for any customer's particular purpose, with respect to such information or advice. As a matter of practical consideration, we also cannot assume any responsibility for updating or correcting any such information or advice once it has been given, nor does the provision of information or advice create, expand or alter any warranty with respect to the sale of our products.

Lincoln Electric is a responsive manufacturer, but the selection and use of specific products sold by Lincoln Electric is solely within the control of, and remains the sole responsibility of the customer. Many variables beyond the control of Lincoln Electric affect the results obtained in applying these types of fabrication methods and service requirements.

Subject to Change – This information is accurate to the best of our knowledge at the time of printing. Please refer to www.lincolnelectric.com for any updated information.

