INSTRUCTION MANUAL

RANGER® AIR 260MPX, 330MPX

For use with Product/Code Numbers:

13462, 12463, 13728

GENUINE LINCOLN PARTS™

Register your machine:
www.lincolnelectric.com/register

Authorized Service and Distributor Locator:
www.lincolnelectric.com/locator

Save for future reference

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Code: (ex: 10859)

Serial: (ex: U1060512345)

IM10672-C | Issue Date AUG - 2025

THE LINCOLN ELECTRIC COMPANY
22801 St. Clair Avenue • Cleveland, OH • 44117-1199 • U.S.A.
www.lincolnelectric.com

Contents

SAFETY INFORMATION

SAFETY DEPENDS ON YOU

Lincoln 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.

⚠ DANGER

This statement indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

⚠ WARNING

This statement indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

⚠ CAUTION

This statement indicates a potentially hazardous situation which, if not avoided, could result in minor or moderate injury.

Notice: This statement indicates the possibility of damage to equipment if the potential risk is not avoided.

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.

KEEP YOUR HEAD OUT OF THE FUMES

- **DON'T** get too close to the weld. Use corrective lenses if necessary to stay a reasonable distance away from the weld.
- **USE ENOUGH VENTILATION** or exhaust at the weld, 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.
- **USE NATURAL DRAFTS** or fans to keep the fumes away from your face. If you develop unusual symptoms, see your supervisor.
- **READ** and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

Perhaps the welding atmosphere and ventilation system should be checked.

WEAR CORRECT EYE, EAR AND BODY PROTECTION

- **PROTECT** your eye and face with 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.
- **PROTECT** your eyes and face with welding helmet
- **IN SOME AREAS**, protection from noise may be appropriate.
- **BE SURE** protective equipment is in good condition.

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

- **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.
- **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.**

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.

⚠ 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.)

For more information go to https://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. 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

- Turn the engine off before troubleshooting and maintenance work unless the maintenance work requires it to be running.

- 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.

- 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 equipment.

- 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.
- **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.
- 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.

- To avoid scalding, do not remove the radiator pressure cap when the engine is hot.

- Generator exhaust contains carbon monoxide. This is a poison you cannot see or smell.
- Using a generator indoors **CAN KILL YOU IN MINUTES**.
- **NEVER** use inside a home or garage, EVEN IF doors and windows are open.

- **ONLY** use **OUTSIDE** and far away from windows, doors and vents.
- Avoid other generator hazards. **READ MANUAL BEFORE USE**.

ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS

- Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines.
- EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.
- Exposure to EMF fields in welding may have other health effects which are now not known.

All welders should use the following procedures in order to minimize exposure to EMF fields from the welding circuit:

- Route the electrode and work cables together - Secure them with tape when possible.
- Never coil the electrode lead around your body.
- 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.
- Connect the work cable to the workpiece as close as possible to the area being welded.
- Do not work next to welding power source.

ELECTRIC SHOCK CAN KILL

- 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.
- 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.
- In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.
- 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.
- Never dip the electrode in water for cooling.

- 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.
- When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
- **Also see** WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION **and** FOR ELECTRICALLY POWERED EQUIPMENT

ARC RAYS CAN BURN

- 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 Z87.1 standards.
- Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- 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

1. 

- Welding may produce fumes and gases hazardous to health. Avoid breathing these 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.

2. 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.
3. 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.
4. Shielding gases used for welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.
5. 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.
6. Also see FOR ENGINE POWERED EQUIPMENT

WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION

- 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.

- 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.
- 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.
- 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.
- Vent hollow castings or containers before heating, cutting or welding. They may explode.
- Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuff-less 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.
- 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.
- **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.
- **DO NOT** use a welding power source for pipe thawing.

CYLINDER MAY EXPLODE IF DAMAGED

- 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.
- Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.

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.
- 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.
- Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.
- Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-l, "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

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

BATTERY HANDLING, STORAGE, AND DISPOSAL

Batteries can be flammable substances such as lithium or other organic solvents, which may result in overheating, rupture, or combustion. Failure to follow the battery manufactures instructions may result in fire, personal injury, and damage to property if used improperly.

- DO NOT short circuit, disassemble, deform, or heat batteries.
- DO NOT attempt to recharge batteries unless they are specifically marked as "rechargeable".
- DO NOT use or charge the battery if it appears to be leaking, deformed or damaged in any way.
- Store in a cool location. Keep batteries away from direct sunlight, high temperature, and high humidity.
- Immediately discontinue use of the battery if, while using, charging, or storing the battery, the battery emits an unusual smell, feels hot, changes color, changes shape, or appears abnormal in any other way.
- Keep batteries out of reach of children, should a child swallow a battery, consult a physician immediately.
- Recycle or dispose of batteries in accordance with local and federal laws.

FOR LASER EMITTING EQUIPMENT

- Hazardous Class 4 (IV) laser products emit invisible, infrared laser radiation which can permanently damage the eye's retina and/or cornea, burn skin, and pose a fire risk. End users shall assign a qualified Laser Safety Officer (LSO) who has the certifications required by applicable law/standards, have a documented Laser Safety Program and have a Laser Controlled Area (LCA) that confirms to ANSI Z136.1 & Z136.9.
- Do not operate laser before end user's LSO has completed a risk assessment and all the prescribed Risk Mitigations measures have been fully implemented. Ensure the laser is operated/ demonstrated safely by trained personnel and that the environment surrounding the laser welding cell or laser-controlled area is safe for people nearby when the laser is in operation.
- Never point the laser at yourself or others. Never look directly into a laser aperture, even if wearing full eye protection.
- All persons inside LCA must wear proper PPE to avoid eye or skin exposure to laser radiation. The end user's LSO shall select proper PPE including, but not limited to, heat-resistant gloves, flame-resistant clothing, laser safety eye wear and laser-safe helmets that conform to ANSI Z136.1 Optical Density requirements for the wavelength and output power of the laser in use. Standard safety glasses and welding helmets DO NOT provide adequate protection from laser beam hazards. Always inspect PPE for damage or improper fit before use.
- Only qualified persons shall install, operate or service this unit per ANSI Z136.1 standards and your LSO's instruction. Read and follow all labels and manuals before installing, operating, or servicing hand held any laser welding equipment.
- Do not operate outside of a LCA, or if the laser protective housing is modified or damaged, or if safety interlocks have been bypassed or otherwise defeated. Inspect all equipment and LCA for damage or tampering prior to use.
- Reflected beams from the laser can damage eyes and skin and can pose a fire risk. Prior to use, the LCA should be assessed by the LSO to understand the surfaces where hazardous reflected beams can exist. Never position yourself or flammable material in the anticipated laser beam path and take extra precautions when working on reflective materials like aluminum and stainless steel.
- Follow all standards, individual facility or building regulations, and national, state, and local codes.

ADDITIONAL SAFETY INFORMATION

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

Electromagnetic Compatibility (EMC)

Conformance

Products displaying the CE mark are in conformity with European Community Council Directive of 15 Dec 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility, 2004/108/EC. It was manufactured in conformity with a national standard that implements a harmonized standard: EN 60974-10 Electromagnetic Compatibility (EMC) Product Standard for Arc Welding Equipment. It is for use with other Lincoln Electric equipment. It is designed for industrial and professional use.

Introduction

All electrical equipment generates small amounts of electromagnetic emission. Electrical emission may be transmitted through power lines or radiated through space, similar to a radio transmitter. When emissions are received by other equipment, electrical interference may result. Electrical emissions may affect many kinds of electrical equipment; other nearby welding equipment, radio and TV reception, numerical controlled machines, telephone systems, computers, etc. Be aware that interference may result and extra precautions may be required when a welding power source is used in a domestic establishment.

Installation and Use

The user is responsible for installing and using the welding equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the user of the welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing (grounding) the welding circuit, see Note. In other cases it could involve construction of an electromagnetic screen enclosing the power source and the work complete with associated input filters. In all cases electromagnetic disturbances must be reduced to the point where they are no longer troublesome.

Note: The welding circuit may or may not be earthed for safety reasons according to national codes. Changing the earthing arrangements should only be authorized by a person who is competent to access whether the changes will increase the risk of injury, e.g., by allowing parallel welding current return paths which may damage the earth circuits of other equipment.

Assessment of Area

Before installing welding equipment the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account:

- Other supply cables, control cables, signaling and telephone cables; above, below and adjacent to the welding equipment.
- Radio and television transmitters and receivers.
- Computer and other control equipment.
- Safety critical equipment, e.g., guarding of industrial equipment.
- The health of the people around, e.g., the use of pacemakers and hearing aids.
- Equipment used for calibration or measurement.
- The immunity of other equipment in the environment. The user shall ensure that other equipment being used in the environment is compatible. This may require additional protection measures.
- The time of day that welding or other activities are to be carried out.

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

Methods of Reducing Emissions:

Mains Supply

Welding equipment should be connected to the mains supply according to the manufacturer's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the mains supply. Consideration should be given to shielding the supply cable of permanently installed welding equipment, in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the welding power source so that good electrical contact is maintained between the conduit and the welding power source enclosure.

Maintenance of the Welding Equipment

The welding equipment should be routinely maintained according to the manufacturer's recommendations. All access and service doors and

covers should be closed and properly fastened when the welding equipment is in operation. The welding equipment should not be modified in any way except for those changes and adjustments covered in the manufacturers instructions. In particular, the spark gaps of arc striking and stabilizing devices should be adjusted and maintained according to the manufacturer's recommendations.

Welding Cables

The welding cables should be kept as short as possible and should be positioned close together, running at or close to floor level.

Equipotential Bonding

Bonding of all metallic components in the welding installation and adjacent to it should be considered. However, metallic components bonded to the work piece will increase the risk that the operator could receive a shock by touching these metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

Earthing of the Workpiece

Where the workpiece is not bonded to earth for electrical safety, not connected to earth because of its size and position, e.g., ships hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the workpiece increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the workpiece to earth should be made by a direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

Screening and Shielding

Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening of the entire welding installation may be considered for special applications[1].

Note: [1]Portions of the preceding text are contained in EN 60974-10: "Electromagnetic Compatibility (EMC) product standard for arc welding equipment."

INSTALLATION

TECHNICAL SPECIFICATIONS

RANGER AIR 260/330MPX (REHLKO) (K5238-1), (K5239-1)

260MPX WELDING RATED OUTPUT @ 104 ºF (40ºC)			
WELDING PROCESS	WELDING OUTPUT - IEC RATING Current/Voltage/Duty Cycle	OTHER RATINGS	MAXIMUM WELD OCV @ RATED LOAD RPM
DC Stick Welding (constant current)	35A / 21.4V / 100 % - 231A / 29.2V / 100 %	260A / 26V / 100 %	80 Volts
Touch-Start TIG	25A / 11V / 100 % - 255A / 20.2V / 100 %	260A / 26V / 100 %	30 Volts
DC MIG/FCAW Welding (Constant Voltage)	35A / 15.8V / 100 % - 253A / 26.7V / 100 %	260A / 26V / 100 %	80 Volts
330MPX WELDING RATED OUTPUT @ 104 ºF (40ºC)			
WELDING PROCESS	WELDING OUTPUT - IEC RATING Current/Voltage/Duty Cycle	OTHER RATINGS	MAXIMUM WELD OCV @ RATED LOAD RPM
DC Stick Welding (constant current)	35A / 21.4V / 100 % - 292A / 31.7V / 100 %	330A/ 28V /100%	85 Volts
DC Pipe Welding	35A / 21.4V / 100 % - 292A / 31.7V / 100 %	330A/ 28V /100%	85 Volts
Touch-Start TIG	25A / 11V / 100 % - 325A / 23.0V / 100 %	330A/ 28V /100%	24 Volts
DC MIG/FCAW Welding (Constant Voltage)	35A / 15.8V / 100 % - 312A / 29.6V / 100 %	330A/ 28V /100%	85 Volts
DC Arc Gouging		330A/ 28V /100%	85 Volts

AIR COMPRESSOR SPECIFICATIONS	
Compressor Type	Single stage, oil injected rotary screw
Air compressor capacity	40 CFM @ 150 psi
Inlet Control	Zero (0) no load / 100% load; proportional type
Air Filter	Pleated paper, dry type
Oil Filter	25 micron spin-on type
Oil capacity	3 quarts, genuine Vanair Oil
Safety relief valve setting	200psi
Electrical system	12 VDC
Cooling system	Air to oil heat exchanger
Air service outlets	Three #8 SAE/ORB
ENGINE SPECIFICATIONS	
Make/Model	REHLKO electronic throttle body -ECH749 (26.5 hp)
EPA Emission	Evaporative
Displacement	45 cu. in. (747 cc)

ENGINE SPECIFICATIONS	
Speed	3600 rpm @ full load
	2500 rpm @ low idle
Warranty (USA)	2 year complete (parts and labor)
	3 year major components (parts and labor)
Battery	12VDC Battery LB1
	BCI group size 99 or 99R
	410 cold cranking amps
Fuel System	Electric lift pump, fuel injected
Air Cleaner	Dual Element
Lubrication	Full pressure with full flow filter
Engine Protection	Low Oil Pressure
Capacities	Fuel: 11 gal (41.6 L)
	Oil: 1.9 qts (1.8 L)

IEC 60974-1; IP23S

-10°C TO +40°C OPERATING RANGE

BATTERY CHARGE		
MODE	OUTPUT	BATTERY VOLTAGES
CHARGING	50 AMPS	12V 24V
JUMP ASSIST	260MPX 260 Amps	
	330MPX 330Amps	

AUXILIARY OUTPUT @ 104ºF (40º) C					
	MODEL	CONTINUOUS	PEAK	RECEPTACLE	CIRCUIT BREAKER
Single Phase 60Hz	Ranger Air 260MPX	9,000 Watts	11,500 Watts	120 VAC Duplex (5-20R) GFCI Protected	20 Amps
				120/240 VAC Dual Voltage Full KVA (14-50R)	50 Amps
				240 VAC (6-50R)	50 Amps
	Ranger Air 330MPX	10,000 Watts	11,500 Watts	120 VAC Duplex (5-20R) GFCI Protected	20 Amps
				120/240 VAC Dual Voltage Full KVA (14-50R)	50 Amps
				240 VAC (6-50R)	50 Amps

GENERAL DESCRIPTION

The RANGER AIR 260MPX/330MPX are a compact, versatile machines ideally suited for service trucks.

The small size allows more room for trucks to carry tools and other equipment, while the low weight allows for easily meeting DOT requirements and ability to haul additional equipment without overloading the chassis.

Low sound improves work place safety and may qualify the machine for low noise regions, such as near schools or hospitals.

Reduced fuel consumption is achieved through advanced engine start/stop controls and variable engine speed during idling, welding or using the compressor.

The rotary screw air compressor supplies powerful instant air for common tools.

The machine's battery jump and charge capability provides power for 12V and 24V batteries.

Auxiliary power quality is the best in its class – less than 5% total harmonic distortion throughout the entire power range. Quality of the auxiliary power is fully independent of the weld setting.

Quick and easy set-up through the digital display offering premier welding arc. For example, the Ready.Set.Weld display guides operators who weld infrequently to proper, hassle free setup.

Direct connect spool gun, Activ8X with Crosslinc and full function wireless remote accessories increase workplace flexibility.

SAFETY PRECAUTIONS

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

⚠ WARNING

Do not attempt to use this equipment until you have thoroughly read the engine manufacturer's manual supplied with your welder. It includes important safety precautions, detailed engine starting, operating and maintenance instructions, and parts lists.

⚠ WARNING

ELECTRIC SHOCK can kill.

Do not touch electrically live parts or electrode with skin or wet clothing.

Insulate yourself from work and ground.

Always wear dry insulating gloves.

⚠ WARNING

ENGINE EXHAUST can kill.

Use in open, well ventilated areas or vent exhaust outside.

⚠ WARNING

MOVING PARTS can injure.

Do not operate with doors open or guards off.

Stop engine before servicing.

Keep away from moving parts.

See additional warning information at front of this operator's manual.

SERVICE TRUCK AND TRAILER INSTALLATION

Position the engine driven welder to ensure an unrestricted flow of clean, cool air to the air inlets and to avoid heated air coming out of the welder recirculating back into the air inlet. See Figure 1 : VENTILATION DIRECTION on page A-5 for air flow.

Position the engine driven welder to ensure proper ventilation of engine exhaust. Lincoln Electric does not recommend operating the engine driven welder in an enclosed or partially enclosed space, such as a trailer, vehicle, compartment or room.

Position engine exhaust far away from windows, doors and vents.

⚠ WARNING

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

Only transport this welding 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. Do not mount the welder using rubber mounts.

Follow vehicle manufacturer's instructions.

Do not install equipment where air flow is restricted. Equipment or the engine may overheat.

Do not weld on the base. Welding on the base may cause fuel tank explosion or fire

Always ground the equipment frame to the vehicle frame to prevent electric shock and static electricity hazards.

Do not place propane or shielding gas tanks near hot air or exhaust.

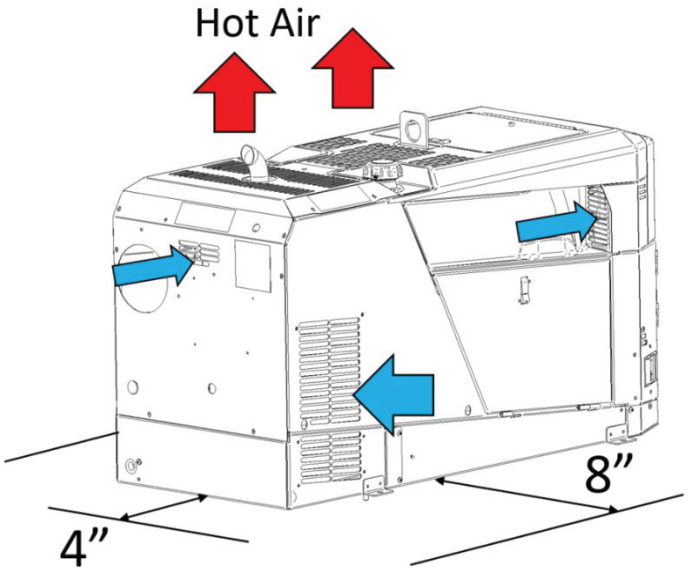


Figure 1 : VENTILATION DIRECTION

Connect a ground cable from the welder to the metal frame of the vehicle. Use insulated AWG #8 cable or larger (not supplied with the Ranger Air).

LOCATION AND VENTILATION

⚠ 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” (1.6 mm) thick, which should extend not less than 5.90” (150 mm) beyond the equipment on all sides.

ENVIRONMENTAL LIMITATIONS

The RANGER AIR 260MPX/330MPX is IP23 rated for use in an outdoor environment. It should not be subjected to falling water during use nor should any parts of it be submerged in water. Doing so may cause improper operation as well as pose a safety hazard. The best practice is to keep the machine in a dry, sheltered area. Use a protective cover when not in use. See ACCESSORIES AND OPTIONS on page C-1

TILTING

Place the machine directly on a secure, level surface or on a recommended undercarriage or trailer. The machine may topple over if this procedure is not followed. The max weight the lift bale is rated for is in the TECHNICAL SPECIFICATIONS on page A-1 section.

Angle of Operation:

The maximum angle of continuous operation is 15°. Engine oil must be at FULL capacity. When operating at an angle, the effective fuel capacity will be reduced.

LIFTING

The RANGER AIR 260MPX/330MPX weigh approximately 631 lbs. (286 kg) each with a full tank of fuel, 565 lbs.(256kg) less fuel. A lift bail is mounted to the machine and should always be used when lifting a machine.

⚠ WARNING

FALLING EQUIPMENT can cause injury

Lift only with equipment of adequate lifting capacity.

Be sure machine is stable when lifting.

Do not lift this machine using lift bail if it is equipped with a heavy accessory such as trailer or gas cylinder.

Do not lift machine if lift bail is damaged.

Do not operate machine while suspended from lift bail.

MUFFLER OUTLET PIPE

Machines manufactured approximately June 2025 or later:

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 direction. Tighten using a 9/16” socket or wrench.

BATTERY CONNECTION

⚠ WARNING

BATTERY GASES

Keep sparks and open flame away from battery

Do not smoke around battery

⚠ WARNING

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.

⚠ WARNING

BATTERY ACID can burn eyes and skin.

Use caution as the electrolyte is a strong acid that can burn skin and damage eyes.

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 battery.

b) Using a booster.

Use correct polarity — **NEGATIVE GROUND**.

These welders are shipped with the positive and negative battery cables disconnected. Make sure that the Engine Switch is in the "OFF" position. Attach the disconnected cables securely to the positive and negative battery terminals before attempting to operate the machine. If the battery is discharged and does not have enough power to start the engine, see the battery charging instructions in the Battery section.

Note: These machines are furnished with a wet charged battery; if unused for several months, the battery may require a booster charge. Be careful to charge the battery with the correct polarity and correct voltage.

To access the battery, turn the machine OFF. Remove the screws holding the battery cover and then slide battery out. When reinstalling, battery cables must be tightly assembled. Do not pinch battery leads between battery, cover or welder frame.

Always disconnect the negative (-) battery cable before charging the battery.

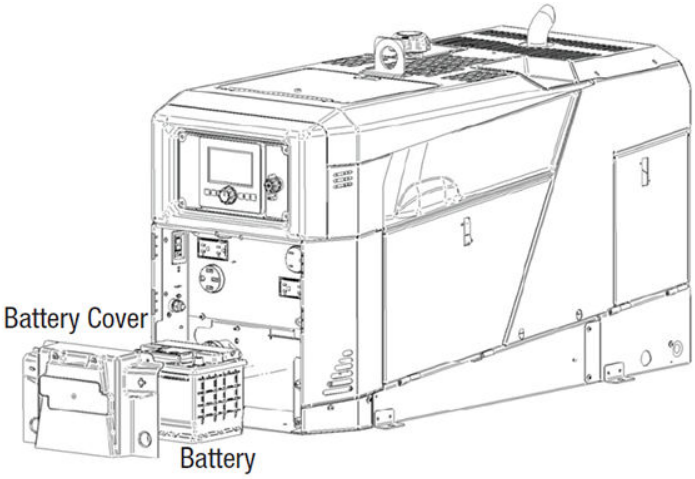


Figure 2 : BATTERY CONNECTION

CABLE STRAIN RELIEF

Strain relief instructions are part of the K5322-1 kit

WELD CONNECTIONS

⚠ WARNING

Turn the machine OFF before connecting/disconnecting welding equipment.

Loose connections will cause the output terminals to overheat. The terminals may eventually melt.

Do not allow bare weld cable to touch the machine or front doors.

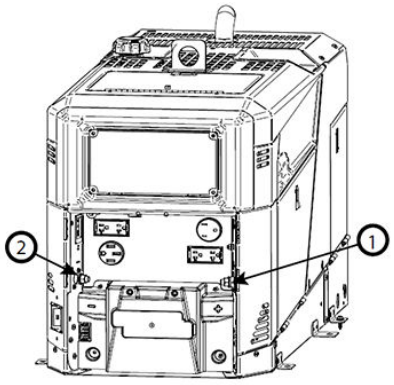


Figure 3 : WELD CONNECTIONS

1. Positive (+) weld terminal
2. Negative (-) weld terminal

For most stick, gouging, MIG and gas shielded flux cored welding procedures, connect the wire feeder or spool gun to the Positive (+) terminal and the work lead to the Negative terminal.

For most self-shielded flux cored and TIG procedures, connect the electrode holder or wire feeder to the Negative (-) terminal and the work lead to the Positive (+) terminal.

WELD CABLES, STANDARD

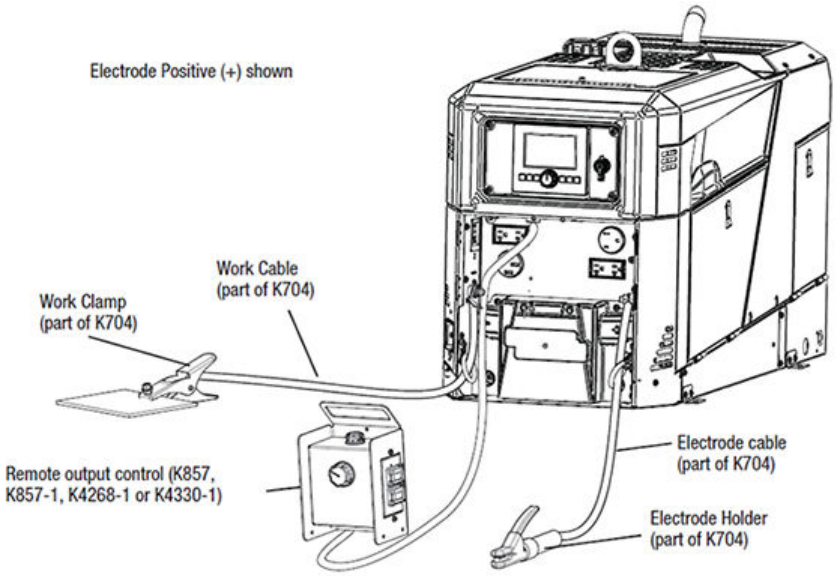
Tabulated below are copper cable sizes recommended for different currents and duty cycles. Lengths stipulated are the distance from the welder to work and back to the welder again. Cable sizes are increased for greater lengths primarily for the purpose of minimizing cable drop.

Table 1 :RECOMMNEDED CABLE SIZES (RUBBER COVERED COPPER-RATED 75º C)**

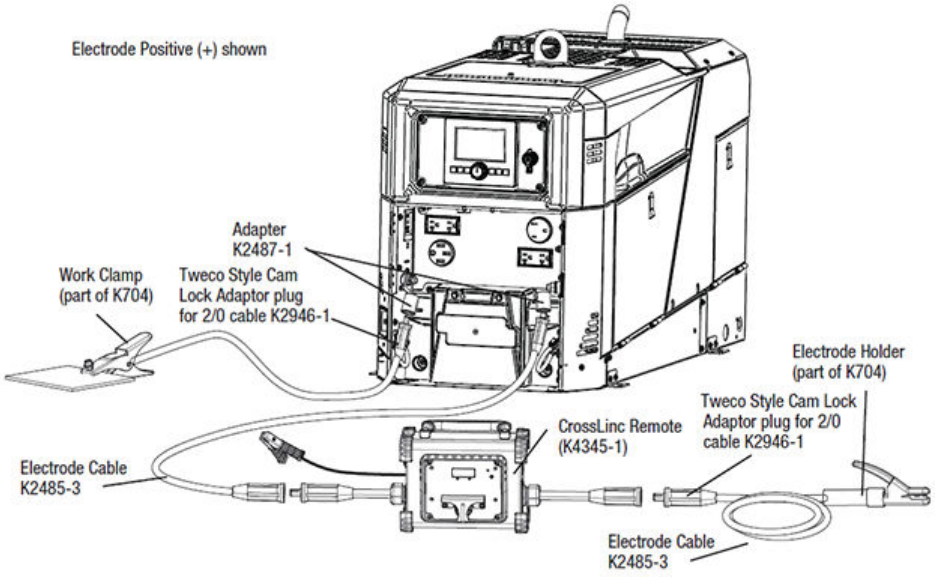
Amperes	Percent Duty Cycle	CABLE SIZES FOR COMBINED LENGTHS OF ELECTRODE AND WORK CABLES				
		0 to 50 Ft.	50 to 100 Ft.	100 to 150 Ft.	150 to 200 Ft.	200 to 250 Ft.
200	60	2	2	2	1	1/0
200	100	2	2	2	1	1/0
225	20	4 or 5	3	2	1	1/0
225	40 & 30	3	3	2	1	1/0
250	30	3	3	2	1	1/0
250	40	2	2	1	1	1/0
250	60	1	1	1	1	1/0
250	100	1	1	1	1	1/0
300	60	1	1	1	1/0	2/0
325	100	2/0	2/0	2/0	2/0	3/0
350	60	1/0	1/0	2/0	2/0	3/0

** Tabled values are for operation at ambient temperatures of 40°C and below. Applications above 40°C may require cables larger than recommended, or cables rated higher than 75°C

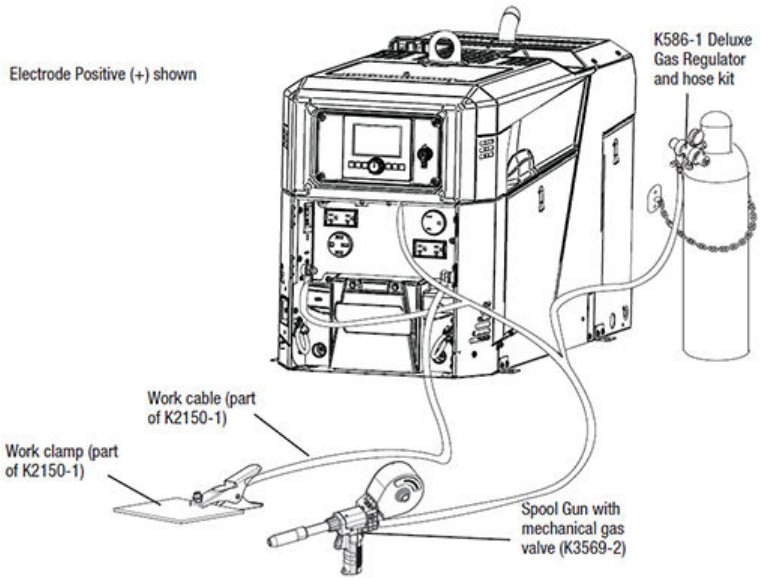
SMAW (STICK) WELDING SET UP



SMAW (STICK) WELDING SET-UP CROSSLINC



WIRE WELDING SET-UP SPOOL GUN



In the spool gun mode, the weld output is controlled by the spool gun trigger. The knob on the Ranger display sets voltage and the spool gun knob sets wire feed speed. Rotating the knob on the spool gun adjusts the work point (wire feed speed).

“Synergic” control is an option for the spool gun. In synergic mode, when the wire feed speed is changed, the voltage is automatically modified up or down to maintain a similar arc length

If desired, a remote can be plugged into the 6 pin connector for setting the voltage away from the Ranger.

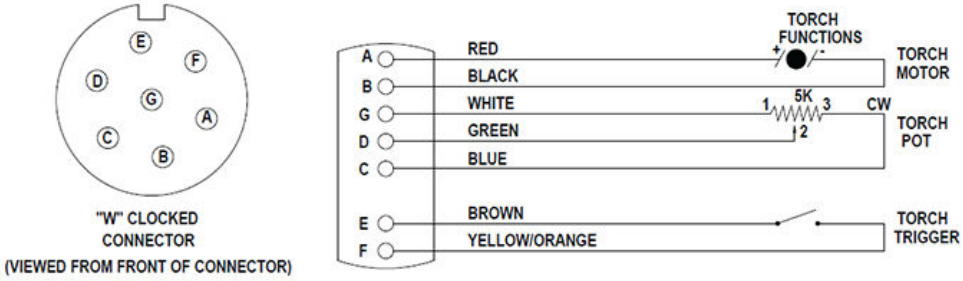
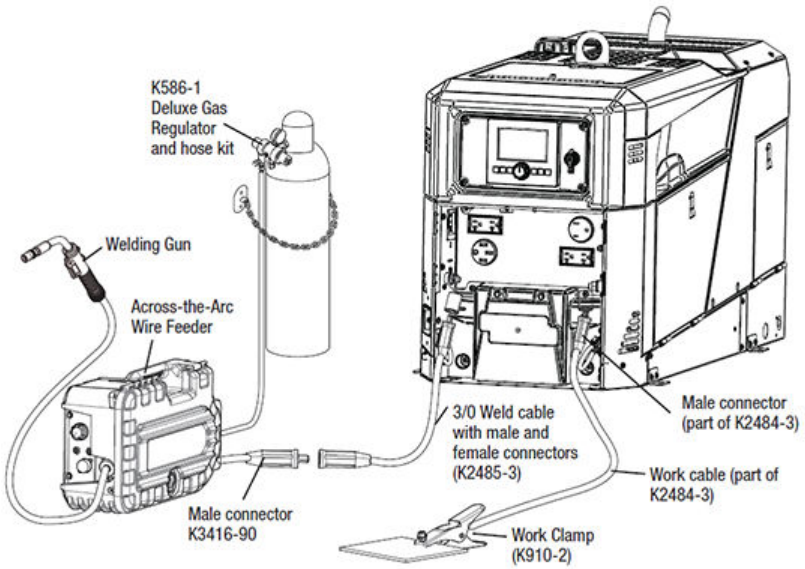
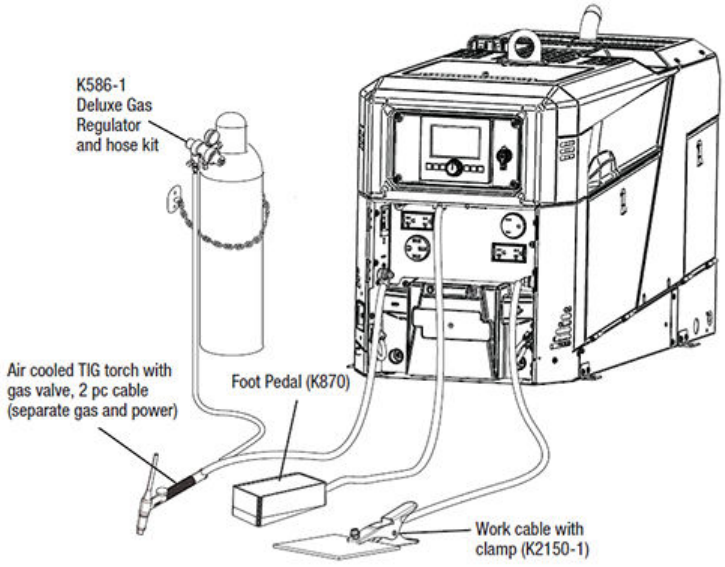


Figure 4 : CONNECTION FUNCTIONS

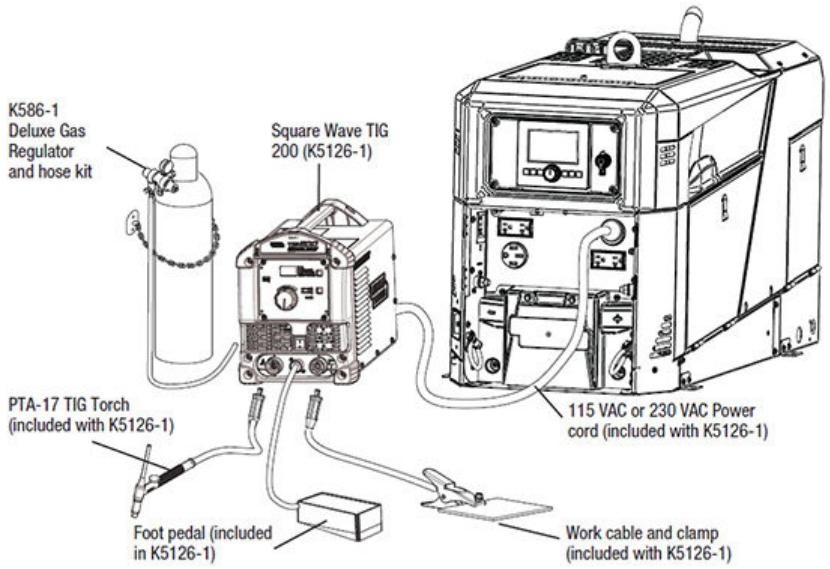
WIRE WELDING SET-UP, ACROSS THE ARC & CROSSLINC FEEDERS



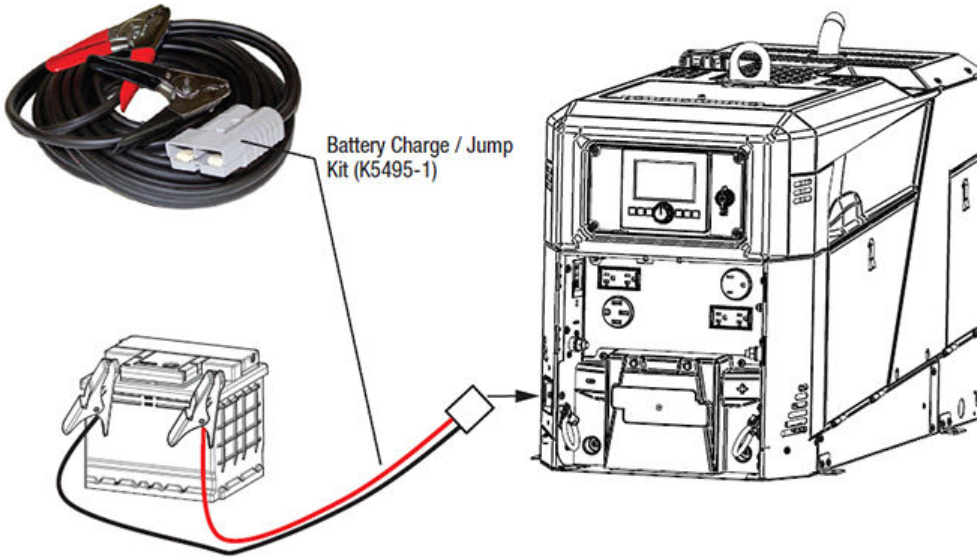
DC GTAW (TIG) WELDING SET-UP, NO HIGH FREQUENCY



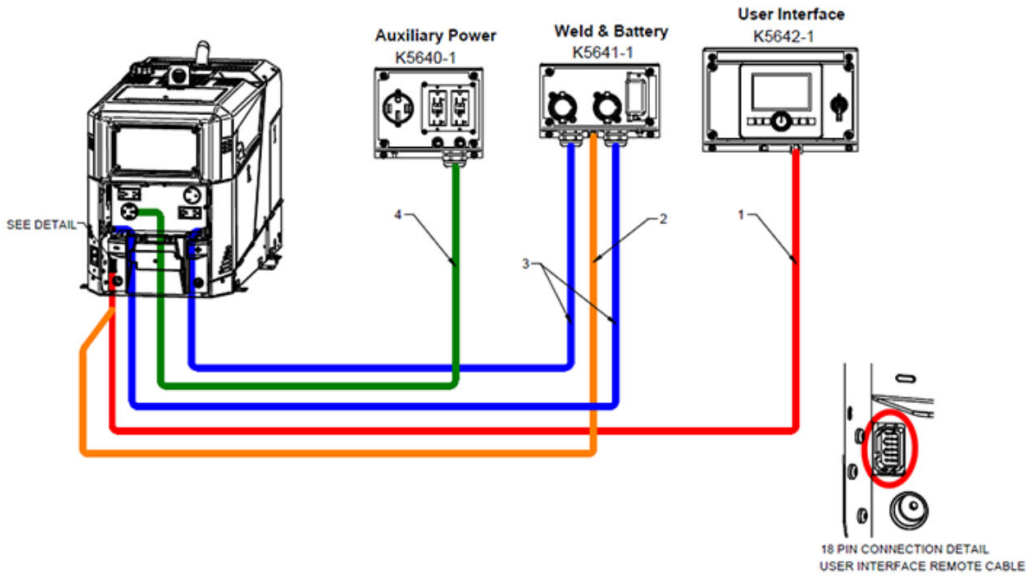
AC OR DC GTAW (TIG) WELDING SET-UP, WITH HIGH FREQUENCY

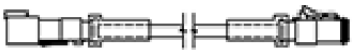


BATTERY CHARGE/JUMP



REMOTE BOX SET-UP



Item #	Product #		Description
1.	K5643-XX	User Interface Remote Cable	
2.	K5645-XX	Battery Assist Remote Cable	

Customer Provided:

Item #	Description
3.	4/0 Cables (x2)
4.	Power Extensions

AIR COMPRESSOR CONNECTIONS

⚠ WARNING

Before starting, performing maintenance or replacing parts, relive the entire system pressure

Turn the machine off and wait at least 1 minute

Remove pressure from attached air devices - hoses, storage tanks, tools,etc.

After venting the air, open the compressor fill cap SLOWLY to make sure all pressure has been relieved.

Compressors generate heat and create hot surfaces. Use caution when operating and servicing equipment. Some surfaces and components may be hot.

Air hoses must have a minimum working pressure of 350 psi and a minimum burst pressure of 1400 psi. Use hoses with at least a ½" I.D. for proper flow

Use only Vanair genuine Vanguard™ oil. Check the oil level daily before starting the machine.

Note: Operating the compressor with oil other than Vanair's genuine Vanguard™ oil may cause compressor damage and over temperature conditions. Incorrect oil usage may void compressor warranty.

Included with the Ranger Air is a #8 Male SAE/ORB to #8 Male JIC fitting.

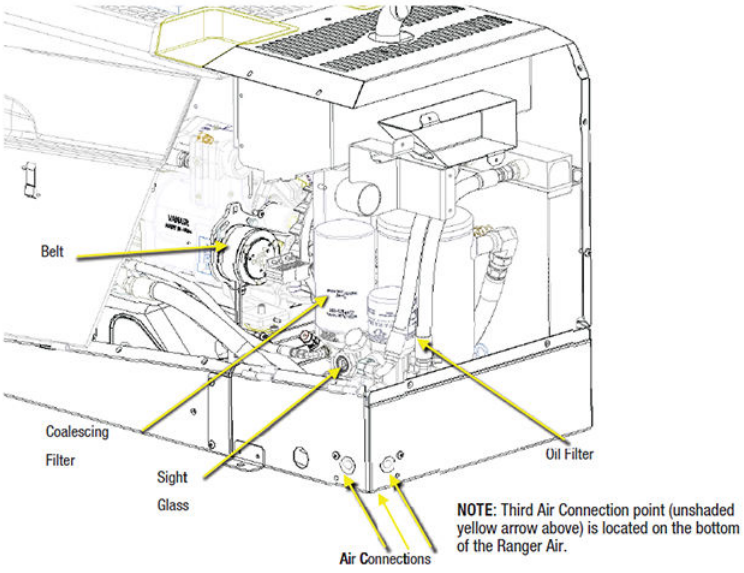


Figure 5 : AIR COMPRESSOR CONNECTIONS

Note: Third Air Connection point (unshaded yellow arrow above) is located on the bottom of the Ranger Air.

FUEL- USE GASOLINE FUEL ONLY

⚠ WARNING

GASOLINE EXPLOSION

Stop engine while fueling.

Dot not smoke when fueling

Keep sparks and flame away from tank

Do not leave unattended while fueling

Wipe up spilled fuel and allow fumes to clear before starting engine.

Do not overfill tank,fuel expansion may cause overflow.

Replace the fuel cap only with proper cap from Lincoln Electric.

USE GASOLINE FUEL ONLY

Use only the proper fuel cap from Lincoln Electric. The cap has an internal safety vent to prevent damage to the machine.

Fill the fuel tank with clean, fresh, lead-free gasoline. Do not top off tank. Be sure to leave filler neck empty to allow room for expansion.

To check fuel level, turn Engine Control Switch to "AUTO" and select any weld mode.

⚠ WARNING

OVERFILLING FUEL TANK CAN LEAD TO ENGINE DAMAGE

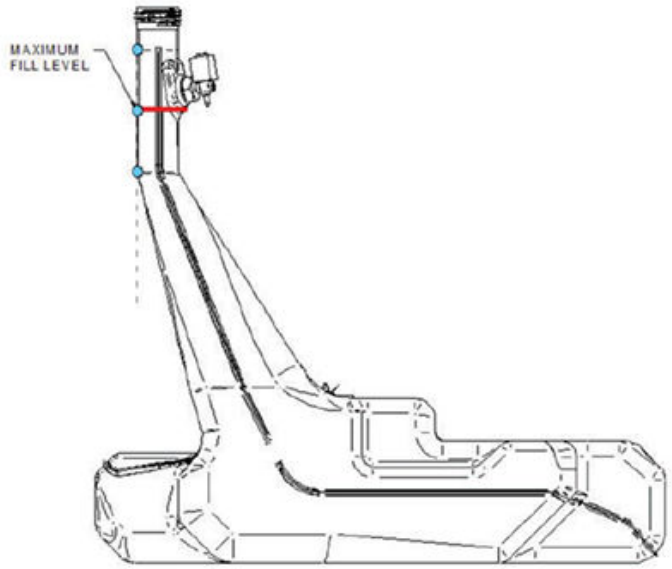


Figure 6 : FUEL TANK FILL LEVEL

REMOTE FUEL SUPPLY

The RANGER AIR 260MPX/330MPX can be configured to draw fuel from an external tank. Install fuel lines per chassis manufacturer's recommendations.

The RANGER AIR 260MPX/330MPX fuel pump is rated for 36" max lift.

All fuel hoses must be ¼" ID and certified to EPA and local state emission regulation. Protect all hoses and wires from sharp edges and hot surfaces and keep away from moving parts. Secure hoses with appropriate clamps.

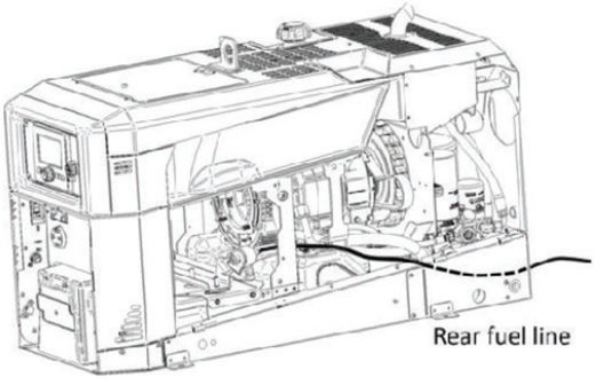


Figure 7 : REAR FUEL LINE

OIL

The welder is shipped with the engine crankcase filled with **10W-50** oil. Check the oil level with the machine on a level surface before starting the engine. If it is not up to the full mark on the dip stick, add oil as required. Make certain that the oil filter cap is tightened securely. Refer to the engine Owner's Manual for specific oil recommendations.

SPARK ARRESTOR

⚠ CAUTION

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

Some federal, state or local laws may require that gasoline 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 arrester. When required by local regulations, a suitable spark arrester, such as the K3679-1 must be installed and properly maintained.

AUXILIARY POWER

⚠ CAUTION

An electric shock can result in serious injury or death.

Always perform the GFCI test before using the generator. If the GFCI system fails the test, the machine must be repaired by an authorized service center

Due to the risk of power interruption, do not power life support equipment from this machine.

Unplug accessories and tools before attempting service.

Close the front service doors protecting the receptacles when operating the machine.

Do not test or reset the GFCI while at idle speed.

If the LED blinks, stop using the GFCI receptacle and have it replaced by an authorized service center.

Long extension cords or cords with poor insulation may allow enough leakage current to trip the GFCI.

When set to high idle, the output frequency is controlled to 57 to 63 Hz under steady state conditions. If the machine is set to AUTO, the output frequency may drop to 40 Hz with a lower voltage. Verify equipment connected to the Ranger is compatible with the frequency and voltage.

For equipment affected by momentary voltage fluctuations, install a plug-in surge suppressor on the receptacles feeding the equipment.

The Lincoln Electric Company is not responsible for any damage to electrical components improperly connected to this product.

Overload operation:

Never exceed the rated load when it is running continuously. Before connecting and operating the Ranger, calculate the electrical power (in Watts) required by the devices to be powered. This electrical power rating is usually found on manufacturer's plate on motors, appliances and power supplies. The sum total power required by these devices should not exceed the nominal power of the Ranger.

Most motors require more than their rated wattage for start-up.

Devices with large start-up power demands many not allow the engine to reach normal operating rpm when the machine is set to AUTO. Turn the OFF/AUTO/HIGH/START switch to HIGH.

In the event that the combined weld + auxiliary power load exceeds the machine's capability, the welding circuit will continue to drive as much power as possible without causing damage to any components. Continued operation in an overload state will bog and stall the engine. Overloading just the auxiliary power circuits will cause the circuit breakers to trip.

OPERATION

SAFETY PRECAUTIONS

Read and understand this entire section before operating your RANGER AIR 260MPX/330MPX.

⚠ WARNING

Do not attempt to use this equipment until you have thoroughly read the engine manufacturer's manual supplied with your welder. It includes important safety precautions, detailed engine starting, operating and maintenance instructions, and parts lists.

⚠ WARNING

ELECTRIC SHOCK can kill.

Do not touch electrically live parts or electrode with skin or wet clothing.

Insulate yourself from work and ground.

Always wear dry insulating gloves.

⚠ WARNING

ENGINE EXHAUST can kill.

Use in open, well ventilated areas or vent exhaust outside.

Do not stack anything near the engine.

⚠ WARNING

MOVING PARTS can injure.

Do not operate with doors open or guards off.

Stop engine before servicing.

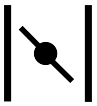
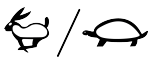
Keep away from moving parts.

The serviceability of a product or structure utilizing the welding modes is and must be the sole responsibility of the builder/user. Many variables beyond the control of The Lincoln Electric Company affect the results obtained in applying these programs. These variables include, but are not limited to, welding procedure, plate chemistry and temperature, weldment design, fabrication methods and service requirements. The available range of a welding mode may not be suitable for all applications, and the builder/user is and must be solely responsible for welding mode selection.

GRAPHIC SYMBOLS

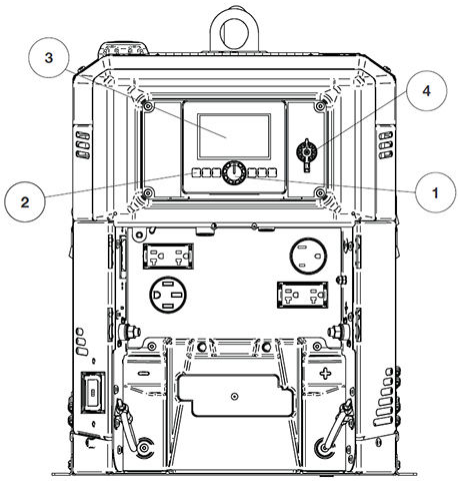
The following graphics appear on the Ranger or in the manual.

Table 2 :GRAPHIC SYMBOLS

 WARNING OR CAUTION	 HOT SURFACE	 EARTH GROUND
 INSTRUCTIONS	 FIRE OR EXPLOSION	 CIRCUIT BREAKER
 FUMES AND GASES	 BATTERY EXPLOSION	A WELDING AMPERAGE
 EXPLOSION	 BATTERY ACID	V WELDING VOLTAGE
 ARC RAYS	 SYSTEM FACTORY RESET	 WIRE FEED SPEED
 MOVING PARTS	 TEMPERATURE	 ARC LENGTH
 FALLING EQUIPMENT	+ POSITIVE OUTPUT	 3 PHASE ALTERNATOR
 ELECTRIC SHOCK	− NEGATIVE OUTPUT	 DIRECT CURRENT
U0 OPEN CIRCUIT VOLTAGE	 SMAW WELDING	 CHOKE
I2 OUTPUT CURRENT	 GMAW/FCAW WELDING	 STOP
U2 OUTPUT VOLTAGE	 GTAW WELDING	 AUTO IDLE
X DUTY CYCLE	 SPOOL GUN	 HIGH IDLE
 HOME	 CARBON ARC GOUGING	 START
 REMOTE	 DOWNHILL PIPE WELDING	 SELECT

HELP	ENGINE	SCROLL
BACK	SET-UP	FUEL
OIL	HOT START	CROSSLINC
AIR FILTER	ARC FORCE	UNITS
SPARK PLUG	PULSE	LOCKED
FUEL FILTER	SPOT TIME	UNLOCKED
BRUSHES	PINCH	TIME
BATTERY		

CASE FRONT CONTROLS



1. **KNOB AND PUSH BUTTON -** Rotate the knob to adjust values shown on the display. Push the knob to select the value.
2. **BUTTONS** - The display has 6 buttons

   HOME: Returns to the home menu for selecting weld modes and other settings.

   REMOTE CONTROL: Toggles the 6 pin remote control ON and OFF.

   AIR COMPRESSOR: Turns the Air Compressor ON and OFF.

   ENGINE: Turns the engine OFF and enters the standby state if the engine is running. Restarts the engine if the machine is in the standby mode.

   HELP: Provides additional information about the selection shown on the user interface.

   BACK: Returns the user interface to the previous screen.

3. **DISPLAY -** Shows information about the Ranger Air operation.
4. **ENGINE CONTROL SWITCH** - The engine control switch has four positions:

   OFF: Turns off the Ranger Air, all electronics and the engine.

AUTO: Allows the engine to drop to 2500 rpm when no load is present. Allows for variable speed welding and compressor

HIGH IDLE: The engine always operates at 3600 rpm.

START: Used to start the engine. Place the engine control switch in either AUTO or HIGH IDLE once the engine has started.

When the switch is in AUTO or HIGH IDLE, the Ranger Air may be configured to turn off the engine after a period of inactivity. The engine may restart automatically when a weld load or air compressor load is applied. Additionally, the Ranger Air may be restarted with a wireless remote control.

After an extended period of inactivity, all Ranger Air electronics turn off, and the control switch must be rotated to OFF before restarting the engine.

WELDING

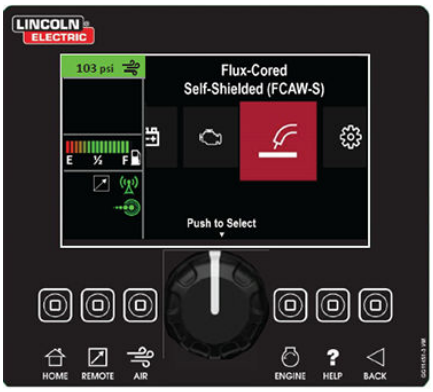
The Ranger Air is a multi-process machine capable of welding many materials. Available weld modes and output ranges are:

	Load Conditions		Engine RPM
High Idle			3,600 RPM
Low Idle	Stick, Pipe, TIG	Preset <225 amps	2,500 RPM
		Preset >= 225 amps	2,700 RPM
	Battery Charging, Spool Gun		2,500 RPM
	GMAW, FCAW, Gouging, Battery jump assist		2,700 RPM
	Air Compressor		2,500 RPM
	No weld mode selected (Home menu, set-up, etc)		Uses RPM from last active weld mode.
Load	Auxiliary power only		3,600 RPM
	Air Compressor only		Variable 2,500 - 3,600 RPM
	Stick, Pipe, TIG	Preset <270 amps	Variable 2,500 - 3,600 RPM
		Preset >= 270 amps	3, 600 RPM
	Battery Charge		2,700 RPM
	Spool Gun		3,000 RPM
	GMAW, FCAW, Gouging, Battery jump assist		3,600 RPM
	Any combined load		3,600 RPM

If desired, weld modes can be turned off in the main menu so only commonly used weld modes are shown. See setting “Active Weld modes” in the set-up menu.

DISPLAY OPERATION

HOME - Brings up the home screen (main menu)
REMOTE CONTROL - Toggles the 6 pin remote control ON / OFF
AIR COMPRESSOR - Toggles the air compressor ON / OFF
ENGINE - Starts or stops the engine if the stop/ idle/run/start switch is in idle or run
HELP- Displays additional information describing the functions
BACK - Goes back to the previous screen
KNOB (ROTATE) - Adjusts values
KNOB (PUSH) - Confirms the selected value or choice



Note: When the RANGER AIR 260MPX/330MPX is first started, the title screen appears. Afterwards, it will return to the screen that was shown when the machine was turned off.

HOME SCREEN

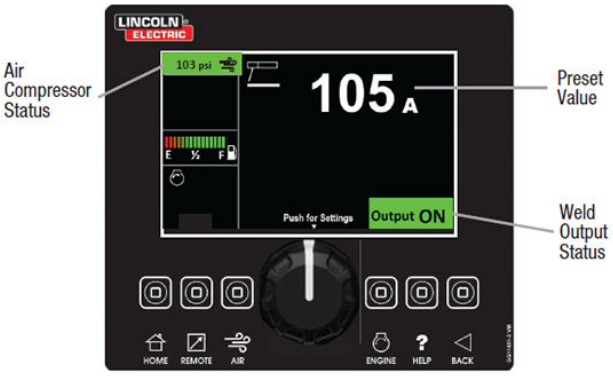
Pressing the Home button displays the home menu. Rotate the knob to select the desired weld mode, or choose air compressor and engine options or set-up menu. Push the button to make the selection.

WELD SCREEN, MANUAL ENTRY

Manual entry operates like a traditional welding machine. Simply set the desired preset amperage or voltage and begin to weld. The “Preset” screen appears when welding is not active.

Output Status: Indicates the status of the weld output, either “Output OFF” or “Output ON”. “Output ON” is shown when the machine is in OCV.

Weld Mode: Shows the icon for selected weld mode.



Air Compressor Status: Shows the actual outlet pressure of the compressor.

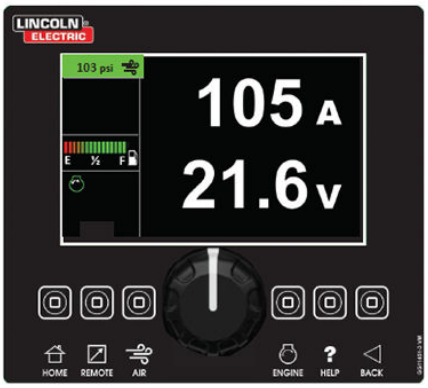
- Green - The air compressor is on and working normally.

- Yellow - The compressor is in “blown down” and cannot be restarted until the internal pressure is 4 psi or less. Blow down generally lasts 30-60 seconds.
- Red - The pressure has exceeded 225 psi and has been shut down.

Preset Value: The desired amps or volts to regulate for the selected welding process.

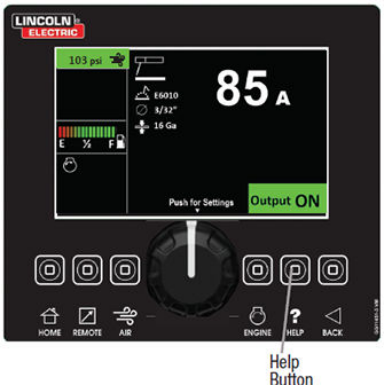
Once welding occurs, the screen changes to show the actual amperage and voltage.

When welding stops, the amperage and voltage numbers will flash for 7 seconds. The display will then switch back to the preset screen.



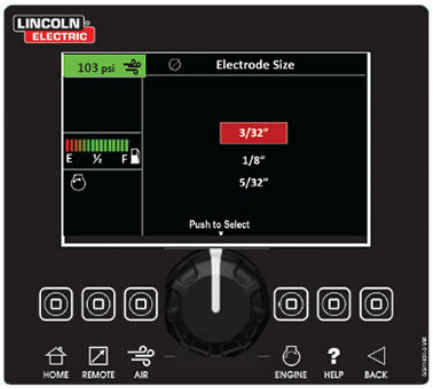
WELD SCREENS, READY.SET.WELD

Ready.Set.Weld. recommends ranges for a given weld procedure. To start the Ready.Set.Weld, press the Help button when in a preset welding screen.

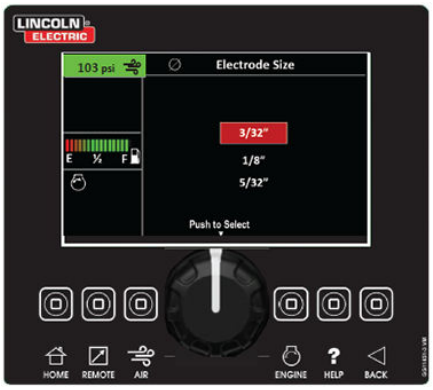


Rotate the knob to choose the electrode type. Press the knob to select. To turn off Ready.Set.Weld, select “Manual Entry”.

Next, select the electrode diameter. Press the knob to select



Select the material thickness. Press the knob to select.



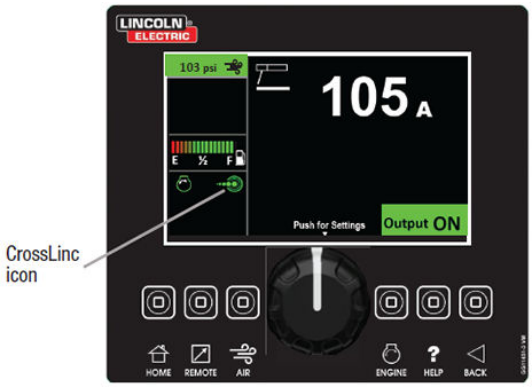
Connect the electrode and work cables. When complete, press the knob to turn the output ON and start welding.

CROSSLINC

CrossLinc provides the benefits of remote control without the cable. The accessory or wire feeder talks to the power source by sending signal through the electrode cable.

To start CrossLinc, simply connect the weld cables and sense lead per the CrossLinc device's instructions. Select the desired weld mode with the Ranger Air. When weld output is ON, the CrossLinc device will automatically link to the RANGER AIR 260MPX/330MPX. The CrossLinc icon will appear on the screen to show active communication.

When CrossLinc is active, the remote control (6 pin) and wireless remote control is disabled.



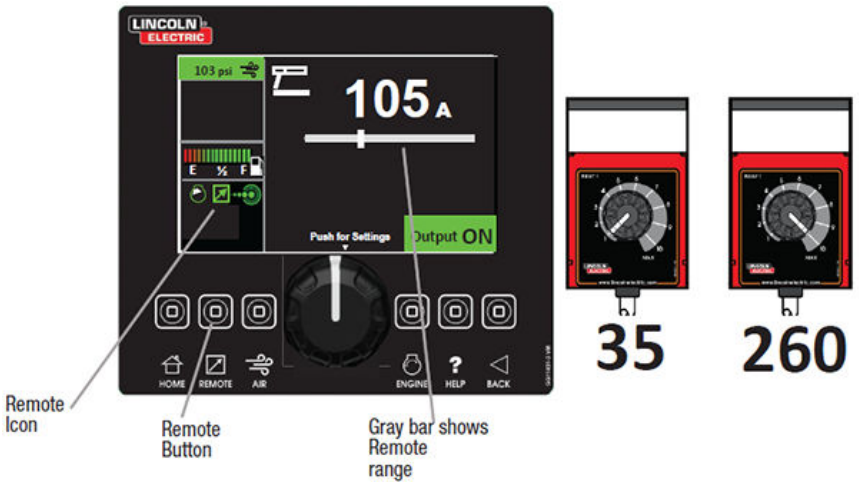
REMOTE CONTROL

All weld modes support using a remote control like K857-1. Plug the remote into the 6 pin connector on the front of the machine.

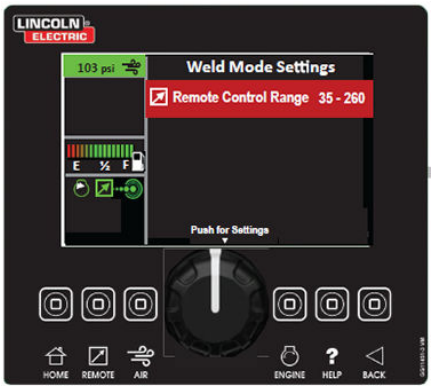
Press the remote button on the display to toggle between control at the remote and control at the knob on the machine. The remote button does not function when welding is occurring.

When a CrossLinc device is connected, the remote control is ignored. Use the CrossLinc device to remotely set values.

When the remote is enabled, a bar will appear underneath the preset value showing the remote range. The standard range allows the remote to adjust from the minimum to the maximum value of the machine.

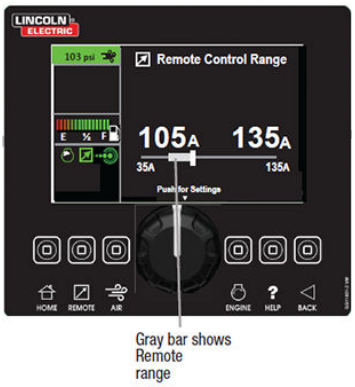


Frequently the entire output range is not required for a weld procedure. To limit the range of the remote, press the knob to enter the Options screen and select Remote Control Range.

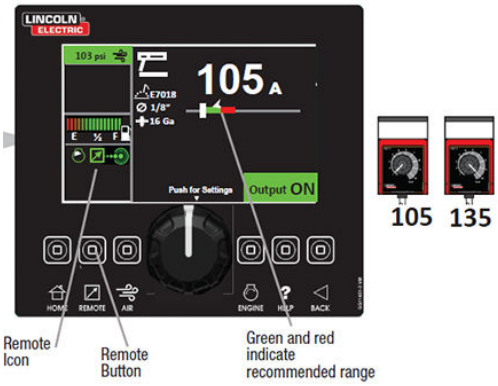


Rotate the knob to adjust the maximum value for the remote control. The gray bar will change size to show the usable range. The restricted range is shown as a thin red bar. Press the knob to select the value.

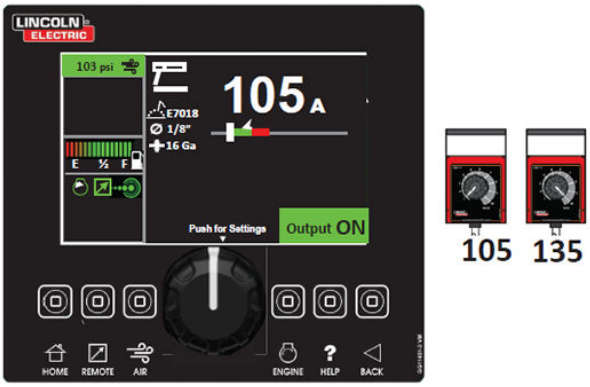
Rotate the knob to adjust the minimum value for the remote control. The gray bar will change size to show the usable range. The restricted range is shown as a thin red bar. Press the knob to select the value.



With the new settings, the sensitivity of the remote is increased.



If Ready.Set.Weld is enabled, the bar appears red and green to show the recommended ranges. The thick portion of the bar shows the remote range.

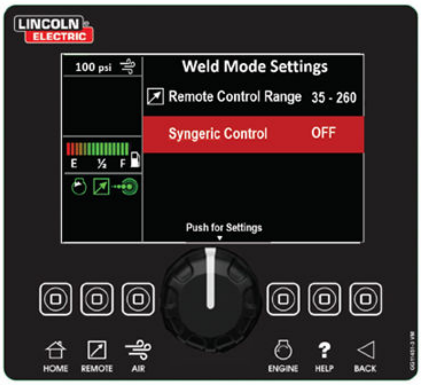


SPOOL GUN OPTIONS

Synergic Control:

The spool gun may be set in either “normal” control or “synergic” control. Synergic mode automatically adjusts the voltage when the wire feed speed is changed.

To activate synergic control, press the knob for options when in the spool gun mode. Rotate the knob to choose “Synergic Control” and then press the knob.



Note: Synergic control is only available when Ready.Set.Weld. is active and an aluminum electrode is selected.

Rotate the knob to change between normal control and synergic control. Press the knob to select

Normal Control:

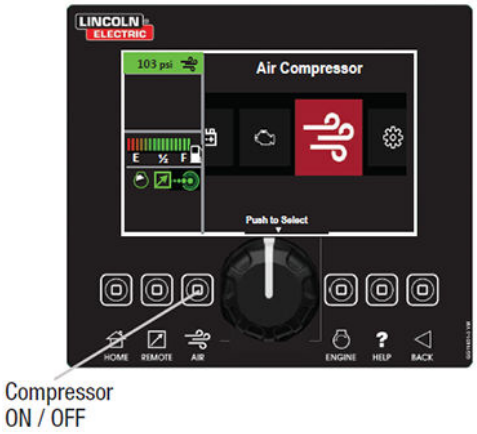
- The knob on the Ranger adjusts voltage
- The knob on spool gun adjusts WFS

Synergic Control:

- The knob on the Ranger adjusts arc length
- The knob on spool gun adjusts deposition

AIR COMPRESSOR

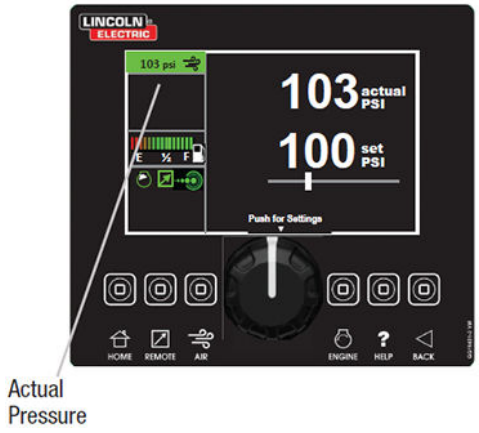
Turn the compressor ON and OFF by pressing the compressor button.



To adjust the compressor pressure, select Air Compressor from the main menu.

The regulated output air pressure may be adjusted between 85 – 150 psi. The actual pressure will vary up to ±5 psi as the regulator adjusts to changing loads.

The compressor goes through a blow down cycle when turned off or the clutch disengages. System pressure is slowly released over a 30 – 60 second period. The air pressure icon will appear yellow while blow down is occurring.



Note: The air compressor cannot be restarted during the blow down cycle to prevent damage to the clutch.

The air compressor is equipped with a pressure relief valve which opens if the pressure exceeds 225 psi.

A temperature sensor monitors the compressor oil. If the compressor oil exceeds 250°F, the compressor is disabled until the temperature drops below 140°.

The Ranger Air monitors the combined load from the air compressor, weld loads and auxiliary power loads and adjusts the engine rpm to optimize fuel consumption. If the combined load exceeds the engine's capabilities, the air compressor will be turned off until the load is reduced.

Check compressor oil daily by looking at the oil level through the sight glass. Before adding oil, make sure the machine is OFF and pressure is released. Use only Vanair genuine Vanguard™ compressor oil.

COMPRESSOR OIL EMULSIFICATION

Operating in high moisture environments may cause water condensation in the oil or oil emulsification. Emulsified oil will appear "milky" or slightly more opaque in color. To prevent emulsification.

- Do not immediately apply an air load until the compressor oil is heated. Let the compressor run for 5 minutes.
- When operating the compressor, run the compressor for 20 minutes or more. This allows the compressor oil to reach a steady operating temperature. Shorter operating periods do not heat the oil sufficiently to drive off moisture

Best practice is to operate the compressor at least once a month for 20 minutes.

The compressor oil temperature should reach at least 180° F.

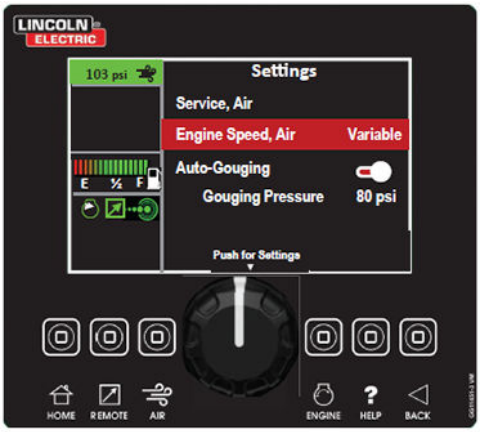
COMPRESSOR OPTIONS

Options with Air Compressor are:

- Service Information
- Engine Speed

ENGINE SPEED

To improve fuel economy and lower work site noise levels, the engine speed while operating the compressor may be set to variable speed. The engine speed will then regulate 2500 – 3600 rpm, depending upon the load conditions.



⚠ WARNING

Have only qualified personnel do all maintenance and troubleshooting work.

Turn the engine off before working inside the machine or servicing the engine.

Remove guards only when necessary to perform maintenance and replace them when the maintenance requiring their removal is complete. If guards are missing from the machine, obtain replacements from a Lincoln Distributor (See Operating Manual Parts List.)

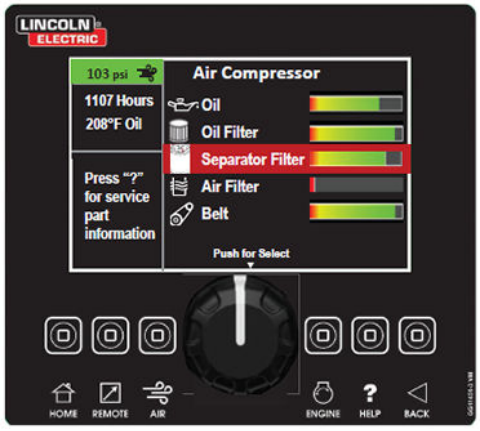
The air compressor service screen shows compressor oil temperature, total compressor hours, and remaining time until maintenance is required for the oil,oil filter, air separator filter and air filter

The status bars indicate the remaining time before service is required. A warning indicator will appear if a service item is nearing the end of its service life. The service alert time can be adjusted or turned off by going to the Settings Menu.

Green = Normal operation

Yellow = Service is required soon

Red = Service is overdue



To see the time remain before servicing, highlight the item press the knob.

To reset the service time, select the item which was serviced and press and hold the knob for 5 seconds.

Press the "?" button for additional service part information.

Note: Lincoln Electric does not offer oil outside of the service kits.

The compressor should be serviced every 500 hours, or annually (whichever comes first). Dusty or high humidity environments may require more frequent servicing.

For additional service information see AIR COMPRESSOR SERVICING on page D-5

GOUGING MODE

AUTOMATIC GOUGING MODE

The gouging mode option is only available on the RANGER AIR 330MPX.

When this option is selected, the air compressor will automatically turn on when gouge mode is active. If the air compressor was off before gouge mode was selected, the air compressor will be turned off when a different weld mode is selected.

GOUGING PRESSURE

Gouging pressure is the air pressure specifically for the gouging mode. Setting the gouging pressure to the minimum value of 85 psi maximizes the amount of energy available for the arc.

BATTERY CHARGE/JUMP ASSIST

⚠ WARNING

Use of an attachment not recommended or sold by Lincoln Electric or VanAir may result in a risk of fire,electric shock, or injury to persons

To reduce risk of damage to jumper cable, pull by the plug rather than the cable when disconnecting the cables.

Do not operate the charger with a damaged cord or plug – replace the cord or plug immediately.

Risk of explosive gases. Working in the vicinity of a lead-acid battery is dangerous. Batteries generate explosive gases during normal battery operation. For this reason, it is of utmost importance that you follow the instructions each time you use the charger.

To reduce risk of battery explosion, follow these instructions and those published by battery manufacturer and manufacturer of any equipment you intend to use in the vicinity of battery. Review cautionary marking on these products and on engine.

PERSONAL PRECAUTIONS

- Consider having someone close enough by to come to your aid when you work near a lead-acid battery.
- Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing or eyes.
- Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.
- If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running water for at least 10 minutes and seek medical attention.
- NEVER smoke or allow a spark or flame in the vicinity of battery or engine
- Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause explosion.
- Remove personal metal items such as rings, bracelets, necklaces and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
- Use charger for charging a lead-acid battery only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use battery charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage to property.
- NEVER charge a frozen battery.

PREPARING TO CHARGE

- If necessary to remove battery from vehicle to charge, always remove grounded battery first. Make sure all accessories in the vehicle are off, so as not to cause an arc.
- Be sure area around battery is well ventilated while battery is being charged.
- Clean battery terminals. Be careful to keep corrosion from coming in contact with eyes.
- Add distilled water in each cell until battery acid reaches level specified by battery manufacturer. Do not overfill. For a battery without removable cell caps such as a valve regulated lead acid batteries, carefully follow manufacturer’s recharging instructions.
- Study all battery manufacturers specific precautions while charging and recommended rates of charge.

- Determine voltage of battery by referring to vehicle's owner's manual and make sure that the charging or jumping voltage is at the correct voltage.

CHARGER LOCATION

- Place the machine as far away from the battery as DC cables permit.
- Never allow battery acid to drop on to the machine when reading electrolyte specific gravity or filling battery.
- Do not operate the Ranger in a closed-in area or restrict ventilation in any way.
- Do not set battery on top of the Ranger.

DC CONNECTION PRECAUTIONS

- Connect and disconnect DC output clips and cables only when the Ranger output is off.
- Never allow clips to touch each other.

DC CONNECTION PRECAUTIONS, BATTERY INSTALLED IN VEHICLE

- A spark near the battery may cause battery explosion.
- Position jumper cables to reduce risk of damage by hood, door or moving engine part.
- Stay clear of fan blades, belts, pulleys and other parts that can cause injury to persons.
- Check polarity of battery posts. Positive (POS, P, +) battery post usually has a larger diameter than Negative (NEG, N, -) post.
- Determine which post of the battery is grounded (connected) to the chassis.
- For a negative-grounded vehicle, connect POSITIVE (RED) clip from battery cable to POSITIVE (POS, P, +) ungrounded post of battery. Connect NEGATIVE (BLACK) clip to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines or sheet metal body parts. Connect to a heavy gage metal part of the frame or engine block.
- For a positive-grounded vehicle, connect NEGATIVE (BLACK) clip from battery charger to NEGATIVE (NEG, N, -) ungrounded post of battery. Connect POSITIVE (RED) clip to vehicle chassis or engine block away from battery. Do not connect clip to carburetor, fuel lines or sheet-metal body parts. Connect to a heavy gage metal part of the frame of engine block.
- See operating instructions for length of charge information.

DC CONNECTION PRECAUTIONS, BATTERY OUTSIDE OF A VEHICLE

- Check polarity of battery posts. Positive (POS, P, +) battery post usually has a larger diameter than Negative (NEG, N, -) post.
- When disconnecting charger, always do so in reverse sequence of connecting procedure and break first connection while as far away from battery as practical.
- A marine (boat) battery must be removed and charged on shore. To charge it on board requires equipment specifically designed for marine use.

The Ranger cannot produce enough current to crank most engines. If the engine does not crank, charge the battery for at least 10 minutes before attempting jump assist again. If after two attempts of charging/ jump assist the engine does not start, the batteries may require replacement.

Jump assist requires the vehicle having a battery. Do not attempt to jump assist a vehicle without a battery or by connecting the jumper cables directly to the starter. Damage to the vehicle may occur.

Note:

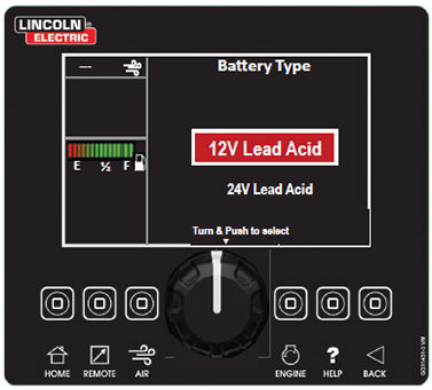
- When using jump assist, the air compressor will be turned off.
- Welding may not be performed while using battery charge or jump assist
- Auxiliary power may not be used while use battery charge or jump assist

BATTERY CHARGING

When charging, the engine rpm will remain at 2500 rpm.

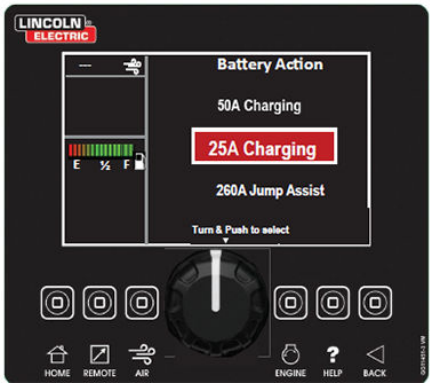
When using jump assist, the engine rpm will start at 2500 rpm, ramp to 3600 rpm, and then adjust as needed.

The RANGER AIR 260MPX/330MPX is capable of charging and providing jump assist to 12V and 24V batteries. Select the desired battery type and press the knob.



Choose the desired action to perform on the battery.

- 25 amp charging
- 50 amp charging
- 260 amp jump assist or 330



⚠ CAUTION

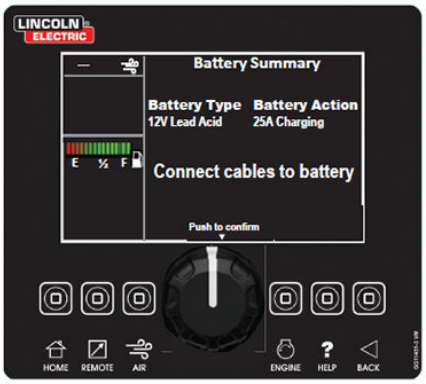
Do not leave the Ranger unattended when using battery charge or jump assist.

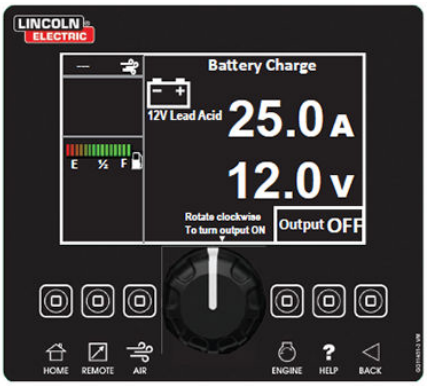
Always attach jumper cables to the battery first,and then to the Ranger

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

BATTERY CHARGE PROCEDURE

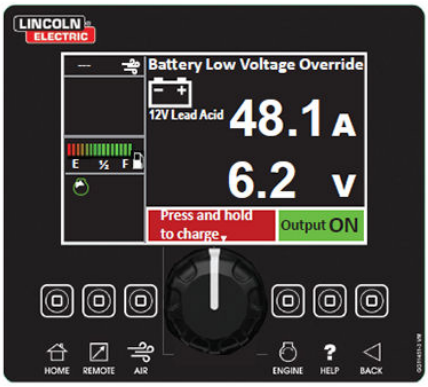
1. Stop the engine of machine connected to the battery.
2. Disconnect the cables to the battery as required.
3. Connect the jumper cables to the battery. Connect the positive (+) cable to the positive (+) battery terminal, and the negative (-) cable to the negative (-) battery terminal.
4. Plug the jumper cable into the Ranger Air.
5. Press the knob to begin charging. Charging will continue for up to 45 minutes, or until the charge voltage is reached.
6. Press the knob, Home button or Back button to stop charging at any time.
7. Disconnect the cables to the battery as required.
8. Connect the jumper cables to the battery. Connect the positive (+) cable to the positive (+) battery terminal, and the negative (-) cable to the negative (-) terminal.
9. Plug the jumper cable into the Ranger Air.
10. Press the knob to begin charging. Charging will continue for up to 45 minutes, or until the charge voltage is reached.
11. Press the knob, Home button or Back button to stop charging at any time.





In some instances, a battery will not charge because the battery voltage is too low. To attempt to charge the battery and override the low battery voltage fault:

- Press and hold the knob for 3 seconds.
- The Ranger will attempt to charge the battery at 10 amps for up to 30 seconds.

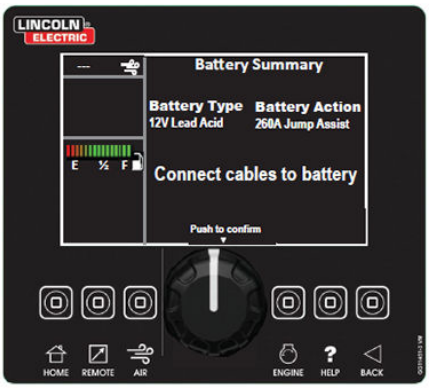


⚠ CAUTION

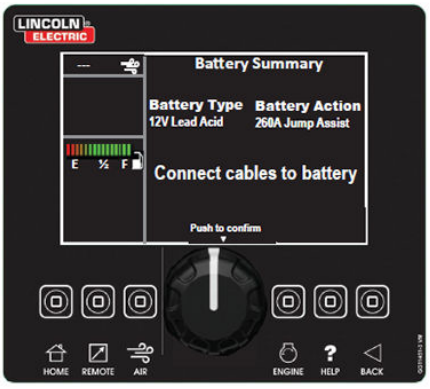
When overriding the low voltage fault, the jumper cables must be connected for proper polarity and must not be shorted together.

BATTERY JUMP ASSIST PROCEDURE

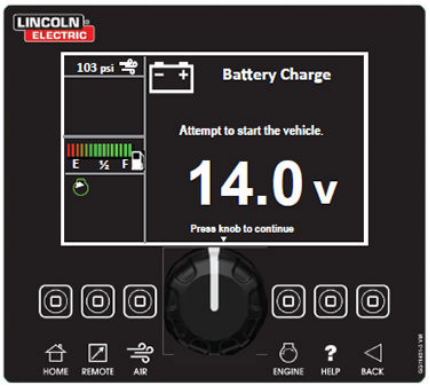
1. Stop the engine of machine connected to the battery.
2. Connect the jumper cables to the battery. Connect the positive (+) cable to the positive (+) battery terminal, and the negative (-) cable to the negative (-) battery terminal.
3. Plug the jumper cable into the RANGER AIR 260MPX/330MPX.



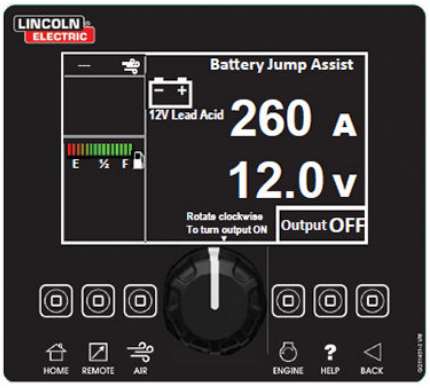
4. Plug the jumper cable into the RANGER AIR 260MPX/330MPX.
5. Press the knob to indicate the vehicle is ready for jump assist.



6. The Ranger will attempt to regulate the battery voltage to 14V. Attempt to start to the vehicle. The Ranger will remain in a jump assist state for up to 10 minutes.
7. The Ranger will supply 260 amp or 330 amp jump assist current. The current will automatically be reduced when the Ranger senses the battery voltage increasing as the engine starts.



Press the knob, Home button or Back button to stop jump assist at any time.



ENGINE STATUS SCREEN

⚠ WARNING

Have qualified personnel do all maintenance and troubleshooting work

Turn the engine off before working inside the machine or servicing the engine.

Remove guards only when necessary to perform maintenance and replace them when the maintenance requiring their removal is complete. If guards are missing from the machine, obtain replacements from a Lincoln Distributor (See Operating Manual Parts List.)

Read the Safety Precautions in the front of this manual and in the Engine Owner's Manual before working on this machine.

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

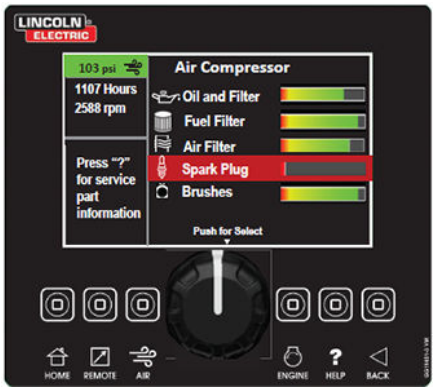
The engine service screen shows engine hours; engine rpm and service status for the oil and oil filter, air filter, spark plug and brushes. To view detailed information about an item, rotate the knob until the item is highlighted in red. Press the knob to display the number of hours remaining until service is required for the selected item.

To see the time remaining before servicing, highlight the item and press the knob.

Press the "?" button for additional service part information.

The status bars indicate the remaining time before service is required. A warning indicator will appear if a service item is nearing the end of its service life. The service alert time can be adjusted or turned off by going to the Settings Menu.

Green = Normal operation
Yellow = Service is required soon
Red = Service is overdue



After service has been performed on an item, press and hold the knob for 5 second to reset the service interval timer. See NORMAL SERVICE INTERVALS on page D-1 for more information.

FUEL CONSUMPTION CURVE

Ranger Air 260MPX	GALS/hr	LITERS/hr	Run time per 11 Gallons
Welding 260amps @ 26 Volts	1.63	6.2	6.7 Hours
Auxiliary Power 10,000 Watts	1.88	7.1	5.9 Hours
High Idle, No load	.73	2.8	15.0 Hours
Low Idle, No load	.57	2.2	19.3 Hours

Ranger Air 330MPX	GALS/hr	LITERS/hr	Run time per 11 Gallons
Welding 330 amps @ 28 Volts	1.9	7.0	8.5 Hours
Welding 260 amps @ 26 Volts	1.5	5.9	7.1
Auxiliary Power 10,000 Watts	1.8	6.7	6.3 Hours
High Idle, No load	.6	2.4	17.8 Hours
Low Idle, No load	.5	1.8	22.8 Hours
Air compressor 40 cfm @150 psi	1.7	6.6	6.4 Hours
Air compressor 30 cfm @100 psi	1.3	4.9	8.5 Hours

AUXILIARY POWER

Combined continuous output of all receptacles is limited to 9.0kW for the Ranger Air 260MPX and 10kW for the Ranger Air 330MPX. The current rating of any plug used with a receptacle must be at least equal to the rating of the receptacle.

Output voltage is within ±5% at all loads up to rated capacity. See Figure 8 : Receptacle locations on page B-19 and Table 3 :Receptacle Description on page B-19 for receptacle identification.

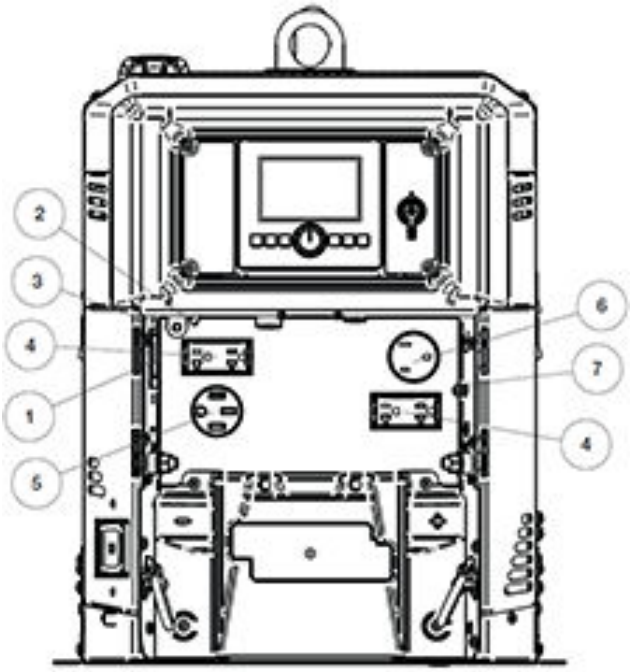


Figure 8 : Receptacle locations

Table 3 :Receptacle Description

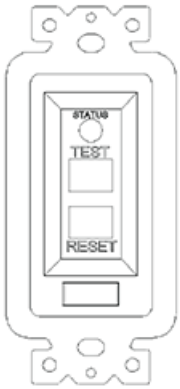
1	GFCI Module	The GFCI module protects the (2) 120 VAC duplex receptacles.
2	50 amp circuit breaker	
3	20 amp circuit breaker	Protects the GFCI and (2) 120 VAC duplexes from overload. If the circuit breaker opens, the receptacles will not work. Press to reset. If it continues to remain open, contact an authorized Lincoln service shop.
4	120 VAC duplex	The 120 VAC duplex receptacles should only be used with three wire grounded type plugs or approved double insulated tools with two wire plugs.
5	120/240 VAC 14-50R Receptacle.	
6	240 VAC 6-50R Receptacle.	
7	Neutral Stud	If the machine is to be grounded, use a AWG #8 copper wire or larger to a solid earth ground. Refer to local codes and the U.S. National Electrical Code.

GFCI MODULES

The GFCI module protects the (2) 120 VAC duplex receptacles.

The GFCI is an auto reset, self testing GFCI. It is identified by the "STATUS" LED located above the buttons.

- Auto Reset: Immediately supplies power to the load when power is applied to the line.
- "STATUS" LED illuminates Green when the GFCI is functioning properly.
- " STATUS" LED illuminates Red when the GFCI has "tripped". Press the reset button.
- "STATUS" LED illuminates flashing Red when the GFCI has failed and needs replaced.



While this GFCI has a self-testing feature, to manually test this GFCI, press the "TEST button. The “STATUS” LED should turn red. Then press the "RESET" button. The “STATUS” LED should turn green. If the “STATUS” LED does not turn red and green as indicated, or flashes red, the GFCI failed the test and should be replaced.

AUXILIARY POWER OPERATION

Combined continuous output of all receptacles is limited to 9.5kW for the Ranger 260MPX and 10.0kW for the Ranger 330MPX. The current rating of any plug used with a receptacle must be at least equal to the rating of the receptacle.

Output voltage is within +-5% at all loads up to rated capacity. When set to high idle, the output frequency is controlled to 57 to 63 Hz under steady state conditions. If the machine is set to AUTO, the output frequency may drop to 40 Hz with a lower voltage. Verify equipment connected to the Ranger is compatible with the frequency and voltage.

For equipment affected by momentary voltage fluctuations, install a plug-in surge suppressor on the receptacles feeding the equipment.

The Lincoln Electric Company is not responsible for any damage to electrical components improperly connected to this product.

OVERLOAD PROTECTION

Never exceed the rated load when it is running continuously. Before connecting and operating the Ranger, calculate the electrical power (in Watts) required by the devices to be powered. This electrical power rating is usually found on manufacturer’s plate on motors, appliances and power supplies. The sum total power required by these devices should not exceed the nominal power of the Ranger.

Most motors require more than their rated wattage for start-up.

Devices with large start-up power demands many not allow the engine to reach normal operating rpm when the machine is set to AUTO. Turn the OFF/AUTO/HIGH/START switch to HIGH.

In the event that the combined weld + auxiliary power load exceeds the machine’s capability, the welding circuit will continue to drive as much power as possible without causing damage to any components. Continued operation in an overload state will bog and stall the engine. Overloading just the auxiliary power circuits will cause the circuit breakers to trip.

SIMULTANEOUS WELD AND POWER TABLE

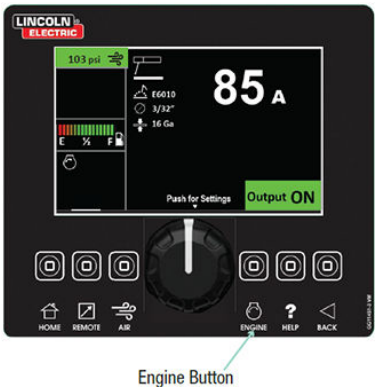
SIMULTANEOUS WELDING AND POWER LOADS				
WELDING OUTPUT - AMPS		PERMISSIBLE POWER - WATTS (UNITY POWER FACTOR)	PERMISSIBLE AUXILIARY CURRENT IN - AMPS	
			120VAC*	240VAC
0		9,000	75**	38
100		7,400	62**	31
150		5,800	48**	24
200		3,900	32**	16
250		2,400	20	10
300		900	8	4
330		0	0	0
	*	120VAC RECEPTACLES LIMITED TO 20 AMPS		
	**	NOT TO EXCEED 50A PER 120VAC BRANCH CIRCUIT WHEN SPLITTING THE 240VAC OUTLET		

WIRELESS REMOTE CONTROL

The RANGER AIR 260MPX/330MPX comes with a basic wireless remote control to turn the engine on/off.

To operate:

- Place the OFF/AUTO/RUN/START switch in either AUTO or RUN.
- Press and release the remote button 3 times within a 10 second period to start the engine.
- Press and release the remote button 3 times within a 10 second period to stop the engine.



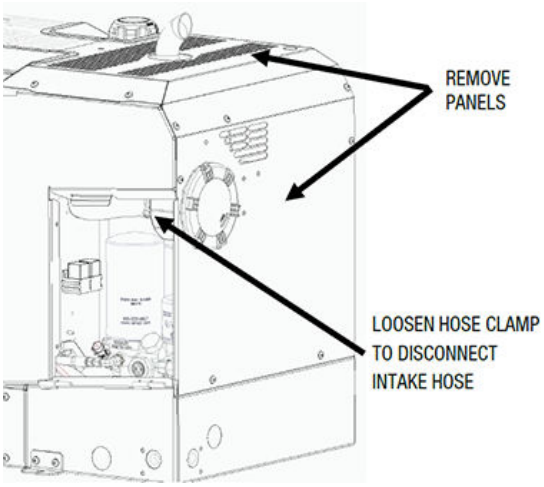
If the remote fob is not available, the engine may be started or stopped by pressing the ENGINE button on the user interface or by using the STOP/AUTO/RUN/START switch.

PAIRING REMOTE FOBS

⚠ WARNING

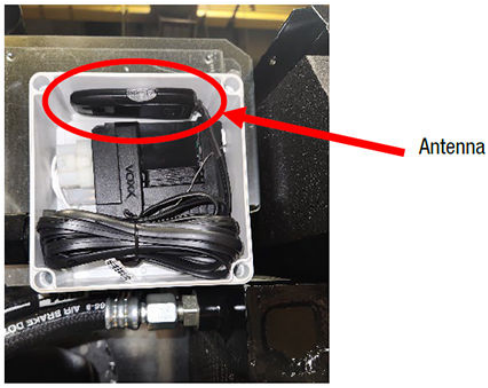
Before pairing remotes, note the compressor, muffler and sheet metal around these items becomes hot during operation and remain hot for a while after stopping the engine. Be careful and take precautions not to contact these items during servicing.

Ensure the engine is off and not running during service. Do not disconnect battery, power will be needed to facilitate pairing.



STEP 1: REMOVE SHEET METAL

With the start switch in the “OFF” position, remove the case back and rear roof panel from machine. Be sure to disconnect compressor air intake hose before removal.



STEP 2: SEPARATE LEADS

Find the wires routed into the remote-control box and remove zip tires constraining their movement. Locate the wire labeled “BLUE” and the blue colored wire. Connect them together. Once connected, remove the lid from the remote-control box and locate the antenna.

STEP 3: PAIRING ADDITIONAL REMOTES

Turn the start switch to the “AUTO IDLE” position, **do not start the engine.**Press and release the button located on the antenna 3 times. You will hear the remote-control receiver click and the antenna lights will flash one time. Press and release the start button on the remote you would like to pair. You will hear the system click one time once successfully paired. Once paired place the start switch back into the “OFF” position.

STEP 4: REASSEMBLING MACHINE

Place the cover back onto the remote-control box. Securely tighten with screwdriver. Disconnect the wire labeled “BLUE” from the blue colored wire. Zip tie the wires back onto the compressor hoses to resecure them, as they were before. Reinstall the sheet metal to the machine, ensuring the compressor intake hose is reconnected.

Regulatory Information about the Remote

FCC Statement:

FCC ID: TBQT4-AM1W

IC Statement: IC: 6081B-T4AM1WTI

HVIN: 181BPTI, 181BPRTI
PWN: CAR ALARM
FVIN: N/A

The enclosed device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operation.

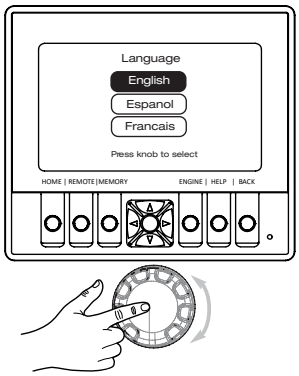
SET-UP MENU

The set-up allows for customization of the Ranger. The supervisor PIN code will be required to access the Set-up menu if it is active.

Options available in the Set-up menu are:
Language selection
Units
Restore Factory Settings
Security
Engine Service Time
Weld Mode Select
Clock
Display Brightness
Spool Gun Calibration
Diagnostic information
Fuel Purge

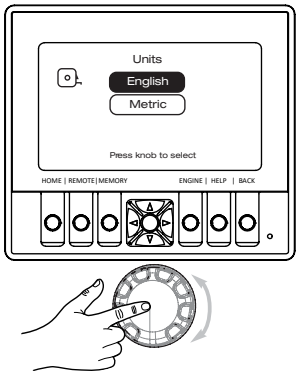
Language

Select from English (default), Spanish or French.



Units

Select from Imperial (default) or metric units. Imperial units show dimensions in inches and fractions. Metric units show dimension in millimeters.



Restore Factory Settings

Restoring factory settings resets all weld modes to original values, resets the remote control values, clears the Ready.Set.Weld. settings, clears the security PINs, resets calibration of the spool gun, sets the language to English and units to Imperial.

Press and hold the knob 5 seconds to confirm restore factory settings.

SECURITY

The Ranger has two levels of security – Operator and Supervisor.

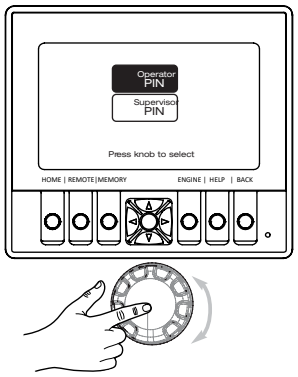
OPERATOR SECURITY – When the Operator PIN (personal identification number) is enabled, the engine will not start until the proper PIN has been entered.

SUPERVISOR SECURITY – When the Supervisor PIN is enabled, the Set-up menu and Engine menu are restricted and cannot be access until the Supervisor PIN is entered.

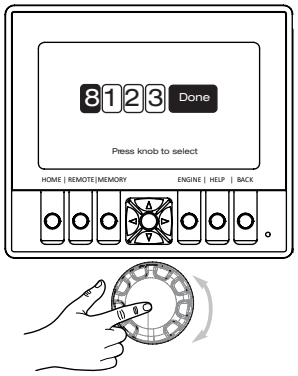
A time delay may be enabled for the operator PIN. This may be useful if the machine has been equipped with an after-market remote start. The operator PIN is entered at the beginning of the day, and then is not required for the selected time period.

DO NOT FORGET THE PIN! The PIN may only be reset by a Lincoln Authorized Service Shop.

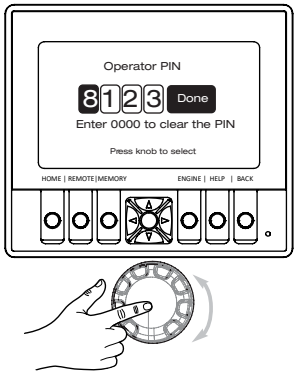
Once in the set-up menu, select the PIN. Rotate the knob to choose either Operator PIN or Supervisor PIN and then press the button to select.



Enter the current PIN. Rotate the knob to adjust the values and press the knob to select and advance to the next number. Press the back button to go to a previous number.

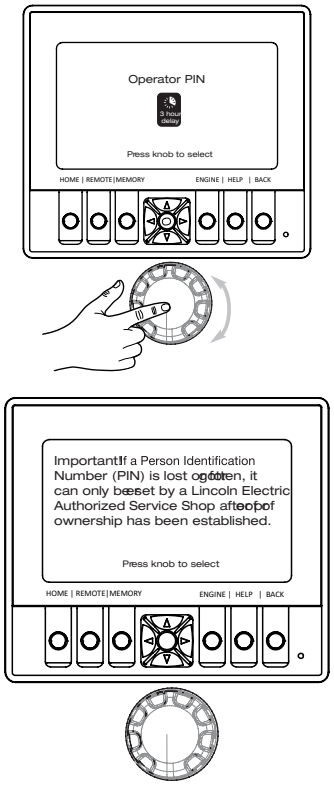


Enter the new PIN.



The Operator PIN has the option of setting a time delay. Using a time delay may be useful when one person starts the Ranger at the beginning of the day, and other people weld with the machine throughout the day. The time delay allows the machine to be turned off and restarted during the specified period without requiring a PIN entry.

Press and hold the knob for 5 seconds to confirm entry of the PIN.



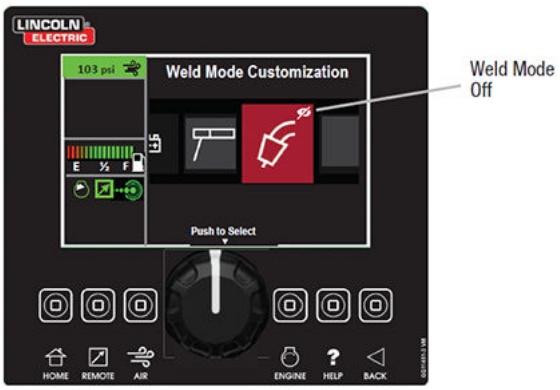
WELD MODE CUSTOMIZATION

Weld Mode Customization removes unused weld modes from the home screen. For example, a supervisor may only want stick and flux cored welding modes to be visible

Use the knob to rotate to the desired weld mode. Press the knob to toggle the weld mode between “Active” and “Off”. Inactive weld modes will have the “not shown” icon in the upper left corner.

When complete, press the back arrow to return to the settings menu.

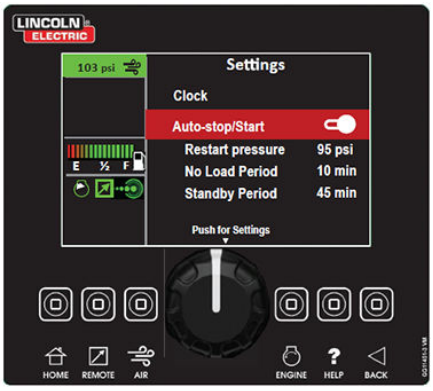
The air compressor, engine service and set-up icon will always appear on the home screen and may not be removed.



AUTO STOP/START

Auto-Stop/Start reduces fuel consumption for those who are not welding continuously. When active, the engine will turn off after a period of inactivity, and then restart when needed. By default, Auto-Stop/Start is turned off.

- Adjust the “Restart Pressure” from 80 to 125 psi. This is pressure at which the engine will restart if the compressor is turned ON.
- Adjust the “No Load Period” from 5 to 120 minutes. This is the amount of time the machine will run in idle before turning off the engine.
- Adjust the “Standby Period” from 5 to 120 minutes. This is the amount of time the machine remains powered up without the engine running. If the engine is not restarted within the standby period, the machine completely turns off and must be restarted with the OFF/IDLE/RUN/START switch.
- A countdown timer appears on the top of the screen showing remaining time until shutdown.

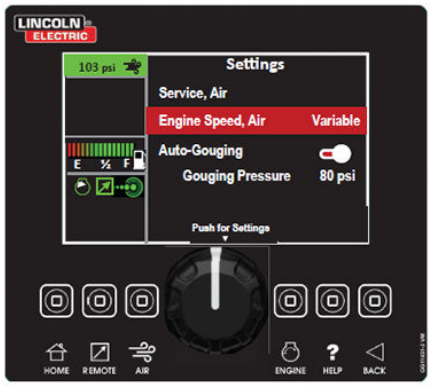


To restart the engine, tap the stick electrode to the work piece for 0.1 to 1 second. Make sure the electrode has good electrical contact to the plate. Pull the electrode away, and allow the engine to start and come up to speed.

Note: The engine will not turn even if Auto Stop/Start is enabled, if the battery voltage is low or if the ambient temperature is exceptionally cold.

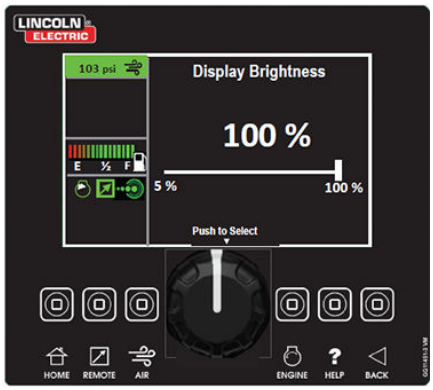
ENGINE SPEED

To improve fuel economy and lower work site noise levels, the engine speed during welding may be set to variable speed. The engine speed will then regulate 2500 – 3600 rpm, depending upon the load conditions.



DISPLAY BRIGHTNESS

The display brightness may be adjusted from 5 – 100%. Default setting is 100%.



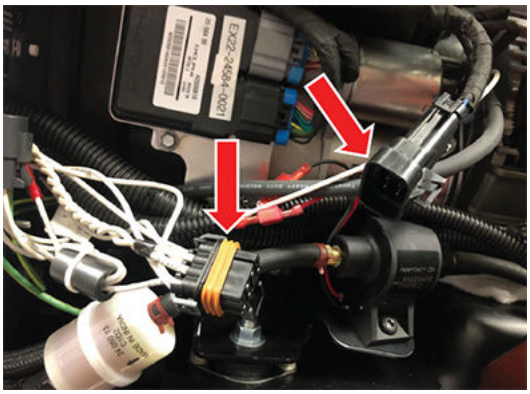
DEMO MODE

The demo mode is used when the Ranger's display will be shown for an extended period of time and the engine is not operating. During demo mode, the battery save function is disabled, the fuel pump is disabled and the engine and maintenance hour tracking functions will not increment.

Extended operation in the demo mode may drain the battery. Use an appropriately sized, listed battery charger when demo mode is being used for long periods.

To configure the Ranger Air for Demo Mode:

1. Disconnect the 8 pin engine harness to prevent the engine from cranking



2. Go to Set-Up Menu, select "Demo Mode", and turn it OFF or ON

ON = Demo Mode Active

OFF = Standard Mode

When Demo Mode is active, "DEMO" will flash in the lower left corner.

INTERNAL CLOCK

The Ranger Air includes an internal clock. The clock will require adjustment when traveling to different time zones or when Daylight Savings Time starts and ends.

Rotate the knob to adjust the highlighted value, then press the knob to select.

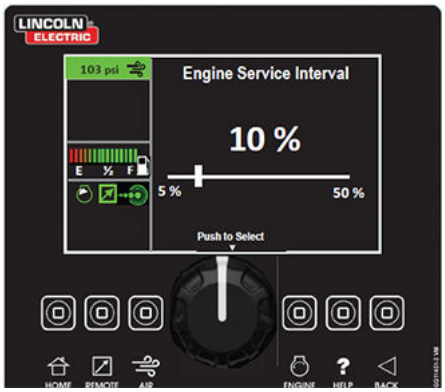
SERVICE INTERVAL ALERTS

When the Ranger is operated in severe conditions, the engine and compressor service alerts can be adjusted to appear more frequently. The factory setting is for alerts to occur when 10% of the service interval remaining. The alert notification may be adjusted between 5 and 50% of the service time, or turned off. For additional information see NORMAL SERVICE INTERVALS on page D-1 .

For example, the recommended service interval for air filter is 100 hours. By default, the alert will appear when 10% x 100 hours remain, or at 10 hours. If the work environment is extra dusty, the alert might be changed to 20%. This will cause the alert to appear when 20 hours remain, or after 80 hours of usage.

To adjust the service intervals, rotate the knob to the desired value and then press the knob.

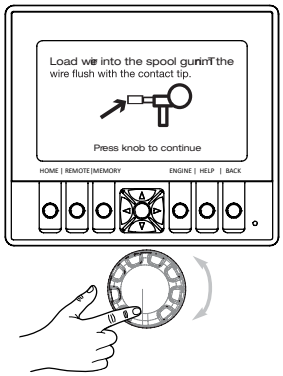
Press the back arrow to exit the screen.



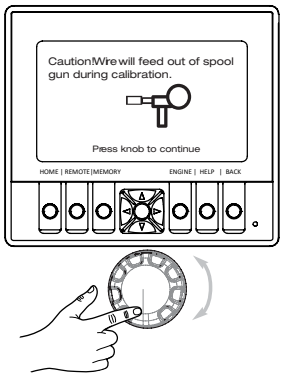
SPOOL GUN CALIBRATION

Spool gun calibration should be run when a new spool gun is attached to the Ranger. The calibration helps to compensate for differences between guns and will make the wire feed speed readings more accurate.

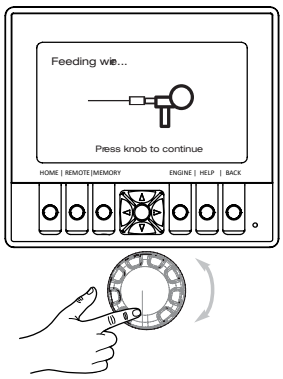
To calibrate a spool gun, start by loading the desired wire into the spool gun. Feed wire out of the gun and then trim it flush with the contact tip. Press the knob to continue.



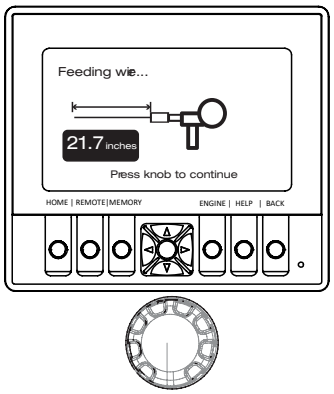
The calibration process will feed wire out of the spool gun for several seconds. Press the knob to start the wire feeding.



The screen will show wire feeding from the spool gun for about 5 seconds.



Rotate the knob to adjust the value shown on the screen to match the actual measured length of wire. Press the knob to complete spool gun calibration.



DIAGNOSTIC INFORMATION

The diagnostic screen lists information about part numbers and software installed in the machine. This may be useful for a service shop in the event repair is required.

ACCESSORIES AND OPTIONS

ACCESSORIES

WIRE FEEDERS:	
K2999-1	Activ8
K2613-XX	LN-25 PRO across-the-arc models
K4267-1	LN-25 PRO X
K4267-2	LN-25 PRO X with TVT
K3569-2	Magnum Pro 250 LX GT Spool gun with mechanical gas valve, Magnum Pro Consumables
STICK:	
K704	Stick welding kit with electrode holder, work clamp, 35’ 2/0 cables, helmet, Electrode Holder. 400 amp nominal rating
K875	Stick welding kit with electrode cable 20 foot #6, work cable 15ft #6, electrode holder, work clamp and helmet. 150 amp nominal rating
K909-7	EH-305HD Heavy Duty Electrode Holder
K909-7	EH-405HD Heavy Duty Electrode Holder
K4345-1	CrossLinc Remote
K4330-1	remote control – 125 ft
K857	remote control – 25 ft
K4268-1	remote control – 125 ft with 115VAC receptacle
TIG:	
K870	Foot amptrol
K4217-1	Wireless pedal for TIG welding
K963-3	Hand amptrol
K930-2	TIG module
K936-3	TIG module cable, 9 pin to 6 pin + 115 VAC plug
K5126-1	Square Wave TIG 200
K2505-3	TIG Torch Twist-Mate to Stud adapter cable, 2 foot gas hose
K1783-9	PTA-26V TIG Torch with valve
K1782-9	PTA-17V TIG Torch with valve
KP509	TIG Parts kit
TRAILERS AND UNDERCARRIAGES:	
K2635-1	Small two-wheel road trailer with Duo Hitch
K2639-1	Fender and light kit
K2640-1	Cable Rack
ACCESSORIES:	
K586-1	Deluxe Adjustable Gas Regulator and Hose Kit
K3679-1	Spark arrestor
K802N	Power Plug Kit
K5492-1	Air Ranger Cover
K2149-1	Work Lead package (15 ft, 4/0) lug connector
K2150-1	Work lead package (15 ft, 2/0) lug connector
K1842-10	Weld power cable - lug to lug (3/0) – 10 foot
K2163-35	Weld power cable - lug to lug (4/0) – 35 ft (2 cables per package)
K2163-60	Weld power cable – lug to lug (4/0) – 60 ft (2 cables per package)
K2483-3	Weld cable – LC40HD male connector to open end (3/0) – 10 ft

ACCESSORIES:	
K2485-3	Weld cable - LC40HD male connector to female connector (3/0) – 50 ft
K2484-3	Weld Cable – LC40HD male connector to lug (3/0) - 50 ft
K2487-1	Stud to Female Lenco adapter connector (CT-40FS)
K2946-1	Male Cam-Lok plug for 2/0 cable
K910-1	Work clamp, 300 amp
K910-2	Work clamp, 500 amp
K3416-70	Lenco male adapter
K3416-90	Lenco male adapter
K3417-70	Lenco female adapter
K3417-90	Lenco female adapter
K5546-1	Engine service parts kit (includes oil, oil filter, air filter and spark plugs)
K5322-1	Strain relief cable D ring kit
K5265-3	Advanced wireless remote
9SM27719-1A	Advanced Wireless remote transmitter
9SM27719-1C	Advanced Wireless remote antenna
9SM27719-1D	Advanced Wireless remote charger
9SM29743-1	Basic wireless remote transmitter
K5493-1	Air After Cooler
K5494-1	Compressor Service Kit, 500 hour
K5492-2	Compressor Service Kit, 50 hour
K5495-1	Battery Jumper Cable Kit, 1/0 Cables, 20 ft.
***Ranger Air Remote Panels:**	
K5642-1	Remote User Interface
K5643-XX	Remote User Interface Control Cable
K5641-1	Weld & Battery Remote Panel (requires K5642-1 to be installed as well)
K5645-XX	Contactor Extension Cable
K5640-1	Auxiliary Power Remote Panel

Note: *For all Ranger Air 330MPX & Ranger Air 260MPX Machines with code 13728 and later

MAINTENANCE

SAFETY PRECAUTIONS

⚠ WARNING

Have qualified personnel perform all maintenance and troubleshooting work.

Turn the engine off before working inside the machine or servicing the engine.

Remove guards only when necessary to perform maintenance and replace them when the maintenance requiring their removal is complete. If guards are missing from the machine, obtain replacements from a Lincoln Distributor. (See Operating Manual Parts List.)

Read the Safety Precautions in the front of this manual and in the Engine Owner's 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 the gears, fans, and all other moving parts when starting, operating, or repairing the equipment.

NORMAL SERVICE INTERVALS

RANGER AIR 260MPX/330MPX SERVICE CHART			
Item	**Service Interval**	**Replacement Part Number**	**Included with K5546-1 Kit**
Oil and Filter	300 Hours	2.0 qts 10W-50 API service classification SJ or later Rehlko 12 050 01 Oil Filter	Y
Air Filter	100 Hours	Rehlko 24 083 15-S Air filter element. Rehlko 24 083 17-S Air Filter Pre-Cleaner	Y
Spark Plug	500 Hours	Champion RC12YC (.30 Gap)	Y
Fuel Filter	200 Hours	Rehlko 24 050 13	Y
Brushes	1000 Hours	Lincoln G10444-C	N/A
Compressor Belt	500 Hours	Lincoln 9SG11356-C	N

In addition, inspect the fuel lines and clamps every 2 years.

When operating in severe (dusty and/or high ambient temperatures) conditions, the alerts for service may be adjusted to occur earlier. See the set-up menu.

OIL FILTER REPLACEMENT

Turn the machine off. Drain the oil while the engine is warm to assure rapid and complete draining. See NORMAL SERVICE INTERVALS on page D-1 for capacity and service interval information.

- Remove the oil filler cap
- Remove the cap from the drain valve. Push in and twist the yellow drain valve counter counterclockwise. Then pull the valve out and drain the oil into a suitable container.

- Close the valve by pushing in and twisting clockwise. Replace the cap. **Close valve and valve cap before adding oil and running the engine**
- Remove the old oil filter. Use Channel lock #9 pliers if the filter is stuck.
- Clean the oil filter mounting surface, and coat the new oil filter gasket with a thin coat of clean oil.
- Screw on the new oil filter by hand until the gasket touches the mounting surface. Then tighten the oil filter an additional 1/2in to 7/8in turn.
- Add oil until to the upper limit mark on the dipstick. Tighten the oil filler cap securely.
- Start the engine and check for leaks.
- Stop the engine and check the oil level. If necessary, add oil to the upper limit mark on the dipstick.

Rehlko 300 hour 10W-50 premium synthetic oil is preferred. Alternatively, you may use 4-stroke motor oil that meets or exceeds the requirements for APIO service classification SG or SH. SAE 10W-30 is recommended for general, all temperature use: -5 to 104F, -20°C to 40°C. See the Engine Owner's Manual for more specific information on oil viscosity recommendations.

Wash hands with soap and water after handling oil.

Dispose of used oil in a manner compatible with the environment. Do not throw used oil into the trash, pour it on the ground or down a drain.

AIR FILTER REPLACEMENT

⚠ WARNING

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

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

Air Filter Pre-cleaner Service:

- Loosen the cover retaining knobs and remove the cover.
- Remove the pre-cleaner from the paper element.
- Wash the pre-cleaner in warm water with detergent. Rinse the pre-cleaner thoroughly until all traces of detergent are removed. Squeeze out excess water (do not wring). Allow the pre-cleaner to dry.
- Reinstall the pre-cleaner over the paper element.
- Reinstall the air cleaner cover. Secure the cover with the cover retaining knobs.

Air Filter Paper Element

- Loosen the cover retaining knobs and remove the cover.
- Remove the pre-cleaner from the paper element.
- Remove the paper element.
- Do not wash the paper element or use pressurized air, as this will damage the element. Replace a dirty, bent, or damaged element with a new element. Handle new elements carefully; do not use if the sealing surfaces are bent or damaged.
- When servicing the air cleaner, check the air cleaner base. Make sure it is secured and not bent or damaged. Also check damaged air cleaner components.

  Note: Before air cleaner is reassembled make sure rubber seal is in position around stud. Inspect, making sure it is not damaged and seals with the element cover

- Reinstall the paper element, pre-cleaner, and air cleaner cover. Secure cover with the cover retaining knobs.

FUEL FILTER

⚠ WARNING

When working on the fuel system:

Keep open lights and flames away, do not smoke!

Do not spill fuel! Clean spills immediately

Check the filter for water accumulation or sediment

Replace the fuel filter if it is found with excessive water or sediment accumulation

SPARK PLUG SERVICING

⚠ WARNING

Before removing the spark plug, the muffler becomes very hot during operation and remains hot for a while after stopping the engine. Be careful not to touch the muffler while it is hot.

The spark plug must be securely tightened. An improperly tightened spark plug can become very hot and may cause engine damage.

To ensure proper engine operation, the spark plug must be properly gapped and free of deposits.

- Remove the spark plug cap.
- Clean any dirt from around the spark plug base.
- Use a plug wrench to remove the spark plug.
- Visually inspect the spark plug. Discard them if the insulator is cracked or chipped. Clean the spark plug with a wire brush if it is to be reused.
- Measure the plug gap with a feeler gauge. Correct as necessary by bending the side electrode.
- Check that the spark plug washer is in good condition and thread the spark plug in by hand to prevent cross-threading.
- After the spark plug is seated, tighten with a spark plug wrench to compress the washer.
- If installing a new spark plug, tighten 1/2 turn after the spark plug seats to compress the washer.
- If reinstalling a used spark plug, tighten 1/8 - ¼ turn after the spark plug seats to compress the washer.

  Spark Plug GAP: .030in. (0.76 mm)
  Spark Plug Torque: 20 ft. lb. (27 N-m)
- Use only the recommended spark plug or equivalent.
- A spark plug which has an improper heat range may cause engine damage.

ENGINE SPEED ADJUSTMENT

⚠ WARNING

OVERSPEED IS HAZARDOUS

The maximum allowable high idle speed for this machine is 3750 RPM, no load. **Do NOT** tamper with governor components or setting or make any other adjustments to increase the maximum speed. Severe personal injury and damage to the machine can result if operated at speeds above maximum

The Ranger Air engine speed is controlled electronically and is not adjustable.

BATTERY MAINTENANCE

⚠ WARNING

BATTERY GASES

Keep sparks and open flame away from battery

Do not smoke around 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 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.

⚠ CAUTION

BATTERY ACID can burn eyes and skin.

Use caution as the electrolyte is a strong acid that can burn skin and damage eyes.

Wear gloves and eye protection and be careful when working near battery.

Follow instructions printed on battery.

To access the battery, remove the 4 screws from the front battery cover. Slide the battery out only far enough to access the battery terminals.

CLEANING THE BATTERY: Keep the battery clean by wiping it with a damp cloth when dirty. If the terminals appear corroded, disconnect the battery cables and wash the terminals with an ammonia solution or a solution of 1/4 pound (0.11kg) of baking soda and 1 quart (0.1 L) of water. Be sure the battery vent plugs (if equipped) are tight so that none of the solution enters the cells.

After cleaning, flush the outside of the battery, the battery compartment, and surrounding areas with clear water. Coat the battery terminals lightly with petroleum jelly or a non-conductive grease to retard corrosion. Keep the battery clean and dry. Moisture accumulation on the battery can lead to more rapid discharge and early battery failure.

CHECKING THE ELECTROLYTE LEVEL If battery cells are low, fill them to the neck of the filler hole with distilled water and recharge. If one cell is low, check for leaks.

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 Ranger 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.

SPARK ARRESTOR SERVICING

⚠ WARNING

Muffler may be hot

Allow the engine to cool before installing the spark arrestor.

Do not operate the engine while installing the spark arrestor.

Clean every 100 hours.

AIR COMPRESSOR SERVICING

Air compressor parts are available from Lincoln Electric and Vanair.

Warranty questions for the air compressor may be directed to Vanair:

- Vanair Service Toll Free - 1-844-826-7378
- Vanair Service Direct - 1-219-879-5100 EXT 400
- Vanair Service Fax - 1-219-879-5335
- Email - service@vanair.com

AIR COMPRESSOR SERVICE SHART

Item	Service Interval	Lincoln Part Number	Vanair Part Number	Included with 50 Hour Service Kit (5494-2)	Included with 500 Hour Service Kit (5494-1)
1 GAL. Rotary Screw Oil	500 Hours	KXXXX-XX	264626-1GAL	Y	Y
Oil Filter	500 Hours	9SG11356-414	266801	Y	Y
Air/Oil Separator Filter	500 Hours	9SG11356-36	264470	N	Y
Air Filter	500 Hours	9SG11356-D	280661-1	N	Y
Belt	500 Hours	9SG11356-C	281074	N	Y

Note: Only genuine VanAir oil filters must be used when servicing the compressor. Using oil or filters from other manufacturers may reduce performance, damage the compressor and voids the compressor warranty.

AIR COMPRESSOR OIL REPLACEMENT

Ensure the Ranger Air is in the off position and the engine is not running. Remove the negative cable from the battery post, and secure so the cable cannot touch any portion of the frame or battery posts.

Ensure the compressor has gone through a full blow down cycle. Ensure the compressor has cooled to a safe working temperature.

Note: The oil internal to the compressor can still be hot even if the exterior surfaces are cool to the touch.

Slowly loosen the oil fill plug a few turns to allow any trapped air to vent. Locate an oil drain pan. Locate the compressor oil drain hose and place it over the pan. Slowly remove the oil drain plug, and allow the oil to drain completely. Replace the drain hose plug. Locate the compressor oil filter, and using an oil filter wrench remove the oil filter and replace it with a new filter. Remove the oil filter plug and fill with the appropriate amount of oil. Replace the oil fill port plug. Reconnect Ranger Air battery cable. Start unit and allow to operate for 1-2 minutes while looking for leaks. If no leaks are present continue running for 3-5 minutes. Shutdown and check for leaks and oil level, adding oil as needed so that it is in the center of the sight glass.

Appropriate amount of oil = 2 quarts to fill receiver tank sump to center of the sight glass.

Run is loaded long enough for the oil cooler thermostat to open (about 170°F+ at the oil temp reading).

Ensure compressor is fully blown down before adding additional oil to center of the sight glass.

Note: The receiver tank sump holds 2 US quarts to the center of the sight glass. The full system holds about 3 quarts.

AIR COMRESSOR BELT TIGHTENTING

Loosen three tensioner bracket locking bolts using a 3/16 allen wrench. Use a 3/8 torque wrench to engage the 3/8 square at the top of the compressor belt tensioner bracket. Torque to 35-40 ft-lbs rotating the idler roller into the belt. Do not exceed 40 ft-lbs. While holding applied torque, tighten three tensioner bracket locking bolts.

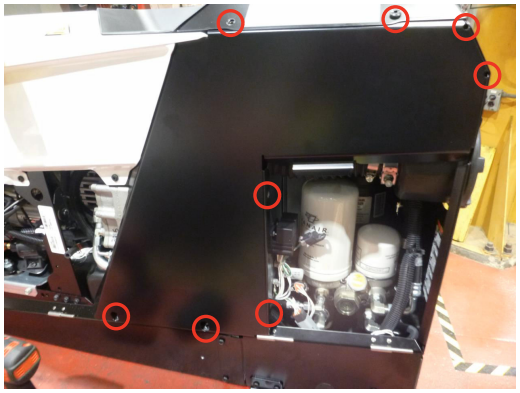
Note: Bracket typically holds in place with applied torque after first tensioner locking bolt is effectively tightened. Be careful not to strip hex drive in bracket locking bolts.

COMPRESSOR BELT REPLACEMENT

Step 1: Slide the compressor door panel towards the rear of the machine and remove.

Step 2: Slide the RANGER AIR 260MPX/330MPX right door panel towards the rear of the machine and remove.

Step 3: Locate and remove the 9 screws holding the right side sheet metal, and remove the panel.

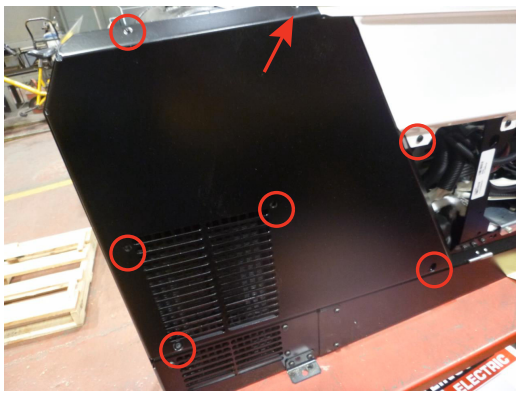


Step 4: Locate and remove the 4 screws that secure the roof grill to the machine.

Note: There will be two screws per side

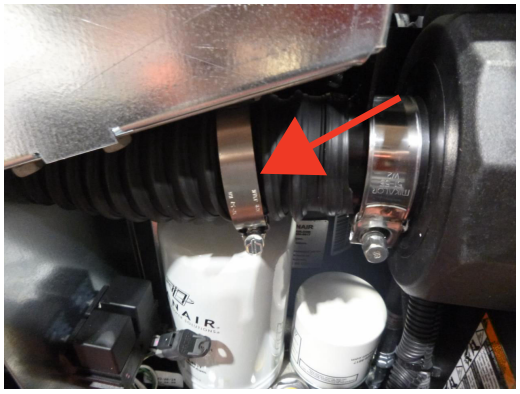
Step 5: Slide the RANGER AIR 260MPX/330MPX left door panel towards the rear of the machine and remove.

Step 6: Locate and remove the 8 screws holding the left side sheet metal, and remove the panel.



Step 7: Locate the hose clamp securing filter hose to the filter.

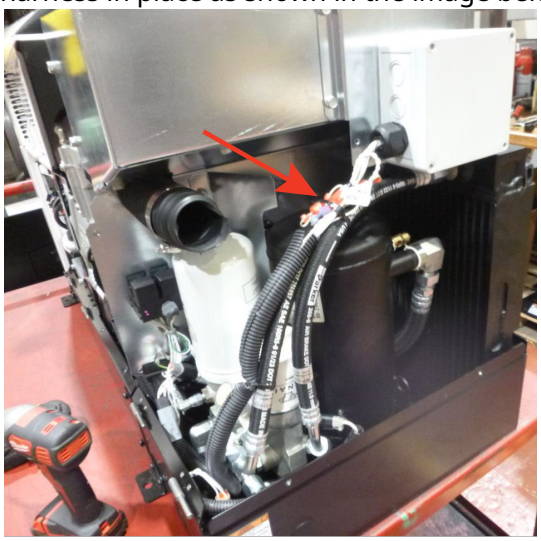
Step 8: Using a common screw driver, loosen the hose clamp enough to remove the hose from the filter.

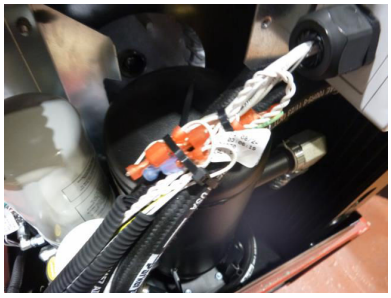


Step 9: Loosen the 2 screws securing the back panel onto the machine. Gently pull back on the panel then remove the screws completely to remove the back panel .

Tip: This step can be done with the hose still attached to the filter.

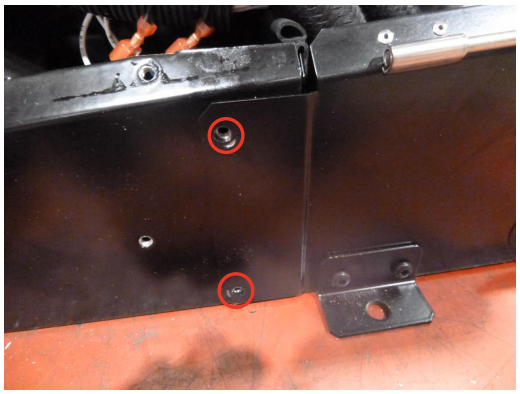
Step 10: Locate the remote lugs from the harness. Disconnect these lugs and cut the zip ties holding the harness in place as shown in the image below.





Step 11: Locate and remove the 4 screws that secure the compressor base to the main machine base.

Note: There will be two screws per side

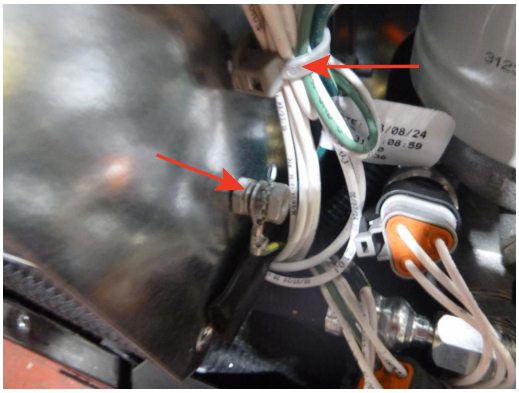


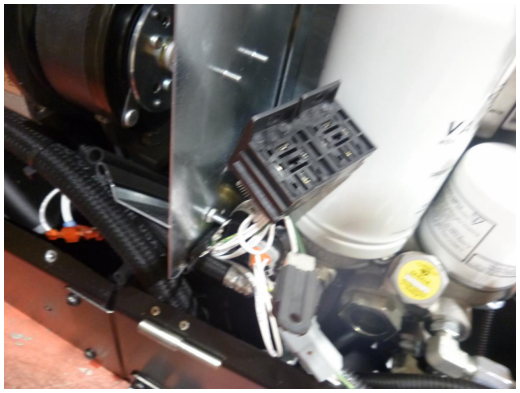
Step 12: Locate and remove the 2 nuts that secure the relay holder to the machine.

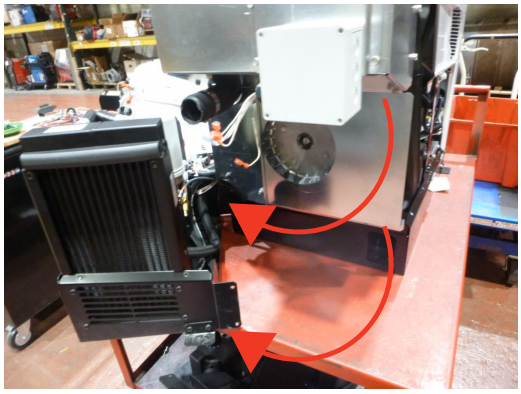
Note: To access these you will need to remove the relays from the holder first.

Step 13: Locate and remove the nut on the grounding stud then remove the ground lead from the stud. Cut the zip tie holding the harness together to separate the ground lead from the harness.

Note: The relay holder should now be disconnected from the machine.

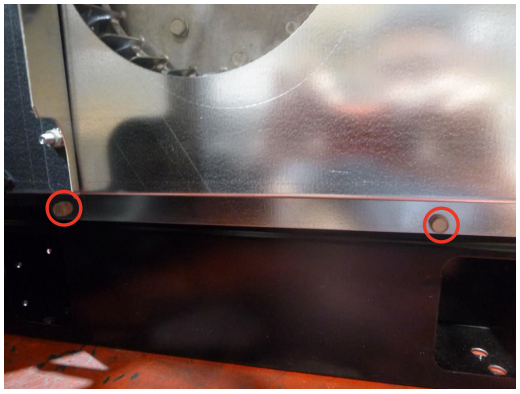






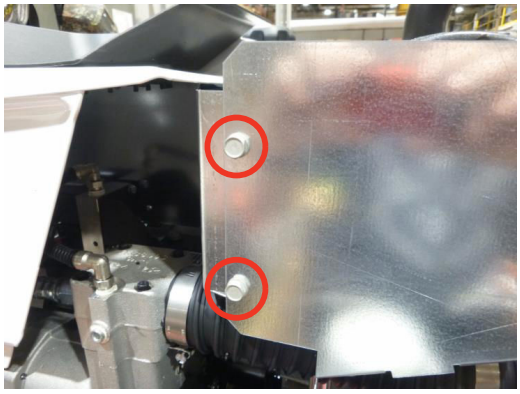
Step 14: Slide the compressor assembly to the left to gain access to the steel back plate.

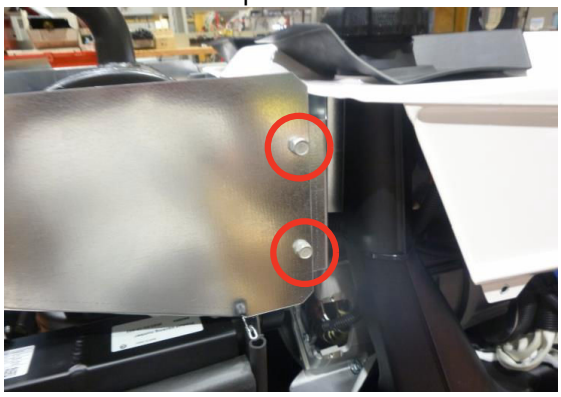
Important: Make sure there is enough clearance in the workspace to slide the compressor assembly. If the filter hose or clutch leads are an issue, you can remove them prior to removing the compressor assembly.



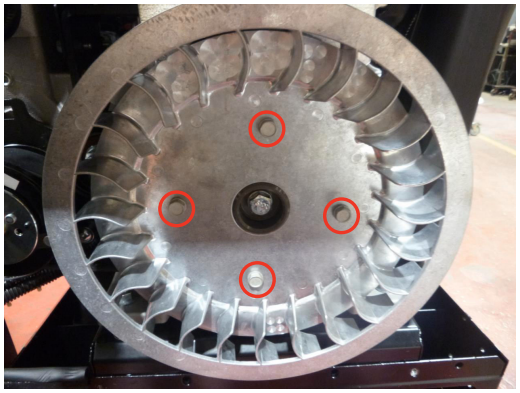
Step 15: Remove the 2 screws that secure the bottom of the back plate to the machine..

Step 16: Remove the 4 screws that secure the left and right sides of the back plate to the machine..



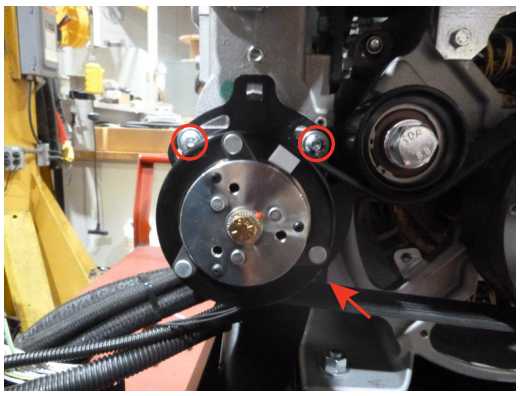


Step 17: Remove the 4 screws that secure the fan blade to the alternator shaft.

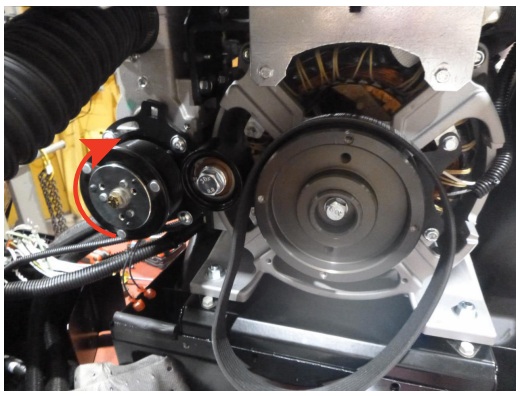


Step 18: Using a 3/8 in allen wrench, loosen the 3 screws securing the clutch to the pump.

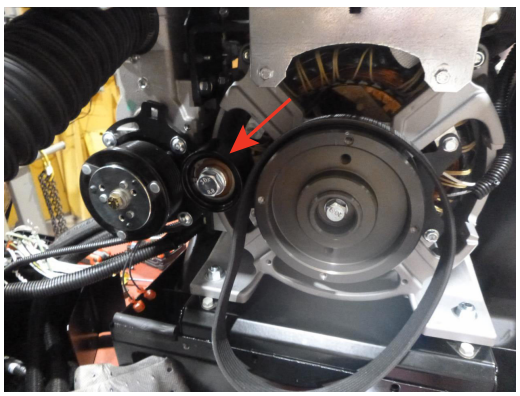
Important: DO NOT remove these screws, you only need to loosen them.



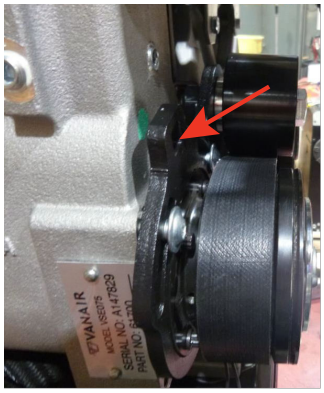
Step 19: With the screws loosened, rotate the clutch clockwise and remove the compressor belt.



Step 20: When installing the replacement belt, make sure the grooves of the belt line up and go underneath the small wheel.



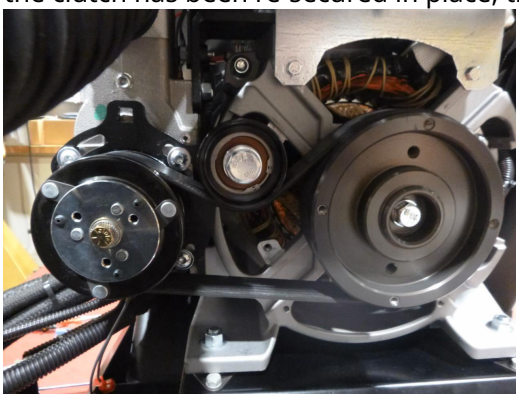
Step 21: Rotate the clutch counterclockwise back into position and place a 3/8 in socket into the square hole to hold it in place.

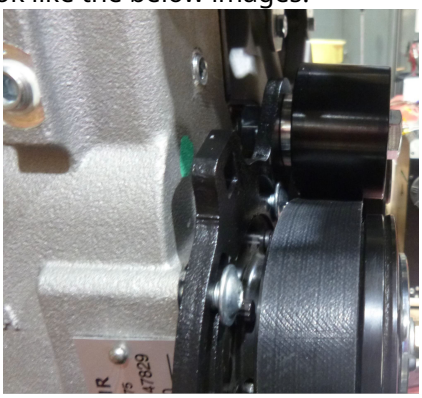


Step 22: Holding the clutch in place with the socket, tighten the allen screws back down to 40 Ft-lbs of torque.

Note: It is okay it the torque is a little over.

Once the clutch has been re-secured in place, the job should look like the below images.





With the belt replaced, begin to reassemble the machine starting with **Step 17** working through this procedure in reverse order until the unit is fully assembled.

TROUBLESHOOTING

TROUBLESHOOTING

⚠ 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.

1. **LOCATE PROBLEM (SYMPTOM)**

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

2. **POSSIBLE CAUSE**

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

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.

⚠ CAUTION

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

Observe all additional safety guidelines detailed throughout this manual.

BASIC TROUBLESHOOTING

PROBLEM (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
AUXILIARY OUTPUT		
Major physical or electrical damage is evident when the sheet metal covers are removed.	Contact your local authorized Lincoln Electric Field Service facility for technical assistance.	.

PROBLEM (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
No 120 VAC output, 240 VAC present	**1.** Check that the 20 Amp circuit breaker did not trip. Check the 40amp breaker **2.** Check that the GFCI has not reset. **3.** Check the flashing diode. **4.** Inspect the alternator brushes for wear or corrosion on the slip rings **5.** Faulty PC Board	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
No 120 VAC and no 240 VAC output	**1.** Check that the 40 amp breaker did not trip **2.** Inspect the alternator brushes for wear or corrosion on the slip rings **3.** Check for voltage to the brushes **4.** Check the flashing diode. **5.** Check J9 connection **6.** Faulty PC Board	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
WELDING		
No weld output	**1.** Verify the weld output is ON. A green icon with “Output ON” appears in the upper right corner of screen whenever weld output is ON **2.** Verify the work connection is tight and attached to clean base metal **3.** The duty cycle of the machine was exceeded and the machine overheated. Allow the machine to cool", "inspect alternator brushes", "verify voltage feedback wiring to the pc board. **4.** Faulty pc board	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
No output control – at the front panel	**1.** . Verify the remote control is not turned on “Remote ON” appears on the bottom left of the screen whenever the remote is turned on **2.** A CrossLinc device is attached to the machine. The CrossLinc symbol appears on the right side of the screen when CrossLinc is active. **3.** Faulty encoder	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
No output control – with remote	**1.** Check the remote cable and connection to the 6 pin connector. **2.** Verify the remote control is turned on. “Remote ON” appears on the bottom left of the screen whenever the remote is turned on. **3.** A CrossLinc device is attached to the machine. The CrossLinc symbol appears on the right side of the screen when CrossLinc is active. **4.** The remote range has been adjusted so the minimum and maximum values are the same.	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**

PROBLEM (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Output control range is limited while using a remote.	**1.** While in the weld mode, go to the remote screen and change the scaling of the remote.	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
The arc is not stable.	**1.** Verify the polarity of the electrode and work cables. **2.** Cables may be excessively long, undersized or damaged. **3.** Verify the weld settings match the electrode. Use Ready-Set-Weld, menu for guidance.	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
ENGINE		
Engine will not crank	**1.** Low or weak battery **2.** Inspect for loose or corroded battery terminals **3.** “Battery circuit” circuit breaker (CB4) has tripped **4.** Faulty Crank relay **5.** Faulty starter motor	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Engine will crank but not start	**1.** Out of fuel **2.** Faulty ECU relay **3.** Enter correct security PIN if the PIN is enabled **4.** Fuel pump not working	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Engine shuts down shortly after starting	**1.** Low fuel level **2.** Low oil level **3.** Clogged fuel filter. clean **4.** Faulty oil pressure switch **5.** Faulty fuel pump	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Engine has low output or runs rough	**1.** Low fuel level **2.** Clogged fuel filter. clean **3.** Clogged air filter. clean **4.** Poor quality fuel – fuel has sat for a long time **5.** Verify the correct fuel cap is being used **6.** Spark plugs are fouled **7.** Valves are out of adjustment	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Engine will not go to low idle	**1.** Idler switch is in the RUN position **2.** Break in lead 239 **3.** Faulty PC Board	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**

PROBLEM (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Engine does not go to full power when using auxiliary power	**1.** The auxiliary power load is less than 100 Watts. Set the OFF/AUTO/RUN/START switch to RUN **2.** Disconnect / turn off auxiliary power loads before starting the engine	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
AIR COMPRESSOR		
Emulsification of oil in compressor system: • Compressor oil is milky white in color • Compressor oil is broken down and lacks lubricity • Compressor oil may develop solid chunks or clumps	**1.** Operating the compressor system for short periods of time: • • Short cycling prevents the temperature of the oil from attaining a high enough temperature capable of vaporizing the moisture droplets. • Total minimum system moisture purge run time of approximately 20 minutes is recommended. **2.** Not allowing compressor to warm up to 180º F operating temperature: • This can keep the oil temperature from getting hot enough to vaporize the moisture droplets, preventing the moisture from being able to escape the system. Additionally, there is no path for the moisture to escape the system. **3.** The air filter is saturated with water: • This forces moisture to be ingested by the compressor. **4.** Operating in humid conditions amplifies all of the above	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
No Air pressure	**1.** Belt not tensioned properly **2.** Air filter clogged	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Air pressure stops intermittently	**1.** Clutch not engaging. **2.** If the air compressor stops when welding or using auxiliary power, the total load may be too much. **3.** Oil level is low or has high moisture content.	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**

PROBLEM (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Air pressure stops intermittently (continued)	Faulty inlet or proportional valve.	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Compressor operating at lower than set point pressure	**1.** Air demand is too high. **2.** Air filter clogged. **3.** Faulty inlet or proportional valve. **4.** If the engine rpm is dropping, verify the engine is functioning properly	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Excessive oil in the air	**1.** Machine is not on a level surface **2.** Compressor oil level too high. **3.** Coalescing filter plugged or damaged. **4.** Scavenger system not operating.	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Excessive moisture in the air	Water may have accumulated in an auxiliary air tank	Drain water from the air tank
Output pressure too high	**1.** The clutch relay failed **2.** The clutch is not releasing **3.** Faulty pressure sensor. **4.** Faulty proportional valve	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Output pressure sensor failure. (The sump pressure sensor is operating	The output pressure sensor is not providing a signal.	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Sump pressure sensor failure. (The output pressure sensor is operating normally and the clutch is engaging and disengaging.)	The sump pressure sensor is not providing a signal.	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Oil temperature too hot	**1.** Check for proper oil level. **2.** Verify moisture is not present in the oil. **3.** Verify the oil cooler is not clogged or damaged. **4.** Verify compressor coolant level.	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**

PROBLEM (SYMPTOMS)	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Oil temperature sensor failure	The temperature sensor reading is out of bounds, or is not changing as the compressor operates.	If all recommended possible areas of possible cause have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**

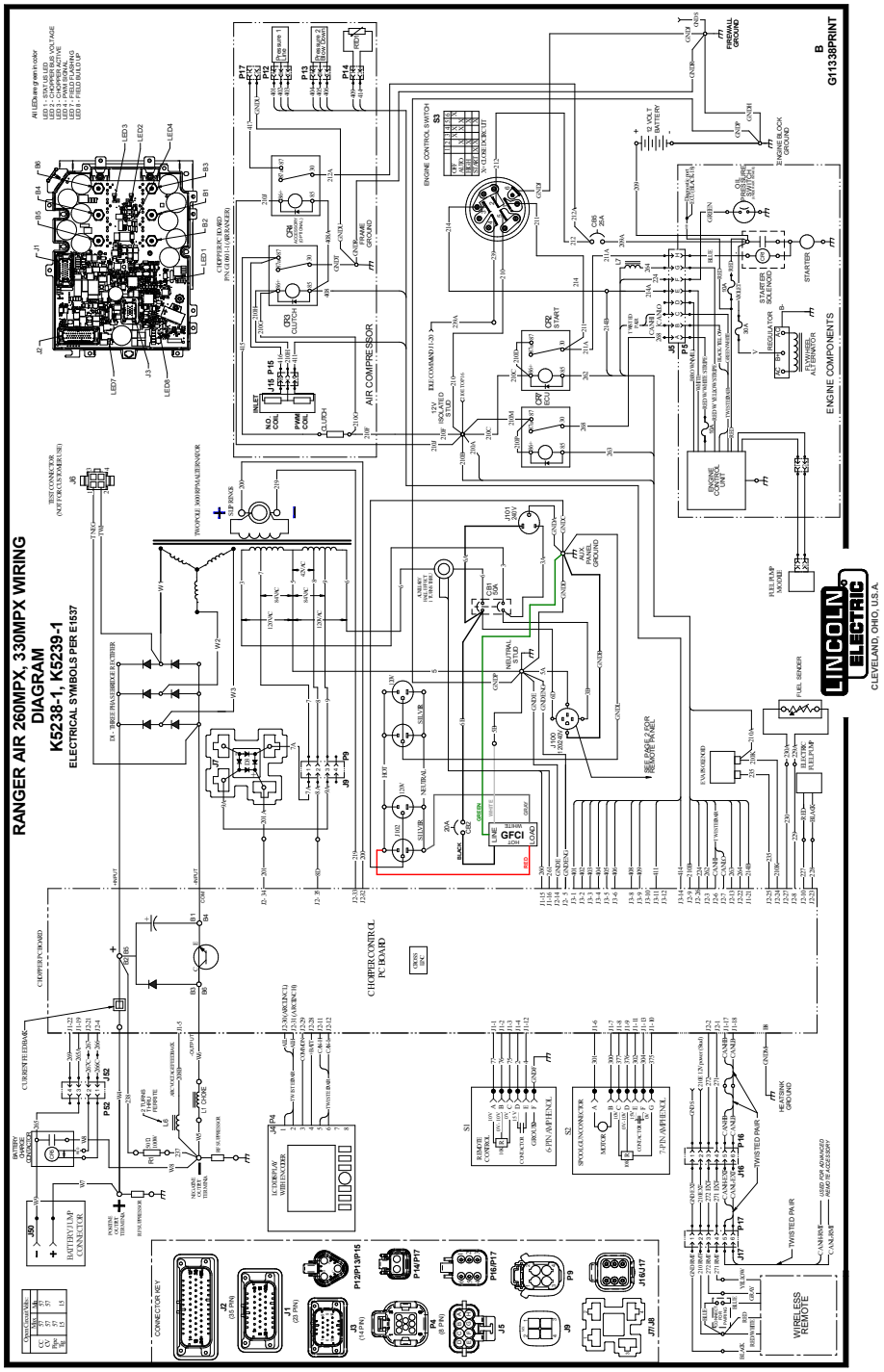
⚠ CAUTION

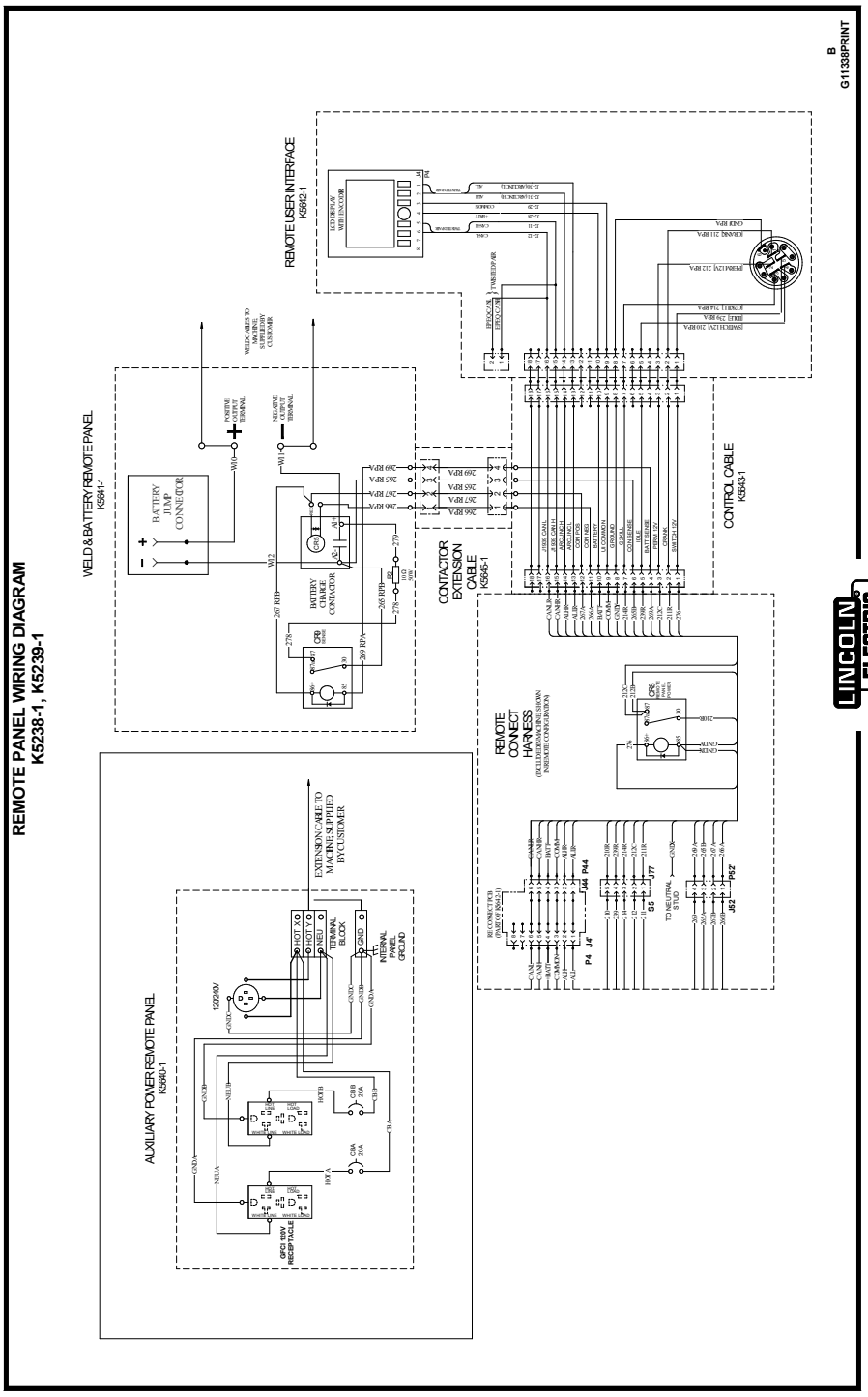
If for any reason you do not understand the test procedures or are unable to perform the tests/repairs safely, contact your Lincoln Authorized Service Facility for technical troubleshooting assistance before you proceed. To locate your nearest service provider please visit www.mylincolnelectric.com

APPENDIX

WIRING DIAGRAM - G11338

For an online copy of this diagram please visit www.lincolnelectric.com/en/Service-Navigator.




REMOTE PANEL WIRING DIAGRAM
K5238-1, K5239-1
B
G11338PRINT
REMOTE USER INTERFACE
K5542-1
WELD & BATTERY REMOTE PANEL
K5541-1
BATTERY
JUMP
CONNECTOR
BATTERY
CHARGE
CONTACTOR
CONTACTOR
EXTENSION
CABLE
K5545-1
CONTROL CABLE
K5543-1
REMOTE
CONNECT
HARNESS
AUXILIARY POWER REMOTE PANEL
K5560-1
EXTENSION CABLE TO
MACHINE SUPPLIED
BY CUSTOMER
HOT X
HOT Y
NEU
GND
TERMINAL
BLOCK
INTERNAL
PANEL
GROUND
120/240V
GFCI 120V
RECEPTACLE
CB1A
20A
CB1B
20A
LINCOLN
ELECTRIC
CLEVELAND, OHIO, U.S.A.

DIMENSION PRINT

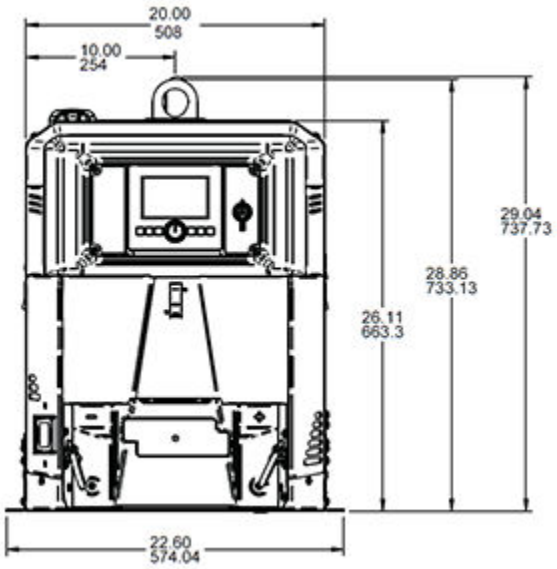


Figure 9 : FRONT VIEW

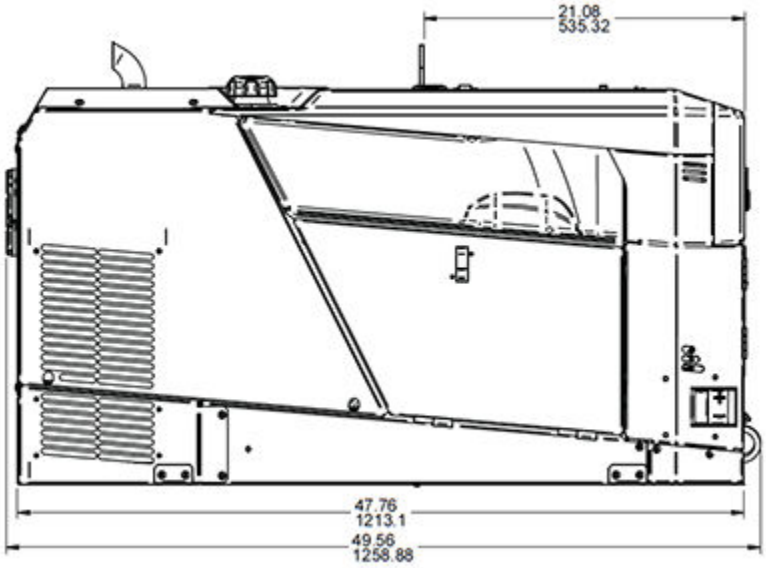


Figure 10 : SIDE VIEW

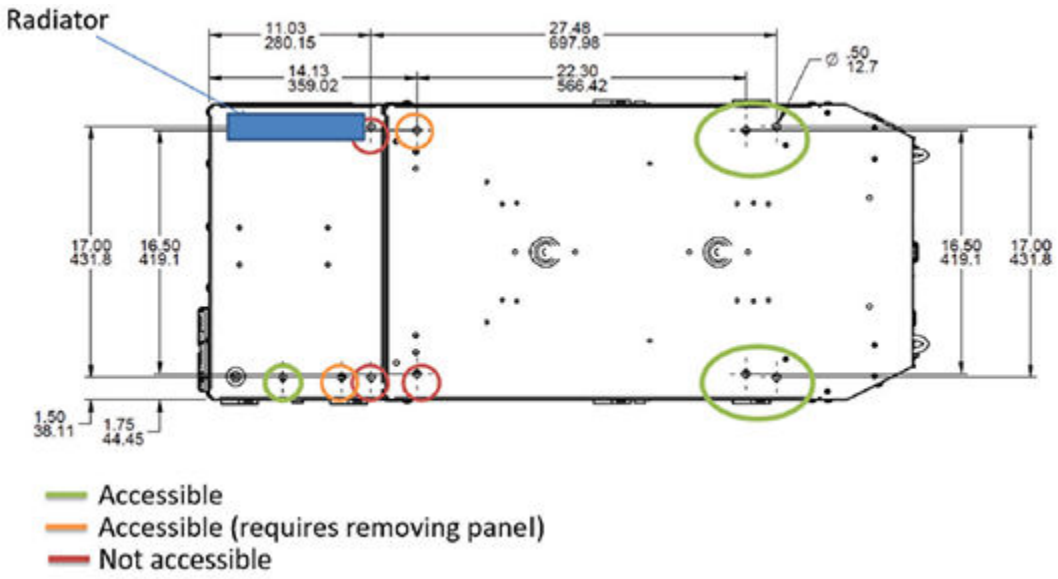


Figure 11 : OVERHEAD VIEW

CUSTOMER ASSISTANCE POLICY

CUSTOMER ASSISTANCE POLICY

The business of Lincoln Electric is manufacturing and selling high quality welding equipment, automated welding systems, consumables, and cutting equipment. Our challenge is to meet the needs of our customers, who are experts in their fields, and to exceed their expectations. On occasion, purchasers may ask Lincoln Electric for information or technical information about their use of our products. Our employees respond to inquiries to the best of their ability based on information and specifications provided to them by the customers and the knowledge they may have concerning the application. Our employees, however, are not in a position to verify the information provided or to evaluate the engineering requirements for the particular weldment, or to provide engineering advice in relation to a specific situation or application. Accordingly, Lincoln Electric does not warrant or guarantee or assume any liability with respect to such information or communications. Moreover, the provision of such information or technical information does not create, expand, or alter any warranty on our products. Any express or implied warranty that might arise from the information or technical information, including any implied warranty of merchantability or any warranty of fitness for any customers' particular purpose or any other equivalent or similar warranty is specifically disclaimed.

Lincoln Electric is a responsive manufacturer, but the definition of specifications, and 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.

WELD FUME CONTROL EQUIPMENT

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.

PARTS LIST

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