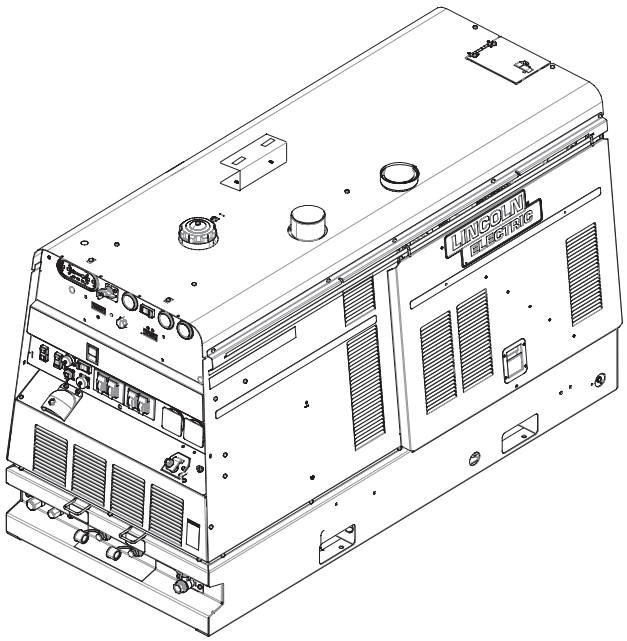
LINCOLN ELECTRIC

Air Vantage® 566 SD Hydraulic

For use with machines having Code Numbers:

Air Vantage® 566 SD Hydraulic: 12580, 12587

SERVICE MANUAL



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THE LINCOLN ELECTRIC COMPANY
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Phone: +1.216.481.8100 • www.lincolnelectric.com

THANK YOU FOR SELECTING A QUALITY PRODUCT BY LINCOLN ELECTRIC.

PLEASE EXAMINE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

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

SAFETY DEPENDS ON YOU

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

⚠ WARNING

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

⚠ CAUTION

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

KEEP YOUR HEAD OUT OF THE FUMES.

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

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

USE ENOUGH VENTILATION or exhaust at the arc, or both, to keep the fumes and gases from your breathing zone and the general area.

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

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

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

WEAR CORRECT EYE, EAR & BODY PROTECTION

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

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

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

IN SOME AREAS, protection from noise may be appropriate.

BE SURE protective equipment is in good condition.

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

SPECIAL SITUATIONS

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

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

Additional precautionary measures

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

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

REMOVE all potential fire hazards from welding area.

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

SECTION A: WARNINGS

CALIFORNIA PROPOSITION 65 WARNINGS

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

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

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

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

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

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

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

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

FOR ENGINE POWERED EQUIPMENT.

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

1.b. Operate engines in open, well-ventilated areas or vent the engine exhaust fumes outdoors.

1.c. Do not add the fuel near an open flame welding arc or when the engine is running. Stop the engine and allow it to cool before refueling to prevent spilled fuel from vaporizing on contact with hot engine parts and igniting. Do not spill fuel when filling tank. If fuel is spilled, wipe it up and do not start engine until fumes have been eliminated.

1.d. Keep all equipment safety 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.

1.e. In some cases it may be necessary to remove safety guards to perform required maintenance. Remove guards only when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.

1.f. Do not put your hands near the engine fan. Do not attempt to override the governor or idler by pushing on the throttle control rods while the engine is running.

1.g. To prevent accidentally starting gasoline engines while turning the engine or welding generator during maintenance work, disconnect the spark plug wires, distributor cap or magneto wire as appropriate.

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

ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS

2.a. Electric current flowing through any conductor causes localized Electric and Magnetic Fields (EMF). Welding current creates EMF fields around welding cables and welding machines

2.b. EMF fields may interfere with some pacemakers, and welders having a pacemaker should consult their physician before welding.

2.c. Exposure to EMF fields in welding may have other health effects which are now not known.

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

2.d.1. Route the electrode and work cables together - Secure them with tape when possible.

2.d.2. Never coil the electrode lead around your body.

2.d.3. Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.

2.d.4. Connect the work cable to the workpiece as close as possible to the area being welded.

2.d.5. Do not work next to welding power source.

ELECTRIC SHOCK CAN KILL.

3.a. The electrode and work (or ground) circuits are electrically “hot” when the welder is on. Do not touch these “hot” parts with your bare skin or wet clothing. Wear dry, hole-free gloves to insulate hands.

3.b. Insulate yourself from work and ground using dry insulation. Make certain the insulation is large enough to cover your full area of physical contact with work and ground.

In addition to the normal safety precautions, if welding must be performed under electrically hazardous conditions (in damp locations or while wearing wet clothing; on metal structures such as floors, gratings or scaffolds; when in cramped positions such as sitting, kneeling or lying, if there is a high risk of unavoidable or accidental contact with the workpiece or ground) use the following equipment:

- Semiautomatic DC Constant Voltage (Wire) Welder.
- DC Manual (Stick) Welder.
- AC Welder with Reduced Voltage Control.

3.c. In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.

3.d. Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.

3.e. Ground the work or metal to be welded to a good electrical (earth) ground.

3.f. Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.

3.g. Never dip the electrode in water for cooling.

3.h. Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.

3.i. When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.

3.j. Also see Items 6.c. and 8.

ARC RAYS CAN BURN.

4.a. Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87. I standards.

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

4.c. Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

FUMES AND GASES CAN BE DANGEROUS.

5.a. 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.**

5. b. The operation of welding fume control equipment is affected by various factors including proper use and positioning of the equipment, maintenance of the equipment and the specific welding procedure and application involved. Worker exposure level should be checked upon installation and periodically thereafter to be certain it is within applicable OSHA PEL and ACGIH TLV limits.

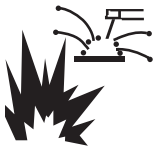
5.c. Do not weld in locations near chlorinated hydrocarbon vapors coming from degreasing, cleaning or spraying operations. The heat and rays of the arc can react with solvent vapors to form phosgene, a highly toxic gas, and other irritating products.

5.d. Shielding gases used for arc welding can displace air and cause injury or death. Always use enough ventilation, especially in confined areas, to insure breathing air is safe.

5.e. Read and understand the manufacturer’s instructions for this equipment and the consumables to be used, including the Safety Data Sheet (SDS) and follow your employer’s safety practices. SDS forms are available from your welding distributor or from the manufacturer.

5.f. Also see item 1.b.

WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION.



6.a. Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.

6.b. Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to "Safety in Welding and Cutting" (ANSI Standard Z49.1) and the operating information for the equipment being used.

6.c. When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.

6.d. Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned". For information, purchase "Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances", AWS F4.1 from the American Welding Society (see address above).

6.e. Vent hollow castings or containers before heating, cutting or welding. They may explode.

6.f. Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuffless trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.

6.g. Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.

6.h. Also see item 1.c.

6.I. Read and follow NFPA 51B "Standard for Fire Prevention During Welding, Cutting and Other Hot Work", available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, MA 022690-9101.

6.j. Do not use a welding power source for pipe thawing.

CYLINDER MAY EXPLODE IF DAMAGED.

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

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

7.c. Cylinders should be located:

- Away from areas where they may be struck or subjected to physical damage.
- A safe distance from arc welding or cutting operations and any other source of heat, sparks, or flame.

7.d. Never allow the electrode, electrode holder or any other electrically "hot" parts to touch a cylinder.

7.e. Keep your head and face away from the cylinder valve outlet when opening the cylinder valve.

7.f. Valve protection caps should always be in place and hand tight except when the cylinder is in use or connected for use.

7.g. Read and follow the instructions on compressed gas cylinders, associated equipment, and CGA publication P-I, "Precautions for Safe Handling of Compressed Gases in Cylinders," available from the Compressed Gas Association, 14501 George Carter Way Chantilly, VA 20151.

FOR ELECTRICALLY POWERED EQUIPMENT.

8.a. Turn off input power using the disconnect switch at the fuse box before working on the equipment.

8.b. Install equipment in accordance with the U.S. National Electrical Code, all local codes and the manufacturer's recommendations.

8.c. Ground the equipment in accordance with the U.S. National Electrical Code and the manufacturer's recommendations.

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

Air Vantage® 566 SD Hydraulic

Service Manual

Last update: 2018/11/01

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Troubleshooting & Repair

HOW TO USE TROUBLESHOOTING GUIDE

⚠ WARNING

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

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

Step 1. LOCATE PROBLEM (SYMPTOM). Look under the column labeled "PROBLEM" (SYMPTOMS). This column describes possible symptoms that the machine may exhibit. Find the listing that best describes the symptom that the machine is exhibiting. Symptoms are grouped into four main categories: Output Problems, Function Problems, Welding Problems and Engine Problems.

Step 2. PERFORM EXTERNAL TESTS. The second column, labeled "POSSIBLE AREAS OF MISADJUSTMENT(S)", lists the obvious external possibilities that may contribute to the machine symptom. Perform these tests/checks in the order listed. In general, these tests can be conducted without removing the case cover.

Step 3. PERFORM COMPONENT TESTS. The last column, labeled "Recommended Course of Action" lists the most likely components that may have failed in your machine. It also specifies the appropriate test procedure to verify that the subject component is either good or bad. If there are a number of possible components, check the components in the order listed to eliminate one possibility at a time until you locate the cause of your problem.

All of the referenced test procedures referred to in the Troubleshooting Guide are described in detail at the end of this section. Refer to the Troubleshooting and Repair Table of Contents to locate each specific Test Procedure. All of the referred to test points, components, terminal strips, etc., can be found on the referenced electrical wiring diagrams and schematics. Refer to the Electrical Diagrams Section Table of Contents to locate the appropriate diagram.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

PC BOARD TROUBLESHOOTING PROCEDURES

⚠ WARNING

ELECTRIC SHOCK can kill.

• Have an electrician install and service this equipment. Turn the input power OFF at the fuse box before working on equipment. Do not touch electrically hot parts.

⚠ CAUTION

Sometimes machine failures appear to be due to PC board failures. These problems can sometimes be traced to poor electrical connections. To avoid problems when troubleshooting and replacing PC boards, please use the following procedure:

1. Determine to the best of your technical ability that the PC board is the most likely component causing the failure symptom.
2. Check for loose connections at the PC board to assure that the PC board is properly connected.
3. If the problem persists, replace the suspect PC board using standard practices to avoid static electrical damage and electrical shock. Read the warning inside the static resistant bag and perform the following procedures:

PC board can be damaged by static electricity.

• Remove your body's static charge before opening the static-shielding bag. Wear an anti-static wrist strap. For safety, use a 1 Meg ohm resistive cord connected to a grounded part of the equipment frame.

ATTENTION
Static-Sensitive Devices
Handle only at Static-Safe Workstations

Reusable Container
Do Not Destroy

• If you don't have a wrist strap, touch an un-painted, grounded, part of the equipment frame. Keep touching the frame to prevent static build-up. Be sure not to touch any electrically live parts at the same time.

• Tools which come in contact with the PC board must be either conductive, anti-static or static-dissipative.

• Remove the PC board from the static-shielding bag and place it directly into the equipment. Don't set the PC board on or near paper, plastic or cloth which could have a static charge. If the PC board can't be installed immediately, put it back in the static-shielding bag.

• If the PC board uses protective shorting jumpers, don't remove them until installation is complete.

• If you return a PC board to The Lincoln Electric Company for credit, it must be in the static-shielding bag. This will prevent further damage and allow proper failure analysis.

4. Test the machine to determine if the failure symptom has been corrected by the replacement PC board.

NOTE: It is desirable to have a spare (known good) PC board available for PC board troubleshooting.

NOTE: Allow the machine to heat up so that all electrical components can reach their operating temperature.

5. Remove the replacement PC board and substitute it with the original PC board to recreate the original problem.

a. If the original problem does not reappear by substituting the original board, then the PC board was not the problem. Continue to look for bad connections in the control wiring harness, junction blocks and terminal strips.

b. If the original problem is recreated by the substitution of the original board, then the PC board was the problem. Reinstall the replacement PC board and test the machine.

6. Always indicate that this procedure was followed when warranty reports are to be submitted.

NOTE: Following this procedure and writing on the warranty report, "INSTALLED AND SWITCHED PC BOARDS TO VERIFY PROBLEM," will help avoid denial of legitimate PC board warranty claims.

Troubleshooting guide

Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
OUTPUT PROBLEMS		
Major physical or electrical damage is evident when the sheet metal covers are removed.	1. Contact your local authorized Lincoln Electric Service Facility.	1. Contact the Lincoln Electric Service Department at 1-888-935-3877.
No welding output or auxiliary power. The engine operates normally.	1. Check for loose or faulty connections in the auxiliary circuit to the output receptacles and/or the weld circuit to the output terminals. See Wiring Diagram. 2. Check the brushes for wear and proper contact to the rotor slip rings.	1. Perform the ***Brush And Slip Ring Service Procedure***. 2. Check for flashing voltage at the slip rings (3 - 7 VDC @ .5 amp until generator builds up, then 198 volts). Perform the ***Flashing Voltage Test Procedure (Engine Not Running)***. 3. Perform the ***Rotor Voltage Test Procedure***. 4. Perform the ***Rotor Resistance And Ground Test Procedure (Static)***. 5. Perform the ***Rotor Resistance And Ground Test Procedure (Dynamic)***. 6. Perform the ***Stator Voltage Test Procedure***. 7. Perform the ***40 VDC Bus Board Test Procedure***. 8. Perform the ***D1 Rectifier Test Procedure***.
⚠ CAUTION		
If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.		

Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
OUTPUT PROBLEMS		
No welding output in any mode. The auxiliary output is normal. The engine operates normally.	1. Place the welding terminals switch in the "Weld Terminals On" position. If the problem is solved and there is a control cable, wire feeder, amptrol or arc start switch connected, the fault may exist within one of the above attached accessories. 2. If the correct OCV is present at the weld output terminals, check the welding cables, connectors, work clamp, electrode holder, etc. For loose or faulty connections. 3. Check for damaged conductors or faulty connections on the heavy current carrying leads that connect the output studs to the chopper boards and the output rectifier. Also check the shunt and the choke assemblies for damage and faulty connections.	1. Check the welding terminals switch and associated leads. See Wiring Diagram. 2. Check gate leads 283 and 284 and right side chopper board power leads 13 and 14 for loose or faulty connections. See Wiring Diagram. 3. Perform the ***Chopper Board Function Test Procedure***. 4. Perform the ***Stator Voltage Test Procedure***. 5. Perform the ***PWM Gate Signal Test Procedure***. 6. Perform the ***40 VDC Bus Board Test Procedure***. 7. Perform the ***D2 Rectifier Test Procedure***. 8. Perform the ***Thermostat Test Procedure***.
VRD lights do not illuminate.	1. Ensure VRD ON/OFF switch is in the "ON" position. (Factory setting is "OFF"). 2. See the VRD indicator light information in the operation section of the Operators Manual.	1. Check the VRD ON/OFF switch for proper operation. 2. The chopper user interface board may be faulty.
⚠ CAUTION If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.		

Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
OUTPUT PROBLEMS		
No auxiliary power at one or more receptacles or at the 14 pin Amphenol. Weld output is normal and the engine operates normally.	1. Check for loose or faulty connections at the output receptacles or 14 pin Amphenol. 2. Check for tripped circuit breaker and/or tripped GFCI receptacles.	1. Perform the ***Stator Voltage Test Procedure***. 2. Check the wiring between the auxiliary receptacle and the stator.
The machine has low welding output and low auxiliary output.	1. The engine RPM may be low. 2. The brushes may be sticking, poorly seated or the slip rings may be dirty.	1. The engine high idle speed may be low. 2. Full load speed should be about 1800 RPM. Inspect and if necessary service the brushes and slip rings per the ***Brush and Slip Ring Service Procedure***. 3. Perform the ***Rotor Voltage Test Procedure***. 4. Perform the ***Rotor Resistance And Ground Test Procedure (Static)***. 5. Perform the ***Rotor Resistance And Ground Test Procedure (Dynamic)***. 6. Perform the ***Stator Voltage Test Procedure***. 7. Perform the ***D1 & D2 Rectifier Test Procedure***.
⚠ CAUTION		
If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.		

Observe Safety Guidelines detailed in the beginning of this manual.	**TROUBLESHOOTING GUIDE**	
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
OUTPUT PROBLEMS		
The machine will weld but the welding arc is "COLD". The engine runs normally and the auxiliary power is normal.	1. Make sure the machine is properly set for the electrode and process is being used. Check electrode size, mode switch setting and amps or voltage setting. If gas is used make sure of correct type and gas flow. 2. Make sure the process does not demand more power than the machine can produce. 3. If the current is correct try increasing the "ARC CONTROL" setting. 4. Check for loose or faulty connections at the weld output terminals and welding cable connections. 5. Check for good connections between the work cable and the work piece. 6. The weld cables may be too long or too small diameter causing excessive voltage drop. 7. The weld cables should not be coiled or wrapped around metal racks or reels. This can cause excessive inductance in the weld circuit. Try welding with a short set of adequately sized weld cables.	1. The engine RPM may be too low. 2. Disconnect all external equipment and perform a "load" test using a resistive load bank and accurate meters. Adjust the load for about 500 Amps at 43 Volts; Check that the engine speed holds at 1800rpm. If not perform engine maintenance. Make sure that the meters read the same as the load bank meters. If not, perform the ***Voltage And Current Feedback Test Procedure***. 3. If the maximum weld output cannot be obtained and the front panel displays are reading accurately, check for damaged conductors or loose connections in the large current carrying conductors of the stator, output rectifier, chopper boards, chokes, shunt and output terminals. See Wiring Diagram. 4. If all these connections are good perform the ***Stator Voltage Test Procedure*** and the ***Chopper Board Diode Drop Test Procedure***. 5. Perform the ***Output Rectifier Bridge Test Procedure***. 6. Perform the ***Mode Select Board Test Procedure***. 7. Perform the ***Remote Receptacle Resistance Test Procedure***.

		8. Perform the ***Choke Test Procedure***.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
FUNCTION PROBLEMS		
The machine welds but it will not maintain a steady output.	1. This condition may be normal in the Downhill Pipe Mode. The downhill pipe mode allows the arc current to increase and decrease slightly as the arc length changes. 2. Check that the electrode is of good quality, dry and free from contamination. Try using some Lincoln Electrode and setting the machine per Lincoln's recommendation. 3. If shielding gas is used, check that the gas and gas flow are correct. Check for damaged, pinched or leaking gas lines. 4. Check for proper work and electrode leads and connections (size, length, coils or bad connections).	1. The machine may not be maintaining the correct RPM. 2. If the engine will not maintain the correct load RPM, the engine may be in need of service. Air and fuel filters should be checked. 3. Check large current carrying leads that connect to the stator, chopper board, shunt, choke and output terminals. See Wiring Diagram. Look for damaged conductors or faulty connections. 4. Check the connections at the chopper user interface board and the chopper board. 5. The output control or the arc control potentiometer may be defective or grounded. The mode select board may also be faulty. Perform the ***Mode Select Board Test Procedure***. 6. The Amphenol receptacles may be contaminated or defective. Perform the ***Remote Receptacle Resistance Test Procedure***.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
FUNCTION PROBLEMS		
The weld output cannot be adjusted with the front panel output control knob in one or more weld modes. The weld output terminals have normal OCV (open circuit voltage). The AC auxiliary power is normal and the engine operates normally.	1. Remote control devices completely disable the front output in all modes except TOUCH START TIG mode. *Make sure there is nothing plugged into the Amphenol receptacles. 2. Check for dirt or moisture contamination in either 12 pin or the 14 pin Amphenols.	1. Perform the ***Remote Receptacle Resistance Test Procedure***. 2. The output control (on the chopper user interface board) may be defective. 3. Check the shunt and associated leads and the voltage feedback leads for loose or faulty connections. See Wiring Diagram.
The machine front panel output control is still active when the remote control unit is connected to one of the Front Panel Amphenol's.	1. Make sure the Local/Remote switch is in the Remote position. 2. This condition is normal in the "TOUCH START TIG MODE". *See the operators manual. 3. The remote control unit may be defective. 4. Check the Amphenol receptacles. Look for damage or corroded contact pins in the receptacle and in the plug of the remote control unit.	1. Check plugs J31, J32 and J33 on the chopper user interface board to see that they are properly seated and the pins in both the plugs and the board receptacle are in good condition. 2. Perform the ***Remote Receptacle Resistance Test Procedure***.
The machine seems to be locked into the "CC-stick" mode of operation.	1. Check the position of the Mode Selector Knob. The knob should positively snap into each mode position and should not feel 'gritty' or get stuck between positions.	1. Check plug J32 on the chopper user interface board to see that it is properly seated and the pins in both the plug and the board receptacle are in good condition. 2. Perform the ***Mode Select Board Test Procedure***.
⚠ CAUTION If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.		

Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
FUNCTION PROBLEMS		
The arc quality is poor with excessive spatter. The arc heat can be controlled and maintained normally, the auxiliary output is normal and the engine operates normally.	1. The ARC CONTROL may be set too high. 2. The output control may be set too high for the electrode being used. Check that the electrode is of good quality, dry and free from contamination. Try using some Lincoln Electrode and setting the machine per Lincoln's recommendations. 3. If shielding gas is used, check that the gas and gas flow are correct. 4. Check for damaged, pinched or leaking gas lines. 5. Check for proper work and electrode leads and connections (size, length, coils or bad connections).	1. Perform the ***Arc Control Potentiometer Test Procedure***. 2. Perform the ***Choke test Procedure***.
A control cable type feeder does not function when connected to the 14 pin Amphenol. Machine operates normally in the "CC-STICK" mode and has normal AC auxiliary output.	1. Check the circuit breaker CB2 if using a 120 Volt AC wire feeder. Check CB6 if using a 42 VAC wire feeder. Reset breaker if tripped. 2. Check the Amphenol receptacle for damaged, corroded or dirty contact pins. 3. The wire feeder control cable may be defective. 4. The wire feeder may be defective.	1. Use a voltmeter to check for the presence of supply voltage at the 14 pin Amphenol receptacle. 120 Volt AC power supplied through pins A and J, 42 VAC power is supplied through pins I and K. 2. Perform the ***Stator Voltage Test Procedure***.
⚠ CAUTION If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.		

Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
FUNCTION PROBLEMS		
Hydraulic pump or air compressor fails to activate. The machine otherwise operates normally.	1. Check all leads and connections for the hydraulic pump and air compressor. See Wiring Diagram. 2. Ensure the hydraulic pump lockout switch is in the correct position. 3. Possible faulty hydraulic pump / air compressor power switch. 4. Possible faulty air compressor (CR1) or hydraulic pump (CR2) relays.	1. Perform the ***Hydraulic Pump / Air Compressor Power Switch Test Procedure***. 2. Perform the ***Fuel, Idle, Air Compressor (CR1) And Hydraulic Pump (CR2) Relay Test Procedure***. 3. Perform the ***Chopper User Interface Board Test Procedure***.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
WELDING PROBLEMS		
An Across-the-Arc type wire feeder does not function when connected to the weld output of the machine. The machine operates normally in the CC-STICK mode and has normal AC auxiliary output.	1. Check that the welding terminals switch is in the "WELD TERMINALS ON" position. 2. Check that the Weld Mode Knob is in the correct position for the process being used, typically "CV-WIRE" mode. 3. Check for poor weld cable connections between the feeder and the welder output terminal and between the work piece and the other output terminal. 4. Check that the wire feeder's work sensing lead is properly connected to work piece and is in good condition. 5. If there is a voltage reading on the wirefeeder voltmeter, the wire feeder may be defective.	1. Use a voltmeter to check for the presence of about 60 VDC open circuit voltage (OCV) across the output studs of the machine. 2. If the OCV is low, there may be a problem with the mode switch. 3. Perform the ***Mode Select Board Test Procedure***. 4. If there is no OCV, check the weld terminal switch and associated wiring. See Wiring Diagram.

⚠ CAUTION

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Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
ENGINE PROBLEMS		
The engine will not crank when the start button is pushed.	1. Check the circuit breaker (CB7). Reset if tripped. 2. The battery may be low or faulty. If the battery will not accept a charge, replace it.	1. Check the wiring and the connections at the starter motor, glow plug button, CB7 circuit breaker, run/stop switch and the start button. See Wiring Diagram. 2. Check the chassis ground connections between the engine block and the negative battery terminal. 3. The starter motor or solenoid may be defective or the engine may be prevented from turning due a mechanical failure. 4. Perform the ***Start / Glow Switch Test Procedure***. 5. Perform the ***Run / Idle Switch Test Procedure***.
The battery does not stay charged.	1. Check for loose, corroded or faulty connections at the battery. 2. Check for loose or damaged alternator drive belt. 3. The battery may be faulty.	1. Perform the ***Engine Alternator Test Procedure***. 2. There may be a defective component or faulty wiring causing a current draw when the run/stop switch is in the "stop" position. 3. If the engine charging system is operating properly but the battery is not staying charged, the battery is defective and should be replaced.

⚠ CAUTION

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Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
ENGINE PROBLEMS		
The engine cranks when the start button is pressed but will not start.	1. The battery voltage may be low (normally results in slow cranking speed). The battery should be checked and recharged if it is not producing adequate voltage and replaced if it will not accept a full charge. 2. Make sure the fuel valve on the fuel sediment filter is in the open position. 3. Check that the machine has an adequate supply of fresh, clean fuel.	1. The fuel filter may be clogged, replace if necessary. 2. Fuel pump may be faulty. Check for fuel flow through filters. Contact local authorized engine service shop. 3. Check oil level. 4. ON/OFF switch on for more than 60 seconds before starting. The ON/OFF switch will need to be switched off and turned back on again. 5. Perform the ***Fuel, Idle, Air Compressor (CR1) And Hydraulic Pump (CR2) Relay Test Procedure***. 6. Perform the ***Glow Relay Test Procedure***. 7. The engine may be in need of mechanical repairs.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
ENGINE PROBLEMS		
The engine starts but shuts down immediately when the start button is released.	1. Check the oil level. 2. Be certain that the engine is not overheated. 3. Check that the machine has an adequate supply of fresh, clean fuel. 4. The fuel filter may be clogged. Replace if necessary. 5. High coolant temperature or low oil pressure (indicator light lit) Check oil and coolant levels to proper level. 6. Check for loose or broken fan belt. 7. Start engine and check for fuel leaks. 8. Faulty oil pressure switch, temperatures switch or other engine component.	1. The engine may have inadequate oil pressure. 2. Check the oil and temperature Sensors. 3. Perform the ***Fuel, Idle, Air Compressor (CR1) And Hydraulic Pump (CR2) Relay Test Procedure***. 4. Perform the ***Glow Relay Test Procedure***.

⚠ CAUTION

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Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
ENGINE PROBLEMS		
The engine shuts down shortly after starting.	1. Check that the machine has an adequate supply of fresh, clean fuel. 2. Check fuel and air filters, replace if necessary. 3. Check oil level, add oil as required. Look for oil leakage. 4. Check for loose or faulty battery cable connections. 5. High coolant temperature or low oil pressure (indicator light lit). Check oil and coolant levels to proper level. Check for loose or broken fan belt. Start engine and check for leaks. 6. Faulty oil pressure switch, temperatures switch or other engine component.	1. The oil pressure switch or coolant temperature switch may be faulty. Check the oil pressure switch and oil temperature switch. 2. Make sure the engine has oil and oil pressure and engine is not overheated. 3. Check the oil pressure switch and oil temperature switch. 4. Check for faulty run/stop switch. 5. Check for poor electrical connections at the run/stop switch. See Wiring Diagram. 6. The engine ECU may be faulty.
The engine will not develop full power.	1. The fuel may be old or contaminated. Supply the engine with clean fresh fuel. 2. The fuel filter may be clogged, replace if necessary. 3. The air filter may be clogged, replace if necessary.	1. The engine may be in need of adjustment or repair. 2. Perform the ***Run / Idle Switch Test Procedure***.
⚠ CAUTION If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.		

Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
ENGINE PROBLEMS		
The engine will not idle down to low RPM. The machine has normal weld and auxiliary output.	1. Make sure the idle switch is in the "AUTO IDLE" position. 2. Make sure there is no external load on the weld terminals or the auxiliary power receptacles.	1. Perform the ***Fuel, Idle, Air Compressor (CR1) And Hydraulic Pump (CR2) Relay Test Procedure***. 2. Check that leads 3 and 6 are properly routed through the toroidal current sensor. See Wiring Diagram. The leads should be wrapped tightly and tie wrapped in place. 3. Check the toroidal current sensor for any signs of damage. 4. Check leads 260 and 261 for poor connections and damage to the conductors and insulation between the toroid current sensor and the J33 connector in the chopper user interface board. Unplug plug J33 from the chopper user interface board and check for damaged, dirty or corroded pins. 5. Perform the ***Run / Idle Switch Test Procedure***. 6. The engine ECU may be faulty.

⚠ CAUTION

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Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
ENGINE PROBLEMS		
The engine will not go to high idle when using auxiliary power. Auxiliary power is normal when the run / idle switch is in the "HIGH" idle position, the automatic idle function works properly when welding.	1. The load on the auxiliary receptacle may be too low. 2. The automatic idle system will not function reliably if the low is less than 100 watts. 3. The device connected to the auxiliary power may be defective, try another device. 4. Make sure the connections to the auxiliary device are tight. 5. Some devices are designed to sense for adequate input power. Product of this type may not turn on due to low voltage and frequency of the machine at low idle. If this happens the current draw will likely be insufficient to activate the automatic idle system. Devices of this type may require that the Automatic Idle switch be in the "HIGH IDLE" position.	1. Check that leads 3 and 6 are properly routed through the toroidal current sensor. Each lead must have three turns and must pass through the sensor in the opposite directions. See Wiring Diagram. The leads should be wrapped tightly and tie wrapped in place. 2. Check the toroidal sensor for any signs of damage. 3. Check leads 260 and 261 for poor connections and damage to the conductors and insulation between the toroid current sensor and the J33 connector on the chopper user interface board. Unplug plug J33 from the chopper user interface board and check for damaged, dirty or corroded pins. 4. The toroidal current sensor may be faulty.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

Observe Safety Guidelines detailed in the beginning of this manual.		**TROUBLESHOOTING GUIDE**
PROBLEMS (SYMPTOMS)	**POSSIBLE AREAS OF MISADJUSTMENT(S)**	**RECOMMENDED COURSE OF ACTION**
ENGINE PROBLEMS		
The engine will not go to high idle when striking arc. The automatic idle system functions normally when using auxiliary power. Welding and auxiliary outputs are normal when the idle switch is in the "HIGH IDLE" position.	1. Check that the welding cables are in good working condition and the connections are tight. Make sure the work clamp is attached to clean, bare material.	1. Check the leads and connections at the SHUNT at the positive output stud. Check lead 204S and 206S for continuity from the shunt to J20-1 and J20-2 on the right side chopper board.
The engine will not go to high idle when attempting to strike and arc or when a load is applied to any of the auxiliary power receptacles.	1. Check that the welding cables and the auxiliary power lead connections are tight. 2. Make sure the Run / Idle switch is in the Auto position.	1. Perform the ***Fuel, Idle, Air Compressor (CR1) And Hydraulic Pump (CR2) Relay Test Procedure***. 2. Perform the ***Run / Idle Switch Test Procedure***. 3. Check CAN communications between the chopper user interface board and the engine ECU. See Wiring Diagram. 4. The engine ECU may be faulty.
The engine goes to low idle, but will not stay at low idle.	1. Make sure there are no auxiliary loads on either the weld terminals or the auxiliary receptacles. 2. Check that the welding cables and the auxiliary power lead connections are tight and that the insulation is not damaged.	1. Perform the ***Fuel, Idle, Air Compressor (CR1) And Hydraulic Pump (CR2) Relay Test Procedure***. 2. Perform the ***Run / Idle Switch Test Procedure***.
Engine will not shut off.	1. Stop engine by shutting off valve on main fuel filter. Contact authorized local Engine Service Shop.	1. Perform the ***Run / Idle Switch Test Procedure***. 2. The engine ECU may be faulty.

⚠ CAUTION

If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

Test Procedures

CASE COVER REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Case Covers.

MATERIALS NEEDED

3/8” Nutdriver
7/16” Open End Wrench
1/2” Nutdriver
5/16” Nutdriver
Wiring Diagram

REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Slide the engine access door off of the slide rail. See ***Figure F.1***.
3. Using a 3/8” nutdriver, remove the six screws securing the door slide rail to the machine. See ***Figure F.1***.
4. Using a 3/8” nutdriver and a 7/16” open-end wrench, remove the screw and nut securing the door slide rail to the machine. See ***Figure F.1***. Carefully remove the door slide rail.
5. Remove the edge guard from around the front panel.
6. Remove the fuel cap, fuel gasket and lift bail seal. See ***Figure F.1***.
7. Using a 3/8” nutdriver, remove the 13 screws securing the roof panel to the machine. See ***Figure F.1***. Remove the roof panel.
8. Attach the fuel cap.
9. Using a 3/8” nutdriver, remove the eight screws securing the right side front panel to the machine. See ***Figure F.1***.
10. Using a 1/2” nutdriver, remove the two screws securing the right side front panel to the machine. See ***Figure F.1***.
11. Using a 3/8” nutdriver, loosen (do not remove) the two bottom screws securing the right side front panel to the machine. See ***Figure F.1***. Remove the right side front panel.
12. Using a 3/8” nutdriver, remove the eight screws securing the left side front panel to the machine.

13. Using a 1/2” nutdriver, remove the two screws securing the left side front panel to the machine.
14. Using a 3/8” nutdriver, loosen (do not remove) the two bottom screws securing the left side front panel to the machine. Remove the left side front panel.
15. Using a 3/8” nutdriver, remove the five screws securing the left rear panel to the machine.
16. Using a 3/8” nutdriver, loosen the two screws securing the left rear panel to the machine. Remove the left rear panel.
17. Using a 5/16” nutdriver, remove the screw securing the front panel in the upright position. Lower the front panel to gain access to the components. See ***Figure F.2***.
18. Perform any tests / replacement procedure.

REPLACEMENT PROCEDURE

1. Place the front panel into the upright position.
2. Using a 5/16” nutdriver, attach the screw securing the front panel in the upright position.
3. Carefully position the left rear panel onto the machine.
4. Using a 3/8” nutdriver, tighten the two screws securing the left rear panel to the machine.
5. Using a 3/8” nutdriver, attach the five screws securing the left rear panel to the machine.
6. Carefully position the left side front panel onto the machine.
7. Using a 3/8” nutdriver, tighten the two bottom screws securing the left side front panel to the machine.
8. Using a 1/2” nutdriver, attach the two screws securing the left side front panel to the machine.
9. Using a 3/8” nutdriver, attach the eight screws securing the left side front panel to the machine.
10. Carefully position the right side front panel onto the machine.
11. Using a 3/8” nutdriver, tighten the two bottom screws securing the right side front panel to the machine.
12. Using a 1/2” nutdriver, attach the two screws securing the right side front panel to the machine.
13. Using a 3/8” nutdriver, attach the eight screws securing the right side front panel to the machine.
14. Remove the fuel cap.
15. Carefully position the roof panel onto the machine.
16. Using a 3/8” nutdriver, attach the 13 screws securing the roof panel to the machine.
17. Attach the fuel cap, fuel gasket and lift bail seal.
18. Attach the edge guard around the front panel.
19. Carefully position the door slide rail onto the machine.
20. Using a 3/8” nutdriver and a 7/16” open-end wrench, attach the screw and nut securing the door slide rail to the machine.
21. Using a 3/8” nutdriver, attach the six screws securing the door slide rail to the machine.
22. Slide the engine access door into the slide rail.

Figure F.1 – Engine access door, door slide rail, roof panel, fuel cap and right side front panel location

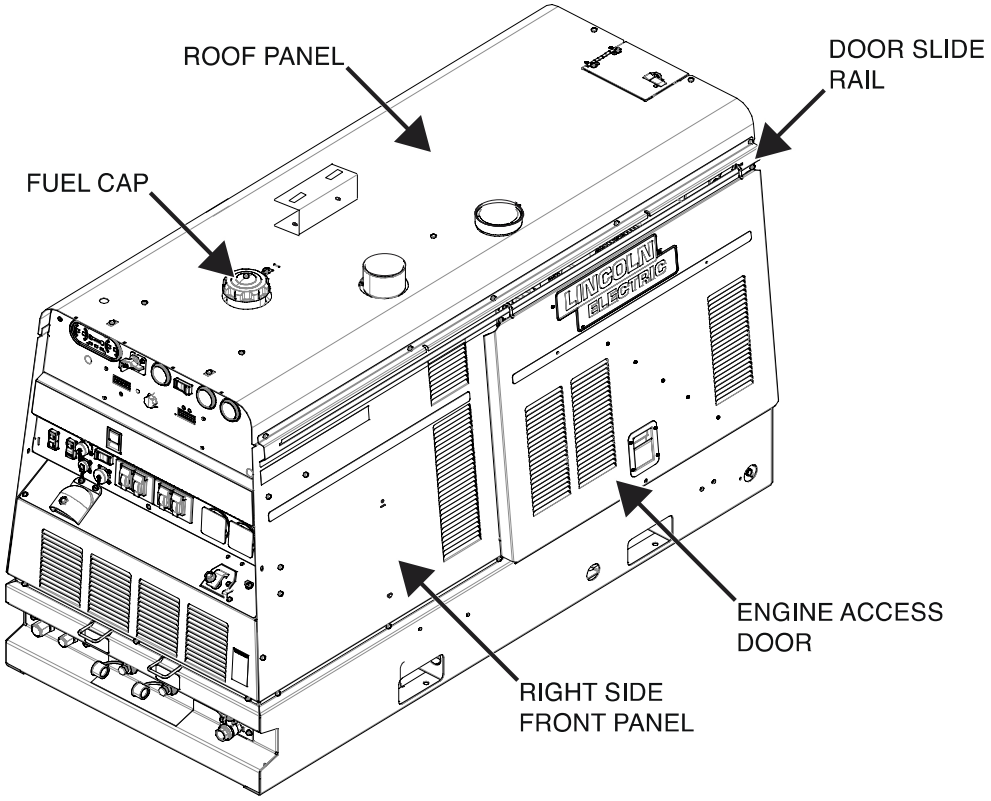
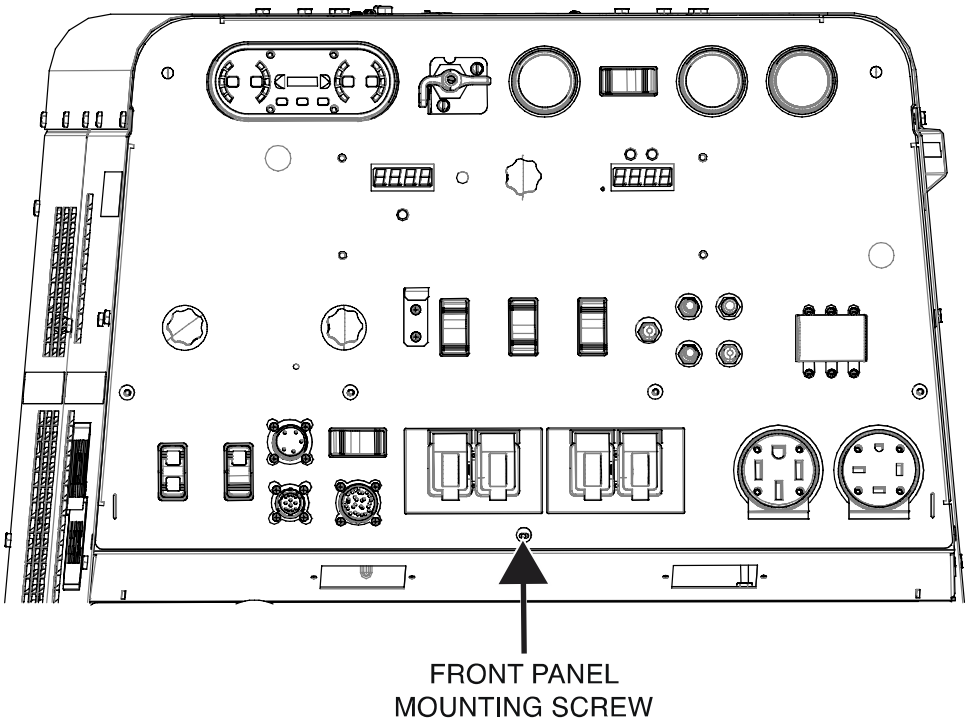


Figure F.2 – Front panel mounting screw location



CAPACITOR DISCHARGE PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will ensure that the Capacitors on the Chopper boards and the Field and Bus Capacitors have been discharged.
This procedure should be performed whenever work is to be attempted on or near the Chopper Boards or Capacitors.

MATERIALS NEEDED

Volt/Ohmmeter
Resistor (25-1000 ohms and 25 watts minimum)
Electrically Insulated Gloves
Electrically Insulated Pliers
Jumper Leads
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Locate the chopper boards on either side of the machine. See ***Figures F.3*** and ***F.4***. See Wiring Diagram.
4. NEVER USE A SHORTING STRAP TO DISCHARGE CAPACITORS. If the Lincoln recommended resistor or an equivalent resistor is used, the capacitors can be discharged by holding the resistor with insulated gloves and insulated pliers and using the resistor terminals to bridge the chopper board terminals B1 to B2 and B4 to B5 on each chopper board. DO NOT TOUCH THE TERMINALS OR METAL PARTS OF THE PLIERS WITH YOUR BARE HANDS. Hold the resistor in place for about ten seconds. If another type of resistor is used, jumper leads may need to be attached to the resistor. The leads can then be used to connect terminals B1 to B2 and B4 to B5 on the chopper boards. See ***Figures F.5*** and ***F.6***. See Wiring Diagram.
5. Using a volt/ohmmeter, check the voltage across terminals B1 and B2 then across terminals B4 and B5. See ***Figures F.5*** and ***F.6***. See Wiring Diagram. Voltage should be zero.
6. If any voltage is present, repeat step 4 until reading is zero volts.
7. Locate the field and bus capacitors. The field capacitor is located on the lower rear of the fan baffle on the right side of the machine, the bus capacitor is located in the control box. See ***Figures F.7***. See Wiring Diagram.

8. NEVER USE A SHORTING STRAP TO DISCHARGE CAPACITORS. If the Lincoln recommended resistor or an equivalent resistor is used, the capacitors can be discharged by holding the resistor with insulated gloves and insulated pliers and using the resistor terminals to bridge the capacitor terminals. DO NOT TOUCH THE TERMINALS OR METAL PARTS OF THE PLIERS WITH YOUR BARE HANDS. Hold the resistor in place for about ten seconds. If another type of resistor is used, jumper leads may need to be attached to the resistor. The leads can then be used to connect the capacitor terminals. See ***Figure F.8***. See Wiring Diagram.
9. Using a volt/ohmmeter, check the voltage across the capacitor terminals. See ***Figure F.8***. See Wiring Diagram. Voltage should be zero.
10. If any voltage is present, repeat step 8 until reading is zero volts.
11. Perform the ***Case Cover Replacement Procedure***.

Figure F.3 – Left side chopper board location

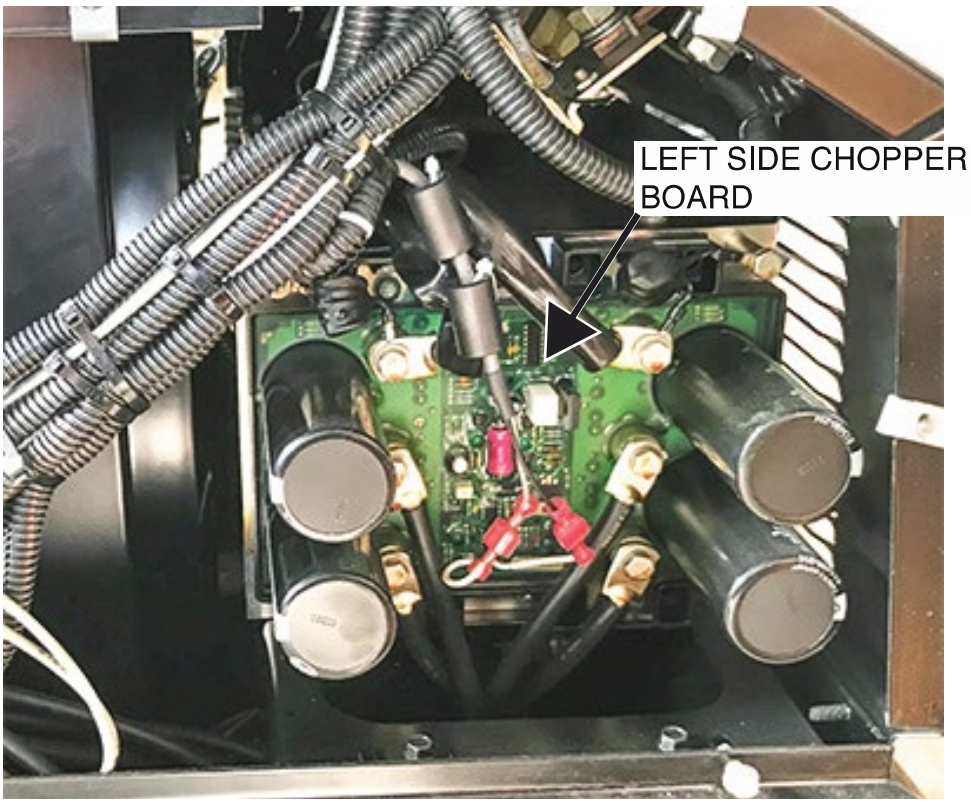


Figure F.4 – Right side chopper board location

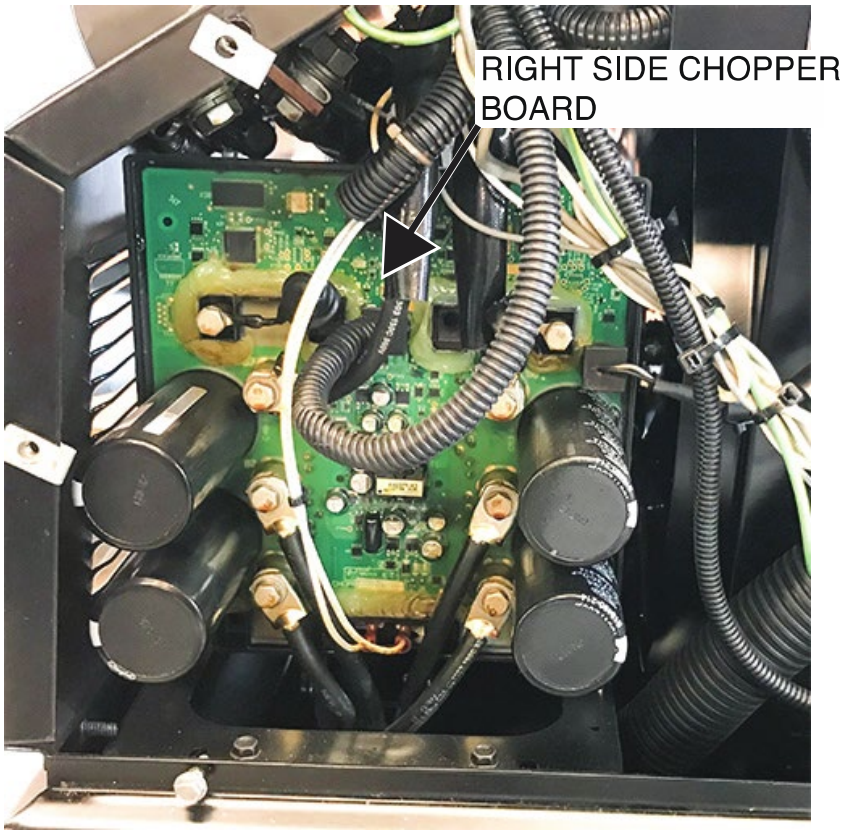


Figure F.5 – Left side chopper board discharge

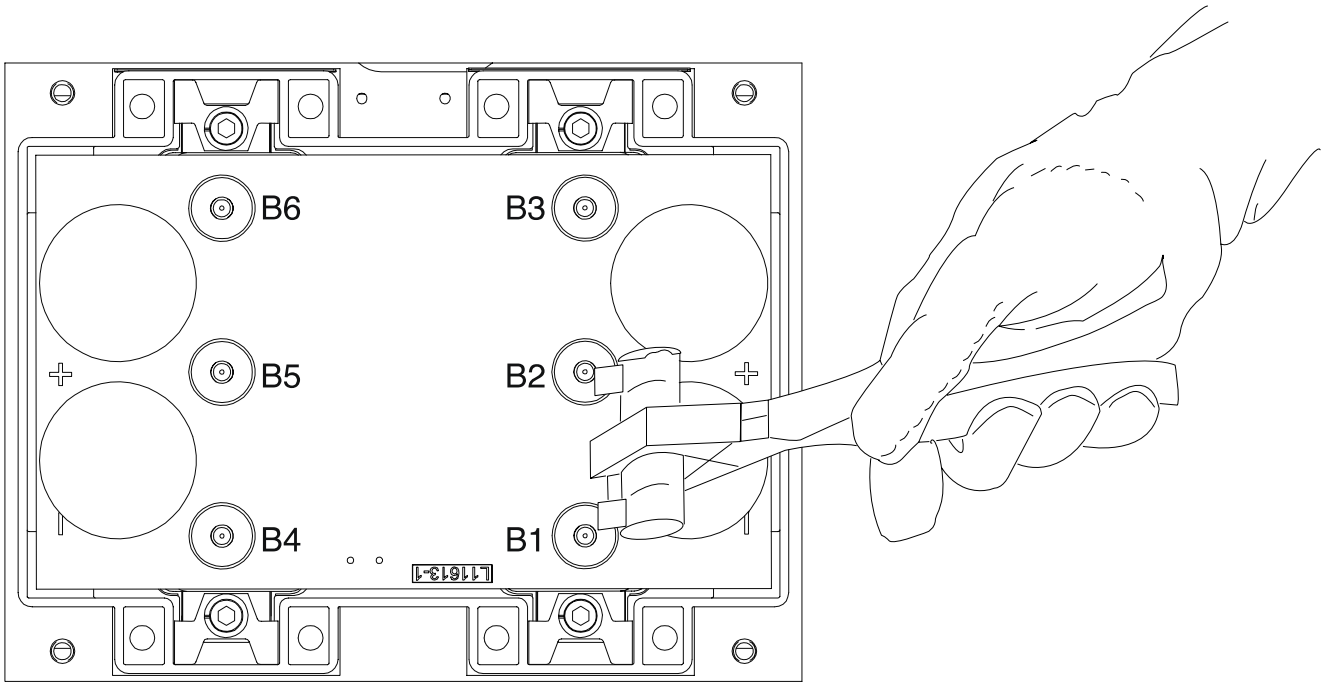


Figure F.6 – Right side chopper board discharge

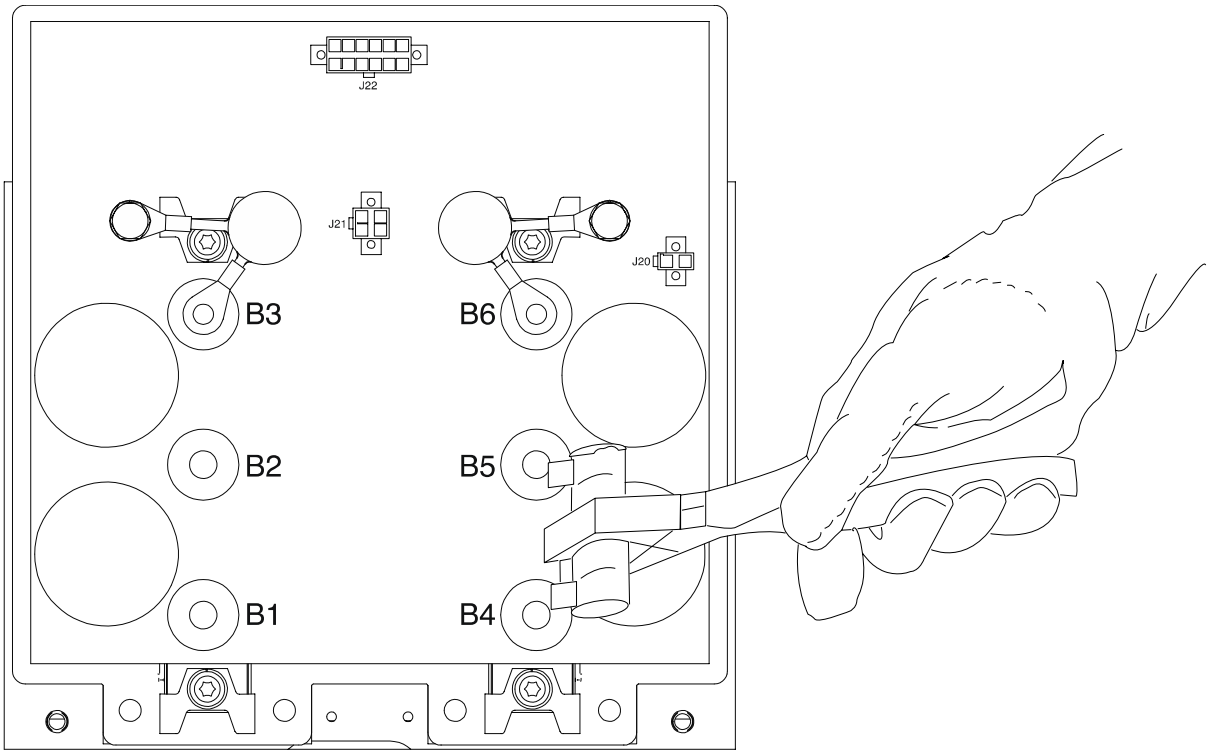


Figure F.7 – Bus capacitor location

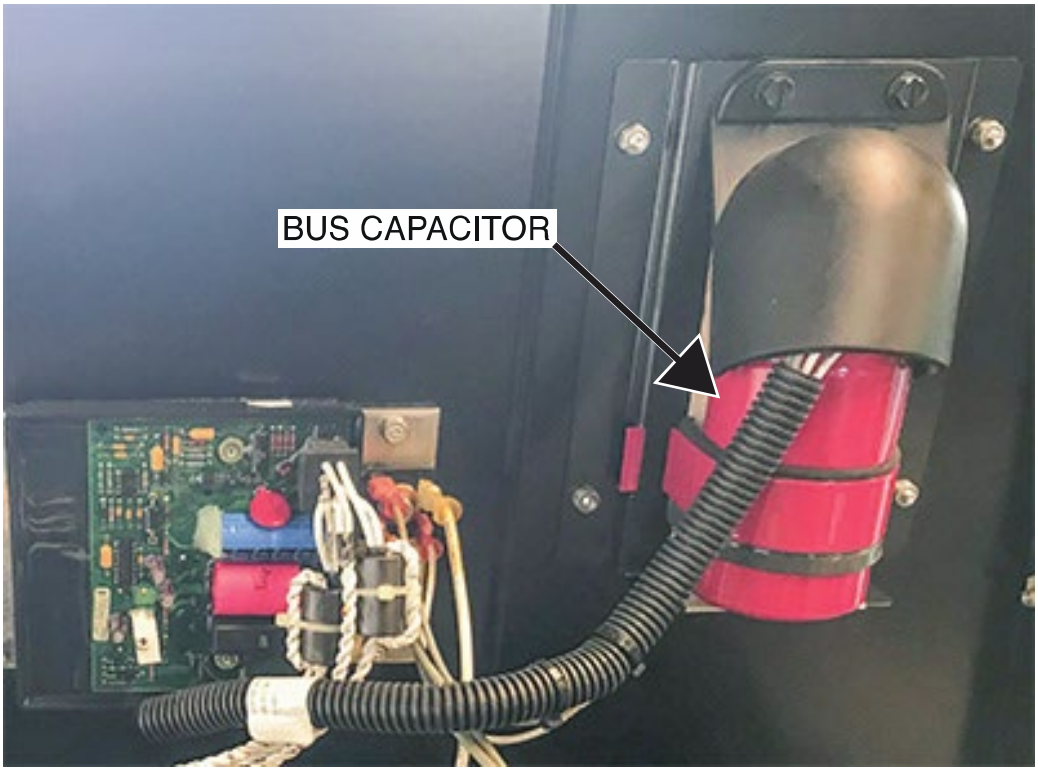
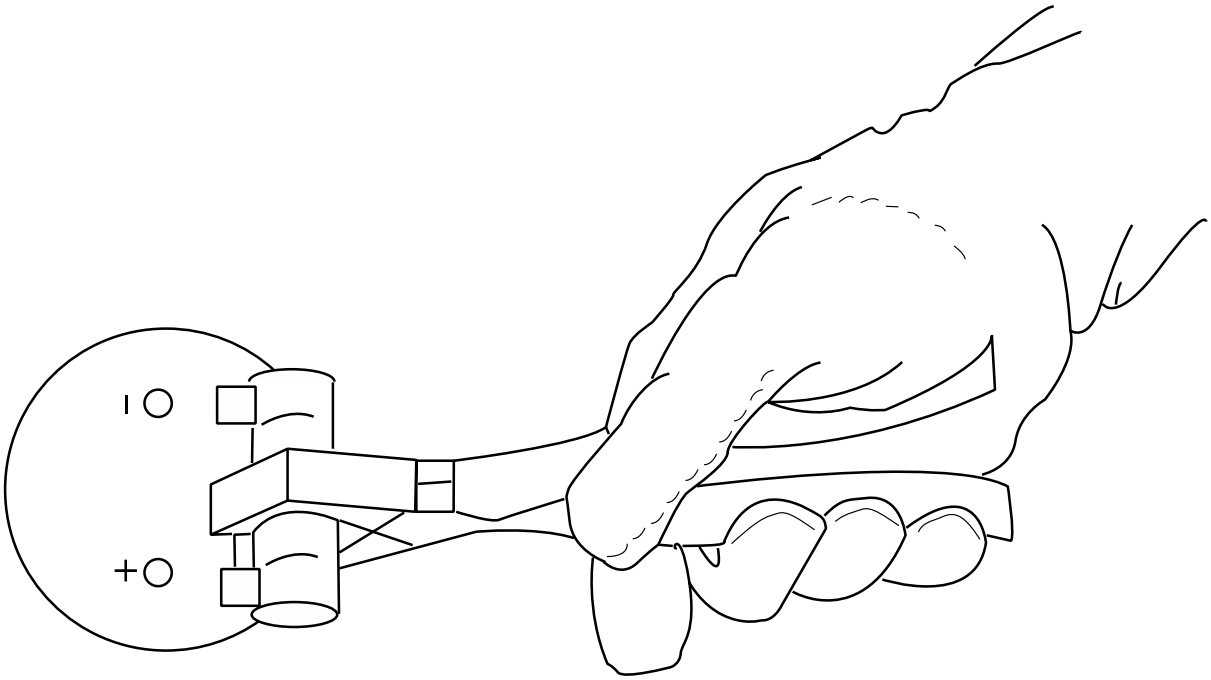


Figure F.8 – Capacitor discharge



BRUSH AND SLIP RING SERVICE PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure provides guidance in testing and maintaining the Brush and Slip Ring system.

MATERIALS NEEDED

Volt/Ohmmeter
500 or 600 Grit Sand Paper
180 Grit Sand Paper
Low Pressure Compressed Air
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Remove the brush holder bracket.
5. Examine brushes and slip rings. The slip rings, brush holder and brushes should be clean and free from oil or grease. The brushes should be making good, continuous contact with the slip rings.
6. The brushes should be of sufficient length and have adequate spring tension. Generally, the brushes should be replaced if either brush has less than 1/4” remaining before it reaches the end of its travel. Spring tension should be sufficient to hold the brushes firmly against the slip rings.
7. The brushes should be removed from the brush holder and examined. The terminals should be clean. The shunt, (braided lead connecting the carbon brush to the terminal) should be in good condition and firmly connected to the carbon brush and to the connection terminal.
8. If the slip rings are discolored, display evidence of excessive sparking or the brushes have worn prematurely; these may be signs of a grounded or shorted rotor. Perform the ***Rotor Resistance and Ground Test Procedures (Static)*** and ***(Dynamic)***.
9. Check for evidence of sticking brushes. Sticking brushes will normally result in the slip rings being pitted and discolored from excessive arcing. Another sign of sticking brushes is intermittent instability or loss of both weld and auxiliary output. If there is any evidence that the brushes may have been sticking in the brush holders, a new brush holder and brush assembly should be installed.

CLEANING SLIP RINGS:

10. In the event that the slip rings have become dirty, discolored or mildly pitted, it will be necessary to clean them, using very fine, 500 or 600 grit sand paper.

SEATING BRUSHES:

11. If brushes have been replaced, repositioned or are not making full contact with the slip rings, it may be necessary to re-seat them. This can be done by placing a strip of 180 grit sandpaper between the slip rings and the brushes, with the abrasive side against the brushes. Pull the sandpaper strip around the circumference of the slip rings in the direction of rotor rotation only. Repeat this procedure until the surface of each brush is in full contact with its matching slip ring.
12. Use a low pressure compressed air to thoroughly blow the carbon and/or sandpaper dust from the machine before operating.
13. Perform the ***Case Cover Replacement Procedure***.

THERMOSTAT TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Thermostat is functioning properly.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Locate the thermostat on the right side chopper board. See ***Figure F.9***. See Wiring Diagram.
5. Label and disconnect plug J22 from the right side chopper board. See ***Figure F.9***. See Wiring Diagram.
6. Using a volt/ohmmeter, measure the resistance from pin 4 to pin 8 of plug J22. See ***Figures F.9*** and ***F.10***. See Wiring Diagram. Normal resistance is less than one ohm at normal operating temperatures.
7. If the resistance is high and the machine is at normal operating temperature, label and disconnect leads from the terminals of the thermostat and retest directly on the thermostat terminals. See Wiring Diagram.
8. If the test fails, the thermostat may be faulty.
9. If faulty, perform the ***Thermostat Removal And Replacement Procedure***.
10. Connect the previously disconnected leads to the thermostat and plug J22 to the right side chopper board. See Wiring Diagram.
11. Perform the ***Case Cover Replacement Procedure***.

Figure F.9 – Thermostat and plug J22 locations

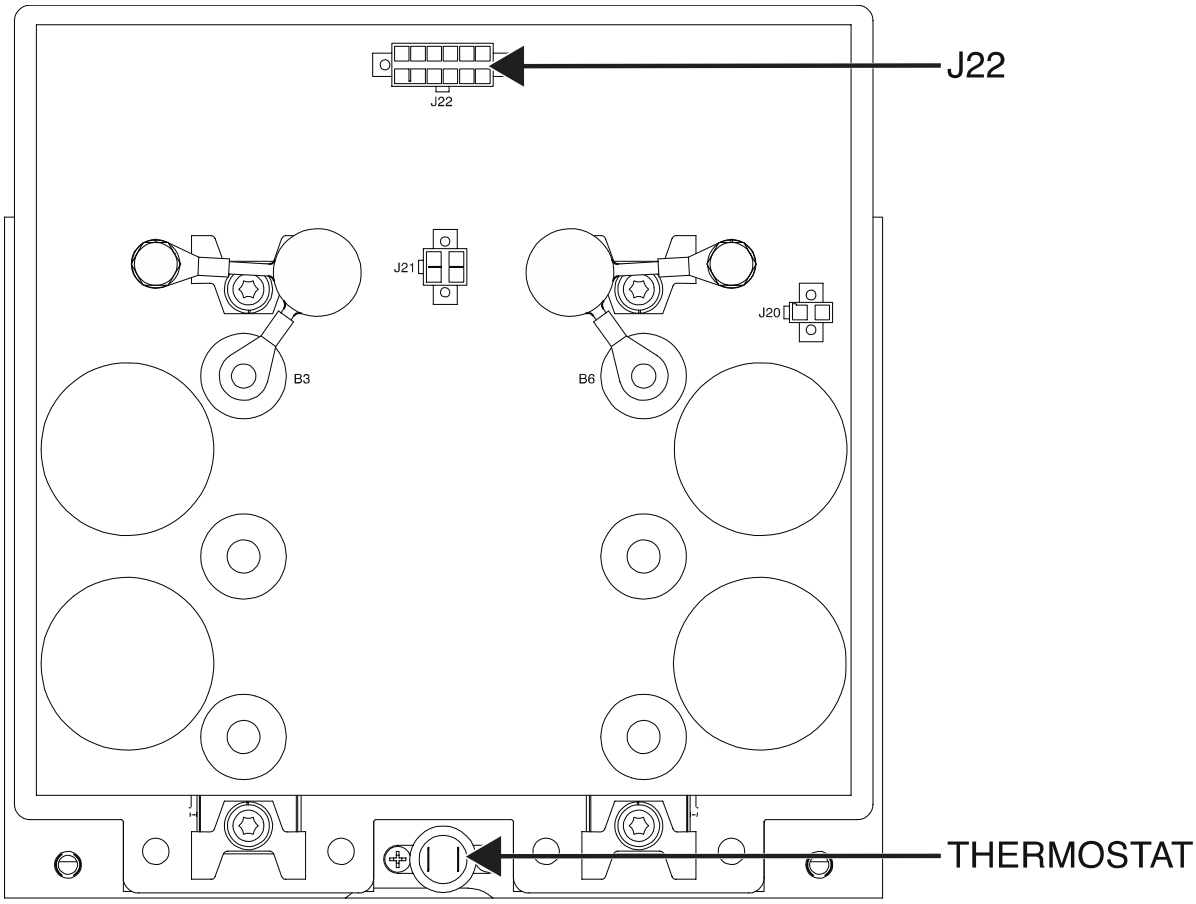
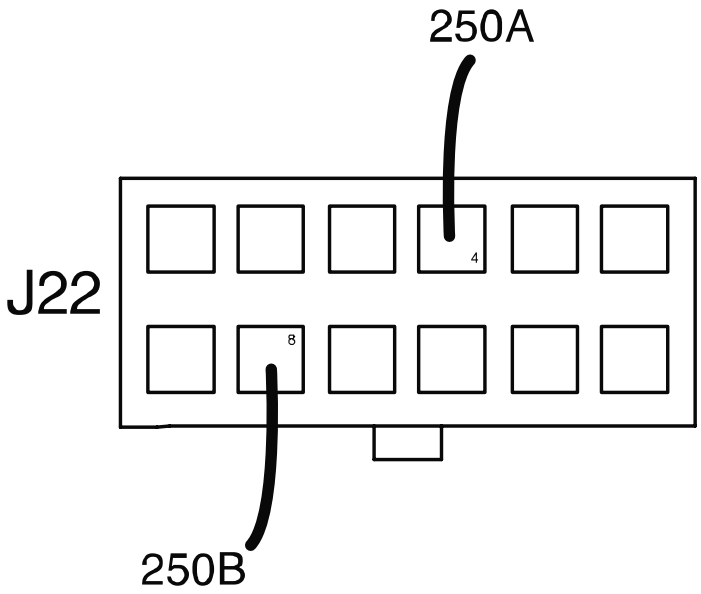


Figure F.10 – Right side chopper board plug J22 lead locations



40 VDC BUS BOARD TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the 40 VDC Bus Board is functioning properly.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Locate the 40 VDC bus board. See ***Figure F.11***.
5. Start the engine and let it run and stabilize at high idle RPM.
6. Locate the Red LED on the 40 VDC bus board. See ***Figure F.12***.
7. If the Red LED is illuminated the 40 VDC bus board is receiving rectified and filtered input voltage from the stator winding.
8. If the Red LED is not illuminated, perform the ***Stator Voltage Test Procedure*** and the ***D1 & D2 Rectifier Test Procedure***, for the D2 rectifier. See Wiring Diagram.
9. Using a volt/ohmmeter, perform the voltage tests outlined in ***Table F.1***. See ***Figures F.12*** and ***F.13***. See Wiring Diagram.
10. If the input voltage is significantly less than 58 VDC, the capacitor may be faulty.
11. If the correct input voltage is being applied to the 40 VDC bus board and the correct output voltages are not being generated, the 40 VDC bus board may be faulty.
12. If faulty, perform the ***40 VDC Bus Board Removal And Replacement Procedure***.
13. Perform the ***Case Cover Replacement Procedure***.

Table F.1 – 40 VDC bus board voltage tests

DESCRIPTION	TEST POINT	TEST POINT	EXPECTED READING
INPUT POWER FROM D2 RECTIFIER	PLUG J46 PIN 3 (LEAD 66)	PLUG J46 PIN 2 (LEAD 65)	APPROX. 58 VDC
INPUT POWER TO RIGHT SIDE CHOPPER BOARD	PLUG J47 PIN 1 (LEAD 51)	PLUG J47 PIN 3 (LEAD 52)	40 VDC
INPUT POWER TO 12 PIN REMOTE AMPHENOL	PLUG J47 PIN 4 (LEAD 52A)	PLUG J47 PIN 5 (LEAD 51A)	40 VDC
INPUT POWER TO 5 PIN REMOTE AMPHENOL	PLUG J47 PIN 8 (LEAD 52B)	PLUG J47 PIN 6 (LEAD 51B)	40 VDC

Figure F.11 – 40 VDC bus board location

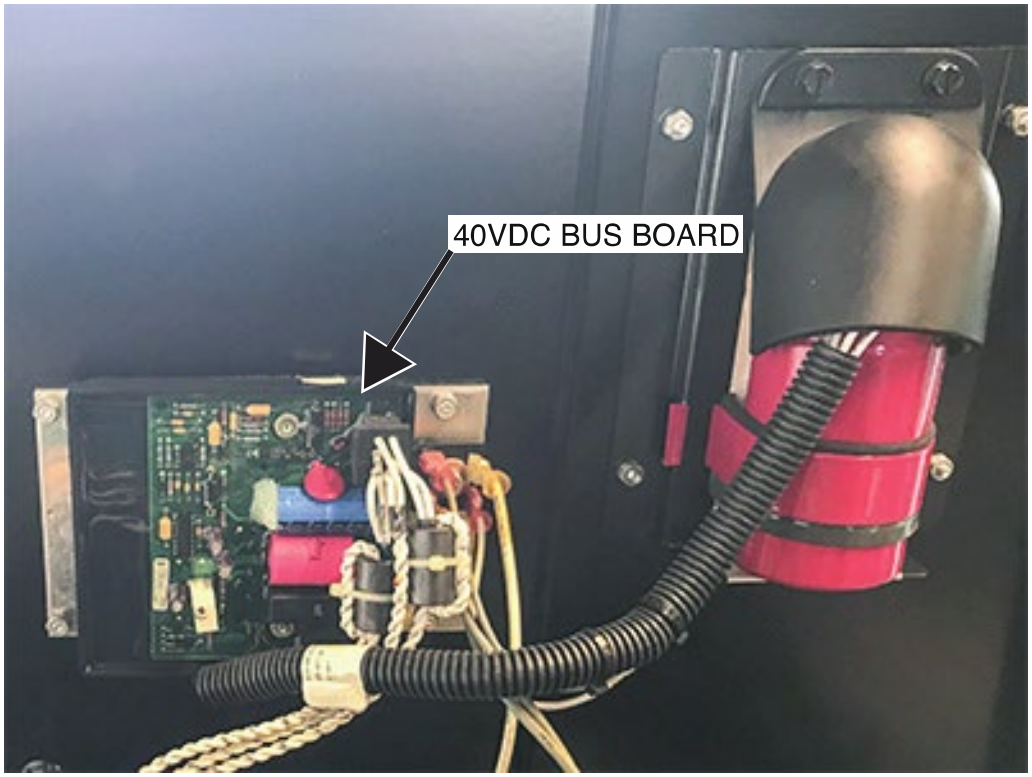


Figure F.12 – 40 VDC bus board plug and LED locations

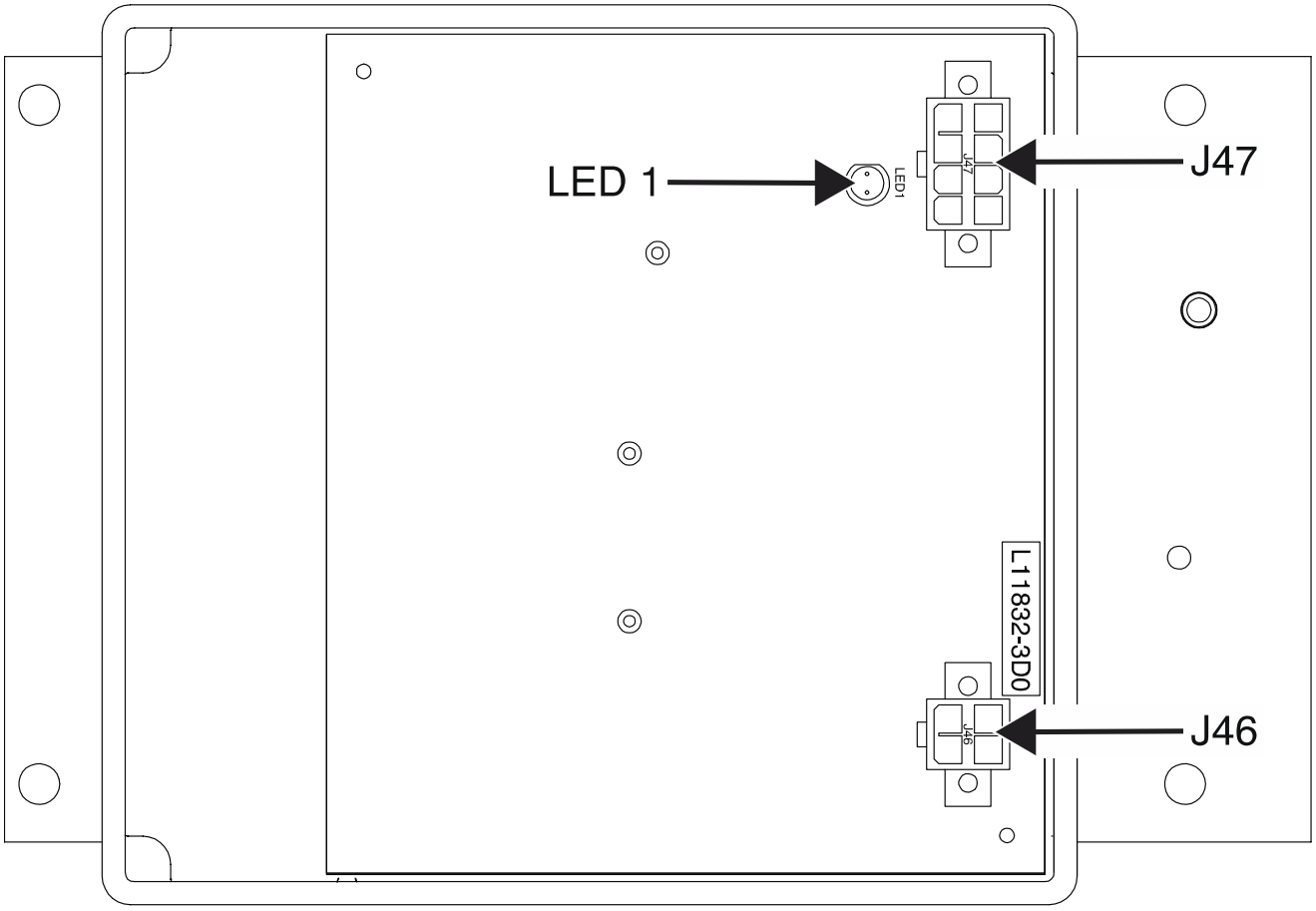
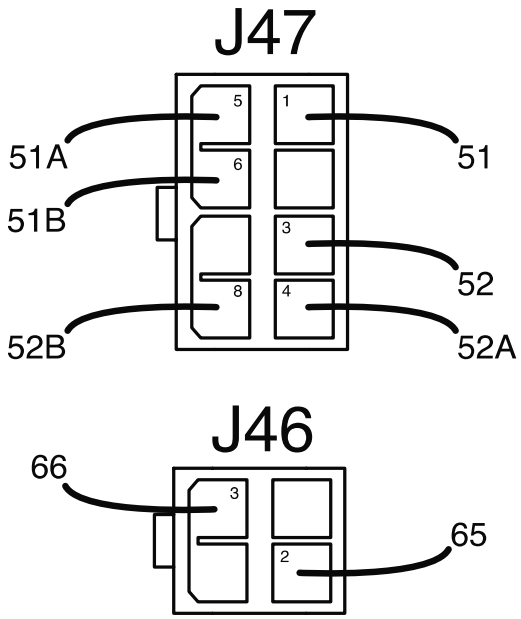


Figure F.13 – 40 VDC bus board pin and lead locations



D1 & D2 RECTIFIER TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the D1 & D2 Rectifiers are functioning properly.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Locate the D1 & D2 rectifiers. The D1 rectifier is located on the lower rear of the fan baffle on the right side. The D2 rectifier is located in the control box. See ***Figure F.14***. See Wiring Diagram.
5. Label and disconnect leads 200, 200A, 201A, 5H and F1 from the D1 rectifier. See ***Figure F.15***. See Wiring Diagram.
6. Using a volt/ohmmeter, perform the forward diode drop tests outlined in ***Table F.2***. See ***Figure F.15***. See Wiring Diagram.
7. If any of the tests fail, the D1 rectifier may be faulty.
8. If faulty, perform the ***D1 Rectifier Removal And Replacement Procedure***.
9. Connect leads 200, 200A, 201A, 5H and F1 to the D1 rectifier. See Wiring Diagram.
10. Label and disconnect leads 65A, 66A, 45 and 46A from the D2 rectifier. See ***Figure F.15***. See Wiring Diagram.
11. Using a volt/ohmmeter, perform the forward diode drop tests outlined in ***Table F.2***. See ***Figures F.14*** and ***F.15***. See Wiring Diagram.
12. If any of the tests fail, the D2 rectifier may be faulty.
13. If faulty, perform the ***D2 Rectifier Removal And Replacement Procedure***.
14. Connect leads 65A, 66A, 45 and 46A to the D2 rectifier. See Wiring Diagram
15. Perform the ***Case Cover Replacement Procedure***.

Table F.2 – D1 & D2 rectifier forward diode drop tests

TEST POINT (POS)	TEST POINT (NEG)	EXPECTED READING
TOP AC TERMINAL	POSITIVE TERMINAL	0.3 VDC – 0.7 VDC
BOTTOM AC TERMINAL	POSITIVE TERMINAL	0.3 VDC – 0.7 VDC
NEGATIVE TERMINAL	TOP AC TERMINAL	0.3 VDC – 0.7 VDC
NEGATIVE TERMINAL	BOTTOM AC TERMINAL	0.3 VDC – 0.7 VDC

Figure F.14 – D2 rectifier location

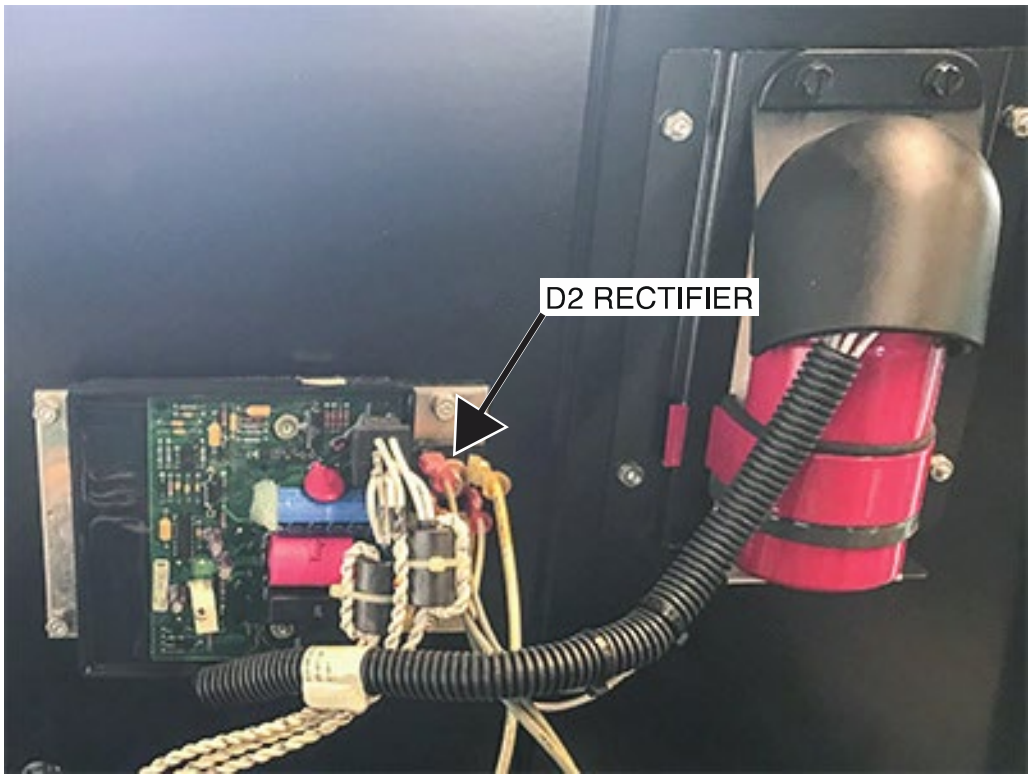
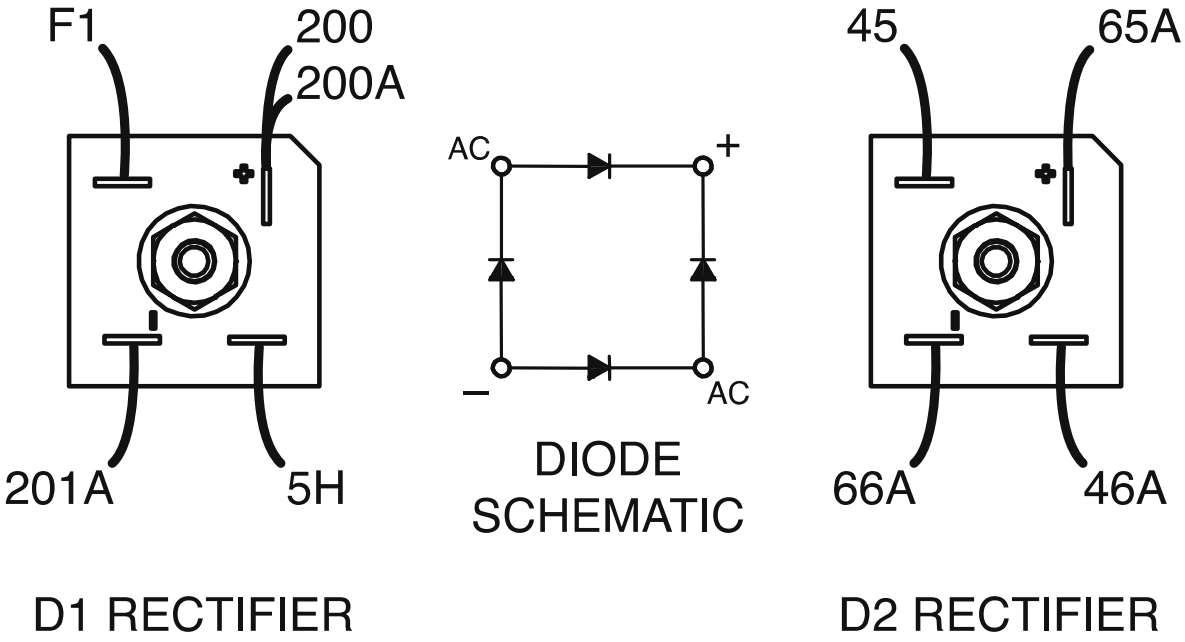


Figure F.15 – D1 & D2 rectifier schematic and lead locations



MODE SELECT BOARD TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Mode Select Board is functioning properly.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Locate the mode select knob. See ***Figure F.16***. See Wiring Diagram.
5. Label and disconnect plug J1 from the rear of the mode select board. See ***Figure F.17***. See Wiring Diagram.
6. Using a volt/ohmmeter, perform the resistance tests outlined on ***Table F.3***. Resistance measurements should be taken directly at plug J1 on the mode select board. See ***Figures F.16*** and ***F.17***. See Wiring Diagram.
7. If any of the tests fail, the mode select board may be faulty.
8. If faulty, perform the ***Mode Select Board Removal And Replacement Procedure***.
9. Connect any previously disconnected leads. See Wiring Diagram.
10. Perform the ***Case Cover Replacement Procedure***.

Table F.3 – Mode select board resistance tests

TEST POINT	TEST POINT	EXPECTED READING	MODE SWITCH POSITION
PLUG J1 PIN 1	PLUG J1 PIN 2	4.66K OHMS	CV MODE
PLUG J1 PIN 1	PLUG J1 PIN 2	OL	ARC GOUGE MODE
PLUG J1 PIN 1	PLUG J1 PIN 2	2.17K OHMS	DOWNHILL PIPE MODE
PLUG J1 PIN 1	PLUG J1 PIN 2	1.33K OHMS	CC STICK MODE
PLUG J1 PIN 1	PLUG J1 PIN 2	910 OHMS	TOUCH START TIG
PLUG J1 PIN 1	PLUG J1 PIN 2	800 OHMS	ARCLINK
PLUG J1 PIN 1	PLUG J1 PIN 4	4K OHMS	CV MODE
PLUG J1 PIN 1	PLUG J1 PIN 4	OL	ARC GOUGE MODE
PLUG J1 PIN 1	PLUG J1 PIN 4	1500 OHMS	DOWNHILL PIPE MODE
PLUG J1 PIN 1	PLUG J1 PIN 4	700 OHMS	CC STICK MODE
PLUG J1 PIN 1	PLUG J1 PIN 4	250 OHMS	TOUCH START TIG
PLUG J1 PIN 1	PLUG J1 PIN 4	110 OHMS	ARCLINK

Figure F.16 – Mode select knob location

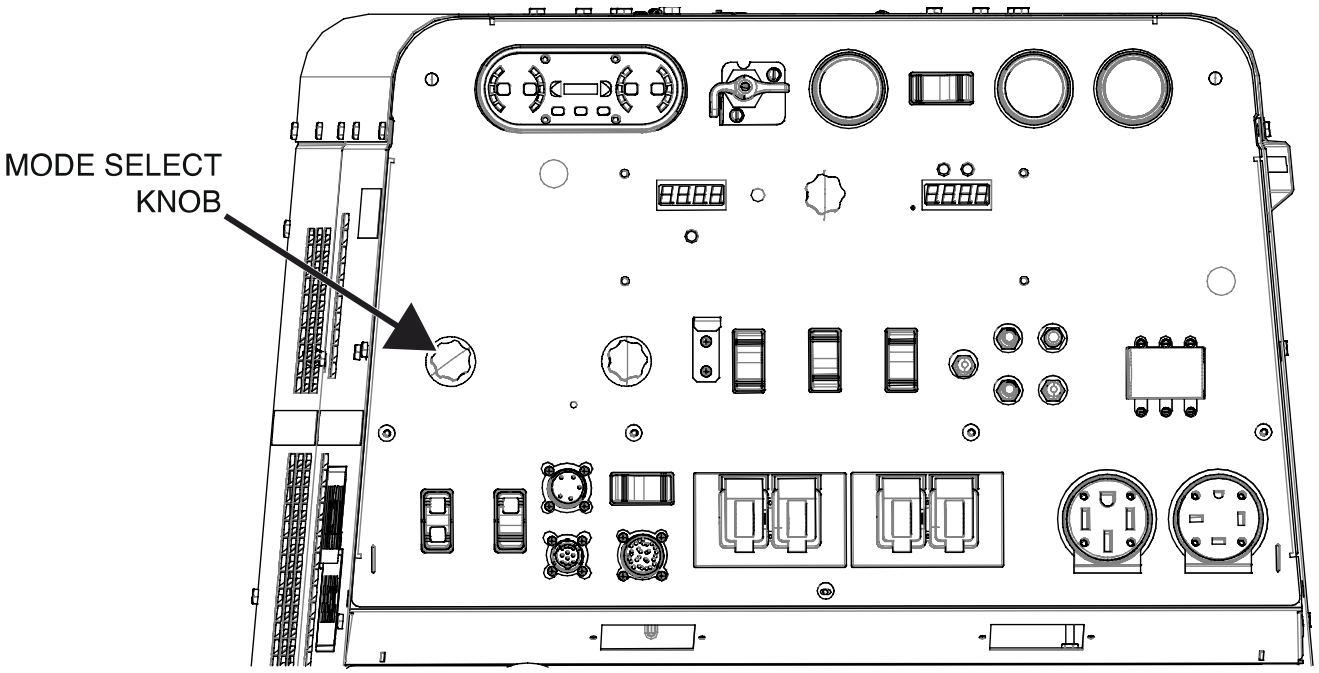
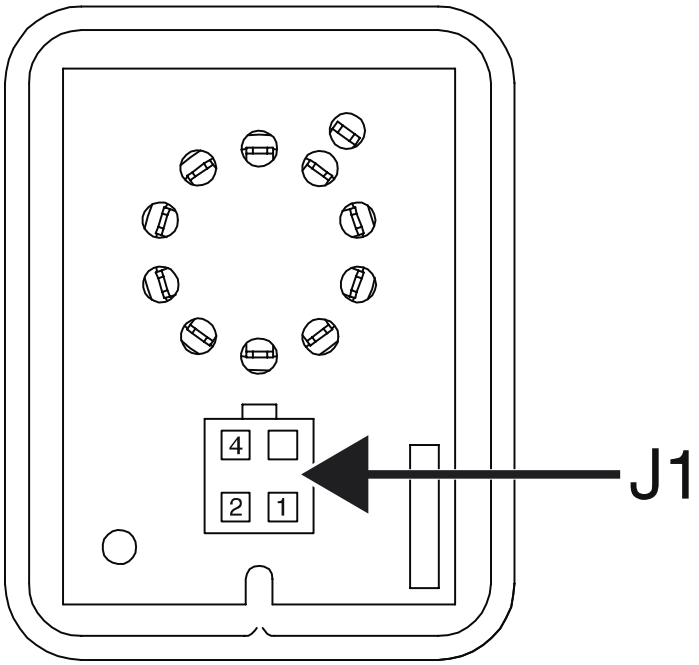


Figure F.17 – Mode select board plug and pin locations



RUN / IDLE SWITCH TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Run / Idle Switch is functioning properly.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Locate the run / idle switch. See ***Figure F.18***. See Wiring Diagram.
5. Label and disconnect leads 232, 232A, 232Z, 236A, 5S, 256, 256A and 257 from the terminals of the run / idle switch. See ***Figure F.19***. See Wiring Diagram.
6. Using a volt/ohmmeter, perform the resistance tests outlined in ***Table F.4***. See ***Figure F.19***. See Wiring Diagram.
7. Using a volt/ohmmeter, perform the diode drop tests outlined in ***Table F.5***. See ***Figure F.19***. See Wiring Diagram.
8. If any of the tests fail, the run / idle switch may be faulty.
9. If faulty, perform the ***Run / Idle Switch Removal And Replacement Procedure***.
10. Connect leads 232, 232A, 232Z, 236A, 5S, 256, 256A and 257 to the terminals of the run / idle switch. See Wiring Diagram.
11. Perform the ***Case Cover Replacement Procedure***.

Table F. 4 – Run / idle switch resistance tests

TEST POINT (+)	TEST POINT (–)	EXPECTED READING	POSITION
TERMINAL 2	TERMINAL 3	LESS THAN ONE OHM (LOW RESISTANCE)	HIGH IDLE/RUN
TERMINAL 5	TERMINAL 6	LESS THAN ONE OHM (LOW RESISTANCE)	HIGH IDLE/RUN
TERMINAL 2	TERMINAL 3	LESS THAN ONE OHM (LOW RESISTANCE)	AUTO IDLE/RUN
TERMINAL 5	TERMINAL 6	AT LEAST 500K OHMS (HIGH RESISTANCE)	AUTO IDLE/RUN
TERMINAL 2	TERMINAL 3	AT LEAST 500K OHMS (HIGH RESISTANCE)	STOP/OFF
TERMINAL 5	TERMINAL 6	AT LEAST 500K OHMS (HIGH RESISTANCE)	STOP/OFF

Table F. 5 – Run / idle switch diode test

TEST POINT (+)	TEST POINT (–)	EXPECTED READING
TERMINAL 8	TERMINAL 7	FORWARD BIAS
TERMINAL 7	TERMINAL 8	REVERSE BIAS

Figure F.18 – Run / idle switch location

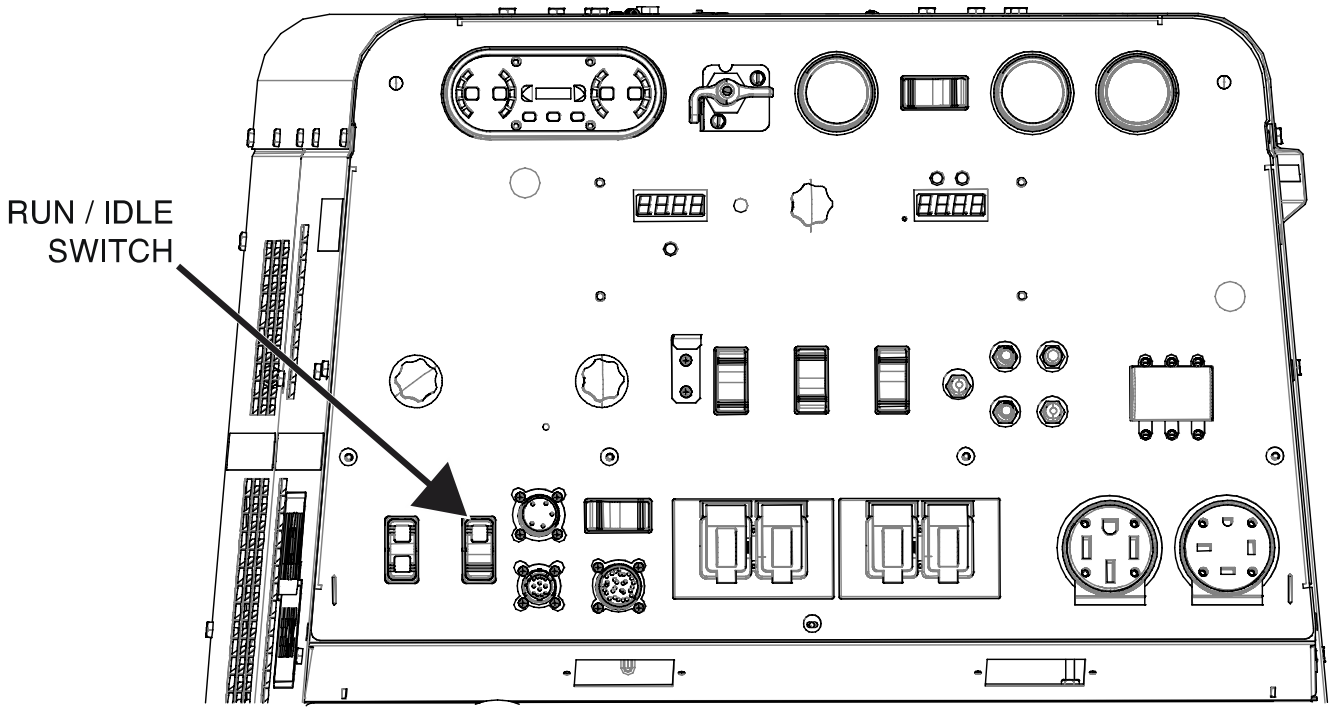
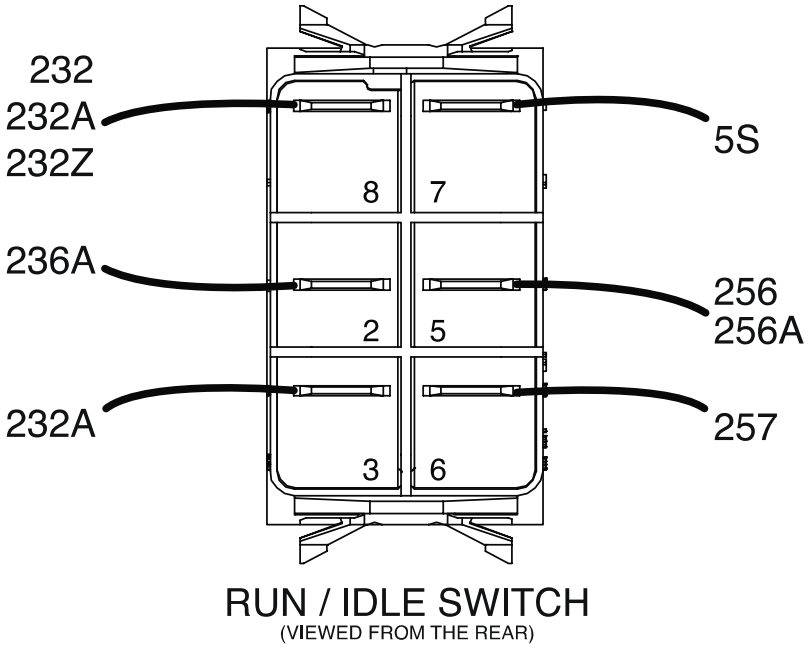


Figure F.19 – Run / idle switch lead locations



START / GLOW SWITCH TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Start / Glow Switch is functioning properly.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Locate the start / glow switch. See ***Figure F.20***. See Wiring Diagram.
5. Label and disconnect leads 232N, 232NA, ECB70, ECB48, ECB35 and ECB65 from the terminals of the start / glow switch. See ***Figure F.21***. See Wiring Diagram.
6. Using a volt/ohmmeter, perform the resistance tests outlined in ***Table F.6***. See ***Figure F.21***. See Wiring Diagram.
7. If any of the tests fail, the start / glow switch may be faulty.
8. If faulty, perform the ***Start / Glow Switch Removal And Replacement Procedure***.
9. Connect leads 232N, 232NA, ECB70, ECB48, ECB35 and ECB65 to the terminals of the run / idle switch. See Wiring Diagram.
10. Perform the ***Case Cover Replacement Procedure***.

Table F. 6 – Start / glow switch resistance tests

TEST POINT (+)	TEST POINT (–)	EXPECTED READING	POSITION
TERMINAL 2 (LEAD 232N)	TERMINAL 3 (LEAD ECB70)	LESS THAN ONE OHM (LOW RESISTANCE)	POSITION 1 (GLOW / START)
TERMINAL 2 (LEAD 232N)	TERMINAL 3 (LEAD ECB70)	AT LEAST 500K OHMS (HIGH RESISTANCE)	POSITION 2 (OFF)

Figure F.20 – Start / glow switch location

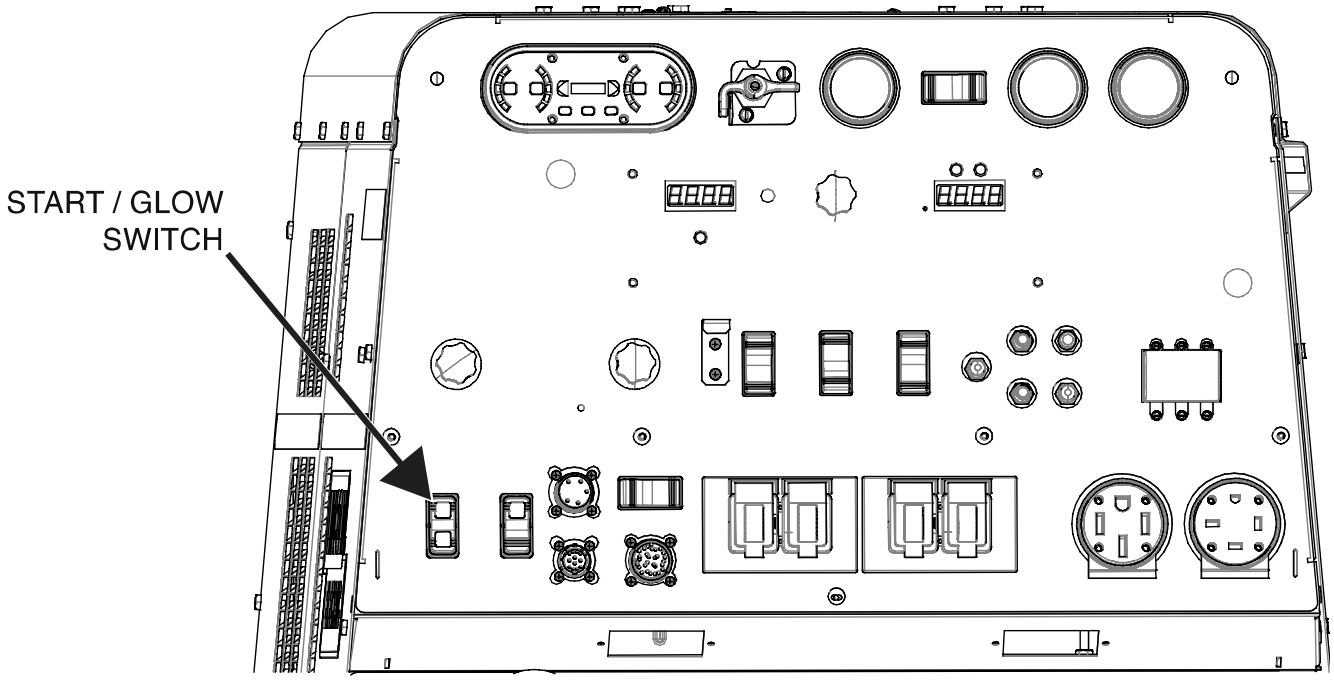
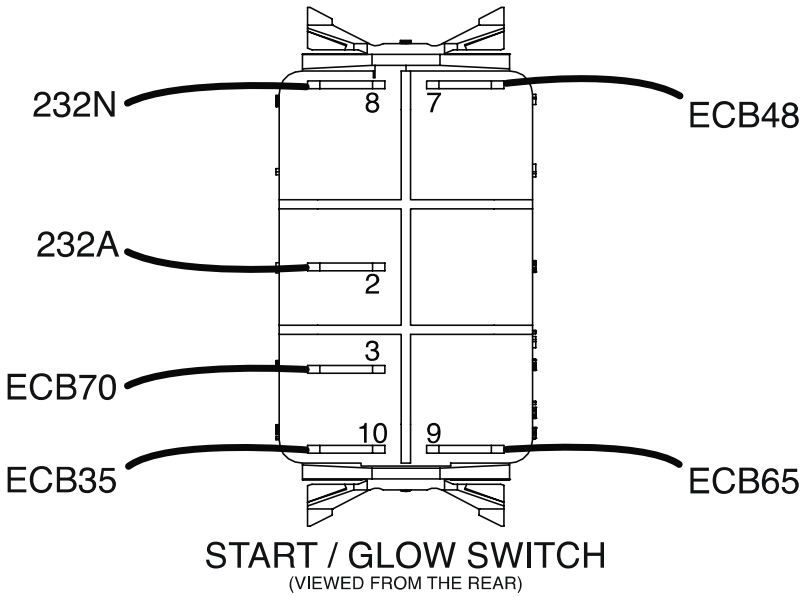


Figure F.21 – Start / glow switch lead locations



HYDRAULIC PUMP / AIR COMPRESSOR POWER SWITCH TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Hydraulic Pump / Air Compressor Power Switch is functioning properly.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Locate the hydraulic pump / air compressor power switch. See ***Figure F.22***. See Wiring Diagram.
5. Label and disconnect leads 232Z, VM4, VM5, VM18, 213, 213A and 232E from the terminals of the hydraulic pump / air compressor power switch. See ***Figure F.23***. See Wiring Diagram.
6. Using a volt/ohmmeter, perform the resistance tests outlined in ***Table F.7***. See ***Figure F.23***. See Wiring Diagram.
7. If any of the tests fail, the run / idle switch may be faulty.
8. If faulty, perform the ***Hydraulic Pump / Air Compressor Power Switch Removal And Replacement Procedure***.
9. Connect leads 232Z, VM4, VM5, VM18, 213, 213A and 232E to the terminals of the hydraulic pump / air compressor power switch. See Wiring Diagram.
10. Perform the ***Case Cover Replacement Procedure***.

Table F. 7 – Hydraulic pump / air compressor power switch resistance tests

TEST POINT (+)	TEST POINT (–)	EXPECTED READING	POSITION
TERMINAL 2	TERMINAL 8	LESS THAN ONE OHM (LOW RESISTANCE)	HYDRAULIC PUMP ON (LEFT POSITION)
TERMINAL 5	TERMINAL 6	LESS THAN ONE OHM (LOW RESISTANCE)	HYDRAULIC PUMP ON (LEFT POSITION)
TERMINAL 2	TERMINAL 3	LESS THAN ONE OHM (LOW RESISTANCE)	OFF (MIDDLE POSITION)
TERMINAL 5	TERMINAL 6	AT LEAST 500K OHMS (HIGH RESISTANCE)	OFF (MIDDLE POSITION)
TERMINAL 2	TERMINAL 3	LESS THAN ONE OHM (LOW RESISTANCE)	AIR COMPRESSOR ON (RIGHT POSITION)
TERMINAL 5	TERMINAL 6	LESS THAN ONE OHM (LOW RESISTANCE)	AIR COMPRESSOR ON (RIGHT POSITION)

Figure F.22 – Hydraulic pump / air compressor power switch location

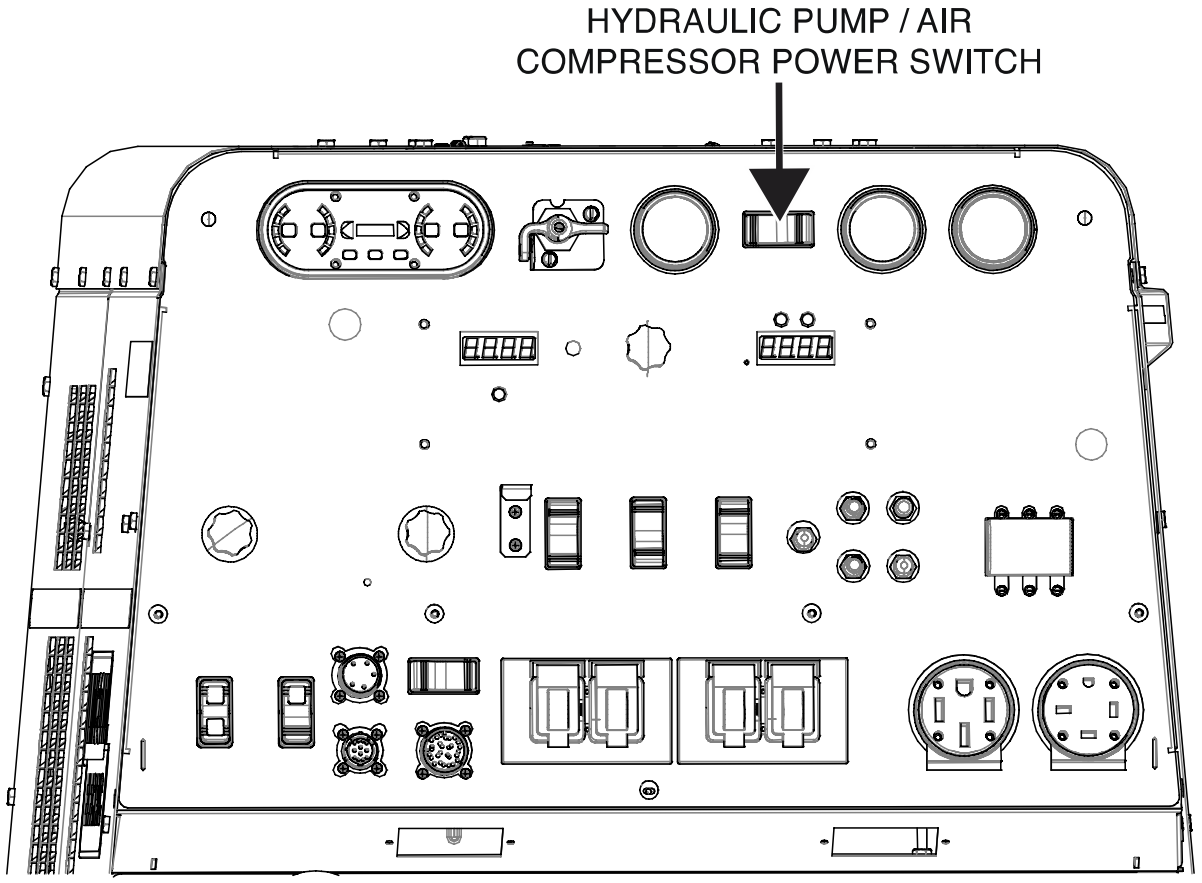
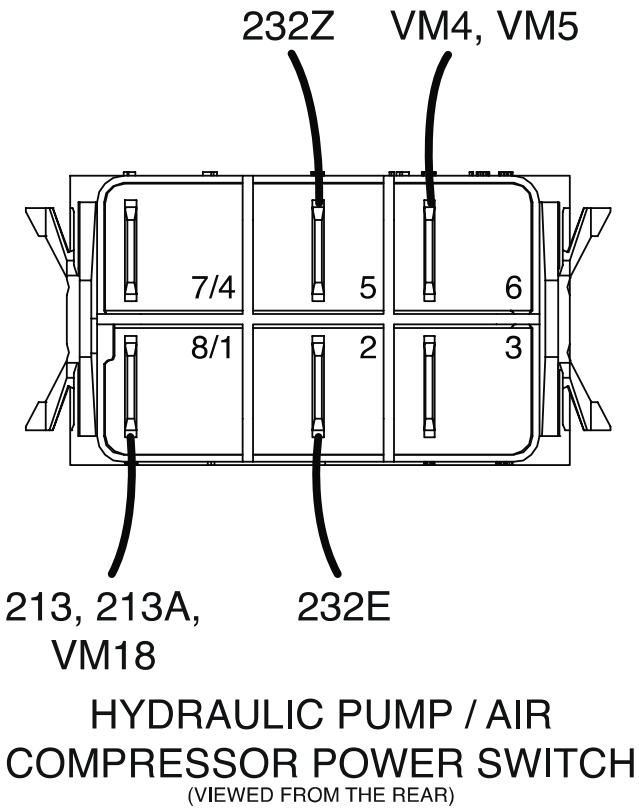


Figure F.23 – Hydraulic pump / air compressor power switch lead locations



FUEL, IDLE, AIR COMPRESSOR (CR1) AND HYDRAULIC PUMP (CR2) RELAY TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Fuel, Idle, Air Compressor (CR1) and Hydraulic Pump (CR2) Relays are functioning properly.

MATERIALS NEEDED

Volt/Ohmmeter
12 VDC Power Supply
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Locate the relay to be tested. The fuel and idle relays are located in the protectors / relay box behind the fuel tank. The air compressor (CR1) and hydraulic pump (CR2) relays are located in the control box. See ***Figures F.24*** and ***F.25***. See Wiring Diagram.
5. Remove the relay to be tested from its mount. To remove relay lift up and out of it's mounting / wiring bracket.
6. Using a volt/ohmmeter, measure the resistance of the relay coil from terminal 86 (+) to terminal 85 (-). See ***Figure F.26***. See Wiring Diagram. Normal resistance should be approximately 90 ohms.
7. Using a volt/ohmmeter and a 12 VDC power supply, perform the tests outlined in ***Table F.8***. See ***Figure F.26***. See Wiring Diagram. Apply positive 12 VDC to terminal 86 and negative to terminal 85.
8. If any of the tests fail, the relay may be faulty, if faulty replace.
9. When testing is complete, place the relay back into it's mounting / wiring bracket. See Wiring Diagram.
10. Perform the ***Case Cover Replacement Procedure***.

Table F.8 – Relay resistance tests

TEST POINT	TEST POINT	EXPECTED READING	MACHINE CONDITION
TERMINAL 87	TERMINAL 30	OPEN (HIGH RESISTANCE)	NO POWER APPLIED TO RELAY COILS.
TERMINAL 87A	TERMINAL 30	CLOSED (LOW RESISTANCE)	NO POWER APPLIED TO RELAY COILS.
TERMINAL 87	TERMINAL 30	CLOSED (LOW RESISTANCE)	12 VDC APPLIED TO RELAY COILS. POSITIVE TO TERMINAL 86.
TERMINAL 87A	TERMINAL 30	OPEN (HIGH RESISTANCE)	12 VDC APPLIED TO RELAY COILS. POSITIVE TO TERMINAL 86.

Figure F.24 – Hydraulic pump and air compressor relay locations

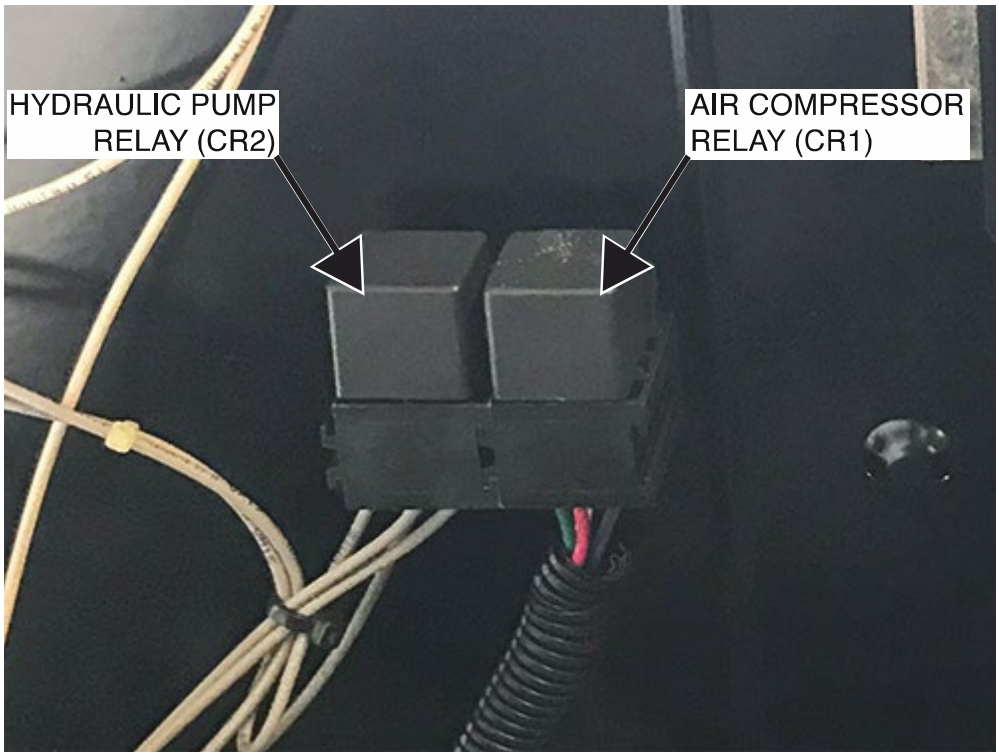


Figure F.25 – Fuel relay and idle relay locations

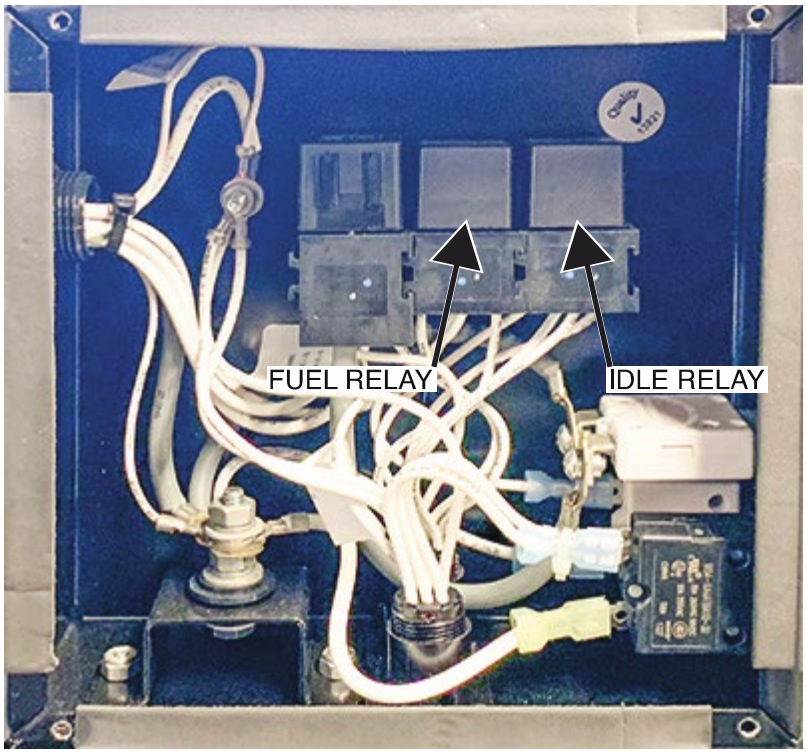
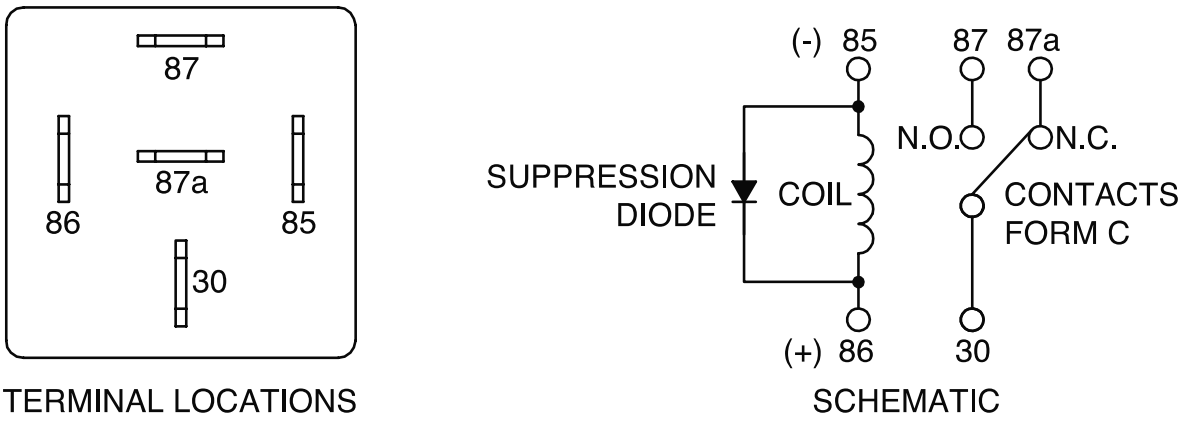


Figure F.26 – Relay terminal locations and schematic



GLOW RELAY TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Glow Relay is functioning properly.

MATERIALS NEEDED

Volt/Ohmmeter
12 VDC Power Supply
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Locate the glow relay. The glow relay is located in the protectors / relay box behind the fuel tank. See ***Figure F.27***. See Wiring Diagram.
5. Remove the glow relay it's mount. To remove relay lift up and out of it's mounting / wiring bracket.
6. Using a volt/ohmmeter, measure the resistance of the glow relay coil from terminal 86 (+) to terminal 85 (-). See ***Figure F.28***. See Wiring Diagram. Normal resistance should be approximately 80 ohms.
7. Using a volt/ohmmeter and a 12 VDC power supply, perform the tests outlined in ***Table F.9***. See ***Figure F.28***. See Wiring Diagram. Apply positive 12 VDC to terminal 86 and negative to terminal 85.
8. If any of the tests fail, the glow relay may be faulty, if faulty, replace.
9. Perform the ***Case Cover Replacement Procedure***.

Table F.9 – Glow relay resistance tests

TEST POINT	TEST POINT	EXPECTED READING	MACHINE CONDITION
TERMINAL 87	TERMINAL 30	OPEN (HIGH RESISTANCE)	NO POWER APPLIED TO RELAY COILS.
TERMINAL 87	TERMINAL 30	CLOSED (LOW RESISTANCE)	12 VDC APPLIED TO RELAY COILS. POSITIVE TO TERMINAL 86.

Figure F.27 – Glow relay location

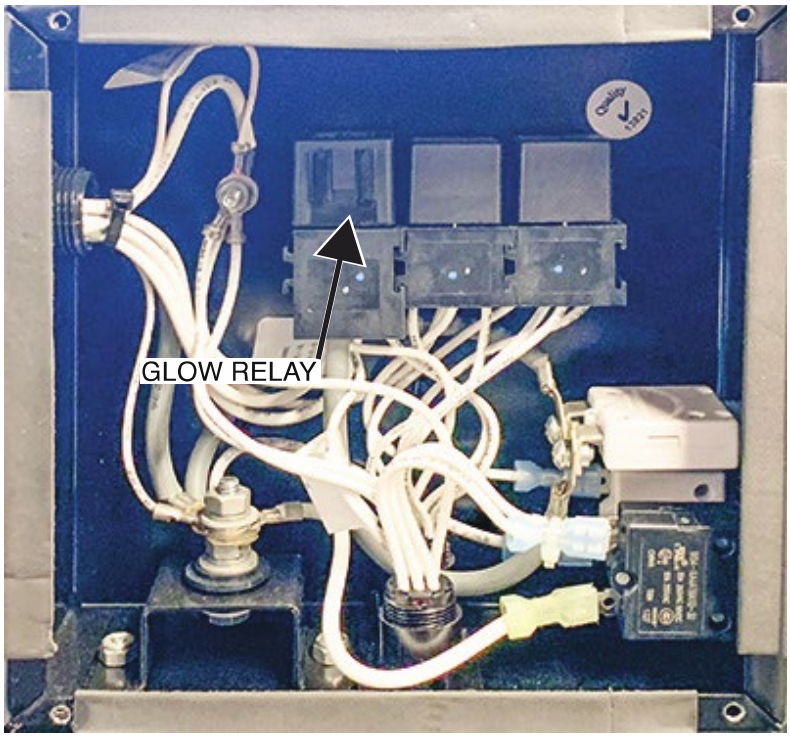
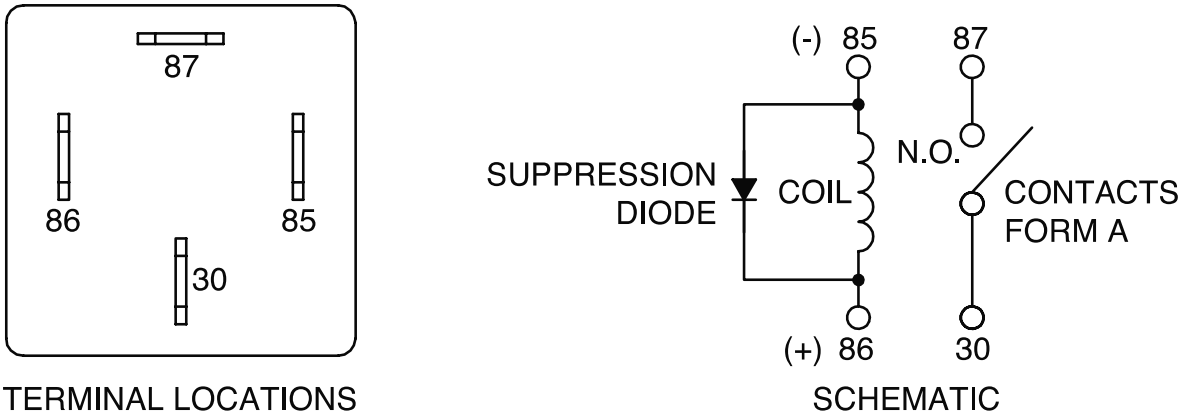


Figure F.28 – Glow relay terminal locations and schematic



ARC CONTROL POTENTIOMETER TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will check the Arc Control Potentiometer and associated wiring for damage and proper operation.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Label and disconnect plug J32 from the chopper user interface board and visually check the plug and attached wiring for damage, corrosion, improperly seated or damaged contact pins. Plug J32 will remain unplugged for the following test. See ***Figure F.29***. See Wiring Diagram.
5. Using a volt/ohmmeter, perform the resistance tests outlined in ***Table F.10***. See ***Figures F.29*** and ***F.30***. See Wiring Diagram.
6. If the resistance readings are not as specified in ***Table F.10***, replace the potentiometer and lead assembly or replace the defective component. See Wiring Diagram.
7. If testing is complete, connect plug J32 to the chopper user interface board. See Wiring Diagram.
8. Perform the ***Case Cover Replacement Procedure***.

Table F.10 – Arc control potentiometer test points

TEST POINT	TEST POINT	EXPECTED READING
PLUG J32 PIN 2 (LEAD 279)	PLUG J32 PIN 5 (LEAD 277)	ABOUT 10K
PLUG J32 PIN 3 (LEAD 278)	PLUG J32 PIN 5 (LEAD 277)	OHMS VALUE SHOULD SWEEP SMOOTHLY FROM 10K TO 0 WHEN ARC CONTROL IS TURNED FROM MIN. TO MAX.

Figure F.29 – Chopper user interface board plug J32 location

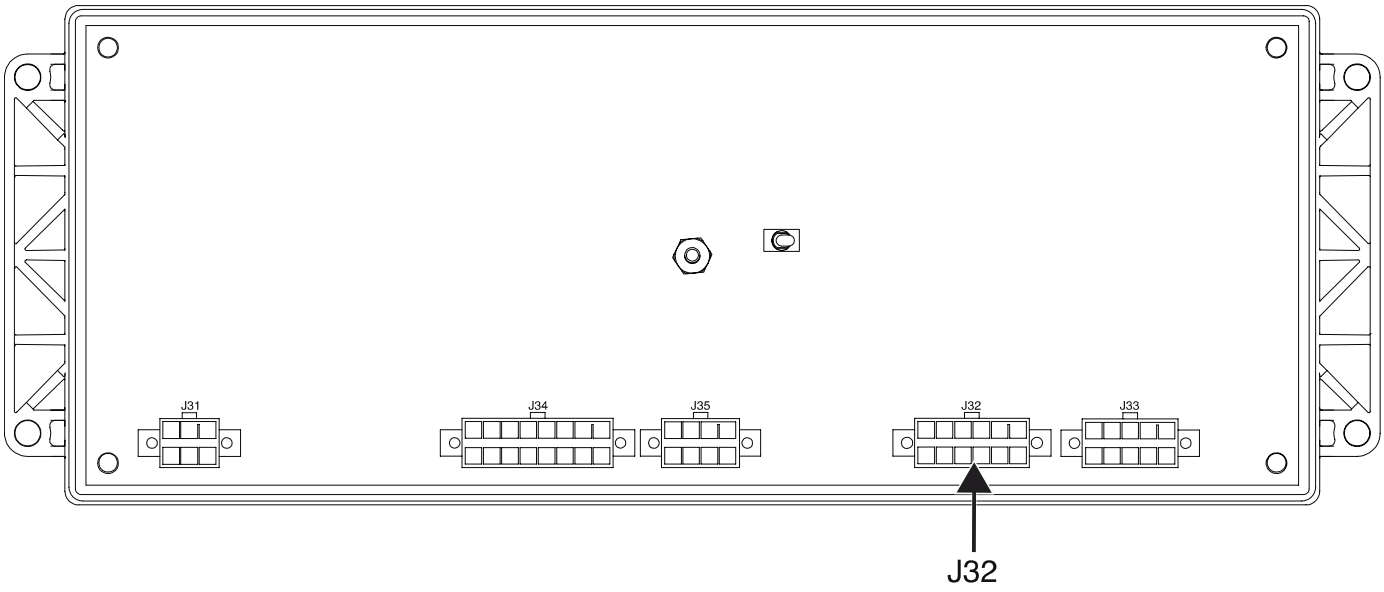
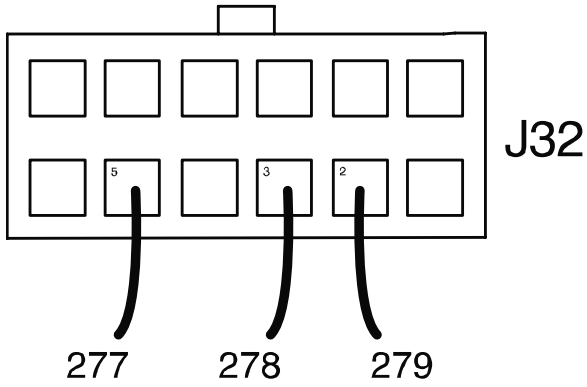


Figure F.30 – Chopper user interface board plug J32 pin and lead locations



REMOTE RECEPTACLE RESISTANCE TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will help determine if there is a problem with the Remote Receptacle Control wiring, relating to electrical tracking between other Control Conductors, Power Conductors or ground.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Make sure that there are no devices of any kind plugged into any of the Amphenol receptacles.
5. Label and disconnect plugs J31 and J33 from the chopper user interface board. See ***Figure F.31***. See Wiring Diagram. Examine the plugs and the receptacles on the chopper user interface board for dirt, corrosion, damaged or out-of-position pins. Repair or replace any damaged components. Position plugs J31 and J33 so they cannot make electrical contact with any other conductor or chassis ground.
6. Label and disconnect plug J47 from the 40 VDC bus board. See ***Figure F.32***. See Wiring Diagram. Position plug J47 so it cannot make electrical contact with any other conductor or chassis ground.
7. Using a volt/ohmmeter, perform the resistance tests outlined in ***Tables F.11***, ***F.12*** and ***F.13***. See ***Figure F.33***. See Wiring Diagram. Be very careful not to damage or spread any of the connection pins in the Amphenol receptacle.
8. If the resistances do not meet values specified, check for damage, dirt or moisture contamination in the Amphenol receptacles, plugs J31 and J33. Check for damaged or grounded wiring.
9. If the resistance values are found to be too low, due to contaminated electrical components in the Amphenol harness assembly. Try removing the contamination and drying the components completely. If the resistance values are still too low, replace the Amphenol harness assembly.
10. Connect plugs J31 and J33 to the chopper user interface board. See Wiring Diagram.
11. Connect plug J47 to the 40 VDC bus board. See Wiring Diagram.
12. Perform the ***Case Cover Replacement Procedure***.

Table F.11 – 14 pin Amphenol resistance tests

OHMMETER CONNECTION	EXPECTED READING
PIN G (75B) TO PIN A (32)	500,000 (500K) OHMS OR HIGHER
PIN G (75B) TO PIN B (GND-A)	500,000 (500K) OHMS OR HIGHER
PIN G (75B) TO PIN C (2B)	500,000 (500K) OHMS OR HIGHER
PIN G (75B) TO PIN D (4B)	500,000 (500K) OHMS OR HIGHER
PIN G (75B) TO PIN E (77B)	500,000 (500K) OHMS OR HIGHER
PIN G (75B) TO PIN F (76B)	500,000 (500K) OHMS OR HIGHER
PIN G (75B) TO PIN H (21)	500,000 (500K) OHMS OR HIGHER
PIN G (75B) TO PIN I (41A)	500,000 (500K) OHMS OR HIGHER
PIN G (75B) TO PIN J (31)	500,000 (500K) OHMS OR HIGHER
PIN G (75B) TO PIN K (42A)	500,000 (500K) OHMS OR HIGHER
PIN F (76B) TO PIN A (32)	500,000 (500K) OHMS OR HIGHER
PIN F (76B) TO PIN B (GND-A)	500,000 (500K) OHMS OR HIGHER
PIN F (76B) TO PIN C (2B)	500,000 (500K) OHMS OR HIGHER
PIN F (76B) TO PIN D (4B)	500,000 (500K) OHMS OR HIGHER
PIN F (76B) TO PIN E (77B)	500,000 (500K) OHMS OR HIGHER
PIN F (76B) TO PIN H (21)	500,000 (500K) OHMS OR HIGHER
PIN F (76B) TO PIN I (41A)	500,000 (500K) OHMS OR HIGHER
PIN F (76B) TO PIN J (31)	500,000 (500K) OHMS OR HIGHER
PIN F (76B) TO PIN K (42A)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN A (32)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN B (GND-A)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN C (2B)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN D (4B)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN H (21)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN I (41A)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN J (31)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN K (42A)	500,000 (500K) OHMS OR HIGHER

Table F.12 – 12 pin Amphenol resistance tests

OHMMETER CONNECTION	EXPECTED READING
PIN E (77B) TO PIN A (53A)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN B (54A)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN C (75B)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN D (77B)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN F (ALPS)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN G (2B)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN H (4B)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN J (51A)	500,000 (500K) OHMS OR HIGHER
PIN E (77B) TO PIN K (52A)	500,000 (500K) OHMS OR HIGHER
PIN D (76B) TO PIN A (53A)	500,000 (500K) OHMS OR HIGHER
PIN D (76B) TO PIN B (75A)	500,000 (500K) OHMS OR HIGHER
PIN D (76B) TO PIN C (2B)	500,000 (500K) OHMS OR HIGHER
PIN D (76B) TO PIN F (ALPS)	500,000 (500K) OHMS OR HIGHER
PIN D (76B) TO PIN G (2B)	500,000 (500K) OHMS OR HIGHER
PIN D (76B) TO PIN H (4A)	500,000 (500K) OHMS OR HIGHER
PIN D (76B) TO PIN J (51A)	500,000 (500K) OHMS OR HIGHER
PIN D (76B) TO PIN K (52A)	500,000 (500K) OHMS OR HIGHER
PIN C (75B) TO PIN A (53A)	500,000 (500K) OHMS OR HIGHER
PIN C (75B) TO PIN B (54A)	500,000 (500K) OHMS OR HIGHER
PIN C (75B) TO PIN F (ALPS)	500,000 (500K) OHMS OR HIGHER
PIN C (75B) TO PIN G (2B)	500,000 (500K) OHMS OR HIGHER
PIN C (75B) TO PIN H (4B)	500,000 (500K) OHMS OR HIGHER
PIN C (75B) TO PIN J (51A)	500,000 (500K) OHMS OR HIGHER
PIN C (75B) TO PIN K (52A)	500,000 (500K) OHMS OR HIGHER

Table F.13 – 5 pin Amphenol resistance tests

OHMMETER CONNECTION	EXPECTED READING
PIN A (53C, 53A) TO PIN B (54C, 54A)	500,000 (500K) OHMS OR HIGHER
PIN A (53C, 53A) TO PIN C (67)	500,000 (500K) OHMS OR HIGHER
PIN A (53C, 53A) TO PIN D (52B)	500,000 (500K) OHMS OR HIGHER
PIN A (53C, 53A) TO PIN E (51B)	500,000 (500K) OHMS OR HIGHER
PIN B (54C, 54A) TO PIN C (67)	500,000 (500K) OHMS OR HIGHER
PIN B (54C, 54A) TO PIN D (52B)	500,000 (500K) OHMS OR HIGHER
PIN B (54C, 54A) TO PIN E (51B)	500,000 (500K) OHMS OR HIGHER
PIN C (67) TO PIN D (52B)	500,000 (500K) OHMS OR HIGHER
PIN C (67) TO PIN E (51B)	500,000 (500K) OHMS OR HIGHER
PIN D (52B) TO PIN E (51B)	500,000 (500K) OHMS OR HIGHER

Figure F.31 – Chopper user interface board plugs J31 and J33 location

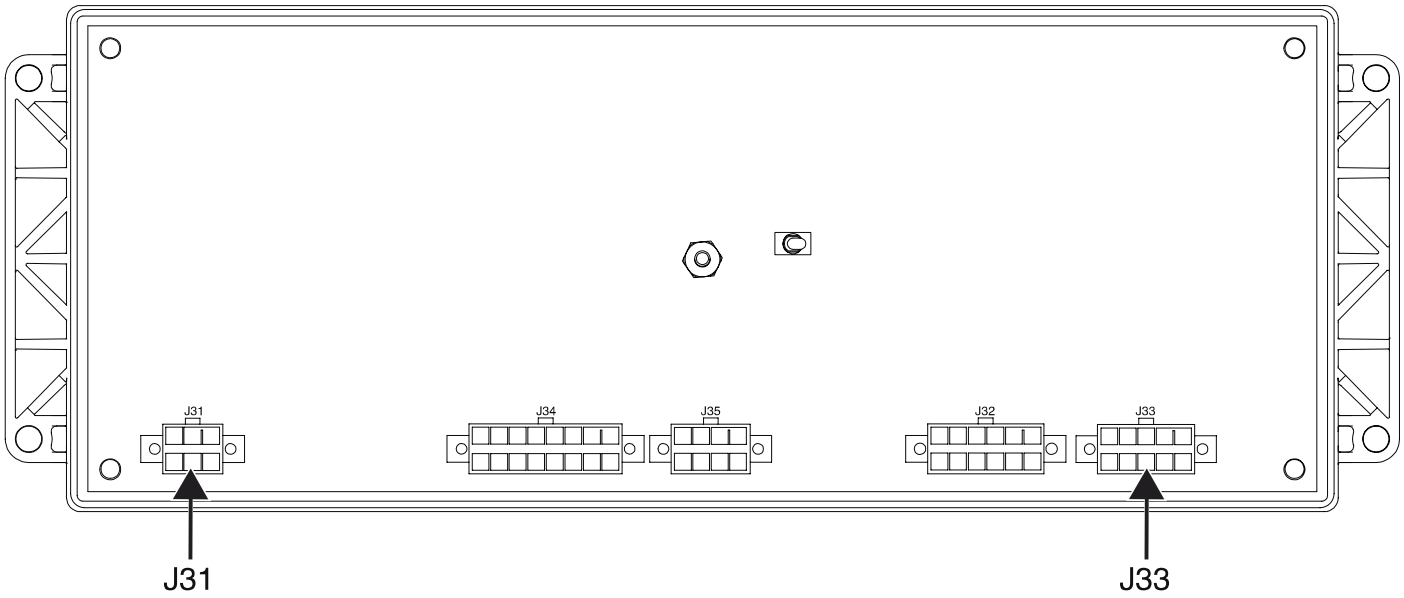


Figure F.32 – 40 VDC bus board plug J47 location

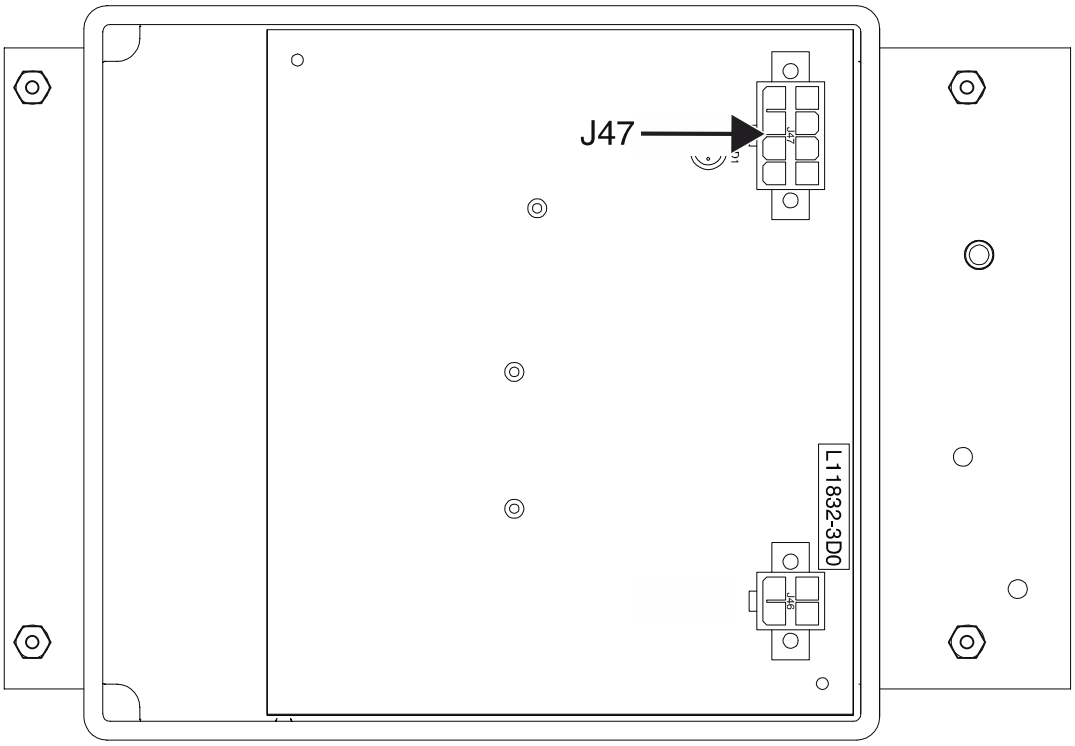
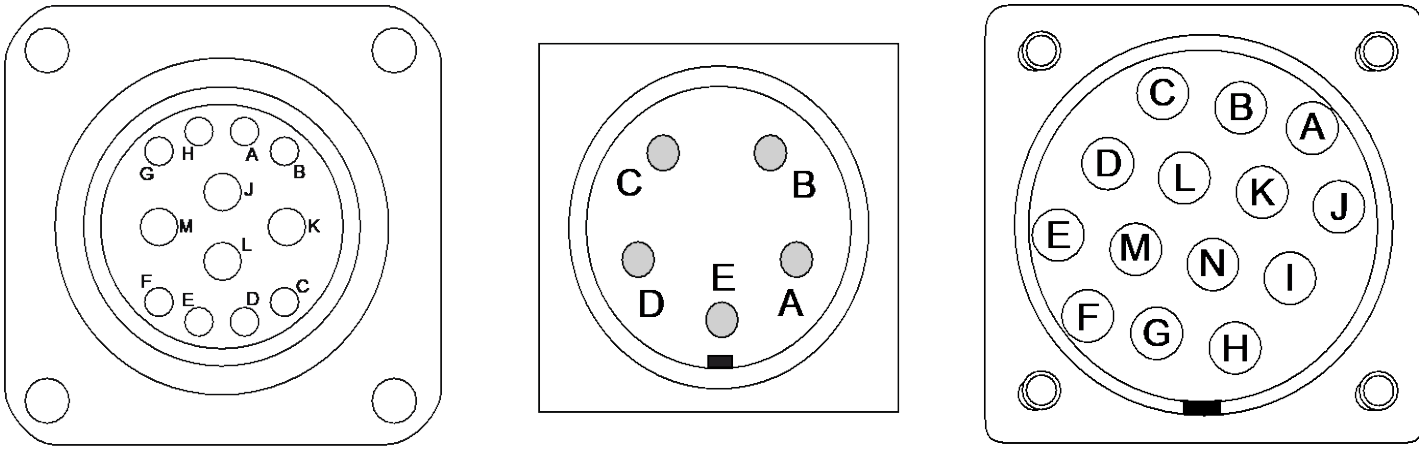


Figure F.33 – Amphenol terminal locations



12 PIN AMPHENOL

5 PIN AMPHENOL

14 PIN AMPHENOL

OUTPUT RECTIFIER BRIDGE TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if there are any failed Diode groups in the Output Rectifier Bridge.
NOTE: This test will not be able to detect individual open Diodes within a group.

MATERIALS NEEDED

7/16” Nutdriver
Volt/Ohmmeter
Wiring Diagram

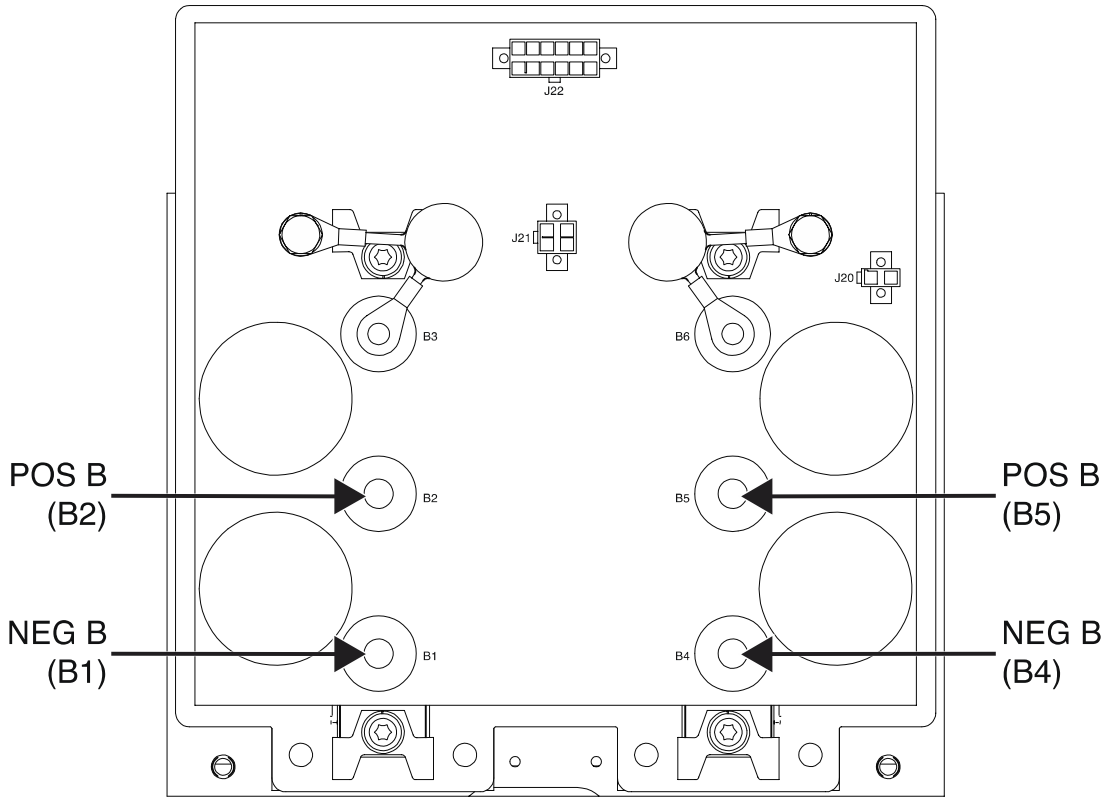
TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Using a 7/16” nutdriver, remove the two bolts, lock washers and flat washers securing leads to terminals B1, B2, B4 and B5 to the right side chopper board. See ***Figure F.34***. See Wiring Diagram. Label and disconnect leads.
5. Locate stator leads W1/W6, W2/W3 and W4/W5 on the left side of the machine. See Wiring Diagram.
6. If using diode checker or a multi-meter with diode check functionality, read and understand the instructions that accompany your test equipment.
7. If using an analog ohmmeter, the forward bias test will indicate low resistance and the reverse bias test will indicate high resistance. Precise ohm values for this test will vary depending on the test equipment used.
8. Using the appropriate volt/ohmmeter, perform the diode drop tests outlined in ***Table F.14***. See ***Figure F.34***. See Wiring Diagram.
9. If any tests fail, the output rectifier bridge may be faulty.
10. If faulty, perform the ***Output Rectifier Bridge Removal And Replacement Procedure***.
11. When testing is complete, reconnect all previously disconnected leads to the output rectifier bridge.
12. Perform the ***Case Cover Replacement Procedure***.

Table F.14 – Output rectifier bridge diode drop tests

TEST POINT (+)	TEST POINT (–)	EXPECTED RESULT
LEADS W1/W6 (AC1)	LEAD POS B (DC+)	0.3 - .7V
LEADS W2/W3 (AC2)	LEAD POS B (DC+)	0.3 - .7V
LEADS W4/W5 (AC3)	LEAD POS B (DC+)	0.3 - .7V
LEAD NEG B (DC-)	LEADS W1/W6 (AC1)	0.3 - .7V
LEAD NEG B (DC-)	LEADS W2/W3 (AC2)	0.3 - .7V
LEAD NEG B (DC-)	LEADS W4/W5 (AC3)	0.3 - .7V

Figure F.34 – Right side chopper board lead connections



CHOPPER BOARD FUNCTION TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will help determine if the Chopper Boards are functioning properly and receiving the correct input from the Output Rectifier and the Chopper User Interface Board.
This test can only provide meaningful results if the machine is producing normal AC auxiliary output.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Make sure that there is nothing plugged into any of the Amphenol receptacles.
4. Place run / idle switch into the “HIGH” idle position.
5. Place the mode switch in the “CC-STICK” position.
6. Place the welding terminal switch in the “Off” position.
7. Start the engine and allow it to stabilize at high idle RPM.
8. Using a volt/ohmmeter, check for 80 to 100 VDC at terminals B1- to B2+ and B4- to B5+ of each of the chopper boards. See ***Figures F.35*** and ***F.36***. See Wiring Diagram.
9. If the correct DC voltage is not present at terminals B1- to B2+ and B4- to B5+, check for damaged conductors or faulty connections between the chopper boards, the output rectifier and the stator weld winding. See ***Figures F.35*** and ***F.36***. See Wiring Diagram. Perform the ***Stator Voltage Test Procedure*** and the ***Output Rectifier Bridge Test Procedure***.
10. If the correct voltage is present at terminals B1- to B2+ and B4- to B5+ of the chopper boards, check for DC voltage at the chopper board terminals B2+ to B3- and B5+ to B6-, if significant voltage is present, disconnect leads 283 and 284 from the right side chopper board. If voltage is still present, one of the chopper boards are shorted and should be replaced. Perform the ***Chopper Board Diode Drop Test Procedure***.
11. If the voltage drops to 0 VDC after leads 283 and 284 have been disconnected, the chopper user interface board is driving the chopper board when it should not be doing so. Reconnect leads 283 and 284 and perform the ***Chopper User Interface Board Test Procedure***.
12. Place the welding terminal switch into the “WELD TERMINALS ON” position.

13. Using a volt/ohmmeter, check for about 60 VDC between chopper board terminals B2+ to B3- and B5+ to B6 and between the welder output terminals. See ***Figures F.35*** and ***F.36***. See Wiring Diagram.
14. If about 60 VDC is present at chopper board terminals B2+ to B3- and B5+ to B6-, but not at the output terminals, there is a problem between the chopper boards and one of the output terminals. Check for damaged conductors or faulty connections, on leads W7/W8 and W9/W10. Also check the shunt, the chokes and the connections at the back of the output terminals. See Wiring Diagram.
15. If the voltage at terminals B2+ to B3- and B5+ to B6- of the chopper boards is significantly higher than 60 VDC, check for an open R4 load resistor. See Wiring Diagram.
16. If the voltage at terminals B2+ to B3- and B5+ to B6- of the chopper boards is very low or not present, use the frequency counter to check for the presence of a 20 kHz PWM signal between leads 283 and 284, where they connect to the right side chopper board.
17. If the 20 kHz signal is present, the chopper board may be faulty. Perform the ***Chopper Board Removal And Replacement Procedures***.
18. When testing is complete, perform the ***Case Cover Replacement Procedure***.

Figure F.35 – Left side chopper board terminal locations

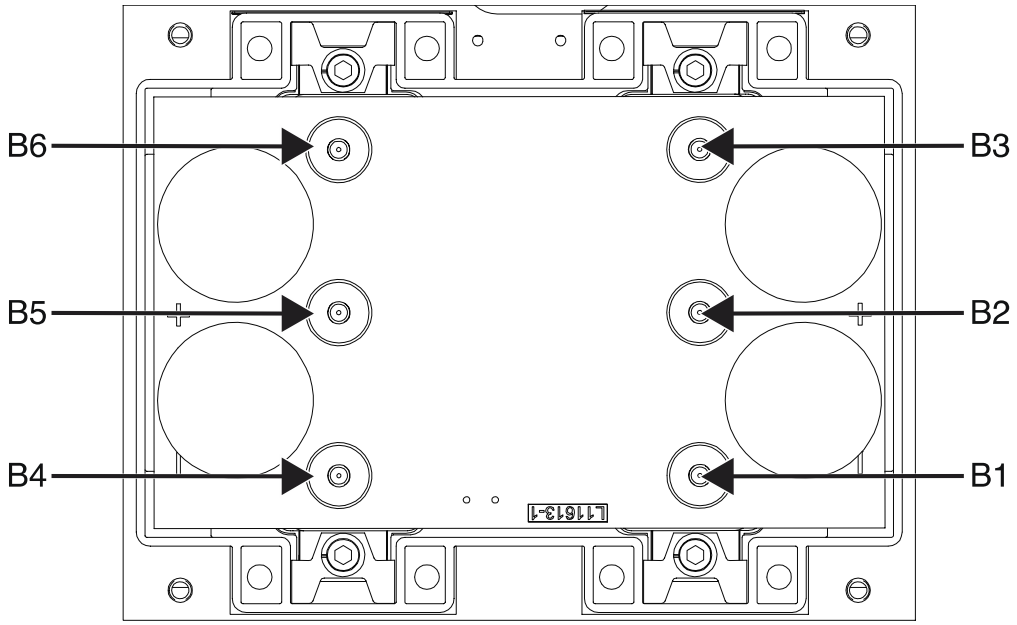
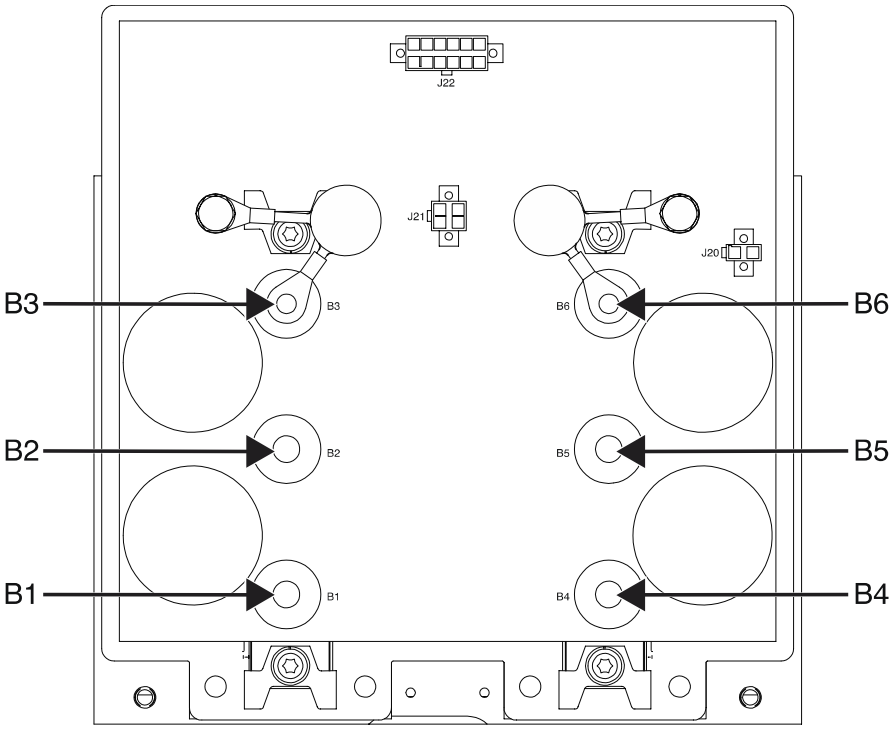


Figure F.36 – Right side chopper board terminal locations



CHOPPER BOARD DIODE DROP TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will help determine if either of the Chopper Boards are shorted. This test can only detect some problems in the "Power" section of the boards. Problems in some other board components may not be detected. This test is to be performed for each Chopper Board.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Label and disconnect all of the leads from terminals B1, B2, B3, B4, B5 and B6 of the chopper boards and position them so they do not make electrical contact with any part of the chopper boards. See ***Figures F.37*** and ***F.38***. See Wiring Diagram.
5. Using a volt/ohmmeter, perform the diode drop tests outlined in ***Table F.15***. See ***Figures F.37*** and ***F.38***. See Wiring Diagram.
6. When testing is complete, connect all previously disconnected leads to the chopper boards. See Wiring Diagram.
7. Perform the ***Case Cover Replacement Procedure***.

Table F.15 – Chopper board diode drop tests

TEST POINT (POS)	TEST POINT (NEG)	EXPECTED READING
B3	B2	0.3 VDC
B1	B3	0.36 VDC
B6	B5	0.33 VDC
B4	B6	1.90 VDC

Figure F.37 – Left side chopper board terminal locations

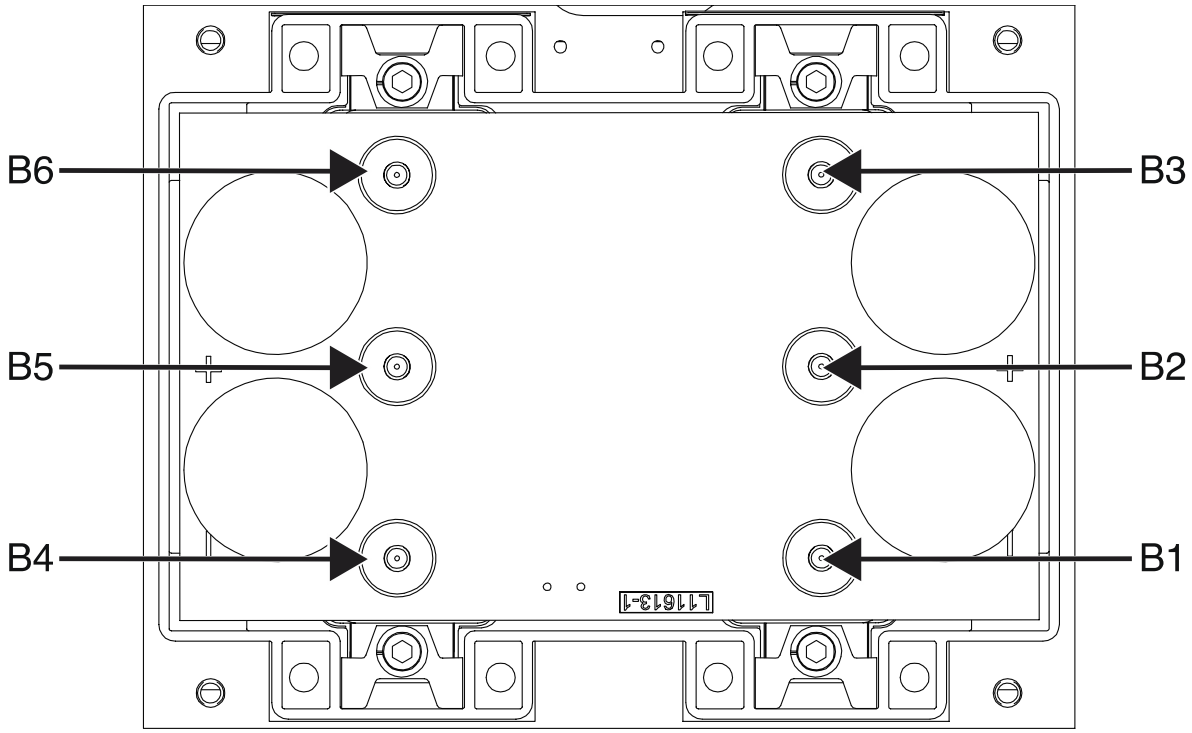
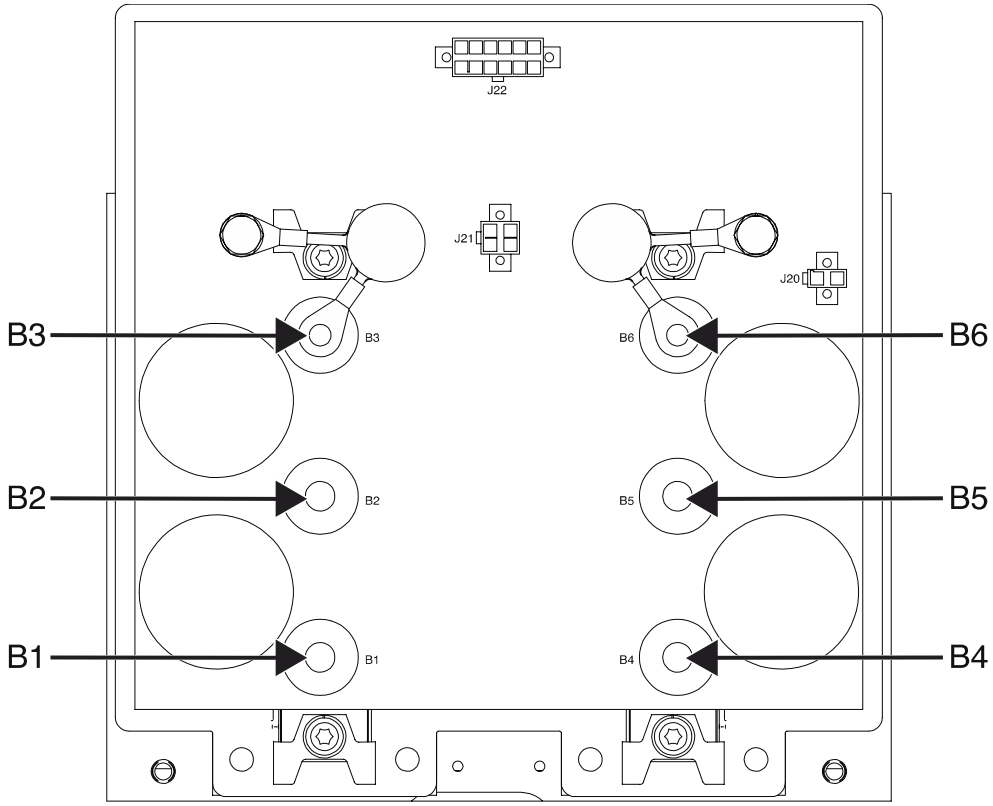


Figure F.38 – Right side chopper board terminal locations



VOLTAGE AND CURRENT FEEDBACK TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Chopper User Interface Board and the Right Side Chopper Board are receiving accurate voltage and current feedback from the weld circuit.
This test will only yield usable information if the machine is producing some weld output.

MATERIALS NEEDED

Resistive Load Bank
Volt and Amp Meter
Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Place the idle switch in the “HIGH IDLE” position.
4. Place the mode switch in the “CC-STICK” position.
5. Place the weld terminals switch in the “WELD TERMINALS ON” position.
6. Make sure that nothing is plugged into either Amphenol receptacle.
7. Connect the resistive load bank and the ammeter to the weld output terminals per the equipment manufacturer’s instructions; also connect the voltmeter probes across the weld output terminals.
8. Start the machine and apply a load of about 200 Amps, as shown on the external ammeter.
9. Compare the readings shown on the external ammeter and voltmeter to the amps and volts displayed on the front panel of the machine.
10. If the readings shown on the front panel displays are about the same or very close to the reading on the external meters, the feedback is probably good and this test is complete.
11. If the readings differ significantly, continue with this procedure.
12. Remove the load from the weld terminals and turn off the engine. (The load bank and ammeter can remain connected).
13. Locate plug J35 on the chopper user interface board. See ***Figure F.39***. Remove the plug and check for dirt, corrosion, damaged, expanded or incorrectly positioned terminals. Repair or replace wiring components as needed and reconnect the plug to the chopper user interface board. See Wiring Diagram.

14. Restart the machine and apply a load across the weld terminals that measures about 200 amps.
15. Using the voltmeter, measure and note the DC voltage at the weld output terminals.
16. Check the voltage between leads 208F+ (J35-2) and lead 206F- (J35-1) at the chopper user interface board. See ***Figures F.39*** and ***F.40***. See Wiring Diagram. The voltage should be the same as the voltage measured at the weld terminals.
17. If the voltage readings are different, check the wiring and connections between the welding terminals and the chopper user interface board. See Wiring Diagram.
18. Locate plug J20 on the right side chopper board. See ***Figure F.41***. See Wiring Diagram.
19. Connect the millivolt meter probes between lead 206S+ (J20-2) and lead 204S- (J20-1). See ***Figures F.41*** and ***F.42***. See Wiring Diagram. If the machine is currently producing 200 amps the millivolt meter should read about 25 millivolts.
20. The shunt used in this machine will produce 100 millivolts at a load of 800 amps or 8 amps per millivolt.
    To calculate the correct millivolt signal for a given load, you divide the number of amps displayed on the external ammeter by 8.
21. If the millivolt reading is incorrect, check the wiring between the shunt and the chopper user interface board for damage, grounds and faulty connections. If the wiring is good, the shunt and lead assembly is faulty and should be replaced.
22. Perform the ***Case Cover Replacement Procedure***.

Figure F.39 – Chopper user interface board plug J35 location

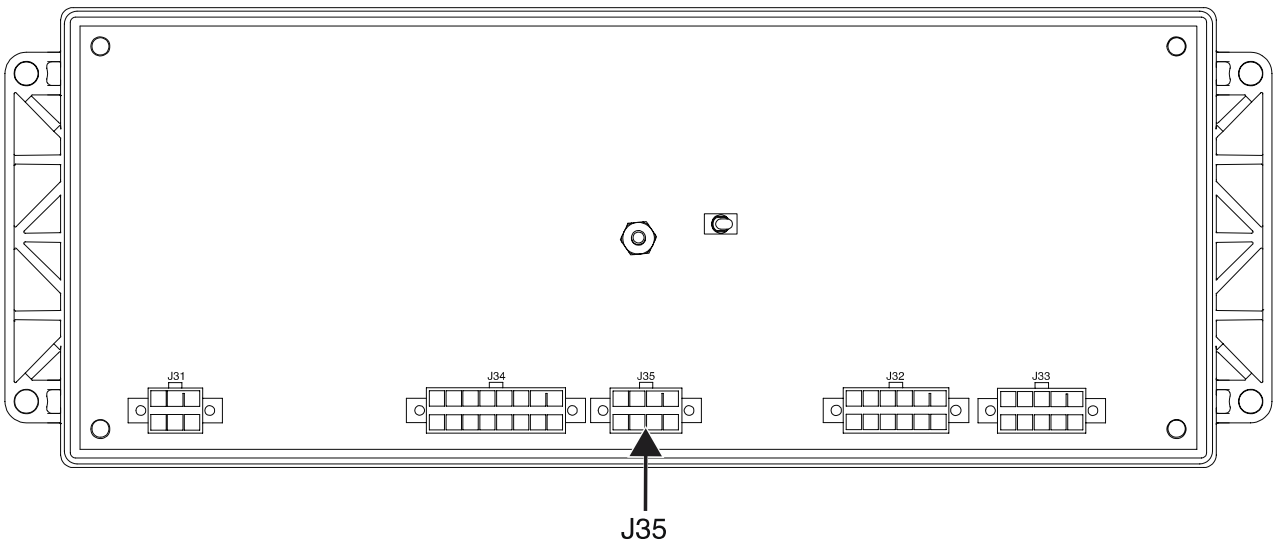


Figure F.40 – Chopper user interface board lead locations

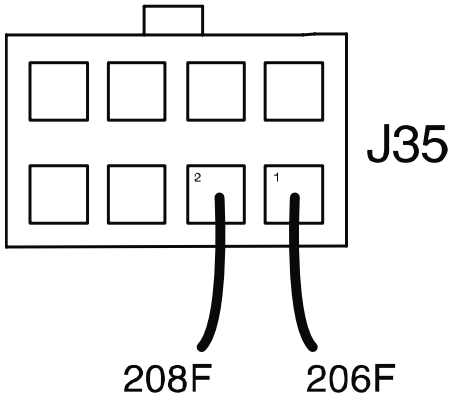


Figure F.41 – Right side chopper board plug J20 location

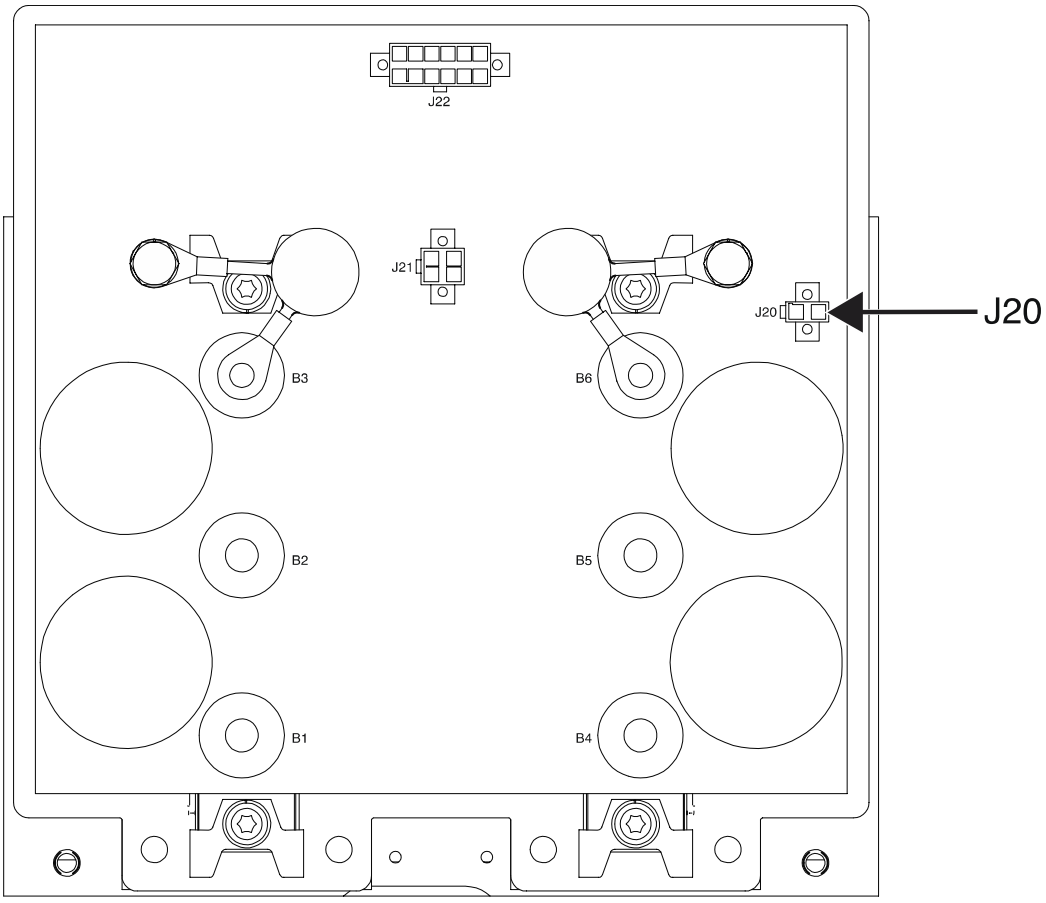
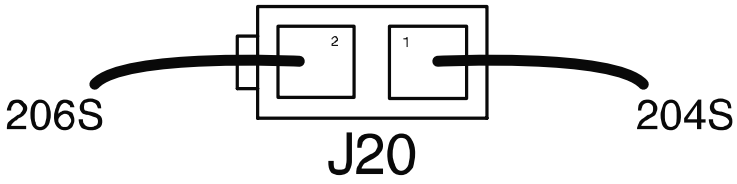


Figure F.42 – Right side chopper board plug J20 lead locations



CHOKE TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if either of the Chokes are open, shorted (turn to turn) or grounded.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Locate the choke assembly. The chokes are located behind the output panel. See Wiring Diagram.
5. **Both Chokes Open:** No weld output. Using a volt/ohmmeter, test the resistance from the B6 or B3 choke lead (on each chopper board) to the negative output stud. See ***Figures F.43*** and ***F.43***. See Wiring Diagram. Typical resistance is less than one ohm (B6 and B3 choke leads should be disconnected from the chopper board for testing).
6. **Turn To Turn Short:** Reduced inductance, arc instability, excessive heating of the choke. Check for any physical signs of arcing within the choke assembly. See Wiring Diagram.
7. **Choke Coil Grounded:** Reduced inductance, alternate weld current path. Electrically isolate the choke coil by disconnecting the leads from chopper board terminals B3 and B6 and the heavy choke leads from the negative output stud. Using a volt/ohmmeter, check the resistance from choke coil to chassis ground. Resistance should be at least 500,000 ohms. See Wiring Diagram.
8. If any of the tests fail, the choke may be faulty.
9. If faulty, perform the ***Choke Removal And Replacement Procedure***.
10. Connect any previously disconnected leads. See Wiring Diagram.
11. Perform the ***Case Cover Replacement Procedure***.

Figure F.43 – Left side chopper board terminal locations

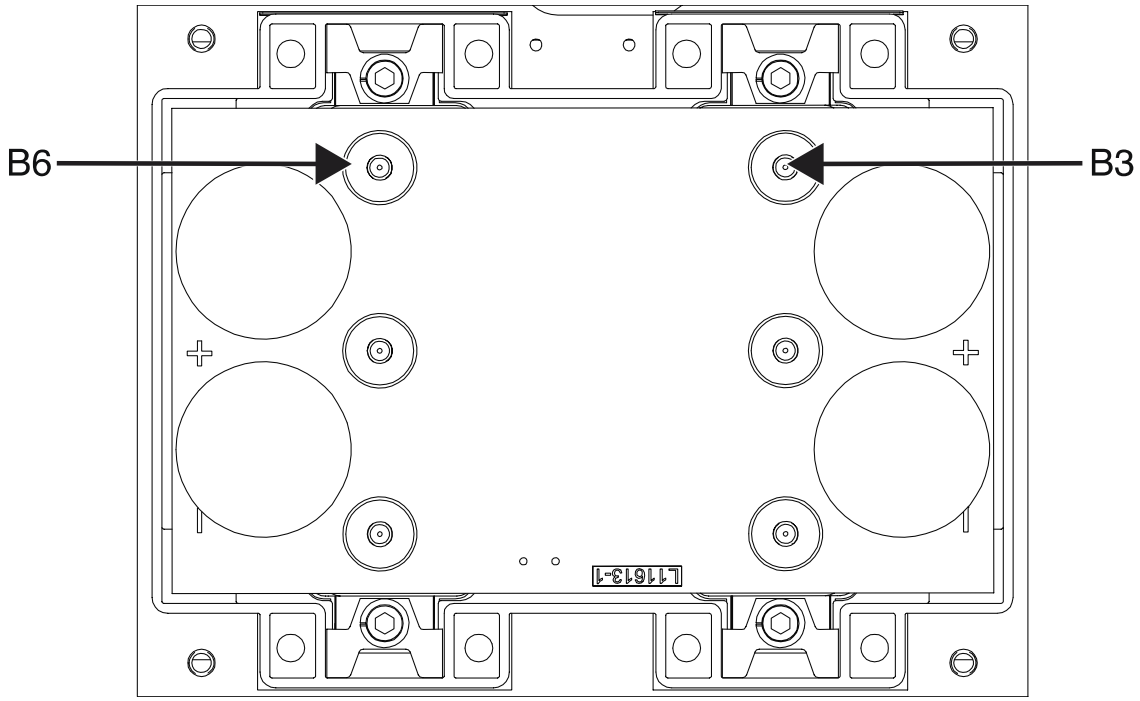
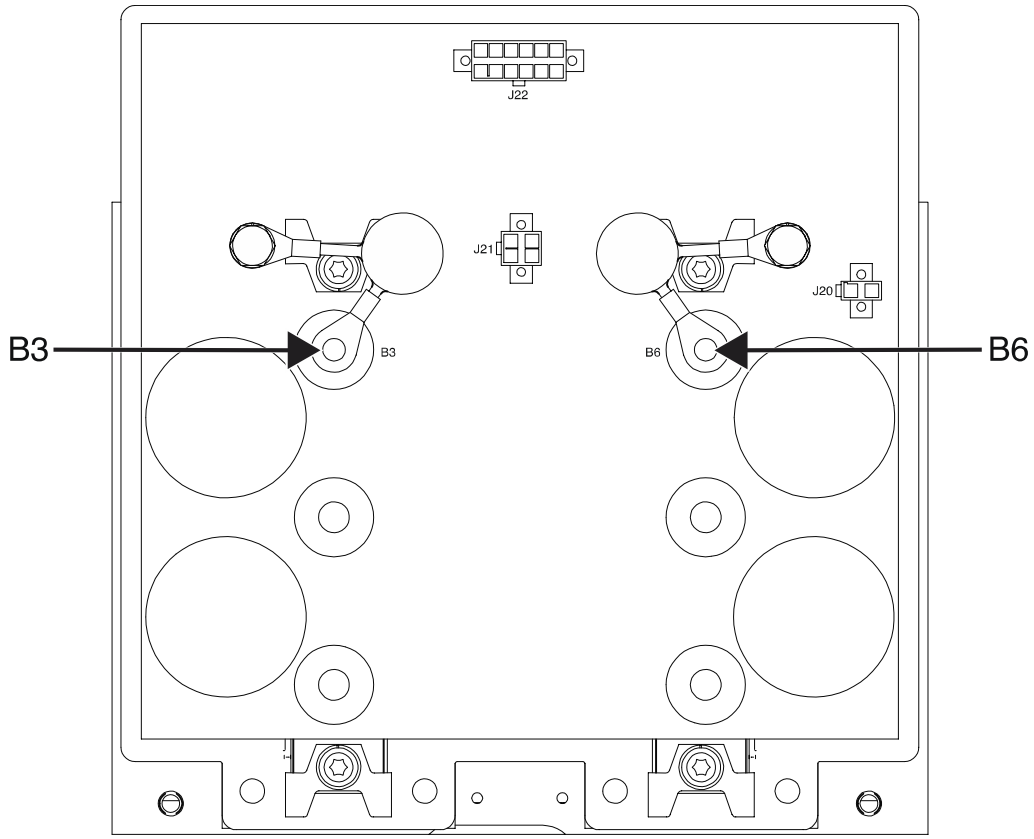


Figure F.44 – Right side chopper board terminal locations



CHOPPER USER INTERFACE BOARD TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Chopper User Interface Board is functioning properly. This test will not test all portions of the Chopper User Interface Board.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Locate the chopper user interface board. See ***Figure F.45***. See Wiring Diagram.
5. Start the engine and allow it to stabilize at high idle RPM.
6. Using a volt/ohmmeter, perform the voltage tests outlined in ***Table F.16***. See ***Figures F.46*** and ***F.47***. See Wiring Diagram.
7. Turn off the engine on the Air Vantage 566 SD Hydraulic.
8. If any of the tests fail, the chopper user interface board may be faulty.
9. If faulty, perform the ***Chopper User Interface Board Removal And Replacement Procedure***.
10. Perform the ***Case Cover Replacement Procedure***.

Table F.16 – Chopper user interface board voltage tests

TEST POINT	TEST POINT	EXPECTED READING	MACHINE CONDITION
PLUG J34 PIN 15 (LEAD 200N)	PLUG J34 PIN 1 (LEAD 5K)	3- 7 VDC	MACHINE RUNNING.
PLUG J31 PIN 5 (LEAD 13)	PLUG J31 PIN 6 (LEAD 14)	80 – 100 VDC	MACHINE RUNNING.
PLUG J34 PIN 9 (LEAD 232C)	PLUG J34 PIN 1 (LEAD 5K)	12 VDC	MACHINE RUNNING.
PLUG J34 PIN 3 (LEAD ECB76B)	PLUG J34 PIN 6 (LEAD ECB54B)	2 VDC	MACHINE RUNNING.
PLUG J34 PIN 4 (LEAD 287)	PLUG J34 PIN 7 (LEAD 288)	2 VDC	MACHINE RUNNING.
PLUG J34 PIN 10 (LEAD 213)	PLUG J34 PIN 1 (LEAD 5K)	12 VDC	MACHINE RUNNING. HYDRAULIC PUMP / AIR COMPRESSOR POWER SWITCH IN THE 'AIR COMPRESSOR ON' POSITION.
PLUG J34 PIN 16 (LEAD 281)	PLUG J34 PIN 1 (LEAD 5K)	10 VDC	MACHINE RUNNING.

Figure F.45 – Chopper user interface board location

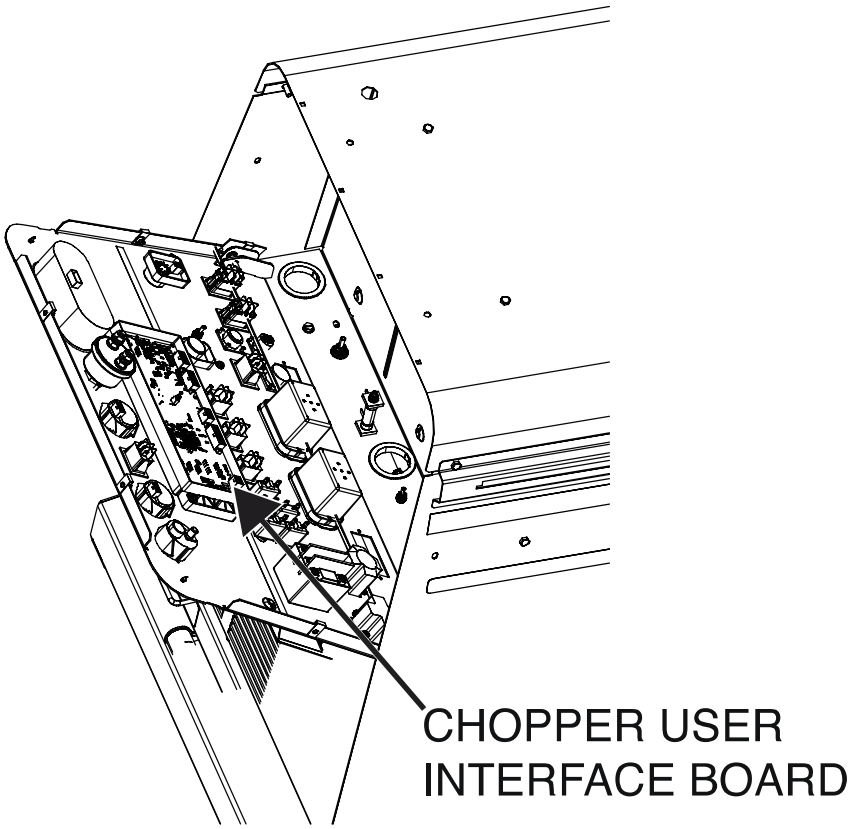


Figure F.46 – Chopper user interface board plug locations

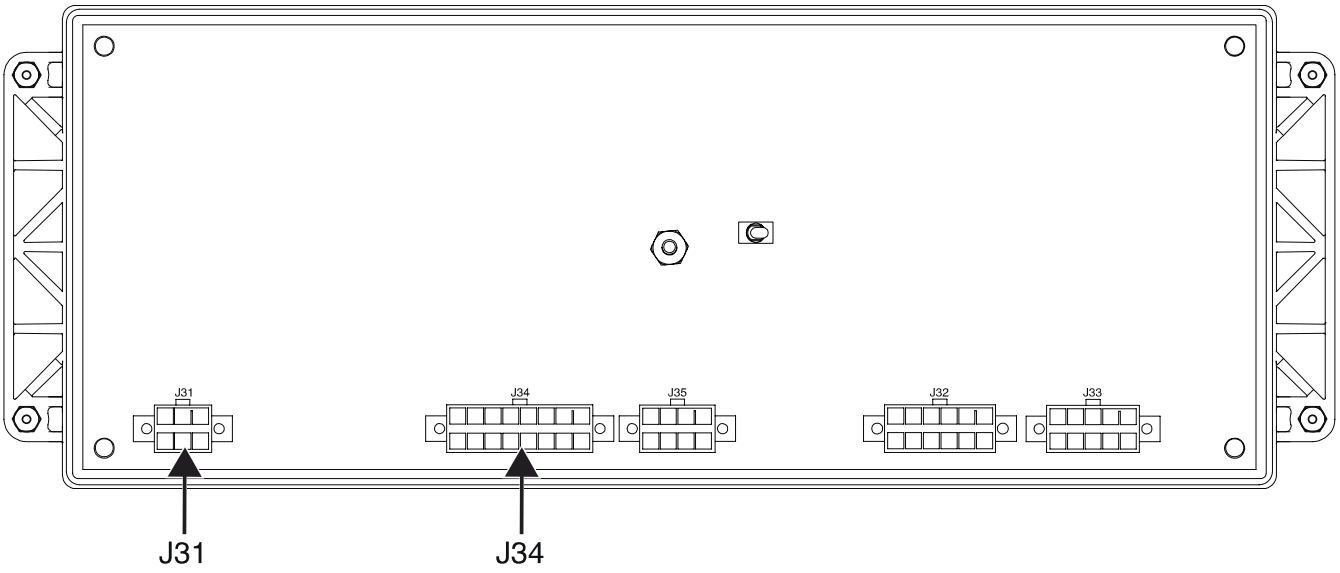
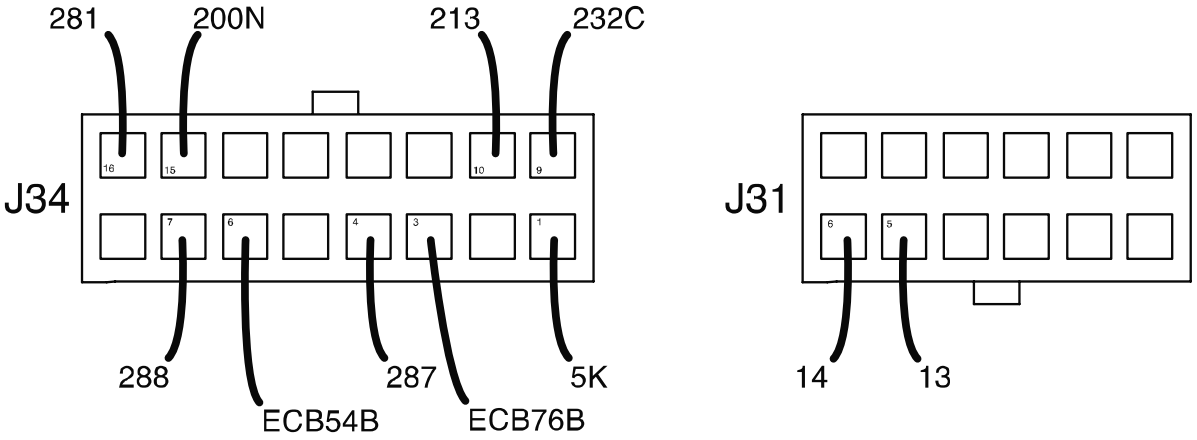


Figure F.47 – Chopper user interface board lead locations



ENGINE ALTERNATOR TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Engine Alternator is functioning properly.

MATERIALS NEEDED

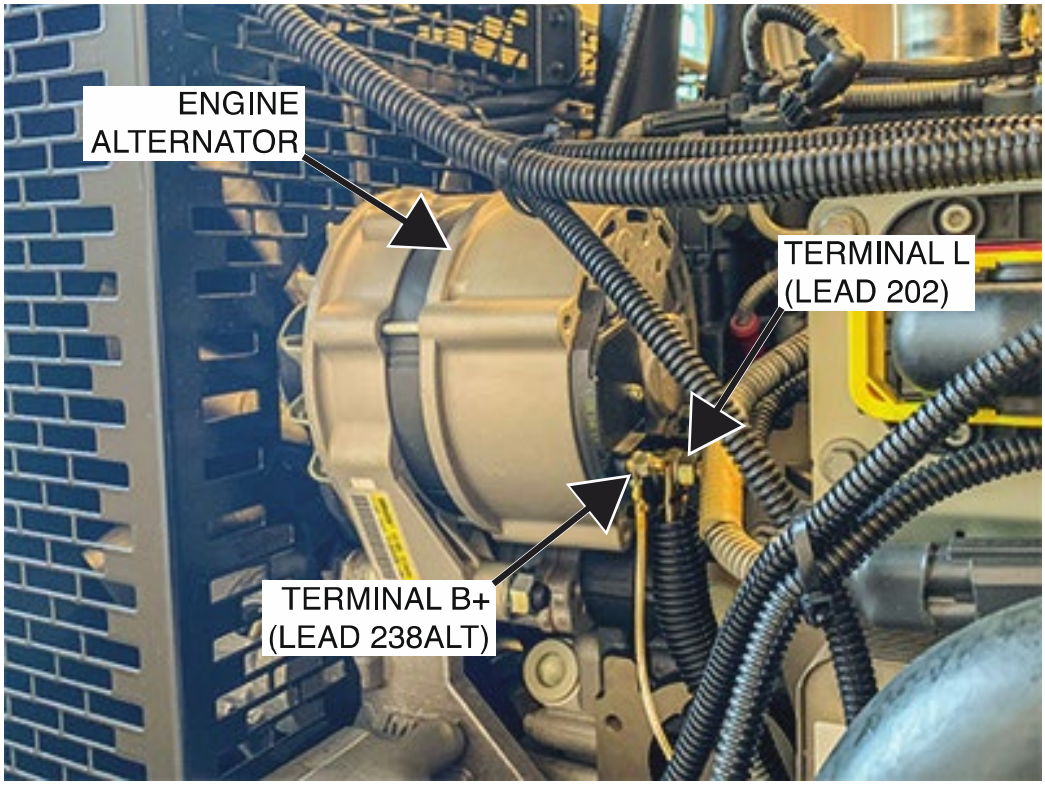
Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Using a volt/ohmmeter, measure the voltage at the battery terminals. The voltage should be approximately 12 VDC. See Wiring Diagram.
4. Attach the meter leads to the battery terminals, being careful to position them so they stay clear of moving parts while the engine is running.
5. Place the idle switch in the “HIGH IDLE” position, start the engine and allow it to run at high idle speed for about 15 to 30 seconds.
6. Using a volt/ohmmeter, measure the battery voltage. See Wiring Diagram. The meter should read about 13.7 to 14.2 VDC.
7. If the meter reads correctly, the engine alternator is producing adequate power to charge the battery and this test is complete.
8. If the voltage is significantly higher than the above values, the alternator is not properly regulating the battery charging voltage and should be replaced. If the voltage reads the same or less than the measurement taken in Step 3, proceed with the following tests.
9. Turn off the engine and disconnect the meter from the battery.
10. Make sure the idle switch is still in the “HIGH IDLE” position, start the engine and allow it to run at high idle speed for about 15 to 30 seconds.
11. Place the negative meter probe on a good chassis ground or the negative battery terminal. Place the positive meter probe on the ‘B+’ terminal (lead 238ALT) on the back of the alternator. See ***Figure F.48***. See Wiring Diagram.
12. The meter should read about 13.7 to 14.2 VDC.
13. Move the positive probe to the ‘L’ terminal on the back of the alternator (lead 202). See ***Figure F.48***.

14. The meter should read about 13.7 to 14.2 VDC.
15. If the meter reads correctly, check the connections between the alternator and the battery. See Wiring Diagram.
16. If the voltage at both of the above test points reads the same or less than the battery voltage measurement in Step 3, the alternator is defective. Repair or replace it.
17. If voltage is present at the battery terminal of the alternator, but not at lead 202; check wiring between the chopper user interface board and the engine alternator. See Wiring Diagram.
18. Perform the ***Case Cover Replacement Procedure***.

Figure F.48 – Engine alternator lead and terminal locations



ROTOR RESISTANCE AND GROUND TEST PROCEDURE (STATIC)

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Rotor Winding is open, shorted or grounded.

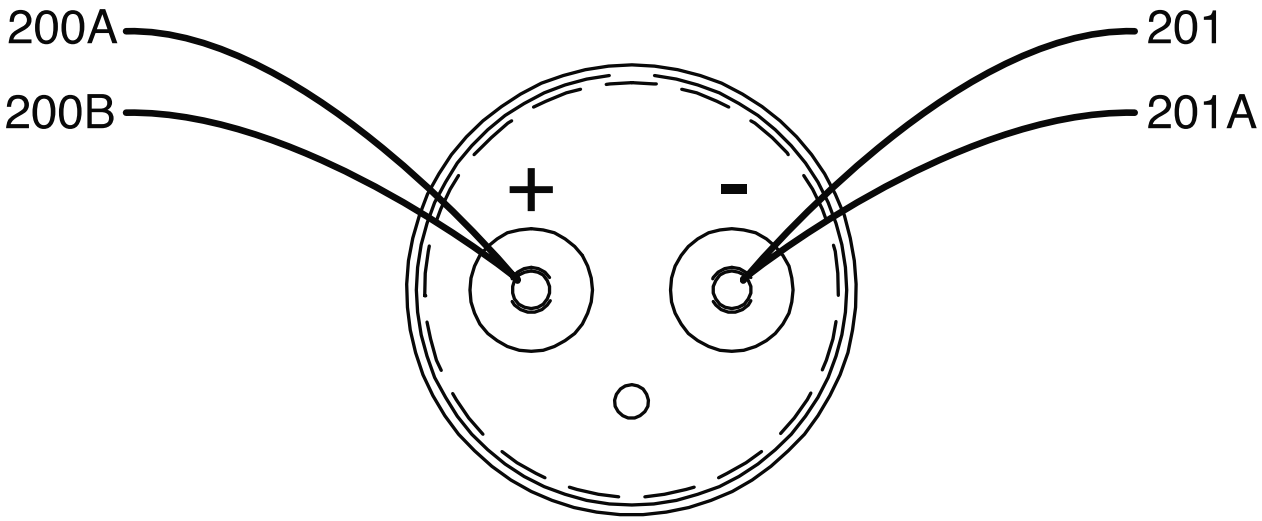
MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Using a 7/16" nutdriver, label and disconnect leads 201 and 200B from the field capacitor located on the right side of the stator fan shroud. See ***Figure F.49***. See Wiring Diagram. This will electrically isolate the rotor windings.
5. Using the volt/ohmmeter, measure the resistance from lead 201 to 200B. It should read approximately 27 ohms. See ***Figure F.49***. See Wiring Diagram.
6. If reading is incorrect, remove the brush holder bracket and measure directly across the slip rings. If reading is correct, check the brushes and the leads. If reading is still incorrect, the rotor is defective.
7. Measure the resistance to ground from either of the slip rings to any good unpainted chassis ground. The resistance should be very high, at least 500,000 ohms (500k).
8. If the test does not meet the resistance specifications, then the rotor is grounded and should be cleaned or replaced.
9. If this test meets the resistance specifications, continue testing using the ***Rotor Resistance and Ground Test Procedure (Dynamic)***.
10. Using a 7/16" nutdriver, attach leads 201 and 200B to the field capacitor. Be sure to connect them to the proper polarity terminals. See ***Figure F.49***. See Wiring Diagram.
11. Perform the ***Case Cover Replacement Procedure***.

Figure F.49 – Capacitor lead and terminal locations



ROTOR RESISTANCE AND GROUND TEST PROCEDURE (DYNAMIC)

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test checks for faults in the Rotor Winding, while these windings are being stressed by the mechanical forces encountered during normal operation.

MATERIALS NEEDED

Volt/Ohmmeter (Analog type meter required for dynamic resistance test)
Wiring Diagram
NOTE: This test is best performed with a good quality analog type ohmmeter. Many digital meters will not provide stable or accurate resistance readings while the rotor is spinning.

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. This test requires that the brushes and slip rings are clean, in good condition and are properly seated.
5. Perform the ***Brush and Slip Ring Service Procedure***, if necessary.
6. Using a 7/16” nutdriver, label and disconnect leads 201 and 200B from the field capacitor and connect an ohmmeter across the two leads and insulate the connections. See Wiring Diagram.
7. Start the engine and run it at high idle speed (1800 RPM). The resistance should read approximately 27 ohms. The resistance of the windings will change with temperature. Higher temperatures will produce higher resistance and lower temperatures will produce lower resistance.
8. Shut off engine and move one of the ohmmeter leads to a good clean chassis ground.
9. Restart the engine and run it at high idle speed (1800 RPM). The resistance should be very high, at least 500,000 (500k) ohms.
10. If the resistance readings differ significantly from the values indicated, re-check the brushes and the brush spring tension. If the brushes and slip rings are good, replace the rotor.
11. If all testing is finished, reconnect the leads to the field capacitor.
12. Perform the ***Case Cover Replacement Procedure***.

ROTOR VOLTAGE TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Rotor Winding is functioning properly.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Connect the voltmeter probes to the field capacitor terminals (201 & 200B). See Wiring Diagram.
5. Set the machine to high idle and start the engine and allow the RPM to stabilize for about 15 to 30 seconds. The meter should read approximately 180 - 220 VDC.
6. Set the RUN/STOP switch to “STOP”.
7. If the meter reading is normal, this test is complete.
8. If the voltage measures zero or very near zero, the rotor flashing circuit may be faulty, the leads may be open or the rotor may be shorted.
9. Perform the ***Rotor Resistance and Ground Test Procedures (Static)*** and ***(Dynamic)*** and the ***Flashing Voltage Test Procedure (Engine Not Running)***.
10. If voltage is higher than 220 VDC, the engine RPM may be too high or there may be voltage intrusion from one of the higher voltage stator windings to the stator exciter winding.
11. If the voltage is lower than 145, the engine RPM may be too low or there may be problems in the windings or other exciter circuit components or connections. Perform the testing described in Step 14.
12. If the meter reading indicates battery voltage, about 12 to 14 VDC, the rotor may be open or the brushes may be faulty or not making proper contact with the slip rings.
13. Perform the ***Rotor Resistance and Ground Test Procedures (Static)*** and ***(Dynamic)*** and ***Brush and Slip Ring Service Procedure***.
14. If the voltage measures about 3 to 5 VDC, the generator is not building-up to normal output even though the flashing circuit appears to be functioning normally. This condition could be caused by one of several failed components or connections. Continue with the following test.

15. Check the field bridge rectifier and capacitor, also check the wiring and terminals connecting them. See Wiring Diagram.
16. Perform the ***Case Cover Replacement Procedure***.

FLASHING VOLTAGE TEST PROCEDURE (ENGINE NOT RUNNING)

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test checks the Flashing Voltage with the engine stopped.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Make sure that the battery is fully charged and in good condition and the battery connections are clean and tight.
5. Place the 'RUN/STOP' switch into the 'RUN' position (the engine protection light should remain on).
6. Connect the voltmeter probes to the terminals of the field capacitor.
7. Measure the voltage; it should read about 3 to 7 VDC.
8. Set the 'RUN/STOP' switch to the 'STOP' position.
9. If the meter reading indicates battery voltage, about 12 to 14 VDC, the rotor may be open or the brushes may be faulty or not making proper contact with the slip rings.
10. Perform the ***Rotor Resistance and Ground Test Procedures (Static)*** and ***(Dynamic)***. Perform the ***Brush and Slip Ring Service Procedure***.
11. If the voltage measures zero or very near zero; this condition could be caused by a poor connection or a defective component in the flashing circuit or a shorted or grounded rotor winding. See Wiring Diagram.
12. Perform the ***Case Cover Replacement Procedure***.

STATOR VOLTAGE TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Stator is able to produce correct voltage from its Windings. It will only yield meaningful data if the engine high idle speed is correct (1800 RPM) and approximately 200 VDC is present across the Rotor Slip Rings.

MATERIALS NEEDED

Volt/Ohmmeter
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
   NOTE: Voltage tests of the 120, 120/240 and 240 VAC receptacles can be performed by placing the meter probes directly into the appropriate connection slots in the front of the receptacles rather than testing at the lead connections described below. If the meter probes are not long enough to make contact with the conductors inside the receptacles, test pins may be used.
   To test the 120 VAC auxiliary winding:
4. Connect the volt/ohmmeter probes to either 120 VAC receptacles. Place the probes directly into receptacle or connect to leads A and J of the 14 pin Amphenol. See ***Figures F.50*** and ***F.51***. See Wiring Diagram.
   NOTE: When testing at the 14 pin Amphenol, ensure the 42V/115V switch is the proper position for the winding to be tested.
5. Start the engine and run it at high idle (1800 RPM).
6. Check the AC voltage reading. It should read between 115 and 132 VAC.
7. Connect the negative meter probe to lead 5C or insert into terminal W of the single-phase 120/240VAC receptacle. See ***Figures F.50*** and ***F.51***. See Wiring Diagram.
8. Connect the positive meter probe to either leads 3B/3C, 6D/6C or insert into the terminal X or Y of the single-phase 120/240VAC receptacle. See ***Figure F.51***. See Wiring Diagram.
9. Start the engine and run it at high idle (1800 RPM).
10. Check the AC voltage reading. It should read between 230 and 264 VAC.

To test the 240 VAC auxiliary winding:

11. Connect the negative meter probe to lead GND-L or insert into the ground terminal of the three-phase 240VAC receptacle. See ***Figure F.51***. See Wiring Diagram.
12. Connect the positive meter probe to either lead 4A, 6C/6B or 3B/3A or insert into the terminal Z, Y or X of the three-phase 240VAC receptacle. See ***Figure F.51***. See Wiring Diagram.
13. Start the engine and run it at high idle (1800 RPM).
14. Check the AC voltage reading. It should read between 230 and 264 VAC.
15. Connect the negative meter probe to leads 6D/6C or insert into the terminal Y of the single-phase 120/240VAC receptacle. See ***Figure F.50***. See Wiring Diagram.
16. Connect the positive meter probe to leads 3B/3C or insert into the terminal X of the single-phase 120/240VAC receptacle. See ***Figure F.50***. See Wiring Diagram.
17. Start the engine and run it at high idle (1800 RPM).
18. Check the AC voltage reading. It should read between 230 and 264 VAC.
19. If these voltage readings are not within the specified limits, check for tripped or defective circuit breakers, loose connections or broken wires between the test points and the stator windings. If there are no wiring problems and the circuit breakers are not tripped or defective, the stator is defective and should be replaced.

    To test the 120 VAC wire feeder supply:

    NOTE: The wire feeder AC voltage supply tests require that the meter probes be inserted into the Amphenol connection cavities. Be careful not to damage or expand the terminals when inserting the probes.

    NOTE: The 120 VAC power supplied to the 14 pin Amphenol connector originates from the same winding that supplies the 120 VAC receptacles. If the machine has previously passed 120VAC auxiliary winding test, this test indicates problems in connections between the Amphenol and the stator winding.

    NOTE: When testing at the 14 pin Amphenol, ensure the 42V/115V switch is the proper position for the winding to be tested.
20. Connect the voltmeter probes to terminals “A” (lead 32) and “J” (lead 31) of the 14 pin Amphenol. See ***Figures F.50*** and ***F.51***. See Wiring Diagram.
21. Start the engine and run it at high idle (1800 RPM).
22. The AC voltage reading should be between 115 and 132 VAC. If this voltage is not within specifications, check for a tripped or defective circuit breaker, faulty connections or broken wires between the test points and the stator windings. See Wiring Diagram.

    To test the 42 VAC wire feeder winding:

    NOTE: When testing at the 14 pin Amphenol, ensure the 42V/115V switch is the proper position for the winding to be tested.
23. Connect the voltmeter probes to terminals “I” (lead 41A) and “K” (lead #42A) of the 14 pin Amphenol. See ***Figures F.50*** and ***F.51***.
24. Start the engine and run it at high idle (1800 RPM).
25. The AC voltage reading should be between 40 and 50 VAC. If this voltage is not within the specified limits, check for tripped or defective circuit breakers, loose connections or broken wires between the test points and the stator windings. If OK, the stator is defective and should be replaced.

    To test the 42 VAC bus winding:
26. Connect the voltmeter probes to the AC terminals of the D2 rectifier. See ***Figures F.52***.
27. Start the engine and run it at high idle (1800 RPM).

28. The AC voltage reading should be between 40 and 50 VAC. If this voltage is not within the specified limits, check for loose connections or broken wires between the test points and the stator windings. If OK, the stator is defective and should be replaced.

To test the three-phase weld winding:

29. Locate the weld winding leads W1/W6, W2/W3 and W4/W5 where they exit the stator on the left side of the machine. See Wiring Diagram.
30. Start the engine and run it at high idle (1800 RPM).
31. Check for about 60 to 65 VAC from leads W1/W6 to W2/W3, W2/W3 to W4/W5 and W4/W5 to W1/W6. See Wiring Diagram.
32. If these voltage readings are not within the specified limits, check for loose connections or broken wires between the test points and the stator windings. If there are no wiring problems, the stator is defective and should be replaced.
33. Turn off the engine on the Air Vantage 566 SD Hydraulic.
34. Perform the ***Case Cover Replacement Procedure***.

Figure F.50 – Receptacle and Amphenol locations

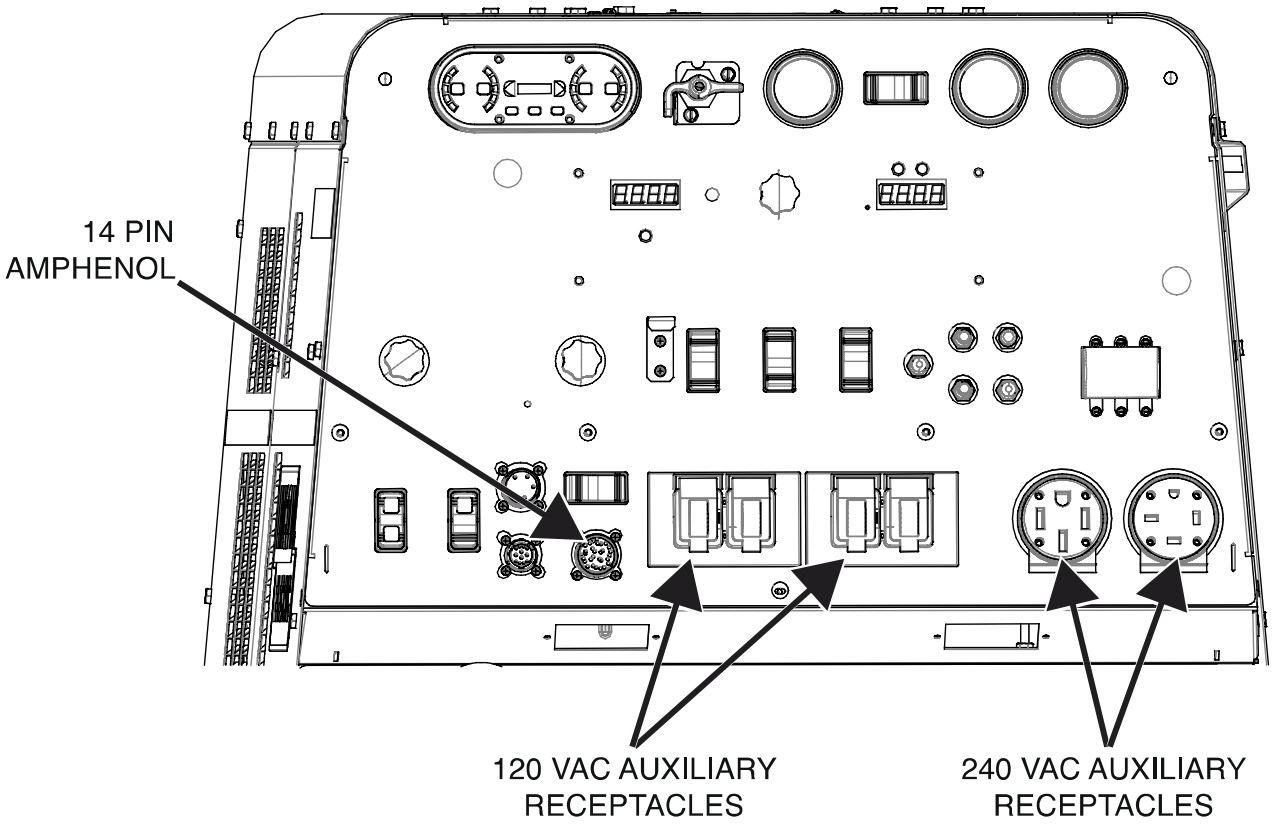


Figure F.51 – 14 Pin Amphenol terminal locations

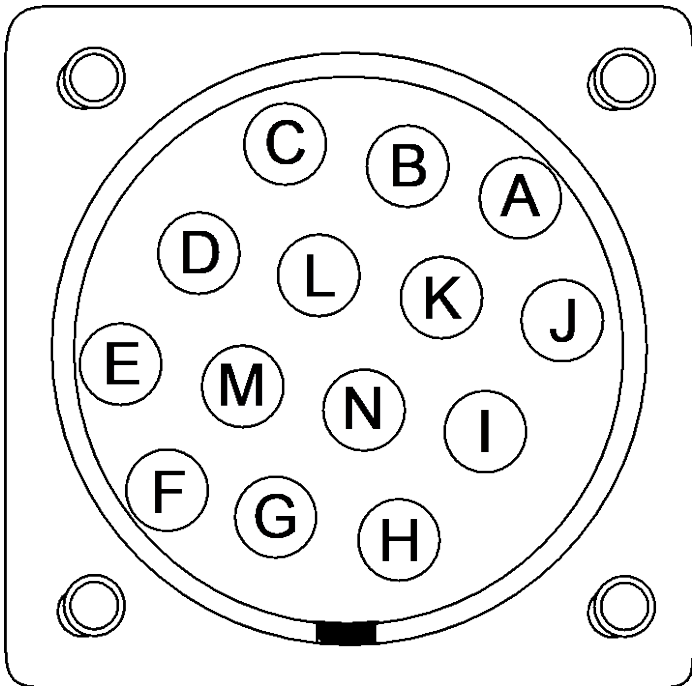
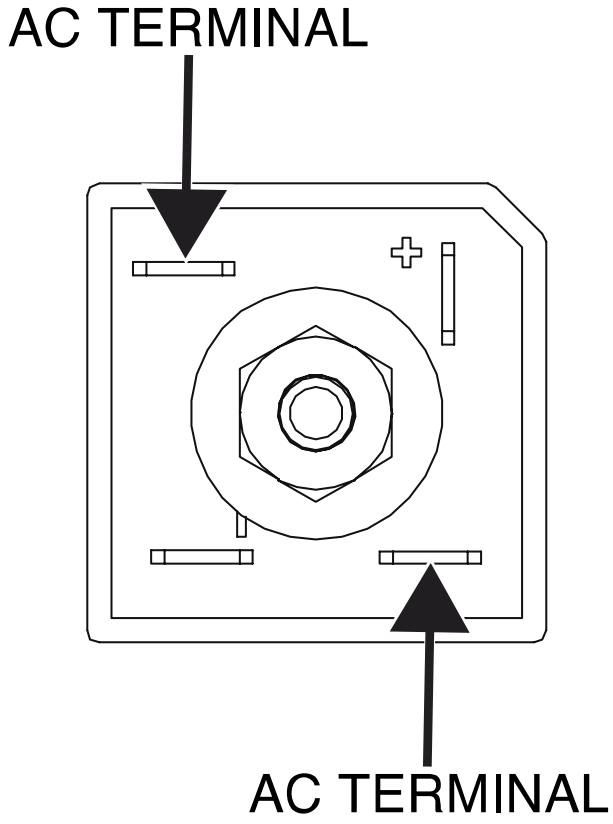


Figure F.52 – D2 rectifier AC terminal locations



PWM GATE SIGNAL TEST PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This test will determine if the Chopper User Interface Board is able to produce the PWM (Pulse Width Modulated) gate signal needed to control the IGBTs (Insulated Gate Bipolar Transistor) on the Chopper Boards. This test will also verify that the Chopper User Interface Board can turn the PWM gate signal on and off properly and that the right side chopper board is sending the PWM (Pulse Width Modulated) gate signal to the left side chopper board.

MATERIALS NEEDED

Volt/Ohmmeter
Frequency counter or digital multi-meter with frequency counter function
Wiring Diagram

TEST PROCEDURE

1. Turn off the engine on the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Unplug any device that may be attached to either the Amphenol receptacles.
5. Place the idle switch in the “HIGH IDLE” position.
6. Place the mode switch in the “CC-STICK” position.
7. Place the weld terminals switch into the “WELD TERMINALS ON” position.
8. Locate plug J31 on the chopper user interface board. See ***Figure F.53***. See Wiring Diagram.
9. Locate plugs J21 and J22 on the right side chopper board. See ***Figure F.54***. See Wiring Diagram.
10. Locate terminals B7 and B8 on the left side chopper board. See ***Figure F.55***. See Wiring Diagram.
11. Start the engine and let it run and stabilize at high idle RPM.
12. Using the frequency counter, test for 20kHz PWM gate signal between leads 283 (J31-1) and 284 (J31-3) on the chopper user interface board. See ***Figures F.53*** and ***F.56***. See Wiring Diagram.
13. Using the frequency counter, test for 20kHz PWM gate signal between leads 283 (J21-2) and 284 (J21-1) on the right side chopper board. See ***Figures F.54*** and ***F.56***. See Wiring Diagram.
14. Using the frequency counter, test for 20kHz PWM gate signal between leads 23 (J22-10) and 25 (J22-9) on the right side chopper board. See ***Figures F.54*** and ***F.56***. See Wiring Diagram.
15. Using the frequency counter, test for 20kHz PWM gate signal between leads 23 (terminal B7) and 25 (terminal B8). See ***Figure F.55***. See Wiring Diagram.

16. If the 20KHz gate signal is present, place the weld terminals switch in the ”REMOTELY CONTROLLED” position. The gate signal should turn off.
17. If the 20 KHz gate signal responds as described above, this test is complete.
18. If there is no 20 KHz gate signal, test for the presence of 80 to 100 VDC, at leads 13 (J31-5) to 14 (J31-6) of the chopper user interface board. See Wiring Diagram. If there is no voltage coming from the right side chopper board, perform the ***Chopper Board Function Test Procedure***.
19. If voltage is very low or not present, check leads 13 and 14 for faulty or damaged wiring or connections between the chopper user interface board and the chopper board. See Wiring Diagram.
20. Place the weld terminals switch into the “WELD TERMINALS ON” position.
21. If the 80 to 100 VDC supply voltage is present at the chopper user interface board, but there is no PWM gate signal, check the voltage between leads 256 (J32-1) and 235 (J32-7). The voltage should be about 0 VDC.
22. If about 5 VDC is detected, the welding terminal control circuit is open. Check for damaged leads for faulty connections at leads 256 and 235; also check for a defective welding terminal switch. See Wiring Diagram.
23. If the PWM signal remains after the welding terminal switch has been placed in the “REMOTELY CONTROLLED” position, check the voltage between leads 256 (J32-1) and 235 (J32-7) at the chopper user interface board.
24. If the voltage reads 0 or very near 0, check for damaged insulation at leads 256 and 235, also check for a shorted welding terminal switch or damaged or contaminated Amphenol receptacle. See Wiring Diagram.
25. If the above wiring and components are undamaged and functioning properly, the chopper user interface board may be faulty.
26. If the voltage reads about 5 VDC and the PWM signal remains, the chopper user interface board may be faulty.
27. If faulty, perform the ***Chopper User Interface Board Removal And Replacement Procedure***.
28. Perform the ***Case Cover Replacement Procedure***.

Figure F.53 – Chopper user interface board plug J31 location

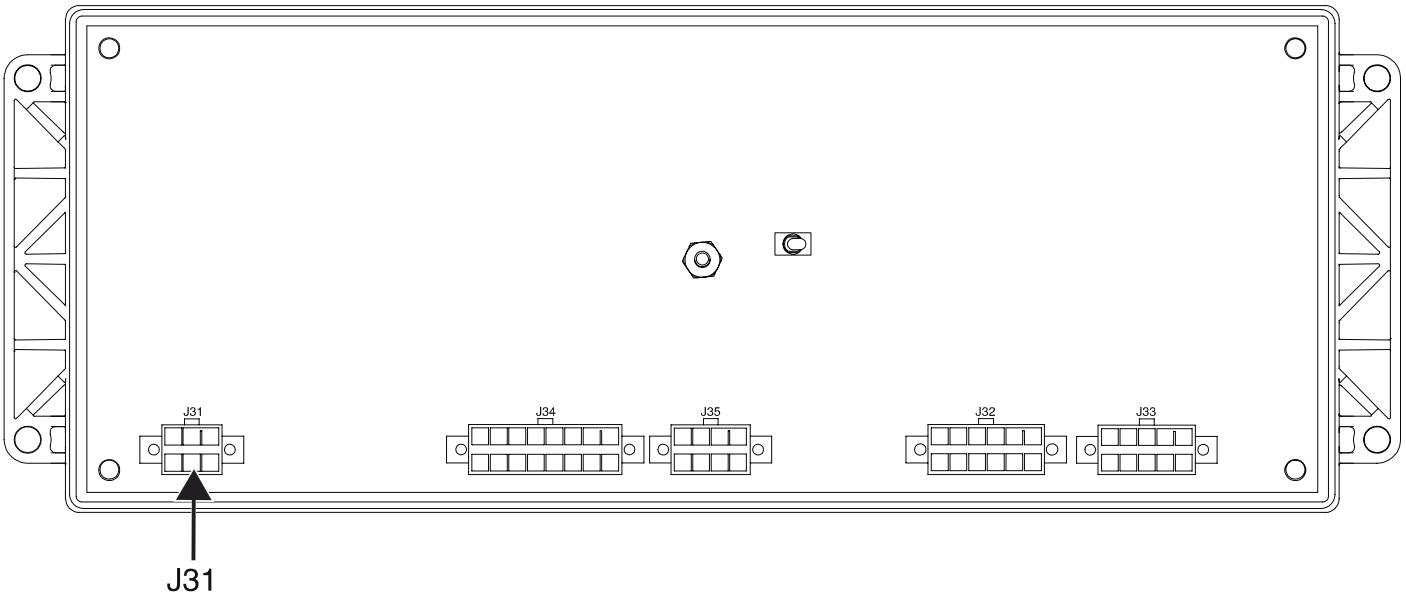


Figure F.54 – Right side chopper board plug J21 and J22 locations

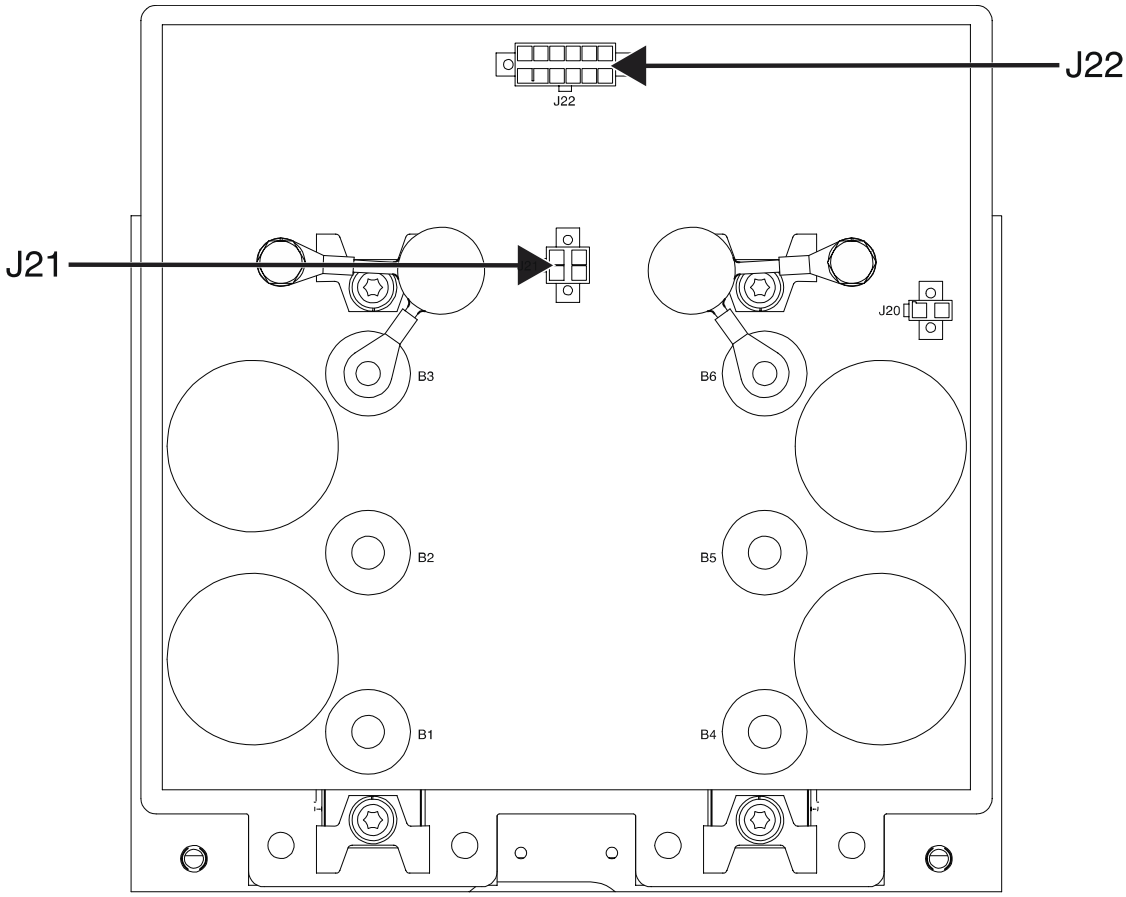


Figure F.55 – Left side chopper board terminal B7 and B8 locations

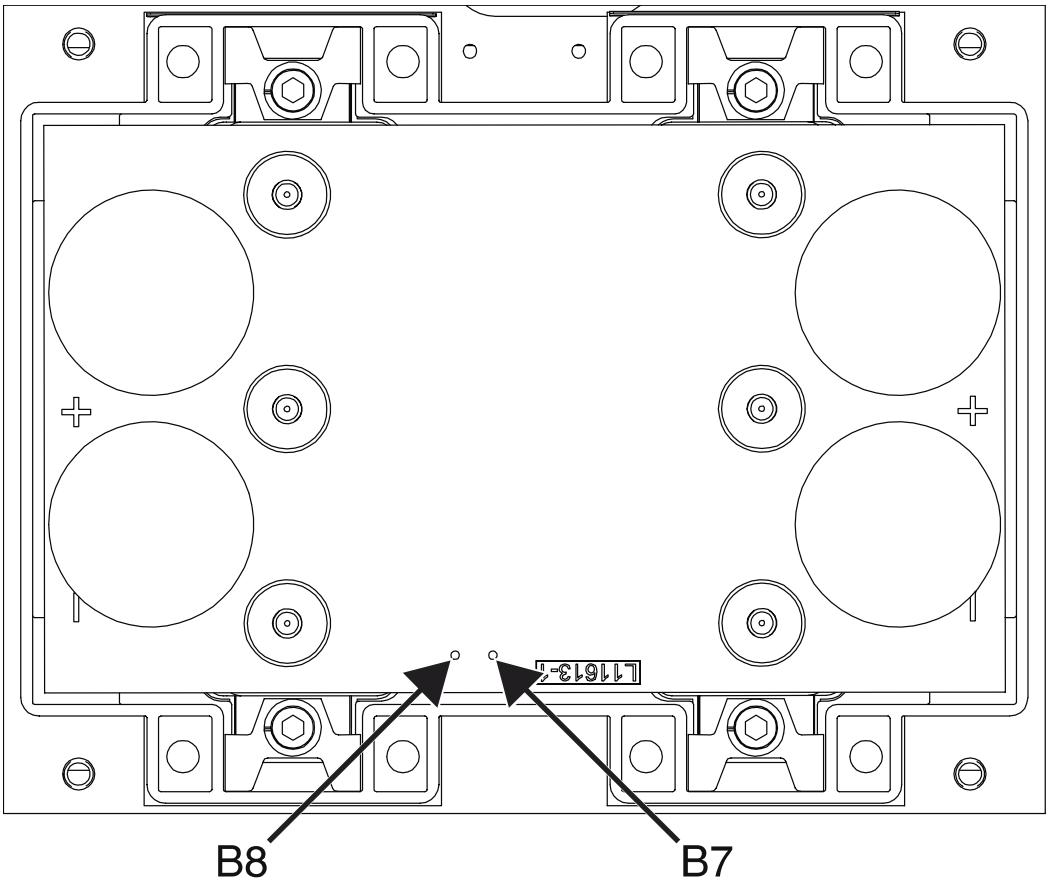
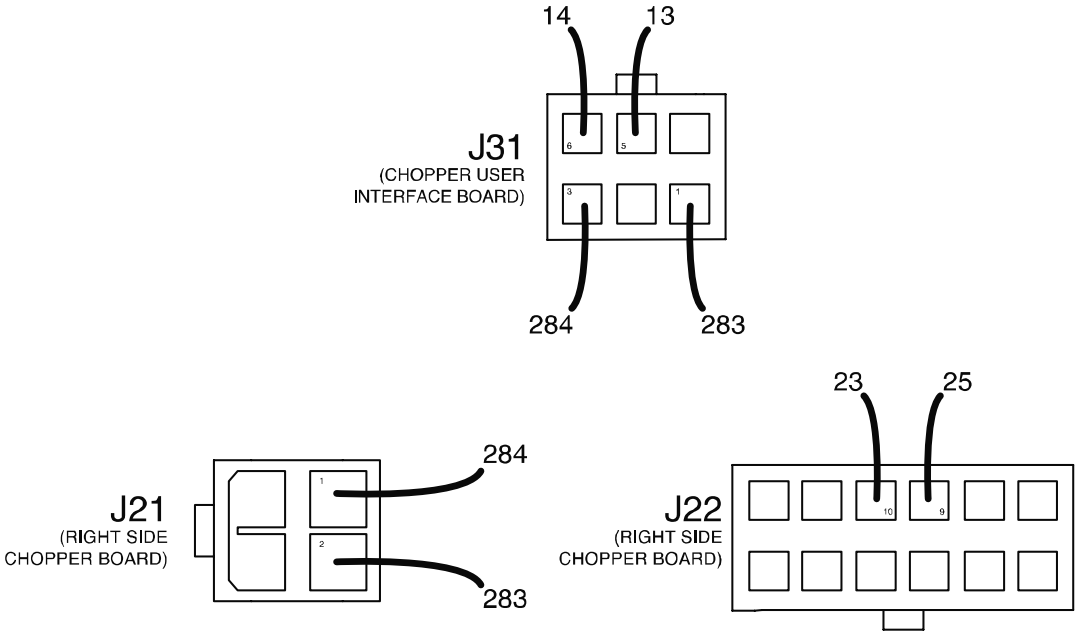


Figure F.56 – Chopper user interface board and right side chopper board lead locations



Removal And Replacement Procedures

THERMOSTAT REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Thermostat.

MATERIALS NEEDED

Phillips Screwdriver
Wiring Diagram

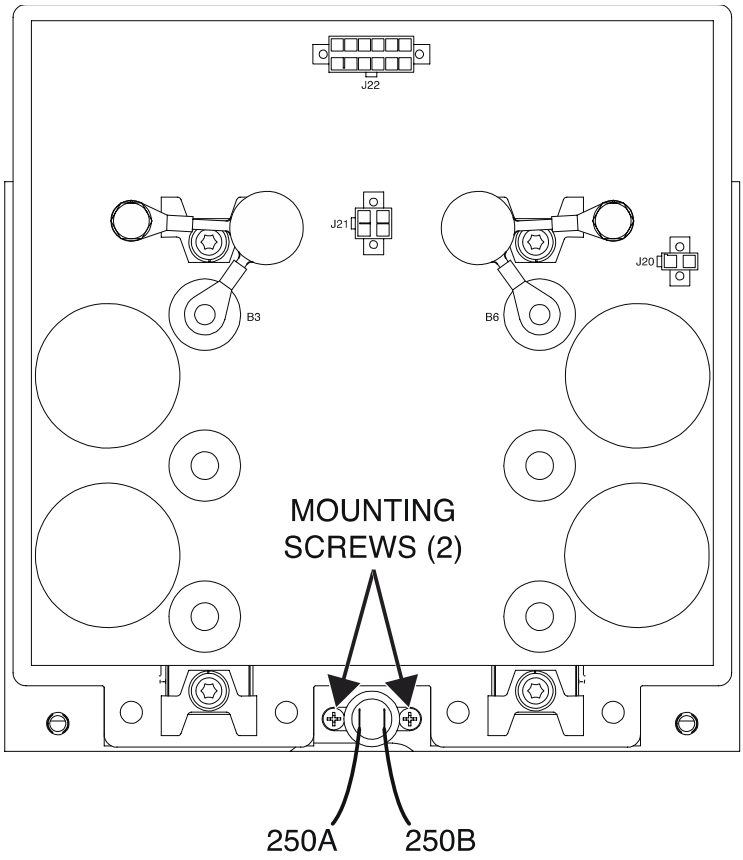
REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Label and disconnect leads 250A and 250B from the thermostat terminals. See ***Figure F.57***. See Wiring Diagram.
4. Using a Phillips screwdriver, remove the two screws securing the thermostat to heat sink of the right side chopper board. See ***Figure F.57***.
5. The thermostat can now be removed and replaced.

REPLACEMENT PROCEDURE

1. Carefully position new thermostat onto the heat sink of the right side chopper board.
2. Using a Phillips screwdriver, attach the two screws securing the thermostat to heat sink of the right side chopper board.
3. Connect leads 250A and 250B to the thermostat terminals. See Wiring Diagram.
4. Perform the ***Case Cover Replacement Procedure***.
5. Perform the ***Retest After Repair Procedure***.

Figure F.57 – Thermostat lead and mounting screw locations



40 VDC BUS BOARD REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the 40 VDC Bus Board.

MATERIALS NEEDED

3/8” Nutdriver
Wiring Diagram

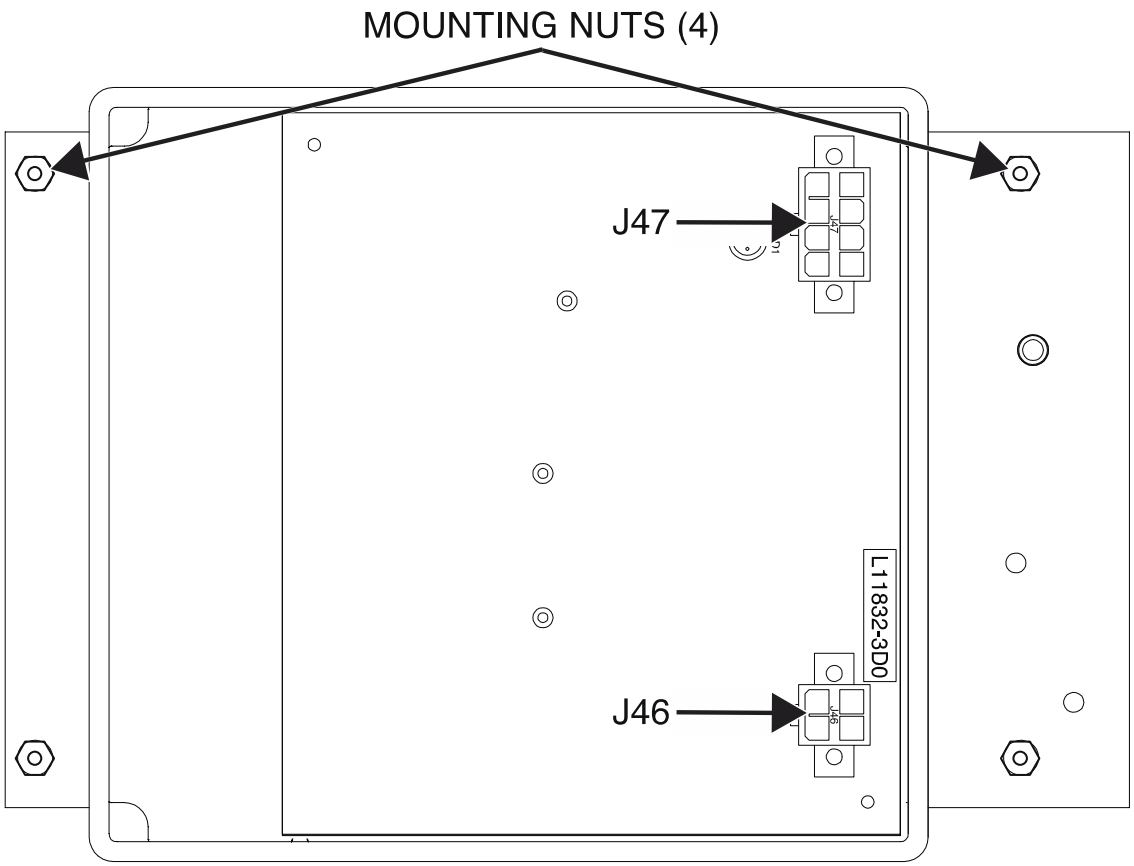
REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***D2 Rectifier Removal Procedure***.
4. Label and disconnect plugs J46 and J47 from the 40 VDC bus board. See ***Figure F.58***. See Wiring Diagram.
5. Using a 3/8” nutdriver, remove the four nuts securing the 40 VDC bus board to the control box. See ***Figure F.58***.
6. The 40 VDC bus board can now be removed and replaced.

REPLACEMENT PROCEDURE

1. Carefully position new 40 VDC bus board onto it’s mounting posts.
2. Using a 3/8” nutdriver, attach the four nuts securing the 40 VDC bus board to the control box.
3. Connect plugs J46 and J47 to the 40 VDC bus board. See Wiring Diagram.
4. Perform the ***D2 Rectifier Replacement Procedure***.
5. Perform the ***Case Cover Replacement Procedure***.
6. Perform the ***Retest After Repair Procedure***.

Figure F.58 – 40 VDC bus board plug and mounting nut locations



D1 & D2 RECTIFIER REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the D1 & D2 Rectifiers.

MATERIALS NEEDED

3/8" Nutdriver
Dow Corning 340 Heat Sink Compound (Lincoln Part #T12837)
Wiring Diagram

REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Label and disconnect leads 200, 200A, 201A, 5H and F1 from the D1 rectifier. See ***Figure F.59***. See Wiring Diagram.
4. Using a 3/8" nutdriver, remove the nut, lock washer, flat washer and spacer securing the D1 rectifier to the fan baffle. See ***Figure F.60***.
5. The D1 rectifier can now be replaced.
6. Label and disconnect leads 65A, 66A, 45 and 46A from the D2 rectifier. See ***Figure F.59***. See Wiring Diagram.
7. Using a 3/8" nutdriver, remove the nut, lock washer, flat washer and spacer securing the D2 rectifier to the 40 VDC bus board mounting plate. See ***Figure F.60***.
8. The D2 rectifier can now be replaced.

REPLACEMENT PROCEDURE

1. Apply a thin coating of Dow Corning 340 heat sink compound to the mating surfaces of the D2 rectifier.
2. Using a 3/8" nutdriver, attach the nut, lock washer, flat washer and spacer securing the D2 rectifier to the 40 VDC bus board mounting plate.
3. Connect leads 65A, 66A, 45 and 46A to the D2 rectifier. See Wiring Diagram.
4. Apply a thin coating of Dow Corning 340 heat sink compound to the mating surfaces of the D1 rectifier.
5. Connect leads 200, 200A, 201A, 5H and F1 to the D1 rectifier. See Wiring Diagram.

6. Using a 3/8” nutdriver, attach the nut, lock washer, flat washer and spacer securing the D1 rectifier to the fan baffle.
7. Perform the ***Case Cover Replacement Procedure***.
8. Perform the ***Retest After Repair Procedure***.

Figure F.59 – D1 & D2 rectifier lead locations

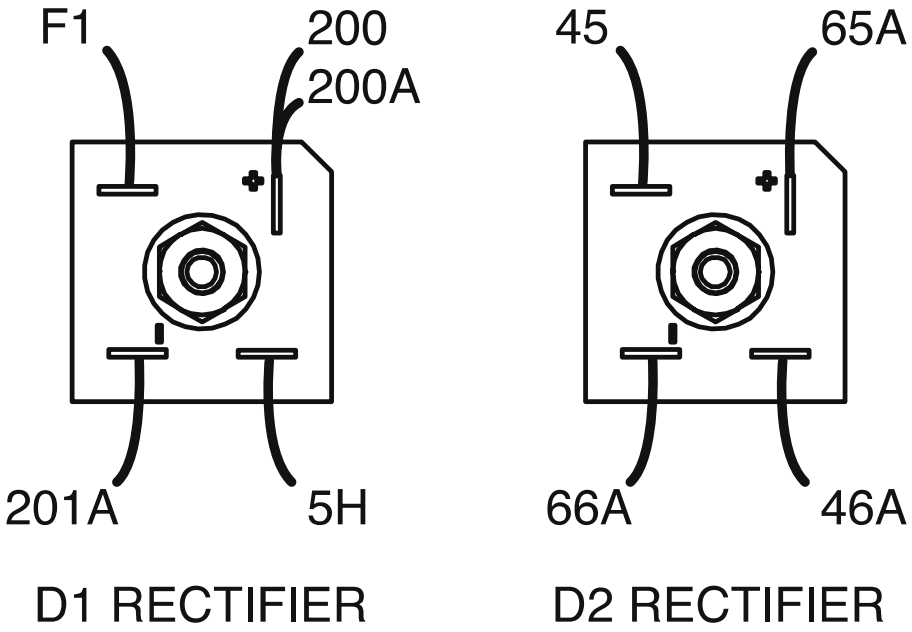
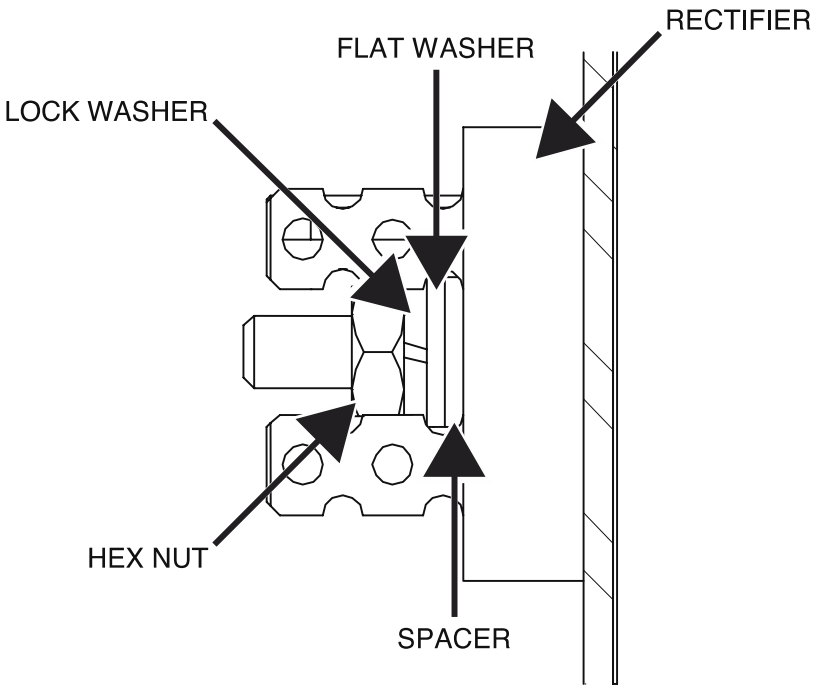


Figure F.60 – D1 & D2 rectifier mounting hardware locations



MODE SELECT BOARD REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Mode Select Board.

MATERIALS NEEDED

5/64” Allen Wrench
9/16” Nutdriver
Wiring Diagram

REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Label and disconnect plug J81 from the mode select board. See ***Figure F.61***. See Wiring Diagram.
4. Using a 5/64” Allen wrench, loosen the setscrew securing the mode select knob to the shaft. See ***Figure F.62***.
5. Using a 9/16” nutdriver, remove the nut securing the mode select board to the front panel.
6. The mode select board can now be replaced.

REPLACEMENT PROCEDURE

1. Carefully position new mode select board into the front panel.
2. Using a 9/16” nutdriver, attach the nut securing the mode select board to the front panel.
3. Using a 5/64” Allen wrench, tighten the setscrew securing the mode select knob to the shaft.
4. Connect plug J81 to the mode select board. See Wiring Diagram.
5. Perform the ***Case Cover Replacement Procedure***.
6. Perform the ***Retest After Repair Procedure***.

Figure F.61 – Mode select board plug J1 location

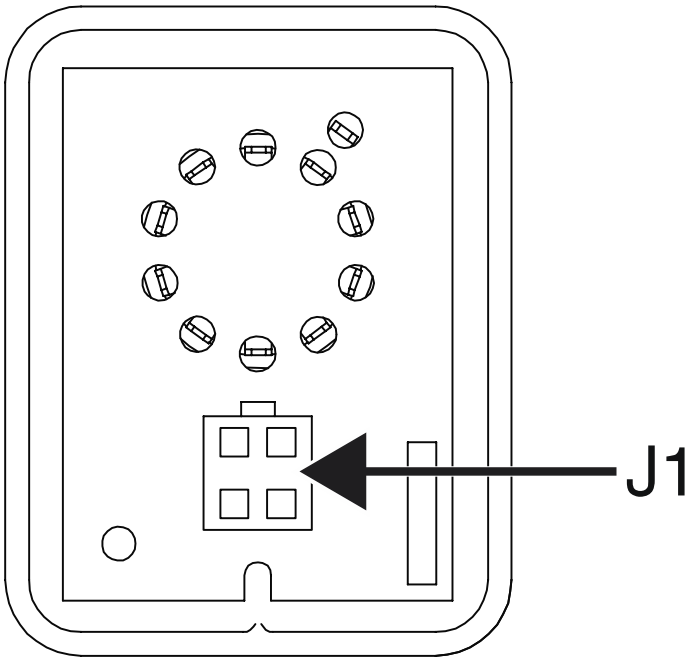
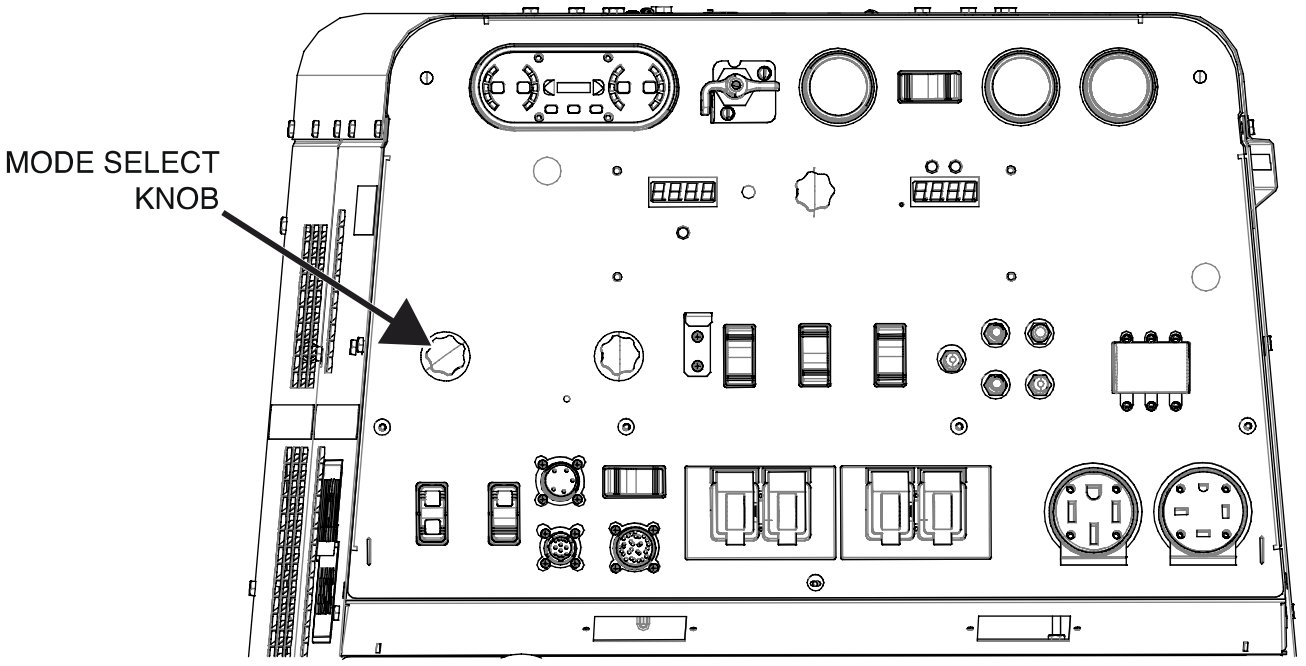


Figure F.62 – Mode select knob location



RUN / IDLE SWITCH REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Run / Idle Switch.

MATERIALS NEEDED

Wiring Diagram

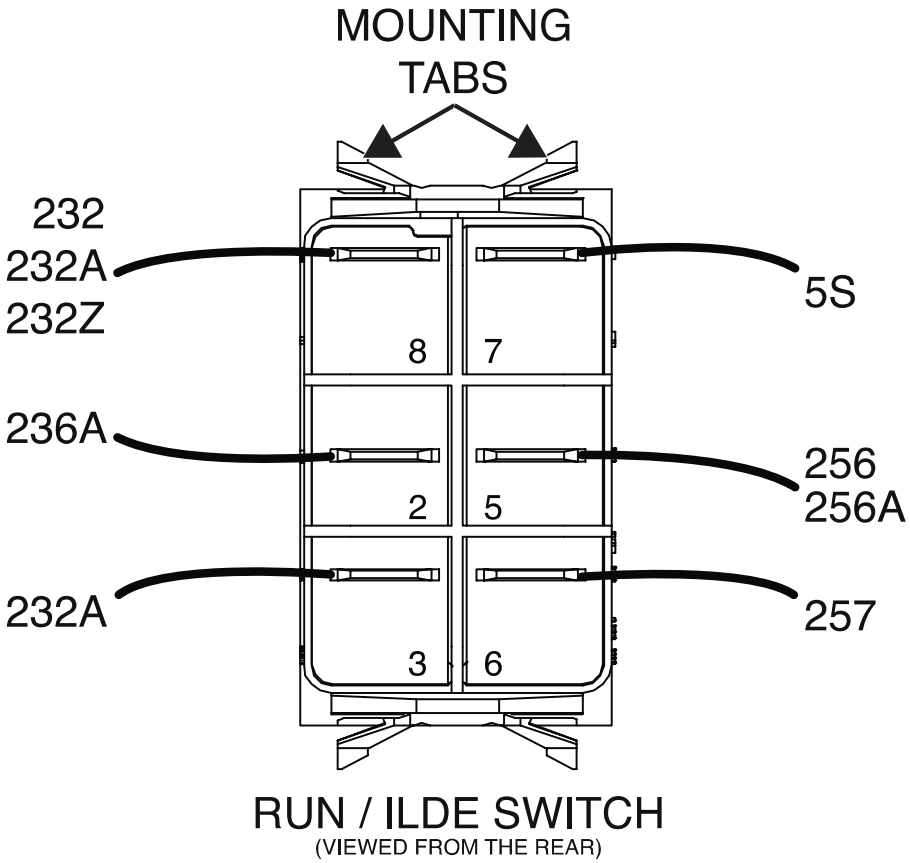
REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Carefully depress the tabs at the top and bottom of the rear side of the run / idle switch. See ***Figure F.63***.
4. Carefully maneuver the run / idle switch thru the front panel.
5. Label and disconnect leads 232, 232A, 232Z, 236A, 5S, 256, 256A and 257 from the terminals of the run / idle switch. See ***Figure F.63***. See Wiring Diagram.
6. Route wires back thru the control panel and remove the run / idle switch backing plate.
7. The run / idle switch can now be removed and replaced can now be replaced.

REPLACEMENT PROCEDURE

1. Carefully position the switch backing plate over the wiring for the switch and route the leads thru the front panel of the machine.
2. Connect leads 232, 232A, 232Z, 236A, 5S, 256, 256A and 257 to the terminals of the run / idle switch. See Wiring Diagram.
3. Carefully press the run / idle switch into position on the control panel. The tabs on the switch should lock the switch in place on the switch backing plate.
4. Perform the ***Case Cover Replacement Procedure***.
5. Perform the ***Retest After Repair Procedure***.

Figure F.63 – Run / idle switch lead and mounting tab locations



START / GLOW SWITCH REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Start / Glow Switch.

MATERIALS NEEDED

Wiring Diagram

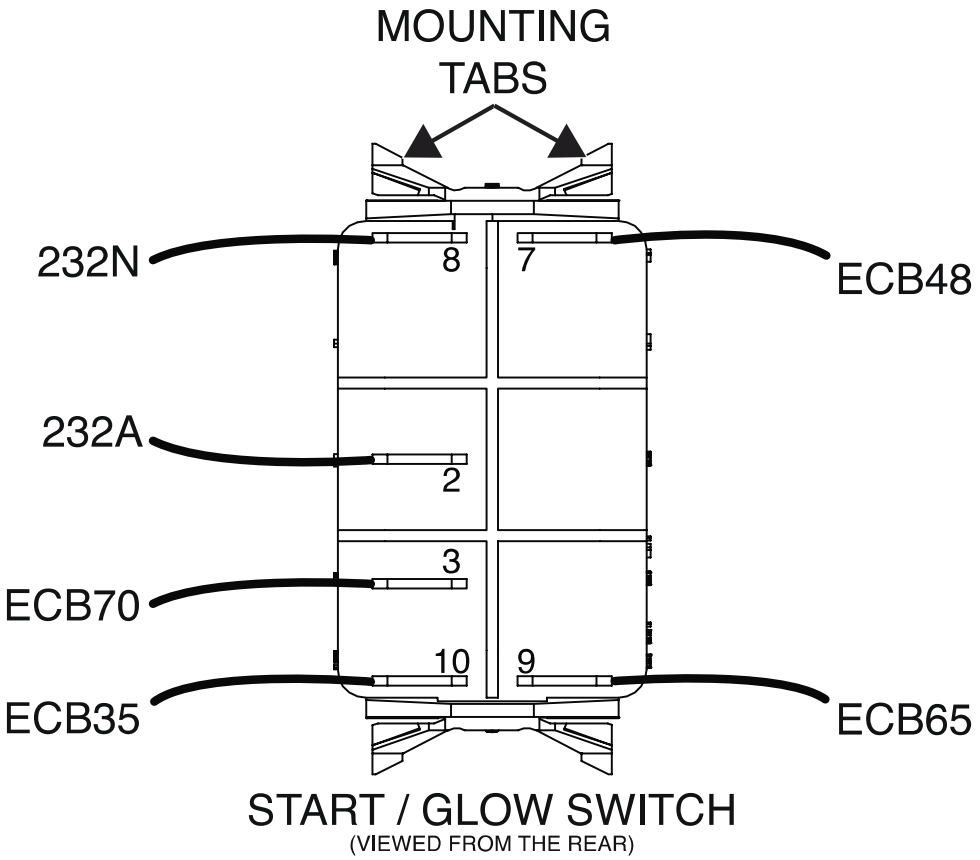
REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Carefully depress the tabs at the top and bottom of the rear side of the start / glow switch. See ***Figure F.64***.
4. Carefully maneuver the start / glow switch thru the front panel.
5. Label and disconnect leads 232N, 232NA, ECB70, ECB48, ECB35 and ECB65 from the terminals of the start / glow switch. See ***Figure F.64***. See Wiring Diagram.
6. Route wires back thru the control panel and remove the start / glow switch backing plate.
7. The start / glow switch can now be removed and replaced can now be replaced.

REPLACEMENT PROCEDURE

1. Carefully position the switch backing plate over the wiring for the switch and route the leads thru the front panel of the machine.
2. Connect leads 232N, 232NA, ECB70, ECB48, ECB35 and ECB65 to the terminals of the start / glow switch. See Wiring Diagram.
3. Carefully press the start / glow switch into position on the control panel. The tabs on the switch should lock the switch in place on the switch backing plate.
4. Perform the ***Case Cover Replacement Procedure***.
5. Perform the ***Retest After Repair Procedure***.

Figure F.64 – Start / glow switch lead and mounting tab locations



HYDRAULIC PUMP / AIR COMPRESSOR POWER SWITCH REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Hydraulic Pump / Air Compressor Power Switch.

MATERIALS NEEDED

Wiring Diagram

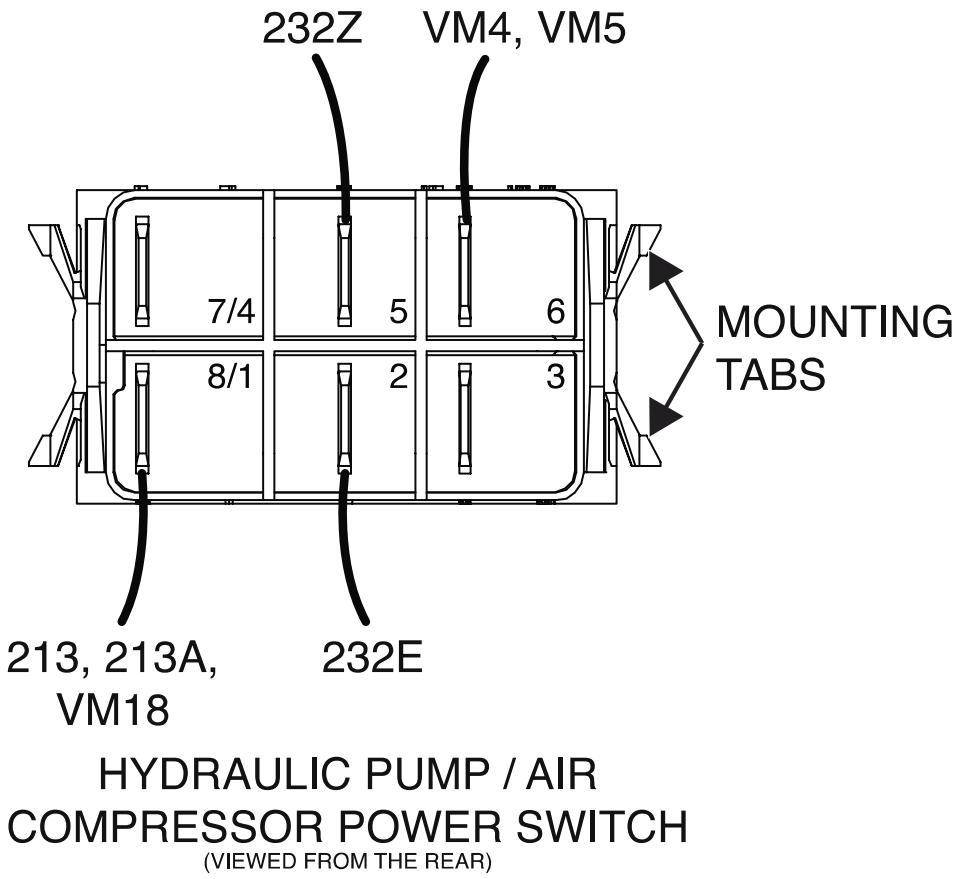
REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Carefully depress the tabs at the top and bottom of the rear side of the hydraulic pump / air compressor power switch. See ***Figure F.65***.
4. Carefully maneuver the hydraulic pump / air compressor power switch thru the front panel.
5. Label and disconnect leads 232Z, VM4, VM5, VM18, 213, 213A and 232E from the terminals of the hydraulic pump / air compressor power switch. See ***Figure F.65***. See Wiring Diagram.
6. Route wires back thru the control panel and remove the hydraulic pump / air compressor power switch backing plate.
7. The hydraulic pump / air compressor power switch can now be removed and replaced can now be replaced.

REPLACEMENT PROCEDURE

1. Carefully position the switch backing plate over the wiring for the hydraulic pump / air compressor power switch and route the leads thru the front panel of the machine.
2. Connect leads 232Z, VM4, VM5, VM18, 213, 213A and 232E to the terminals of the hydraulic pump / air compressor power switch. See Wiring Diagram.
3. Carefully press the hydraulic pump / air compressor power switch into position on the control panel. The tabs on the switch should lock the switch in place on the switch backing plate.
4. Perform the ***Case Cover Replacement Procedure***.
5. Perform the ***Retest After Repair Procedure***.

Figure F.65 – Hydraulic Pump / Air Compressor Power Switch lead and mounting tab locations



POWER MODULE REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Power Module.

MATERIALS NEEDED

3/8” Nutdriver
Two 3/4” Open-End Wrenches
7/16” Nutdriver
Two 1/2” Open-End Wrenches
7/16” Open-End Wrench
1/2” Open-End Wrench
1/2” Nutdriver
Wiring Diagram

REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Using a 3/8” nutdriver, remove the two screws securing the output panel assembly to the control panel assembly. See ***Figure F.66***. See Wiring Diagram.
5. Using a 3/8” nutdriver, remove the three screws securing the output panel assembly to the base of the machine. See ***Figure F.66***. See Wiring Diagram.
6. Using two 3/4” open-end wrenches, remove the bolt, nut, lock washer and two flat washers securing the leads to the rear of the negative terminal. See ***Figure F.66***. See Wiring Diagram.
7. Using a 7/16” nutdriver, remove the nut securing lead GND-J to the output panel assembly. See Wiring Diagram.
8. Using two 3/4” open-end wrenches, remove the bolt, nut, lock washer and flat washer securing the shunt to the rear of the positive terminal. See ***Figure F.66***. See Wiring Diagram.
9. Using a 3/4” open-end wrench, remove the nut, lock washer and flat washer securing leads to the positive terminal. See ***Figure F.66***. See Wiring Diagram.
10. The output panel can now be removed.
11. Label and disconnect plugs J20, J21 and J22 from the right side chopper board. See ***Figure F.67***. See Wiring Diagram.

12. Using a 7/16” nutdriver, remove the six bolts, lock washers and flat washers securing leads to terminals B1, B2, B3, B4, B5 and B6 to the right side chopper board. See ***Figure F.67***. See Wiring Diagram.
13. Label and disconnect leads 250B (left) and 250A (right) from the thermostat on the right side chopper board. See ***Figure F.67***. See Wiring Diagram.
14. Label and disconnect leads 25 (white) and 23 (black) from the quick connect terminals B8 and B7 of the left side chopper board. See ***Figure F.68***. See Wiring Diagram.
15. Using a 7/16” nutdriver, remove the six bolts, lock washers and flat washers securing leads to terminals B1, B2, B3, B4, B5 and B6 of the left side chopper board. See ***Figure F.68***. See Wiring Diagram.
16. Using two 1/2” open-end wrenches, remove the bolt, nut, lock washer and two flat washers securing the leads to the negative terminal of the output rectifier. See ***Figure F.69***. See Wiring Diagram.
17. Using a 7/16” open-end wrench and a 1/2” open-end wrench, remove the bolt, nut, lock washer and two flat washers securing each set of leads to the three ac terminals of the output rectifier. See ***Figure F.69***. See Wiring Diagram.
18. Using a 7/16” nutdriver, remove the four screws and lock washers securing the power module top bracket to the chopper board heat sinks. See ***Figure F.70***.
19. Using a 7/16” nutdriver, remove the four screws, lock washers and flat washers securing the choke assemblies to the power module top bracket. See ***Figure F.70***.
20. Carefully maneuver the top bracket to allow for access to power module components.
21. Using a 1/2” nutdriver, remove the two nuts securing the output rectifier to the power module bracket. See ***Figure F.70***. See Wiring Diagram.
22. Carefully maneuver the output rectifier to gain access to the rear of the output rectifier.
23. Using two 1/2” open-end wrenches, remove the bolt, nut, lock washer and two flat washers securing leads to the positive terminal of the output rectifier. See ***Figure F.70***. See Wiring Diagram.
24. Using a 3/8” nutdriver, remove the four screws securing the power module to the base of the machine.
25. Carefully lift the power module out of the machine.

REPLACEMENT PROCEDURE

1. Carefully position the power module into the machine.
2. Using a 3/8” nutdriver, attach the four screws securing the power module to the base of the machine.
3. Using two 1/2” open-end wrenches, attach the bolt, nut, lock washer and two flat washers securing leads to the positive terminal of the output rectifier. See Wiring Diagram.
4. Carefully position output rectifier onto it’s mounting bracket.
5. Using a 1/2” nutdriver, attach the two nuts securing the output rectifier to the power module bracket.
6. Carefully position the top bracket onto power module components.
7. Using a 7/16” nutdriver, attach the four screws, lock washers and flat washers securing the choke assemblies to the power module top bracket.
8. Using a 7/16” nutdriver, attach the four screws and lock washers securing the power module top bracket to the chopper board heat sinks.

9. Using a 7/16” open-end wrench and a 1/2” open-end wrench, attach the bolt, nut, lock washer and two flat washers securing each set of leads to the three ac terminals of the output rectifier. See Wiring Diagram.
10. Using two 1/2” open-end wrenches, attach the bolt, nut, lock washer and two flat washers securing the leads to the negative terminal of the output rectifier. See Wiring Diagram.
11. Using a 7/16” nutdriver, attach the six bolts, lock washers and flat washers securing leads to terminals B1, B2, B3, B4, B5 and B6 of the left side chopper board. See Wiring Diagram.
12. Connect leads 25 (white) and 23 (black) to the quick connect terminals B8 and B7 of the left side chopper board. See Wiring Diagram.
13. Connect leads 250B (left) and 250A (right) to the thermostat on the right side chopper board. See Wiring Diagram.
14. Using a 7/16” nutdriver, attach the six bolts, lock washers and flat washers securing leads to terminals B1, B2, B3, B4, B5 and B6 to the right side chopper board. See Wiring Diagram.
15. Connect plugs J20, J21 and J22 to the right side chopper board. See Wiring Diagram.
16. Carefully position the output panel onto the machine.
17. Using a 3/4” open-end wrench, attach the nut, lock washer and flat washer securing leads to the positive terminal. See Wiring Diagram.
18. Using two 3/4” open-end wrenches, attach the bolt, nut, lock washer and flat washer securing the shunt to the rear of the positive terminal. See Wiring Diagram.
19. Using a 7/16” nutdriver, attach the nut securing lead GND-J to the output panel assembly. See Wiring Diagram.
20. Using two 3/4” open-end wrenches, attach the bolt, nut, lock washer and two flat washers securing the leads to the rear of the negative terminal. See Wiring Diagram.
21. Using a 3/8” nutdriver, attach the three screws securing the output panel assembly to the base of the machine. See Wiring Diagram.
22. Using a 3/8” nutdriver, attach the two screws securing the output panel assembly to the control panel assembly. See Wiring Diagram.
23. Perform the ***Case Cover Replacement Procedure***.
24. Perform the ***Retest After Repair Procedure***.

Figure F.66 – Machine front component locations

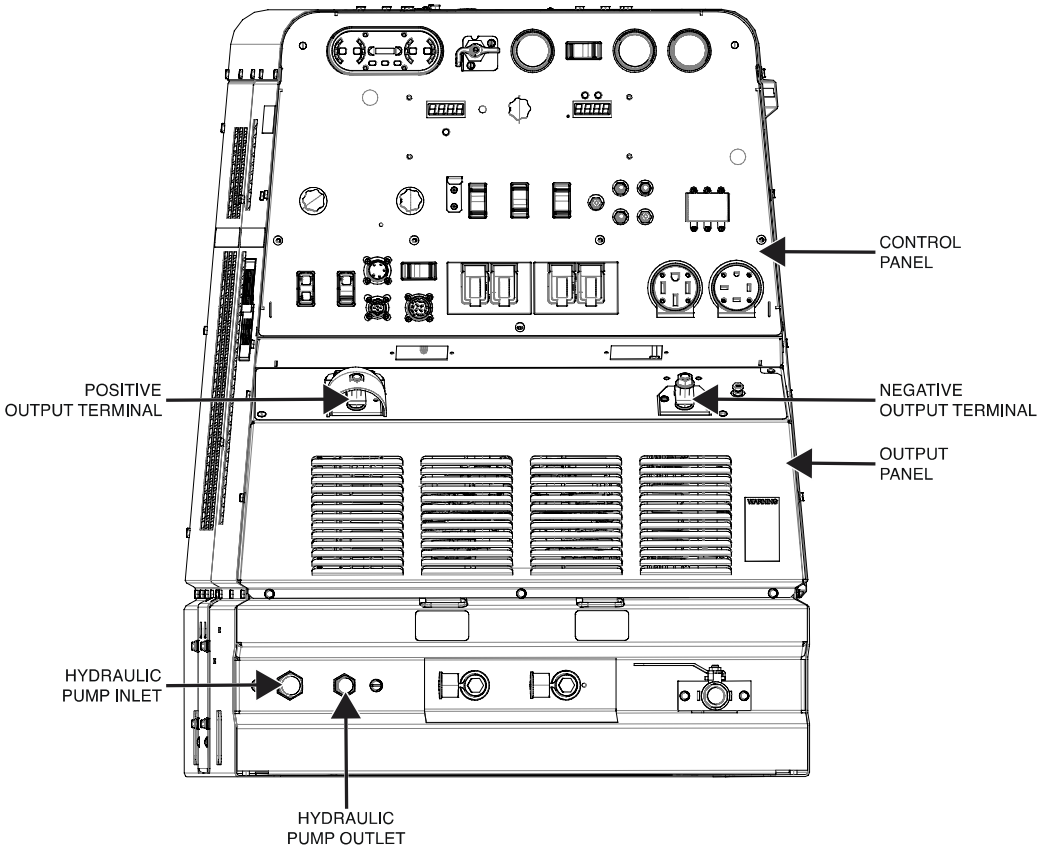


Figure F.67 – Right side chopper board plug and terminal locations

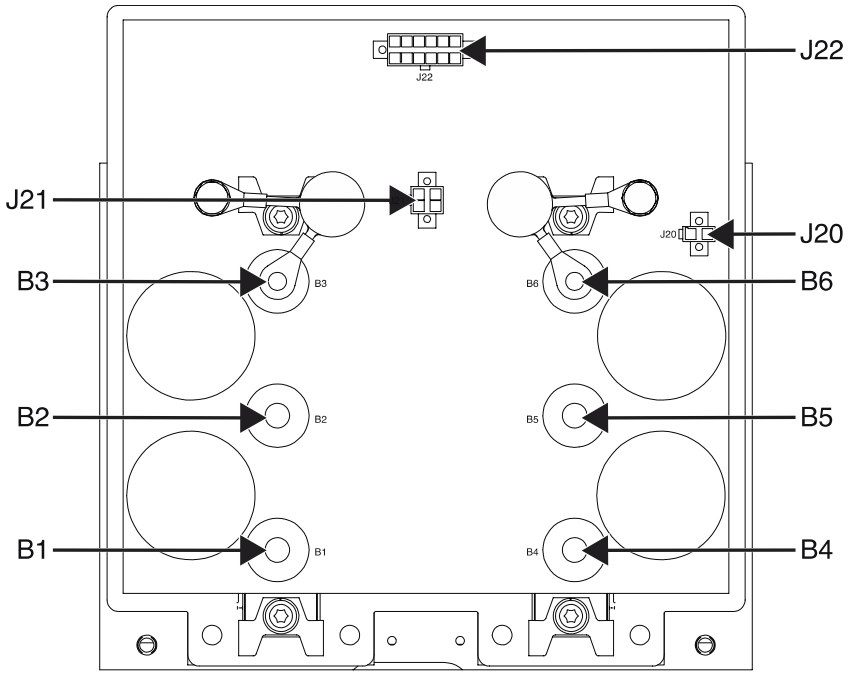


Figure F.68 – Left side chopper board plug and terminal locations

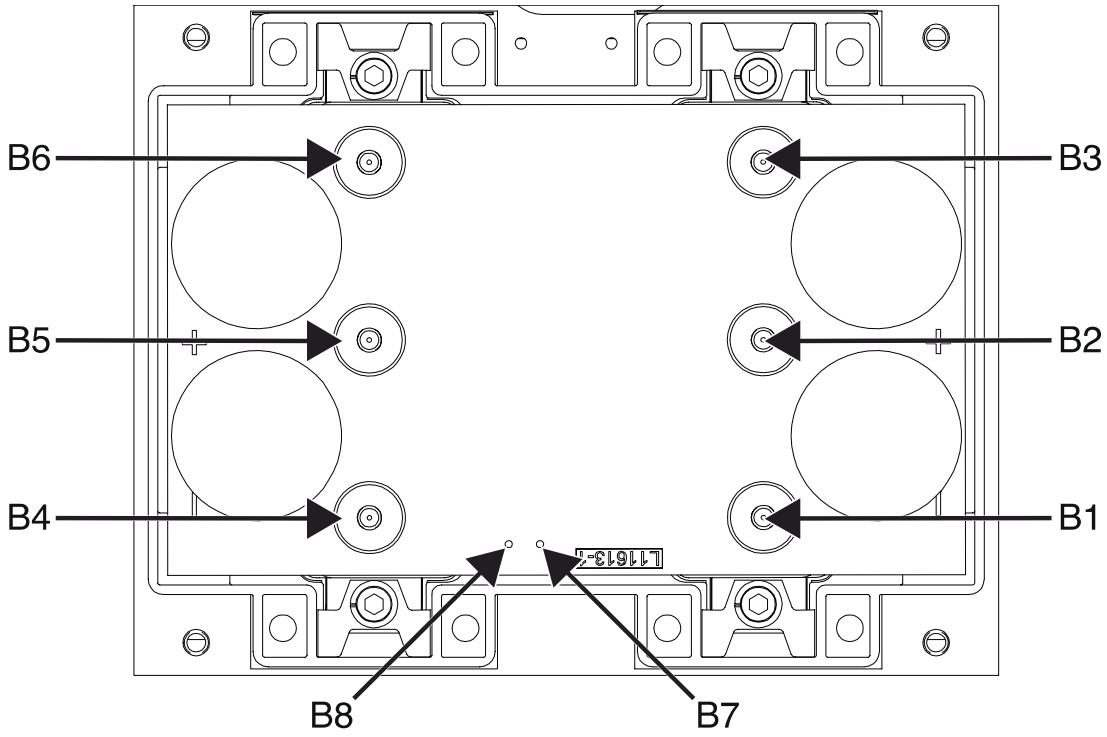


Figure F.69 – Output rectifier terminal locations

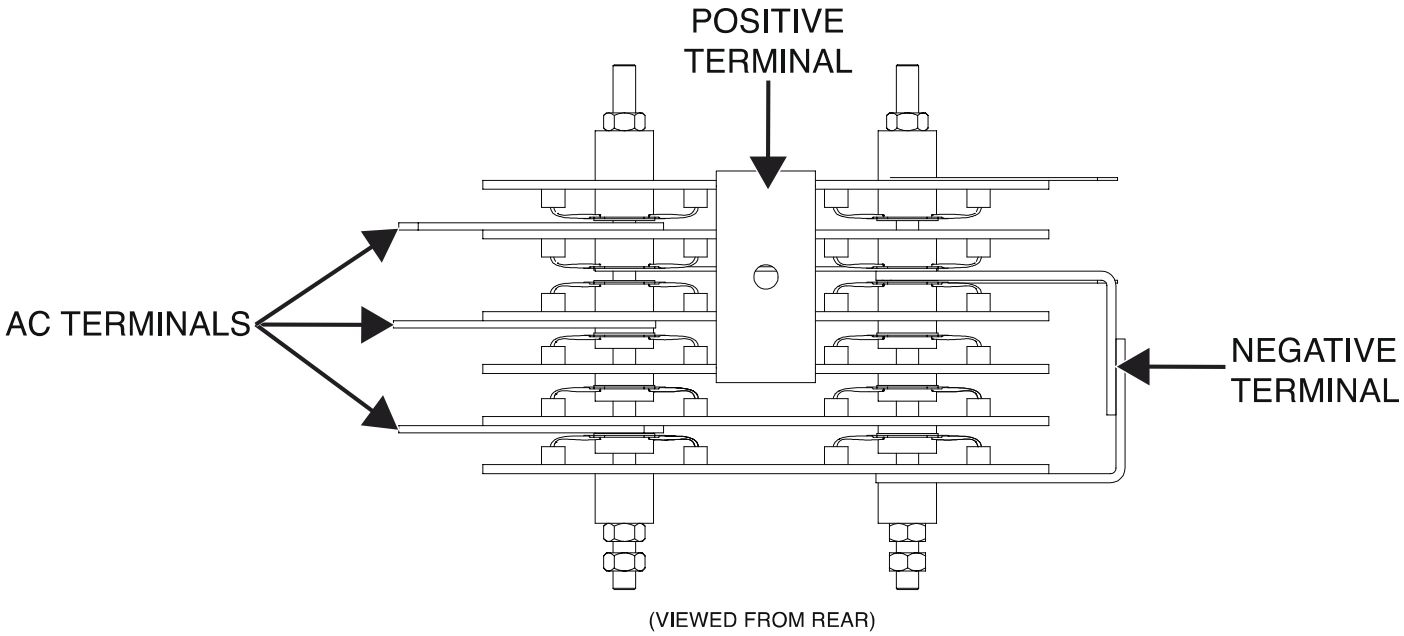
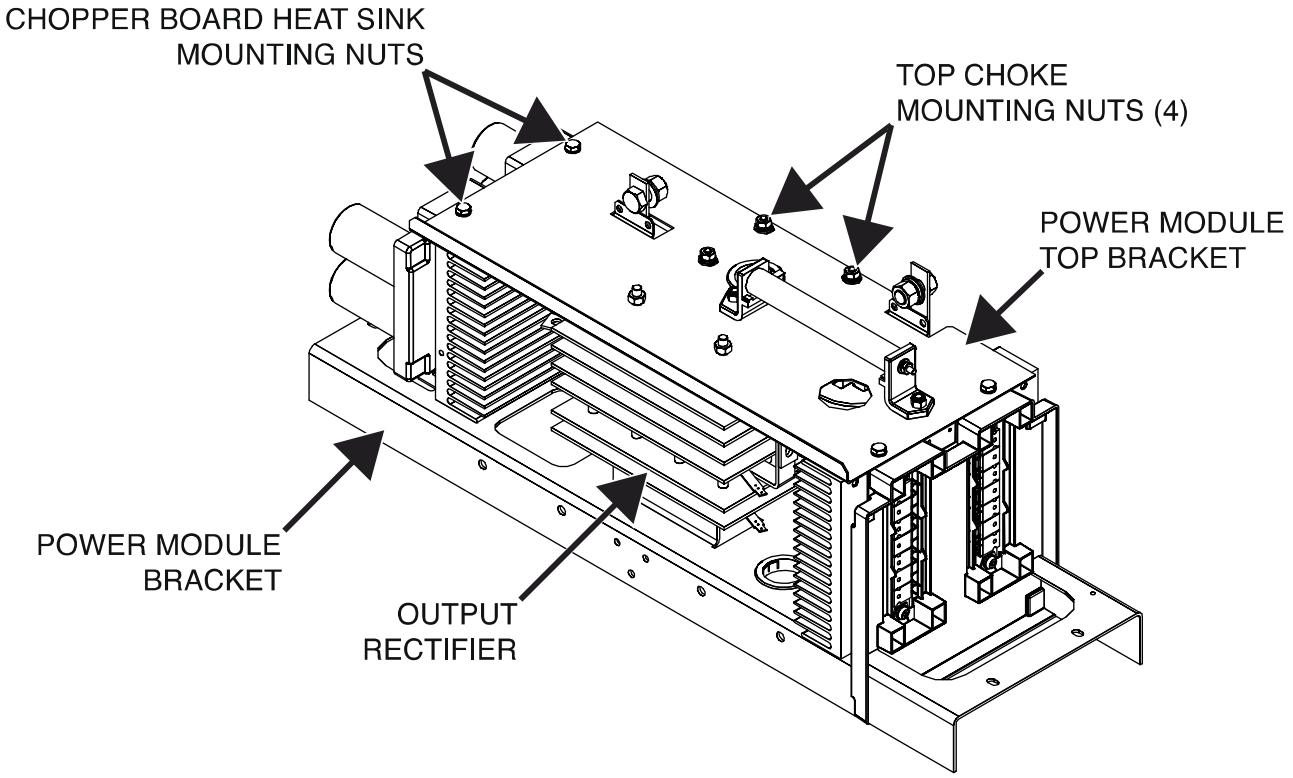


Figure F.70 – Power module component locations



OUTPUT RECTIFIER REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Output Rectifier.

MATERIALS NEEDED

Wiring Diagram

REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Perform the ***Power Module Removal Procedure***.
5. With the power module removed from the machine and all leads and mounting nuts removed from the output rectifier carefully lift the output rectifier off of it's mounting bracket and remove from the machine.
6. The output rectifier can now be replaced.

REPLACEMENT PROCEDURE

1. Carefully position the new output rectifier onto the mounting posts on the power module.
2. Perform the ***Power Module Replacement Procedure***.
3. Perform the ***Case Cover Replacement Procedure***.
4. Perform the ***Retest After Repair Procedure***.

RIGHT SIDE CHOPPER BOARD REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Right Side Chopper Board.

MATERIALS NEEDED

7/16” Nutdriver
Wiring Diagram

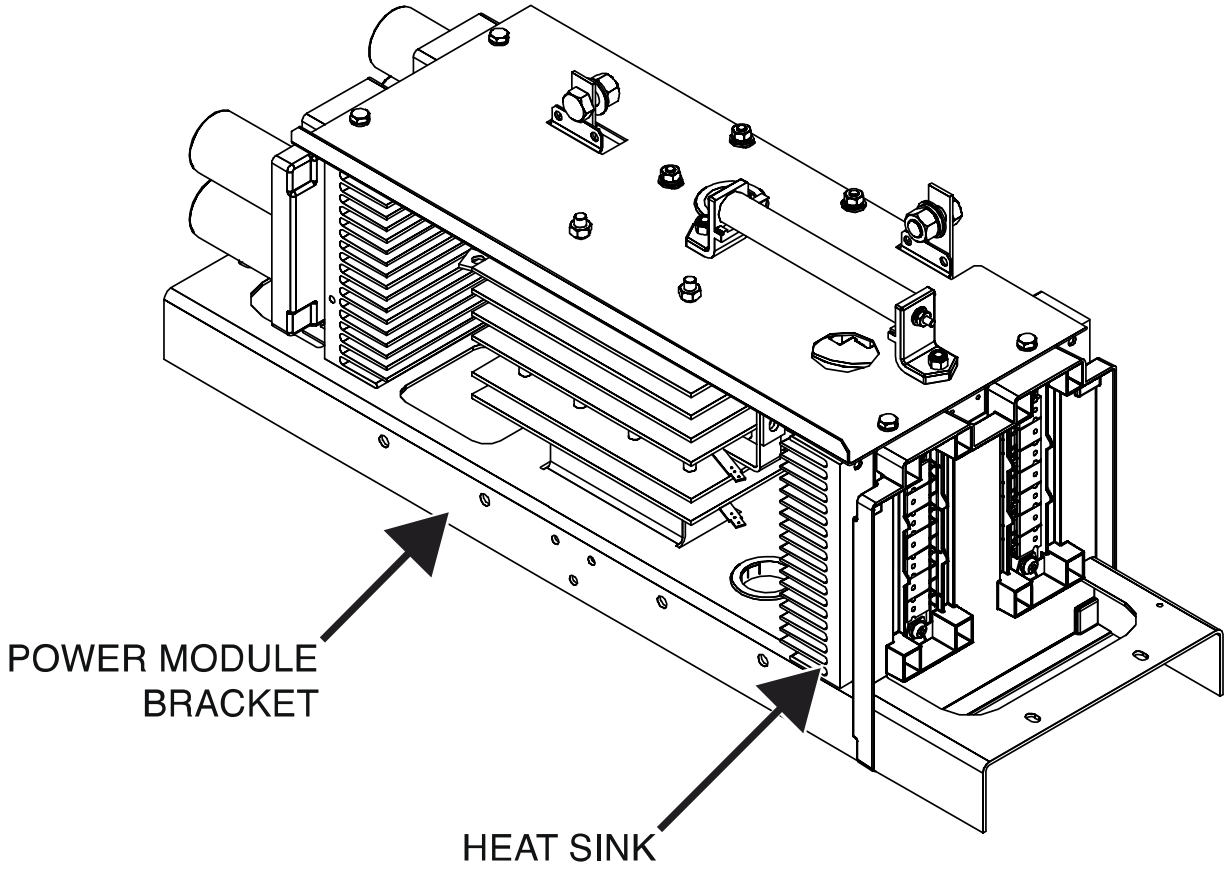
REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Perform the ***Power Module Removal Procedure***.
5. Using a 7/16” nutdriver, remove the two bolts, and lock washers securing the heat sink to the power module bracket. See ***Figure F.71***.
6. The right side chopper board can now be replaced.

REPLACEMENT PROCEDURE

1. Carefully position new right side chopper board assembly onto the power module.
2. Using a 7/16” nutdriver, attach the two bolts, and lock washers securing the heat sink to the power module bracket.
3. Perform the ***Power Module Replacement Procedure***.
4. Perform the ***Case Cover Replacement Procedure***.
5. Perform the ***Retest After Repair Procedure***.

Figure F.71 – Power module bracket and heat sink locations



LEFT SIDE CHOPPER BOARD REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Left Side Chopper Board.

MATERIALS NEEDED

7/16” Nutdriver
Wiring Diagram

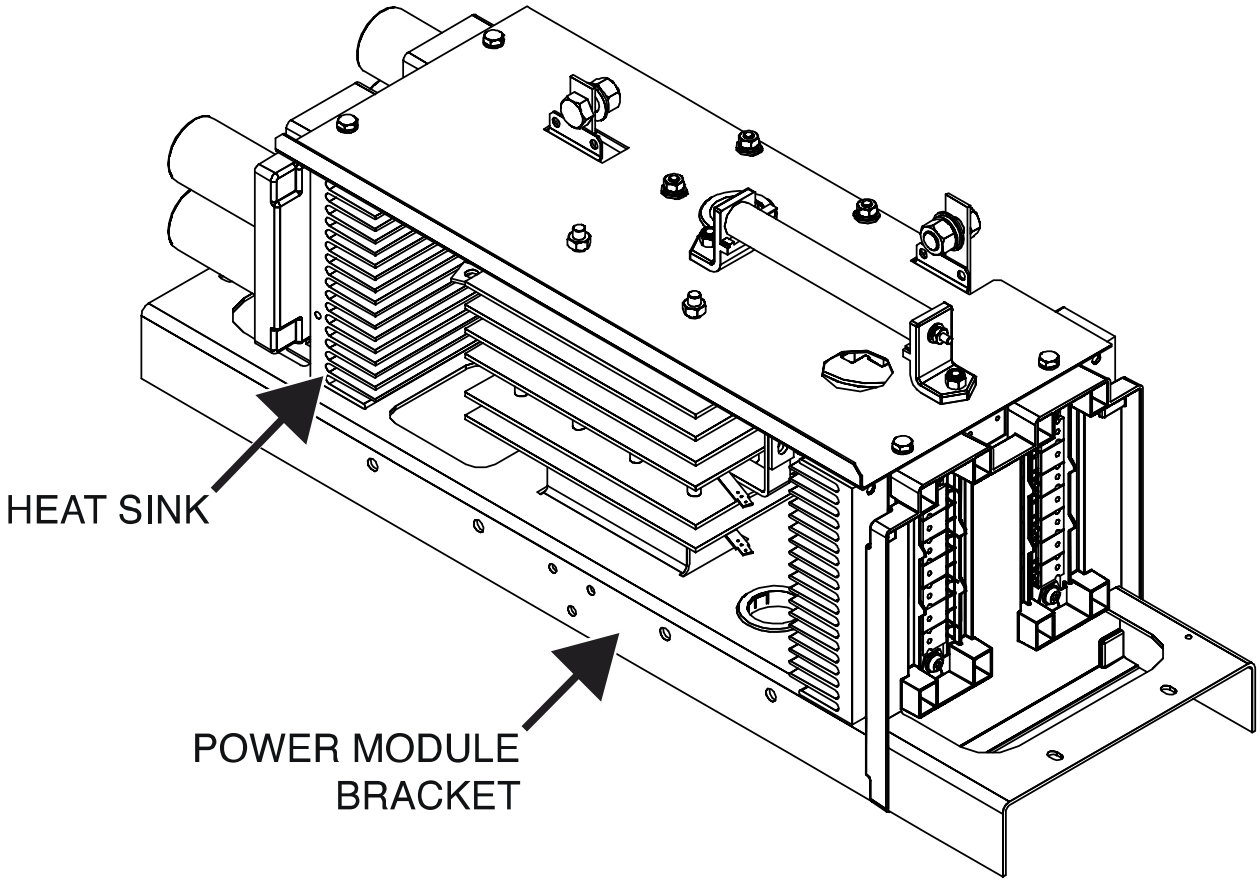
REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Perform the ***Power Module Removal Procedure***.
5. Using a 7/16” nutdriver, remove the two bolts, and lock washers securing the heat sink to the power module bracket. See ***Figure F.72***.
6. The left side chopper board can now be replaced.

REPLACEMENT PROCEDURE

1. Carefully position new left side chopper board assembly onto the power module.
2. Using a 7/16” nutdriver, attach the two bolts, and lock washers securing the heat sink to the power module bracket.
3. Perform the ***Power Module Replacement Procedure***.
4. Perform the ***Case Cover Replacement Procedure***.
5. Perform the ***Retest After Repair Procedure***.

Figure F.72 – Power module bracket and heat sink locations



CHOKE REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Choke Assemblies.

MATERIALS NEEDED

1/2” Open-End Wrench
1/2” Nutdriver
7/16” Nutdriver
Wiring Diagram

REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Perform the ***Power Module Removal Procedure***.
5. Remove protective covering from choke lead connection points. See Wiring Diagram.
6. Using a 1/2” open-end wrench and a 1/2” nutdriver, remove the bolt, nut, lock washer and flat washer securing choke leads to the top terminal of the choke assembly. See ***Figure F.73***. See Wiring Diagram.
7. Using a 1/2” open-end wrench and a 1/2” nutdriver, remove the bolt, nut, lock washer and two flat washers securing the leads to the lower terminals of the choke. See ***Figure F.74***. See Wiring Diagram.
8. Using a 7/16” nutdriver, remove the two bolts and lock washers securing the choke to the power module bracket. See ***Figure F.73***.
9. The choke assembly can now be removed and replaced.
10. Repeat these steps for the other choke assembly is necessary.

REPLACEMENT PROCEDURE

1. Carefully position the new choke assembly onto power module.
2. Using a 7/16” nutdriver, attach the two bolts and lock washers securing the choke to the power module bracket.

3. Using a 1/2” open-end wrench and a 1/2” nutdriver, attach the bolt, nut, lock washer and two flat washers securing the leads to the lower terminals of the choke. See Wiring Diagram.
4. Using a 1/2” open-end wrench and a 1/2” nutdriver, attach the bolt, nut, lock washer and flat washer securing choke leads to the top terminal of the choke assembly. See Wiring Diagram.
5. Replace the protective covering on the choke lead connection points. See Wiring Diagram.
6. Repeat these steps for the other choke as necessary.
7. Perform the ***Power Module Replacement Procedure***.
8. Perform the ***Case Cover Replacement Procedure***.
9. Perform the ***Retest After Repair Procedure***.

Figure F.73 – Choke top terminal locations

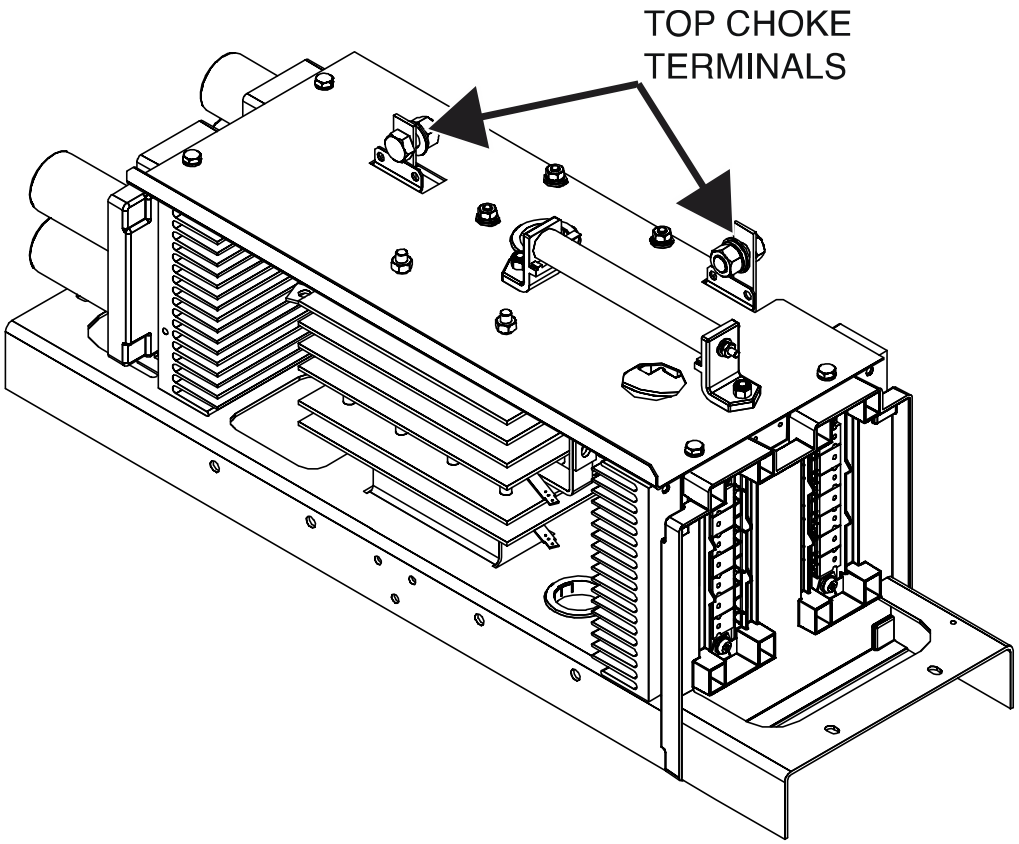
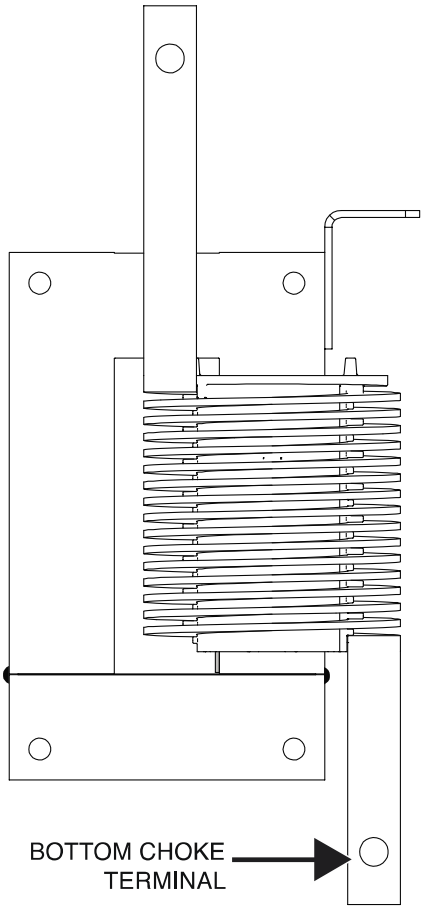


Figure F.74 – Choke lower terminal location



CHOPPER USER INTERFACE BOARD REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Chopper User Interface Board.

MATERIALS NEEDED

5/64" Allen Wrench
3/8" Nutdriver
Wiring Diagram

REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Using a 5/64" Allen wrench, loosen the setscrew securing the output control knob to the shaft. See ***Figure F.75***. Remove the output control knob.
4. Label and disconnect plugs J31, J32, J33, J34 and J35 from the chopper user interface board. See ***Figure F.75***. See Wiring Diagram.
5. Using a 3/8" nutdriver, remove the four nuts securing the chopper user interface board to the front panel. See ***Figure F.76***.
6. The chopper user interface board can now be removed and replaced.

REPLACEMENT PROCEDURE

1. Carefully position the new chopper user interface board onto the front panel.
2. Using a 3/8" nutdriver, attach the four nuts securing the chopper user interface board to the front panel.
3. Connect plugs J31, J32, J33, J34 and J35 to the chopper user interface board. See Wiring Diagram.
4. Attach the output control knob to the shaft of the chopper user interface board.
5. Using a 5/64" Allen wrench, tighten the setscrew securing the output control knob to the shaft.
6. Perform the ***Case Cover Replacement Procedure***.
7. Perform the ***Retest After Repair Procedure***.

Figure F.75 – Output control knob location

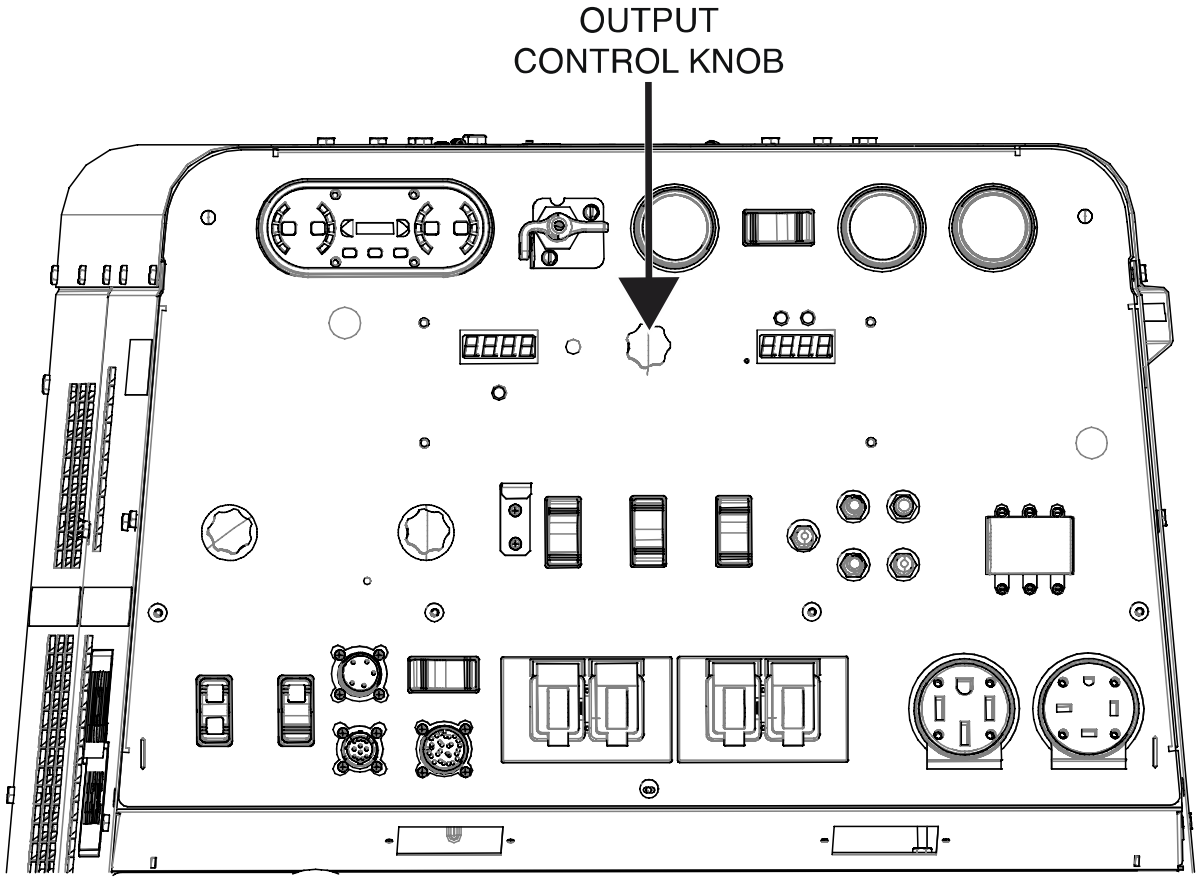
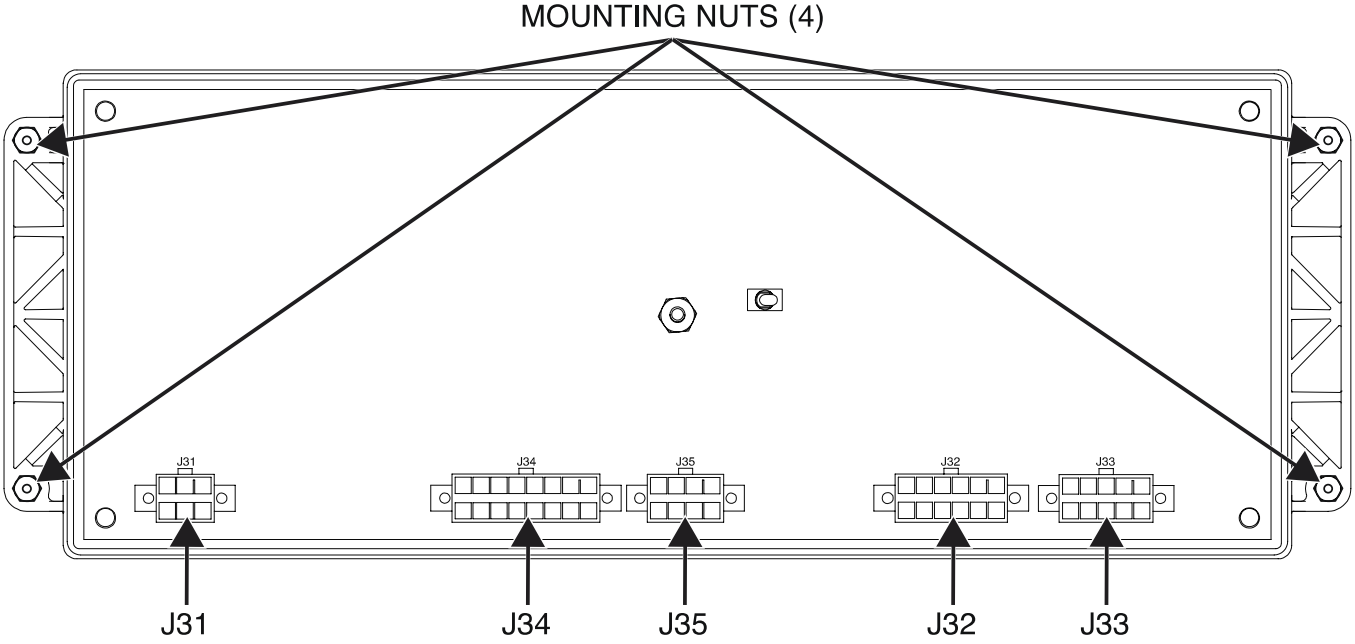


Figure F.76 – Chopper user interface board plug and mounting screw locations



FUEL TANK REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Fuel Tank Assembly.

MATERIALS NEEDED

3/8” Nutdriver
Fuel Siphon
Fuel Storage Container
Slotted Screwdriver
Paper Towels
Wiring Diagram

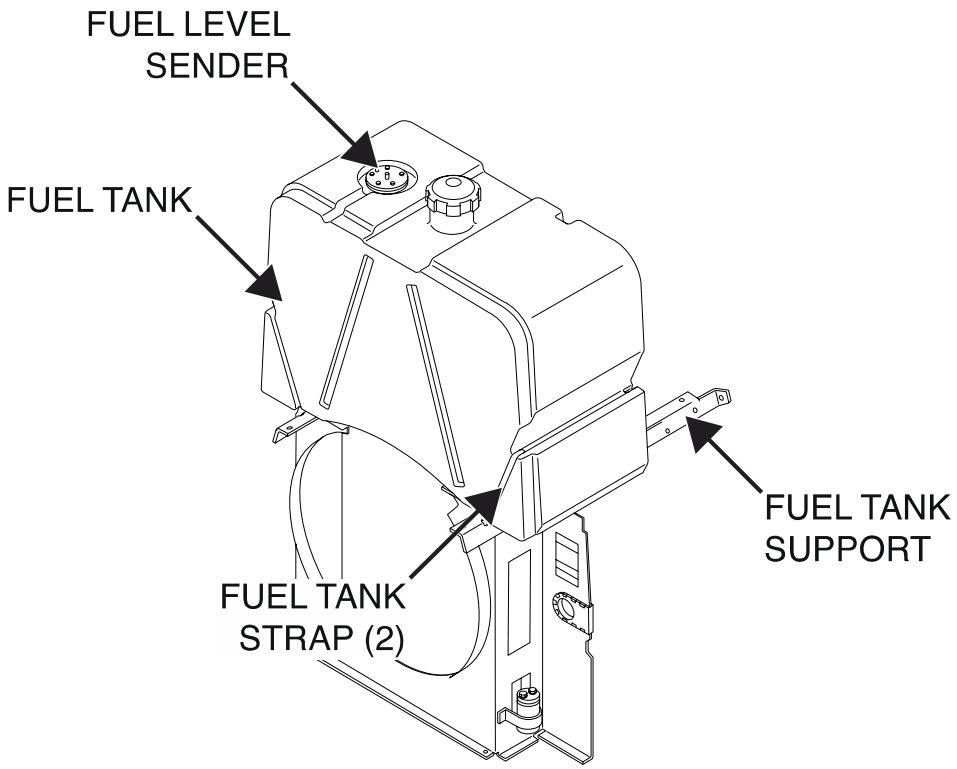
REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Using a 3/8” nutdriver, remove the two nuts, lock washers and flat washers securing leads 229 and 5J to the fuel level sender. See ***Figure F.77***. See Wiring Diagram. Route the leads thru the control box panel.
4. Using a fuel siphon and an appropriate fuel storage container, drain the fuel into the fuel storage container.
5. Using a slotted screwdriver, loosen the hose clamps securing the fuel hoses to the fuel tank.
   NOTE: To avoid spills, temporarily wrap fuel hoses with paper towels to absorb any residual fuel. If there is any fuel left in the fuel tank, drain it into an appropriate fuel storage container.
6. Using a 9/16” nutdriver, remove the two nuts, lock washers, flat washers and rubber washers securing each fuel tank strap to the fuel tank support. See ***Figure F.77***.
7. Carefully lift the fuel tank out of the machine.
8. Using a 3/8” nutdriver, remove the two screws securing the fuel tank guard to the machine.
9. Carefully remove the fuel tank guard.

REPLACEMENT PROCEDURE

1. Carefully position the fuel tank support into the machine.
2. Using a 3/8” nutdriver, attach the two screws securing the fuel tank support to the machine.
3. Carefully position the fuel tank into the machine.
4. Using a 9/16” nutdriver, attach the two nuts, lock washers, flat washers and rubber washers securing each fuel tank strap to the fuel tank support.
5. Using a slotted screwdriver, tighten the hose clamps securing the fuel hoses to the fuel tank.
6. Route leads 229 and 5J thru the control box panel.
7. Using a 3/8” nutdriver, attach the two nuts, lock washers and flat washers securing leads 229 and 5J to the fuel level sender. See Wiring Diagram. Replace cable ties as necessary.
8. Perform the ***Case Cover Replacement Procedure***.
9. Perform the ***Retest After Repair Procedure***.

Figure F.77 – Fuel level sender, fuel tank support, fuel tank strap and fuel tank support locations



ROTOR AND STATOR REMOVAL AND REPLACEMENT PROCEDURE

Service and repair should be performed by only Lincoln Electric factory trained personnel. Unauthorized repairs performed on this equipment may result in danger to the technician or 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. If for any reason you do not understand the test procedures or are unable to perform the test/repairs safely, contact the Lincoln Electric Service Department for electrical troubleshooting assistance before you proceed. Call 1-888-935-3877.

TEST DESCRIPTION

This procedure will aid the technician in the removal and replacement of the Rotor and Stator assemblies.

MATERIALS NEEDED

Slotted Screwdriver
Two 7/16” Open-End Wrenches
3/8” Nutdriver
1/2” Nutdriver
Two Large Wrenches
7/16” Nutdriver
5/16” Nutdriver
Small Piece Of Wood
Large Crescent Wrench
3/4” Open-End Wrench
3/4” Socket
Hoist & Appropriate Rigging
Wood Or Steel Blocking
Wiring Diagram

REMOVAL PROCEDURE

1. Turn off the engine of the Air Vantage 566 SD Hydraulic.
2. Perform the ***Case Cover Removal Procedure***.
3. Perform the ***Capacitor Discharge Procedure***.
4. Perform the ***Power Module Removal Procedure***.
5. Perform the ***Fuel Tank Removal Procedure***.
6. Using a slotted screwdriver, loosen the screws securing leads 3, 4 and 6 to circuit breaker CB1. See Wiring Diagram. Cut cable ties as necessary. Label leads for reassembly.
7. Route leads 3 and 6 thru the toroid. Take note of the direction and number of turns for reassembly.
8. Using two 7/16” open-end wrenches, remove the bolt, nut, lock washer and flat washer securing lead 5A to the insulated neutral stud on the bottom of the control box. See Wiring Diagram.
9. Using a 3/8” nutdriver, remove the nut, lock washer and flat washer securing lead 5 to the auxiliary ground stud bottom center. See Wiring Diagram.

10. Label and disconnect leads 41 and 41A from the quick-connect terminals. See Wiring Diagram.
11. Label and disconnect leads 45 and 46A from the quick-connect terminals. See Wiring Diagram.
12. Label and disconnect leads 5H and F1 from the D1 rectifier. See Wiring Diagram.
13. Label and disconnect any other leads necessary to allow for the removal of the control box and front panel. See Wiring Diagram. Cut cable ties as necessary.
14. Using a 3/8" nutdriver, remove the two screws securing the control box/ front panel to the fuel tank supports. See ***Figure F.78***.
15. Using a 1/2" nutdriver, remove the two screws securing the fuel tank supports to the lift frame weldment. See ***Figure F.78***.
16. Using a 3/8" nutdriver, remove the screw securing the brush cover to the machine.
17. Label and disconnect leads from the brush holder terminals. See Wiring Diagram.
18. Using a 3/8" nutdriver, remove the two screws securing the brush holder assembly to the machine.
19. Using two large wrenches, disconnect the large air hose from the minimum pressure check valve assembly. Route air hose thru the fan baffle.
20. Using two large wrenches, disconnect the two large hoses from the hydraulic pump inlet and outlet connections. See ***Figure F.79***. Route hoses thru the fan baffle.
21. Using a 7/16" nutdriver, remove the two nuts, lock washers and flat washers securing leads 201, 201A, 200A and 200B to the field capacitor terminals. See ***Figure F.80***. See Wiring Diagram.
22. Label and disconnect leads 200, 200A, 5H, F1 and 201A from the D1 rectifier. See ***Figure F.81***. See Wiring Diagram.
23. Label and disconnect leads 200 and 200N from the R1 resistor. See Wiring Diagram.
24. Using a 7/16" nutdriver, remove the two screws securing the fan baffle to machine base. See ***Figure F.78***.
25. Using a 5/16" nutdriver, remove the six screws securing the upper and lower stator baffles to the fan baffle.
26. Carefully route all leads and hoses to allow for the removal of the fan baffle. Remove the fan baffle.
27. Carefully remove the upper stator baffle.
28. Remove the acoustical foam. See ***Figure F.82***.
29. Using a 3/8" nutdriver, remove the six screws securing the two stator cowlings to the machine. See ***Figure F.82***.
30. Use a small piece of wood to prevent the fan blades from turning during removal.
31. Using a large crescent wrench, remove the nut and washer securing the fan to the rotor shaft. See ***Figure F.82***.
32. Slide the fan off the rotor shaft.
33. Using a 3/4" open-end wrench and 3/4" socket, remove the bolt, nut and two washers securing the stator frame to the rubber mount. See ***Figure F.82***.
34. Using a hoist and the appropriate rigging, slightly lift the stator frame off of it's mount. See ***Figure F.82***.
35. Place wood or steel blocking under the flywheel housing to support the engine.
36. Using a 11/16" socket, remove the eight screws and lock washers securing the stator frame to the engine. See ***Figure F.82***.
37. Using a hoist and appropriate rigging, carefully remove the stator frame form the engine.
38. Using a hoist and appropriate rigging, support the rotor and shaft assembly.
39. Remove the eight screws securing the rotor coupling disc to the engine.
40. The rotor assembly can now be removed.

REPLACEMENT PROCEDURE

1. Using a hoist and appropriate rigging, carefully mate the rotor and shaft assembly with the engine.
2. Attach the eight screws securing the rotor coupling disc to the engine. See Wiring Diagram.
3. Using a hoist and appropriate rigging, carefully position the stator frame onto the engine.
4. Using a 9/16” socket, attach the eight screws and lock washers securing the stator frame to the engine.
5. Using a hoist and the appropriate rigging, slightly lift the stator frame off of it’s mount.
6. Carefully remove the wood or steel blocking from under the flywheel housing.
7. Using a hoist and the appropriate rigging, lower the stator frame onto it’s mount.
8. Using a 11/16” socket, remove the eight screws and lock washers securing the stator frame to the engine.
9. Using a hoist and the appropriate rigging, carefully position the stator frame above it’s mount.
10. Using a 3/4” open-end wrench and 3/4” socket, attach the bolt, nut and two washers securing the stator frame to the rubber mount.
11. Slide the fan onto the rotor shaft.
12. Using a large crescent wrench, attach the nut and washer securing the fan to the rotor shaft.
13. Using a 3/8” nutdriver, attach the six screws securing the two stator cowlings to the machine.
14. Position the acoustical foam into the machine.
15. Carefully position the upper stator baffle into the machine.
16. Carefully position the fan baffle into the machine.
17. Using a 5/16” nutdriver, attach the six screws securing the upper and lower stator baffles to the fan baffle.
18. Using a 7/16” nutdriver, attach the two screws securing the fan baffle to machine base.
19. Connect leads 200 and 200N to the R1 resistor. See Wiring Diagram.
20. Connect leads 200, 200A, 5H, F1 and 201A to the D1 rectifier. See Wiring Diagram.
21. Using a 7/16” nutdriver, remove the two nuts, lock washers and flat washers securing leads 201, 201A, 200A and 200B to the field capacitor terminals. See Wiring Diagram.
22. Route the hydraulic hoses thru the fan baffle. Using two large wrenches, connect the two large hoses to the hydraulic pump inlet and outlet connections.
23. Route air hose thru the fan baffle. Using two large wrenches, connect the large air hose to the minimum pressure check valve assembly.
24. Carefully position the brush holder assembly into the machine.
25. Using a 3/8” nutdriver, attach the two screws securing the brush holder assembly to the machine.
26. Connect leads to the brush holder terminals. See Wiring Diagram.
27. Using a 3/8” nutdriver, attach the screw securing the brush cover to the machine.
28. Using a 1/2” nutdriver, attach the two screws securing the fuel tank supports to the lift frame weldment.
29. Using a 3/8” nutdriver, attach the two screws securing the control box/ front panel to the fuel tank supports.
30. Connect leads 5H and F1 to the D1 rectifier. See Wiring Diagram.
31. Connect leads 45 and 46A to the quick-connect terminals. See Wiring Diagram.
32. Connect leads 41 and 41A to the quick-connect terminals. See Wiring Diagram.
33. Using a 3/8” nutdriver, attach the nut, lock washer and flat washer securing lead 5 to the auxiliary ground stud bottom center. See Wiring Diagram.

34. Using two 7/16” open-end wrenches, attach the bolt, nut, lock washer and flat washer securing lead 5A to the insulated neutral stud on the bottom of the control box. See Wiring Diagram.
35. Route leads 3 and 6 thru the toroid. Note direction and number of turns.
36. Using a slotted screwdriver, tighten the screws securing leads 3, 4 and 6 to circuit breaker CB1. See Wiring Diagram. Replace cable ties as necessary.
37. Connect any other previously disconnected leads to the control box and front panel. See Wiring Diagram. Replace cable ties as necessary.
38. Perform the ***Fuel Tank Removal Procedure***.
39. Perform the ***Power Module Removal Procedure***.
40. Perform the ***Case Cover Replacement Procedure***.
41. Perform the ***Retest After Repair Procedure***.

Figure F.78 – Fuel tank support and fan baffle locations

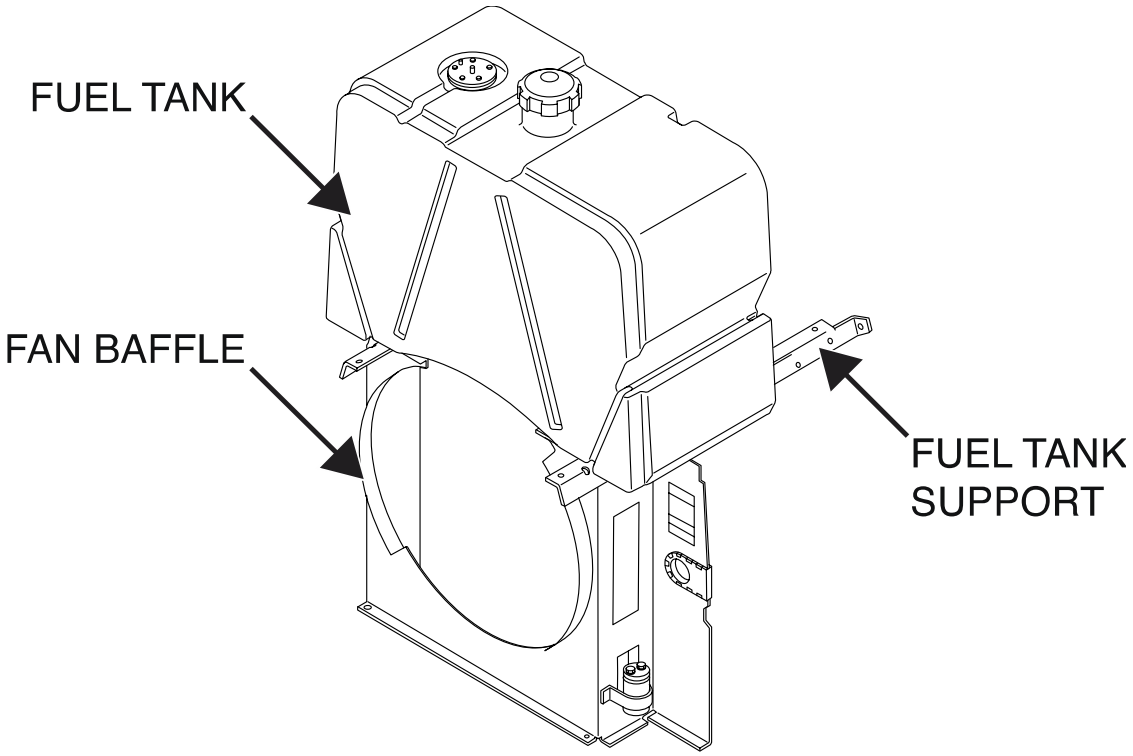


Figure F.79 – Hydraulic pump inlet and outlet locations

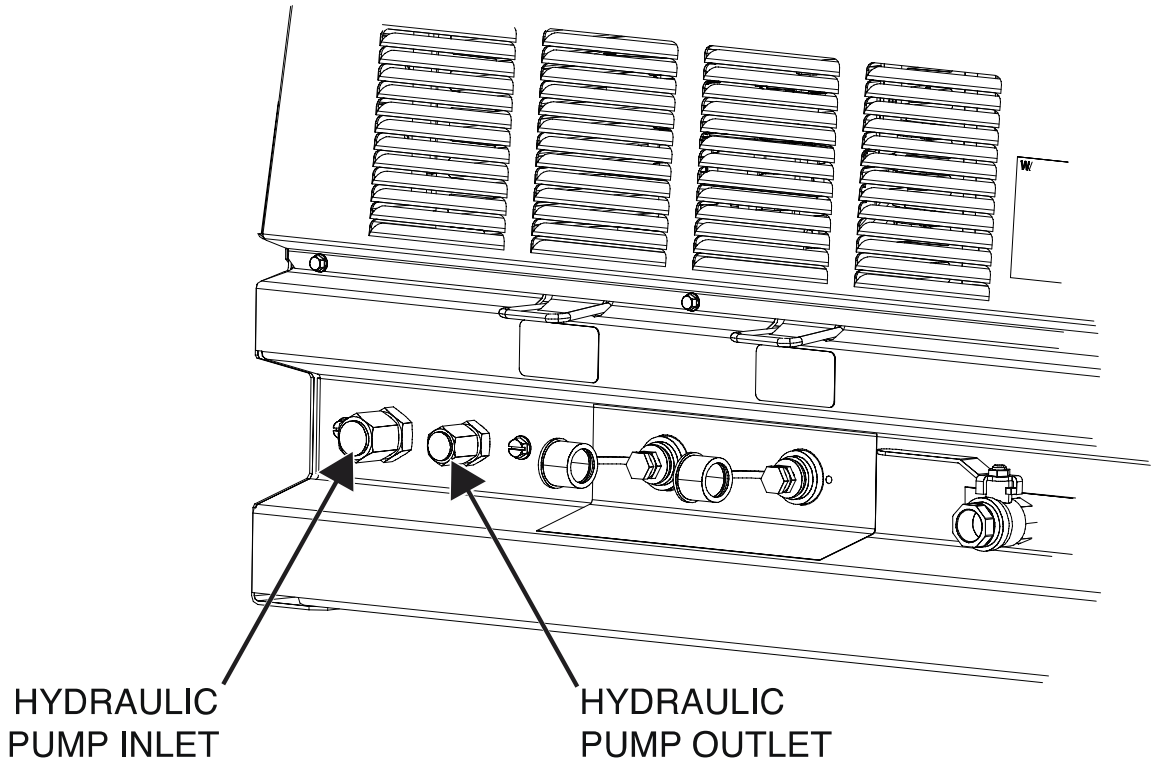


Figure F.80 – Field capacitor lead locations

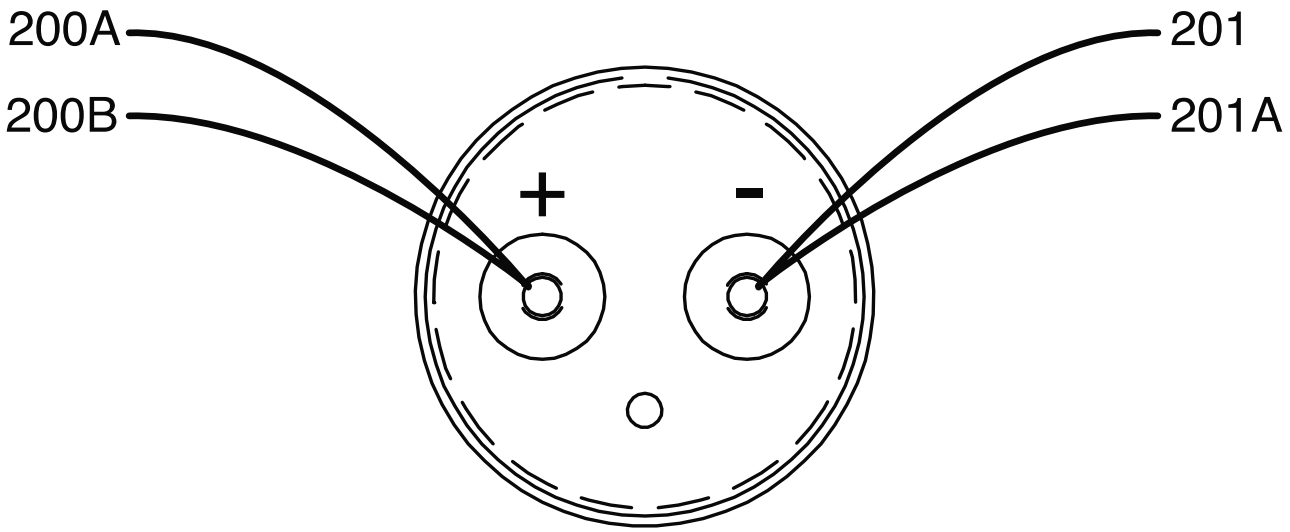


Figure F.81 – D1 Rectifier lead locations

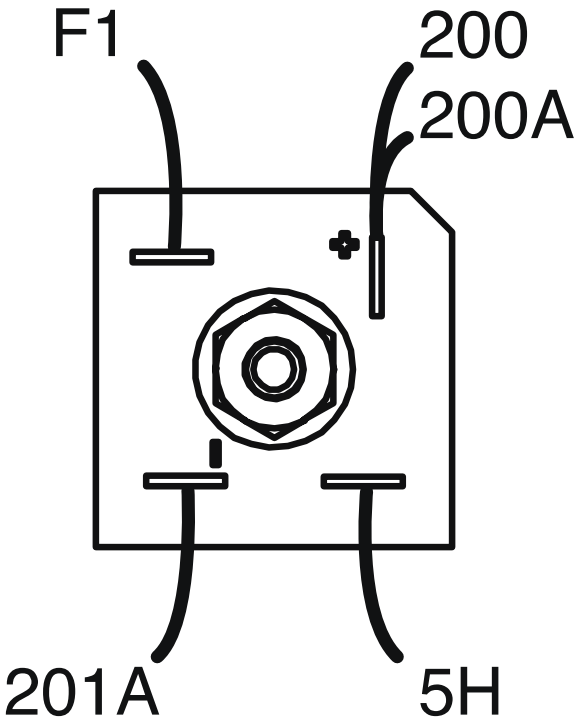
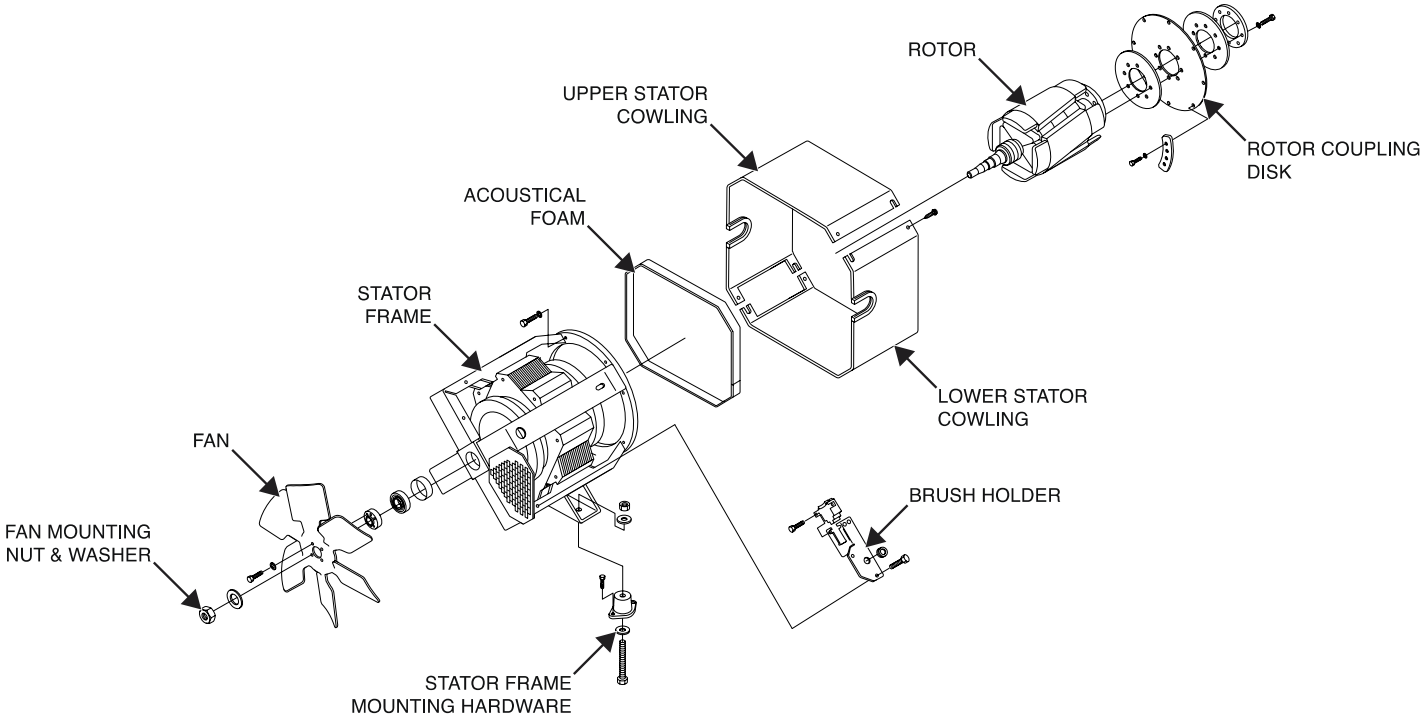


Figure F.82 – Stator, fan and rotor assembly locations



RETEST AFTER REPAIR

Retest a machine:

• If it is rejected under test for any reason that requires you to remove any part which could affect the machine's electrical characteristics.

OR

• If you repair or replace any electrical components.

ENGINE OUTPUT

MODE	NO LOAD RPM	LOAD RPM
LOW IDLE	1525	N/A
HIGH IDLE	1800	1800

RATED OUTPUT @ 104° F (40° C) – WELDER

DUTY CYCLE	WELDING OUTPUT	VOLTS AT RATED AMPERES
100%	575 AMPS (DC MULTI-PURPOSE)	43 VOLTS
60%	600 AMPS (DC MULTI-PURPOSE)	40 VOLTS

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

WELDING RANGE	OPEN CIRCUIT VOLTAGE	AUXILIARY POWER
30 – 600 AMPS CC/CV	60 MAX OCV @ 1800 RPM	120/240 VAC 12,000 WATTS, 60 HZ., SINGLE PHASE 20,000 WATTS, 60 HZ., THREE PHASE
20 – 250 AMPS TIG		

COMPRESSOR SPECIFICATIONS

DESCRIPTION	DELIVERY	MAXIMUM SYSTEM PRESSURE	COMPRESSOR PROTECTION	CAPACITIES
BELT-DRIVE ROTARY SCREW S700162 (VMAC®)	HIGH IDLE MODE: 60 SCFM @ 100PSI (28.3 LTR/SEC. @ 7.0 KG/CM)	150 PSI (10.5 KG/CM^2) AT 0 CFM FLOW RATE	SAFETY RELIEF VALVE 200 PSI (14.1 KG/CM^2) HIGH TEMPERATURE AUTOMATIC SHUTDOWN 290°F (143°C)	1.1 GAL. (4.0 LITERS)

HYDRAULIC PUMP SPECIFICATIONS

PTO TYPE	HYDRAULIC PUMP	OUTPUT AT HIGH IDLE	INLET FITTING	OUTLET FITTING
BELT DRIVEN WITH 12 VOLT ELECTRO-CLUTCH	TYPE: CAST IRON GEAR PUMP MAKE: PARKER MODEL: AGP315	10 GAL/MIN @ 3,000 PSI	SAE12, 37° JIC MALE FLARE	SAE10, 37° JIC MALE FLARE