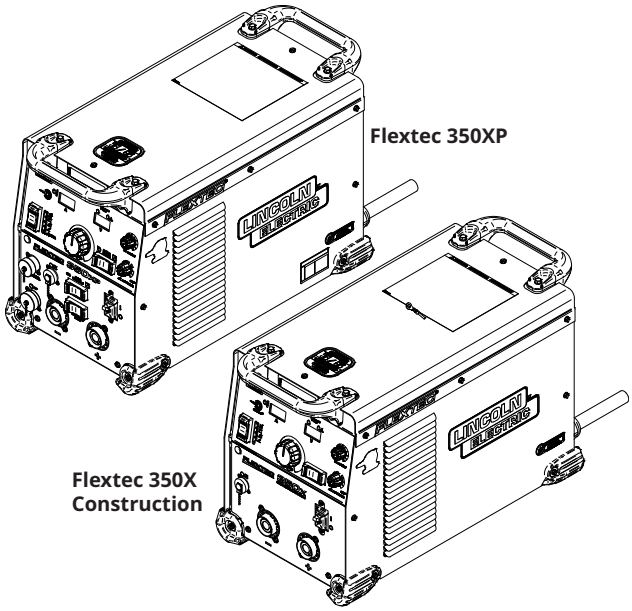
INSTRUCTION MANUAL

Flextec® 350XP & Flextec® 350X Construction



For use with Product/Code Numbers:

13067, 13071, 13578, 13579, 13066, 13070, 13073, 13532, 13581, 13582, 13891, 13461

Save for future reference

Date Purchased

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THE LINCOLN ELECTRIC COMPANY
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SAFETY INFORMATION

SAFETY DEPENDS ON YOU

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

⚠ DANGER

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

⚠ WARNING

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

⚠ CAUTION

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

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

PLEASE EXAMINE CARTON AND EQUIPMENT FOR DAMAGE IMMEDIATELY

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

KEEP YOUR HEAD OUT OF THE FUMES



- **DON'T** get too close to the weld. Use corrective lenses if necessary to stay a reasonable distance away from the weld.
- **USE ENOUGH VENTILATION** or exhaust at the weld, or both, to keep the fumes and gases from your breathing zone and the general area.
- **IN A LARGE ROOM OR OUTDOORS** , natural ventilation may be adequate if you keep your head out of the fumes.
- **USE NATURAL DRAFTS** or fans to keep the fumes away from your face.
- **READ** and obey the Safety Data Sheet (SDS) and the warning label that appears on all containers of welding materials.

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

WEAR CORRECT EYE, EAR AND BODY PROTECTION



- **PROTECT** your eyes and face with properly fitted and with proper grade of filter plate (See ANSI Z49.1).
- **PROTECT** your body from welding spatter and arc flash with protective clothing including woolen clothing, flame-proof apron and gloves, leather leggings, and high boots.
- **PROTECT** others from spatter, flash, and glare with protective screens or barriers.
- **PROTECT** your eyes and face with welding helmet
- **IN SOME AREAS**, protection from noise may be appropriate.
- **BE SURE** protective equipment is in good condition.



- **AT ALL TIMES**, wear safety glasses in work area.
- **DO NOT WELD, CUT, OR HEAT** containers or materials which previously had been in contact with hazardous substances unless they are properly cleaned. This is extremely dangerous.

- **DO NOT WELD, CUT, OR HEAT** painted or plated parts unless special precautions with ventilation have been taken. They can release highly toxic fumes or gases.
- **PROTECT** compressed gas cylinders from excessive heat, mechanical shocks, and arcs; fasten cylinders so they cannot fall.
- **BE SURE** cylinders are never grounded or part of an electrical circuit.
- **REMOVE** all potential fire hazards from welding area.



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

CALIFORNIA PROPOSITION 65 WARNINGS

⚠ WARNING



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

Always start and operate the engine in a well-ventilated area.

If in an exposed area, vent the exhaust to the outside.

Do not modify or tamper with the exhaust system.

Do not idle the engine except as necessary.

⚠ WARNING



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

For more information go to https://www.p65warnings.ca.gov

ARC WELDING CAN BE HAZARDOUS

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

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

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

FOR ENGINE POWERED EQUIPMENT



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



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



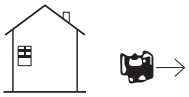
- In some cases it may be necessary to remove safety guards to perform required maintenance. **REMOVE GUARDS ONLY** when necessary and replace them when the maintenance requiring their removal is complete. Always use the greatest care when working near moving parts.
- **DO NOT** put your hands near the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



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



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



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

ELECTRIC AND MAGNETIC FIELDS MAY BE DANGEROUS



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

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

- Route the electrode and work cables together - Secure them with tape when possible.
- Never coil the electrode lead around your body.
- Do not place your body between the electrode and work cables. If the electrode cable is on your right side, the work cable should also be on your right side.
- Connect the work cable to the workpiece as close as possible to the area being welded.
- Do not work next to welding power source.

ELECTRIC SHOCK CAN KILL



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

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

- Semiautomatic DC Constant Voltage (Wire) Welder.
- DC Manual (Stick) Welder.
- AC Welder with Reduced Voltage Control.
- In semiautomatic or automatic wire welding, the electrode, electrode reel, welding head, nozzle or semiautomatic welding gun are also electrically “hot”.
- Always be sure the work cable makes a good electrical connection with the metal being welded. The connection should be as close as possible to the area being welded.
- Ground the work or metal to be welded to a good electrical (earth) ground.
- Maintain the electrode holder, work clamp, welding cable and welding machine in good, safe operating condition. Replace damaged insulation.
- Never dip the electrode in water for cooling.

- Never simultaneously touch electrically “hot” parts of electrode holders connected to two welders because voltage between the two can be the total of the open circuit voltage of both welders.
- When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.
- **Also see** WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION **and** FOR ELECTRICALLY POWERED EQUIPMENT

ARC RAYS CAN BURN



- Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when welding or observing open arc welding. Headshield and filter lens should conform to ANSI Z87.1 standards.
- Use suitable clothing made from durable flame-resistant material to protect your skin and that of your helpers from the arc rays.
- Protect other nearby personnel with suitable, non-flammable screening and/or warn them not to watch the arc nor expose themselves to the arc rays or to hot spatter or metal.

FUMES AND GASES CAN BE DANGEROUS



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

WELDING AND CUTTING SPARKS CAN CAUSE FIRE OR EXPLOSION



- Remove fire hazards from the welding area. If this is not possible, cover them to prevent the welding sparks from starting a fire. Remember that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Avoid welding near hydraulic lines. Have a fire extinguisher readily available.
- Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations. Refer to **“Safety in Welding and Cutting” (ANSI Standard Z49.1)** and the operating information for the equipment being used.

- When not welding, make certain no part of the electrode circuit is touching the work or ground. Accidental contact can cause overheating and create a fire hazard.
- Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to ensure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been “cleaned”. For information, purchase “Recommended Safe Practices for the Preparation for Welding and Cutting of Containers and Piping That Have Held Hazardous Substances”, **AWS F4.1** from the American Welding Society.
- Vent hollow castings or containers before heating, cutting or welding. They may explode.
- Sparks and spatter are thrown from the welding arc. Wear oil free protective garments such as leather gloves, heavy shirt, cuff-less trousers, high shoes and a cap over your hair. Wear ear plugs when welding out of position or in confined places. Always wear safety glasses with side shields when in a welding area.
- Connect the work cable to the work as close to the welding area as practical. Work cables connected to the building framework or other locations away from the welding area increase the possibility of the welding current passing through lifting chains, crane cables or other alternate circuits. This can create fire hazards or overheat lifting chains or cables until they fail.
- **Read and follow NFPA 51B** “Standard for Fire Prevention During Welding, Cutting and Other Hot Work”, available from NFPA, 1 Batterymarch Park, PO box 9101, Quincy, MA 022690-9101.
- **DO NOT** use a welding power source for pipe thawing.

CYLINDER MAY EXPLODE IF DAMAGED



- Use only compressed gas cylinders containing the correct shielding gas for the process used and properly operating regulators designed for the gas and pressure used. All hoses, fittings, etc. should be suitable for the application and maintained in good condition.
- Always keep cylinders in an upright position securely chained to an undercarriage or fixed support.

Cylinders should be located:

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

FOR ELECTRICALLY POWERED EQUIPMENT



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

BATTERY HANDLING, STORAGE, AND DISPOSAL



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

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

FOR LASER EMITTING EQUIPMENT



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

DEALER LOCATOR & PRODUCT REGISTRATION

Register your machine:

https://www.lincolnelectric.com/register

Authorized Service and Distributor Locator:

https://www.lincolnelectric.com/locator

ADDITIONAL SAFETY INFORMATION

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

WEEE



Do not dispose of electrical equipment together with normal waste! In observance of European Directive 2012/19/EC on Waste Electrical and Electronic Equipment (WEEE) and its implementation in accordance with national law, electrical equipment that has reached the end of its life must be collected separately and returned to an environmentally compatible recycling facility. As the owner of the equipment, you should get information on approved collection systems from our local representative.

By applying this European Directive you will protect the environment and human health!

ECO DESIGN INFORMATION

The equipment has been designed in order to be compliant with the Directive 2009/125/EC and the Regulation 2019/1784/EU.

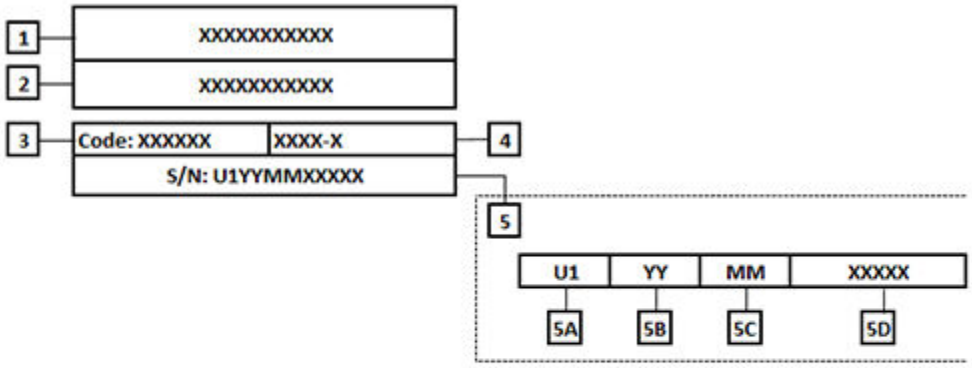
Table 1 :Efficiency and idle power consumption

Name	Efficiency when max power consumption / Idle power consumption	Equivalent model
Flextec 350X Standard	87.67% / 150W	Flextec 350X Construction CE
Flextec 350X Construction CE	87.67% / 150W	Flextec 350X Standard CE

idle state, set the Weld Terminals to off and Local/Remote to remote and wait until the fan is off. The fan will be off when the units are powered up, or will turn off after a delay of (up to) 5 minutes if the welding output was just disabled.

The value of efficiency and consumption in idle state have been measured by method and conditions defined in the product standard EN 60974-1

Manufacturer's name, product name, code number, product number, serial number and date of production can be read from rating plate and serial number label.



Where:

1- Manufacturer name and adress
2- Product name
3- Code number
4- Product number
5- Serial number
5A- country of production
5B- year of production
5C- month of production
5D- progressive number different for each machine

Table 2 :Typical gas usage for MIG/MAG equipment

Material Type	Wire diameter (mm)	DC electrode positive		Wire Feeding (m/min)	Shielding Gas	Gas flow (l/min)
		Current (A)	Voltage (V)			
Carbon, low alloy steel	0,9 - 1,1	95 - 200	18 - 22	3,5 - 6,5	Ar 75%, CO_2 25%	12
Aluminum	0,8 - 1,6	90 - 240	18 - 26	5,5 - 9,5	Argon	14 - 19
Austenitic stainless steel	0,8 - 1,6	85 - 300	21 - 28	3 - 7	Ar 98%, O_2 2% / He 90%, Ar 7,5% CO_2 2,5%	14 - 19
Copper alloy	0,9 - 1,6	175 - 385	23 - 26	6 - 11	Argon	12 - 16

Material Type	Wire diameter (mm)	DC electrode positive		Wire Feeding (m/min)	Shielding Gas	Gas flow (l/min)
		Current (A)	Voltage (V)			
Magnesium	1,6 - 2,4	70 - 335	16 - 26	4 - 15	Argon	24 - 28

TIG Process:

In TIG welding process, gas usage depends on cross-sectional area of the nozzle. For commonly used torches:

- Helium: 14-24 l/min
- Argon: 7-16 l/min

Notice: Excessive flow rates causes turbulence in the gas stream which may aspirate atmospheric contamination into the welding pool.

Notice: A cross wind or draft moving can disrupt the shielding gas coverage, in the interest of saving of protective gas use screen to block air flow.

End of life

At end of life of product, it has to be disposal for recycling in accordance with Directive 2012/19/EU (WEEE), information about the dismantling of product and Critical Raw Material (CRM) present in the product, can be found at:

www.lincolnelectric.com

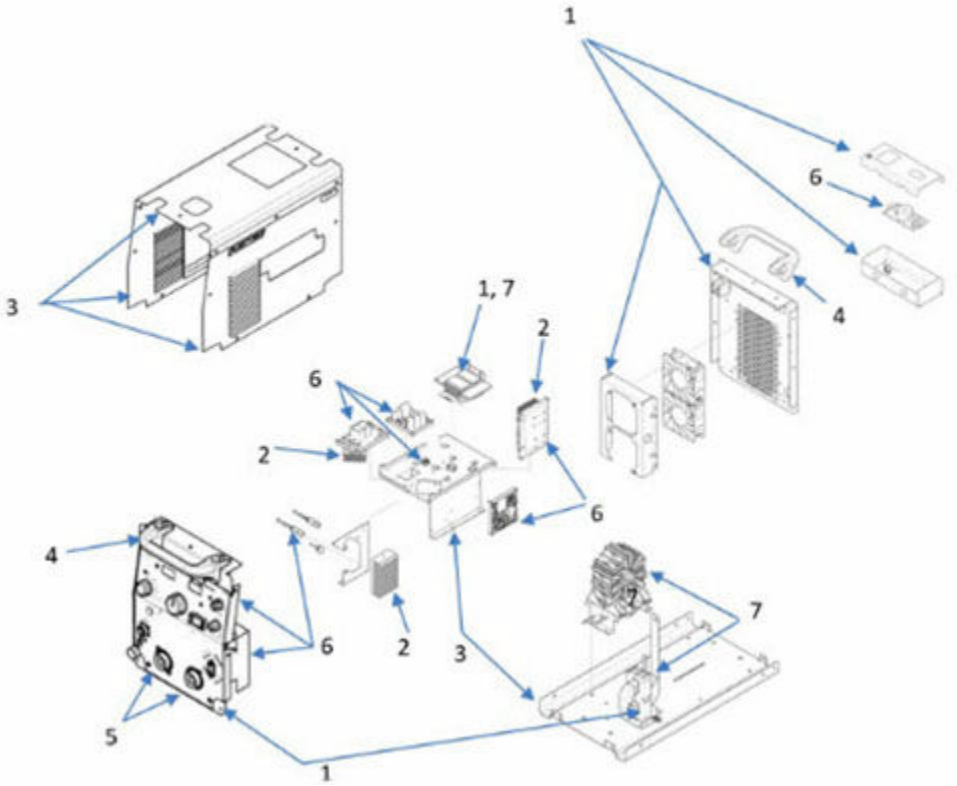


Figure 1 : Flextec 350X CE Construction & Standard Models

Item	Component	Material for recovery	CRM	Selective treatment
1	Enclosure	Steal	-	-
2	Heat sink	Aluminum	Si, 11g Mg, 18g	-
3	Enclosure	Aluminum	Si g Mg g	-
4	Handle	Aluminum	Si, 118g Mg, 1g	-
5	Output terminal	Brass	-	-
6	PC board	-	-	Required
7	Choke Transformers Internal cables	Copper	-	-
8	External Cables (not shown)	Copper	-	Required

Reference: P-1219-A, code 12776

INSTALLATION

GENERAL FUNCTIONAL DESCRIPTION

The Flextec® 350XP and Flextec® 350X Construction are inverter based, multi-process, DC power sources that have a 5 to 425 Amp output range. The machine is capable of welding in CC and CV modes with common wire types and sizes. The Flextec® 350 XP and Flextec® 350X Construction are both capable of gouging in either Stick or CV modes. Two units can be paralleled in CC modes for extra gouging power. In this document, “Flextec® 350XP is used to refer to the Construction model as well unless otherwise specified.

The Standard and Construction models include welding modes for GMAW, FCAW, SMAW, and GTAW for a variety of materials including mild steel, some cored wires, gas shielded wires, and aluminum wires. VRD (Voltage Reduction Device) is offered supporting reduced open circuit voltages for an added measure of safety. The Flextec® 350XP Standard machine includes an ArcLink setting that allows the power source to weld synergic modes with ArcLink compatible feeders.

The Flextec® 350XP Standard is designed to be compatible with the current range of semi-automatic ArcLink wire feeders in addition to the analog and across-the-arc wire feeders. The Flextec® 350XP Standard comes with a 5-pin ArcLink digital feeder connector, a 14-pin analog feeder connector and a 12- pin remote output connector.

The Flextec® 350X Construction machine only comes with a 12-pin remote output connector and is only compatible with across the arc wire feeders and CrossLinc® compatible feeders.

All of the models of Flextec® 350XP come with CrossLinc® technology for remote voltage setting, without a control cable, with CrossLinc® compatible feeders or remote controls.

RECOMMENDED PROCESSES

Flextec® 350XP is designed for CC-SMAW, CC-GTAW (Touch Start TIG™), CV-GMAW, CV-GMAW-P, CV-FCAW-SS, CV-FCAW-G. CAG arc gouging is also supported in the CV and CC modes.

WELD MODE	PROCESS	COMMON MATERIALS	COMMON ELECTRODES
GTAW	TOUCH START TIG® (CC)	STAINLESS, STEEL	
SMAW	STICK-CC	ALUMINUM, STAINLESS, STEEL	6010, 6011, 7018
CV	MIG (GMAW) FCAW-GS	ALUMINUM, STAINLESS, STEEL	L-50; L-56
CV	INNERSHIELD	FCAW-SS STAINLESS, STEEL	NR-203; NR-211, NR-440NI2
ArcLink	CV-GMAW-P*	CARBON STEEL, STAINLESS, STEEL, ALUMINUM	L50; L-56

Note: *GMAW-P is only available in the Flextec® 350XP model with ArkLink feeder.

PROCESS LIMITATIONS

The Flextec® 350XP is only suitable for the processes listed.

PRODUCT SPECIFIC INSTALLATION LIMITATIONS

CrossLinc® technology uses a communication protocol coupled on the electrode and work cables. For best performance the total voltage drop in the system should be kept under 10V.

CrossLinc® is not compatible with High Frequency TIG. If HF is in the area, the cables need to routed as far as possible from each other. Also follow all high frequency best practices, including the driven earth ground.

DESIGN FEATURES

- Multiple process DC output range: 5 - 425 Amps.
- Circuit breaker protected 10 amp auxiliary power for the 350XP, 3 amp auxiliary power for the Construction, and breaker-less protection for the 350XP CE.
- Thermostatically protected with Thermal Light.
- Simple and easy to use.
- Flexible Multi-Process Capability – Including stick, TIG, MIG, GMAW-P, Flux-cored and CAG.
- Bright Digital Amp and Volt Meters – Easy to monitor, even in sunlight, and presettable for precise procedure control, display error codes for troubleshooting.
- Compact, Durable Case – Tough IP23 enclosure rating ensures the ability to withstand extreme field environments.
- Variable Hot Start – Get the extra starting amperage you need for thick, rusty or dirty material.
- Variable Arc Control – In stick mode, vary the arc force to obtain the “soft” or “crisp” arc you want as conditions require. In CV modes vary the pinch or inductance to control.
- Procedure Control – Utilize ArcLink Feeder capabilities such as user memories and preference options.*
- Full-Featured Remote Control Capability – Use a foot pedal or hand control to remotely vary output up to 100 ft. (30.5 mm) away.
- 380 – 575 VAC, 50/60Hz Voltage Input (350XP and Construction models) - Offers the ability to be connected anywhere in the world without manual reconnect switches or bus bars. The 350XP CE model is rated for 380 - 415, 50/60Hz Voltage Input.
- Voltage Compensation and Reliable Input Voltage Connection – Provides consistent operation over ±10% input voltage variation.
- Easy to Parallel Machines in CC mode.
- Severe Duty – Can be stored outdoors. IP23 Rated.
- Desert Duty Rated – Welding outputs are rated for extreme temperature operation up to 55°C - welding output is reduced @ 55°C.
- ArcLink® Wire Feeder Compatible – unlock synergic modes to increase productivity and control.*
- Synergic Modes – for easy, repeatable welds.*
- VRD – reduces OCV when not welding for added safety.
- Low Operating Cost– Operates at a high efficiency.
- Transport - Reversible handles for ease of lifting.
- CrossLinc® technology allows for remote control of the welding output using the weld cables rather than a control cable when connected to a CrossLinc® compatible wire feeder or remote control.
- Activ8x Pipe Compatible - The Flextec® 350XP CE is compatible with Activ8x Pipe to produce advanced STT field and Synergic Pulse Welds.

Note: * Flextec® 350XP and 350XP CE only.

INSTALLATION SAFETY

⚠ WARNING



ELECTRIC SHOCK CAN KILL.

ONLY A QUALIFIED ELECTRICIAN SHOULD CONNECT THE INPUT LEADS TO THE Flextec® MACHINE. CONNECTIONS SHOULD BE MADE IN ACCORDANCE WITH ALL LOCAL AND NATIONAL ELECTRICAL CODES AND THE CONNECTION DIAGRAM LOCATED UNDERNEATH THE CASE TOP OF THE MACHINE. FAILURE TO DO SO MAY RESULT IN BODILY INJURY OR DEATH.

COMMON EQUIPMENT PACKAGES

COMMON OPTIONAL KITS & ACCESSORIES	
K3059-4	INVERTER CART (REQUIRES LOCKING FOOT KIT)
K4424-1	350XP LOCKING FOOT KIT
K5527-1	Flextec® TIG SOLENOID KIT
K2909-1	12-PIN TO 6-PIN ADAPTER
K3127-1	WIRELESS FOOT PEDAL (6-PIN)*
K857-2	REMOTE OUTPUT CONTROL WITH 12-PIN UNIVERSAL CONNECTOR (25 FEET)
K857-3	REMOTE OUTPUT CONTROL (12-PIN) (100 FEET)*
K870-2	FOOT AMPTROL WITH 12-PIN UNIVERSAL CONNECTOR
K963-4	HAND AMPTROL (12-PIN). *
K4421-1	MILLER RACK ADAPTOR KIT, REQUIRES A LOCKING FOOT KIT
K4345-1	CROSSLINC REMOTE

Note: * Any accessory with a 6-pin connector also needs to use the K2909-1 12-pin to 6-pin adapter.

COMPATIBLE WIRE FEEDERS – ANALOG & ARCLINK FEEDERS	
NORTH AMERICAN SEMI-AUTOMATIC WIRE FEEDERS	
PF25M, PF84	POWER FEED SERIES (40VDC INPUT)*
LF-72, LF-74	LF SERIES (42VAC INPUT)*
ALL MODELS	FLEX FEED SERIES (42VAC INPUT)*
ALL MODELS	LN-10, DH-10 (42VAC INPUT)*
ALL MODELS	LN-25 PRO SERIES, ACTIV8
ALL MODELS	ACTIV8X / LN-25X / LN-25X WITH CROSSLINC TECHNOLOGY

Note: * Supported with Flextec® 350XP Standard and 350XP CE models. Flextec® 350X Construction model will not support.

COMPATIBLE WIRE FEEDERS – ANALOG & ARCLINK FEEDERS	
EUROPEAN SEMI-AUTOMATIC WIRE FEEDERS	
PF-44, PF-46	POWER FEED SERIES (EXCLUDING PF42 & PF 40 FOR FLUX CORED)*
LF-33S, LF-33, LF-34, LF-35, LF-37, LF-38, LN-15	LINC FEED SERIES (42VAC INPUTS ONLY)*
LF-45, LF-45S	LINC FEED SERIES (40VDC INPUTS)*
LF-22M, LF- 24M, LF-24	PRO LINC FEED SERIES (ACROSS THE ARC INPUT)

Note: * Supported with Flextec® 350XP Standard and 350XP CE models. Flextec® 350X Construction model will not support.

INPUT VOLTAGE SELECTION

The Flextec® 350XP automatically adjusts to work with different input voltages. No reconnect switches or bus bars are required.

INPUT AND GROUND CONNECTIONS

The Flextec® 350XP comes standard with a power cord. Connect the supply lines to 3 phase power and the ground according to your local and national electrical codes.

INPUT FUSE AND SUPPLY WIRE CONSIDERATIONS

Refer to technical specifications for recommended fuse, wire sizes and type of the copper wires. Fuse the input circuit with the recommended super lag fuse or delay type breakers (also called "inverse time" or "thermal/magnetic" circuit breakers). Choose input and grounding wire size according to local or national electrical codes. Using input wire sizes, fuses or circuit breakers smaller than recommended may result in "nuisance" shut-offs from welder inrush currents, even if the machine is not being used at high currents.

LOCATION

Location and ventilation for cooling

Place the welder where clean cooling air can freely circulate in through the rear louvers and out through the case sides. Dirt, dust, or any foreign material that can be drawn into the welder should be kept at a minimum. Failure to observe these precautions can result in excessive operating temperatures and nuisance shutdowns.

Tilting

Place the machine directly on a secure, level surface or on a recommended undercarriage. The machine may topple over if this procedure is not followed.

Lifting

The Flextec® 350XP has two handles that can be used to lift the machine.

Both handles should be used when lifting the machine. When using a crane or overhead device to lift using the handles, a lifting strap should be connected to both handles. Do not attempt to lift the Flextec® 350XP with accessories attached to it.

Stacking

The Flextec® 350XP cannot be stacked.

Environmental limitations

The Flextec® 350XP is IP23 rated for use in an outdoor environment. The machine should not be subjected to falling water during use nor should any parts of it be submerged in water. Doing so may cause improper operation as well as pose a safety hazard. The best practice is to keep the machine in a dry, sheltered area.

Do not mount the Flextec® 350XP over combustible surfaces. Where there is a combustible surface directly under stationary or fixed electrical equipment, that surface shall be covered with a steel plate at least .060" (1.6mm) thick, which shall extend not less than 5.90" (150mm) beyond the equipment on all sides.

HIGH FREQUENCY PROTECTION

Locate the Flextec® 350XP away from radio controlled machinery. The normal operation of the Flextec® 350XP may adversely affect the operation of RF controlled equipment, which may result in bodily injury or damage to the equipment.

TECHNICAL SPECIFICATIONS

K4271-2 Flextec® 350X CONSTRUCTION - Tweco

K4272-2 Flextec® 350XP STANDARD - Tweco

K3441-2 Flextec® 350X CONSTRUCTION - Twist Mate

K3442-2 Flextec® 350XP - Twist Mate

K4272-2-SB Flextec® 350X CONSTRUCTION - Sunbelt

K5422-1 Flextec® 350XP CE - Twist Mate

POWER SOURCES - INPUT VOLTAGE AND CURRENT					
PRODUCT #	**DUTY CYCLE**	**INPUT VOLTAGE ±10%**	**INPUT AMPERES**	**IDLE AMPS**	**POWER FACTOR**
K4271-2, K4272-2, K3441-2, K3442-2, K4272-2 SB, K5422-1	60% RATING	380 - 575V 3 Phase 50 or 60 Hz 380/400/415	25/28/22	.13/.16/.27 1.3/1.4/1.4	.87/.77/.62
	100% RATING		21/23/23		.84/.70/.61
	60% RATING		34/32/30		.62/.62/.65
	100% RATING		31/26/25		62/.62/.62

POWER SOURCES - RECOMMENDED INPUT WIRE AND FUSE SIZES[1]				
PRODUCT #	**VOLTAGE**	**INPUT AMPERES**	**FUSE (SUPER LAG) OR BREAKER SIZE[2]**	**TYPE S, SJ, SJO AND SJT FLEXIBLE CORD WITH AMBIENT TEMPERATURE OF 30C**
K4271-2, K4272-2, K3441-2, K3442-2, K4272-2 SB	380/3/50	21A	35A	10 AWG
	460/3/60	23A	35A	10 AWG
	575/3/60	18A	35A	10 AWG
K5422-1	380/3/50	31A	45A	8 AWG

Note: [1] Cord and Fuse Sizes based upon the U.S. National Electric Code and maximum output

Note: [2] Also called 'inverse time' or 'thermal/magnetic' circuit breakers; circuit breakers that have a delay in tripping action that decreases as the magnitude of current increases.

RATED OUTPUT			
PROCESS	**DUTY CYCLE**	**VOLTS AT RATED AMPERES**	**AMPERES**
GMAW (CV)	60%	31.5V	350A
	100%	29V	300A
GTAW (CC)	60%	24V	350A
	100%	22V	300A
SMAW (CC)	60%	34V	350A
	100%	32V	300A
FCAW-GS (CV)	60%	31.5V	350A
	100%	29V	300A
FCAW-SS (CV)	60%	31.5V	350A
	100%	29V	300A

RATED OUTPUT IEC60974-1		
DUTY CYCLE	**VOLTS AT RATED AMPERES**	**AMPERES**
60%	34	350
100%	32	300

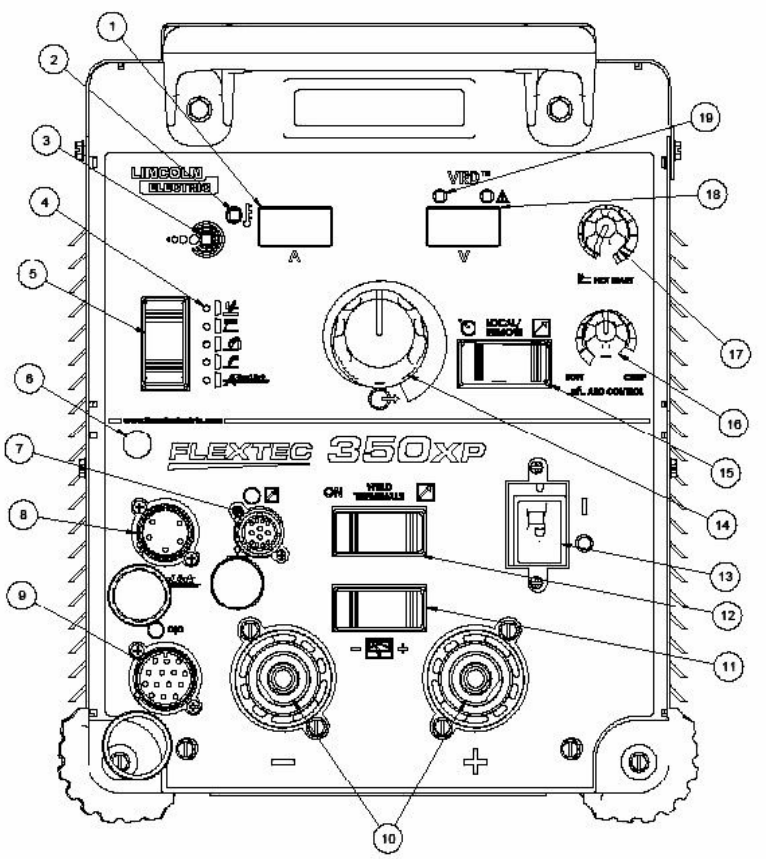
PHYSICAL DIMENSIONS				
MODEL	**HEIGHT**	**WIDTH**	**DEPTH**	**WEIGHT**
All Models	17.0 IN (432 MM)	13.0 IN (330 MM)	27.0 IN (609 MM)	74 LBS (33.6 KG)
				79 LBS (35.8 KG)

TEMPERATURE RANGES		
OPERATING TEMPERATURE	**STORAGE TEMPERATURE**	**INSULATION CLASS**
-4° F TO 131° F (-10° C TO 55° C)*	-40° F TO 185° F (-40° C TO 85° C)	CLASS H (180° C), CLASS F (155°)

Note: * Power Source is de-rated at temperatures above 40C

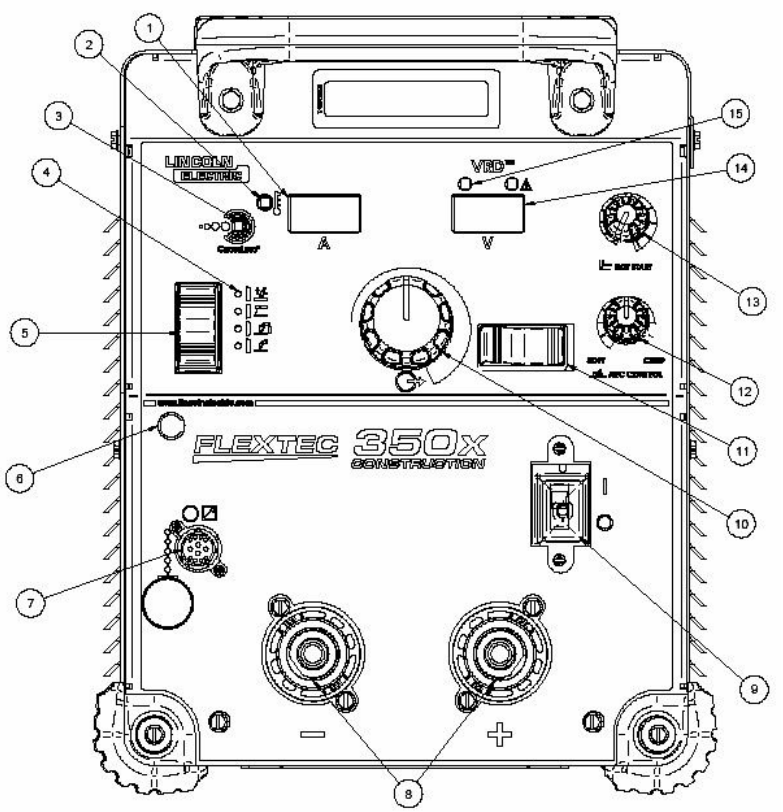
AGENCY APPROVALS			
MODEL	**MARKET**	**CONFORMITY MARK**	**STANDARD**
ALL (Except K5422-1)	US AND CANADA	$_{C}CSA_{US}$	CAN/CSA - E60974-1 ANSI/IEC - 60974-1 IEC 60974-1
K5422-1	EUROPE / INTERNATIONAL	CE	EN/IEC 60974-1 EN/IEC 60974-10 Class A

CASE FRONT CONTROL - STANDARD



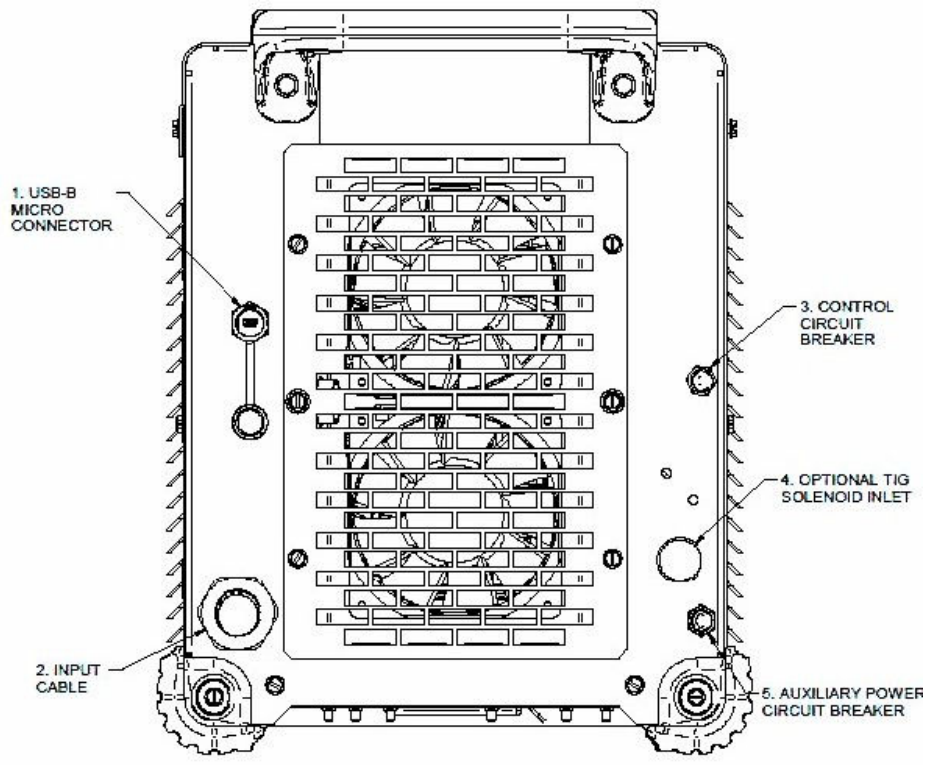
1. **Amperage LCD Display**
2. **Thermal LED:** A yellow light that comes on when an over temperature situation occurs. Output is disabled until the machine cools down. When cool, the light goes out and output is enabled.
3. **CrossLinc Communication Indicator:** When green, the power source is connected to a feeder via CrossLinc.
4. **Process Indicator LEDs:** Red LEDs that indicate which of the five Flextec® 350XP local weld processes are engaged - CC-GTAW, CC-SMAW, CV, CV-Innershield, and ArcLink.
5. **Process Indicator Switch:** Momentary rocker switch to select weld modes.
6. **Optional TIG Solenoid Outlet:** Remove plug button to install K5527-1 TIG Solenoid Kit.
7. **12-Pin Remote:** Circular connector for attaching optional remote control devices.
8. **5-Pin ArcLink:** Wire feeder circular connector.
9. **14-Pin Wire Feeder:** Circular connector for attaching wire feeder control cables
10. **Positive and Negative Welding Output Connection**
11. **Wire Feeder Voltmeter:** Polarity selection switch matches the polarity of the wire feeder voltmeter to the polarity of the electrode.
12. **Weld Terminals On/Remote:** Selector switch sets output terminals ON all the time or remotely controlled by a wire feeder or remote device.
13. **Power Switch:** Controls input power to the Flextec® 350XP.
14. **Output Control Dial:** Sets the Output Current or Voltage for the selected Weld Process.
15. **Local/Remote Selector Toggle Switch:** Choose machine output to be controlled locally through the output control knob or remotely via a remote device connected to the 12- pin or 14-pin connector (i.e. hand amptrol or K870 foot amptrol). A device connected through CrossLinc technology will override this setting.
16. **Arc Force Control Dial:** Full range selection of arc force from -10 to +10.
17. **Hot Start Control Dial:** Full range selection of hot start from 0 to 10.
18. **Voltage LCD Display**
19. **VRD LED Indicators**

CASE FRONT CONTROL - CONSTRUCTION



1. **Amperage LCD Display**
2. **Thermal LED:** A yellow light that comes on when an over temperature situation occurs. Output is disabled until the machine cools down. When cool, the light goes out and output is enabled.
3. **CrossLinc Communication Indicator:** When green, the power source is connected to a feeder via CrossLinc.
4. **Process Indicator LEDs:** Red LEDs that indicate which of the five Flextec® Construction local weld processes are engaged - CC-GTAW, CC-SMAW, CV and CV-Innershield.
5. **Process Indicator Switch:** Momentary rocker switch to select weld modes.
6. **Optional TIG Solenoid Outlet:** Remove plug button to install K5527-1 TIG Solenoid Kit.
7. **12-Pin Remote:** Circular connector for attaching optional remote control devices.
8. **Positive and Negative Welding Output Connection**
9. **Power Switch:** Controls input power to the Flextec® Construction.
10. **Output Control Dial:** Sets the Output Current or Voltage for the selected Weld Process.
11. **Local/Remote Selector Toggle Switch:** Choose machine output to be controlled locally through the output control knob or remotely via a remote device connected to the 12- pin (i.e. hand amptrol or K870 foot amptrol). A device connected through CrossLinc technology will override this setting.
12. **Arc Force Control Dial:** Full range selection of arc force from -10 to +10.
13. **Hot Start Control Dial:** Full range selection of hot start from 0 to 10.
14. **Voltage LCD Display**
15. **VRD LED Indicators**

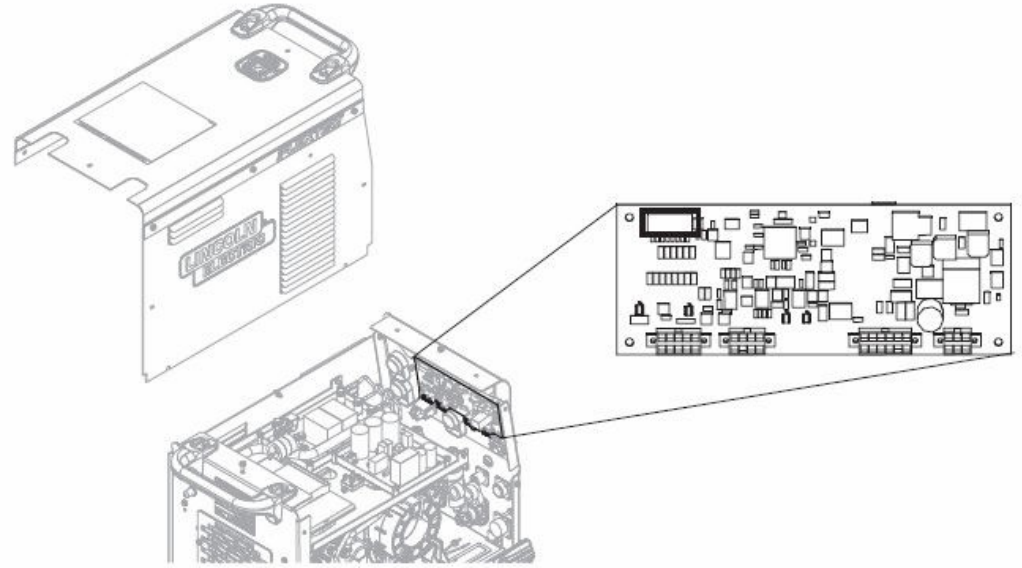
CASE BACK CONTROL



1. **USB-B Micro Connector:** Remove cap and connect to computer to re-program machine software. Replace cap for environmental protection.
2. **Input Cable:** Comes with domestic and CE machines (not included for CCC model).
3. **Control Circuit Breaker:** 20A on all but CE models.
4. **Optional TIG Solenoid Inlet:** Remove plug button to install K5527-1 TIG Solenoid Kit.
5. **Auxiliary Power Circuit Breaker:** 3A on Construction models, 10A on standard models, and not present on CE model.

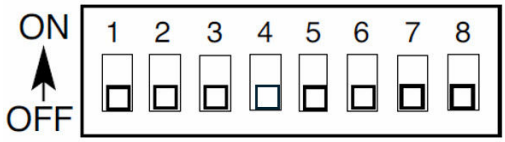
INTERNAL CONTROLS

DIP SWITCH LOCATION ON USER INTERFACE PCB



The User Interface pc board has one bank of dip switches. As shipped from the factory and under normal conditions, the dip switches are all in the 'off' position. There are 3 instances that require a change of the dip switch.

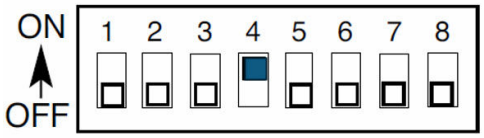
Factory Default Setting



All Switches in the 'OFF' Position.

Test Mode Setting

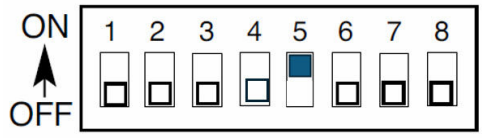
1. **Enter a test mode.** This is utilized when the machine is connected to a grid load for servicing.



Turn switch #4 to the 'ON' position.

VRD Enabled Setting

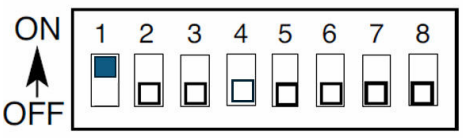
1. **Enter VRD Mode** (VRD Enabled)



Turn switch #5 to the 'ON' position.

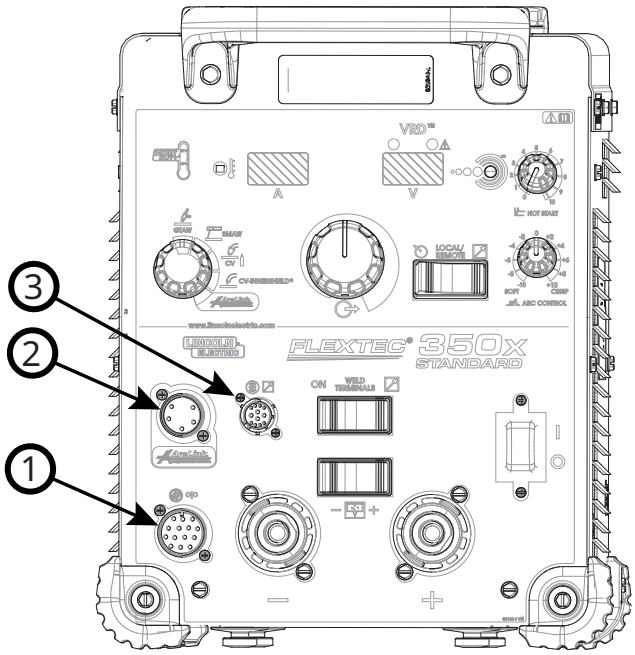
Calibration

1. **Enter Calibration Mode.** This allows the machine voltage and current to be calibrated while connected to a grid load.

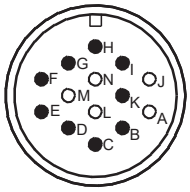


Turn switch #1 to the "ON" position.

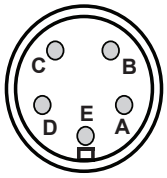
WIRE FEEDER CONNECTIVITY



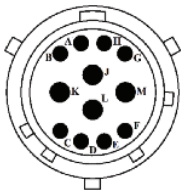
ANALOG WIRE FEEDER CONNECTIVITY

IMAGE	FUNCTION	PIN	WIRING
CONNECTOR 1 	14-PIN CONNECTOR FOR WIRE FEEDER CONNECTIVITY	A	
		B	GROUND
		C	TRIGGER, COMMON
		D	TRIGGER INPUT
		E	77 REMOTE POTENTIOMETER, 5K
		F	76 REMOTE POTENTIOMETER, WIPER
		G	75 REMOTE POTENTIOMETER, COMMON
		H	VOLTAGE SENSE (21)
		I	40VDC
		J	
		K	40VDC
		L	
		M	

ARCLINK WIRE FEEDER ACCESSORY CONNECTIVITY

IMAGE	FUNCTION	PIN	WIRING
CONNECTOR 2 	5-PIN CONNECTOR FOR WIRE FEEDER CONNECTIVITY	A	ARCLINK CAN
		B	ARCLINK CAN
		C	ELECTRODE SENSE LEAD
		D	40VDC
		E	40VDC COMMON

DIGITAL ACCESSORY CONNECTIVITY

IMAGE	FUNCTION	PIN	WIRING
CONNECTOR 3 	12-PIN REMOTE CONTROL CONNECTOR FOR REMOTE OR HAND/ FOOT AMPTROL AND DIGITAL ACCESSORIES	A	ARCLINK CAN
		B	ARCLINK CAN
		C	REMOTE POTENTIOMETER COMMON
		D	REMOTE POTENTIOMETER WIPER
		E	REMOTE POTENTIOMETER +10V
		F	ALPS CONNECTION
		G	TRIGGER
		H	TRIGGER
		J	40VDC COMMON
		K	40VDC
		L	NOT USED
		M	NOT USED

RECOMMENDED ELECTRODE AND WORK CABLE SIZES FOR ARC WELDING

Connect the electrode and work cables between the appropriate output studs of the Flextec® 350XP per the following guidelines:

- Most welding applications run with the electrode being positive (+). For those applications, connect the electrode cable between the wire drive input power connector and the positive (+) output stud on the power source. Connect a work lead from the negative (-) power source output stud to the work piece.
- When negative electrode polarity is required, such as in some Innershield applications, reverse the output connections at the power source (electrode cable to the negative (-) stud, and work cable to the positive (+) stud).

The following recommendations apply to all output polarities and weld modes:

- Select the appropriate size cables per the “Output Cable Guidelines” below. Excessive voltage drops caused by undersized welding cables and poor connections often result in unsatisfactory welding performance. Always use the largest welding cables (electrode and work) that are practical, and be sure all connections are clean and tight.

Note: Excessive heat in the weld circuit indicates undersized cables and/or bad connections.

- Route all cables directly to the work and wire feeder, avoid excessive lengths and do not coil excess cable. Route the electrode and work cables in close proximity to one another to minimize the loop area and therefore the inductance of the weld circuit.
- Always weld in a direction away from the work (ground) connection.

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

RECOMMENDED CABLE SIZES (RUBBER COVERED COPPER - RATED 167°F OR 75°C)**						
AMPERES	PERCENT DUTY CYCLE	CABLE SIZES FOR COMBINED LENGTHS OF ELECTRODE AND WORK CABLES				
		0 to 50Ft. (0 to 15m)	50 to 100Ft. (15 to 30m)	100 to 150 Ft. (30 to 46m)	150 to 200 Ft. (46 to 61m)	200 to 250 Ft. (61 to 76m)
200	60	2	2	2	1	1/0
200	100	2	2	2	1	1/0
225	20	4 or 5	3	4 or 5	1	1/0
225	40 & 30	3	3	3	1	1/0
250	30	3	3	3	1	1/0
250	40	2	2	2	1	1/0
250	60	1	1	1	1	1/0
250	100	1	1	1	1	1/0
300	60	1	1	1	1/0	1/0
350	100	2/0	2/0	2/0	2/0	2/0
350	60	1/0	1/0	1/0	2/0	3/0
400	60	2/0	2/0	2/0	3/0	4/0
400	100	3/0	3/0	3/0	3/0	4/0
500	60	2/0	2/0	2/0	3/0	4/0

Note: ** Tabled values are for operation at ambient temperatures of 104° F (40° C) and below. Applications above 104° F (40° C) may require cables larger than recommended, or cables rated higher than 167° F (75° C).

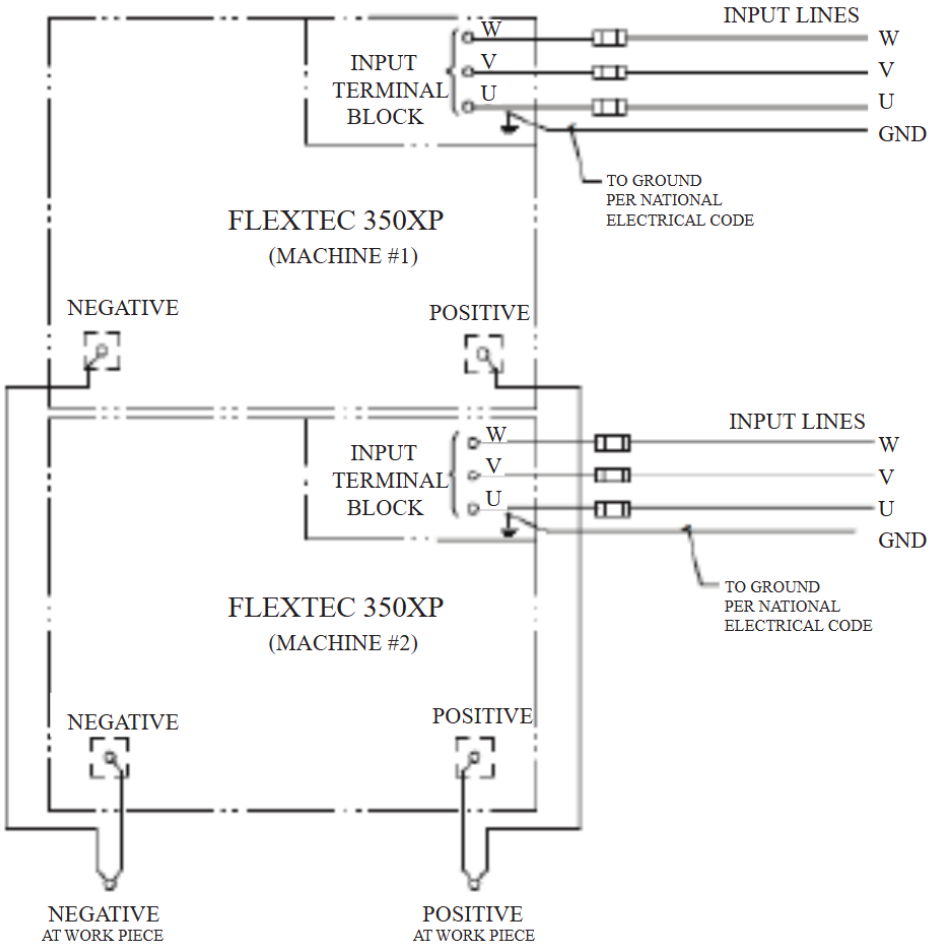
REMOTE SENSE LEAD SPECIFICATIONS

Genuine Lincoln Electric control cables should be used at all times (except where noted otherwise). Lincoln Electric cables are specifically designed for the communication and power needs of the Flextec® 350XP. Most are designed to be connected end-to-end for ease of extension. Generally, it is recommended that the total length not exceed 100 feet (30.5 m). The use of non-standard cables, especially in lengths greater than 25 feet, can lead to communication problems (system shutdowns), poor motor acceleration (poor arc starting), and low wire driving force (wire feeding problems). Always use the shortest length of control cable possible, and DO NOT coil excess cable.

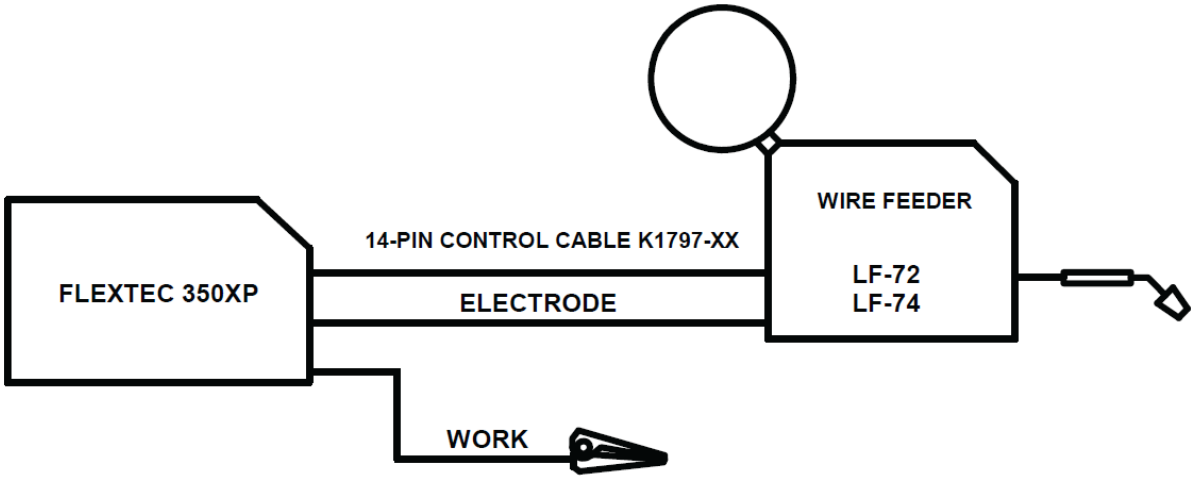
Regarding cable placement, best results will be obtained when control cables are routed separate from the weld cables. This minimizes the possibility of interference between the high currents flowing through the weld cables, and the low level signals in control cables.

Paralleling Machines

The Flextec® 350XP power sources may be paralleled for increased output requirements in constant current application. No kit is required for paralleling of Flextec® 350XP power sources. The Flextec® 350XP can only be paralleled for constant current processes. Connect the power sources as shown, and set the output control of each power sources to one half of the desired arc current.

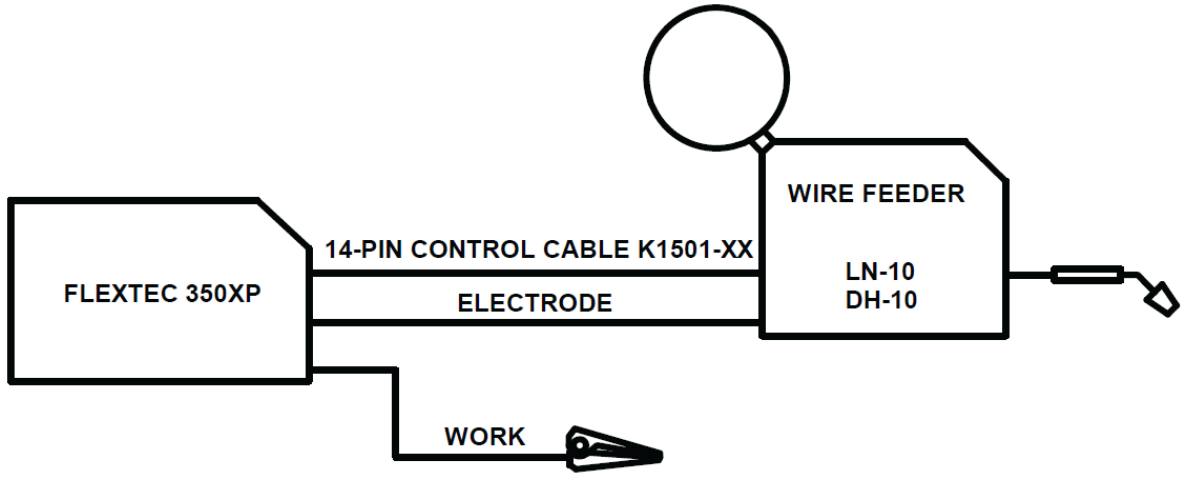


CONNECTING LF-72 AND LF-74



CONTROL SETTING	
WELD MODE	CV, CV-INNERSHIELD
WELD TERMINALS	REMOTELY CONTROLLED
REMOTE/LOCAL	LOCAL
	(REMOTE IF K2329-1 INSTALLED)
VOLTMETER POLARITY	PROCESS DEPENDENT

CONNECTING LN-10 AND DH-10



CONTROL SETTING	
WELD MODE	CV, CV-INNERSHIELD
WELD TERMINALS	REMOTELY CONTROLLED
REMOTE/LOCAL	REMOTE
VOLTMETER POLARITY	PROCESS DEPENDENT

LN-10,DH-10 Control Switch Setup

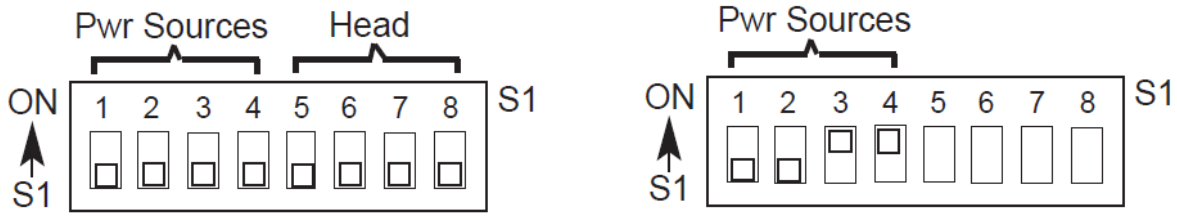
Initial set up of the LN-10, DH-10 control for the system components being used and for general operator preferences is done using a pair of 8-pole DIP switches located inside the LN-10, DH-10 control box.

Setup DIP Switch Access

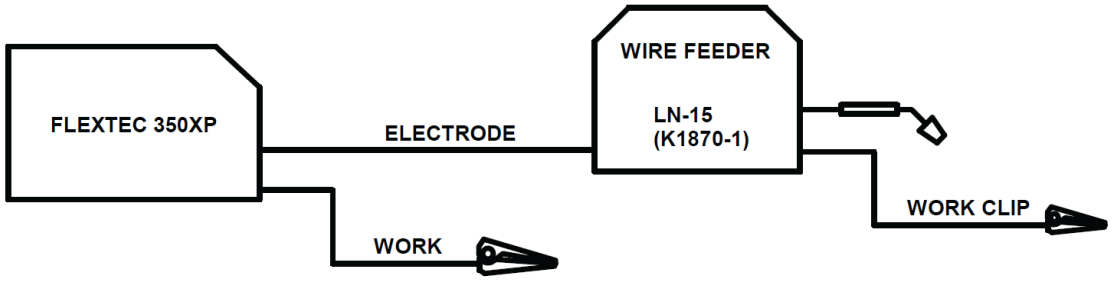
1. Shut off the input power to the LN-10, DH-10 control by turning off the power at the welding power source it is connected to.
2. Remove the two screws on the top of the LN-10, DH-10 control box door and swing the door down to open.
3. Locate the two 8-pole DIP switches, near the top left corner of the LN-10, DH-10 Control P.C. board, labeled S1 and S2.
4. Switch settings are only programmed during input power-up restoration.

Setting the DIP Switches

The DIP switches are each labeled with an “ON” arrow showing the on direction for each of the 8 individual switches in each DIP switch (S1 and S2). The functions of these switches are also labeled and set as described below:

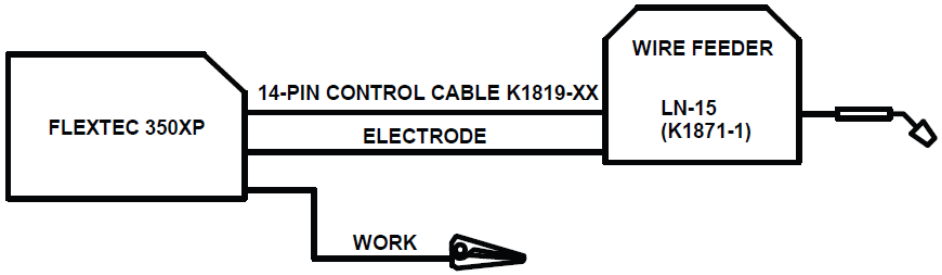


CONNECTING LN-15 (K1870-1)



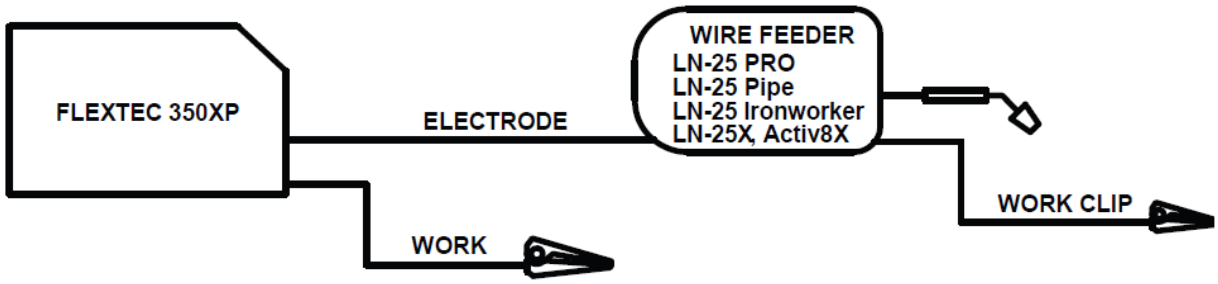
CONTROL SETTING	
WELD MODE	CV, CV-INNERSHIELD
WELD TERMINALS	ON
REMOTE/LOCAL	LOCAL
VOLTMETER POLARITY	PROCESS DEPENDENT

CONNECTING LN-15 (K1871-1)



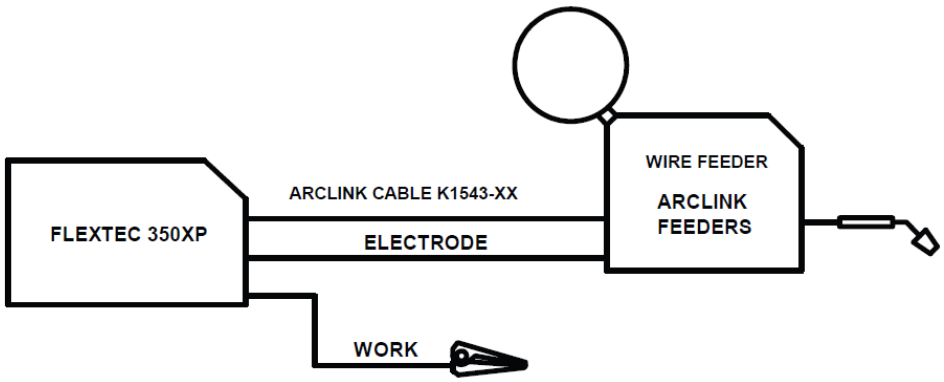
CONTROL SETTING	
WELD MODE	CV, CV-INNERSHIELD
WELD TERMINALS	ON
REMOTE/LOCAL	REMOTELY CONTROLLED
VOLTMETER POLARITY	PROCESS DEPENDENT

CONNECTING ACTIV8, ACTIV8X, LN-25 PRO SERIES, LN-25 PIPE, LN-25 IRONWORK AND LN-25X



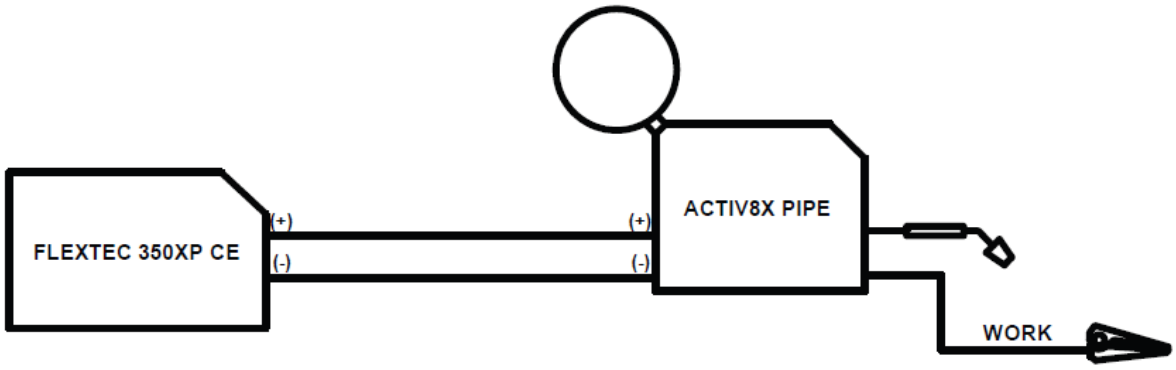
CONTROL SETTING	
WELD MODE	CV, CV-INNERSHIELD
WELD TERMINALS	ON
REMOTE/LOCAL	LOCAL, OR REMOTE WHEN USING CROSSLINC
VOLTMETER POLARITY	PROCESS DEPENDENT

CONNECTING ARCLINK



CONTROL SETTING	
WELD MODE	ARCLINK
WELD TERMINALS	REMOTE
REMOTE/LOCAL	N.A.
	N.A.
VOLTMETER POLARITY	N.A.

CONNECTING ACTIV8X PIPE (CE)



CONTROL SETTING	
WELD MODE	NOT ARCLINK OR TIG
WELD TERMINALS	REMOTE
REMOTE/LOCAL	N.A.
	N.A.
VOLTMETER POLARITY	N.A.

OPERATION

OPERATION SAFETY

⚠ WARNING



ELECTRIC SHOCK CAN KILL

Unless using cold feed feature, when feeding with gun trigger, the electrode and drive mechanism are always electrically energized and could remain energized several seconds after the welding ceases.

⚠ WARNING



FUMES AND GASES CAN BE DANGEROUS

Keep your head out of fumes.

Use ventilation or exhaust to remove fumes from breathing zone.

⚠ WARNING



ARC RAYS CAN BURN

Wear eye, ear and body protection.

Note: See additional warning information under "Arc Welding Safety Precautions" on inside of front cover of operating manual.

GRAPHIC SYMBOLS

GRAPHIC SYMBOLS THAT APPEAR ON THE Flextec® 350XP OR IN THIS MANUAL.



INPUT POWER

ON



OFF



HIGH TEMPERATURE



CIRCUIT BREAKER



WIRE FEEDER



POSITIVE OUTPUT

NEGATIVE OUTPUT



3 PHASE INVERTER



INPUT POWER



THREE PHASE



DIRECT CURRENT



REDUCED OPEN CIRCUIT VOLTAGE



OPEN CIRCUIT VOLTAGE



INPUT VOLTAGE



OUTPUT VOLTAGE



INPUT CURRENT



OUTPUT CURRENT



PROTECTIVE GROUND



WARNING OR CAUTION



EXPLOSION



DANGEROUS VOLTAGE



SHOCK HAZARD

POWER UP SEQUENCE

When power is applied to the Flextec® 350XP, the displays will illuminate and the machine electronics will complete a power up sequence indicated by a scrolling bar across each seven segment display. Once the power up sequence is complete and the machine is ready for welding, the seven segment displays will indicate the voltage and amperage settings. Any ArcLink wire feeders present and connected to the 5-pin circular connector will also initialize and begin a power up sequence once power is applied to the machine.

For machines connected to CrossLinc® compatible feeders the green CrossLinc® will light indicating a connection to the feeder over the electrode cable.

DUTY CYCLE

The Flextec® 350XP is capable of welding at a 100% duty cycle (continuous welding) at 300 Amps rated output.

The 60% duty cycle rating is 350 amps (based off of a ten minute cycle – 6 minutes on time and 4 minutes off time). The maximum output of the machine is 425 amps.

The Flextec® 350XP is also rated for Desert Duty, elevated temperature operation, in a 55°C ambient. The machine is derated in the elevated temperature ambient.

THERMAL PROTECTION

Thermostats protect the machine from excessive operating temperatures. Excessive temperatures may be caused by a lack of cooling air or operating the machine beyond the duty cycle and output rating. If excessive operating temperature should occur, the thermostat will disable the output and run the cooling fan. The displays will remain energized during this time and the thermal light will be illuminated. Thermostats are self-resetting once the machine cools sufficiently. If the thermostat shutdown was caused by excessive output or duty cycle and the fan is operating normally, the Power Switch may be left on and the reset should occur within a 15 minute period.

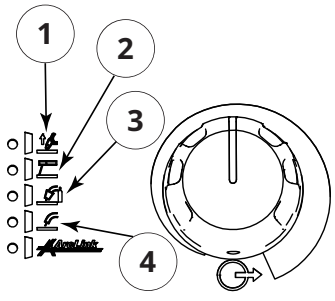
For Flextec® Construction machines the welding output will start again as soon as the thermostats close.

The Flextec® Standard output will start again if the welding output controls are set to on. Otherwise the output will be started once the controls are enabled.

MAKING A WELD

The Flextec® 350XP is a multi-process inverter welder. The Weld Process Selector Switch is used to set the desired weld mode. The Flextec® 350XP Standard has 4 selectable welding modes:

1. GTAW – This is a CC (constant current) weld mode used for touch start GTAW tig welding process.
2. SMAW – This is a CC (constant current) weld mode used for the SMAW stick welding process.
3. CV – This is CV (constant voltage) weld mode used for welding the GMAW mig welding process and the FCAW-GS, flux cored gas shielded welding process.
4. CV-Innershield – This is a CV (constant voltage) weld mode used for welding the FCAW-SS, flux cored self shielded welding process.



(Not pictured/ArcLink - is the digital communications channel. This uses the 5-pin amphenol. Pulsed MIG is only available using an ArcLink feeder connected to the 5-pin amphenol. Only available in Flextec® 350XP model).

The machine is also capable of gouging. Gouging can be done in either the SMAW mode or the CV and CV-Innershield modes.

In addition to the Weld Mode Selector switch, a hot start dial, output control dial and arc control dial are provided to setup and fine tune the welding procedure.

DEFINITION OF WELDING MODES

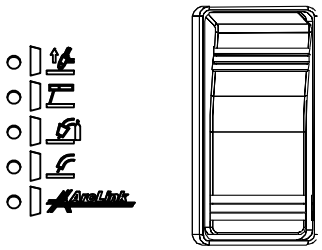
NON-SYNERGIC WELDING MODES

- A Non-synergic welding mode requires all welding process variables to be set by the operator.

SYNERGIC WELDING MODES

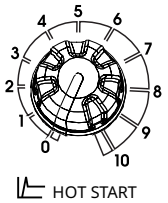
- A Synergic welding mode offers the simplicity of single knob control. The machine will select the correct voltage and amperage based on the wire feed speed (WFS) set by the operator.

WELD CONTROLS AND DISPLAYS



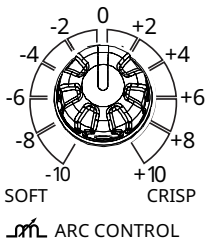
Weld Process Selector Switch

5 or 4 Position switch used to select the welding process.



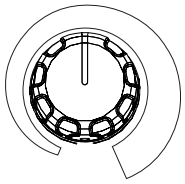
Hot Start Dial

The Hot Start control regulates the starting current at arc initiation. Hot Start can be set to ‘0” and no additional current is added at arc start. Increasing from 0 to 10 will increase the additional current (relative to the preset current) that is added at arc initiation.



Arc Force Control Dial

Full range selection of arc control from -10 to +10. In CV mode, this control is an inductance control. In stick mode, the control adjusts the arc force.

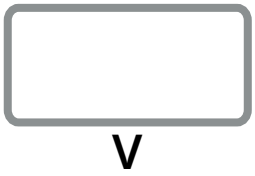


Output Control Dial

Output control is conducted via a single turn potentiometer. Adjustment is indicated by the meters. When in remote modes, this control sets the maximum welding current or voltage output. Full depression of a foot or hand amptrol results in the preset level of current or voltage.

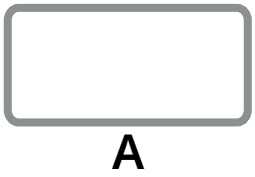
Volt Display Meter

- Prior to CV operation (current flow), the meter displays desired preset voltage value (+/- .1V).
- Prior to STICK or TIG operation, the meter displays three dashes.
- During welding, this meter displays actual average volts.
- After welding, the meter holds the actual voltage value for 5 seconds. The displays blink indicating that the machine is in the "Hold" period.
- Output adjustment while in the "hold" period results in the "prior to operation" characteristics.



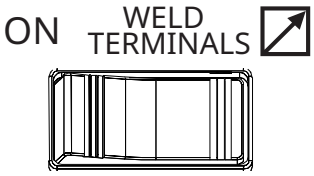
Amperage Display Meter

- Prior to STICK or TIG operation (current flow), the meter displays preset current value.
- Prior to CV operation, the meter displays four dashes indicating non-presettable AMPS.
- During welding, this meter displays actual average amps.
- After welding, the meter holds the actual current value for 5 seconds. The displays blink indicating that the machine is in the "Hold" period.
- Output adjustment while in the "hold" period results in the "prior to operation" characteristics.



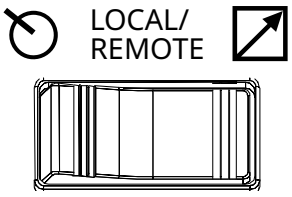
Weld Terminals On/Remote Toggle Switch *

- This switch determines the trigger location.
- When set to the ‘ON’ position, the weld terminals are at OCV (open circuit voltage) and ready to weld.
- When set to the ‘remote’ position, output is enabled through a remote trigger such as a welding gun.



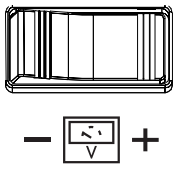
Output Control - Local/Remote Toggle Switch

- Set the switch to ‘local’ to control output at the Flextec® via the Output Control dial.
- Set the switch to ‘remote’ to control output via a remote device (K857 hand amptrol or K870 foot amptrol) connected to the 12-pin remote connector or a wire feeder connected to the 14-pin connector or when using a CrossLinc® enabled wire feeder.



Wire Feeder Voltmeter Polarity Switch *

This switch configures the 21 sense lead in the 14 pin connector to the work weld terminal of the machine. Matches the polarity of the wire feeder voltmeter to the polarity of the electrode. It also configures the reading of the 67 sense lead when in ArcLink mode.



Thermal Light

This status light indicates when the power source has been driven into thermal overload. If the output terminals were "ON", the output will be turned back on once the unit cools down to an acceptable temperature level. If the unit was operating in the "REMOTE" mode, the trigger will need to be opened before or after the thermal has cleared and closed after the machine has cooled down to an acceptable temperature to reestablish output.



VRD Lights

There are two indicator lights on the case front of the Flextec® 350XP above the Voltage display to indicate the status of VRD operation. As shipped, the VRD function is disabled. VRD is enabled by setting dip switch number 5 to the on position on the User Interface P.C. board. When VRD is active, a green light indicates the open circuit voltage is less than 35V peak, a red light indicates the OCV is at or above 35V peak, both lights will illuminate for 5 seconds upon power up. The behavior of the VRD lights is listed in the table below. While the VRD lights are always active when VRD has been enabled, VRD applies to the constant current modes of operation. Only in these modes will the OCV been reduced.



Note: * Not included on Construction model.

<table>
<tr><th colspan="4">VRD INDICATOR LIGHTS</th></tr>
<tr><th colspan="2">MODE</th><th>VRD ON</th><th>VRD OFF</th></tr>
<tr><td rowspan="2">CC-SMAW
CC-GTAW</td><td>OCV</td><td>GREEN (OCV REDUCED)</td><td rowspan="6">NO LIGHTS ARE ACTIVE</td></tr>
<tr><td>WHILE WELDING</td><td>GREEN OR RED (DEPENDS ON WELD VOLTAGE)*</td></tr>
<tr><td rowspan="4">CV-GAS
C V-INNERSHIELD</td><td rowspan="3">OCV</td><td>RED (OCV NOT REDUCED)
WELD TERMINALS ‘ON’</td></tr>
<tr><td>RED (OCV NOT REDUCED)
WELD TERMINALS REMOTELY CONTROLLED
GUN TRIGGER CLOSED</td></tr>
<tr><td>GREEN (NO OCV)
WELD TERMINALS REMOTELY CONTROLLED
GUN TRIGGER OPEN</td></tr>
<tr><td>WHILE WELDING</td><td>GREEN OR RED (DEPENDS ON WELD VOLTAGE)*</td></tr>
</table>

Note: * It is normal for the lights to alternate between colors while welding.

BASIC MODES OF OPERATION

GTAW

This weld mode is a constant current (CC) mode featuring continuous control from 10 –425 amps.

It is intended for the GTAW TIG welding processes.

Hot Start - Hot start regulates the arc initiation current. A setting of +10 results in the most positive arc initiation.

Arc Control – This control is not used in the GTAW mode.

Weld Terminals On/Remote

- When set to the ‘ON’ position, the weld terminals are at OCV (open circuit voltage) and ready to weld.
- When set to the ‘remote’ position, output is enabled through a remote trigger.

Voltage Display – This display will display three dashed lines when the machine is in the idle state. This indicates that voltage is not settable in this weld mode. While output is enabled, the actual welding voltage will be displayed. After welding, the meter holds the actual voltage value for 5 seconds. Output adjustment while in the "hold" period results in the "prior to operation" characteristics stated above. The displays blink indicating that the machine is in the "Hold" period.

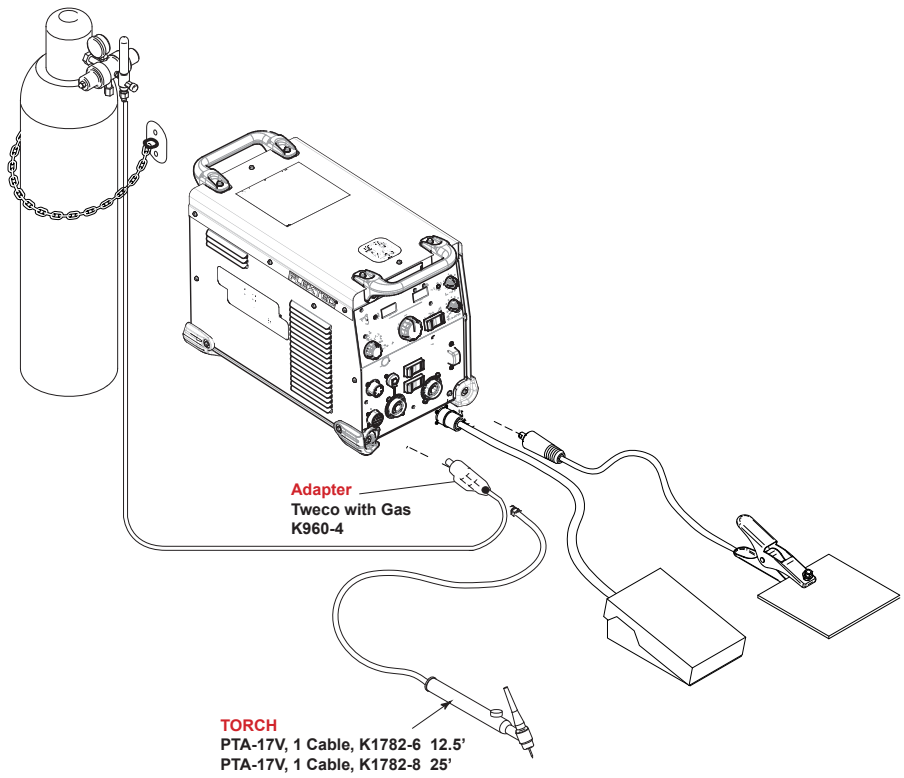
Amperage Display – This display will display the pre-set welding current when the machine is in the idle state. After welding, the meter holds the actual amperage value for 5 seconds. Output adjustment while in the "hold" period results in the "prior to operation" characteristics stated above. The displays blink indicating that the machine is in the "Hold" period.

Output Control Local/Remote – When the control is set to local (no remote potentiometer/control plugged into the 12-pin or 14-pin connectors), the output is controlled through the Output Control dial on the front of the Flextec® 350XP. Set this switch to ‘Remote’ when an external potentiometer/control is connected.

- When a remote potentiometer is connected and the Local/Remote toggle is set to 'Remote', the output control on the Flextec® and the remote act as master/slave configuration. Use the output control dial on the Flextec® to set the maximum welding current. The remote will control output from minimum to the pre-set maximum.

Output Control Dial

- When the Local/Remote is set to Local, this dial sets the welding amperage.
- When the Local/Remote is set to Remote, this dial sets the maximum welding amperage. The remote potentiometer than controls the amperage from minimum to this pre-set maximum.



SMAW

This weld mode is a constant current (CC) mode featuring continuous control from 15 – 425 Amps.

It is intended for the SMAW stick welding processes and arc gouging. The mode can also be used for TIG operation without changing modes (as long as Hot Start=0 and Arc Control=(-10). Values of Hot start greater than 0 will result in a higher current arc start. Values of Arc Control greater than the minimum setting of (-10) will result in a higher output that the intended preset value.).

Hot Start - The Hot Start control regulates the starting current at arc initiation. Hot Start can be set to '0" and no additional current is added at arc start. Increasing from 0 to 10 will increase the additional current (relative to the preset current) that is added at arc initiation.

Arc Control - The Arc Control regulates the Arc Force to adjust the short circuit current. The minimum setting (-10) will produce a "soft" arc and will produce minimal spatter and shallow penetration. The maximum setting (+10) will produce a "crisp" arc and will minimize electrode sticking with deeper penetration.

Weld Terminals On/Remote – Set to "On" so the machine is in the ready to weld state. Setting the machine to "On" enables the machine OCV.

Voltage Display – This display will display three dashed lines when the machine is in the idle state. This indicates that voltage is not settable in this weld mode. While output is enabled, the actual welding voltage will be displayed. After welding, the meter holds the actual voltage value for 5 seconds. Output adjustment while in the "hold" period results in the "prior to operation" characteristics stated above. The displays blink indicating that the machine is in the "Hold" period.

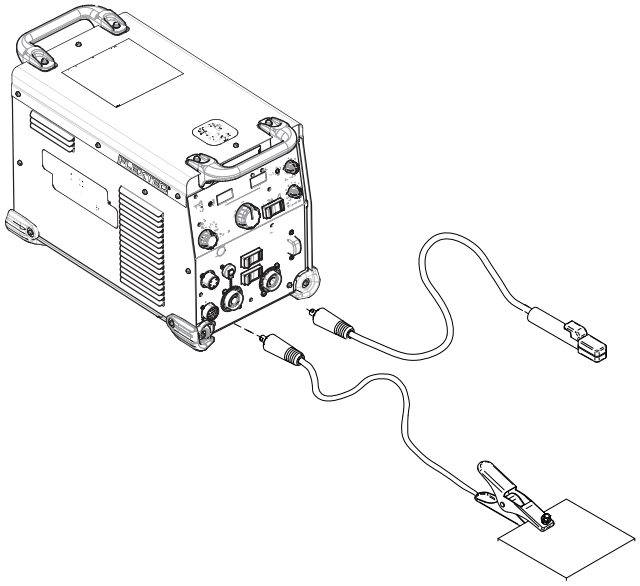
Amperage Display – This display will display the pre-set welding current when the machine is in the idle state. After welding, the meter holds the actual amperage value for 5 seconds. Output adjustment while in the "hold" period results in the "prior to operation" characteristics stated above. The displays blink indicating that the machine is in the "Hold" period.

Output Control Local/Remote – When the control is set to local (no remote potentiomer/control plugged into the 12-pin or 14-pin connectors), the output is controlled through the Output Control dial on the front of the Flextec® 350XP. Set this switch to 'Remote' when an external potentiometer/control is connected.

- When a remote potentiometer is connected, the output control on the Flextec® and the remote act as a master/slave configuration. Use the output control dial on the Flextec® to set the maximum welding current. The remote will control output from minimum to the pre-set maximum.

Output Control Dial

- When the Local/Remote is set to Local, this dial sets the welding amperage.
- When the Local/Remote is set to Remote, this dial sets the maximum welding amperage. The remote potentiometer than controls the amperage from minimum to this pre-set maximum.



CV-GAS

This weld mode is a constant voltage (CV) mode featuring continuous control from 10 to 45 volts. It is intended for the GMAW, FCAW-GS, MCAW welding processes and arc gouging.

Hot Start – Rotate from the '0' position to the '10' position to provide more energy during the start of a weld.

Arc Control – The Arc Control regulates pinch effect. At the minimum setting (-10), minimizes pinch and results in a soft arc. Low pinch settings are preferable for welding with gas mixes containing mostly inert gases as well as aluminum alloys. At the maximum setting (+10), maximizes pinch effect and results in a crisp arc. High pinch settings are preferable for welding FCAW and GMAW with CO2.

Weld Terminals On/Remote

• When set to the 'ON' position, the weld terminals are at OCV (open circuit voltage) and ready to weld. This selection is used for across the arc wire feeders. The 12-pin connector remote input is used to adjust the voltage with a master/slave relationship with the output control dial.

• When set to the 'remote' position, output is enabled through a remote trigger. The 14-pin connector remote input is used to adjust the voltage with a master/slave relationship with the output control dial.

Amperage Display – This display will display three dashed lines when the machine is in the idle state. This indicates that amperage is not settable in this weld mode. While output is enabled, the actual welding amperage will be displayed. After welding, the meter holds the actual amperage value for 5 seconds.

Output adjustment while in the "hold" period results in the "prior to operation" characteristics stated above. The displays blink indicating that the machine is in the "Hold" period.

Voltage Display – This display will display the pre-set welding voltage when the machine is in the idle state. After welding, the meter holds the actual voltage value for 5 seconds. Output adjustment while in the "hold" period results in the "prior to operation" characteristics stated above. The displays blink indicating that the machine is in the "Hold" period.

Output Control Local/Remote – When the control is set to local (no remote potentiometer/control plugged into the 12-pin or 14-pin connectors), the output is controlled through the Output Control dial on the front of the Flextec® 350XP. Set this switch to 'Remote' when an external potentiometer/control is connected or using a CrossLinc® feeder.

• When a CrossLinc® equipped feeder like the LN-25X is used, output will then be controlled at the CrossLinc remote through the full range of the voltage allowable. The output control dial on the Flextec® 350XP will no longer set the maximum amperage.

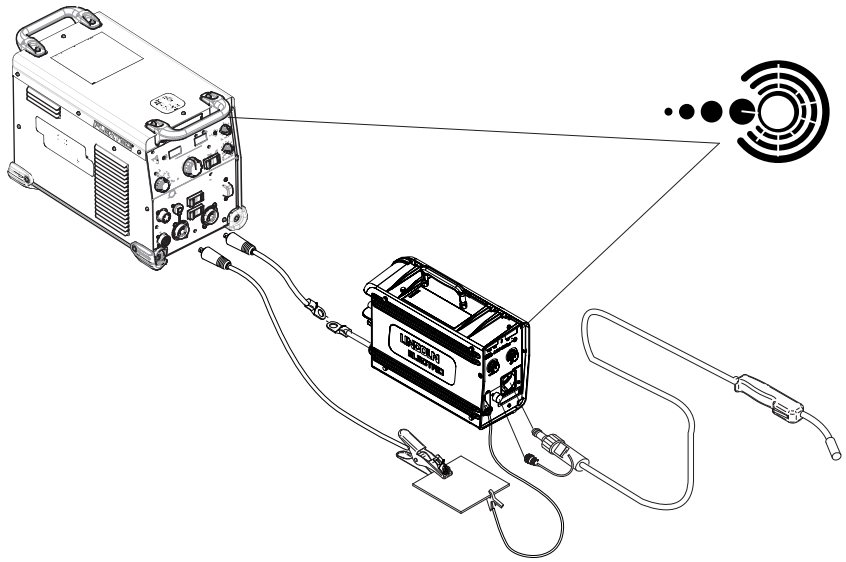
Output Control Dial

- When the Local/Remote is set to Local, this dial sets the welding voltage.
- When the Local/Remote is set to Remote, and the weld terminal switch is in the 'ON' position, this dial sets the maximum welding voltage. The remote potentiometer controls the voltage from minimum to this pre-set maximum. If the weld terminal switch is in the 'REMOTE' position, the output is controlled via the 14-pin input.

CrossLinc® - CrossLinc is a new welding system communication technology. When using a CrossLinc enabled power source such as the Flextec® 350XP and a CrossLinc enabled wire feeder such as the LN-25X, welding voltage can be controlled remotely without the use of an additional control cable.

The digital meters on the LN-25X will show the pre-set values for wire feed speed and voltage prior to welding. During welding, the meters will show actual current and voltage present at the wire feeder. After welding the meters will then flash the last welding current and voltage that was present during welding for 10- seconds after welding. If WFS or V is adjusted during this 10 second period, the meters will go back to the pre-set value.

- When a LN-25X CrossLinc enabled feeder is connected with the Flextec® 350XP using the standard weld power cable and the LN-25X sense lead is attached to the work piece, the CrossLinc light will automatically illuminate on both the Flextec® 350XP and the LN-25X. No additional pairing of the machine to the feeder is needed. This light indicates the CrossLinc connection is active and that control of the Flextec® 350XP voltage can be made at the LN-25X feeder.
- The Flextec® 350XP Weld Terminals On/Remote toggle should be set to 'ON'. This powers the weld terminals for an across the-arc LN-25X wire feeder.
- The Flextec® 350XP Output Control Local/Remote switch should be set to 'Remote' allowing for remote control of the output at the CrossLinc equipped feeder.



CV-INNERSHIELD

This weld mode is a constant voltage (CV) mode featuring continuous control from 10 to 45 volts.

It is intended for the FCAW-SS welding process and arc gouging.

Hot Start – Toggle from the ‘0’ position to the ‘10’ position to provide more energy during the start of a weld.

Arc Control – The Arc Control regulates pinch effect. At the minimum setting (-10), minimizes pinch and results in a soft arc. At the maximum setting (+10), maximizes pinch effect and results in a crisp arc.

Weld Terminals On/Remote

- When set to the ‘ON’ position, the weld terminals are at OCV (open circuit voltage) and ready to weld. This selection is used for across the arc wire feeders. The 12-pin connector remote input is used to adjust the voltage with a master/slave relationship with the output control dial.
- When set to the ‘remote’ position, output is enabled through a remote trigger. The 14-pin connector remote input is used to adjust the voltage with a master/slave relationship with the output control dial.

Amperage Display – This display will display three dashed lines when the machine is in the idle state. This indicates that amperage is not settable in this weld mode. While output is enabled, the actual welding amperage will be displayed. After welding, the meter holds the actual amperage value for 5 seconds. Output adjustment while in the "hold" period results in the "prior to operation" characteristics stated above. The displays blink indicating that the machine is in the "Hold" period.

Voltage Display – This display will display the pre-set welding voltage when the machine is in the idle state. After welding, the meter holds the actual voltage value for 5 seconds. Output adjustment while in the "hold" period results in the "prior to operation" characteristics stated above. The displays blink indicating that the machine is in the "Hold" period.

Output Control Local/Remote – When the control is set to local (no remote potentiometer/control plugged into the 12-pin or 14-pin connectors), the output is controlled through the Output Control dial on the front of the Flextec® 350XP. Set this switch to ‘Remote’ when an external potentiometer/control is connected or using a CrossLinc® feeder.

Output Control Dial

- When the Local/Remote is set to Local, this dial sets the welding voltage.

- When the Local/Remote is set to Remote, and the weld terminal switch is in the ‘ON’ position, this dial sets the maximum welding voltage. The remote potentiometer controls the voltage from minimum to this pre-set maximum. If the weld terminal switch is in the ‘REMOTE’ position, the output is controlled via the 14-pin input.

PROCESS SELECTION ASSIST (Codes 13461 and Higher Only)

When using an Activ8x or LN-25X*, the Flextec® will automatically select the process re\u001Fected by the polarity of the feeder. For instance, the selected process by the Flextec® will automatically change to “CV” when connected electrode positive and “CV-Innershield” when connected electrode negative. The original process selected will blink on the Flextec® until the CrossLinc connection is established.

When using a CrossLinc Remote*, the Flextec® will automatically select the process re\u001Fected by the polarity of the remote. For instance, the process selected by the Flextec® will automatically change to “SMAW” when connected electrode positive and “GTAW” mode when connected electrode negative. The original process selected will blink on the Flextec® until the negotiation is completed.

The last process selected on the Flextec® before connection through CrossLinc will be remembered by the power source. Upon power off of the CrossLinc Remote, Activ8X, or LN-25X by disconnecting the work clip, after a 30 second delay the selected process on the Flextec® will revert to the originally selected process. Ten seconds after the power off of the feeder or remote, the original process that the Flextec® will revert back to will begin to blink indicating to the user that an automatic change to the selected weld process is pending. If the power to the remote or feeder is turned off by the “weld terminals” switch on the front panel of the Flextec®, the active process will revert back to the original process immediately without the delay.

The Process Selection Assist feature can be disabled or enabled using the process selection rocker switch. Holding the process selection rocker switch up for ve seconds disables the process selection assist. The display will indicate this by showing “PSA” “OFF” for a couple seconds. Holding the process selection rocker switch in the up position for \u001Eve seconds will enable the process selection assist. The display will indicate this by showing “PSA” “On” for a couple seconds. When Process Selection Assist is active the process selection switch is disabled.

Note: * Manufactured after December 2022.

ACCESSORIES AND OPTIONS

OPTIONAL KITS AND ACCESSORIES

K3059-4 Inverter and Wire Feeder Cart* - Rear-wheeled cart with front casters and gas bottle platform. Convenient handles allow for easy cable storage. Small footprint fits through 30 in. (762mm) door. Not intended for use with double head wire feeders.



K3059-5 Dual Cylinder Inverter & Wire* Feeder Cart - Rear-wheeled cart with front casters and dual cylinder platform. Convenient handles allow for easy cable storage. Small footprint fits through 30 inch (762mm) door.



K3091-1 Multi-Process Switch* - Easily switch between CC and CV processes.

Note: *Requires Locking Foot Kit (K4424-1).



K4424-1 Flextec 350 Locking Foot Kit - Allows the Flextec® to lock to the inverter cart, Multi-Process Switch, Cool-Arc 55 water cooler.

K586-1 Deluxe Adjustable Gas Regulator & Hose Kit - Accommodates C02, Argon, or Argon-blend gas cylinders. Includes a cylinder pressure gauge, dual scale flow gauge and 4.3ft (1.3m) gas hose.



3100211 Harris Argon Flowmeter Regulator and Hose Kit

K3019-1 Arc Tracker - The Arc Tracker monitors information regarding your welding arc by connecting it between any DC welding power source and the work clamp.

Weld Fume Control Solutions. Lincoln Electric offers a wide variety of welding fume control solutions, ranging from portable systems easily wheeled around the shop to shop-wide central systems servicing many dedicated welding stations.



K2909-1 12-pin to 6-pin Adapter



Stick Options



K857-2 12-pin Remote Output Control with Universal Connector - Permits remote adjustment of output.

TIG Options



K870-2 Foot Amptrol® - Provides 25 ft. (7.6 m) of remote current control for TIG welding (12-pin plug connection).



K963-4 Hand Amptrol® - Provides 25 ft. (7.6 m) of remote current control for TIG welding (12-pin plug connection).



K814 Arc Start Switch (6-pin) -** May be used in place of the Foot or Hand Amptrol®. Comes with a 25 ft. (7.6m) cable. Attaches to the TIG torch for convenient finger control to start and stop the weld cycle at the current set on the machine.

Note: ** Requires K2909-1 - 12-pin to 6-pin adapter.



K4345-1 CrossLinc Remote - Allows for remote output control of the Flextec® power source through the weld cable without additional control cables.

MAINTENANCE

MAINTENANCE SAFETY

⚠ WARNING



Before carrying out service, maintenance and/or repair jobs, fully disconnect power to the machine.

⚠ WARNING



Use Personal Protective Equipment (PPE), including safety glasses, dust mask and gloves to avoid injury. This also applies to persons who enter the work area.

⚠ WARNING



MOVING PARTS CAN INJURE

Do not operate with doors open or guards off.

Stop engine before servicing.

Keep away from moving parts.

⚠ WARNING



Have qualified personnel do all maintenance and troubleshooting work.

VISUAL INSPECTION

Clean interior of machine with a low pressure air stream. Make a thorough inspection of all components.

Look for signs of overheating, broken leads or other obvious problems. Many problems can be uncovered with a good visual inspection.

ROUTINE MAINTENANCE

Every 6 months or so the machine should be cleaned with a low pressure air stream. Keeping the machine clean will result in cooler operation and higher reliability. Be sure to clean these areas:

- All printed circuit boards
- Power switch
- Main transformer
- Input rectifier
- Heatsink fins
- Auxiliary transformer
- Fan (blow air through the rear louvers)

Examine the sheet metal case for dents or breakage. Repair the case as required. Keep the case in good condition to ensure that high voltage parts are protected, and correct spacing is maintained. All external sheet metal screws must be in place to insure case strength and electrical ground continuity.

CURRENT CALIBRATION

1. Remove the machine's wrap around cover.
2. Set the dip switch number 1 on the User Interface board to the "ON" position.
3. Connect the resistive load bank and external voltage and current meters to the welder.
4. Rotate the Hot Start, Arc Control and Output Control knobs all the way counterclockwise.
5. Set the local/remote switch to the local position.
6. Connect input power and turn on the Flextec®.
7. Once the machine is fully powered up the UI will display "Cur CAL".
8. Rotate the Hot Start knob clockwise until the message "Adj POT SO real Cur = 300A" scrolls across the screen.
9. Press the up then down position on the mode select switch, then release.
    - **Note:** The LED below CV Innershield should illuminate indicating the machine is in the correct mode for Current calibration.
10. Turn ON the load bank and adjust, so that the machine is loaded to 300A.
11. Adjust the output control knob until the actual output amperage measures 300 amps +/- 2A on the external current meter.
12. Toggle the Local/Remote switch to remote position, the UI should display "CAL SET".
13. Turn off the load bank, so that the external voltage meter displays OCV approximately 60VDC.
14. The Flextec® machine can be turned off and remove from input power.
15. Set the dip switch number 1 on the User Interface board to the "OFF" position.
16. Reinstall the machine's wrap around cover.

VOLTAGE CALIBRATION

1. Remove the machine's wrap around cover.
2. Set the dipswitch number 1 on the User Interface board to the "ON" position.
3. Connect the resistive load bank and external voltage and current meters to the welder.
4. Rotate the Hot Start, Arc Control and Output Control knobs all the way counterclockwise.
5. Set the local/remote switch to the local position.
6. Connect input power and turn on the Flextec®.

7. Once the machine is fully powered up the UI will display “Cur CAL”.
8. Rotate the Arc Control knob clockwise until the UI displays the message “VOL CAL”, across the screen.
9. Rotate the Hot Start knob clockwise until the UI displays the message “Adj POT SO real VOL = 20 VOL” across the screen.
10. Press the up then down position on the mode select switch, then release.
    - **Note:** There should be no LEDs lit around the mode select switch, indicating the machine is in the correct mode for Voltage calibration.
11. Turn ON the load bank and adjust, so that the machine is being loaded to 300A.
12. Adjust the output control knob until the actual output voltage measures 20 VDC +/- .5 volts, on the external voltage meter.
13. Toggle the Local/Remote switch to remote position, the UI should display “CAL SET”.
14. Turn off the load bank, so that the external voltage meter displays OCV approximately 60VDC.
15. The Flextec® machine can be turned off and remove from input power.
16. Reinstall the machine’s wrap around cover.

TO RESTORE FACTORY CURRENT CALIBRATION

1. Connect the resistive load bank and test voltmeter to the welding output terminals.
2. Put dipswitch 1 in the on position.
3. Rotate the Hot Start knob and Arc Control knob to the minimum.
4. Turn on the Flextec 350XP.
5. The display should read “Cur CAL”.
6. Rotate the Arc Control knob until the display reads “Fct Cur”.
7. Rotate the Hot Start knob until a message scrolls across the screen.
8. Toggle the Local/Remote switch to save the calibration.
9. The display should flash "CAL SEt".

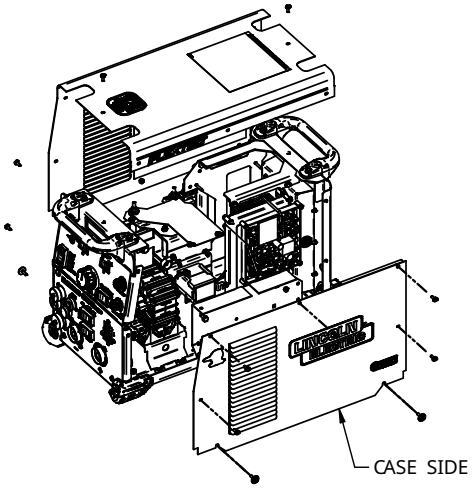
TO RESTORE FACTORY VOLTAGE CALIBRATION

1. Connect the resistive load bank and test voltmeter to the welding output terminals.
2. Put dipswitch 1 in the on position.
3. Rotate the Hot Start knob and Arc Control knob to the minimum.
4. Turn on the Flextec 350XP.
5. The display should read “Cur CAL”.
6. Rotate the Arc Control knob until the display reads “Fct VoL”.
7. Rotate the Hot Start knob until a message scrolls across the screen.
8. Toggle the Local/Remote switch to save the calibration.
9. The display should flash "CAL SEt".

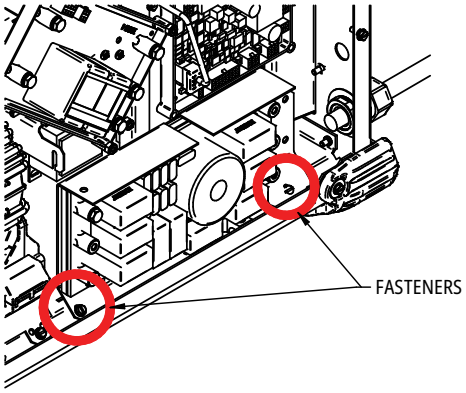
TO REPLACE INPUT CORD

1. Completely de-energize machine and verify that no residual charge is present on capacitors, etc.

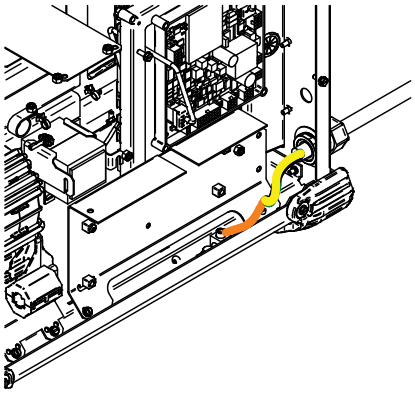
2. Remove case sides to expose input cord connection to input EMI Filter.



3. Remove 2 fasteners holding \u001Flter bracket to case bottom.



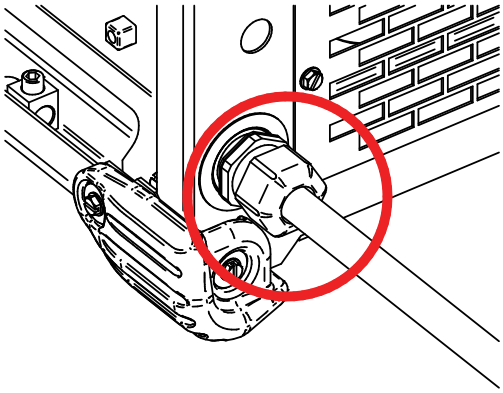
4. Remove EMI Filter Bracket holding EMI Filter to expose ground connection to case bottom.



5. Remove 3 phase connection to EMI Filter Board. Be sure to keep the input toriod in the same relative position when reinstalling the EMI Filter Bracket.

6. Remove ground connection by loosening set screw on ground lug.

7. Remove input cord by loosening cable strain relief on case back.



8. Replace input cord with desired cord by connecting 3 input voltage phase leads to B1, B2, and B3 on EMI Filter board. Secure ground lead to lug on case bottom.

TROUBLESHOOTING

HOW TO USE TROUBLESHOOTING GUIDE

⚠ WARNING



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

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

1. **LOCATE PROBLEM (SYMPTOM)**

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

2. **POSSIBLE CAUSE**

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

3. **RECOMMENDED COURSE OF ACTION**

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

⚠ CAUTION



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

Observe all additional safety guidelines detailed throughout this manual.

TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSE	RECOMMENDED COURSE OF ACTION
Major physical or electrical damage is evident when the sheet metal covers are removed.	**1.** Contact your local authorized Lincoln Electric Field Service facility for technical assistance.	If all recommended possible areas of misadjustment have been checked and the problem persists, **Contact your local Lincoln Authorized Field Service Facility.**
Machine won't weld, can't get any output.	**1.** If the displays show an Err ### see the fault section for corrective action. **2.** If the thermal symbol is lit refer to the thermal section. **3.** If the output terminals are in remote control switch to "ON" and check for output voltage. If output voltage is now present check for correct remote control connection and operation.	
Thermal symbol is lit.	**1.** Check for proper fan operation. • Check for material blocking intake or exhaust louvers. • Blow air in the rear louvers to clear dirt from the fan. Note: The Fan As Needed circuitry automatically shuts off the fan 5 minutes after welding has stopped. **2.** Welding output ratings may have been exceeded. Allow the machine to cool down and reset.	
Wire feeder won't work. Apparently no power to wire feeder	**1.** Check the control cable connectors on the case front of the machine to make sure it is properly connected. **2.** Check circuit breaker on the case back of the machine. Reset if necessary. **3.** Check the control cable between the power source and the wire feeder for continuity.	

USING THE STATUS LED TO TROUBLESHOOT SYSTEM PROBLEMS

Errors are displayed on the user interface. In addition, there are status lights on the User Interface PC board and the Switch PC board that contain error sequences.

Included in this section is information about the status lights and some basic troubleshooting charts for both machine and weld performance.

The status lights on the User Interface board, Crosslinc®, Input board, Control board and the Switch board are dual-color LED's or green LEDs. Normal operation for each is described on the wiring diagram.

Error conditions are indicated in the following chart.

ERROR CODE #	DESCRIPTION	POSSIBLE CAUSE	CORRECTIVE ACTION
6	Device that controls sequence of the welding operation halted due to an error.	Communication from the Power Source failed before mapping was complete.	Weld Terminals Remote: Re-trigger to recover from error. Weld Terminals Local: Toggle Remote/Local Switch to recover from error.
18	ArcLink Auto-Mapping Failed.	The machine could not properly configure the devices that are attached to it. This configuration problem could be caused by the type of devices that are connected to the machine or a required device that is not connected.	Refer to the Operator's Manual for proper configuration. Verify all devices in the system are properly powered.
21	Device that controls sequence of the welding operation halted due to an error.	A component of the system encountered an error during the welding sequence and caused system to stop. The component with the error could be a wire drive, a user interface or some other part of the system.	Weld Terminals Remote: Re-trigger to recover from error. Weld Terminals Local: Toggle Remote / Local switch to recover from error.

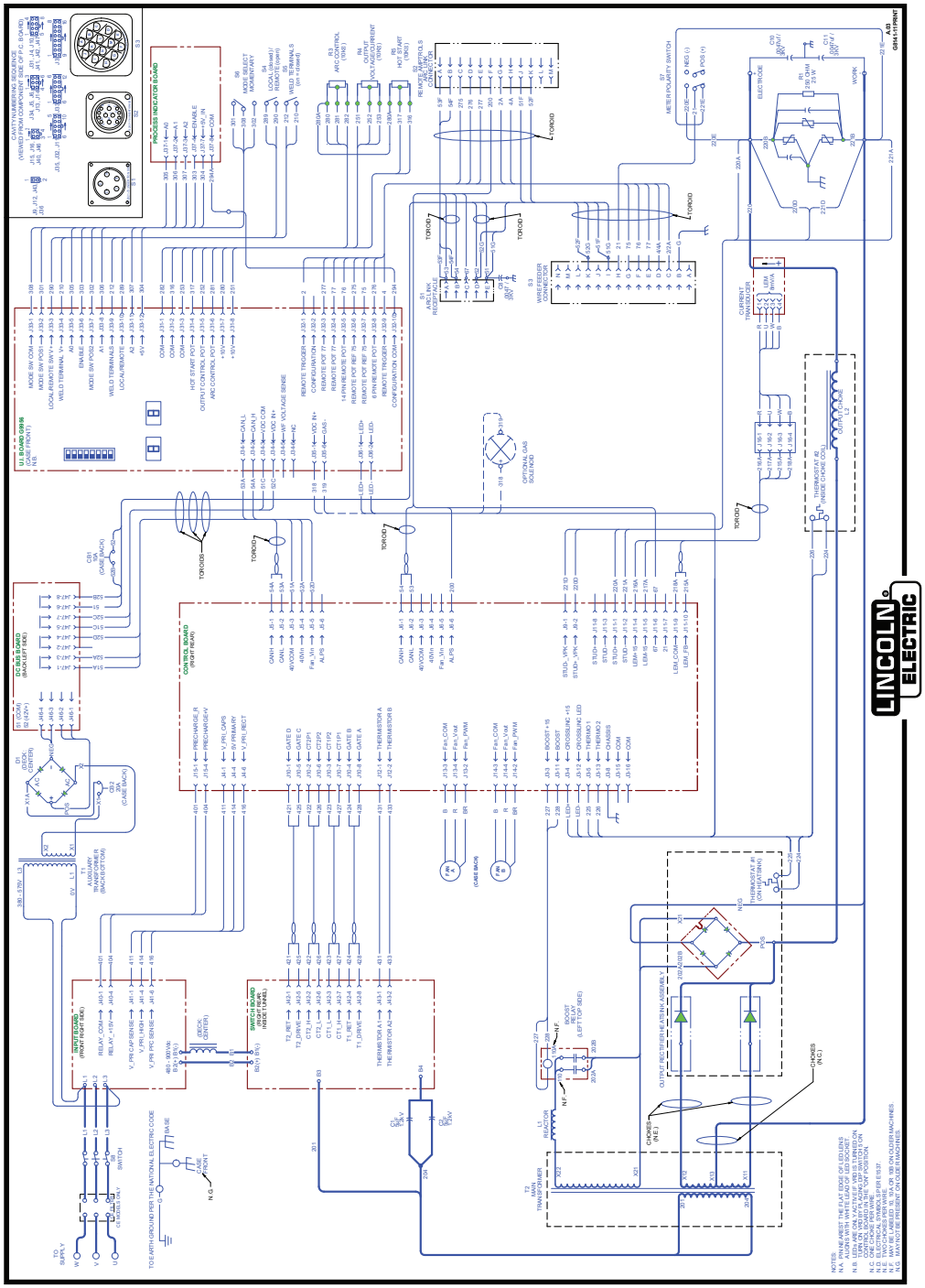
ERROR CODE #	DESCRIPTION	POSSIBLE CAUSE	CORRECTIVE ACTION
31	Primary Over Current.	Peak current through the transformer primary has exceeded its threshold.	Check the input power (voltage and frequency). Verify that the PC boards and input rectifier are in working conditionC and proper input power and welding output cable connections. Verify proper connections of main internal power components. Power must be cycled to the machine to reset the error.
36	Thermal Fault.	Machine shut off output due to elevated internal temperatures.	**1.** Check for material blocking intake or exhaust louvers. • Blow air in the rear louvers to clear dirt from the fan. **Note:** The Fan As Needed circuitry automatically shuts off the fan five minutes after welding has stopped. **2.** Welding output ratings may have been exceeded. Allow the machine to cool down and reset. Measure the thermostats at the Switchboard and replace if defective.
45	Output Voltage Limit Exceeded.	During OCV, the voltage at the studs exceeded the allowable levels.	If VRD is enabled, the stud voltage exceeded 35 volts peak. In standard operation, the stud voltage exceeded 113 volts peak. Verify the voltage feedback leads are properly connected inside the machine. Verify the input voltage in within +/- 10% of the nominal value.

ERROR CODE #	DESCRIPTION	POSSIBLE CAUSE	CORRECTIVE ACTION
213	Communication Fault.	CAN communication between the User Interface PC board and the Switch PC Board has been interrupted.	Power must be cycled to the machine to reset the error. Visually inspect the CAN harness to ensure connections and condition. Verify power supply to the User Interface and Switch PC boards. Replace defective assemblies as required.
711	DC Link Capacitor Over/ Under Voltage.	The voltage on the main DC link capacitors housed on the switchboard has either gone too high or too low.	Verify all three phases of the AC input are connected.

APPENDIX

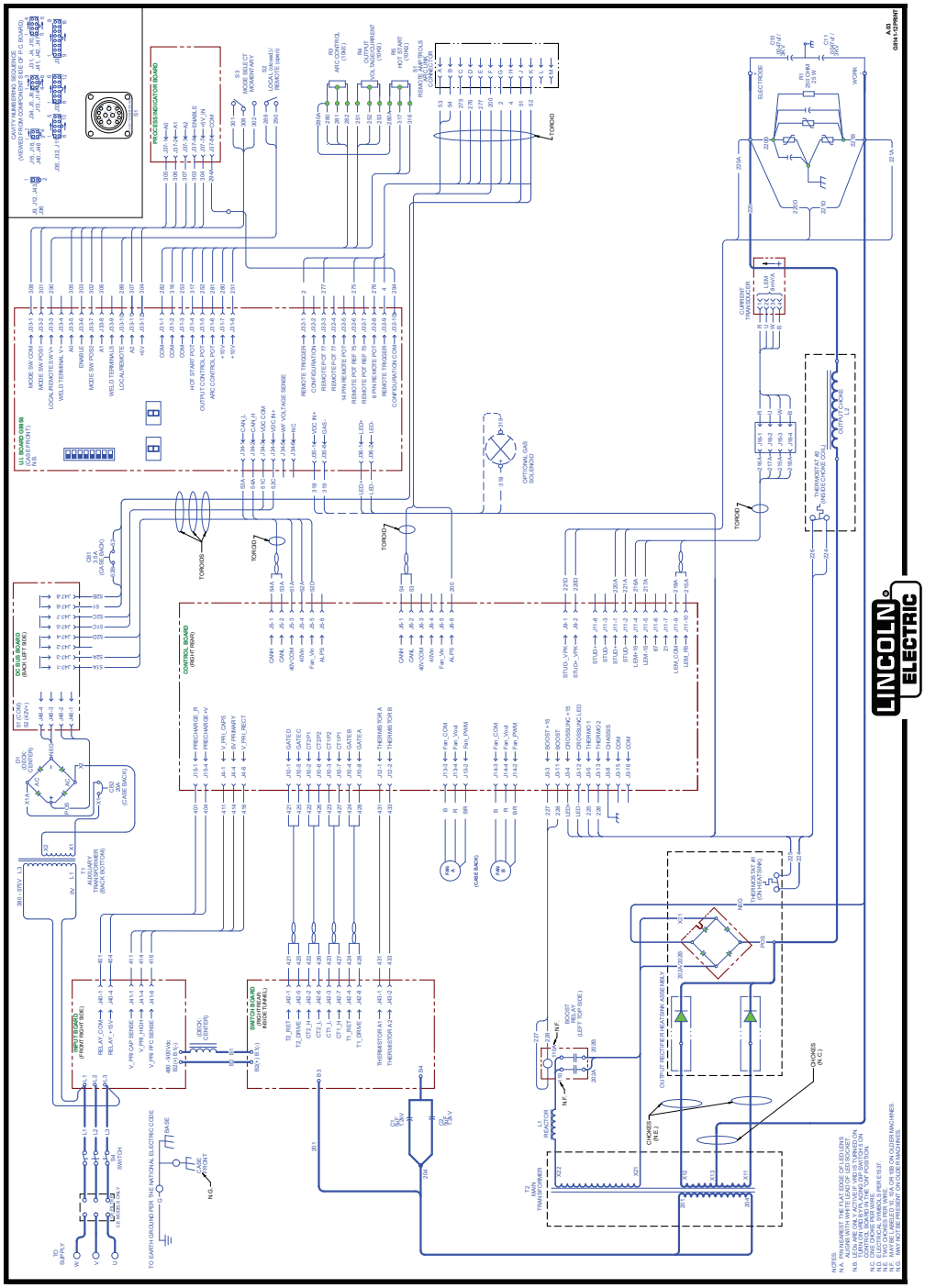
WIRING DIAGRAMS

WIRING DIAGRAM - CODE 13067, 13069, 13071



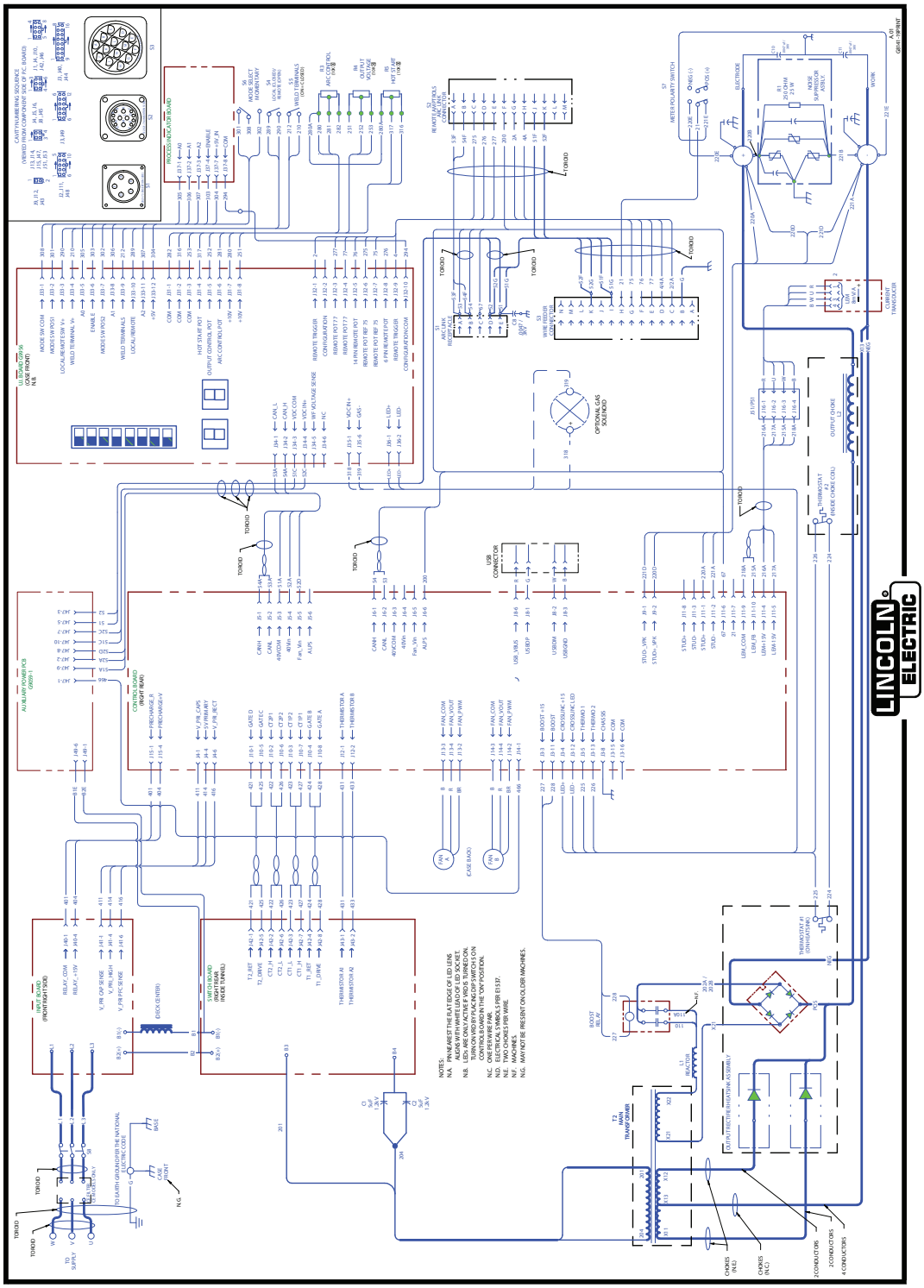
NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment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

WIRING DIAGRAM - CODE 13066, 13070, 13073, 13580, 13581, 13582



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

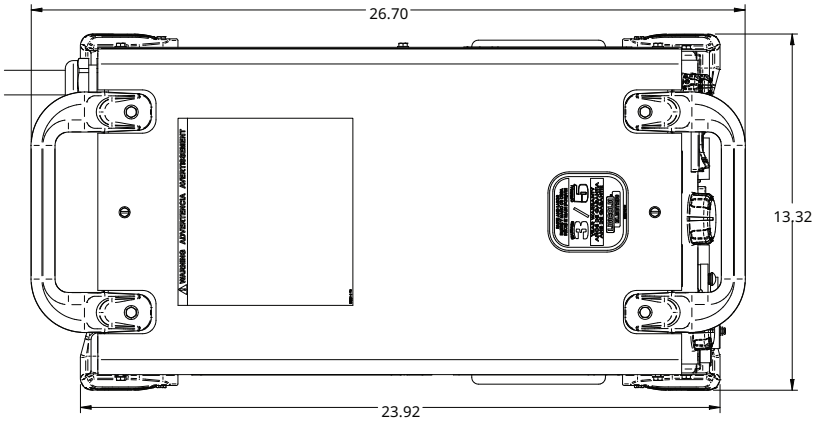
WIRING DIAGRAM - CODE 13461



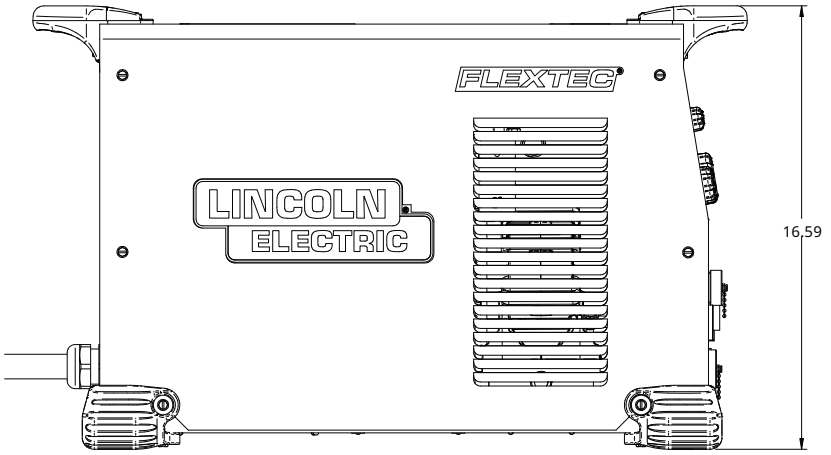
NOTE: This diagram is for reference only. It may not be accurate for all machines covered by this manual. The specific diagram for a particular code is pasted inside the machine on one of the enclosure panels. If the diagram is illegible, write to the Service Department for a replacement. Give the equipment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

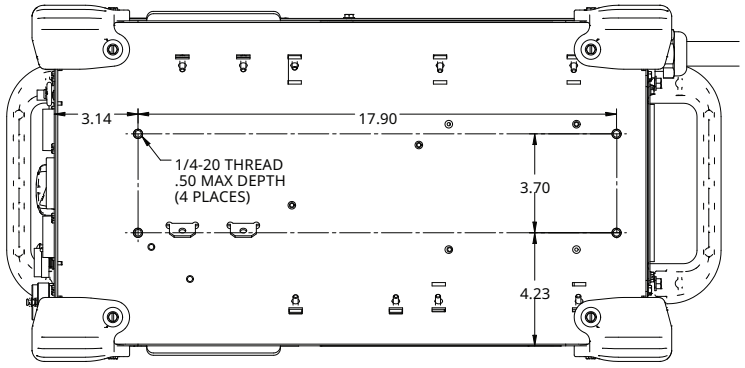
DIMENSIONS

DIMENSIONAL PRINT



TOP VIEW





BOTTOM VIEW

CUSTOMER ASSISTANCE POLICY

CUSTOMER ASSISTANCE POLICY

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

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

WELD FUME CONTROL EQUIPMENT

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

PARTS LIST

Content/Details may be changed or updated without notice. For most current Instruction Manuals, go to PARTS.LINCOLNELECTRIC.COM.