

LOTOS ST1600

Stick Welder

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ST1600

STICK WELDER

Save this Manual

You will need the manual for safety warnings and precautions, assembly instructions, operating and maintenance procedures, parts list and diagram. Keep your invoice with this manual. Write the invoice number and date of purchase on the inside of the manual. Keep the manual and invoice in a safe and dry place for future use.

Operation Manual

Carefully read the operation manual prior to using, installing and maintaining the electric welding machine for the purpose of preventing damages such as fire, electric shock and etc. from occurring. Please keep the manual for future reference.

SAFETY WARNINGS AND PRECAUTIONS



PLEASE READ AND UNDERSTAND THE FOLLOWING SAFETY HIGHLIGHTS. BE SURE THAT ALL INSTALLATION, OPERATION, MAINTENANCE AND REPAIR PROCEDURES ARE PERFORMED ONLY BY QUALIFIED INDIVIDUALS. ARC AND TIG 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.

⚠ WARNING

WHEN USING THE WELDER, ALL BASIC SAFETY PRECAUTIONS SHOULD ALWAYS BE FOLLOWED TO REDUCE THE RISK OF PERSONAL INJURY AND DAMAGE TO EQUIPMENT.

READ ALL INSTRUCTIONS BEFORE USING THIS WELDER.

Keep work area clean. Cluttered areas invite injuries.

Observe work area conditions. Do not use machines or power tools in damp or wet locations. Do not expose to rain. Keep work area well-lighted. Do not use electrically powered tools in the presence of flammable gases or liquids.

Keep children away. Children must never be allowed in the work area. Do not let them handle machines, tools or extension cords.

Store idol equipment. When not in use, tools must be stored in a dry location to inhibit rust. Always lock up tools and keep them out of the reach of children.

Do not force tool. It will do the job better and safer at the rate for which it was intended. Do not use inappropriate attachments in an attempt to exceed the tool capacity.

Use the right tool for the job. Do not attempt to force a small tool or attachment to do the work of a larger industrial tool. There are certain applications for which this welder was designed. Do not modify this welder and do not use this welder for any other purposes for which it was not intended.

Dress properly. Do not wear loose clothing or jewelry as they can be caught in moving parts. Protective, flame retardant, electrically non-conductive clothing and non-skid footwear are recommended when working. Wear restrictive hair covering to contain long hair.

Use eye and ear protection. Always wear ANSI approved, arc shaded, impact safety face shield (welding helmet). Always use a full-face shield when welding. Always wear ANSI approved eyewear under face shield and while in the workplace. Wear a NIOSH approved dust mask or respirator when working around metal, chemical dusts, fumes and mists.

Do not over reach. Keep proper footing and balance at all times. Do not reach over or across running machines.

Maintain tools with care. Keep tools sharp and clean for better and safer performance. Follow instructions for lubricating and changing accessories. Inspect tool cords periodically and, if damaged, have them repaired by an authorized technician. The handles must be kept clean, dry, and free from oil and grease at all times.

Disconnect power. Unplug tool when not in use.

Remove adjusting keys and wrenches. Check that keys and adjustment wrenches are removed from the welder and work area before plugging in.

Avoid starting unintentionally. Be sure the switch is in the off position when not in use and before plugging in. Do not carry any tool with your finger on the trigger, whether it is plugged in or not.

Stay alert. Watch what you are doing. Use common sense. Do not operate any tool when tired.

Check for damaged parts. Before using any tool, any part that appears damaged should be carefully checked to determine that it would operate properly and perform its intended function. Check for alignment and binding of moving parts; any broken parts or mounting fixtures; and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the tool if any switch does not turn on and off properly.

Guard against electric shock. Prevent body contact with grounded surfaces such as pipes, radiators, ranges, and refrigerator enclosures.

Replacement parts and accessories. When servicing, use only identical replacement parts. Use of any other parts will void warranty. Only use accessories intended for use with this welder. Approved accessories are available from www.uwelding.com.

Do not operate tool if under the influence of alcohol or drugs. Read warning labels on prescriptions to determine if your judgment or reflexes are impaired while taking drugs. If there is any doubt, do not operate the welder.

Maintenance. For your safety, service and maintenance should be performed regularly by a qualified technician.

Use proper size and type extension cord. If an extension cord is required, it must be of the proper size and type to supply the correct current to the welder without heating up. Otherwise, the extension cord could melt and catch fire, or cause electrical damage to the welder. This welder requires use of an extension cord of 20 amps minimum capability up to 30 feet, with a wire size rated at 12 AWG. Longer extension cords require larger size wire. If you are using the welder outdoors, use an extension cord rated for outdoor use, signified by “WA” on the jacket. Performance of this welder may vary depending on condition in local line voltage. Extension cord usage may also affect welder performance.

⚠ WARNING

The warnings, cautions and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood, by the operator, that common sense and caution are factors, which cannot be built into this product, but must be supplied by the operator.

ARC WELDER SAFETY WARNINGS AND PRECAUTIONS

Warning: This product, when used for welding and similar applications, produces chemicals to cause cancer and birth defects (or other reproductive harm).

❖ ELECTRIC SHOCK can be fatal



- The electrode and work (or ground) circuits are electrically “hot” when the machine is on. Do not touch these “hot” parts with your bare skin or wet clothing. Protective clothing should be hole free, dry and ANSI approved. Wear dry, hole-free gloves to insulate hands.
- Do not permit electrically live parts, cables, or electrodes to contact skin, clothing or gloves.
- This unit draws enough current to cause serious injury and or death.
- Before turning the welder on, check the welder gun to be sure that there are no protruding screw heads and that all insulation is secure.
- 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.
- Always be sure the work cable makes a good electrical connection with the metal being cut. The connection should be as close as possible to the area being cut
- Ground the work metal to be cut to a good electrical (earth) ground.
- Maintain the welding torch, work clamp, power cable and cutting machine in good, safe operating condition. Replace damaged insulation.
- Never dip the electrode in water for cooling.
- When working above floor level, use a safety belt to protect yourself from a fall should you get a shock.

❖ **FUMES AND GASES can be dangerous**



- Plasma cutting may produce fumes and gases hazardous to health. Avoid breathing these fumes and gases. When cutting, 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. In confined spaces or in some circumstances, outdoors, a respirator may be required. Additional precautions are also required when cutting on galvanized steel.
- Do not cut 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.
- Read and understand the manufacturer's instructions for this equipment and the consumables to be used, including the material safety data sheet (MSDS) and follow your employer's safety practices. MSDS forms are available from your welding distributor or from the manufacturer.

❖ **ELECTRIC AND MAGNETIC FIELDS may be dangerous**



- ❖ The EMF field that is generated during arc welding may interfere with various electrical and electronic devices such as cardiac pacemakers.
- ❖ Anyone using such devices should consult with their physician prior to performing any electric welding operations.
- ❖ Exposure to EMF fields while welding may have other health effects, which are not known.

❖ **ARC RAYS can burn**



- Avoid eye and body damage. Arc rays and infrared radiation can cause injury to the eyes and burn the skin. Wear ANSI approved eye and body protection. Do not allow viewing by visitors without proper eye and body protection.
- Use a shield with the proper filter and cover plates to protect your eyes from sparks and the rays of the arc when plasma cutting or observing open arc plasma cutting.
- 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.

❖ **WELDING SPARKS can cause fire or explosion**



- Remove fire hazards from the cutting 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 cutting can easily go through small cracks and openings to adjacent areas. Avoid cutting near hydraulic lines. Have a fire extinguisher readily available. Do not operate the electric arc welder in areas where flammable or explosive vapors are present.
- Where compressed gases are to be used at the job site, special precautions should be used to prevent hazardous situations.
- Do not heat, cut or weld tanks, drums or containers until the proper steps have been taken to insure that such procedures will not cause flammable or toxic vapors from substances inside. They can cause an explosion even though they have been "cleaned".
- Always keep a fire extinguisher nearby while welding.
- Use welding blankets to protect painted surfaces, dashboards, engines, etc.
- Please make sure there are no combustible items around your welding area.

❖ **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 any 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.

❖ **ELECTRICALLY POWERED EQUIPMENT can be dangerous**



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

❖ **MOVING PARTS can cause injury**



- Keep away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.

.....
 Please read this Operation Manual carefully and thoroughly before attempting to operate this machine. Keep this manual handy for quick reference. Pay close attention to the safety instructions provided for your own protection.

SPECIFICATIONS

❖ GENERAL DESCRIPTION

The LOTOS ST1600 is one of the lightest stick welders weighing only 13lbs, so it is quite portable and accessible. This machine is powered by a high speed cooling fan that will keep this welding machine running long and at a cooled temperature. This machine operates on 220v input power. It pushes an impressive 160 amps of power.

❖ WHAT'S INCLUDED

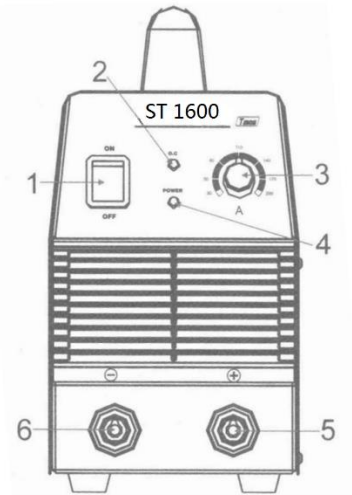
- Power Supply
- Stick Electrode Holder
- Ground Clamp and Cable



❖ POWER SUPPLY RATINGS

Model	ST1600
Power voltage	220V±10% 50//60HZ
Rated input current	25A
Power factor	0.82
Welding current adjustment range	20A—160A
Rated output voltage	62V
Efficiency	≥80%
Duty cycle	60% @ 160A 100% @ 124A
Housing protection grade	IP21S
Insulation grade	F
Dimensions (L*W*H)	11"(280mm) 4.3"(110mm) 7.1"(180mm)
Weight	13.4 lbs. (6.1 kg)

❖ FRONT CONTROL PANEL



The panel picture above is for reference only. If any differences with the actual machine, please refer to the actual machine instead.

1	Power Switch
2	Over Current Indicator Light
3	Welding Current Adjustment Knob
4	Power Indicator Light
5	Positive Terminal (+)
6	Negative Terminal (-)

INSTALLATION



PLEASE READ ENTIRE INSTALLATION SECTION BEFORE STARTING INSTALLATION. BE SURE THAT ONLY QUALIFIED PERSONNEL SHOULD PERFORM THIS INSTALLATION.

❖ MACHINE SETUP

WARNING

ELECTRIC SHOCK can be fatal

- ◆ Have a qualified electrician install and service this equipment.
- ◆ Turn the input power OFF and unplug the machine from the receptacle before working on this equipment.
- ◆ Allow machine to sit for 5 minutes minimum to allow the power capacitors to discharge before working inside this equipment.
- ◆ Do not touch electrically hot parts.
- ◆ Machine must be plugged into a receptacle that is grounded according to the National Electrical Code and local codes.
- ◆ Do not remove or defeat the purpose of the power cord ground pin.



➤ **SELECT SUITABLE LOCATION**

The machine will operate in harsh environments. Even so, it is important that standard measures are followed in order to assure the machine is long lasting and reliable operation.

- The machine must be located where there is open space such that the air circulation in the back and out the front will not be restricted.
- Avoid getting dirt and dust in the machine. Failure to observe these precautions can result in excessive operating temperatures and shut down by itself.

➤ **ENVIRONMENTAL AREA**

Keep the machine dry. Do not place it on wet ground or in puddles. Avoid rainwater. Operating in rain is not allowed.

INSTALLATION INSTRUCTIONS

1. Make sure the fan is not blocked in the rear to avoid damage and overheating.
2. Even though the unit is grounded by the main ground wire to the front panel, an additional bonded ground in the back panel may be necessary to use in some locations to comply with code and if you are using a grounding cable that is longer than six (6) meters. Consult a locally licensed electrician concerning the use of this ground and its application.
3. Correctly connect the Stick Holder to the machine on the negative (-) end for straight polarity and turn clockwise to lock in the DIN connector. You can also change to reverse polarity by switching the Stick Holder to positive.
4. Connect the Ground Clamp to Positive (+) for straight polarity. You can also use reverse polarity depending on the welding situation.
5. With Arc or Stick Welding, you are able to use a straight polarity when DC Stick Welding. By using the wrong polarity you may have an unstable arc. Please make sure that you firstly try welding with the Stick Holder in the Negative (-) position and the Ground Clamp in the Positive (+) position.
6. Please check your input voltage and connect the machine straight to a 220v power supply. Please make sure your plug is within the allowed parameters of the allowed voltage.

OPERATION



PLEASE READ AND UNDERSTAND THIS ENTIRE SECTION BEFORE OPERATING YOUR MACHINE. ONLY QUALIFIED PERSONNEL SHOULD OPERATE THIS EQUIPMENT. OBSERVE ALL SAFETY INFORMATION THROUGHOUT THIS MANUAL.

❖ WELDING OPERATIONS

⚠ WARNING

ELECTRIC SHOCK can be fatal

- ◆ Have an electrician install and service this equipment.
- ◆ Turn the input power off at the fuse box, disconnect or unplug supply lines and allow machine to sit for five minutes minimum to allow the power capacitors to discharge before working inside this equipment.
- ◆ Do not touch electrically hot parts. Turn the input power OFF and unplug the machine from the receptacle before working on this equipment.



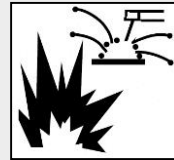
FUMES AND GASES can be dangerous

- ◆ Keep your head out of fumes.
- ◆ Use ventilation or exhaust to remove fumes from breathing zone.



WELDING SPARKS can cause fires or explosions

- ◆ Keep flammable material away.
- ◆ Do not weld, cut or gouge on containers that have held combustibles.



ARC RAYS can burn

- ◆ Wear eye, ear and body protection.



Before operating the machine, please make sure power switch is in the “off” position. Make sure all cables are connected firmly. Power the machine n after checking and reading the entire safety guide and tips.

➤ WELDING STEPS

1. Turn on the power switch, the digital display will show amps, and the cooling fan will begin to start turning.
2. Adjust knob of the desired welding current ranging from 20-160 amps.
3. A general welding current chart is provided below:

Specification of Diameter in MM	$\varphi 2.5$	$\varphi 3.2$	$\varphi 4.0$	$\varphi 5.0$
Current	70-100A	110-140A	170-220A	230-280A

MAINTENANCE



PLEASE READ AND UNDERSTAND THIS ENTIRE SECTION BEFORE DOING MAINTENANCE FOR YOUR MACHINE. ONLY QUALIFIED PERSONNEL SHOULD OPERATE THIS EQUIPMENT. OBSERVE ALL SAFETY INFORMATION THROUGHOUT THIS MANUAL.

⚠ WARNING

ELECTRIC SHOCK can be fatal

- ◆ Have a qualified electrician install and service this equipment.
- ◆ Turn the input power off at the fuse box, disconnect or unplug supply lines and allow machine to sit for five minutes minimum to allow the power capacitors to discharge before working inside this equipment. Allow machine to sit for 5 minutes minimum to allow the power capacitors to discharge before working inside this equipment.
- ◆ Do not touch electrically hot parts.



❖ ROUTINE MAINTENANCE

1. Remove dust by using dry clean compressed air regularly to avoid build up on the circuit boards. Use dry compressed air to remove particles that may have deposited during operation in harsh environments.
2. Pressure of compressed air must be within the reasonable range in order to prevent damaging to small components of inner-machine. We recommend using a dust can and not an air compressor.
3. Check internal circuit of welding machine regularly and make sure the circuit connections are connected correctly and tightly (especially plug-in connector and components). If rust is found, please clean it, and connect it again tightly.
4. Prevent water and steam from entering into the machine. If that happens, please blow dry it and check the insulation of the machine. Make sure the machine is dry before operating.
5. If welding machine will not be used for a long interval, please keep it covered in a dry and clean space to avoid corrosion.

TROUBLESHOOTING



PLEASE READ AND UNDERSTAND THIS ENTIRE SECTION. SERVICE AND REPAIR SHOULD ONLY BE PERFORMED BY TRAINED PERSONNEL FOR YOUR SAFE, PLEASE OBSERVE ALL SAFETY INFORMATION THROUGHOUT THIS MANUAL.

⚠ WARNING
ELECTRIC SHOCK CAN KILL



◆ Service and Repair should only be performed by Trained Personnel. Have a qualified electrician install and service this equipment

Problem/Symptoms	Solutions
Power indicator is not lit, fan is not working, no welding output.	A. Make sure power switch is connected properly. B. Make sure your power plug is connector to the proper voltage.
Power indicator is lit, fan doesn't work, no welding output.	A. Check the input power to make sure you are connected to the proper power level of 220v B. Dirty or Unstable power is detected and the machine has entered a fail-safe mode. Unplug and restart the machines after 5 minutes once the voltage is stable. C. Restart the machine but unplugging the power cable and turning the machine on in 5 minutes D. Cables in the power plug or the machine power switch are loose or not connected firmly.
ARC Welding Current Knobs is Unstable	A. Amp Adjustment Knobs needs replacement along with potentiometer. B. Terminal of output has a broken circuit or poor connection.
Fan is working and abnormal indicator is not lit, no welding output.	A. Check if components are connected properly. B. Check if the output terminals are connected properly.
Fan is working and abnormal indicator is lit, no welding output.	A. Overload current protection may start, please turn off machine first, and then restart it after abnormal indicator is off. B. Overheat protection may start, it will be restored in 2-3min. C. Maybe feedback circuit is in fault.