CANAWELD
Welding & Cutting Equipment
www.canaweld.com

User Manual

Model: PF 161Du

Thank You From Canaweld

Thank you for choosing a Canaweld machine, with 30+ years of welding equipment manufacturing experience overseas, you can feel confident that you have made the right choice.

Canaweld Inc. was started in Canada to manufacture the highest quality welding and cutting equipment for the North American market. All of our machines are electronically and weld tested before they leave our factory to ensure the equipment you purchased is ready to work.

Our engineers are continuously working on new equipment to release new models on a regular basis as well as to upgrade our existing line of machines. Canaweld, is in partnership with some of the best European welding and cutting equipment manufacturers, to distribute their machines to the North American market. Our business relationships have been created to offer our customers a wider range of machines - only the best available for every industry.

This user manual should be read carefully to fully understand the machine you have purchased and how to maintain it in the best operating condition.

For more information on our full line of products please visit our website or contact a dealer in your local area, our dealer list can be found on our website – www.canaweld.com

If you require more information on how to use the equipment, please visit our website at www.canaweld.com and view our tutorials section to find the correct one for your machine.

TABLE OF CONTENTS

PF 161Du- WELDER PACKAGE

1

2

3

4

5

6

7

Name	Product Number	Quantity
1. Machine		1
2. Work/Ground Clamp Set	ALP1980126	1
3. Electrode Holder Set	ALP2280095	1
4. TIG Torch with Gas Valve	TGE0180334	1
5. Gas Flow Regulator	TLJ1080187	1
6. 10 ft. Gas Hose	TLJ1080188	1
7. Machine Bag	TGJ2780145	1

SECTION 1- SAFETY CAUTIONS & SYMBOLS

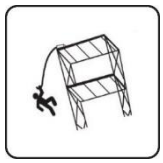
CAUTION: READ USER MANUAL

Indicates any section that the user must read the manual to fully understand the machine's characteristics to avoid any hazardous situation.

ELECTRIC SHOCK

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on.

- Do not touch live electrical parts.
- Insulate yourself from work and ground using dry insulating mats or covers big enough to prevent any physical contact with the work or ground.
- Do not remove any machine covers while the machine is powered.



WELDING WORKPLACE

Be mindful of working in cramped positions, scaffolds, or any location where you can fall and become injured.

- Wear a safety harness if working above floor level.
- Do not work in wet areas, or while wearing wet clothing.

WELDED PARTS

Immediately after welding, all welded parts will be a very high temperature which will cause burns to any exposed skin that makes contact.

- Do not touch parts after welding. Allow for cooling period before picking up.
- Allow cooling period before working on equipment.
- To handle hot parts, use proper tools and/or wear heavy, insulated welding gloves and clothing to prevent burns.

WELDING FUMES

Welding produces fumes and gases. Breathing these fumes and gases can be hazardous to your health.

- Keep your head out of the fumes stream while welding. Do not breathe the fumes.
- If inside, ventilate the area and/or use local forced ventilation at the welding point to remove welding fumes and gases.
- If ventilation is poor, wear an approved air-supplied respirator.
- Read and understand the Material Safety Data Sheets (MSDSs) and the manufacturer's instructions for metals, consumables, coatings, cleaners, and degreasers.
- Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Welding fumes and gases can displace air and lower the oxygen level causing injury or death. Always have a trained watchperson nearby.
- Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

WELDING RAYS

Rays from the welding process produce intense visible and invisible (ultraviolet and infrared) rays that can burn eyes and skin.

- Wear an approved welding helmet fitted with a proper shade of filter lenses to protect your face and eyes from welding rays.
  Use protective screens or barriers to protect others from flash, glare and sparks; warn others not to watch the arc.
- Wear protective clothing made from durable, flame-resistant material (leather, heavy cotton, or wool) and to cover any exposed skin, arms, neck area.

WELDING FIRES

Welding creates heat and can lead to fires, as well certain welding forms create sparks which could also ignite surrounding items and create a fire. The flying sparks, hot workpiece, and hot equipment can cause fires and burns.

- Remove all flammables within 35 ft. (10.7 m) of the welding arc. If this is not possible, cover them with approved covers.
- Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
- Watch for fire, and keep a fire extinguisher nearby.

GASES

Dangerous gases can be produced during welding, breathing these gases in can be hazardous to your health.

- Shut off shielding gas supply when not in use.
- Always ventilate confined spaces or use approved air-supplied respirator.
- Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapors to form highly toxic and irritating gases.

EMF- ELECTRIC MAGNETIC FIELDS

During welding, electric magnetic fields are created and can produce malfunctions in electrical components within the area.

- EMF created by welders may affect wearers of Pacemakers and other Implanted Medical Devices should keep away.
- Implanted Medical Device wearers should consult their doctor and the device manufacturer before going near arc welding, spot welding, gouging, plasma arc cutting, or induction heating operations.

EXCESSIVE NOISE

Be mindful if your working area creates excessive noise.

- Wear approved ear protection if noise level is high.
- Any workers close by the area will also be effected by the noise and may also require hearing protection.

GAS CYLINDER/LINE DAMAGE

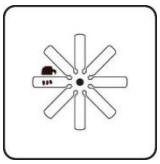
Shielding gas cylinders contain gas under high pressure. If damaged, a cylinder can explode. Since gas cylinders are normally part of the welding process, be sure to treat them carefully.

- Protect compressed gas cylinders from excessive heat, mechanical shocks, physical damage, slag, open flames, sparks, and arcs.
- Install cylinders in an upright position by securing to a stationary support or cylinder rack to prevent falling or tipping.
- Protect all gas lines from sparks, slag and open flames.
- Open the cylinder valve slowly. Then slowly open regulator valve to avoid damage to the regulator.

ESD- ELECTRIC STATIC DISCHARGE

An electric static charge can be created during welding and discharged immediately after into any items touched by the welder after welding.

- Put on grounded wrist strap BEFORE handling boards or parts.
- Use proper static-proof bags and boxes to store, move, or ship PC boards.



MOVING PARTS

A number of moving parts may be in typical welding machines such as rollers and fans.

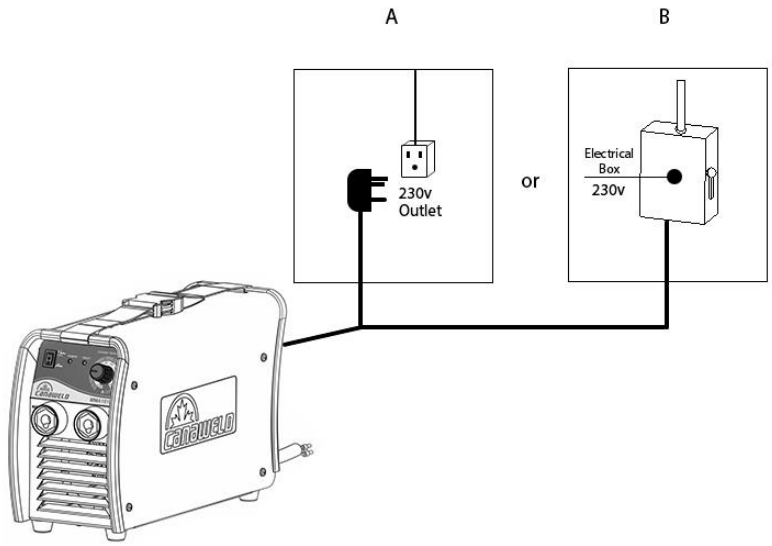
- Keep hands away from moving parts such as fans.
- Keep all doors, panels, covers, and guards closed and securely in place.
- Keep away from moving parts.
- Keep away from pinch points such as drive rolls.
- Secure any loose clothing and hair and keep away from moving parts.

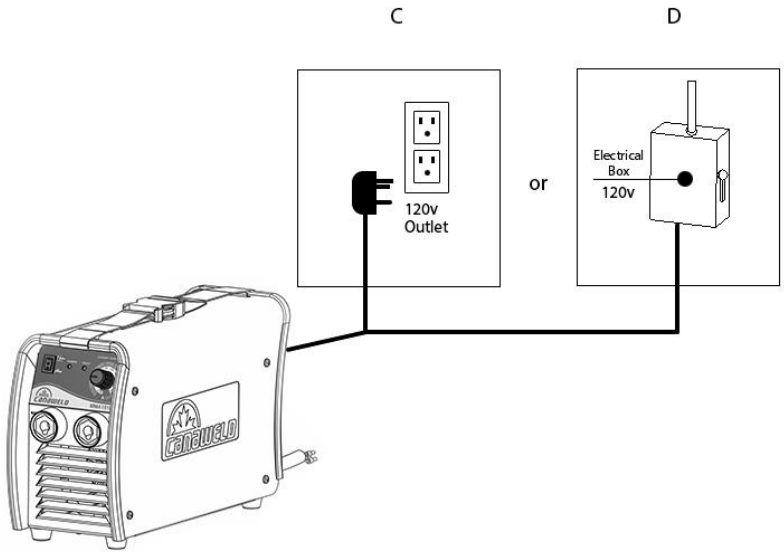
SECTION 2- INSTALLATION, OVERVIEW & SPECIFICATIONS

INSTALLATION

ELECTRICAL

- The serial number and rating information is located on the bottom of the machine. Use the rating labels to determine input power requirements and rated output.
- Check whether the voltage value variations are within the acceptable working range with a multi-meter.
- **(A)** The input cable of the machine is ready to be plugged into a 230 V $\pm\%10$ compatible connector / socket or **(B)** you can remove the installed plug and have the input cable "hard" wired into the appropriate building electrical panel.
- **(C)** The machine is designed to operate on a 120V $\pm\%10$ voltage, a compatible connector can be fitted to the input cable **(D)** or it can be hard wired into the electrical panel.
- Electrical installation must meet all national and Local Codes− has only a qualified electrician does the installation.





OVERVIEW

PRODUCT & DESIGN

- Our unique electric structure and air channeling design in this series of welding machines are designed to speed up the heat dissipation of the power device as well as improving the duty cycles of the machine.
- The unique heat dissipation design leads to less damage done to the power source and control circuits from overheating due to dust build up from air inducted by fan.
- The whole machine is in form of coherent streamline, the front and rear panels are naturally integrated via large-radian transition manner.
- Front and rear panel are inset with a rubber trim on the leading edge protecting the machine from damage.
- The heavy/thick steel base has an anti-rust (corrosion resistant) coating applied to extend the life of the machine.
- Heavy-duty metal casing for protection of internal components. Scratch proof coated surface for long life and anti-corrosion durability.
- Set of heavy duty connector and ground cable which is able to connect to other Dinse system
- Heavy duty machine (150 A in 100 % duty cycle in 104 ºF 40 ºC.

FUNCTION

- **Hot start arc ignition application is a built –in function:** allows for the arc ignition in MMA welding making ignition easier and more reliable.
- **Anti-sticking function:** reduce working strength in welding.
- **Self-adaptive arc force technology:** improves the performance of the machine in long-cable welding and enhances long-distance welding.
- **Advanced arc ignition by scraping:** "scratch" start TIG welding without HF arc ignition circuit.

PERFORMANCE

Advanced IGBT inverter technology

- Inverting frequency of 34~39 kHz greatly reduces the volume and weight of the welder.
- Large reduction in magnetic and resistance loss enhances the welding efficiency resulting in energy saving.
- Working frequency is beyond audio range, eliminating approximately 90% of the noise pollution.

Leading control mode

- Advanced control technology allows for various welding applications and greatly improves the welding performance in a number of welding conditions.
- It can be widely used in acid and basic electrode welding.
- Designed for easy arc starting, creating less spatter, stable current and good shaping properties.

SECTION 3- OPERATION OF EQUIPMENT

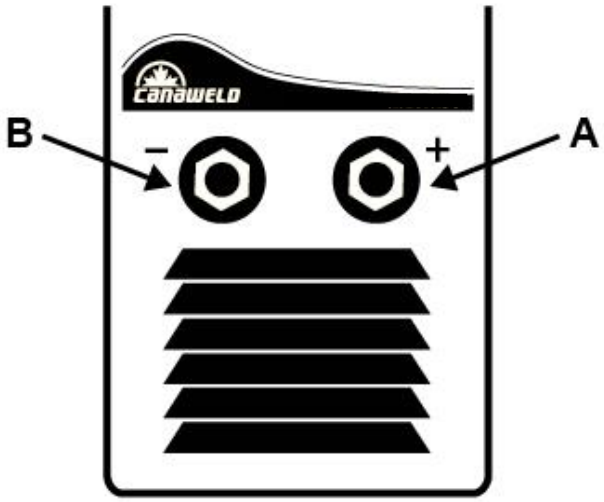
OPERATION

- After being installed according to the prescribed method, and the power switch being switched on, the machine is started with the power LED on and the fan working.
- Pay attention to the polarity when making connections. An unstable arc, spatter, and electrode sticking could happen if improper mode is selected, exchange the polarity if necessary.

STICK OPERATION

- **(A)** Insert the electrode holder cable plug into the "+" socket on the front panel of the welding machine, and tighten it clockwise.
- **(B)** Insert the ground cable plug into the "—" socket on the front panel of the welding machine, and tighten it clockwise.
- Ground connection is needed for safe operation.

The connection as mentioned above is a DCEP connection. Operator can choose DCEN connection according to work piece and electrode application requirement. Generally, DCEP connection is recommended for basic electrode, while there is no special requirement for acid electrode.



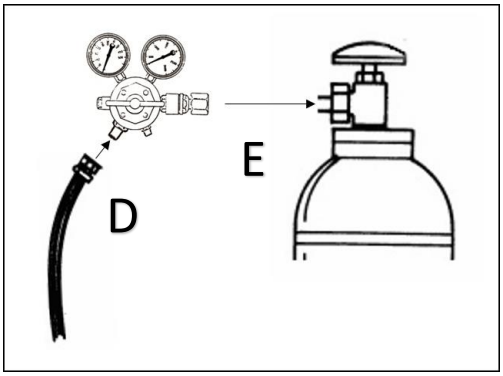
Welding parameter table (for reference only)

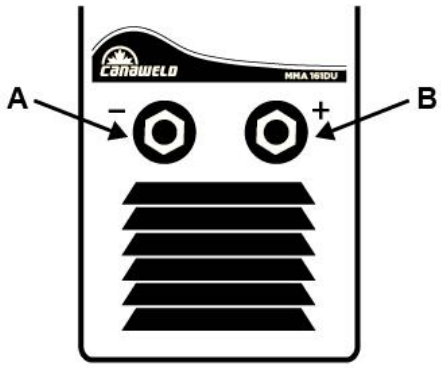
This table is suitable for mild steel stick welding. For other materials, consult related materials and welding process for reference.

Electrode diameter (mm)	Recommended welding current (A)	Recommended welding voltage (V)
2.0	60 - 100	22.4 - 24.0
2.5	80 - 120	23.2 - 24.8
3.2	108 - 148	23.32 - 24.92
4.0	140 - 180	24.6 - 27.2
5.0	180 - 220	27.2 - 28.8

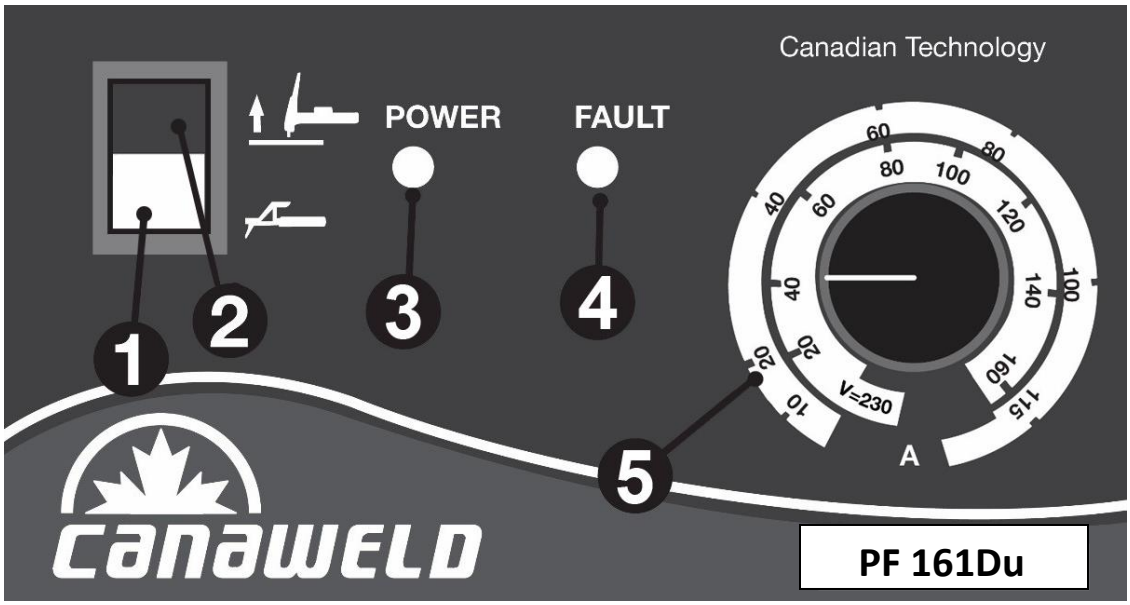
TIG OPERATION

- **(A)** Insert the electrode holder cable plug into the "-" socket on the front panel of the welding machine, and tighten it clockwise.
- **(B)** Insert the ground cable plug into the "+" socket on the front panel of the welding machine, and tighten it clockwise.
- Ground connection is needed for safe operation.
- (**D**) Connect the gas regulator to the welding gas cylinder, (**E**) attach the gas hose to the regulator. Connect the gas hose from the torch to the gas hose attached to the regulator (quick connector). Make sure to open the cylinder valve slowly. Then slowly open regulator valve to avoid damage to the regulator.





Control Panel



Front Panel

1) Welding Process Switch(STICK)
2) Welding Process Switch(TIG)
3) Main voltage LED
4) Thermostatic protection LED
5) Welding current adjustment

STICK Welding:

Switch Position 1

Then adjust your welding Voltage with 5.

TIG Welding:

Switch position 2

Adjust your welding current with 5.

SECTION 4- MAINTENANCE & TROUBLESHOOTING

MAINTENANCE

Please disconnect power to machine before performing maintenance.

- Check periodically whether cable connection is in good condition (esp. plugs). Tighten any loose connections. If there is oxidization, remove it with sandpaper and then reconnect.
- Clean the dust inside the machine periodically with dry and clean compressed air. If welding environment has heavy smoke and pollution, machine should be cleaned daily. The pressure of the compressed air should be at a low pressure in order to avoid the small parts inside the machine being damaged.
- Avoid water and vapor entering the machine. If this occurs, dry machine internals and check the insulation of the equipment (including that between the connections and that between the connection and the enclosure). Only when there is no moisture present, can the machine be used.
- Check all cables periodically, to be sure they are in good condition with no worn spots or cracks in outer insulation. If there is any dilapidation, rewrap it or replace all damaged cables.
- Put the machine into clean packing and in a dry location if it is not to be used for an extended period of time.
- If machine is in an environment that is in or near chemicals, cover machine when not in use.
- Check gas hose periodically, to ensure it is in good condition and has no cracks, if any damage/wear is visible replace hose.

TROUBLESHOOTING

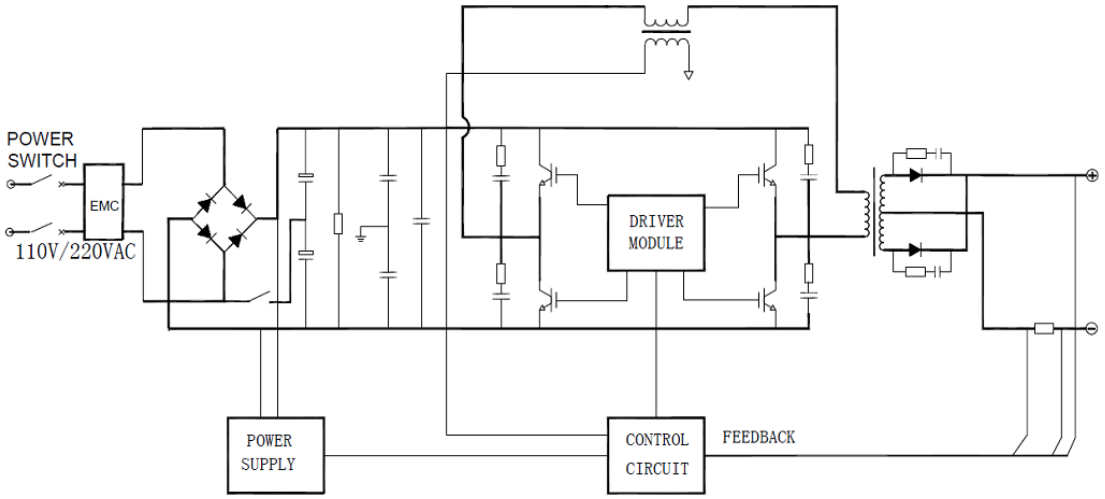
Problem	Remedy
No welding output; unit completely inoperative; ready light (LED) Off.	1) Be sure power cord is plugged in and that receptacle is receiving input power. 2) Check if the Power switch is in ON position. 3) Check and replace line fuse(s), if necessary, or reset circuit breaker.
No welding output; ready light (LED) On.	1) Check and secure loose welding cable(s) into receptacle(s). 2) Check for poor connection of ground clamp to workpiece, correct if loose.
No welding output; high temperature light (LED) On.	1) Unit overheated causing thermal shutdown. Allow unit to cool with fan ON. 2) Check for blocked/poor airflow to unit and correct. 3) Reduce duty cycle or amperage.
Turn on the machine, the power LED is off, the fan doesn't work, and no welding output.	1) No input power. 2) Check if machine is connected to power source.
Machine is on, the fan functions, but the output current is unstable and can't be controlled by potentiometer when welding.	1) The current potentiometer has failed. Replace it. 2) Check if any loose contact exists inside the machine. If any, reconnect.
Machine is on, the power LED is on, the fan functions, but there is no welding output.	1) Check if any loose contact exists inside the machine. 2) Open circuit or loose contact at the joint of output terminal. 3) The overheating LED is on. a) The machine is under over-heating protection status. It will reset automatically after the welding machine is cooled. b) Check if the thermal switch is ok. Replace it if damaged. c) Check if the thermal switch has a loose connection, and adjust it if necessary.
The electrode holder becomes very hot during welding.	1) The rated current of the electrode holder is smaller than its actual working current. Replace it with a higher rated electrode holder.
Excessive spatter in SMAW welding.	1) The output polarity connection is incorrect, exchange the polarity.

SECTION 5- ELECTRICAL SPECIFICATIONS

Machine Specifications	
Input Voltage- Single Phase	
Maximum Input current	
Maximum effective primary current ($I_{1\,eff}$)	
Output Current Range	
Open Circuit Voltage	
Output Voltage Range	
Duty Cycle @ 40˚C	
Machine Dimensions	
Weight	

Machine Specifications (Input 120V 50/60 HZ)	
Input Voltage- Single Phase	
Maximum Input Amperage	
Output Current Range	
Open Circuit Voltage	
Output Voltage Range	
Duty Cycle @ 40˚C	

Electrical Schematic Diagram



SECTION 6- PARTS LIST

Name	Product Number	PF 161 DU - Quantity
		1
		1
		1
		1
		1
		1
		1
		1
		1
		1
		1
		1
		2
		4
		1
		1
		1
		2
		1
		1
		2
		2
		2
		4
		2
		2
		4
		2
		1
		10
		1
		1
		1
		1
		1

SECTION 7- WARRANTY & SERVICE

STATEMENT OF LIMITED WARRANTY:

Canaweld Inc. warrants to the end user (purchaser) of all new welding and cutting equipment, and accessories (the "Warranted Goods") that such Warranted Goods will be free of defects in workmanship and material. This warranty is void if Canaweld Inc. or its Authorized Repair Centre finds that the equipment has been subjected to improper installation, improper care or abnormal operations. THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY LIABILITY ARISING UNDER ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. All statutory warranties are excluded or limited to the maximum extent permitted by law.

WARRANTY PERIOD:

Canaweld Inc. will assume both the parts and labor expense of correcting defects during the warranty period. All warranty periods start from the date of purchase to the original end user provided that the original invoice evidencing the date of purchase is provided. In the event that the original invoice evidencing the date of purchase is not provided, then the warranty period shall start on the date of delivery to the dealer. The warranty period shall extend for three (3) years from the start of the warranty period.

CONDITIONS OF WARRANTY TO OBTAIN WARRANTY COVERAGE:

In order for any repair and/or replacement services of Warranted Goods to be covered pursuant to this warranty, such service must be must be performed by an Authorized Repair Centre. For assistance in locating an Authorized Repair Centre go to www.canaweld.com. Final determination of warranty on Warranted Goods will be made by Canaweld Inc.

Purchaser must present copy of a copy of the original proof of purchase, i.e. receipt/invoice, to be mailed in along with the completed Warranty/Product Registration form.

Mail the warranty/product registration form and proof of purchase to:

Canaweld Inc.
Attn: Warranty Department
155 Drumlin Circle, Unit 1
Vaughan, Ontario, Canada L4K 3E7

WARRANTY REPAIR:

If the Authorized Repair Centre confirms the existence of a defect covered by this warranty, the defect will be corrected by repair or replacement at Canaweld Inc.'s option. At Canaweld Inc.'s request, the Authorized Repair Centre will return to Canaweld Inc. any equipment/accessories claimed defective under Canaweld Inc.'s warranty. By submitting Warranted Goods to an Authorized Repair Centre, the purchaser confirms that the Authorized Repair Centre is authorized to deliver the Warranted Goods to Canaweld Inc. Repair or replacement is the sole and exclusive remedy available under this limited warranty.

FREIGHT COSTS:

The purchaser is responsible for shipment to and from the Authorized Repair Centre.

WARRANTY LIMITATIONS:

Canaweld Inc. will not accept responsibility or liability for

- repairs made outside of an Authorized Repair Centre;
- failures resulting from any improper use or installation;
- failures resulting from attachments, accessory items and parts not sold or approved by Canaweld Inc.;
- failures resulting from purchaser's delay in delivering the Warranted Goods to an Authorized Repair Centre after being notified of a potential problem with the Warranted Goods;
- damage resulting from normal wear and tear; and

- repairs or replacement of any parts reasonably considered to be consumables, including but not limited to the following TIG torch components: (i) collet and collet body, (ii) gas nozzles, (iii) gas cups, (iv) insulators, (v) back cups, and (vi) gas lenses, and to the following MIG/MAG torch components (vii) gas nozzles, (viii) tips, (ix) gas lenses, (x) liners, and (xi) drive wheels.

Canaweld Inc.'s liability under this warranty shall not exceed the cost of correcting the defect of the Warranted Goods or the cost of replacing them, whichever is less.

Canaweld Inc. will not be liable under this warranty for any loss suffered by the purchaser which:

- in any manner relates to a loss of revenue, profits, opportunity or production, loss or denial of use of any equipment or facility, increased expense of operation, economic loss, loss of goodwill or reputation, delay, business interruption or the cost of repair to or replacement of equipment, facilities or goods and related third party services; or
- in any manner can be construed as indirect, incidental, special, punitive or consequential losses or damages;

This warranty and the rights granted herein are non-transferrable.

This warranty gives the purchaser specific legal rights. The purchaser may also have other rights which vary from country to country.

For Purchasers in Quebec: The parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en anglais, ainsi que tous documents, avis et procedures judiciaires executés, donnés ou intents à la suite de ou en rapport, directement ou indirectement, avec les procedures concernées.

NOTES

NOTES

NOTES

155 Drumlin Circle, Unit 1
Vaughan, Ontario, Canada L4K 3E7
T: 416·548·5650 F: 416·548·5651
www.canaweld.com

2016-01