



Operating Manual

Tradestig AC/DC 200 S



**Please ensure that this
Instruction Manual and
Parts List is made
available to the user
of the equipment**



Contents

	Page
● Safety	3
● Installation	5
● Introduction/Options	8
● Controls	9
● Operation	10
● Specification	13
● Circuit Diagram	14
● Maintenance	15
● Parts List	16



WARNING



This welding equipment has been designed, manufactured and tested to the highest standards to ensure long and trouble free life. However, regular maintenance is an essential part of keeping the machine operating in a reliable and safe manner and your attention is drawn to any maintenance instructions that are contained in this manual.

In general, all welding equipment should be thoroughly inspected, tested and serviced at least annually. More frequent checking will be required when the equipment is heavily used.

Wear and tear, particularly in electro-mechanical and moving components, are gradual processes. Caught in time, repair and costs are small and the benefits in performance reliability and safety are significant. Left alone, they can put the equipment, and you, at risk.

Have this equipment regularly inspected and maintained by an approved service centre.



WARNING



ARC WELDING AND CUTTING CAN BE INJURIOUS TO YOURSELF AND OTHERS. TAKE PRECAUTIONS WHEN WELDING. ASK FOR YOUR EMPLOYER'S SAFETY PRACTICES WHICH SHOULD BE BASED ON MANUFACTURERS' HAZARD DATA.

ELECTRIC SHOCK - Can Kill

- Install and earth the welding unit in accordance with applicable standards.
- Do not touch live electrical parts or electrodes with bare skin, wet gloves, or wet clothing.
- Insulate yourself from earth and work.
- Ensure your working position is secure.

FUMES AND GASES - Can be Dangerous to Health

- Keep your head out of the fumes.
- Use ventilation, extraction at the arc, or both, to keep fumes and gases from your breathing zone and the general area.

ARC RAYS - Can Injure Eyes and Burn Skin

- Protect your eyes and body. Use the correct welding screen and filter lens and wear protective clothing.
- Protect bystanders with suitable screens or curtains.

NOISE - Excessive noise can damage hearing

- Protect your ears. Use ear defenders or other hearing protection.
- Warn bystanders of the risks.

**READ AND UNDERSTAND THE INSTRUCTION MANUAL
BEFORE INSTALLING OR OPERATING AND SEE WMA PUBLICATION 237
'The arc welder at work' AVAILABLE FROM THE MANUFACTURER.**

PROTECT YOURSELF AND OTHERS

SAFETY

In any arc welding or gouging operation, it is the responsibility of the user to observe certain safety rules to ensure his personal safety and to protect those working near him.

Read all safety articles relevant to arc welding published by the WMA. Pay particular attention to any **CAUTION** or **WARNING** Notes included in this manual. **CAUTION** indicates possible equipment damage. **WARNING** indicates possible hazard to life.

⚠ **WARNING** ⚠

*The ON/OFF switch on this equipment does not isolate the unit from the mains electrical supply. **AC POWER IS PRESENT ON THE ON/OFF SWITCH TERMINALS.***

*The On/Off lamp is an indication that the supply is switched on and does not imply that the unit is isolated from the supply. **BEFORE REMOVING THE COVERS FOR MAINTENANCE, ISOLATE THE UNIT FROM THE MAINS ELECTRICAL SUPPLY.***

1. Electrical

- ⚠ Treat electricity with respect. Even the open circuit voltage of this equipment can be dangerous. Adjustments to the torch or replacement of torch parts should be undertaken with the mains supply isolated from the unit.
If damaged torch cables or torch components are found, the unit must be disconnected from the mains and defective parts must be replaced using only Murex spare parts.
- ⚠ Do not work on live circuits or cables. Disconnect the main power supply before checking the machine or performing any maintenance operation.
- ⚠ Be sure the case of the welding machine is properly connected to a good electrical earth.
- ⚠ Have the wiring for the welding machine installed by a qualified electrician. All connections must be made according to specifications in force and to general safety standards.
- ⚠ Do not stand in water or on damp floors while using an arc welder or cutter. Do not use in the rain.
- ⚠ Do not operate with worn or poorly connected cables. Inspect all cables frequently for insulation failure, exposed wires and loose connections.
- ⚠ Do not overload cables or continue to operate with overheating cables. Cables which are too small for the current carried will overheat, causing rapid deterioration of the insulation.
- ⚠ Pay attention that live parts of the torch do not touch any metal which is connected to the work return cable. Fix an insulated hook to hang the torch on when it is not in use.

2. Ventilation

- ⚠ Do not weld or cut on containers which have held combustible or flammable materials, or materials which give off flammable or toxic vapours when heated, without proper cleaning.
- ⚠ Locate the welding/cutting operation far enough from any vapour-type degreaser using trichlorethylene or other chlorinated hydrocarbons as solvents. The ultraviolet light from the arc can decompose these vapours into toxic gases at a considerable distance from the arc, even though the concentration of the gases is low enough to be undetectable by smell.
- ⚠ Be sure to provide adequate ventilation for removal and dilution of fume and gases. Fume exhaust facilities near the arc, or a ventilated helmet should be used when cutting in confined spaces or on toxic material.

3. Glare

- ⚠ Never look at the arc without wearing eye protection. Always use the proper protective clothing, filter glasses, and gloves. Be careful to avoid exposed skin areas. Do not use cracked or defective helmets or shields.
- ⚠ Never strike an arc when there is someone near who is not protected from the strong light of the arc.
- ⚠ Warn bystanders who are not aware of the dangers of ultraviolet light.

4. General

- ⚠ Take care when lifting the unit.
- ⚠ Ensure that cylinders are secured by chains.
- ⚠ Locate the unit so that there is adequate air flow to the ventilation louvres.
- ⚠ Always dress correctly to protect against glare, radiation and spatter.

5. Fire

- ⚠ Ensure that the correct type of fire extinguisher is available in the welding area.
- ⚠ Do not weld near flammable materials or liquids, in or near explosive atmospheres, or on pipes carrying explosive gases.

6. Vehicle Electrics

- ⚠ When working on motor vehicles, remove the battery and any circuits which may be damaged by the arc.
- ⚠ Whilst welding be aware of the possibility of 'hidden wires' behind panels or bulkheads.



INSTALLATION

WARNING

Review the safety section at the front of this manual and comply with all applicable precautions.

Follow the instructions included elsewhere in this manual relative to proper installation to reduce radio interference.

To prepare the unit for installation, several items should be checked. Clear all packing materials from around the unit and carefully inspect for damage which may have been caused by shipping. Be sure to read all the instructions before attempting to operate the unit.

Location

A proper installation site should be selected for the welding equipment if the unit is to provide dependable service, and remain relatively maintenance free.

The site should allow air movement into and out of the welding unit, and be free from excessive dust, dirt, moisture, and corrosive vapours. The location should also permit easy removal of the welding unit panels for maintenance.

IMPORTANT

Do not place any filtering device over the air intake passages of the unit as this will restrict the movement of air and could cause overheating and possible failure. Warranty is void if any type of filtering device is used.

Electrical Input Connections

WARNING

Before making electrical input connections to the welding unit, use 'machinery lockout procedures': If the connection is to be made from a mains disconnect switch, the switch should be padlocked in the off position. If the connection is made from a fuse box, remove the fuses from the box and padlock the cover in the closed position. If locking facilities are not available, attach a red tag to the mains disconnect switch (or fuse box) to warn others that the circuit is being worked on.

Placing the welding unit power switch in the 'Off' position does not shut off all power within the equipment.

Be sure that the switch box is attached directly or by cable to a suitable ground such as a water pipe or ground rod. Do not ground to gas piping or electrical conduits. Comply with local electrical inspection authorities.

Input Electrical Requirements

This AC/DC welding unit is a SINGLE-phase unit and must be connected to a SINGLE-phase power line or any two phases of a three-phase system of the proper voltage.

INPUT 415v 50 Hz FUSE 25A SLOW BLOW

If there is any question about the type of system used locally, or the proper connections to obtain a single-phase primary input voltage to the welding unit, consult the local power authorities.

Input Connections

The welding unit should be operated from a separately fused or circuit breaker-protected circuit. The maximum capacity of the welding unit is affected by the mains voltage and if the circuit is overloaded, the performance of the welding equipment will be impaired.

CAUTION

Connect the input cable to the unit before making connections to the single phase power line.

CAUTION

Be sure when installing the welding unit that an earth wire is connected from the ground lug to a suitable ground. This is absolutely necessary as any development of stray currents may give a severe shock should anyone touch the welding unit and at the same time touch any grounded object. The ground lug is connected to the welding equipment chassis and is for ground purposes only. If the welding unit is to be connected to two phases of a three-phase line, do not connect the third wire from a three-phase line to the ground lug as this will result in a 'live' welding unit chassis.

The input cable wires connect to terminals labelled 'L1 and L2'. A third conductor, ground connections, should be fastened to the ground lug, and leave sufficient slack in the earth wire so that, in the event of strain on the cable, the earth wire is the last to be affected.

Welding Connections

NOTE

To obtain the full rated output from this unit, it is necessary to select, install and maintain proper welding cables. Failure to comply in any of these areas may result in less than satisfactory welding performance.

Cable Length

It is recommended that the welding cables be kept as short as possible, spaced as described below, and be of adequate current carrying capacity. The resistance of the welding cables and connections causes a voltage drop which is added to the voltage of the arc. Excessive cable resistance may result in overloading as well as reducing the maximum current output of the welding unit. The proper operation of any welding unit is to a great extent dependent on the use of welding cables and connections that are in good condition and of adequate size. An insulated electrode holder should be used to ensure operator's safety.

Cable Insulation

It is important, especially where high frequency is used, that lugs or uninsulated portions of the welding cable do not touch or come too close to the case of the welding equipment.

Cable Spacing

When welding with AC or DC, if the welding cables are coiled up they will operate a magnetic field which will seriously affect the operation of the welding equipment. Always lay the welding cables out. The welding cables should not be taped together when using high-frequency, they should be placed about 1.9 to 2.5cm (3/4 inch to 1 inch) apart on a suitable board and fastened with plastic clamps or clips. Do not use metal clamps as they will tend to serve as an antenna and radiate high-frequency.

Gas Connections

CAUTION

When connecting to gas solenoid valve, use non-conductive hose.

1. The gas inlet is located on the rear panel. Connect the gas hose from the gas supply, to the gas valve connection labelled 'Gas In'.
2. The gas flow must be controlled accurately with the aid of a regulator and a flow-meter. No specific recommendations for rates of flow can be given, as this depends entirely on the specific welding conditions.



HIGH FREQUENCY RADIATION NOTES PREVENTATIVE MEASURES

To prevent the possibility of interfering with authorised radio communication services it is necessary to install the welding equipment properly. Field experience has shown that if the instructions outlined in this manual are followed in detail, the installation is unlikely to radiate disturbing energy.

The importance of correct installation cannot be over-emphasised since case histories of interference due to high frequency stabilised arc welding machines have shown that invariably an inadequate installation was at fault.

Under certain conditions, especially when this equipment is operated in very close proximity to sensitive radio frequency receivers, interference may still be caused in spite of the fact that field strengths may be within specified limits. In these cases the user is obligated to take any additional steps to clean up the interfering situation provided the receiver being subjected to interference is of good design and properly installed.

General Information

In a high frequency stabilised arc welding installation, interfering radiation can escape in four distinct ways as outlined below:

(a) Direct Radiation from the Welding Unit

This is radiation which escapes directly from the welding unit case. This is very pronounced if access doors are left open and unfastened and if the welding unit case is not properly grounded.

Any opening in the metal case will allow some radiation to escape.

The high frequency unit of this equipment is adequately shielded to prevent direct radiation of any consequence if proper grounding is carried out.

(b) Direct Feedback to the Mains Cable

High frequency energy may get on the mains cable by direct coupling inside the equipment of the high frequency unit, the cable then serving as a radiating antenna.

By properly shielding and filtering, direct coupling is prevented in this equipment.

(c) Direct Radiation from Welding Leads

Direct radiation from the welding leads, although very pronounced, decreases rapidly with distance from the welding leads. By keeping the welding leads as short as possible, the operator can do a great deal to minimise interference from the source.

The intensity and frequency of the radiation can be altered over wide limits by changing the location and relative position of the welding leads and work. If possible, loops and suspended sections should be avoided.

(d) Pick-up and Reradiation

Even though welding lead radiation falls off rapidly with distance, the field strength in the immediate vicinity of the welding area may be extremely high. Unshielded wiring and ungrounded metallic objects in this strong field may pick up the direct radiation, conduct the energy from some distance, and produce a strong interference field in another area.

This is usually the most troublesome source of interference, but careful adherences to proper installation procedure as outlined in this manual will minimise this type of interference.

Power Service

The specific installation instructions for making the proper primary connections to the equipment as outlined in this instruction manual should be followed carefully.

Ordinary helically wrapped conduit is designed for mechanical protection and is not suitable for electrical shielding. Only solid metallic conduit or conduit of 'equivalent electrical shielding ability' should be used to enclose the primary power service leads.

Solid metallic shielding shall enclose the primary power supply to the equipment from a point 15m (50 feet) from the equipment in an unbroken run.

This shielding shall be grounded at the farthest point from the equipment and should make good electrical contact with the casing of the equipment. Care should be taken that paint or corrosion at the junction of conduit and case, does not make good electrical contact.

There shall be no gap in this shielding run. This simply means that within 15m (50 feet) of the equipment, no portion of the power wires serving the equipment shall be unshielded. If there is any question about the electrical efficiency of the joints between individual conduit sections, outlet boxes and the equipment case, bonding should be carried out by soldering a copper strap or wire across the joint as shown.

No change in the wiring or the location of parts inside the equipment, other than power supply tap changes or other adjustments specifically covered, shall be made. The equipment shall not be modified in any way since changes in the equipment can affect the radiation characteristics.

While the equipment is in operation, all access and service doors shall be closed and properly fastened.

Spark gap settings shall be maintained at the minimum separation consistent with satisfactory welding results.

Welding Leads

To minimise direct weld lead radiation, the welding cables (electrode cable and work cable) must be kept as short as possible. Tests have been made with cables 7.6m (25 feet) long. Considerable improvement in radiation minimisation can be made by shortening the cables as much as possible.

Keeping the electrode cable and the work cable as close as possible and on the floor serves to reduce the radiation.

Wiring in the Vicinity of the Welding Area

As discussed in the general information section, the most serious source of interference is reradiation from wires located near the welding area.

Any ungrounded electrical conductor in the strong 'directly radiated' field, produced by the welding cables, serves as a pick-up device and may conduct the interference for some distance and reradiate strongly at another location.

For purpose of simplification and standardisation, the space all around the weld zone at a distance of 15m (50 feet) in all directions is referred to as the High Field Intensity (H.F.I.) zone.

To minimise radiation of this type, all wiring in the H.F.I. zone shall be in rigid metallic conduit, lead covered cable, copper braid, or material of equivalent shielding efficiency. Ordinary flexible helically wrapped metallic conduit is not satisfactory for shielding, and should not be used. The shield on all wiring should be grounded at intervals of 15m (50 feet) and good electrical bonding between sections shall be maintained.

This shielding requirement applied to all wiring, including telephone, intercommunication, signal and control, and incidental service.

Extreme precaution should be taken to make sure that the location of the zone is chosen so that none of the conditions is voided by unshielded wires off the premises but still within the radial dimensions of the H.F.I. zone.

This 15m (50 feet) H.F.I. zone is a minimum that is imposed on the installation. Tests by the manufacturer are based on this limit.

Keeping unshielded wires farther than 15m (50 feet) from the weld zone will materially aid in minimising interference.