



Transmig 305S & 405S



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

Contents

| | Page |
|--------------------------------|---------|
| • Warnings..... | 3 |
| • Safety..... | 4 |
| • Introduction & Controls..... | 5 |
| • Installation..... | 6 |
| • Specification..... | 7 |
| • Circuit Diagram..... | 8 |
| • Circuit Description..... | 9 |
| • Maintenance..... | 10 |
| • Spare Parts..... | 11 - 14 |



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 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 earth cable. Fix an insulated hook to hang the torch on when it is not in use.

1. 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.

2. 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.

3. 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.

4. 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.

5. Vehicle Electrics

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

GENERAL

The Transmig 305S and Transmig 405S (TM 305S & TM 405S) are constant voltage characteristic welding power supply units designed for use in MIG/MAG dip transfer and spray transfer modes.

Inductance output sockets (XS2 A, B & C) are provided for these techniques (see below).

In addition to the welding output, these units provide 42 volts and contactor control circuit outputs to a wire feed unit (socket on rear panel). Both units can be used in conjunction with the Transmatic 2 x 2, 4 x 4 and 4 x 4 HD Feed Units. Details of interconnections to these feeders are given at the front of the Parts List under 'Optional Extras'.

A 42 volts a.c. outlet is supplied on a terminal block inside the unit to supply a CO₂ Heater if required (see installation, page 6).

A water cooler may be fitted to the unit by mounting it on the cylinder carrier plate on the back panel.

220 volts a.c. is provided on a terminal block inside the unit to power the cooler (see installation, page 6).

A thermostatically controlled cooling fan is mounted inside the rear panel. This fan normally runs at reduced power but if the temperature rises, the fan speed increases. Once the power source has cooled down, the fan returns to a low speed. The fan draws air in via the louvres in the front and side panels, and expels through the rear, cooling the rectifiers and other components. To operate efficiently these louvres must be kept free from obstruction.

Reduced air flow may cause a thermal overload (over-heating).

A thermostat protects the unit from thermal overload. This thermostat is mounted on the rectifier assembly (see Parts List) and disables the control circuit in the event of overheating. Should the overload lamp light (see below) cease welding, keep the mains switched on leaving the fan running to minimise the

cooling time, and leave the unit to cool. Investigate the cause of overheating (ventilation, fan failure etc.).

Circuit breakers on the rear panel, protect the circuits from excess current overload. They are reset by pushing in the buttons.

WARNING

Persistent operation of the circuit breakers must be investigated. Under no conditions should they be held on artificially (override device etc.)

A Voltmeter and Ammeter mounted on the front panel indicate actual welding voltage and welding current values.

The 'Press to read' button activates the welding output voltage allowing the O.C.V. (Open Circuit Voltage) to be checked.

The Voltage Selection switches provide coarse and fine control of output voltage.

CONTROLS

Ammeter
Under welding conditions indicates welding current

Voltmeter
Indicates actual welding voltage.

Press-to-read OCV switch

-VE Welding power Minimum Inductance
For short arc welding of thin materials root runs, aluminium and cored wires.

-VE Welding power Medium Inductance
Used for short arc welding, gives slightly increased heat input.

Overload Lamp

ON/OFF Lamp
Indicates welding power is switched on.

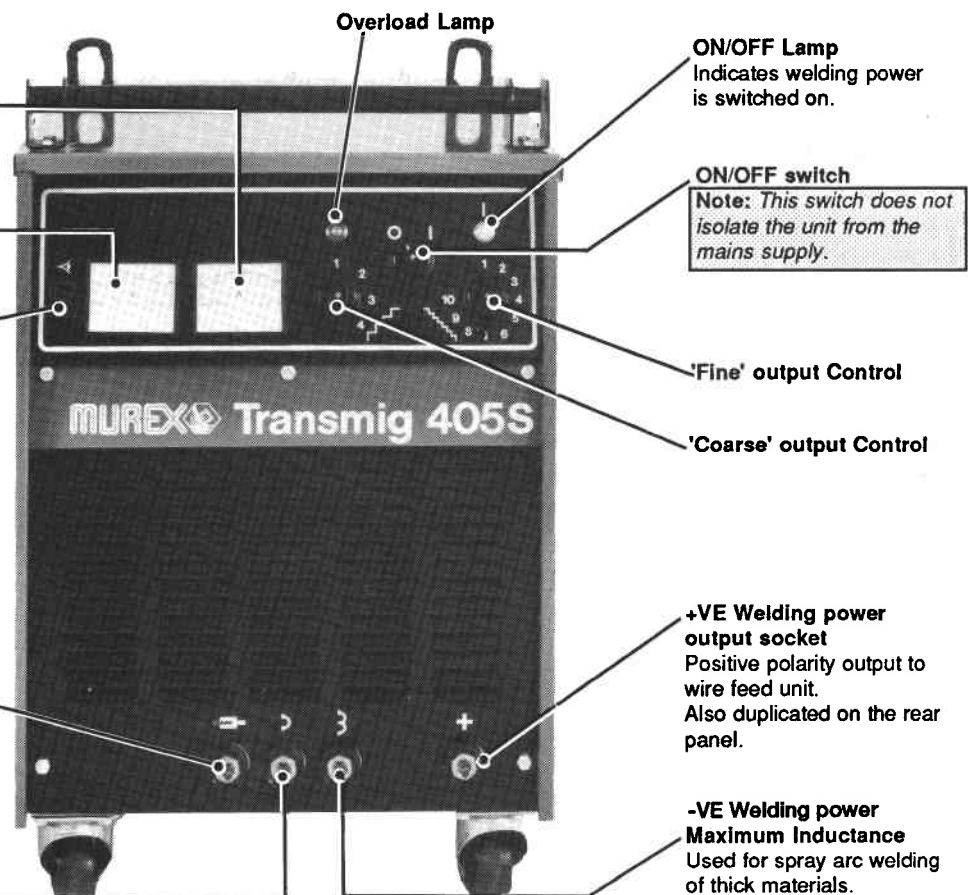
ON/OFF switch
Note: This switch does not isolate the unit from the mains supply.

'Fine' output Control

'Coarse' output Control

+VE Welding power output socket
Positive polarity output to wire feed unit. Also duplicated on the rear panel.

-VE Welding power Maximum Inductance
Used for spray arc welding of thick materials.



INSTALLATION

WARNING

Installation should only be undertaken by a qualified electrician or trained individual.

Correct installation is important for the reliable and safe operation of the equipment. Before continuing carry out the following checks:

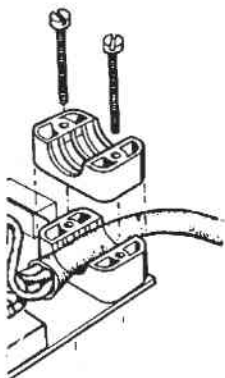
1. Having unpacked the power source, inspect for evidence of damage or missing parts. Notify the carrier or Murex immediately.
2. Check the air louvres in the front and rear panels for any packing materials that might obstruct the air flow.
3. Position the equipment in a safe area. Leave at least 0.5m clearance around the unit to allow air to circulate freely. The position should be free from dust, fumes and heat. See SAFETY at the front of this manual.

Connection to Mains Supply

WARNING

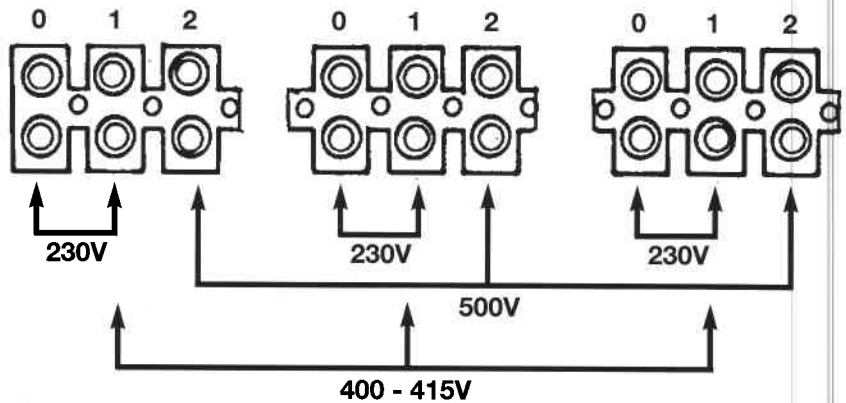
Before making electrical input connections to the unit, use 'machinery lockout procedures'. If the connection is to be made from a mains disconnect switch, the switch should be padlocked in the off position. If the connection is made from a fuse box, remove the fuses from the box and padlock the cover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

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

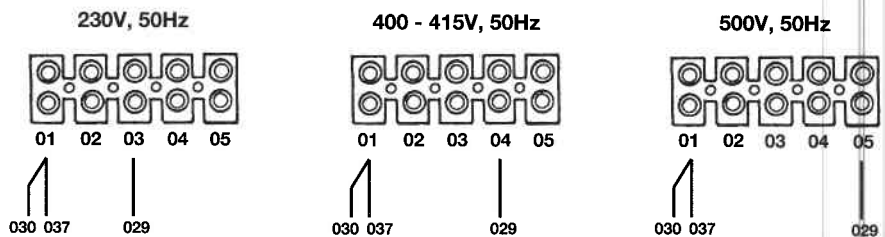


Clamp the input cable firmly
MAINS CABLE INPUT
 Connect the mains input cable to TB XT1

TERMINAL BOARD XT2 MAINS VOLTAGE SELECTION



AUXILIARY TRANSFORMER MAINS VOLTAGE SELECTION



The Murex Transmig 305S or 405S power source requires industrial 3 phase mains power of the proper voltage, 230, 400, 415 or 500V, see SPECIFICATION section, page 7.

WARNING

From the factory the machine is set for 415V use and the fitted primary cable is suitable for use with 400V or 415V supplies only.

Fitting Optional Extras

Terminal Boards XT3 and XT5 provide a means of connection to the various auxiliary supplies available.

WARNING

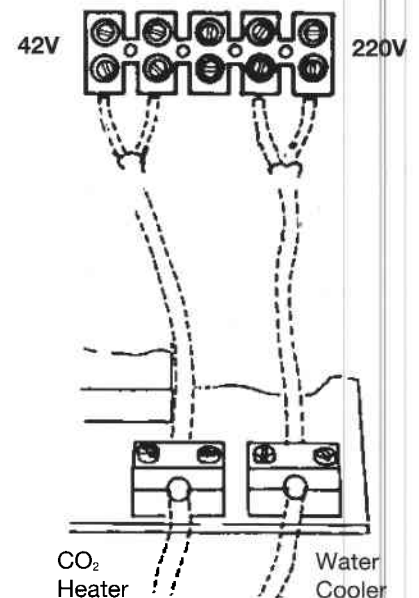
Ensure suitable strain reliefs are fitted when routing cables through the rear panel.

42V and 220V a.c. auxiliaries are protected by resettable circuit breakers and accessible on the rear panel.

WARNING

The 220V a.c. auxiliary is not isolated from the incoming mains and is for use with suitable torch water cooling units only.

TBXT5 & TBXT3 AUXILIARY SUPPLIES

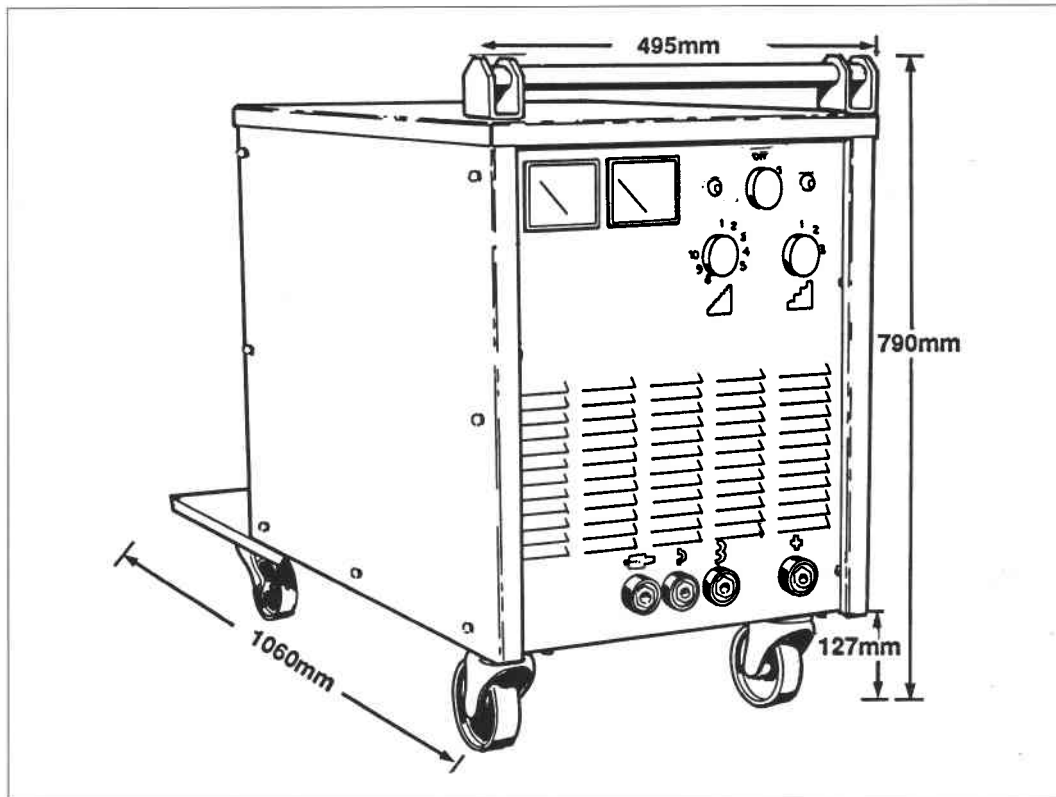


Connect to auxiliary supplies as required taking care to clamp the cables (as shown)

Transmig 305S & 405S

Technical Notes

SPECIFICATION



INPUT

| | TM 305S | TM405S |
|--------------------------|-------------------------|-------------------------|
| Phase: | 3 | 3 |
| Frequency: | 50/60Hz | 50/60Hz |
| Max current at 420V: | 18A | 28A |
| Max kVA | 13kVA | 20kVA |
| Fuse rating 420V supply: | 20A | 35A |
| Nominal Voltage: | 230/400 - 415/500V 50Hz | 220/440 - 460/550V 60Hz |

OUTPUT

| | TM305S | TM405S |
|------------------------|---------------------|----------|
| Open Circuit voltage: | 39V max. | 46V max |
| Current range: | 60A:15V | 60A:17V |
| | 300A:30V | 400A:36V |
| Rated output: 100% | 250A/27V | 320A/30V |
| 60% | 300A/30V | 400A/34V |
| Permitted max current: | 300A | 400A |
| Control: | 40 Switch Positions | |
| Inductance Taps: | 3 | 3 |

OTHER DATA

| | | |
|-----------------------|-----------|--------|
| Rating specification: | IEC 974-1 | |
| Ambient temperature: | 40°C | |
| Insulation class: | H | |
| Max temperature rise: | 140°C | |
| Weight: | TM305S | TM405S |
| | 160Kg | 200Kg |

Due to variations which can occur in manufactured products, claimed performance voltages, ratings, all capacities, measurements, dimensions and weights quoted are approximate only. Achievable capacities and ratings in use and operation will depend upon correct installation, use, application, maintenance and service.