Manual # 312 plant # 1844001

Welder Transmig 250

Tweco® / Arcair®

IMPORTANT SAFEGUARDS

Welding and Cutting Operations

PRECAUCIONES IMPORTANTES

Trabajos de soldadura y corte

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MEDIDAS DE PRECAUÇÃO IMPORTANTES

Operações de soldagem e corte

A THERMADYNE® COMPANY

IMPORTANT SAFEGUARDS

Welding and Cutting Operations

READ THESE WARNINGS ⚠ **WARNINGS** ⚠ **PROTECT YOURSELF AND OTHERS**

SERIOUS INJURY OR DEATH may result if welding and cutting equipment is not properly installed, used and maintained. Misuse of this equipment and other unsafe practices can be hazardous. The operator, supervisor and helper must read and understand the following safety warnings and instructions before installing or using any welding or cutting equipment.

The welding/cutting process is used in many potentially dangerous environments such as elevated heights, areas of limited ventilation, close quarters, around water, in hostile environments, etc., and it is important that the operators are aware of the dangers associated in working in these types of conditions. Be certain that the operator(s) are trained in safe practices for environments in which they are expected to work and under competent supervision.

It is essential that the operator, supervisor and others in the work area are aware of the dangers of the welding or cutting process. Training and proper supervision are important for a safe work place. Keep these instructions for future use. Additional recommended safety and operating information is referenced in each section.

ELECTRIC SHOCK CAN CAUSE INJURY OR DEATH

Install and maintain equipment in accordance with the National Electrical Code NFPA 70 and local codes. Do not service or repair equipment with power on. Do not operate equipment with protective insulators or covers removed. Service or repair to equipment must be done by qualified and/or trained personnel only.

Do not contact electrically live parts. Do not touch electrode with bare skin and electrical ground at the same time. Always wear dry welding gloves in good condition. Aluminized protective clothing can become part of the electrical path. Keep oxygen cylinders, chains, wire ropes, cranes, hoists, and elevators away from any part of the electrical path. All ground connections must be checked periodically to determine that they are mechanically strong and electrically adequate for the required current.

When engaged in alternating current welding/cutting under wet conditions or warm surroundings where perspiration is a factor, the use of reliable automatic controls for reducing the no load voltage is recommended to reduce shock hazard. When the welding/cutting process requires values of open circuit voltages in alternating current machines higher than 80 volts, and direct current machines higher than 100 volts, means must be provided to prevent the operator from making accidental contact with the high voltage by adequate insulation or other means.

When welding is to be suspended for any substantial length of time, such as during lunch or overnight, all electrodes should be removed from the electrode holder and the electrode holder carefully located so that accidental contact cannot occur. The holder must be disconnected from the power source when not in use. Never immerse Mig-Guns, electrode holders, Tig torches, Plasma torches, or electrodes in water.

SEE SAFETY AND OPERATING REFERENCES 1, 2, AND 8.

SMOKE, FUMES AND GASES CAN BE DANGEROUS TO YOUR HEALTH

Keep smoke, fumes and gases from the breathing area. Fumes from the welding or cutting process are of various types and strengths, depending on the kind of base metal being worked on. To ensure your safety, do not breath these fumes. Ventilation must be adequate to remove smoke, fumes, and gases during the operation to protect operators and others in the area.

Vapors of chlorinated solvents can form the toxic gas "Phosgene" when exposed to ultraviolet radiation from an electric arc. All solvents, degreasers degreasers and potential sources of these vapors must be removed from the operating area.

Fumes produced by welding or cutting particularly in confined places can cause discomfort and physical harm if inhaled over an extended period of time. Provide adequate ventilation in the welding/cutting area. Use air-supplied respirators if ventilation is not adequate to remove all fumes and gases. Never ventilate with oxygen, because oxygen supports and vigorously accelerates fire.

SEE SAFETY AND OPERATING REFERENCES 1, 2, 3, AND 4.

ARC RAYS, HOT SLAG AND SPARKS CAN INJURE EYES AND BURN SKIN

The welding/cutting processes produce extreme localized heat and strong ultraviolet rays. Never attempt to weld/cut without a welding helmet with the proper lens, that complies with federal guidelines. A number 12 to 14 shade filter lens provides the best protection against arc radiation. When in a confined area, prevent the reflected arc rays from entering around the helmet.

Make sure others are protected from arc rays and sparks. Approved shielding curtains and appropriate goggles should be used to provide protection to others in the surrounding area and operators of nearby equipment.

Skin should also be protected from arc rays, heat and molten metal. Always wear protective gloves and clothing which will not allow skin to become exposed. All pockets should be closed and cuffs sewn shut. Leather aprons, sleeves, leggings, etc. should be worn for out-of position welding/cutting or for heavy operations using large electrodes. High top work shoes provide adequate protection from foot burns. For added protection use leather spats. Flammable hair preparations should not be used when welding/cutting. Wear ear plugs to protect ears from sparks.

Where the work permits, the operator should be enclosed in an individual booth painted with a finish of low reflectively such as zinc oxide, An important factor for absorbing ultraviolet radiations, and lamp black, or shall be enclosed with noncombustible screens similarly painted.

SEE SAFETY AND OPERATING REFERENCES 1,2, AND 3.

WELDING SPARKS CAN CAUSE FIRES AND EXPLOSIONS

Causes of fire and explosion are; combustibles reached by the arc, flame, flying sparks, hot slag or heated materials. Remove combustibles from the work area and/or provide a fire watch. Avoid oily or greasy clothing as spark my ignite them. Have a fire extinguisher nearby, and know how to use it.

Be alert to the danger of conduction or radiation, for example if welding/cutting is to be done on a metal wall, partition, ceiling or roof, precautions must be taken to prevent ignition of combustibles on the other side. Do not weld/cut containers that have held combustibles. All hollow spaces, cavities and containers should be vented prior to welding/cutting to permit the escape of air or gases. Purging with inert gas is recommended.

Never use oxygen in a welding torch. Use only inert gases or inert gas mixes as required by the process. Use of combustible compressed gases can cause explosions resulting in personal injury or death.

Arcing against any compressed gas cylinder can cause cylinder damage or explosion.

SEE SAFETY AND OPERATING REFERENCES 1,2,5,7, AND 8.

NOISE CAN DAMAGE HEARING

Noise from the air carbon-arc process can damage your hearing. Wear protective hearing devices to ensure protection when noise levels exceed OSHA standards. Adequate hearing protection devices must be worn by operators and surrounding personnel to ensure personal protection against noise.

SEE SAFETY AND OPERATING REFERENCES 1,2, AND 6

SAFETY AND OPERATING REFERENCES

1. Code of Federal Regulations (OSHA) Section 29, Part 1910.95, 132, 133, 134, 139, 251, 252, 253, 254 and1000. U.S. Government Printing Office, Washington, DC 20402

2 ANSI Z49.1 "Safety In Welding and Cutting."

3. ANSI Z87.1 "Practice for Occupational and Educational Eye and Face Protection."

4. ANSI Z88.2 "Standard Practice for Respiratory Protection." American National Standards Institute, 1430 Broadway, New York, NY 10018

5. AWS F4.1 "Recommended Safe Practices for Welding and Cutting Containers."

6. AWS C5.3 Recommended Practices for Air Carbon-Arc Gouging and Cutting.
The American Welding Society, 550 NW Lejeune Rd., P.O. Box 351040, Miami, FL 33135

7. NFPA 51B "Fire Prevention in Cutting and Welding Processes."

8. NFPA-7 "National Electrical Code"
National Fire Protection Association, Battery Park, Quincy, MA 02269

9. CSA W117.2 "Safety In Welding, Cutting and Allied Processes."
Canadian Standards Association, 178 Rexdale Blvd., Rexdale, Ontario, Canadá M9W 1R3

Manual # 312

Tweco® plant # 1844001.

Welder Transmig 250

MIG-GUN
MAINTENANCE and OPERATING INSTRUCTIONS

The Professional's Choice

AIR COOLED MIG-GUNS

Mini-Mig-Gun 160 Amps
No.1 180 Amps
No.2 200 Amps
No.3 300 Amps
No.4 400 Amps
No.5 500 Amps
No.6 600 Amps
Tuff-N-Lite 350 Amps
Supra 3 350 Amps
Supra 6 600 Amps

A THERMADYNE® COMPANY

CE

DECLARATION OF CONFORMITY

We Tweco Products, Inc.
P.O. Box 12250
Wichita,KS 67277

declare under our sole responsiblity that the product

HAND HELD AIR COOLED SEMI & AUTOMATIC MIG-GUNS

to which ths declaration relate(s) is in conformance with the following standards:

EN 50078-1:1992

following the provisions of the 89/336/EEC Directives

Wichita, KS Oct. 21,1999
(Place & date of issue)

Nat S. Hansen
Vice President
Gereral Operations Manager
Tweco / Arcair

Oreste Cazzaniga
Managing Director
Thermadyne Europe

MIG-GUN SPECIFICATIONS

MIG-GUN CLASSIFICATION

Process: MIG/MAG welding
Method of Guidance: Manually Guided
Voltage Class: L (up to 113 V peak)
Type of Cooling: air or cooling gas

DUTY CYCLE

MIG-GUN MODEL NO.	10% DUTY CYCLE	35% DUTY CYCLE	60% DUTY CYCLE	100% DUTY CYCLE
160	200 amps	185 amps	160 amps	125 amps
180	230 amps	205 amps	180 amps	140 amps
200	260 amps	230 amps	200 amps	150 amps
300	375 amps	340 amps	300 amps	205 amps
350	435 amps	390 amps	350 amps	240 amps
400	500 amps	450 amps	400 amps	275 amps
500	600 amps	550 amps	500 amps	350 amps
600	700 amps	660 amps	600 amps	400 amps

The above duty cycles were established by testing under the following parameters:

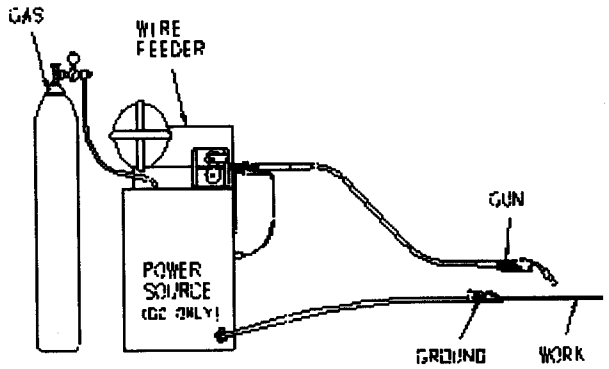
MIG

Electrode: aluminum 3% to 5% magnesium
Type of voltage: d.c.: electrode polarity: positive
Shielding gas: argon
Gas flow rate: 30 CFH / 14,2 l/m
Weld Material: AlMg3 to AlMg5
Gun cable length: 10ft./3M
Electrode size:
160 = .030in/,8mm
180 = .030in/,8mm
200 = .045in/1,2mm
400 = 1/16in/1,6mm
500 = 1/16in/1,6mm
600 = 1/16in/1,6mm

MAG

Electrode: mild (low carbon) steel
Type of voltage: d.c.: electrode polarity: positive
Shielding gas: argon/CO_2 mixed gas (80/20 & 75/25)
Gas flow rate: 30 CFH / 14,2 l/m
Weld Material: mild (low carbon) steel
Gun cable length: 15ft./5M
Electrode size:
160 = .030in/,8mm
180 = .030in/,8mm
200 = .045in/1,2mm
400 = 1/16in/1,6mm
500 = 1/16in/1,6mm
600 = 1/16in/1,6mm

MIG-GUN INSTALLATION



Standard Mig-Gun Installation

GENERAL: Be certain that the end user (welder, operator, or helper) reads and understands these instructions. Be certain that the welder also reads the TWECO "Important Safeguards," S-W-397

WARNING - ELECTRICAL SHOCK MAY KILL

DIRECT PLUG MIG-GUN INSTALATION

Tweco Mig-Guns are furnished with rear connections to fit directly into most Miller, Lincoln and Euro connection wire feeders. These guns are referred to as "Direct Plug Mig-Guns". Tweco Mig-Guns are also furnished with the time proven Mig-Kwik connection. The Mig-Kwik connection, when utilized with a Tweco adapter kit, allows a Tweco Mig-Gun to be installed on almost any wire feed system. For a listing of available adapter kits, see the Tweco Adapter Kit Listing or call Tweco Customer Service.
Direct Plug Mig-Guns install by directly inserting the rear connector plug into the feeder wire guide outlet (See figure 1) and tightening the plug retaining screw. All models of Mig-Guns except the Euro-Kwik guns require a control wire assembly to attach the Mig-Gun trigger leads to the feeder. The control wire assemblies plug into the rear connector case of the Mig-Gun and into the control wire receptacle on the feeder. Euro-Kwik connections are installed by inserting the gun connection into the feeder receptacle aligning the conduit plug first, then the gas plug. Push until all fittings are seated, then tighten the nut hand-tight. (See figure 2)

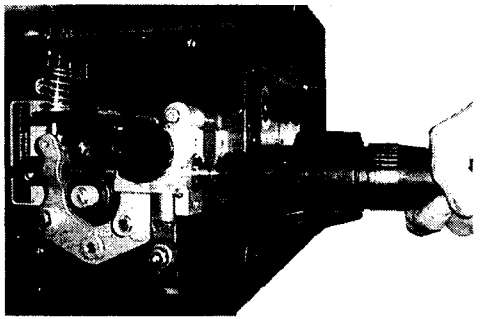


Figure 1

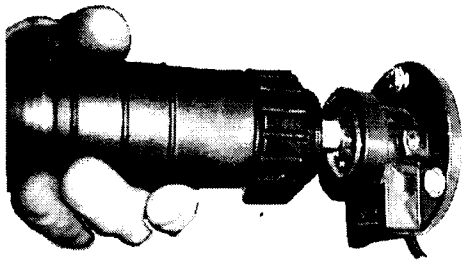


Figure 2

TWECO MIG-KWIK CONNECTION AND ADAPTER KIT INSTALLATION
180 Amp Through 600 Amp Mig-Guns

Installation of a Tweco Mig-Gun equipped with a Tweco connector plug may require an adapter kit. Choose the correct adapter kit for your wire feeder from the Adapter Kit Listing. To install follow the instructions furnished with the adapter kit. (Figure 3) shows the general adapter kit installation.

General Assembly

1. Screw adapter plug into the receptacle and tighten.
2. Insert the adapter plug and receptacle into the wire feeder wire guide-out. Tighten the wire guide attachment screw.
3. If needed, attach a proper sized welding cable from the welding power source to the receptacle power connection.
4. Attach a gas hose to the receptacle and to the feeder gas solenoid. **Important:** When using an adapter kit, the gas must be attached to the receptacle to provide gas to the Mig-Gun. If the feeder gas supply is attached to the feeder wire guide out block, it must be rerouted to the receptacle.
5. Insert the Mig-Gun rear connection plug into the receptacle and tighten the attachment screw.
6. Attach the control wire plug assembly to the wire feeder Mig-Gun control circuit. Then plug the flat double female plug into the Mig-Gun.

The gun should now be installed and ready to feed wire as recommended by the feeder manufacturer.

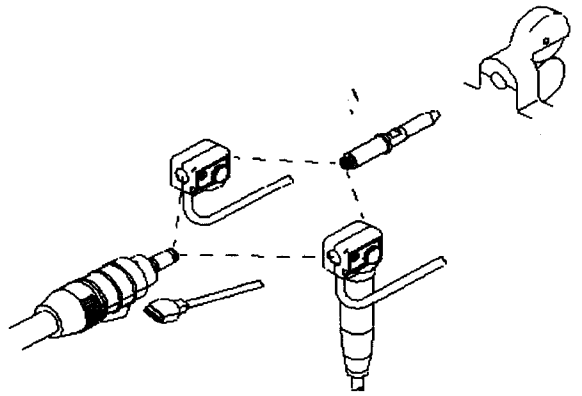


Figure 3

WIRE CONDUIT REPLACEMENT

The procedure for removal and installation of a wire conduit is similar for all Tweco Mig-Guns. Conduits may be identified by the type of conduit stop and the part number marking on each conduit stop. Four series of conduits are used:
160 amp guns use #40 series conduits.
180 & 200 amp guns use #42 series conduit.
400 amp guns use #44 series conduit.
500 & 600 amp guns use #45 series conduit.
To remove a conduit:

1. Lay the Mig-Gun out on a table or on the floor in a straight line. Make sure the gun is fully extended and all twists in the cable are removed.
2. Remove the nozzle and loosen the conduit set screw in the front on the gun. This is usually located in the diffuser. Then loosen the conduit set screw in the rear connector plug. Note: On Miller direct plug guns, remove the nipple on the end of the connector plug. On Euro-Kwik connctions, remove the conduit retaining cap.
3. Remove the diffuser and contact tip.
4. Grip the conduit stop and remove the conduit with a twisting motion. On Miller direct plug guns, twisting the rear of the gun approximately one revolution clockwise will raise the conduit stop out of the connector plug recess.

To install a conduit:

1. Uncoil the conduit and lay it in a straight line. Insert the conduit into the rear connector plug. Push the conduit into the gun with short strokes. If the conduit hangs up, twist the conduit counterclockwise or gently whip the cable while applying pressure to the conduit.
2. When the conduit is completely in the gun, tighten the rear conduit set screw. On Miller guns, reinstall the nipple. On Euro-Kwik guns, reinstall the conduit retaining cap.

3. Trim the conduit extending from the conductor tube to length.
   1.0 in./25,4mm for 160 & 180 gun
   1.3in./33,0mm for 200 gun
   .5in./12,7mm for 400 gun
   .6in./15,2mm for 500 & 600 gun
4. File the cut conduit end to remove burrs that could interfere with wire feeding or catch on the diffuser.
5. Replace the diffuser and contact tip and tighten the nozzle.

The Mig-Gun is now ready to be reinstalled on the feeder.

GENERAL OPERATING TIPS

Contact tips and nozzles should be cleaned frequently. Spatter buildup may cause bridging between nozzle and tip. This could cause electrical shorting between the nozzle and work piece as well as poor or improper gas flow.

Regularly inspect the conductor tube, handle, cablehoz, and other parts of the Mig-Gun for abrasion, cuts, or undue wear. Replace or repair any parts found deficient.

Problem	Possible Cause	Corrective Action
Wire feed inconsistent or not smooth	1. Loose contact tip or diffuser. 2. Excessively worn contact tip. 3. Spatter buildup on end of contact tip. 4. Sharp bends or kinks in conduit. 5. Dirty or plugged conduit. 6. Conduit pulled back from diffuser. 7. Machine improperly adjusted.	1. Tighten contact tip and diffuser plier tight. 2. Replace contact tip. 3. Clean or replace contact tip. 4. Straighten or replace conduit. 5. Replace conduit. 6. Reposition conduit and tighten front set screw. 7. Reset machine as per machine and wire manufacturers' recommendations.
Mig-Gun is running hot.	1. Loose contact tip or diffuser. 2. Loose power connections. 3. Loose or undersize ground cable or ground clamp. 4. Operating gun above recommended amperage rating.	1. Tighten contact tip and diffuser plier-tight. 2. Inspect complete gun for loose connections and repair. 3. Tighten or replace as required. 4. Readjust machine to correct setting for size of gun being used.
Porous weld	1. Poor or improper gas flow. 2. Dirty or contaminated wire. 3. Base metal contaminated.	1. Check gas flow out of gun nozzle. Check for leaks or restrictions in gas hoses and connections. 2. Change wire. 3. Replace base metal.

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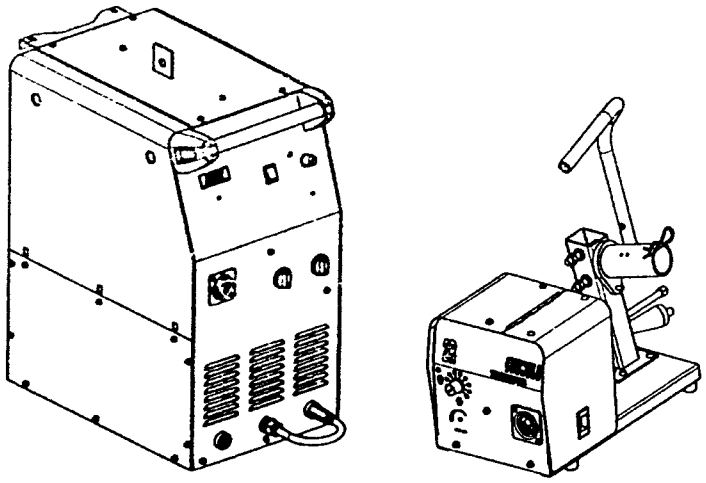
Manual # 312

Plant # 1844001

Welder Transmig 250

CIGWELD



OPERATING MANUAL

TRANSMIG 220/250

MIG Welder

TRANSMIG 220	**Compact**	**Part No. 710001**
TRANSMIG 250	**Compact**	**Part No. 710007**
	Remote Wirefeeder	**Part No. 710002**
2Re	**Wirefeeder**	**Part No. 706685**

719433	Issue 6	704

Description of equipment: Welding Equipment (Mig/Mag). CIGWELD Transmig 220/250, Wirefeeder and associated accessories.

* Serial numbers are unique with each individual piece of equipment and details description, parts used to manufacture a unit and date of manufacture.

National Standard and Technical Specifications

The product is designed and manufactured to a number of standards and technical requirements as listed below:

* AS1966-1 relevant clauses applicable to welding equipment and associated accessories.
* AS/NZS 3652-(EMC Directive EN50199) applicable to arc welding equipment –generic emissions and regulations.
* AS1939-1990 relevant clauses applicable to degree of protection provided by enclosures for electrical equipment IP21
* Extensive product design verification is conducted at the manufacturing facility as part of the routine design and manufacturing process, to ensure the product is safe and performs as specified. Rigorous testing is incorporated into the manufacturing process to ensure the manufactured product meets or exceeds all design specifications.

CIGWELD has been manufacturing and merchandising an extensive equipment range with superior performance, ultra safe operation and world class quality for more than 30 years and will continue to achieve excellence.

Notes, Cautions and Warnings

Throughout this manual, notes, cautions, and warnings are used to highlight important information. These highlights are categorised as follows:

NOTE

An operation, procedure, or background information which requires additional emphasis or is helpful in efficient operation of the system.

CAUTION

A procedure which, if not properly followed, may cause damage to the equipment.

WARNING

A procedure which, if not properly followed, may cause injury to the operator or others in the operating area.

Important Safety Precautions

WARNING

OPERATION AND MAINTENANCE OF WELDING ARC EQUIPMENT CAN BE DANGEROUS AND HAZARDOUS TO YOUR HEALTH.

To prevent possible injury, read, understand and follow all warnings, safety precautions and instructions before using the equipment. Call your local distributor if you have any questions.

TABLE OF CONTENTS

Tables

Figures

1. Unpacking MIG 220/250

Carefully unpack the MIG220/250 and check that all items listed in table 1 are present.

Description	Quantity
Cylinder Tray	1
Chain Bracket	1
Castor Swivel	2
Wheel	2
Rear wheel Axle	1
Washer ½ inch	2
Fastener (End Cap)	2
Screw M8	12
Screw M5	2
Chain	1

Table 1 – MIG 220/250 Kit Contents

2. Rear Wheel Assembly

a) Insert the axle through the cylinder tray.
b) Install the washers, wheels, and Fastener in the position as shown Figure 1

3. Front Swivel Castors And Cylinder Carrier Assembly

a) Install the two swivel castors in the position as shown in Figure 1 using the M8 fasteners.
b) Remove M5 screws from machine as shown by (A) in Figure 1
c) Install the assembled cylinder carrier in the position as shown in Figure 1 using the M8 fasteners

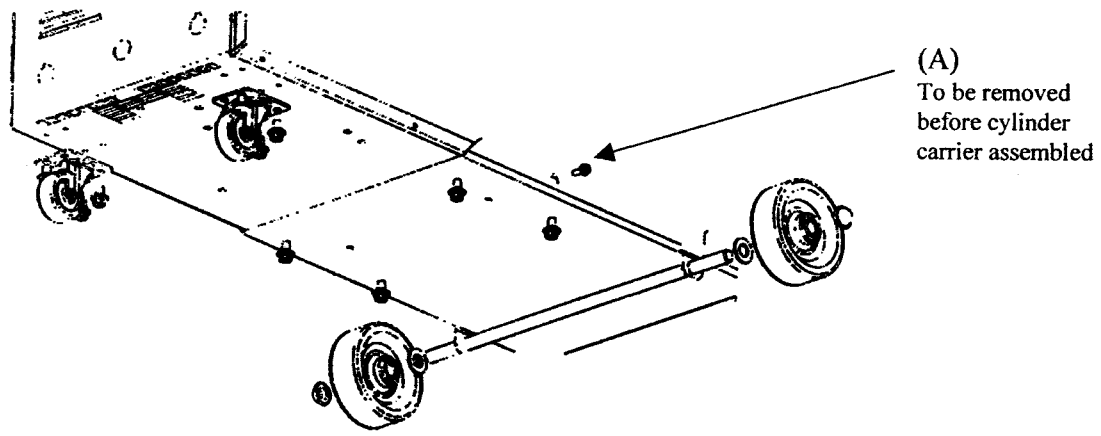


Figure 1 – Transmig 220/250 Castor and Carrier Assembly

4. Rear Cylinder Bracket Assembly

a) Install the cylinder bracket in the position as shown in Figure 2 using the M5 fasteners

b) Install the chain to cylinder bracket.

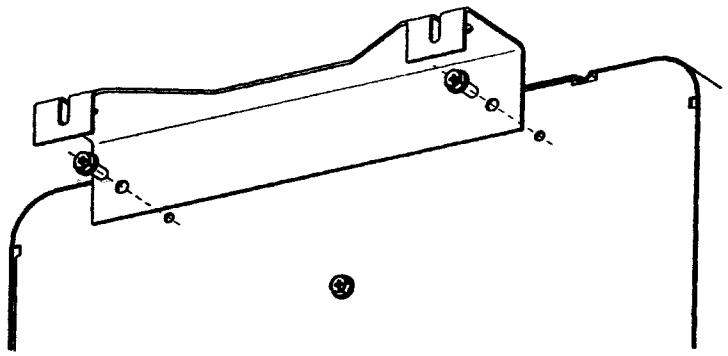


Figure 2 – Transmig 220/250 Cylinder Bracket Assembly

GASES AND FUMES

Gases and fumes produced during the welding process can be dangerous and hazardous to your health.

- Keep all fumes and gases from the breathing area. Keep your head out of the welding fume plume.
- Use an air-supplied respirator if ventilation is not adequate to remove all fumes and gases.
- The kinds of fumes and gases from the welding arc depend on the kind of metal being used, coatings on the metal, and the different processes. You must be very careful when cutting or welding any metals which may contain one or more of the following:

Antimony	Beryllium	Cobalt	Manganese	Selenium
Arsenic	Cadmium	Copper	Mercury	Silver
Barium	Chromium	Lead	Nickel	Vanadium

- Always read the Material Safety Data Sheets (MSDS's) that should be supplied with the material you are using. These MSDS's will give you the information regarding the kind and amount of fumes and gases that may be dangerous to your health.
- For information on how to test for fumes and gases in your workplace, refer to item 1 in Subsection 4.1, Publications in this manual.
- Use special equipment, such as water or down draft cutting tables, to capture fumes and gases.
- Do not use the welding torch in an area where combustible or explosive gases or materials are located.
- Phosgene, a toxic gas, is generated from the vapours of chlorinated solvents and cleansers. Remove all sources of these vapours.
- Refer to the Victorian Occupational Health and safety (Confined Spaces) Regulations 1996 and Code of Practice or its equivalent for other states and / or countries.

ELECTRIC SHOCK

Electric Shock can injure or kill. The welding arc process uses and produces high voltage electrical energy. This electric energy can cause severe or fatal shock to the operator or others in the workplace.

- Never touch any parts that are electrically "live" or "hot."
- Wear dry gloves and clothing. Insulate yourself from the work piece or other parts of the welding circuit.
- Do not use this welding power supply to thaw frozen water pipes.
- Repair or replace all worn or damaged parts.
- Extra care must be taken when the workplace is moist or damp.
- Install and maintain equipment according to NEC code, refer to item 4 in Subsection 4.1, Publications.
- Disconnect power supply before performing any service or repairs.

Read and follow all the instructions in the Operating Manual.

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Electric Shock can injure or kill. The welding arc process uses and produces high voltage electrical energy. This electric energy can cause severe or fatal shock to the operator or others in the workplace.

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- Install and maintain equipment according to NEC code, refer to item 4 in Subsection 4.1, Publications.
- Disconnect power supply before performing any service or repairs.
- Read and follow all the instructions in the Operating Manual.

FIRE AND EXPLOSION

Fire and explosion can be caused by hot slag, sparks, or the welding arc.

- Be sure there is no combustible or flammable material in the workplace. Any material that cannot be removed must be protected.
- Ventilate all flammable or explosive vapours from the workplace.
- Do not cut or weld on containers that may have held combustibles.
- Provide a fire watch when working in an area where fire hazards may exist.
- Hydrogen gas may be formed and trapped under aluminium workpieces when they are cut underwater or while using a water table. **DO NOT** cut aluminium alloys underwater or on a water table unless the hydrogen gas can be eliminated or dissipated. Trapped hydrogen gas that is ignited will cause an explosion.

NOISE

Noise can cause permanent hearing loss. Plasma arc processes can cause noise levels to exceed safe limits. You must protect your ears from loud noise to prevent permanent loss of hearing.

- To protect your hearing from loud noise, wear protective earplugs and/or earmuffs. Protect others in the workplace.
- Noise levels should be measured to be sure the decibels (sound) do not exceed safe levels.
- For information on how to test for noise, see item 1 in Subsection 4.1, Publications, in this manual.

ARC RAYS

Arc Rays can injure your eyes and burn your skin. The welding arc process produces very bright ultra violet and infra red light. These arc rays will damage your eyes and burn your skin if you are not properly protected.

- To protect your eyes, always wear a welding helmet or shield. Also always wear safety glasses with side shields, goggles or other protective eye wear.
- Wear welding gloves and suitable clothing to protect your skin from the arc rays and sparks.
- Keep helmet and safety glasses in good condition. Replace lenses when cracked, chipped or dirty.
- Protect others in the work area from the arc rays. Use protective booths, screens or shields.
- Use the shade of lens as recommended in the Operating Manual.

4.1 Publications

Refer to the following standards or their latest revisions for more information:

1. OSHA, SAFETY AND HEALTH STANDARDS, 29CFR 1910, obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
2. ANSI Standard Z49.1, SAFETY IN WELDING AND CUTTING, obtainable from the American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126
3. NIOSH, SAFETY AND HEALTH IN ARC WELDING AND GAS WELDING AND CUTTING, obtainable from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402
4. ANSI Standard Z87.1, SAFE PRACTICES FOR OCCUPATION AND EDUCATIONAL EYE AND FACE PROTECTION, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018
5. ANSI Standard Z41.1, STANDARD FOR MEN'S SAFETY-TOE FOOTWEAR, obtainable from the American National Standards Institute, 1430 Broadway, New York, NY 10018
6. ANSI Standard Z49.2, FIRE PREVENTION IN THE USE OF CUTTING AND WELDING PROCESSES, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018
7. AWS Standard A6.0, WELDING AND CUTTING CONTAINERS WHICH HAVE HELD COMBUSTIBLES, obtainable from American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126

8. NFPA Standard 51, OXYGEN-FUEL GAS SYSTEMS FOR WELDING, CUTTING AND ALLIED PROCESSES, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
9. NFPA Standard 70, NATIONAL ELECTRICAL CODE, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
10. NFPA Standard 51B, CUTTING AND WELDING PROCESSES, obtainable from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269
11. CGA Pamphlet P-1, SAFE HANDLING OF COMPRESSED GASES IN CYLINDERS, obtainable from the Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202
12. CSA Standard W117.2, CODE FOR SAFETY IN WELDING AND CUTTING, obtainable from the Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3
13. NWSA booklet, WELDING SAFETY BIBLIOGRAPHY obtainable from the National Welding Supply Association, 1900 Arch Street, Philadelphia, PA 19103
14. American Welding Society Standard AWSF4.1, RECOMMENDED SAFE PRACTICES FOR THE PREPARATION FOR WELDING AND CUTTING OF CONTAINERS AND PIPING THAT HAVE HELD HAZARDOUS SUBSTANCES, obtainable from the American Welding Society, 550 N.W. LeJeune Rd, Miami, FL 33126
15. ANSI Standard Z88.2, PRACTICE FOR RESPIRATORY PROTECTION, obtainable from American National Standards Institute, 1430 Broadway, New York, NY 10018

5. Electromagnetic Compatibility

WARNING

Extra precautions for Electromagnetic Compatibility may be required when this welding power source is used in a domestic situation.

5.1 Installation and use - Users Responsibility

The user is responsible for installing and using the welding equipment according to the manufacturer's instructions. If electromagnetic disturbances are detected then it shall be the responsibility of the user of the welding equipment to resolve the situation with the technical assistance of the manufacturer. In some cases this remedial action may be as simple as earthing the welding circuit. In other cases it could involve constructing an electromagnetic screen enclosing the welding power source and the work, complete with associated input filters. In all cases, electromagnetic disturbances shall be reduced to the point where they are no longer troublesome.

NOTE 1

The welding circuit may or may not be earthed for safety reasons. Changing the earthing arrangements should only be authorised by a person who is competent to assess whether the changes will increase the risk of injury, e.g. by allowing parallel welding current return paths which may damage the earth circuits of other equipment. Further guidance is given in IEC 974-13 Arc Welding Equipment - Installation and use (under preparation).

5.2 Assessment of Area

Before installing welding equipment, the user shall make an assessment of potential electromagnetic problems in the surrounding area. The following shall be taken into account

i) Other supply cables, control cables, signalling and telephone cables; above, below and adjacent to the welding equipment.

ii) Radio and television transmitters and receivers.

iii) Computer and other control equipment.

iv) Safety critical equipment, e.g. guarding of industrial equipment.

v) The health of people around, e.g. the use of pacemakers and hearing aids.

vi) Equipment used for calibration and measurement.

vii) The immunity of other equipment in the environment: the user shall ensure that other equipment being used in the environment is compatible: this may require additional protection measures.

viii) The time of day that welding or other activities are to be carried out.

The size of the surrounding area to be considered will depend on the structure of the building and other activities that are taking place. The surrounding area may extend beyond the boundaries of the premises.

6. Electromagnetic Compatibility - Methods Of Reducing Emissions

6.1 Mains Supply

Welding equipment should be connected to the mains supply according to the manufacturer's recommendations. If interference occurs, it may be necessary to take additional precautions such as filtering of the mains supply. Consideration should be given to shielding the supply cable of permanently installed welding equipment in metallic conduit or equivalent. Shielding should be electrically continuous throughout its length. The shielding should be connected to the welding power source so that good electrical contact is maintained between the conduit and the welding power source enclosure.

6.2 Maintenance of Welding Equipment

The welding equipment should be routinely maintained according to the manufacturer's recommendations. All access and service doors and covers should be closed and properly fastened when the welding equipment is in operation. The welding equipment should not be modified in any way except for those changes and adjustments covered in the manufacturer's instructions. In particular, the spark gaps of arc striking and stabilising devices should be adjusted and maintained according to the manufacturer's recommendations.

6.3 Welding Cables

The welding cables should be kept as short as possible and should be positioned close together, running at or close to the floor level.

6.4 Equipotential Bonding

Bonding of all metallic components in the welding installation and adjacent to it should be considered. However, Metallic components bonded to the work piece will increase the risk that the operator could receive a shock by touching the metallic components and the electrode at the same time. The operator should be insulated from all such bonded metallic components.

6.5 Earthing of the Workpiece

Where the workpiece is not bonded to earth for electrical safety, nor connected to earth because of it's size and position, e.g. ship's hull or building steelwork, a connection bonding the workpiece to earth may reduce emissions in some, but not all instances. Care should be taken to prevent the earthing of the workpiece increasing the risk of injury to users, or damage to other electrical equipment. Where necessary, the connection of the workpiece to earth should be made by direct connection to the workpiece, but in some countries where direct connection is not permitted, the bonding should be achieved by suitable capacitance, selected according to national regulations.

6.6 Screening and Shielding

Selective screening and shielding of other cables and equipment in the surrounding area may alleviate problems of interference. Screening the entire welding installation may be considered for special applications.

7. General Information

The TRANSMIG 220/250 compact and remote are semi-automatic Gas Metal Arc Welders (GMAW-commonly MIG) with either integrated or separate wire feed unit. The Power Sources are designed to meet the broad operating needs of the metal fabrication industry where production efficiency is vital. They are designed in Australia to Australian Standard AS1966.1.

The TRANSMIG 220/250 gives excellent performance on mild steel, stainless steel, aluminium, silicon bronze and some hard facing wires with Argon based shielding gases. The Power Sources also give good results on mild steel using Carbon Dioxide shielding gas.

The TRANSMIG 220/250 is supplied as a complete package ready to weld (apart from shielding gas, electrode wire and Hiderok ™ welding helmet). The following instructions detail how to correctly set up the machine and give guidelines on gaining the best production efficiency from the Power Source. Please read these instructions thoroughly before using your TRANSMIG 220/250 welder.

7.1 User Responsibility

This equipment will perform as per the information contained herein when installed, operated, maintained and repaired in accordance with the instructions provided. This equipment must be checked periodically. Defective equipment (including welding leads) should not be used. Parts that are broken, missing, plainly worn, distorted or contaminated, should be replaced immediately. Should such repairs or replacements become necessary, it is recommended that such repairs be carried out by appropriately qualified persons approved by CIGWELD. Advice in this regard can be obtained by contacting CIGWELD.

This equipment or any of its parts should not be altered from standard specification without prior written approval of CIGWELD. The user of this equipment shall have the sole responsibility for any malfunction which results from improper use or unauthorised modification from standard specification, faulty maintenance, damage or improper repair by anyone other than appropriately qualified persons approved by CIGWELD.

7.2 Duty Cycle

Duty Cycle is the amount of arc-on time (actual welding or cutting time) during any 10 minute period that a machine can operate at it's rated output without damaging internal components. For example, the Transmig 250 is designed for 30% duty cycle at 250 amps. This means that it has been designed and built to provide the rated amperage, 250 amps, for 3 minute out of every 10 minute period. During the other 7 minutes of the 10 minute period the Transmig 250 must idle and be allowed to cool. The thermal cutout will operate if the duty cycle is exceeded. Note that all duty cycles are calculated for a maximum ambient temperature of 40°C as per AS1966. Duty cycles must be reduced, ie reduce the arc-on time, when the ambient temperature exceeds 40°C.

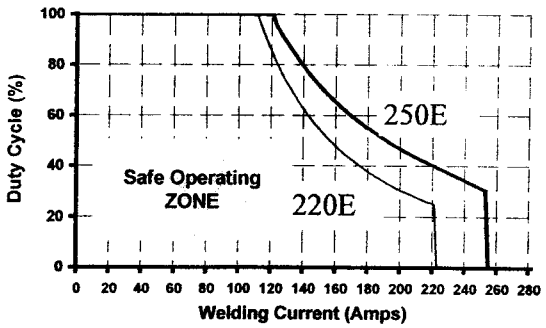


Figure 3 – TRANSMIG duty cycle curves

7.3 Terms Of Warranty – June 2004

1. The Trade Practices Act 1974 (Commonwealth) and similar State Territory legislation relating to the supply of goods and services, protects consumers' interests by ensuring that consumers are entitled in certain situations to the benefit of various conditions, warranties, guarantees, rights and remedies (including warranties as to merchantability and fitness for purpose) associated with the supply of goods and services. A consumer should seek legal advice as to the nature and extent of these protected interests. In some circumstances, the supplier of goods and services may legally stipulate that the said conditions, warranties, guarantees, rights and remedies are limited or entirely excluded. The warranties set out in Clause 2 shall be additional to any non-excludable warranties to which the Customer may be entitled pursuant to any statute.

2. Subject to Clause 3. CIGWELD gives the following warranties to the Customer:

   Insofar as they are manufactured or imported by CIGWELD, goods will upon delivery be of merchantable quality and reasonably fit for the purpose for which they are supplied by CIGWELD.

   CIGWELD will repair or, at its option, replace those of the goods which, upon examination, are found by CIGWELD to be defective in workmanship and/or materials.

   CIGWELD reserves the right to request documented evidence of date of purchase.

3. The Warranty in Clause 2;

   Is conditional upon:

   The Customer notifying CIGWELD or our Accredited Distributor in writing of its claim within seven (7) days of becoming aware of the basis thereof, and at its own expense returning the goods which are the subject of the claim to CIGWELD or nominated Accredited Distributor/Accredited Service Agent.

   The goods being used in accordance with the Manufacturer's Operating Manuals, and under competent supervision.

   Does not apply to:

   Obsolete goods sold at auction, second-hand goods and prototype goods.

   Breakdown or malfunction caused by accident, misuse or normal wear and tear.

   Repairs or replacement made other than by CIGWELD or Accredited Service Agents, unless by prior arrangement with CIGWELD.

   Replacement parts or accessories which may affect product safety or performance and which are not manufactured, distributed or approved by CIGWELD.

4. CIGWELD declares that, to the extent permitted by law, it hereby limits its liability in respect of the supply of goods which are not of a kind ordinarily acquired for personal, domestic or household use or consumption to any one or more of the following (the choice of which shall be at the option of CIGWELD).

   The replacement of the goods or the supply of equivalent goods.

   The repair of goods.

   The payment of cost of replacing the goods or acquiring equivalent goods.

   The payment of the cost of having goods repaired.

5. Except as provided in Clauses 2 to 4 above, to the extent permitted by statute, CIGWELD hereby excludes all liability for any loss, damage, death or injury of any kind whatsoever occasioned to the Customer in respect of the supply of goods including direct, indirect, consequential or incidental loss, damage or injury of any kind.

7.4 Transmig 220/250 Warranty Schedule - June 2004

These warranty periods relate to the warranty conditions in clause 2. All warranty periods are from date of sale from the Accredited Distributor of the equipment. Notwithstanding the foregoing, in no event shall the warranty period extend more than the time stated plus one year from the date CIGWELD delivered the product to the Accredited Distributor. Unless otherwise stated the warranty period includes parts and labour.

CIGWELD reserves the right to request documented evidence of date of purchase.

GMAW EQUIPMENT	WARRANTY PERIOD
Transmig 220/250	
Main Welding Transformer and Inductor (Power Magnetics)	3 years
Original Main Power Rectifiers, Control P.C. Boards	3 years
All other circuits and components including, but not limited to, relays, switches, contactors, solenoids, fans, power switch semi-conductors	1 year
250A MIG Torch	3 months
Mig Torch Consumable Items	NIL

Please note that the information detailed in this statement supersedes any prior published data produced by CIGWELD.

WARNING

For the purpose of safety and performance and to protect your CIGWELD Equipment Warranty always use genuine CIGWELD replacement parts and accessories.

8. Safe Practices For The Use Of Welding Equipment

In many situations the "striking" voltage can be hazardous. Any person touching simultaneously the electrode lead/terminal and the work lead/terminal may receive a serious electrical shock. Additional precautions must be exercised where two Welding Power Sources are being used close to each other because, under certain conditions, the voltages between the welding terminals of the two Welding Power Sources could be two times the specified open circuit voltage.

It is essential that the Welding Power Source be correctly installed, if necessary, by a qualified electrician and maintained in sound mechanical and electrical condition. It is also important that the Welding Power Source be switched off when not in use.

8.1 Precautions to be Taken by Operators

- Whenever practicable, all parts of the welding circuit should be isolated from earth and other conducting material and under no circumstances should any earthing conductor of the electrical installation be used in place of the work lead.
- The Mains supply voltage should be switched off before connecting or disconnecting welding leads. Welding lead connections must have clean contact surfaces and must be securely tightened. Poor connections will result in overheating and loss of welding current. All parts of the welding circuit, including the return paths, are to be considered electrically alive, so the operator must ensure that no part of the body is placed in such a position that it will provide a path for an electric current.
- Welding operators should avoid direct contact with the work to be welded or against any metal in contact with the work. When this cannot be avoided the operator must not touch any exposed portion of the MIG Torch with any part of the body. Should this occur, the operator will risk completing the electrical circuit through the body.
- When welding in confined spaces, where reasonable movement is restricted, particular care must be taken to ensure that the area is well ventilated and the operator is under

constant observation by a person who can immediately switch off the power and give assistance in an emergency.

- During pauses between welding runs, MIG Torch should be so placed that they cannot make electrical contact with persons or conductive objects.
- The welding leads, both the MIG Torch lead and the work lead, must be protected from damage. Damaged leads must not be used.
- Keep combustible materials away from the welding area. Have a suitable fire extinguisher handy.
- Do not stand on damp ground when welding.

8.2 Personal Protection

The radiation from an electric arc during the welding process can seriously harm eyes and skin. It is essential that the following precautions be taken:

- Gloves should be flameproof gauntlet type to protect hands and wrists from heat burns and harmful radiations. They should be kept dry and in good repair.
- Protective clothing must protect the operator from burns, spatter and harmful radiation. Woollen clothing is preferable to cotton because of its greater flame resistance. Clothing should be free from oil or grease. Wear leggings and spats to protect the lower portion of the legs and to prevent slag and molten metal from falling into boots or shoes.
- Face Shield, It is recommended to use a welding face shield, conforming to the relevant standards, when electric arc welding. Use a welding face shield in serviceable condition and fitted with an eye filter lens to safely reduce harmful radiation from the arc as described in Table 2.

Description of Process	Approximate Range of Welding Current Amperes	Filters Recommended Shade Number
GMAW / FCAW	Up to 149	10
GMAW / FCAW	150 – 249	11
GMAW / FCAW	250-300	12

Table 2 – Filter lens size verses welding current

Protective filter lenses are provided to reduce the intensity of radiation entering the eye thus filtering out harmful infra-red, ultra-violet radiation and a percentage of the visible light. Such filter lenses are incorporated within face shields. To prevent damage to the filter lenses from molten or hard particles an additional hard clear glass or special clear external cover lens is provided. This cover lens should always be kept in place and replaced before the damage impairs your vision while welding.

9. Resuscitation For Electric Shock Victims

Electric shock may kill immediately. Early resuscitation is required if a life is to be saved. Every Second Counts! Electrical currents may:

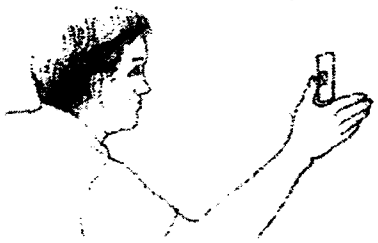
- Stop the heart;
- Cause contraction of the muscles of the body;
- Paralyse breathing due to paralysis of the centre of respiration in the brain;
- Cause burns.

The victims often cannot free themselves from the current and may not be able to breathe due to fixation of the chest.

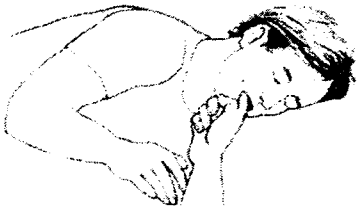
9.1 Resuscitation

Efficient resuscitation requires training, which is available from the St John Ambulance Association, Red Cross and other sources.

1 Don't become a victim. Switch off power if possible. If not, remove victim from contact, using some insulating material.



2 If unconscious, place victim on their side and clear vomit and other foreign matter from mouth. Check for breathing by look, listen and feel. If not breathing, commence expired air resuscitation (E.A.R.). This should take no longer than 3 or 4 seconds.



3 Place victim flat on their back on a hard surface, open airway - using head tilt and jaw support as shown.

4 Begin artificial breathing - 5 full breaths in 10 seconds, sealing nostrils with cheek or holding nose closed.

5 Check carotid pulse in neck. If pulse is present, continue E.A.R.
15 breaths per minute for adults.
20 breaths per minute for children.

6 If pulse is absent and you have been trained, begin cardio pulmonary resuscitation (C.P.R).
Cardiac Compression - depress lower end of breast bone (sternum) 4cm to 5cm, less for small children.
<u>One rescuer</u> - 2 breaths, 15 compressions in 15 seconds, ie. 4 cycles per minute.
<u>Two rescuers</u> - 1 breath, 5 compressions in 5 seconds, ie. 12 cycles per minute.

7 Check for return of pulse and breathing after 1 minute and at least every 2 minutes. Continue uninterrupted until trained assistance is available. When breathing and pulse return, turn on side and continue observation.

10. Specifications

10.1 MIG Torch Specifications

Torch Part Number	T161558367
Torch Rating & Consumables	TWECO 250A (Eliminator Consumables)
Torch Cable Length	3.6 metres

10.2 Wire Drive Specifications

Motor Supply Voltage	12V DC	
Minimum Wire Speed	1m per minute	
Maximum Wire Speed	20m per minute	
Wire Diameter	Mild Steel: Stainless Steel: Aluminium: Flux Cored:	0.6mm (.024"), 0.8mm (.030"), 0.9mm (.035") 0.6mm (.024"), 0.8mm (.030"), 0.9mm (.035") 0.9mm (.035"), 1.0mm (.040"), 1.2mm (.045") 0.8mm (.030"), 0.9mm (.035"), 1.2mm (.045")
Wire Spool Size	15kg Maximum	
Burnback Time Range	0 to 0.5 Seconds	

10.3 Plant Contents

Description	TRANSMIG 220 Compact	TRANSMIG 250 Compact / Remote	
Transmig 220/250 Power Source	Compact	Compact	Remote
Wirefeeder 2R	-	-	✓
250 Mig Torch	✓	✓	✓
Regulator / Flowmeter	✓	✓	✓
3 Metre Lead	✓	✓	-
8 Metre Lead	-	-	✓
Tray Cylinder/Wheel Assembly	✓	✓	✓
Euro Connector	✓	✓	✓
Operating Manual	✓	✓	✓
Feed Roller 0.6/0.8 Hard (fitted)	✓	✓	✓

10.4 Machine Specifications

Description (Refer NOTE 2)	TRANSMIG 220 Compact	TRANSMIG 250 Compact	TRANSMIG 250 Remote
Plant Assembly	710001	710007	710002
Plant Mass	87kg	91kg	107kg
Plant Dimensions (including wheels and cylinder carrier)	H 1000mm x W 430mm x D 880mm		
Power Source	706668	706686	706684
Power Source Mass	83kg	86kg	82kg
Power Source Dimensions (including wheels and cylinder carrier)	H 760mm x W 355mm x L 850mm		
Wirefeeder	NA	NA	706685
Wirefeeder Mass	NA	NA	18kg
Wirefeeder Dimensions	NA	NA	H 255mm x W 230mm x L 420mm

	TRANSMIG 220		TRANSMIG 250	
Primary input voltage	**220V**	**240V**	**220V**	**240V**
Number of Phases	1Ø			
Frequency	50/60 Hz			
Rated Input Current	22.4A	20.5A	28A	27A
Rated kVA @ 100% Duty Cycle	3.6 kVA	3.6 kVA	7.3 kVA	7.3 kVA
Maximum Input Current	∇ 44.5 A	∇ 41.0 A	∇ 51A	∇ 49 A
Generator Requirements	♣ 10 kVA	♣ 10 kVA	♣ 12 kVA	♣ 12 kVA
Supply VA @ no load	970 VA	1120 VA	970 VA	1120 VA
Supply VA @ max. output	9.8 kVA	9.8 kVA	12.2kVA	11.7 kVA
Power Factor @ max. output	.85	.86	.85	.86
Open Circuit Voltage Range	18 to 40V	18 to 40V	18 to 42V	18 to 42V
Output Current Range	30 to 220A	30 to 220A	30 to 250A	30 to 250A
Duty Cycle Period	10 minutes			
Number of Output Voltage Values	16			
240V Mains Circuit to suit factory fitted 15 amp Plug & Lead				
Minimum 240V Mains Circuit to suit factory fitted 15 amp Plug & Lead (Weld Current @ Duty Cycle)	✦ 15A (110A@100%)	✦ 15A (110A@100%)	✦ 15A (110A@100%)	✦ 15A (110A@100%)
Maximum 240V Mains Circuit to suit factory fitted 15 amp Plug & Lead (Weld Current @ Duty Cycle)	✦ 15A (160A@40%)	✦ 15A (160A@40%)	✦ 15A (190A@23%)	✦ 15A (190A@23%)
For 240V Mains Circuit to achieve the maximum rated weld current, refer to section 11.5 on page 19.				
Minimum 240V Mains Circuit to achieve the rated weld current (Weld Current @ Duty Cycle)	✦ 20A (✪110A@100%)	✦ 20A (✪110A@100%)	✦ 35A (✪137A@100%)	✦ 35A (✪137A@100%)
Maximum 240V Mains Circuit to achieve the maximum rated weld current.(Weld Current @ Duty Cycle)	✦ 44A (✪220A@25%)	✦ 40A (✪220A@25%)	✦ 51A (✪250A@30%)	✦ 49A (✪250A@30%)
Wire Size Range	0.6mm (.024") - 0.9mm (.035") Hard wire 0.6mm (.024") - 1.2mm (.045") Hard wire 0.9mm (.035") - 1.2mm (.045") Soft wire 0.8mm (.030") - 1.2mm (.045") Fluxcored wire			

∇ The Rated Input Current should be used for the determination of cable size & supply requirements.

✦ Motor start fuses or thermal circuit breakers are recommended for this application. Check local requirements for your situation in this regard.

♣ Generator Requirements at the Maximum Output Duty Cycle.

✪ To achieve these ratings, the 15 Amp plug and lead (as supplied) must be replaced with a larger plug and lead. Refer to section 11.5 on page 19. This must be carried out by a qualified electrical tradesperson.

NOTE 2

Due to variations that 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, applications, maintenance and service.

10.5 Optional Accessories

Part Number	Description	TRANSMIG 220 Compact	TRANSMIG 250 Compact / Remote	
706744	Digital Meter Kit	✓	✓	✓
T161558367	250A TWE2 Euro torch	✓	✓	✓
T161565367	400A TWE4 Euro torch	✓	✓	✓
705948	15kg Spool Cover Kit. (Wirefeeder only)	-	-	✓
704829	Work lead 8M	-	-	✓
700638	Work lead 3M	✓	✓	✓
704915	Tweco No. 2 & 4 MIG gun adaptor kit	✓	✓	✓
7977036	Feed roll, 0.6/0.8 Hard Wire	✓	✓	✓
7977660	Feed roll, 0.9/1.2 Hard Wire	✓	✓	✓
7977731	Feed roll, 0.8/0.9 Soft Wire	✓	✓	✓
7977264	Feed roll, 0.9/1.2 Soft Wire	✓	✓	✓
7977732	Feed roll, 0.8/0.9 Flux cored	✓	✓	✓
704277	Feed roll, 1.0/1.2 - 1.4/1.6 Flux cored	✓	✓	✓

11. Installation Recommendations

11.1 Environment

The TRANSMIG 220/250 is NOT designed for use in environments with increased hazard of electric shock.

a) Examples of environments with increased hazard of electric shock are -
   i) In locations in which freedom of movement is restricted, so that the operator is forced to perform the work in a cramped (kneeling, sitting or lying) position with physical contact with conductive parts;
   ii) In locations which are fully or partially limited by conductive elements, and in which there is a high risk of unavoidable or accidental contact by the operator, or
   iii) In wet or damp hot locations where humidity or perspiration considerable reduces the skin resistance of the human body and the insulation properties of accessories.

b) Environments with increased hazard of electric shock do not include places where electrically conductive parts in the near vicinity of the operator, which can cause increased hazard, have been insulated.

11.2 Location

Be sure to locate the Power Source according to the following guidelines:

a) In areas, free from moisture and dust.
b) In areas, free from oil, steam and corrosive gases.
c) In areas, not subjected to abnormal vibration or shock.
d) In areas, not exposed to direct sunlight or rain.
e) In areas, with an ambient temperature of between -10 °C and 40 °C
f) Place at a distance of 30cm or more from walls or similar that could restrict natural airflow for cooling.
g) The minimum ground clearance for these products is 80mm

11.3 Ventilation

Since the inhalation of welding fumes can be harmful, ensure that the welding area is effectively ventilated.

11.4 Mains Supply Voltage Requirements

The Mains supply voltage should be within ± 10% of the rated Mains supply voltage. Too low a voltage may cause poor welding performance or the wirefeeder malfunction. Too high a supply voltage will cause components to overheat and possibly fail.

11.5 Mains Current Circuit Requirements For Maximum Weld Current

The Welding Power Source must be:

- Correctly installed, if necessary, by a qualified electrician.
- Correctly earthed (electrically) in accordance with local regulations.
- Connected to the correct size Mains Current Circuit as per the Table 3.

The following Mains Current Circuit recommendations are required to obtain the maximum welding current and duty cycle from these welding products:

Model	Welder Supply plug and Lead Size	Mains Supply Lead Size	Minimum Mains Current Circuit Size	Mains Supply Voltage Setting	Weld Current & Duty Cycle
Transmig 220	20 Amps/ 2.5mm^2	10 mm^2	42 Amps	240V	220A @ 25%
	20 Amps/ 2.5mm^2	10 mm^2	45 Amps	220V	
Transmig 250	35 Amps/ 6mm^2	10 mm^2	49 Amps	240V	250A @ 30%
	35 Amps/ 6mm^2	10 mm^2	51 Amps	220V	

Table 3 – Mains Current Circuit sizes to achieve maximum weld current

WARNING 1

CIGWELD advises that this equipment be electrically connected by a qualified electrical trades-person.

WARNING 2

The TRANSMIG Mains supply leads should be replaced with leads as specified in section 11.5 when the TRANSMIG'S Mains supply voltage is changed.

11.6 Alternative Mains Supply Voltages

The TRANSMIG 220/250 can be rewired to operate on Mains supply voltage of 220V.

WARNING 3

CIGWELD advises that a qualified electrical tradesperson rewire your TRANSMIG 220/250 for 220V operation.

a) Disconnect the TRANSMIG 220/250 from the Mains supply.

b) Refer to Figure 4 for Input Supply lead termination.

c) The TRANSMIG 220/250 is now ready for operation on 220V Mains supply.

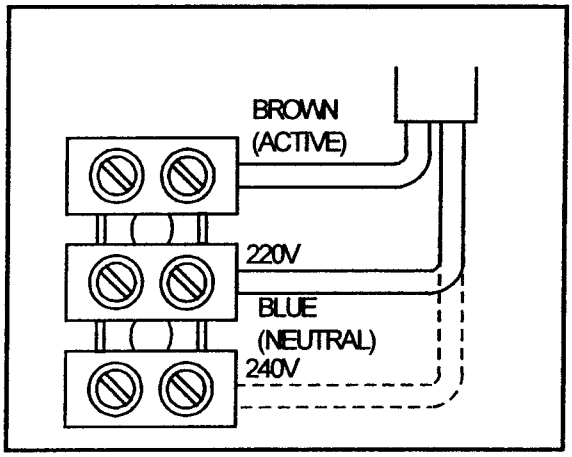


Figure 4 – Mains Supply Lead Termination

12. Set Up For Compact Transmig

a) Remove all packaging materials.

b) Fit wheels as per procedure on page 1.

CAUTION 1

To obtain adequate air flow and cooling for the Power Source components, the four wheels must be fitted. Alternatively, the Power Source may be raised 80mm from the floor using supports that do not restrict airflow.

c) Connect the work lead to the negative (–) socket (positive + for Flux Cored Wire)

d) Connect the *TORCH* lead to the positive (+) socket (negative – for Flux Cored Wire)

e) Position a gas cylinder on the rear tray and lock securely to the Power Source cylinder bracket with the chain provided. If this arrangement is not used then ensure that the gas cylinder is secured to a building pillar, wall bracket or otherwise securely fixed in an upright position.

f) Fit the gas Regulator/Flowmeter to the gas cylinder.

g) Connect the gas hose from the rear of the Power Source to the Flowmeter outlet.

h) The Duel groove feed roller is supplied as standard with the Power Source. Position the roller with the chosen wire size marking facing outwards.

i) Fit the electrode wire spool to the wire reel hub located behind the electrode wire compartment door. Ensure that the drive dog-pin engages the mating hole in the wire spool. Push the 'R' clip into place to retain the wire spool securely. The wire should feed from the bottom of the spool.

j) Fit the MIG Torch TWE2 Euro Connection to the Wirefeeder by pushing the torch connector into the brass torch adaptor and screwing the plastic torch nut clockwise. Remove the contact tip from the torch handset.

k) Lift up the wire feeder pressure lever and pass the electrode wire through the inlet guide, between the rollers, through the outlet guide and into the torch.

l) Lower the pressure lever and with the torch lead reasonably straight, feed the wire through the torch. Fit the appropriate contact tip.

WARNING 4

The electrode wire will be at welding voltage potential whilst it is being fed through the system.

13. Set Up For Remote Transmig

a) Remove all packaging materials.

b) Fit wheels as per procedure on page 1.

CAUTION 2

To obtain adequate air flow and cooling for the Power Source components, the four wheels must be fitted. Alternatively, the Power Source may be raised 80mm from the floor using supports that do not restrict airflow.

c) Connect the work lead to the negative (–) socket (positive (+) for Flux Cored Wire)

d) Connect the *WIREFEEDER* lead to the positive (+) socket (negative (–) for Flux Cored Wire)

f) MIG Torch

i) Tweco Eliminator MIG Torch Connection

Fit the Tweco Eliminator MIG torch to the wirefeed unit by releasing the torch locking screw in the brass torch adaptor and pushing in the torch fitting until the plastic torch casing meets the brass adaptor. Tighten the torch locking screw securely. Also ensure that the adjacent black knurled screw in the Wirefeeder casting is securely tightened. Remove the contact tip from the torch. Connect the torch trigger lead to the torch trigger terminals.

ii) Euro Connection

Fit the MIG Torch to the Wirefeeder by pushing the torch connector into the brass torch adaptor and screwing the plastic torch nut clockwise to secure the torch to the torch adaptor. Remove the contact tip from the torch handset.

g) Lift up the wire feeder pressure lever and pass the electrode wire through the inlet guide, between the rollers, through the outlet guide and into the MIG torch.

h) Lower the pressure lever and with the torch lead reasonably straight, feed the electrode wire through the torch. Fit the appropriate contact tip, eg a 0.9 mm tip for 0.9mm wire.

WARNING

The electrode wire will be at welding voltage potential whilst it is being fed through the wirefeeder system.

14.3 Handle

The Wirefeeder is shipped with the handle disassembled.

Fit the Handle as shown using the M10 bolts, washers, spring washers and nuts provided. (The handle should point towards the front of the wirefeeder).

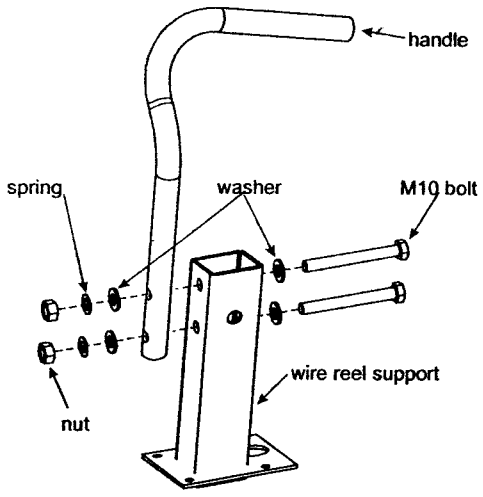


Figure 6 – Handle assembly

14.4 Power Source Compatibility

The Wirefeeder is only compatible with the TRANSMIG 250R.

14.5 Drive Roller Pressure Adjustment

The moveable rollers apply pressure to the grooved feed rollers via a scaled adjustable tension screw. These devices should be adjusted to a minimum pressure that will provide satisfactory WIREFEED without slippage. If slipping occurs, and inspection of the wire contact tip reveals no wear, distortion or burn back jam, the conduit liner should be checked for kinks and clogging by metal flakes and swarf. If it is not the cause of slipping, the feedroll pressures can be increased by rotating the scaled tension screws clockwise. The use of excessive pressure may cause rapid wear of the feed rollers, shafts and bearing.

14.6 Wire Reel Brake

The wire reel hub incorporates a friction brake, which is adjusted during manufacture for optimum breaking. If it is considered necessary, adjustment can be made by turning the large nut inside the open end of the hub clockwise to tighten the brake. Correct adjustment will result in the wire reel circumference continuing no further than 20mm after release of the trigger. The electrode wire should be slack without becoming dislodged from wire spool

CAUTION

Overtension of brake will cause rapid wear of mechanical WIREFEED parts, overheating of electrical componentry and possibly an increased incidence of electrode wire Burnback into contact tip.

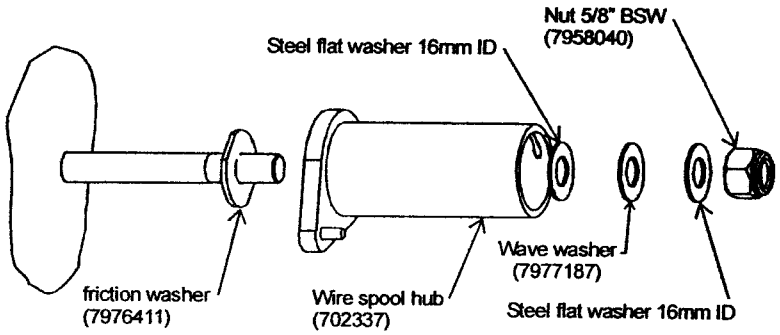


Figure 7 – Standard 300mm spool set-up

15. Power Source Controls, Indicators And Features

15.1 Power Source Controls, Indicators And Features

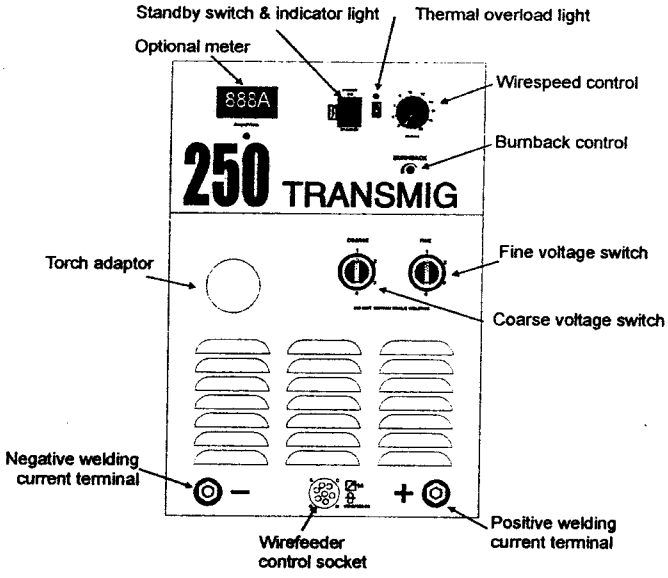


Figure 8 – Compact TRANSMIG controls

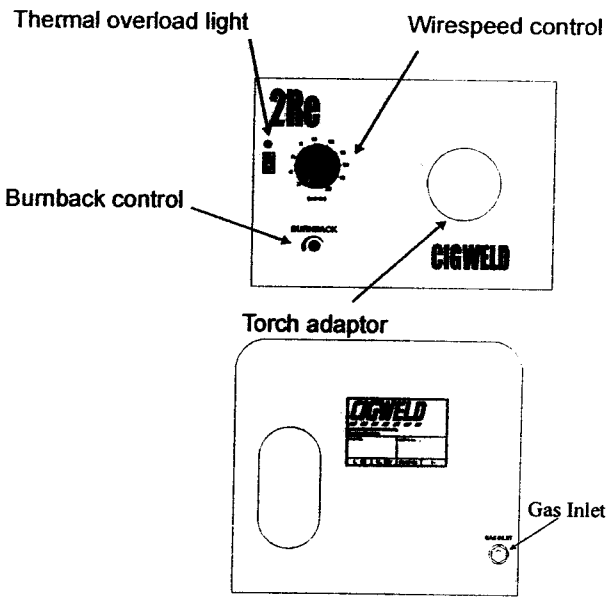


Figure 9 – Wirefeeder controls (remote model)

15.2 Wirespeed Control

The Wirespeed Control knob controls the welding current via the electrode wire feed rate. ie the speed of the wire feed motor.

e) Position a gas cylinder on the rear tray and lock securely to the Power Source cylinder bracket with the chain provided. If this arrangement is not used then ensure that the gas cylinder is secured to a building pillar, wall bracket or otherwise securely fixed in an upright position.
Fix the cable stowage hook to the Power Source cylinder bracket with the bolts provided

f) Fit the gas Regulator/Flowmeter to the gas cylinder.

g) Connect the gas hose from the rear of the wirefeeder to the Flowmeter outlet.

h) Set up the wirefeeder as specified in the wirefeeder operating manual.

WARNING 5

The electrode wire will be at welding voltage potential whilst it is being fed through the wirefeeder system.

14. Setup For The Transmig Wirefeeder

14.1 Power Source Connections

a) Remove all packaging materials.

b) Connect the work lead to the negative welding terminal (–) [positive welding terminal (+) for flux cored electrode wire]. If in doubt, consult the electrode wire manufacturer.

c) Position a gas cylinder on the rear tray of the Power Source and lock securely to the Power Source cylinder bracket with the chain provided. If this arrangement is not used or the Power Source is not fitted with a gas cylinder tray then ensure that the gas cylinder is secured to a building pillar, wall bracket or otherwise securely fixed in an upright position.

14.2 Wirefeeder Connections

a) Connect the welding power cable from the Wirefeeder's interconnection cables to the positive welding terminal (+) [negative welding terminal (–) for flux cored electrode wire]. If in doubt, consult the electrode wire manufacturer.

b) Connect the control cable from the Wirefeeder to the socket on the Power Source.

c) Fit the gas regulator and flowmeter to the gas cylinder then connect the gas hose from the rear of the Wirefeeder to the Flowmeter outlet.

d) Dual groove feed rollers are supplied as standard. They can accommodate 0.6 / 0.9 diameter hard wires. Select the roller required with the chosen wire size marking facing outwards.

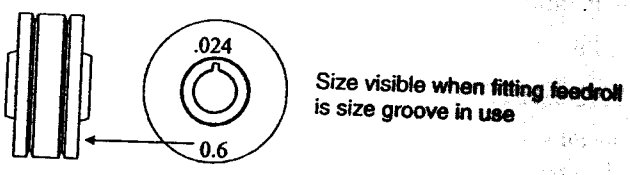


Figure 5 – Feed Roll Installation

e) Fit the electrode wire spool to the wire reel hub. Ensure that the drive dog-pin engages the mating hole in the wire spool. Push the 'R' clip into place to retain the wire spool securely. The electrode wire should feed from the bottom of the spool.

15.3 Standby switch with in-built Indicator Light

The indicator light is provided to indicate when the TRANSMIG 220/250 is connected to the Mains Supply voltage.

With the switch in the *STANDBY* position, the auxiliary power and the fan are turned off.

WARNING 6

When the light is lit, the machine is connected to the Mains supply voltage and the internal electrical components are at Mains voltage potential.

15.4 Coarse Voltage Control Switch and Fine Voltage Control Switch

The Coarse Voltage Control sets the voltage level to the welding terminals as it is rotated in the clockwise direction. The Fine Voltage Control switch increases the voltage (in smaller increments than the Coarse switch) as it is rotated in the clockwise direction.

CAUTION 3

The Coarse & Fine Voltage Control switches MUST NOT BE SWITCHED during the welding process.

15.5 Torch Polarity Lead

This lead selects the welding voltage polarity of the electrode wire. Plug it into the positive welding terminal (+) when using steel, stainless steel or aluminium electrode wire. Plug the Torch Polarity Lead into the negative welding terminal (–) when using gasless electrode wire. If in doubt, consult the manufacturer of the electrode wire for the correct polarity.

15.6 Digital Ammeter and Voltmeter (Optional)

Where fitted an average reading ammeter and voltmeter is provided to allow accurate monitoring (5% tolerance) of welding current and voltmeter to facilitates precise welding condition adjustment.

Value displayed for 157 Amp Value displayed for 21.9 Volts

Figure 10 – Examples of the digital read outs

The Digital Meter will display both welding current and voltage. To toggle between the current and voltage readings depress the push button switch mounted below the meters display. See Figure 10 for an example of current and voltage display.

The Digital Meter will hold the last reading at completion of welding for 10 seconds to allow for easy operator set up.

15.7 Wirefeeder Control Socket (Remote models only)

The WIRE FEEDER 7 pin receptacle is used to connect the 2R wire feeder to the welding power source circuit. Power Source trigger is between pins 1 and 2.

To connect, align keyway, insert plug, from wire feeder interconnection cable, and rotate threaded collar clockwise to lock the plug into place. The socket pin configuration is detailed below (looking onto the front of the socket on the Power Source).

Socket Pin	Function
1	24VAC Solenoid
2	24VAC Common
3	Thermal Overload
4	Thermal Overload
5	24 VAC
6	-ve Welding Voltage
7	+ve Welding Voltage

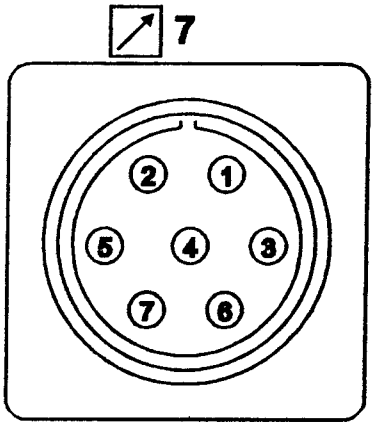


Figure 11 – Wirefeeder 7 pin receptacle

15.8 Thermal Overload

The critical component for thermal protection is the rectifier stack, which is fitted with a thermal overload cut out device. If the overload operates then the machine should be left to cool for approximately 15 minutes before resuming welding.

The thermal overload will not operate and there will be no danger of transformer damage if the Power Source is operated within its duty cycle, refer to section 1.5 for an explanation of duty cycle and section 7.3 for the specifications.

15.9 Burnback Control

Burnback time is the difference between the wirefeed motor stopping and switching off of the welding current. The Burnback time allows the electrode wire to burn out of the molten metal weld pool. The Burnback time is factory set for optimum performance.

Burnback time is adjusted by placing a flat bladed screwdriver into the Burnback adjustment access hole and adjusting the trim potentiometer. Clockwise adjustment increases Burnback time.

15.10 Wirefeeder Drive Roller Pressure Adjustment

The moveable roller applies pressure to the grooved roller via screw adjustable spring pressure. The adjustable spring screw should be adjusted to a minimum pressure that will provide satisfactory wire feed without slippage. If slipping occurs, and inspection of the wire contact tip reveals no wear, distortion or burn-back jam, the conduit liner should be checked for kinks and clogging by metal flakes and swarf. If this is not the cause of slipping, the feed roller pressure can be increased by rotating the adjustable spring screw clockwise. The use of excessive pressure may cause rapid wear of the feed roller, motor shaft and motor bearings.

15.11 Wire Reel Brake

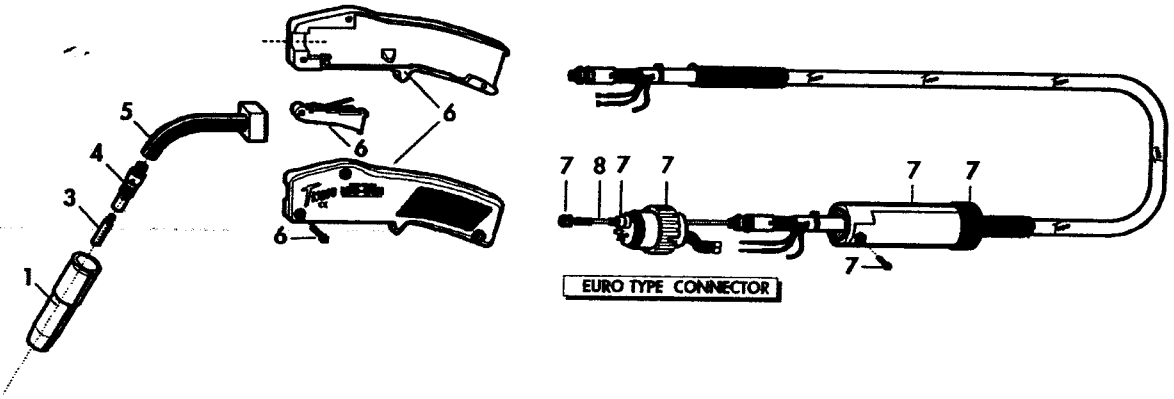
The wire reel hub incorporates a friction brake, which is adjusted during manufacture for optimum braking. If it is considered necessary, adjustment can be made by turning the large nut inside the open end of the wire reel hub. Clockwise rotation will tighten the brake. Correct adjustment will result in the wire reel circumference continuing no further than 20mm after release of the Torch trigger switch. The wire should be slack without becoming dislodged from the reel.

CAUTION 4

Excessive tension on the brake will cause rapid wear of mechanical wire feed parts, overheating of electrical componentry1 and possibly an increased incidence of wire Burnback into the contact tip.

16. MIG Torch

16.1 Tweco MIG Torch T161558367



Item	Part No.	Description		Qty
1	—	Nozzle	(refer to Table 7)	1
3	—	Contact tip	(refer to Table 6)	1
4	—	Gas diffuser	(refer to Table 5)	1
5	T116103507	Conductor tube		1
6	717592	Handle kit		1
7	717591	Euro Back End kit		1
8	—	Conduit	(refer to Table 8)	1

Table 4 – MIG Torch components for T161558367

16.2 Torch Consumable Parts For T161558367 & 717578

NOTE 4

** denotes parts that are supplied as standard with TWECO torches*

a) Gas Diffusers

Part No.
* EL52 (slide on nozzles)

Part No.
EL52CT (screw on nozzles)

Table 5 – MIG torch gas diffusers

b) Contact Tips

STANDARD

Wire Size	Part No.
0.6mm (.024")	Not available
0.8mm (.030")	EL1630
0.9mm (.035")	* EL1635
1.0mm (.040")	EL1640
1.2mm (.045")	EL1645
1.2mm (.045") Alum	EL16A364

TAPERED

Wire Size	Part No.
0.6mm (.024")	EL16T23
0.8mm (.030")	EL16T30
0.9mm (.035")	EL16T35
1.0mm (.040")	EL16T40
1.2mm (.045")	EL16T45

Table 6 – MIG torch contact tips

c) Nozzles

Bore Size	Part No.
9.5mm (3/8")	EL22A37
12.7mm (1/2")	EL22A50
12.7mm (1/2")	EL22A50F
15.9mm (5/8")	EL22A62
15.9mm (5/8")	EL22A62F

Table 7 – MIG torch nozzles

Bore Size	Part No.
19.1mm (3/4")	EL22A75
15.9mm (5/8")	EL22CT62
15.9mm (5/8")	EL22CT62F
15.9mm (5/8")	EL22CT62P

CT = Coarse Thread P = Protruding Tip
F = Flush Tip

d) Conduits

HARD ELECTRODE WIRE

Wire Size	Part No.
0.8mm (.030")	OTW42/3035
0.9mm (.035")	OTW42/3035
1.0mm (.040")	OTW42/4045
1.2mm (.045")	OTW42/4045

Table 8 – MIG torch conduits

SOFT ELECTRODE WIRE

Wire Size	Part No.
0.6mm (.024") Alum	not available
0.8mm (.030") Alum	OTW42N/3545
0.9mm (.035") Alum	OTW42N/3545
1.0mm (.040") Alum	OTW42N/3545
1.2mm (.045") Alum	OTW42N/3545

16.3 Installing A New Wire Conduit

a) Be sure the MIG Torch cable is arranged in a straight line, free from twists, when installing or removing a wire conduit. Remove the old conduit by first removing the MIG Torches nozzle, contact tip and gas diffuser. Then loosen Allen screws, where fitted, in the conductor tube and pull the old wire conduit out of the cable assembly from the connector plug end.

b) To install a new wire conduit, start from the connector plug end of the assembly and begin pushing the conduit through the connector plug, cable assembly and into the gun. If the conduit should lodge along the way, gently whip or work the cable assembly to aid forward movement.

c) When the wire conduit stop firmly meets the end of the connector plug and the new raw end extends through the end of the conductor tube. Trim the conduit so that the "raw end" of the conduit protrudes 34 mm out of the open end of the gun. The trimmed end which seats in the Gas Diffuser must be filed and reamed smooth on the inside and outside radii so wire feed will not be obstructed.

d) Replace Gas Diffuser, Contact Tip, and Nozzle.

e) Tighten the Allen screw, where fitted, in the conductor tube.

CAUTION 5

Do not over tighten the conductor tube screw as this action will result in the distortion of the conduit and will lead to wire feedability problems.

16.4 MIG Torch Maintenance

Remove dust and metallic particles from the torch conduit by forcing clean, dry compressed air into the conduit once a week. This will minimise wire feeding problems.

17. Basic Welding Technique

17.1 Setting of the Power Source

The setting of the Transmig requires some practice by the operator, the welding Power Source having two control settings that have to balance. These are the Wirespeed control and the Voltage Control switch. The welding current is determined by the Wirespeed control, the current will increase with increased Wirespeed, resulting in a shorter arc. Less wire speed will reduce the current and lengthen the arc. Increasing the welding voltage hardly alters the welding current level, but lengthens the arc. By decreasing the voltage, a shorter arc is obtained with little change in welding current.

When changing to a different electrode wire diameter, different control settings are required. A thinner electrode wire needs more Wirespeed to achieve the same current level.

A satisfactory weld cannot be obtained if the wire speed and voltage switch settings are not adjusted to suit the electrode wire diameter and dimensions of the workpiece.

If the Wirespeed is too high for the welding voltage, "stubbing" will occur as the wire dips into the molten pool and does not melt. Welding in these conditions normally produces a poor weld due to lack of fusion. If, however, the welding voltage is too high, large drops will form on the end of the electrode wire, causing spatter. The correct setting of voltage, and Wirespeed can be seen in the shape of the weld deposit and heard by a smooth regular arc sound.

17.2 Position of MIG Torch

The angle of MIG torch to the weld has an effect on the width of the weld run. Refer to Figure 12.

17.3 Distance from the MIG Torch Nozzle to the Work Piece

The electrode stick out from the MIG Torch nozzle should be between 2.0mm to 5.0mm. This distance may vary depending on the type of joint that is being welded.

17.4 Mig Torch Travel Speed

Speed at which a weld travels influences the width of the weld and penetration of the welding run.

17.5 Electrode Wire Size Selection

The choice of electrode wire size in conjunction with shielding gas used depends on:

a) Thickness of the metal to be welded,
b) Type of joint,
c) Capacity of the wire feed unit and Power Source,
d) The amount of penetration required,
e) The deposition rate required,
f) The bead profile desired,
g) The position of welding and
h) Cost of the electrode wire.

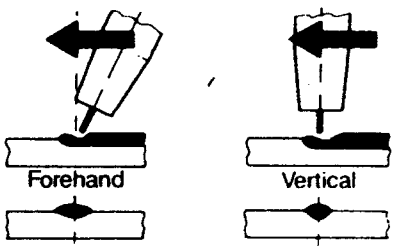


Figure 12 – MIG Torch angle

18. Routine Maintenance & Inspection

The only routine maintenance required for the Transmig 220/250 is a thorough cleaning and inspection, with the frequency depending on the usage and the operating environment.

WARNING 7

Disconnect the Transmig220/250 from the Mains supply voltage before disassembling.

Special maintenance is not necessary for the control unit parts in the Power Source. If these parts are damaged for any reason, replacement is recommended.

CAUTION 6

Do not blow air into the Power Source during cleaning. Blowing air into the Power Source can cause metal particles to interfere with sensitive electronic components and cause damage to the Power Source.

To clean the Power Source, disconnect it from the mains supply voltage then open the enclosure and use a vacuum cleaner to remove any accumulated dirt and dust. The Power Source should also be wiped clean. If necessary, solvents that are recommended for cleaning electrical apparatus may be used.

Troubleshooting and repairing the Transmig 220/250 should be carried out only by those who are familiar with electrical equipment.

WARNING 8

Do not attempt to diagnose or repair unless you have had training in electronic measurement and troubleshooting techniques.

19. Basic Troubleshooting

The basic level of troubleshooting is that which can be performed without special equipment or knowledge, and without removing the covers from the Power Source.

If major components are faulty, then the Power Source should be returned to an Accredited CIGWELD Service Agent for repair.

19.1 Solving Problems Beyond the Welding Terminals

The general approach to fix Gas Metal Arc Welding (GMAW) problems is to start at the wire spool then work through to the MIG torch. There are two main areas where problems occur with GMAW:

a) Porosity

When there is a gas problem the result is usually porosity within the weld metal. Porosity always stems from some contaminant within the molten weld pool which is in the process of escaping during solidification of the molten metal.

Contaminants range from no gas around the welding arc to dirt on the work piece surface. Porosity can be reduced by checking the following points:

1. Gas cylinder contents and flow meter.	- Ensure that the gas cylinder is not empty and the flow meter is correctly adjusted to 15 litres per minute.
2. Gas leaks.	- Check for gas leaks between the regulator/cylinder connection and in the gas hose to the Power Source.
3. Internal gas hose in the Power Source.	- Ensure the hose from the solenoid valve to the Mig torch adaptor has not fractured and that it is connected to the Mig torch adaptor.
4. Welding in a windy environment.	- Shield the weld area from the wind or increase the gas flow.
5. Welding dirty, oily, painted, oxidised or greasy plate.	- Clean contaminates off the plate
6. Distance between the MIG torch nozzle and the work piece.	- Keep the distance between the MIG torch nozzle and the work piece to a minimum. Refer to section 17.3 on page 29.
7. Maintain the MIG torch in good working order.	- Ensure that the gas holes are not blocked and gas is exiting out of the torch nozzle. Refer to WARNING 6. Do not restrict gas flow by allowing spatter to build up inside the Mig torch nozzle.

WARNING 9

Disengage the drive roll when testing for gas flow by ear.

b) Inconsistent wire feed

Wire feeding problems can be reduced by checking the following points:

1. Wire spool brake is too tight. - Feed roller driven by motor in the cabinet will slip.

2. Wire spool brake is too loose. - Wire spool can unwind and tangle.

3. Worn or incorrect feed roller size. - Use 'U' groove drive feed roller matched to the aluminium wire size you are welding.

   Use 'V' groove drive feed roller matched to the steel wire size you are welding.

   Use 'knurled V' groove drive feed roller matched to the flux cored wire size you are welding.

4. Misalignment of inlet/outlet guides. - Wire will rub against the misaligned guides and reduces wire feedability.

5. Liner blocked with swarf. - Swarf is produced by the wire passing through the feed roller, if excessive pressure is applied to the pressure roller adjuster.

   Swarf can also be produced by the wire passing through an incorrect feed roller groove shape or size.

   Swarf is fed into the liner where it accumulates thus reducing wire feedability.

6. Incorrect or worn contact tip. - The contact tip transfers the weld current to the electrode wire. If the hole in the contact tip is to large then arcing may occur inside the contact tip resulting in the electrode wire jamming in the contact tip.

   When using soft electrode wire such as aluminium it may become jammed in the contact tip due to expansion of the wire when heated. A contact tip designed for soft electrode wires should be used.

7. Poor work lead contact to work piece. - If the work lead has a poor electrical contact to the work piece then the connection point will heat up and result in a reduction of power at the arc.

8. Bent liner. - This will cause friction between the wire and the liner thus reducing wire feedability

19.2 Welding Problems

FAULT	CAUSE	REMEDY
1 Undercut.	A Welding arc voltage too high.	A Reduce voltage by reducing the voltage selection switch position or increase the wire feed speed.
	B Incorrect torch angle	B Adjust angle
	C Excessive heat input	C Increase the torch travel speed and/or reduce welding current by reducing the voltage selection switch position or reducing the wire feed speed.
2 Lack of penetration.	A Welding current too low	A Increase welding current by increasing wire feed speed and increasing voltage selection switch position.
	B Joint preparation too narrow or gap too tight	B Increase joint angle or gap
	C Shielding gas incorrect	C Change to a gas which gives higher penetration
3 Lack of fusion.	Voltage too low	Increase voltage by increasing voltage selection switch position.
4 Excessive spatter.	A Voltage too high	A Lower voltage by reducing the voltage selection switch or increase wirespeed control.
	B Voltage too low	B Raise voltage by increasing the voltage selection switch or reduce wirespeed control.
5 Irregular weld shape.	A Incorrect voltage and current settings. Convex, voltage too low. Concave, voltage too high.	A Adjust voltage and current by adjusting the voltage selection switch and the wirespeed control.
	B Wire is wandering	B Replace contact tip
	C Incorrect shielding gas	C Check shielding gas.
	D Insufficient or excessive heat input	D Adjust the wirespeed control or the voltage selection switch.

Welding Problems (continued)

FAULT	CAUSE	REMEDY
6 Weld cracking.	A Weld beads too small	A Decrease travel speed
	B Weld penetration narrow and deep	B Reduce current and voltage and increase Mig torch travel speed or select a lower penetration shielding gas.
	C Excessive weld stresses	C Increase weld metal strength or revise design
	D Excessive voltage	D Decrease voltage by reducing the voltage selection switch.
	E Cooling rate too fast	E Slow the cooling rate by preheating part to be welded or cool slowly.
7 Cold weld puddle.	A Faulty rectifier unit	A Have an Accredited CIGWELD Service Agent to test then replace the faulty component.
	B Loose welding cable connection.	B Check all welding cable connections.
	C Low Primary Voltage	C Contact supply authority
8 Arc does not have a crisp sound that short arc exhibits when the wirefeed speed and voltage are adjusted correctly.	The MIG torch has been connected to the wrong voltage polarity on the front panel.	Connect the MIG torch to the positive (+) welding terminal for solid wires and gas shielded flux cored wires. Refer to the electrode wire manufacturer for the correct polarity.

19.3 Power Source Problems

FAULT	CAUSE	REMEDY
1 Mains supply voltage is ON. Welding arc can not be established.	A Primary fuse is blown.	A Replace primary fuse.
	B Broken connection in primary circuit.	B Have an Accredited CIGWELD Service Agent check primary circuit.
2 Mains supply voltage is ON but when the torch trigger switch is depressed nothing happens.	Torch trigger switch leads are disconnected.	Reconnect.

Power Source Problems (continued)

FAULT	CAUSE	REMEDY
3 Mains supply voltage is ON, no wire feed but gas flows from the MIG Torch when the torch trigger switch is depressed.	A Electrode wire stuck in conduit liner or contact tip (burn-back jam). B Faulty control PCB	A Check for clogged / kinked MIG Torch conduit or worn contract tip. Replace faulty component(s). B Have an Accredited CIGWELD Service Agent investigate the fault.
4 Wire feeds when the torch trigger switch is depressed but arc can not be established.	Poor or no work lead connection.	Clean work clamp area and ensure good electrical contact.
5 Jerky wire feed	A Worn or dirty contact tip B Worn feed roller. C Excessive back tension from wire reel hub. D Worn, kinked or dirty conduit liner	A Replace B Replace C Reduce brake tension on spool hub D Clean or replace conduit liner
6 No gas flow	A Gas hose is cut. B Gas passage contains impurities. C Gas regulator turned off.	A Replace or repair. B Disconnect gas hose from the rear of Transmig 220/250 then raise gas pressure and blow out the impurities. C Turn on.
7 Gas flow continues after the torch trigger switch has been released.	Gas valve has jammed open due to impurities in the gas or the gas line.	Have an Accredited CIGWELD Service Agent repair or replace gas valve.

20. Spare Parts

Description	TRANSMIG 220	TRANSMIG 250
Main Transformer	706823PKD	706700PKD
Inductor & bracket	706509PKD	706509PKD
Rectifier	7977745PKD	7977889PKD
Capacitor 22000µF 63V	-	7977178
Capacitor 100000µF 40V	7977774	-
Control PCB	705531PKD	705531PKD
Contactor	7977878	7977878
Coarse Voltage Switch	7977666	7977666
Fine Voltage Switch	7977666	7977666
Solenoid Valve	7977867	7977867
Wire Reel Hub	702337	702337
Friction Washer, wire reel Hub	7976411	7976411
Kit Spool Cover 15kg (Wirefeeder only)	-	705948
Standby Switch 250VAC	7977884	7977884
Wire Drive Assembly	7977939PKD	7977939PKD
Fan Assembly	7977932PKD	7977932PKD
TWE2 Torch 250A 3.6M with Euro back end	T161558367	T161558367

Table 9 – Mig 220/250 Spare Parts

21. Transmig 220 / 250 Circuit Diagrams

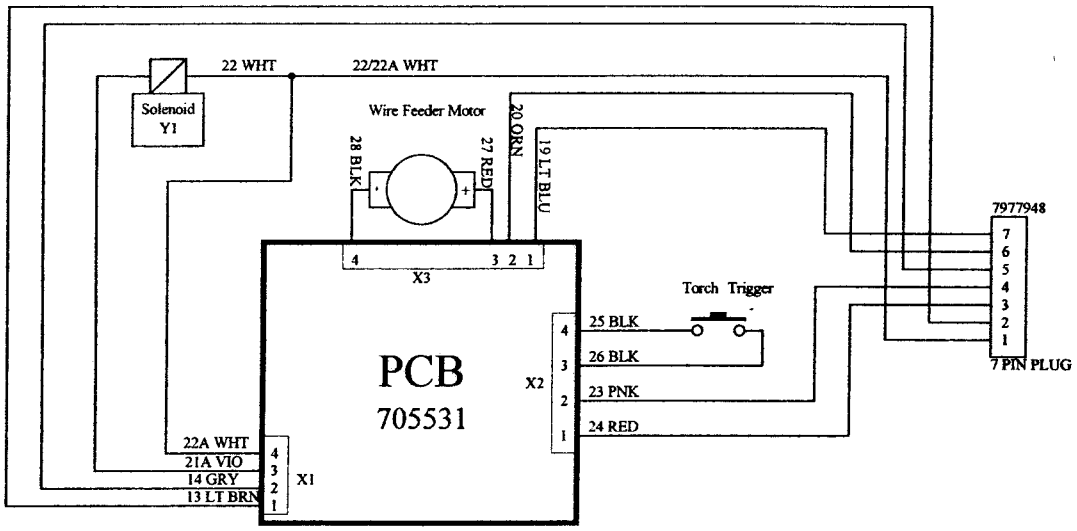


Figure 13 – 2Re Wirefeeder circuit diagram

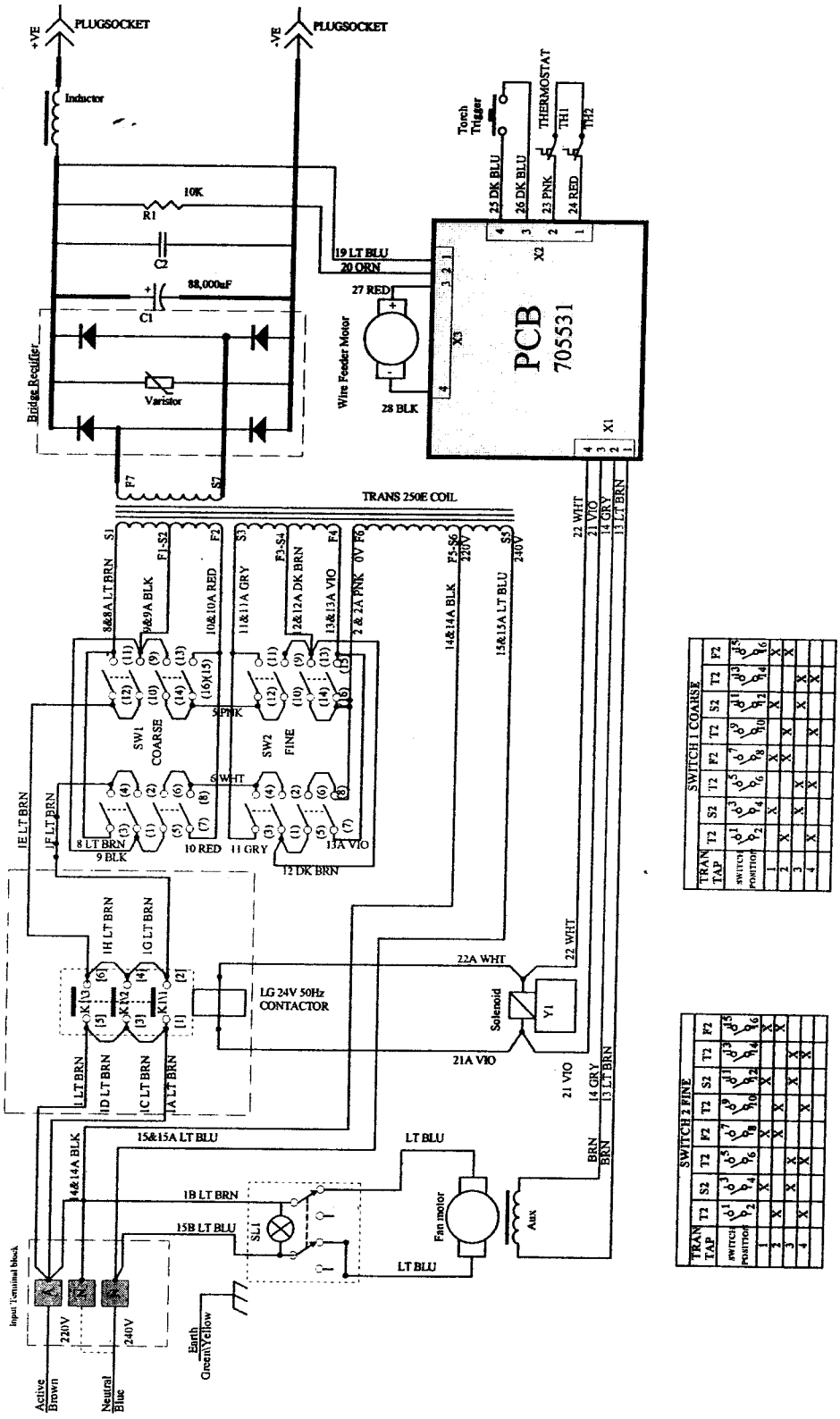


Figure 14 – Circuit diagram for Transmig 220/250 Compact

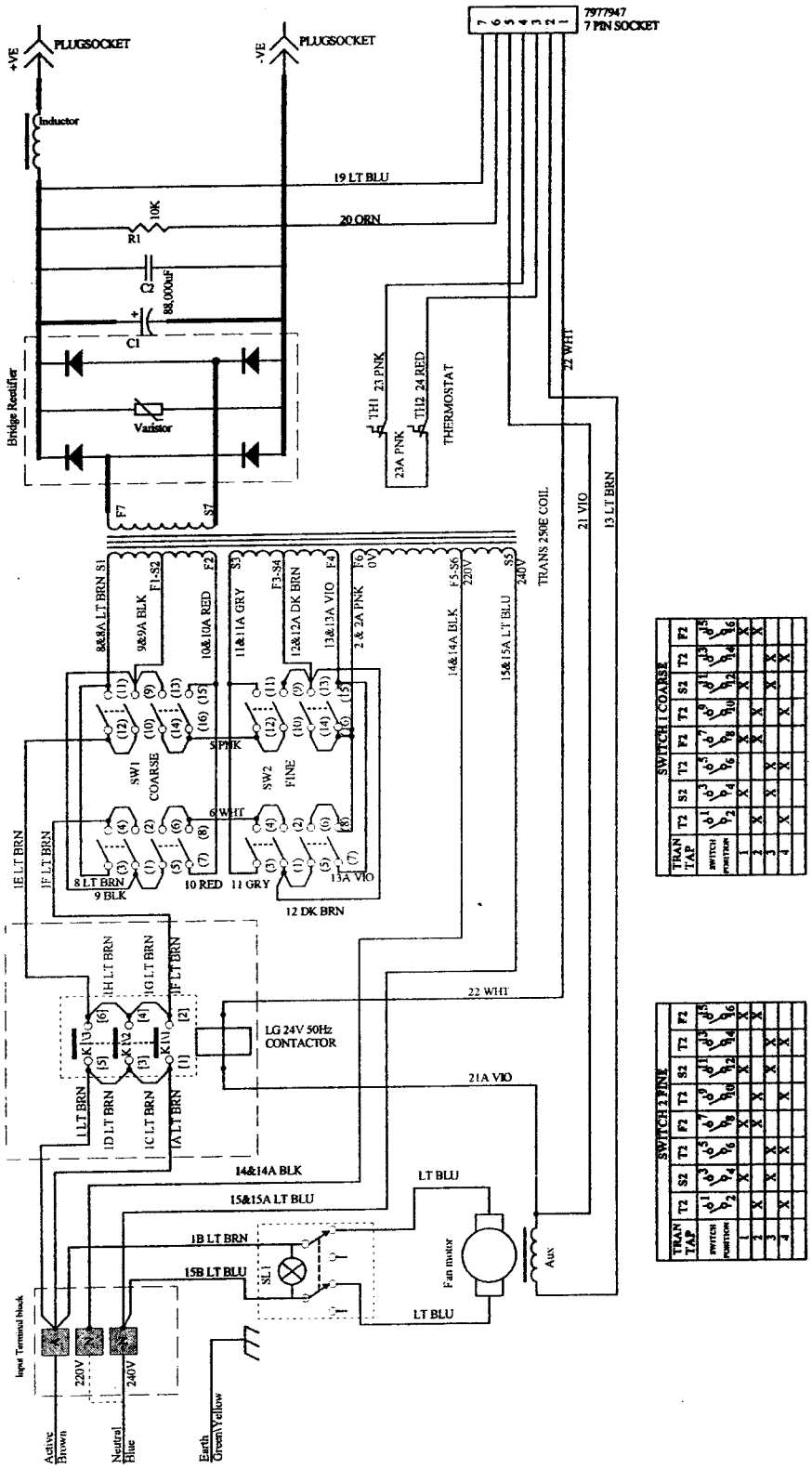


Figure 15 – Circuit diagram for Transmig 250 Remote