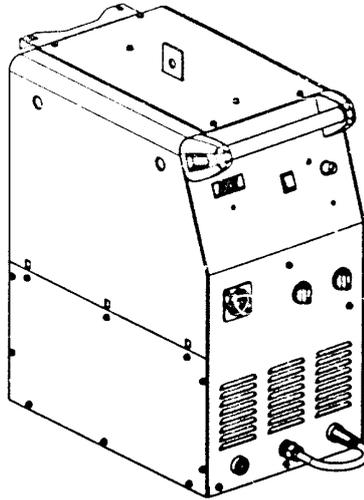


CIGWELD



OPERATING MANUAL

MIG POWER SOURCE

Model Description	Plant	Power Source
TRANSMIG 220 (Single Phase)	710024	710025
TRANSMIG 250 (Single Phase)	710018	710019
TRANSMIG 253 (Three Phase)	710009	710013

PART NO.	ISSUE	DATE
719454	02	403

Manufacturer and Merchandiser of Quality Consumables and Equipment: CIGWELD

Head Office Address:

71 Gower St, Preston

Victoria 3072

Australia



Description of equipment: Welding Equipment (Mig/Mag). CIGWELD Transmig 220, 250, 253 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(s) are guided in design to a number of standards and technical requirements as listed below:

- * AS1966-1 relevant clauses applicable to welding equipment and associated accessories.
- * AS/NZS 3195:1995 relevant clauses applicable to portable machines for electric arc welding and allied processes.
- * 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 extensive equipment range with superior performance, ultra safe operation and world class quality for more than 30 years and will continue to achieve excellence.

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1 Unpacking Your Transmig

Carefully unpack the Transmig and check that all items listed in table 1 are present.

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

Table 1 – List of Accessory Items

2 Rear Wheel Assembly

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

3 Front Swivel Castors And Cylinder Tray Assembly

- Install the two swivel castors in the position as shown in Figure 1 using M8 fasteners.
- Remove M5 screws, as shown by (A) in Figure 1, from either side of power source.
- Install assembled cylinder tray in position shown in Figure 1 using the M8 fasteners.

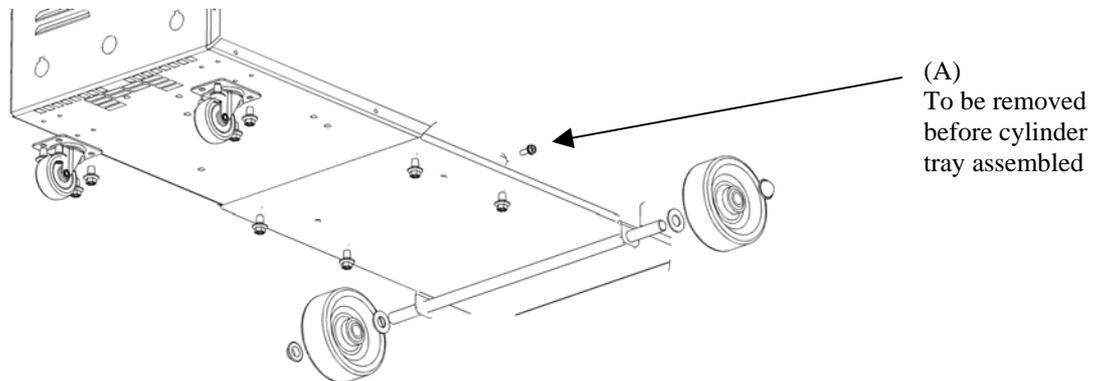


Figure 1 - Castor and Tray Assembly

4 Rear Cylinder Bracket Assembly

- a) Install the cylinder bracket in the position as shown in Figure 2 using M5 fasteners
- b) Install the chain to cylinder bracket.

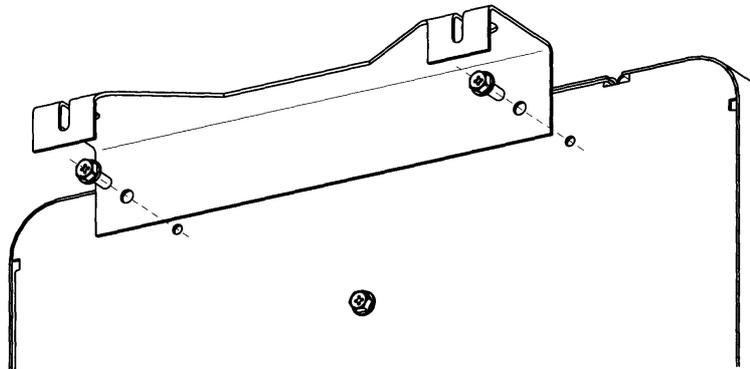


Figure 2 - Cylinder Bracket Assembly

5 Introduction

5.1 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.

5.2 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.



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 (MSD'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 5.3, 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.
- 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 5.3, 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 work-pieces 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 5.3, 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.

5.3 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

6 Electromagnetic Compatibility



WARNING

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

6.1 Installation and use – User’s 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).

6.2 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, 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.

7 Electromagnetic Compatibility - Methods Of Reducing Emissions

7.1 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.

7.2 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.

7.3 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.

7.4 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.

7.5 Earthing of the Work-piece

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

7.6 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.

8 General Information

These TRANSMIG's are semi-automatic Gas Metal Arc Welders (GMAW-commonly MIG). They are designed to meet the broad operating needs of the metal fabrication industry where production efficiency is vital. Australian Standard AS1966.1 was used to guide the design.

The TRANSMIG range 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 excellent results on mild steel using Carbon Dioxide shielding gas.

The TRANSMIG range 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 welder.

8.1 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.

8.2 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 its 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 periods the Transmig must idle and be allowed to cool. The thermal cut-out will operate if the duty cycle is exceeded. Note that all duty cycles are calculated for a maximum ambient temperature of 40°C. Duty cycles must be reduced, i.e. reduce the arc-on time, when the ambient temperature exceeds 40°C.

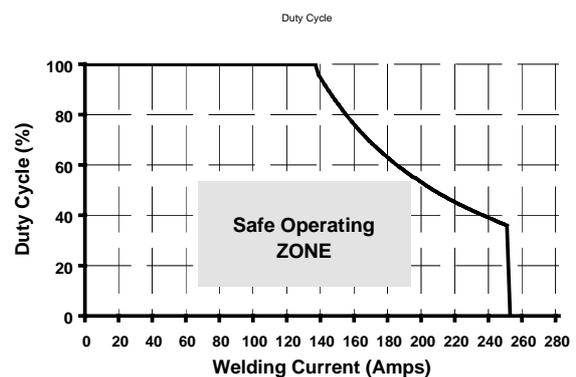


Figure 3 – Example of the TRANSMIG 250 duty cycle curve

8.3 Terms Of Warranty - May 2001

1. The Trade Practices Act 1974 (Australian 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.

8.4 Transmig Warranty Schedule - May 2001

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.

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

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

9 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.

9.1 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 ensure that the area is well ventilated and the operator is under constant observation by a person who can immediately switch off 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 from welding area. Have a suitable fire extinguisher handy.
- ◆ Do not stand on damp ground when welding.

9.2 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.

10 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:

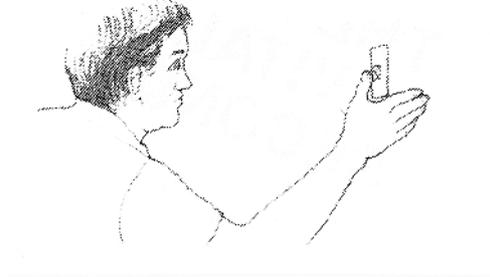
- ◆ Stop the heart;
- ◆ Cause contraction of the muscles of the body;
- ◆ Paralyse breathing due to paralysis of the centre of respiration in the brain;
- ◆ Cause burns.

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

10.1 Resuscitation

Efficient resuscitation requires training which is available from the St John's 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.

One rescuer - 2 breaths, 15 compressions in 15 seconds, i.e. 4 cycles per minute.

Two rescuers - 1 breath, 5 compressions in 5 seconds, i.e. 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.

11 Specifications**11.1 MIG Torch Specifications**

Torch Part No.	T161510302
Torch Model No.	TD-15
Torch Cable Length	3.0m

11.2 Wire Drive Specifications

Motor Supply Voltage	12VAC
Minimum Wire Speed	1m per minute
Maximum Wire Speed	20m per minute
Wire Diameter	Mild Steel: 0.6mm (.024"), 0.8mm (.030"), 0.9mm (.035") Stainless Steel: 0.6mm (.024"), 0.8mm (.030"), 0.9mm (.035") Aluminium: 0.9mm (.035"), 1.0mm (.040"), 1.2mm (.045") Flux Cored: 0.8mm (.030"), 0.9mm (.035"), 1.2mm (.045")
Welding connection	25mm ² Dinse Plug
Wire Spool Size	15kg Maximum
Burn-back Time Range	0 to 0.5 Seconds

11.3 Plant Contents for Transmig 220, 250 or 253

Part Number	Description
T161510302	Torch
310335	Regulator CO ₂
704099	Work Lead 3m
719454	Operating Manual
7977036	Feed Roll 0.6/0.8 Hard(fitted)

11.4 Power Source Only Contents for Transmig 220, 250 or 253

Part Number	Description
704099	Work Lead 3m
719454	Operating Manual
7977036	Feed Roll 0.6/0.8 Hard(fitted)

11.5 Machine Specifications

a) For the Single Phase Models Transmig 220 and 250

Description (Refer NOTE 2)	TRANSMIG 220	TRANSMIG 250
Plant Assembly	710024 (710025*)	710018 (710019*)
Plant Mass (*Deduct 2kg for Power Source Only model)	87kg	91kg
Plant Dimensions (including wheels and cylinder carrier)	H 1000mm x W 430mm x D 880mm	
Power Source Mass	83kg	86kg
Power Source Dimensions (fitted wheels and cylinder carrier)	H 760mm x W 355mm x L 850mm	

Supply Voltage	220V	240V	220V	240V
Supply Phasing	1Ø			
Frequency	50 Hz / 60 Hz			
Input Current @ 100% Duty Cycle	22.4A	20.5A	28.0A	27.0A
Power Input @ 100% Duty Cycle	3.6kVA	3.6kVA	7.3kVA	10
Maximum Input Current	∇ 44.5A	∇ 41.0A	∇ 51.0A	∇ 49.0A
Generator Requirement	♣ 10kVA	♣ 10kVA	♣ 12kVA	♣ 12kVA
Supply Power @ no load	970VA	1120VA	970VA	1120VA
Supply VA @ max. output	9.8kVA	9.8kVA	12.2kVA	12.2kVA
Efficiency @ max. output	60%	60%	55%	55%
Power Factor @ max. output	0.85	0.86	0.85	0.86
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
Rated Output Duty Cycle	220A @ 25%		250A @ 30%	
100% Duty Cycle Output Rating	110A @ 20V		135A @ 21V	
Duty Cycle Period	10 minutes			
Number of Output Voltage Values	16			
Wire Size Range	0.6mm - 1.2mm Hard 0.8mm - 1.2mm Soft 0.8mm - 1.2mm F.C.			

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

♣ Generator Requirements at the Maximum Output Duty Cycle.

b) For the Three Phase Model Transmig 253

Description (Refer NOTE 2)	TRANSMIG 253
Plant Assembly	710009 (710013*)
Plant Mass (*Deduct 2kg for Power Source Only model)	91kg
Plant Dimensions (including wheels and cylinder carrier)	H 1000mm x W 430mm x D 880mm
Power Source Mass	86kg
Power Source Dimensions (fitted wheels and cylinder carrier)	H 760mm x W 355mm x L 850mm

Supply Voltage	220V	380V	415V
Supply Phasing	3Ø		
Frequency	50 Hz / 60 Hz		
Input Current @ 100% Duty Cycle	16A	11A	10A
Power Input @ 100% Duty Cycle	7.3 kVA		
Maximum Input Current	∇ 28A	∇ 16A	∇ 15A
Generator Requirement	♣ 15kVA		
Supply Power @ no load	1200VA		
Supply VA @ max. output	11.0kVA		
Efficiency @ max. output	60%		
Power Factor @ max. output	0.85		
Open Circuit Voltage Range	18 to 41V		
Output Current Range	30 to 250A		
Rated Output Duty Cycle	250A @ 30%		
100% Duty Cycle Output Rating	135A @ 21V		
Duty Cycle Period	10 minutes		
Number of Output Voltage Values	16		
Wire Size Range	0.6mm - 1.2mm Hard 0.8mm - 1.2mm Soft 0.8mm - 1.2mm F.C.		

- ∇ The Input Current @ 100% duty cycle should be used in the determination of cable size & supply requirements.
♣ Generator Requirements at the Maximum Output Duty Cycle.

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.

11.6 Optional Accessories

Part No.	Description	Transmig 220	Transmig 250	Transmig 253
706744	Digital Meter Kit	N / A	√	√
T161510302	Torch TD-15	√	√	√
T161520302	Torch TD-25	√	√	√
704099	Work lead 3M	√	√	√
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	√	√	√

12 Installation Recommendations

12.1 Environment

The TRANSMIG's are 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 where freedom of movement is restricted and operator is forced to perform the work in a cramped (kneeling, sitting or lying) position in 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.
 - 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.

12.2 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) Position 30cm or more from walls that could restrict cooling by natural airflow.
- g) The minimum ground clearance for these products is 80mm.

12.3 Ventilation

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

12.4 Mains Supply Voltage Requirements

The Mains supply voltage should be within $\pm 10\%$ 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.

12.5 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.

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

Model	Input Cable Size	Minimum Supply Current	Supply Voltage Setting	Output Current & Duty Cycle
Transmig 220	2.5mm ²	42A	220V	220A @ 25%
	2.5mm ²	45A	240V	
Transmig 250	2.5mm ²	49A	220V	250A @ 30%
	2.5mm ²	51A	240V	
Transmig 253	1mm ²	15A	415V	250A @ 30%
	1mm ²	16A	380V	
	4mm ²	28A	220V	

Table 3 – Input Supply Circuit Requirements (Maximum Output)



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 12.5 when the TRANSMIG'S Mains supply voltage is changed.

12.6 Alternative Supply Voltage

Factory preset to run on 240V for both the single phase units and 415V for the Transmig 253 all units can alternatively be rewired to operate on supply voltages of either 380V(Transmig 253 only) or 220V.



WARNING 3

CIGWELD advises that a qualified electrical tradesperson rewire your TRANSMIG alternative supply operation.

- a) Disconnect the TRANSMIG from the Mains supply.
- b) Refer to Figure 4 for Input Supply lead termination.
- c) The TRANSMIG's are now ready for operation on 220V or 380V.

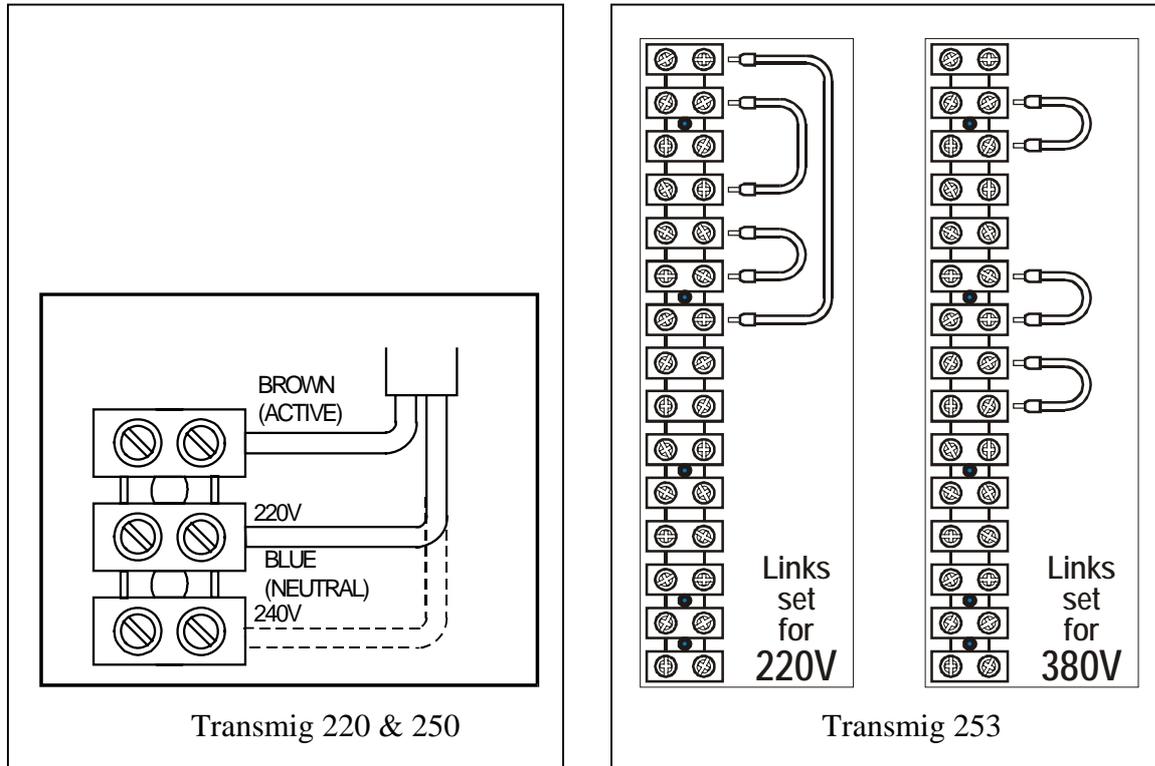


Figure 4 – Input Supply Voltage Set

13 Set Up For Compact Transmig

- a) Remove all packaging materials.
- b) Refer to section 1 Unpacking Your Transmig.

CAUTION 1

To ensure adequate cooling for the Power Source the wheels must be fitted. Alternatively raise the Power Source by 80mm from the floor using supports that do not restrict airflow.

- c) In general connect the **WORK LEAD** to the negative (-) outlet; this is when not using self shielding flux cored wire designed to run **ELECTRODE NEGATIVE**.
TORCH LEAD to the positive (+) socket; this is when not using self shielding flux cored wire designed to run **ELECTRODE NEGATIVE**.
- d) Position the 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.
- e) Fit the gas **REGULATOR** to the gas cylinder.
- f) Connect the gas hose from the rear of the Power Source to the **REGULATOR** outlet.
- g) The Duel groove feed roller is supplied as standard with the Power Source. Position the roller with the chosen wire size marking facing outwards.

- h) Fit the spool of wire to the wire 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 spool.
- i) Align and fit the back-end of the TORCH into the torch adaptor then lock into place by screwing the retaining ring. Remove the contact tip from the torch front-end.
- j) 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.
- k) 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.

14 Power Source Controls, Indicators and Features

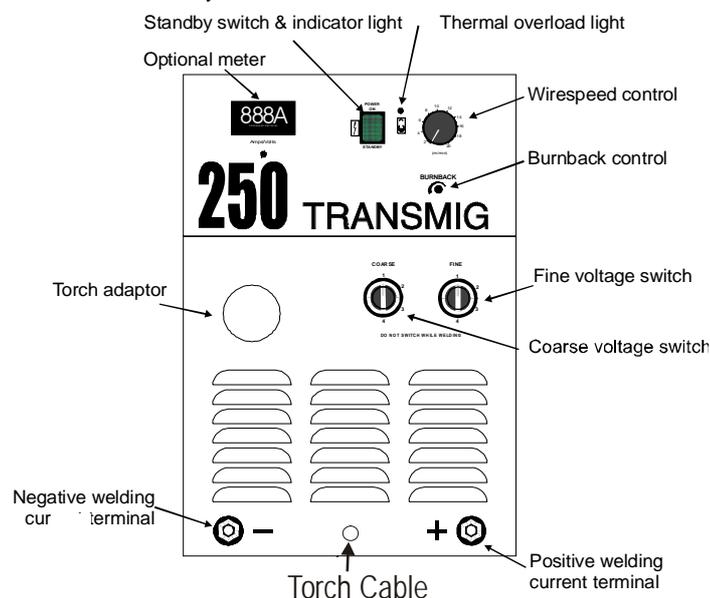


Figure 5 - Compact TRANSMIG controls

14.1 Power ON/OFF switch with in-built Indicator Light

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

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



WARNING 5

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

14.2 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 2

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

14.3 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 23.4 Volts



The image shows two digital displays. The left display shows '157A' in a large, black, seven-segment font. The right display shows '23.4V' in the same font, with a decimal point between the 3 and 4.

Figure 6 - 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 6 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.

14.4 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.

14.5 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, refers to section 8.2 for an explanation of duty cycle and section 11 for the specifications.

14.6 Wirespeed Control

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

14.7 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.

14.8 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.

14.9 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 3

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

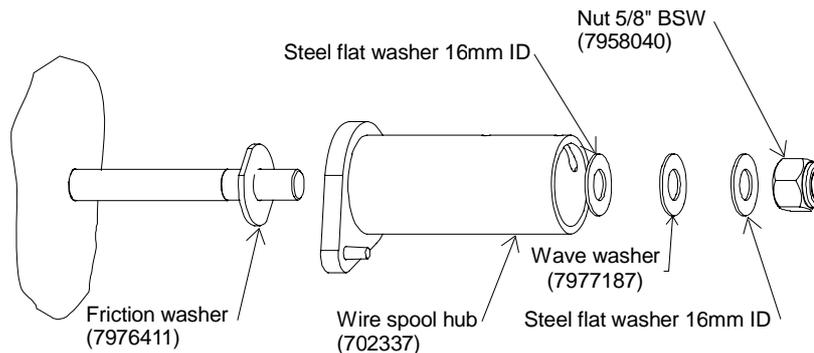
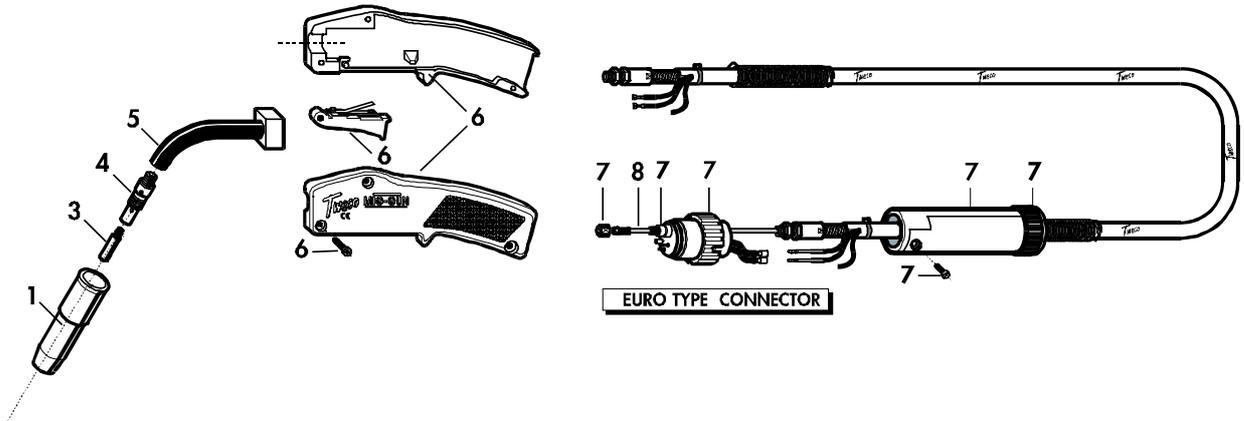


Figure 7 - Standard 300mm spool set-up

15 MIG Torch

15.1 Tweco MIG Torch TD-15 (T161510302)



Item	Part No.	Description	Qty
1	T116103501	Nozzle 12mm Bore	1
3	(refer to Table 5)	Contact tips	1
4	T118102504	Gas diffuser	1
5	T116103501	Conductor tube	1
6	T137100508	Handle Case	1
7	—	Euro Back End kit	1
8	(refer to Table 6)	Liner (Conduit)	1

Table 4 – Torch TD-15 Components

15.2 Torch TD-15 Consumable Parts

NOTE 3

* denotes parts that are supplied as standard with TWECO torches

a) Contact Tips

M6 STANDARD

Wire Size	Part No.
0.6mm (.024")	T147010706
0.8mm (.030")	T147010708
0.9mm (.035")	T147010709
1.0mm (.040")	T147010710

Table 5 – Torch TD-15 Contact Tips

b) Liners (Conduits)

HARD ELECTRODE WIRE

Wire Size	Part No.
0.6/1.0mm 4m Hard	T130020402
0.8/1.0mm 4m Soft	T134030402

Table 6 –Torch Liners (Conduits)

15.3 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 Torch's nozzle, contact tip and gas diffuser. Then loosen Allen screws, where fitted, in the conductor tube and connector plug and pull the old wire conduit out of the cable assembly from the connector plug end.
- b) To install a new wire conduit, first inspect the o-ring gas seal on the conduit for cuts or damage. 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 meets the end of the connector plug and the new raw end extends through the end of the conductor tube, the Allen screw in the connector plug must be securely tightened onto the conduit to prevent its backward movement.

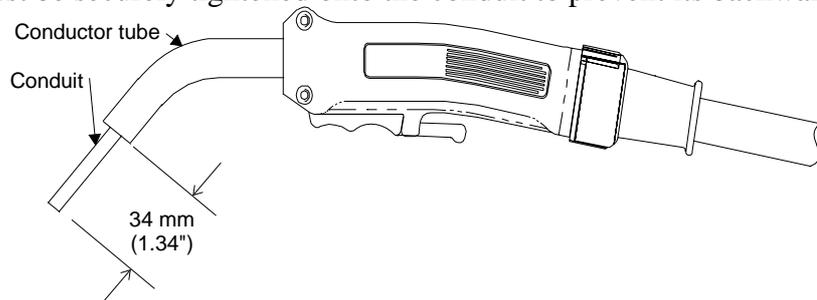


Figure 8 - Conduit trim length

NOTE 4

When the conduit is fully inserted into the cable assembly and the conduit stop is firmly against the Connector Plug, the "raw end" of the conduit will protrude out of the open end of the gun conductor tube. Trim the conduit as shown in Figure 8. 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 4

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.

15.4 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.

16 Basic Welding Technique

16.1 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 wirespeed and voltage switch settings are not adjusted to suit the electrode wire diameter and dimensions of the work-piece.

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.

16.2 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 10.

16.3 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.

16.4 Mig Torch Travel Speed

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

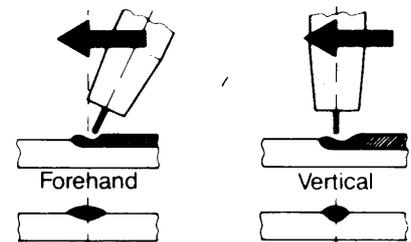


Figure 9 - MIG Torch angle

16.5 Electrode Wire Size Selection

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

- Thickness of the metal to be welded.
- Type of joint.
- Capacity of the wire feed unit and Power Source.
- The amount of penetration required.
- The deposition rate required.
- The bead profile desired.
- The position of welding.
- Cost of the electrode wire.

17 Routine Maintenance & Inspection

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



WARNING 6

Disconnect the Transmig 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 5

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 should be carried out only by those who are familiar with electrical equipment.



WARNING 7

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

18 Basic Troubleshooting

The basic level of troubleshooting is 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.

18.1 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 that the hose from solenoid valve to Mig torch adaptor is connected and not fractured.
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 16.3 on page 24.
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 8

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 feed roll matched to the aluminium wire size you are welding.
 - Use 'V' groove feed roll matched to the steel wire size you are welding.
 - Use 'knurled' groove feed roll matched to 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 wire passing over feed roll, 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 too 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

18.2 Welding Problems

FAULT	CAUSE	REMEDY
1 Undercut.	A Welding arc voltage too high. B Incorrect torch angle C Excessive heat input	A Reduce voltage by reducing the voltage selection switch position or increase the wire feed speed. B Adjust angle 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 B Joint preparation too narrow or gap too tight C Shielding gas incorrect	A Increase welding current by increasing wire feed speed and increasing voltage selection switch position. B Increase joint angle or gap 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 B Voltage too low	A Lower voltage by reducing the voltage selection switch or increase wirespeed control. 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. B Wire is wandering C Incorrect shielding gas D Insufficient or excessive heat input	A Adjust voltage and current by adjusting the voltage selection switch and the wirespeed control. B Replace contact tip C Check shielding gas. D Adjust the wirespeed control or the voltage selection switch.

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

18.3 Power Source Problems

FAULT	CAUSE	REMEDY
1 Mains supply voltage is ON. Welding arc can not be established.	<p>A Primary fuse is blown. B Broken connection in primary circuit.</p>	<p>A Replace primary fuse. B Have an Accredited CIGWELD Service Agent check primary circuit.</p>
2 Mains supply voltage is ON but when the torch trigger switch is depressed nothing happens.	Torch trigger switch leads are disconnected.	Reconnect.
3 Mains supply voltage is ON, no wire feed but gas flows from the MIG Torch when the torch trigger switch is depressed.	<p>A Electrode wire stuck in conduit liner or contact tip (burn-back jam). B Faulty control PCB</p>	<p>A Check for clogged / kinked MIG Torch conduit or worn contract tip. Replace faulty component(s). Accredited CIGWELD Service Agent to fault find. B</p>
4 Wire feed when trigger is depressed but arc cannot 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 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 at rear. Raise gas pressure to blow out impurities. C Turn on.
7 Gas flow continues after torch trigger 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.

19 Spare Parts

Description	Part No.	Description	Part No.
Main Transformer:		Inductor / bracket:	
Transmig 220	706823PKD	Transmig 220	706828PKD
Transmig 250	706700PKD	Transmig 250	706509PKD
Transmig 253	706788PKD	Transmig 253	706797PKD
Rectifier:		Voltage Switch:	
Transmig 220	7977745	Transmig 220	7977666
Transmig 250	7977889	Transmig 250	7977666
Transmig 253	7977658	Transmig 253	7977885
Capacitor Output:		Work Lead Plug (25mm ²)	7977160
Transmig 220	7977774	Wire Drive Assembly	7977939
Transmig 250	7977178	Fan Assembly	7977932
Standby Switch 250VAC	7977884	Swivel Wheel	7977938
Control PCB	705531PKD	Fixed Wheel	7976759
Contacto	7977878	Regulator/Flowmeter	310335
Output Terminals (25mm ²)	7977159	Torch TD-15	T161510302
Solenoid Valve	7977867	Euro Adaptor	7977946
Wire Reel Lock Pin	OTWAK1P		
Wire Reel Hub	702337		
Friction Washer (wire reel hub)	7976411		

Table 7 – Basic Spare Parts

20 Transmig 220 & 250 Compact Power Source Circuit Diagram

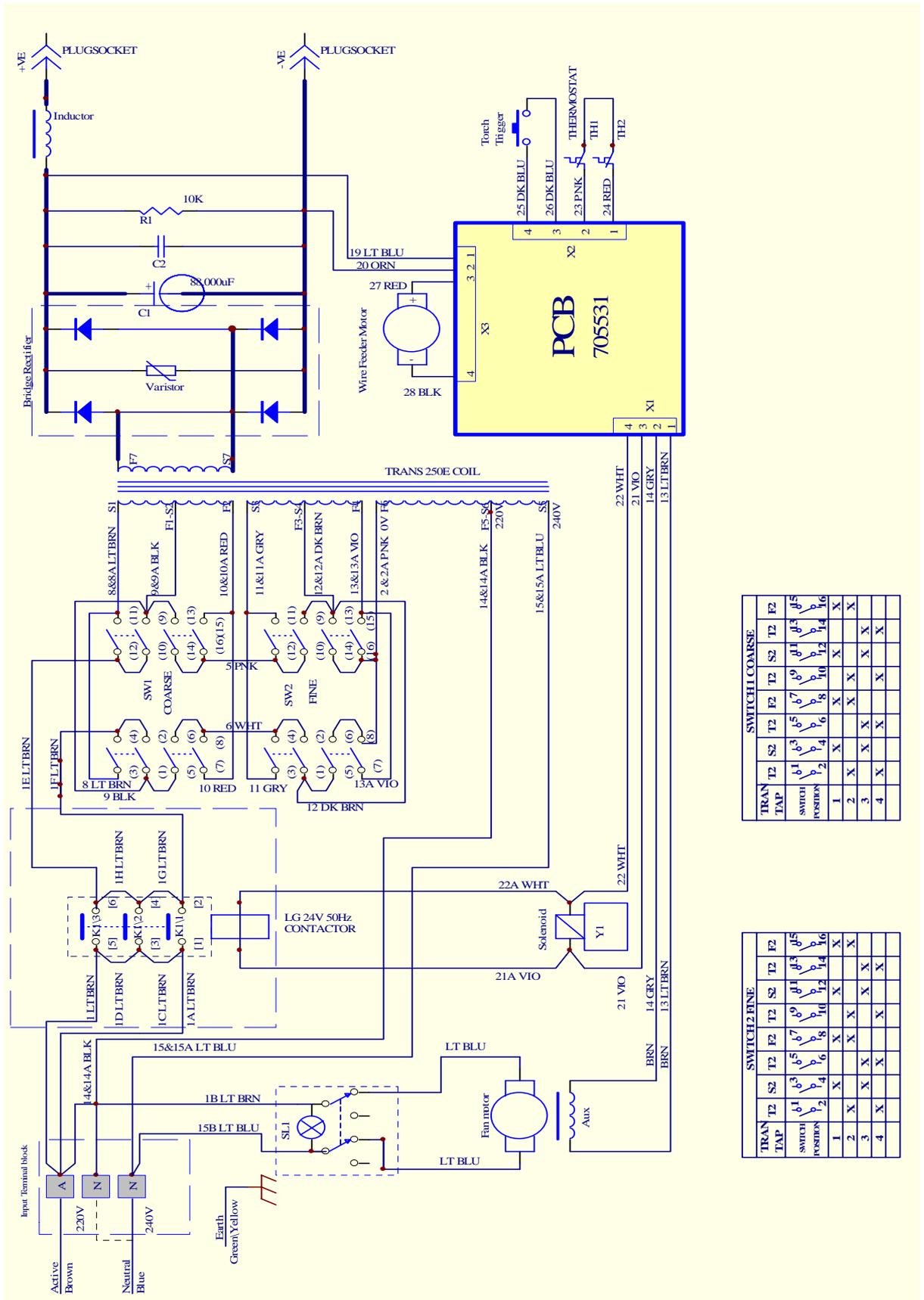


Figure 10 - MIG Power Source Schematic for Transmig 220 & 250

21 Transmig 253 Compact Power Source Circuit Diagram

[Not available at time of print]

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CIGWELD

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