CIGWELD
AN ESAB BRAND

OPERATING MANUAL

MIG

Transmig 4RX WIRE FEEDER

OUTPUT CURRENT 550A* 60%

GMAW/FCAW

4 ROLL WIRE DRIVE
SPOOLS UP TO 300mm

WARRANTY* 3 YEARS

Version No: AA | **Issue Date:** 26-2-2021 | **Manual No:** 0-5603

*Refer to Specification Table for rating information.

CIGWELD
AN ESAB BRAND

WE APPRECIATE YOUR BUSINESS!

Congratulations on your new Cigweld product. We are proud to have you as our customer and will strive to provide you with the best service and reliability in the industry. This product is backed by our extensive warranty and world-wide service network. To locate your nearest distributor or service agency call +1300 654 674, or visit us on the web at www.thermadyne.com.au

This Operating Manual has been designed to instruct you on the correct use and operation of your CIGWELD product. Your satisfaction with this product and its safe operation is our ultimate concern. Therefore please take the time to read the entire manual, especially the Safety Precautions. They will help you to avoid potential hazards that may exist when working with this product.

We have made every effort to provide you with accurate instructions, drawings, and photographs of the product(s) while writing this manual. However errors do occur and we apologize if there are any contained in this manual.

Due to our constant effort to bring you the best products, we may make an improvement that does not get reflected in the manual. If you are ever in doubt about what you see or read in this manual with the product you received, then check for a newer version of the manual on our website or contact our customer support for assistance.

YOU ARE IN GOOD COMPANY!

The Brand of Choice for Contractors and Fabricators Worldwide.

CIGWELD is the Market Leading Brand of Arc Welding Products for ESAB. We are a mainline supplier to major welding industry sectors in the Asia Pacific and emerging global markets including; Manufacturing, Construction, Mining, Automotive, Engineering, Rural and DIY.

We distinguish ourselves from our competition through market-leading, dependable products that have stood the test of time. We pride ourselves on technical innovation, competitive prices, excellent delivery, superior customer service and technical support, together with excellence in sales and marketing expertise.

Above all, we are committed to develop technologically advanced products to achieve a safer working environment for industry operators.

WARNINGS

Read and understand this entire Manual and your employer's safety practices before installing, operating, or servicing the equipment.

While the information contained in this Manual represents the Manufacturer's best judgement, the Manufacturer assumes no liability for its use.

Operating Manual Number 0-5603 for:
WIREFEEDER 4RX Part Number W3000410

Published by:
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Publication Date: February, 2021

Revision Date:

Record the following information for Warranty purposes:

Where Purchased: _____

Purchase Date: _____

Equipment Serial #: _____

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SECTION 1:
ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS

WARNING

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR. DO NOT LOSE THESE INSTRUCTIONS. READ OPERATING/INSTRUCTION MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.

Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Some of these practices apply to equipment connected to power lines; other practices apply to engine driven equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld.

Safe practices are outlined in the Australian Standard AS1674.2-2007 entitled: Safety in welding and allied processes Part 2: Electrical. This publication and other guides to what you should learn before operating this equipment are listed at the end of these safety precautions. **HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.**

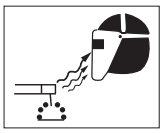
1.01 Arc Welding Hazards

WARNING

ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.
6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workpiece to a good electrical (earth) ground.
11. Do not touch electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
14. Wear a safety harness to prevent falling if working above floor level.
15. Keep all panels and covers securely in place.



WARNING

ARC RAYS can burn eyes and skin; NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

1. Use a Welding Helmet or Welding Faceshield fitted with a proper shade of filter (see ANSI Z49.1 and AS 1674 listed in Safety Standards) to protect your face and eyes when welding or watching.
2. Wear approved safety glasses. Side shields recommended.
3. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved ear plugs or ear muffs if noise level is high.
6. Never wear contact lenses while welding.

Recommended Protective Filters for Electric Welding

Description of Process	Approximate Range of Welding Current in Amps	Minimum Shade Number of Filter(s)
Manual Metal Arc Welding - covered electrodes (MMAW)	Less than or equal to 100	8
	100 to 200	10
	200 to 300	11
	300 to 400	12
	Greater than 400	13
Gas Metal Arc Welding (GMAW) (MIG) other than Aluminium and Stainless Steel	Less than or equal to 150	10
	150 to 250	11
	250 to 300	12
	300 to 400	13
	Greater than 400	14
Gas Metal Arc Welding (GMAW) (MIG) Aluminium and Stainless Steel	Less than or equal to 250	12
	250 to 350	13
Gas Tungsten Arc Welding (GTAW) (TIG)	Less than or equal to 100	10
	100 to 200	11
	200 to 250	12
	250 to 350	13
	Greater than 350	14
Flux-cored Arc Welding (FCAW) -with or without shielding gas.	Less than or equal to 300	11
	300 to 400	12
	400 to 500	13
	Greater than 500	14
Air - Arc Gouging	Less than or equal to 400	12
Plasma - Arc Cutting	50 to 100	10
	100 to 400	12
	400 to 800	14
Plasma - Arc Spraying	—	15
Plasma - Arc Welding	Less than or equal to 20	8
	20 to 100	10
	100 to 400	12
	400 to 800	14
Submerged - Arc Welding	—	2(5)
Resistance Welding	—	Safety Spectacles or eye shield

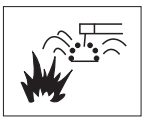
Refer to standard AS/NZS 1338.1:1992 for comprehensive information regarding the above table.

WARNING

FUMES AND GASES can be hazardous to your health.

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

1. Keep your head out of the fumes. Do not breath the fumes.
2. If inside, ventilate the area and/or use exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Material Safety Data Sheets (MSDSs) and the manufacturer's instruction for metals, consumables, coatings, and cleaners.
5. Work in a confined space only if it is well ventilated, or while wearing an air-supplied respirator. Shielding gases used for welding can displace air causing injury or death. Be sure the breathing air is safe.
6. Do not weld in locations near degreasing, cleaning, or spraying operations. The heat and rays of the arc can react with vapours to form highly toxic and irritating gases.
7. Do not weld on coated metals, such as galvanized, lead, or cadmium plated steel, unless the coating is removed from the weld area, the area is well ventilated, and if necessary, while wearing an air-supplied respirator. The coatings and any metals containing these elements can give off toxic fumes if welded.

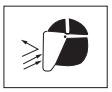


WARNING

WELDING can cause fire or explosion.

Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, hot workpiece, and hot equipment can cause fires and burns. Accidental contact of electrode or welding wire to metal objects can cause sparks, overheating, or fire.

1. Protect yourself and others from flying sparks and hot metal.
2. Do not weld where flying sparks can strike flammable material.
3. Remove all flammables within 35 ft (10.7 m) of the welding arc. If this is not possible, tightly cover them with approved covers.
4. Be alert that welding sparks and hot materials from welding can easily go through small cracks and openings to adjacent areas.
5. Watch for fire, and keep a fire extinguisher nearby.
6. Be aware that welding on a ceiling, floor, bulkhead, or partition can cause fire on the hidden side.
7. Do not weld on closed containers such as tanks or drums.
8. Connect work cable to the work as close to the welding area as practical to prevent welding current from travelling long, possibly unknown paths and causing electric shock and fire hazards.
9. Do not use welder to thaw frozen pipes.
10. Remove stick electrode from holder or cut off welding wire at contact tip when not in use.



WARNING

FLYING SPARKS AND HOT METAL can cause injury.

Chipping and grinding cause flying metal. As welds cool, they can throw off slag.

1. Wear approved face shield or safety goggles. Side shields recommended.
2. Wear proper body protection to protect skin.

WARNING

CYLINDERS can explode if damaged.

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

1. Protect compressed gas cylinders from excessive heat, mechanical shocks, and arcs.
2. Install and secure cylinders in an upright position by chaining them to a stationary support or equipment cylinder rack to prevent falling or tipping.
3. Keep cylinders away from any welding or other electrical circuits.

4. Never allow a welding electrode to touch any cylinder.
5. Use only correct shielding gas cylinders, regulators, hoses, and fittings designed for the specific application; maintain them and associated parts in good condition.
6. Turn face away from valve outlet when opening cylinder valve.
7. Keep protective cap in place over valve except when cylinder is in use or connected for use.
8. Read and follow instructions on compressed gas cylinders, associated equipment, and CGA publication P-1 listed in Safety Standards.

WARNING

MOVING PARTS can cause injury.

Moving parts, such as fans, rotors, and belts can cut fingers and hands and catch loose clothing.

1. Keep all doors, panels, covers, and guards closed and securely in place.
2. Stop engine before installing or connecting unit.
3. Have only qualified people remove guards or covers for maintenance and troubleshooting as necessary.
4. To prevent accidental starting during servicing, disconnect negative (-) battery cable from battery.
5. Keep hands, hair, loose clothing, and tools away from moving parts.
6. Reinstall panels or guards and close doors when servicing is finished and before starting engine.

WARNING

This product, when used for welding or cutting, produces fumes or gases which contain chemicals know to the State of California to cause birth defects and, in some cases, cancer. (California Health & Safety code Sec. 25249.5 et seq.)

NOTE

Considerations About Welding And The Effects of Low Frequency Electric and Magnetic Fields

The following is a quotation from the General Conclusions Section of the U.S. Congress, Office of Technology Assessment, Biological Effects of Power Frequency Electric & Magnetic Fields - Background Paper, OTA-BP-E-63 (Washington, DC: U.S. Government Printing Office, May 1989): "...there is now a very large volume of scientific findings based on experiments at the cellular level and from studies with animals and people which clearly establish that low frequency magnetic fields and interact with, and produce changes in, biological systems. While most of this work is of very high quality, the results are complex. Current scientific understanding does not yet allow us to interpret the evidence in a single coherent framework. Even more frustrating, it does not yet allow us to draw definite conclusions about questions of possible risk or to offer clear science-based advice on strategies to minimize or avoid potential risks."

To reduce magnetic fields in the workplace, use the following procedures.

1. Keep cables close together by twisting or taping them.
2. Arrange cables to one side and away from the operator.
3. Do not coil or drape cable around the body.
4. Keep welding power source and cables as far away from body as practical.

ABOUT PACEMAKERS:

The above procedures are among those also normally recommended for pacemaker wearers. Consult your doctor for complete information.

1.02 Principal Safety Standards

Safety in welding and allied processes Part 1: Fire Precautions, AS 1674.1-1997 from SAI Global Limited, www.saiglobal.com.

Safety in welding and allied processes Part 2: Electrical, AS 1674.2-2007 from SAI Global Limited, www.saiglobal.com.

Filters for eye protectors - Filters for protection against radiation generated in welding and allied operations AS/NZS 1338.1:1992 from SAI Global Limited, www.saiglobal.com.

Welding Processes, Code of Practice, APRIL 2016 - Safe Work Australia. This document provides "Practical guidance on how to manage health and safety risks associated with welding". The latest version is available free of charge at : https://www.safeworkaustralia.gov.au/system/files/documents/1705/mcop-welding-processes-v3.pdf

Other International Standards and Codes of Practice

Safety in Welding and Cutting, ANSI Standard Z49.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

Safety and Health Standards, OSHA 29 CFR 1910, from Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, American Welding Society Standard AWS F4.1, from American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33126.

National Electrical Code, NFPA Standard 70, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, CGA Pamphlet P-1, from Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, CSA Standard W117.2, from Canadian Standards Association, Standards Sales, 178 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, ANSI Standard Z87.1, from American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, NFPA Standard 51B, from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

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SECTION 2: INTRODUCTION

2.01 How to Use This Manual

This Operating Manual usually applies to the part numbers listed on page i. To ensure safe operation, read the entire manual, including the chapter on safety instructions and warnings. Throughout this manual, the word WARNING, CAUTION and NOTE may appear. Pay particular attention to the information provided under these headings. These special annotations are easily recognized as follows:

NOTE!

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

WARNING

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

CAUTION

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

WARNING

Gives information regarding possible electrical shock injury. Warnings will be enclosed in a box such as this.

Additional copies of this manual may be purchased by contacting Cigweld at the address and phone number for your location listed in the inside back cover of this manual. Include the Owner's Manual number and equipment identification numbers.

2.02 Equipment Identification

The unit's identification number (specification or part number), model, and serial number usually appear on a nameplate attached to the machine. Equipment which does not have a nameplate attached to the machine is identified only by the specification or part number printed on the shipping container. Record these numbers for future reference.

2.03 Receipt of Equipment

When you receive the equipment, check it against the invoice to make sure it is complete and inspect the equipment for possible damage due to shipping. If there is any damage, notify the carrier immediately to file a claim. Furnish complete information concerning damage claims or shipping errors to the location in your area listed in the inside back cover of this manual.

Include all equipment identification numbers as described above along with a full description of the parts in error.

Move the equipment to the installation site before un-crating the unit. Use care to avoid damaging the equipment when using bars, hammers, etc., to un-crate the unit.

2.04 Symbol Chart

Note that only some of these symbols will appear on your model.

	On
	Off
	Dangerous Voltage
	Increase/Decrease
	Circuit Breaker
	AC Auxiliary Power
	Fuse
A	Amperage
V	Voltage
Hz	Hertz (cycles/sec)
f	Frequency
	Negative
	Positive
	Direct Current (DC)
	Protective Earth (Ground)
	Line
	Line Connection
	Auxiliary Power
115V 15A	Receptacle Rating- Auxiliary Power

1 ~	Single Phase
3 ~	Three Phase
	Three Phase Static Frequency Converter-Transformer-Rectifier
	Remote
X	Duty Cycle
%	Percentage
	Panel/Local
	Shielded Metal Arc Welding (SMAW)
	Gas Metal Arc Welding (GMAW)
	Gas Tungsten Arc Welding (GTAW)
	Air Carbon Arc Cutting (CAC-A)
	Constant Current
	Constant Voltage Or Constant Potential
	High Temperature
	Fault Indication
	Arc Force
	Touch Start (GTAW)
	Variable Inductance
V	Voltage Input

	Wire Feed Function
	Wire Feed Towards Workpiece With Output Voltage Off.
	Welding Gun
	Purging Of Gas
	Continuous Weld Mode
	Spot Weld Mode
t	Spot Time
t1	Preflow Time
t2	Postflow Time
	2 Step Trigger Operation Press to initiate wirefeed and welding, release to stop.
	4 Step Trigger Operation Press and hold for preflow, release to start arc. Press to stop arc, and hold for preflow.
t	Burnback Time
	Disturbance In Ground System
IPM	Inches Per Minute
MPM	Metres Per Minute
	Spool Gun
AUTO SET MIG STICK TIG	Auto Settings for MIG, STICK, TIG

Art # A-04937_AD

Figure 2-1 Symbol chart

2.05 Description

The Transmig 4RX Wirefeeder is fully compliant to Standard IEC 60974.5.The Transmig 4RX Wirefeeder when used in conjunction with the Transmig 355i Multi Process Welder provides excellent MIG welding performance across a broad range of applications when used with the correct welding consumables and procedures. The instructions in the next section detail how to correctly and safely set up the machine and give guidelines on gaining the best efficiency and quality from the Power Source. Please read these instructions thoroughly before using the unit.

2.06 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 an Accredited CIGWELD Distributor.

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 unauthorized modification from standard specification, faulty maintenance, damage or improper repair by anyone other than appropriately qualified persons approved by CIGWELD.

2.07 Transportation Methods

WARNING

ELECTRIC SHOCK can kill. DO NOT TOUCH live electrical parts. Disconnect input power conductors from de-energized supply line before moving the welding power source.

WARNING

FALLING EQUIPMENT can cause serious personal injury and equipment damage.

Lift unit with integrated handle at the top of the unit.

Use handcart or similar device of adequate capacity.

If using a fork lift vehicle, place and secure unit on a proper skid before transporting.

2.08 Packaged Items

Transmig 4RX Wirefeeder
(Part No. W3000410)

- Transmig 4RX Wirefeeder
- Operating Manual
- Drive Roll 0.9-1.2mm, V Groove Fitted

2.09 Specifications

Description	Transmig 4RX Wirefeeder
Wirefeeder Plant Part Number	W3000410
Wirefeeder Plant Dimensions	H 453mm x W 238mm x D 553mm
Wirefeeder Plant Mass	18 kg
Wire Feed Motor Voltage	24 VDC
Gas Solenoid Voltage	24 VDC
MIG (GMAW) Welding Output, 40°C, 10 min	60% @ 550A
	100% @ 426A
Transmig 355i/555i Wire Speed Range Minimum Wire Speed Maximum Wire Speed	 1.5 MPM 22 MPM
Operating Temperature Range	0°C - 40°C
Interconnection Plug	10 Pin
Optional Interconnection Cable Lengths	8 metre

Table 2-1: Transmig 4RX Specification

NOTE
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.

SECTION 3: INSTALLATION OPERATION AND SETUP

3.01 Environment

These units are designed for use in environments with increased hazard of electric shock as outlined in IEC 60974.5.

A. Examples of environments with increased hazard of electric shock are:

1. 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.
2. 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.
3. In wet or damp hot locations where humidity or perspiration considerably 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.

3.02 Location

Be sure to locate the welder according to the following guidelines:

A. In areas, free from moisture and dust.

B. Ambient temperature between 0° C to 40° C.

C. In areas, free from oil, steam and corrosive gases.

D. In areas, not subjected to abnormal vibration or shock.

E. In areas, not exposed to direct sunlight or rain.

F. The enclosure design of this Wire Feeder meets the requirements of IP23S as outlined in AS60529. This provides adequate protection against solid objects (greater than 12mm), and direct protection from vertical drops. Under no circumstances should the unit be operated or connected in a micro environment that will exceed the stated conditions. For further information please refer to AS 60529.

G. Precautions must be taken against the Wire Feeder toppling over. The Wire Feeder must be located on a suitable horizontal surface in the upright position when in use.

WARNING

This equipment should be electrically connected by a qualified electrician.

3.03 Ventilation

WARNING

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

3.04 Mains Supply Voltage Requirements

See Operating Manual for Transmig 355i.

3.05 Electromagnetic Compatibility

WARNING

Extra precautions for Electromagnetic Compatibility may be required when this Welding Power Source is used in a domestic situation.

A. 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, see NOTE below. 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 Trouble-some.

NOTE!

The welding circuit may or may nor 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 60974-13 Arc Welding Equipment - Installation and use (under preparation).

B. 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.

1. Other supply cables, control cables, signalling and telephone cables; above, below and adjacent to the welding equipment.
2. Radio and television transmitters and receivers.
3. Computer and other control equipment.
4. Safety critical equipment, e.g. guarding of industrial equipment.
5. The health of people around, e.g. the use of pace-makers and hearing aids.
6. Equipment used for calibration and measurement.
7. The time of day that welding or other activities are to be carried out.
8. 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.

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.

C. Methods of Reducing Electromagnetic Emissions

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.

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.

3. Welding Cables

   The welding cables should be kept as short as possible and should be positioned close together but never coiled and running at or close to the floor level.

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.

5. Earthing/grounding 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 earth-ing 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.

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.

3.06 4RX Wire Feeder Controls, Indicators and Features

The 4RX Wirefeeder is designed to be used with the Transmig 355i. Select MIG Process and REMOTE 10P on the Transmig 355i Power Source to enable the controls on this wirefeeder. Set Internal Switch on Transmig 355i to <1>Local / 4RX / Spool Gun position. See the Transmig 355i Operating manual for details.

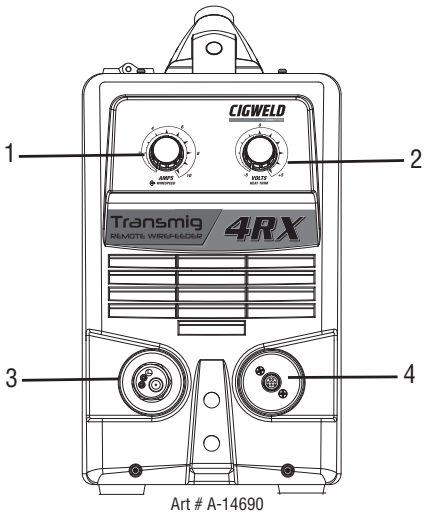


Figure 3-1: 4RX Front Panel Controls

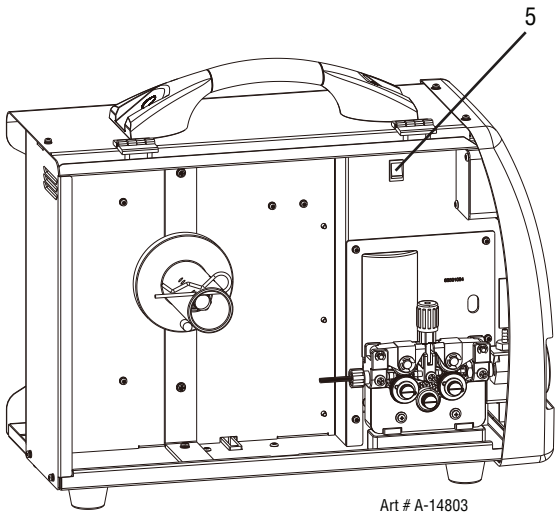
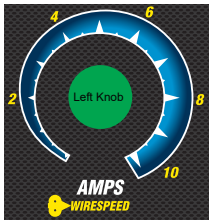


Figure 3-2: 4RX Local/Remote Switch

The Tweco MIG Torch will connect to the 4RX just as it does to the power source. The electrode Polarity setting is done at the power source. See sub sections 3.09 and 3.10.

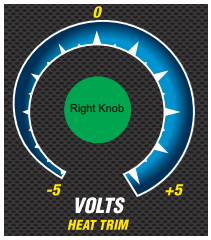
1. Left Knob: WFS (Wire Feed Speed) Control Amperage Control



The Left Knob controls the Amperage and the Wirespeed in the wirefeeder. It adjusts the preview wire speed display in the power source. The amperage control knob adjusts the amount of welding current delivered by the power source. In MIG mode, the amperage knob adjusts the speed of the wire feed motor (which in turn adjusts the output current by varying the amount of MIG wire delivered to the welding arc). The optimum wire speed required is dependent on the type of welding application. The setup chart on the inside of the wire feed compartment door of the Transmig 355i provides a brief summary of the required output settings for a basic range of MIG welding applications. The value may also be adjusted while a weld is in progress.

In Auto MIG mode, adjusting the Wire Feed Speed Control on the 4RX can also select different plate thicknesses. Note that on the Transmig 355i Power Source if Plate Thickness is selected Note that if welding is done then this will revert to display Wire Feed Speed. If you desire to show the plate thickness display again, then press the Wire Feed Speed/Amps knob on the Transmig 355i Power Source to change to display plate thickness mode.

2. Right Knob: MIG Voltage Control



MIG Voltage Control

The Right knob is used to adjust the output voltage of the power source. It adjusts the preview voltage display in the power source. The welding voltage is increased by turning the knob on the 4RX clockwise or decreased by turning the knob anti-clockwise. The optimum voltage level required is dependent on the type of welding application. The setup chart on the inside of the wire feed compartment door of the Transmig 355i provides a brief summary of the required output settings for a basic range of MIG welding applications. The value may also be adjusted while a weld is in progress.

In Auto MIG mode, the Right knob is also used to adjust the HEAT TRIM, the heat setting off the Auto MIG synergic line (which is set at 0 on the scale). The heat value will be shown by pressing the volts knob on the power source. Adjusting the Voltage Control knob clockwise increases the voltage along with the Heat Scale and the maximum value is +5V. Adjusting the Voltage Control knob anti-clockwise decreases the voltage along the Heat Scale, the minimum value is -5V.

3. MIG Torch Adaptor (Euro Style)

The MIG Torch adaptor is the connection point for the MIG welding Torch. Connect the MIG Torch by pushing the MIG Torch connector into the brass MIG Torch adaptor firmly and screwing the plastic MIG Torch nut clockwise to secure in position. To remove the MIG Torch simply reverse these directions.

4. Remote Control Socket

The 8 pin Remote Control Socket is used to connect remote control devices to the 4RX Wirefeeder. To make connections, align keyway, insert plug, and rotate threaded collar fully clockwise.

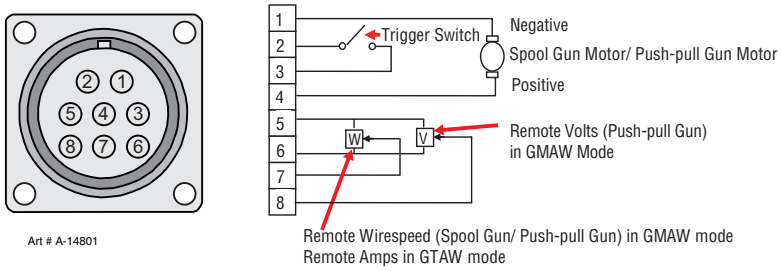


Figure 3-3: Remote Control Socket

Socket Pin	Function
1	Spool gun motor negative
2	Trigger Switch Input
3	Trigger Switch Input
4	Spool gun motor positive
5	5k ohm (maximum) connection to 5k ohm remote control potentiometer.
6	Zero ohm (minimum) connection to 5k ohm remote control potentiometer.
7	Wiper arm connection to 5k ohm remote control Wirespeed MIG (GMAW) mode potentiometer. Wiper arm connection to 5k ohm remote control Amps TIG (GTAW) mode potentiometer.
8	Wiper arm connection to 5k ohm remote control Volts MIG (GMAW) mode potentiometer.

Table 3-1

5. Local/Remote Switch (Located in wire feed compartment)

The remote / local switch(inside the 4RX) is used to switch between using the controls on the wire feeder 4RX and using controls on a Push-Pull gun or other remote device attached wire feeder speed and voltage control. To use the controls on the wirefeeder the switch must be in the Local position. When the local/remote switch is in the local position, the 4RX wirefeeder controls will take over all voltage and wire feed speed will be made from there. To use a remote control device (such as a Push-pull gun with remote voltage and wire feed speed control) the switch must be in the Remote position. Note that the MIG Gun trigger will operate at all times regardless of the position of the local remote switch (i.e. in both local and remote modes).

3.07 Transmig 355i Power Source Controls, Indicators and Features

NOTE!

See Transmig 355i Operator Manual for more information.

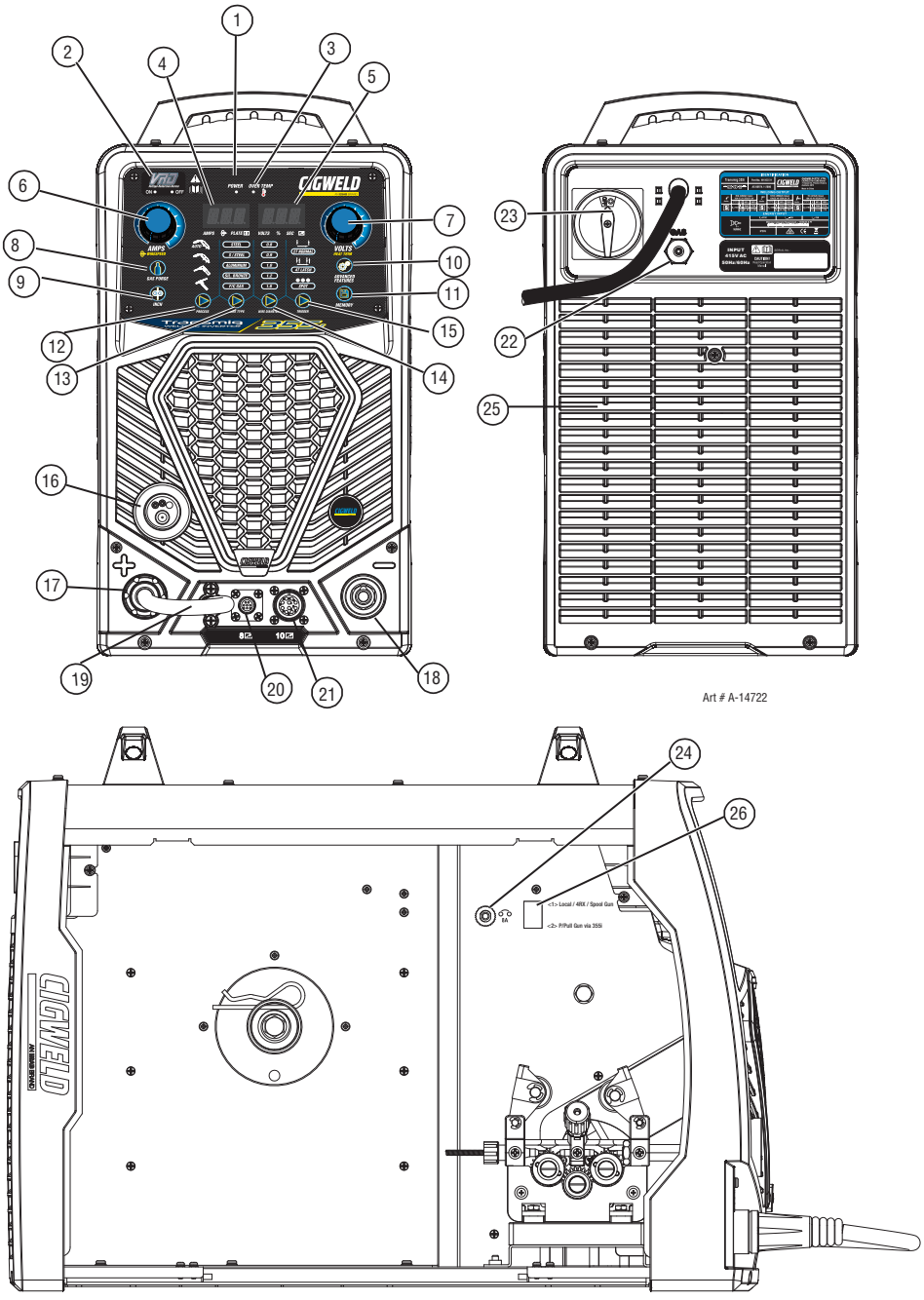


Figure 3-4: Transmig 355i Controls, Indicators and Features

1. Power Indicator

The power indicator is illuminated when the correct mains power is applied to the power source and when the ON/OFF switch located on the rear panel is in the ON position.

2. VRD Indicator ON/OFF Lights

A VRD (voltage reduction device) is a hazard reducing device designed to reduce electric shock hazards present on the output of welding power source when operating in MMAW (stick) mode. Note that the presence of VRD should not be used as a substitute for the use of appropriate safety practices as indicated in section one of this manual.

Both the green and red indicator lights only operate in MMAW (stick) mode.

The green VRD ON light illuminates (red light is off) when the VRD is active. Under this condition the open circuit voltage of the unit is limited to below 35V DC, thus reducing the potential of serious electric shock (such as when changing electrodes).

The red VRD OFF light illuminates (green light is off) when the VRD is inactive. Under this condition the output voltage of the unit will be at welding potential which in some cases may exceed 35V DC.

3. Over Temperature Indicator

This welding power source is protected by a self resetting thermostat. The Over Temp indicator will illuminate if the duty cycle of the power source has been exceeded. Should the Over Temp indicator illuminate the output of the power source will be disabled. Once the power source cools down this Over Temp indicator will go OFF and the over temperature condition will automatically reset. Note that the mains power switch should remain in the On position such that the fan continues to operate thus allowing the unit to cool sufficiently.

4. Digital Amps Meter (Left Digital Display)

MIG Mode

This digital meter is used to display the pre-set (preview) Wirefeed Speed in Meters Per Minute (MPM) in MIG mode and actual welding amperage of the power source when welding. At times of non-welding, the digital meter will display a pre-set (preview) value of Wirefeed Speed. This value can be adjusted by varying the Amperage Control Knob (6). In Auto MIG mode, the digital meter will also display the plate thickness, and the wirefeed speed and plate thickness can be alternatively displayed by pressing the Amperage Control Knob (6).

STICK and LIFT TIG Modes

The digital meter is used to display the pre-set (preview) amperage in STICK / LIFT TIG modes and actual welding amperage of the power source when welding. At times of non-welding, the amperage meter will display a pre-set (preview) value in both STICK and LIFT TIG modes. This value can be adjusted by varying the Amperage Control Knob (6).

When welding, this digital meter will display actual welding amperage in all modes.

At the completion of welding, the digital meter will hold the last recorded amperage value for a period of approximately 10 seconds in all modes. The amperage meter will hold the value until; (1) any of the front panel controls are adjusted in which case the unit will revert to preview mode, (2) welding is recommenced, in which case actual welding amperage will be displayed, or (3) a period of 10 seconds lapses following the completion of welding in which case the unit will return to preview mode.

In advanced operation, this display is also used to show the ADVANCED FEATURE. Please refer to Transmig 355i Operating Manual for more details.

NOTE!

The preview functionality provided on this power source is intended to act as a guide only. Some differences may be observed between preview values and actual welding values due to factors including the mode of welding, differences in consumables/gas mixtures, individual welding techniques and the transfer mode of the welding arc (ie dip versus spray transfer). Where exact settings are required (in the case of procedural work), it is recommended that alternate measurement methods be utilised to ensure output values are accurate.

5. Digital Voltage Meter (Right Digital Display)

MIG Mode

This digital meter is used to display the pre-set (preview) Voltage in MIG mode and actual welding voltage of the power source when welding. At times of non-welding, the digital meter will display a pre-set (preview) value of Voltage. This value can be adjusted by varying the Volt Control Knob (7). In Auto MIG mode, the digital meter will also display the HEAT Value, and the pre-set voltage and heat value can be alternatively displayed by pressing the Volt Control Knob (7).

STICK and LIFT TIG Modes

This digital meter is used to display the Welding Output Terminal Voltage in STICK / LIFT TIG modes during non-welding or welding. This value cannot be adjusted by varying the Volt Control Knob (7).

When welding, this digital meter will display actual welding voltage in all modes.

At the completion of welding, the digital meter will hold the last recorded voltage value for a period of approximately 10 seconds in all modes. The voltage meter will hold the value until; (1) any of the front panel controls are adjusted in which case the unit will revert to preview mode, (2) welding is recommenced, in which case actual welding amperage will be displayed, or (3) a period of 10 seconds lapses following the completion of welding in which case the unit will return to preview mode.

In advanced operation, this display is also used to show the ADVANCED FEATURET VALUE. Please refer to Transmig 355i Operating Manual for more details.

NOTE!

The preview functionality provided on this power source is intended to act as a guide only. Some differences may be observed between preview values and actual welding values due to factors including the mode of welding, differences in consumables/gas mixtures, individual welding techniques and the transfer mode of the welding arc (ie dip versus spray transfer). Where exact settings are required (in the case of procedural work), it is recommended that alternate measurement methods be utilised to ensure output values are accurate.

6. Amperage Control (Wirespeed)

The amperage control knob adjusts the amount of welding current delivered by the power source. In MMAW (stick) and GTAW (TIG) modes, the amperage control knob directly adjusts the power inverter to deliver the desired level of output current. In GMAW/FCAW modes (MIG), the amperage knob adjusts the speed of the wire feed motor (which in turn adjusts the output current by varying the amount of MIG wire delivered to the welding arc). The optimum wire speed required will be dependent on the type of welding application. The setup chart on the inside of the wire feed compartment door provides a brief summary of the required output settings for a basic range of MIG welding applications.

NOTE!

In Auto MIG mode adjusting the Wire Feed Speed Control may also Synergically adjust the voltage value.

Pressing this knob in Auto MIG selects Wirefeed speed or Plate (Material) Thickness.

Also when in Advanced Features mode pressing this knob allows the user to step through Advanced Features functions. Please refer to Transmig 355i Operating Manual for more details.

NOTE!

The preview functionality provided on this power source is intended to act as a guide only. Some differences may be observed between preview values and actual welding values due to factors including the mode of welding, differences in consumables/gas mixtures, individual welding techniques and the transfer mode of the welding arc (ie dip versus spray transfer). Where exact settings are required (in the case of procedural work), it is recommended that alternate measurement methods be utilised to ensure output values are accurate.

7. Voltage Control

In MIG (GMAW/FCAW) mode only, the voltage control knob is used to adjust the output voltage of the unit. The welding voltage is increased by turning the knob clockwise or decreased by turning the knob anti-clockwise. The optimum voltage level required will be dependent on the type of welding application.

In Manual MIG Mode, the setup chart on the inside of the wire feed compartment door provides a brief summary of the required output settings for a basic range of MIG welding applications.

NOTE!
In Auto MIG mode adjusting the Wire Feed Speed Control may also Synergically adjust the voltage value.

In Auto MIG mode pressing the Volts Control Knob will select Heat Control function which by turning the Voltage Control knob clockwise increases the voltage by 0.1V increments and the maximum value is +5V.

Adjusting the Voltage Control knob anti-clockwise decreases the voltage by 0.1V increments, the minimum value will be limited by the minimum output voltage, normally -5V.

Turning the voltage control knob will adjust the heat setting off the Auto MIG synergic line (which is set at 0 on the Heat Control).

8. Purge Button

The Gas Purge button is active in GMAW/FCAW (MIG) mode only.

This will purge the Shielding Gas (MIG) through the MIG Gun when pressed.

When button is pressed and released it will purge the shielding gas for 20 seconds. If during that time the gas purge is required to be stopped press the button again to stop it.

9. Inch Button

The INCH button is active in GMAW/FCAW mode (MIG) only.

Press and hold the INCH button to Inch the MIG welding wire through the MIG Gun.

10. Advanced Features Button

Press and release the Advanced Features button to enter or exit from the advanced programming mode. To exit, simply press and release the button again. User can scroll through Advanced Features by using AMPS Control Knob (6) and can scroll through the parameters of each Advanced Features by using VOLTS Control Knob (7). Any changes made are saved. The advanced programming menu items are described in detail for each welding mode in Transmig 355i Operating Manual.

11. Memory Button

Frequently used weld settings for MIG, STICK, TIG can be saved to the memory for future use.

To SAVE A MEMORY

To store welding parameters to Memory, press and hold the MEMORY button for 3 seconds. The left LED shows STR (STORE).

Then turn the Right Knob (VOLTS Control No. 7) to select a memory location 1 to 15 that can be loaded or overwritten. Confirm by pressing and holding the Right Knob (VOLTS Control No. 7) for 3 seconds to save to memory.

To RECALL A MEMORY

To recall welding parameters from the stored Memory, press and release the MEMORY button. The left LED shows MEM.

Then turn the Right Knob (VOLTS Control No. 7) to select a memory location 1 to 15 that can be recalled. Confirm by pressing and holding the Right Knob (VOLTS Control No. 7) for 3 seconds to recall the stored memory.

12. Process Selection Control - Auto MIG,Manual MIG,STICK &LIFT TIG

The process selection control is used to select the desired welding mode. Four modes are available, AUTO MIG, MANUAL MIG (GMAW / FCAW (MIG)), GTAW (Lift TIG) and MMAW (Stick) modes. Refer to Transmig 355i Operating Manual for more details.

Note that when the unit is powered off the mode selection control will automatically default to MIG mode. This is necessary so as to prevent inadvertent arcing should an electrode holder be connected to the unit and mistakenly be in contact with the work piece during power up.

13. Material Type (MIG only)

The process selection control is used to select the welding material type. Five types are available, STEEL (MILD STEEL), S/STEEL (STAINLESS STEEL), ALUMINIUM, SIL.BRONZE(SILICON BRONZE) and F/C GAS (FLUX CORED MIG SHIELDED). Refer to Transmig 355i Operating Manual for more details.

14. Wire Diameter Selection

The process selection control is used to select the wire diameter on AUTO MIG mode. Five types are available, 0.8mm (MILD STEEL), 0.9mm (MILD STEEL, S/STEEL, Aluminium, SIL.BRONZE),1.0mm(MILD STEEL, Aluminium, SIL.BRONZE) , 1.2mm(MILD STEEL, S/STEEL, Aluminium, SIL.BRONZE, F/C GAS) and 1.6mm(F/C GAS). Refer to Transmig 355i Operating Manual for more details.

15. Trigger Mode Control (MIG and TIG Mode only)

The trigger mode control is used to switch the functionality of the torch trigger from 2T (normal), 4T (latch mode) and Spot Welding (MIG mode).

2T Normal Mode

In this mode, the torch trigger must remain depressed for the welding output to be active. Press and hold the torch trigger to activate the power source (weld). Release the torch trigger switch to cease welding.

4T Latch Mode

This mode of welding is mainly used for long welding runs to reduce operator fatigue. In this mode the operator can press and release the torch trigger and the output will remain active. To deactivate the power source, the trigger switch must again be depressed released, thus eliminating the need for the operator to hold the torch trigger.

Note that 4T mode is required to be selected for Crater Current and Crater Voltage functions.

Note that when operating in GTAW (TIG mode), the power source will remain activated until the selected downslope time has elapsed.

SPOT WELDING (MIG mode)

Spot welding is used to weld two thin plates together at a desired location by melting the top and bottom plates together to form a nugget between them.

16. MIG Torch Adaptor (Euro Style)

The MIG torch adaptor is the connection point for the MIG welding torch. Connect the torch by pushing the torch connector into the brass torch adaptor firmly and screwing the plastic torch nut clockwise to secure in position. To remove the MIG Torch simply reverse these directions.

17. Positive Welding Output Terminal

The positive welding terminal is used to connect the welding output of the power source to the appropriate welding accessory such as the MIG torch (via the MIG torch polarity lead), electrode holder lead or work lead. Positive welding current flows from the power source via this Dinse type terminal. It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

CAUTION
Loose welding terminal connections can cause overheating and result in the male plug being fused in the Dinse terminal.

18. Negative Welding Output Terminal

The negative welding terminal is used to connect the welding output of the power source to the appropriate welding accessory such as the MIG torch (via the MIG torch polarity lead), TIG torch or work lead. Negative welding current flows to the power source via this heavy duty Dinse type terminal. It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

CAUTION
Loose welding terminal connections can cause overheating and result in the male plug being fused in the Dinse terminal.

19. MIG Torch Polarity Lead

The polarity lead is used to connect the MIG torch to the appropriate positive or negative output terminal (allowing polarity reversal for different welding applications). In general, the polarity lead should be connected in to the positive welding terminal (+) when using steel, stainless steel or aluminium electrode wire. When using gasless wire, the polarity lead is generally connected to the negative welding terminal (-). If in doubt, consult the manufacturer of the electrode wire for the correct polarity. It is essential, however, that the male plug is inserted and turned securely to achieve a sound electrical connection.

CAUTION
Loose welding terminal connections can cause overheating and result in the male plug being fused in the Dinse terminal.

20. 8 Pin Control Socket

The 8 pin Remote Control Socket is used to connect remote control devices to the welding power source. To make connections, align keyway, insert plug, and rotate threaded collar fully clockwise.

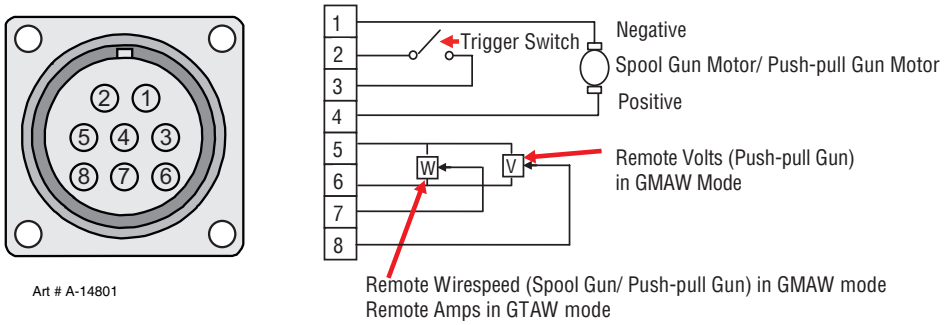


Figure 3-5: 8 Pin Control Socket

Socket Pin	Function
1	Spool gun motor negative
2	Trigger Switch Input
3	Trigger Switch Input
4	Spool gun motor positive
5	5k ohm (maximum) connection to 5k ohm remote control potentiometer.
6	Zero ohm (minimum) connection to 5k ohm remote control potentiometer.
7	Wiper arm connection to 5k ohm remote control Wirespeed MIG (GMAW) mode potentiometer. Wiper arm connection to 5k ohm remote control Amps TIG (GTAW) mode potentiometer.
8	Wiper arm connection to 5k ohm remote control Volts MIG (GMAW) mode potentiometer.

Table 3-2: 8 Pin Interconnection Control Plug configuration

NOTE!

When using a TIG Torch with Remote Current Control via the 8 pin socket that in order to achieve full TIG current range via the torch remote control the wirefeeder 10 pin control plug must be removed from the 10 pin socket of the power source.

NOTE!

When using the spool gun in the 355i, the INTERNAL SWITCH in wirefeed compartment should be set to <1> position (Local, 4RX, Spool Gun).
The R/L setting in ADVANCED FEATURES should be set to 8P (8pin). See Transmig 355i Operating Manual.

When using the push pull gun (in conjunction with Syncroniser Box) with the 355i, the INTERNAL SWITCH in wirefeed compartment should be set to <2> position (P/Pull Gun via 355i).
The R/L setting in ADVANCED FEATURES should be set to 8P (8pin). See Transmig 355i Operating Manual.

21.10 Pin Control Socket

The 10 pin receptacle is used to connect a Wirefeeder remote control device to the welding Power Source circuitry:

To make connections, align keyway, insert plug, and rotate threaded collar fully clockwise. The socket information is included in the event the supplied cable is not suitable and it is necessary to wire a plug or cable to interface with the 10 pin receptacle.

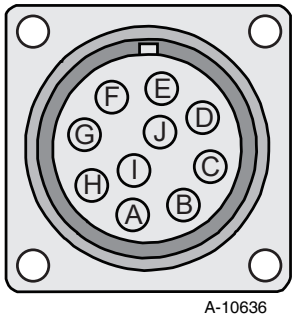


Figure 3-6: 10 Pin Control Socket

Socket Pin	Part Number / Description
A	Remote Voltage Control Potentiometer Wiper
B	Motor Negative
C	Motor Positive
D	Contactor + (Contact closure is provided between socket pins D and G to energise the contactor)
E	Remote Voltage & Wirespeed Control Potentiometers Maximum
F	Remote Wirespeed Control Potentiometer Wiper
G	Contactor Negative, Solenoid Negative
H	Remote Voltage & Wirespeed Control Potentiometers Minimum
I	Solenoid Positive
J	Not used

Table 3-3: 10 Pin Interconnection Control Plug configuration

NOTE!
When using the 10P (10 pin) connection, in order to get full range adjustment the 8 pin control plug must be removed from the 8 pin socket of the power source.

NOTE!
When connecting the 4RX Feeder , the 355i R/L setting in ADVANCED FEATURES should be set to 10P (10pin). See Transmig 355i Operating Manual.

22. Gas Inlet (MIG mode only)

The Gas Inlet connection is used to supply the appropriate MIG welding gas to the unit. Refer to Transmig 355i Operating Manual for setup details.

WARNING
Only Inert Shielding Gases specifically designed for welding applications should be used.

23. ON/OFF Switch

This switch is used to turn the unit ON/OFF. When this switch is turned ON the LED Screen on the front panel will illuminate.

WARNING
When the front digital displays are lit, the machine is connected to the Mains supply voltage and the internal electrical components are at Mains voltage potential.

24. Wiredrive Motor Circuit Breaker

The 8A Circuit Breaker protects the unit from electrical faults and will operate in the event of a motor overload.

NOTE!
If a circuit breaker trips, a short cooling period must be allowed before an attempt is made to reset the unit by pressing the circuit breaker reset button.

25. Cooling Fan

The Transmig 355i is fitted with a fan as needed feature. Fan as needed automatically switches the cooling fan off when it is not required. This has two main advantages; (1) to minimize power consumption, and (2) to minimise the amount of contaminants such as dust that are drawn into the power source.

Note that the fan will only operate when required for cooling purposes and will automatically switch off when not required.

26. Internal Switch

The Internal Switch is used for selection of wire feeding device. When Internal Switch is in <1> Local / 4RX / Spool gun position, only a wire feeding device which is located in Transmig 355i, Transmig 4RX remote wirefeeder, or Spool Gun is active. When Internal Switch is in <2> P/Pull Gun via 355i position, both wire feeding devices in Transmig 355i and Push-Pull Gun are active.

Note that the trigger of a remote TIG torch will operate at all times irrespective of the position of the Internal Switch.

27. Anti Stick Feature (Not Shown)

This feature operates in Stick (Manual Arc) mode. The anti stick feature senses when the electrode sticks and automatically reduces the current to prevent the Stick Electrode from sticking to the work piece. This is a preset feature and is not adjustable.

3.08 Advanced Features Details

See Operating Manual for Transmig 355i for details.

3.09 Wire Feeder Set Up MIG (GMAW) Welding with Gas Shielded MIG Wire

Connection to Transmig 355i

The Transmig 355i is supplied with a Tweco Fusion 400 AMP air-cooled MIG Torch that can be used with the 4RX Wire Feeder. The Fusion MIG Torch is designed with an ergonomic handle and fewer parts to cause performance problems. The Fusion MIG Torch uses standard readily available Tweco Fusion consumable parts.

When using a Gas Shielded wire with the 4RX Wire Feeder, you need to have an external gas source attached to the 4RX.

For most Gas Shielded wire, connect the Work Lead to the negative - terminal on the front of the Transmig 355i and connect the Welding Power Cable from the back of the 4RX to the positive + terminal on the front of the Transmig 355i. Check with wire manufacturer for recommended polarity.

The 4RX Wire Feeder requires an interconnection cable assembly to connect from the back of the 4RX to the front of the Transmig 355i welding power source. 2, 8 and 15M lengths are available.

Connect the MIG Torch to the front of the 4RX as you would to the front of the Transmig 355i. See Figure 3-7 below and Section 3.12.

In MIG (GMAW/FCAW) Mode Advanced Features Menu Map, select Remote/ Local to 10 P. Refer to Transmig 355i Operating Manual for further information

Set Internal Switch in the wirefeeder compartment to <1> Local / 4RX / Spool Gun position. Refer to Transmig 355i Operating Manual for further information.

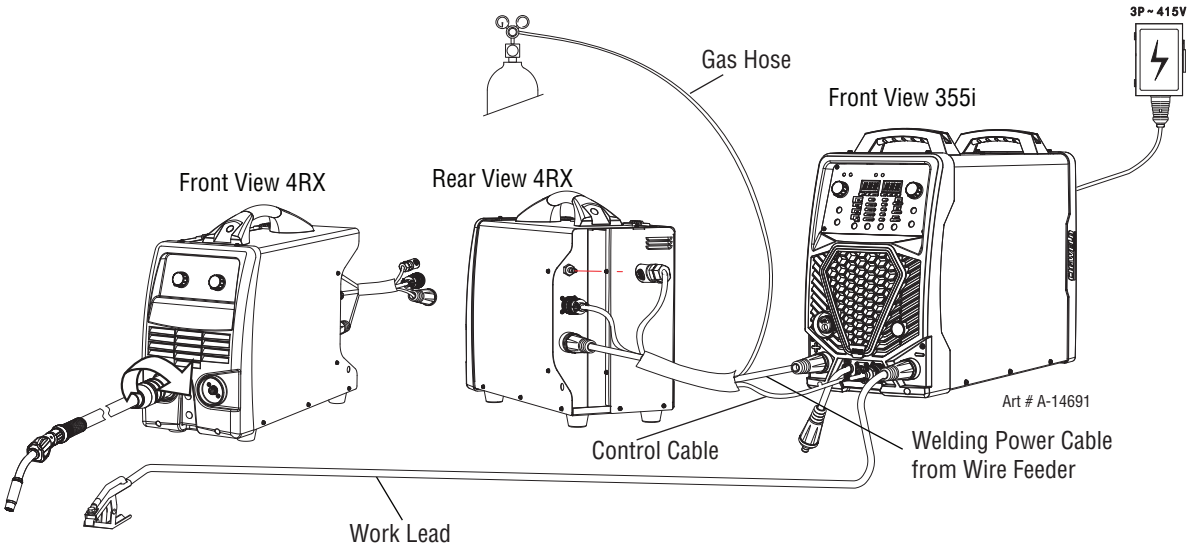


Figure 3-7: Setup for 4RX Wirefeeder with Gas Shielded MIG Wire

WARNING

Before connecting the work clamp to the work make sure the mains power supply is switched off.

CAUTION

Loose welding terminal connections can cause overheating and result in the male plug being fused in the terminal.

NOTE!

Depending on the type of wire you will be using the MIG Torch polarity may need to be switched. Follow the wire manufacturers recommendation.

NOTE!

Spool hub and feed plate setup and operation can be reviewed later in this Section starting at 3.12.

3.10 Wire Feeder Set-up for MIG (FCAW) Welding with Gasless MIG Wire

Connection to Transmig 355i

The Transmig 355i is supplied with a Tweco Fusion 400 AMP air-cooled MIG Torch that can be used with the 4RX Wire Feeder. The Fusion MIG Torch is designed with an ergonomic handle and fewer parts to cause performance problems. The Fusion MIG Torch uses standard readily available Tweco Fusion consumable parts.

When using a gasless flux cored wire, you do not need to have an external gas source attached to the 4RX Wire Feeder. If one is, then make sure it is turned off.

For most Self Shielded Flux Cored Wire, connect the Work Lead to the positive + terminal on the front of the Transmig 355i and connect the Welding Power Cable from the back of the 4RX to the negative - terminal on the front of the Transmig 355i.

The 4RX Wire Feeder requires an interconnection cable assembly to connect from the back of the 4RX to the front of the Transmig 355i welding power source. 2, 8 and 15M are available. See Figure 3-8.

In MIG (GMAW/FCAW)Mode Advanced Features Menu Map, select Remote/ Local to 10 P. Refer to Transmig 355i Operating Manual for further information.

Set Internal Switch in the wirefeeder compartment to <1> Local / 4RX / Spool Gun position. Refer to Transmig 355i Operating Manual for further information.

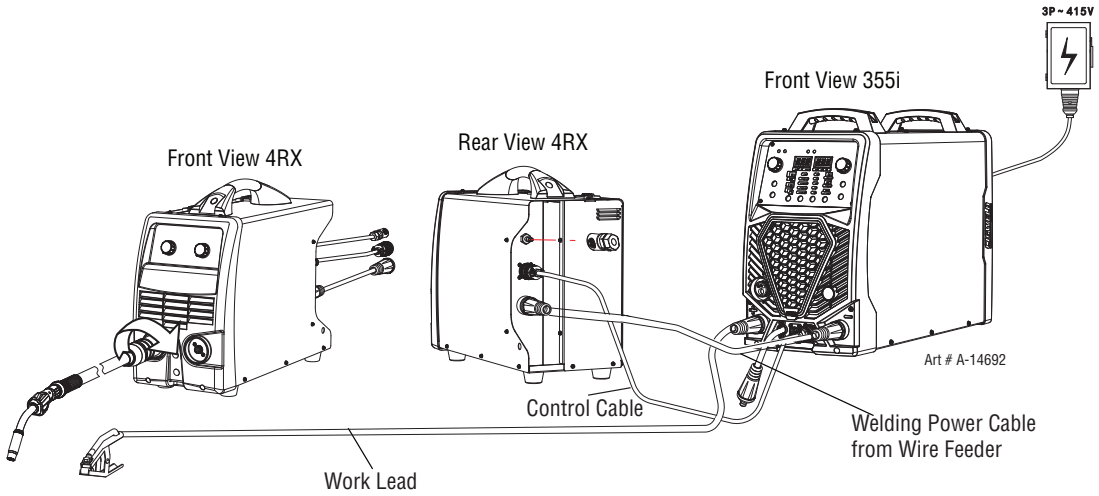


Figure 3-8: Setup for 4RX Wirefeeder with Gasless MIG Wire

WARNING

Before connecting the work clamp to the work make sure the mains power supply is switched off.

CAUTION

Loose welding terminal connections can cause overheating and result in the male plug being fused in the terminal. Remove any packaging material prior to use. Do not block the air vents at the front or rear of the Welding Power Source.

NOTE!

Depending on the type of wire you will be using the MIG Torch polarity may need to be switched. Follow the wire manufacturers recommendation.

NOTE!

Spool hub and feed plate set up and operation are similar to the 355i which can be reviewed later in this section starting at 3.12.

3.11 Wire Feeder Set-up for PUSH PULL GUN MIG (GMAW) Welding

A. The Transmig 355i is supplied with a TBi Push-Pull Gun,that can be used with the 4RX Wire Feeder. The TBi Push-Pull Gun is designed with an ergonomic handle and fewer parts to cause performance problems. The TBi Push-Pull Gun with the synchronous control box that provide the stabled and smooth wire speed for Push-Pull Gun.

B. Fit the Euro Push-pull Gun to the wire feeder using the front panel EURO torch adaptor (refer also to Section 5.05 the Tweco Professional Fusion MIG Torch). Connect the push-pull gun 10 pin Remote Control Plug to the 10 pin Synergic Control Socket on Synergic control box. Connect the Synergic control box 8 pin Remote Control Plug to the 8 pin Remote Control Socket on the power source.

C. For most Gas Shielded wire, connect the Work Lead to the negative - terminal on the front of the Transmig 355i and connect the Welding Power Cable from the back of the 4RX to the positive + terminal on the front of the Transmig 355i. Check with wire manufacturer for recommended polarity.

D. The 4RX Wire Feeder requires an interconnection cable assembly to connect from the back of the 4RX to the front of the Transmig 355i welding power source. 2, 8 and 15M lengths are available.

E. Refer to the Weld Guide located on Transmig 355i for further information.

F. Select MIG mode with the process selection control on Transmig 355i (refer to Section 3.07.12).

G. In MIG (GMAW/FCAW)Mode Advanced Features Menu Map, select Remote/ Local to 10P. Refer to Transmig 355i Operating Manual for further information.

H. Set Internal Switch in the wirefeeder compartment to <1> Local / 4RX / Spool Gun position. Refer to Transmig 355i Operating Manual for further information

WARNING
Before connecting the work clamp to the work make sure the mains power supply is switched off.
Secure the welding grade shielding gas cylinder in an upright position by chaining it to a suitable stationary support to prevent falling or tipping.

CAUTION
Loose welding terminal connections can cause overheating and result in the male plug being fused in the terminal.
Remove any packaging material prior to use. Do not block the air vents at the front or rear of the Welding Power Source.

WARNING
Before connecting the work clamp to the work make sure the mains power supply is switched off.
Secure the welding grade shielding gas cylinder in an upright position by chaining it to a suitable stationary support to prevent falling or tipping.

CAUTION
Loose welding terminal connections can cause overheating and result in the male plug being fused in the terminal.
Remove any packaging material prior to use. Do not block the air vents at the front or rear of the Welding Power Source.

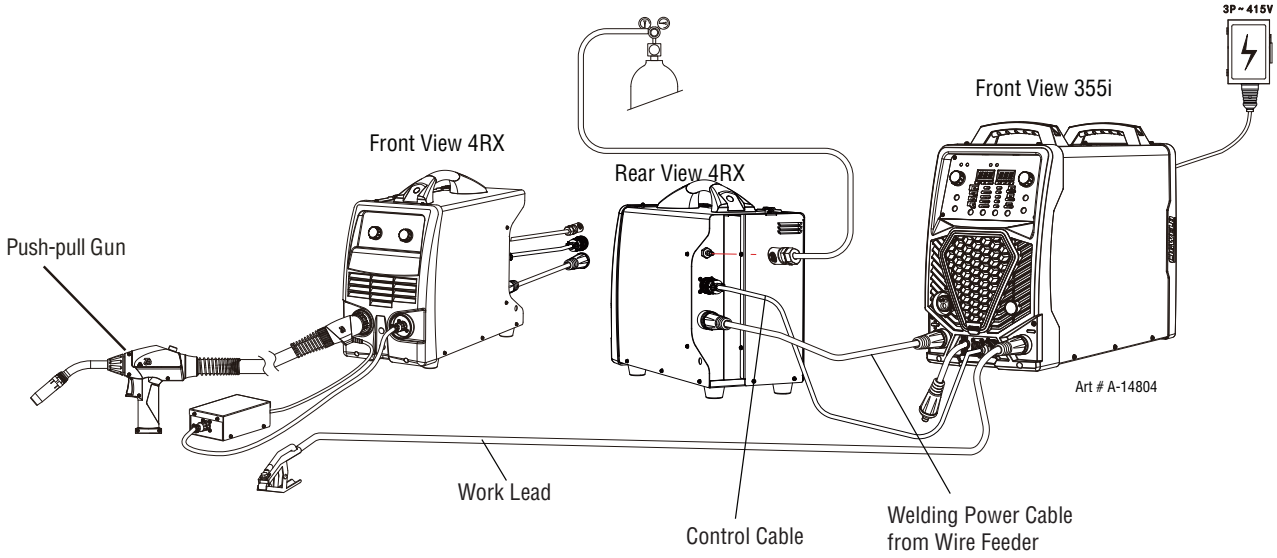


Figure 3-9

3.12 Attaching the Tweco Professional MIG Torch (Euro)

1. Align the pins on the MIG Torch Cable with the pin holes of the MIG Torch receptacle on the front of the system. Press the MIG Torch in and secure by turning the locking ring to the right (clockwise). Refer to Figure 3-10.

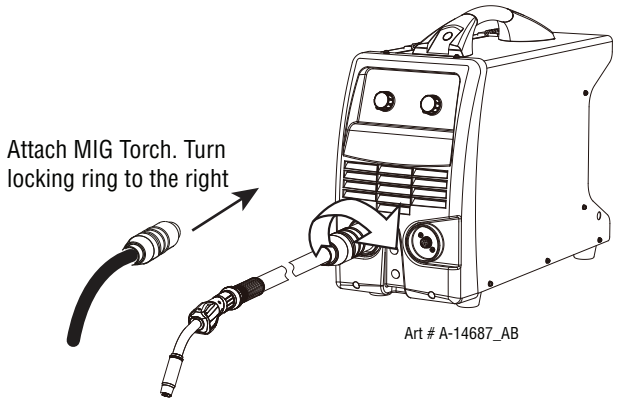


Figure 3-10: Mount MIG Torch Cable to Adapter Socket

NOTE!

When disconnecting the MIG Torch trigger switch leads from the machine, Do Not pull on the wires. Loosen the locking ring and gently pull the plug out of the socket.

3.13 Installing a Handi Spool (200mm diameter)

In order to fit a Handi Spool (200mm diameter) assemble parts in the sequence shown in Figure 3-11.

Installation of wire spool.

1. Remove spool hub nut by unscrewing in an anticlockwise direction.
2. Place Wire Spool onto the hub, loading it so that the wire will feed off the bottom of the spool as the spool rotates counter clockwise.
3. Place 200mm diameter wire spool adaptor onto the hub and tighten the spool hub nut by turning it clockwise.

NOTE!

The Wire Wheel Brake has been pre-adjusted at the factory. However if adjustment is required, refer to Section 3.18.

CAUTION

Use care in handling the spooled wire as it will tend to "unravel" when loosened from the spool. Grasp the end of the wire firmly and don't let go of it.

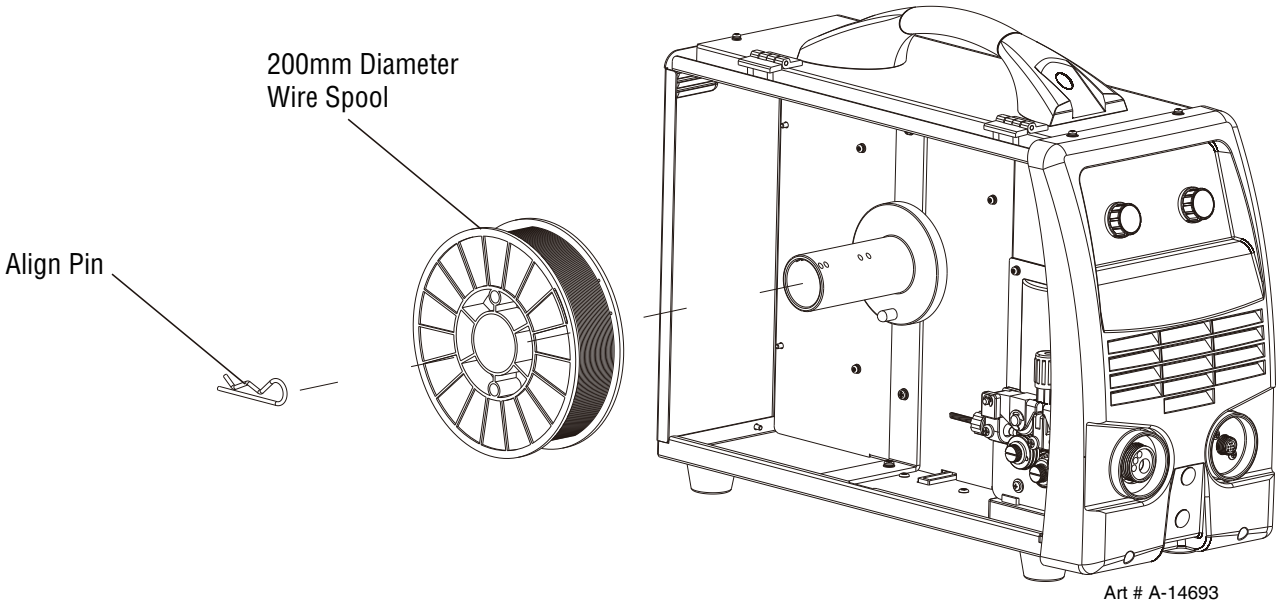


Figure 3-11: 200mm Handi Spool Installation

3.14 Installing a Standard Spool (300mm diameter)

As delivered from the factory, the unit is set for a 15 kg or 300mm spool.

Installation of wire spool. Refer to Figure 3-12.

1. Remove spool hub nut by unscrewing in an anticlockwise direction.
2. Place Wire Spool onto the hub, loading it so that the wire will feed off the bottom of the spool as the spool rotates counter clockwise.
3. Tighten the spool hub nut by turning it clockwise.

NOTE!

The Wire Wheel Brake has been pre-adjusted at the factory. However if adjustment is required, refer to Section 3.18.

CAUTION

Use care in handling the spooled wire as it will tend to "unravel" when loosened from the spool. Grasp the end of the wire firmly and don't let go of it.

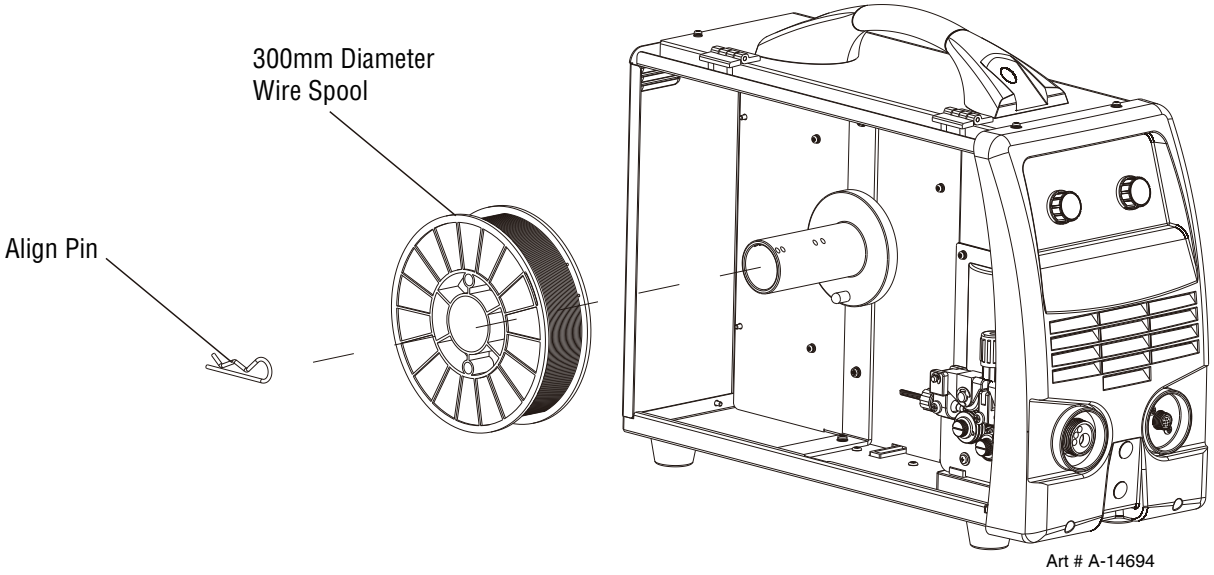


Figure 3-12: Standard 300mm Spool Installation

3.15 Inserting Wire into the Feed Mechanism

WARNING

ELECTRIC SHOCK CAN KILL! Make certain the input power is disconnected from the power source before proceeding. Do not reattach the input power until told to do so in these instructions.

1. Loosen the Spring Pressure Adjusting Knob if needed and swing it down (Figure. 3-13)
2. Move the Pressure (top) Roller Arms by swinging them up. (Figure. 3-14)
3. Make sure the end of the wire is free of any burrs and is straight. Pass the end of wire through the Inlet Wire Guide and over the Feedrolls. Make certain the proper groove is being used. (Figure. 3-14)
4. Pass the MIG wire over the drive roll groove, through the outlet guide and out past the MIG Torch Adaptor. Then fit the MIG Torch as per Section 3.12 ensuring the MIG wire passes into the MIG Torch liner of the MIG Torch.
5. Close the Pressure Roller Arm. (Figure. 3-15)
6. Swing the Spring Pressure Adjusting Knob back into place. (Figure. 3-16)
7. Use the Pressure Adjusting Knob to create a “snug” condition. (Clockwise to tighten and Counter Clockwise to loosen). (Figure. 3-16)
8. Continue to the next section for proper setting of tension.

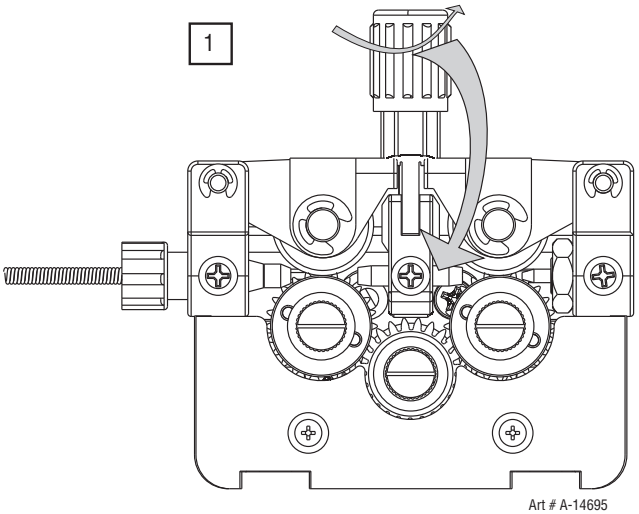


Figure 3-13: Opening Pressure Arm

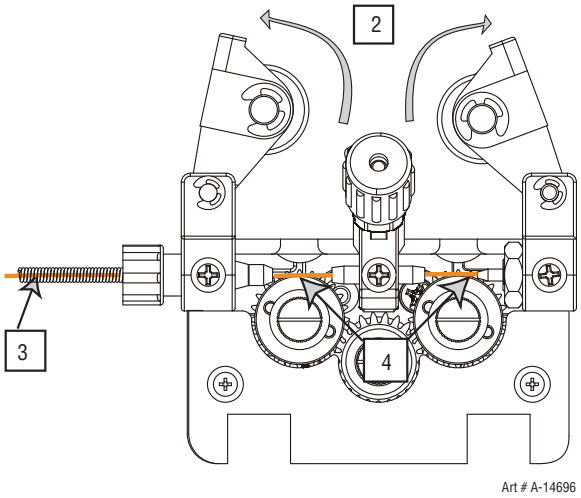


Figure 3-14: Opening Tension Arms and Inserting Wire

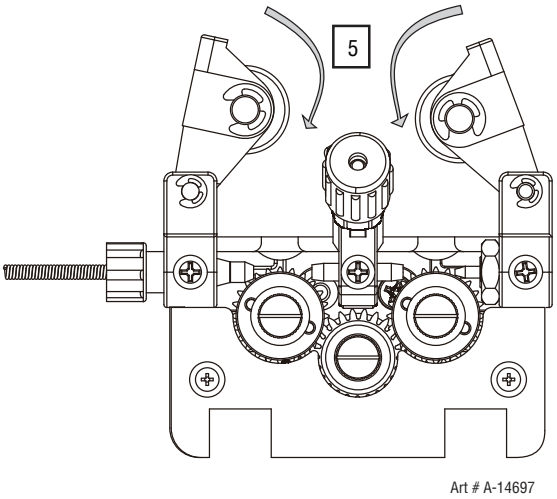


Figure 3-15: Closing Pressure Arm

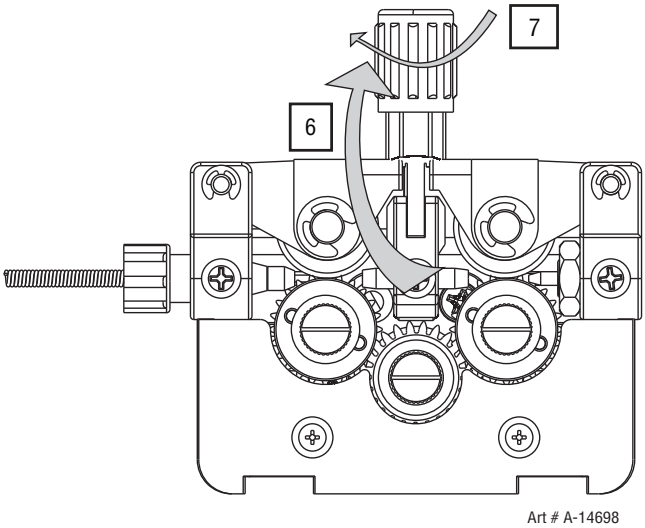


Figure 3-16: Adjusting Tension

3.16 Feed Roller Pressure Adjustment

NOTE!

Before attempting to set the drive roller pressure you must select GMAW mode on the power supply.

The roller on the swing arms apply pressure to the grooved roller via an adjustable tension devise. The Tension Adjusters should be set to a minimum pressure that will provide satisfactory wire feed without slippage. If slipping occurs, and inspection of the wire out of the MIG Torch reveals no deformation or wear, the conduit liner should be checked for kinks or clogging from metal flakes. If this is not the cause of slipping, the feedroll pressure can be increased by rotating the Tension Adjusting knobs clockwise. The use of excessive pressure may cause rapid wear of the feed roller, motor shaft and motor bearings.

NOTE!

Genuine TWECO contact tips and liners should be used. Many non-genuine liners use inferior materials which can cause wire feed problems.

3.17 Changing the Feed Roll

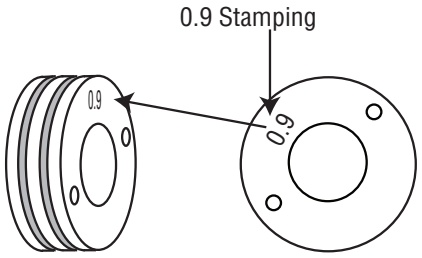
NOTE!

Feedrolls often come with a rust prohibitive coating that needs to be cleaned off before installation.

A Feedroll consists of two different sized grooves. As delivered from the factory the drive roll is installed for 0.9mm / 1.2mm.

The stamped marking on the feedroll refers to the groove furthest from the stamped marking. When mounted, that will be the groove closest to the motor and the one to thread.

To ensure proper wire feed, the groove closest to the motor must match the electrode wire size being used.



Art# A-14699

The size that is visible when fitting the feedroll is the groove size in use.

Figure 3-17: Feedroll Example

NOTE!

All grooved feed rolls have their wire size or range stamped on the side of the roll. On rolls with different size grooves, the outer (visible when installed) stamped wire size indicates the groove in use.

Refer to feed roll kit in the Appendix for the proper selection and ordering of feed roll kits. Kit includes drive rolls, an input wire guide and an output wire guide for a specific wire type and size.

Feed rolls are removed by twisting the feed roll retainer cap and aligning the retaining knob splines/tabs with the drive gear splines. Feedrolls are installed by putting the feedroll onto the drive gear splines and twisting the feedroll retainer cap so that the splines/tabs rest against the face of the feedroll where they will click into place.

NOTE!

Installation of all styles of feed rolls are identical.

WARNING

The welding wire is electrically Hot if it is fed by depressing MIG Torch switch. Electrode contact to work piece will cause an arc with MIG Torch switch depressed.

3.18 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 spool hub nut. Clockwise rotation will tighten the brake. (Refer to Figure 3-18).

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.

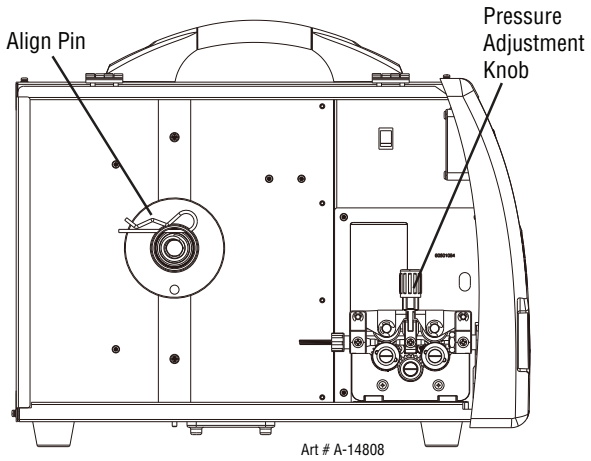


Figure 3-18: Wheel Brake (Wire not installed)

CAUTION

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

NOTE!

Correct adjustment will result in the wire reel circumference continuing no further than 20mm after release of the MIG Torch trigger switch. The wire should be slack without becoming dislodged from the reel.

3.19 Shielding Gas Regulator Operating Instructions

WARNING

This equipment is designed for use with welding grade (Inert) shielding gases only.

NOTE!

Shielding Gas Regulator not included in the Transmig 4RX.

NOTE!

Shielding Gas is not required if the unit is used with self shielded FCAW (flux cored arc welding) wires.

Shielding Gas Regulator Safety

This regulator is designed to reduce and control high pressure gas from a cylinder or pipeline to the working pressure required for the equipment using it.

If the equipment is improperly used, hazardous conditions are created that may cause accidents. It is the users responsibility to prevent such conditions. Before handing or using the equipment, understand and comply at all times with the safe practices prescribed in this instruction.

SPECIFIC PROCEDURES for the use of regulators are listed below.

1. NEVER subject the regulator to inlet pressure greater than its rated inlet pressure.
2. NEVER pressurize a regulator that has loose or damaged parts or is in a questionable condition. NEVER loosen a connection or attempt to remove any part of a regulator until the gas pressure has been relieved. Under pressure, gas can dangerously propel a loose part.
3. DO NOT remove the regulator from a cylinder without first closing the cylinder valve and releasing gas in the regulator high and low pressure chambers.
4. DO NOT use the regulator as a control valve. When downstream equipment is not in use for extended periods of time, shut off the gas at the cylinder valve and release the gas from the equipment.
5. OPEN the cylinder valve SLOWLY. Close after use.

User Responsibilities

This equipment will perform safely and reliable only when installed, operated, maintained, and repaired in accordance with the instructions provided. Equipment must be checked periodically and repaired, replaced, or reset as necessary for continued safe and reliable performance. Defective equipment should not be used. Parts that are broken, missing, obviously worn, distorted, or contaminated should be replaced immediately.

The user of this equipment will generally have the sole responsibility for any malfunction, which results from improper use, faulty maintenance, or by repair by anyone other than an accredited repairer.

CAUTION

Match regulator to cylinder. NEVER CONNECT a regulator designed for a particular gas or gases to a cylinder containing any other gas.

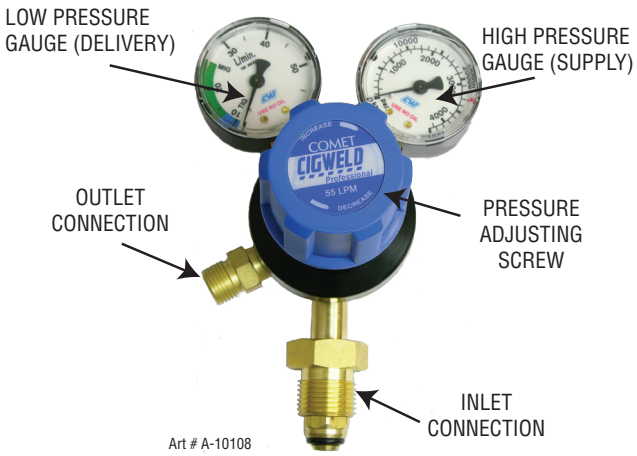


Figure 3-19: Adjusting Flow Rate

NOTE!

The regulator/flow meters used with argon based and carbon dioxide shielding gases are different. The regulator/flow meter supplied with certain welders is for argon based shielding gases. If carbon dioxide is to be used a suitable carbon dioxide regulator/flow meter will need to be fitted.

NOTE!

All valves downstream of the regulator must be opened to obtain a true flow rate reading on the outlet gauge. (Welding power source must be triggered) Close the valves after the pressure has been set.

Installation

1. Remove cylinder valve plastic dust seal. Clean the cylinder valve outlet of impurities that may clog orifices and damage seats before connecting the regulator.

   Crack the valve (open then close) momentarily, pointing the outlet away from people and sources of ignition. Wipe with a clean lint free cloth.

2. Match regulator to cylinder. Before connecting, check that the regulator label and cylinder marking agree and that the regulator inlet and cylinder outlet match. NEVER CONNECT a regulator designed for a particular gas or gases to a cylinder containing any other gas.

3. Connect the regulator inlet connection to cylinder or pipeline and tighten it firmly but not excessively, with a suitable spanner.

4. Attach the gas line from the back of the 4RX to the regulator output.

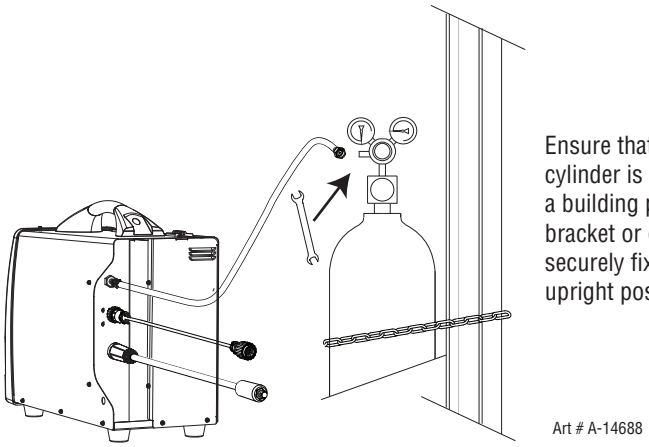


Figure 3-20: Attach gas line to proper inlet

5. To protect sensitive down-stream equipment a separate safety device may be necessary if the regulator is not fitted with a pressure relief device.

Operation

With the regulator connected to cylinder or pipeline, and the adjustment screw/knob fully disengaged, pressurize as follows:

1. Stand to one side of regulator and slowly open the cylinder valve. If opened quickly, a sudden pressure surge may damage internal regulator parts.
2. With valves on downstream equipment closed, adjust regulator to approximate working pressure. It is recommended that testing for leaks at the regulator connection points be carried out using a suitable leak detection solution or soapy water.
3. Purge air or other unwanted welding grade shielding gas from equipment connected to the regulator by individually opening then closing the equipment control valves. Complete purging may take up to ten seconds or more, depending upon the length and size of the hose being purged.

Adjusting Flow Rate

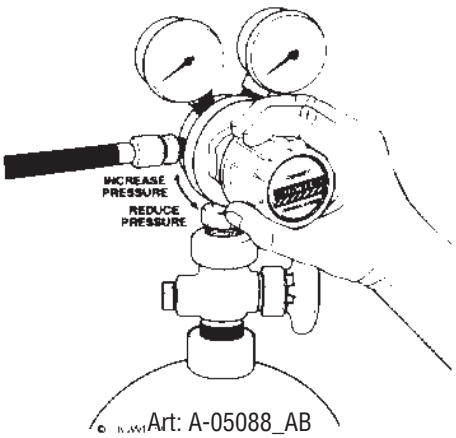


Figure 3-21: Adjust Flow Rate

With the regulator ready for operation, adjust working flow rate as follows:

1. Slowly turn adjusting screw/knob in (clockwise) direction until the outlet gauge indicates the required flow rate.

> **NOTE!**
>
> It may be necessary to re-check the shielding gas regulator flow rate following the first weld sequence due to back pressure present within shielding gas hose assembly.

2. To reduce flow rate, allow the welding grade shielding gas to discharge from regulator by opening the downstream valve. Bleed welding grade shielding gas into a well ventilated area and away from any ignition source. Turn adjusting screw counterclockwise, until the required flow rate is indicated on the gauge. Close downstream valve.
3. Adjust regulator pressure adjusting screw to the required flow rate, indicated on gauge dial. (Refer back to Figure 3-19)

The gas flow rate should be adequate to cover the weld zone to stop weld porosity. Excessive gas flow rates may cause turbulence and weld porosity.

Argon or argon based gas flow rates:

- Workshop welding: 10-15 LPM
- Outdoor welding: 15-20 LPM

Shutdown

Close cylinder valve whenever the regulator is not in use. To shut down for extended periods (more than 30 minutes).

1. Close cylinder or upstream valve tightly.
2. Open downstream equipment valves to drain the lines. Bleed gas into a well ventilated area and away from any ignition source.
3. After gas is drained completely, disengage adjusting screw and close downstream equipment valves.
4. Before transporting cylinders that are not secured on a cart designed for such purposes, remove regulators.

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SECTION 4: BASIC WELDING GUIDE

4.01 MIG (GMAW/FCAW) Basic Welding Technique

Two different welding processes are covered in this section (GMAW and FCAW), with the intention of providing the very basic concepts in using the MIG mode of welding, where a MIG Torch is hand held, and the electrode (welding wire) is fed into a weld puddle, and the arc is shielded by an inert welding grade shielding gas or inert welding grade shielding gas mixture.

GAS METAL ARC WELDING (GMAW): This process, also known as MIG welding, CO_2 welding, Micro Wire Welding, short arc welding, dip transfer welding, wire welding etc., is an electric arc welding process which fuses together the parts to be welded by heating them with an arc between a solid continuous, consumable electrode and the work. Shielding is obtained from an externally supplied welding grade shielding gas or welding grade shielding gas mixture. The process is normally applied semi automatically; however the process may be operated automatically and can be machine operated. The process can be used to weld thin and fairly thick steels, and some non-ferrous metals in all positions.

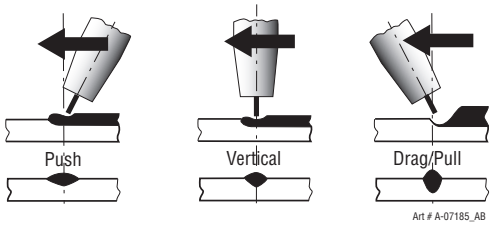
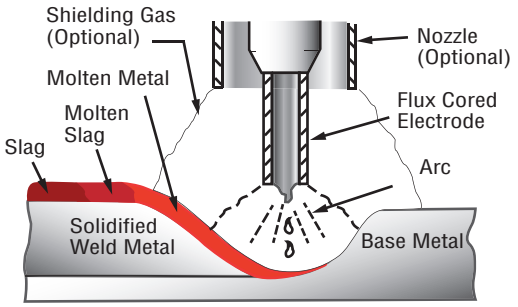


Figure 4-1

FLUX CORED ARC WELDING (FCAW): This is an electric arc welding process which fuses together the parts to be welded by heating them with an arc between a continuous flux filled electrode wire and the work. Shielding is obtained through decomposition of the flux within the tubular wire. Additional shielding may or may not be obtained from an externally supplied gas or gas mixture. The process is normally applied semi automatically; however the process may be applied automatically or by machine. It is commonly used to weld large diameter electrodes in the flat and horizontal position and small electrode diameters in all positions. The process is used to a lesser degree for welding stainless steel and for overlay work.



FCAW Process

Figure 4-2

Position of MIG Torch

The angle of MIG Torch to the weld has an effect on the width of the weld.

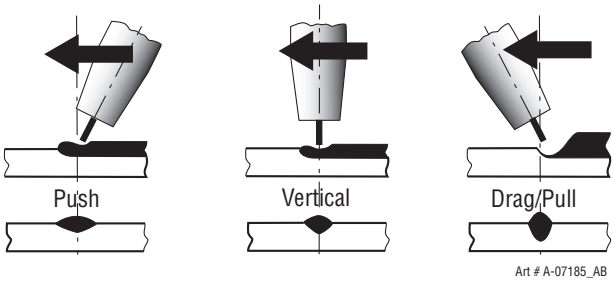


Figure 4-3

The MIG Torch should be held at an angle to the weld joint. (see Secondary Adjustment Variables below)

Hold the MIG Torch so that the welding seam is viewed at all times. Always wear the welding helmet with proper filter lenses and use the proper safety equipment.

CAUTION

Do not pull the MIG Torch back when the arc is established. This will create excessive wire extension (stick-out) and make a very poor weld.

The electrode wire is not energized until the MIG Torch trigger switch is depressed. The wire may therefore be placed on the seam or joint prior to lowering the helmet.

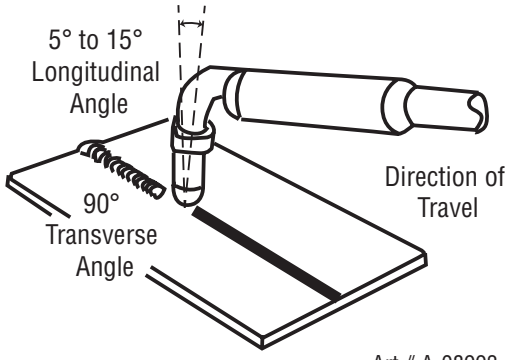


Figure 4-4

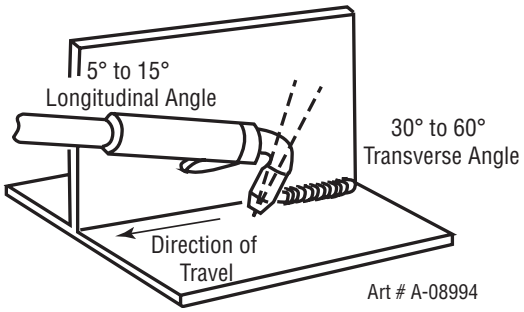
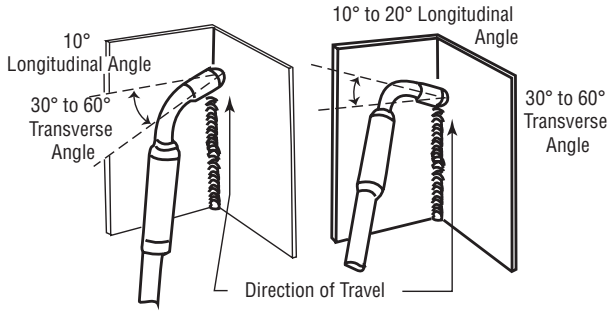


Figure 4-5



Vertical Fillet Welds Art # A-08995

Figure 4-6

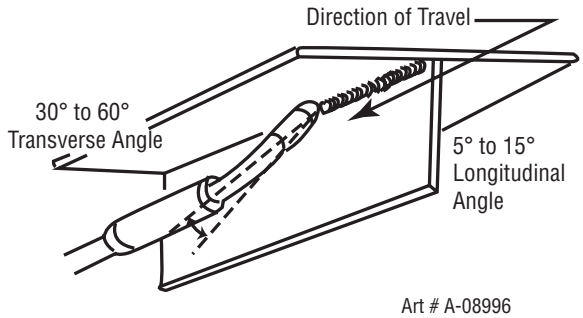


Figure 4-7

Distance from the MIG Torch Nozzle to the Work Piece

The electrode wire stick out from the MIG Torch nozzle should be between 10mm to 20mm. This distance may vary depending on the type of joint that is being welded.

Travel Speed

The speed at which the molten pool travels influences the width of the weld and penetration of the welding run.

MIG Welding (GMAW) Variables

Most of the welding done by all processes is on carbon steel. The items below describe the welding variables in short-arc welding of 0.6mm to 6.4mm mild sheet or plate. The applied techniques and end results in the GMAW process are controlled by these variables.

Preselected Variables

Preselected variables depend upon the type of material being welded, the thickness of the material, the welding position, the deposition rate and the mechanical properties. These variables are:

- Type of electrode wire
- Size of electrode wire
- Type of gas (not applicable for FCAW self shielding wires)
- Gas flow rate (not applicable for FCAW self shielding wires)

Primary Adjustable Variables

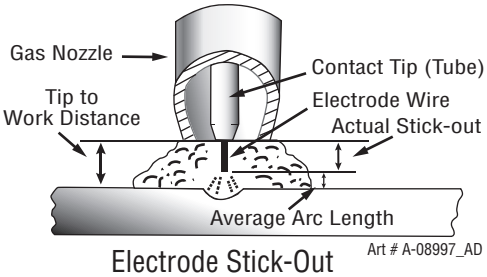
These control the process after preselected variables have been found. They control the penetration, bead width, bead height, arc stability, deposition rate and weld soundness. They are:

- Arc Voltage
- Welding current (wire feed speed)
- Travel speed

Secondary Adjustable Variables

These variables cause changes in primary adjustable variables which in turn cause the desired change in the bead formation. They are:

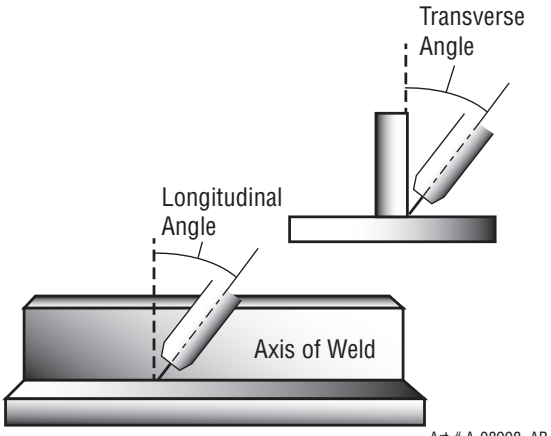
1. Stick-out (distance between the end of the contact tube (tip) and the end of the electrode wire). Maintain at about 10mm stick-out
2. Wire Feed Speed. Increase in wire feed speed increases weld current, Decrease in wire feed speed decreases weld current.



Electrode Stick-Out

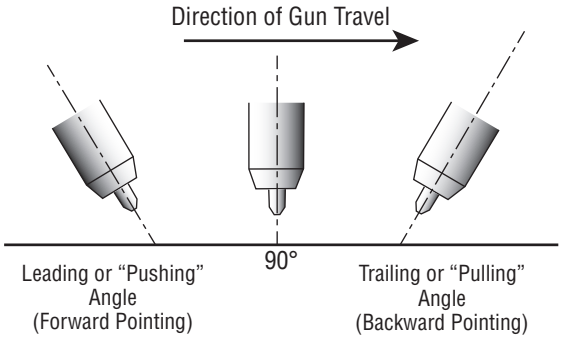
Figure 4-8

3. Nozzle Angle. This refers to the position of the MIG Torch in relation to the joint. The transverse angle is usually one half the included angle between plates forming the joint. The longitudinal angle is the angle between the centre line of the MIG Torch and a line perpendicular to the axis of the weld. The longitudinal angle is generally called the Nozzle Angle and can be either trailing (pulling) or leading (pushing). Whether the operator is left handed or right handed has to be considered to realize the effects of each angle in relation to the direction of travel.



Transverse and Longitudinal Nozzle Axes

Figure 4-9



Nozzle Angle, Right Handed Operator

Figure 4-10

Establishing the Arc and Making Weld Beads

Before attempting to weld on a finished piece of work, it is recommended that practice welds be made on a sample metal of the same material as that of the finished piece.

The easiest welding procedure for the beginner to experiment with MIG welding is the flat position. The equipment is capable of flat, vertical and overhead positions.

For practicing MIG welding, secure some pieces of 1.5mm or 2.0mm mild steel plate 150 x 150mm. Use 0.8mm flux cored gasless wire or a solid wire with shielding gas.

Setting of the Power Source

Power source and Wirefeeder setting requires some practice by the operator, as the welding plant has two control settings that have to balance. These are the Wirespeed control and the welding Voltage Control. 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 current level, but lengthens the arc. By decreasing the voltage, a shorter arc is obtained with a little change in current level.

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 settings are not adjusted to suit the electrode wire diameter and the 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 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. Refer to the Weld Guide located on the inside of the wirefeed compartment door for setup information.

Electrode Wire Size Selection

The choice of Electrode wire size and shielding gas used depends on the following

- 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 wire

4.02 MIG (GMAW/FCAW) Welding Troubleshooting

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; Porosity and Inconsistent wire feed.

Problem 1 - 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.

FAULT	CAUSE
1 Shielding gas cylinder contents and flow meter.	Ensure that the shielding 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, oxidized or greasy plate.	Clean contaminates off the work piece.
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.
7 Maintain the MIG Torch in good working order.	A Ensure that the gas holes are not blocked and gas is exiting out of the torch nozzle. B Do not restrict gas flow by allowing spatter to build up inside the MIG Torch nozzle. C Check that the MIG Torch O-rings are not damaged.

Table 4-1: MIG (GMAW / FCAW) Welding Troubleshooting

Problem 2 - Inconsistent Wire Feed

WARNING

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

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

FAULT	CAUSE
1 Feed roller driven by motor in the cabinet slipped.	Wire spool brake is too tight.
2 Wire spool unwound and tangled.	Wire spool brake is too loose.
3 Worn or incorrect feed roller size	A Use a feed roller matched to the size you are welding. B Replace feed roller if worn.
4 Wire rubbed against the misaligned guides and reduced wire feed ability.	Misalignment of inlet/outlet guides
5 Liner blocked with swarf	A Increased amounts of swarf are produced by the wire passing through the feed roller when excessive pressure is applied to the pressure roller adjuster. B Swarf can also be produced by the wire passing through an incorrect feed roller groove shape or size. C Swarf is fed into the conduit liner where it accumulates thus reducing wire feed ability.
6 Incorrect or worn contact tip	A 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 wire jamming in the contact tip B When using soft 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 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 feed ability

Table 4-2: Wire Feeding Problems

Basic MIG (GMAW/FCAW) Welding Troubleshooting

FAULT	CAUSE	REMEDY
1 Undercut	A Welding arc voltage too high.	A Decrease voltage or increase the wire feed speed.
	B Incorrect MIG Torch angle	B Adjust angle.
	C Excessive heat input	C Increase the MIG Torch travel speed and/or decrease welding current by decreasing the voltage or decreasing 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.
	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.
4 Excessive spatter	A Voltage too high	A Decrease voltage or increase the wirespeed control.
	B Voltage too low	B Increase the voltage or decrease wirespeed.
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 control 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 control.
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.
	E Cooling rate too fast	E Slow the cooling rate by preheating part to be welded or cool slowly.
7 Cold weld puddle	A Loose welding cable connection.	A Check all welding cable connections.
	B Low primary voltage	B Contact supply authority.
	C Fault in power source	C Have an Accredited CIGWELD Service Provider test then replace the faulty component.
8 Arc does not have a crisp sound that short arc exhibits when the wirefeed speed and voltage are adjusted correctly.	The Wirefeeder has been connected to the wrong voltage polarity on the front panel of the power source.	Connect the Wirefeeder to the positive (+) welding terminal for solid wires and gas shielded flux cored wires. Refer to the electrode wire manufacturer for the correct polarity.

Table4-3: GMAW (MIG) Welding Problems

SECTION 5: ROUTINE SERVICE REQUIREMENTS

5.01 Cleaning the Welding Power Source

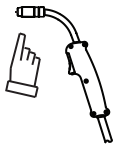
Warning!
Disconnect input power before maintaining.

Maintain more often if used under severe conditions

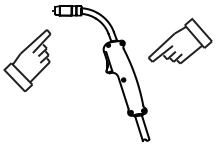
Each Use

Visual check of regulator and pressure

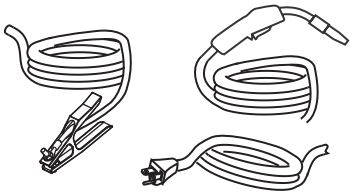
Visual check of torch Consumable parts



Weekly



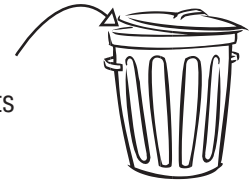
Visually inspect the torch body and consumables



Visually inspect the cables and leads. Replace as needed

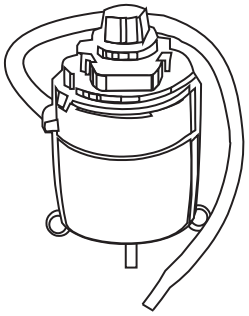
3 Months

Replace all broken parts

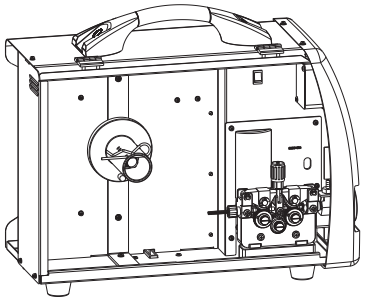


Clean exterior of wirefeeder

6 Months



Bring the unit to an authorized CIGWELD Service Provider to remove any accumulated dirt and dust from the interior. This may need to be done more frequently under exceptionally dirty conditions.



Art # A-14809

Figure 5-1 Routine Cleaning

5.02 Cleaning the Feed Rolls

Clean the grooves in the drive rolls frequently. This can be done by using a small wire brush. Also wipe off, or clean the grooves on the upper feed roll. After cleaning, tighten the feed roll retaining knobs.

CAUTION

Do not use compressed air to clean the Welding Power Source. Compressed air can force metal particles to lodge between live electrical parts and earthed metal parts within the Welding Power Source. This may result in arcing between these parts and their eventual failure.

SECTION 6: KEY SPARE PARTS

6.01 4RX Wire Feeder Replacement Parts

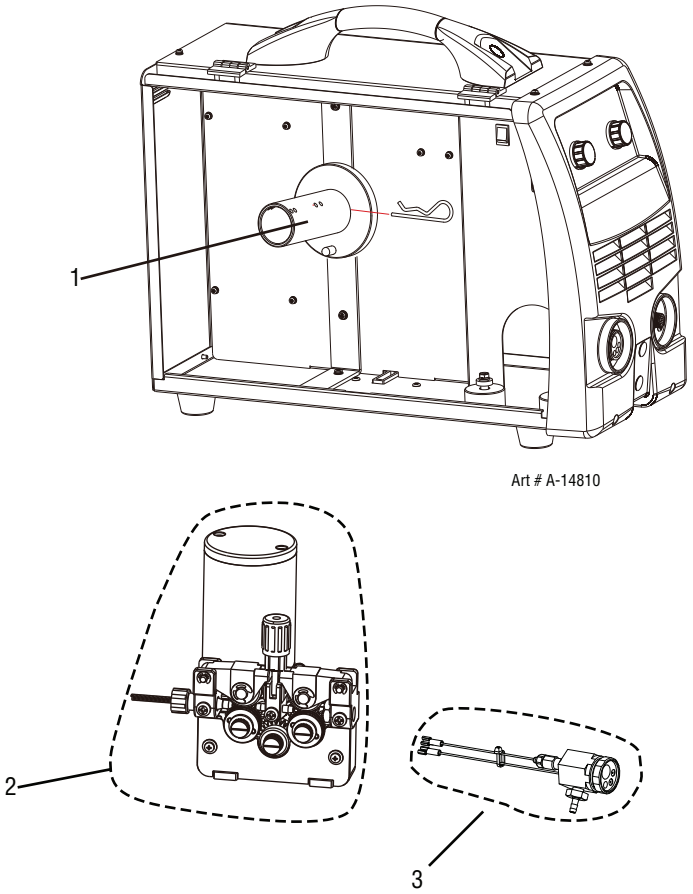


Figure 6-1

TRANSMIG 4RX SPARE PARTS (LEFT SIDE)		
ITEM	**PART NUMBER**	**DESCRIPTION**
1	W7006668	Spool Hub Assembly 4RX
2	W7006951	Wire Drive Assembly (include motor and feed rolls)
3	W7006952	Euro Connector Assembly

Table 6-1

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APPENDIX 1: OPTIONS AND ACCESSORIES

Description	Part Number
Supra XT torch, 4.0 metre Euro	SE400X4M16
Tweco 4, 400A MIG torch, 3.6 metre Euro	OTWX412/3545
CIGWELD TBi Push-Pull Gun, 8m	185P958180
CIGWELD TBi Push-Pull Gun, 12m	185P9581C0
CIGWELD TBi Push-Pull Gun Neck, 40 degree	185P001002
CIGWELD TBi Synchroniser Box	590P958000

Table A-1: Options and Accessories

Wire Size	Wire Type	Part Number
0.6mm/0.8mm	HARD	7977729
0.9mm/1.2mm	HARD	7977703
1.2mm/1.6mm	HARD	7977346
0.8mm/0.9mm	SOFT	7977733
1.0mm/1.2mm	SOFT	7977730
1.2mm/1.6mm	SOFT	7977348
0.8mm/0.9mm	FLUX CORED	7977734
1.2mm/1.6mm	FLUX CORED	7977347

Table A-2: Wire, Drive Roll Chart

APPENDIX 2: 4RX WIRING SCHEMATIC

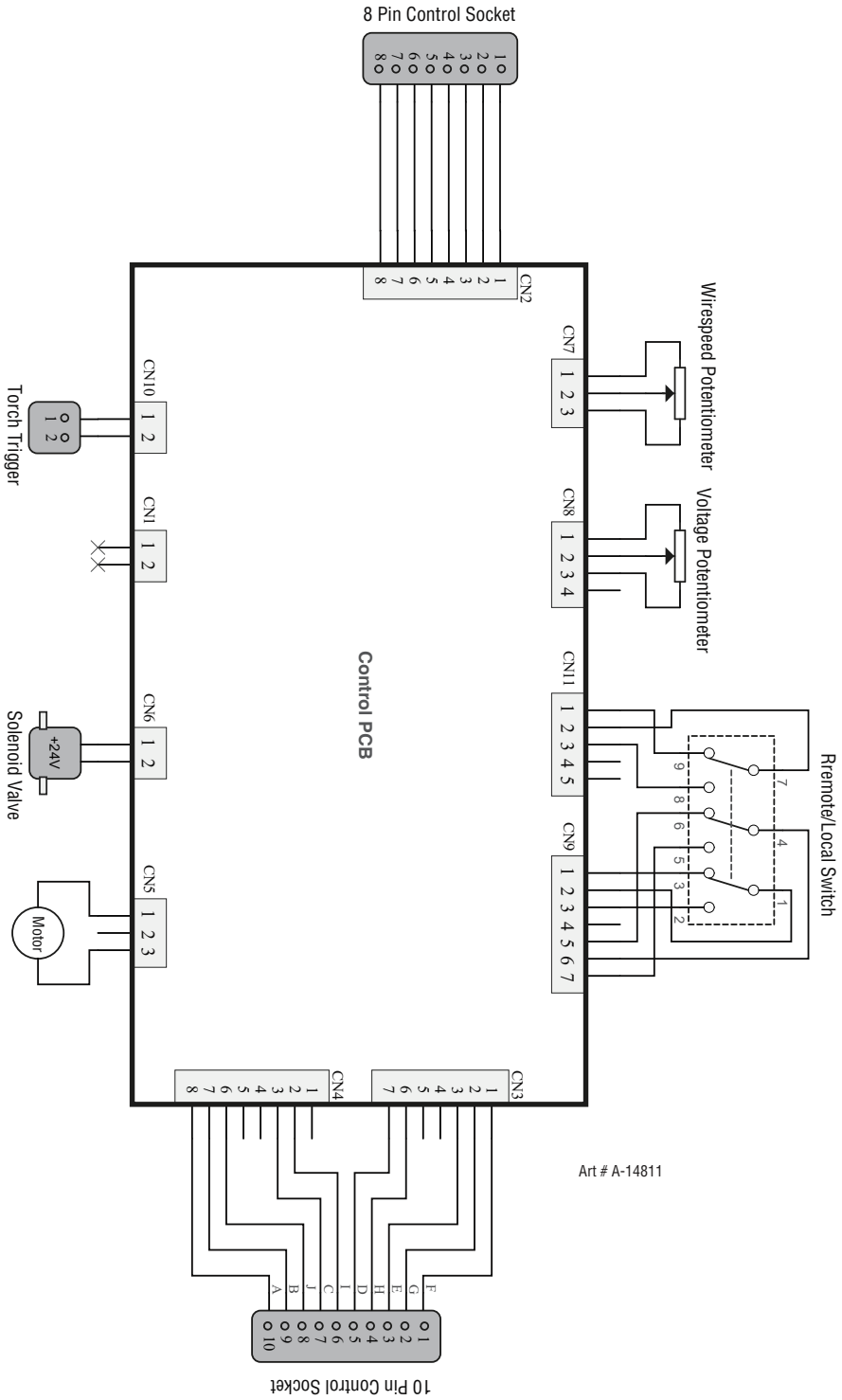

Figure A-1:4RX Wiring Schematic

CIGWELD – LIMITED WARRANTY TERMS

LIMITED WARRANTY: CIGWELD Pty Ltd, An ESAB Brand, hereafter, "CIGWELD" warrants to customers of its authorized distributors hereafter "Purchaser" that its products will be free of defects in workmanship or material. Should any failure to conform to this warranty appear within the time period applicable to the CIGWELD products as stated below, CIGWELD shall, upon notification thereof and substantiation that the product has been stored, installed, operated, and maintained in accordance with CIGWELD's specifications, instructions, recommendations and recognized standard industry practice, and not subject to misuse, repair, neglect, alteration, or accident, correct such defects by suitable repair or replacement, at CIGWELD's sole option, of any components or parts of the product determined by CIGWELD to be defective.

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LIMITATION OF LIABILITY: CIGWELD SHALL NOT UNDER ANY CIRCUMSTANCES BE LIABLE FOR SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, SUCH AS, BUT NOT LIMITED TO, LOST PROFITS AND BUSINESS INTERRUPTION. The remedies of the Purchaser set forth herein are exclusive and the liability of CIGWELD with respect to any contract, or anything done in connection therewith such as the performance or breach thereof, or from the manufacture, sale, delivery, resale, or use of any goods covered by or furnished by CIGWELD whether arising out of contract, negligence, strict tort, or under any warranty, or otherwise, shall not, except as expressly provided herein, exceed the price of the goods upon which such liability is based. No employee, agent, or representative of CIGWELD is authorized to change this warranty in any way or grant any other warranty.

PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF REPLACEMENT PARTS OR ACCESSORIES ARE USED WHICH IN CIGWELD'S SOLE JUDGEMENT MAY IMPAIR THE SAFETY OR PERFORMANCE OF ANY CIGWELD PRODUCT. PURCHASER'S RIGHTS UNDER THIS WARRANTY ARE VOID IF THE PRODUCT IS SOLD TO PURCHASER BY NON-AUTHORIZED PERSONS.

The warranty is effective for the time stated below beginning on the date that the authorized distributor delivers the products to the Purchaser. 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 authorized distributor.

Any claim under this warranty must be made within the warranty period which commences on the date of purchase of the product. To make a claim under the warranty, take the product (with proof of purchase from a Cigweld Accredited Seller) to the store where you purchased the product or contact Cigweld Customer Care 1300 654 674 for advice on your nearest Service Provider. CIGWELD reserves the right to request documented evidence of date of purchase. CIGWELD or our Accredited Distributor must be notified 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 Provider

This warranty is given.

Cigweld Pty Ltd

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Website: www.cigweld.com.au

This warranty is provided in addition to other rights and remedies you have under law: Our goods come with guarantees which cannot be excluded under the Australian Consumer Law. You are entitled to replacement or refund for a major failure and to compensation for other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

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

WARRANTY SCHEDULE – TRANSMIG 4RX

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.

WARRANTY	WARRANTY PERIOD – (Parts and Labour)
Transmig 4RX Wirefeeder	3 Years

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

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