weldtech

WT4015MP

40A PLASMA CUTTER
150A INVERTER MMA/TIG WELDER

WORKSHOP RANGE

IGBT
INVERTER
TECHNOLOGY

OPERATING INSTRUCTIONS

www.weldtech.net.nz

We Appreciate Your Business!

Congratulations on your new Weldtech product!

The Weldtech range from Euroquip uses latest technology design and engineering to produce welding products that combine market leading value and features with durability. Designed for discerning operators who seek professional results and product quality without the price tag of a full professional setup. Design emphasis is placed on simple, functional design and operation. Weldtech product is subject to stringent quality control and designed and manufactured to NZ & Australian standards.

Common use of Weldtech products include:

- Light Engineering
- Automotive
- Home/ Hobby Engineering
- Farming
- Maintenance & Repairs

For industrial welding solutions, check out the Strata range from Euroquip:
www.strata.co.nz

Euroquip is a market leading provider of innovative power equipment solutions to a wide range of industries across New Zealand and Australia. Key product categories are; welding equipment, air compressors, power generators and cleaning equipment.

Euroquip's slogan is 'empowering industries', find out more about the advantage Euroquip brings at **www.euroquip.co.nz.**

Providing exceptional product support is a key component of Euroquip's market leading customer advantage focus. As part of this program, it is required for all products to be registered with Euroquip to qualify for product support. Products not registered with Euroquip are supported by a base 12 month warranty only. Spare parts and technical support will not be available for an unregistered product outside of this base warranty period. If a Euroquip dealer has not already registered your product, please register it online at www.euroquip.co.nz. To request a physical registration form, please contact Euroquip customer service on 0800 387 678.

Contents

weldtech

9.5kg Super Lightweight

15A 230V Input Power Requirement

ARC/TIG Leads Included

WT4015MP

WORKSHOP SERIES

40A PLASMA CUTTER
150A INVERTER MMA/TIG WELDER

The perfect multi-process welder for MMA/TIG and plasma cutting tasks around the workshop

Powerful - 150A welding power MMA/TIG
40A plasma output curent - cuts up to 10mm steel

Portable - Only 9.5kg super light weight and portable

Reliable - Cutting edge IGBT inverter technology

- Plasma cutting up to 10mm steel
- MMA and HF TIG ability for a wide variety of jobs
- 100% duty cycle at 82A (MMA/TIG)
- Lightweight and robust construction - only 9.5kg
- MMA VRD Protection for increased safety

Includes:
5m Plasma Torch
3m Earth Lead
3m MMA Lead w/twist lock electrode holder
4m TIG Torch
..and more!

40A | CUTS UP TO 10 MM STEEL | 18 MONTH * COMMERCIAL WARRANTY

SUPERIOR DIGITAL MICROPROCESSOR CONTROL

*18 Month Commercial Warranty only valid with online registration at www.weldtech.net.nz

Dimensions: (L x W x H)	415 x 194 x 307mm
Weight:	9.5kg
Input Power:	230V, 15A
Max. Input Current:	29.1A
Generator Capacity:	6.7kVA

Output Power:	30 - 150A - MMA 15 - 150A - TIG 20 - 40A - PLASMA
Duty Cycle:	60% @ 106A - MMA 60% @ 106A - TIG 60% @ 27A PLASMA
Electrode Size:	1.3 - 3.2mm

IGBT INVERTER TECHNOLOGY

With 15A Plug - Ideal for workshop projects - cars, trailers and structural steel!

Optional accessories to help you get the job done!

4 Sensor Auto Helmet with grind function (#DW3000)

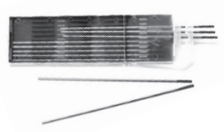
Welding Magnet (#WMG05)

Welding Gloves (#TWG20)

Tungsten Electrodes - 150mm

- Thoriated for use on stainless and mild steel
- Zirconiated for use on aluminium.

Thoriated
1.6 (#TT16-150)
2.4 (#TT24-150)
3.2 (#TT32-150)

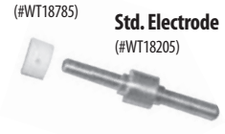


Standard Collets
1.6mm (#TC10N23)
2.4mm (#TC10N24)
3.2mm (#TC10N25)

Standard Ceramic Cups
8 x 12.5mm (#TCC10N46)
7 x 11mm (#TCC10N47)
6 x 10mm (#TCC10N48)
5 x 8mm (#TCC10N49)

Swirl Baffle (#WT18785)

Std. Electrode (#WT18205)

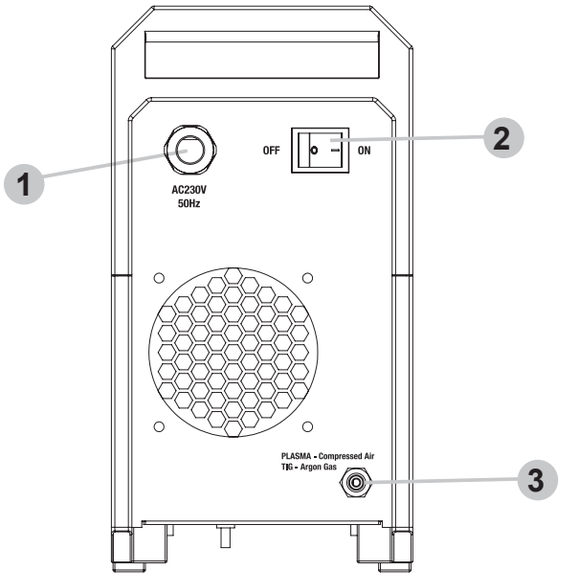


Std Nozzle (#WT18866)

Shield Cap (#WT18204)

Know Your Machine

*Denotes more detailed explanation of function below.

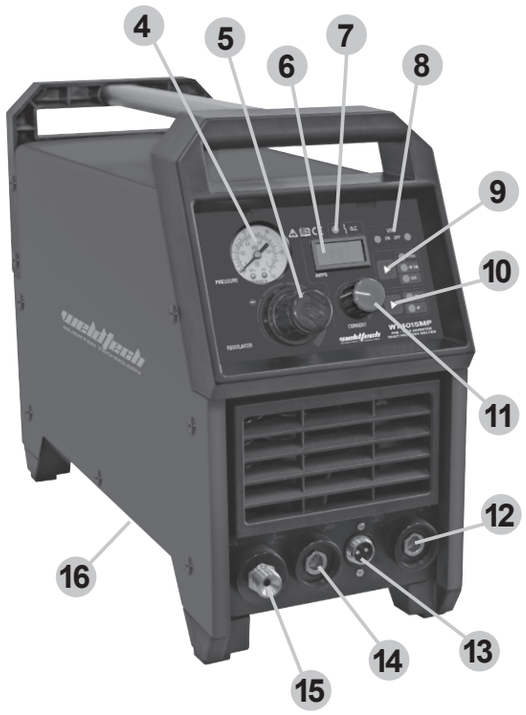


Rear

1. Input Power Lead
2. Power Switch
3. Compressed Air/ Argon Gas Inlet Fitting

Front

4. Air Pressure Gauge
5. Air Pressure Regulator Adjustment Knob
6. LCD Current Meter
7. Error/ Overload Indicator*
8. VRD Mode Indicator*
9. Mode Selector
10. 2T/4T Trigger Mode Selector*
11. Cutting Current Adjustment Knob
12. Positive (+) welding power output connection socket.
13. Torch Switch Connection Socket
14. Negative (-) welding power output connection socket.
15. Power/ Gas Output Connection
16. Water Condensate Filter Drain (Obscured Underneath)*



Controls Explained

Error/Overload Indicator (7)

Lights when over voltage, over current or electrical overheating (due to exceeding duty cycle) is detected and protection is activated. When protection is activated, cutting output will be disabled until the safety system senses the overload has reduced sufficiently and indicator lamp goes out. May also trigger if machine experiences an internal power circuit failure.

2T/4T Trigger Control (10)

In 2T Mode the trigger is pulled and held on to activate the welding/cutting circuit, when the trigger is released, the welding/cutting circuit stops. 4T is known as 'latching' mode. The trigger is pulled once and released to activate the welding/cutting circuit, pulled and released again stops the welding/cutting circuit. This function is useful for longer welds/cuts as the trigger is not required to be held on continuously.

Duty Cycle Rating

Cutting duty cycle is the percentage of actual cutting time that can occur in a ten minute cycle. E.g. 20% at 40 amps - this means the plasma cutter can operate at 40 amps for 2 minutes and then the unit will need to be rested for 8 minutes. All duty cycle ratings are based on an ambient air temperature of 40°C with 50% humidity, which is the international standard for such a rating. In an environment with temperatures exceeding 40°C, the duty cycle will be less than stated. In ambient temperature less than 40°C, duty cycle performance will be higher.

MMA Welding

VRD Function (8)

VRD stands for Voltage Reduction Device. This is a safety system that reduces the output voltage from the welding terminals in MMA mode while the welding output is not in use, to reduce the risk of electric shock from the live output voltage.

When the VRD indicator light is 'on', the protection system is active. It should only switch to 'off' during welding operation. The disadvantage of this system is that it makes the striking of the arc more difficult, especially on restarts and with some types of electrode such as low hydrogen electrodes. VRD protection is enabled standard for the WT4015MP. If it is not required, the feature may be disabled by a Euroquip welding service dealer.

Plasma Cutting

Air Regulator (5)
Pressure Adjustment

Correct air pressure is critical for plasma cutting. Incorrect air pressure will cause poor cut quality, lack of cutting power, damage to the plasma torch and consumables and potentially damage the power source.

Optimum air pressure is between 4 and 5 bar (60-75psi). Air pressure should be set with the air flowing through the torch, as the pressure with the air flowing will normally be less than static pressure, due to flow losses through the torch system. To unlock the pressure regulator knob in order to adjust it, pull the knob upwards. Once the pressure is set correctly, push the knob down again to lock it into place.

Air Filter/ Water Separator

As with correct air pressure, clean, dry air is also critical for plasma cutting machine performance and reliability. The WT4015MP is designed with an internal air filtration/ moisture separator to assist with providing suitable air supply. The moisture separator is self-draining, the water drain tube exits out the bottom of the machine casing (16). It is normal to see moisture coming from this drain tube. If excessive amounts of water or oil are being produced from the condensate drain, the compressed air supply should be checked for issues.

Plasma Torch Consumables

It is very important to recognise that plasma torch consumables wear as part of normal operation and should be replaced in a timely manner.

Operating a torch with worn consumables will cause poor cutting results and possible damage to the torch and machine itself. Damage caused by untimely replacement of consumables will not be covered by warranty.

Use the following guidelines to determine when consumables should be replaced.

Cutting Tips: the cutting tip has a small calibrated orifice that the plasma passes through. If the orifice becomes partially blocked, deformed or enlarged, the cutting tip should be replaced.

Electrodes: the electrode has a small silver 'hafnium' insert in the end of the tip. This is what generates the plasma ions. Once the hafnium insert is used up or is damaged the tip must be replaced.

Swirl Ring/Retaining Cap: these should be replaced if broken, chipped, cracked or badly heat damaged.

Tips and electrodes should wear reasonably evenly and it is normal practice to replace them both together. If a new tip is inserted with a worn electrode the tip will wear much more quickly than if the electrode was also replaced at that same time.

If tips or electrodes are wearing much faster than the other component it is likely to be caused by one of the following: poor operator technique, incorrect air supply or damaged torch head.

It is also very important to only use genuine Strata or Weldtech consumables and parts for the WT4015MP

plasma torch. They are engineered to suit the machine and non-genuine items may cause lack of performance, short life span, torch and machine damage and void warranty.

TIG Welding

HF TIG Arc Ignition

In the TIG welding process, contact of the torch tungsten to the workpiece will cause contamination of the tungsten and the workpiece which will adversely affect the weld quality, especially when the tungsten is electrically energised. HF (high frequency) ignition sends a pulse of high energy electricity through the torch system that is capable of 'jumping' between the tungsten and the workpiece, ensuring arc starting without any contact between the tungsten and workpiece.

The disadvantage of HF ignition is that the high energy electrical pulse creates significant electrical and radio signal interference, which limits its use around sensitive electronic equipment.

Quick Start Guide

Electrical Power Supply

The WT4015MP is designed to operate on a 15A 230V AC power supply. If an extension cord must be used, it should be a heavy duty version with a minimum cable core size of 2.5mm2. It is recommended to use the Euroquip industrial duty 15A extension lead, part number; 16895.

Plasma Cutting Compressed Air Requirements

A reliable and consistent supply of clean dry compressed air is essential for proper operation of the WT4015MP. Although the machine contains its own internal air supply filtration system it is recommended the compressed air supply should have external filtration in the line feeding the machine, both a standard water trap (sintered bronze filter) and also a coalescing filter (for oil in air).

The air requirement is a minimum of 120 l/min (4.5cfm) Free Air Delivery (FAD) at 75 PSI pressure. This normally means the compressor must be a belt drive model or if a direct drive it must have a motor power of 2.5HP or greater.

The air must be dry and free of oil and moisture (normally a symptom of older, worn out compressors). The air hose must also be of sufficient size (3/8"/10mm minimum) to supply the machine

Operating Environment

Adequate ventilation is required to provide proper cooling for the WT4015MP. Ensure that the machine is placed on a stable level surface where clean cool air can easily flow through the unit. The WT4015MP has electrical components and control circuit boards which may be damaged by excessive dust and dirt, so a clean operating environment is important for reliable product life.

Basic Operation

1. Plasma Cutting Operation

1.1 Connect the earth cable quick connector to the positive (+) welding power output connection socket (12) Connect the earth clamp to the work piece. Contact with the work piece must be firm contact with clean, bare metal, with no corrosion, paint or scale at the contact point.

1.2 Connect the rolling nut plasma torch fitting to the Power/ Gas Output Connection (15), ensuring it is tightened firmly by hand. Connect the plasma torch switch lead to the machine socket (13).

1.3 Connect the machine to suitable mains power using the mains input power lead (1). Switch the mains power switch (2) to 'on' to power up the machine.

1.4 Set the welding mode selector (9) to 'CUT'. Select '2T' or '4T' trigger mode using the mode selector switch (10).

1.5 Connect the compressed air supply to the machine inlet (3). Check the air pressure (4). Trigger the torch briefly to start the air flow before cutting, check the air pressure again and adjust if necessary.

1.6 Select the output current using the current control knob (11). You are now ready to plasma cut!

2. ARC/ MMA Welding Operation

2.1 Connect the earth cable quick connector to the negative welding power output socket (14) Connect the earth clamp to the work piece. Contact with the work piece must be firm contact with clean, bare metal, with no corrosion, paint or scale at the contact point.

2.2 Insert an electrode into the electrode holde and connect the electrode holder and work lead to the positive welding power output socket (12).

NOTE: *This polarity connection configuration is valid for most GP (General Purpose) MMA electrodes. There are variances to this. If in doubt, check the electrode specifications or consult the electrode manufacturer.*

2.3 Connect the machine to suitable mains power using the mains input power lead (1). Switch the mains power switch (2) to 'on' to power up the machine. Set the welding mode selector (9) to 'STICK'.

2.4 Select the output current using the current control knob (11). You are now ready to weld!

3. TIG Operation

NOTE: *TIG operation requires an argon gas supply.*

3.1 Connect the earth cable quick connector to the positive welding power output socket (12). Connect the earth clamp to the work piece. Contact with the work piece must be firm contact with clean, bare metal, with no corrosion, paint or scale at the contact point.

3.2 Connect the rolling nut TIG torch fitting to the Power/ Gas Output Connection (15) ,ensuring it is tightened firmly by hand. Connect the TIG torch switch lead to the machine socket (13)

3.3 Connect the machine to suitable mains power using the mains input power lead (3). Switch the mains power switch (2) to 'on' to power up the machine. Set the welding mode selector (9) to 'HF TIG'. Select '2T' or '4T' trigger mode using the mode selector switch (10).

3.4 Assemble the female gas quick connector to the gas line and to the regulator outlet fitting. Connect the gas regulator to a gas cylinder (not included with machine) and connect the female quick connector to the male gas inlet on the rear of the machine (1). Ensure all connections are tight. Open gas cylinder valve and adjust regulator, flow should be between 5-10 l/min depending on application. Re-check regulator flow pressure with the torch triggered as static gas flow setting may drop once gas is flowing.

3.5 Select the output current using the current control knob (11). You are now ready to weld!

Please note, the WT4015MP is a DC (Direct Current) output welder only, this means that it is unable to TIG weld reactive metals such as Aluminium alloys and Brass (which require AC output). DC TIG output is suitable for steel, stainless steel and copper.

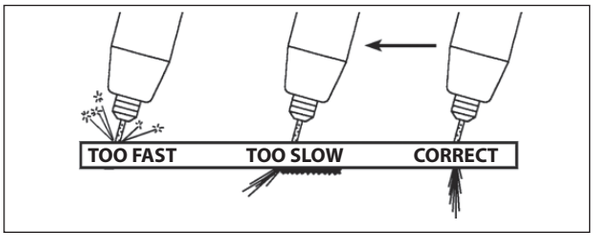
The EziTIG200 ACDC is the model in the Weldtech range that is designed for TIG welding Aluminium and its alloys.

Basic Plasma Cutting Guide

Amperage Guide

Material Thickness (mm)	0.5	2	4	6	8	10
Output Current (A) Dial Position (6)	15	20	30	35	40	40

Effect of Cutting Speed

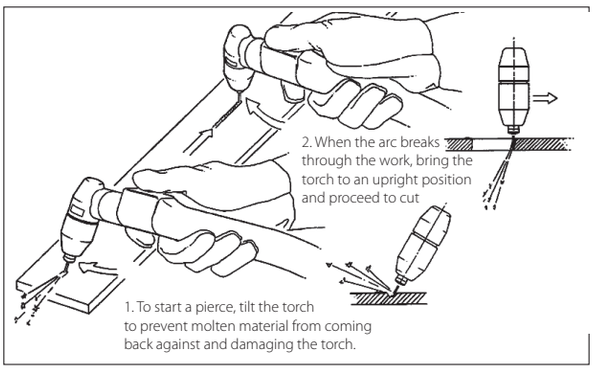


Operating Techniques

1. **Piercing** - Materials (up to 3.2mm/1/8in. thick) may be pierced with the torch touching the work. When piercing thicker materials (up to 4.8mm stainless or carbon steel) at an angle, position the torch 0.5mm (.02") above the work piece.

It is advisable when piercing thicker materials to drill a small pilot/starting hole in the work piece which makes it a lot easier and gives increased tip life.

Start the cutting arc, then immediately raise the torch to 1.6mm (1/16") stand-off and move the torch along the cut path. This will reduce the chance of spatter from entering the torch and prevent the possibility of welding the tip to the plate. The torch should be angled at about 30° when starting to pierce, and then straightened after accomplishing the pierce.



NOTE: *Keep moving while cutting. Cut at a steady speed without pausing. Maintain the cutting speed so that the arc lag is 10° to 20° behind the travel direction. Use a 5° - 15° leading angle in the direction of the cut.*

2. **Grate Cutting** - For rapid restarts, such as grate or heavy mesh cutting, do not release the torch switch. This avoids the 2 second pref-low portion of the cutting cycle.

3. **Edge Starting** - For edge starts, hold the torch perpendicular to the work piece with the front of the tip near (not touching) the edge of the work piece at the point where the cut is to start. When starting at the edge of the plate, do not pause at the edge and force the arc to 'reach' for the edge of the metal.

Establish the Cutting Arc as Quickly as Possible.

4. **Drag Cutting** - Position torch tip slightly above work piece, press torch switch and lower torch tip forward work piece until contact is made and cutting arc is established. After cutting arc is established, move the torch in the desired direction keeping the torch tip slightly angled, maintaining contact with the work piece.

   Avoid moving too fast as would be indicated by sparks radiating from the topside of the work piece. Move the torch just fast enough to maintain sparks concentration at the underside of the work piece and making sure the material is completely cut through before moving on. Adjust drag speed as desired/ required.

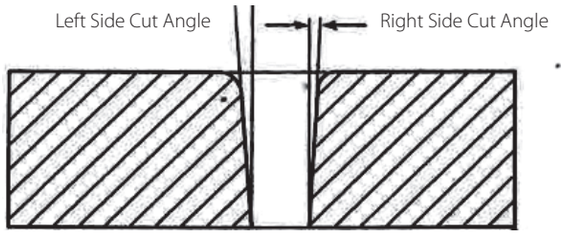
NOTE: *The speeds given on the following chart are typical for best quality cuts. Your actual speeds may vary depending on material composition, surface condition, operator technique, etc.*

If cutting speed is too fast, you may lose the cut. With slower speeds excessive dross may accumulate. If speed is too slow, the arc may extinguish. Air cutting typically produces a rough face on stainless steel and aluminium.

Cutting Speed Guide		
Material	**Thickness (mm)**	**Cutting Speed (mm/s)**
Carbon Steel (AISI 1020)	1.6	150
	3.2	50
	6.4	20
Stainless Steel (AISI 304)	1.6	140
	3.2	40
	6.4	15
Aluminium (6061)	1.6	190
	3.2	85
	6.4	30

5. **Direction of Cut** - The plasma gas stream swirls as it leaves the torch to maintain a smooth column of gas. This swirl effect results in one side of a cut being more square than the other. Viewed along the direction of travel, the right side of the cut is more square than the left.

To make a square-edged cut along an inside diameter of a circle, the torch should move counter clockwise around the circle. To keep the square edge along an outside diameter cut, the torch should travel in a clockwise direction.



To make a square-edged cut along an inside diameter of a circle, the torch should move counter clockwise around the circle. To keep the square edge along an outside diameter cut, the torch should travel in a clockwise direction.

6. **Quality Cuts** – Dross (slag) is the excess material that spatters and builds up on the underside of the work-piece as you cut. Dross occurs when the operating procedure and technique is less than optimal. It will require practice and experience to obtain cuts without dross. Although less than optimal cuts will contain dross, it is relatively easy to remove by breaking it off using pliers or chipping off with a chisel or scraping or grinding the finished cut as needed and is generally only a minor inconvenience.

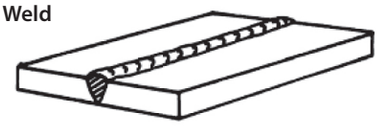
A combination of factors contributes to the build-up of dross. They include; material type, material thickness , amperage used for the cut, speed of the torch across the work-piece, condition of the torch tip, input line voltage, air pressure, etc. Generally there is an inversely proportional relationship between output current and speed of cut. Do not use more output current than is necessary and adjust speed of cut toward minimizing dross build-up on underside of cut. Experiment with adjusting current and speed to minimize dross.

When dross is present on carbon steel, it is commonly referred to as either 'high speed, slow speed, or top dross'. Dross present on top of the plate is normally caused by too great a torch to plate distance.

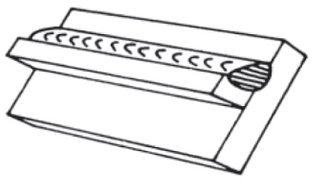
'Top dross' is normally very easy to remove and can often be wiped off with a welding glove. 'Slow speed dross' is normally present on the bottom edge of the plate. It can vary from a light to heavy bead, but does not adhere tightly to the cut edge, and can be easily scraped off. 'High speed dross' usually forms a narrow bead along the bottom of the cut edge and is very difficult to remove. When cutting troublesome steel, it is sometimes useful to reduce the cutting speed to produce 'slow speed dross'. Any resultant clean up can be accomplished by scraping, not grinding.

Basic MMA Welding Guide

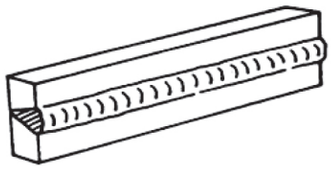
Flat Position, Down Hand Butt Weld (Fig 1-11)



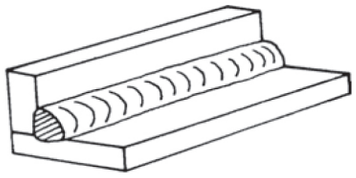
Flat Position, Gravity Fillet Weld (Fig 1-12)



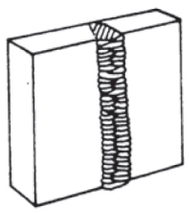
Horizontal Position, Butt Weld (Fig 1-13)



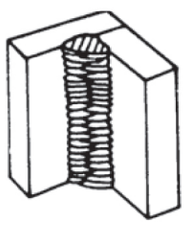
Horizontal-Vertical (HV) Position (Fig 1-14)



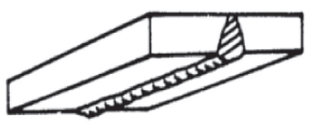
Vertical Position, Butt Weld (Fig 1-15)



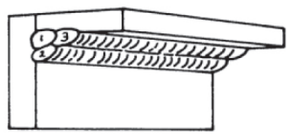
Vertical Position, Fillet Weld (Fig 1-16)



Overhead Position, Butt Weld (Fig 1-17)



Overhead Position, Fillet Weld (Fig 1-18)



Joint Preparations

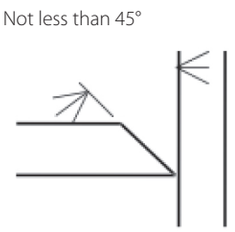
In many cases, it will be possible to weld steel sections without any special preparation. For heavier sections and for repair work on castings, etc., it will be necessary to cut or grind an angle between the pieces being joined to ensure proper penetration of the weld metal and to produce sound joints.

In general, surfaces being welded should be clean and free of rust, scale, dirt, grease, etc. Slag should be removed from oxy-cut surfaces. Typical joint designs are shown in Figure 1-19.

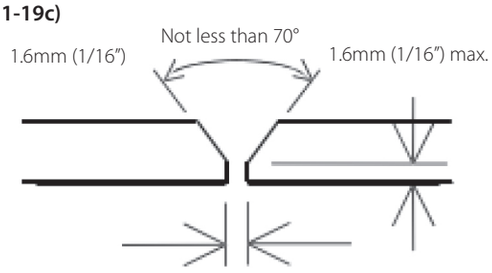
Open Square Butt Joint
(Fig 1-19a)

Gap varies from1.6mm (1/16")
to 4.8mm (3/16") depending on plate thickness

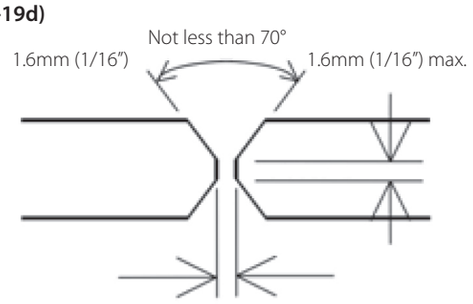
Single Vee Butt Joint
(Fig 1-19b)



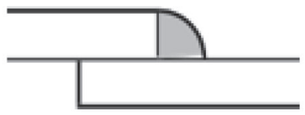
Single Vee Butt Joint
(Fig 1-19c)



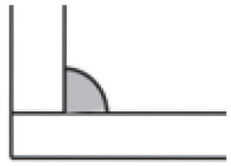
Double Vee Butt Joint
(Fig 1-19d)



Lap Joint
(Fig 1-19e)

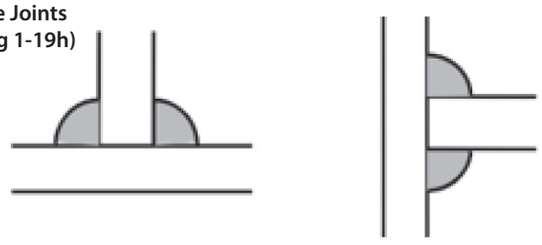


Fillet Joint
(Fig 1-19f)

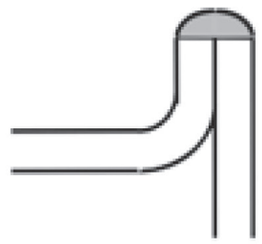


Corner Weld
(Fig 1-19g)

Tee Joints
(Fig 1-19h)



Edge Joint
(Fig 1-19i)



Plug Welds
(Fig 1-19j)

MMA Welding Techniques

For those who have not yet done any welding, the simplest way to commence is to run beads on a piece of scrap plate. Use mild steel plate about 6.0mm thick and a 3.2mm electrode.

Clean any paint, loose scale or grease off the plate and set it firmly on the work bench so that welding can be carried out in the down hand position. Make sure that the Work Lead/Clamp is making good electrical contact with the work, either directly or through the work table. For light gauge material, always clamp the work lead directly to the job, otherwise a poor circuit will probably result.

The Welder

Place yourself in a comfortable position before beginning to weld. Get a seat of suitable height and do as much work as possible sitting down. Don't hold your body tense. A taut attitude of mind and a tensed body will soon make you feel tired. Relax and you will find that the job becomes much easier. You can add much to your peace of mind by wearing a leather apron and gauntlets. You won't be worrying then about being burnt or sparks setting alight to your clothes.

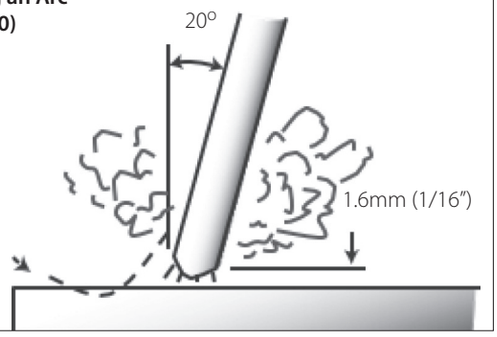
Place the work so that the direction of welding is across, rather than to or from, your body. The electrode holder lead should be clear of any obstruction so that you can move your arm freely along as the electrode burns down. If the lead is slung over your shoulder, it allows greater freedom of movement and takes a lot of weight off your hand. Be sure the insulation on your cable and electrode holder is not faulty; otherwise you are risking an electric shock.

Striking the Arc

Practice this on a piece of scrap plate before going on to more exacting work. You may at first experience difficulty due to the tip of the electrode "sticking" to the work piece. This is caused by making too heavy a contact with the work and failing to withdraw the electrode quickly enough. A low amperage will accentuate it. This freezing-on of the tip may be overcome by scratching the electrode along the plate surface in the same way as a match is struck. As soon as the arc is established, maintain a 1.6mm to 3.2mm gap between the burning electrode end and the parent metal. Draw the electrode slowly along as it melts down.

Another difficulty you may meet is the tendency, after the arc is struck, to withdraw the electrode so far that the arc is broken again. A little practice will soon remedy both of these faults.

Striking an Arc (Fig 1-20)



Arc Length

The securing of an arc length necessary to produce a neat weld soon becomes almost automatic. You will find that a long arc produces more heat.

A very long arc produces a crackling or spluttering noise and the weld metal comes across in large, irregular blobs. The weld bead is flattened and spatter increases.

A short arc is essential if a high quality weld is to be obtained although if it is too short there is the danger of it being blanketed by slag and the electrode tip being solidified in. If this should happen, give the electrode a quick twist back over the weld to detach it. Contact or "touch-weld" electrodes such as E7014 Stick electrodes do not stick in this way, and make welding much easier.

Rate of Travel

After the arc is struck, your next concern is to maintain it, and this requires moving the electrode tip towards the molten pool at the same rate as it is melting away. At the same time, the electrode has to move along the plate to form a bead.

The electrode is directed at the weld pool at about 20° from the vertical. The rate of travel has to be adjusted so that a well-formed bead is produced.

If the travel is too fast, the bead will be narrow and strung out and may even be broken up into individual globules. If the travel is too slow, the weld metal piles up and the bead will be too large.

Making Welded Joints

Having attained some skill in the handling of an electrode, you will be ready to go on to make up welded joints.

A. Butt Welds

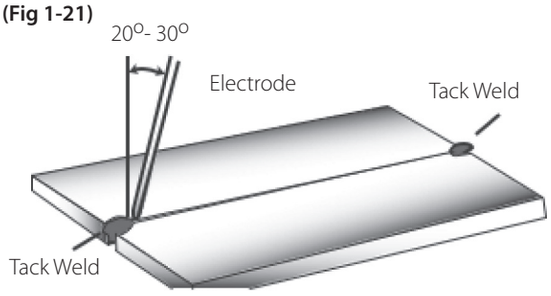
Set up two plates with their edges parallel, as shown in Figure 1-21, allowing 1.6mm to 2.4mm gap between them and tack weld at both ends. This is to prevent contraction stresses from the cooling weld metal pulling the plates out of alignment.

Plates thicker than 6.0mm should have their mating edges bevelled to form a 70º to 90º included angle. This allows full penetration of the weld metal to the root. Using a 3.2mm E7014 Stick electrode at 100 amps, deposit a run of weld metal on the bottom of the joint.

Do not weave the electrode, but maintain a steady rate of travel along the joint sufficient to produce a well-formed bead. At first you may notice a tendency for undercut to form, but keeping the arc length short, the angle of the electrode at about 20º from vertical, and the rate of travel not too fast, will help eliminate this.

The electrode needs to be moved along fast enough to prevent the slag pool from getting ahead of the arc. To complete the joint in thin plate, turn the job over, clean the slag out of the back and deposit a similar weld.

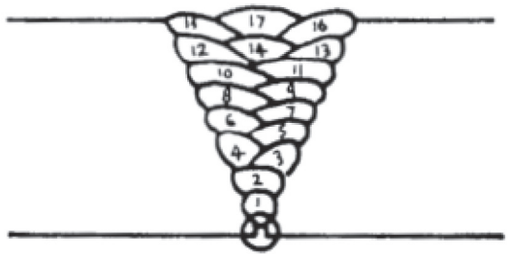
Butt Weld (Fig 1-21)



Heavy plate will require several runs to complete the joint. After completing the first run, chip the slag out and clean the weld with a wire brush. It is important to do this to prevent slag being trapped by the second run. Subsequent runs are then deposited using either a weave technique or single beads laid down in the sequence shown in Figure 1-22. The width of weave should not be more than three times the core wire diameter of the electrode.

When the joint is completely filled, the back is either machined, ground or gouged out to remove slag which may be trapped in the root, and to prepare a suitable joint for depositing the backing run. If a backing bar is used, it is not usually necessary to remove this, since it serves a similar purpose to the backing run in securing proper fusion at the root of the weld.

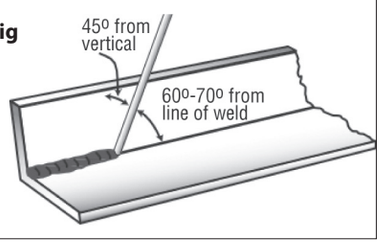
Weld Build Up Sequence (Fig 1-22)



B. Fillet Welds

These are welds of approximately triangular cross-section made by depositing metal in the corner of two faces meeting at right angles. Refer to Figure 1-14, 1-23 and 1-24.

Electrode Position for HV Fillet Weld (Fig 1-23)

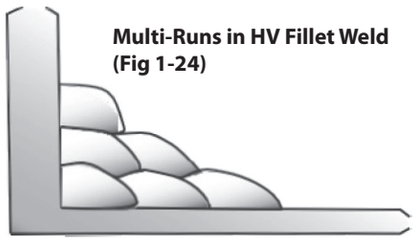


A piece of angle iron is a suitable specimen with which to begin, or two lengths of strip steel may be tacked together at right angles. Using a 3.2mm E7014 Stick electrode at 100 amps, position angle iron with one leg horizontal and the other vertical. This is known as a horizontal-vertical (HV) fillet.

Strike the arc and immediately bring the electrode to a position perpendicular to the line of the fillet and about 45º from the vertical. Some electrodes require being sloped about 20º away from the perpendicular position to prevent slag from running ahead of the weld. Refer to Figure 1-23.

Do not attempt to build up much larger than 6.4mm width with a 3.2mm electrode, otherwise the weld metal tends to sag towards the base, and undercut forms on the vertical leg. Multi-runs can be made as shown in Figure 1-24. Weaving in HV fillet welds is undesirable.

Multi-Runs in HV Fillet Weld (Fig 1-24)



C. Vertical Welds

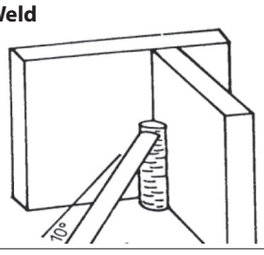
1. Vertical Up

Tack weld a three feet length of angle iron to your work bench in an upright position. Use a 3.2mm E7014 Stick electrode and set the current at 100 amps. Make yourself comfortable on a seat in front of the job and strike the arc in the corner of the fillet. The electrode needs to be about 10º from the horizontal to enable a good bead to be deposited. Refer Fig. 1-25.

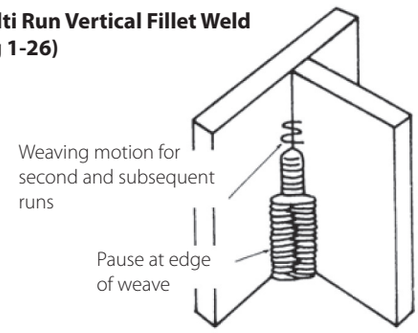
Use a short arc, and do not attempt to weave on the first run. When the first run has been completed de-slag the weld deposit and begin the second run at the bottom. This time a slight weaving motion is necessary to cover the first run and obtain good fusion at the edges.

At the completion of each side motion, pause for a moment to allow weld metal to build up at the edges, otherwise undercut will form and too much metal will accumulate in the centre of the weld. Figure 1-26 illustrates multi-run technique and Figure 1-27 shows the effects of pausing at the edge of weave and of weaving too rapidly.

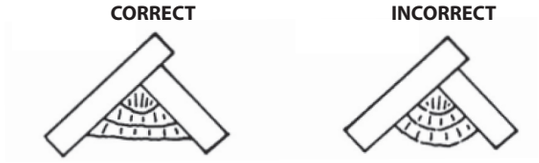
Single Run Vertical Fillet Weld (Fig 1-25)



Multi Run Vertical Fillet Weld (Fig 1-26)



Examples of Vertical Fillet Welds (Fig 1-27)



2. Vertical Down

The E7014 Stick electrode makes welding in this position particularly easy. Use a 3.2mm electrode at 100 amps. The tip of the electrode is held in light contact with the work and the speed of downward travel is regulated so that the tip of the electrode just keeps ahead of the slag. The electrode should point upwards at an angle of about 45º.

3. Overhead Welds

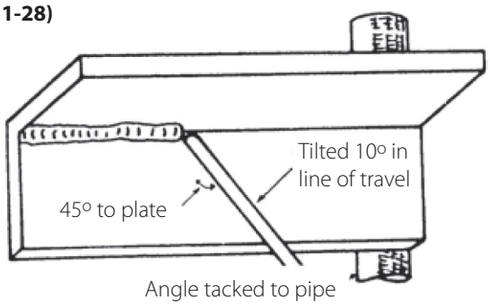
Apart from the rather awkward position necessary, overhead welding is not much more difficult that down hand welding.

Set up a specimen for overhead welding by first tacking a length of angle iron at right angles to another piece of angle iron or a length of waste pipe. Then tack this to the work bench or hold in a vice so that the specimen is positioned in the overhead position as shown in the sketch.

The electrode is held at 45º to the horizontal and tilted 10º in the line of travel (Figure 1-28). The tip of the electrode may be touched lightly on the metal, which helps to give a steady run. A weave technique is not advisable for overhead fillet welds.

Use a 3.2mm E6013 Stick electrode at 100 amps, and deposit the first run by simply drawing the electrode

Overhead Fillet Weld (Fig 1-28)



along at a steady rate. You will notice that the weld deposit is rather convex, due to the effect of gravity before the metal freezes.

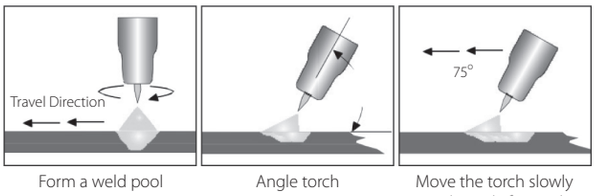
Basic TIG Welding Guide

Tig Welding Techniques

Tig Welding Fusion Technique

Manual TIG welding is often considered the most difficult of all the welding processes. Because the welder must maintain a short arc length, great care and skill are required to prevent contact between the electrode and the work piece. Similar to Oxygen Acetylene torch welding, TIG welding normally requires two hands and in most instances requires the welder to manually feed a filler wire into the weld pool with one hand while manipulating the welding torch in the other. However, some welds combining thin materials can be accomplished without filler metal like edge, corner, and butt joints.

This is known as Fusion welding where the edges of the metal pieces are melted together using only the heat and arc force generated by the TIG arc. Once the arc is started the torch tungsten is held in place until a weld pool is created, a circular movement of the tungsten will assist is creating a weld pool of the desired size. Once the weld pool is established tilt the torch at about a 75° angle and move smoothly and evenly along the joint while fusing the materials together.



Tig Welding with Filler Wire Technique

In many situations with TIG welding, it is necessary to add a filler wire into the weld pool to build up weld reinforcement and create a strong weld. Once the arc is started the torch tungsten is held in place until a weld pool is created, a circular movement of the tungsten will assist is creating a weld pool of the desired size. Once the weld pool is established tilt the torch at about a 75° angle and move smoothly and evenly along the joint. The filler metal is introduced to the leading edge of the weld pool. The filler wire is usually held at about a 15° angle and fed into the leading edge of the molten pool, the arc will melt the filler wire into the weld pool as the torch is moved forward. Also a dabbing technique can be used to control the amount of filler wire added, the wire is fed into the molten pool and retracted in a repeating sequence as the torch is moved slowly and evenly forward. It is important during the welding to keep the molten end of the filler wire inside the gas shield as this protects the end of the wire from being oxidised and contaminating the weld pool.

Electrodes

Tungsten Electrodes

Tungsten is a rare metallic element used for manufacturing TIG welding electrodes. The TIG process relies on tungsten's hardness and high temperature resistance to carry the welding current to the arc. Tungsten has the highest melting point of any metal at 3410 degrees Celsius.

Tungsten electrodes are non-consumable and come in a variety of sizes, they are made from pure tungsten or an alloy of tungsten and other rare earth elements. Choosing the correct tungsten depends on the material being welded, the amount of amps required and whether you are using AC or DC welding current.Tungsten electrodes are colour-coded at the end for easy identification.

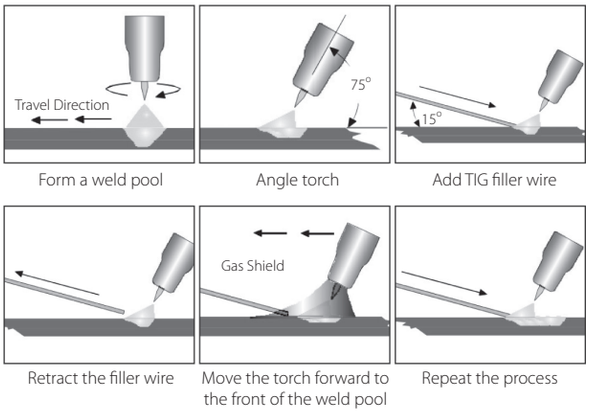
Thoriated Tungsten Electrodes

Thoriated tungsten electrodes (AWS classification EWTh-2) contain a minimum of 97.30 percent tungsten and 1.70 to 2.20 percent thorium and are called

2 percent thoriated. They are the most commonly used electrodes today and are preferred for their longevity and ease of use.

Thorium increases the electron emission qualities of the electrode, which improves arc starts and allows for a higher current-carrying capacity. This electrode operates far below its melting temperature, which results in a considerably lower rate of consumption and eliminates arc wandering. Compared with other electrodes, thoriated electrodes deposit less tungsten into the weld puddle, so they cause less weld contamination.

Thorium is a low-level radioactive hazard and many



users have switched to other alternatives. Thorium is an alpha emitter but when enclosed in a tungsten matrix, the risks are negligible. Thus holding a stick of Thoriated tungsten in your hand should not pose a great threat unless a welder has open cuts on their skin. Thoriated tungsten should not get in contact with open cuts or wounds. The more significant danger to welders can occur when thorium oxide gets into the lungs. This can happen from the exposure to vapours during welding or from ingestion of material/
dust in the grinding of the tungsten. Follow the manufacturer's warnings, instructions, and the Safety Data Sheet (SDS) for its use.

Tungsten Preparation

Always use DIAMOND wheels when grinding and cutting. While tungsten is a very hard material, the surface of a diamond wheel is harder, and this makes for smooth grinding. Grinding without diamond wheels, such as aluminium oxide wheels, can lead to jagged edges, imperfections, or poor surface finishes not visible to the eye that will contribute to weld inconsistency and weld defects.

Tungsten Electrode Preparation

Tungsten Electrode Diameter (mm)	Flat Spot Diameter at the Tip (mm)	Tip Included Angle (Degrees)	Current Range (Amps)	Current Pulsed (Amps)
1.6	.500	25	08 - 50	05 - 10
	.800	30	10 - 70	10 - 140
2.4	.800	35	12 - 90	12 - 180
	1.100	45	15 - 150	15 - 250
3.2	1.100	60	20 - 200	20 - 300
	1.500	90	25 - 250	25 - 350

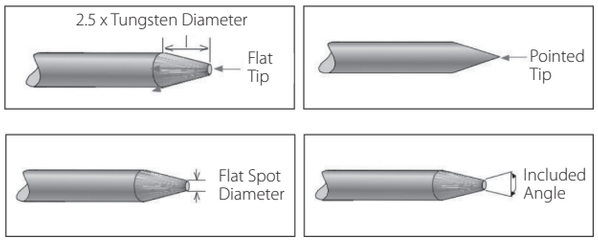
Tungsten Electrode Current Ranges

Tungsten Diameter	DC Current Amps Torch Negative 2% Thoriated
1.0mm	15 - 80
1.6mm	70 - 150
2.4mm	150 - 250
3.2mm	250 - 400
4.0mm	400 - 500

Always grind the tungsten in a longitudinal direction. Tungsten electrodes are manufactured with the molecular structure of the grain running lengthwise and thus grinding crosswise is "grinding against the grain." If electrodes are ground crosswise, the electrons have to jump across the grinding marks and the arc can start before the tip and wander. Grinding longitudinally with the grain, the electrons flow steadily and easily to the end of the tungsten tip. The arc starts straight and remains narrow, concentrated, and stable.

Electrode Tip/Flat

The shape of the tungsten electrode tip is an important process variable in precision arc welding. A good selection of tip/flat size will balance the need for several advantages. The bigger the flat, the more likely arc wander will occur and the more difficult it will be to arc start. Increasing the flat to the maximum level that still allows arc start and eliminates arc wonder will improve the weld penetration and increase the electrode life. Some welders grind electrodes to a sharp point, which makes arc starting easier but can



contribute to decreased welding performance due to the tip me lting and falling into the weld pool.

Electrode Included Angle/Taper

DC Welding Tungsten electrodes for DC welding should be ground longitudinally and concentrically with diamond wheels to a specific included angle in conjunction with the tip/flat preparation. Different angles produce different arc shapes and offer different weld penetration capabilities.

In general, electrodes that have an appropriate included angle and a suitable flat on the tip, exhibit the following benefits:

- Last longer
- Have better weld penetration
- Have a narrower arc shape
- Can handle more amperage without eroding.

Sharper electrodes with smaller included angle provide:

- Offer less arc weld
- Have a wider arc
- Have a more consistent arc

The included angle determines weld bead shape and size. Generally, as the included angle increases, penetration increases and bead width decreases.

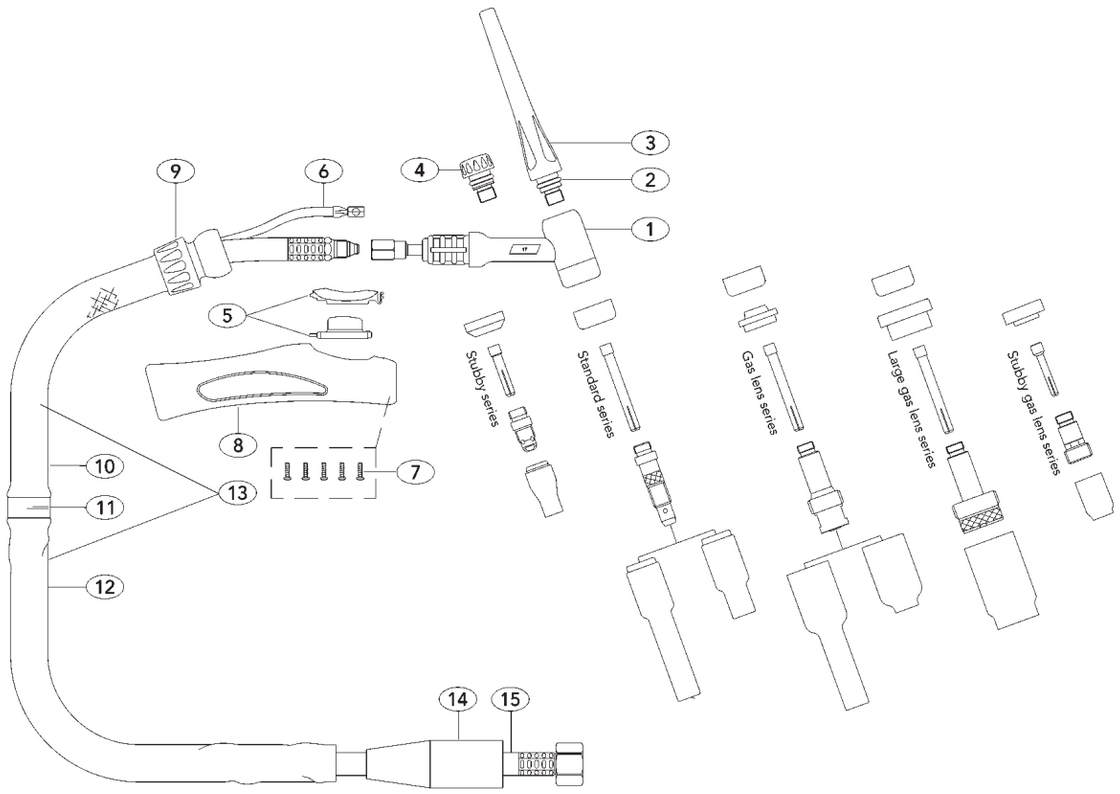
Accessories & Consumables

Refer to page 4 for related accessories for this machine or visit www.weldtech.co.nz for a full range of consumables and accessories.

Spare Parts for WT4015MP

CODE #:	DESCRIPTION:
18106	Air Pressure Regulator Assembly
18107	Air Pressure Gauge
18108	WT4015 Front Display PCB PK06B-002-A
18109	WT4015 Main Power PCB PK01B-117-A
18110	Main Power Switch
18113	Wt4015 HF PCB PK01B-101-A
18112	Air Filter/ Water Trap Assembly
18111	Cooling Fan
18114	Gas Solenoid 220V
18115	WT4015 Trigger Filter PCB PH05-001-A00
ACR2608	1/4" Male ARO Plug
ACR210	1/4 Female Coupler
A200EC	200A Earth clamp
S400EH	400A Screw Type Electrode holder
CP1625	Cable Plug - 15-25mmÂ³ (8.5mm dia pin)
AEL1625	Earth Lead 16mm2 cable, 16-25mm plug, 3m Heavy duty earth clamp
AAL1625	Arc Lead 16mm2 cable, 16-25mm plug, 4m Twist-lock Electrode holder.
ALS1625	MMA Lead Set 200A 2+3m 3/8" Dinse Connector
RW1500MP-57	Complete Replacement Tig Torch
RW30C-35	Complete Replacement Plasma Torch
DW3000	Auto Darkening Helmet, Shade 9-13
DW4000	Auto Darkening Helmet, Shade 9-13 w/ Grinding Visor
DW7000	Auto Darkening Helmet, Shade 9-13 w/ Grinding Visor and PRSL Filtration System
16895	15m H/D 15A Extension Lead (3x2.5mm2 wiring)
GR101AR	Argon Twin Gauge Regulator
GR101ARFL	Argon Gas Regulator c/w Flow Meter
WT18204	PT-31 Shield cap (2pk)
WT18205	PT-31 Electrode - std. (5pk)
WT18785	PT-31 Swirl baffle (2pk)
WT18866	PT-31 Nozzle - std. (5pk)
WT19682	PT-31 Nozzle - long (5pk)
WT19683	PT-31 - Long Electrode (5pk)
WT45065	PT-31 O-ring (2pk)
TC10N23	Collet 1/16 (1.6mm) (2 pk)

CODE #:	DESCRIPTION:
TC10N24	Collet 3/32 (2.4mm) (2 pk)
TC10N25	Collet 1/8 3.2mm (Pkt 2)
TCB10N31	Collet body 1/16 (1.6mm) (2pk)
TCB10N32	Collet body 3/32 (2.4mm) (2pk)
TCB10N28	Collet body 1/8 (3.2mm) (2 pk)
TCC10N48	Std. ceramic cup 3/8 bore #6 (2pk)
TCC10N47	Std. ceramic cup 7/16 bore #7 (2pk)
TCC10N46	Std. ceramic cup 1/2 bore #8 (2pk)
TCC10N45	Std. ceramic cup 5/8 bore #10 (2pk)
TT16-150	Thoriated Tungsten Electrode 1.6mm (3pk)
TT24-150	Thoriated Tungsten Electrode 2.4mm (3pk)
TT32-150	Thoriated Tungsten Electrode 3.2mm (3pk)
DCKIT	DC Tig Components Starter Kit - WP17, WP18, WP26 Suits : XTP200PRO, XMP5000 or any tig kit sold with MIG or ARC welder
TR16MS-70S-6	Mild steel tig rod 1.6mm/ 1kg
TR24MS-70S-6	Mild steel tig rod 2.4mm/ 1kg
TR32MS-70S-6	Mild steel tig rod 3.2mm/ 1kg
TR16SS-316	Stainless steel tig rod 1.6mm
TR24SS-316	Stainless steel tig rod 2.4mm
TR32SS-316	Stainless steel tig rod 3.2mm
ETCPH4825	Overcord R92 2.5mm Electrodes (350mm)
ETCPH4832	Overcord R92 3.2mm Electrodes (350mm)
ETCPH4840	Overcord R92 4.0mm Electrodes (350mm)
ETCPH6825	Overcord 2.5mm Electrodes (350mm)
ETCPH6832	Overcord 3.2mm Electrodes (350mm)
ETCPH6840	Overcord 4.0mm Electrodes (350mm)
ETCPH7725	Supercito 2.5mm Electrodes (350mm)
ETCPH7732	Supercito 3.2mm Electrodes (450mm)
ETCPH7740	Supercito 4.0mm Electrodes (450mm)
ETCPH56S25	Tenax 56S 2.5mm Electrodes (350mm)
ETCPH56S32	Tenax 56S 3.2mm Electrodes (350mm)
ETCPH56S40	Tenax 56S 4.0mm Electrodes (450mm)
WT C03001	2-Pin Plug for Tig Torch
PDL15	3 Pin Plug15A 250V straight
16896	2m 15A H/D Molded Plug & Lead, (3x2.5mm2 wiring)
TBC57Y02	Long black cap

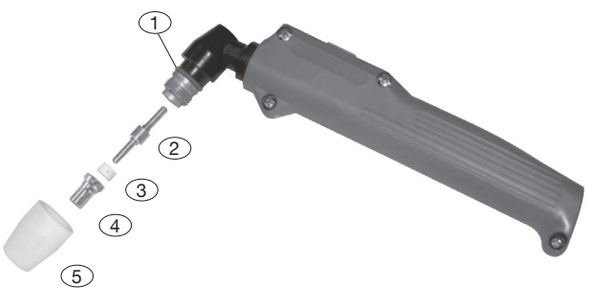


WP17 TIG Torch Range Parts

3.	TCB57Y02	Back Cap Long
4.	TCB57Y04	Back Cap Short
5.	TER1MS	Momentary Kit
6.	ERSWL8	Trigger Lead 25ft
8.	TERH100	Small Ergo Tig Handle
9.	UERKJ100	Small Knuckle Joint
10.	UERLC100-08	Leather Cover × 0.8mt
11.	UERJK100	Jointing Repair Kit
13.	UERCO100-40	Sheath x 12.5ft Inc Leather Cover
	UERCO100-80	Sheath x 25ft Inc Leather Cover
15.	57Y01R	Power Cable x 12.5ft Rubber
	57Y03R	Power Cable x 25ft Rubber

WT-PT31 Torch Compatible Consumables

1	WT45065	O-Ring
2	WT18205	Electrode - Std.
2	WT19683	Electrode - Long
3	WT18785	Swirl Baffle
4	WT18866	Nozzle - Std.
4	WT19682	Nozzle - Long
5	WT18204	Shield Cap



Care & Maintenance

Keep your Welding Machine in Top Condition

The WT4015MP does not require any special maintenance; however the user must be aware of the following:

- Regularly clean the ventilation slots.
- Keep the casing clean.
- Check all cables before use.
- Check electrode holders, work lead/clamps and welding torches before use.
- Replace worn electrode holders and earth clamps, which do not provide a good connection.
- Use a soft cloth or brush to clean electrical components. Do not use liquid cleaning products, water or especially solvents.
- Do not use compressed air to clean electrical components as this can force dirt and dust further into components, causing electrical short circuits.

Check for Damaged Parts

Do not use the welder with damaged parts, before further use, a damaged welder must be carefully checked by a qualified person to determine that it will operate properly. Check for breakage of parts, mountings and other conditions that may affect its operation.

An authorised service centre should properly repair a damaged part. Have your welder repaired by an expert. This appliance is manufactured in accordance with relevant safety standards. Only experts must carry out repairing of electrical appliances, otherwise considerable danger for the user may result. Use only genuine replacement parts. Do not use modified or non-genuine parts.

Storing the Welder

When not in use the welder should be stored in the dry and frost-free environment.

⚠ **WARNING!** *Before performing cleaning/maintenance, replacing cables / connections , make sure the welding machine is switched off and disconnected from the power supply.*

Knowledge & Resources

Please refer to Euroquip website
www.euroquip.co.nz/ Downloads.html
for knowledgebase articles & operation videos.

Safety

Store and Retain this Manual

Retain this manual for the safety warnings and precautions, assembly, operating, inspection, maintenance and cleaning procedures. Write the product's serial number into the NOTES section at the rear, and keep this manual and the receipt in a safe and dry place for future reference.

Important Safety Information

Failure to follow the warnings and instructions may result in electric shock, fire, serious injury and/or death. Save all warnings and instructions for future reference.

This is the safety alert symbol to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ **DANGER!** *indicates a hazardous situation which, if not avoided, will result in death or serious injury.*

⚠ **WARNING!** *indicates a hazardous situation which, if not avoided, could result in death or serious injury.*

⚠ **CAUTION,** *used with the safety alert symbol, indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.*

NOTE, *used to address practices not related to personal injury.*

CAUTION, *without the safety alert symbol, is used to address practices not related to personal injury.*

GENERAL SAFETY WARNINGS

1. Maintain labels and nameplates on the welder. These carry important information. If unreadable or missing, contact Euroquip for a replacement.

2. Avoid unintentional starting. Make sure the welder is setup correctly and you are prepared to begin work before turning on the welder.

3. Unplug before performing maintenance. Always unplug the welder from its electrical outlet before performing any inspection, maintenance, or cleaning procedures.

4. Never leave the welder unattended while energised. Turn power off before leaving the welder unattended.

5. Do not touch live electrical parts. Wear dry, insulating gloves. Do not touch the electrode or the conductor tong with bare hands. Do not wear wet or damaged gloves.

6. Protect yourself from electric shock. Do not use the welder outdoors. Insulate yourself from the work piece and the ground. Use non-flammable, dry insulating material if possible, or use dry rubber mats, dry wood or plywood, or other dry insulating material large enough to cover the area of contact with the work or the ground.

7. Avoid inhaling dust. Some dust created by power sanding, sawing, grinding, drilling, cutting, welding and other construction activities, contain chemicals known to cause cancer, birth defects or other harm. Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals, work in a well-ventilated area, and work with approved safety equipment, such as dust masks that are specially designed to filter out microscopic particles.

8. People with pacemakers should consult their physician(s) before using this machine.

WARNING!
Electromagnetic fields in close proximity to a heart pacemaker could cause interference, or failure of the pacemaker. The use of a Welder is NOT RECOMMENDED for pacemaker wearers. Consult your doctor.

9. Ensure that the unit is placed on a stable location before use.

WARNING!
If this unit falls while plugged in, severe injury, electric shock, or fire may result.

10. Transportation Methods Lift unit with the handles provided, or use a handcart or similar device of adequate capacity. If using a fork lift vehicle, secure the unit to a skid before transporting.

CAUTION!
Disconnect input power conductors from de-energized supply line before moving the welding power source.

11. Exercise good work practices. The warnings, precautions, and instructions discussed in this instruction manual cannot cover all possible conditions and situations that may occur. It must be understood by the operator that common sense and caution are factors which cannot be built into this product, but must be considered by the operator.

Welding /Plasma Cutting Safety Instructions & Warnings

WARNING!
Protect yourself and others from possible serious injury or death. Keep children away. Read the operating/Instruction manual before installing, operating or servicing this equipment. Have all installation, operation, maintenance, and repair work performed by qualified people.

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

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 European Standard EN60974-1 entitled: Safety in welding and allied processes.

WARNING!
Only use safety equipment that has been approved by an appropriate standards agency. Unapproved safety equipment may not provide adequate protection. Eye and breathing protection must be AS/NZS compliant for the specific hazards in the work area.

DANGER!
Always wear AS/NZS compliant safety glasses and full face shield fitted with appropriate filter shade number. (Refer Filter Table on page 17.)

CAUTION!
Heavy-duty work gloves, non-skid safety shoes and hearing protection used for appropriate conditions will reduce personal injuries.

CAUTION!
Have the equipment serviced by a qualified repair person using identical replacement parts. This will ensure that the safety of the power tool is maintained.

Personal Safety

CAUTION!
Keep the work area well lit. Make sure there is adequate space surrounding the work area. Always keep the work area free of obstructions, grease, oil, trash, and other debris. Do not use equipment in areas near flammable chemicals, dust, and vapours. Do not use this product in a damp or wet location.

1. Stay alert, watch what you are doing and use common sense when operating equipment. Do not use a tool while you are tired or under the influence of drugs, alcohol or medication. A moment of distraction when operating equipment may result in serious personal injury.
2. Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.

Arc Rays can Burn Eyes and Skin

DANGER!
Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin.

1. Use a Welding Helmet or Welding Face Shield fitted with a proper shade filter (refer AS 60974-1, AS/NZS 1337.1 and AS/NZS 1338.1 Safety Standards) to protect your face and eyes when welding or watching. (See Filter Table on Page17).
2. Wear approved safety glasses. Side shields are 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 safety protection.
5. Never wear contact lenses while welding.

Noise Can Damage Hearing

CAUTION!
Noise from some processes can damage hearing. Use AS/NZS compliant ear plugs or ear muffs if the noise level is high.

Work Environment Safety

DANGER!
Remove any combustible material from the work area.

1. When possible, move the work to a location well away from combustible materials. If relocation is not possible, protect the combustibles with a cover made of fire resistant material.
2. Remove or make safe all combustible materials for a radius of 10 metres around the work area. Use a fire resistant material to cover or block all doorways, windows, cracks, and other openings.
3. Enclose the work area with portable fire resistant screens. Protect combustible walls, ceilings, floors, etc., from sparks and heat with fire resistant covers.
4. If working on a metal wall, ceiling, etc., prevent ignition of combustibles on the other side by moving the combustibles to a safe location. If relocation of combustibles is not possible, designate someone to serve as a fire watch, equipped with a fire extinguisher, during the welding process and well after the welding is completed.
5. Do not weld or cut on materials having a combustible coating or combustible internal structure, as in walls or ceilings, without an approved method for eliminating the hazard.
6. After welding, make a thorough examination for evidence of fire. Be aware that visible smoke or flame may not be present for some time after the fire has started. Do not weld or cut in atmospheres containing dangerously reactive or flammable gases, vapours, liquids, and dust. Provide

adequate ventilation in work areas to prevent accumulation of flammable gases, vapours, and dust.

7. Do not apply heat to a container that has held an unknown substance or a combustible material whose contents, when heated, can produce flammable or explosive vapours. Clean and purge containers before applying heat. Vent closed containers, including castings, before preheating, welding, or cutting.

Electricity Can Kill

DANGER!
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 semi-automatic 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 the work and the ground using dry insulating mats or covers.
4. Disconnect input power 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 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 the 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. Connect work piece to a good electrical ground.
11. Do not touch the electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts as soon as practical.
13. In confined spaces or damp locations, do not use a welder with AC output unless equipped with a voltage reducer.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Use the following table to select the appropriate shade number for a Welding Helmet or Welding Face Shield.

1. Use a Welding Helmet or Welding Face Shield fitted with a proper shade of filter (see AS 60974-1, AS/NZS 1337.1 and AS/NZS 1338.1 Safety Standards) to protect your face and eyes when welding or watching.
2. Wear approved safety glasses. Side shields are 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. Never wear contact lenses while welding.

Fumes And Gases

WARNING!
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 breathe the fumes.
2. If inside, ventilate the area and/or use an exhaust at the arc to remove welding fumes and gases.
3. If ventilation is poor, use an approved air-supplied respirator.
4. Read the Safety Data Sheets (SDS) and the manufacturer's instruction for the 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 ga es used for welding can displace air causing injury or death. Be sure the breathing air is safe.

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 (MMA)	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 (GWAW) (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(GWAW) (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 for comprehensive information regarding the above table.

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.

Fire & Explosive Risks

WARNING!
Sparks and spatter fly off from the welding arc. The flying sparks and hot metal, weld spatter, work piece, 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 10m of the welding site.
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 the work lead/clamp to the job 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 a welder to thaw frozen pipes.
10. Remove the stick electrode from the holder or cut off the welding wire at the contact tip when not in use.

Sparks & Hot Metal

WARNING!
Chipping and grinding causes flying metal, and as welds cool they can throw off slag.

1. Wear an AS/NZS approved face shield or safety goggles. Side shields are recommended.
2. Wear appropriate safety equipment to protect the skin and body.

Cylinders

WARNING!
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 appropriate shielding gas, regulators, hoses, and fittings designed for the specific application; maintain them and their associated parts in good condition.
6. Turn your face away from the valve outlet when opening the cylinder valve.

Warranty

As part of an on-going commitment to excellence in product support, Euroquip offers a comprehensive product warranty program.

In order to qualify for full warranty support, your product must be registered.

Product not registered with Euroquip is supported by a base 12 month warranty only. Spare parts and technical support will not be available for an unregistered product outside of this base warranty period. If a Euroquip dealer has not already registered your product, please register it online at www.euroquip.co.nz. To request a physical registration form, please contact Euroquip customer service on 0800 387 678.

Registered warranty period for the WT4015MP:
Commercial Use: 18 Months
Domestic Use: 18 Months

Warranty covers failure caused by manufacturing and material defects in the product, during the warranty period specified. The warranty period begins when the product is purchased by the end user. Warranty is not transferrable and is only claimable by the original purchaser.

Warranty does not cover parts that are subject to wear and tear from usage.

Warranty covers failure of a product caused by defective materials and/or manufacturing for the period given and the usage specified by Euroquip. The warranty period begins when the product is purchased by the end user. Warranty is not transferrable and is only claimable by the original purchaser.

Warranty also does not cover failure caused by the untimely replacement or service of the above wearing parts. Evidence must be provided that the product has been maintained and serviced suitably for a claim to be considered under warranty.

Failure caused by incorrect operation of the product, lack of proper care and maintenance of the product, external damage, external circumstances such as contaminated fuel or poor water supply, modifications to the product, attempted repair/ service by a party other than an Approved Service Agent, is not covered under warranty.
Warranty does not cover pre delivery service and adjustment, or failure that may occur as a result of lack of/ incorrect pre delivery service and adjustment.

Warranty does not cover any incidental, indirect or consequential loss, damage or expense that may result from any defect, failure or malfunction of a product.

Should any issue be found to be a combination of a warranty failure and a non-warranty issue, the repair cost component to rectify and repair the non-warranty failure is the customers' full responsibility.

The decision that an issue with a product qualifies as a warranty claim is made at the sole jurisdiction of Euroquip.

No costs incurred will be considered under warranty if repairs are carried out by a party other than a Euroquip Approved Service Agent, unless with prior consent in writing from Euroquip.

It is the responsibility of the purchaser to deliver a product under warranty to the nearest relevant service agent or product reseller. Warranty does not cover call outs, mileage and freight costs.

If a product is repaired under warranty, parts and labour required for the repair will be supplied at no charge. Warranty assessment and repair will be scheduled and executed according to the normal work flow at the service location and depending on the availability of suitable replacement parts.

This warranty policy is an additional benefit and does not affect the legal rights of any end user, reseller or service agent.

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