THE TOOL COMPANY

230V TURBO MIG WELDERS

■ STOCK Nos. 72224
72223
75115

■ PART Nos. MW135AT
MW150AT
MW151AT

• INSTRUCTIONS •

IMPORTANT: PLEASE READ THESE INSTRUCTIONS CAREFULLY TO ENSURE THE SAFE AND EFFECTIVE USE OF THIS TOOL.

CE

04/2005

GENERAL INFORMATION

This manual has been compiled by Draper Tools and is an integrated part of the product with which it is enclosed and should be kept with it for future references.

This manual describes the purpose for which the product has been designed and contains all the necessary information to ensure its correct and safe use. We recommend that this manual is read before any operation or, before performing any kind of adjustment to the product and prior to any maintenance tasks. By following all the general safety instructions contained in this manual, it will ensure both product and operator safety, together with longer life of the product itself.

All photographs and drawings in this manual are supplied by Draper Tools to help illustrate the operation of the product.

Whilst every effort has been made to ensure accuracy of information contained in this manual, the Draper Tools policy of continuous improvement determines the right to make modifications without prior warning.

230V TURBO MIG WELDERS

■ STOCK Nos.72224
72223
75115

■ PART Nos.MW135AT
MW150AT
MW151AT

CONTENTS:

DECLARATION OF CONFORMITY

We
Draper Tools Ltd. Hursley Road, Chandler's Ford, Eastleigh, Hampshire.
SO53 1YF. England.

Declare under our sole responsibility that the product:

Stock No:- 75115, 72223, 72224

Part No:- MW151AT, MW150AT, MW135AT

Description:- Mig Welder

To which this declaration relates is in conformity with the following directive(s)
73/23/EEC & 89/336/EEC

With reference to: EN60974-1 & EN50199

JOHN DRAPER
Managing Director

19/03/2004

DRAPER
THE TOOL COMPANY

SPECIFICATION

The Draper Tools policy of continuous improvement determines the right to change specification without notice.

Stock No.	72224	72223	75115
Part No.	MW135AT	MW150AT	MW151AT
Polarity Switch Fitted	YES	NO	YES
Input Voltage (single phase)	230V	230V	230V
Output Amperage Range	30-135A	30-150A	30-150A
Max. Input Power	2.1kW	2.6kW	2.6kW
Open/No Load Voltage	18-30V	18-32V	18-32V
Duty Cycle	15%-135A	10%-150A	10%-150A
	20%-100A	25%-120A	25%-120A
	60%-65A	60%-70A	60%-70A
	100%-50A	100%-55A	100%-58A
Wire Sizes Steel	0.6-0.8mm	0.6-0.8mm	0.6-0.8mm
Stainless Steel	0.8mm	0.8mm	0.8mm
Aluminium	0.8mm	0.8mm	0.8mm
Flux cored	0.8-0.9mm	~	0.8-0.9mm
Max Metal Welding Thickness*	4-5mm	4-5mm	4-5mm
Wire Spool Capacity	up to 5kg	up to 5kg	up to 5kg
Dimensions	500x300x360mm	500x300x360mm	500x300x360mm
Weight	25kg	30kg	30kg

*Mild Steel

ALWAYS WEAR AN APPROVED WELDING MASK/VISOR AND PROTECTIVE GLOVES

DRAPER
THE TOOL COMPANY

GUARANTEE

Draper Tools have been carefully tested and inspected before shipment and are guaranteed to be free from defective materials and workmanship for a period of 12 months from the date of purchase except where tools are hired out when the guarantee period is ninety days from the date of purchase.

Should the machine develop any fault, please return the complete tool to your nearest authorized warranty repair agent or contact Draper Tools Limited, Chandler's Ford, Eastleigh, Hampshire, SO53 1YF. England. Telephone: (023) 8026 6355.

If upon inspection it is found that the fault occurring is due to defective materials or workmanship, repairs will be carried out free of charge. This guarantee does not apply to normal wear and tear, nor does it cover any damage caused by misuse, careless or unsafe handling, alterations, accident, or repairs attempted or made by any personnel other than the authorised Draper warranty repair agent.

This guarantee applies in lieu of any other guarantee expressed or implied and variations of its terms are not authorised.

Your Draper guarantee is not effective unless you can produce upon request a dated receipt or invoice to verify your proof of purchase within the 12 month period.

Please note that this guarantee is an additional benefit and does not affect your statutory rights.

Draper Tools Limited.

POWER SUPPLY

The machine should be connected to a 16amp power supply either using the appropriate blue 16amp plug or directly into the fused mains supply. Both of these operations should be carried out by a qualified electrician.

***WARNING:**
A plug with bare flexible wires exposed is hazardous if engaged in a live power socket outlet.

WARNING: THIS APPLIANCE MUST BE EARTHED.
the mains lead is coloured Green and Yellow - Earth, Blue - Neutral & Brown - Live. As these colours may not correspond with the coloured markings identifying the terminals in your 16amp plug, proceed as follows. The wire which is coloured green and yellow must be connected to the terminal in your plug marked with the letter 'E' or by the earth symbol ⏚ or coloured green or green and yellow. The wire which is coloured blue must be connected to the terminal which is marked with the letter 'N' or coloured black or blue. The wire which is coloured brown must be connected to the terminal which is marked with the letter 'L' or coloured red or brown.

GENERAL SAFETY INSTRUCTIONS FOR POWER TOOLS

WARNING:
Please read the following instructions carefully, failure to do so could lead to serious personal injury. When using electric tools, basic safety precautions, including the following, should always be followed to reduce the risk of fire, electric shock and personal injury. Read all these instructions before operating this product and save these instructions.

IMPORTANT:
Draper Tools Limited recommends that this machine should not be modified or used for any application other than that for which it was designed. If you are unsure of its relative applications do not hesitate to contact us in writing and we will advise you.

1. **KNOW YOUR POWER TOOL**
   Read and understand the owner's manual and labels affixed to the tool. Learn its application and limitations as well as the specific potential hazards peculiar to this tool.
2. **KEEP WORK AREA CLEAN**
   Cluttered areas and benches invite accidents. Floors must not be slippery due to oil or sawdust.
3. **AVOID DANGEROUS ENVIRONMENTS**
   Do not use power tools in damp or wet locations, or expose them to rain. Keep work area well lit. Provide adequate space surrounding the work area. Do not use in environments with a potentially explosive atmosphere.
4. **KEEP CHILDREN AWAY**
   All visitors should be kept a safe distance from work area.
5. **STORED TOOLS**
   When not being used, all tools should be stored in a dry, locked cupboard and out of the reach of children.
6. **WEAR PROPER CLOTHING**
   Do not wear loose clothing, neckties or jewellery (rings, wristwatches) to catch in moving parts. NONSLIP footwear is recommended. Wear protective hair covering to contain long hair. Roll long sleeves above the elbow.
7. **USE SAFETY GOGGLES (Head Protection)**
   Wear CE approved safety goggles at all times. Normal spectacles only have impact resistant lenses, they are NOT safety glasses. Also, use face or dust mask if application is dusty and ear protectors (plugs or muffs) during extended periods of operation.
8. **NOISE LEVELS**
   Some types of machines may have high noise levels when working. In such cases ear protection must be worn.
9. **VIBRATION LEVELS**
   Hand held power tools produce different vibration levels. You should always refer to the specifications and relevant Health and Safety guide.
10. **DUST EXTRACTION**
    If your tool is fitted with a dust extraction fitting, always ensure that it is connected and being used with a dust extractor. Vacuum cleaners can be used if suitable for the material being extracted.
11. **PROTECT YOURSELF FROM ELECTRIC SHOCK**
    When working with power tools, avoid contact with any earthed items (e.g. pipes, radiators, hobs and refrigerators, etc.). If you are using a power tool in extreme conditions (e.g. high humidity or generating metal dust), always use an RCD (residual current device) at the power socket.
12. **STAY ALERT**
    Always watch what you are doing and use common sense. Do not operate a power tool when you are tired or under the influence of alcohol or drugs.
13. **WHEN WORKING OUT OF DOORS**
    Only use extension leads designed for that purpose.
14. **ACCESS TO MAINS SOCKET**
    If a stationary machine is fitted with a moulded plug and cable, the machine should not be positioned so that access to the mains socket is restricted.
15. **DISCONNECT POWER TO THE TOOL**
    When not in use, before servicing and when changing accessories such as cutters, etc.
16. **AVOID ACCIDENTAL STARTING**
    Make sure the switch is in the OFF position before plugging the machine into the power supply.
17. **NEVER LEAVE MACHINE RUNNING UNATTENDED**
    Turn power off. Do not leave machine until it comes to a complete stop.
18. **DO NOT ABUSE THE CORD**
    Never carry the tool by the power cable or pull it from the socket. Keep the power cable away from heat, oil and sharp edges. If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similarly qualified person in order to avoid hazard.
19. **NEVER STAND ON TOOL**
    Serious injury could occur if the tool is tipped or if the cutting tool is accidentally contacted. Do not store materials above or near the tool, so that it is necessary to stand on the tool to reach them.
20. **CHECK DAMAGED PARTS**
    Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, free running of moving parts, breakage of parts, mounting and any other conditions that may affect its operation. A guard or other part that is damaged should be repaired properly or replaced by an authorized service centre unless otherwise indicated in this instruction manual. Have defective switches replaced by an authorized service facility. Do not use the tool if the switch does not turn it on and off.
21. **KEEP GUARDS IN PLACE**
    And in working order.
22. **MAINTAIN TOOLS WITH CARE**
    Keep tools sharp and clean for the best and safest performance. Follow instructions for lubricating and changing accessories. All extension cables must be checked at regular intervals and replaced if damaged. Always keep the hand grips on the tool clean, dry and free of oil and grease.
23. **USE RECOMMENDED ACCESSORIES**
    Consult the owners manual for recommended accessories. Follow the instructions that accompany the accessories. The use of improper accessories may cause hazards.
24. **REMOVE ADJUSTING KEYS AND WRENCHES**
    Form a habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.
25. **SECURE WORK**
    Use clamps or a vice to hold work. This frees both hands to operate the tool.
26. **DO NOT OVERREACH**
    Keep proper footing and balance at all times.
27. **USE RIGHT TOOL**
    Do not force the tool or attachment to do a job for which it was not designed.
28. **DO NOT FORCE TOOL**
    It will do the job better and safer at the rate for which it was designed.
29. **DIRECTION OF FEED**
    Feed work into a blade or cutter against the direction of rotation of the blade or cutter only.
30. **WHEN DRILLING OR SCREWING INTO WALLS**
    Always make sure there is no danger of hitting any hidden power cables, water or gas pipes in the wall.
31. **HAVE YOUR TOOL REPAIRED BY A QUALIFIED PERSON**
    This electric tool is in accordance with the relevant safety requirements. Repairs should only be carried out by qualified persons using original spare parts, otherwise this may result in considerable danger to the user.

IMPORTANT NOTE:
Residual Risk. Although the safety instructions and operating manuals for our tools contain extensive instructions on safe working with power tools, every power tool involves a certain residual risk which can not be completely excluded by safety mechanisms. Power tools must therefore always be operated with caution!

DRAPER
THE TOOL COMPANY

ADDITIONAL SAFETY INSTRUCTIONS FOR WELDERS

1. Connect the earth clamp as near to the work area as possible, to avoid electric shock.
2. Never use welding machines in damp or wet conditions or in the vicinity of water.
3. Always wear gloves and rubber soled footwear.
4. Always switch welding machinery off when not in use or after an interruption in the power supply. Do not leave unattended.
5. The process of welding will generate heat, radiation, noise and noxious fumes, which can lead to serious health risks. Always wear long sleeve work wear and suitable trousers (without turn ups). Wear fire resistant gloves and a cap to protect the head/hair.
6. Always use a protective mask fitted with a suitable shade filter to shield the eyes. Do not work with other people in the vicinity, however if this can not be avoided ensure they look away prior to commencing. Wear ear defenders.
7. When removing slag ensure protective goggles with top/side protection are worn.
8. Position a protective screen around the work area.
9. Welding produces sparks and hot slag which can ignite and cause fire. Do not operate around inflammable materials (e.g. saw dust, paint, solvents, petrol, gas etc.).
10. Always have a fire extinguisher to hand when operating.
11. Always thoroughly clean out an item to be welded, if it at some point has contained an inflammable material.
12. Noxious gases created during welding may be hazardous if inhaled for extended periods. Weld in a well ventilated area. Certain materials may be more dangerous than others so additional breathing protection should be worn. Consult relevant reference material for further information.
13. Gas cylinders are potentially dangerous, handle with care, secure to the welder as indicated. Do not expose to direct sunlight or heat.
14. WARNING: Shield gases such as argon if leaking will collect near the floor as it is more dense than air. If this happens in a confined area there is a danger of suffocation.
15. Always close the main gas regulator when not in use.
16. Chlorinated hydrocarbon vapours produced by certain paints or digressers can react when welding to produce phosgene which is a highly toxic gas. Irritation to the eyes, nose and throat are symptoms of suffocation. Stop welding immediately and seek a clean source of fresh air. If symptoms persist, seek medical attention immediately.
17. Position the welder to allow easy access to controls but avoid causing an obstructive hazard. Do not position the machine on an uneven or a sloping surface, or under possible falling hazards.
18. Do not lift or move the welder by the power cable, torch or earth leads. Use only the handles provided and ensure the gas/power supply is switched off.
19. Do not point the welding torch at people or animals as expelling welding wire will cause injury.
20. Take care after welding as area will be hot - danger of burns.
21. Moving parts may cause injury.

GETTING TO KNOW YOUR WELDER

1. Transport handle
2. Wire feed compartment lid
3. Gas/No Gas polarity connections*
4. Transport wheels
5. Torch (non live)
6. Earth clamp & cable

*Not fitted to MW15OAT

7. Power cable
8. ON/OFF switch
9. Wire speed control
10. Output amperage controls switches
11. Power indication LEDs
12. Thermal overload indication led

13. Face mask
14. Spool (differs depending on model)
15. 190mm Ø spool spacer
16. Wire brush
17. Gas cylinder regulator & gauge
18. Gas hose

NOTE: Carefully check inside the wire feed compartment for the handle and other assembly parts.

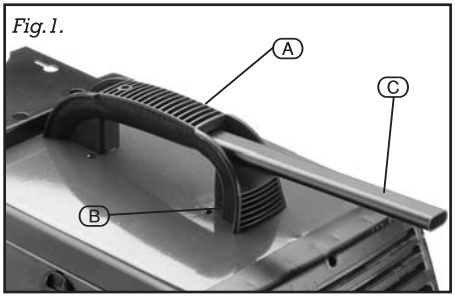
UNPACKING: After removing the packing material, make sure the product is in perfect condition and that there are no visible damaged parts. If in doubt, do not use the welder and contact the dealer from whom it was purchased.
The packaging materials (plastic bags, polystyrene etc,) must be disposed of in an appropriate refuse collection container. These materials must not be left within the reach of children as they are potential sources of danger.

ASSEMBLY

NOTE:
Remove the plug from the socket before carrying out adjustment, servicing or maintenance.

HANDLE: (Fig.1)
The fixing screws for the transport handle come supplied in situ. Remove them, align handle (A) with the holes in the machine body and secure with the screws (B). Insert the front part of the handle (C) into the main handle (A) and secure.

Fig.1.



WHEELS & STAND: (Fig.2)
Pass the axle (D) through the holes located in the side of the gas bottle shelf. Position the wheels (E) on the axle and fix in place with end stop provided. Locate the stand (F) on the front underside and secure with the screws provided.

NOTE: The MW151AT must use flux cored wire.

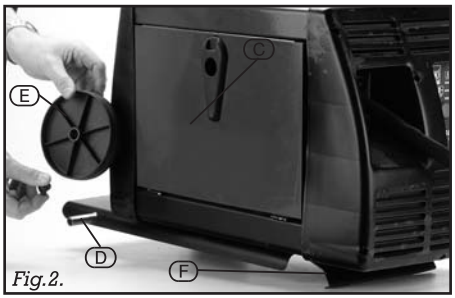
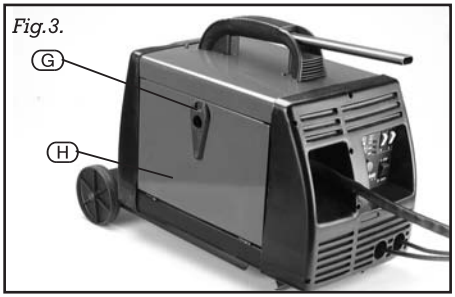


Fig.2.

INSTALLING WELDING WIRE: (Fig.3 - 6)
Slide latch (G) down and lower the wire feed compartment lid (H).

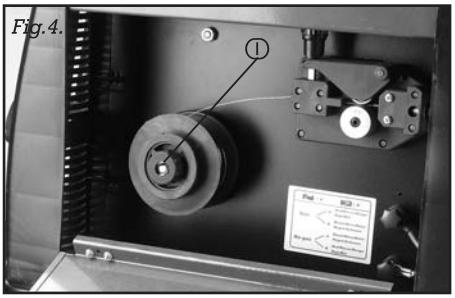
Fig.3.



ASSEMBLY

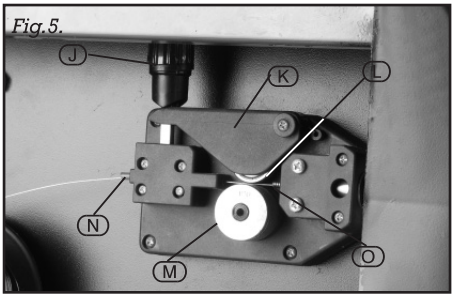
Remove the locking knob (I). Place the spool over the spindle so that it sits on the spring. The spool must be fitted with the correct orientation otherwise feeding problems will occur. The wire will feed off the spool clockwise. It is advisable to trim the first 10cm of wire to avoid burrs. Straighten the next 15cm of wire to aid with feeding.
NOTE: Do not let the wire tension off as it will unravel causing feeding problems later on.

Fig.4.



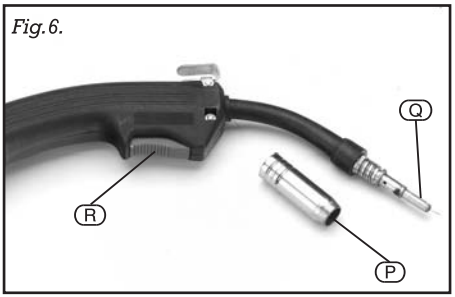
Loosen tensioning knob (J) off completely and pivot it 90 which will release arm (K) to open the gap between the tension roller (L) and drive roller (M). Before installing any wire check the drive roller is in the correct position. There are two different size slots. The number on top of the roller indicates the slot in size use. To swap, simply loosen the grub screw recessed in the side of the roller, lift off, turn over and reinstall. Ensure the grub screw is gently tightened again. Carefully pass the wire through the piece of teflon (N), the drive roller slot and then into the torch liner (O). Push as much as possible into the torch. Close round the tension mechanism. Apply sufficient tension to hold, but do not fully tighten.
NOTE: Correct tension will smoothly feed the wire into the torch but will allow the drive roller to slip in the event of a blockage.

Fig.5.



Connect the welding machine to the power supply. Position the switch to 'on'. Unscrew/remove the gas shroud (P), and with a small spanner unscrew and remove the tip (Q). Pull the trigger (R) and observe the wire feed mechanism. If the wire is being fed correctly it will come out of the swan neck. Pass the tip over the wire and secure back onto the swan neck. Do not over tighten. Resecure the gas shroud and trim the wire back as required.
NOTE: Ensure the tip size matches the wire size prior to installing.

Fig.6.



ASSEMBLY

GAS CONNECTION: (Fig.7)
The regulator supplied is for the use with a large bottle. Unscrew the gas flow valve fully anti-clockwise prior to connecting to ensure no gas escapes. Screw the regulator onto the bottle clockwise, but do not over tighten. Push the gas hose onto the regulator outlet and the welding machine inlet which is located on the rear panel. Secure in place with hose cups to ensure a gas tight seal. Only turn on the gas while in use and ensure it is shut after each use.

Fig.7.

OPERATION AND USE

ON/OFF SWITCH: (Fig.8)
The on/off switch is a simple rocker type. Position the top half in to switch the welder 'on' or the bottom half in to switch the welder 'off'.

Fig.8.

WELDING CURRENT REGULATION SWITCH: (Fig.9)
The current regulation switches are a simple rocker type.

Positions 1 & 3 = Stage 1 = Low
Positions 1 & 4 = Stage 2 = Medium low
Positions 2 & 3 = Stage 3 = Medium high
Positions 2 & 4 = Stage 4 = High

Fig.9.

WIRE SPEED CONTROL DIAL: (Fig. 10)
The dial allows fine regulation of wire speed. The wire speed control when used in conjunction with current regulation will help produce a smooth arc.

NOTE: When using the welder on a low amp setting/low wire speed, it is necessary that the wire drive tension is increased on the adjustment to avoid the spool stalling.

Fig.10.

THERMAL OVERLOAD PROTECTION CIRCUIT: (Fig. 11)
When welding on a maximum current or a low current for longer periods the machine will heat up. To avoid damage a thermal overload protection circuit cuts the power and indicator LED (S) will illuminate. Once the machine has had sufficient time to cool down the led will extinguish and the welder can continue to be used.

NOTE:
Remove the plug from the power supply before carrying out adjustment, servicing or maintenance.

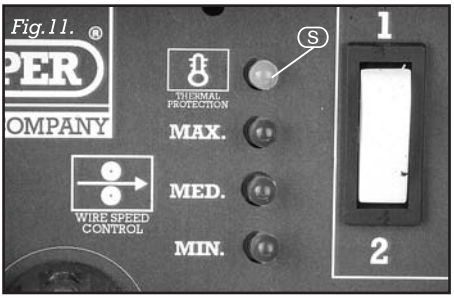


Fig.11.

GAS/NO GAS POLARITY CONNECTIONS:
(Fig. 12) (Not applicable to MW151AT)
For gas welding connect the lead labelled A to the Red terminal and the lead labelled B to the Black terminal.
For gasless welding connect the lead labelled A to the Black terminal and the lead labelled B to the Red terminal.

A = Torch lead
B = Clamp lead

Note: These connections can be located inside the wire drive compartment near the front.

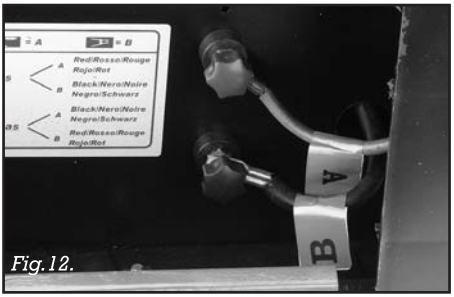


Fig.12.

MIG WELDING PRINCIPLES

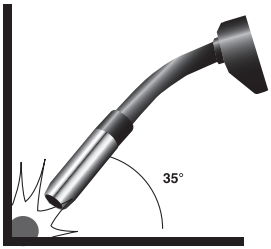
The Mig welding process is self generating. It allows two similar materials to be fused together without altering the properties of the material. The electric arc created between the electrode (the welding wire) and the work piece produces the required heat for turning the metal into a molten state. The gas creates a shield around the arc and the molten metal, on a no gas welder the shield gas comes from the flux cored welding wire that must be used.

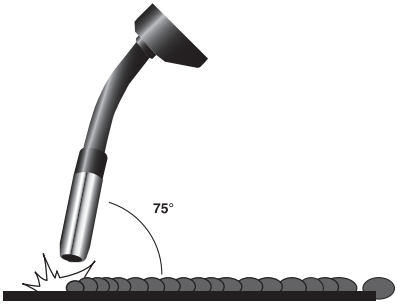
The shield gas required will either be Co^2 or Argon of a Co^2/Argon mix. The choice of gas is dependent upon the material to be welded.

When operating outdoors measures to create a wind break may be necessary as a break down of the shield gas may occur resulting in a poor weld.

The area to be welding and the earth point must be clean of grease, dirt, paint and rust. Clean with a wire brush as necessary. Position the earth clamp as close as possible to the working area and ensure a tight grip is achieved.

Select the welding current based on the thickness of the material. A thick piece will require a high current, however due to the duty cycle this will effect the welding time by significantly reducing it. A thin piece will only require minimal heat and so the current can be less. This will allow a longer period of welding. Ensure the gas (where applicable) flow is set on the regulator accordingly. The position of the torch is critical to the arc and end results.



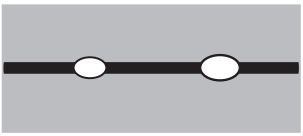


The position of the welding torch is important to achieve a good quality bead. Position the torch at approximately 35 vertically and 75 horizontally and up to 20mm* distance from the join. 20mm is the maximum that can be achieved on the maximum setting. Ensure the gas shroud remains clean of spatter as a build up will start to reduce the flow/effects of the shield gas. Likewise and more importantly the wire feed tip must be kept clean to avoid the wire becoming blocked or restricted.

Use of an anti-spatter spray will help keep the end result more tidy.

DRAPER
THE TOOL COMPANY

TROUBLE SHOOTING

EXAMPLE	TERM	CAUSE
	Insufficient penetration	• Incorrect arc distance • Welding current too low • Wire speed to low • Welding line not central to butt
	Overlap	• Wire size too large for application • Torch speed too slow
	Pitting	• Contamination in the metal (e.g. rust) • Shield gas breakdown • Incorrect arc distance • Area cooling down too fast
	Untidy weld	• Unsteady torch movement • Worn wire tip
	Burn through	• Current too high for material thickness • Torch speed too slow

DRAPER
THE TOOL COMPANY

NOTES

DRAPER
THE TOOL COMPANY

NOTES

DRAPER®

THE TOOL COMPANY

DRAPER TOOLS LIMITED,
Hursley Road, Chandler's Ford, Eastleigh, Hants. SO53 1YF.
U.K.
Helpline: (023) 8049 4344.
Sales Desk: (023) 8049 4333.
General Enquiries: (023) 8026 6355.
Fax: (023) 8026 0784.


http://www.draper.co.uk
e-mail: sales@drapertools.com

YOUR DRAPER STOCKIST