Clarke®

weld

WE6480

MIG 95

OPERATING & MAINTENANCE INSTRUCTIONS

Congratulations of the the purchase of your new **Clarke** Mig Welder. Before attempting to operate this machine, please read this instructions manual thoroughly and follow all directions carefully. By doing so you will ensure the safety of both yourself and others around you, and at the same time, you should look forward to long and trouble free service from your **Clarke** Mig Welder.

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Safety Precautions

1.1 General Instructions

Make sure this manual is carefully read and understood by the welder.

1.2 Location

Welding processes of any kind can be dangerous not only to the operator but to any person situated near the equipment, if safety and operating rules are not strictly observed.

These are the main precautionary measures to observe:

- Operators should protect their body by wearing closed, non-flammable protective clothing, without pockets or turned up trousers.
- The operators should wear a non-flammable welding helmet designed so as to shield the neck and the face, also on the sides. It is necessary to keep the protective lens always clean and to replace it when broken or cracked. It is advisable to put a transparent glass between the lens and the welding area. Welding should be done in a closed area that does not open into other working areas.
- The operators should never look at the welding arc without the correct protection for the eyes. They should always wear safety glasses with side shields to protect from flying particles.
- The welding process must be performed on metal coatings thoroughly cleaned from layers of rust or paint, to avoid production of harmful fumes. The parts degreased with a solvent must be dried before welding.
- Welding should never be done on metals or coated metals containing zinc, mercury, chromium, graphite, lead, cadmium or beryllium unless the operator and the people standing in the same area use an air-supplied respirator.

1.3 Safety Instructions

For your safety, before plugging in the welder, closely follow these instructions:

- When working in a confined space, the welder must be kept outside the welding area and the ground cable should be fixed to the work piece. Never work in a damp or wet area, in these conditions.
- Do not use damaged power cords or welding cables;
- The welding torch should never be pointed at the operator's or at other persons' body;
- The welder must never be operated without its panels as this could cause serious injury to the operator and could damage the equipment.

1.4 Fire Prevention

- Make sure that appropriate fire prevention devices are available near to the welding area;
- All combustible material must be removed from the welding area.

1.5 Shielding Gas

Use the correct shielding gas for the welding process. Make sure that the regulator mounted on the cylinder is working well. Remember to keep the cylinder away from any source of heat.

1.6 Electric Shock

DANGER – ELECTRIC SHOCK CAN BE FATAL.

If a person is found unconscious and electric shock is suspected, do not touch the person if they are in contact with any electrical wires. Disconnect power from the machine and then use First Aid. Dry wood, and other insulating material can be used to move electrical cables, if necessary, away from the person.

Welder Specifications

Primary Or Input Power Data

	MIG 95
Primary Volts	120 Volts
Primary Amps	13 Amps
Frequency	60 Hz

Secondary Or Output Power Data

Max. Sec. Volts	27 Volts
Peak Sec. Amps	95 Amps
Duty Cycle	60 Amps at 20%

Duty Cycle

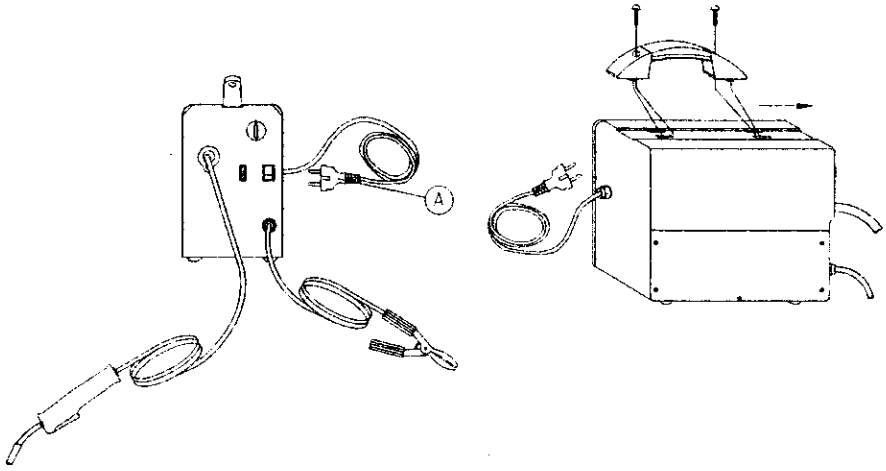
Mig 95 is rated at a 20% duty cycle. This means for example, that when welding with this machine at a current output of 60 Amps over a period of 10 minutes, the total welding time is 2 minutes, and the rest time is 8 minutes.

Wiring

The wire in the power cord of this machine (A) in Fig.1, is coloured in accordance with the following code:

	120 V.
GREEN WIRE	Ground
WHITE WIRE	Neutral
BLACK WIRE	Live

Assembly



- In order to assemble the plastic handle follow the instructions in figure 1.
- In order to assemble the handshield; insert the plastic protection shield in the special opening fixing it with the two screws. Place the handle fixing it in the slit of the protection mask, push it and rotate it by 90° until it enters into the hole inside the protection mask.

CAUTION: Never look at an electric arc without eye protection, the arc rays can injure the eyes permanently. Use always the protection shield supplied with the welder or any other protection mask or welding helmet.

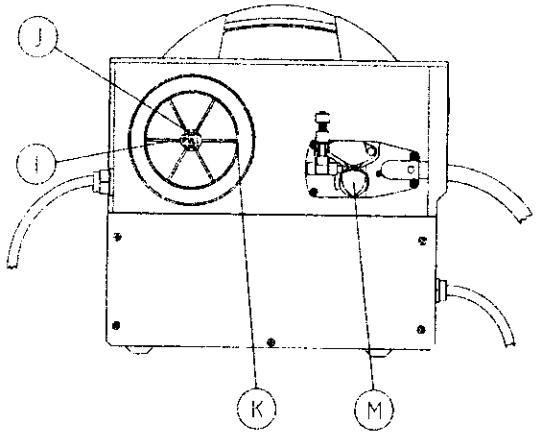
Connecting the welding wire

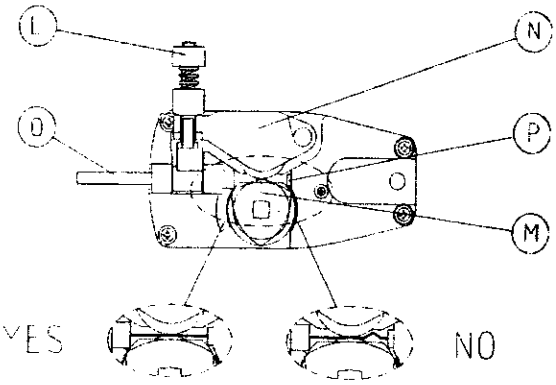
The welder is supplied with a welding wire spool. In order to install this wire into the feeding system, follow the instructions and refer to Figure 2.

1. Remove the spool holder (R) locking knob (I), press the two clicks (J) and extract the wire spool.
2. Remove the plastic film from the wire spool (K) and replace it on the spool holder (R). Replace the spool holder locking knob (I) (the spring and the washer form the braking system of the wire spool speed).
3. Loosen and lower the plastic knob (L), release the upper roll of the feeder (N) and extract the shipping wire from the torch liner.
4. When the wire on the spool is loosened, hold it with pliers so that it cannot uncoil from the spool, and straighten it before inserting it in the wire input guide (O). Insert the wire on the lower roll (M) and in the torch liner.

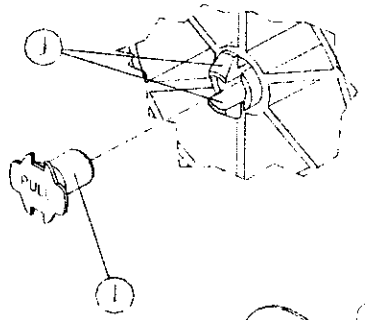
WARNING: The torch must be kept straight. When feeding a new wire through the liner, make sure the wire is cut cleanly (no burrs or angles) and at least 10 inches of the end is straight (no curves). Failure to follow these instructions could lead to the wire damaging the liner.

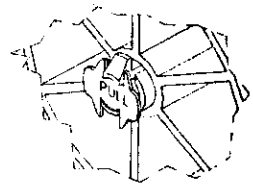
5. Lower the upper roll (N) and the knob (L) and tighten slightly (if there is too much pressure the wire gets locked and the motor could get damaged, if too loose the wire will not be fed by the rolls).
6. Plug the power cord into the 120V 60Hz plug and turn on the switch, then press the torch switch. The wire fed by the wire feeding motor at variable speed must slide through the liner; when it exits from the torch neck, release the torch switch, turn off the machine and install the contact tip and the nozzle.



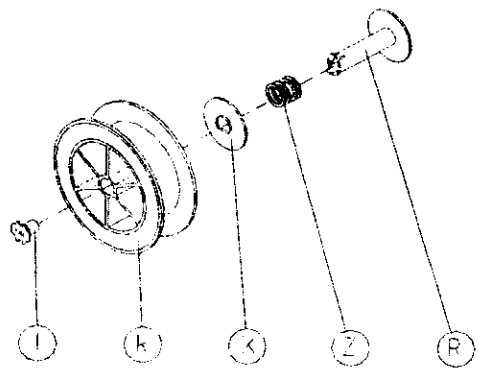


WARNING: The rolls, when in movement, may crush the fingers. Periodically check the rolls and replace them when they are worn.





WARNING: The torch is the part of the welder that needs the most maintenance. We recommend to periodical checking of the contact tips and the nozzle. These parts must be clean and not worn-out. The torch liner must be replaced when the wire does not feed smoothly.



MIG Welding

In MIG welding (Metal Inert Gas) a continuously fed metal electrode is melted into a welding pool at constant and controlled speed.
The wire is connected to a constant voltage pole while the work piece is connected to the other pole. When the wire is fed and touches the work piece, an electric arc is produced.
The arc melts the wire that is deposited on the work piece.

NO GAS Welding

In "NO GAS welding" the torch is connected to the negative pole and the ground cable to the positive pole. With gas welding the shielding gas is used to protect the weld pool from oxidation and porosity. By NO GAS welding this protection is given by a special wire called "flux cored wire", this technique simplifies the use of these machines compared to the machines with standard wire, on which the gas flow must be adjusted separately.

Prepartion for Welding

1. Connect the welding machine to the 120V 60Hz line;
2. Connect the ground cable to the work piece and make sure that the contact is good;
3. Make sure that the wire-feeding roll is correctly positioned (groove matching the wire diameter). Note that each roll has two grooves one marked .035 the other marked .030.

Advantages of NO GAS Welding

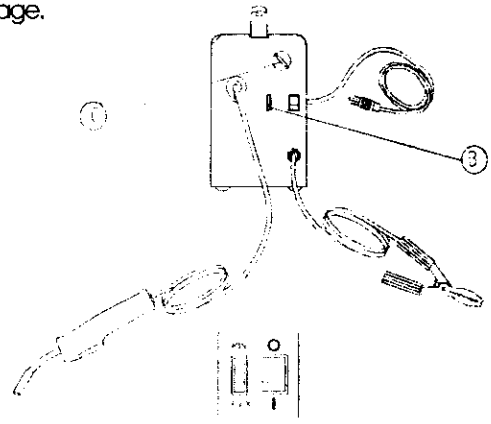
1. There is no need for gas cylinders.
2. Welding outdoors is easier because there are fewer chances that wind blows away the shielding gas.
3. Welding time is about 50% less compared to the normal electrode welding.
4. The learning time for the operator is very short.
5. Minimum waste of welding material.
6. Most important, this process allows the welding to be completed more quickly and efficiently.
7. Less heat, less distortion.
8. Possibility to weld thin materials.

Welding procedures

1. Your welder has two positions for control of the welding amperage.
2. The choice of the position for the welding is determined by the thickness of the material to weld.
3. For the adjustment of the welder refer to the graphs on this page.

Wire Size Specification Chart

SOFT STEEL FOR NO GAS	.035 WIRE NO-GAS WELDING	
WORK PIECE THICKNESS (IN)	VOLTAGE POSITION	WIRE SPEED ADJUSTMENT
1/64 - 1/32	B	C
1/32 - 1/16	MIN	LOW
1/16 - 3/32	MIN	MEDIUM
3/32 - 1/8	MAX	MEDIUM
	MAX	HIGH



Replacement of The Wire Spool

Your welder is supplied with a mini wire spool of about 0.5 pounds of .035" diameter wire. When the wire spool is finished it can be replaced with a 2 pound wire spool.
The wire is pushed by a roll which is moved by a series of mechanisms. The roll has two grooves one marked by .035" and the other marked by .030". It is very important to use the correct groove. Otherwise the wire will not be fed regularly or it will be crushed. Make sure that the torch tip matches with the wire diameter. Your welder is supplied with a torch complete of tip for the wire included with the welder.
Refer to figure 2 and follow the procedure described at page 5 "Connecting the welding wire" for the replacement of the wire spool.
CAUTION : ONLY 2 POUND SPOOLS OF .035 FLUX CORED WIRE

Welding Tips

1. Keep the torch handle at an angle of 45° with respect to the work piece and maintain the nozzle about 6mm from the surface.
2. Move the torch handle with a steady motion.
3. Avoid welding in areas with too much wind. The wind blows away the shielding gas from the weld pool causing porosity in the weld.
4. Keep the wire and its cover clean. Do not use rusted wire.
5. Avoid sharp bends and kinks on the welding hose.
6. If possible, clean the wire liner with compressed air when replacing the wire spool.
7. Periodically remove the dust, using low pressure (20-30 PSI) from the inside of the welder, to assure adequate heat dissipation from welder during operation.

Adjustment of The Welder

Set the voltage: use the correct "stick out". The wire "stick out" is the distance between the contact tip and the work piece. The wire "Stick out" (sometimes improperly called arc length) should remain in the range 3/16" ÷ 6/16" in order to obtain best welding performances.
1. Position the voltage switch in the desired position. Select lower position for lower thickness and higher settings for higher thickness.
2. Adjust the wire speed. Start using a trial metal sheet thoroughly cleaned from layers of rust or paint. Connect the ground cable to the work piece. Adjust the wire speed at high setting. Press the torch switch (note: The torch switch must be pressed thoroughly in order to perform its two functions, wire feed and welding current). Start welding and decrease the wire speed gradually. Continue to decrease the wire speed and listen to the sound. The sound will change from a crackling noise to a regular and strong buzzing (similar to the sound of frying bacon). This buzzing sound indicates the correct wire speed for the work piece being welded. When the welding amperage is changed set the wire speed again. Always start from a higher wire speed. This operation prevents damage to the contact tip during welding.

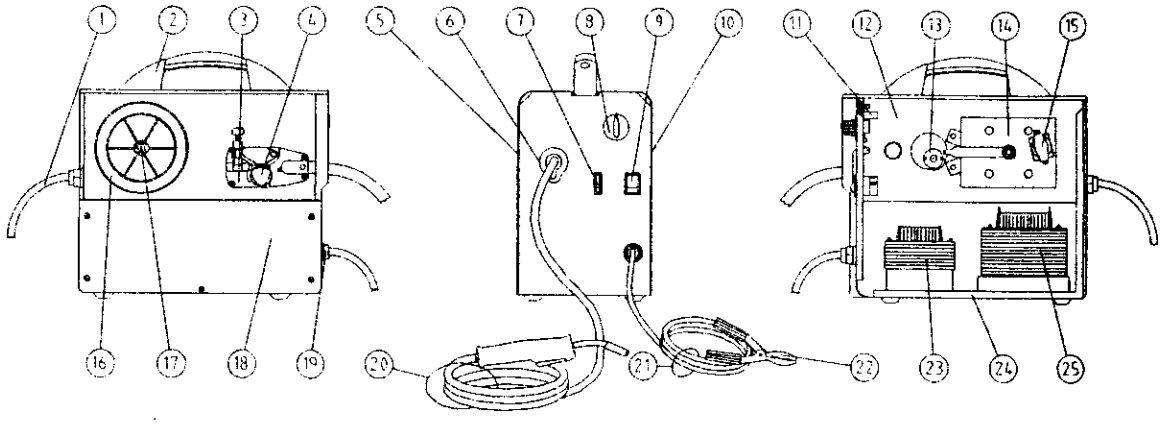
Welding Problems and Solutions

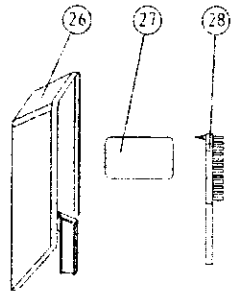
1. Defect: The wire pushes the torch back from the work piece.
   Cause: Excessive wire speed.
2. Defect: The wire sticks on the contact tip.
   Cause: Low wire feeding.
3. Defect: Excessive welding spatters
   Cause: Erratic wire feeding, improper torch position (too inclined)
4. Defect: Arc is unstable
   Cause: Low voltage, erratic wire feeding.
5. Defect: Inadequate penetration.
   Cause: Welding current too low, excessive travel speed, torch travel direction should be reversed.
6. Defect: Cracking
   Cause: Base material dirty, welding current too low, excessive welding voltage, rust on the electrode wire.

Spare Parts List

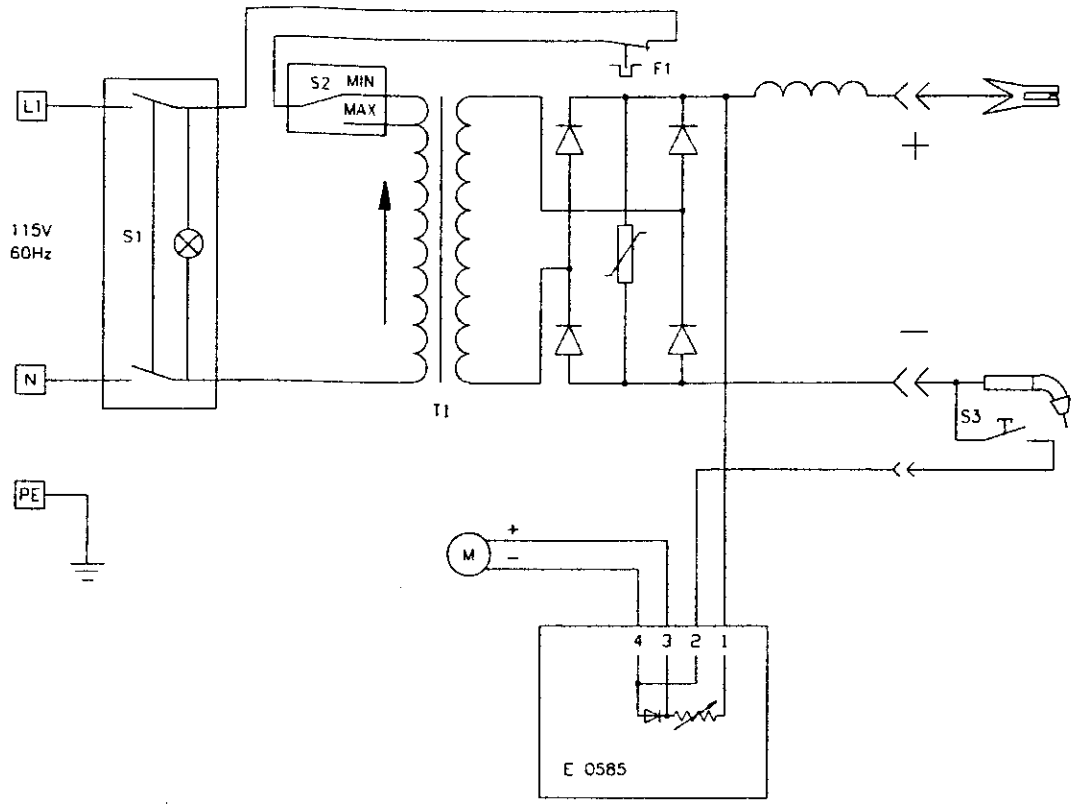
01	WE20220018	Sjt Cable 3x4wg14 m 2,5+American Plug	1
02	WE21600036	Handle	1
03	WE44400018	Plastic Wire Feeder D.28 Rolls 06-08	1
04	WE33805074	Wire Feed Roll D.7x25 0,6x0,8	1
05	WE33705326	Side Panel	1
06	WE21690001	Torch Grommet On Front Panel	1
07	WE22200006	Welding Current Switch 16A 250V	1
08	WE21690018	Potentiometer Knob	1
09	WE22200002	On/Off Switch 16A-250V	1
10	WE33705324	Right Upper Panel	1
11	WE22710001	P.c. Board E0585.1 220V	1
12	WE33720108	Internal Panel	1
13	WE22810007	Wire Feed Motor 12V D.28	1
14	WE22400083	Rectifier Prns 30b F/1 Type	1
15	WE04600113	Complete Thermostat 100° + Support	1
16	WE21910028	0,9mm 0,225 Kg. Flux-cored Wire Spool	1
17	WE04600108	Kit Spool Holder For ø16 Spools - Complete	1
18	WE33705325	Left Side Panel	1
19	WE21605010	Cable Clamp	2
20	WE23000055	E3 8mm² m 2 No-gas Torch	1
21	WE43210021	Earth Cable 10mm² m 1,6 C.120/Conn	1
22	WE22110005	Earth Clamp 120A	1
23	WE44135097	Choke 40x25 Al	1
24	WE33700174	Rear Panel	1
25	WE44120100	Transformer 60Hz 115V 50x70 Al	1
26	WE21905002	Plastic Mask 75x98	1
27	WE21905007	Adiactinic Glass 75x98 Art.471 Din 11	1
28	WE21905011	Hammer-brush	1

Parts Drawing





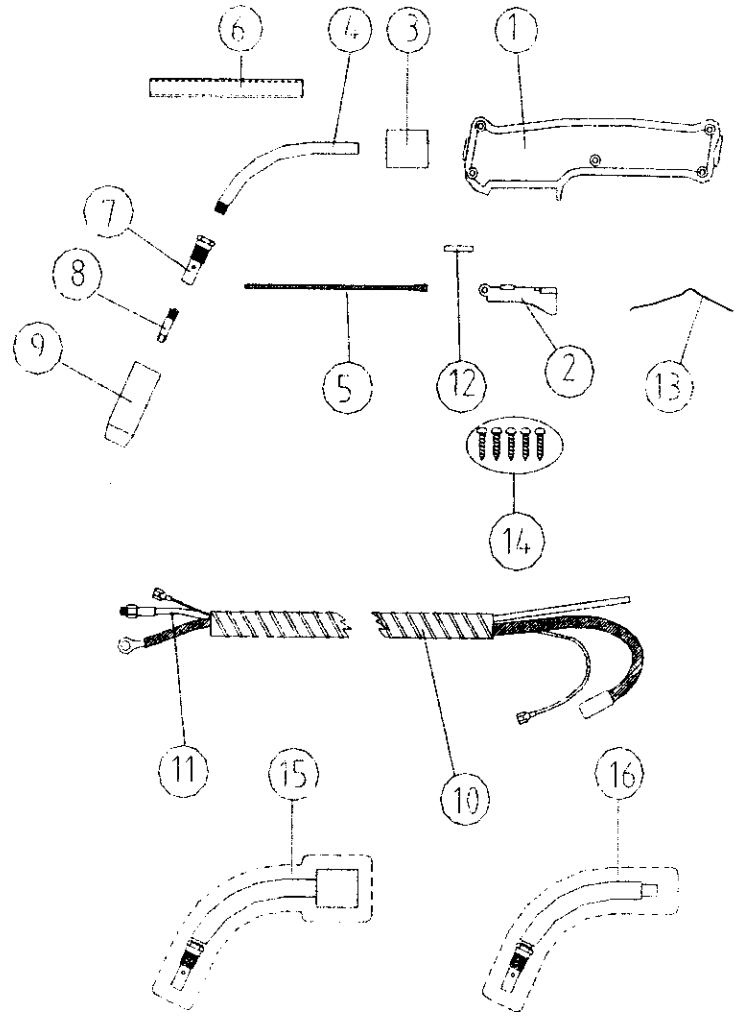
Wiring Diagram



Torch Spare Parts List

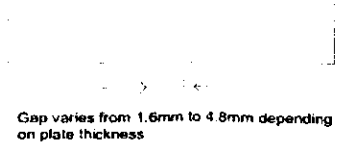
01	WE21690343	Complete Torch Handle	1
02	WE21690340	Trigger	1
03	WE23005011	Torch Gas Valve For No Gas T 1.0 Torch	1
04	WE23005145	Torch Neck For Tw1 Torch	1
05	WE23005091	Thread Guide Wire Liner X T Neck 1.4	1
06	WE23005090	Torch Neck Insulator 1.4 Torch E3	1
07	WE23005146	Gas Diffuser For Torch Tw1 Me-99	1
08	WE23005020	1,0mm Contact Tip For Torch T 1.4-1.6	1
09	WE23005147	Torch Gas Nozzle For Torch Tw1 Mc-31	1
10	WE30900019	Outer Sleeve D.15,5 L=1700	1
11	WE23005127	Steel Wire Liner 1,4x4 Blue L 1950	1
12	WE33810090	Pin For Torch Trigger D.4x16	1
13	WE33800009	No-gas Torch Contact Spring Sp.0,5	1
14	WE21020012	Self Tapping Screw	5
15	WE23005179	Gas Valve No Gas W/Neck	1
16	WE23005148	Outside Liner	1

Torch Spare Parts Drawing



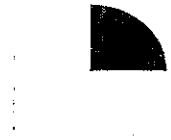
Types of Joints

OPEN SQUARE BUTT JOINT

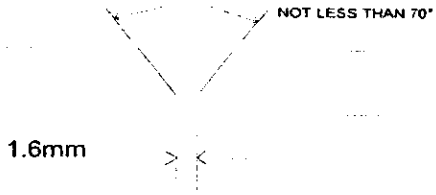


Gap varies from 1.6mm to 4.8mm depending on plate thickness

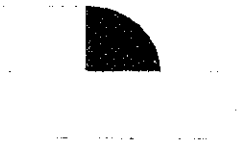
CORNER JOINT



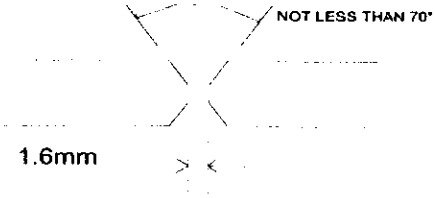
SINGLE VEE BUTT JOINT



SINGLE FILLET LAP JOINT



DOUBLE VEE BUTT JOINT



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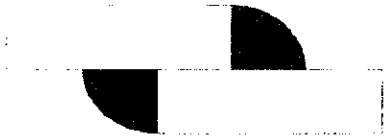
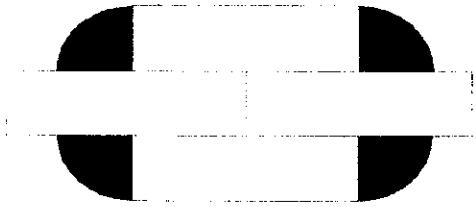


SINGLE BEVEL JOINT

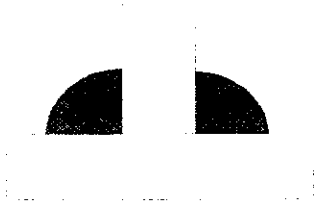
SINGLE STRAP JOINT

DOUBLE BEVEL JOINT

DOUBLE STRAP JOINT



DOUBLE FILLET TEE JOINT



SINGLE FILLET TEE JOINT

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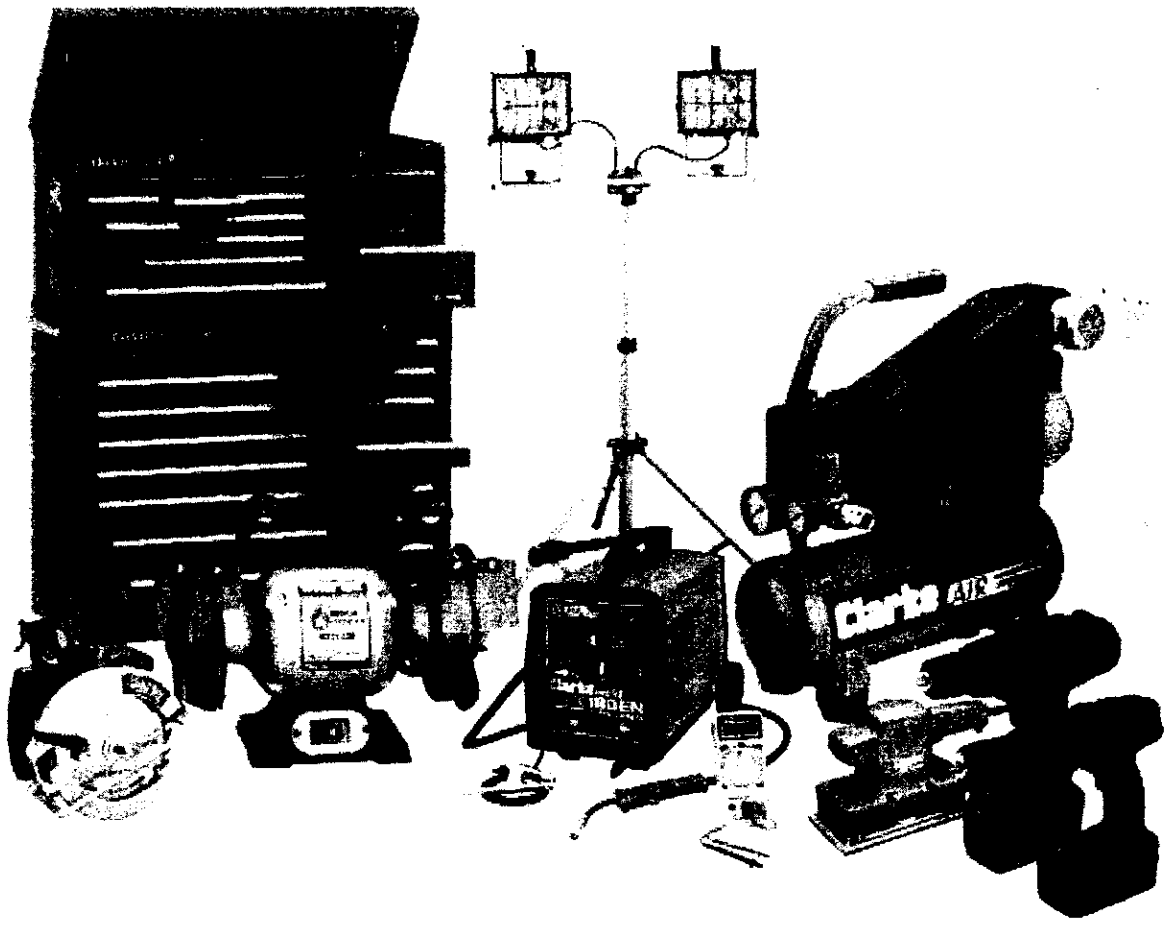
OPERATING MANUAL



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