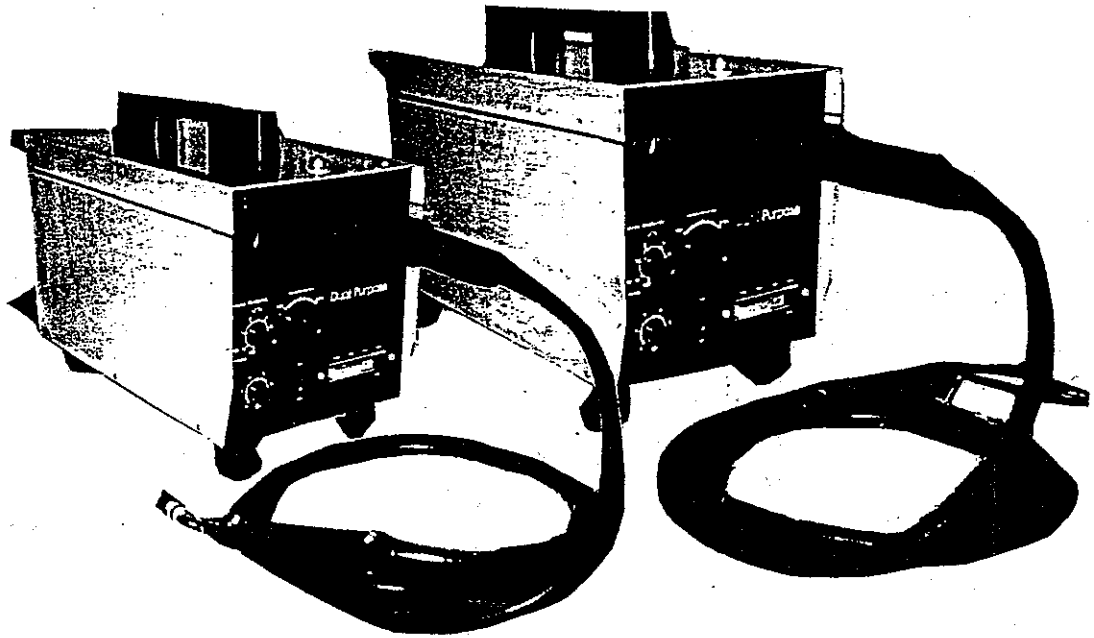


**TURBO M.I.G. 80 & 130
GAS/NO GAS**

*D.P. 130
Dual
purpose*



**TWO YEAR
BUMPER-TO-BUMPER
WARRANTY**

**ISO 9001
REGISTERED
QUALITY SYSTEM**

COMPLETE M.I.G. PACKAGE TURBO 130

With built-in wire feeder, gun, gas regulator, four wheel undercarriage, and bottle rack. Controls include six voltage ranges, wire feed speed (current) and spot timer. Single phase 115/220 volt primary, 64 pounds. Dimensions: 16" X 12" X 22". Output: 130A @ 20% duty cycle. Uses .030"-.035" flux core or .024" - .030" hard wire.

ISO - 9001 REGISTERED QUALITY SYSTEMS

TECHNICAL DATA		TURBO M.I.G. 130	TURBO M.I.G. 80
Single Phase Input 60 Hz.	V	115/220 Interchangeable	115
Output Voltage	Amps	30-130	35-80
Fuse	A	20	15
Gun Length	Ft.	10	7
Heat Settings	#	6	4
Wire Size	Diameter	.024-.030 M.I.G. Wire .030-.035 Flux Core	.024 - .030 M.I.G. Wire 0.24 -.030
Duty Cycle at 20%	A	130	80
Dimensions	Inches	L 16 W 12 H 21	13 10 22
Weight	Pounds	64	39

STANDARD FEATURES

- Cylinder rack
- Wheels
- Euro connector with detachable gun and ground clamp on TURBO 130 only
- Regulator
- Spool flux core wire
- Spot/stitch timer

TWO YEAR BUMPER-TO-BUMPER WARRANTY

All C.E.A. equipment is warranted for two years from the date of purchase. The warranty is against any and all defects in the equipment used under normal and proper conditions. This two year warranty covers the front to the back of the equipment.

Includes:

- | | |
|---------------|---------------------|
| Guns | Ground Clamps |
| Wheels | Adjusting Dials |
| Rectifiers | Transformers |
| Feed Motors | Controls |
| HF Units | Power Sources |
| Wire Feeders | Interconnect cables |
| Dials & Cages | Feed Rolls |

(Other than consumables, it is covered)

Introduction.

With this welding unit you can now experience the many advantages of the Mig/Mag welding process. This unit will enable you, with the help of this booklet and a little practice, to obtain a professional finish in welding car bodywork, and many other uses for which you will find it ideal.

THE MIG/MAG WELDING PROCESS:

This welder produces a direct current output (DC), enabling an arc to be struck between a continuously fed consumable electrode (wire) and the work piece. The current passes to the wire through the small copper contact tip. The wire is fed through the tip by the wire feed rollers mounted on a DC drive motor within the machine. This wire melts in the arc and is transferred to the weld pool in the form of droplets.

The gas which is passed down through the torch and exits around the shroud, shields the arc and molten metal protecting it from the effects of oxygen and nitrogen in the atmosphere. (In a 'gasless' or dual purpose machine when using self shielding wire this gas is produced from the core of the wire when it is heated.)

The welding current is determined by the wire feed speed and the welding voltage. The current will increase with greater wire speed.

CARE OF

The Equipment.

TIPS:

The tip should be replaced if it becomes burnt or worn as otherwise a poor contact and hence poor welding will result.

SHROUDS:

The shroud must always be kept clear of spatter, particularly when welding with CO₂, and replaced if it becomes damaged.

LINER:

The torch liner will require replacement after prolonged periods of use.

WIRE:

Welding wire should always be stored in dry conditions, and be protected from dirt and contamination. This is to avoid oxidation of the surface of the wire, which leads to jamming and a poor electrical contact. Also, reels which are stored in such a way that the reel becomes loose or tangled can present difficulties.

GAS:

When using small disposable bottles always unscrew the regulator from the gas bottle when you have finished welding, this will avoid wasting any of the gas. When using refillable bottles with a valve, always switch off valve after use.

Setting Up.

OBSERVE ALL SAFETY INSTRUCTIONS (PAGE 37)

1. ELECTRICAL:

1. This welder can be connected to a domestic supply socket. Connection to a suitable voltage through the recommended fuse supply must be made by a good quality (rubber preferred) plug or a suitable fused isolator switch, with the wire connected as follows:

Wire Colour	Pin Connection
Brown (Ground)	Live
Blue	Neutral
Green/Yellow	Earth

THIS APPLIANCE MUST BE EARTHED.

2. FEEDING THE WIRE:

2. If the wire is not already fed through the Torch, or when fitting a new reel you will have to follow the procedure, as below:

a. Remove the Shroud from the Torch and unscrew the contact tip.

b. Fit Wire Reel onto Spindle. (There are a set of Spacers which allow the use of various sizes of reels; select the correct one).

c. Find the free end of the wire which will be terminated in a hole on the reel rim. Remove the end from the hole and cut off any distorted wire with a pair of sharp wire cutters. Be careful not to allow the wire to unwind, which it will tend to do, as it is very springy.

d. Hinge back the Pressure Arm and feed the end of the wire into the hole in the end of the liner, ensuring that the wire has been fitted so that it is fed into the wire feed mechanism in a straight line.

e. Fasten down the Pressure Arm ensuring that the wire is in the groove in the Feed Roller.

N.B. The feed roller for solid wire has two grooves, one for 0.6 wire and one for 0.8. Ensure that the correct one is being used; if not the roller is removed by slackening the grub screw with a 2.5mm AF Allen Key and pulling upwards. The roller can then be reversed so that the other groove is used. For cored wire, a roller with knurled grooves for 0.8-1.2mm wire is provided.

f. Switch on the machine and operate the Torch Trigger, the Wire Feed Roller will turn feeding the wire through the Torch. It is advisable to keep the Torch as straight as possible during this operation.

g. When the end of the wire has emerged from the end of the Torch, feed the Tip onto the wire, ensuring that it is the correct size for the diameter of wire being used, tighten it and replace the Shroud.

3. **SELECTING POLARITY** (dual purpose model only)
The torch and work lead polarity must be set correctly for the type of welding to be carried out.

When using normal welding wire (solid) and gas (CO₂, Argon, etc) the torch connection (item 43, page 35) located inside the wire feed compartment must be connected to the + socket and the work lead to the - socket.

When using cored wire for gasless operation the work lead must be connected to + and the torch to -

The plugs can be withdrawn from the + - sockets by turning anti-clockwise. To ensure a good connection when refitting turn the plugs tightly clockwise in the sockets.

N.B. Always use the knurled roller for gasless core wire. See page 8.

4. FITTING GAS CYLINDER MOUNTING BRACKETS (where provided)

Fit the two brackets to the rear of the machine using the four self tapping screws provided. The rear of the machine has four punched holes for this purpose.

N.B. The bracket with the larger hole should be uppermost.

5. CONNECTING THE GAS PIPE:

(Also applicable to dual purpose machine when using solid wire). Connect the Gas Pipe to Cylinder by pushing the free end into the connector on the Regulator. (If required, the pipe can be detached again by pushing the pipe and the small ring around it into the fitting, and then pulling the pipe whilst maintaining the pressure on the ring).

6. FITTING GAS REGULATOR AND DISPOSABLE CYLINDER

a. Remove the seal from the cylinder thread and depress slightly the valve pin to allow a small amount of gas to escape. The valve will close automatically when the pin is released.

b. Open the flowmeter tap completely by rotating the knob anti-clockwise (plastic type only).

C. Connect cylinder flowmeter by slowly screwing it in. Hand tighten only. If using a plastic type flowmeter, grip it on the lower moulding, not on the clear moulding or flow control knob.

d. Important: Always detach flowmeter from cylinder when you have finished welding. This is to avoid small leakages that may occur in fittings and torches emptying the cylinder in the long run.

N.B. a. Due to local regulations, some machines are supplied with different types of regulators, either with or without a gas cylinder. For details see appendices at the back of the manual.

b. Supplied with the regulator is a spare sealing washer for the cylinder/flowmeter connection.

7. SETTING THE GAS FLOW:

a. Release the Wire Pressure Arm.

b. Turn on the machine and operate the Torch Trigger.

C. **PLASTIC FLOWMETER/REGULATOR.** Adjust the flow to read approximately 3 on the gauge by turning the Control Knob on the Regulator anti-clockwise from its fully closed position.

d. **BRASS REGULATOR.** Turn the control knob fully clockwise and then turn back anti-clockwise $\frac{1}{2}$ - 1 turn depending on welding conditions.

Indicator Charts.

The following is intended as an approximate guide only to setting up the welder. The condition of the material, the position of the weld, and variations in technique will require modifications to the settings indicated. In particular, the wire-feed setting should be adjusted to suit the application. A practical rule of thumb is to adjust the arc according to its sound. A smooth crackling sound usually indicates a correct setting.

FIG. A: VOLTAGE SETTING

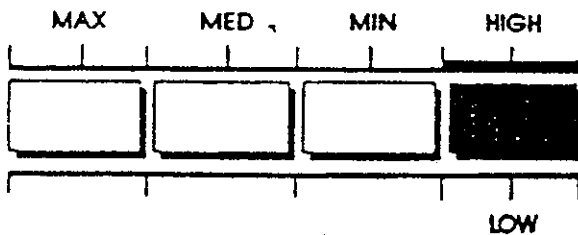
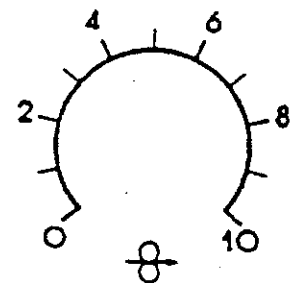


FIG. B: WIRE SPEED SETTING



N.B. Wire Feed speed is automatically adjusted when the voltage is selected. The wire speed setting control provides fine tuning.

Dual Purpose.

WITH TORCH POSITIVE

Set wire speed initially to the middle of the range suggested below for the selected voltage setting. Fine adjustment of the wire speed control can then be made to give a smooth crackling sound to the arc.

Mild Steel

Gas: Argon/CO₂ Mixture

Wire: 0.6mm/.024" - 0.8mm/.315"

Voltage Setting:		Material Thickness:		0.6φ	0.8φ
				Wire Speed Setting:	
LOW	MIN.	1.0/0.7mm	.039/.027"	2-4	2-3
	MED.	1.5/1.0mm	.058/.039"	3-5	2-4
	MAX.	2.0/1.5mm	.078/.058"	4.5-6.5	3-5
HIGH	MIN.	3.0/2.0mm	.125/.078"	6-8	4-6
	MED.	6.0/4.0mm	.236/.156"	8-10	5-7
	MAX.	8.0/6.0mm	.315/.236"	8-10	6-8

Gas: CO₂

Wire: 0.6mm/.024" - 0.8mm

Voltage Setting:		Material Thickness:		Wire Speed Setting:	
LOW	MIN.	NOT NORMALLY USED WITH CO ₂ GAS			
	MED.	1.0/0.7mm	.039/.027"	2.5-3.5	2-3
	MAX.	1.5/1.0mm	.058/.039"	3-5	2-4
HIGH	MIN.	2.0/1.5mm	.078/.058"	4-6	2.5-4.5
	MED.	4.0/3.0mm	.156/.125"	5.5-7.5	3-5
	MAX.	6.0/4.0mm	.236/.156"	6.5-8.5	4-6

Stainless Steel

Gas: Argon/Oxygen or Argon CO₂

Wire: 0.8mm/.030" Stainless Steel

Voltage Setting:		Material Thickness:		0.6φ	0.8φ
				Wire Speed Setting:	
LOW	MIN.	1.0/0.7mm	.039/.027"		2-3
	MED.	1.5/1.0mm	.058/.039"		2-4
	MAX.	2.0/1.5mm	.078/.058"		3-5
HIGH	MIN.	3.0/2.0mm	.125/.078"		4-6
	MED.	6.0/4.0mm	.236/.156"		5-7
	MAX.	8.0/6.0mm	.315/.236"		6-8

Aluminium

Gas: Pure Argon

Wire: 0.8mm/.030" Aluminium 5% Silicon Alloy

Voltage Setting:		Material Thickness:		0.6φ	0.8φ
				Wire Speed Setting:	
LOW	MED.	1.5mm	.058"		9-10
	MAX.	2.0mm	.078"		9-10
HIGH	MIN.	4.0mm	.156"		9-10
	MED.	6.0mm	.236"		9-10
	MAX.	8.0mm	.315"		9-10

N.B. Always start with maximum wire speed when using Aluminium.

TYPICAL SETTINGS

Gasless.

AND

Dual Purpose.

WITH TORCH NEGATIVE & FLUX CORED WIRE

Set wire speed initially to the middle of the range suggested below for the selected voltage setting. Fine adjustment of the wire speed control can then be made to give a smooth crackling sound to the arc.

Mild Steel (with flux cored – self shielding wire)

Wire: 0.8mm/.030" – 1.2mm/.047"		Material Thickness:		0.8φ	1.2φ
Voltage Setting:				Wire Speed Setting:	
LOW	MIN.	1.2/1.0mm	.047/.039"	2-3	
	MED.	1.5/1.2mm	.058/.047"	2.5-3.5	2-2.5
	MAX.	2.0/1.5mm	.078/.058"		2.5-3.0
HIGH	MIN.	3.0/2.0mm	.125/.078"	3.5-4.5	2.5-3.5
	MED.	6.0/4.0mm	.236/.156"	4-5.5	2.5-3.5
	MAX.	8.0/6.0mm	.315/.236"	4.5-6.5	2.5-3.5

Starting to Weld.

Before welding ensure the following:

a. All oil, petrol and inflammable containers have been removed from the area.

b. There is good all round ventilation, particularly at the rear and the side of the unit.

c. You have an adequate fire fighting appliance on hand.

1. Connect the earth clamp onto the metal to be welded (scrap material for first attempt).

2. Set voltage and wire feed setting by turning or pressing the appropriate controls, see figs (A & B) according to the indicator charts, taking into account the material, material thickness and the gas, or self shielding wire being used.

N.B. a. For Dual Purpose model ensure that the plugs connecting the earth return (work) lead and the torch, are connected to the appropriate sockets inside wire feed compartment to give the correct torch polarity. i.e. torch positive for solid wire and torch negative for self shielding (gasless) wire.

b. Unless one of the push buttons marked MAX, MED or MIN is fully depressed the machine will not operate.

3. Plug in and switch on the machine.

4. Clip off any protruding wire to 3mm ($\frac{1}{8}$ ") from tip.

5. Position tip 6mm ($\frac{1}{4}$ ") from point where welding is to commence at angles, (see figs C & D p.22) depending on the welding direction to be used.

6. Hold the mask in front of your eyes.

7. Press the trigger and move the torch slowly in the chosen direction.

8. If the arc gives a humming sound and a blob tends to form on the end of the wire, you have insufficient wire feed speed and it should be increased.

OR If it gives an erratic sound with possibly a feel that the wire is stubbing against the work and excessive spatter, you have too much wire speed and it should be reduced.

When the speed is correct you will get a steady smooth crackling sound.

9. If you have a porous weld you have insufficient gas flow and it should be increased. Also applicable in the case of the dual purpose machine.

N.B. Normal Mig welders do not perform correctly in areas that are subject to wind or severe draughts as the gas is blown from the weld area. The 'gasless' Migmate and dual purpose Migmate when used with self shielding wire, can however be used in these conditions.

10. If the weld has a stringy appearance you are moving the torch too quickly.

11. If the arc melts holes in the workpiece you are moving too slowly.

12. The unit is fitted with a Thermal Overload Cut-out which will prevent it from operating if the winding temperatures become too high due to over use. If the overload operates, switch off the machine and allow it to cool down. The Thermal Overload will re-set automatically after a short period when the windings have cooled, and you will be able to restart working.

WELDING

Problems.

WELD DEPOSIT 'STRINGY' AND INCOMPLETE:

- a. Torch moved over workpiece too quickly.
- b. Gas flow incorrect.

WELD DEPOSIT TOO THICK:

- a. Torch moved over workpiece too slowly.
- b. Welding voltage too low.

ARC UNSTABLE, EXCESSIVE SPATTER & WELD POROSITY:

- a. Torch held too far from the workpiece.
- b. Rust, grease or paint on workpiece.
- c. Insufficient shielding gas, check the gas flow and operation of the gas valve.

WIRE REPEATEDLY BURNS BACK:

- a. Torch held too close to the workpiece.
- b. Intermittent break in the welding circuit caused by:
 - 1. Contact tip loose – tighten.
 - 2. Contact tip damaged – replace.
 - 3. Welding wire or liner corroded – replace wire or liner.

C. Wire feed slipping caused by:

1. Restrictions or kinks in; liner; faulty contact tip – check and replace if necessary.
2. Worn feed rolls – replace.
3. Pressure roll adjustment incorrect – re-adjust.

WIRE BURNS BACK:

- a. Poor gas coverage.

BURNING HOLES IN THE WORKPIECE:

- a. Torch moved too slowly or erratically.
- b. Welding voltage too high.
- c. Wire feed speed too high.

LACK OF PENETRATION:

- a. Torch moved too fast.
- b. Welding voltage too low.
- c. Wire feed speed too low.

Torch Position.

When welding with a Mig-Mag machine it is possible to move the torch in either direction, see fig. C and fig. D. The quality of weld is not affected by the direction of travel, but fig. C may be found to be the easiest.

FIG. C:

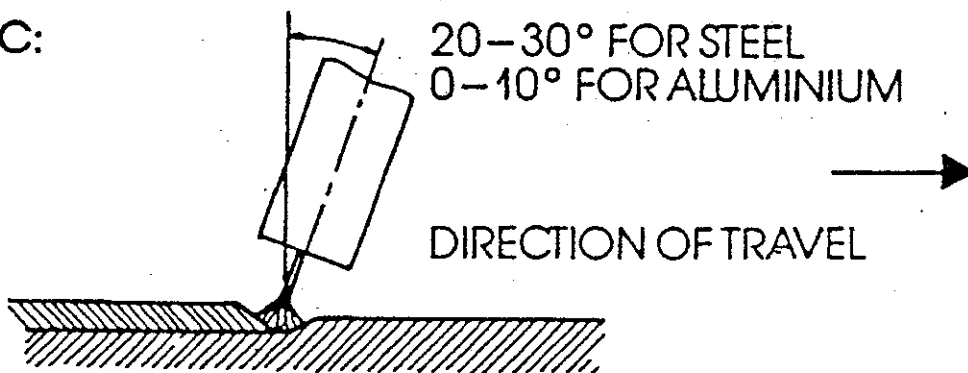
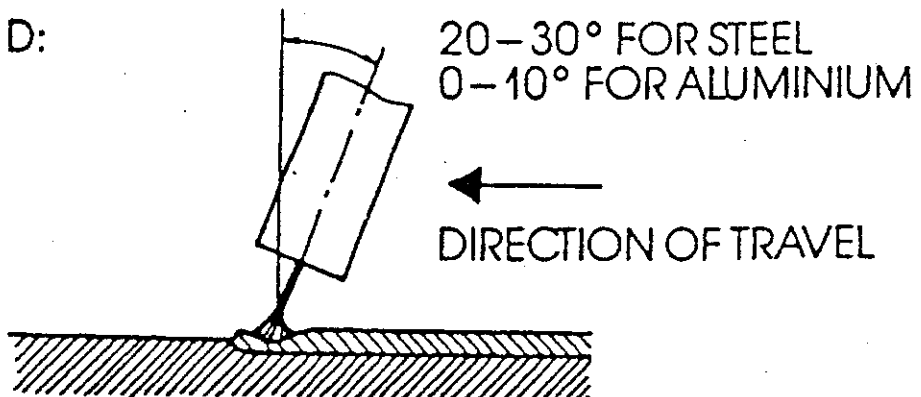
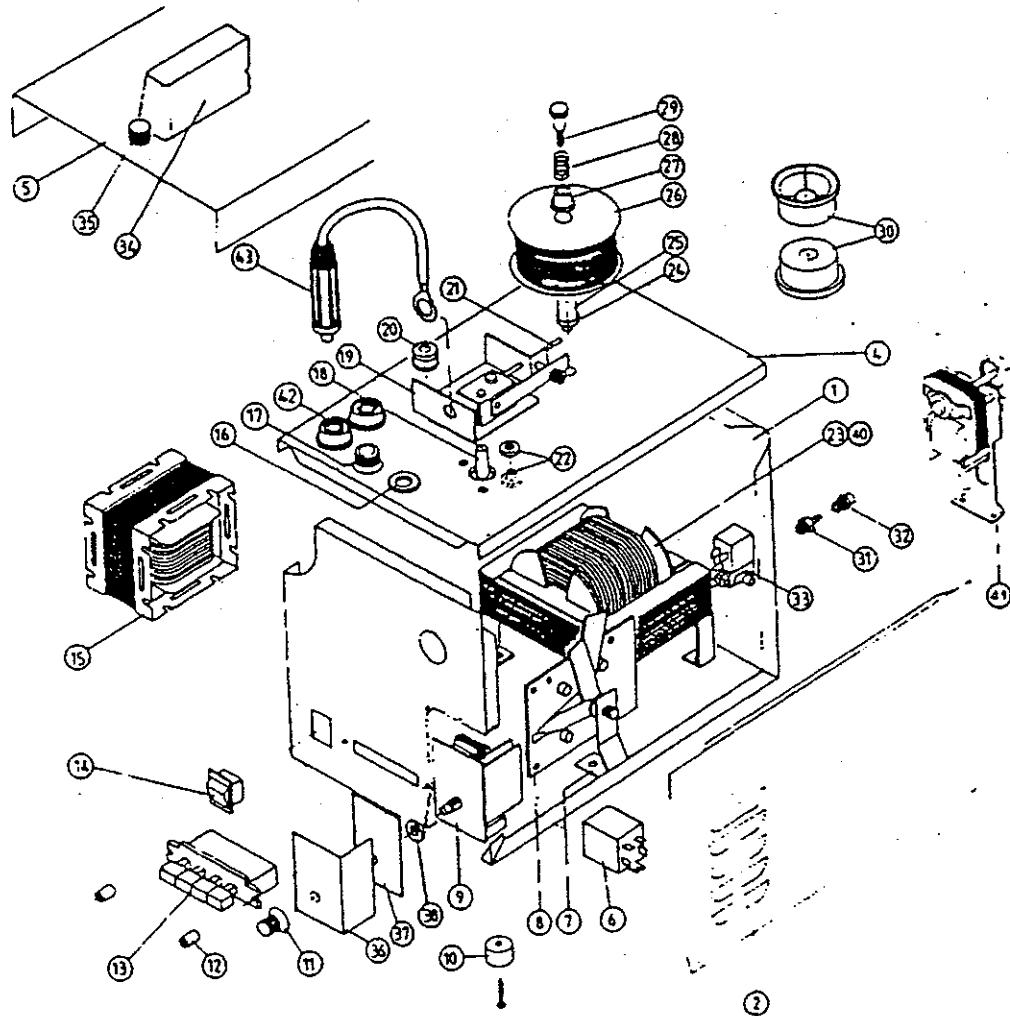


FIG. D:



PARTS LIST GASLESS & DUAL PURPOSE			PART NUMBERS	
Ref	Description	Quantity	Gasless	D.P.
1	CHASSIS	1	10200	10250
2	R.H. SIDE PANEL	1	10276	10276
3	L.H. SIDE PANEL (not illustrated)	1	10277	10277
4	CENTRE PANEL	1	10278	10253
5	LID	1	10204	10254
6	RELAY	1	10005	10005
7	RECTIFIER BRACKET	1	10006	10006
8	RECTIFIER	1	10306	10306
9	P.C.B.	1	20507	20507
10	FOOT INCLUDING SCREW	4	10010	10010
11	CONTROL KNOB	1	10011	10011
12	SPACER	2	10012	10012
13	4-WAY SELECTOR SWITCH	1	10013	10013
14	ON/OFF SWITCH	1	10014	10014
15	CHOKE	1	10207	10207
16	GROMMET	1	10016	10016
17	STRAIN RELIEF BUSH	2	10017	10017
18	WIRE FEED MOTOR	1	10018	10018
19	WIRE FEED TENSION UNIT	1	10283	10283
20	DRIVE ROLLER PLAIN	1	N/A	10309
21	GUIDE PIPE	1	10021	10021
22	MOUNTING BUSH SET	3	10022	10022
23	TRANSFORMER	1	10312	10312
24	SPINDLE SPACER	1	10029	10029
25	WIRE REEL SPINDLE	1	10030	10030
26	WIRE REEL 0.7kg x 0.6mm MILD STEEL	1	02661	02661
27	SPRING MOULDING	1	10031	10031
28	SPRING	1	10032	10032
29	WIRE REEL SPINDLE SCREW	1	10033	10033
30	5kg REEL ADAPTORS	2	10034	10034
31	TAIL ADAPTOR	1	10036	10036
32	PUSH-IN ADAPTOR	1	10035	10035
33	GAS VALVE	1	N/A	10037
34	HANDLE	1	10039	10039

35	LID RETAINING SCREW & CIRCLIP	1	10040	10040
36	INSULATION PAPER	1	10041	10041
37	INSULATING BOARD	1	10042	10042
38	INSULATING WASHER	1	10043	10043
39	CASTOR (not illustrated)	1	10044	10044
40	TRANSFORMER THERMAL CUT-OUT	1	10109	10109
41	FAN	1	10285	10285
42	DINSE SOCKETS	2	N/A	10261
43	DINSE PLUG	2	N/A	10262
44	KNURLED ROLLER	1	10263	10263



TURBO 130

THE UNITS ARE DELIVERED
CONNECTED AT 230V : TO CHANGE
RATED INPUT VOLTAGE FROM 230V
TO 115V DISCONNECT UNIT FROM
MAINS, REMOVE SWITCH KNOB AND
NYLON PLATE, ROTATE THE SWITCH
ANTICLOCKWISE AND REVERSE
NYLON PLATE AS ILLUSTRATED TO
PREVENT CLOCKWISE ROTATION.
FOR FURTHER INFORMATIONS SEE
INSTRUCTIONS MANUAL.

