

WELDING INDUSTRIES OF AUSTRALIA
A DIVISION OF WELDING INDUSTRIES LTD
ACN 004 547 111

Head Office and International Sales

5 Allan Street, Melrose Park

South Australia, 5039

Telephone (08) 8276 6494 Facsimile (08) 8276 6327

OWNERS MANUAL

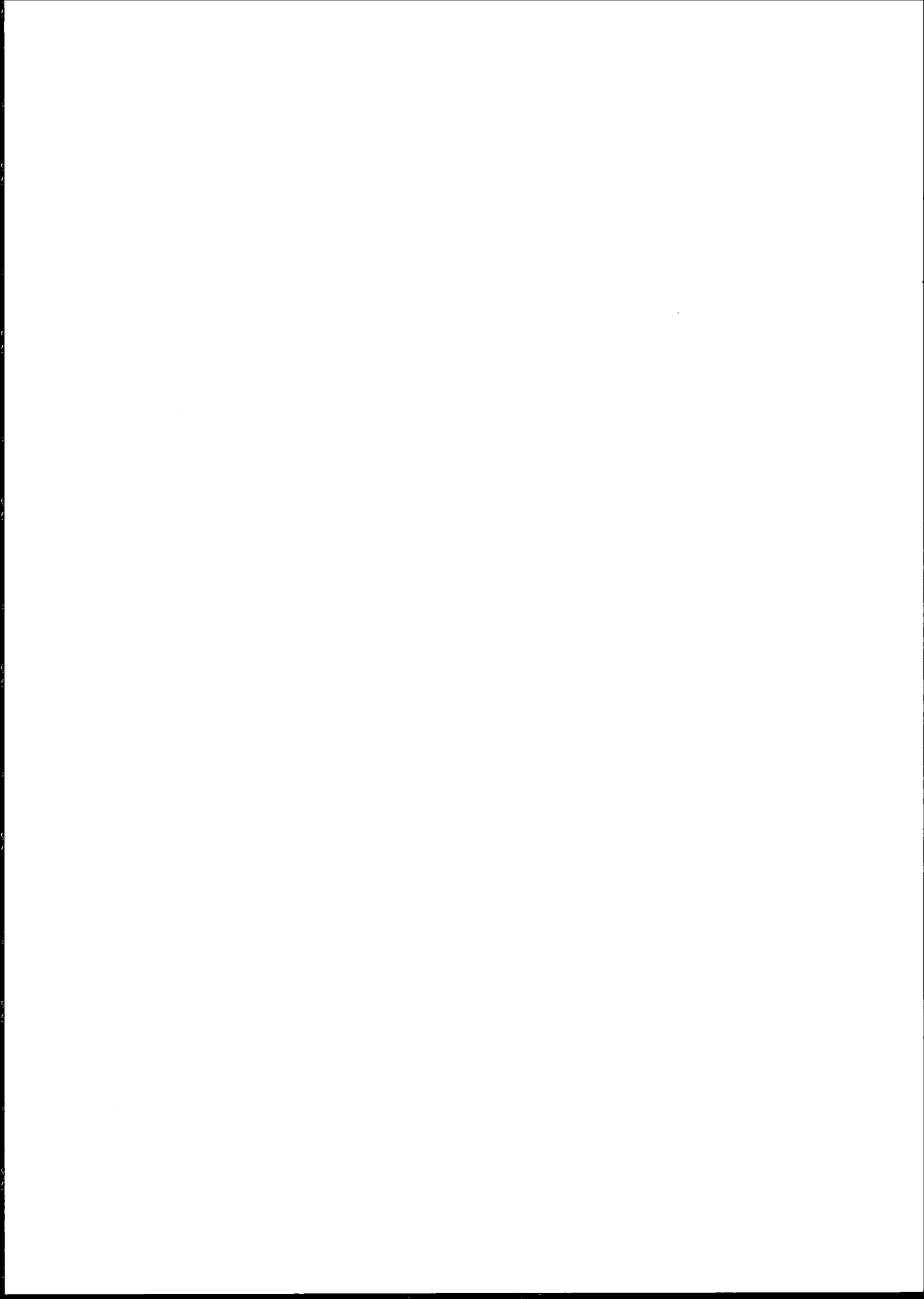
WELDMATIC 205S

MODEL NO. CP102-4, REV. D

MODEL NO. CP102-5, REV. E

07/95





SAFETY

Before this equipment is put into operation, the SAFE PRACTICES section at the back of the manual must be read completely. This will help to avoid possible injury due to misuse or improper welding applications.

CONTENTS

Sec.1.....	Introduction	P.4
Sec.2.....	Receiving	P.4
Sec.3.....	Specifications.....	P.5
Sec.4.....	Power Source Controls	P.6
Sec.5.....	Installation	P.7
Sec.6.....	Normal Welding Sequence.....	P.10
Sec.7.....	Basic Welding Information.....	P.10
Sec.8.....	General Maintenance.....	P.13
Sec.9.....	Trouble Shooting	P.13
Sec.10.....	Service Information	P.14
Sec.11.....	Parts Lists.....	P.18
Sec.12.....	Safe Practices.....	P.23

FIGURES

Fig.1.....	Power Source Controls	P.6
Fig.2.....	Remote Wirefeeder Connection.....	P.8
Fig.3.....	Positive Wire Connection.....	P.9
Fig.4.....	Negative Wire Connection.....	P.9
Fig.5.....	'Good' Weld	P.12
Fig.6.....	'Bad' Weld	P.12
Fig.7.....	Gun Position.....	P.12
Fig.8.....	Circuit Diagram.....	P.15
Fig.9.....	Dual SCR Control Board	P.16
Fig.10.....	Wirefeed Control Board.....	P.17
Fig.11.....	Power Source Assembly.....	P.19
Fig.12.....	Gun Cable Assembly	P.20
Fig.13.....	Wire Drive Assembly	P.21
Fig.14.....	Remote Wirefeeder.....	P.22

The information contained in this manual is set out to enable you to properly maintain your new equipment and ensure that you obtain maximum operating efficiency.

Please ensure that this information is kept in a safe place for ready reference when required at any future time.

When requesting spare parts, please quote the model and serial number of the machine and part number of the item required. All relevant numbers are shown in lists contained in this manual. Failure to supply this information may result in unnecessary delays in supplying the correct parts.

1. INTRODUCTION

Gas Metal Arc Welding (G.M.A.W.) is a basically simple welding process, where a consumable wire is fed by motor driven drive rollers to a welding gun, and where welding current is supplied from the welding power source. The welding arc is struck between the workpiece and the end of the wire, which melts into the weld pool. The arc and the weld pool are both shielded by gas flow from the gun, or in the case of "self shielded" wires, by gases generated by the wire core.

The process is very versatile in that by selection of the correct wire composition, diameter and shielding gas, it can be used for applications ranging from sheetmetal to heavy plate, and metals ranging from carbon steel to aluminium alloys.

The WELDMATIC 205S has been designed to be used with consumable wires in the range from 0.6mm to 1.2mm diameter. The smaller wire sizes are used when welding at lower currents, such as sheet-metal applications. Increasing the wire diameter permits higher welding currents to be selected.

A common application of G.M.A.W. is for welding Mild Steel. In this application, a Mild Steel solid consumable such as WIA ES4 or ES6 is used with a shielding gas of Carbon Dioxide, or Argon mixed with Carbon Dioxide. Alternatively, Flux-cored consumables are available in both gas shielded, and 'gasless' self shielding types.

Stainless steel and Aluminium can be welded with G.M.A.W. using the correct consumable wire and shielding gas.

2. RECEIVING

Check the equipment received against the shipping invoice to make sure the shipment is complete and undamaged. If any damage has occurred in transit, please immediately notify your supplier.

The CP102-4 (Internal Wirefeeder) Package contains;

- WELDMATIC 205S Power source.
- BEQA210AE BERNARD Gun cable, 3 metre, Euro connector.
- HA101-185 Regulator and Flowgauge. (Argon)
- (This) Owners Manual.

The CP102-5 (Remote Wirefeeder) Package contains;

- WELDMATIC 205S Power Source.
- W32-0 Wirefeeder.
- AM224-0/10 Inter-connecting lead kit, 10 metre.
- BEQA210AE BERNARD Gun cable, 3 metre, Euro connector.
- HA101-185 Regulator and Flowgauge. (Argon)
- (This) Owners Manual.

3. SPECIFICATIONS

Manufactured to Australian standard AS1966.1-1985

PRIMARY VOLTAGE.....240 Volts A.C., Single Phase, 50 Hz.

RATED PRIMARY CURRENT 15 Amps

MAX PRIMARY DEMAND30 Amps, 7.2 kVA
(Minimum requirement for supply
from engine driven alternator.)

FUSE RATING..... 15 Amps

FITTED SUPPLY CABLE30/0.25 Three Core,
Heavy Duty PVC

WIRE SIZE RANGE0.6mm - 1.2mm diameter

OPEN CIRCUIT VOLTAGE Maximum HI Range 35V.
Maximum LO Range 24V.

WIRE FEED RANGE..... 1 to 15 Metres/min

COOLING..... Fan cooled, air drawn in
through rear fan grille.

WELDING CURRENT RANGE35 - 205 AMPS

OUTPUT RATING Rated Output: 180 Amps
@ 24 Volts, 35% Duty Cycle.
Max. Welding Current:
205 Amps, 25% Duty Cycle

(Duty cycle is defined in Australian Standard AS1966.1 as the ratio of arcing time to 5 minutes in any 5 minute period, expressed as a percentage.)

4. POWER SOURCE CONTROLS

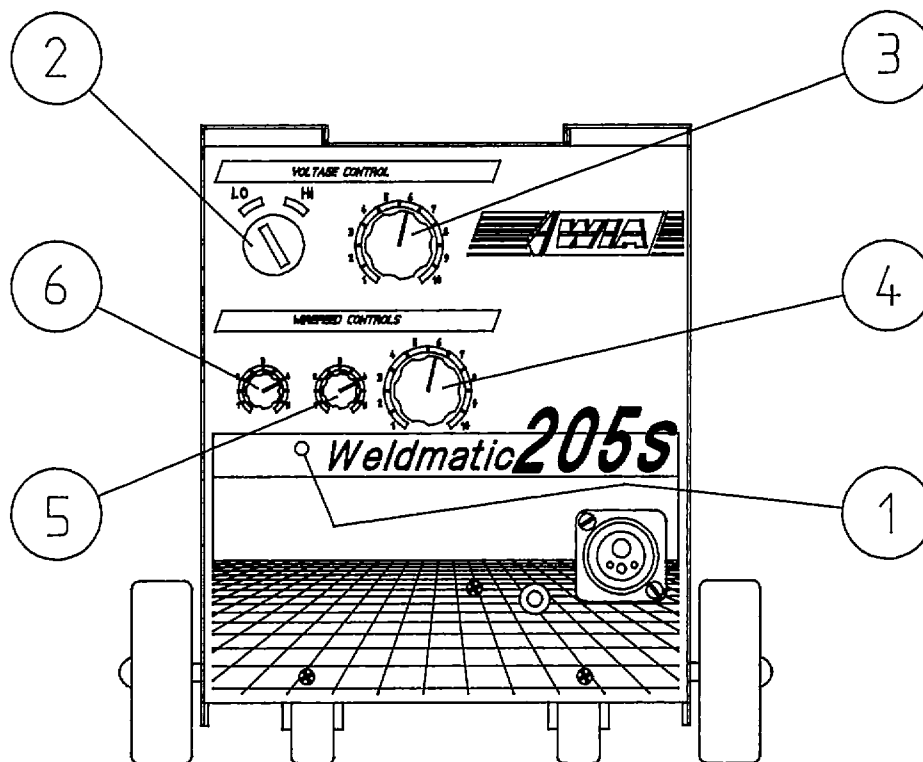


FIGURE 1. POWER SOURCE CONTROLS

1. POWER ON INDICATOR

This is illuminated when the machine is energised, that is when electrical mains power is connected to the welder.

2. HI - LO SWITCH

This switch provides Coarse adjustment of the Output Welding voltage.

3. VOLTAGE CONTROL

This control provides Fine adjustment of the Output Welding voltage. Rotating the control in a clockwise direction will increase the output voltage.

4. WIRE SPEED CONTROL

The wirefeed speed of the machine is varied with this control; turning the dial in a clockwise direction increases the wirefeed speed, increasing the welding current.

5. SPOT TIME CONTROL

When operating the machine in Spot Weld mode, this control will vary the spot weld time. Rotating the dial clockwise will increase the spot weld time, in the range 0.5 - 2.5 seconds. If the Spot Weld mode is not required this feature can be turned off by rotating the control anti-clockwise until it 'clicks' into the minimum position.

6. INTERVAL CONTROL

When operating the machine in Cycle Arc mode this control sets the period between welds. The spot time control sets the welding period. Rotating the dial clockwise will increase the interval time, in the range 0.5 - 2.5 seconds. If the Cycle Arc mode is not required this feature can be turned off by rotating both controls fully anti-clockwise.

5. INSTALLATION

CONNECTION TO ELECTRICAL MAINS POWER SUPPLY

The WELDMATIC 205S is supplied with a 3 metre 3 core Heavy Duty PVC mains power supply cable and standard 15 Amp plug. A 15 Amp plug and socket is recognisable by a wide Earth pin. Power Supply authorities require that equipment fitted with a 15 Amp plug shall ONLY be connected to a 240 Volt, 15 Amp power point. DO NOT modify the plug.

Due to peak current requirements, the Electrical Mains supply to welding machines is best protected by fuses. Circuit Breakers may trip frequently if used in this application.

If it becomes necessary to replace the mains power supply cable, use only a cable with an equivalent or higher current rating. Access to the machine supply terminals is gained by removing the power-source side panel opposite to the wire-spool enclosure.

FITTING THE GUN CABLE

The BERNARD BEQA210AE gun cable is equipped with a 'Euro' wirefeeder connector which incorporates all required connection points to the gun cable for welding current, shielding gas and gun switch control.

To attach the gun cable to the wirefeeding mechanism, engage the mating parts of the male and female Euro connectors, then rotate the locking ring clockwise to firmly secure the connection.

FITTING THE GAS BOTTLE

The MAXIMUM height of a gas cylinder to be fitted to the standard WELDMATIC 205S is 1.0 metre. The weight and high centre of gravity of taller cylinders will result in the machine becoming unstable. To enable use of taller cylinders, an optional accessory AM209 is available separately.

Depending on configuration of the cylinder to be used, the gas flowmeter / regulator may be fitted directly to the cylinder, or in conjunction with an elbow. DO NOT apply any grease to these joints, and tighten the nuts securely.

Fit the end of the gas inlet hose from the back panel of the machine to the connector supplied with the flow regulator, and secure with the clamp also supplied.

FITTING THE CONSUMABLE WIRE

The quality of the consumable wire greatly affects how reliably a G.M.A.W. machine will operate. For best results when welding mild steel, we recommend quality WIA AUSTMIG ES4 or ES6. Dirty, rusty or kinked wire will not feed smoothly through the gun cable and will cause erratic welding. Deposits from the wire will clog the gun cable liner requiring it to be replaced prematurely.

Place the spool of welding wire onto the spool holder. The location pin should mate with a hole provided on the wire spool body. Fit the spool retaining 'R'clip supplied.

Check the adjustment of the spool brake, which should be set to prevent over-run of the wire spool at the end of a weld, without unduly loading the wirefeed motor. The braking can be adjusted by the Nyloc nut using a 15/16" AF or 24mm socket wrench.

FEEDING THE CONSUMABLE WIRE

Open the two roll drive mechanism by lifting the pressure lever upwards, which lifts the upper roller away from the driven roller. The end of the welding wire can now be passed through the inlet guide, over the bottom driven roller, and into the brass gun cable adapter.

Check that the drive roller groove is correct for the wire in use. The appropriate size is stamped on the visible side of the installed roller. Check also that the correct size contact tip is fitted at the gun end. Refer to section 11 for gun part numbers.

Return the top roller to the closed position and, with the machine turned on, close the gun switch to feed wire through the gun cable. Adjust the compression screw to provide sufficient clamping of the drive rolls drive to achieve constant wirefeed. Do not overtighten.

FITTING REMOTE WIREFEEDER

Where fitted, the W32-0 remote wirefeeder is connected to the WELDMATIC 205 power source using an AM224 extension lead kit. The connection details are shown in the diagram below.

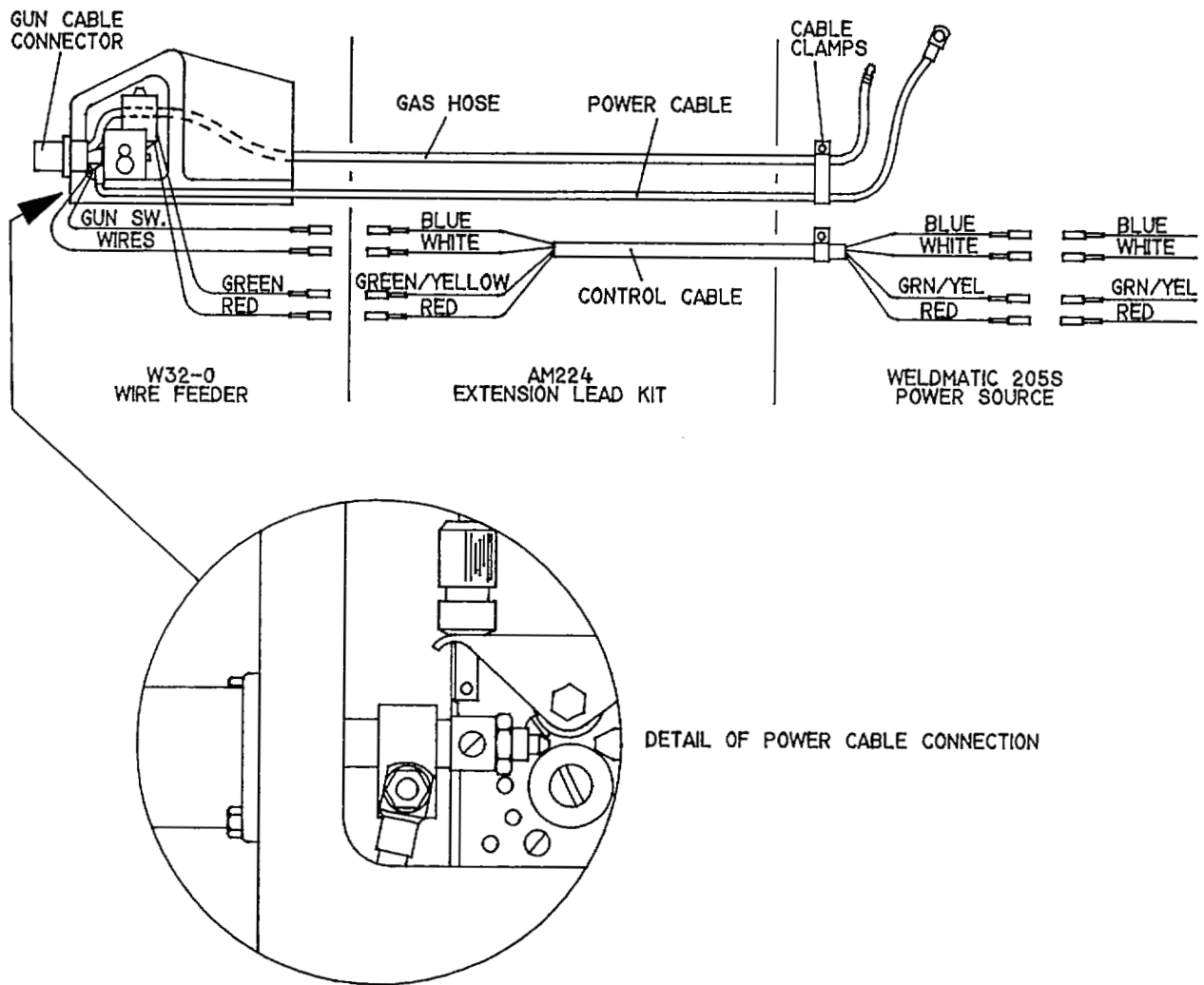


FIGURE 2. REMOTE WIREFEEDER CONNECTIONS

OUTPUT VOLTAGE POLARITY.

The design of the WELDMATIC 205S allows selection of the Output Voltage polarity.

POSITIVE WIRE

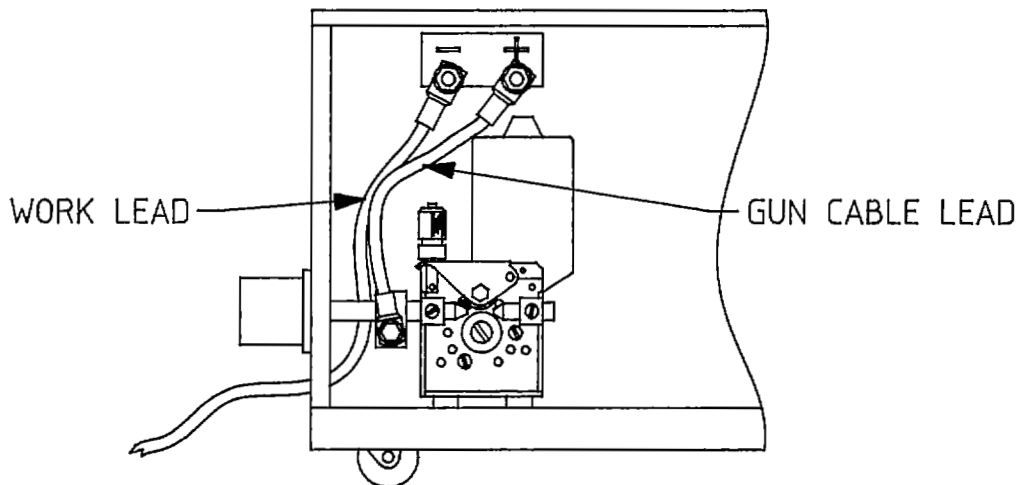
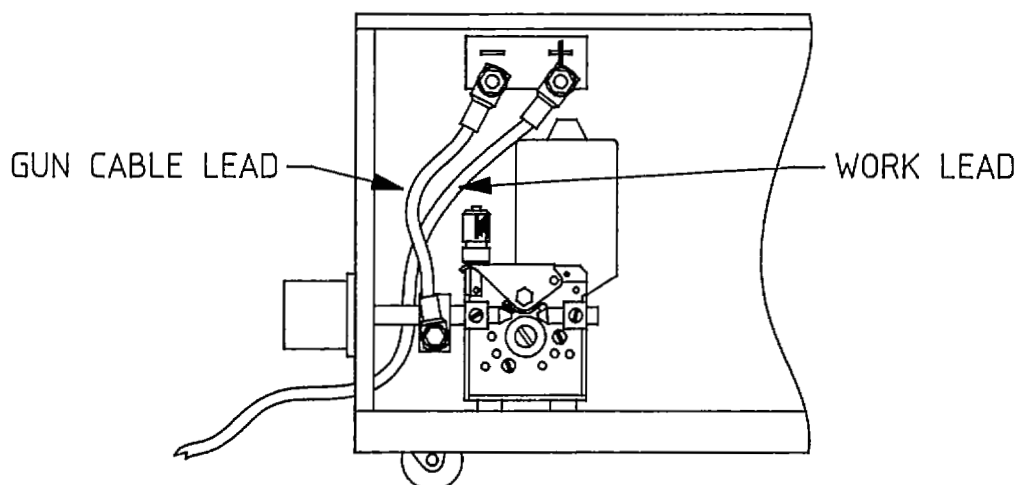
Most G.M.A.W. is carried out with the workpiece Negative and the welding consumable wire Positive.

To set the machine for this condition, bolt the 'WORK' lead onto the (-) output stud, and the 'GUN CABLE' lead to the (+) stud, as in figure 3. below.

NEGATIVE WIRE

Some "Self-Shielded" flux cored consumables are intended to be operated with the workpiece Positive and the consumable wire Negative. Refer to the manufacturers data for the particular consumable to be used.

To set the machine for this condition, bolt the 'WORK' lead onto the (+) output stud, and the 'GUN CABLE' onto the (-) stud, as in figure 4. below.

**FIGURE 3. POSITIVE WIRE****FIGURE 4. NEGATIVE WIRE**

6. NORMAL WELDING SEQUENCE

WELD START

Closing the welding gun switch initiates this sequence of events:

- The gas valve is energised and gas flow commences;
- The Power Source contactor function is initiated. Welding voltage is applied between the work-piece and the consumable wire.
- The wire drive motor is energised, wirefeed commences and the arc is established.

WELD END

Releasing the gun switch initiates this sequence of events:

- The wire drive motor is de-energised, and is dynamically braked to a stop;
- After a short pre-set period, known as the 'burn-back' time, the Power-source contactor function is released. This period ensures that the consumable wire does not 'freeze' in the weld pool. To adjust the 'burn-back' time, refer to Section 10.
- The gas valve is de-energised and the flow of shielding gas ceases.

7. BASIC WELDING INFORMATION

CHOICE OF SHIELDING GAS

The choice of shielding gas is largely determined by the consumable wire to be used. Many proprietary shielding gas mixtures are available.

The recommended shielding gases for use with the WELDMATIC 205s are :

- Mild Steel.....Argon + 5 to 25% Carbon Dioxide;
- Aluminium.....Argon;
- Stainless Steel.....Argon + 1 to 2% Oxygen.

Consult your gas supplier if more specific information is required.

SHIELDING GAS FLOW RATE

In G.M.A.W., one of the functions of the shielding gas is to protect the molten weld pool from the effects of oxygen in the atmosphere. Without this protection the weld deposit becomes 'honeycombed' in appearance, an effect which is described as weld porosity.

In draft-free conditions the gas flow rate required to give adequate protection is typically 10 litres/min. In situations where drafts cannot be avoided, it may be necessary to increase this rate and/or to provide screening of the work area.

Weld porosity can also be caused by air entering the gas stream through a damaged hose, loose gas connection, or from restriction in the nozzle, such as from excess build-up of spatter.

ESTABLISHING A WELD SETTING

Once the consumable wire type, wire size and shielding gas have been chosen, the two variables that are adjusted in order to obtain a stable arc are;

- Wirefeed speed,
- Welding arc voltage.

The wirefeed rate determines the welding current; increasing the feed rate increases the current, and decreasing it decreases current. The selected wirefeed rate must be matched with sufficient arc voltage; an increase of wirefeed rate requires an increase of arc voltage.

If the voltage is too low the wire will stub and stutter, and there will not be a steady arc. If the voltage is too high the arc will be long with the metal transfer within the arc occurring as a series of large droplets.

The welding current should be chosen to suit the thickness of the metal to be welded. It is important to check that the deposited weld provides sufficient strength to suit the application.

A "good" weld will have the characteristics illustrated in figure 5. The weld has penetrated into the parent metal, fusing the root of the joint where the two plates meet, and the weld blends smoothly into the side walls.

A "bad" weld is shown in figure 6. The weld has not penetrated the joint root, and there is poor side wall fusion. This lack of fusion would normally be corrected by increasing the arc voltage, or by increasing both wirefeed rate and arc voltage to achieve a higher current weld setting.

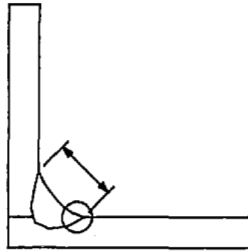


FIGURE 5. "GOOD" WELD

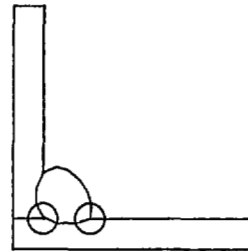


FIGURE 6. "BAD" WELD

GUN POSITION

For "down hand" fillet welding, the gun is normally positioned as in the figures below with the nozzle end pointing in the direction of travel.

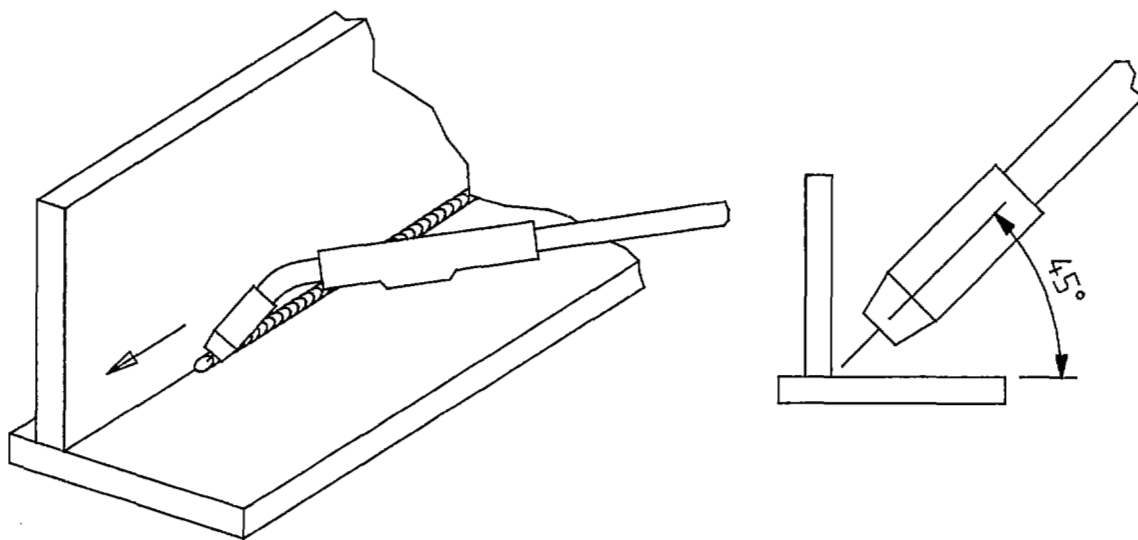


FIGURE 7. GUN POSITION

8. GENERAL MAINTENANCE

Before removing the machine cover, ENSURE that the unit is disconnected from the mains power supply. When the unit is energised LETHAL VOLTAGES are present on the electrical components enclosed.

DUST

Care should be taken to prevent excessive build-up of dust and dirt within the welding power source. It is recommended that at regular intervals, according to the prevailing conditions, the machine covers be removed and any accumulated dust be removed by the use of dry, low pressure compressed air, or a vacuum cleaner.

WIREFEED

In order to obtain the most satisfactory welding results from the G.M.A.W. process, the wirefeed must be smooth and constant. It is therefore important to observe the following points;

- Keep the gun cable liner clear of dust and swarf build-up. When replacement becomes necessary, fit only the correct liner to suit the gun cable model. See Section 11. The build-up of dust in a cable liner can be minimized by regular purging of the liner with dry compressed air. This may be conveniently done each time the wire spool is replaced.
- Replace the welding tip as it becomes worn.
- Keep the wire drive mechanism clean. Periodically check the drive rollers for wear and for free rotation.
- Check that the consumable wire spool holder rotates smoothly and that the braking action is not excessive. This also may be conveniently done each time the wire is replenished.

9. TROUBLE SHOOTING

UNSATISFACTORY RESULTS

WIREFEED

- Erratic wirefeed is the MOST LIKELY cause of failure in all Gas Metal Arc Welding. It should therefore be the first point checked when problems occur. Refer to the section above.
- Check for correct gas flow rate at the welding torch nozzle and ensure there are no gas leaks. The gun nozzle must be free from spatter and firmly attached to the welding gun to ensure that air is not drawn into the shielded area.
- Check that the shielding gas selected is correct for the consumable wire in use.

WELDING CIRCUIT

- Ensure that the work clamp is securely tightened onto the work-piece so that good electrical contact is achieved. Check also that the output polarity selected is appropriate for the consumable in use.
- Surface contamination of the work-piece by water, oil, grease, galvanizing, paint, or oxide layers can severely disturb the welding arc resulting in a poor weld. Should this condition occur, surface cleaning of the work piece will be beneficial.

WIREFEED / ARC VOLTAGE RELATIONSHIP

If the consumable wire is stubbing into the workpiece, and a steady arc cannot be obtained, it is likely that the arc voltage is set too low to suit the wire speed. To correct this situation either increase arc voltage, or decrease the wire speed.

If the arc length is too long, the arc voltage is too high to suit the wire speed. To correct this, increase wire speed or decrease arc voltage.

NO WELDING CURRENT

Check that Mains Supply is available at the WELDMATIC 205S Power Source, i.e. that the fan is running and the indicator light is illuminated.

Check continuity of the welding current circuit, i.e., work lead, work clamp and gun cable connections.

The WELDMATIC 205S welding power source incorporates an inbuilt over temperature thermostat which will trip if the welding load exceeds the operating duty cycle.

In this event the machine will not deliver welding current until the machine has cooled sufficiently. The thermostat will reset automatically - do not switch the machine off as the cooling fan will assist the resetting of the thermostat.

If the forgoing checks have been made and have not revealed the fault condition, a QUALIFIED SERVICE person should be consulted.

10. SERVICE INFORMATION.

NOTE that the following information is intended for use by Qualified Service Personnel. When the unit is energised LETHAL VOLTAGES are present on the electrical and electronic components. It is not intended that persons without suitable training and knowledge attempt to perform service tasks on the components of this Welder.

The main electrical components of the WELDMATIC 205S are listed below, with reference to the following circuit diagram.

- Welding Rectifier Assembly, Item 1. This comprises two high-current rectifier diodes mounted on an aluminium heatsink, electrolytic filter capacitors, transient protection network and discharge resistors.
- Welding Transformer, Item 2. The Primary winding is tapped to provide High / Low range adjustment, and the secondary is centre tapped. Maximum open circuit secondary voltage = 24 - 0 - 24 Volts AC with HI range and the maximum voltage selected.
- Wirefeed control Board, Item 4. See following description.
- Dual SCR Control Board (including Dual SCR), Item 5. See following description.
- Control Transformer, Item 19. The secondary winding is centre-tapped, providing an output voltage = 30 - 0 - 30 Volts AC.
- Welding Inductance, Item 3.
- HI / LO Range Switch, Item 57.
- Limiting Inductance, Item 47.
- Gas valve, Item 21.

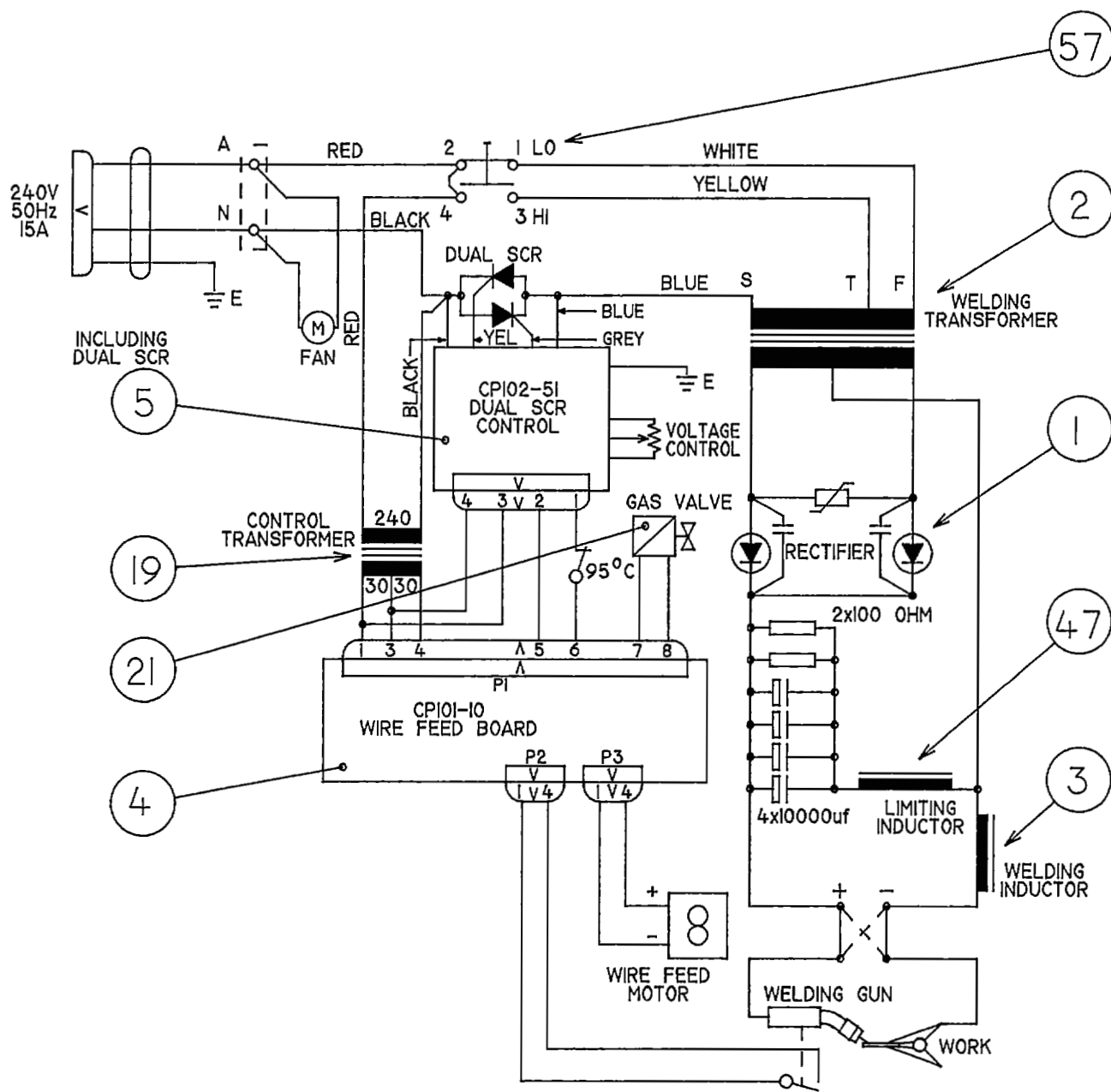


FIGURE 8. WELDMATIC 205S CIRCUIT DIAGRAM

DUAL SCR CONTROL BOARD CP102-51

DANGER: Parts of this circuit board are at MAINS VOLTAGE potential whenever the machine is energised.

The Dual SCR Control board and associated Dual SCR together provide two circuit functions;

- Welding transformer ON / OFF control in response to an output of the wirefeed control board, (the contactor function).
- Output voltage control by means of phase-shifting of the Welding transformer primary voltage, as adjusted by the front panel 'VOLTAGE CONTROL' potentiometer.

With HI range selected, the 'VOLTAGE CONTROL' provides adjustment of the welding transformer secondary voltage over the range 11 - 24 Volts A.C., measured from the centre tap to one end of the winding.

Connections to the board are detailed in the diagram below.

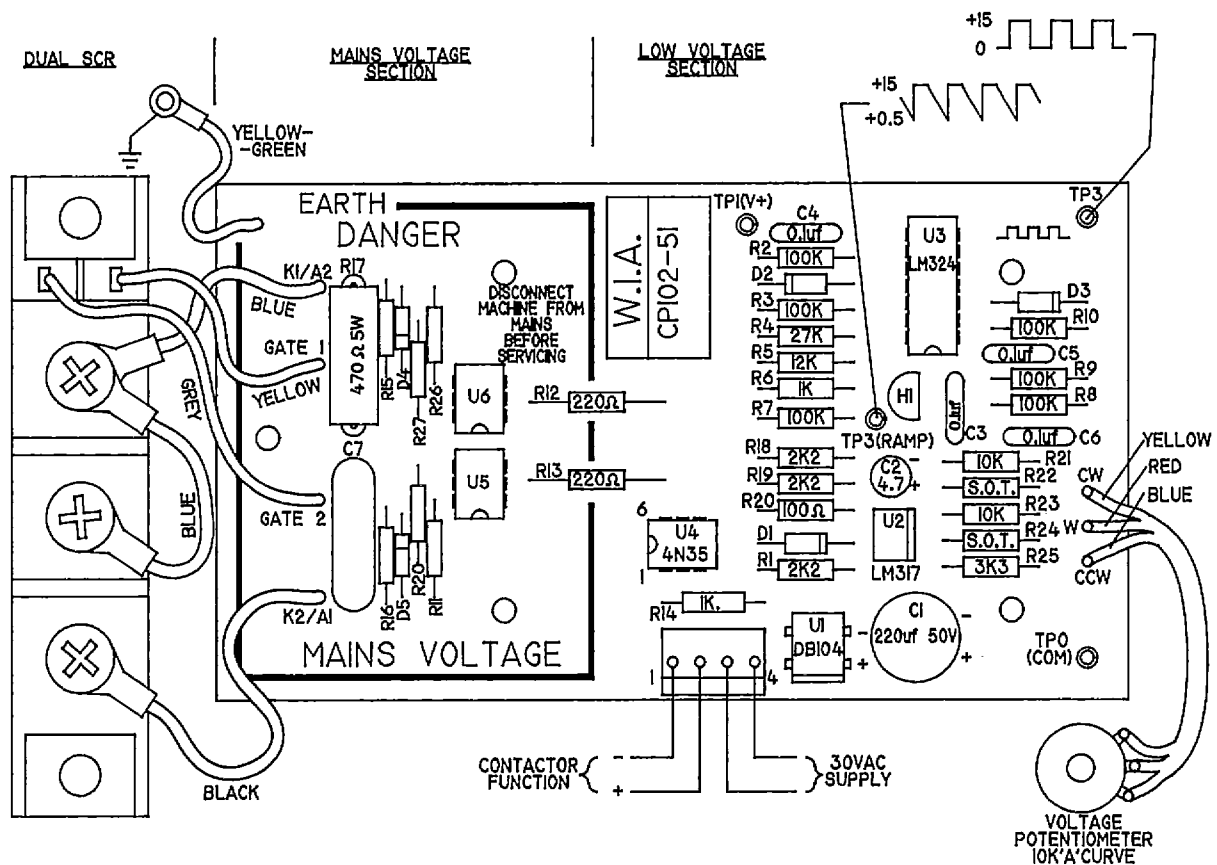


FIGURE 9. DUAL SCR CONTROL BOARD

WIREFEED CONTROL BOARD CP101-10

The Wirefeed control board provides the following circuit functions:

- Wirefeed motor ON / OFF control in response to the gun-switch.
- Speed control of the wirefeed motor.
- 'Burn-back' control.
- Braking of the wirefeed motor at end of weld.
- Spot-weld timer.
- Interval timer.
- Control of the gas solenoid valve.

Connections to the board, and Service points are detailed in the drawing below.

The circuit is factory adjusted to provide a maximum drive roller speed of 126 rpm.

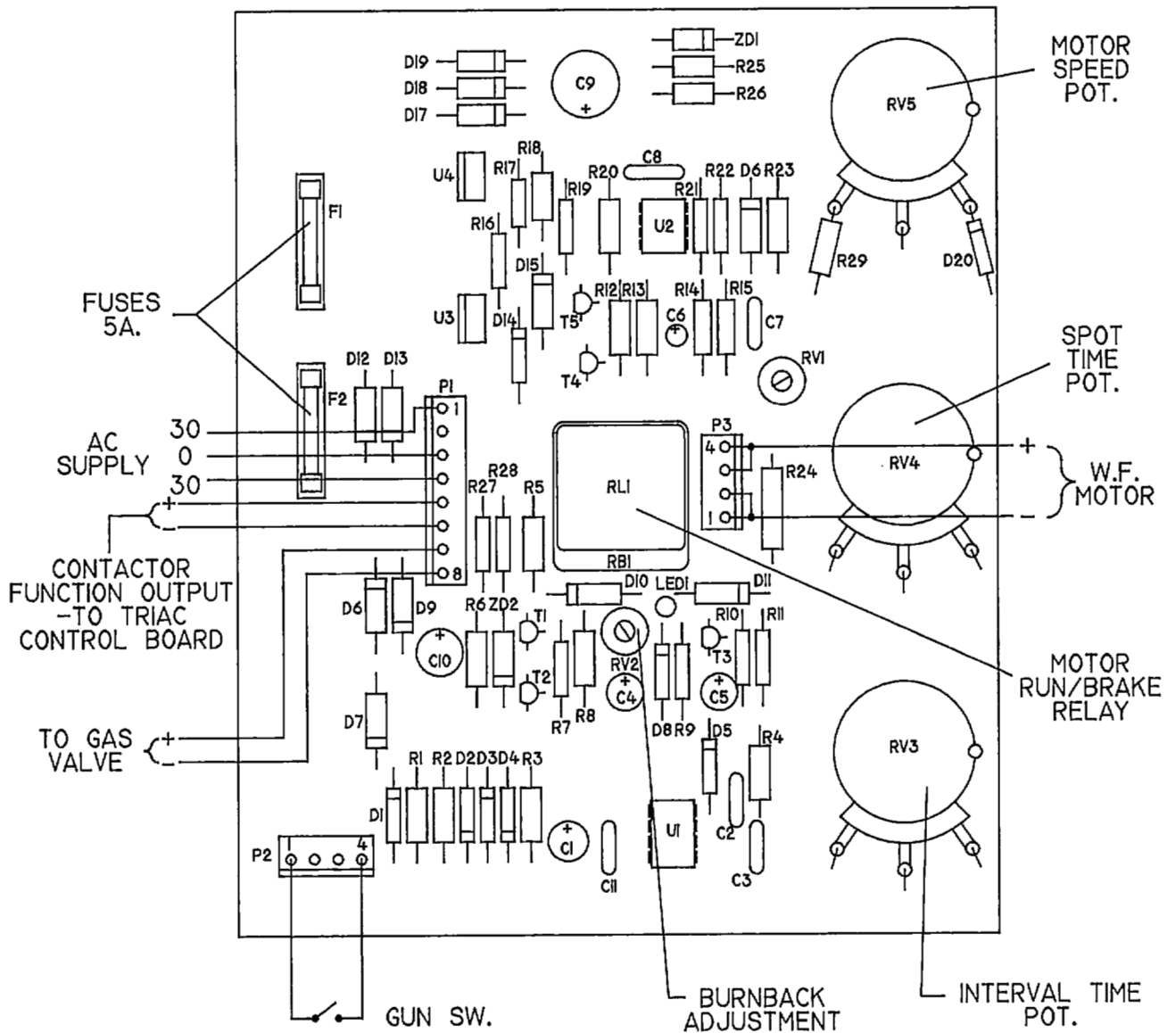


FIGURE 10. WIREFEED CONTROL BOARD

11. PARTS LISTS

WELDMATIC 205S POWER SOURCE CP102-0 PACKAGE

ITEM #	PART#	DESCRIPTION
1.....	CP102-12.....	Recifier assembly
Includes		
	CP34-14/19.....	Diode SKR 130/04 (2)
	CP102-12/8.....	Capacitor 10,000 μ F, 63V.(4)
	CP101-12/7.....	Discharge resistor (2)
	CP3-9/8.....	Thermostat
2.....	CP102-13.....	Welding transformer
3.....	CP102-14.....	Welding inductance assembly
4.....	CP101-10.....	Wirefeed control board
Includes		
	W11-7/16.....	Relay, 24v (2)
5.....	CP102-51.....	Dual SCR control PCB(inc.Dual SCR)
6.....	CP102-40.....	Front panel
7.....	CP102-22.....	Back panel
8.....	CP102-43.....	Side panel (fixed)
9.....	CP102-44.....	Side panel (opening)
10.....	CP102-26.....	Centre panel
11.....	CP102-42.....	Top tray
12.....	CP102-20/2.....	Base
13.....	AM119-3.....	Wheel
14.....		Rear axle
15.....	MC11-53/6.....	Ratchet caps
16.....	CP102-0/20.....	Castor wheel
17.....	MC14-1/14.....	Terminal block
18.....	CP27-0/15.....	Fan
19.....	CP102-0/16.....	Control transformer
20.....	CP101-0/17.....	Fan finger guard
21.....	CP010-0/18.....	Gas valve
22.....	W11-11/1.....	Hose barb
23.....	OCL13.....	1/2" hose clip
24.....	H532-12.....	Miniature hose clamp
25.....	MC66-0/8.....	Primary flex and plug
26.....	W27-1.....	Motor and two roll drive assembly
27.....	W17-2/12.....	Lens
28.....	W5-10/19.....	Small knob (2)
29.....	W11-0/16.....	Large knob
30.....	HOS5R.....	Gas hose, black rubber
38.....		Bottle chain
43.....	CP3-0/23.....	Rubber grommet
44.....	MC14-0/10.....	Conduit bush, male
45.....	MC14-0/11.....	Conduit bush, female
47.....	CP102-17.....	Limiting inductance assembly
48.....	CP102-15.....	Work lead assembly
49.....	AM177.....	Spool holder assembly (not shown)
57.....	CP102-0/17.....	HI / Lo switch
58.....	W6-9/10.....	Conduit bush, male
59.....	W6-9/11.....	Conduit bush, female
76.....	TC396-1.....	Euro connector and stem
77.....	CP102-28.....	Diode protection assembly
78.....	CP102-34.....	Motor and gun switch loom

NOTE

For the Remote Wirefeeder package, Items 26 & 49 are deleted, and item 76 becomes Rubber grommet CP102-27.

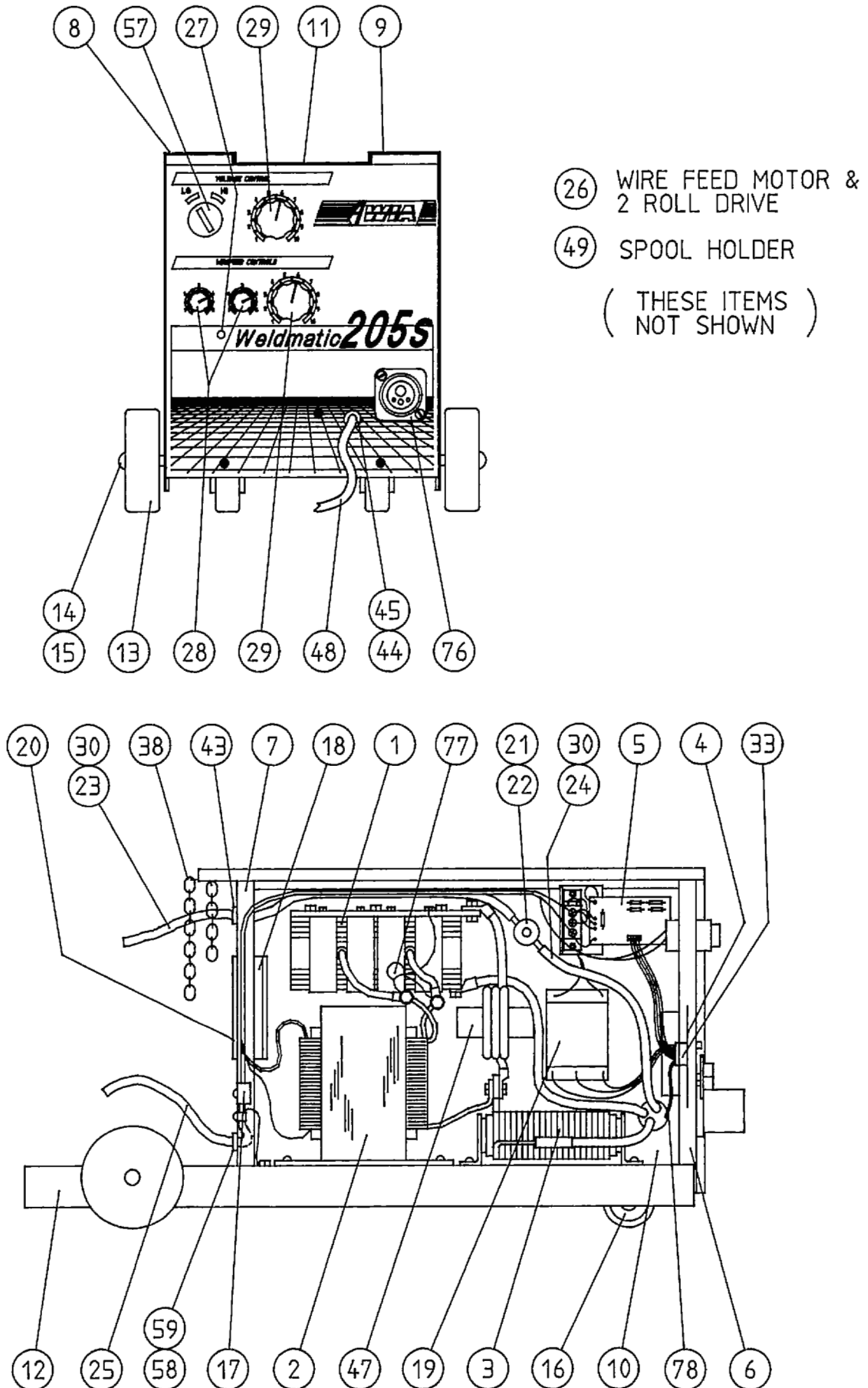


FIGURE 11. WELDMATIC 205S POWER SOURCE ASSEMBLY

BEQA210AE GUN ASSEMBLY

- | | |
|--------------------------------|----------------------------------|
| 1 ... 4392 Nozzle | 12 . 5662 Trigger assembly |
| 3 ... 4335 Head | 14 . 4261TE.... Cable assembly |
| 3A . 7126 'O' Ring | 15 . 2520012 .. Cable Support |
| 3B . 7360 Retaining ring | 16 . 1880074 .. Connection Case |
| 4 ... 4323R..... Cap | 19 . 1199E..... Euro direct plug |
| 6 ... QT2-45 ... Body tube | Includes |
| 7 ... 4313B..... End fitting | A...4822.... Bushing |
| 8 ... 4305 Cone nut | B...608..... Screw |
| 9 ... 1780006 .. Handle kit | C ...4816.... Adaptor nut |
| Includes | D ...5060.... Euro block |
| 5630 Handle half, right | |
| 5631 Handle half, left | 20 . 1920082 .. Liner |
| 10 . 4238 Hang-up hook | Contact tips |
| 11 . 1880004 .. Screw kit | 0.6mm 7497 |
| Includes | 0.8mm 7488 |
| 4207 Post fastener | 0.9mm 7489 |
| 4209 Screw | 1.0mm 7496 |
| | 1.2mm 7490 |

To replace liner: remove Euro connector from power source, remove nozzle (1) and head (3) from gun hand piece. Withdraw old liner from Euro connector end. Feed new liner in also from the Euro connector end. Refit the Euro connection to the power source. At the gun end compress the liner within the gun cable, then cut it one contact tip length past the end of the body tube (6). Refit head, tip and nozzle.

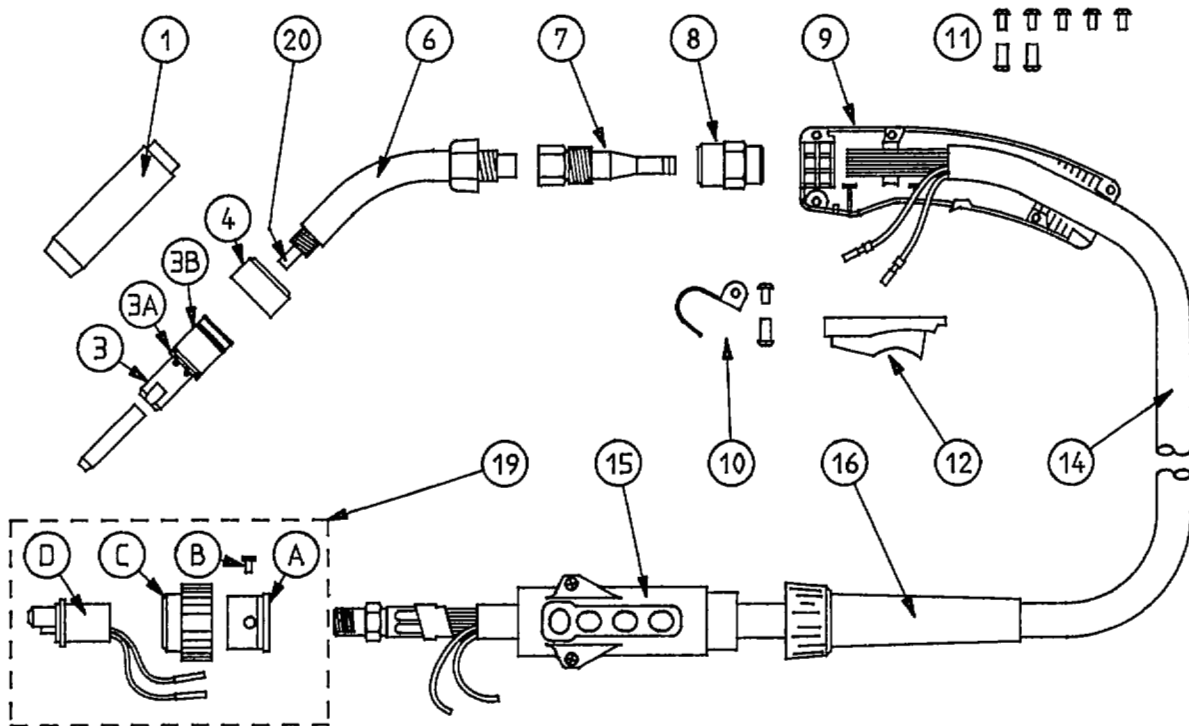


FIGURE 12. BEQA210AE (200 AMP) GUN CABLE ASSEMBLY

W27-1 MOTOR & TWO ROLL DRIVE ASSEMBLY

ITEM #	PART #	DESCRIPTION
1	W27-0/1	Motor & Gearbox
2	W26-0/3	Screw M6 x 12
3	W27-0/4	Key
4	W27-1/1	Feed Plate
5	W26-5/8	Feed Roll 0.9 - 1.2mm
6	W27-0/9	Positioning Screw
7	W27-1/2	Axle
8	W27-1/4	Pressure Arm complete
Comprising		
8.1	W27-1/5	Axle
8.2	W27-1/6	Pressure Arm
8.3	W27-1/7	Spacer (narrow)
8.4	W27-1/8	Pressure Roll
8.5	W27-1/9	Spacer (large)
8.6	W27-1/10	Axle Clip
9	W26-0/13	Inlet Guide
10	W27-1/11	Pressure Screw complete
Comprising		
10.1	W27-1/12	Thumbscrew
10.2	W27-1/20	Spring
10.3	W27-1/14	Base
10.4	W27-1/15	Pressure Link
11	W27-1/16	Pressure Screw Axle
12	W27-1/17	Spring
13	W27-1/18	Pin
14	W27-1/3	External Circlip 4mm ID
15	W27-1/19	External Circlip 5mm ID

ALTERNATIVE PARTS

(5)	W26-1/8	Feed Roll 0.8 + 1.0mm
(5)	W26-2/8	Feed Roll 1.0 + 1.2mm
(5)	W26-3/8	Feed Roll 1.0 + 1.2mm Al.
(5)	W26-4/8	Feed Roll 1.2 + 1.6mm
(9)	W27-1/13	Inlet Guide 3mm
(9)	W27-2/13	Inlet Guide 2mm

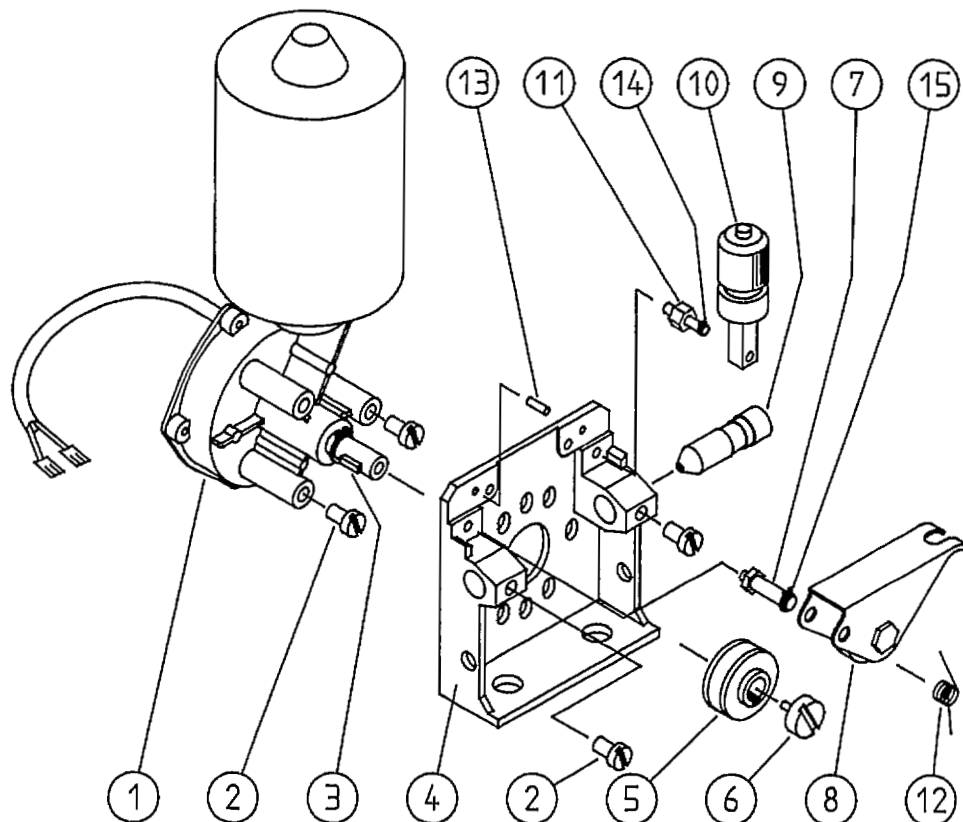


FIGURE 13. W27-1 TWO ROLL DRIVE ASSEMBLY

W32-0 REMOTE WIREFEEDER ASSEMBLY

ITEM #	PART #	DESCRIPTION
1	W32-11	Base assembly
2	AM177	Spool holder assembly
3	W21-11/9	Plastic dust-flap mounting rod
4	AM138-2	Plastic dust flap
5	W27-1	Wirefeed motor and drive ass'y
6	TC396-1	Euro gun adaptor and stem

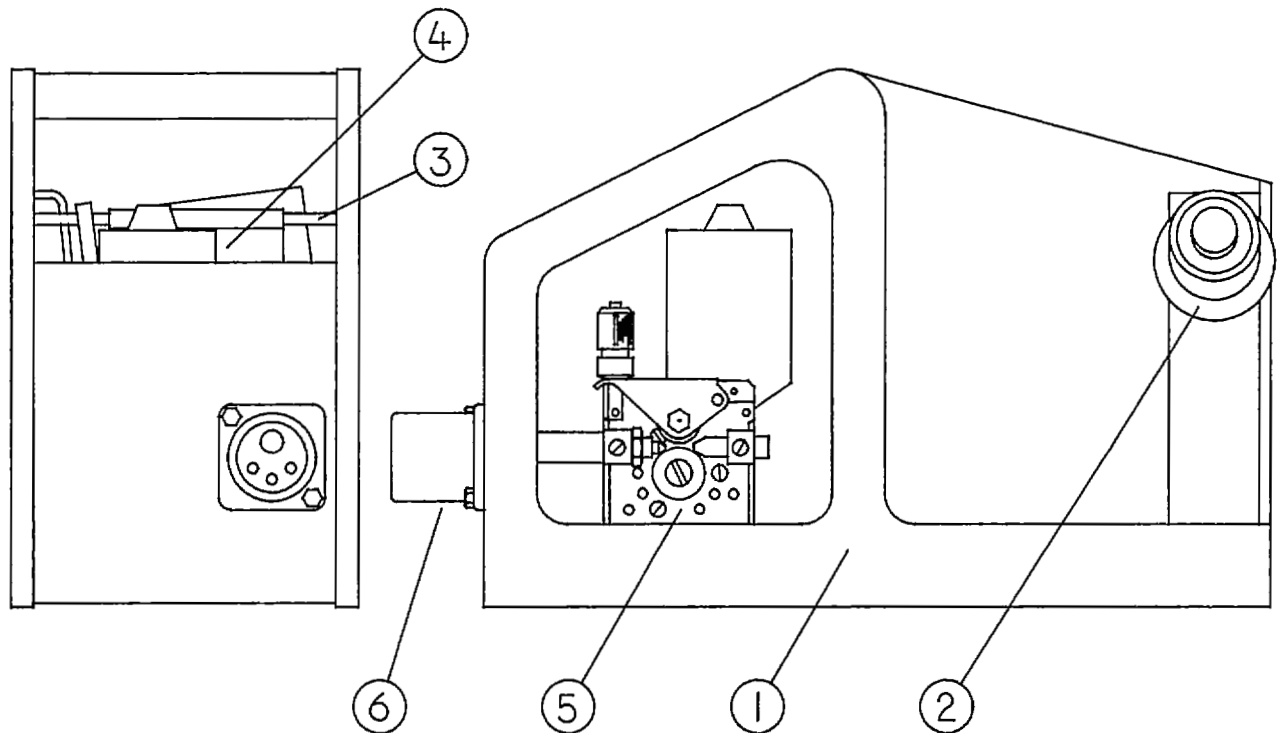


FIGURE 14. W32-0 REMOTE WIREFEEDER

12. SAFE PRACTICES IN USING WELDING EQUIPMENT

These notes are provided in the interests of improving operator safety. They should be considered only as a basic guide to Safe Working Habits. A full list of Standards pertaining to industry is available from the Standards Association of Australia, also various State Electricity Authorities, Departments of Labour and Industry or Mines Department and other Local Health or Safety Inspection Authorities may have additional requirements. WTIA Technical Note TN7-98 also provides a comprehensive guide to safe practices in welding.

EYE PROTECTION

NEVER LOOK AT AN ARC WITHOUT PROTECTION. Wear a helmet with safety goggles or glasses with side shields underneath, with appropriate filter lenses protected by clear cover lens. This is a MUST for welding, cutting, and chipping to protect the eyes from radiant energy and flying metal. Replace the cover lens when broken, pitted, or spattered.

Recommended shade filter lens.

Amps	TIG	MMAW	MIG	Pulsed MIG
0-100.....	10.....	9	10	12-13
100-150.....	11.....	10	10	12-13
150-200.....	12.....	10-11	11-12	12-13
200-300.....	13.....	11	12-13	12-13
300-400.....	14.....	12	13	14
400-500.....	--	13	14	14
500 +.....	--	--	14	14

BURN PROTECTION.

The welding arc is intense and visibly bright. Its radiation can damage eyes, penetrate lightweight clothing, reflect from light-coloured surfaces, and burn the skin and eyes. Burns resulting from gas-shielded arcs resemble acute sunburn, but can be more severe and painful.

Wear protective clothing - leather or heat resistant gloves, hat, and safety-toe boots. Button shirt collar and pocket flaps, and wear cuffless trousers to avoid entry of sparks and slag.

Avoid oily or greasy clothing. A spark may ignite them. Hot metal such as electrode stubs and work pieces should never be handled without gloves.

Ear plugs should be worn when welding in overhead positions or in a confined space. A hard hat should be worn when others are working overhead.

Flammable hair preparations should not be used by persons intending to weld or cut.

TOXIC FUMES.

Adequate ventilation with air is essential. Severe discomfort, illness or death can result from fumes, vapours, heat, or oxygen depletion that welding or cutting may produce. NEVER ventilate with oxygen.

Lead, cadmium, zinc, mercury, and beryllium bearing and similar materials when welded or cut may produce harmful concentrations of toxic fumes. Adequate local exhaust ventilation must be used, or each person in the area as well as the operator must wear an air-supplied respirator. For beryllium, both must be used.

Metals coated with or containing materials that emit fumes should not be heated unless coating is removed from the work surface, the area is well ventilated, or the operator wears an air-supplied respirator.

Work in a confined space only while it is being ventilated and, if necessary, while wearing air-supplied respirator.

Vapours from chlorinated solvents can be decomposed by the heat of the arc (or flame) to form PHOSGENE, a highly toxic gas, and lung and eye irritating products. The ultra-violet (radiant) energy of the arc can also decompose trichlorethylene and perchlorethylene vapors to form phosgene. Do not weld or cut where solvent vapors can be drawn into the welding or cutting atmosphere or where the radiant energy can penetrate to atmospheres containing even minute amounts of trichlorethylene or perchlorethylene.

FIRE AND EXPLOSION PREVENTION.

Be aware that flying sparks or falling slag can pass through cracks, along pipes, through windows or doors, and through wall or floor openings, out of sight of the operator. Sparks and slag can travel up to 10 metres from the arc.

Keep equipment clean and operable, free of oil, grease, and (in electrical parts) of metallic particles that can cause short circuits.

If combustibles are present in the work area, do NOT weld or cut. Move the work if practicable, to an area free of combustibles. Avoid paint spray rooms, dip tanks, storage areas, ventilators. If the work can not be moved, move combustibles at least 10 metres away out of reach of sparks and heat; or protect against ignition with suitable and snug-fitting fire-resistant covers or shields.

Walls touching combustibles on opposite sides should not be welded on or cut. Walls, ceilings, and floor near work should be protected by heat-resistant covers or shields.

A person acting as Fire Watcher must be standing by with suitable fire extinguishing equipment during and for some time after welding or cutting if;

- Combustibles (including building construction) are within 10 metres.
- Combustibles are further than 10 metres but can be ignited by sparks.
- Openings (concealed or visible) in floors or walls within 10 metres may expose combustibles to sparks.
- Combustibles adjacent to walls, ceilings, roofs, or metal partitions can be ignited by radiant or conducted heat.

After work is done, check that area is free of sparks, glowing embers, and flames.

An tank or drum which has contained combustibles can produce flammable vapors when heated. Such a container must never be welded on or cut, unless it has first been cleaned as described in AS.1674-1974, the S.A.A. Cutting and Welding Safety Code. This includes a thorough steam or caustic cleaning (or a solvent or water washing, depending on the combustible's solubility), followed by purging and inerting with nitrogen or carbon dioxide, and using protective equipment as recommended in AS.1674-1974. Water-filling just below working level may substitute for inerting.

Hollow castings or containers must be vented before welding or cutting. They can explode. Never weld or cut where the air may contain flammable dust, gas, or liquid vapours.

SHOCK PREVENTION.

Exposed conductors or other bare metal in the welding circuit, or ungrounded electrically alive equipment can fatally shock a person whose body becomes a conductor. Ensure that the machine is correctly connected and earthed. If unsure have machine installed by a qualified electrician. On mobile or portable equipment, regularly inspect condition of trailing power leads and connecting plugs. Repair or replace damaged leads.

Fully insulated electrode holders should be used. Do not use holders with protruding screws. Fully insulated lock-type connectors should be used to join welding cable lengths.

Terminals and other exposed parts of electrical units should have insulated knobs or covers secured before operation.