

# Cutlass Fasteners, Inc.

83 Vermont Ave., Unit 6, Warwick, RI 02888

Tel: (401) 732-6333 Fax: (401) 732-6336

cutlass-studwelding.com

## Stud Welding...

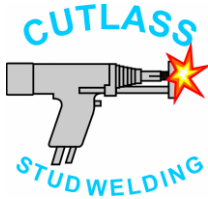
- Fasteners
- Equipment
- Service

## CLASSIC MANUAL

**MODEL :** CUTLASS CLASSIC MANUAL  
**PART NO. :** 602-2310T/602-2310B PKM-1B  
**SERIAL NO. :**



PLEASE READ THIS OPERATION AND MAINTENANCE MANUAL  
CAREFULLY BEFORE USING YOUR NEW CUTLASS STUD WELDER.



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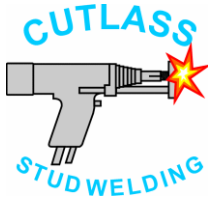
## CLASSIC MANUAL

### WARRANTY

The electrical and mechanical components of the Cutlass Stud Welders are thoroughly performance inspected prior to assembly in the Welder. The assembled Welder is completely performance checked. The Welder is delivered to you in perfect electro-mechanical condition. All parts used in the assembly of the Welder are fully warranted for a period of twelve (12) months from the date of delivery.

Under this warranty, the manufacturer reserves the right to repair or replace, at its option, defective parts which fail during the warranty period. Notice of any claim for warranty repair or replacement must be furnished to the manufacturer, by the purchaser, within five (5) days after the defect is first discovered. The manufacturer does not assume any liability for paying shipping costs, or for any labor or material furnished where such costs are not expressly authorized in writing.

We do not warrant the Cutlass Stud Welders, parts or accessories against failures resulting from misuse, abuse, improper installation, normal wear and tear, maladjustment or use not in accordance with the operating instructions furnished by the manufacturer. Cutlass shall never be liable for any consequential damages.



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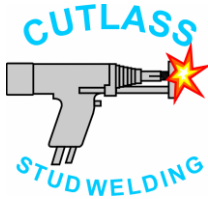
## CLASSIC MANUAL

### **SUGGESTED SAFETY PRECAUTIONS**

In any welding operation, it is the responsibility of the welder to observe certain safety rules to insure his personal safety and to protect those working near him.

Reference is directed without endorsement or recommendation, to ANSI Z49.1, Safety in Welding and Cutting, and to AWG Publication A6, 1-66 Recommended Safe Practices for Gas-Shielded Arc Welding.

1. Always treat electricity with respect. Under open circuit conditions, the welding machine output may be dangerous.
2. Do not work on live circuits and conductors. Disconnect the main power line before checking the machine or performing any maintenance operations.
3. Ensure the welding machine cabinet is properly grounded to a good electrical ground.
4. Do not stand in water or on damp floors while welding or weld in the rain. Avoid wearing wet or sweaty clothes when welding.
5. Do not operate with worn or poorly connected cables, and do not operate weld gun with loose cable connections. Inspect all cables frequently for insulation failures, exposed wires, loose connections and repair as needed.
6. Do not overload weld cables or continue to operate with hot cables.
7. Do not weld near flammable materials or liquids, in or near atmospheres, or on ducts carrying explosive gases.
8. Do not weld on containers which have held combustible or flammable materials, or on materials which give off flammable or toxic vapors when heated, without proper cleaning, purging, or inerting.
9. Ensure adequate ventilation is provided when welding in confined spaces.
10. Never look at the electrical arc without wearing eye shields.
11. Always use proper protective clothing, gloves etc. Never weld close to a bystander who is unaware of the possible dangers of ultraviolet light and weld splatter on their eyes.
12. Installation, servicing and trouble shooting should only be done by qualified personnel, familiar with this type of equipment.



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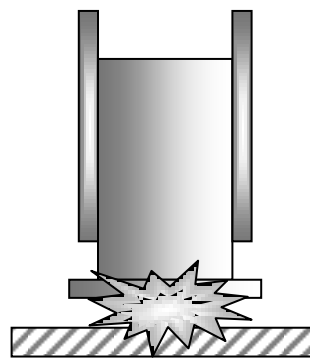
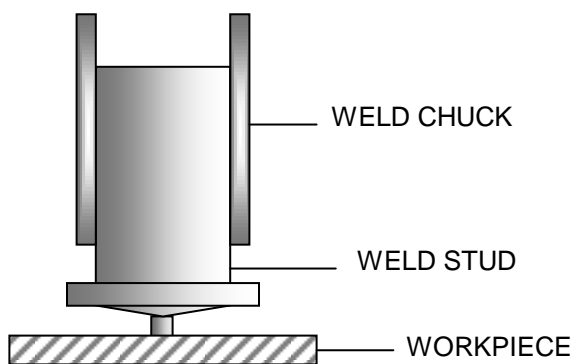
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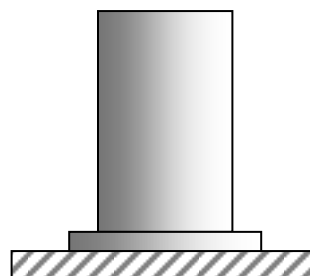
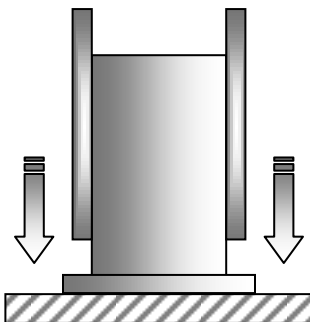
### THE CAPACITOR DISCHARGE STUD WELDING PROCESS

#### HOW THE STUD WELD IS MADE:



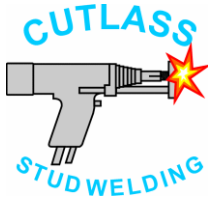
1. The stud is located on the spot to which it is to be welded.

2. Stored energy is discharged through the precisely engineered weld tip at the base of the fastener.



3. The stud is plunged into the molten weld pool, and fusion is achieved across the complete section of the weld.

4. The weld gun is withdrawn leaving the fastener permanently welded to the workpiece.



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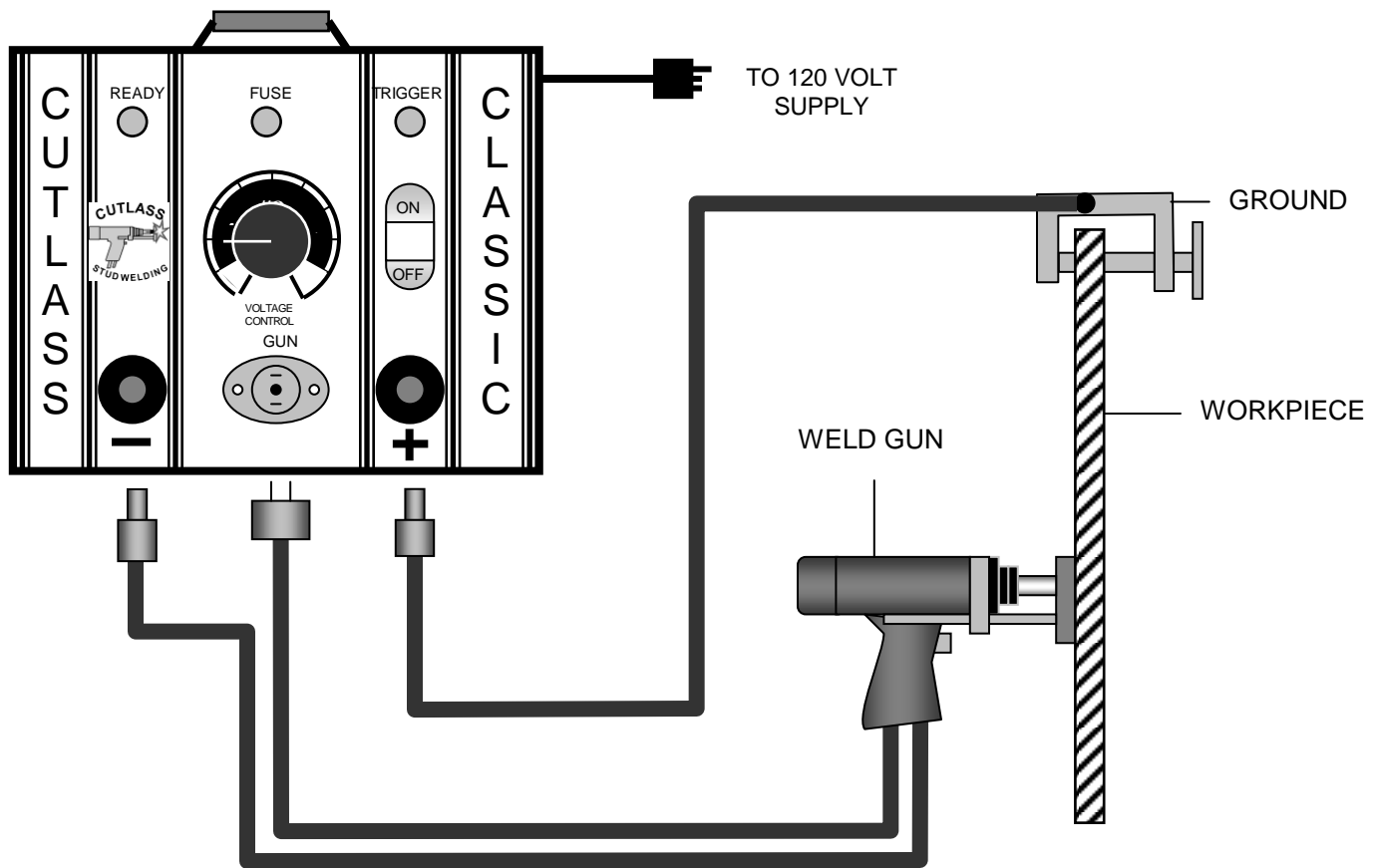
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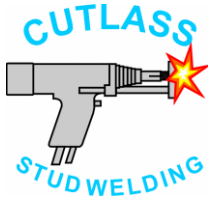
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### HOW TO INSTALL YOUR CUTLASS CLASSIC

1. Attach the ground cable to the workpiece with the "C" clamp. Connect the other end of the cable to the (+) Positive socket on the Classic.
2. Connect the Control Plug (3 pin connector) on the Gun cable, to the 3 Pin Socket on the front of the Classic.
3. Connect the Weld Cable Plug on the Gun cable to the (-) Negative socket on the front of the Classic.
4. Connect the power lead to a 120 volt supply.

**NOTE: UNIT IS SHIPPED FROM THE FACTORY TAPPED FOR 120 VOLT OPERATION. FOR 220/240 VOLT OPERATION THE TRANSFORMER MUST BE RE-TAPPED. SEE PAGE 12 FOR THE CORRECT PROCEDURE.**





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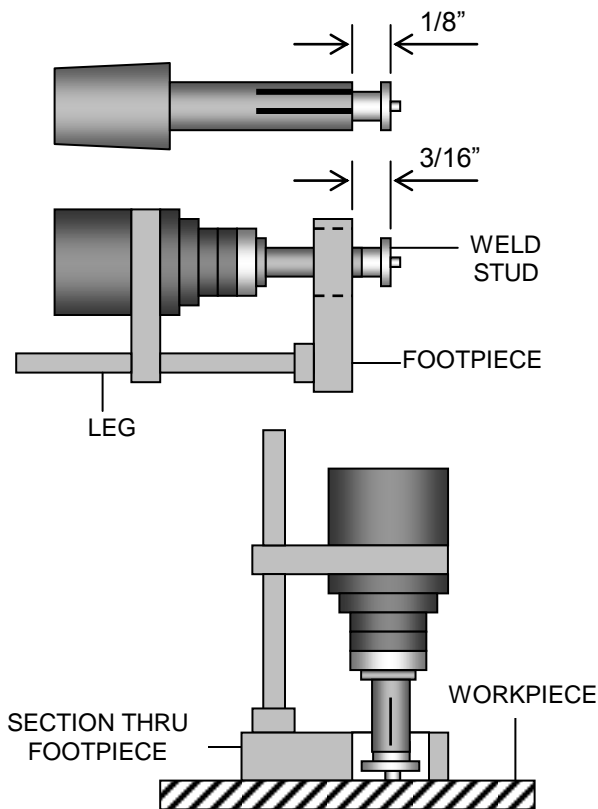
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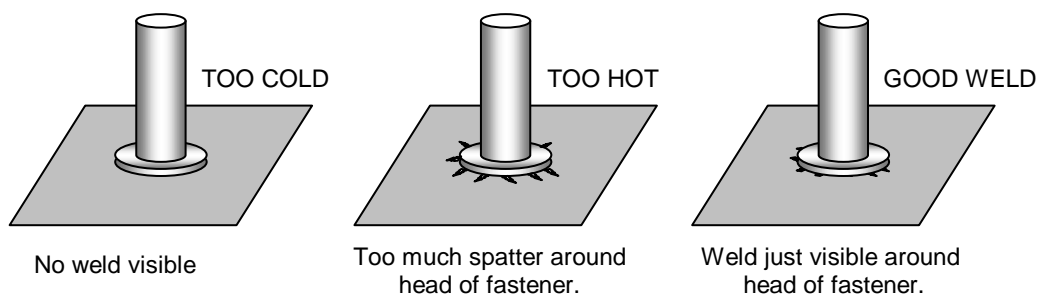
### WELD GUN SETUP



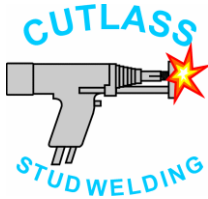
1. The weld chuck should be adjusted as shown. For longer studs, as much of the stud should be held as possible. This may require complete removal of the adjusting screw.
2. Seat weld chuck firmly in the front of weld gun and attach leg and footpiece assembly. Set leg depth so approximately 3/16" of stud/chuck protrudes beyond the footpiece.
3. Place the weld gun perpendicular to the workpiece as shown. Apply pressure to the gun so the footpiece lies firmly on the workpiece.
4. Hold gun steady and pull trigger when stud is in required position. After weld cycle withdraw gun from stud. Pull gun straight back so weld chuck is not damaged.
5. Inspect weld and adjust setting as required.

### TEST WELDING

Before making your first weld, check the ground clamp. It is essential that no power be lost through a poor connection. The surface under the ground should be free from oil, scale, grease and rust. The test should be on a piece of scrap material similar to the material to be used during actual production.



**NOTE: IF WELD APPEARS COLD, DO NOT PLACE GUN ON WELDED STUD AND TRIGGER AGAIN. DAMAGE TO WELD CHUCK OR CONTROLLER WILL OCCUR.**



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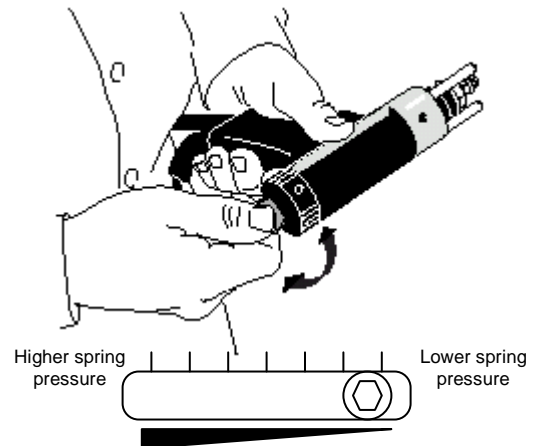
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The electrical and mechanical parameters of the weld are set using the voltage control knob on the front of the welder and by adjusting the spring pressure of the welding gun.

### ADJUSTING THE PKM-1B WELD GUN

The welding time depends on the speed of the stud as it moves forward into the molten welding pool. The speed is adjusted directly by changing the spring pressure. The greater the spring pressure, the shorter the welding time.

To adjust, use a coin or broad bladed screw driver to turn the adjusting knob in the center of the back cap: Clockwise to increase spring pressure and Counterclockwise to reduce spring pressure. Set the spring pressure by observing the pointer in the window on the side of the weld gun. Re-tighten the small screw in the back cap.

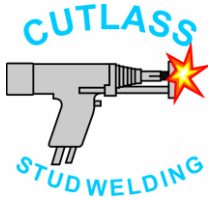


Exploded view of window scale on side of weld gun.

The gun is shipped from the factory in the 1-2 position. The suggested spring settings are shown below...

WORKPIECE MATERIAL	STUD MATERIAL AND DIAMETER														
	MILD STEEL					STAINLESS STEEL					ALUMINUM ALLOY				
	#6	#8	#10	1/4	5/16	#6	#8	#10	1/4	5/16	#6	#8	#10	1/4	5/16
STEEL	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	-	-	-	-	-
STEEL GALVANIZED	1-2	1-2	1-2	1-2	-	1-2	1-2	1-2	1-2	1-2	-	-	-	-	-
STAINLESS STEEL	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	-	-	-	-	-
ALUMINUM ALLOY	-	-	-	-	-	-	-	-	-	-	4-6*	4-6*	4-6*	4-6*	-

\* Aluminum studs can be welded using the contact method with limitations



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### VOLTAGE CONTROL

A variable voltage control knob is mounted on the front panel of the unit. Before turning the power switch on, the voltage knob should be turned to the fully counter-clockwise position.

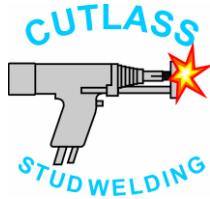
When the equipment is completely connected, press the green "ON" button...the unit will turn on and the white power light will glow indicating power is supplied to the machine. Slowly turn the voltage control knob clockwise to increase power and set according to the recommendations below. The settings shown below are to be used as a guide only, and we recommend test welding on scrap material to ascertain optimum weld parameters for a specific application.

To adjust the voltage down it is necessary to turn the unit off for several seconds, turn the voltage control knob counter-clockwise, turn the power on again, and increase voltage to the required setting.

STUD MATERIAL	STUD SIZE	VOLTAGE SETTING	STUD POLARITY
MILD STEEL & STAINLESS STEEL	#4, 12Ga. #6, 10Ga., (3mm) #8 (4mm) #10 (5mm) 1/4 (6mm) 5/16 (8mm)	95-110 120-130 130-145 130-145 145-160 175-190	NEGATIVE
ALUMINUM & BRASS	#4, 12Ga. #6, 10Ga., (3mm) #8 (4mm) #10 (5mm) 1/4 (6mm)	100-115 125-140 155-170 155-170 *****	POSITIVE

\*\*The settings shown above are for standard Flanged welding studs. For Mini-Flanged or Non-Flanged Studs, lower settings will be required.





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### CAUSES OF POOR OR ERRATIC WELDS

1. Loose weld chuck – does not grip stud tightly.
2. Faulty or loose ground connections.
3. Dirty base material (oil, grease, rust etc).
4. Voltage too high or too low.
5. Broken or loose cables.
6. Gun binding – dirt in weld gun preventing free movement.
7. Leg and/or footpiece incorrectly set.
8. Use of center punch.
9. Weld cables coiled.

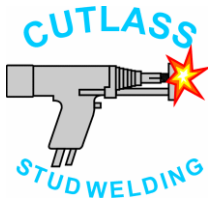
NOTE: The weld cables and ground cables should be laid out in a straight line or large loops. Poor weld quality may result if welding cables are closely coiled.

### WELDER MAINTENANCE

Your Cutlass welder is designed for long service with minimum care. Ordinary common sense maintenance will keep it operating efficiently. Following are some tips on preventative maintenance:

1. Treat the welding and control cables with respect. Avoid sharp bends and kinks which may break the cables. Do not use the cables as a "tow-line" to move controller. Avoid damaging or straining the cables where they enter the gun or connectors.
2. Ensure unit vents are not obstructed, and that the unit is not covered while in use. Avoid overheating.
3. Keep the welding gun free of dust and dirt. Periodically clean weld splatter from front of gun.
4. The welder should not be placed in close proximity to any MIG or TIG welders, nor should the Classic share a common power supply with MIG or TIG equipment. Similarly the main ground connection from the Classic to the workpiece should not be linked in any way to MIG or TIG grounds.

**FAILURE TO COMPLY COULD INVALIDATE YOUR WARRANTY**



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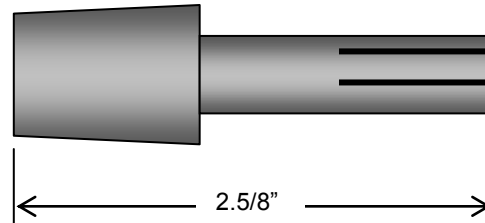
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## CLASSIC MANUAL

### STANDARD ACCESSORIES

#### INCH

STUD SIZE	PART NUMBER
2-56UNC	015-509
12GA, 4-40UNC	602-467A
1/8	015-511
10GA, 6-32UNC	602-451A
8-32UNC	602-452A
#10, 3/16	605-101A
0.217	605-112
1/4	605-104A
5/16	605-105A
3/8	605-106A



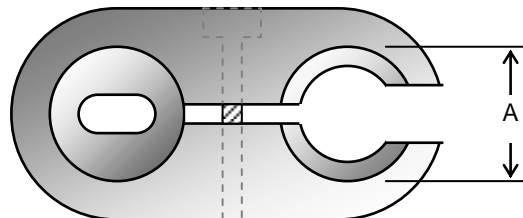
#### METRIC

STUD SIZE	PART NUMBER
3MM	605-111
4MM	602-423A
5MM	605-102
6MM	605-103
8MM	605-105A
10MM	605-106

### STANDARD ADJUSTABLE WELD CHUCKS

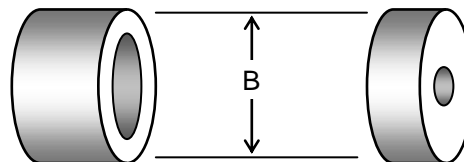
- LONGER LENGTHS AVAILABLE ON REQUEST

### CD FOOTPIECE



SIZE	'A' DIA.	PART NO.
SMALL	7/8"	023-252
MEDIUM	1.160"	023-252M

DESCRIPTION	PART NO.
JIG LOCATING BUSH B = 7/8"	650-691
NAIL GUIDE B = 7/8"	601-350
CHUCK DRIFT	000-374
SPARK SHIELD, SML. C = 1.16", D = 3/16"	999-013
SPARK SHIELD, LGE. C = 1.16", D = 1/2"	999-018

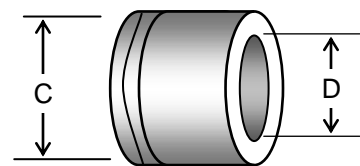


### NAIL GUIDE

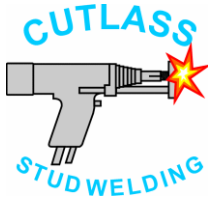
### JIG LOCATING BUSH



### CHUCK DRIFT



### SPARK SHIELD



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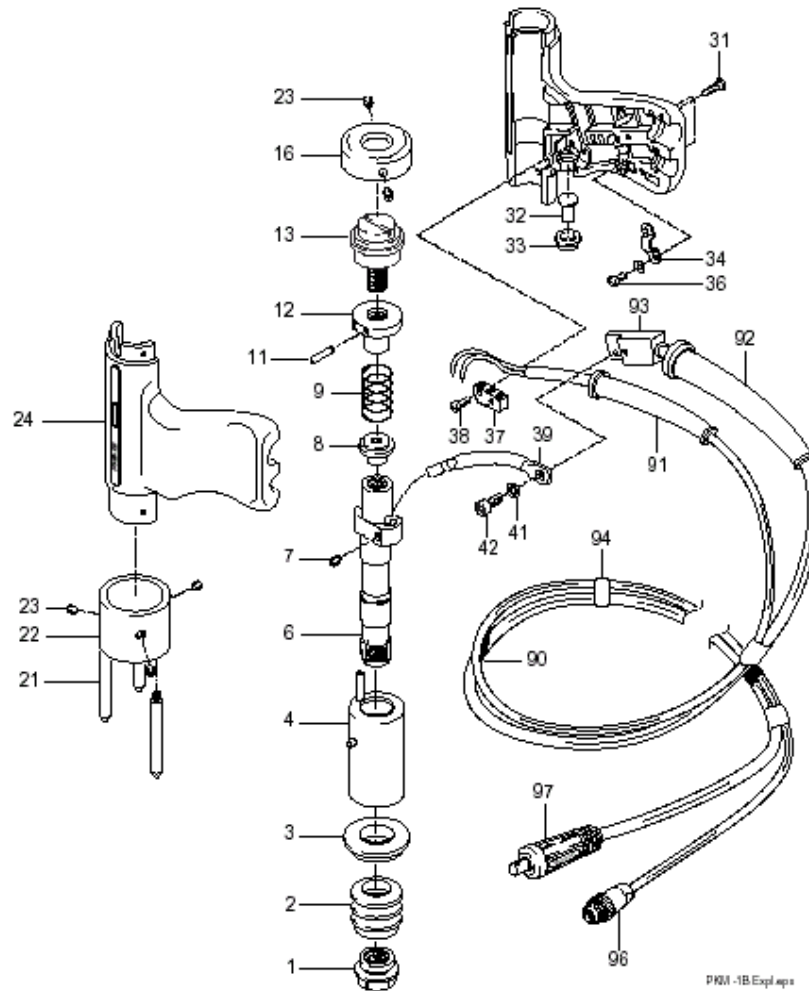
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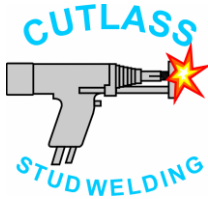
## CLASSIC MANUAL

### PKM-1B GUN PARTS



### ALTERNATE PARTS...

ITEM	PART NO.	DESCRIPTION	QTY
1A	80-40-1741	B COLLET ADAPTOR	1
22A	80-40-1739	SINGLE LEG FACEPLATE	1
22B	80-40-1113	TWIN LEG FACEPLATE	1



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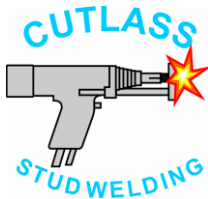
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### PKM-1B GUN PARTS

ITEM	PART NO.	DESCRIPTION	QTY
	90-10-2126	COMPLETE WELD GUN	1
1	80-40-1738	TAPER CHUCK ADAPTOR	1
2	80-40-1097	BELLOWS	1
3	80-40-1023	INSULATING BUSH	1
4	80-40-1020	GUIDE BUSH	1
6	80-40-1740	SPINDLE	1
7	80-15-1011	M5 X 8 SOC. HD. SCREW	1
8	80-40-1027	SPRING PLATE	1
9	80-40-1031	MAIN SPRING	1
11	80-15-1022	M3 X 12 SOC. HD. SCREW	1
12	80-40-1015	ADJUSTING NUT	1
13	80-40-1603	SPRING ADJUSTING SCREW	1
16	80-40-1028	BACK CAP	1
21	80-40-1012	TRIPOD LEG	3
22	80-40-1013	TRIPOD FACEPLATE	1
23	80-15-1010	M5 X 4 SOC. HD. SCREW	1
24	80-40-1602	GUN BODY (TOP & BOTTOM)	1
31	80-15-1013	HANDLE SCREW	3
32	80-40-1016	TRIGGER BUTTON	1
33	80-40-1017	TRIGGER SLEEVE	1
34	80-10-1015	CABLE CLIP	1
36	80-15-1061	M2.5 X 8 SCREW	2
37	80-50-1013	TRIGGER SWITCH	1
38	80-15-1015	M2.0 X 10	2
39	80-72-1012	INTERNAL WELD CABLE	1
41	80-15-1016	M4 LOCK WASHER	1
42	80-15-1012	M4 X 8 SOC. HD. CAP SCREW 1	1
90	80-72-1039	WELD/CONTROL CABLE (16FT.)	1
91	80-10-1011	CONTROL CABLE SLEEVE	1
92	80-10-1013	WELD CABLE SLEEVE	1
93	80-35-1134	CABLE CONNECTING BLOCK	1
94	600-627	CABLE SLEEVE	1
96	000-594P	CONTROL PLUG C/M	1
97	000-568	WELD PLUG C/M	1



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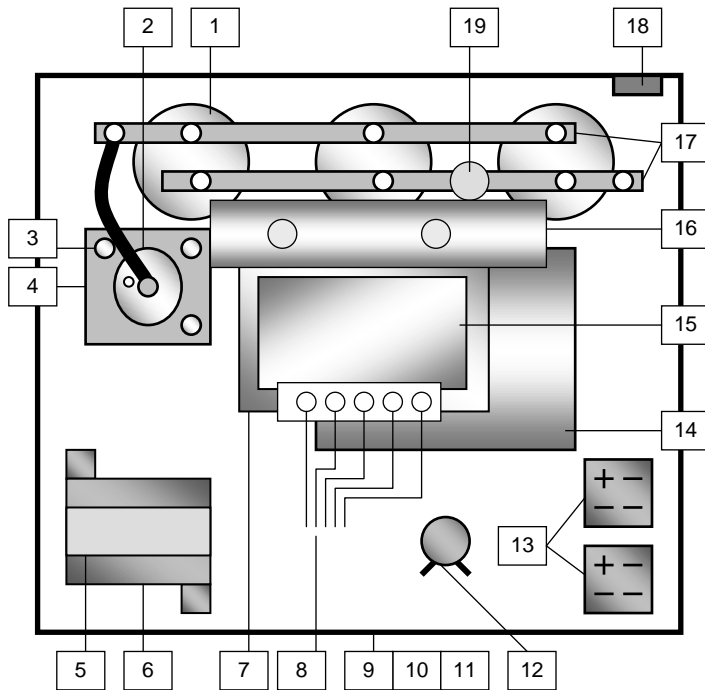
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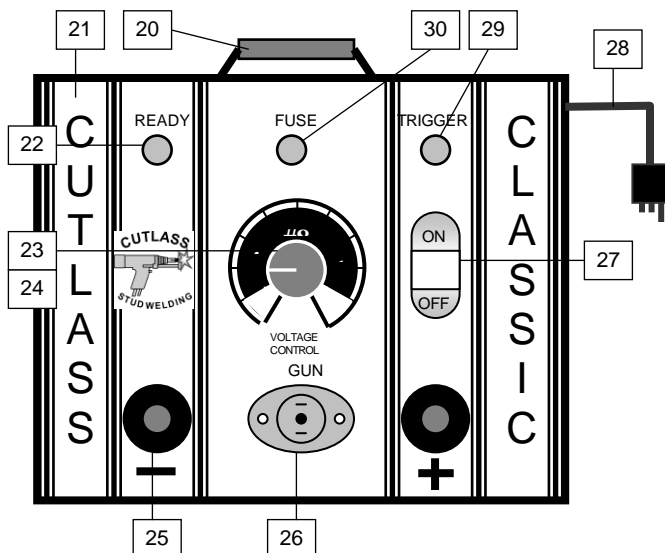
### CLASSIC PARTS LIST

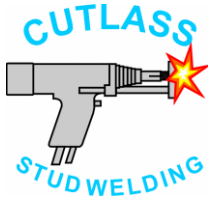
CHASSIS, TOP VIEW



ITEM	DESCRIPTION	PART NO.
1	CAPACITOR (X3)	602-2299
2	WELD SCR	602-212
3	STAND OFF (X3)	602-125
4	HEAT SINK PLATE	602-124
5	RELAY 12VDC	602-249
6	RELAY BASE	602-250
7	PCB MOUNTING BOARD	999-124
8	WIRING HARNESS	999-117
9	OUTER COVER	602-1043
10	CHASSIS	602-1042C
11	FRONT PANEL	602-1025D
12	DISCHARGE RESISTOR	002-984
13	BRIDGE RECTIFIER (X2)	019-592
14	MAIN TRANSFORMER	602-2304
15	PCB	602-2305
16	CAPACITOR HOLD DOWN	018-863
17	BUSS BAR STD (X2)	018-838
18	STRAIN RELIEF	018-700
19	CHARGE SCR	003-461
20	CARRYING HANDLE	602-1163
21	FACIA PANEL	999-116
22	READY LIGHT	602-1195
23	POTENTIOMETER	001-031
24	POT. KNOB	600-657
25	WELD SOCKET P/M (X2)	000-577
26	CONTROL SOCKET	000-598P
27	ON/OFF SWITCH	999-118
28	POWER CORD & PLUG	999-090
29	TRIGGER LIGHT	602-1196
30	CIRCUIT BREAKER 10A	602-1094A

FRONT PANEL, FRONT VIEW





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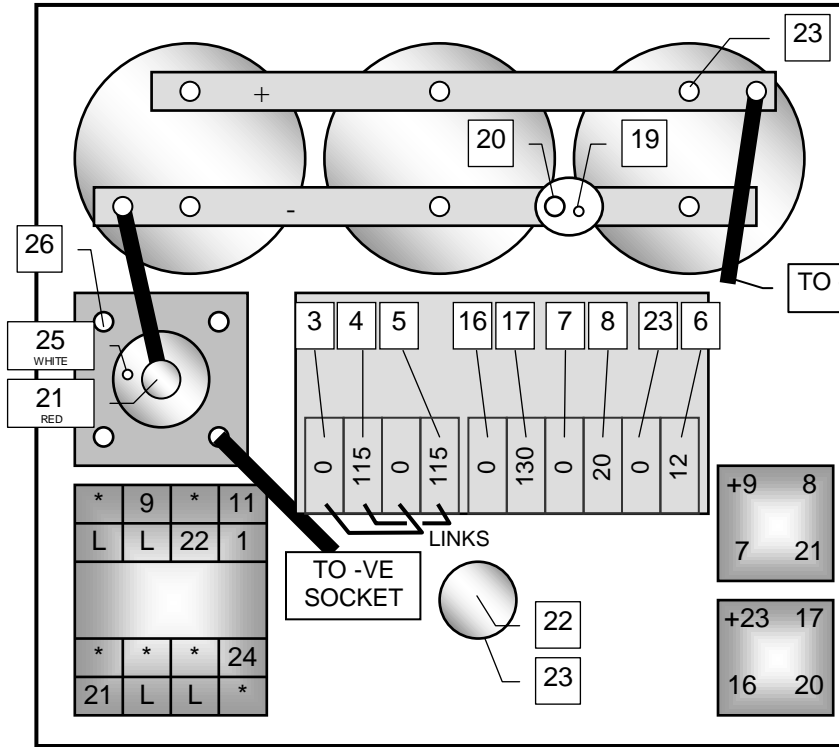
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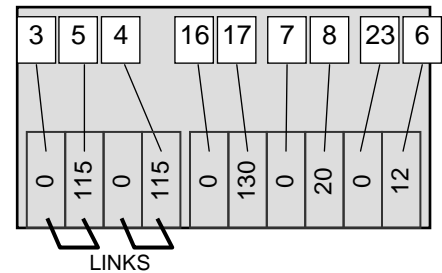
#### CLASSIC WIRING DIAGRAM

CHASSIS, TOP VIEW



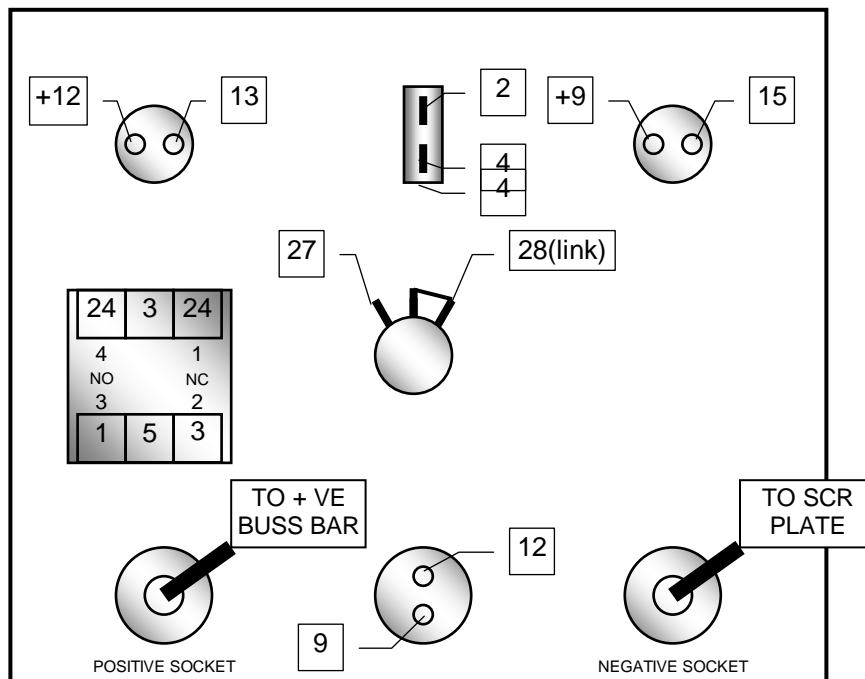
Shown tapped for 120 volt operation.

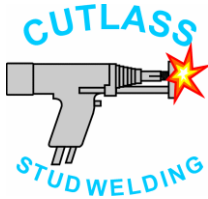
To tap for 220/240 volt operation re-tap transformer as shown below.



PCB adjustment: to set maximum charge voltage turn potentiometer ....clockwise to decrease  
 ....counter-clockwise to increase.

FRONT PANEL, REAR VIEW





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### CLASSIC MANUAL

#### CLASSIC SCHEMATIC DIAGRAM

