

VERTICAL SHUNT WELDER  
WESTERN ARCTRONICS MODEL WS230 VW  
GENERAL INFORMATION AND PARTS LIST (#17800-WA)

This arc welder is a precision engineered, quality manufactured machine designed for long life and dependable service. It is an easy-to-use practical welder for general repair--especially designed for filling station and garage work--light manufacturing--farm repair--body and sheet metal work.

The unit has two output welding ranges with infinite amperage settings within each range. The indicator arm (visible through slot in front panel) indicates at a glance the amperage you have selected.

SPECIFICATIONS

Transformer - Heavy Duty - Limited Input		Max. Open Circuit Voltage	80
Primary Voltage	230	Welding Range Amps-Lo 20-175 Hi 25-230	
Primary Input	50	Secondary Load Volts	25
Phase	Single	Temp. Rise	105° C
Frequency	60 Hz	Duty Cycle	20-100 %

ACCESSORIES ARE OPTIONAL

Electrode Holder and Cable - The electrode holder is a fully insulated heavy duty holder allowing a full range of welding rod diameters and has four positions to hold welding rod. The cable is extra flexible fine strand welding cable. The plug is machined brass with a molded rubber integral insulation and grip.

Ground Clamp and Cable - The ground clamp is heavy duty and will clamp to a wide variety of shapes and sizes to be welded. Cable quality and plug-in the same as electrode cable.

Helmet - The helmet is molded rugged fiberglass with semi-flexible headband fully adjustable for comfort fit. Its main features besides the rugged quality are its light weight and snug size. It is especially advantageous to repair around machines, under cars and trucks and other confining repair jobs. Comes complete with Government approved welding arc filter lens and special spatter resistant clear cover lens.

Electric Arc Torch - A very useful accessory for brazing, heavy soldering, preheating, bending, paint and scale removing. Plugs into welding stages and gives up to 9000° F flame. Easy to use.

Welding Rod - Flux - Brazing Rod - Hardsurfacing Materials - Extension Cables - Many other Welding Supplies and Equipment.

INSTALLATION

Location - The location you pick for your arc welder is quite important and certain factors should be considered. Among them are the following:

1. Place your welder in an area that is free of any volatile liquids, excessive dust, or any other easily flammable items that sparks from welding may ignite.
2. An open area with adequate floor space is important as many things to be welded need to be laid out on the floor or on a large bench for easier operation.
3. Location of your welder should be free from damp or wet floor or ground.
4. If it is intended to weld on large equipment that cannot be brought inside the building, it is best to locate the welder near the door or provide a power receptacle near the door so that your welder can be used both outside and inside.

5. Your welder should be located where there is adequate power supply. The unit requires a 45 amp fuse or breaker. A power supply wire size for the welder only over a short distance can be a size #8. If longer distances are required, a #6 wire is recommended to eliminate any excessive voltage drop. If other electrical equipment is to be operated at the same time (you are welding, increasingly larger wire size will be necessary and can be figured by your electrician.

N O T E

DO NOT connect this welder to a 3-phase supply as a 3-phase machine. If no 230 volt single phase power is available, the welder can be used by connecting to only two of the 3-phase connections. However, care must be taken that the third ground safety wire is properly connected to a separate approved ground.

### OPERATING INSTRUCTIONS

WELDING - Good strong welds can be easily attained by following these easy instructions:

1. Prepare the joint to be welded making certain that the metal is clean of all foreign material.
2. Select the correct rod type and size to properly weld the joint.
3. Connect the electrode holder and ground clamp cables to the proper output jacks, turn the crank so that the output amperage is matched to the amperage requirements of the rod used.
4. Turn the welder on and proceed to weld using accepted welding procedures.

BRAZING - With the carbon arc torch it is very easy to do. You simply use the regular amperage plugs and grounds with the torch. The torch is designed to use 1/4", 5/16", 3/8" and 1/2" copper coated carbon rods. The most popular sizes for regular work are 5/16" and 3/8" diameters.

3/16" carbon . . . not more than 30 amps	1/4" carbon . . . not more than 50 amps
5/16" carbon . . . not more than 90 amps	3/8" carbon . . . not more than 120 amps

MAINTENANCE - The welder requires little maintenance other than normal care. Keep the welder case clean and waxed to preserve the original finish. The electrode holder, ground clamp, and plugs SHOULD BE KEPT CLEAN to give BEST PERFORMANCE!

Caution: Do not force the crank at the end of the welding ranges; observe the indicator arm through slot on front panel. Some increase in transformer hum may be noted at some amperage settings more than others. This is normal, however, wear on the shunt locks or guides may cause hum to become excessive. This can be corrected by unplugging supply cable, removing case wrap-around, locate shunt lock pressure plates on side of transformer, tighten each nut equally (not over 1/4 turn at a time). Under each nut is a special "spring" washer--this washer should never be tightened completely flat. Tension can be checked by turning crank to determine if it cranks too hard. The locks should not be tightened beyond a comfortable turning of the crank with the fingers. A paste-type silicone grease may be added to the 45° slope of the shunt guides and to the shunt lead screw.

Before each operation of the welder check to see if the fan is turning properly after turning welder switch on. The fan has sealed lubricated bearings; however, dirt may accumulate on the fan blades or armature causing decreased air flow or fan stoppage. THE WELDER MUST NOT BE OPERATED IF FAN IS NOT RUNNING PROPERLY.

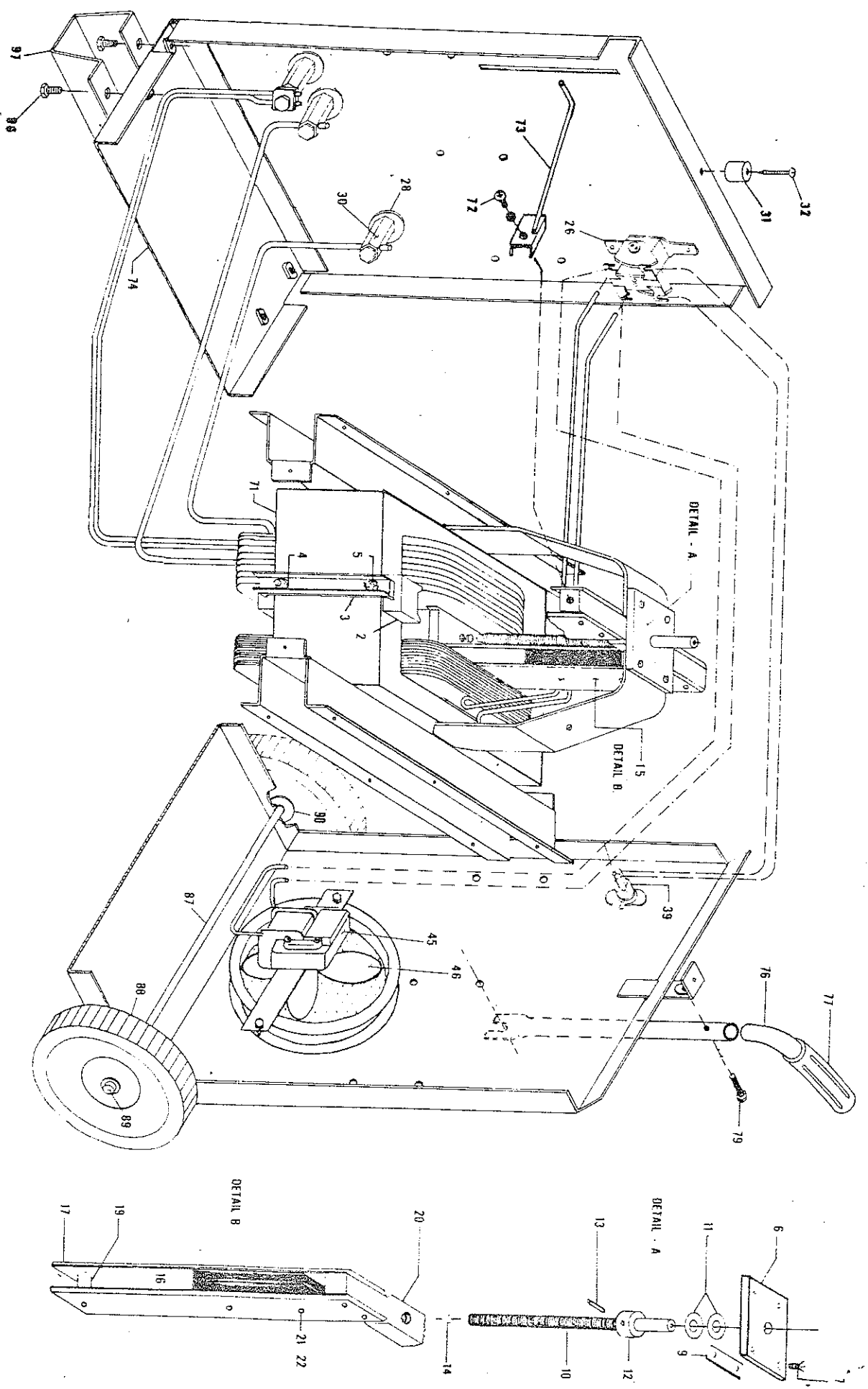
The fan can easily be removed for cleaning or checking by unplugging supply cord. Remove case wrap-around, loosen screws on fan motor straps allowing motor and fan assembly to be removed from shroud. The blade and motor can be observed and cleaned at this point. If necessary to remove completely, the leads can be disconnected at the switch. Apply 230 volts AC to fan on bench checking.

PARTS LIST # 17800 WA  
VERTICAL SHUNTWELDER  
WESTERN ARCTRONICS MODEL WS230 VW

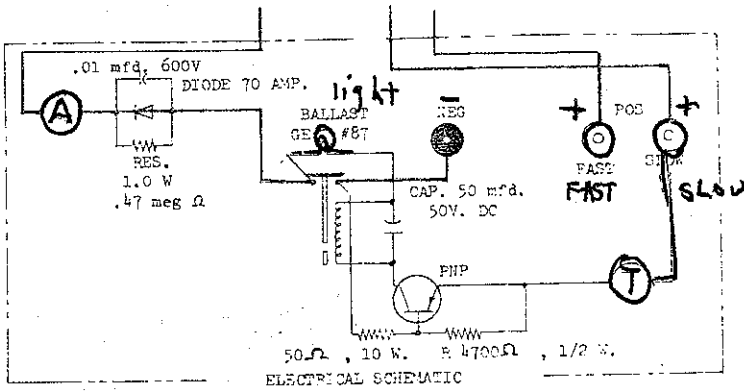
ITEM NO.	NAME	NUMBER REQUIRED	PARTS NO.
71	X-former Ass'y (w/Windings & Mtg. Brackets)	1	17750
02	Shuntlock	4	12733
03	Pressure Plate for Shuntlocks	2	13430
04	Spring Washer	4	134-5321
05	Nut, Self-Locking	4	135-4332
06	Front Plate	1	12726
07	Screws, Pan Hd. Ph. 1/4-20 x 3/4" lg.	4	131-62502
09	Speed-Nut, 1/4-20 (Dual)	2	135-63313
10	Lead Screw, Style "B"	1	12725-B
11	Washer Thrust (Nylon)	2	134-7762
12	Bushing	1	12744
13	Drive Pin (1/8 dia.)	1	136-3815
14	Thrust Disk	1	12729
15	Shunt Ass'y	1	12720
16	Shunt Laminations 7/8" stack, 4.5 long	a.r.	127-4043-A
17	Shunt Plates	4	12721
19	Plastic Spacer	2	12723
20	Crossbar (w/ACME NUT)	1	12727
21	Rivet	10	136-3151
22	Insulator	4	12722
72	Screw (Ind. Arm) 10-16 x 3/4 (Type 25)	1	132-2665
73	Indicator Arm	1	13519
26	Switch, Toggle, DP. ST.	1	151-7329
27	Insulator, Molded, Green (Not Shown)	1	57503-0
	Insulator, Molded, Black	2	57501-0
28	Insulator Washer (1/8 thick)	3	57404-0
30	Jack	3	57500-0
45	Fan Motor Ass'y (230 V, 60 Hz)	1	14430
46	Fan Blade, 6-5/8" dia. (Molded Nylon)	1	151-5011
74	Case Ass'y, Front - Bottom - Rear (w/Handle Tab)	1	17810-WA
75	Wrap-Around - Top & Sides (Not Shown)	1	17813-WA
39	Lead-in-Cordset	1	173-0807
40	Crank (Not Shown)	1	13475
41	Washer, Lock (Dished Type); to attach crank (Not Shown)	1	134-9324
42	Screw, Mach., 1/4-20 x 3/8; to attach crank (Not Shown)	1	131-70501
76	Handle Bar	1	13516
77	Grip, (For handle Bar)	1	148-2612
79	Screw, Mach. Oval Hd., 1/4-20 x 1	1	131-31505
87	Axle	1	13515
88	Wheel ( 5 x 1 )	2	148-8405
89	Pushnut	2	135-9702
90	Washer, Flat (Fibre)	2	134-9850
96	Screw, Hwhd., 1/4-20 x 5/8	4	131-70502
97	Leg, Front	1	17814

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PARTS PICTORIAL  
VERTICAL SHUNT WELDER



17800



This Rectifier Replacement Kit fits a wide variety of Models.

Replacement instructions are as follows:

- 1.) Disconnect supply cord from power outlet.
- 2.) Remove top of welder. Familiarize yourself with the pictures on the other side, and determine which mounting style is applicable.
- 3.) If your machine was originally equipped with a selenium rectifier:
  - a.) Remove connector strap from ammeter to selenium rectifier.
  - b.) Remove connector strap from rectifier to solenoid and discard these connector straps and the defective rectifier.
  - c.) Mount the furnished adaptor bracket to the existing bracket using a 1/4" x 5/8" bolt, washer and nut (Fig. 1) if so needed on some versions, otherwise, discard adaptor bracket. Mount RECTIFIER-HEATSINK-PLATE with 1/4" x 1" long screws insulated as shown (Fig. 2) with proper insulating hardware; item 8, 9, 10 and 11.

CAUTION: The heatsink plate MUST be insulated from the bracket as shown in Fig. 2.

- 4.) If your machine was originally equipped with a silicon diode rectifier, this kit fits either style of mounting (vertical and horizontal).
  - a.) Remove defective diodes w/ heatsink plate and discard.
  - b.) Mount pre-assembled rectifier-heatsink-plate (w/ diode, etc.) to the 1/4-20 studs using insulated hardware, item 8, 9, 10, and 11.
- 5.) Connect cable/strap from HEATSINK POSITIVE POLE to AMMETER as shown.

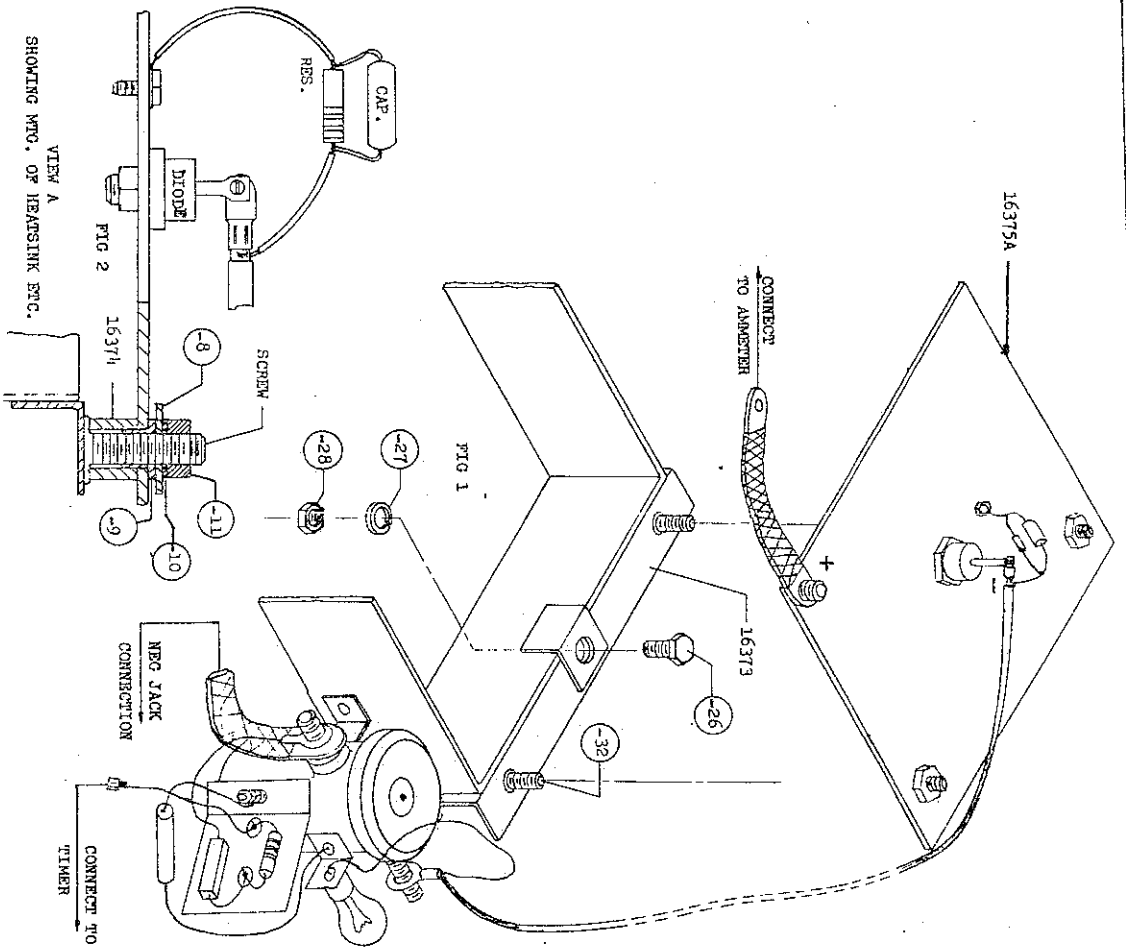
CAUTION: The heatsink plate MUST be insulated from the bracket as shown in Fig. 2.

- 6.) Connect cable from heatsink POS. pole to ammeter, as shown.
- 7.) Connect cable from DIODE NEGATIVE POLE to side stud on solenoid (where connector cable was removed in step 3 b. or 4 a. (Fig. 1).
- 8.) Remount welder top.

NO.	REQ'D	PART NAME	SIZE	MATERIAL
1	1	ADAPTOR BRACKET	1/4-20 x 1"	
2	1	HEATSINK PLATE		
3	1	RECTIFIER		
4	1	DIODE	1/2"	
5	1	DIODE	1/2"	
6	1	DIODE	1/2"	
7	1	DIODE	1/2"	
8	1	RECTIFIER-HEATSINK-PLATE	1/4-20 x 5/8	ST. CR.
9	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
10	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
11	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
12	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
13	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
14	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
15	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
16	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
17	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
18	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
19	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
20	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
21	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
22	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
23	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
24	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
25	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
26	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
27	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
28	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
29	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
30	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
31	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
32	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
33	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
34	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
35	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
36	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
37	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
38	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
39	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
40	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
41	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
42	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
43	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
44	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
45	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
46	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
47	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
48	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
49	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.
50	1	RECTIFIER-HEATSINK-PLATE	1/4-20	ST. CR.

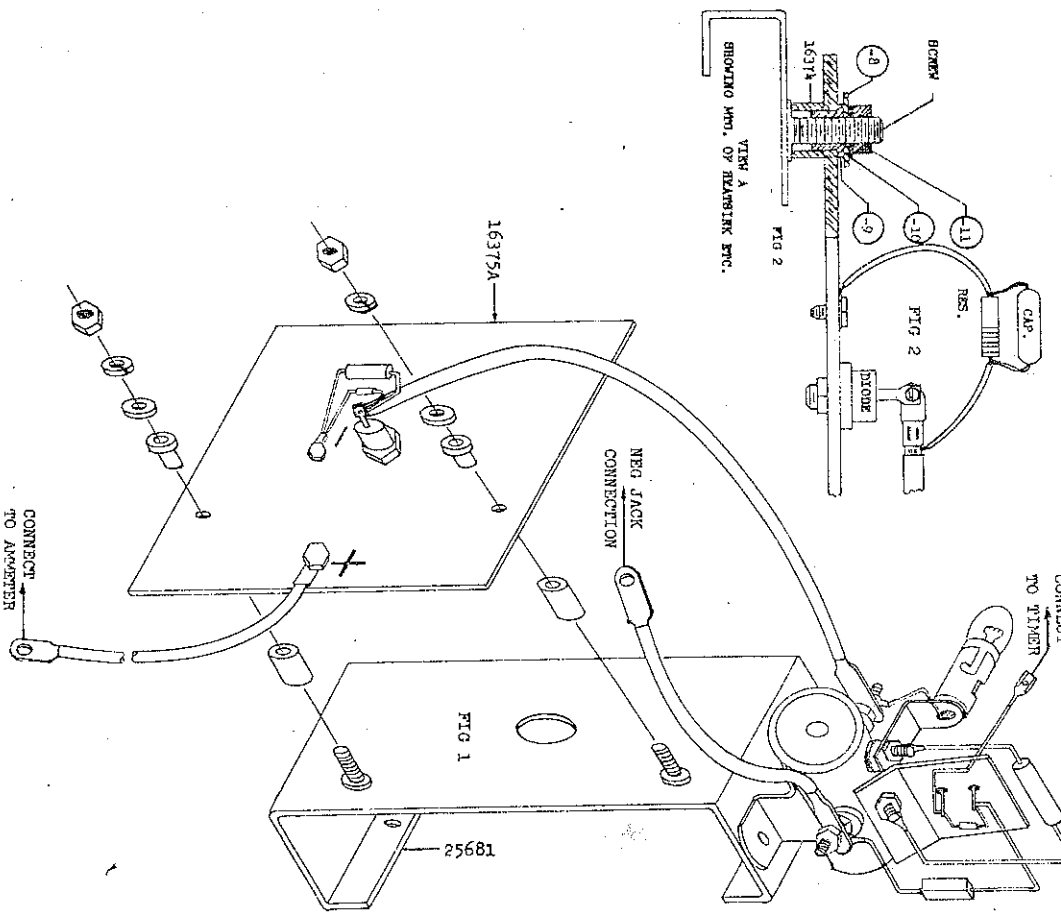
NO. 101	REQ'D	PART NAME	SIZE	MATERIAL
RECTIFIER REPLACEMENT KIT FI MODELS				
F 230 BT. F 240 BT. F 260 BT. F 275 BT.				
DRAWN	DATE	SCALE	TORNEY MANUFACTURING CO.	
DATE	SCALE	DIV. OF TORNEY INDUSTRIES, INC.		DWG NO.
SCALE	NONE		FORT COLLINS, COLORADO	
TOL	XX .032	XXX .015	16388	

CAT. NO. 58560-0



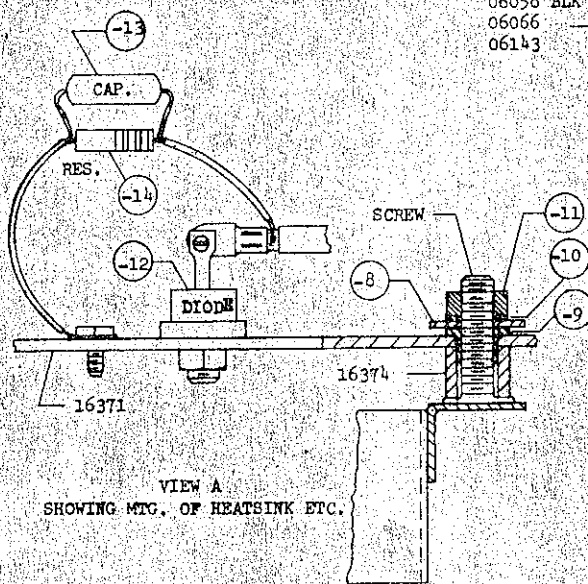
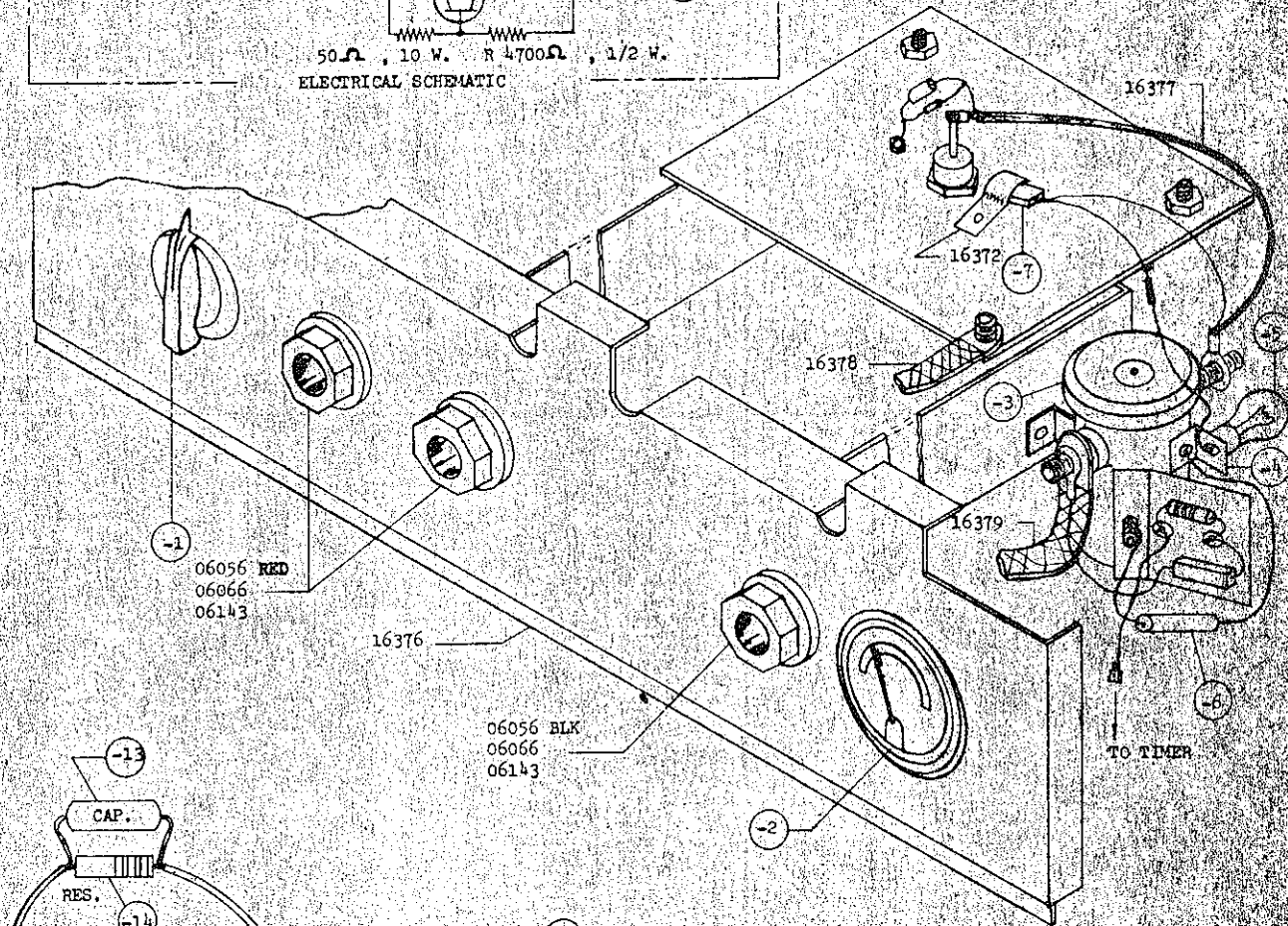
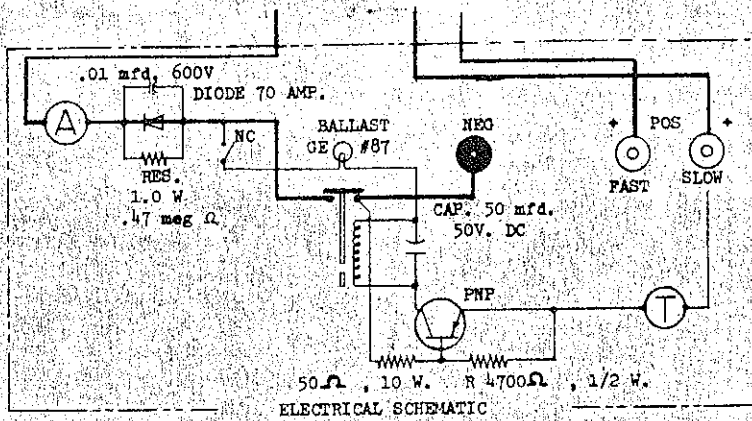
HORIZONTAL RECTIFIER MOUNTING ON  
 MODEL F 230 BT, F 240 BT, F 275 BT & F 260 BT

VIEW A  
 SHOWING MFG. OF HEATSINK ETC.



VERTICAL RECTIFIER MOUNTING ON  
 MODEL F 260 BT

VIEW A  
 SHOWING MFG. OF HEATSINK ETC.



16377	1	WIRE ASS'Y & DIODE	SOLENOID
-14	1	RESISTOR	1.0 WATT, .47 meg. ohm
-13	1	CAP. CERAMIC	.01 mfd, 600V, DC
-12	1	DIODE	70 AMP
-11	2	NUT, HEX.	1/4 - 20
-10	2	LOCK-WASHER, TB.	17/4"
-9	2	UPSET-WASHER (SMALL)	WILCOX
-8	2	WASHER, FLAT	FIBRE
16374	2	INSULATOR BUSHING	FIBRE
16371	1	HEATSINK	
16372	1	MTG. CLIP	
-7	1	HEAT SENSING DEVICE	
16378	1	CONNECTOR STRAP	(AMMETER - HEATSINK) LONG
16379	1	CONNECTOR STRAP	(SOLENOID - NEG, JACK)
-6	1	CAPACITOR	100 mfd, 50V, DC
-5	1	BALLAST BULB	GE 87
-4	1	LAMPHOLDER	S.C. B.T.
	1	TRANSISTOR SUB-ASS'Y	
-3	1	SOLENOID	6 VOLT DC
-2	1	AMMETER	0 - 50 AMP, DC
16375-1	1	TIMER w. KNOB	3 Hrs. w. HOLD.
06143	3	JACK	CHARGER TYPE
06066	3	INSULATOR WASHERS	
06056	2	BUTTON POS.	RED
06056	1	BUTTON, NEG.	BLACK
16376	1	PANEL SUB-ASS'Y.	

ASSY. BATTERY CHARGER SECTION 77

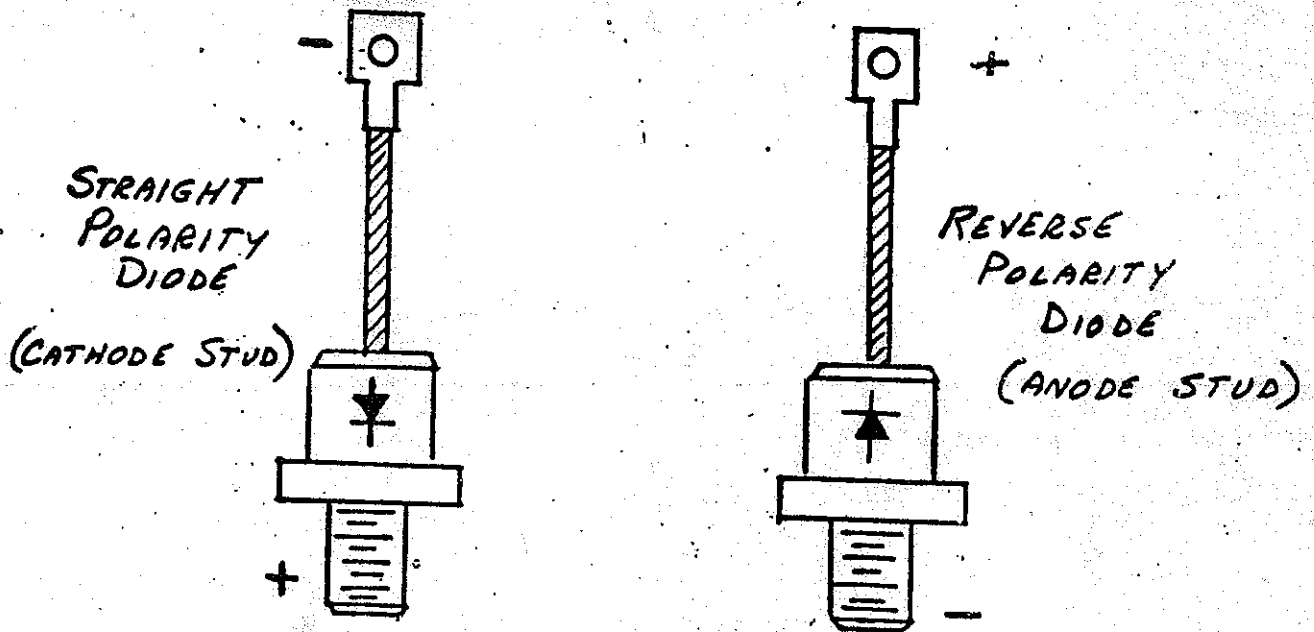
R. S. [Signature]

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## PROCEDURE FOR CHECKING DIODES

Inspect the diode to determine if it is of the "straight polarity" or "reverse polarity" type. (Refer to the following sketches for typical marking of diode polarity. It is essential that a replacement diode be of the same polarity as the one removed.



Usually when a diode fails, it becomes a short circuit. A simple diode test uses the resistance circuits of a multimeter; the diode should show better conductivity in one direction than in the other.

### TEST AS FOLLOWS:

- A: Set the multimeter on the low resistance range.
- B: Connect one lead to the stud and one lead to the pigtail. Read the Resistance.
- C: Reverse the leads and read the resistance. It should show a higher resistance in the "blocking" direction than in the "conducting" direction. If it shows a very low, resistance (or zero resistance) in both directions, the diode is shorted. If it does not show continuity in either direction, the diode is open.

As stated above, it is essential that a replacement diode must be of the same size, type, and polarity as the one it replaces.



FOR USE WITH <b>Forney</b> MODEL F-230 WELDER		
6 VOLT BATTERIES		
CHARGE RATE	PLUG CHARGER CABLES INTO FOLLOWING WELDER TAPS	CHARGING AMPS.
LOW	140 ⊙ 155 and 165 ⊙ 205	18 amp.
HIGH	115 ⊙ 125 and 165 ⊙ 205	45 amp.
12 VOLT BATTERIES		
LOW	25 ⊙ 45 and 165 ⊙ 205	15 amp.
HIGH	70 ⊙ 90 and 165 ⊙ 205	45 amp.

0-10-230B

FOR USE WITH <b>Forney</b> MODEL F-230 WELDER		
6 VOLT BATTERIES		
CHARGE RATE	PLUG CHARGER CABLES INTO FOLLOWING WELDER TAPS	CHARGING AMPS.
LOW	25 ⊙ 45 and 140 ⊙ 155	15 amp.
HIGH	115 ⊙ 125 and 140 ⊙ 155	40 amp.
12 VOLT BATTERIES		
LOW	25 ⊙ 45 and 140 ⊙ 155	10 amp.
HIGH	115 ⊙ 125 and 165 ⊙ 205	30 amp.

0-10-230A