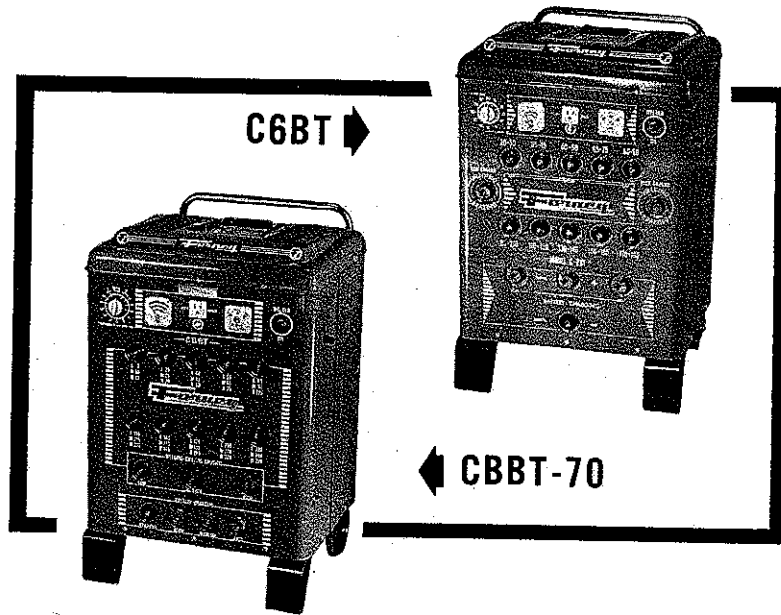


Forney

**MODELS C6BT and CBBT-70
WELDER-CHARGER**

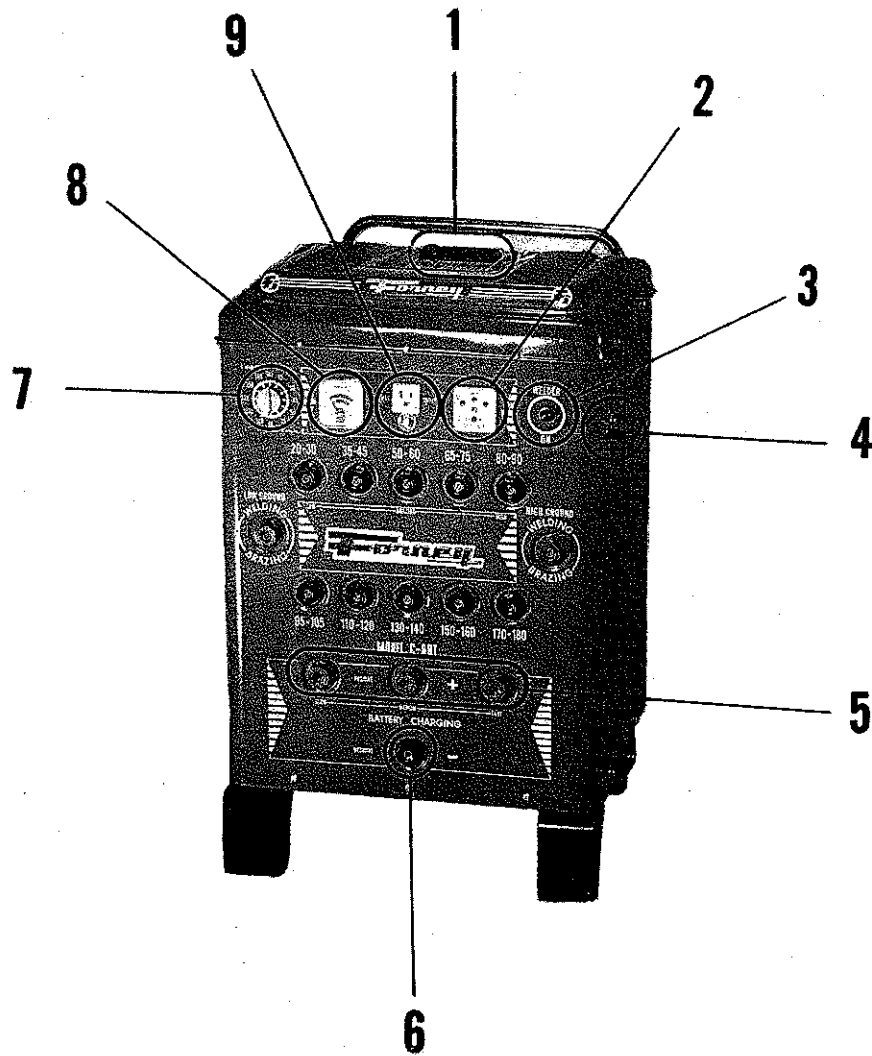


**SUPPLEMENTARY
INSTRUCTION MANUAL**

FORNEY MANUFACTURING COMPANY
Division of Forney Industries, Inc.
Fort Collins, Colorado

Features of the FORNEY MODEL C6BT WELDER-CHARGER

(Same on Model CBBT-70 except position
of Battery Charging Jacks.)



1. Electrode and Brazing Carbon Size Gage (part #56701) and Amperage Chart. Sized holes in a special gage indicate quickly the size of any welding electrode or brazing carbon plus a handy chart to show the proper amperage to use for each size. The welding electrode chart illustrates the metal thickness and the amperage setting to use for a particular size. No matter what the metal thickness, you can always tell from a glance at the chart which electrode size and what amperage setting will do the job. This Forney Simplified System takes the guesswork out of welding. The maximum amperage to use with each size brazing carbon is shown above the gage holes used to measure the carbon diameter.
2. Soldering Outlet Receptacle (part #59013). The LO, MED, and HI soldering output heats are combined with a common ground in this soldering outlet to give a quick hookup of the soldering iron attachment Model 350 (part #59100). No hunting for the proper amperage jacks, these soldering heat stages are from special soldering circuits to give the exact heats for all soldering jobs.
3. Welder ON Indicating Light (part #59306). A light to show that the main welder switch is ON and the operator may proceed with any welding, battery charging (timer must also be ON), brazing, or soldering tasks. Whenever the light is ON the welder transformer is energized and ready for use.
4. Main Welder Switch (part #59304 C6BT, part #59300 CBBT-70). This main welder switch acts as a master switch for the welder-charger. When it is turned ON the indicating light will be on. When the main switch is turned OFF all accessories will be shut OFF.
5. Battery Charging Positive Jacks (part #57505). These red buttoned SLOW, MEDIUM, and FAST positive battery charging jacks are specially designed to accept only the battery charging cable plug. These plugs and jacks are so constructed to prevent any possibility of the welding current passing into the battery charging circuit.
6. Battery Charging Negative Jacks (part #57505). This black buttoned battery charging negative jack also is smaller than the welding jacks. The negative battery charging cable plugs into this jack regardless of the charging rate and battery voltage.
7. Battery Charging Timer (part #59401). This three hour timer energizes the battery charging control circuit when the main welder switch is ON. It may be set for any desired time up to 180 minutes. When the preselected time has elapsed, the timer will break the control circuit and terminate the battery charging cycle. By turning the timer backwards slightly past the top, it stays in the manual "HOLD" position.

8. Charge Rate Ammeter (part #50100). This ammeter shows the battery charging output for 6 or 12 volt charging. The scales are color coded to give at a glance indication of the battery charging output.
9. Safety 115 Volt Outlet (part #58200). Powered from a separate winding on the welder secondary, this 115 volt outlet is the new three prong grounded type. Its balanced power is entirely separated from the 230 volt input with no chance of over-voltage. The circuit breaker (part #50400) below the outlet is designed to provide overload protection for tools and other equipment plugged into the receptacle.

OPERATION OF THE MODEL C6BT AND CBBT-70

WELDING AND BRAZING

Instructions for using the units for welding and brazing may be found in the Forney Arc Welding Manual furnished with each welder. Special chapters are devoted to the various welding procedures and different metal types. Brazing techniques are covered in additional chapters of the manual.

SOLDERING

The Model 350 soldering iron attachment plugs into the soldering outlet receptacle with the main welder switch ON. The two prongs on the special plug are identical and no polarity need be observed. Consult the Forney Arc Welding Manual, Chapters 31-35, for further instructions on the use of the Forney Soldering Iron.

BATTERY CHARGING

Specific battery charging instructions using the Forney Model C6BT and CBBT-70 are contained in the chapter on Battery Charging, page 187, in the Forney Arc Welding Manual. However, since the Model C6BT and CBBT-70 contain some advanced features in their Special Battery Charging Circuit, a short description of each component part of the circuit and its function will help explain the purpose of the new features.

Battery Charging Control Circuit

This low voltage control circuit consists of two main components; a Timer (part #59401), and a Heat Sensing Switch (part #59308). The 3 hour Timer controls the length of charge. When the Timer shuts OFF it causes the relay to break the DC current going to the battery. The Timer is equipped with a HOLD feature for use when it is desired to SLOW charge batteries longer than the 3 hour period.

The Heat Sensing Switch also will cause the relay to break the DC current going to the battery if the rectifier becomes overheated. The Heat Sensing Switch is automatic in nature and it will allow the charging to resume when the rectifier plates have cooled.

Battery Charging Output Circuit

This 6-12 volt charging output circuit consists of four main components; an ammeter (part #50100), a rectifier (part #58541), a battery circuit relay (part #59312), and the battery charging output jacks in the welder front panel.

The Rectifier converts the AC current from the main transformer into DC current for battery charging. The voltage of this circuit automatically adjusts for 6, 8, or 12 volt batteries.

PROCEDURE TO CHARGE A BATTERY

1. Check battery conditions as outlined in the Forney Arc Welding Manual, page 188.
2. Connect clamps to correct polarity battery terminals and plug cables into battery charging jacks on the Welder. Red (+) Positive, Black (-) Negative.
3. Turn welder main switch. ON.
4. Set timer for desired length of charge.

ALTERNATOR POLARITY PROTECTOR RELAY

This special protective relay and control circuit prevents the possibility of a reverse polarity charge being placed on the battery of an alternator equipped vehicle. The Alternator Polarity Protector feature thus makes it possible to use the C6BT and CBBT-70 charging output on such vehicles without danger of damaging an alternator or its parts. The protective relay will not close if the charging clips are connected in reverse, if the clips are not making good contact, or if the battery is shorted or open.

If the cables are connected correctly and all instructions followed, then the relay will close when the timer is turned on and the amount of charge going into the battery will show on the ammeter.

CONDITIONS WHICH WILL KEEP RELAY FROM CLOSING

- (a) Battery cables not connected to battery.
- (b) Battery cables connected backwards (reverse polarity) at welder or battery.
- (c) Battery cables connected, but connections corroded and not allowing current to pass.
- (d) Battery completely dead or so low no spark can be obtained across the terminals.
- (e) Battery shorted between terminals, internally or externally.

(NOTE: Condition (d) and (e) may mean battery is defective and must be replaced or corrected.)

SUGGESTIONS

If the battery is in a very low or completely dead state of charge and the relay will not close because of this, momentarily jumper another battery to the one being charged so that sufficient voltage is present to close the relay.

MODEL C6BT and CBBT-70 CHARGER PARTS LIST SERIAL NUMBER 309475 AND UP

<u>ITEM</u>	<u>PART NO.</u>	<u>DESCRIPTION</u>	<u>NO. REQ'D.</u>
1	50100	Ammeter	1
2	58541	Rectifier 6243	1
3	59308	Heat Sensing Switch	1
4	59309	Condensor, 50 MFD.	1
5	59311	Diode, 2 amps, 100 PIV	2
6	59312	Relay, Battery Circuit (6V)	1
7	59313	Bulb, ballast, GE #87	1
8	59401	Timer, 3 hr., Hold	1

RECTIFIER PACKAGE TRANS. UNIVERSAL
 CATALOG # 58553

FOR MODEL: C 6 BT Spec. # 28 & 29
 C 8 BT Spec. # 70 & 71

TO REMOVE RECTIFIER ASS'Y

CAUTION: WITH UNIT CONNECTED TO RECEPTACLE, 230 VOLT POWER IS PRESENT WITHIN THE UNIT. THIS IS DANGEROUS AND THE UNIT SHOULD ALWAYS BE DISCONNECTED FROM THE RECEPTACLE BEFORE REMOVING THE TOP OF THE CASE.

1. Remove top of case.
2. Locate rectifier assembly, attached to rear of case behind transformer.
3. Disconnect braided straps and timer wire.
4. Remove nuts holding assembly to case.
5. Lift unit out top.

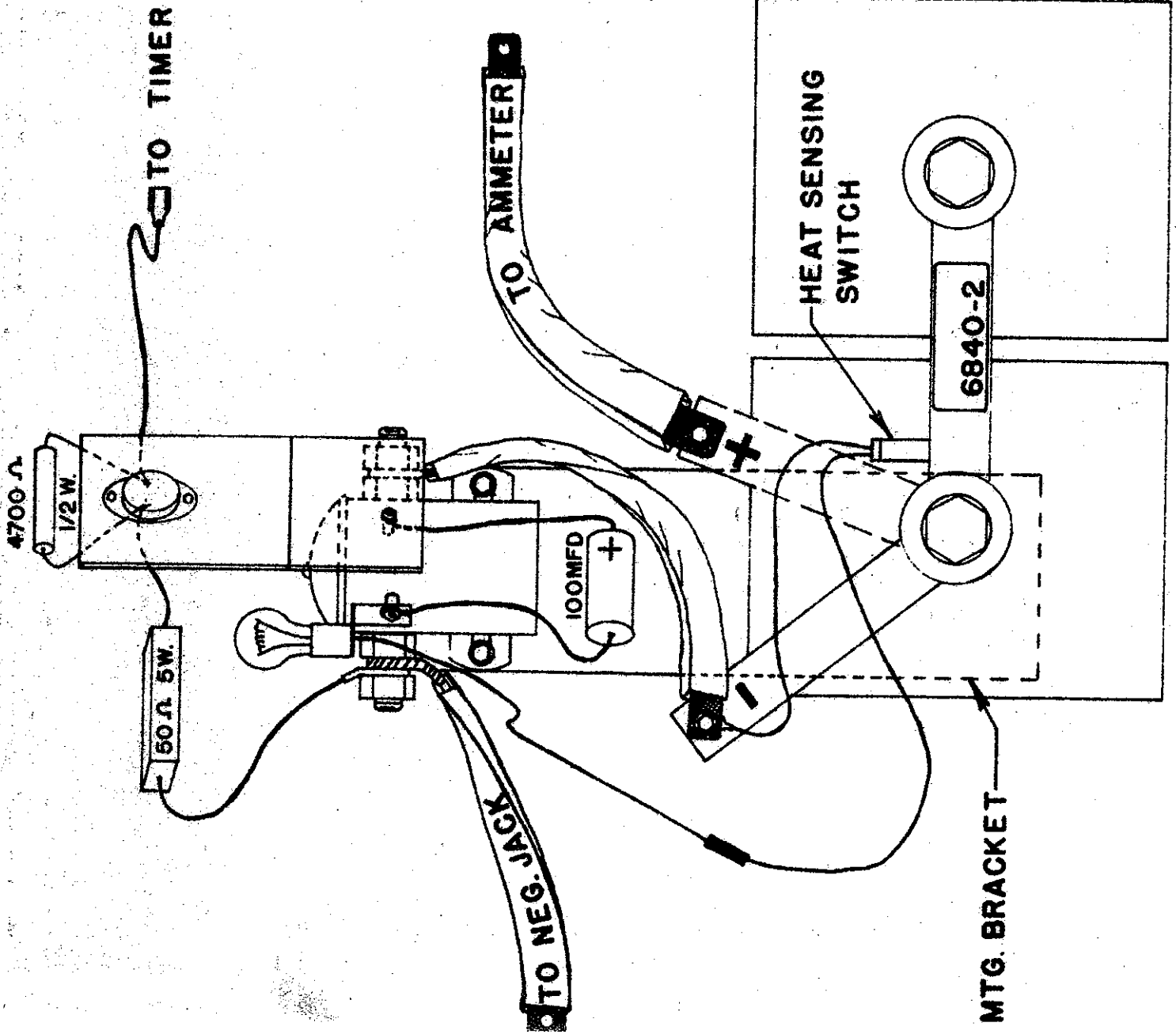
TO INSTALL RECTIFIER ASS'Y

1. Make sure welder plug is removed from wall receptacle.
2. Attach assembly to rear of case.
3. Connect braided straps and timer wire. (Ref. sketch)
4. Replace top.
5. Insert welder plug in receptacle.

NOTE: Unit may be used for welding while rectifier assembly is removed.

FORNEY INDUSTRIES, INC.

Fort Collins, Colorado 80521



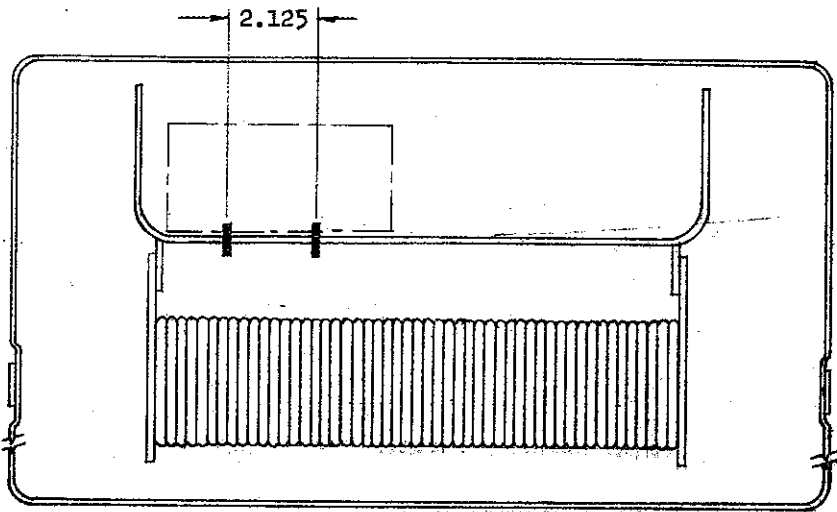
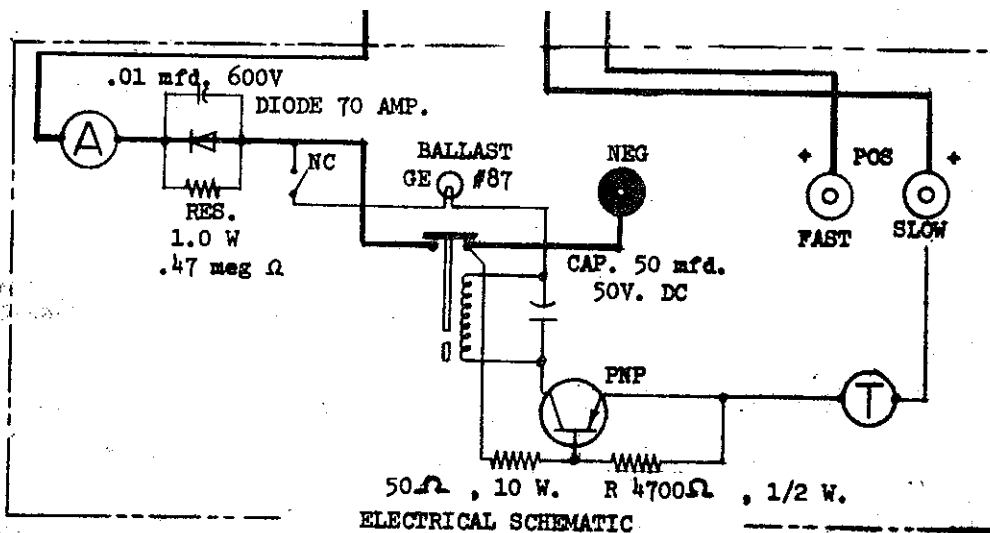


FIG. 1
(TOP VIEW)

1. Remove top of welder and remove old rectifier assembly from lower back of welder.
 2. Remove long vinyl sleeve covered cable from negative jack at the solenoid and the vinyl covered cable from the ammeter to the selenium rectifier at the rectifier and push aside cables temporarily.
 3. Locate the 1 or 2 holes in the choke coil bracket (see Fig. 1), if only one hole exists, drill a second 1/4" hole 2.125" from the original hole. If no holes exist you will have to drill two holes.
 4. Attach cable from ammeter to hole in lower left corner of heatsink plate.
 5. Mount pre-assembled rectifier heatsink plate and bracket assembly, pointing down, (solenoid and transistor assembly pointing up) in holes existing or drilled in step 3. (Fig. 2 & 3) with two 1/4 x 5/8" bolt, washer and nut.
- Note: Heatsink assembly must be insulated from "z" bracket and not touch any other metallic parts.
6. Attach cable from negative jack to solenoid opposite diode and heat sensor wire (Fig. 2).
 7. Make certain transistor assembly does not touch cover and replace cover on welder.
- See schematic for additional reference information.



RECTIFIER REPLACEMENT (KIT C-II) W/AP SECTION.

MODELS C5-BT, C6-BT & CB-BT

FORNEY MANUFACTURING CO.

DIV. OF FORNEY INDUSTRIES, INC.

FORT COLLINS, COLORADO

DWG. NO.

9875

CAT. NO. 58561-0

DRAWN	RJS	W. Kolbe
DATE	12-29-76	
SCALE	NONE	

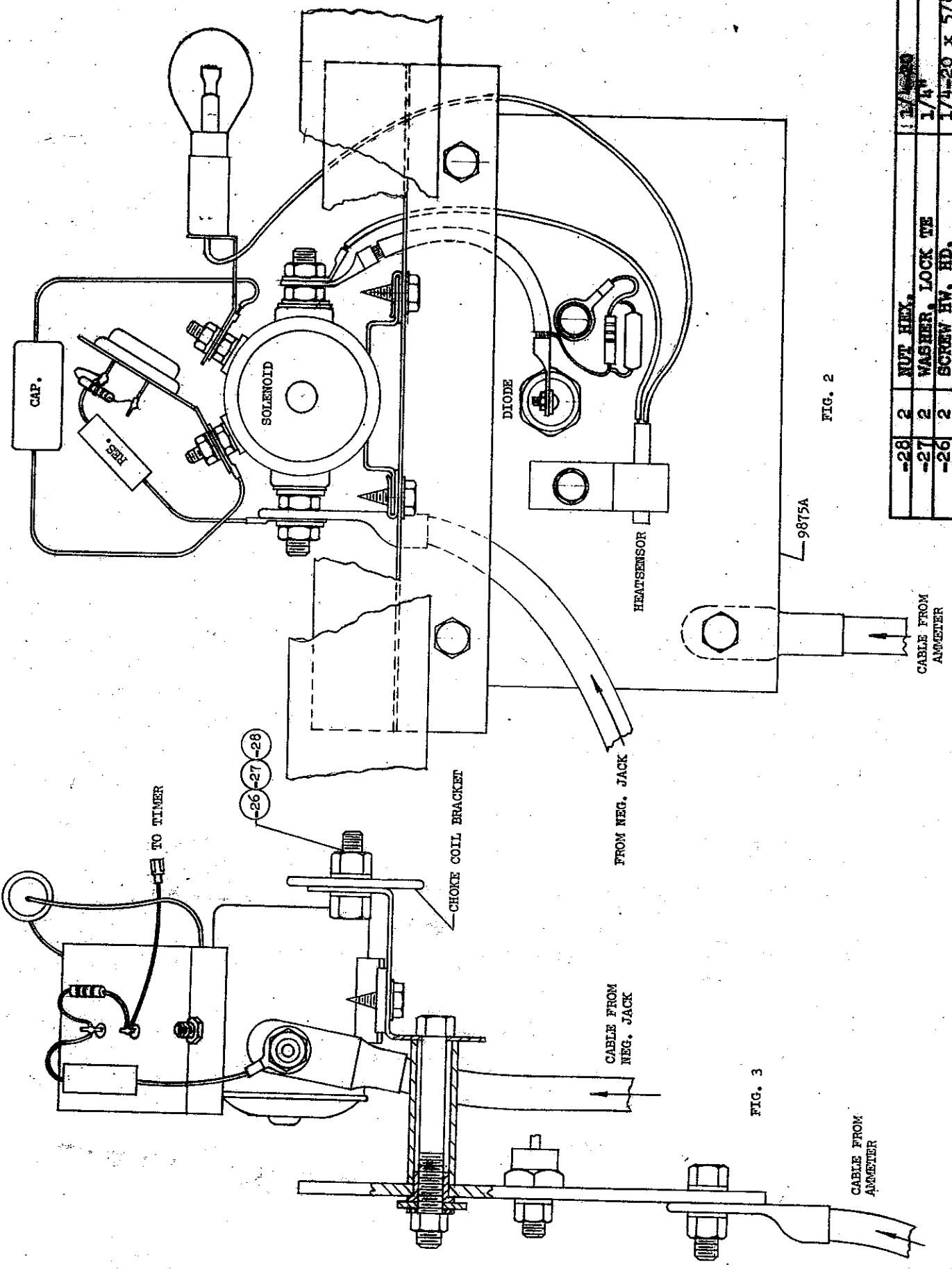
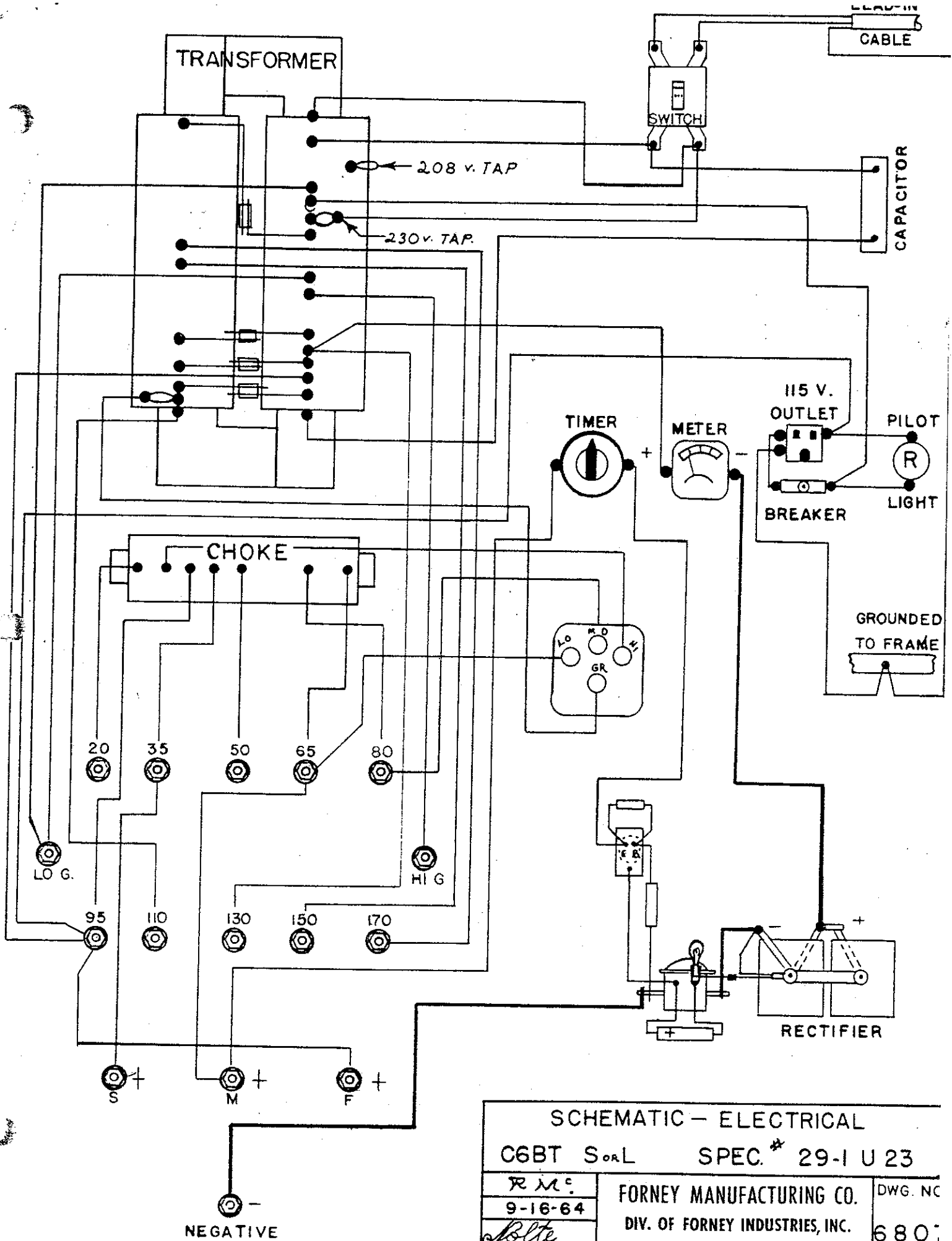


FIG. 2

FIG. 3

-28	2	NUT HEX.	1/4"
-27	2	WASHER	LOCK TPE
-26	2	SCREW HV. HD.	1/4-20 x 5/8
9875	1	RECTIFIER/A.P.	SUB-ASSY.



SCHEMATIC - ELECTRICAL

C6BT S_{ORL} SPEC. # 29-1 U 23

R M C 9-16-64 <i>Blte</i>	FORNEY MANUFACTURING CO. DIV. OF FORNEY INDUSTRIES, INC. FORT COLLINS, COLORADO	DWG. NO 6807
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