

HOBART

OWNER'S MANUAL

IMPORTANT: Read these instructions before installing, operating, or servicing this product.

TECHNICAL MANUAL NO. TM-502
for MODEL RC-256

Constant Voltage Rectifier Welder

5181D-1
5228D-1
5269D-1
5270D-1
5271C-1

DO NOT DESTROY

HOBART BROTHERS COMPANY, TROY, OHIO 45373, U.S.A.

Manufacturers of Arc Welding Systems/Aircraft Ground Power Equipment/Industrial Battery Chargers

HOW TO USE THIS MANUAL - This manual, identified by a "TM-" prefixed number, usually covers just the underlined specification number in the listing below; in which case, the diagrams at the rear of this manual cover only that particular spec. no. If none of the spec. nos. are underlined, they're all covered.

EQUIPMENT IDENTIFICATION - The unit's specification, model, and serial numbers appear on a nameplate, usually attached to its control panel. The "specification number" starts out with a "series number" (first 4-digit number, with a possible letter suffix) which does not cover a complete unit. A "dash number" (-1, -2, etc.) must follow the "series number" to make a complete "specification number". For example: 1234A-1, 1234A-2, etc.

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Constant Voltage Rectifier Welder

This manual covers units displaying any one of the following specification numbers, with exceptions as noted in the first paragraph above.

5181D-1
5228D-1
5269D-1
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5271C-1

Issued: July 28/76

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Important!

The interior of this unit must be cleaned on a regular basis.

Refer to maintenance section of this manual.

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ARC WELDING SAFETY INSTRUCTIONS AND WARNINGS



WARNING

ARC WELDING can be hazardous.

PROTECT YOURSELF AND OTHERS FROM POSSIBLE SERIOUS INJURY OR DEATH. KEEP CHILDREN AWAY. PACEMAKER WEARERS KEEP AWAY UNTIL CONSULTING YOUR DOCTOR. DO NOT LOSE THESE INSTRUCTIONS. READ OPERATING/INSTRUCTION MANUAL BEFORE INSTALLING, OPERATING OR SERVICING THIS EQUIPMENT.

Welding products and welding processes can cause serious injury or death, or damage to other equipment or property, if the operator does not strictly observe all safety rules and take precautionary actions.

Safe practices have developed from past experience in the use of welding and cutting. These practices must be learned through study and training before using this equipment. Anyone not having extensive training in welding and cutting practices should not attempt to weld. Certain of the practices apply to equipment connected to power lines; other practices apply to engine driven equipment.

Safe practices are outlined in the American National Standard Z49.1 entitled: SAFETY IN WELDING AND CUTTING. This publication and other guides to what you should learn before operating this equipment are listed at the end of these safety precautions.

HAVE ALL INSTALLATION, OPERATION, MAINTENANCE, AND REPAIR WORK PERFORMED ONLY BY QUALIFIED PEOPLE.



ELECTRIC SHOCK can kill.

Touching live electrical parts can cause fatal shocks or severe burns. The electrode and work circuit is electrically live whenever the output is on. The input power circuit and machine internal circuits are also live when power is on. In semiautomatic or automatic wire welding, the wire, wire reel, drive roll housing, and all metal parts touching the welding wire are electrically live. Incorrectly installed or improperly grounded equipment is a hazard.

1. Do not touch live electrical parts.
2. Wear dry, hole-free insulating gloves and body protection.
3. Insulate yourself from work and ground using dry insulating mats or covers.
4. Disconnect input power or stop engine before installing or servicing this equipment. Lock input power disconnect switch open, or remove line fuses so power cannot be turned on accidentally.
5. Properly install and ground this equipment according to its Owner's Manual and national, state, and local codes.

6. Turn off all equipment when not in use. Disconnect power to equipment if it will be left unattended or out of service.
7. Use fully insulated electrode holders. Never dip holder in water to cool it or lay it down on the ground or the work surface. Do not touch holders connected to two welding machines at the same time or touch other people with the holder or electrode.
8. Do not use worn, damaged, undersized, or poorly spliced cables.
9. Do not wrap cables around your body.
10. Ground the workpiece to a good electrical (earth) ground.
11. Do not touch electrode while in contact with the work (ground) circuit.
12. Use only well-maintained equipment. Repair or replace damaged parts at once.
13. In confined spaces or damp locations, do not use a welder with AC output unless it is equipped with a voltage reducer. Use equipment with DC output.
14. Wear a safety harness to prevent falling if working above floor level.
15. Keep all panels and covers securely in place.



ARC RAYS can burn eyes and skin; NOISE can damage hearing.

Arc rays from the welding process produce intense heat and strong ultraviolet rays that can burn eyes and skin. Noise from some processes can damage hearing.

1. Wear a welding helmet fitted with a proper shade of filter (see ANSI Z49.1 listed in Safety Standards) to protect your face and eyes when welding or watching.
2. Wear approved safety glasses. Side shields recommended.
3. Use protective screens or barriers to protect others from flash and glare; warn others not to watch the arc.
4. Wear protective clothing made from durable, flame-resistant material (wool and leather) and foot protection.
5. Use approved ear plugs or ear muffs if noise level is high.

Eye protection filter shade selector for welding or cutting (goggles or helmet), from AWS A6.2-73.

Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade No.	Welding or Cutting Operation	Electrode Size Metal Thickness or Welding Current	Filter Shade No.
Torch soldering	—	2	Gas metal-arc welding (MIG)		
Torch brazing	—	3 or 4	Non-ferrous base metal	All	11
Oxygen cutting			Ferrous base metal	All	12
Light	Under 1 in., 25 mm	3 or 4	Gas tungsten arc welding (TIG)	All	12
Medium	1 to 6 in., 25-150 mm	4 or 5	Atomic hydrogen welding	All	12
Heavy	Over 6 in., 150 mm	5 or 6	Carbon arc welding	All	12
Gas welding			Plasma arc welding	All	12
Light	Under 1/8 in., 3 mm	4 or 5	Carbon arc air gouging		
Medium	1/8 to 1/2 in., 3-12 mm	5 or 6	Light		12
Heavy	Over 1/2 in., 12 mm	6 or 8	Heavy		14
Shielded metal-arc welding (stick) electrodes	Under 5/32 in., 4 mm	10	Plasma arc cutting		
	5/32 to 1/4 in., 4 to 6.4 mm	12	Light	Under 300 Amp	9
	Over 1/4 in., 6.4 mm	14	Medium	300 to 400 Amp	12
			Heavy	Over 400 Amp	14



DES PIÈCES EN MOUVEMENT PEUVENT CAUSER DES BLESSURES.

Des pièces en mouvement, tels des ventilateurs, des rotors et des courroies peuvent couper doigts et mains, ou accrocher des vêtements amples.

1. Assurez-vous que les portes, les panneaux, les capots et les protecteurs soient bien fermés.
2. Avant d'installer ou de connecter un système, arrêtez le moteur.

3. Seules des personnes qualifiées doivent démonter des protecteurs ou des capots pour faire l'entretien ou le dépannage nécessaire.
4. Pour empêcher un démarrage accidentel pendant l'entretien, débranchez le câble d'accumulateur à la borne négative.
5. N'approchez pas les mains ou les cheveux de pièces en mouvement; elles peuvent aussi accrocher des vêtements amples et des outils.
6. Réinstallez les capots ou les protecteurs et fermez les portes après des travaux d'entretien et avant de faire démarrer le moteur.



DES ETINCELLES PEUVENT FAIRE EXPLOSER UN ACCUMULATEUR; L'ELECTROLYTE D'UN ACCUMULATEUR PEUT BRULER LA PEAU ET LES YEUX.

Les accumulateurs contiennent de l'électrolyte acide et dégagent des vapeurs explosives.

1. Portez toujours un écran facial en travaillant sur un accumulateur.
2. Arrêtez le moteur avant de connecter ou de déconnecter des câbles d'accumulateur.
3. N'utilisez que des outils anti-étincelles pour travailler sur un accumulateur.
4. N'utilisez pas une source de courant de soudage pour charger un accumulateur ou survolter momentanément un véhicule.
5. Utilisez la polarité correcte (+ et -) de l'accumulateur.



LA VAPEUR ET LE LIQUIDE DE REFROIDISSEMENT BRULANT SOUS PRESSION PEUVENT BRULER LA PEAU ET LES YEUX.

Le liquide de refroidissement d'un radiateur peut être brûlant et sous pression.

1. N'ôtez pas le bouchon de radiateur tant que le moteur n'est pas refroidi.
2. Mettez des gants et posez un torchon sur le bouchon pour l'ôter.
3. Laissez la pression s'échapper avant d'ôter complètement le bouchon.

PRINCIPALES NORMES DE SECURITE

Safety in Welding and Cutting, norme ANSI Z49.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

Safety and Health Standards, OSHA 29 CFR 1910, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

Recommended Safe Practices for the Preparation for Welding and Cutting of Containers That Have Held Hazardous Substances, norme AWS F4.1, American Welding Society, 550 N.W. LeJeune Rd., Miami, FL 33128.

National Electrical Code, norme 70 NFPA, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Safe Handling of Compressed Gases in Cylinders, document P-1, Compressed Gas Association, 1235 Jefferson Davis Highway, Suite 501, Arlington, VA 22202.

Code for Safety in Welding and Cutting, norme CSA W117.2 Association canadienne de normalisation, Standards Sales, 276 Rexdale Boulevard, Rexdale, Ontario, Canada M9W 1R3.

Safe Practices for Occupation and Educational Eye and Face Protection, norme ANSI Z87.1, American National Standards Institute, 1430 Broadway, New York, NY 10018.

Cutting and Welding Processes, norme 51B NFPA, National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

Instructions

RECEIPT OF EQUIPMENT

Check the equipment received against the Hobart Brothers Company invoice to make certain that the shipment is complete and undamaged. If the equipment has been damaged in transit, notify the carrier (railroad, trucking company, etc.) at once and file a claim for damages. If you require assistance with a damage claim, furnish Hobart Brothers Company full information about the claim. If the shipment is in error, contact: Order Department, Hobart Brothers Company, Troy, Ohio 45373.

Give the MODEL, SPECIFICATION, and SERIAL numbers of the equipment, and a full description of the parts in error. Refer to the PARTS LIST section of this manual for an explanation of the specification numbers.

Generally, it is good practice to move the equipment to the site of installation before uncrating. Use care in uncrating in order to avoid damage to the equipment when bars, hammers, etc., are used. Lifting eyes which extend through the top of the cabinet have been provided to facilitate handling with a crane or hoist.

Best results with this equipment will be obtained ONLY if the responsible operating and maintenance personnel have access to and are familiar with these instructions. Additional copies may be obtained at small cost per copy by writing to: Hobart Brothers Company, Troy, Ohio 45373.

Give the SPEC, SERIAL, and MODEL numbers of your equipment and the number of copies needed.

DESCRIPTION OF EQUIPMENT

This is a Hobart model RC-256 constant-voltage rectifier-type welder designed for semiautomatic welding operations, to be used as a power source for wire feeders and welding guns. It is designed to operate on 3-phase, AC voltage and must be protected by a customer-supplied fused line disconnect switch (see INSTALLATION section). The rated output current is 200 Amperes at 24-Volt DC. The duty cycle is 100%, which means that the unit may be operated continuously at rated load. The welding current circuit is protected by an overload protective device, factory-set to operate at 110% of rated load. This device protects ONLY the welding current circuit. A retractable lifting eye extends through the top of the cabinet to facilitate handling with a crane or hoist. A built-in swivel mount is located on the top of the cabinet for convenient mounting of the wire feeder.

DIMENSIONS - Refer to Outline Diagram enclosed.

WEIGHT - 235 lb. (107 kg)

Output Volt-Ampere Characteristics Curves

Model: RC-256

Output: 200 Ampere 24 Volts DC

100% Duty Cycle

Input: Welder Nameplate

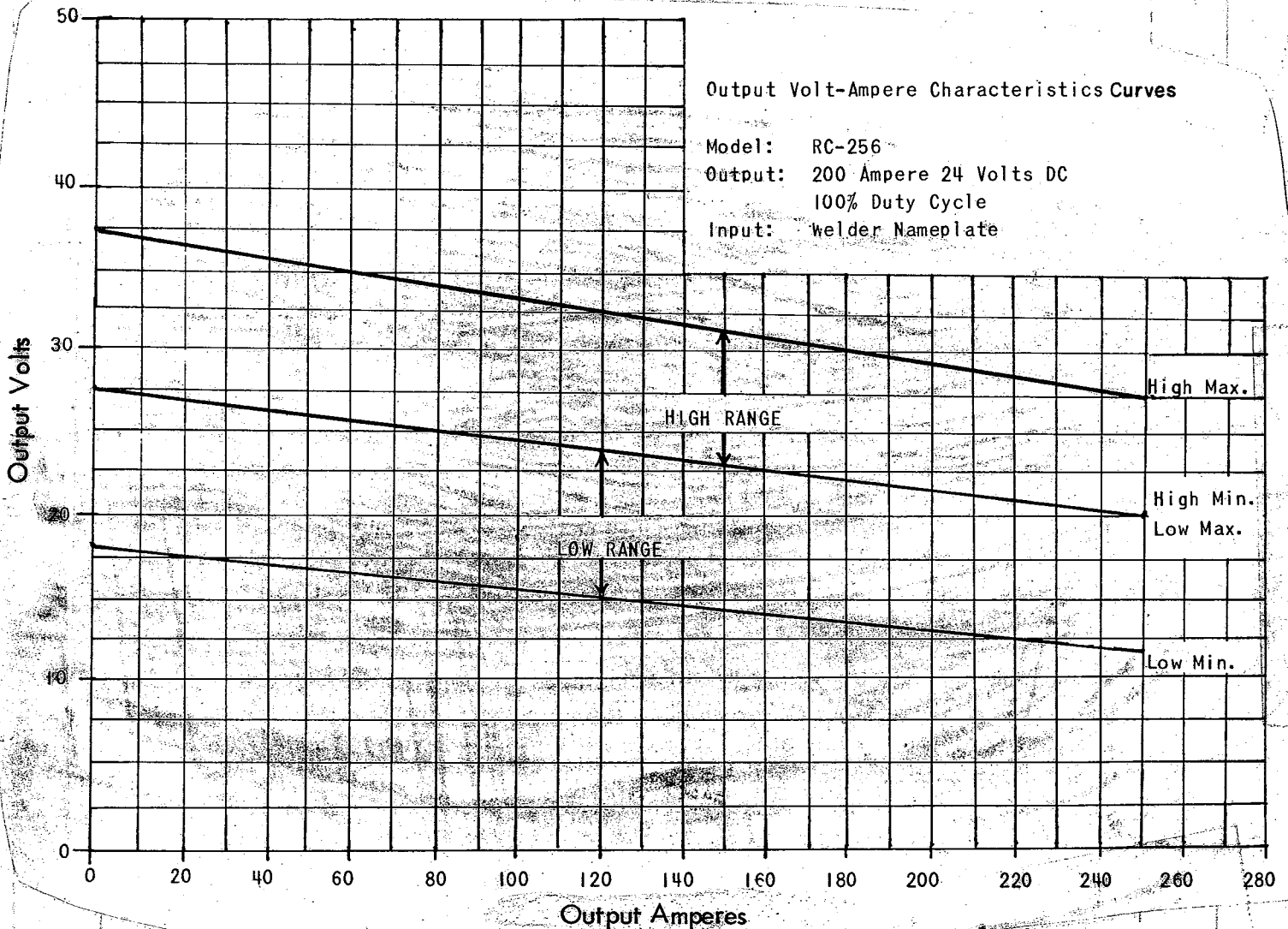
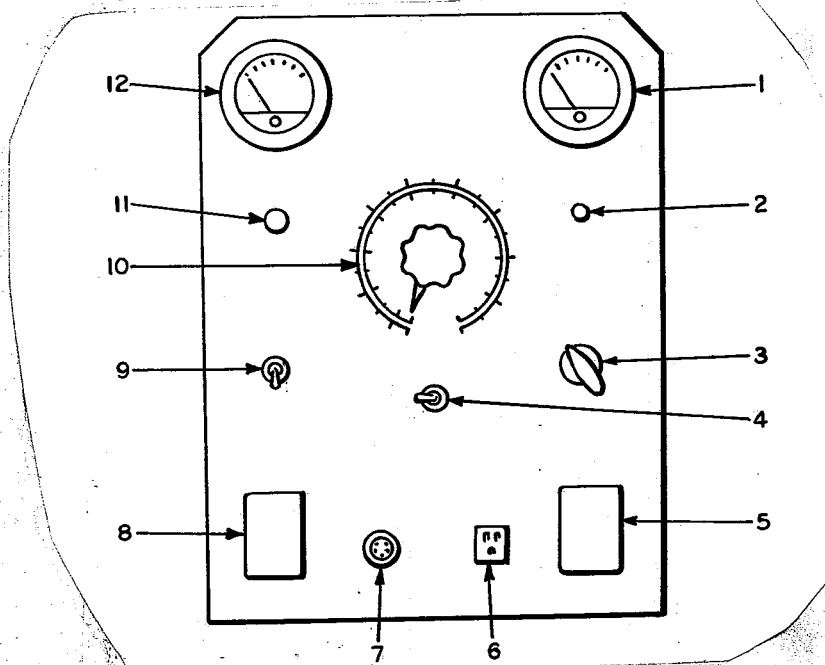


Figure 1

CONTROLS, INSTRUMENTS, AND OUTLETS (See Figure 2)

1. **WELDING VOLTMETER** - Indicates open circuit voltage across the welding output terminals, plus welding voltage during welding.
2. **OVERLOAD RESET** - Opens welding current contactor if unit is overloaded. Allowing the reset to cool for a few minutes, then pushing its button, will restore welder to normal operation.
3. **POWER ON-OFF SWITCH** - A 3-pole master switch which must be in the ON position in order to energize the main transformers, and for any other part of the unit to function.
4. **CONTACTOR OPENING DELAY SWITCH** - In "Opening Delay" position, it allows welding current to flow through the welding wire for a preset length of time after the wire feeder stops. This gives a "burnback" action to prevent weld wire from freezing in the weld.



- | | |
|-----------------------------------|--|
| 1. Welding Voltmeter | 7. Remote Contactor Control Receptacle |
| 2. Overload Reset | 8. Negative (-) Welding Terminal |
| 3. Power ON-OFF Switch | 9. Voltage Range Switch |
| 4. Contactor Opening Delay Switch | 10. Voltage Control |
| 5. Positive (+) Welding Terminal | 11. Fuse, 6-1/4 Ampere ("Slow-Blo") |
| 6. 115 Volt AC Receptacle | 12. Welding Ammeter |

Control Panel
Figure 2

wire from freezing in the weld puddle. In "Instant" position, the welder shuts off power to the welding wire at the same time that the wire feeder stops.

5. POSITIVE (+) "WORK" WELDING TERMINAL - Connection point for welding cable leading to the workpiece (when "straight" polarity is desired).

6. 115-V AC RECEPTACLE - Provides power for the wire feeder. Do not plug other equipment into this receptacle, as its capacity is only 6-1/4 Amperes.

7. REMOTE CONTACTOR CONTROL RECEPTACLE - Connection point for cable leading from wire feeder. It provides control of the welding current output contactor by the gun switch.

8. NEGATIVE (-) "ELECTRODE" WELDING TERMINAL - Connection point for welding cable leading to the electrode holder (when "straight" polarity is desired).

9. VOLTAGE RANGE SWITCH - This two position switch selects either the low (18 to 27.5 Volts) or high (27.5 to 37 Volts) range as shown on the voltage control range scales.

10. **VOLTAGE CONTROL** - This control consists of two variable transformers which are tandem mounted on a single shaft. They are so connected that the highest point on the low (18 to 27.5 Volt) range is radially the lowest point on the high (27.5 to 37 Volt) range. Since the control is rotated counterclockwise to increase the voltage output on the low range, the control must be rotated clockwise to increase the output voltage on the high scale.

This feature permits a smooth transition when control is transferred from the low to the high range by the Voltage Range Switch. The control is calibrated in open-circuit volts. It is recommended that the control be rotated daily to prevent oxidation at the brush-contact point on the variable-transformer winding.

11. **FUSE** - Protects the 115-V AC receptacle and the cooling fan. Replace only with a 6-1/4 Ampere "slow-blo" type fuse.

12. **WELDING AMMETER** - Indicates the current used during the welding process.

INSTALLATION

LOCATION

For best operating characteristics and longest unit life, take care in selecting an installation site. Avoid locations exposed to high humidity, dust, high ambient temperature, or corrosive fumes. Moisture can condense on electrical components, causing corrosion or shorting of circuits. Dirt on components helps retain this moisture.

Adequate air circulation is needed at all times in order to assure proper operation. Provide a minimum of 12 inches (305 mm) of free air space at both front and rear of the unit. Make sure that the ventilator openings are not obstructed.

WIRING

The input power cable should be connected to the power supply through a fused disconnect switch, furnished by the user. Consult local electrical codes for power cable and fuse sizes, or if none exist, refer to the National Electrical Code or to Table 1 in this manual. To connect the power lines to the welder, the control cabinet top and left side must be removed to give access to the input terminals and voltage changeover linkage panel.

To minimize the possibility of damaging the primary windings of this welder by its being inadvertently connected to a power supply of higher voltage than that for which the voltage changeover links are arranged, the unit is normally shipped from the factory with the primary leads connected for the highest input voltage at which the machine can be operated. However, if the machine is ordered for a specific voltage, this may not be the case.

CAUTION: See specification plate on welder control panel for input power voltages and frequency at which it may be operated.

Refer to Voltage Changeover Diagram under DIAGRAMS for link and wire positions for various input voltages. If necessary, change link and wire positions to correspond to the input voltage to be used. Securely tighten all connections.

WARNING: Make certain that input circuit is open before attempting any wiring changes.

LEAD-IN WIRE (COPPER 60° C)					
LINE RATING VOLTAGE	LINE CURRENT AT RATED LOAD	SINGLE CONDUCTORS		FUSE SIZE	GROUND WIRE SIZE
		IN CONDUIT	IN FREE AIR		
208	22	#10	#12	30	#14
220-230	20	#12	#12	30	#14
380	12	#14	#14	20	#14
440-460	10	#14	#14	15	#14
500	9.5	#14	#14	15	#14
575	8	#14	#14	15	#14

Recommended Wire and Fuse Sizes
(Based on National Electric Code)

Table 1

GROUNDING

The frame of this welder should be grounded for personnel safety. Where grounding is mandatory under state or local codes, it is the responsibility of the user to comply with all applicable rules and regulations. Where no state or local codes exist, it is recommended that the National Electrical Code be followed. Refer to Table 1 for wire sizes.

These requirements and recommendations apply to rubber-tire mounted equipment as well as other equipment. In addition to the usual function of protecting personnel against the hazard of electrical shock due to fault in the equipment, grounding serves to discharge the static electrical charges which tend to build up on the surfaces of rubber-tire mounted equipment. These static charges can cause painful shock to personnel, and can lead to the erroneous conclusion that an electrical fault exists in the equipment.

When possible use an input power cable assembly which includes a grounding connector to connect this equipment to the input power supply. When included in the cable assembly, the grounding conductor will be green, green with a yellow stripe, or bare. Connect the grounding conductor to the equipment grounding terminal, if provided, and if not, to the equipment frame, taking care to make good electrical connection. Connect the other end of the grounding conductor to the system ground.

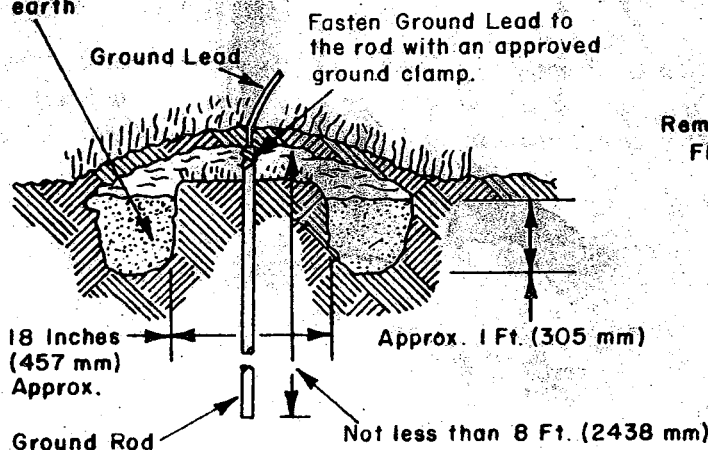
If, for any reason, an input cable which does not include a grounding conductor is used, the equipment may be grounded with a separate conductor if permitted under applicable code or by special permission of the jurisdictional body responsible for enforcement of the code. Minimum size and color coding requirements must be in accordance with any applicable state or local code, or the National Electrical Code.

If metallic armored cable or conduit is used, the metal sheathing or conduit must be effectively grounded as required by state or local code, or the National Electrical Code.

If a system ground is not available, the welder frame must be connected to a driven ground rod (see Figures 3 and 4) or to a water pipe that enters the ground not more than 10 feet (3048 mm) from the welder. Refer to the preceding wire size table for selection of the proper ground wire.

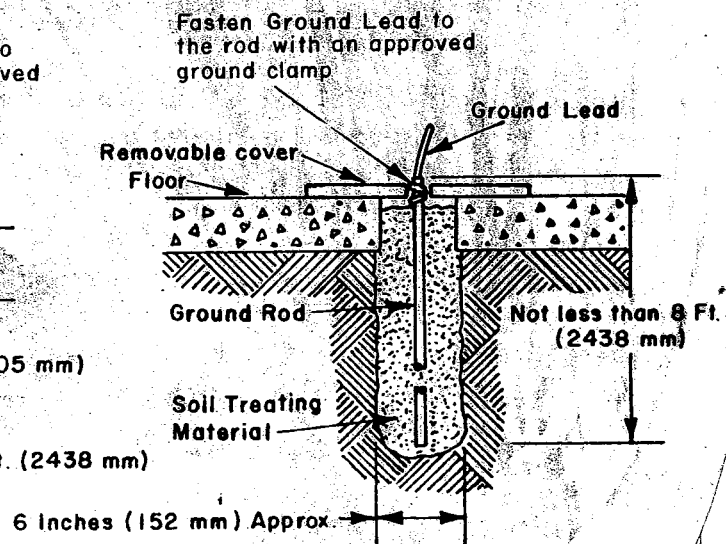
NOTE: The ground wire must be as short as possible in order to produce the most efficient installation.

20-30 lbs. (9.1-13.6 kg) Soil treating material (copper sulphate, magnesium sulphate or rock salt) placed in circular trench and covered with earth



Outside Ground

Figure 3



Inside Ground

Figure 4

TREATING AN OUTSIDE GROUND - The soil treating materials are placed in a circular trench around the rod, but not in direct contact. The crystals are gradually dissolved by surface waters and the solution is carried into the most useful area of earth surrounding the electrode (rod). Flood the trench several times when making original installation. See Figure 3.

TREATING AN INSIDE GROUND - Reduce the diameter of the hole to 6 inches (152 mm), pour soil treating material in around the rod. Add enough water to dissolve 8 pounds (3.62 kg) of soil treating material. Flood the hole every 6 months and replace the soil treating material when it is all dissolved. See Figure 4.

WELDING CABLES

Table 2 shows cable sizes recommended for various lengths of copper cables. The lengths shown include the complete welding circuit, both electrode and work cables combined.

Welding Current Amperes	LENGTH OF CABLE CIRCUIT IN FEET (AND METERS) TOTAL OF BOTH ELECTRODE AND WORK CABLE												
	60 (18M)	100 (31M)	125 (38M)	150 (46M)	175 (53M)	200 (61M)	225 (69M)	250 (76M)	275 (83M)	300 (91M)	350 (107M)	400 (122M)	500 (152M)
100	#4	#4	#4	#4	#2	#2	#2	#2	#1	#1	1/0	1/0	2/0
150	#2	#2	#2	#2	#1	#1	1/0	1/0	2/0	2/0	3/0	3/0	4/0
200	#2	#2	#2	#1	1/0	1/0	2/0	2/0	3/0	3/0	4/0	4/0	-
250	#2	#2	#1	1/0	2/0	2/0	3/0	4/0	-	-	-	-	-
300	#1	#1	1/0	2/0	3/0	3/0	4/0	-	-	-	-	-	-

Suggested Copper Welding Cable Size Guide

Table 2

OPERATION

Inspect the unit thoroughly to be sure that it is in proper working order. Check all wire connections to be certain that they are secure. Tighten any loose screws, nuts, or bolts. Check closely for any damage which may have occurred in transit. Blow accumulated dust off internal components with clean, dry compressed air of not over 25 psi (1.8 kg/cm²). Wipe off any water accumulation on parts, making sure all circuitry is dry. Be sure to replace all cabinet panels.

WARNING: Make sure that welder is disconnected from the line voltage before blowing or wiping inside the unit. Turn fused disconnect switch to "OPEN" or "OFF" and remove fuses.

Remove all special tags from the unit, read carefully, and follow any special directions listed. Keep tags with manual for future reference.

Before operating this unit, make certain that all installation instructions have been carried out and that safety precautions have been observed. (Refer to SAFETY WARNINGS at front of manual.)

Connect the welding cables to the proper positive or negative terminals and make sure connections are clean and tight.

SEMI-AUTOMATIC "CV" WELDING

1. Place the Power ON-OFF Switch in the ON position.
2. Place the Voltage Range Switch in either the LOW or HIGH position, according to the anticipated welding voltage required.
3. Set the Voltage Control dial to the anticipated open-circuit voltage required for the particular welding operation.
4. For welding processes requiring reverse polarity, connect a welding cable from the wire feeder (electrode) to the Positive Welding Terminal and a welding cable from the work to the Negative Welding Terminal. See Table 2 for suggested wire sizes for various welding cable lengths.
5. Plug the wire feeder power source cable into the 115-V AC Receptacle. Do not use this receptacle as a power source for other equipment as it is fused for only 6-1/4 Amperes (part of which is used for the cooling fan).
6. Plug the remote control cable from the wire feeder into the Remote Contactor Control Receptacle.
7. Strike an arc. The welding voltage may be adjusted with the voltage control. If the end of the range is reached while turning in the counterclockwise direction, reposition the Voltage Range Switch and reverse the direction of rotation. When welding is completed, turn the Power ON-OFF Switch to the OFF position.

AUTOMATIC "CV" WELDING

This unit is NOT readily adaptable for use with Hobart fully automatic heads, such as models AI-23, AO-20, etc., or with the Hobart model AGH-36 wire feeder, primarily because of the lack of remote voltage control.

MAINTENANCE

OILING

See Page 8A for Lubrication.

INSPECTION AND CLEANING

For uninterrupted, satisfactory service from this welder, it is necessary to keep the machine clean, dry, and well ventilated. Dirt and dust may be blown or wiped from the inside of the welding machine with clean, dry air of not over 25 psi (1.8 kg/cm²) pressure. Be sure to wipe the fan blades clean. All electrical connections should be checked and tightened at regular intervals to eliminate unnecessary losses and to avoid subsequent trouble from overheating or open circuits.

LUBRICATION

The fan motor incorporates sleeve bearings. You can expect the life of this motor to exceed 50,000 hours without relubrication. Periodically cleaning the motor and lubricating the bearings will extend the life of the motor. The following table will furnish a recommended guide to the frequency of this lubrication if desired.

Type of Duty	Lubrication Interval
Light (up to 6 hrs./day)	Every 12 months
Moderate (7 to 15 hrs./day)	Every 6 months
Heavy (16 to 24 hrs./day)	Every 3 months

NOTE: Apply 1-12 drops of 20W non-detergent oil at each end of bearing.



TM-502

WARNING: Make sure that welder is disconnected from the line voltage before blowing or wiping inside the unit. Turn fused disconnect switch to "OPEN" or "OFF" and remove fuses.

CAUTION: The flow of air through the welder is carefully directed by baffles. Never operate the welder with any of the side or top panels removed or open, as serious damage to the rectifiers may result.

REPLACEMENT OF SILICON RECTIFIERS

The silicon rectifier is composed of silicon diodes, some of which are positive (+) base and some negative (-) base. In general, diodes mounted on the same plate are of the same polarity. Should it become necessary to replace a diode, great care must be taken to replace it with one of like polarity.

An absolutely sure means of identification is to note the small arrow on the side of the diode. If the arrow points toward the stud, the diode is referred to as a "positive base". If the arrow points toward the lead (cable) end of the diode, the diode is referred to as a "negative base".

When ordering replacement diodes, make certain to indicate whether the diode to be replaced is positive or negative base. Part numbers will indicate this, but for absolute surety, indicate polarity as well. Consult your Hobart dealer for proper diode tightening torques.

TROUBLE SHOOTING

The following chart contains information which can be used to diagnose and correct unsatisfactory operation or failure of the various components of the welder. Each symptom of trouble is followed by a list of probable causes and the procedure necessary to correct the problem.

TROUBLE	PROBABLE CAUSE	REMEDY
1. Welder will not operate. Fan blade does not rotate.	a. Power switch in OFF position	a. Place power switch in ON position.
	b. Power lines dead	b. Check voltage.
	c. Broken power lead	c. Repair
	d. Wrong line voltage	d. Check power supply.
	e. Incorrect input power connections at welder	e. Check connections against wiring diagram.
	f. Blown fuses	f. Replace.
	g. Overload circuit breaker has tripped	g. Reset after a short cooling period.
	h. Open circuit to power switch or control	h. Repair. Check for broken wire or loose connections at terminals.
	i. Overload circuit breaker failed	i. Check for failed circuit breaker switch. Replace defective part.
2. Welder delivers welding current but soon shuts down	a. Welder overloaded; overload protective device tripped	a. Reduce load; overload can be carried only a short time.
	b. Ambient temperature too high	b. Operate at reduced loads when temperature exceeds 100°F (38°C)
	c. Ventilator openings blocked	c. Check air intake and exhaust openings.
	d. Fan motor not operating	d. Check fuse, bearing, and leads.
	e. Open circuit in delay contactor-opening control	e. Check internal circuit.

TROUBLE	PROBABLE CAUSE	REMEDY
2. Welder delivers welding current but soon shuts down (cont'd)	f. Power diode failed	f. Replace diode (see MAINTENANCE section).
3. Contactor operates but welder will not deliver current	a. Loose welding cable or poor ground	a. Tighten.
	b. Transformer winding open	b. Repair.
	c. Diode failed	c. Replace. (See MAINTENANCE section.)
	d. Overload circuit breaker failed	d. Replace.
	e. High-low range switch failed	e. Replace.
4. Voltage control does not control welding	a. Variable transformer defective	a. Check windings and brushes.
	b. High-low range switch failed	b. Replace.
	c. Overload circuit breaker failed	c. Replace.
5. Fan not operating	a. Fuse blown	a. Replace; check 115-volt receptacle for overload. Replace fuse only with a 6-1/4 A "slow-blo" type.
	b. Motor failed	b. Replace or repair.
	c. Defective wiring	c. Check.

TROUBLE	PROBABLE CAUSE	REMEDY
6. Abnormal current fluctuation, voltage nearly constant	a. Irregular wire-feed speed b. Inadequate shielding of arc by flux or gas c. Wire-feed rate too low d. Too much shielding gas e. Loose cable connections f. Welding-current tip on wire feeder making poor contact with electrode	a. See wire-feeder manual. b. Increase shielding by trial and error. See welding head manual. c. Increase wire-feed rate. See wire burn-off rate charts. d. Increase by trial and error. See welding head manual. e. Check. f. Check tip hole size; if wrong size, replace.
7. Welding current contactor not opening	a. Contacts of contactor sticking	a. Repair or replace.
8. Welding wire freezes in welding puddle when gun switch is released	a. Delay contactor-opening control is not delaying the opening	a. Check control, especially capacitors. Check jumper on terminals 5 and 6. Add jumper if missing on delayed contactor opening panel. (See Connection Diagram.)
9. Operator is shocked when he touches welder case	a. Case of welder not grounded	a. Ground welder case. (See INSTALLATION section.)
10. Operator is shocked when he touches work, work cable, or work table	a. Not grounded	a. Ground
11. Welder open circuit meter voltages do not agree with nameplate	a. Low or high line voltage b. Failed high-low range switch	a. Contact power company. b. Replace.

TROUBLE	PROBABLE CAUSE	REMEDY
11. Welder open circuit meter voltages do not agree with name-plate (cont'd)	c. Failed overload circuit breaker	c. Replace.

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Parts List

EQUIPMENT IDENTIFICATION - An identification plate on the unit's control panel shows its model number, serial number, and specification number. Whenever ordering parts or making inquiries, furnish all these numbers.

NOTE: A "specification number" must have a "dash number" suffix (-1, -2, -3, etc.) in order to be a complete number.

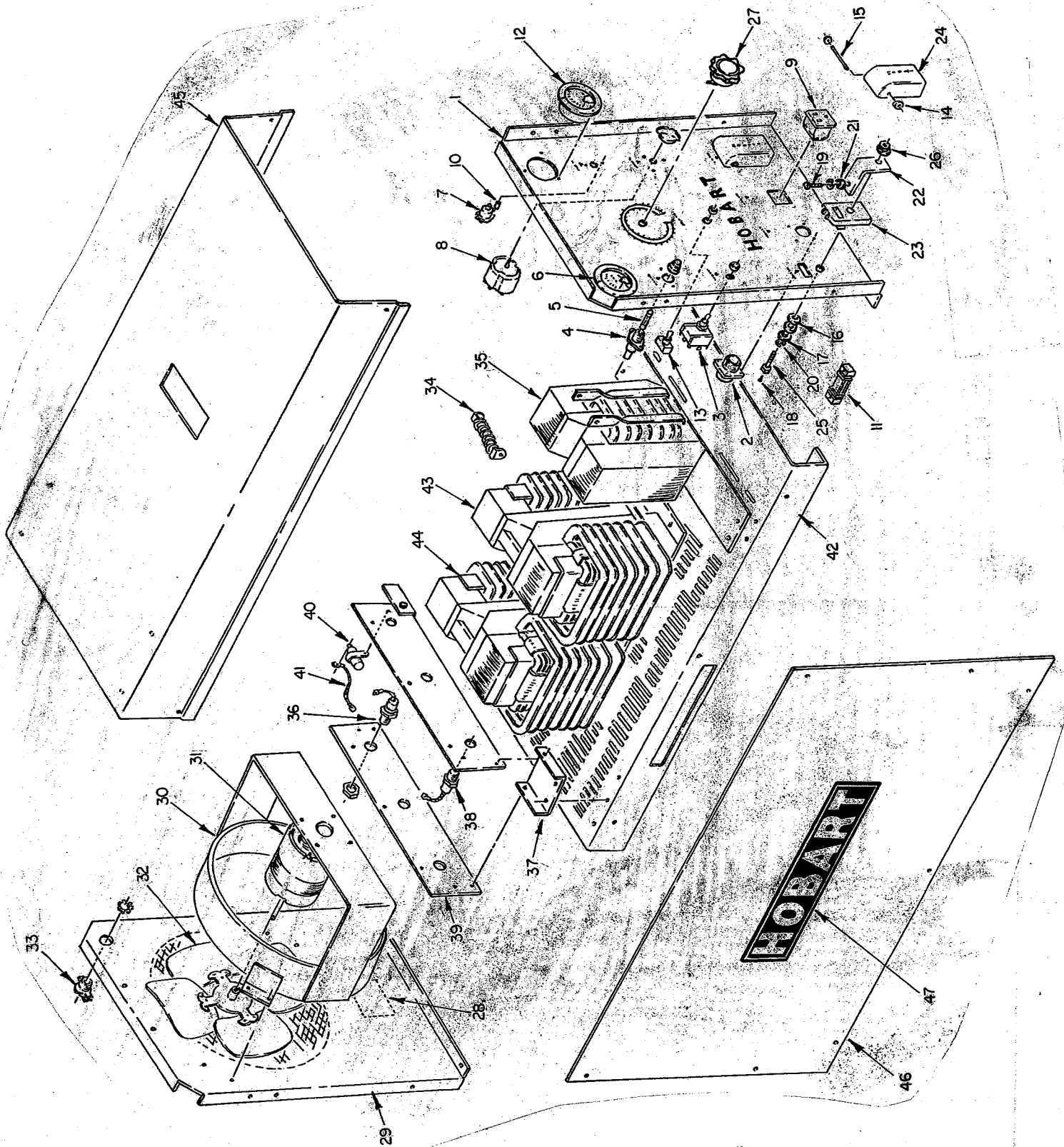
HOW TO USE THIS PARTS LIST - The part name listings may be indented to show part relationships as indicated in the following example.

Fig. No.	Item No.	Part Number	Nomenclature							Units per Assembly	Application Code
			1	2	3	4	5	6	7		
1-		123456	Assembly (Not Shown)							1	
	1	234567	. A detail of assembly							1	
	2	345678	. A sub-assembly							1	
	3	456789	. . A detail of sub-assembly (Item 2)							1	
	4	567891	. . A sub-assembly of Item 2							1	
	5	678910	. . . A detail of sub-assembly (Item 4)							1	

Locate the specification number below that appears on your unit, and note the "APPLICATION CODE" letter adjacent to it.

<u>Specification Number</u>	<u>Application Code</u>
5181D-1	A
5228D-1	B
5269D-1	C
5270D-1	D
5271C-1	E

After locating the desired part in the following figures and parts lists, if the "Application Code" column says "All", proceed to order the part. If there are several part numbers after the same "Item No.", order only the part number corresponding to the "Application Code" letter that you selected above.



Control Panel Group
Figure 1

Fig. No.	Item No.	Part Number	Nomenclature							Units	Application Code
			1	2	3	4	5	6	7	per Assembly	
1-		366917	Panel - Front, Assembly							1	All
	1	366918	. Panel - Control, Front							1	All
	2	16DA-4107	. Receptacle - Box							1	All
	3	402826	. Switch - Toggle, Low & High							1	All
	4	402151	. Holder - Fuse							1	All
	5	W-10502-11	. Fuse - FHM, Slow Blow, 6-1/4 Amp							1	All
	6	400641-6	. Ammeter - DC							1	All
	7	402829-1	. Switch - Overload							1	All
	8	402796-1	. Switch - Off and On							1	All
	9	402823	. Receptacle - 115 V.							1	All
	10	422241	. Spacer - Overload Switch							2	All
	11	CW-1142A	. Shunt - 50 MV.							1	All
	12	400642-3	. Voltmeter - DC							1	All
-		403173-1	. Decal - Fuse							1	All
	13	402662	. Switch - Toggle							1	All
		357668-1	. Kit - Connecting Cable, Output							2	All
K	14		. . Nut - Push, Steel							2	All
K	15		. . Pin - 1/8 x 2-1/4							1	All
K	16		. . Washer - Bakelite							2	All
K	17		. . Washer - Flat Steel							1	All
K	18		. . Screw - 6-32 Rd. Hd. Mach.							1	All
K	19		. . Screw - 1/2 x 13, HHCS, Cad. Plated							1	All
K	20		. . Washer - Lock, Steel, 1/2							2	All
K	21		. . Washer - Steel, Cad. Plated							1	All
K	22		. . Bar - Bus							1	All
K	23		. . Bushing - Insulating							1	All
K	24		. . Cover - Cable Stud, Terminal							1	All
K	25		. . Screw - 1/2-13 HHCS							1	All
K	26		. . Nut - 1/2 x 13							1	All
	27	HF-1638	Knob							1	All
	28	407961A-1	Nameplate							1	All
	29	366026	Panel - Rear							1	All
	30	362753	Shroud - Fan							1	All
	31	12TW-595-1	Motor - Fan							1	All
	32	8RT-609	Fan							1	All
	33	W-10862-1	Connector - Strain Relief							1	All
	34	364042	Resistor - Stability							1	All
	35	364034	Reactor - Stability							1	All
		365659	Rectifier - Output Assembly							1	All
	36	402833-3	. Diode - Rect. Neg. Base							3	All
	37	365663	. Insulator - Mount Rect.							2	All
-		Not Illustrated									
K		Kit, Parts Not Sold Separately									



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5181D, 5206D, 5209D, 5211D, 5271C

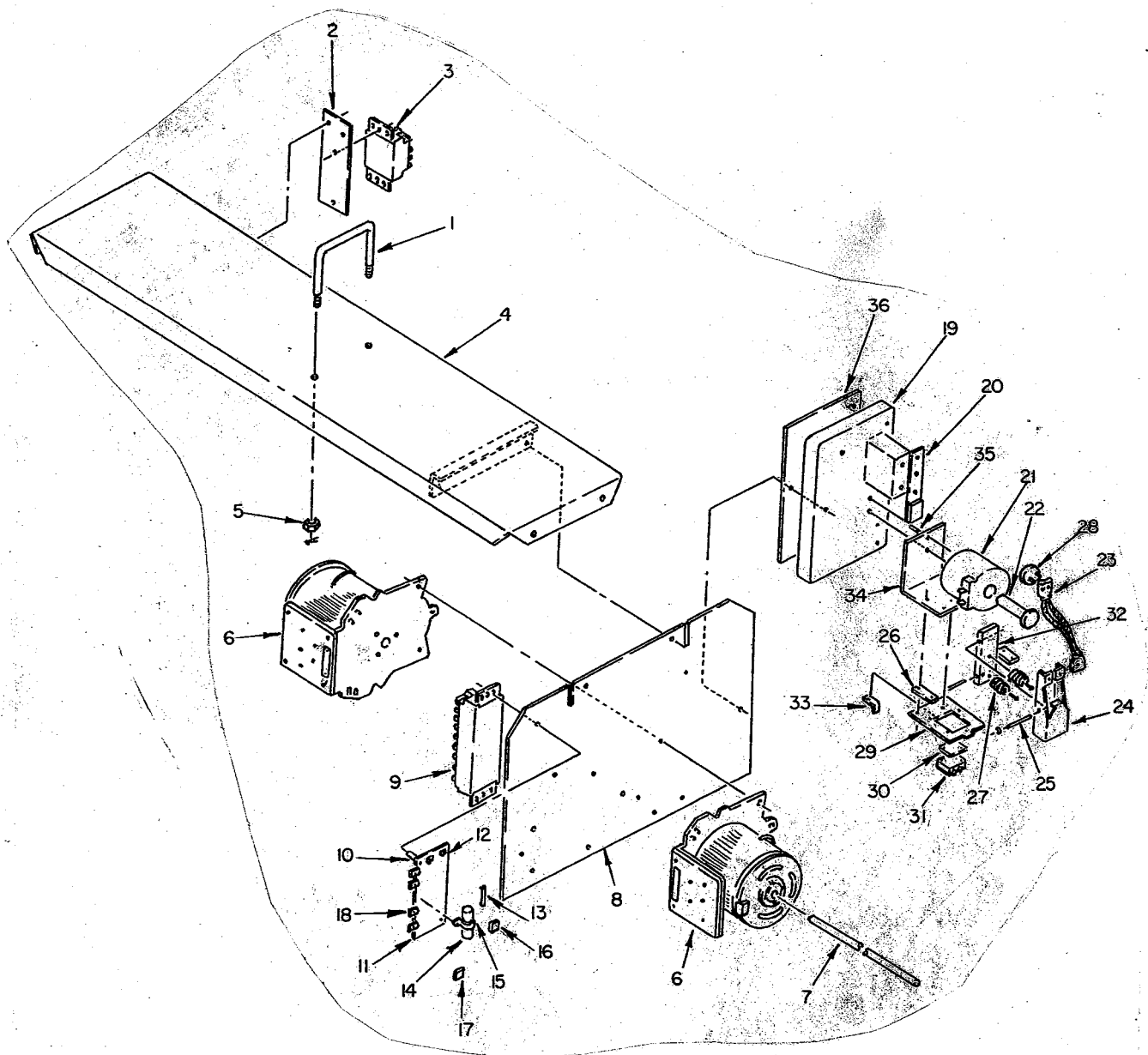
Fig. No.	Item No.	Part Number	Nomenclature							Units per Assembly	Application Code
			1	2	3	4	5	6	7		
1-	38	402832-3	.	Diode	-	Rect.	Pos.	Base		3	All
	39	365662	.	Plate	-	Mtg.	Diode			2	All
	40	W-11605-2	.	Capacitor						1	All
	41	No Number	.	Lead	-	Capacitor				1	All
	42	366030	Base							1	All
	43	365993-1	Transformer	-	#1					1	A
		365993-11	Transformer	-	#1					1	B
		365993-13	Transformer	-	#1					1	C
		365993-5	Transformer	-	#1					1	D
		365993-9	Transformer	-	#1					1	E
		44 365993-2	Transformer	-	#2					1	A
		365993-12	Transformer	-	#2					1	B
		365993-14	Transformer	-	#2					1	C
		365993-6	Transformer	-	#2					1	D
		365993-10	Transformer	-	#2					1	E
	45	366025	Top	-	Canopy					1	All
	46	362751	Panel	-	Side, Left & Right					2	All
	47	402986	Decal	-	Hobart					1	All
	-	365599	Label	-	Volt. Inst. (Attach to Inside of Top)					1	A
		365729	Label	-	Volt. Inst. (Attach to Inside of Top)					1	B
		365727	Label	-	Volt. Inst. (Attach to Inside of Top)					1	C
		365728	Label	-	Volt. Inst. (Attach to Inside of Top)					1	D
		366746	Label	-	Volt. Inst. (Attach to Inside of Top)					1	E
	-	408060	Label	-	CSA					1	BD

Not Illustrated

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51810, 52240, 52690, 52110, 52710



Lifting Yoke Group
Figure 2



PL-502

Fig. No.	Item No.	Part Number	Nomenclature							Units per Assembly	Application Code
			1	2	3	4	5	6	7		
2-		366027-1	Yoke - Lifting							1	A-E
		366027-2	Yoke - Lifting							1	B-C-D
	1	362784	. Eye - Lifting							1	All
	2	362890	. Brace - Mtg. Term. Block							1	All
	3	402897	. Block - Term.							1	All
	4	366028	. Brace - Top Assembly							1	All
	5	No Number	. Pin - Cotter							2	All
	6	402898	. Transformer - Variable							2	All
	7	362808	. Shaft - Control Variable							1	All
	8	362783	. Panel - Contactor							1	All
	9	402830	. Block - Terminal							1	A-E
		402922	. Block - Terminal							1	B-C-D
		365667	. Control - Contactor, Assembly							1	All
	10	16DA-4102	. . Spacer - Mtg.							2	All
	11	404209A	. . Board - P.C. Contactor Control							1	All
	12	422640	. . Lug - Terminal							2	All
	13	W-9026-10	. . Resistor - 5 Ohm, 10 Watt							1	All
	14	402461-5	. . Capacitor							1	All
	15	W-10051-14	. . Clamp - Wire Plastic							1	All
	16	402125	. . Bridge - Diode							1	All
	17	401943-1	. . Capacitor - Radial Lead .02/600							1	All
	18	422224	. . Lug - Terminal							4	All
		430260-2	. Contactor - Assembly							1	All
	19	430259	. . Base							1	All
	20	430141	. . Tip - Contact Stationary							1	All
	21	Data 3165	. . Coil - 300 A Contactor							1	All
	22	370704	. . Polepiece							1	All
		356089-3	. . Contactor - Assembly							1	All
	23	430139	. . . Lead - Pigtail							1	All
	24	370711	. . . Support - Contact Moving							1	All
	25	430172-1	. . . Pin - Support							2	All
	26	430146	. . . Support - Arm Right							2	All
	27	400562-8	. . . Spring							2	All
	28	430265	. . . Tip - Contact							1	All
	29	370708	. . . Plate - Mtg. Micro Sw.							1	All
	30	370714	. . . Insulator - Micro Sw.							1	All
	31	402070	. . . Switch - Micro							1	All
	32	370710	. . . Plate - Arm							1	All
	33	430145	. . . Stop - Plate Arm							1	All
	34	370706	. . . Frame - Contactor							1	All
	35	16DA-954-2	. . . Pin - Spring							1	All
	36	430258	. Insulator - Contactor							1	All

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5181D, 5225, 5229, 5220, 5221, 5222

Diagrams

1. Note the model and specification number shown on the equipment nameplate.
2. Locate these numbers in the model and specification number columns below.
3. Use only those diagrams and instructions that are applicable.

MODEL#	SPECS#	CONN. DIA.	VOLT CHGVR. DIA.	SCHEMATIC DIA.	OUTLINE DIM.
RC-256	5181D-1	366921	365599		365598
	5228D-1	366921	365729		365598
	5269D-1	366921	365727		365598
	5270D-1	366921	365728 /		365598
	5271C-1	366921	366746 /		365598

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FRONT PANEL
124 BLACK

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PROPER TERMINAL STRIP
CONNECTIONS AND JUMPERS
ARE GIVEN ON THE VOLTAGE
CHANGE-OVER DIAGRAM IN
THE MANUAL ON LID OF THE
MACHINE.



2	AMMETER	
3	CONTACTOR	
4	RELAY	
5	DELAY CONTACTOR OPENING PANEL	
6	BYPASS	
7	FUSE SWITCH	
8	LINE TERMINAL STRIP	
9	PAN MOTOR	
10	PAUSE CODE	
11	OVERLOAD	
12	RESISTOR STABILITY	
13	REMOTE CONTACTOR CONTROL RECEIPT	
14	RANGE SWITCH	
15	STABILITY REACTOR	
16	MAIN TRANSFORMERS	
17	VOLTMETER	
18	OVERHAUL	
19	VARIABLE TRANSFORMER	
20	FUSE HOLDER	
21	RECEPTACLE	
22	MICRO SWITCH	
23	INSTANT DELAY SWITCH	



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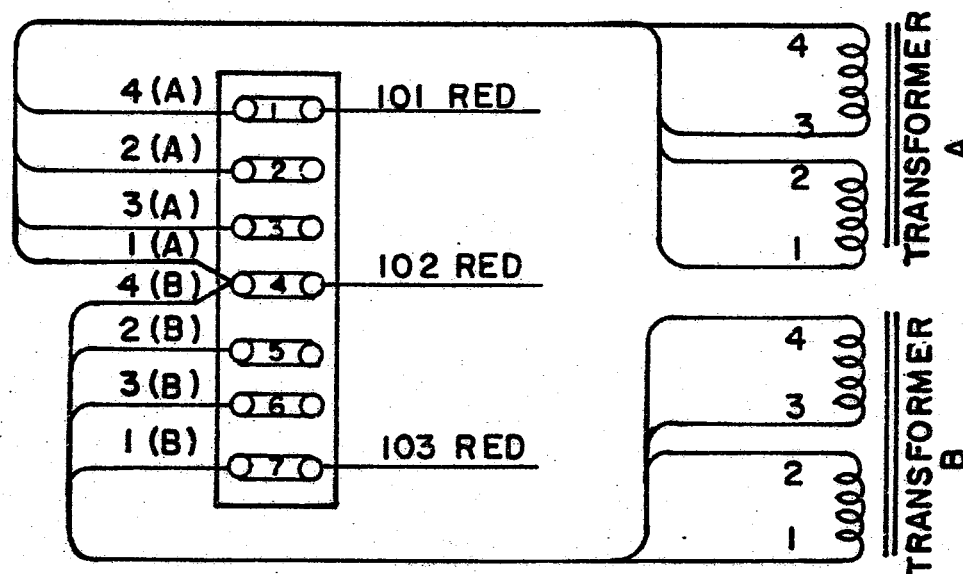
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NOMINAL RESISTANCES (COIL LEADS DISCONNECTED)		NOMINAL NO. LOAD DC VOLTS AT DIFFERENT TERMINALS	
TERMINALS	OHMS	RIEGSTAT SNOW POSITION	HIGH PRESSURE LOW SNOW
X3A - X4A	.430		
X3B - X4B	.370 °C		
X3C - X4C	.370 °C		
X3D - X4D	.370 °C		
X1A - X2A	.350	MAX RH/STAT	3 ¹ 2 ⁰
X1B - X2B	.350	MIN RH/STAT	3 ¹ 2 ⁰

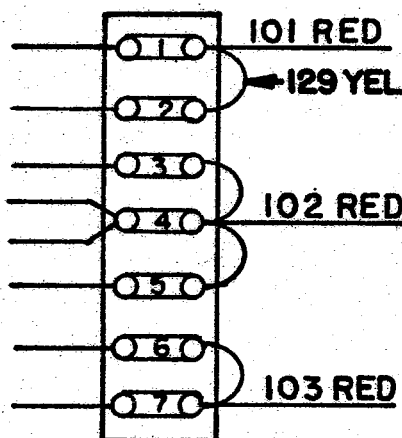
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PRIMARY DIAGRAM FOR 230/460 VOLTS, 60 HERTZ

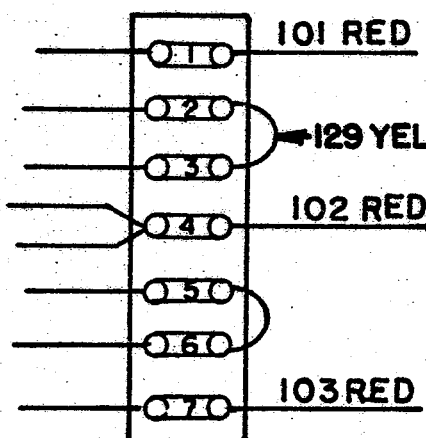
PRIMARY SCHEMATIC (LESS JUMPERS)



JUMPERS CONNECTED FOR 230 VOLTS



JUMPERS CONNECTED FOR 460 VOLTS



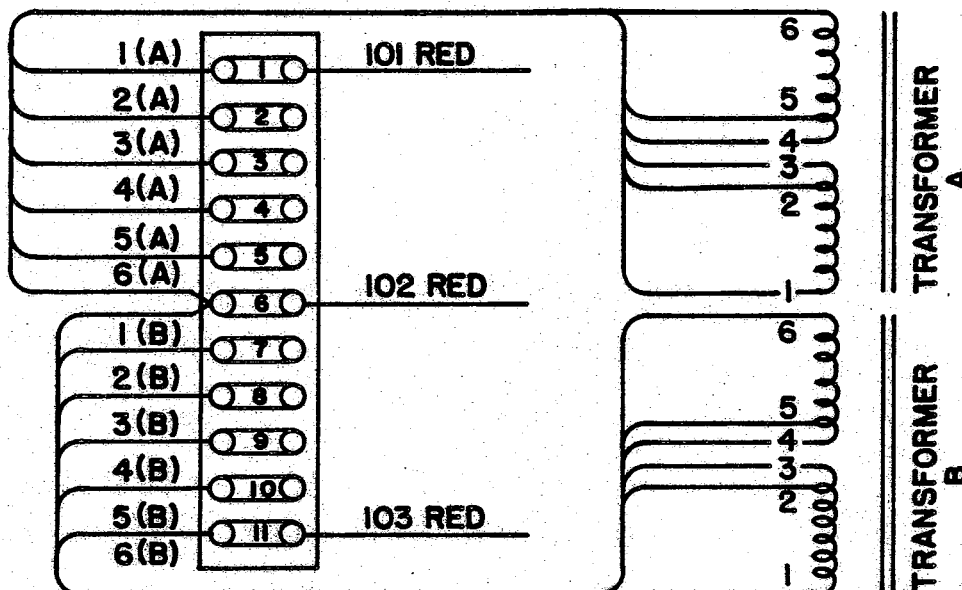
INSTRUCTIONS FOR CONNECTING VOLTAGE CHANGEOVER TERMINAL STRIP

1. REMOVE TOP AND LEFT SIDE PANEL.
2. CHECK NAMEPLATE OF THE WELDER TO BE CERTAIN IT IS DESIGNED FOR THE LINE VOLTAGE AND FREQUENCY YOU HAVE.
3. CHECK YOUR LOCAL CODES FOR PROPER LINE WIRE SIZE AND FUSING FOR THE LINE CURRENT SHOWN ON THE NAMEPLATE. IF NO CODE EXISTS, USE THE CHART IN THE "INSTALLATION" SECTION OF THE MANUAL.
4. CONNECT JUMPERS FOR PROPER LINE VOLTAGE AS SHOWN IN THE DIAGRAM ABOVE. (CAUTION: BE CERTAIN INPUT CIRCUIT IS OPEN BEFORE HANDLING LINE.)
5. CONNECT 3 PHASE LINE LEADS TO THREE STATION TERMINAL AT REAR OF MACHINE. ATTACH GROUND WIRE TO THE STUD PROVIDED.
6. REPLACE TOP AND SIDE PANEL BEFORE ENERGIZING UNIT.

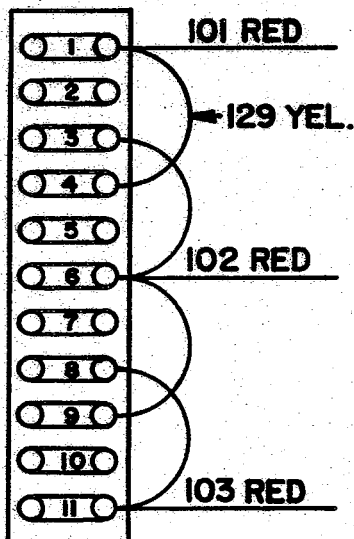
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PRIMARY DIAGRAM FOR 220/380/440 VOLTS, 50 HERTZ

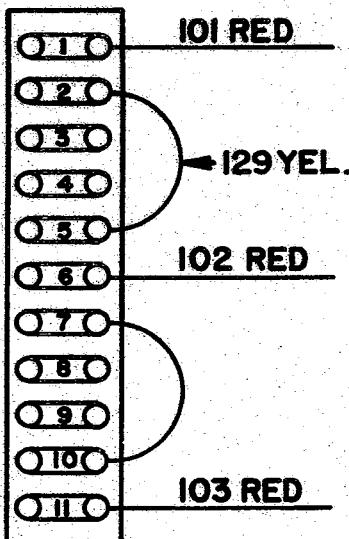
PRIMARY SCHEMATIC (LESS JUMPERS)



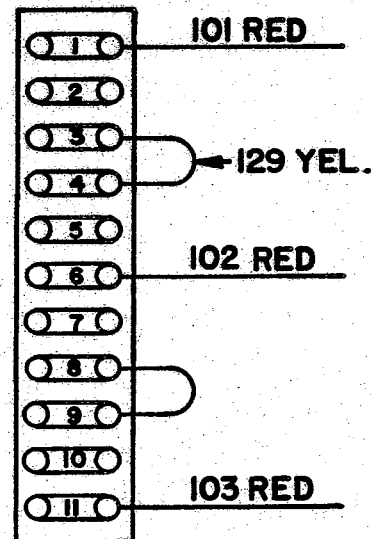
JUMPERS CONNECTED FOR 220 VOLTS



JUMPERS CONNECTED FOR 380 VOLTS



JUMPERS CONNECTED FOR 440 VOLTS



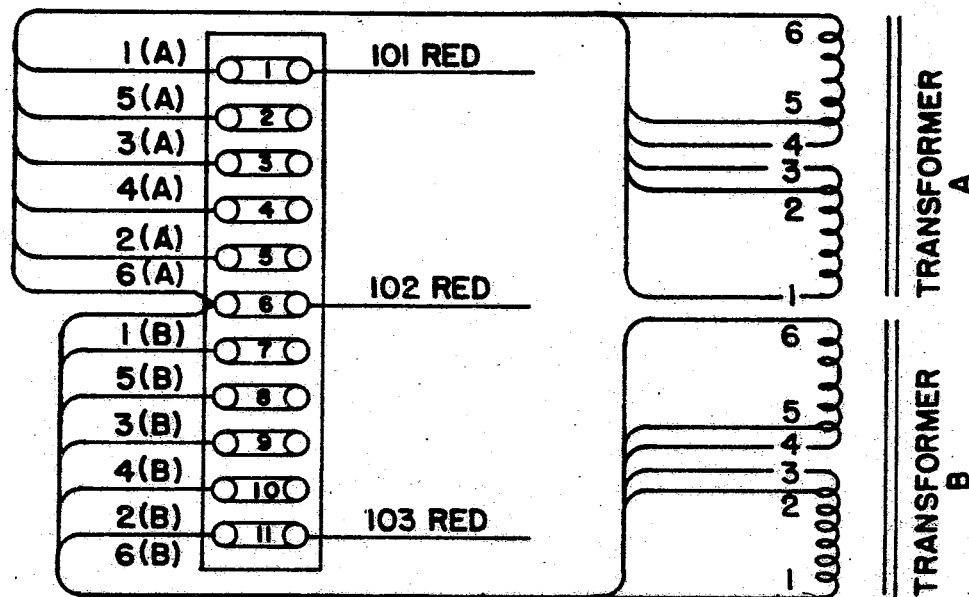
INSTRUCTIONS FOR CONNECTING VOLTAGE CHANGEOVER TERMINAL STRIP

1. REMOVE TOP AND LEFT SIDE PANEL.
2. CHECK NAMEPLATE OF THE WELDER TO BE CERTAIN IT IS DESIGNED FOR THE LINE VOLTAGE AND FREQUENCY YOU HAVE.
3. CHECK YOUR LOCAL CODES FOR PROPER LINE WIRE SIZE AND FUSING FOR THE LINE CURRENT SHOWN ON THE NAMEPLATE. IF NO CODE EXISTS, USE THE CHART IN THE "INSTALLATION" SECTION OF THE MANUAL.
4. CONNECT JUMPERS FOR PROPER LINE VOLTAGE AS SHOWN IN THE DIAGRAM ABOVE. (CAUTION: BE CERTAIN INPUT CIRCUIT IS OPEN BEFORE HANDLING LINE.)
5. CONNECT 3 PHASE LINE LEADS TO THREE STATION TERMINAL AT REAR OF MACHINE. ATTACH GROUND WIRE TO THE STUD PROVIDED.
6. REPLACE TOP AND SIDE PANEL BEFORE ENERGIZING UNIT.

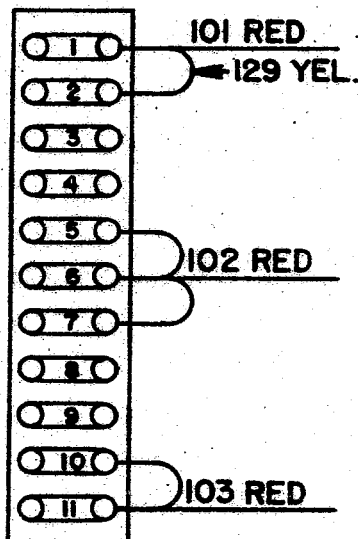
365729

PRIMARY DIAGRAM FOR 208/230/460 VOLTS, 60 HERTZ

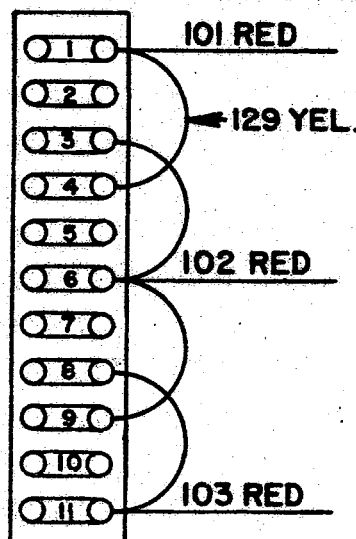
PRIMARY SCHEMATIC (LESS JUMPERS)



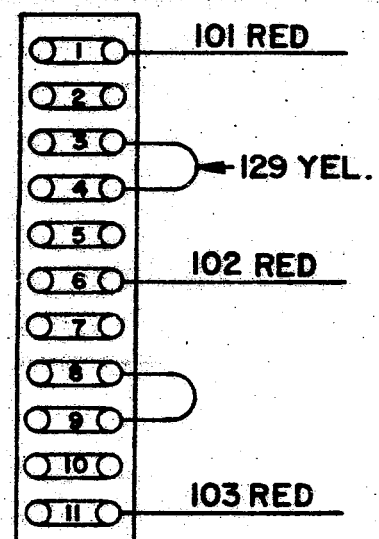
JUMPERS CONNECTED FOR 208 VOLTS



JUMPERS CONNECTED FOR 230 VOLTS



JUMPERS CONNECTED FOR 460 VOLTS



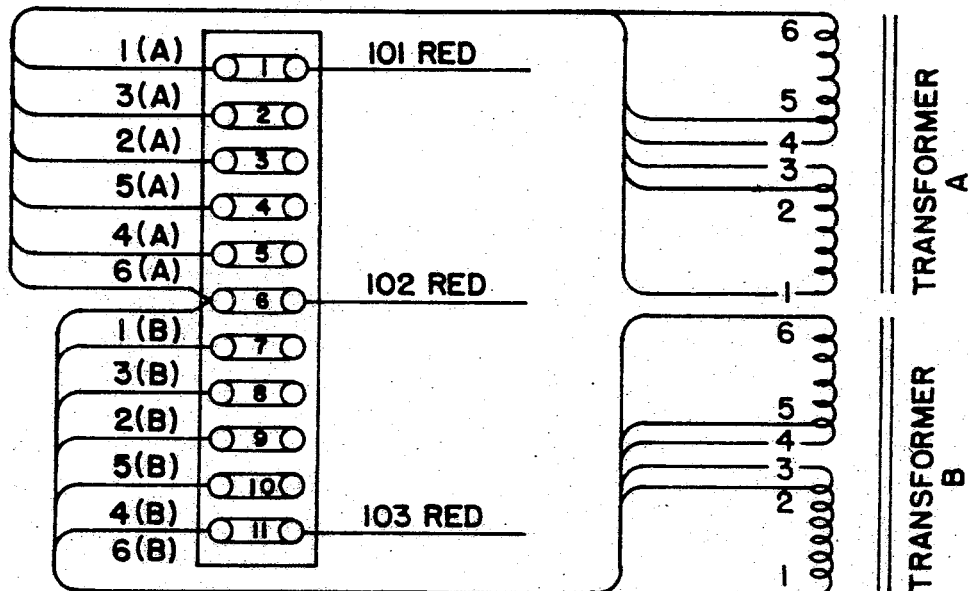
INSTRUCTIONS FOR CONNECTING VOLTAGE CHANGEOVER TERMINAL STRIP

1. REMOVE TOP AND LEFT SIDE PANEL.
2. CHECK NAMEPLATE OF THE WELDER TO BE CERTAIN IT IS DESIGNED FOR THE LINE VOLTAGE AND FREQUENCY YOU HAVE.
3. CHECK YOUR LOCAL CODES FOR PROPER LINE WIRE SIZE AND FUSING FOR THE LINE CURRENT SHOWN ON THE NAMEPLATE. IF NO CODE EXISTS, USE THE CHART IN THE "INSTALLATION" SECTION OF THE MANUAL.
4. CONNECT JUMPERS FOR PROPER LINE VOLTAGE AS SHOWN IN THE DIAGRAM ABOVE. (CAUTION: BE CERTAIN INPUT CIRCUIT IS OPEN BEFORE HANDLING LINE.)
5. CONNECT 3 PHASE LINE LEADS TO THREE STATION TERMINAL AT REAR OF MACHINE. ATTACH GROUND WIRE TO THE STUD PROVIDED.
6. REPLACE TOP AND SIDE PANEL BEFORE ENERGIZING UNIT.

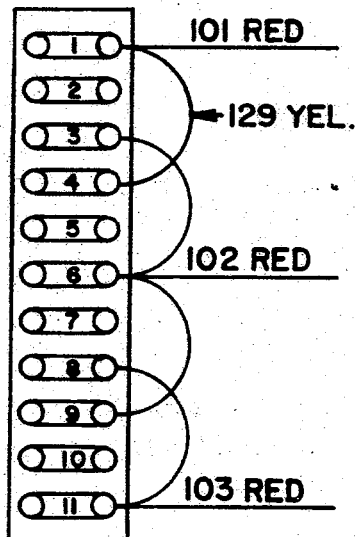
365727

PRIMARY DIAGRAM FOR 230/460/575 VOLTS, 60 HERTZ

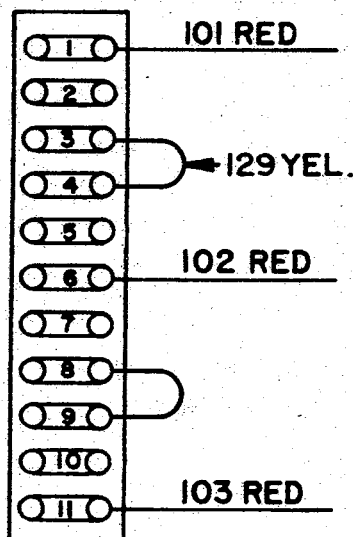
PRIMARY SCHEMATIC (LESS JUMPERS)



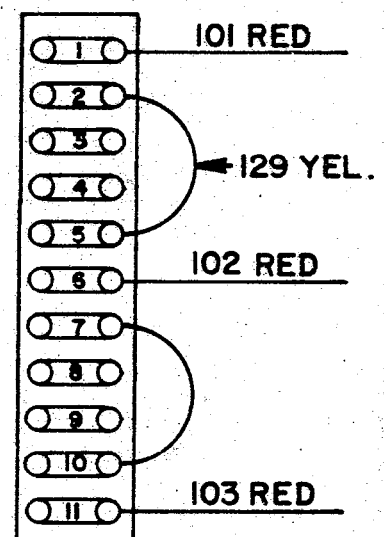
JUMPERS CONNECTED FOR 230 VOLTS



JUMPERS CONNECTED FOR 460 VOLTS



JUMPERS CONNECTED FOR 575 VOLTS



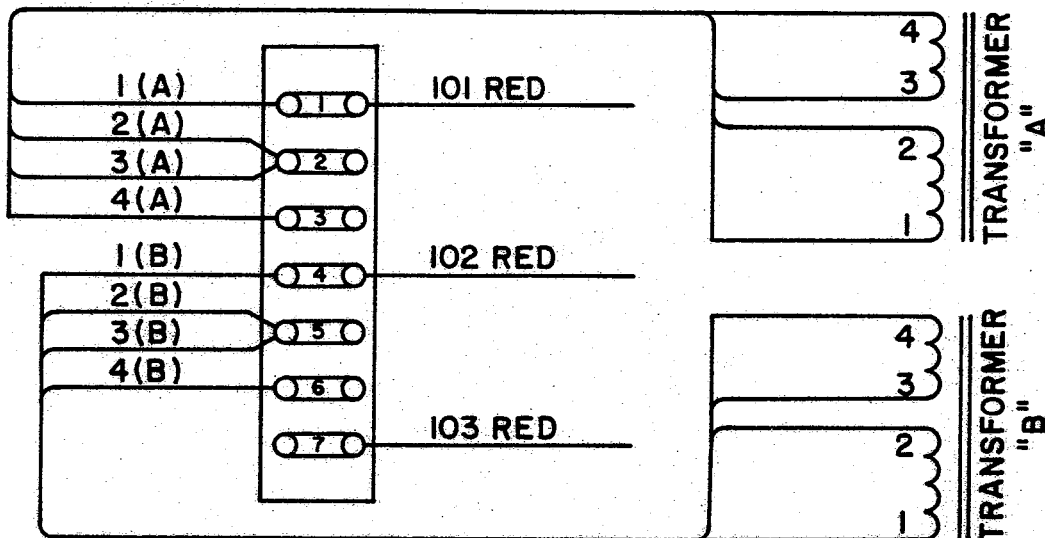
INSTRUCTIONS FOR CONNECTING VOLTAGE CHANGEOVER TERMINAL STRIP

1. REMOVE TOP AND LEFT SIDE PANEL.
2. CHECK NAMEPLATE OF THE WELDER TO BE CERTAIN IT IS DESIGNED FOR THE LINE VOLTAGE AND FREQUENCY YOU HAVE.
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6. REPLACE TOP AND SIDE PANEL BEFORE ENERGIZING UNIT.

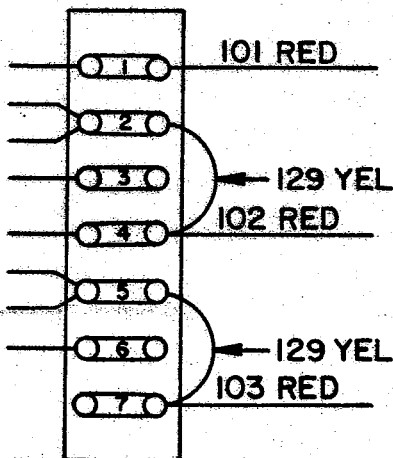
365728

PRIMARY DIAGRAM FOR 380/500 VOLTS, 50 HERTZ

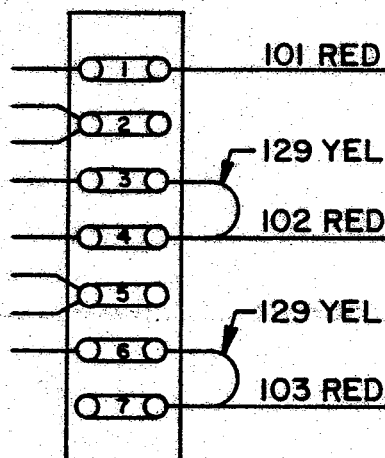
PRIMARY SCHEMATIC (LESS JUMPERS)



JUMPERS CONNECTED FOR 380 VOLTS



JUMPERS CONNECTED FOR 500 VOLTS

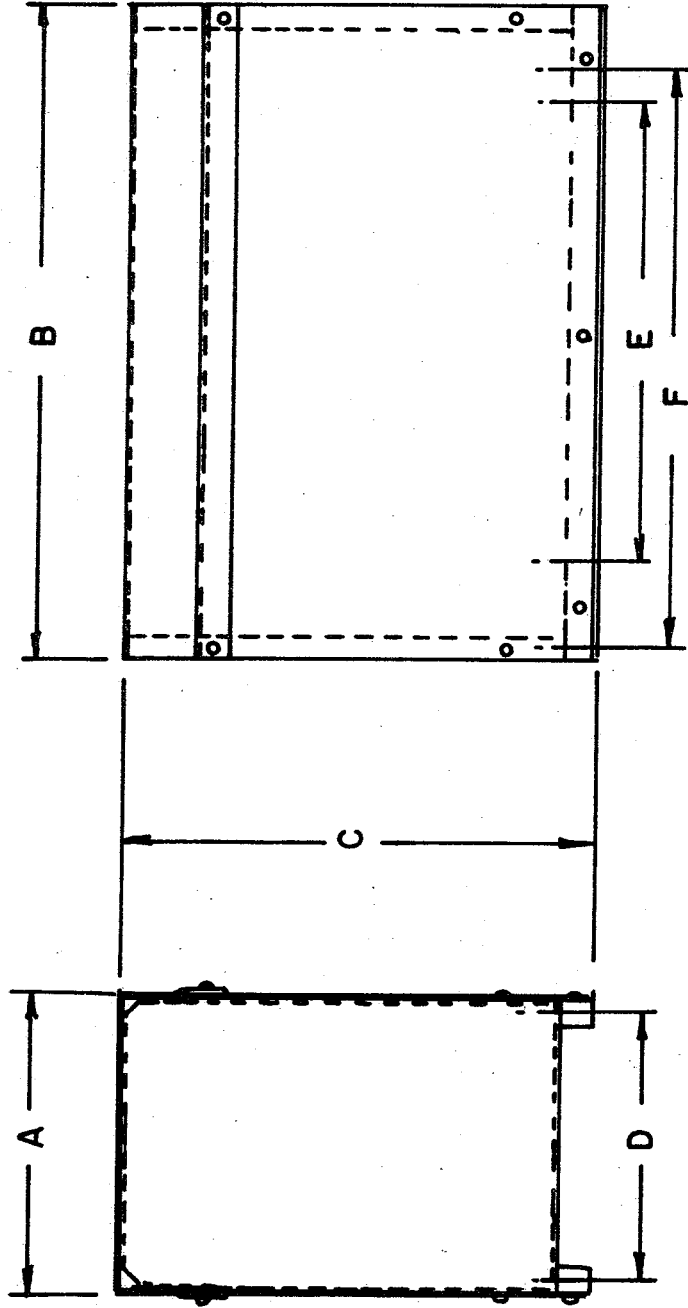


INSTRUCTIONS FOR CONNECTING VOLTAGE CHANGEOVER TERMINAL STRIP

1. REMOVE TOP AND LEFT SIDE PANEL.
2. CHECK NAMEPLATE OF THE WELDER TO BE CERTAIN IT IS DESIGNED FOR THE LINE VOLTAGE AND FREQUENCY YOU HAVE.
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6. REPLACE TOP AND SIDE PANEL BEFORE ENERGIZING UNIT.

366746

365598



DIMENSION SYSTEM	A	B	C	D	E	F	NET WT.
ENGLISH	14	30	22-1/2	12-3/4	23	26 1/2	235
METRIC	356	762	572	324	584	673	107

HOBART BROS. CO.
TROY, OHIO

SIZE
B

DWG. NO.

365598

ATTENTION!!!

**PLEASE FILL OUT AND RETURN THE
WELDER REGISTRATION CARD BELOW.**

Cut Along Dotted Line



NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS MAIL PERMIT NO. 12 TROY, OHIO

POSTAGE WILL BE PAID BY ADDRESSEE

**Hobart Brothers Company
600 West Main Street
Troy, Ohio 45373-9933**



HOBART BROTHERS CO. — WELDER REGISTRATION CARD

Serial No. _____

Owner's Name _____

Address _____

City _____ State _____

Date Received _____ In Satisfactory Order? _____

Obtained From: Factory ☐ Dealer or Distributor ☐

IMPORTANT! Fill out at once in ink and return to Hobart Brothers. Immediate return of this card registers warranty date.

THE HOBART "531" CANADA WARRANTY CERTIFICATE

1. **General:** Hobart's products are warranted for one (1) year following date of shipment to the original user, with exception of items listed in paragraphs 2 through 9 below.
2. **Main Power Rectifiers:** Silicon diodes and power SCRs used in the welding output circuits of equipment are **warranted for five (5) years** following date of shipment to the original user. Hobart will cover parts and labor in year one and parts replacement only in years two through five.
3. **Major Power Components:** Main power transformers, control, stability and filter reactors, armatures, stators, and printed circuit boards with a price in excess of \$200.00, are **warranted for three (3) years** following date of shipment to the original user. Hobart will cover parts and labor in year one and parts replacement only in years two and three.
4. **Expendable Items:** Primary and secondary switch contacts, cable connectors, carbon brushes, fuses, bulbs, filters, nozzles, contact tips, liners, cutting tips and wire feed rolls are worn or consumed in the normal process of welding or cutting and are therefore warranted only if found to be defective prior to use.
5. **Replacement Parts:** Replacement and exchange parts are warranted for the remainder of the original equipment warranty or for a period of ninety (90) days, whichever is greater.
6. **Semiautomatic Items:** Mig welding guns and cables and plasma cutting torches and cables are warranted for ninety (90) days.
7. **Engines, Tires, and Batteries:** Hobart does not warrant items furnished by Hobart but manufactured by others, including without limitation, gasoline or diesel engines, engine electrical equipment, batteries, and tires. Such items are warranted directly by the manufacturer, and Hobart may periodically inform customers of such warranty coverage; however, Hobart does not guarantee the accuracy or completeness of its information regarding such warranties.
8. **Exclusive Remedies:** In case of Hobart's breach of warranty or any other duty with respect to the quality of any product or service, the sole and exclusive remedies therefore shall be:

As to **PRODUCTS**, (1) repair, (2) replacement, or (3) where authorized by Hobart, payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the product, and as to **SERVICES** (including repair under warranty), the sole and exclusive remedies therefore shall be payment or credit for Hobart's actual charge therefore or, in the absence of any actual charge, the customary or reasonable charge for such services, and if such breach also involves impairment of Hobart products, the remedies available for breach of warranty with respect to the product.
9. **Modification and Misuse:** This warranty does not apply to products which have been modified in any way by any party other than Hobart; nor to products which have not been installed and operated in accordance with applicable industry standards; nor to products which have been used other than under the usual conditions for which designed; nor to products that have not received proper care, lubrication, protection, and maintenance under supervision of competent personnel. **Use of a product after discovery of a defect voids all warranties.**

DISCLAIMER OF WARRANTIES AND CONDITIONS

ALL OTHER GUARANTEES, WARRANTIES, CONDITIONS, REPRESENTATIONS, EITHER EXPRESSED OR IMPLIED, WHETHER ARISING UNDER ANY STATUTE, COMMON LAW, COMMERCIAL USAGE OR OTHERWISE, INCLUDING WITHOUT LIMITATION IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED.

WARNING

At all times, safety is an important consideration in the installation, servicing, and operation of the product, and skilled, qualified technical assistance should be utilized at all times. Specific recommendations are included in CAN/CSA-W117.2-M87 Safety in Welding, Cutting, and Allied Processes.

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3. **Major Power Components:** Main power transformers, control, stability and filter reactors, armatures, stators, and printed circuit boards with a price in excess of \$150.00, are warranted for three (3) years following date of shipment to the original user. Hobart will cover parts and labor in year one and parts replacement only in years two and three.
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7. **Engines, Tires, and Batteries:** Hobart does not warrant items furnished by Hobart but manufactured by others, including without limitation, gasoline or diesel engines, engine electrical equipment, batteries, and tires. Such items are warranted directly by the manufacturer, and Hobart may periodically inform customers of such warranty coverage; however, Hobart does not guarantee the accuracy or completeness of its information regarding such warranties.
8. **Exclusive Remedies:** In case of Hobart's breach of warranty or any other duty with respect to the quality of any product or service, the sole and exclusive remedies therefore shall be:

As to **PRODUCTS**, (1) repair, (2) replacement, or (3) where authorized by Hobart, payment of or credit for the purchase price (less reasonable depreciation based upon actual use) upon return of the product, and as to **SERVICES** (including repair under warranty), the sole and exclusive remedies therefore shall be payment or credit for Hobart's actual charge therefore or, in the absence of any actual charge, the customary or reasonable charge for such services, and if such breach also involves impairment of Hobart products, the remedies available for breach of warranty with respect to the product.
9. **Modification and Misuse:** This warranty does not apply to products which have been modified in any way by any party other than Hobart; nor to products which have not been installed and operated in accordance with applicable industry standards; nor to products which have been used other than under the usual conditions for which designed; nor to products that have not received proper care, lubrication, protection, and maintenance under supervision of competent personnel. **Use of a product after discovery of a defect voids all warranties.**

DISCLAIMER OF WARRANTIES

THERE ARE NO WARRANTIES WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF, EXCEPT AS SPECIFICALLY PROVIDED IN THE EXPRESSED WARRANTIES SET FORTH ABOVE, ALL PRODUCTS ARE SOLD "AS IS". HOBART MAKES NO WARRANTIES, EXPRESSED OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

WARNING

At all times, safety is an important consideration in the installation, servicing, and operation of the product, and skilled, qualified technical assistance should be utilized at all times. Specific recommendations are included in "Safety in Welding and Cutting", American National Standard No. Z-49-1.