

Instructions

FOR
PROJECTION EQUIPMENT

Type

94099-6

3-61

THE STRONG ELECTRIC CORP.
67 CITY PARK AVE., TOLEDO, OHIO

PREFACE

THIS STRONG RECTIFIER is a remote controlled three phase selenium power supply designed, manufactured and tested in one plant for use with an angular trim high intensity carbon arc lamp used with motion picture service.

THE ELECTRICAL DESIGN of this rectifier assures the proper power characteristics to the carbons of the high intensity arc lamp. It has an output range of 120 to 160 amperes at 65 to 76 D. C. volts.

TRANSFER LINKS located on the terminal panel in the power supply provide a means for "Coarse" adjustment of the D. C. output voltage. Line tap adjustments also on the terminal panel provide for "Fine" adjustment of the D. C. output voltage.

THE ARC POWER SELECTOR KNOB on the lamphousing provides D. C. arc voltage swings of about 10 volts. This control is used for adjusting the power supply when the arc voltage changes by a small amount for an appreciable length of time.

THE LENGTH OF THE ARC GAP in the lamp is controlled by the rectifier setting and the Arc Power Selector on the lamp. If the arc gap length is too long, lower the power output by turning the Arc Power Selector on the lamp to a lower number. If the arc gap length is too short, raise the power output by turning the Arc Power Selector to a higher number. If the range of the Arc Power Selector is exceeded, adjust the "Fine" and "Coarse" settings on the terminal panel as instructed under "Adjustment and Operation" section.

THE ARC CURRENT SELECTOR (motor rheostat) in the arc lamp controls only the arc current or carbon feeding rate and is not used to adjust the length of the arc gap.

SUFFICIENT AIR CIRCULATION is assured by means of an air cooling fan that supplies the air past the selenium unit to maintain a low operating temperature. This fan will operate when the rectifier is energized. Do not operate with cabinet cover panel removed.

THE SELENIUM RECTIFIER ELEMENTS used in this rectifier are special coated for moisture protection.

IF AT ANY TIME you have a suggestion, or desire aid in securing anticipated results, please feel free to write directly to THE STRONG ELECTRIC CORP., 87 City Park Ave., Toledo, Ohio.

FORMING OF SELENIUM UNIT

PLACE THE TRANSFER LINKS (marked coarse) at position "LOW" on the terminal panel. Place Primary Cable (marked fine) on taps marked "LOW", and the Arc Power Selector in the lamp on step #0.

REMOVE CARBONS FROM LAMP so that arc cannot be operated while forming selenium stack.

TURN ON ARC POWER SWITCH for 3 seconds, off 10 seconds, on 10 seconds, off 30 seconds and on for 3 to 5 minutes.

SELENIUM STACK is now formed.

PROCEED to adjust rectifier to correct output as described under ADJUSTMENT AND OPERATION section following.

CAUTION: WHEN ADJUSTING "COARSE" transfer links, make sure that all three links are set to the same position on the terminal panel.

WARNING

IF THIS RECTIFIER REMAINS IDLE for periods of three months or more, it will be necessary to reform the plates in the selenium unit, as per above procedure.

ADJUSTMENT AND OPERATION

ADJUST RECTIFIER TO CONDITION "A" as shown in table below.

INSERT THE CARBONS, strike the arc, and let the lamp burn for about ten minutes. Observe the arc gap during this trial period. The arc gap should be approximately equal to the diameter of a negative carbon. If it is quite obvious that the arc gap is too short, increase the power supply, while the arc is burning, by turning the arc power selector to a higher number. At the end of the ten minute trial period turn the lamp off and check the length of the arc gap using a negative carbon. The carbon should just pass between the positive and negative when the rectifier is correctly adjusted.

IF THE HIGHEST POSITION, NO. 6, is reached on the arc power selector and the arc gap is still too short, remove front panel, adjust rectifier to condition "B" and repeat the paragraph above. Follow the sequence of conditions "A" through "F" until the proper arc gap is obtained, making sure that each time the coarse transfer links and the fine terminal taps are changed, the arc power selector is returned to dial step No. 0.

Condition	Coarse Transfer Links	Fine Terminal Taps	Arc Power Selector
A	LOW	LOW	step 0 thru 6
B	LOW	MED.	step 0 thru 6
C	LOW	HIGH	step 0 thru 6
D	HIGH	LOW	step 0 thru 6
E	HIGH	LOW	step 0 thru 6
F	HIGH	HIGH	step 0 thru 6

CAUTION: If coarse transfer links are adjusted to "HIGH", the fine terminal taps must initially be placed to "LOW", and the arc power selector returned to step No. 0.

AFTER THE CORRECT POWER SETTING is obtained as determined by the length of arc gap, no further adjustment of the rectifier will be necessary unless the arc gap length changes. Any change can usually be corrected by turning the arc power selector to a higher number to increase the arc gap or to a lower number to shorten the arc gap. However, in some instances it might be necessary to change the internal connections of the rectifier.

EXAMPLE 1. REFER TO THE TABLE ON THE PRECEDING PAGE. If your rectifier is set at condition "B" with the arc power selector set on step 6 and the arc gap is still too short, turn the power off, return the arc power selector to step 0, and reset the rectifier to condition "C".

EXAMPLE 2. REFER TO THE TABLE ON THE PRECEDING PAGE. If your rectifier is set at condition "C" with the arc power selector set on step 0, and the arc gap is still too long, turn the power off, and reset the rectifier to condition "B".

THE AMOUNT OF CURRENT AT THE ARC is regulated at the arc current control on the lamp and not at the rectifier. If the current is registering lower than the desired amount, turn the arc current control on the lamp in a clockwise direction to increase in amperage. If it is registering too high, turn the arc current control down by turning in a counterclockwise direction. Allow ten or fifteen minutes time for the carbons to adjust themselves before judging whether or not the current is correct.

THE AIR COOLING FAN will operate when the rectifier is energized. To assure complete air circulation and proper ventilation, do not place anything on the grill top of the rectifier. If the rectifier is permitted to operate at too high a temperature then damage will result to the selenium unit.

DO NOT OPERATE WITH COVER PANEL REMOVED.

MAINTENANCE

LITTLE MAINTENANCE of the rectifier is required to keep it in good working condition.

VACUUM the entire rectifier unit every three months. Dust and dirt will collect in the selenium unit reducing air flow and cause overheating, which could cause it to short out. It will be necessary to remove the selenium unit from the rectifier housing to clean it thoroughly.

TO REMOVE THE SELENIUM UNIT from the rectifier, first remove the front cover from the rectifier housing. Remove the two screws securing the choke to the rectifier base and move the choke out of the way of the selenium unit. Remove the two screws securing the selenium unit to the base of the rectifier. Next, disconnect at terminal panel, the heavy white wire running from the selenium unit to the terminal panel. Disconnect D. C. line at external connection and pull wire through housing outlet. Remove selenium unit from housing.

FUSES should be checked periodically. Check for overheating and make certain fuse holders are not loose.

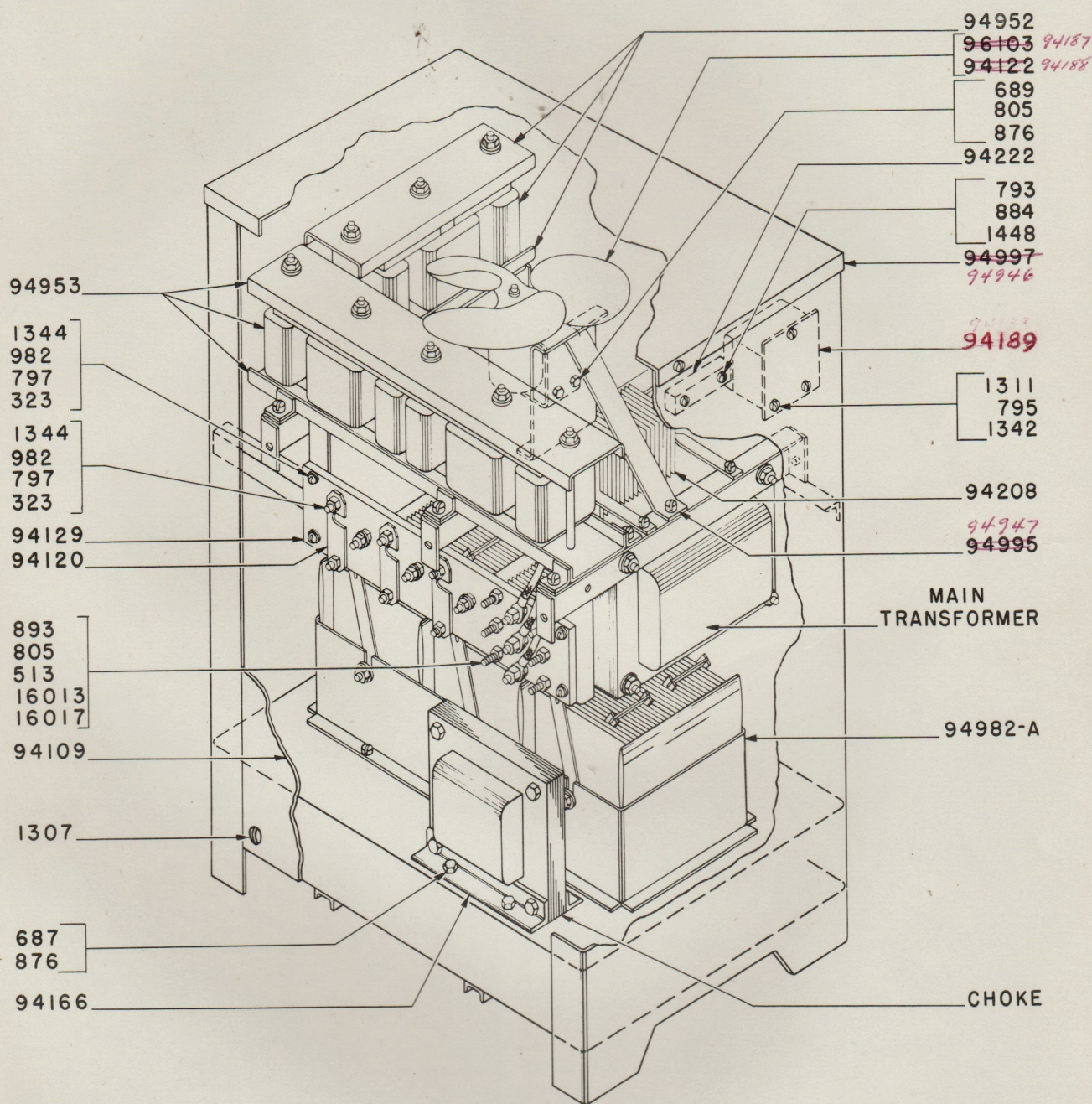
CHECK CONNECTIONS on selenium stack and terminal panel every 6 months. Make certain that all electrical connections are tight and secure at all times.

INSPECT AND CHECK THE CONTACTS of the relay at least two times a year - do not file or sand contacts.

TROUBLE CHART

<u>TROUBLE</u>	<u>POSSIBLE CAUSE</u>	<u>REMEDY</u>
No direct current at arc.	Not wired according to Installation Wiring Diagram.	Refer to Installation Wiring Diagram & Installation Section of this Inst. Book.
	Blown fuses.	Check fuses and fuse holders.
	Relay coil burned out.	Replace coil in relay.
	Relay contacts burned out or damaged.	Replace with new contacts.
Blowing or destroying line fuses.	Wrong size fuses.	Refer to Wiring Diagram for correct fuses.
	Bad contacts in relay.	Replace with new contacts
	Selenium units shorted out.	Return selenium unit to factory for exchange unit. Do not return the complete rectifier.
Low Arc current with full 3 phase input voltage applied.	Voltage control circuit open.	Check voltage control circuit for continuity. Circuit includes arc power selector and control windings on saturable reactor.
	Defective arc voltage control selenium.	Measure across "plus" and "minus" terminals for short or open.

PLATE 1623



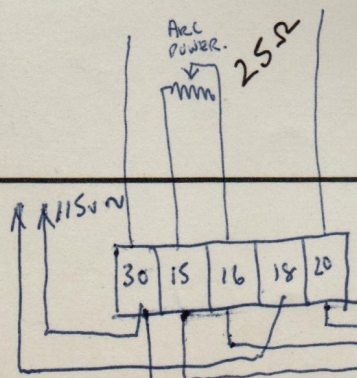
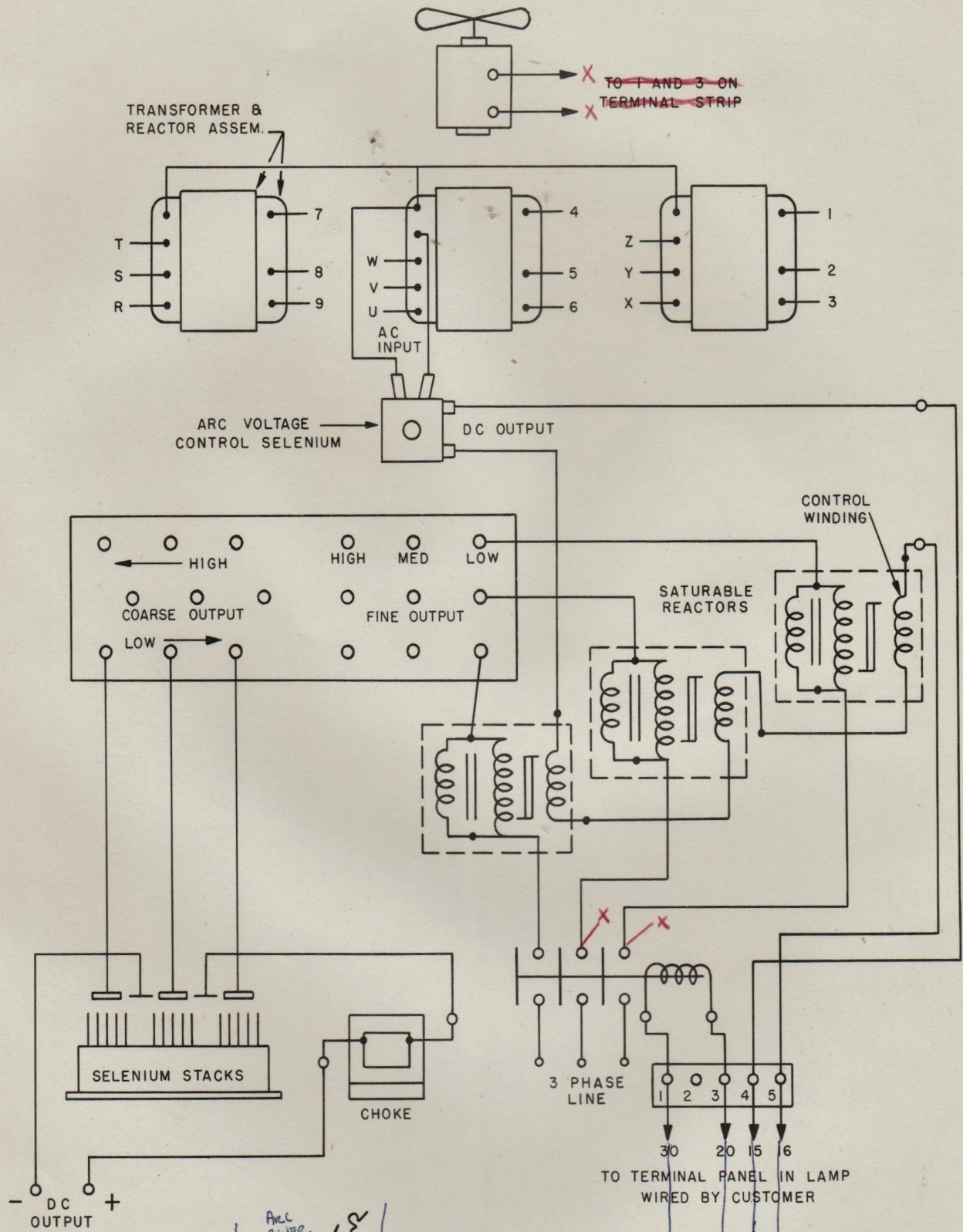
323	Screw - Rd. Hd., 10-24 x 1"
513	Screw - Fil. Hd., 1/4-20 x 1-1/4"
615	Screw - Hex. Hd., 5/16-18 x 1-1/2"
687	Screw - Hex. Hd., 1/4-20 x 1/2"
689	Screw - Hex. Hd., 1/4-20 x 5/8"
793	Nut - Steel, 6-32
795	Nut - Steel, 8-32
797	Nut - Steel, 10-24
805	Nut - Steel, 1/4-20
807	Nut - Steel, 5/16-18
853	Washer - Steel (Bright) 5/16"
884	L'Washer - Split Ring, #6 Stn. Std.
893	L'Washer - 1/4" Shakeproof #1914
982	Washer - #5210 Bright Kromoide
1307	Screw - Bind. Hd., 8-32 x 5/16"
1311	Screw - Bind. Hd., 8-32 x 3/8"
1342	Washer - #8 Shakeproof, External Type Size 1108
1344	L'Washer - #10 Internal, #1210 Shakeproof
1448	Screw - Brd. Hd., #6-32 x 3/4"
1502	L'Washer 5/16" Shakeproof (cadmium steel plate - internal)
16013	Nut - Terminal Post
16017	Washer - Wire Forming
94109	Access Panel
94120	Transfer Link
94122	Motor - Fan (<i>*94188 FAN BLADE</i>)
94189	Relay
94166	Bracket - Mounting, (choke)
94208	Rectifier - Control Voltage
94219	Terminal Panel
94222	Terminal Strip
94952	Reactor Assembly (2 unit)
94953	Reactor Assembly (4 unit)
94955	Case Assembly
94982-A	Selenium Units & Support Assy.
94995	Support Bracket - Motor
94997	Cover Assembly
95147	Coil (110 volt)
95148	Contacts - Relay. One set of contacts consist of: (1) movable and (2) stationary contacts. (3) sets of contacts are required for each relay.

Choke) When ordering choke or transformer, give type number and
Transformer) serial number of rectifier.

Note: Do not ship the complete rectifier if returning selenium unit to factory. Return selenium unit only for exchange unit. Replacement selenium unit will include cables.

When ordering parts be sure to give the serial and type number of the original equipment for which the parts are required.

PLATE 1625



PARTS LIST

All the prices are quoted f.o.b. Toledo and are subject to change without notice.

When ordering parts be sure to advise the serial numbers and the model of lamps in addition to the name of the parts wanted and how shipment is to be made.

There will be a minimum charge of one dollar on any one invoice and a service charge sufficient to cover the cost of handling on all merchandise returned to us for credit.

