

Color Arc 700

700W Xenon Followspot

OPERATION MANUAL



USHIO U-TECH INC.

1. GENERAL

This manual gives the assembly/set up procedure and the optical alignment and adjustment of the XEBEX SUPERSOL 701SR xenon follow spot light.

Before operation, please peruse this operation manual.

2. SPECIFICATIONS

Input Side

1. Supply power Voltage	100/120/200/220/240V, $\pm 10\%$ single phase
2. Rated Input Power	1.6KVA
3. Input Current	14/12/8.0/7.3/6.9 amps
4. Number of Phase	single
5. Frequency	50/60Hz

Output Side

1. Output Voltage	22VDC
2. Output Current	35VDC
3. No Load Voltage	approx. 100VDC

3. COMPOSITION

1. Xenon Lamp	UXL-7PR	x 1
2. Spot Head (Main Body)	XPS-701SR	x 1
3. Power Supply (Switching Regulator)	KSX-35MHXC1	x 1
4. Reflector	XHM-1P-11	x 1
5. Color Changer	XCC-6XC-6	x 1
6. Stand	STM-X5	x 1

4. ASSEMBLY AND SET UP

(1) Spot Head and Stand (Fig. 6)

Insert the support rod of the spot head into the stand and clamp.

When making height adjustment, loosen the clamping lever (24).

Caution is necessary for this practice because the main unit being heavy.

(2) Color Changer (Figs. 6 & 7)

Insert the frame plate of the color changer into the color changer fixing groove (29) at the front edge of the main body. Then fasten by screws.

(3) Xenon Lamp (Fig. 3)

The negative electrode side (smaller electrode side) must come to the front and the positive electrode side to the rear. Firstly set the positive cap into the chuck (42) and temporarily clamp it by the chuck fastening lever (38). Secondly, connect the negative lead (47) to the negative cap and firmly clamp by the clamp nut (48). Lastly firmly clamp the xenon lamp positive cap by means of the chuck fastening lever.

(4) Balance Adjustment (Fig. 6)

To establish balance of the spot head, loosen four balance adjusting nuts (11) and move the spot head alongside the rail. After adjustment, fasten the nuts.

5. WIRING (Fig. 5)

- (1) Wiring connection between the spot light and the rectifier must be made referring to the wiring diagram in this manual (Fig. 5).
- (2) Earthing is always necessary.

6. LOCATION OF RECTIFIER AND VOLTAGE SELECTION (Fig. 4)

- (1) The switching regulator power supply is designed to make forced air cooling from the side and the rear. The power supply location should therefore be minimum of 100mm clear of wall surface.
- (2) The voltage changeover selector is integrated in the power supply. Open the front cover and make re-selection when necessary. Operation of the regulator on mismatched supply voltage causes failure of the equipment. (The rectifier is factory preset to 240V.)

7. PERPARATION FOR IGNITING & CONFIRMATION (Figs. 3, 6 & 8)

- (1) Switch on the power switch of the switching regulator.
- (2) Confirm the correct connection of the DC power supply lines. Confirm it by a tester at the positive and negative terminals of the xenon lamp.
- (3) Switch on the power switch (17) of the spot head.
- (4) Confirm that the cooling fan motor of the spot head are operating in the normal mode. Confirm once again the positive and negative connections for the DC supply at the lamp terminals.

8. LIGHTING (Figs. 4, 6 & 8)

- (1) Switch on the power switch (17) of the spot head.
- (2) Press the arc start push button (16). The xenon lamp will be ignited.

Remarks: Under no circumstances, try to watch xenon light without protective (dark color) eye glasses.

9. ADJUSTMENT OF LAMP CURRENT (Fig. 8)

The useful range of the lamp current for the 700W xenon lamp is 30 ~ 35 amps. Regulate the output current of the power supply by means of the output current adjustor adjacent to the ammeter on the top panel of the power supply. (Use a screw driver for this adjustment.)

10. OPTICAL ALIGNMENT & ADJUSTMENT (Figs. 6, 7 & 9)

- (1) When making optical alignment and adjustment, lamp current must be lowered to the minimum level.
- (2) The cutting shutter (4) douser (3) and the iris shutter (5) must be fully opened.
- (3) Adjust light distribution by means of the following controls:
lamp right/left adjust knob (36), lamp up/down adjust knob (37) and lamp for/back adjust knob (39).
- (4) In case uniform light distribution is not obtainable by the above procedure, or luminosity is extremely low, readjust with these knobs after adjustment of reflector (refer to item 15 in this manual).

11. ADJUSTMENT OF ZOOM LENS (Figs. 6, 7 & 9)

- (1) Pull the zoom handle (9) to the xenon lamp side and then make focusing with the zoom wire take up handle (10). Then return the zoom handle (9) to the color changer side and obtain focus with the minimum spot diameter by turning the zoom fine adjust screw (8).
- (2) Correction of the zoom can be made by setting the zoom handle (9) at the neutral (central) position and then turning the zoom wire take up handle (10).

12. EXTINGUISHING (Figs. 6 & 9)

- (1) The xenon lamp can be extinguished by switching off the power switch (17) of the spot head.
- (2) Forced air cooling for the xenon lamp must be continued for 5 minutes after extinguishing.

13. COLOR CHANGER (Figs 6, 7, 9 & 13)

- (1) Insert the color changer into the color changer groove (29) of the spot head.
- (2) By pressing down the lever of the desired color sheet frame, it will be set in position.

14. COLOR SHEET & LIGHT DISTRIBUTION ADJUSTMENT (Fig. 11)

Whenever the color sheet is used, precaution is necessary that good light distribution adjustment has been established to avoid condensed hot spot which may cause burning of the color sheet.

15. ADJUSTMENT OF REFLECTOR (Fig. 1)

This adjustment is made while operating the xenon spot light.

If the center of the condensed light (hot spot) does not come to that of the projected spot light circle or uniform light distribution is not possible (50% distribution) (brightness is deviated to either side) or luminosity is extremely low, even after the xenon lamp positioning adjustment, adjustment of the reflector is necessary in the following manner.

The adjustment can be made by means of the reflector clamps and the adjust screws (46) (4 positions around the reflector). Once the correct reflector positioning adjustment is accomplished, there is no further need until the reflector is replaced.

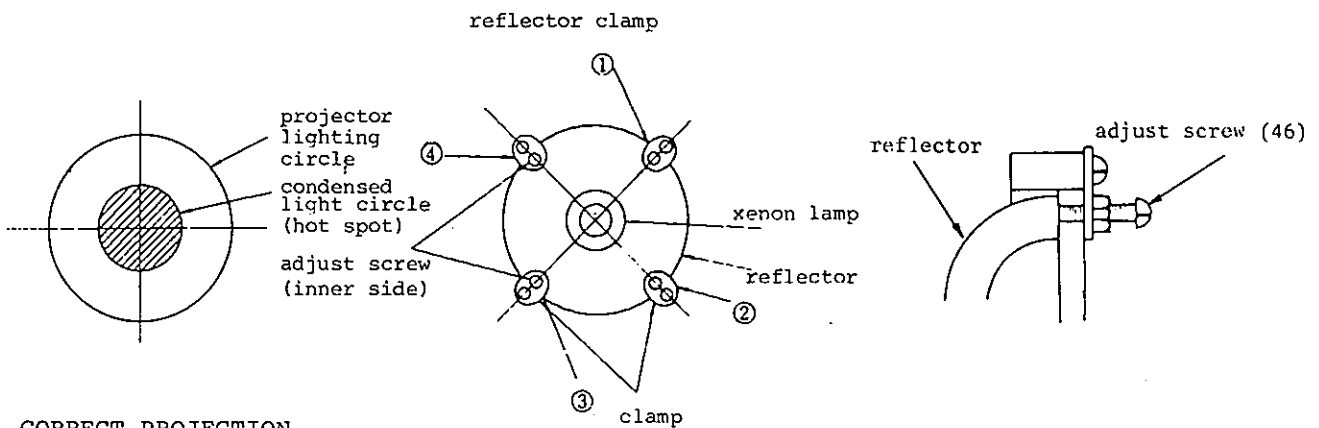
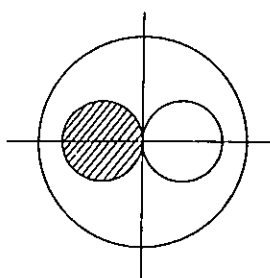


Fig. 1

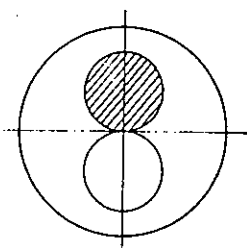
The correct light condensing is as shown above.

If correctly aligned even when the xenon lamp is moved in the longitudinal axis (by the for/back knob (39)), the condensed light circle will always stay in the center of the spot light circle. If the condensed light circle departs from the center as the xenon lamp for/back knob (39) is adjusted, the following adjustment is necessary.



LATERAL DEVIATION

Condensed light circle deviates laterally as shown in the left. Shaded circle ... push the adjust screws of positions ① and ② . Solid line circle ... push the adjust screws of positions ③ and ④ .



VERTICAL DEVIATION

Condensed light circle deviates vertically as shown in the left. Shaded circle ... push the adjust screws of positions ② and ③ . Solid line circle ... push the adjust screws of positions ① and ④ .

Fig. 2

16. MAINTENANCE, CHECK AND CAUTIONS FOR OPERATION

- (1) Always keep the reflector, the xenon lamp and the lenses clean.
If soiled by dusts, oil, etc. clean with an alcohol impregnated soft cloth.
- (2) Cautions for use of iris shutter (Fig. 5)
When fading out the light by using the iris shutter (5), remaining light must immediately be shielded by means of the cutting shutter (4). Otherwise, xenon light may burn the blades of the iris shutter.

17. STORING

- (1) When the spot light must be stored for a prolonged period of time, the xenon lamp must be removed from the spot head and separately stored at a safe place.
- (2) To operate the spot light after storing, provide identical cares head. and checks to that practised at the initiation of operation.

18. HANDLING OF XENON LAMP

- (1) The xenon lamp must always be contained in the protective plastic envelope as supplied until it is installed into the spot
- (2) Avoid touching the xenon lamp quartz wall. Reducing agents such as sodium adhering to the fingers may be transferred to the quartz causing devitrification. If accidentally soiled, immediately clean the quartz by alcohol.
- (3) The larger electrode side is the positive. If the xenon lamp is installed in the incorrect polarity (Note that this is reversed polarity lighting type xenon spot light and the positive cap must come to the rear side), the electrodes will fuse in a short period of time after starting.
- (4) The xenon lamp must be operated not exceeding the specified rated operating current. The rated current of the UXL-7PR is 35amps max.
- (5) The UXL-7PR xenon lamp requires forced air cooling. Do not operate the spot light if the cooling fan motor is out of operation.
- (6) The xenon lamp emits a considerable amount of ultra violet rays which are hazardous to human eyes. Do not watch the xenon light without protective glasses, etc.

- (7) For safety purpose, wear a protective mask and gloves when installing or removing the xenon lamp.
- (8) If the terminations are loose, it may cause overheating because of high current load. The clamp nut and the lamp chuck of the xenon lamp must be firmly clamped.
- (9) After a prolonged hours of use, when the anyone of the following symptoms is observed, life of the xenon lamp in use is considered terminated. Immediately replace with a new xenon lamp.
 - a. Owing to consumption of a tip of the electrode, projected light gives flickers.
 - b. Owing to vaporization of the electrodes, inner surface of the lamp quartz wall is blackened and luminosity is lowered.
 - c. Owing to consumption of a tip of the negative electrode, the lamp voltage goes up exceeding the specified maximum rating (45amps.).
 - d. At igniting, the xenon lamp does not easily start even if sparks are established between the electrodes.

19. HANDLING OF REFLECTOR AND LENSES

Surface of the reflector and the lenses must always be kept clean. For cleaning, use alcohol. During cleaning practice, the power switch must be switched off.

TROUBLESHOOTINGS AND MEASURES

SYMPTOMS	CAUSES	CHECK POINTS	MEASURES
The xenon lamp cannot be ignited.	No power supply.	Check for the main switch	Switch on the power switch.
		Check for the fuse in the power line.	Replace the fuse with the one having 30amps capacity.
	No operation of the rectifier.	The power switch of the rectifier is not switched on.	Check for the rectifier power switch.
		Check for correct setting of voltage selector.	Select to matched supply voltage (refer to Fig. 4.)
		Blow off of the rectifier fuse.	Replace the fuse with one having 20 amp capacity. (Refer to Fig. 4)
	No operation of the ignitor. (If normal, when the arc start push button is pressed, high frequency pulsed voltage generation noise (bz.z.z.z...) is heard.	Check if 100V AC is impressed upon the AC terminals of the relay terminal board of the spot head. (Refer to Fig.5-2)	If AC power is not impressed, check the primary power supply to the rectifier. Or, failure of the ignitor. Replace.
	Insufficient contact or cut off in the electric circuit.	Check at each terminals, or wiring.	Repair.
The ignitor functions normally but the xenon lamp cannot be started.	No load voltage at the output terminals (+) (-) of the rectifier is lower than 75VDC. Or such voltage is considerable lower.	Failure of electronic components of the rectifier.	Replace and repair.
	Life termination of the xenon lamp.	High frequency pulse is discharged between the electrodes.	Replace.
	Output current of the rectifier is too low.	Increase the output current of the rectifier by means of adjustor.	Turn clockwise. (Rated current is 35amps.)
	Insufficient termination of the DC output cables (+) (-) or insufficient contact at the xenon lamp.	Check all contacts.	Repair or correct such insufficient contact.

PARTS LIST

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4	cutting shutter	6 , 7
5	iris shutter	6 , 7
6	knurled head clamping screw (requires special screw driver)	6 , 7
7	color changer	6
8	zoom fine adjust screw	6 , 7
9	zoom adjust lever (both sides)	6 , 7
10	zoom wire adjust handle	6 , 7
11	spot head balance adjust nut	6
12	tilt lock handle (towel rack)	6
13	operation	6
14	view glass	6
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17	power switch	6
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19	D.C. power cable	6 , 7
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21	power cable	6
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23	pan lock handle	6
24	stand height adjust handle	6
25	wire hook	6
26	knurled clamping screw (requires special screw driver)	6
27	spot head front nose cover	6
28	lamphouse top cover	6
29	color changer groove	6 , 7
30	color changer clamping screw	6 , 7
31	stand height adjust pipe	6
32	stand column	6
33	stand leg	6
34	stand lock handle	6
35	castor	7

<u>index</u>	<u>nomenclature</u>	<u>figure no.</u>
36	xenon lamp right/left adjust knob	7
37	xenon lamp up/down adjust knob	7
38	xenon lamp clamping lever	7
39	xenon lamp for/back adjust knob	7
40	positive(+) lead	7
41	door switch	7
42	chuck assembly	7
43	xenon lamp UXL-7PR	7
44	reflector, 180 ϕ X 30 X 360	7
45	reflector shield	7
46	reflector clamping screw	7
47	lamp lead	7
48	nut	7
49	zoom lens (rear) (synthetic F.L.=78mmEF)	7
50	zoom guide shaft	7
51	zoom spring	7
52	zoom wire	7
53	zoom lens (front) (6" ϕ - 18"EF)	7
54	guide pulley	7
55	guide pulley	7
56	zoom pulley	7
57	guide pulley	7
58	cable clamping bushing	7
59	ignitor(SS-35GRX)	7
60	relay, AC 100V (for hour meter) (Matsushita AP3514)	7
61	terminal board	7
62	cooling fan motor (C-20BF)	7

XENON LAMP INSTALLATION (FIG. 3)

The xenon lamp must be installed in the following method.

The negative cap (the cathode side which has a smaller electrode) must come to the front side, and the positive cap to the rear side.

1. Insert the positive (+) cap of the xenon lamp into the chuck and clamp the cap by means of the chuck fastening handle to an extent that the xenon lamp can be lightly held.
2. Connect the negative (-) of the xenon lamp to the high tension voltage terminal and clamp it by the nut.
3. Firmly clamp the positive cap of the xenon lamp by means of the chuck clamp knob.

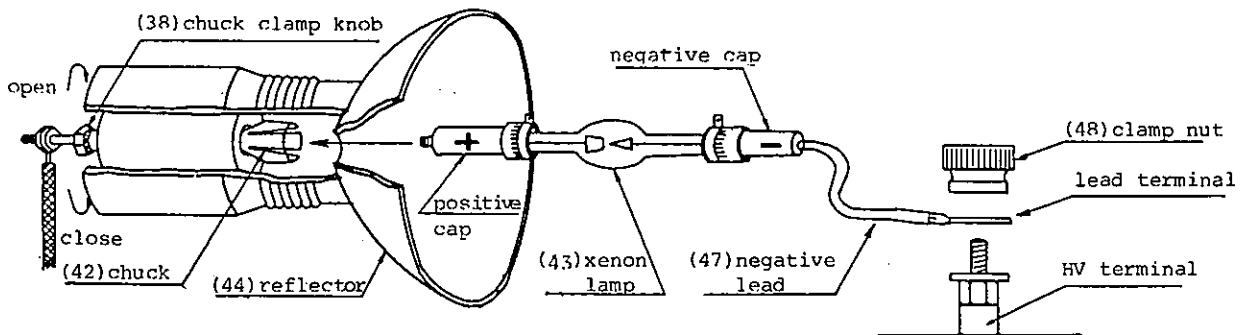


Fig. 3

VOLTAGE SELECTOR OF SWITCHING REGULATOR (Fig. 4)

Setting of Input Voltage

Open the front panel of the regulator and set to the correct input voltage in the following procedure.

(Inside this front panel, spare fuse wires and pilot lamps are attached.)

(Caution: During input voltage selection procedure, the mains switch at the power board must be switched off.)

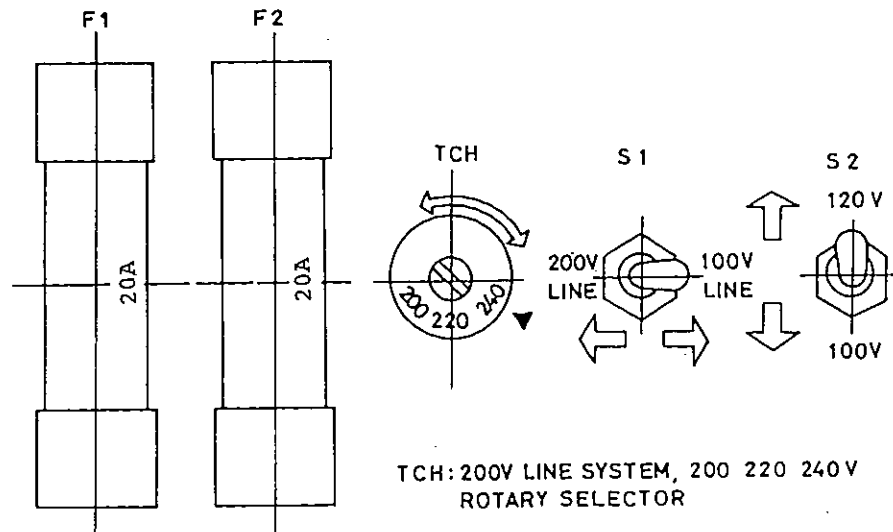


Fig. 4

Procedure

1. Confirm the supply voltage.

90 --- 130v. Throw the S1 into the "100V LINE" side(right side).
180 -- 260v. Throw the S1 into the "200V LINE" side(left side).

2. "100V LINE" selected.

Select the S2 at an appropriate position, 120v or 100v.

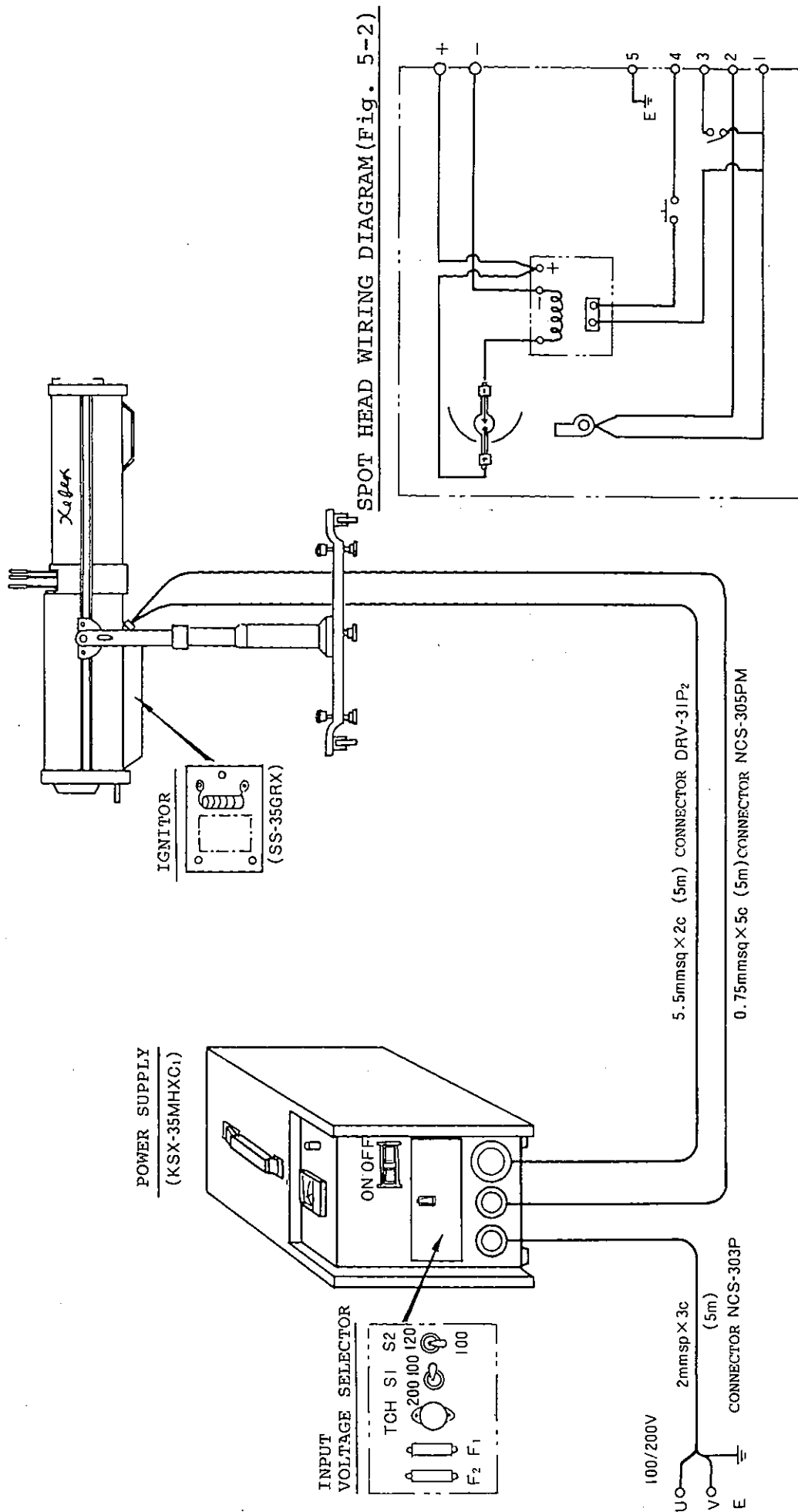
"200V LINE" selected.

Set the rotary selector switch TCH to an appropriate position.

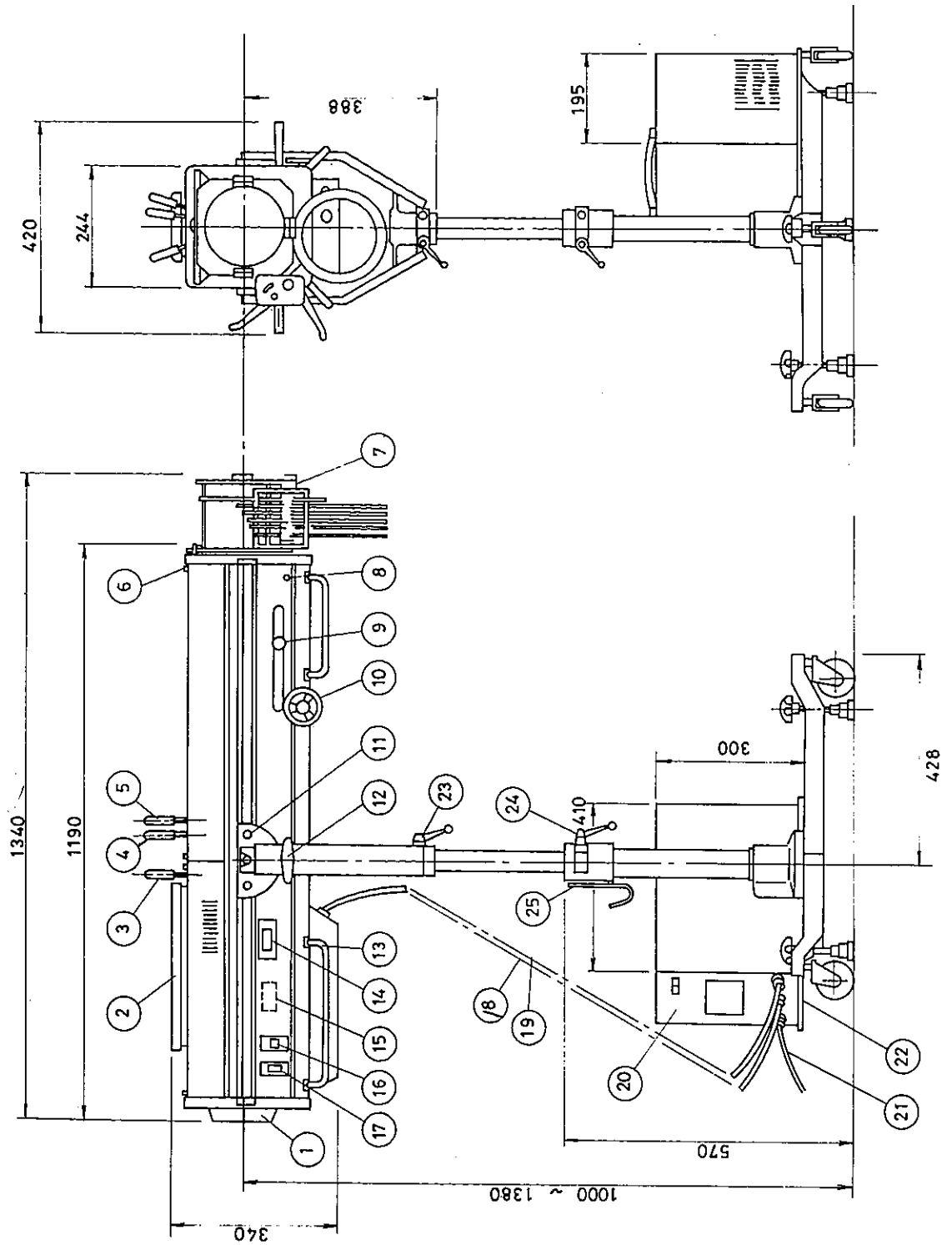
CAUTION

1. Permissible input voltage fluctuation to the selected voltage is $\pm 10\%$.
2. The S2 and the TCH are independent. When "100V LINE" is selected, there is no need to control the TCH. Likewise, when "200V LINE" is selected, there is no need to control the S2.
3. To control the TCH, use a screw driver and select the desired voltage by setting it to the ▲ mark.
4. If, by error, 200V(180--260v) power is impressed while "100V LINE" is preselected, an integrated alarming buzzer gives warning and operation is not possible. In such case, immediately cut off mains power supply and select "200V LINE" by the S1 and then set to an appropriate input voltage by the TCH.

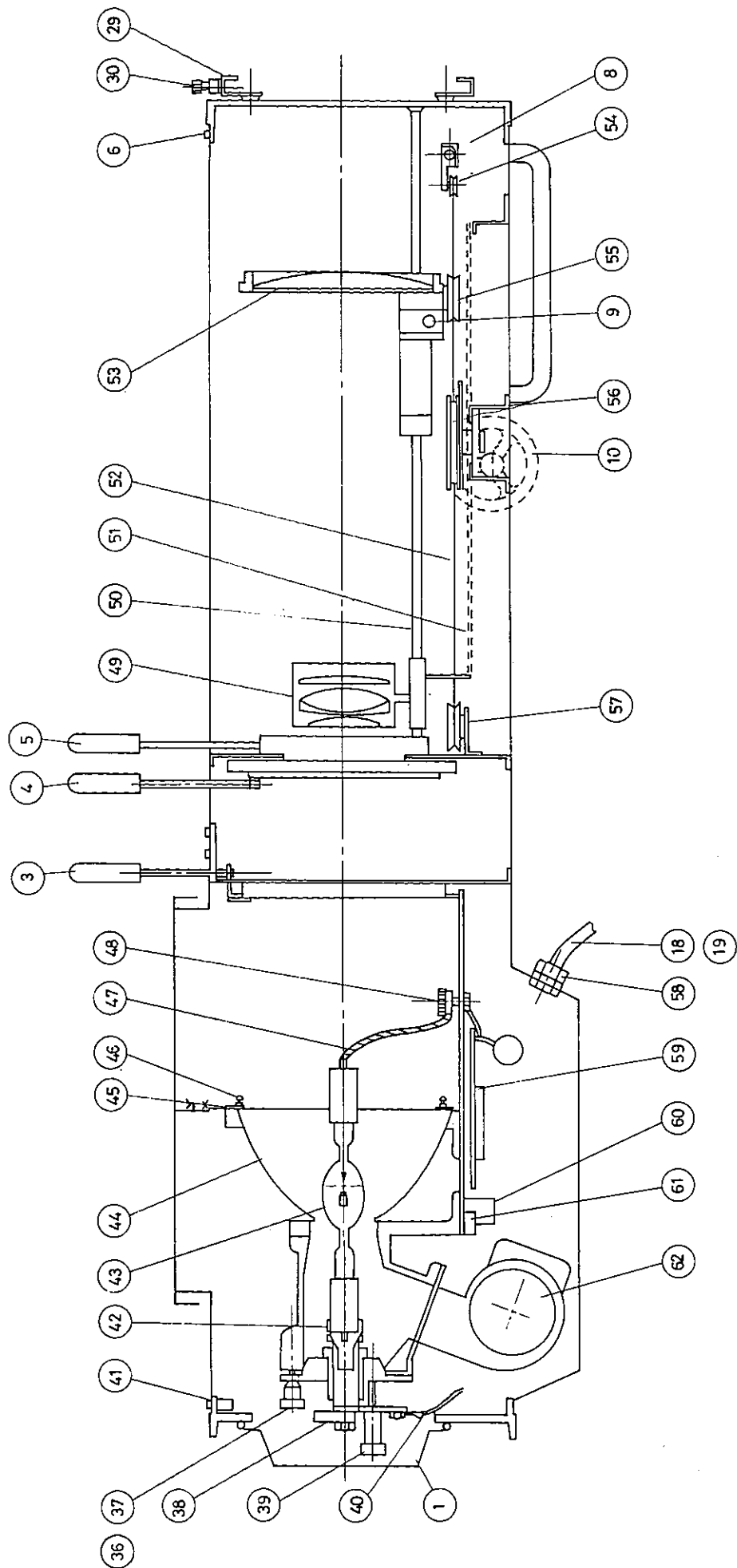
SCHEMATIC DIAGRAM (Fig. 5-1)



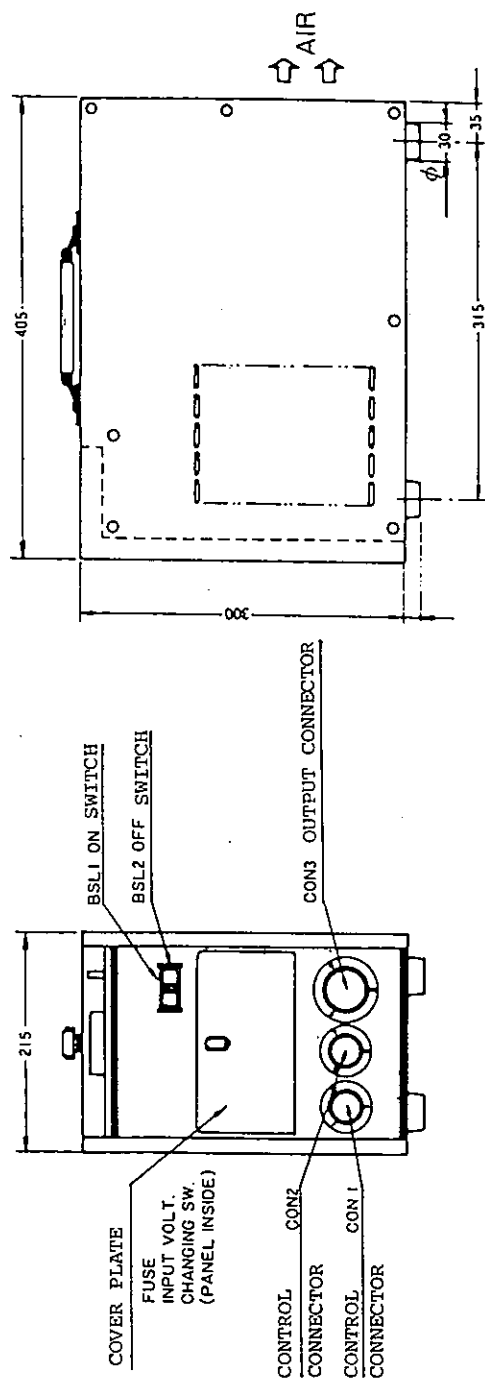
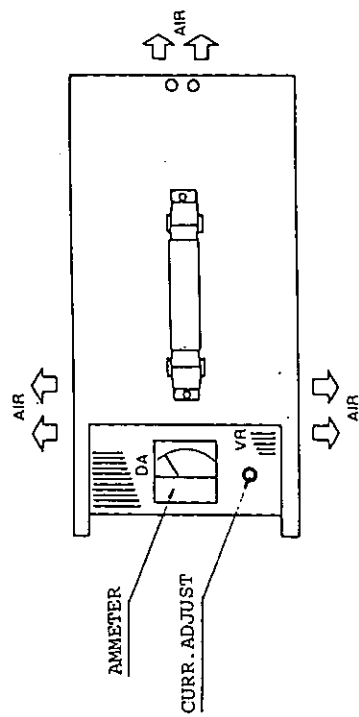
EXTERNAL VIEW (Fig. 6)



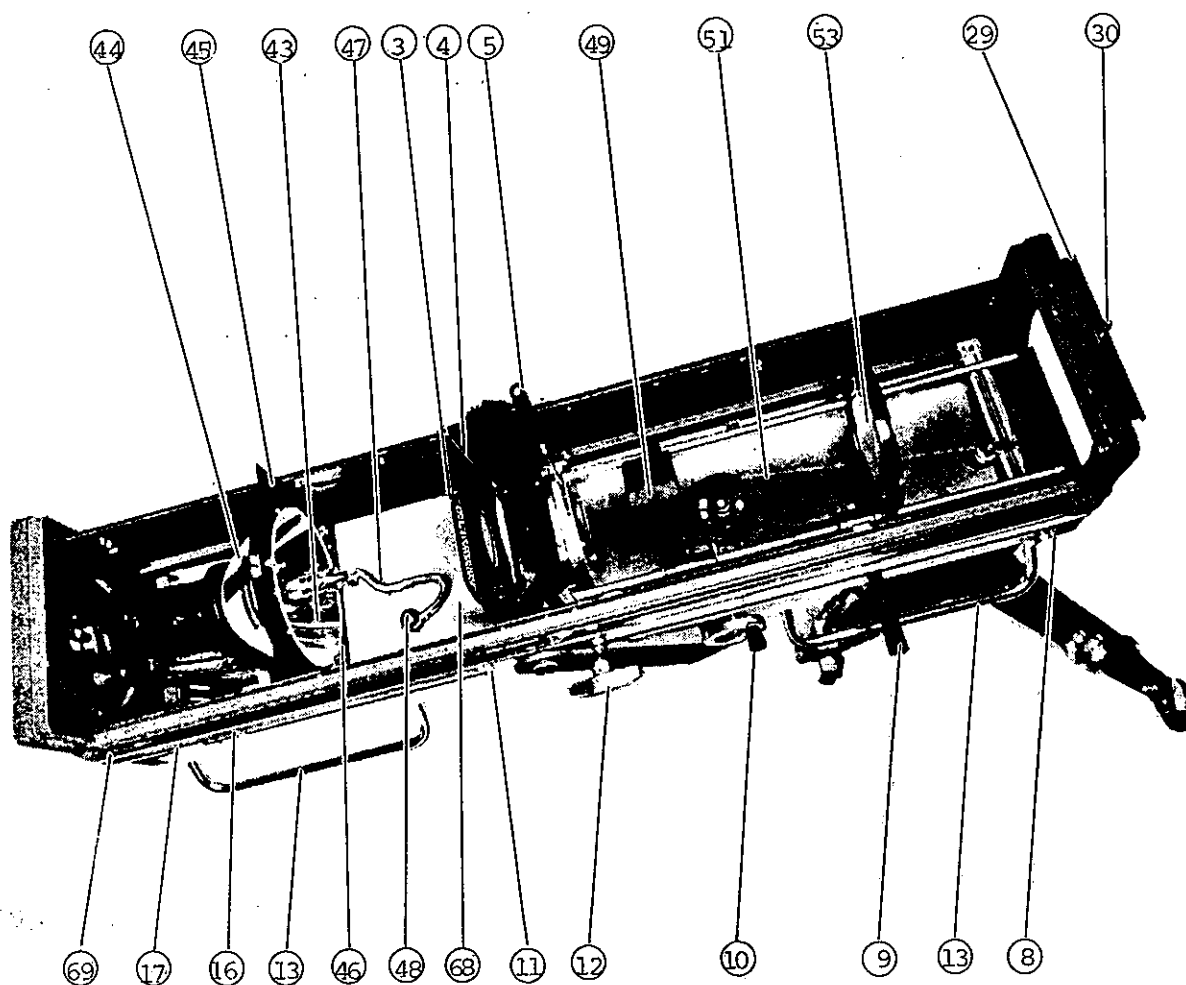
INTERNAL VIEW (Fig. 7)



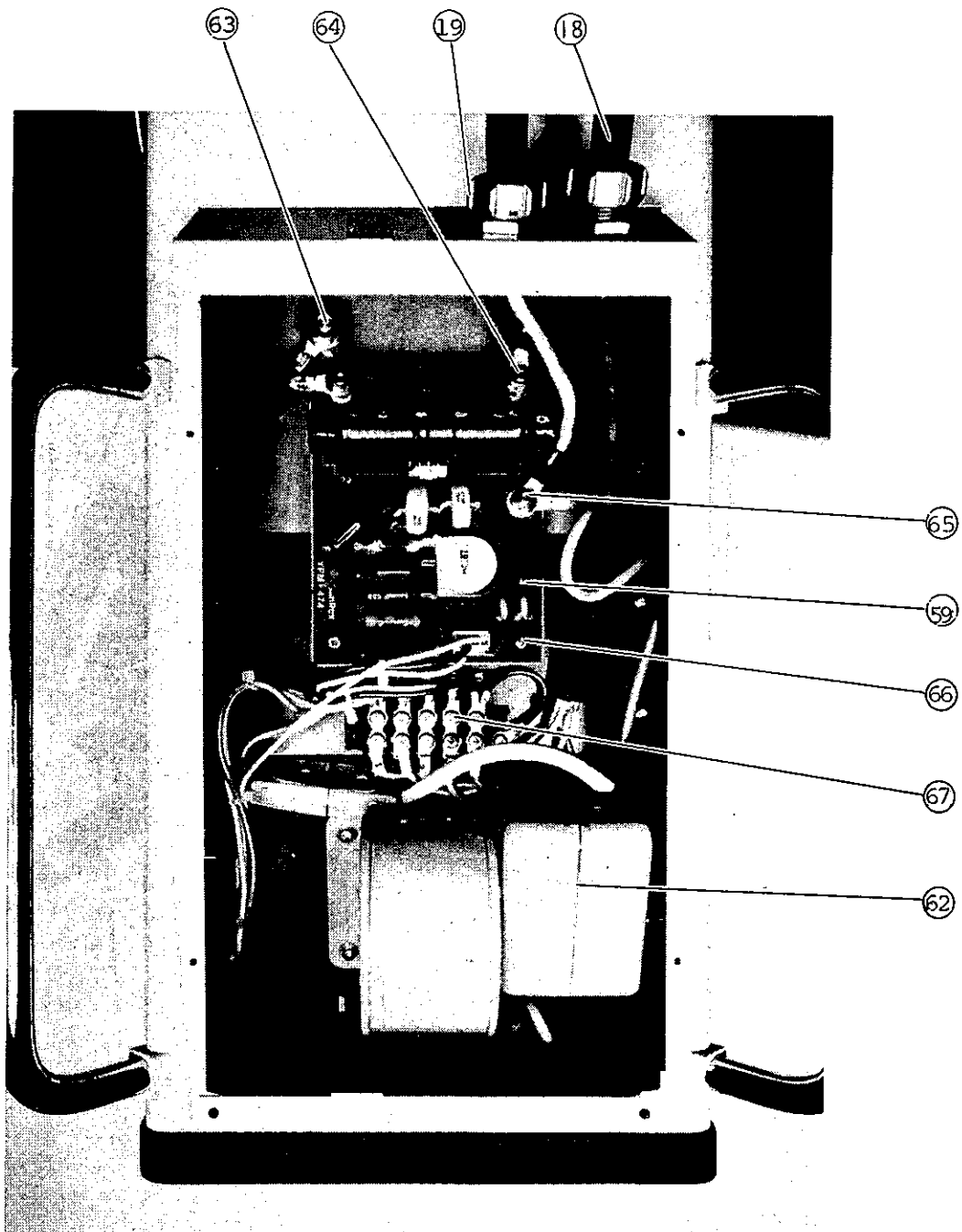
POWER SUPPLY (SWITCHING REGULATOR) (Fig.-7)
(KSX-35MHXC1)



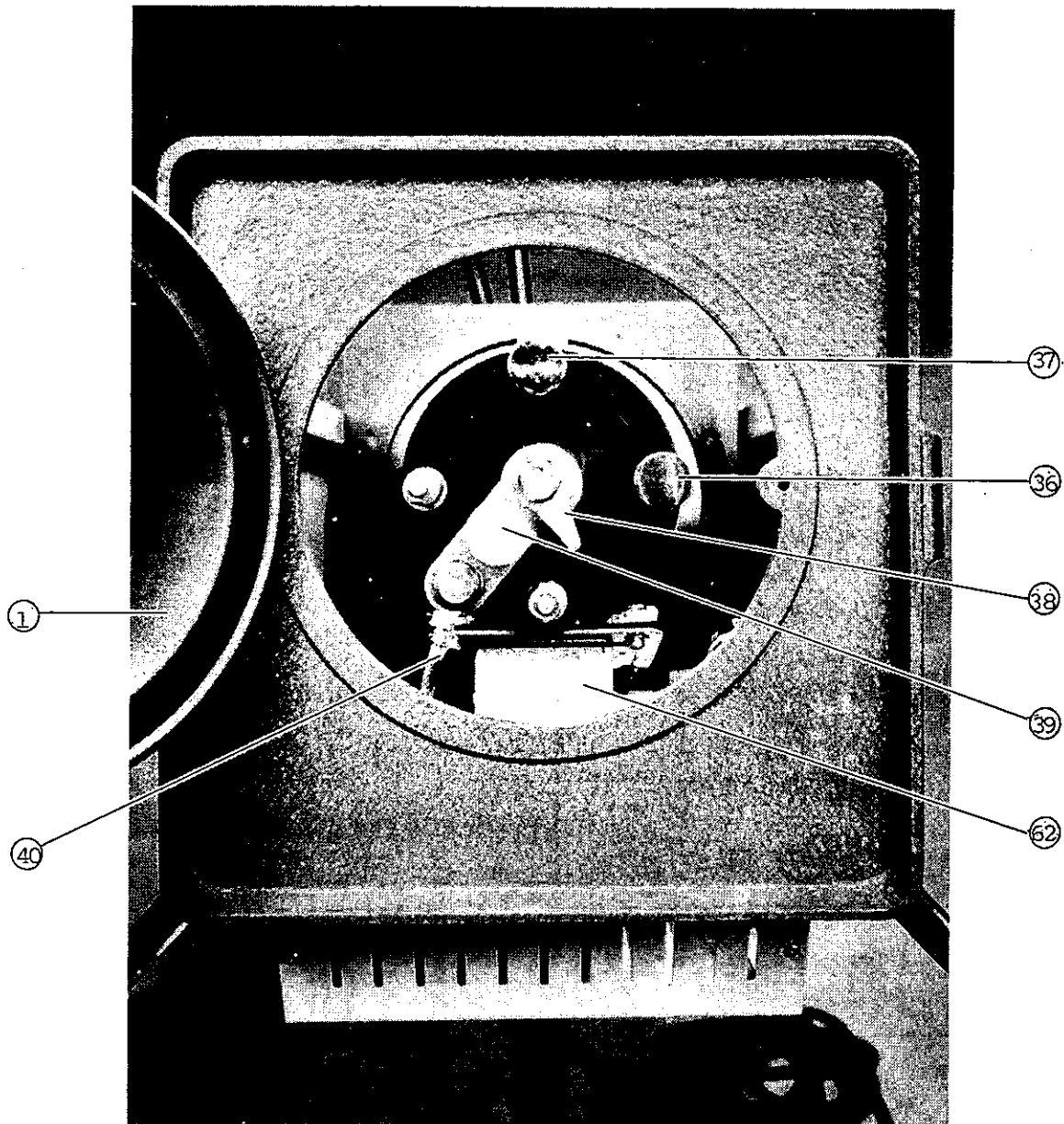
SPOT HEAD (Fig. 9)



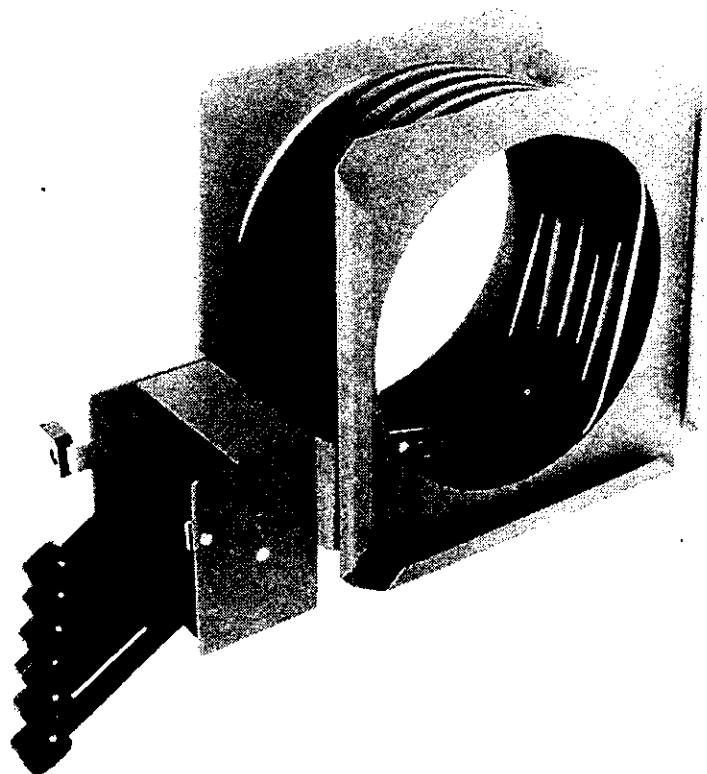
IGNITOR (Fig. 10)



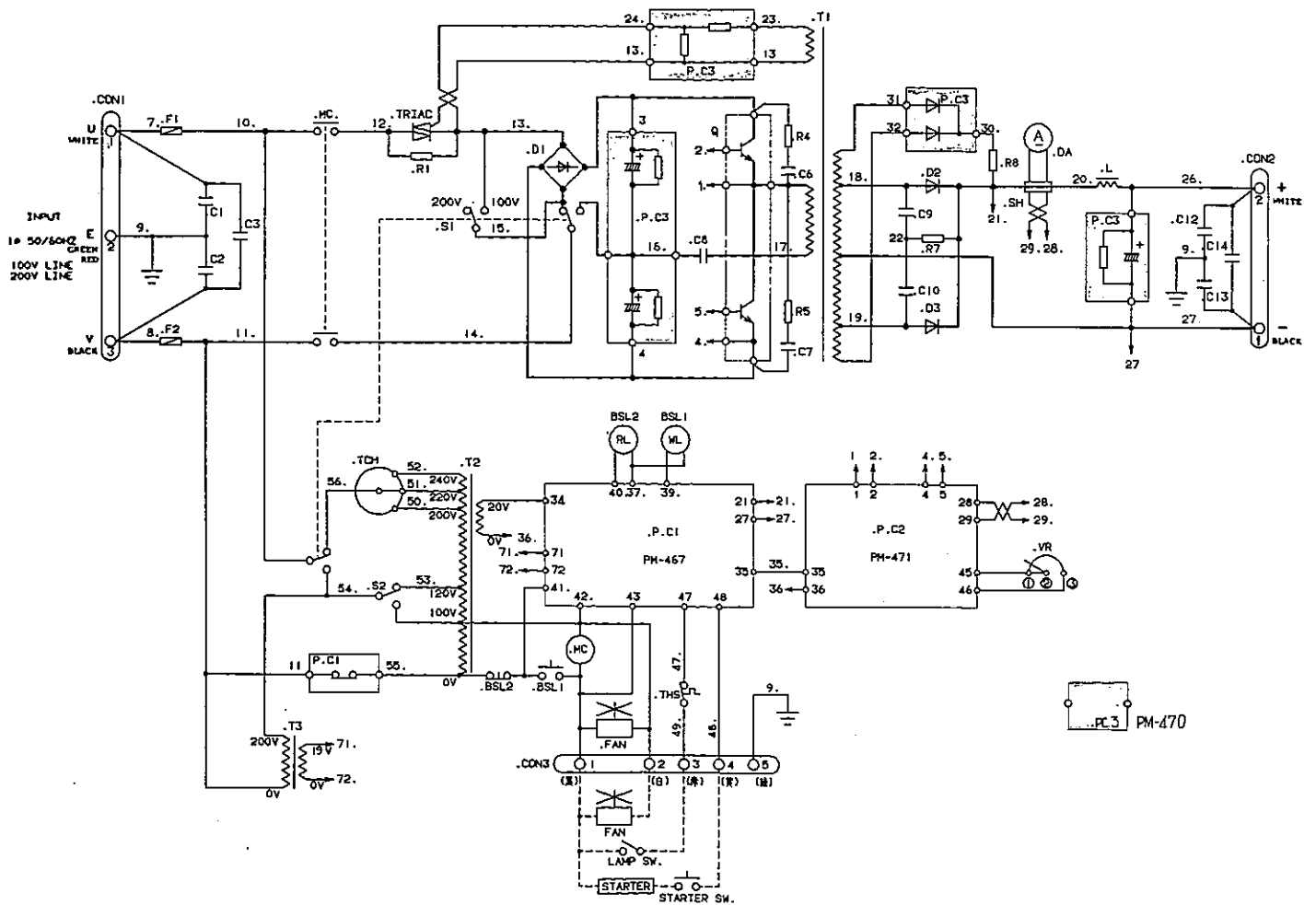
LAMP CHUCK & OPTICAL CONTROLS (Fig. 11)



COLOR CHANGER (Fig. 12)



POWER SUPPLY CIRCUIT DIAGRAM (Fig. 13)
KSX-35MHXC₁



NO.	INDEX	NOMENCLATURE	MODEL/RATING	Q'TY
1	F1-2	fuse	CTY 20A 250V	2
2		fuse holder	CH3	2
3	DA	DC ammeter	40A/60HV	1
4	SH	shunt	40A/60HV	1
5	S1	switch	A-TYPE	1
6	S2	switch	S-32-6NAT 3POT	1
7	BSL1	self-illuminating push button switch (white)	1POT	1
8	BSL2	self-illuminating push button switch (red)	LB15KSI	1
9	TCH	voltage system selector	AT-607-5V	1
10	MC	magnetic switch	AT-607-5V	1
11	THIS	thermal switch	AC 200W	1
12	VR	variable switch	AC 100W	1
13	R1	resistor	FMC-OT 4A	1
14	R4-5	resistor	OHD-908 90 OFF	1
15	R7	resistor	RV24YN15SB 0.25M	1
16	R8	resistor	CC 10W 10 Ω	1
17	C1-2	capacitor	CZG 20W 15 Q	2
18	C3	capacitor	ERG-3ANJ 221 3W	1
19	C6-7	capacitor	CC 30W 300 Q	2
20	C8	capacitor	DE7100F222HVA1 250V	2
21	C9-10	capacitor	ECQE 6104NZ DC 630V	2
22	C12-13	capacitor	ECN6H562JD DC 600V	2
23	C14	capacitor	ECWF29405JASAC 290V	2
24	Q	transistor	ECN6H562JD DC 600V	2
25	D1	diode	DE7100F222HVA1 250V	1
26	D2-3	diode	ECQE 6104NZ DC 630V	1
27	TRIAC	triac	ECN6H562JD DC 600V	2
28	FAN	cooling fan	ECWF29405JASAC 290V	2
29	T1	transformer	ECN6H562JD DC 600V	2
30	T2	transformer	DE7100F222HVA1 250V	2
31	L	reactor	ECQE 6104NZ 630V	1
32	P.C1	PCB	QN300Y-H	1
33	P.C2	PCB	S25VB60 VRN 600V	1
34	P.C3	PCB	40C1S30	2
35	CON1	connector	TG25C60	1
36	CON2	connector	FW-15AVR	1
37	CON3	connector	SF1A-7465	1