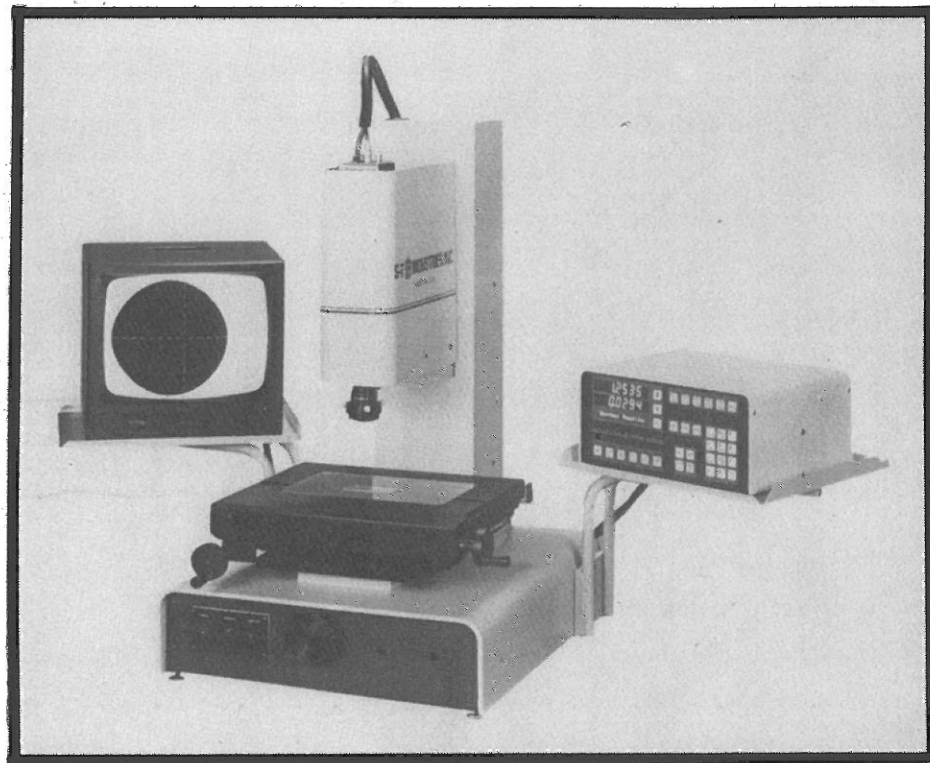


INSTRUCTION MANUAL



VIDEO INSPECTION SYSTEM

20-8600 SERIES

20-8600 SERIES VIDEO INSPECTION SYSTEM

INSTRUCTION MANUAL

INTRODUCTION

This manual contains the instructions for the installation, operation and maintenance of the SCHERR-TUMICO 20-8600 Series Video Inspection System. Due to S-T Industries' policy of continued improvement of products, the right to change without notice is reserved. The information contained in this manual may vary somewhat from the machine with which it is to be used. To fully utilize the capabilities of this optical comparator, a comprehensive study of this manual is necessary. Over 50 years of manufacturing experience combined with worldwide factory service make **S-T Optical Comparators and Video Inspection Systems your best buy.**

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20-8600 Series Nomenclature

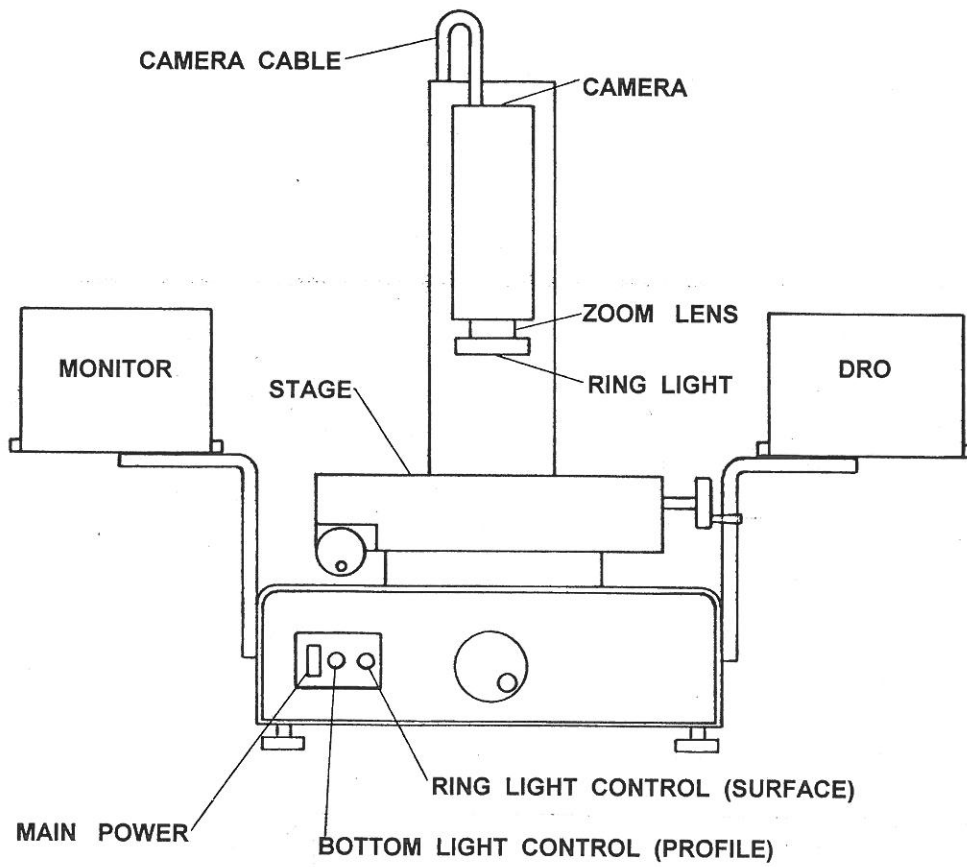


FIG. 1

SETUP - GETTING STARTED

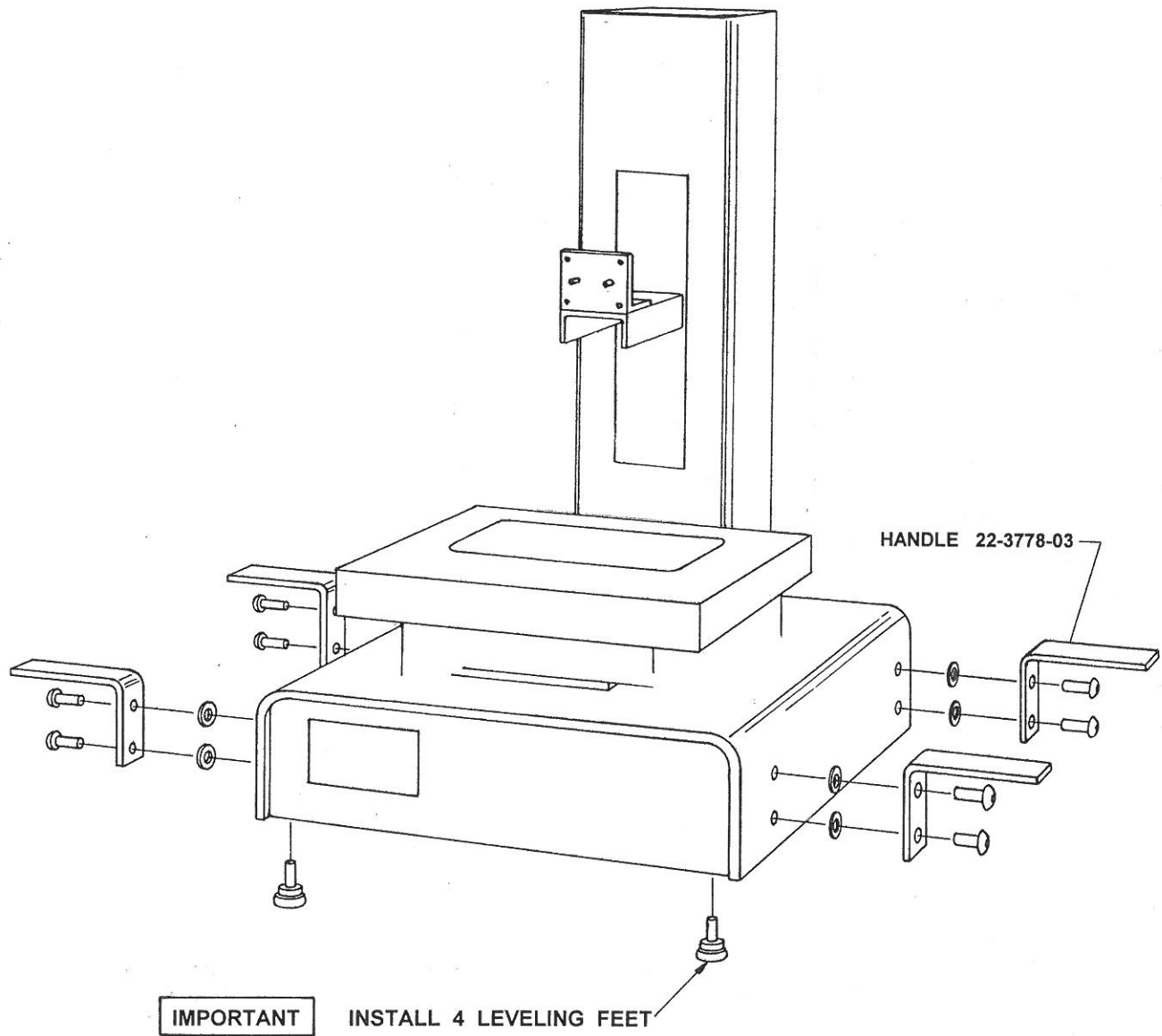


FIG. 2

ALWAYS LIFT UNIT WITH LIFT HANDLES

* DO NOT LIFT BY STAGE OR VERTICAL COLUMN.

AFTER PLACING UNIT AT WORK STATION, REMOVE HANDLES AND STORE FOR POSSIBLE USE.

SETUP

Note: Use included four (4) handles to lift and move Video Inspection System.

1. Install 4 leveling feet under base (**Very important. Leveling feet must be installed for proper air flow to cool lamps**). When system is placed on operational surface, adjust leveling feet until stable. There should be no noticeable rock of the base on the operational surface.
2. Remove upper back panel from column and remove RED shipping bracket from inside column that locks focus motion. Do not replace screws for shipping bracket
3. Position camera mount assembly, with lens down, over dowel pins and fasten with 4 screws. **Do not force assembly over dowel pins**. Only slight pressure should be necessary to seat plate on pins.

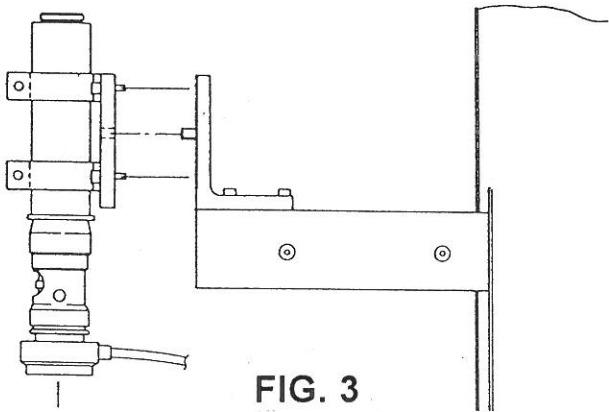


FIG. 3

4. Install camera cover with 4 screws on camera arm. Attach ring light on end of zoom lens with 3 plastic set screws. **Do not over tighten plastic set screws**. Support fiber optic bundle with plastic clip on side of column. Plug end of bundle into socket in rear panel of base and secure with set screw.

5. Remove any packing material from camera power cable and video cable. Run camera power and video cables over crossbar of camera cover and connect to camera. Adjust cable length so there is freedom through the entire focus motion.
6. If this is a manually focused system, install focus knob in front of base.
7. Remove 4 RED shipping brackets from measuring stage.
8. Install stage glass by aligning radius corners with radiused corners in top plate. Adjust for level if necessary with plastic screws underneath glass. (For best results, use dial indicator on glass to check level) Lock in place by tightening 2 corner expanding plastic buttons.
9. Install 2 display arms on back of base. Mount trays on top of arms.
10. Place video monitor and digital readout on desired trays. Connect cables from glass scales to digital readout. Optional: Install one arm and tray and place monitor and digital readout on same tray.
11. If this is an 8600 system, connect video cable from camera to input of crosshair generator. Connect second video cable from output of crosshair generator to input on video monitor. If this system is an 8700 or 8800, connect video cable to video-in connector on back of QC4000 computer.
12. Connect power cables of base, monitor and DRO to power strip. If this is an 8600, the power supply cable for the crosshair generator comes out of the back of the vertical column. If this is an 8800, connect motor and limit switch cables, joystick, jog and motor cables using key in QC4000 manual.

OUTLINE DIMENSIONS

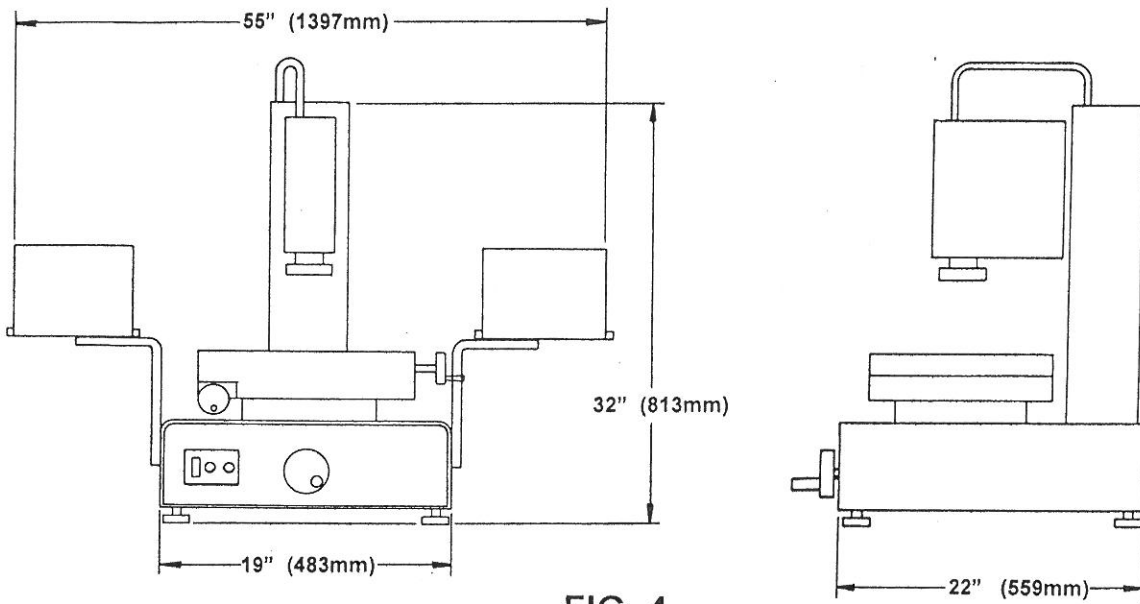


FIG. 4

SPECIFICATIONS

Machine Dimensions

Length.....	55" (1397mm)
Width.....	22" (559mm)
Height.....	32" (813mm)

Work Table

Length.....	14" (356 mm)
Width.....	10" (254mm)
Standard Clamping Slot.....	1
Allowable Workload.....	25 lb. (11.4Kg)

Measuring Capacity

X-axis.....	8" (200mm)
Y-axis.....	4" (100mm)
Focus.....	5" (125mm)
Scale Resolution.....	.0001" (.002 mm)

Monitor

13" diagonal Black & White

Optics

1:6 Zoom lens for 30 to 180 X magnification

Electrical

Voltage.....	100-240v, 50 or 60 Hz
Current	
8600.....	3 amps
8800 CNC.....	5 amps
8600 220/240 v.....	2 amps
8800 CNC 220/240 v.....	3 amps
Lamps (Tungsten-Halogen)	
Profile Illumination....	100 watt, 12 volt
Surface Illumination..	100 watt, 12 volt

Weight

Video System.....	170 lb. (77 Kg)
Crated System.....	200 lb. (91 Kg)
8800 CNC System.....	180 lb. (82 Kg)
8800 CNC Crated.....	215 lb. (98 Kg)

PROFILE AND SURFACE ILLUMINATION

Profile and surface illumination each have their own light sources and respective controls.

The profile illuminator provides back lighting for peripheral viewing of a part to be measured.

The surface illuminator projects light through a fiber optic ringlight onto the front surface of a part. To adjust each light level, turn the respective control knob on the front left of the base. The control allows smooth adjustment from zero to 100%. When turned completely counterclockwise, the lamp is off. There is no click or detent at this position. When not using the system, however, the main power switch should be turned off.

MEASURING TECHNIQUES

Measured Linear Displacement

The standard measuring stage allows accurate linear measurements in 2 axis, X and Y. The X axis travel is 8" (200mm), the Y axis travel is 4" (100mm). A slip bearing mechanism on the X axis travel allows free motion by pushing the stage in the desired direction. Fine adjust by turning the hand wheel. Y axis motion is by hand wheel only. The stage is equipped with either .002mm or .001mm resolution glass scale encoders and one of several available digital readouts.

Procedure

- 1) Secure the part to the stage and focus area to be measured.
- 2) Be sure the part is parallel with the stage motion. Align the first edge of the part to be measured with the cross line on the monitor.
- 3) Zero the appropriate axis on the digital readout.
- 4) Move the stage until the second edge to be measured aligns with the cross line.
- 5) Read the linear measurement in the digital readout.

DIGITAL READOUT SYSTEMS

The 20-8600 Series Optical Comparator comes with several optional digital readout systems.

20-8600-01 - 4" x 8" travel stage with standard digital readout system. S-T's model 20-7000 DRO features X, Y and angle axis. Also includes INCH/MM, INC/ABS and PRINT features.

20-8600-02 - 4" x 8" travel stage with QuadraChek 2200 geometric digital readout system. DRO has all standard features plus geometric calculations including point, line, circle, distance, angle and skew and programmability.

20-8600-03 - 4" x 8" travel stage with QuadraChek 3200 geometric digital readout system. DRO has all features of above system plus enhanced programmability and feature memory.

20-8600-04 - 4" x 8" travel stage with QuadraChek 4200 geometric digital readout system. DRO has all features of above system and includes PC computer with WINDOWS^R based QC 4200 software. Unique features are graphic representation of part features as they are measured, mouse driven commands and unlimited programmability.

CALIBRATION

For assistance in this procedure contact S-T Industries, Inc. or your local S-T distributor.

MEASURING STAGE

The measuring stage linear accuracy can be calibrated by using S-T Industries' 74-0500-00 calibration plate.

- 1) Place the calibration plate on the stage so the longer side is with the X axis.
- 2) Focus on the 6" or 150mm scale and move to one end of the scale.
- 3) Adjust the image by moving one end of the plate on the stage until the scale line remains on the crosshair as the stage is moved back and forth.
- 4) Align the '0' end of the calibration scale with the screen crosshair or the vertical line.
- 5) Zero the X axis display on the DRO and move the stage until the end of the scale aligns with the crosshair.
- 6) The X axis display should read the same as the scale length; 6.0000" or 150.000mm. If it does not, consult your DRO manual and adjust LEC (Linear Error Correction) until the reading is correct.
- 7) Return to the '0' end of the scale, zero the X axis display and move to the next increment on the scale. Record the value and repeat for each increment.
- 8) For Y axis, locate scale along short side of plate. Do not reposition plate since Y axis is square to X axis. Repeat steps 5-8 using Y axis.

MAINTENANCE

External Lens Cleaning

- 1) Remove all dust from external glass surfaces. Use a clean, soft brush (preferably a lens brush sold in camera stores) or clean cotton to avoid scratching.
- 2) Use a damp cotton swab with isopropyl alcohol to clean lens.

CAUTION

Never immerse a lens system in any cleaning solution. Moisten the cotton swab with the alcohol.

Fuse Protection

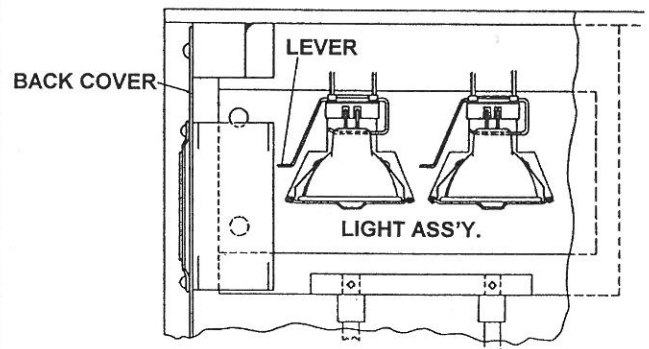
A 3 amp fuse (2 amp for 220-240 volt) protects all electric circuits in the 20-8600 optical comparator. The fuse is located in the power input module located at the rear of the comparator. To change, remove the power cord from the power entry module and, using your finger, unsnap the fuse drawer and pull out. Change fuse and replace fuse drawer.

Lamp Replacement

When a lamp fails, wait 5 minutes before replacing to allow fans to cool off lamp area.

1. Turn off power switch and unplug power cord from back of base.
2. Disconnect fiberoptic line from back of base.

3. Remove 4 corner screws from back cover of base. Lay cover down.
4. Looking at back of base, the lamps are on left. The first lamp is for the bottom lighting. You can remove this lamp by pulling up on the lever which is part of the socket. Replace lamp by aligning the pins of the new lamp with the socket and pushing lamp down until seated in the socket. If the bad lamp is for the ring light, you must remove the light assembly to access the lamp. Remove two screws from base of light assembly plate and pull light assembly out of base. Replace lamp and reinstall light assembly.
5. Replace back panel with four screws and plug in fiberoptic line and power cord.



* FAN STAYS WITH BACK COVER

FIG. 5

Lubrication

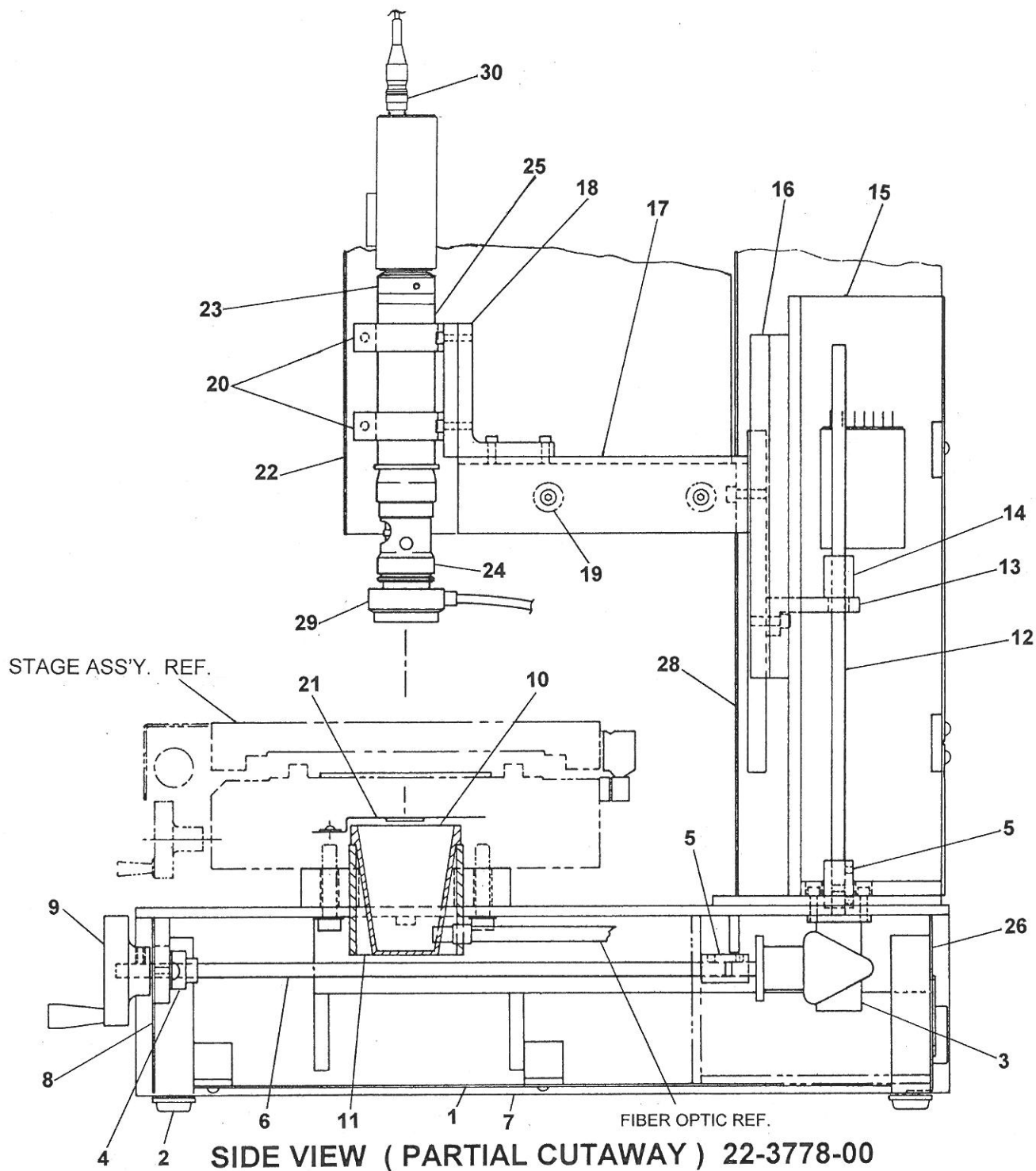
Lubricate V-ways and ball bearings of measuring stage with light oil occasionally, to prevent corrosion and keep motion smooth.

Parts Identification

Compare the part numbers on sub-assembly and part illustrations with their respective parts lists to identify parts.

Parts Ordering

- 1) Furnish the model and serial number
- 2) State the part number, description and quantity of each part required.
- 3) State shipping instructions.



ITEM	PART NUMBER	DESCRIPTION	QTY.	ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3778-25	BASE COVER	1	16.	22-3778-12	FOCUS SLIDE ASS'Y.	1
2.	48-7307	FOOT	4	17.	22-3778-07	CAMERA EXT. WLD'T	1
3.	48-7859	DRIVE GEAR	1	18.	22-3861	CAMERA & DOWEL PLATE ASS'Y.	1
4.	48-7690	BEARING	1	19.	22-3778-48	STAND OFF (NYLON)	4
5.	22-3778-20	COUPLING	2	20.	22-3778-18	CAMERA LENS MOUNT	2
6.	22-3778-22	SHAFT	1	21.	22-3815	LIGHT GUARD	1
7.	22-3778-05	BASE WLD'T	1	22.	22-3778-14	COVER	1
8.	22-3778-10	FRONT PANEL ASS'Y.	1	23.	48-7880	C - MOUNT ADAPTER	1
9.	22-1942	HANDLE	1	24.	48-7867	ZOOM LENS	1
10.		CUP (POLYFOAM)	1	25.	48-7868	ADAPTER LENS	1
11.	22-3778-21	FIBER OPTIC TUBE MOUNT	1	26.	22-3778-83	PANEL ASS'Y. - BACK	1
12.	22-3778-23	LEAD SCREW	1	27.	48-7883	GROMMET	2
13.	22-3778-19	ENCODER & FOCUS NUT MT.	1	28.	22-3778-13	POST COVER WLD'T	1
14.	48-7655	NUT	1	29.	48-7866	FIBER OPTICS RING LIGHT	1
15.	22-3778-06	CHANNEL WLD'T	1	30.	22-3778-54	CAMERA & CABLE ASS'Y.	1

FIG. 6

FRONT VIEW

22-3778-00

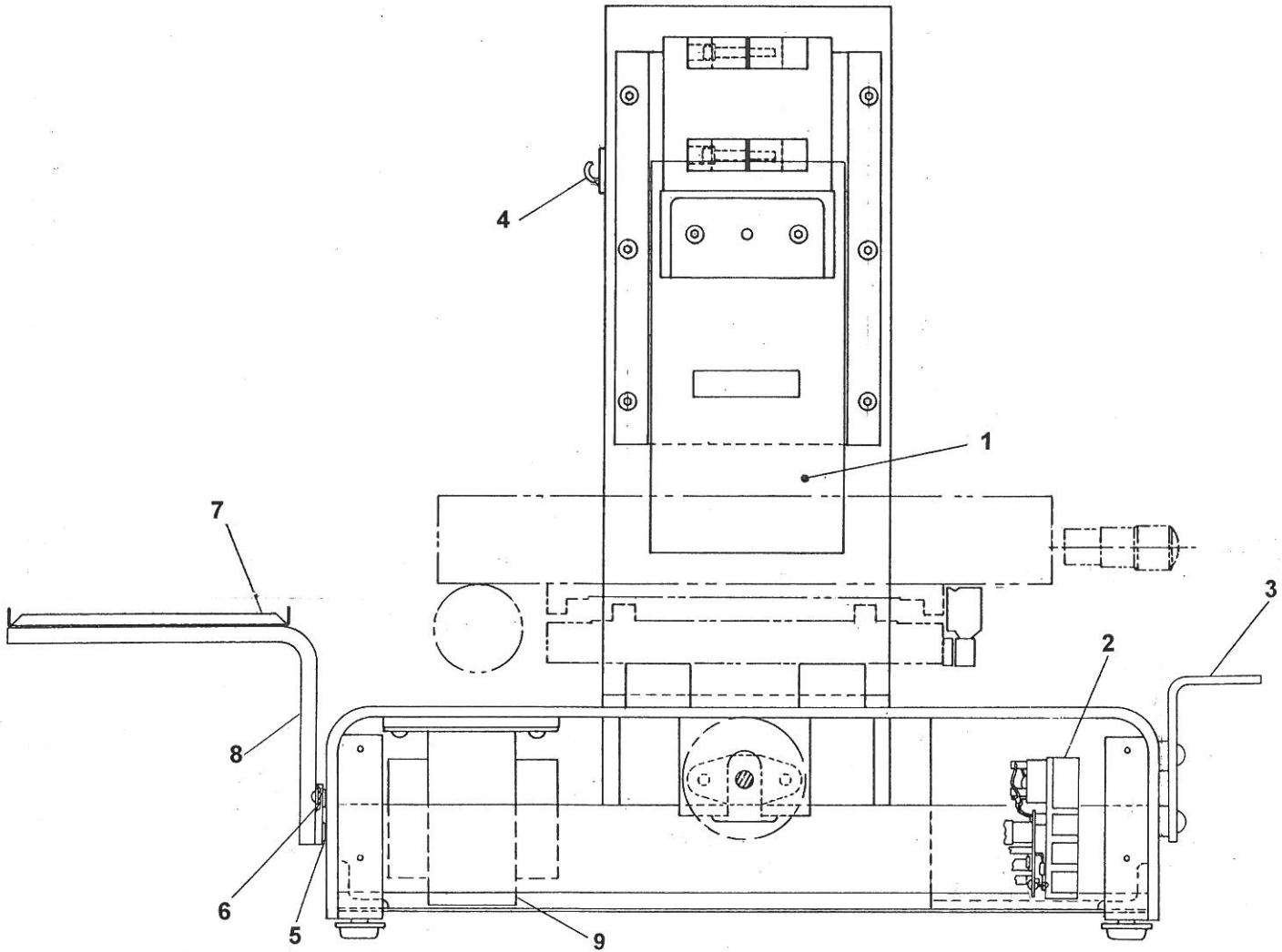
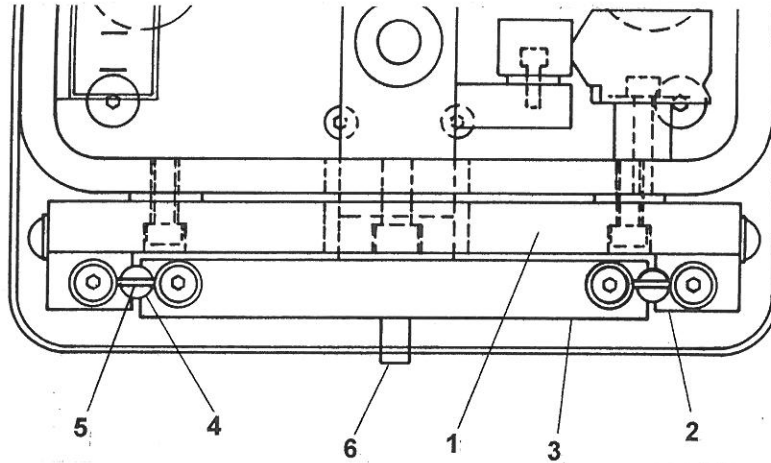


FIG. 7

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	22-3778-16	GIB COVER	1
2	22-3778-99	VIDEO LIGHT CONTROL	1
3	22-3778-03		4
4	48-5631	WIRE CLAMP	4
5	48-6854	NYLON WASHER	8
6	48-6151	NYLON WASHER	4
7	22-3778-73	DRO TRAY	2
8	22-3978-04	DRO ARM	2
9	48-7929	TRANSFORMER ASS'Y.	1

FOCUS SLIDE ASS'Y. 22-3778-12



ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3778-51	VERT. FRONT PLATE	1
2.	22-3691	GIB	2
3.	22-3695	VERT. SLIDE PLATE	1
4.	48-7679	BALL 5/16 DIA.	16
5.	22-3712-13	BALL RETAINER	2
6.	48-5317	DOWEL PIN	1

FIG. 8

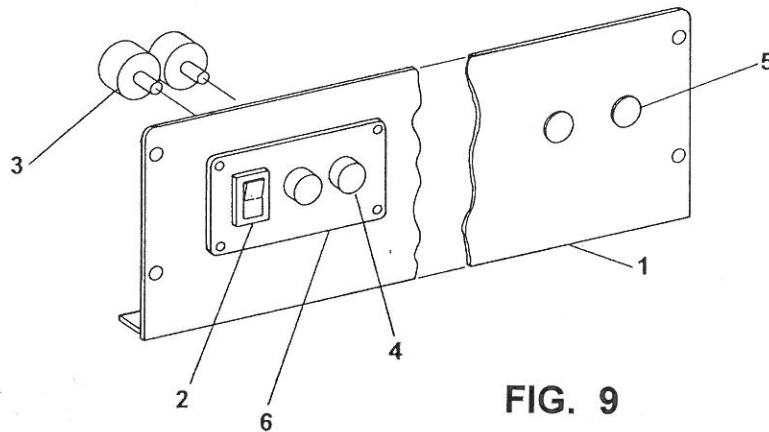
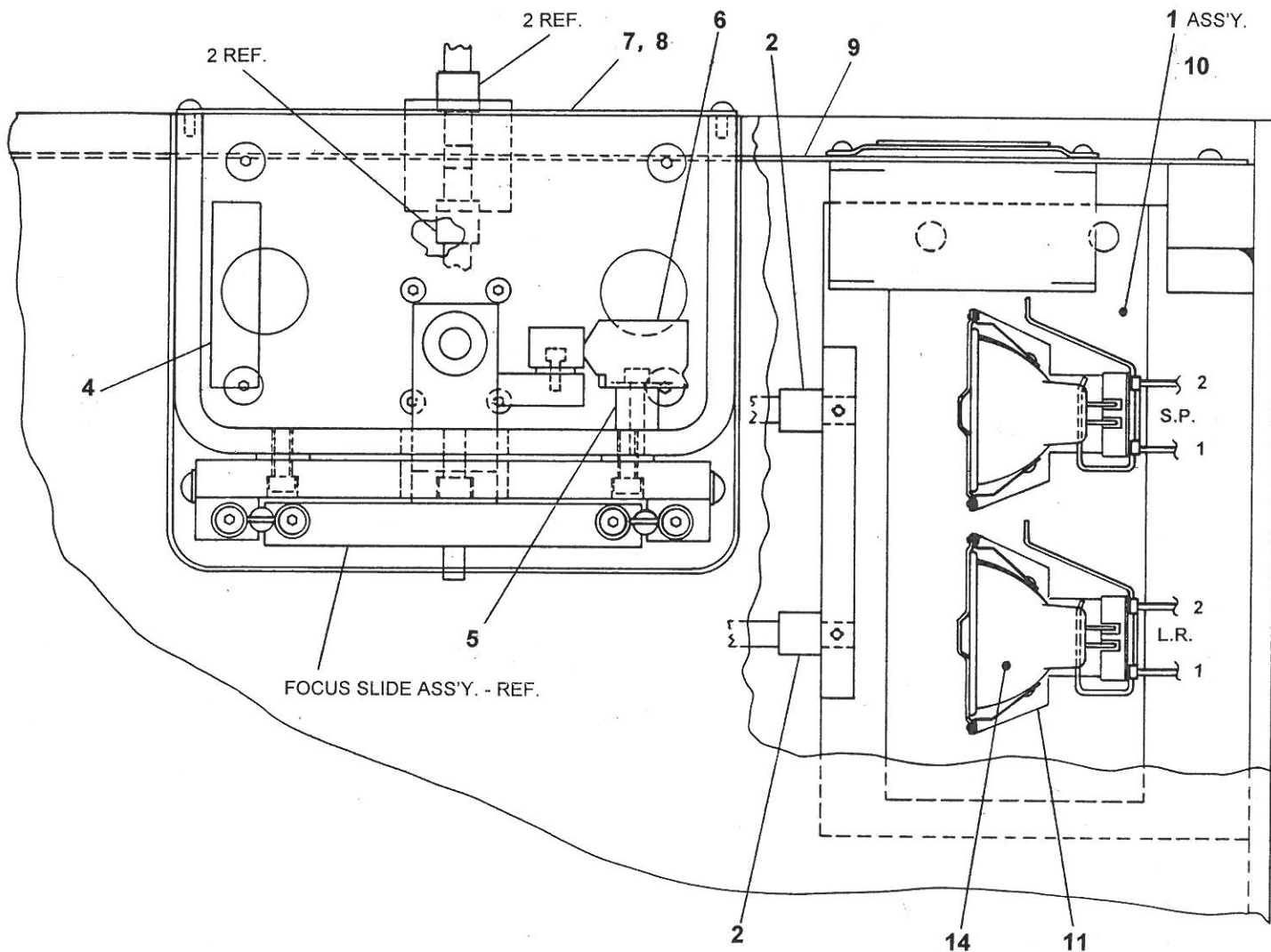


FIG. 9

FRONT PANEL ASS'Y. 22-3778-10

ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3787-00	FRONT PANEL	1
2.	48-7443	SWITCH	REF.
3.	22-3778-52	WIRE ASS'Y., CONTROL RHEOSTAT	1
4.	48-6711	KNOB	REF.
5.	48-7019-08	PLUG	2
6.	22-3789-00	SWITCH PLATE	REF.

TOP VIEW - PARTIAL



ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3778-11	BASE & LAMP ASS'Y.	1
2.	48-6868	FIBER OPTICS	2
3.	22-3778-27	FIBER OPTIC MOUNT	1
4.	22-3835	POWER MODULE & CABLE	1
5.	22-3778-28	SPACER	2
6.	48-7468	SCALE	1
7.	22-3778-15	BACK POST COVER, LOWER	1
8.	22-3778-67	BACK POST COVER, UPPER	1
9.	22-3778-83	BACK PANEL ASS'Y.	1

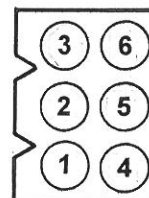
BASE & LAMP ASS'Y. 22-3778-11

ITEM	PART NUMBER	DESCRIPTION	QTY.
10.	22-3778-29	BASE WLD'T	1
11.	48-7748	SOCKET	2
12.	48-7874	PLUG, 6 PIN	1
13.	48-6189	PIN	4
14.	48-7747	LAMP	2

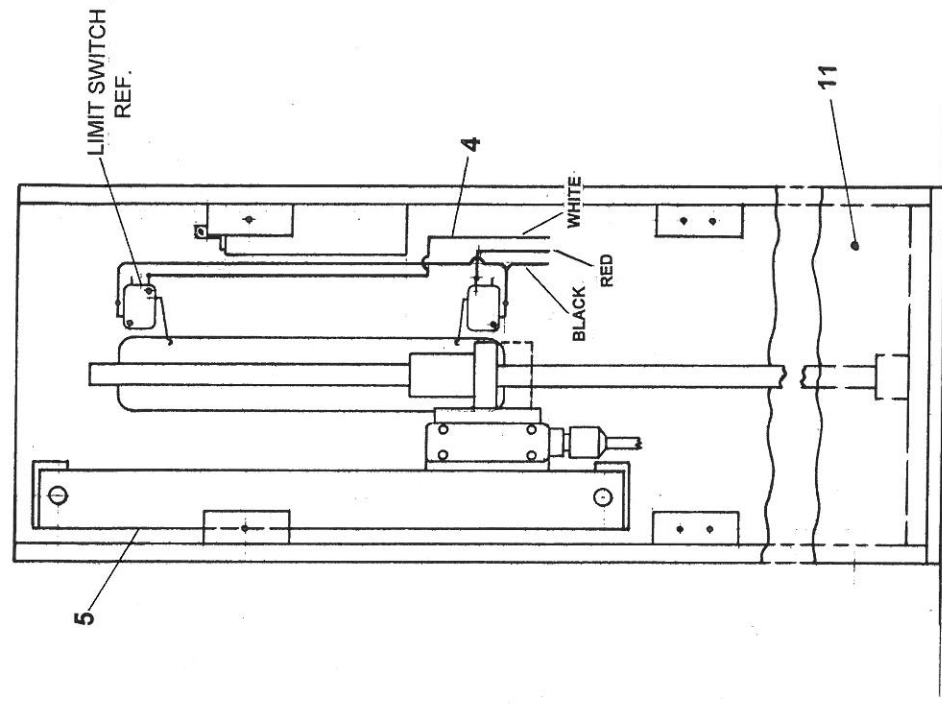
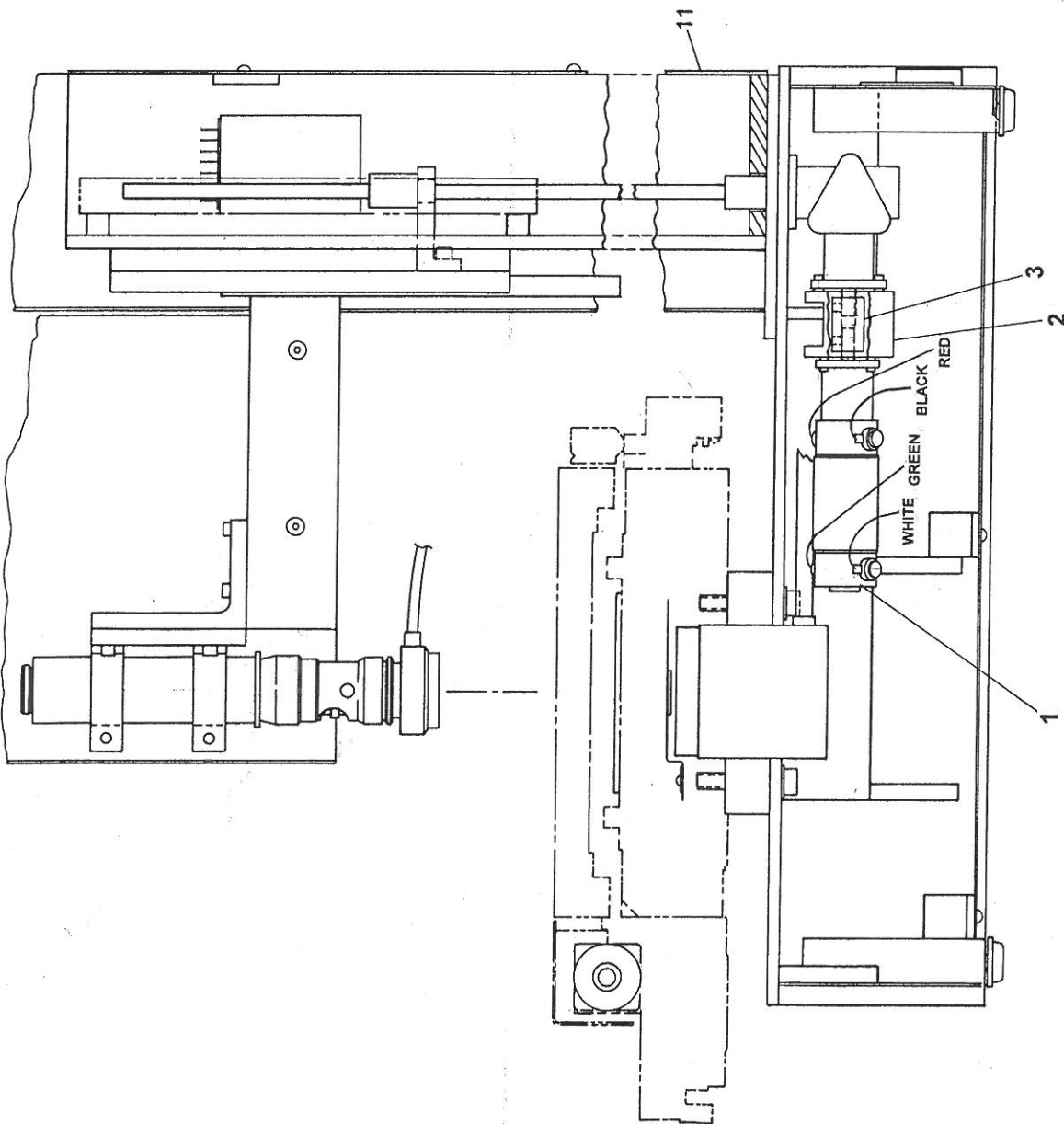
FIG. 10

WIRE ROUTES

- L.R. 1 TO PLUG 3
- L.R. 2 TO PLUG 6
- S.P. 1 TO PLUG 1
- S.P. 2 TO PLUG 4
- RECEP. TO PLUG 2
- RECEP. TO PLUG 5



MODULE "N" TO MODULE "A"



ITEM	PART NUMBER	DESCRIPTION	QTY.
1	48-7788-00	MOTOR	1
2	22-3724-69	MOTOR ADAPTER	1
3	48-7583-00	COUPLING	1
4	22-3814-00	LIMIT SWITCH WIRE ASSY.	1
5	48-7818	SCALE, 4", 1 MICRON	1
* 7	48-7774	DB HARDWARE KIT	1
8	22-3788-07	CABLE ASS'Y., EXT. AMP. BOX	1
* 9	22-3724-67	TUNED AMPLIFIER	1
10			
11	22-3724-70	REAR LOWER COVER	1

* MOUNT IN AMPLIFIER BOX ASS'Y. 22-3788-00

AUTO - Z AXIS OPTION - CNC 20-8820-00

SEE: 22-3814-00 LIMIT SWITCH WIRE ASS'Y.
22-3788-07 CABLE ASS'Y., EXT. AMP. BOX

FIG. 11

WIRE ASS'Y., CONTROL RHEOSTATS 22-3778-52

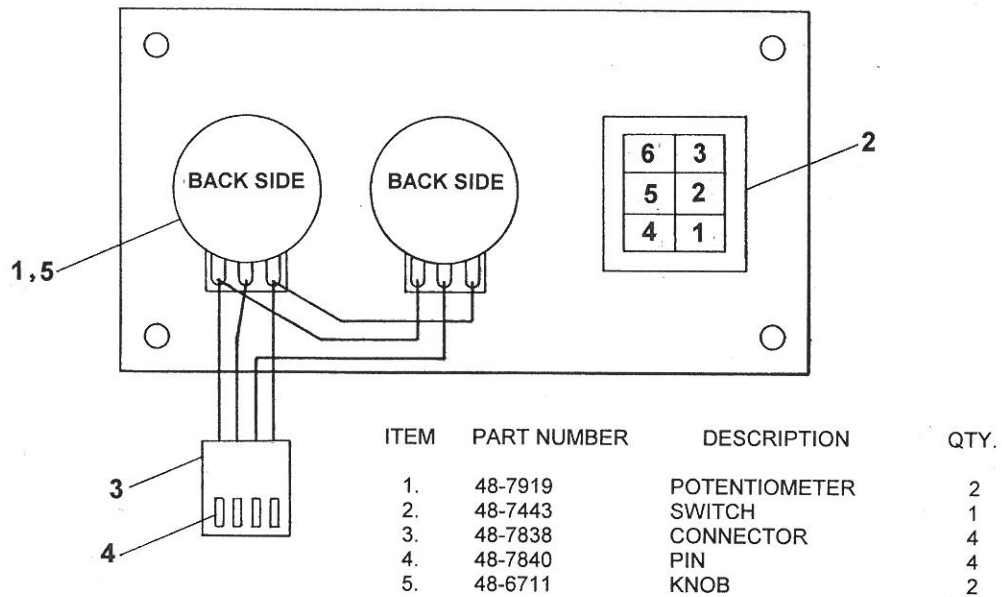
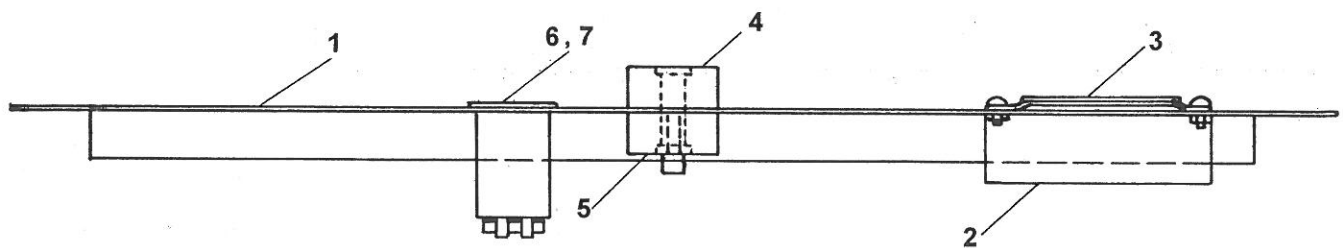


FIG. 12

BACK PANEL ASS'Y. 22-3778-83 TOP VIEW



ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3778-63	BACK PANEL	1
2.	22-3426	FAN ASS'Y.	1
3.	48-6778	FAN GUARD	1
4.	22-3778-84	FIBER OPTIC MOUNT	1
5.	22-3778-85	FIBER OPTIC MOUNT	1
6.	48-7444	POWER ENTRY MODULE	REF.
7.	48-7445	FUSE DRAWER	REF.

FIG. 13

FRONT PANEL ASS'Y. 22-3778-63, CNC

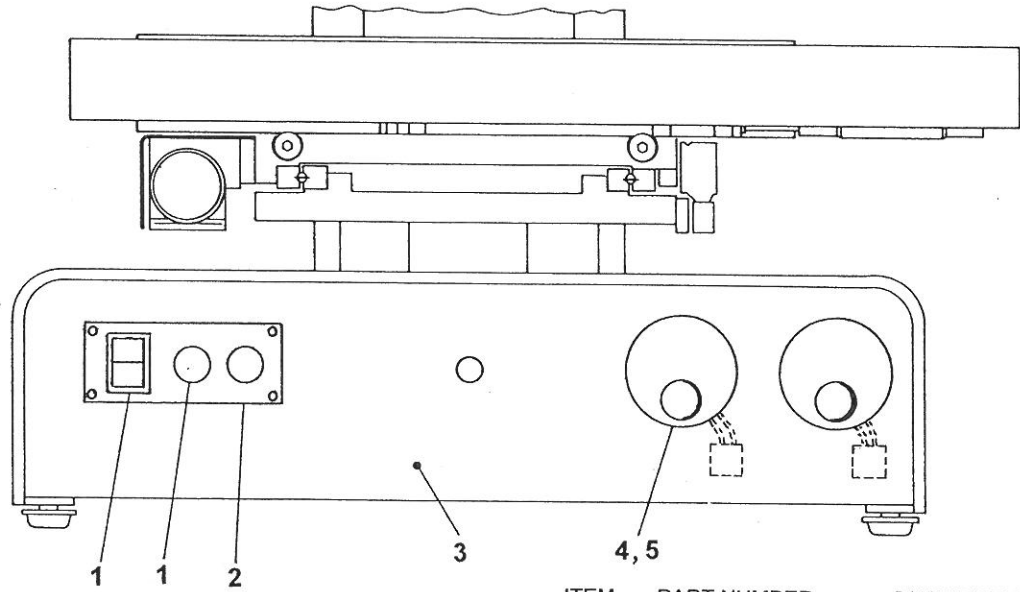
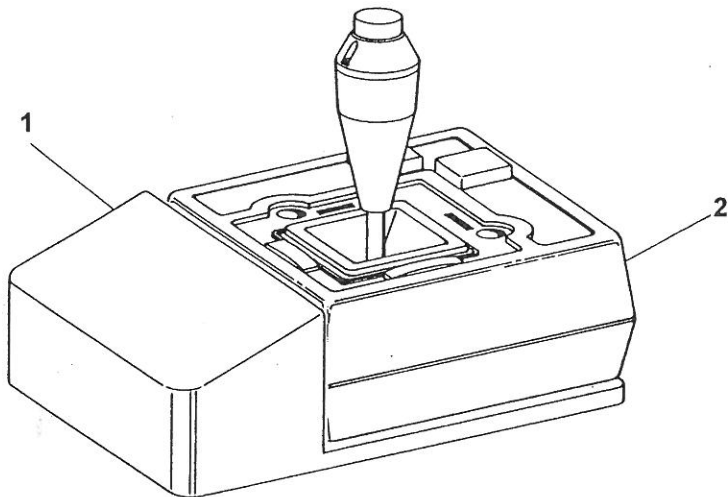


FIG. 14

ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3778-52 (SEE FIG. 12)	WIRE ASS'Y., CONTROL RHEOSTAT	1
2.	22-3789-00	SWITCH PLATE	1
3.	22-3787-00	FRONT PANEL	1
4.	48-7755	ENCODER HP PANEL	2
5.	48-7764	KNOB	2

JOYSTICK ASS'Y. 22-3823



ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3827-00	JOYSTICK BASE & REST ASS'Y.	1
2.	48-7763	JOYSTICK	1

FIG. 15

NOTES

STAGE ASSY. - FRONT & SIDE
22-3759-00

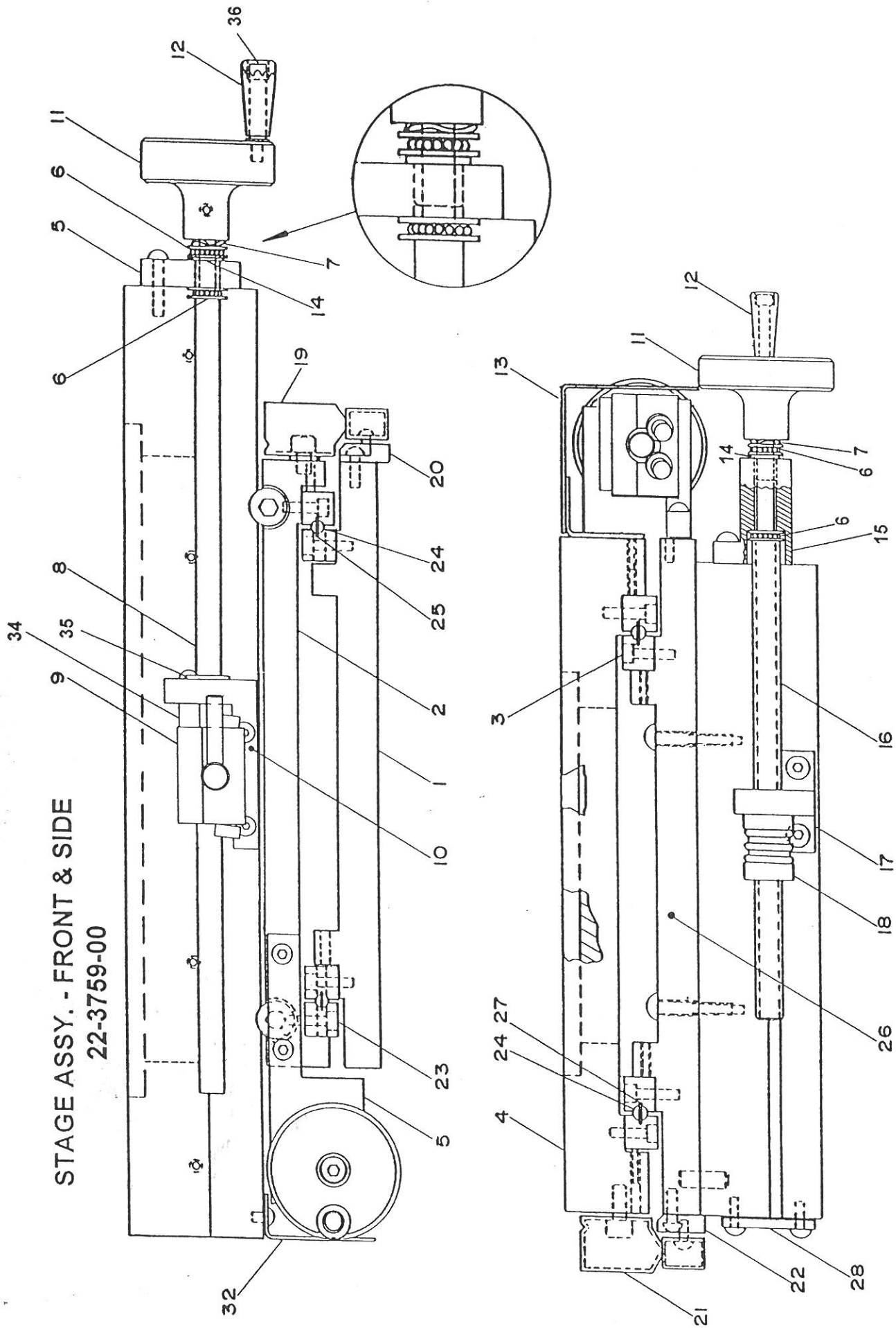


FIG. 16

STAGE ASSY. - TOP

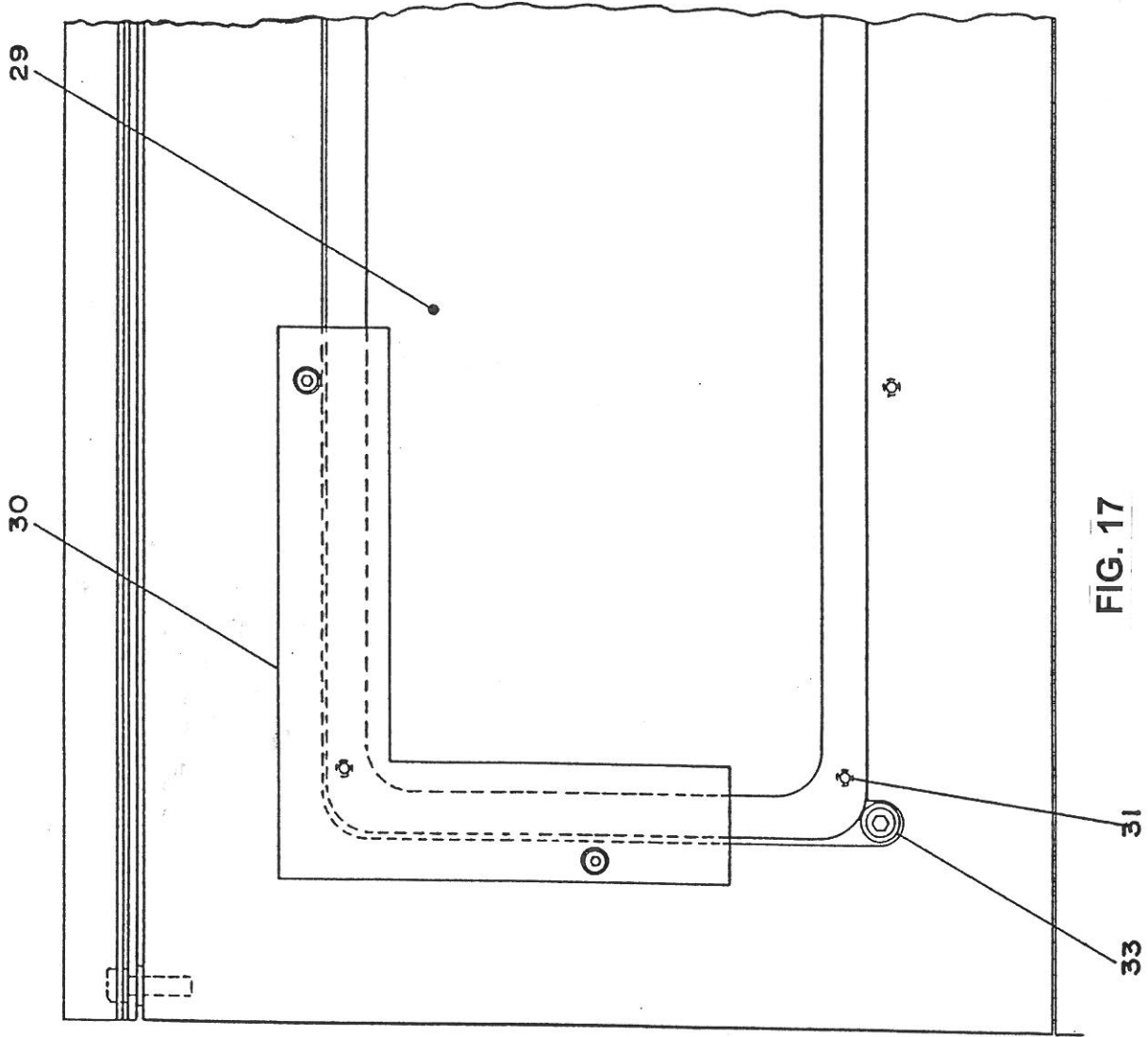


FIG. 17

STAGE ASS'Y. 22-3759-00 REF.

ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3759-19	BASE PLATE	1
2.	22-3759-20	LOWER SLIDE PLATE	1
3.	22-3759-09	GIBS, MATCHED PAIR	2 PR.
4.	22-3759-10	TOP PLATE	1
5.	22-3759-63	KNOB MOUNT, X-AXIS	1
6.	48-7646-00	THRUST BEARING	4
7.	48-6630-00	WAVE WASHER	2
8.	22-3759-16	LEAD SCREW, X-AXIS	1
9.	22-3844-00	QUICK RELEASE NUT	1
10.	22-3759-80	QUICK RELEASE NUT	1
		MT. ASS'Y.	1
11.	22-3102-00	KNOB	2
12.	22-1007-00	HANDLE	2
13.	22-3759-56	COVER, X-AXIS	1
14.	48-7437-00	FLANGE BEARING	2
15.	22-3759-61	MOUNT	1
16.	22-3759-54	LEAD SCREW, Y-AXIS	1
17.	22-3759-03	NUT MOUNT	1
18.	48-7655-00	BACKLASH NUT	1
19.	48-7823-00	SCALE, 2"	1
20.	22-3759-15	ENCODER MOUNT, Y-AXIS	1
21.	48-7469	SCALE, 8"	1
22.	22-3759-01	ENCODER MOUNT, X-AXIS	1
23.	22-3759-12	GIBS, MATCHED PAIR	2 PR.
24.	48-5152-00	BALL	72
25.	22-3759-13	BALL GUIDE	2
26.	22-3759-02	UPPER SLIDE PLATE	1
27.	22-3759-08	BALL GUIDE	2
28.	22-3759-29	SHIPPING BRACKET	4
29.	22-3759-17	GLASS PLATE	1
30.	22-3759-21	SQUARE, OPTIONAL	1
31.	48-5380	NYLON SET SCREW.	4
32.	22-3759-11	COVER, Y-AXIS	1
33.	22-3759-18	GLASS BUSHING	2
34.	22-3891	SPACER	2
35.	22-3844-12	FLANGE BEARING	1

STAGE ASSY. - FRONT & SIDE
22-3759-70

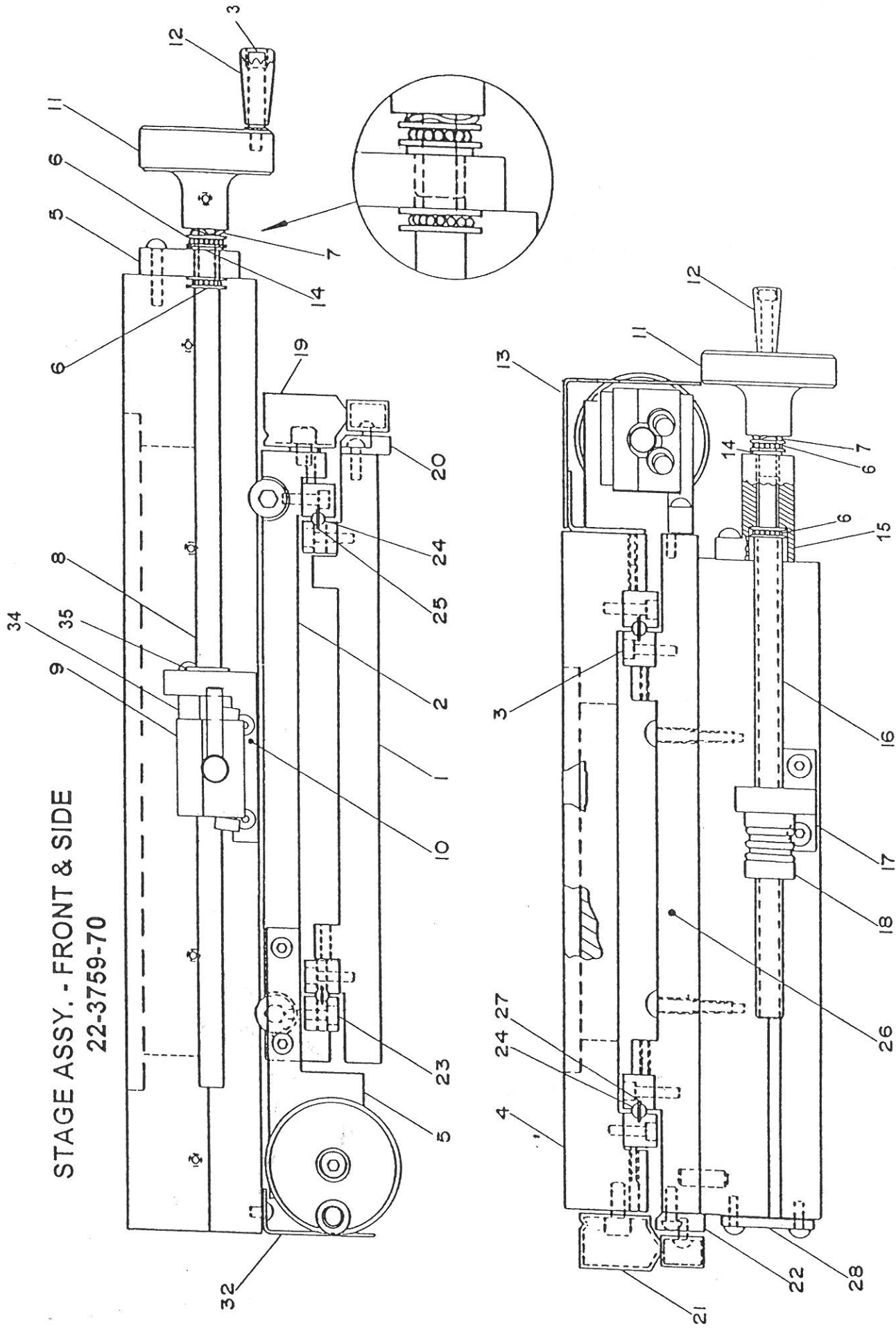
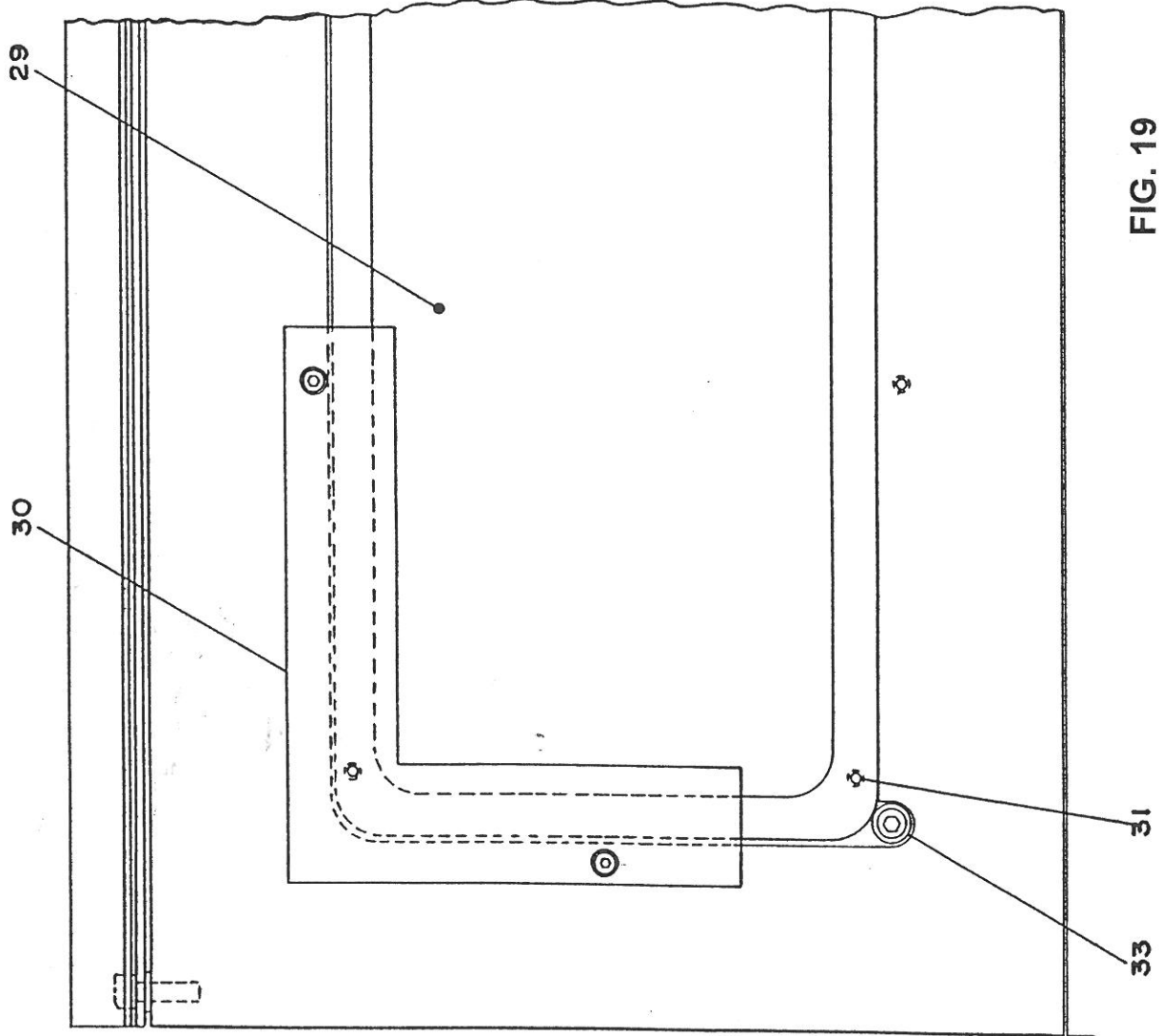


FIG. 18

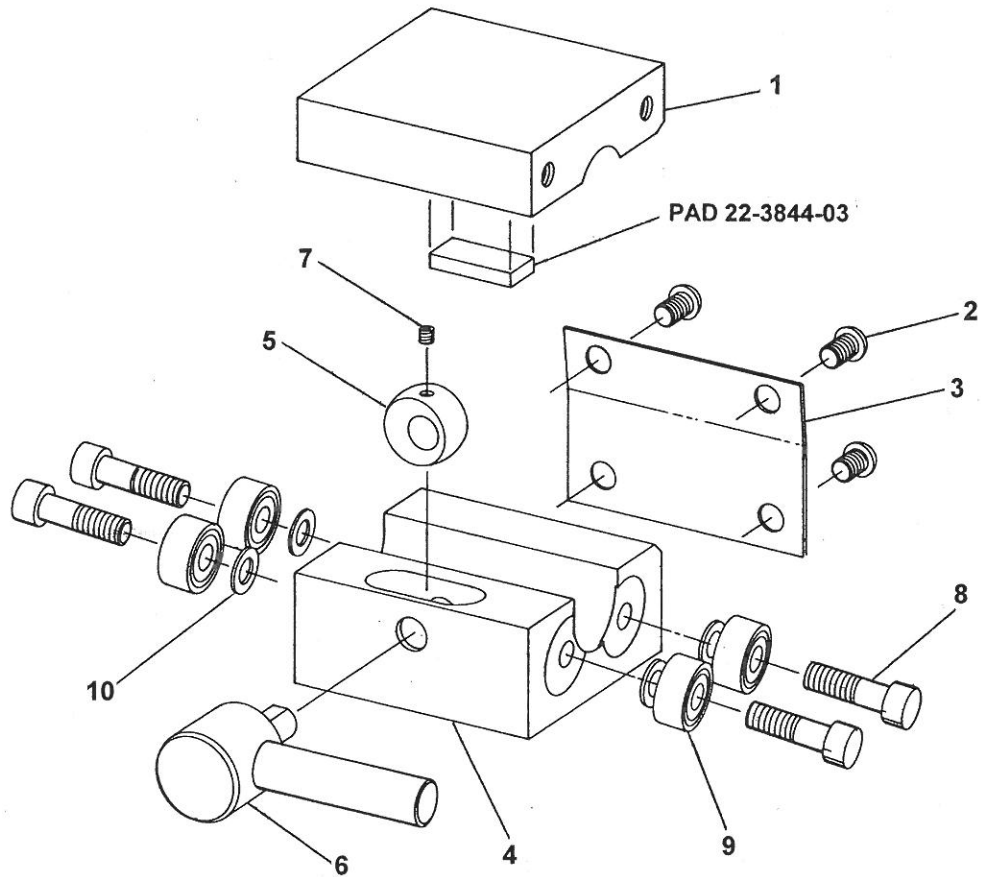
STAGE ASSY. - TOP



STAGE ASS'Y. 22-3759-70 REF.

ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3759-19	BASE PLATE	1
2.	22-3759-20	LOWER SLIDE PLATE	1
3.	22-3759-09	GIBS, MATCHED PAIR	2 PR.
4.	22-3759-69	TOP PLATE	1
5.	22-3759-63	KNOB MOUNT, X-AXIS	1
6.	48-7646-00	THRUST BEARING	4
7.	48-6630-00	WAVE WASHER	2
8.	22-3759-68	LEAD SCREW, X-AXIS	1
9.	22-3844-00	QUICK RELEASE NUT	1
10.	22-3759-80	QUICK RELEASE NUT MT. ASS'Y.	1
11.	22-3102-00	KNOB	2
12.	22-1007-00	HANDLE	2
13.	22-3759-64	COVER, X-AXIS	1
14.	48-7437-00	FLANGE BEARING	2
15.	22-3759-61	MOUNT	1
16.	22-3759-54	LEAD SCREW, Y-AXIS	1
17.	22-3759-03	NUT MOUNT	1
18.	48-7655-00	BACKLASH NUT	1
19.	48-7823-00	SCALE, 2"	1
20.	22-3759-15	ENCODER MOUNT, Y-AXIS	1
21.	48-7470	SCALE, 10"	1
22.	22-3759-01	ENCODER MOUNT, X-AXIS	1
23.	22-3759-12	GIBS, MATCHED PAIR	2 PR.
24.	48-5152-00	BALL	72
25.	22-3759-13	BALL GUIDE	2
26.	22-3759-02	UPPER SLIDE PLATE	1
27.	22-3759-08	BALL GUIDE	1
28.	22-3759-29	SHIPPING BRACKET	2
29.	22-3759-67	GLASS PLATE	4
30.	22-3759-21	SQUARE, OPTIONAL	1
31.	48-5380	NYLON SET SCREW.	1
32.	22-3759-11	COVER, Y-AXIS	4
33.	22-3759-18	GLASS BUSHING	1
34.	22-3891	SPACER	2
35.	22-3844-12	FLANGE BEARING	2

FIG. 19

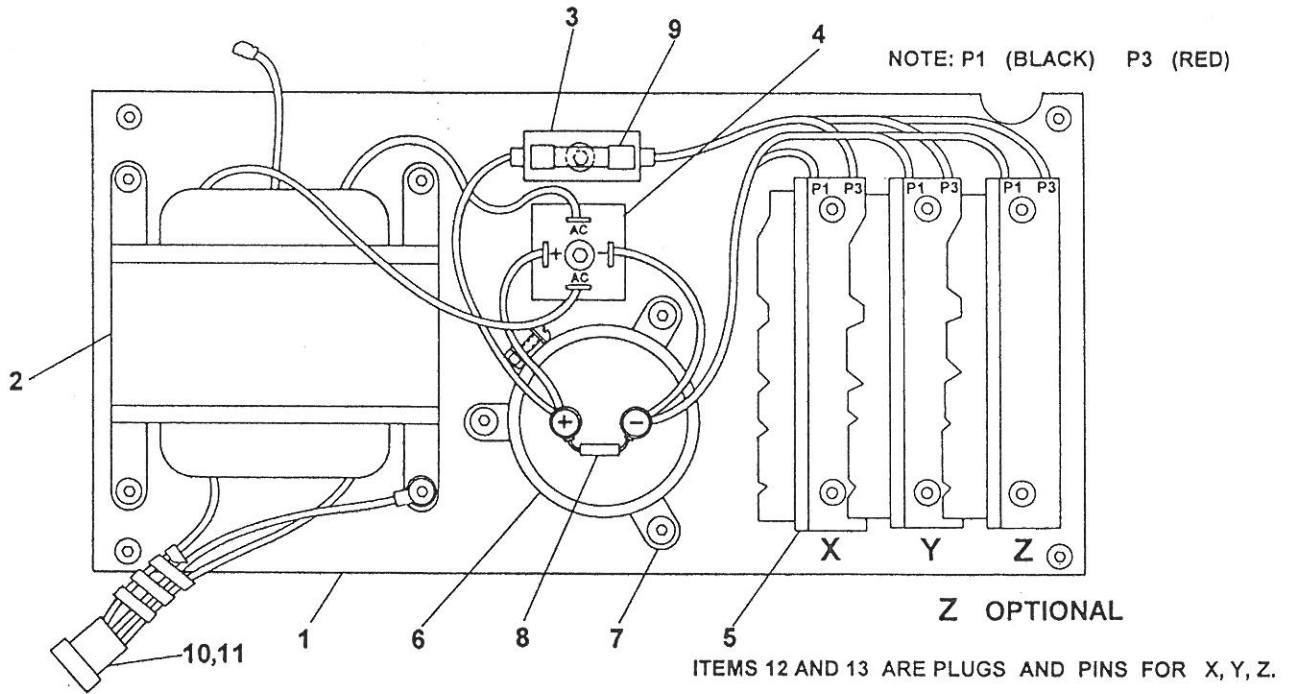


QUICK RELEASE NUT ASS'Y. 22-3844-00

ITEM	PART NUMBER	DESCRIPTION	QTY.
1	22-3844-01	COVER ASS'Y.	1
2	48-5137	BTN. HD. SCR. #6-32 x 1/4	4
3	22-3844-08	SPRING	1
4	22-3844-04	BASE	1
5	22-3844-05	ECCENTRIC BUSHING	1
6	22-3844-07	KNOB ASS'Y.	1
7	48-8028	SOC. SET SCR. #5-40 x 3/32	1
8	48-8008	SHOULDER SCR.	4
9	48-8009	BEARING	4
10	48-8010	WASHER	4

FIG. 20

AMPLIFIER AND TRANSFORMER ASS'Y. 22-3724-07

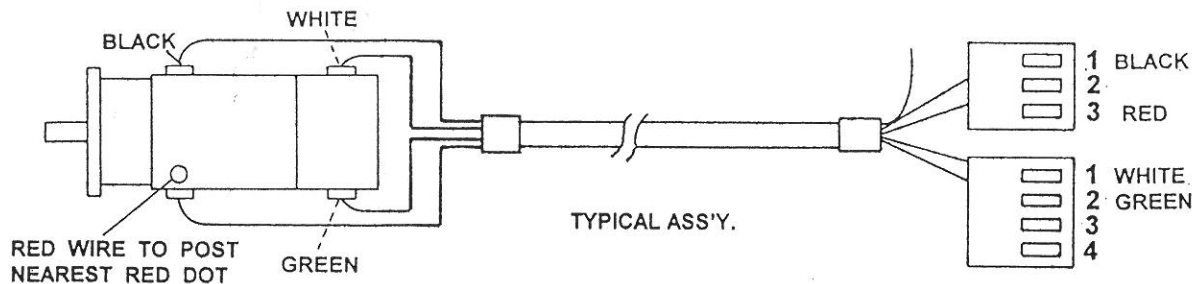


ITEM	PART NO.	DESCRIPTION	QTY.
1.	22-3724-29	AMPLIFIER BASE	1
2.	48-7799	TRANSFORMER	1
3.	48-7843	FUSE POST HOLDER	1
4.	48-7802	BRIDGE RECTIFIER	1
5.	22-3724-67	TUNED AMPLIFIER	2
6.	48-7800	CAPACITOR	1
7.	48-7801	CAPACITOR BASE MOUNT	1
8.	48-7803	RESISTOR	1
9.	48-7842	FUSE	1
10.	48-6189	MALE CONNECTOR PIN	3
11.	48-6233	3 PIN CONNECTOR HOUSING	1
12.	48-7839	1.5 AMP. HOUSING	3
13.	48-7841	1.5 AMP. PIN	6

FIG. 21

CABLE ASS'Y. Y-AXIS MOTOR 22-3728-38

CABLE ASS'Y. X-AXIS MOTOR 22-3728-39



NOTE: X-AXIS CABLE IS LONGER

FIG. 22

STAGE ASS'Y. 22-3759-50 4 X 8 SERVO DRIVEN

22

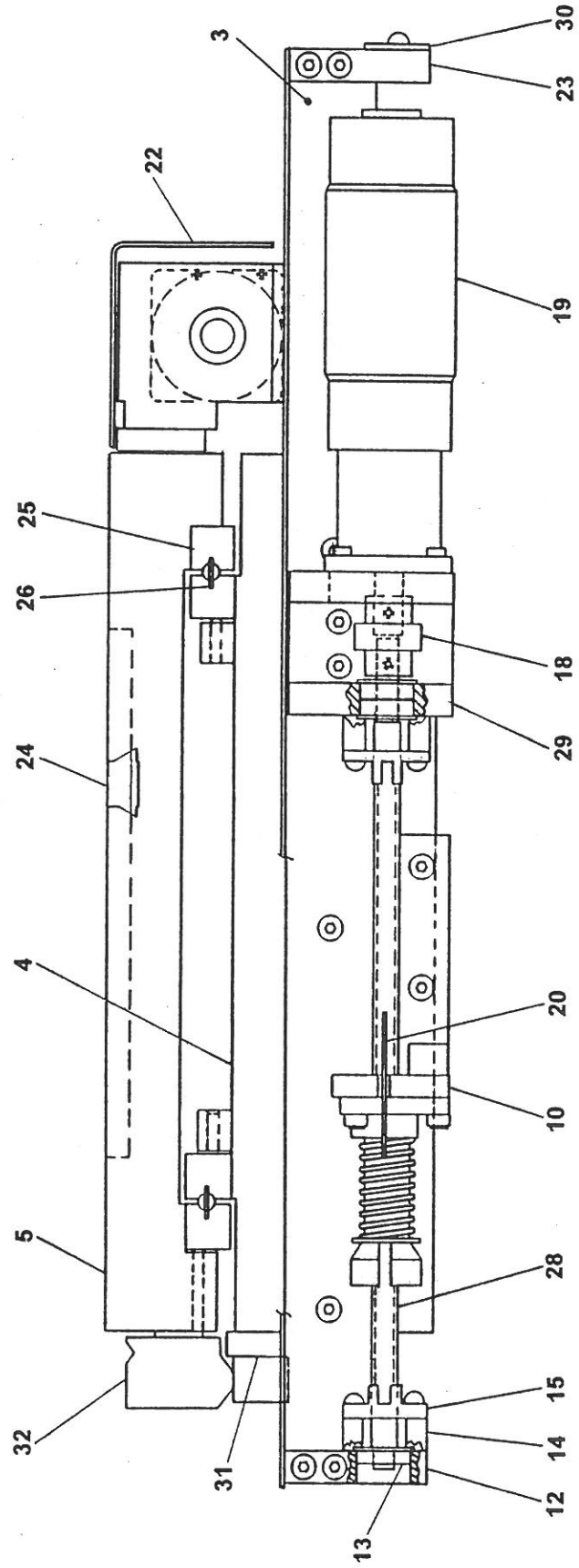
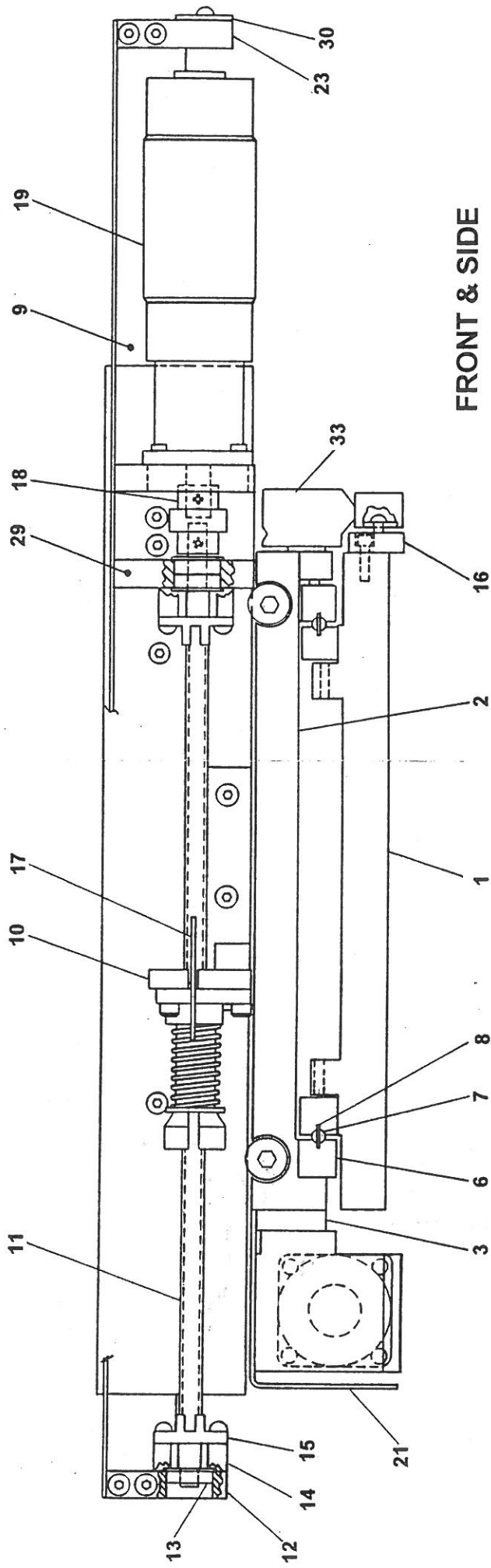


FIG. 23

STAGE ASSY. - TOP

22-3759-21 SQUARE, OPTIONAL

24

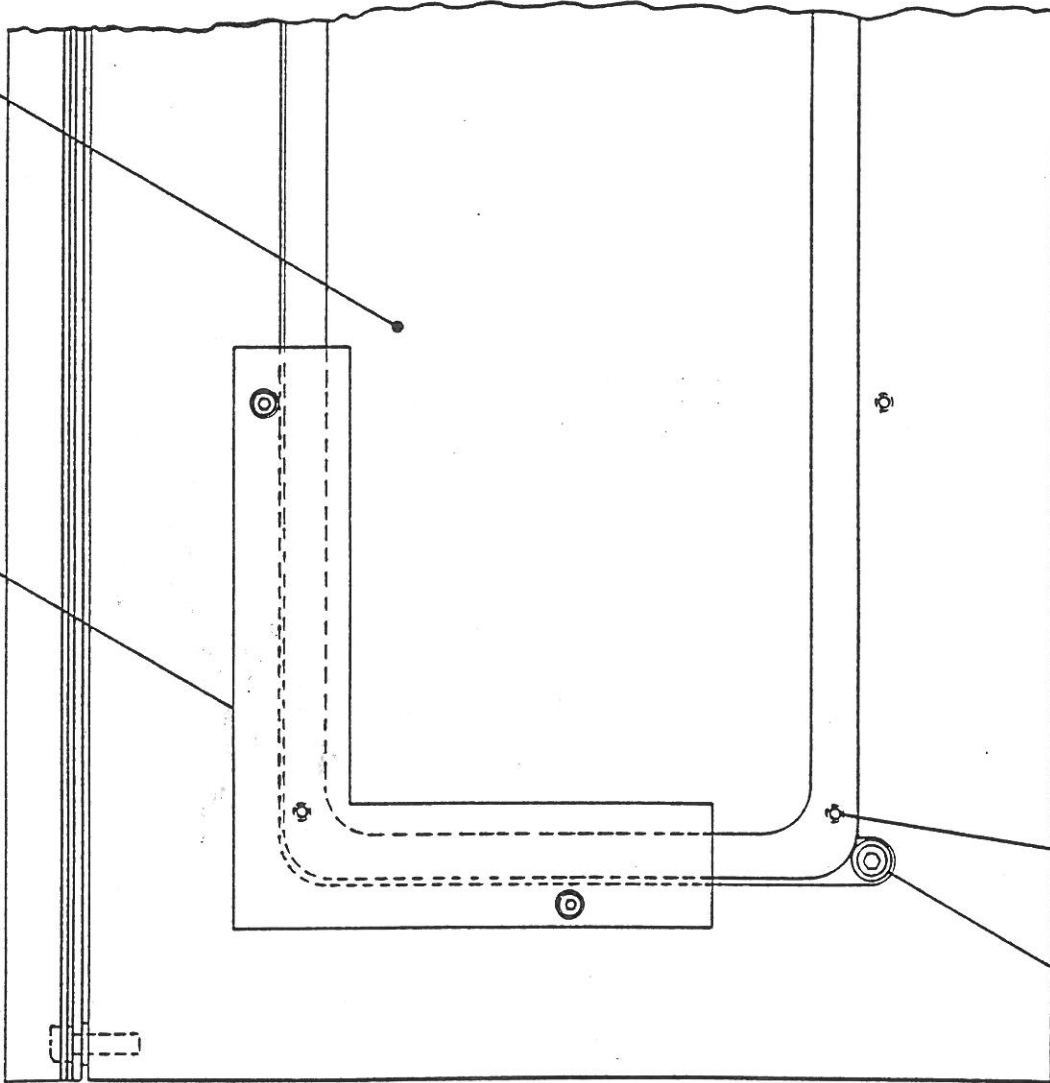
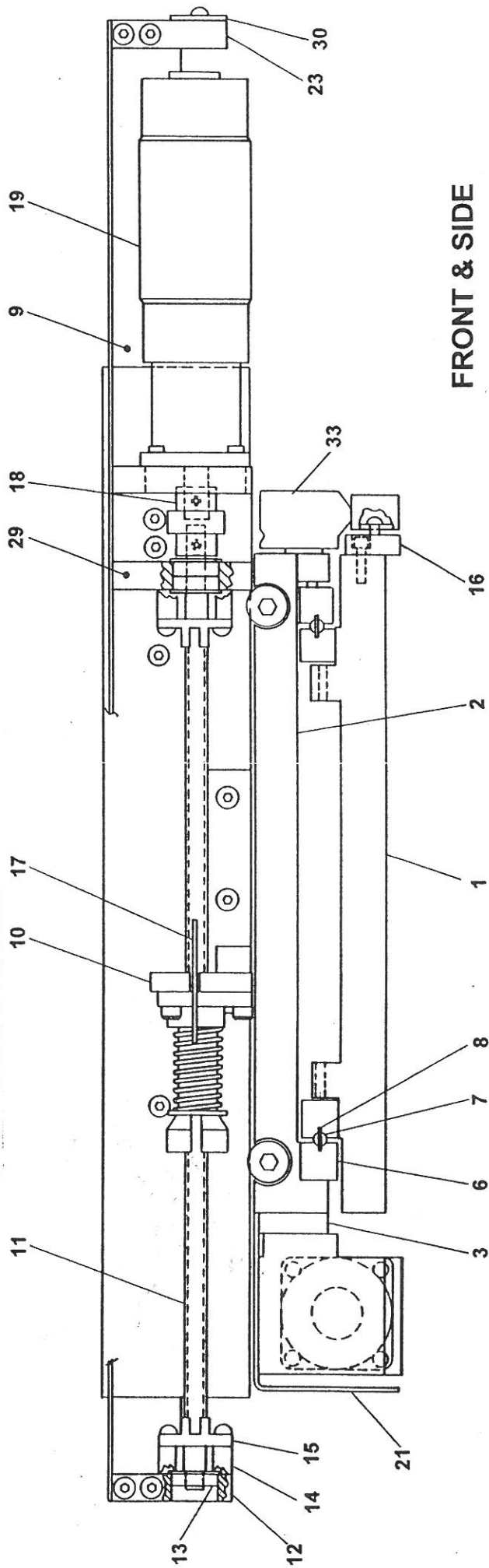


FIG. 24

STAGE ASS'Y. 22-3759-50 REF. 4 X 8 SERVO DRIVEN

ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3759-19	BASE PLATE	1
2.	22-3759-20	LOWER SLIDE PLATE	1
3.	22-3759-35	MOUNT BAR, Y-AXIS	1
4.	22-3759-02	UPPER SLIDE PLATE	1
5.	22-3759-10	TOP PLATE	1
6.	22-3759-12	GIBS, MATCHED PAIR	2 PR.
7.	48-5152	BALL 3/16 DIA.	72
8.	22-3759-13	BALL GUIDE	2
9.	22-3759-36	MOUNT BAR, X-AXIS	1
10.	22-3759-41	MOUNT	2
11.	22-3759-31	LEAD SCREW, X-AXIS	1
12.	22-3759-39	BEARING MOUNT	2
13.	48-7928	FLANGE BEARING	6
14.	48-7775	SPACER	8
15.	48-7935	LIMIT STOP SENSOR	1
16.	22-3759-15	ENCODER MOUNT, Y-AXIS	4
17.	22-3759-46	LIMIT STOP, X-AXIS	1
18.	48-8042	COUPLING	2
19.	48-7788	MOTOR	2
20.	22-3759-47	LIMIT STOP, Y-AXIS	2
21.	22-3759-38	COVER, Y-AXIS	1
22.	22-3759-34	COVER, X-AXIS	1
23.	22-3759-37	SOCKET MOUNT	2
24.	22-3759-17	GLASS PLATE	1
25.	22-3759-09	GIBS, MATCHED PAIR	2 PR.
26.	22-3759-08	BALL GUIDE	2
27.	22-3759-18	GLASS BUSHING	2
28.	22-3759-32	LEAD SCREW, Y-AXIS	1
29.	22-3759-53	BEARING AND MOTOR MOUNT	2
30.	48-7924	"D" CONNECTOR	2
31.	22-3759-01	ENCODER MOUNT, X-AXIS	1
32.	48-7797	SCALE, 8"	1
33.	48-8090	SCALE, 3"	1
34.	22-3759-40	NUT MOUNT BAR	2
35.	48-5380	NYLON SET SCREW	4

STAGE ASS'Y. 22-3759-71
4 X 12 SERVO DRIVEN



FRONT & SIDE

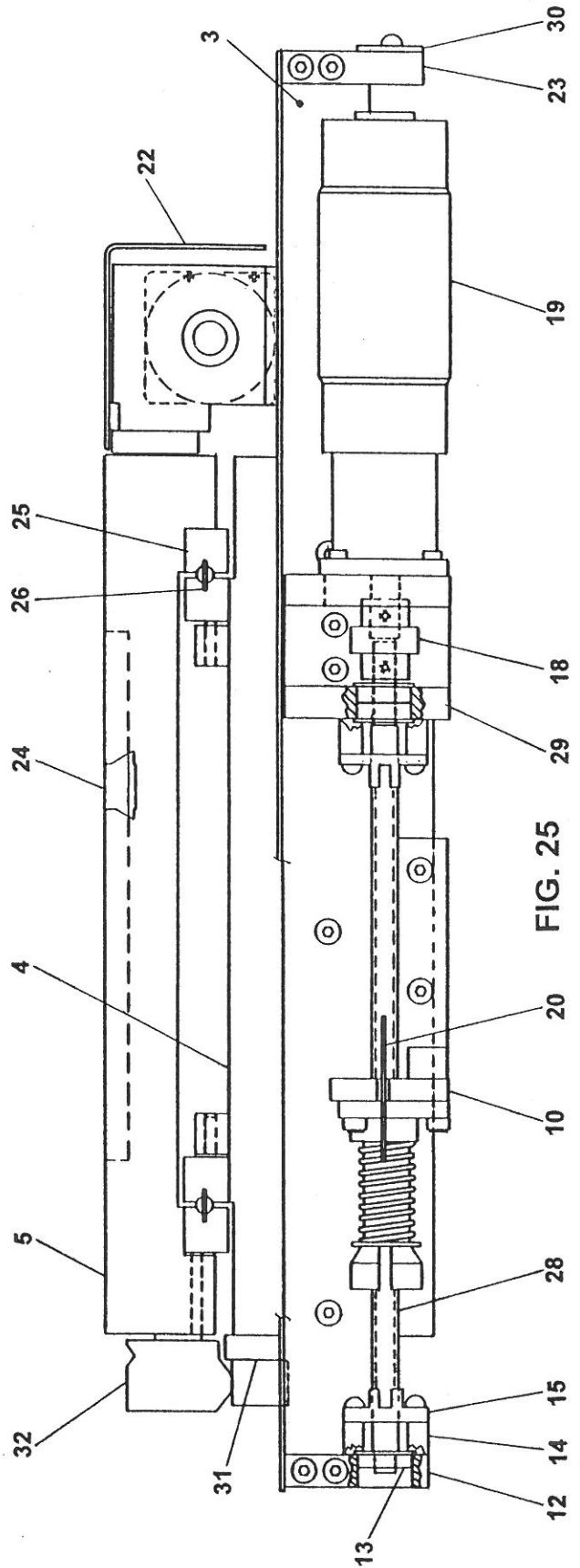


FIG. 25

STAGE ASSY. - TOP

22-3759-21 SQUARE, OPTIONAL

24

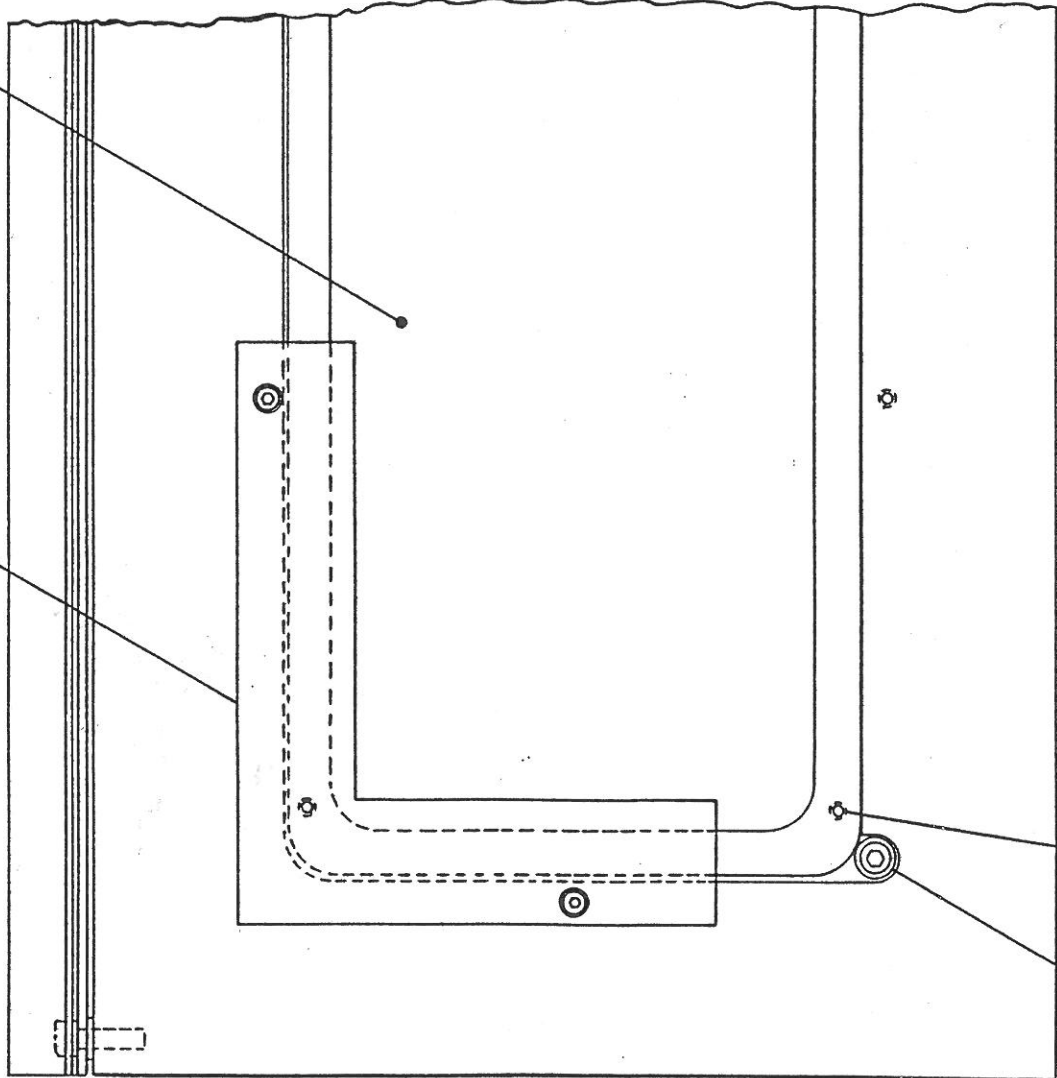


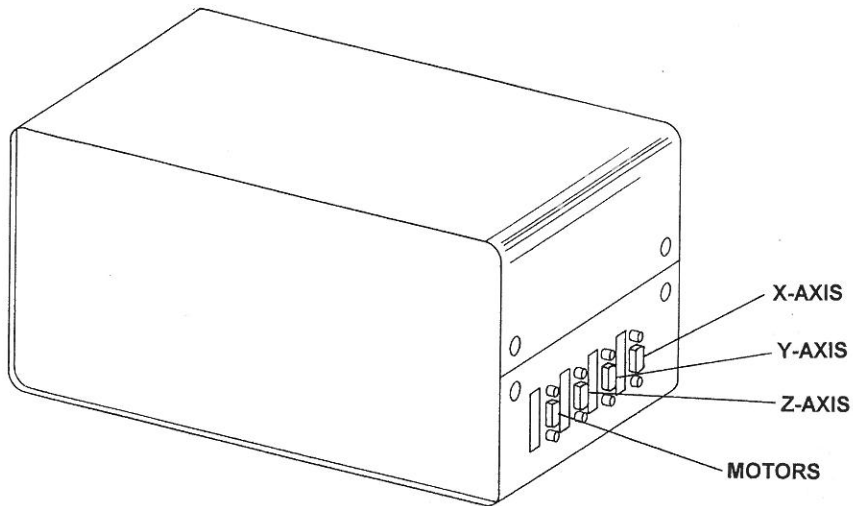
FIG. 26

35

27

STAGE ASS'Y. 22-3759-71 REF. 4 X 12 SERVO DRIVEN

ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3759-19	BASE PLATE	1
2.	22-3759-20	LOWER SLIDE PLATE	1
3.	22-3759-35	MOUNT BAR, Y-AXIS	1
4.	22-3759-02	UPPER SLIDE PLATE	1
5.	22-3759-69	TOP PLATE	1
6.	22-3759-12	GIBS, MATCHED PAIR	2 PR.
7.	48-5152	BALL, 3/16 DIA.	72
8.	22-3759-13	BALL GUIDE	4
9.	22-3759-75	MOUNT BAR, X-AXIS	1
10.	22-3759-41	MOUNT	2
11.	22-3759-72	LEAD SCREW, X-AXIS	1
12.	22-3759-39	BEARING MOUNT	2
13.	48-7928	FLANGE BEARING	6
14.	48-7775	SPACER	8
15.	48-7935	LIMIT STOP SENSOR	4
16.	22-3759-15	ENCODER MOUNT, Y-AXIS	1
17.	22-3759-46	LIMIT STOP, X-AXIS	1
18.	48-8042	COUPLING	2
19.	48-7788	MOTOR	2
20.	22-3759-47	LIMIT STOP, Y-AXIS	1
21.	22-3759-38	COVER, Y-AXIS	1
22.	22-3759-73	COVER, X-AXIS	1
23.	22-3759-37	SOCKET MOUNT	2
24.	22-3759-67	GLASS PLATE	1
25.	22-3759-09	GIBS, MATCHED PAIR	2 PR.
26.	22-3759-08	BALL GUIDE	2
27.	22-3759-18	GLASS BUSHING	2
28.	22-3759-32	LEAD SCREW, Y-AXIS	1
29.	22-3759-53	BEARING AND MOTOR MOUNT	2
30.	48-7924	"D" CONNECTOR	2
31.	22-3759-01	ENCODER MOUNT, X-AXIS	1
32.	48-7796	SCALE, 10"	1
33.	48-8090	SCALE, 3"	1
34.	22-3759-40	NUT MOUNT BAR	1
35.	48-5380	NYLON SET SCREW	4

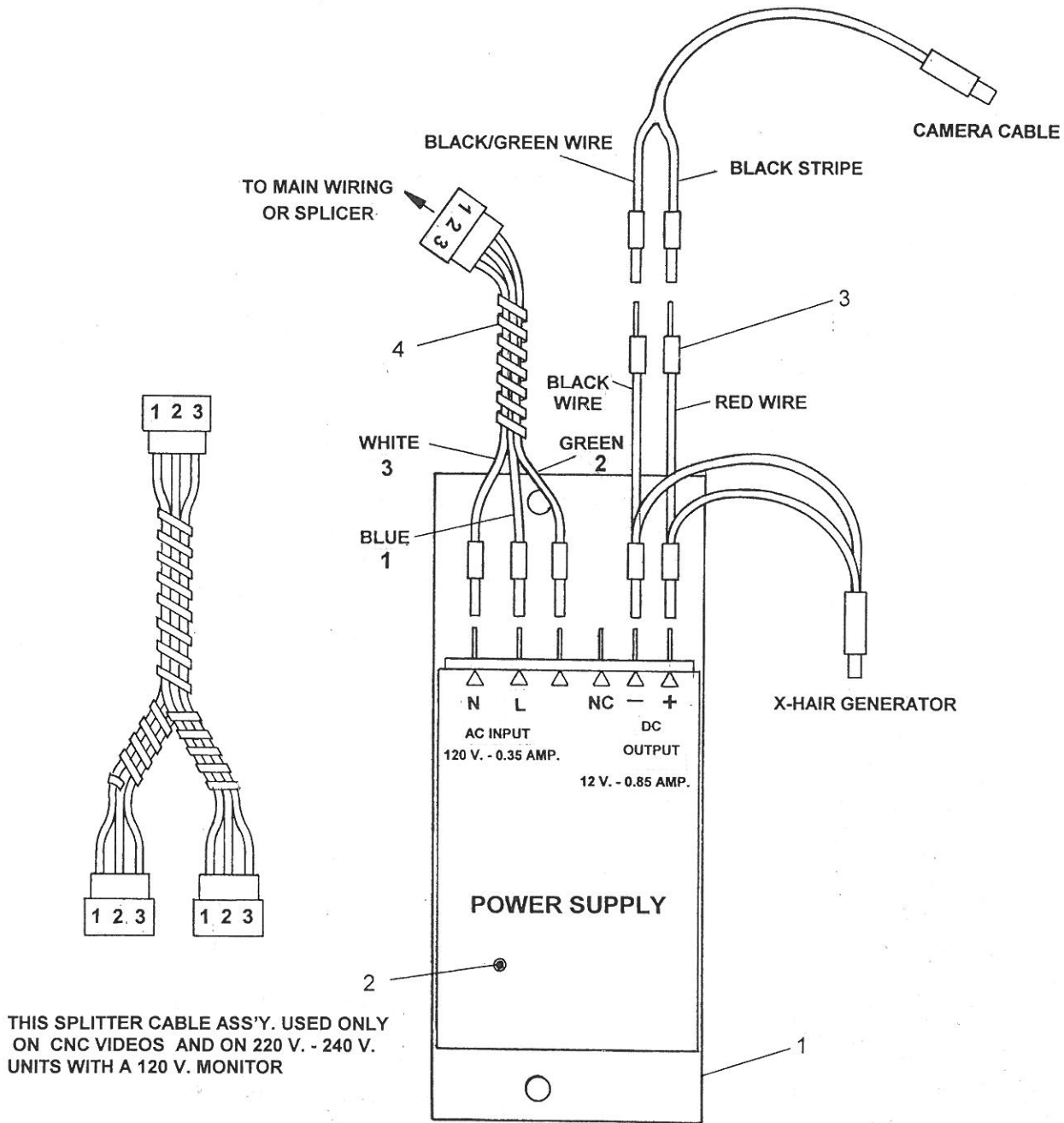


AMPLIFIER BOX ASS'Y. 22-3788-00

ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3724-07	AMPLIFIER ASS'Y.	1
2.	22-3788-01	WIRE ASS'Y.	1
3.	22-3788-10	WIRE ASS'Y., PWR. RECEP.	1
4.	89-0796	LABEL, Y - AXIS.	1
5.	89-0797	LABEL, X - AXIS	1
6.	48-7774	DB HDWR. PKG.	1
7.	22-3788-11	AMPLIFIER BOX HOUSING	1
8.	89-0798	LABEL, Z-AXIS	1
9.	22-3788-09	POWER CORD ASS'Y.	1
10.	89-0799	LABEL, MOTOR	1

FIG. 27

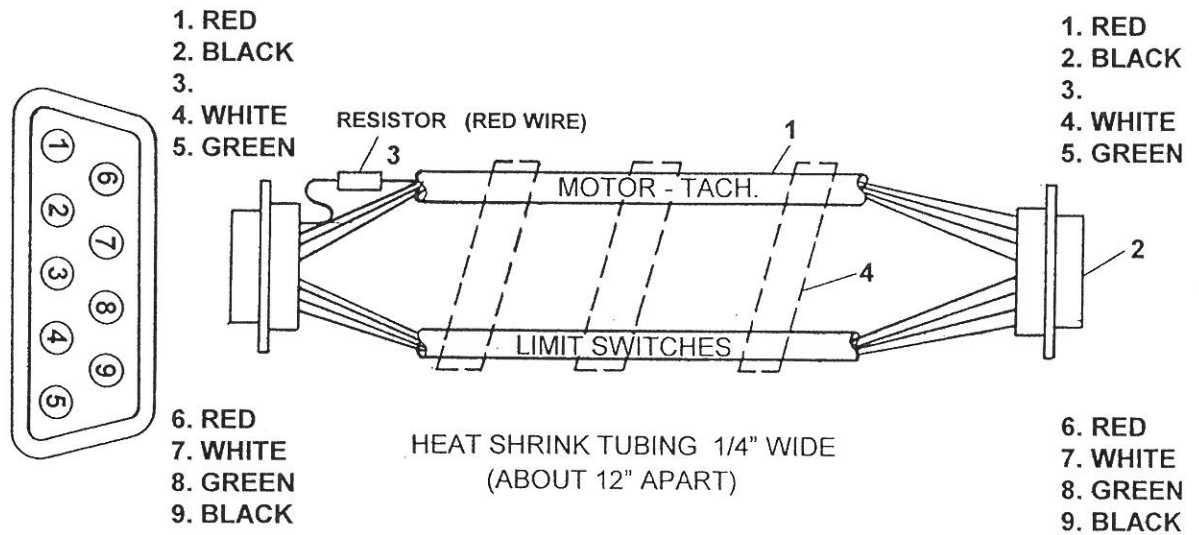
POWER SUPPLY AND CABLE ASS'YS. 22-3835-00



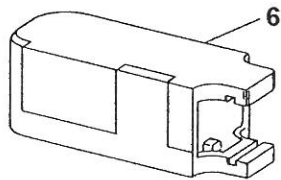
ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	22-3805-00	POWER SUPPLY MTG. PLATE	1
2.	48-7931-00	POWER SUPPLY	1
3.	22-3822-03	CABLE ASS'Y., CROSS HAIR GENERATOR	1
4.	22-3833-00	CABLE ASS'Y., POWER SUPPLY INPUT	1
5.	22-3836-00	CABLE ASS'Y., SPLITTER	REF.

FIG. 28

CABLE ASS'Y., EXTERNAL AMPLIFIER BOX 22-3788-07



ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	48-7944	CABLE, 4 COND., #28 AWG.	12 FT.
2.	48-7658	CONNECTOR - 9 PIN	2
3.	48-7854	RESISTOR, 3.0 K	1
4.	48-6493	HEAT SHRINK TUBING	1.5 FT.
5.	48-7659	HOUSING	1
6.	48-7960	HOUSING, RIGHT ANGLE	1



HARDWARE NOT SHOWN FOR ITEMS 5 & 6.

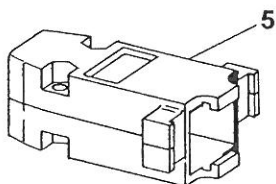
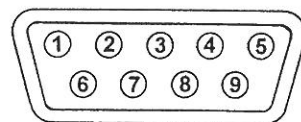


FIG. 29

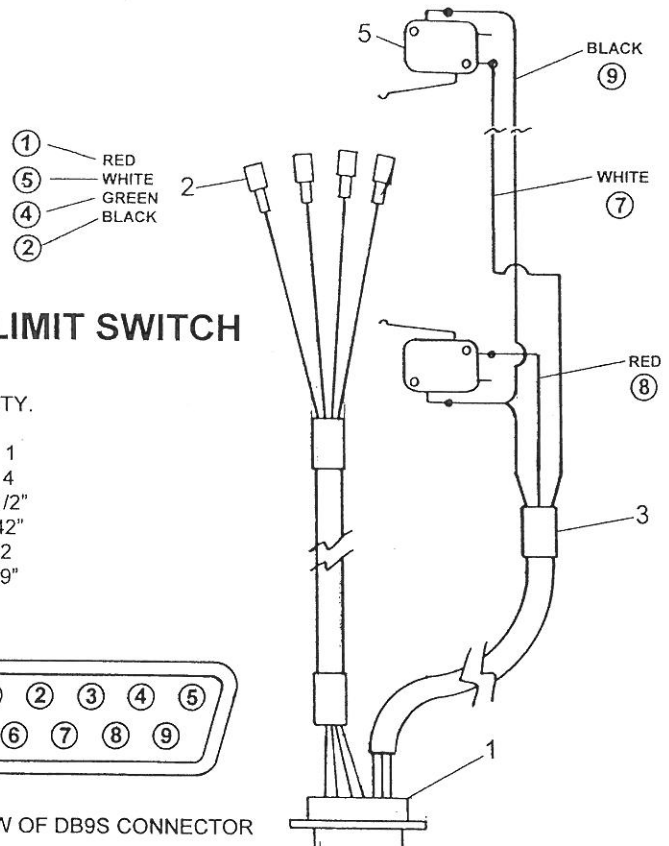
WIRE ASS'Y., Z-AXIS MOTOR & LIMIT SWITCH 22-3814-00

ITEM	PART NUMBER	DESCRIPTION	QTY.
1.	48-7924	CONNECTOR, DB9S	1
2.	48-5812	TERMINAL, .187" QL	4
3.	48-5758	HEAT SHRINK TUBING 4 @ 1/2"	
4.	48-7761	CABLE, 4 WIRE, 22GA.	42"
5.	48-5594	LIMIT SWITCH	2
6.	48-7416	WIRE, BLACK	9"

FIG. 30



WIRE SIDE VIEW OF DB9S CONNECTOR



MAIN WIRE ASS'Y. 22-3778-02 8600 VIDEO

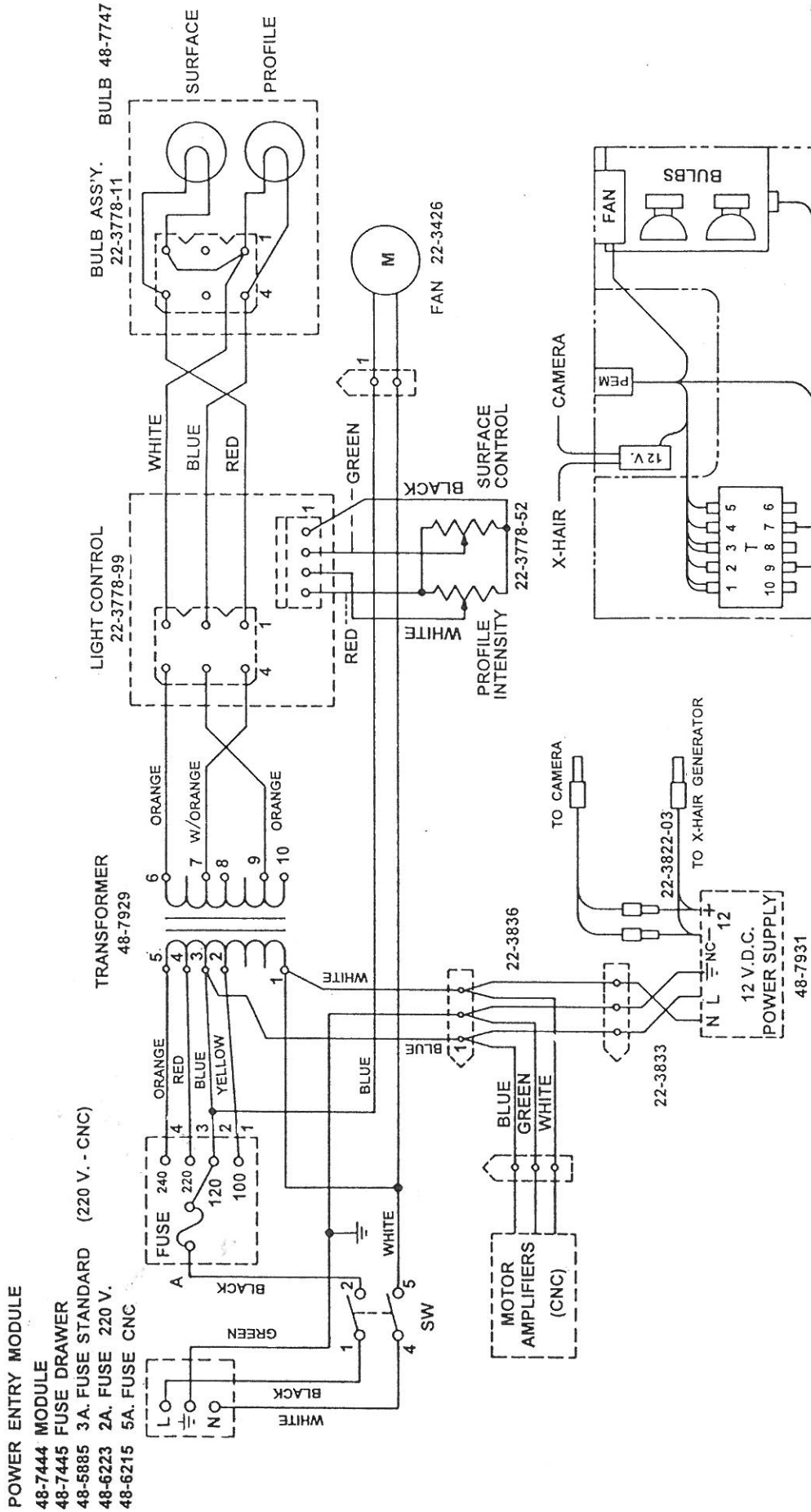
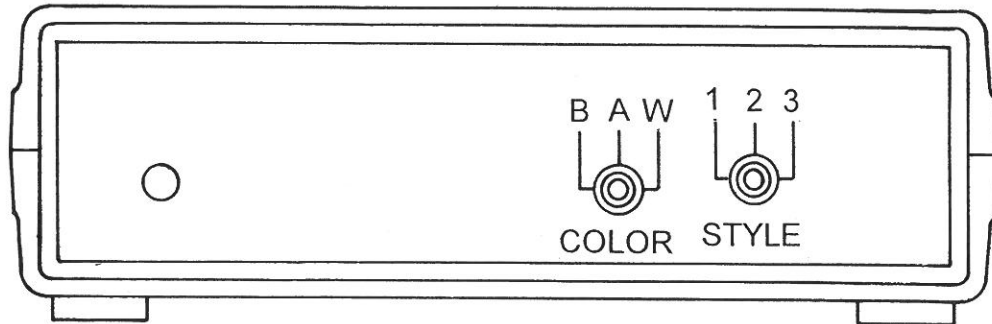


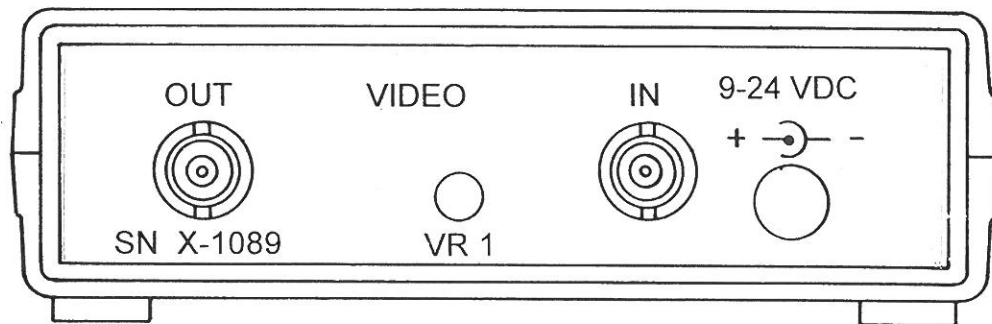
FIG. 31

REF. WIRE RUNS - BASE AND VERT. COLUMN

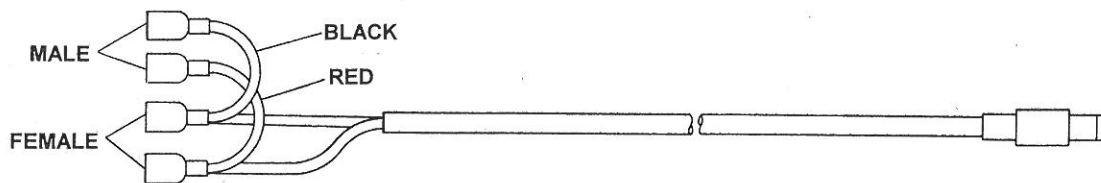
DIGITAL CROSSHAIR GENERATOR 20-8010



FRONT



REAR



CROSS HAIR GENERATOR POWER CORD 22-3822-03

FIG. 32