Film-Tech

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www.film-tech.com

EPRAD SIMPLE SWORD

Forward-Running Film Transport and Rewind Unit

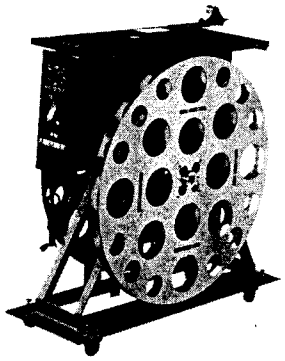
Series 50000 & 51000

OPERATOR'S MANUAL AND PARTS LIST

50000 Simple Sword
40" Reels - 3 hours

51000 Jumbo Sword
48" Reels - 4½ Hours

50000/51000 Simple or Jumbo Forward Sword Systems



Without exaggeration, the most practical, space-saving systems available for truly cost-efficient reliable performance. A pedestal of projection and Xenon systems and film transport all in one. Simple Sword units can accommodate up to 40″ reels for up to three hours of uninterrupted programming. Jumbo Sword is the choice for up to 4½ hours of uninterrupted program with 48″ reels. Simple to thread. Simple to run and rewind.

EPRAD INC

Gentle, Versatile Film Transport Systems

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Toledo, Ohio 43620
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EPRAD, INC.
2541 Tracy Road
Northwood, Ohio 43619
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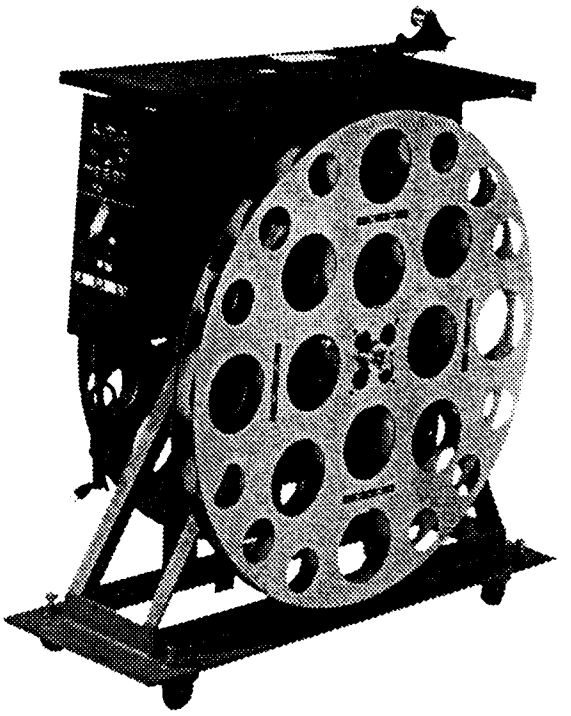
50000/51000 Simple or Jumbo Forward Sword Systems



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EPRAD FILM TRANSPORT SYSTEMS PRICE LIST
Effective August 9, 1982

	ITEM	LIST PRICE
LARGE REEL FILM HANDLING SYSTEMS		
76000	DBL-MUT	2730.77
50000	Simple Forward Only SWORD w/Make-Up Spindle	4230.77
51000	Jumbo Forward Only SWORD w/Make-Up Spindle	4307.69
40355	Forward/Reverse SWORD w/Make-Up Spindle	6000.00

No projector modifications are needed for reverse operation if reversing Ballantyne Pro 35 or reversing Simplex PR1030 projectors are to be used with F/R SWORDS. Add $275 for solenoid reversing kit needed for reverse operation of Century Projector with straight gate and traps. Prices for reverse modifications needed to operate other or rebuilt projectors are available upon request.

EPRAD SUPER SIMPLE SWORD FILM HANDLING DEVICE

INSTALLATION INSTRUCTIONS

RECEIVING:

1) Check shipment for damage and report any damage to carrier at once.

2) See that all required loose parts are received (in separate box), checking against packing list.

3) Move machine in crate as far as possible; then push or pull only on main frame or top plate, by brace - NEVER on the optional wrap-around paneling.

4) If the booth door is too small to accommodate the SWORD unit, it is possible to disassemble the SWORD into its two main assemblies following these instructions:

a) Dismount forward roller arm and both reel drive motor assemblies.

b) Remove 2 trunnion mounting bolts from trunnion rod; leave trunnion rod on elevation screw. The inner frame is now swing "free" on main pivot.

c) After suitable propping or bracing, remove main pivot; lift inner ("H") frame from outer ("A") frame. "H" frame can now be upended and angled into the booth.

d) Reverse above instructions to re-assemble.

Under extreme circumstances, it may be necessary to remove the top plate. This is NOT recommended unless as a "last resort", since the sword top plate is factory aligned to the soundhead bracket for correct optical center.

If necessary, carefully follow these instructions:

a) Dismount splice light and projector motor and interlock bypass switches.

b) Drive out the 1/4" roll pins located under the top plate. Save the pins.

c) Using a 1/2" wrench, remove the 4 top plate mounting bolts. Remove top plate.

d) To re-install top plate, replace the top plate mounting hardware, but DO NOT tighten more than "finger tight".

e) Replace 1/4" roll pins.

f) Firmly tighten mounting bolts.

g) Replace splice light and switches.

5) Locate SWORD in place. SWORD is delivered set at 0° projection angle; before setting your projection angle, level top plate lamphouse table with 4 leveling bolts on bottom of SWORD frame. (Note: if booth floor is wood or soft linoleum, it is recommended to place leveling bolts on 4x4x1/4" steel plates. To avoid "settling").

6) Mount soundhead and projector according to manufacturer's instructions. Power for projector motor (115 V.AC Switched) and frame light (115 V.AC Constant) is provided in handy box mounted on front of SWORD frame.

7) Mount soundhead roller bracket to bottom of soundhead with 5/16-18 bolts provided. If optional run-out or film split switch is used, remove jumper from "film split switch" socket and replace with switch plug. Align rollers with soundhead film path and tighten bolts. Align dancer arm roller to soundhead rollers.

MECHANICAL ASSEMBLY:

If SWORD is equipped with EPRAD SOUNDHEAD, follow these instructions:

a) Mount projector head and align it very carefully with soundhead. For EPRAD sound Fig. A shows how to use straight-edge pressed against soundhead sprockets as an indication of whether projector sprocket is in line with it; end of projector sprocket "A" must precisely touch straight-edge "B". Also, front of projector casting "C" must be precisely parallel with front edge of top plate "D".

b) Assemble drive shaft and belt pulleys on projector head.

c) Assemble drive belt(s) and adjust tension with idler rollers. NOT TOO TIGHT! You should be able to squeeze the two sides about 1/8 to 1/4 inch closer together with light finger and thumb pressure, applied halfway between pulleys.

When adjusting belt drive from motor, loosen motor hold-down bolts and push motor base plate (NOT motor casing) while retightening bolts, otherwise casing springs back in its rubber mounts when you let go.

8) Mount make-up spindle. Align drive dog with front top rollers using straight-edge before tightening bolts. Electrical connection in floating socket below top plate.

9) Mount overhead film transport column. The cross-bar should be parallel with front of projector.

10) If optional upper film split switch is used, mount bracket to overhead roller column. Thread a piece of film on upper projector sprocket and hold taut across overhead rollers. Edge of film should run across center of paddle. Set switches (by reforming paddles with needlenose pliers) to "click" when paddles are displaced to inner edge of sprocket perforations. Run cable through round hole in SWORD top plate; replace jumper in 3-pin floating socket with cable plug.

11) Mount lamphouse with bolts passing through slots in the machine top plate, leaving them loose temporarily.

12) Connect framing light in projector to power in accordance with maker's instructions.

13) Plug AC power cord of machine into polarized socket which should have been installed near each machine.

14) Align projector with screen and lamphouse to projector in usual way. Set projection angle with handscrew/trunnion adjustment on SWORD frame. After setting angle, lock setscrew in trunnion rod against handscrew. (To run projector without film, set selector switch to MANUAL, projector motor switch ON, and depress INTERLOACK BYPASS button)

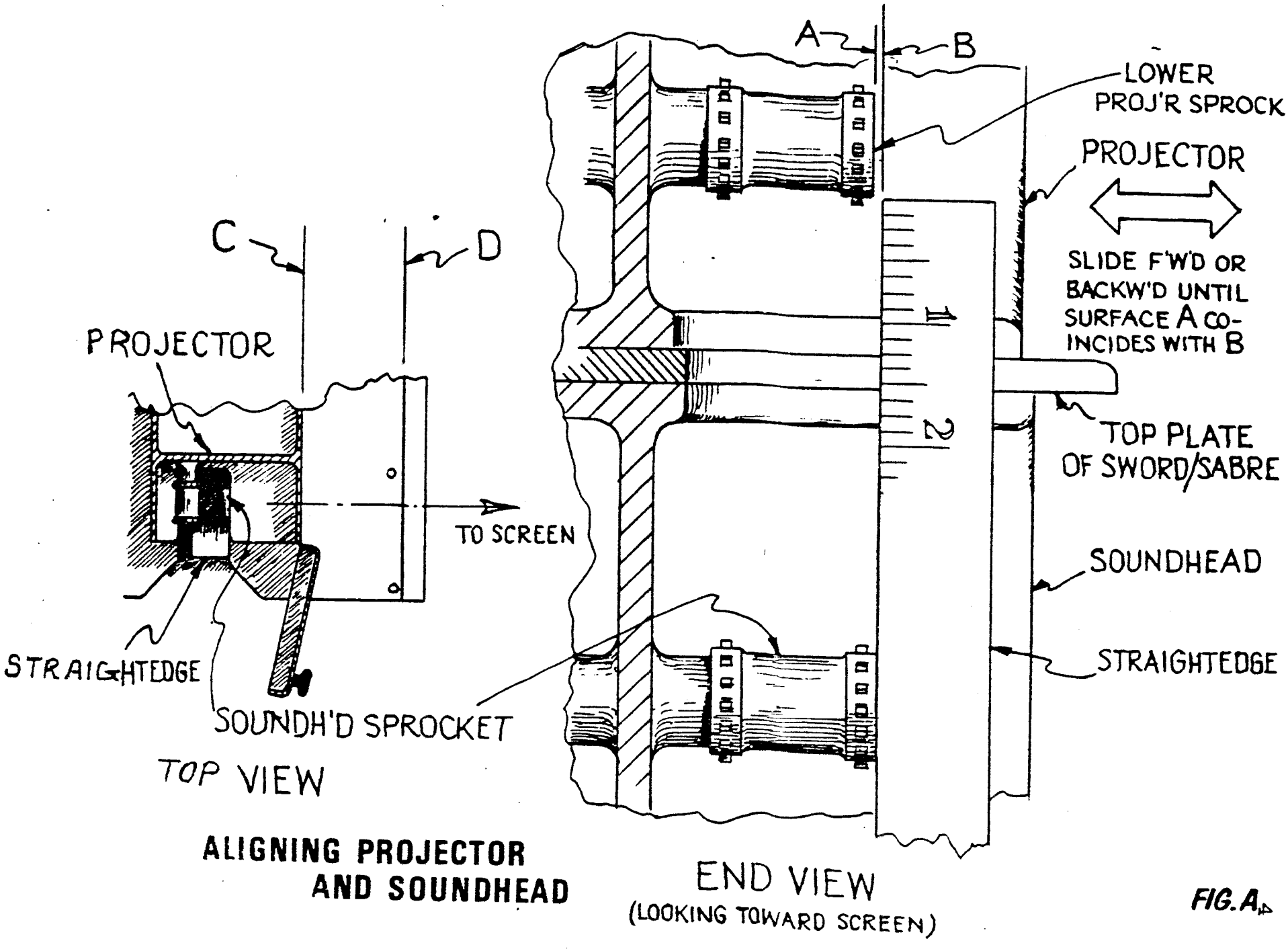
15) If SWORD is set to other than 0^{o} projection angle, the shutdown switches over the dancer arms must be reset. Loosen the switch mounting screws and slide forward or back on plate until switch "clicks" just before dancer arm touches frame bumper. If switch travel is inadequate, the actuator arm on switch may be carefully bent up or down with needlenose pliers.

If the installation requires an extreme projection angle, it may be necessary to re-set the dancer arm center (the point at which the transfer switch in the servo power supply reverses motor rotation). Chains are removed by pulling the spring-loaded side and lifting the chain off the power supply sprocket. To set the left (from rear) power supply, remove chain, allow dancer arm to rest on frame bumper, manually rotate power supply sprocket counterclockwise to stop, and replace chain. To set the right power supply, remove chain, manually rotate power supply sprocket to transfer switch "click", raise dancer arm to desired center position (usually just above elevation screw brace), and replace chain. Lower the dancer arm and check that arm is resting on bumper and power supply sprocket stop is NOT engaged.

For further information on Servo Power Supply, consult drawing B-40297-2

ELECTRICAL INSTALLATION:

The Projector Controller has two sets of form "C" contacts that can be used to control house functions. These are available on the terminal strip on the chassis (see C-40741).



ALIGNING PROJECTOR AND SOUNDHEAD

FIG. A

OPERATING INSTRUCTIONS

Standard Model with 50040 Controller

The Simple SWORD Controller cabinet contains a Servo Control Module, a Projector Motor Start Module, and a Make-Up Servo Power Supply. Interlock ("safety") switching is incorporated in the servo control module and interconnected to the motor start module; in the event of a film break, the SWORD, projector, and lamphouse shut down simultaneously.

Terminals 1 and 2 on the projector motor start module provide 115 volts AC (switched) for the projector motor. These terminals are factory pre-wired to the "handy" box mounted on the front frame cover of the SWORD. The box also furnishes 115 volts AC (constant) for the framing or housing light.

Terminals 3 and 4 provide dry contacts to complete a 115 volt AC circuit to the xenon lamphouse ignitor. Terminals 5-10 provide additional contacts which can be used for house or auditorium functions (lights, curtain, etc.).

Operating mode is selected with the six-position rotary switch located at the rear of the controller. Also found on the back panel are the 4.5 amp circuit breakers which protect the servo drive system, and the ½ amp fuse protecting the interlock wiring.

As a safety precaution, neither the projector motor nor the lamphouse will start unless the selector switch is in RUN mode and the interlocks are "clear"; that is, both dancer arms are up and all (optional) film split switch paddles are open.

Drawing C-40741 shows the electrical layout of the Simple SWORD.

Interlock Bypass Switch

A pushbutton switch is located on the side of the SWORD top plate (lamphouse table) for the purpose of "clearing" all interlocks simultaneously. This feature is intended for facilitating projector repair or preventive maintainance when the machine is unthreaded, or inching additional film to complete threading. NOTE: It is advisable to prop or block the right dancer arm in its center ("click") position, or to remove the right reel while in interlock bypass; otherwise, the reel will turn at high speed until the switch is released.

"Inching" is accomplished by placing the mode switch in RUN, the projector motor switch ON, and "bumping" the interlock bypass switch. After enough film has been payed out, return the mode switch to THREAD and motor switch to OFF until threading is complete.

Interlock Bypass Switch (con't)

If the machine has stopped as the result of a film break or film run-off, DO NOT clear with the interlock bypass. Until the fault is corrected, additional film footage will be damaged.

Simple SWORD with EPRAD CO-OPERATOR

The Simple SWORD is easily automated with the EPRAD Co-Operator. Three holes in the back panel of the SWORD controller cabinet correspond to matching mounting holes in the Co-Operator cabinet. When a Co-Operator is used, the projector motor start module is not used; projector and lamphouse functions are controlled by the Co-Operator.

Co-Operator Installation

a) Interconnect Co-Op terminals 1-2-3 to Servo Control module terminals 1-2-3 for 115 volts AC.

b) Mount shut-down switch to soundhead roller bracket (holes provided); plug shut-down switch into "Film Split Switch" socket on front of SWORD frame, in place of jumper.

c) Remove jumper from terminals 4 and 7 on Servo Control module.

d) Connect Servo Control module terminals 6 and 7 (interlock) to Co-Op socket J-3.

e) Mount pick-off as per instructions in "Pick-off Manual" (included with Co-Op); connect to Co-Op socket J-2.

f) Move projector motor and lamphouse leads to corresponding terminals in Co-Op.

NOTE: Co-Operator will function only when SWORD is in RUN mode. For detailed information, consult "EPRAD CO-OPERATOR: Description of Circuit Operation" provided with Co-Operator.

Make-Up Spindle

Features can be both made up and later broken down for shipment using the Make-up spindle. It is powered only in the two MAKE-UP modes, and both speed and direction are controlled by manual operation of the Make-Up Servo Control knob located on the left side of the controller cabinet.

The make-up spindle will accomodate reels up to 26 inches in diameter, and replacement shafts and shaft adapters for reels with $\frac{1}{2}$ inch hub bores are available from EPRAD dealers.

Splice Light

To aid splicing "in frame", the SWORD is equipped with a splice light on the top plate in line with the make-up film path. The

Splice Light (con't)

on-off switch for the splice light is located below the top plate on the right of the light housing.

The splice light operates at 24 volts AC.

Reel Drive System

The "heart" of the SWORD reel drive system is the 115 volt, permanent magnet, spur-gear DC servo motor. Since the reel mounts directly on the motor shaft, no torque is lost through drive transfer or coupling systems.

The gearbox is sealed and permanently lubricated. The only maintainance required on the motor is periodic inspection and replacement of the motor brushes (available through EPRAD dealers).

If the motor is the "heart" of the reel drive system, the Servo Power Supply is the "brain". The servo power supply consists of a variable transformer to control the motor speed, a bridge rectifier to furnish the DC current, and a transfer switch to determine the direction of motor rotation.

The shaft of the variable transformer (VT) is linked to the dancer arm with a roller chain. In this manner, the speed of the motor is determined by the pay-out or take-up requirements of the individual reels, regardless of the amount of film on the reel.

When the dancer arm is at its center position, the VT is at its center tap, or null voltage, point. If the dancer arm rises, as film is "pulled" by a projector, the VT shaft moves the wiper up the transformer windings, and the motor starts and gains speed. a cam on the end of the VT shaft actuates the transfer switch and "tells" the motor to rotate in pay-out direction.

Subsequently, the other dancer arm drops as film is fed out of the soundhead. Its VT shaft moves the wiper down the windings, causing the other reel to take-up at the correct speed.

The most critical adjustment in the servo power supply is the position of the VT shaft cam to the actuator of the transfer switch. The transfer ("click") must occur exactly at the point where the wiper is at the center tap. Any variation of this setting will result in annoying dancer arm oscillation, and in extreme cases, might damage film.

If booth line voltage is in excess of 125 V.AC, it may be necessary to change the black leads (pins 4 and 6) in the servo power supply plug to protect the VT.

Both of these settings are illustrated on Drawing 40297-2.

Servo Switching

Position of the mode switch determines which servo power supply controls the operation of which motor.

NOTE: Always place the selector switch in THREAD position before attempting any threading operation! Failure to do so may cause film damage.

Servo Switching (con't)

Mode	Servo Power Supply	Motor
RUN	Right	Right reel motor
	Left	Left reel motor
REWIND	Make-up	Right reel motor
	Left	Left reel motor
MAKE-UP (RIGHT)	Make-up	Make-up motor
	Right	Right reel motor
MAKE-UP (LEFT)	Make-up	Make-up motor
	Left	Left reel motor
THREAD	All Servo Power Supplies, all Motors OFF	

NOTE: All servo power supplies are wired identically, and are completely interchangeable. Those mounted on the frame are inside enclosures to prevent electrical shock in the course of maintainance or repair.

Dynamic Braking System

The two 200 watt light bulbs mounted on the servo motor channel serve as ballasts for the operation of the DC motors. They work primarily as a brake for the motor in the event of a film break; without the bulb, the reel would continue to turn until the loaded reel ceases to "flywheel". The bulb filament also stabilizes the operation of the DC drive system.

While the SWORD will operate without the bulbs, they should be maintained. If the bulbs burn out, the dynamic braking will be lost, resulting in more "spilled" film if a film break occurs; also, the dancer arms may oscillate without the filament stabilization.

The socket is standard size and will accept any size light bulb, but use of a 200 watt bulb is recommended; the filament size not only improves operation, but assures longer life.

NORMAL PROJECTION THREADING PATH

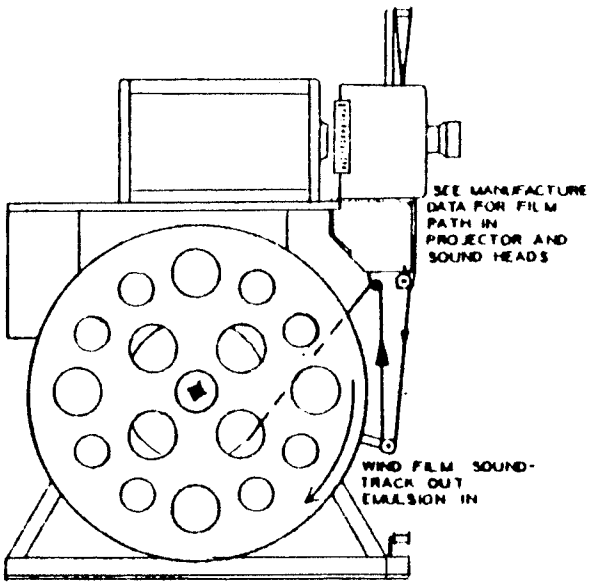


FIG. 1A RIGHT SIDE

In RUN mode, the left reel pays out film at a speed determined by the feed sprocket of the projector.

Likewise, the right reel takes up the film at the same speed as it leaves the soundhead.

When threading over the overhead guide rollers, note that the film should be emulsion-side up and sound-track front (toward screen). This forms a gentler twist of the film and ensures the correct angle to the upper film split switch (when used).

Thread the projector and soundhead according to manufacturer's instructions.

After threading, rotate the large reels by hand to bring the dancer arms to or near their center ("click") positions before placing mode switch to RUN. This will prevent the surge of the dancer arms "hunting" their centers.

Make sure the motor switch is OFF before turning to RUN mode.

CHECK YOUR THREAD PATH! Make sure the film is laying correctly on the sprockets, and all pad rollers are closed.

Turning the motor switch to ON will start the projector and ignite the lamphouse. Enough blind film (opaque leader) should be provided to allow the lamp to ignite and projector to come to speed.

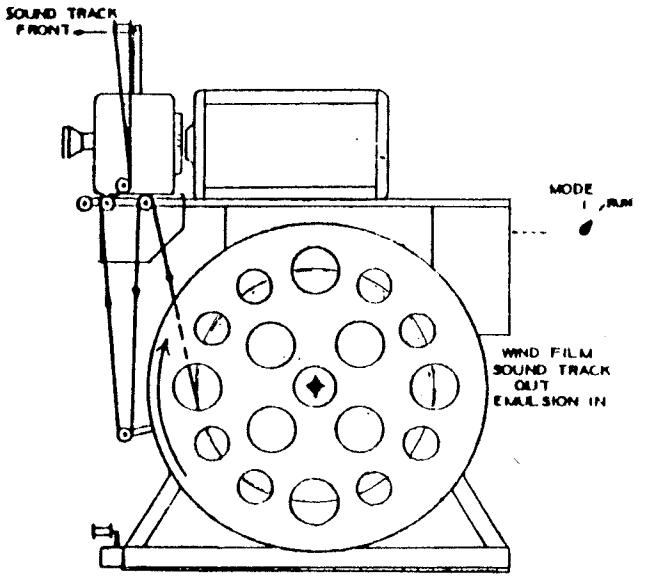


FIG. 1B LEFT SIDE

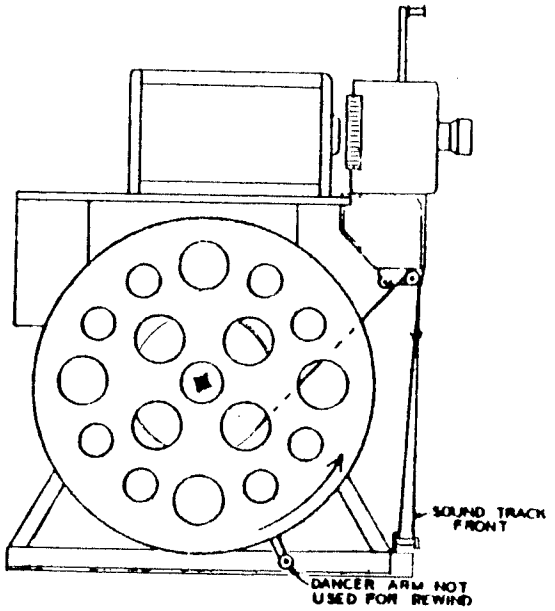


FIG. 2A RIGHT SIDE

NOTE: Before placing selector switch in REWIND, make sure Make-Up servo power supply control is in OFF setting.

At the conclusion of the machine's run, place the selector switch on THREAD and route the film across the rewind rollers as illustrated (SK-978 "Reel-to-reel Rewind Film Path" shows the same thread path from another view).

Notice that the right dancer arm is not used in this mode.

When properly threaded, turn the selector switch to REWIND mode. Slowly rotate the Make-Up servo power supply knob counterclockwise until the left reel picks up speed. Continue to rotate the knob until the desired speed is reached, making sure that the left dancer arm is staying just above the bumper strip (when shut-down switches above dancer arms are properly set, unit will shut down if dancer arm touches bumper).

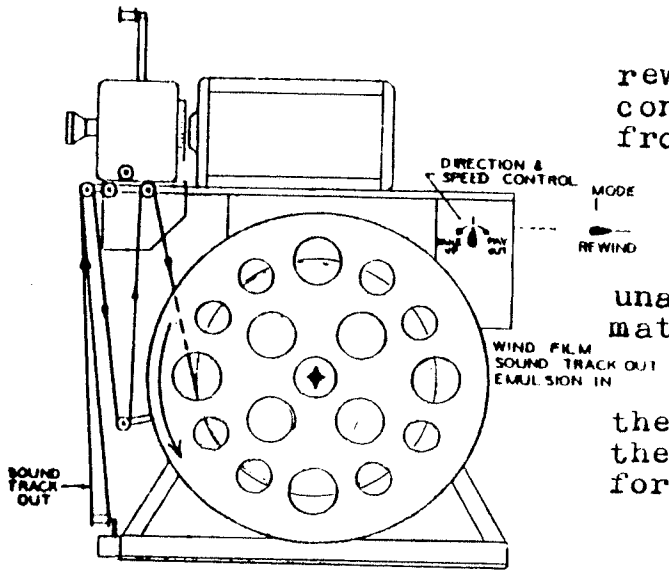
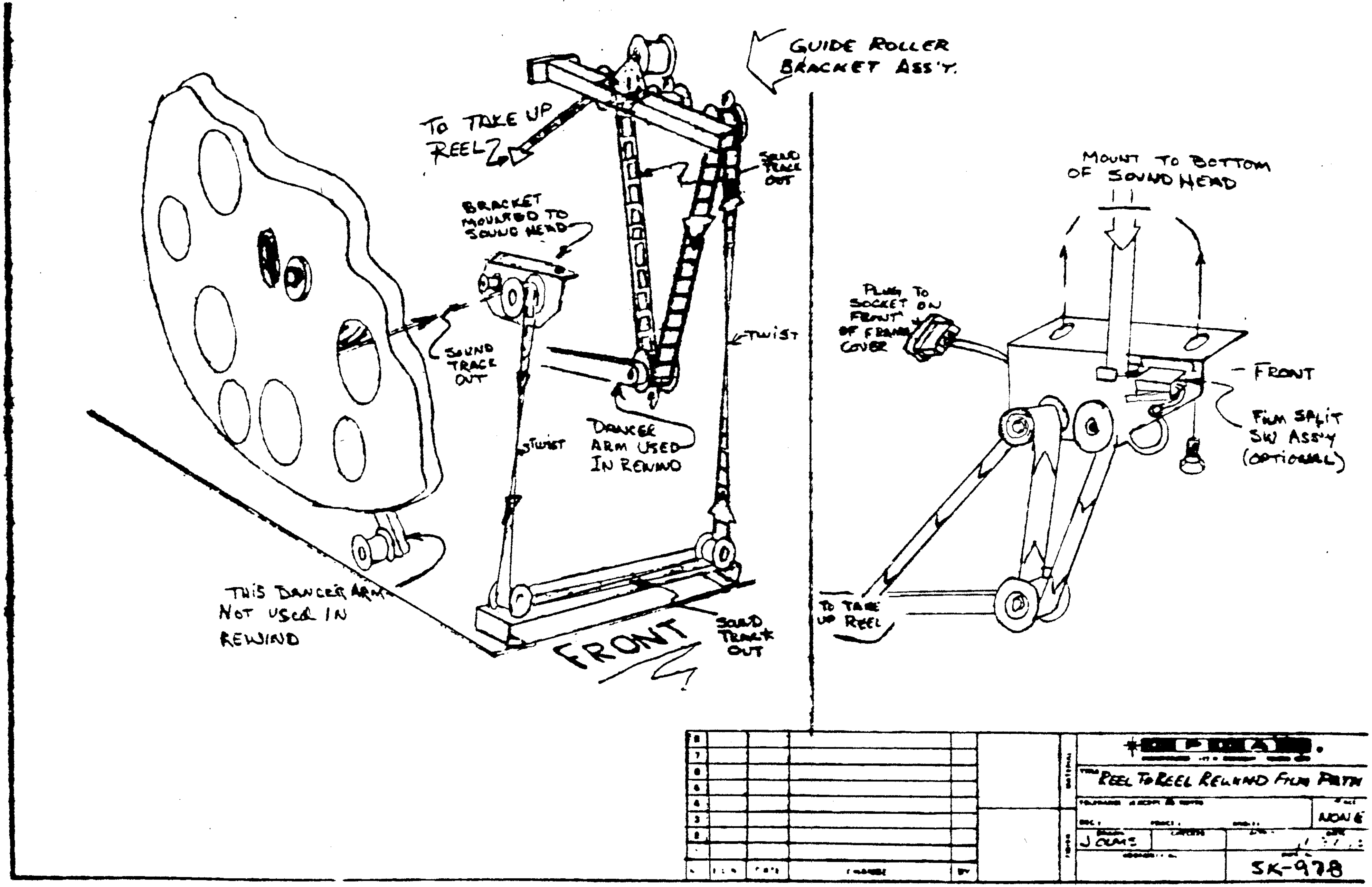


FIG. 2B LEFT SIDE

If it is important to complete rewind as soon as possible, you may continue turning the control knob from time to time, providing the the dancer arm does not touch the bumper. In a few minutes you will reach the switch's limit (top speed) and you may leave the unit unattended. It will shut down automatically when rewinding is complete.

On completeion of rewind, place the selector switch to THREAD, return the Make-Up knob to OFF, and re-thread for the next show.


GUIDE ROLLER BRACKET ASS'Y.
TO TAKE UP REEL
BRACKET MOUNTED TO SOUND HEAD
SOUND TRACK OUT
TWIST
DANCER ARM USED IN REWIND
THIS DANCER ARM NOT USED IN REWIND
FRONT
MOUNT TO BOTTOM OF SOUND HEAD
PLUG TO SOCKET ON FRONT OF FRAME COVER
FRONT
FILM SPLIT SW ASS'Y (OPTIONAL)
TO TAKE UP REEL
REEL TO REEL REWIND FILM PATH
NONE
J OLMS
SK-978

MAKE-UP TO LEFTREEL THREADING PATH

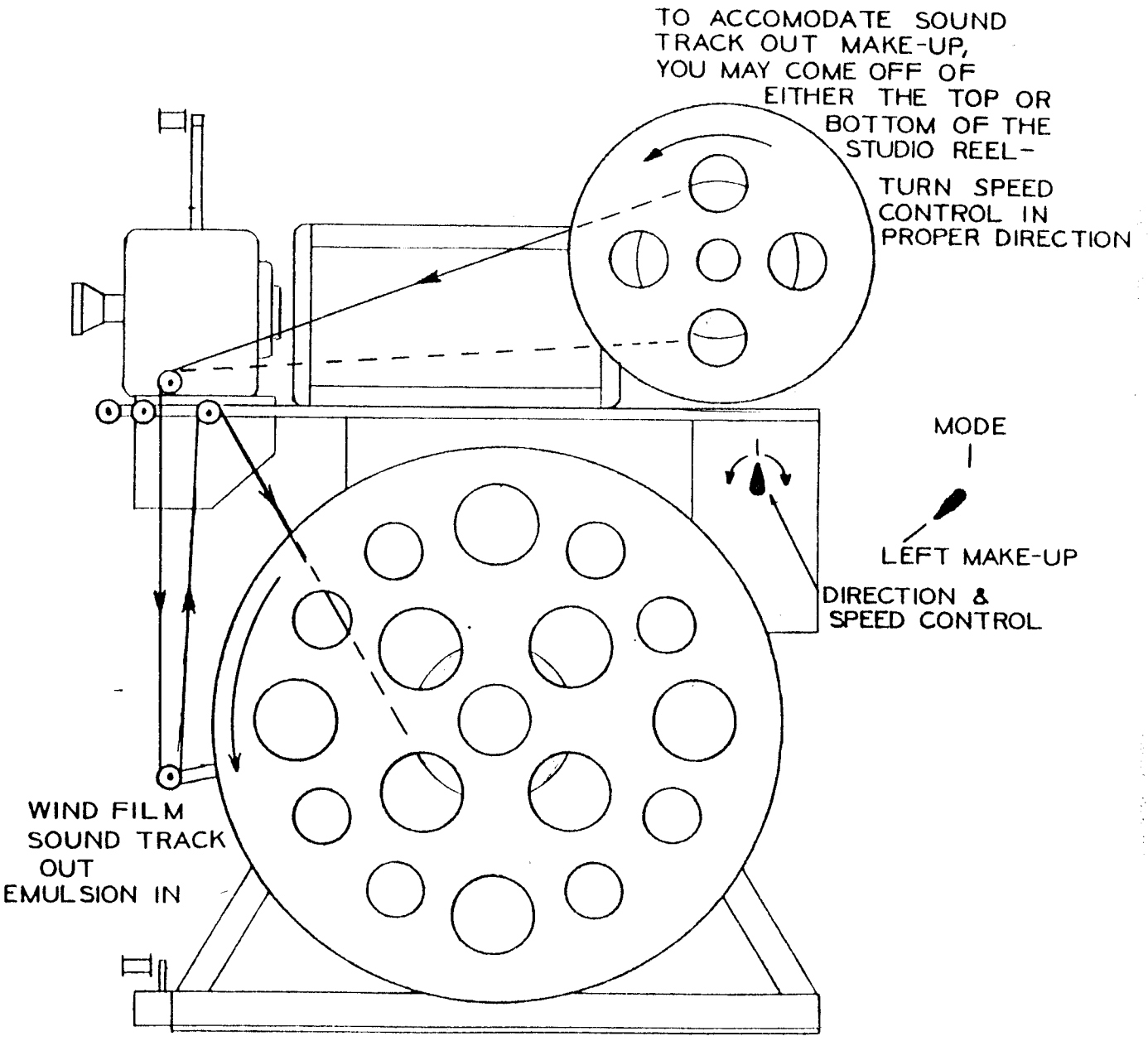


FIG. 3 LEFT SIDE

MAKE UP TO RIGHT REEL THREADING PATH

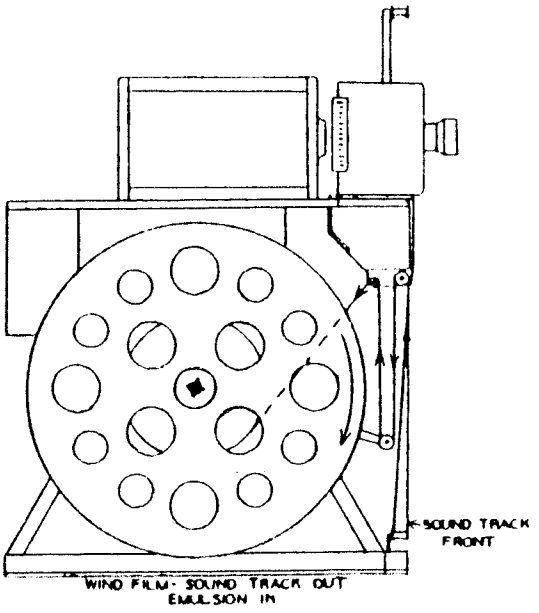


FIG. 4A RIGHT SIDE

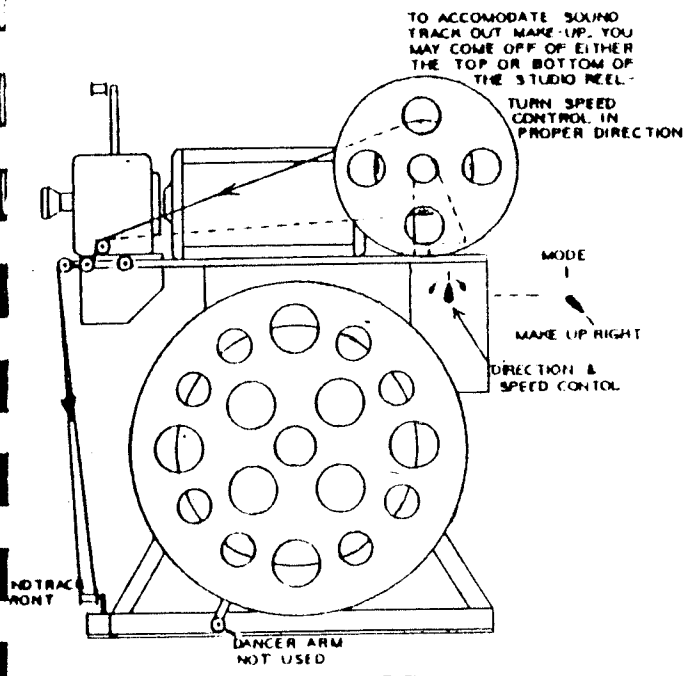


FIG. 4B LEFT SIDE

Two MAKE-UP modes (LEFT and RIGHT) are provided to accomodate prints received either heads- or tails-up.

If the print is received heads up, use MAKE-UP (RIGHT). Splice head of reel 1, with leader, to your opaque house leader (use of house leader guarantees enough film to reach from soundhead to right reel).

Using the Make-Up servo power supply knob, pay out reel 1 to the SWORD right reel, after threading according to the diagrams on this page. Make sure the soundtrack is outboard; it may be necessary to use the alternate film path shown with the dotted line.

When you reach the end of reel 1, stop the SWORD with the make-up supply knob, detach reel 1 tail (leaving a frame or two for identification purposes), and splice on the head of reel 2 (without the leader--again, leave I.D. frames on the leader).

Continue until you have reached the tail of the last reel. At this point, rewind reel-to-reel to reach the head of reel 1 to thread for your show.

If the SWORD is used in conjunction with any automation system, carefully inspect your incoming print and remove any "foreign" cueing foils left on by prior exhibitors.

If the print is received tails up, start with the tail of the last reel, threading to SWORD left reel, as illustrated in Fig. 3, preceding page. Make up as before, only splicing tail of preceding reel to head of the reel already made up. On completion of MAKE-UP (LEFT), you will finish with the head of reel 1 and be ready to thread for your show.

Make-Up (con't)

If your booth is equipped with a rewind bench handling 26 inch reels, the show can be made up on these reels (two and often three shipping reels each), during show time, and later rapidly transferred to the SWORD reel.

Before returning prints to the exchange, be sure all leaders and tails are replaced on the correct reels! Marking your points of splices with a felt-tip pen or "Magic Marker" on the perforation lines of the film simplifies locating heads and tails when shipping out.

White Mylar tape serves the same purpose, and is nearly invisible on the screen.

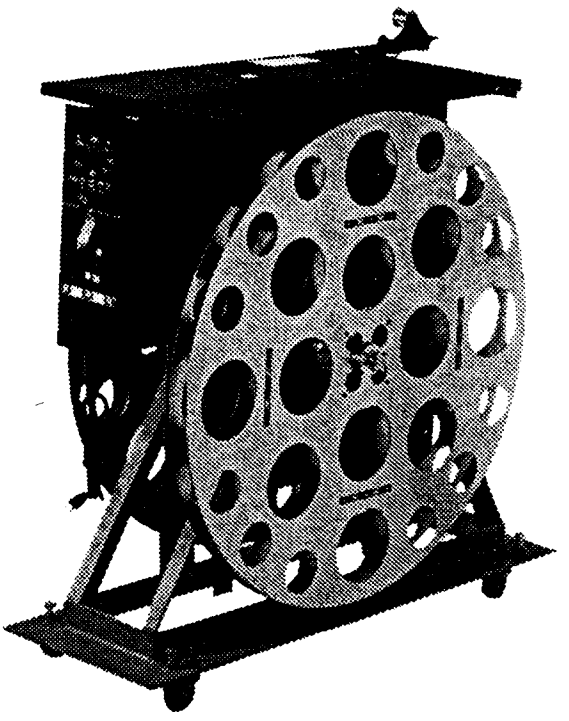
NOTE: There is a special place in hell for operators who mismatch heads and tails to their reels.

Carefully inspect your print while making up! An extra splice added when making up may save a breakdown during showtime and prevent expensive film and projector damage.

Small Reel Projection from Make-Up Spindle

Should you have a special trailer, cartoon, or featurette which will be shown only once or twice, it can be run from the make-up spindle, leaving your regular feature made up on the SWORD left reel.

Use the threading path shown in Fig. 5 (next page), making sure that you prop the left dancer arm in its center ("click") position so the left reel will not turn. For projection, use RUN mode; for rewind to small reel, use MAKE-UP (RIGHT).



SMALL REEL PROJECTION THREADING PATH

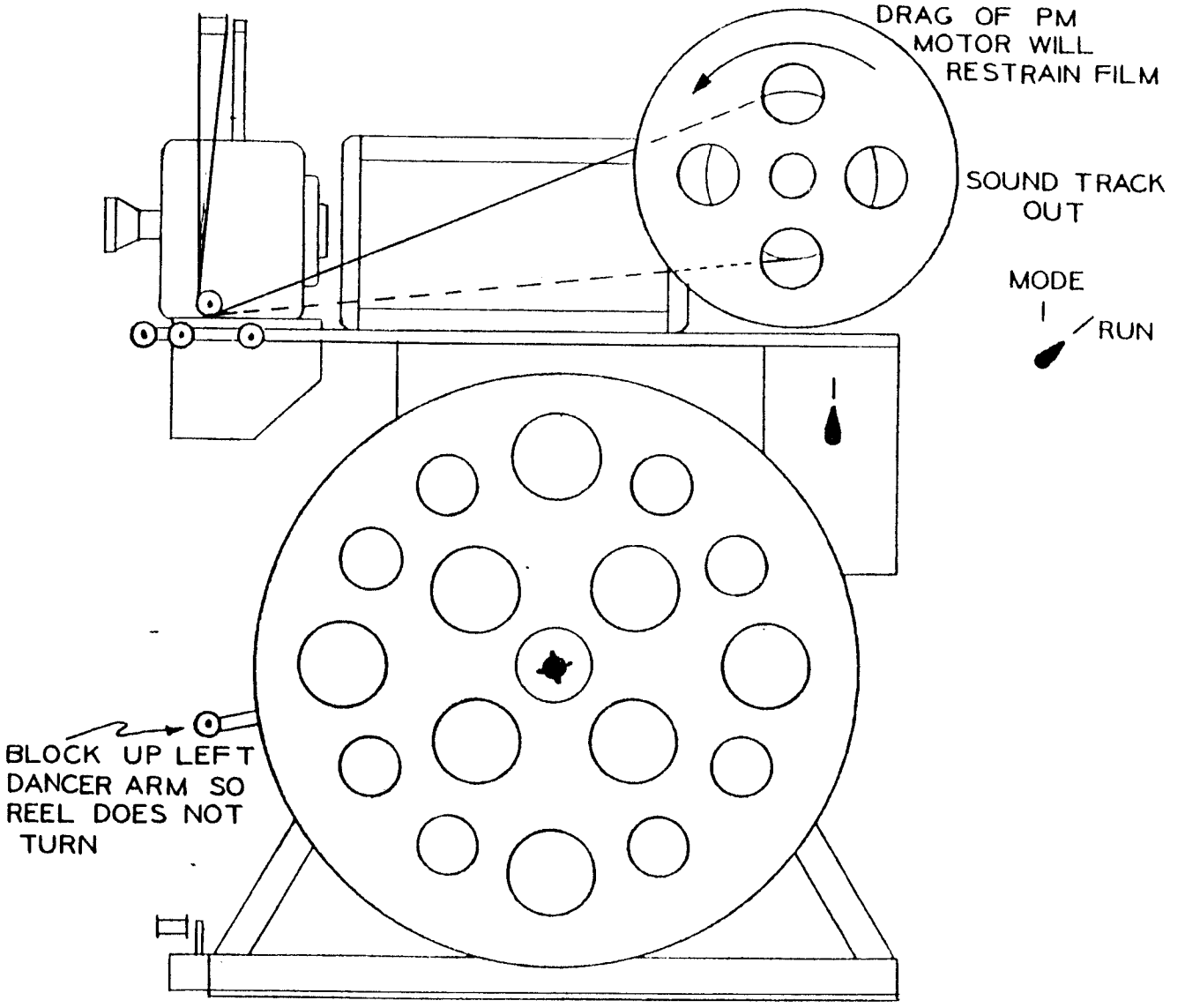


FIG. 5 LEFT SIDE

SEE FIG. IA FOR THREADING PATH RIGHT SIDE

Maintainance and Service

Time spent on preventive maintainance before or after showtime is never time wasted. Even automated machines intended to run unattended require periodic service to ensure proper operation necessary for uninterupted show presentations.

The Simple SWORD is designed to require a minimum of operator attention, but a few minor checks should be performed on a regular basis.

--Check grease fittings on the top of each dancer arm. The roller bearings should be visibly "wet" with an all-purpose lithium grease. NOTE: Overgreasing may cause grease to fly off during high-speed (i.e. REWIND or MAKE-UP) operation and might deposit on the film.

--Keep controller screen in place. Running with the controller screen off might allow dust or grit to deposit on the motor relay contacts.

--Check the condition of the servo motor brushes (two per motor) every six months to a year. Make sure all brush holders are screwed firmly shut. Do not overtighten (with a screwdriver); brush holders may crack.

--Check ballast lamp filaments periodically.

--Do not overfuse. Use only ½ amp fuse.

--Turn off all power to the unit when removing controller screen. The variable transformer of the servo power supply is electrically "hot" in certain modes.

--Check lubricant levels in projector and soundhead and maintain according to manufacturer's specifications.

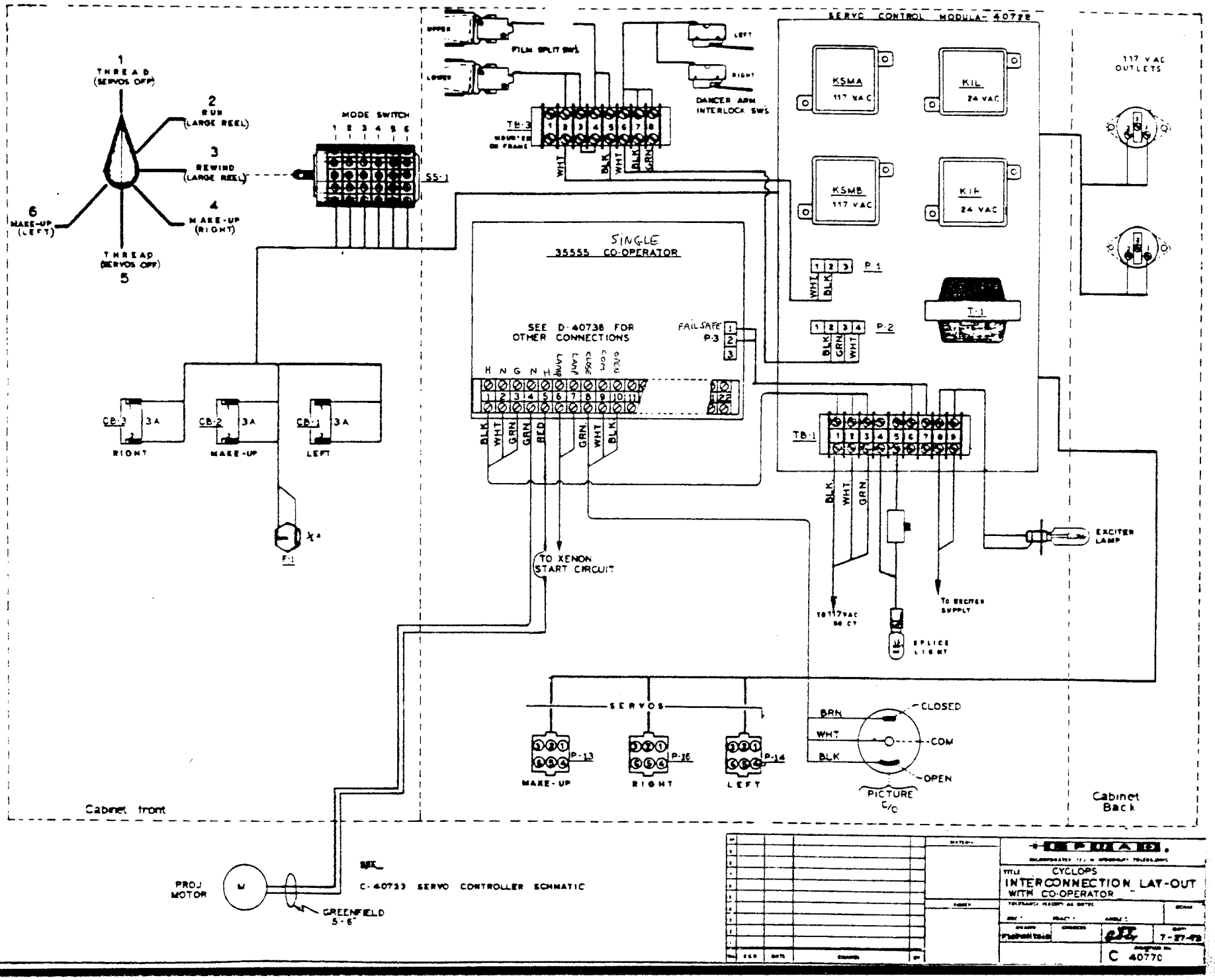
--Do not lean large reels, loaded OR empty, against walls. If they are stored off the SWORD, ½ inch hanger shafts should be provided on the booth wall, and the reel should be hung from one of the core holes. These reels are impossible to bend back in shape if they become warped.

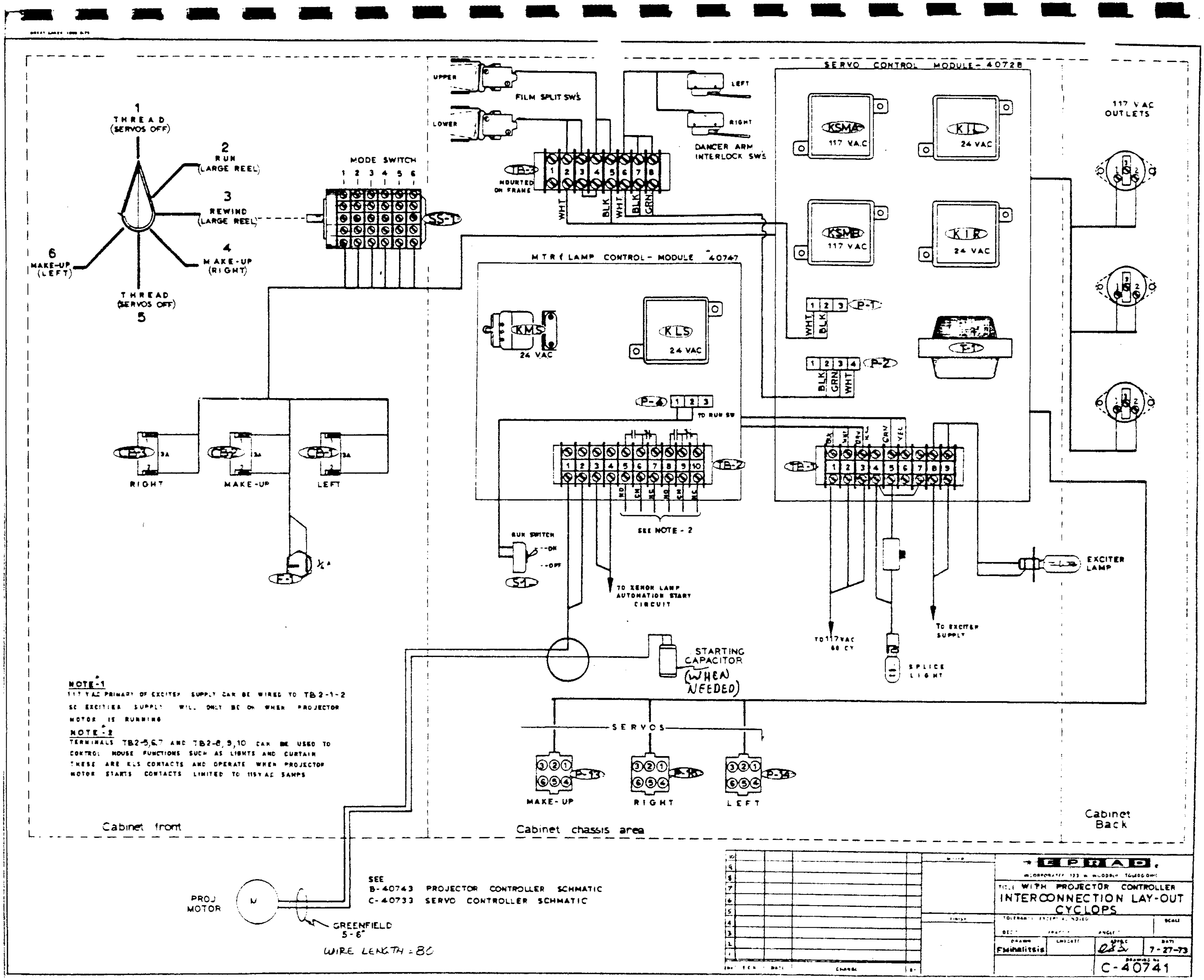
--Periodically snap the selector switch firmly through all mode positions. This keeps the switch contacts clean.

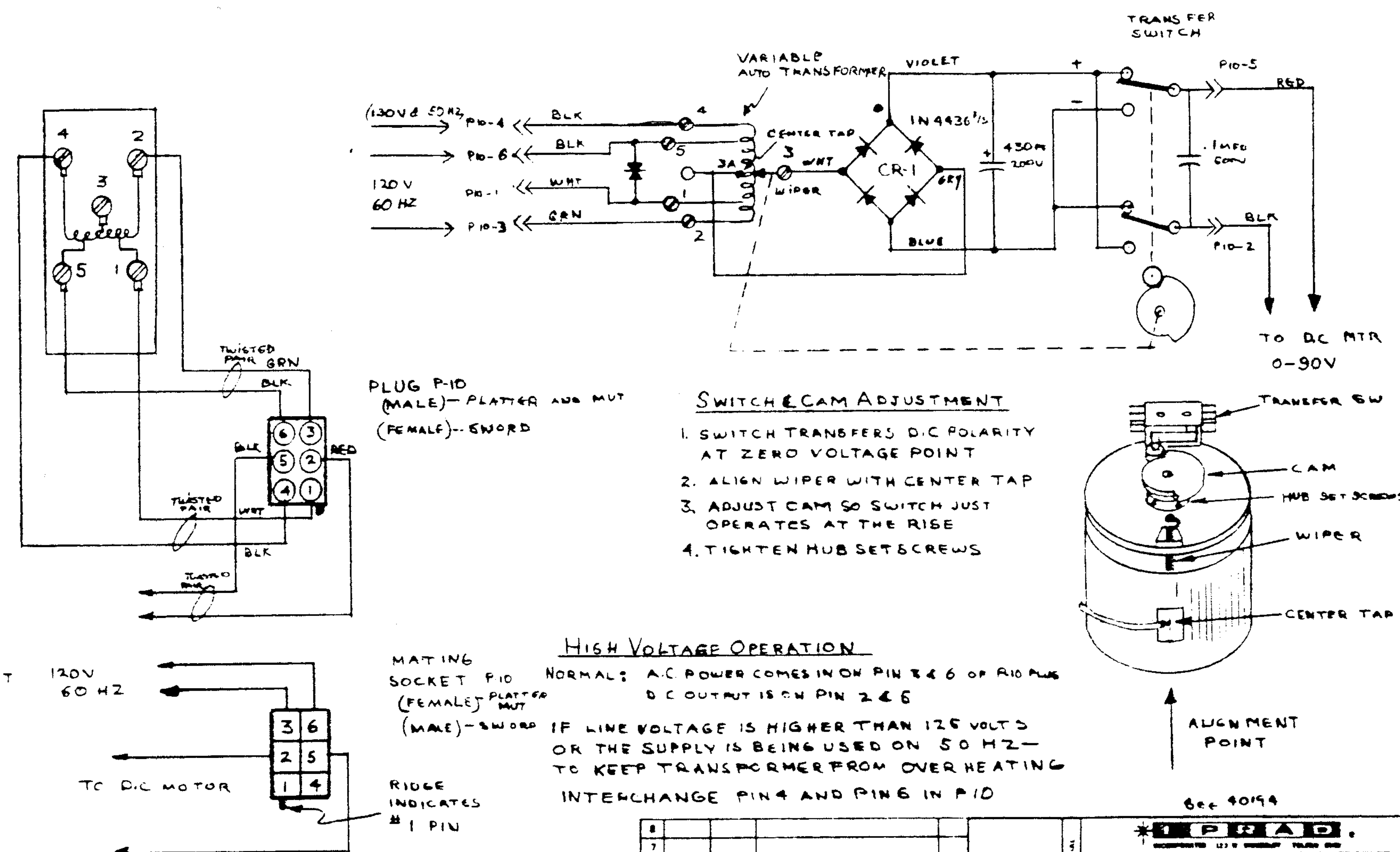
--Check screws, bolts, etc. for tightness. Vibration from running may cause small fasteners to loosen.

SERVICE NOTES AND TROUBLESHOOTING

Problem	Probable Cause	Remedy
Oscillating dancer arm (does not center and ride steady at start-up)	1. Ballast lamp loose or burned out	1. Tighten or replace
	2. Power supply cam out of adjustment	2. Re-set cam according to Drawing 40297-2
	3. Power supply sprocket eccentric	3. Replace sprocket (40469)
	4. Dancer arm binding on motor shaft	4. a) Lubricate bearing b) Inspect bearing; if frozen, replace with 61460 c) Remove wave spring washer
	5. Dancer arm chain loose	5. Tighten spring one or two links
Dancer arm "runs away" on start	Servo power supply transfer switch	1. High side of cam not actuating; re-set switch 2. Defective power supply; replace (40227)
Film wrap loose (sagging, Z-folds, gaps, etc.)	1. Dancer arm too light	1. Move weight down arm toward roller until wrap is satisfactory
	2. Static electricity	2. Maintain booth humidity; in extreme cases, install humidifier in vicinity of SWORD.
	3. Damaged perforations (sprocket holes)	3. Order replacement print
Projector motor fails to start or relay "buzzes"	Dirty relay contacts on projector start module	Clean relay contacts (marked KM) with dry typing paper or burnishing tool Keep controller cover screen in place!


SERVO CONTROL MODULE 40728
1 THREAD (SERVOS OFF)
2 RUN (LARGE REEL)
3 REWIND (LARGE REEL)
4 MAKE-UP (RIGHT)
5 THREAD (SERVOS OFF)
6 MAKE-UP (LEFT)
MODE SWITCH
SS-1
FILM SPLIT SW'S
UPPER
LOWER
LEFT
RIGHT
DANCER ARM INTERLOCK SW'S
TB-3
WHT
BLK
WHT
BLK
GRN
KSMA 117 VAC
KIL 24 VAC
KSMB 117 VAC
KIR 24 VAC
117 VAC OUTLETS
P-1
P-2
T-1
SINGLE
35555 CO-OPERATOR
SEE D-40738 FOR OTHER CONNECTIONS
FAILSAFE P-3
H N G N H LAMP LAMP CLOSE COM OPEN
BLK WHT GRN RED GRN WHT BLK
TB-1
CB-3 3A RIGHT
CB-2 3A MAKE-UP
CB-1 3A LEFT
F-1
TO XENON START CIRCUIT
BLK WHT GRN
EXCITER LAMP
TO 117VAC 60 CY
TO EXCITER SUPPLY
SPLICE LIGHT
SERVOS
P-13 MAKE-UP
P-16 RIGHT
P-14 LEFT
BRN
WHT
BLK
CLOSED
COM
OPEN
PICTURE C/O
Cabinet front
Cabinet Back
PROJ MOTOR
M
GREENFIELD 5'-6"
SEE C-40733 SERVO CONTROLLER SCHMATIC
CYCLOPS
INTERCONNECTION LAY-OUT
WITH CO-OPERATOR
7-27-72
C 40770


SERVO CONTROL MODULE - 40728
MTR & LAMP CONTROL - MODULE 40747
117 VAC OUTLETS
KSMA 117 VAC
KSMB 117 VAC
K1L 24 VAC
K1R 24 VAC
T-1
P-1
P-2
KMS 24 VAC
KLS 24 VAC
P-6
TO RUN SW
TB-1
TB-2
TB-3
MOUNTED ON FRAME
FILM SPLIT SW'S
UPPER
LOWER
DANCER ARM INTERLOCK SW'S
LEFT
RIGHT
WHT
BLK
GRN
YEL
MODE SWITCH
SS-1
1 THREAD (SERVOS OFF)
2 RUN (LARGE REEL)
3 REWIND (LARGE REEL)
4 MAKE-UP (RIGHT)
5 THREAD (SERVOS OFF)
6 MAKE-UP (LEFT)
CB-3 3A RIGHT
CB-2 3A MAKE-UP
CB-1 3A LEFT
F-1 ½A
RUN SWITCH
ON
OFF
S-1
SEE NOTE - 2
TO XENON LAMP AUTOMATION START CIRCUIT
TO 117VAC 60 CY
SPLICE LIGHT
TO EXCITER SUPPLY
EXCITER LAMP
STARTING CAPACITOR (WHEN NEEDED)
SERVOS
P-13 MAKE-UP
P-36 RIGHT
P-34 LEFT
NOTE-1
117 VAC PRIMARY OF EXCITER SUPPLY CAN BE WIRED TO TB2-1-2 SO EXCITER SUPPLY WILL ONLY BE ON WHEN PROJECTOR MOTOR IS RUNNING
NOTE-2
TERMINALS TB2-5,6,7 AND TB2-8,9,10 CAN BE USED TO CONTROL HOUSE FUNCTIONS SUCH AS LIGHTS AND CURTAIN. THESE ARE KLS CONTACTS AND OPERATE WHEN PROJECTOR MOTOR STARTS. CONTACTS LIMITED TO 115VAC 5AMPS
Cabinet front
Cabinet chassis area
Cabinet Back
PROJ MOTOR
M
GREENFIELD 5-6"
WIRE LENGTH: 80
SEE
B-40743 PROJECTOR CONTROLLER SCHMATIC
C-40733 SERVO CONTROLLER SCHMATIC
EPRAD
TITLE WITH PROJECTOR CONTROLLER
INTERCONNECTION LAY-OUT
CYCLOPS
DRAWN Fminalitsis
DATE 7-27-73
DRAWING No. C-40741



No	ECR	DATE	CHANGE	BY
8				
7				
6				
5				
4				
3				
2				
1		3-6-77	REDRAWN	KE

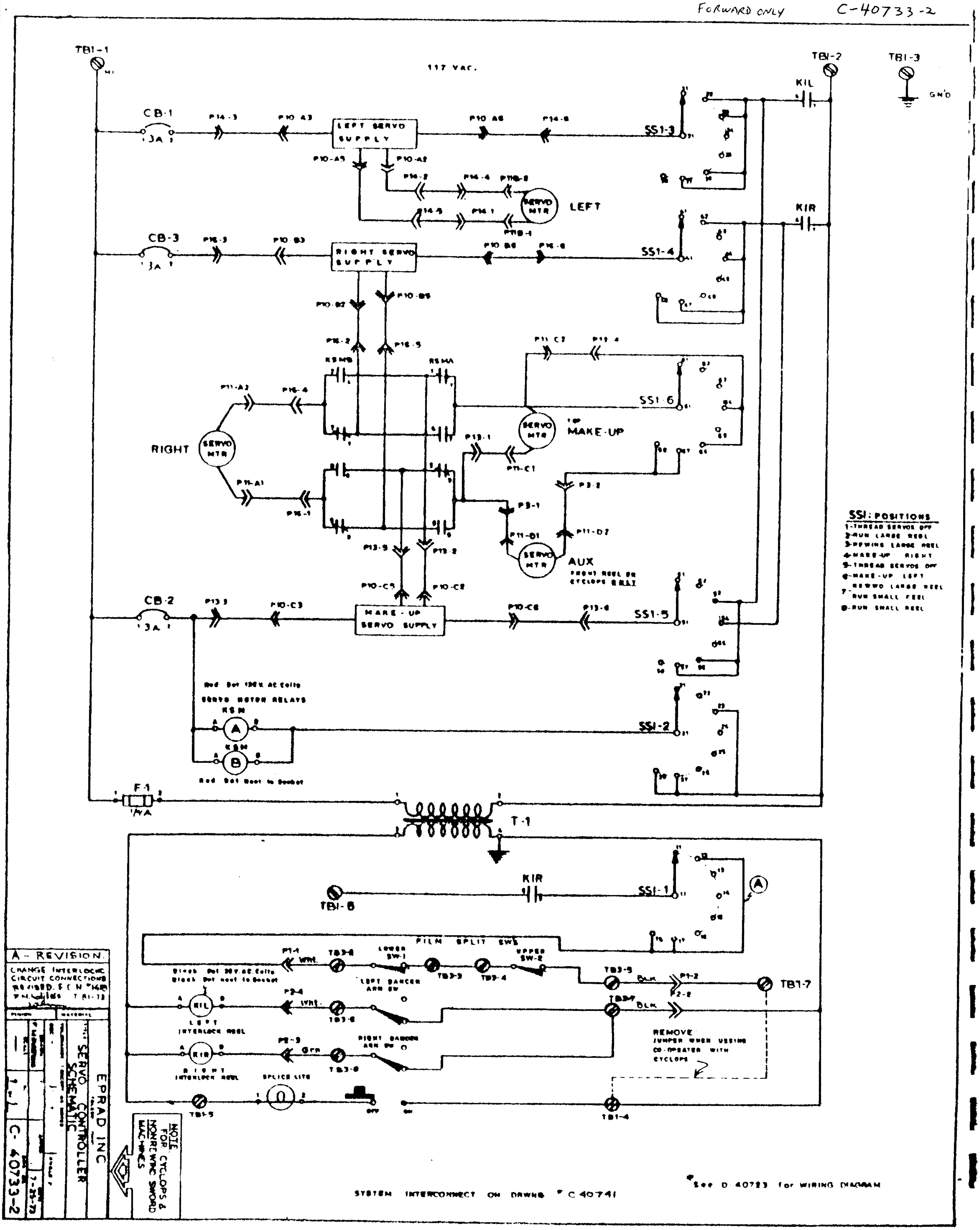
IPRAD

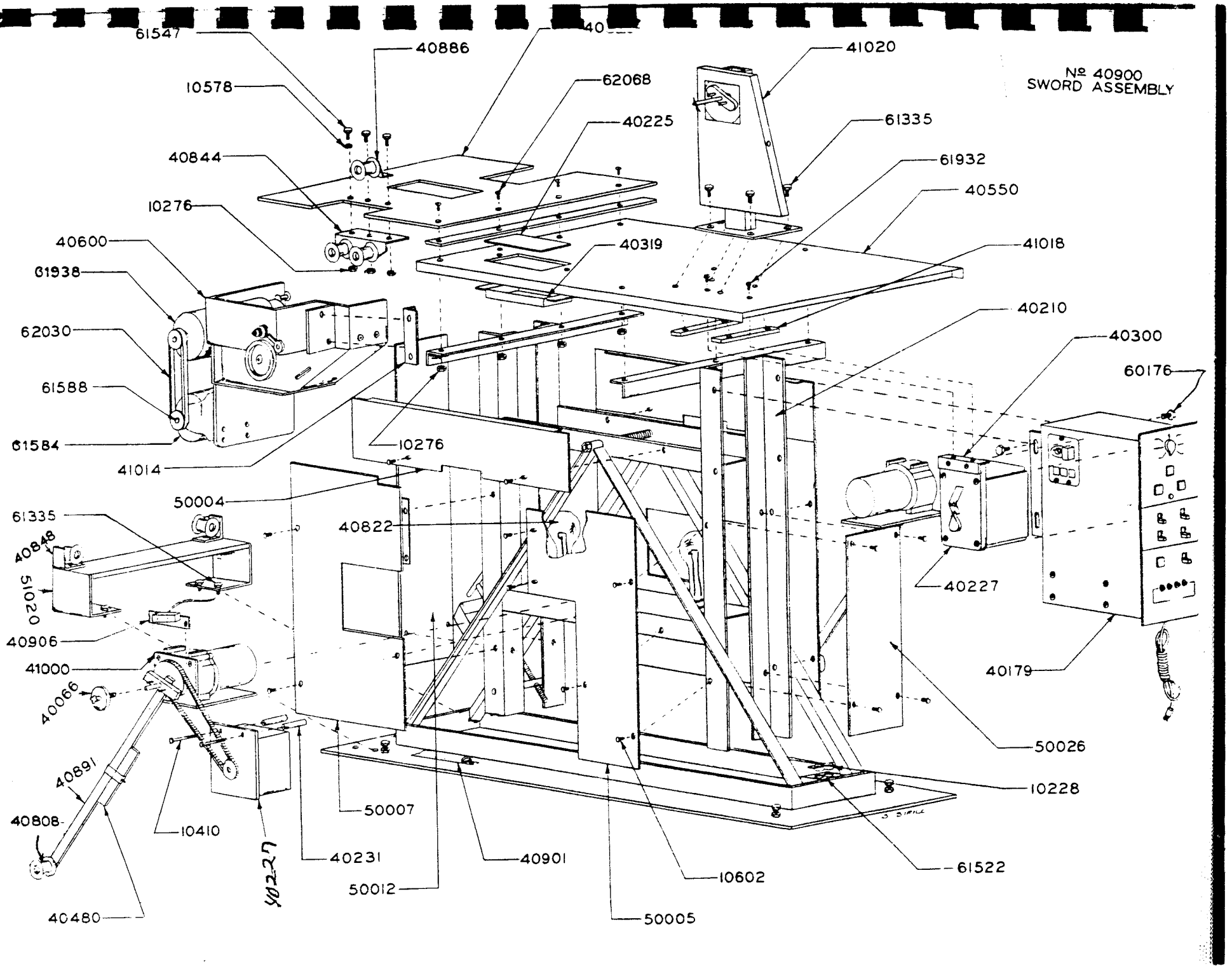
TITLE: SERVO POWER SUPPLY WIRING

TOLERANCE (EXCEPT AS NOTED) DEC: FRACT: ANGLES:		SCALE —
DRAWN	CHECKED	APP'D	DATE 7-20-72
ASSEMBLY No. 40557/70120		DWG No. 40297-2

SCHEMATIC OF SERVO CONTROLLER

FORWARD ONLY C-40733-2



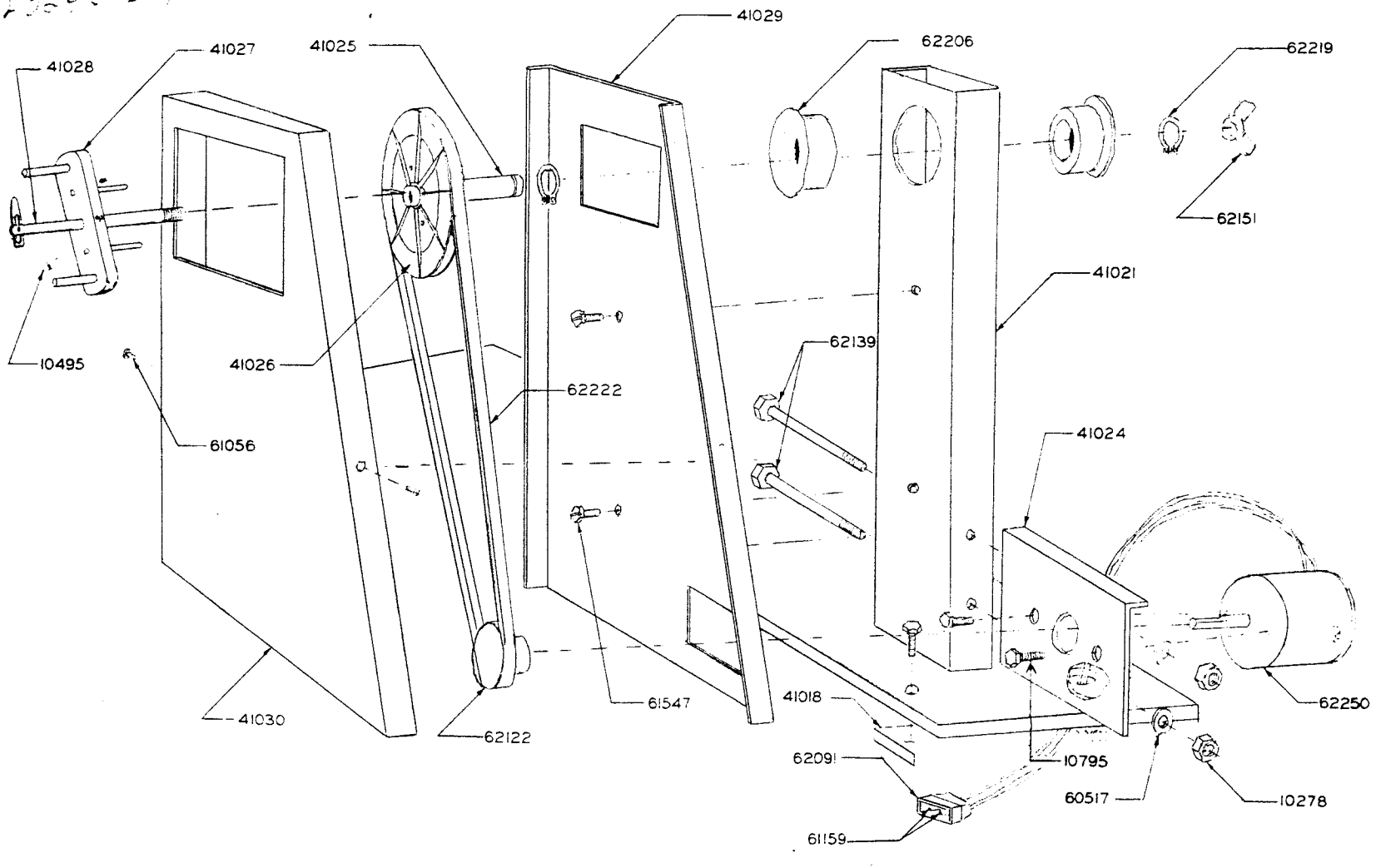

№ 40900
SWORD ASSEMBLY
61547
40886
40
41020
10578
62068
40225
61335
40844
61932
10276
40550
40600
40319
41018
61938
40210
62030
40300
60176
61588
61584
10276
41014
50004
61335
40822
40848
51020
40227
40906
41000
40179
40066
50026
40891
10228
40808
10410
50007
40231
40901
61522
10602
50012
40480
50005

№ 40900 SWORD ASSEMBLY

10228	Receptacle Duplex 110V
10276	10-24 Hex Nut
10410	1/4-20 X 2 1/4 Cap Screw
10578	#10 Flat Washer
10602	#8-32 X 1/4 Truss Hd. Screw
40066	Reel Retaining Plate
40179	Controller Wired Assy.
40210	Frame & Support Angle Assy.
40226	Film Splicing Window Assy.
40227	Remote Variac Servo Assy.
40231	Variac Mounting Spacer
40300	Make-up Servo Mtg. Brkt.
40319	Film Splice Light Assy.
40480	Dancer Arm Weight Assy.
40550	Top Plate AET. Assy.
40600	Soundhead (Casting HSG.)
40808	Filmguide Roller
40822	Lamp Socket & Cable Assy.
40825	Reel Drive Assy. (Compl.)
40826	Front Top Plate Assy.
40844	Double Guide Roller Assy.
40848	Lower Rewind Bracket
40886	Double Guide Roller Brkt. W/Boss
40891	Dancer Arm Assy.
40901	(Shut Down Stop) Rubber Bumper Assy.
40906	Shut Down Switch Assy.
41000	Spur Gear Motor Assy.
41014	"L" Mounting Soundhead Brkt.
41018	Make-up Drive Nut Plate
41020	Reel Drive Assy. (Make-up Spindle)
50004	Frame Cover - Top Left
50005	Frame Cover - Bottom - Left Side Front
50007	Bottom Frame Cover
50012	Front Frame Cover
50026	Back Plate
51020	Lower Rewind Assy.
60176	1/4 - 20 X 1/2 M. Bolt
61335	1/4 - 20 X 3/4 Bolt
61522	4" X 2 1/8 X 1 7/8 Handy Box
61547	#10 - 24 X 1/2 Hex Hd. Screw
61584	Motor 1/6 HP 1725 RPM 115 VAC
61588	Variable Ditch Sheave 1.8 to 2.9
61932	#10 - 32 X 1 Hex Hd. Screw
61938	Projector Drive Motor
62030	3L 230 Vee Belt
62068	#10 - 24 X 1 1/4 Allen Hd. Screw

10276	#10-24 Hex Nut
10495	#10-24x¼ Set Screw
40139	Column-Guide Rollers
40240	Upper Film Spl. Sw. Ass'y.
40808	Large Roller Ass'y.
40846	Cross Bar O/H Guide

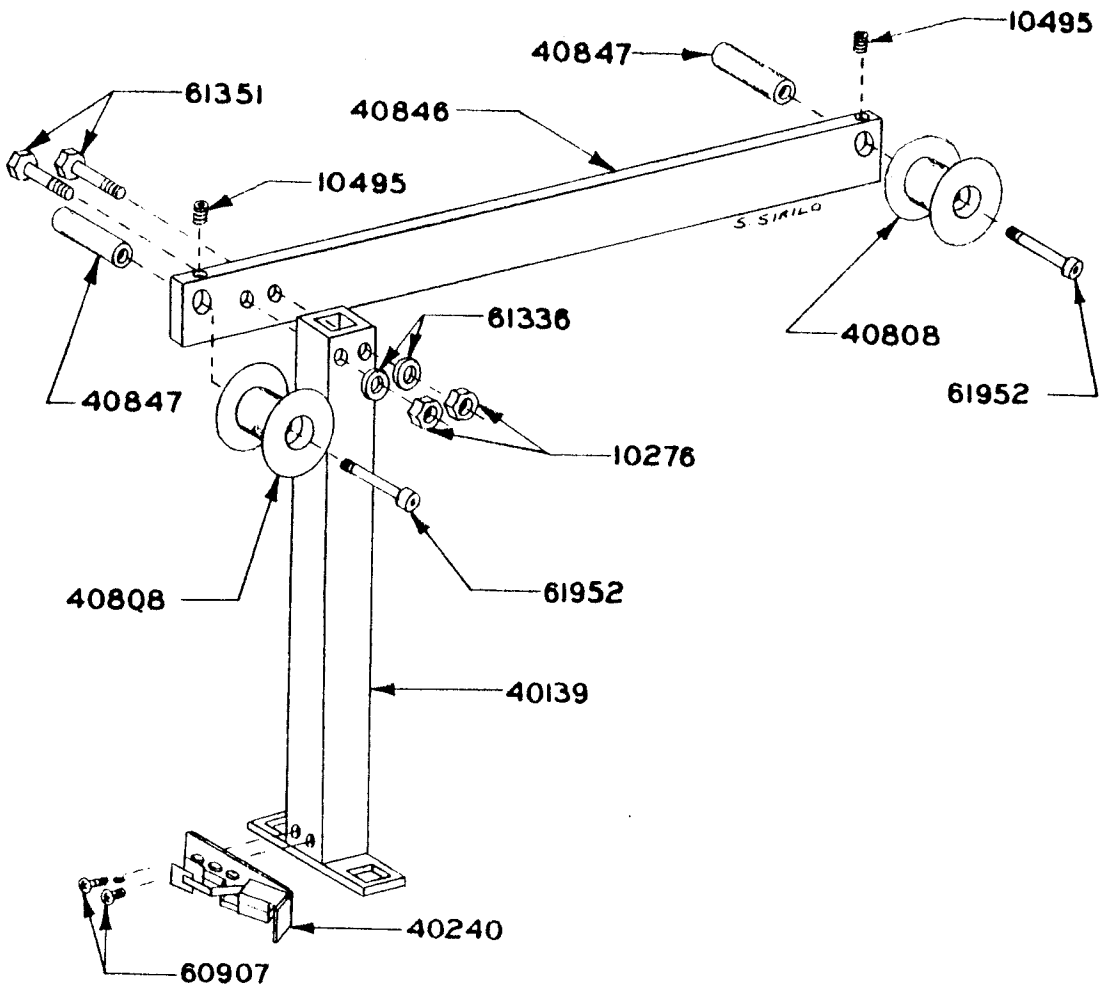
№ 41020
MAKE-UP REEL
DRIVE ASS'Y.



12-24-76

№ 40845
OVERHEAD GUID
ROLLER ASS'Y

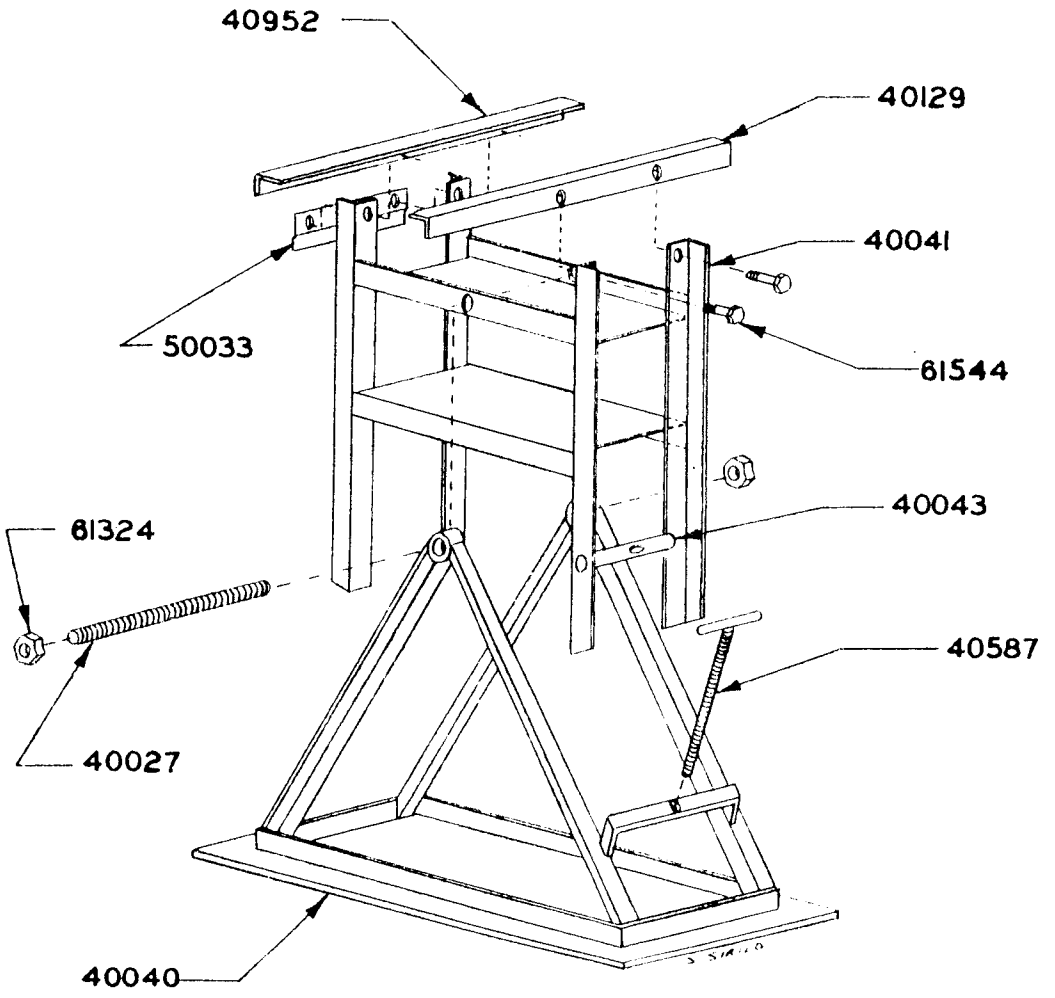
10276	#10-24 Hex Nut
10495	#10-24x¼ Set Screw
40139	Column-Guide Rollers
40240	Upper Film Spl. Sw. Ass'y.
40808	Large Roller Ass'y.
40846	Cross Bar O/H Guide
40847	Shaft Extension Guide
60907	#8-32x¼ Philip Screw
61336	¼" Split Washer
61351	¼-20x2 Hex Bolt
61952	¼x1½ Shoulder Screw



12-24-76

FRAME & SUPPORT ANGLE ASSEMBLY

40027	Main Frame Pivot Screw
40040	Frame & Base
40041	Inner Frame
40043	Elev'n Adj. Trunniom
40129	Support Angle-Top of Inner Frame
40587	Trunniom Adj. Ass'y.
40952	Support Angle-Top of Inner Frame
50033	Front Plate Brkt.
61324	7/8-9 Hex Nut
61544	5/16-18x1 Hex Bolt



EPRAD

PARTS LIST

SWORD CONTROLLER (40179)

	Part No.
Push buttons	
White - lens	61539
Blue - lens	61536
Green - lens	61538
Red - lens	61537
Actuator	61534
Contactor	61535
Lamp	61864
Selector Knob	61295
Selector Switch	61236
Manual Changeover Pushbutton	10999
Power Indicator Lite	61397
Changeover Mode Switch	61592
Xenon Switch	61572
Reverse Speed Switch	61572
Arc Light Cell Switch	61518
Fault Buzzer Switch	61518
Circuit Breakers	
Projector Motor 8 amp	60746
Servos 4.5 amp	61886
Relay 4 pole 24VDC	61208
Relay 3 pole 115VAC	61378
Relay 3 pole 24VDC	61025
Relay 120VAC, 4 pole motor forward	61231
Relay 120VAC, 8 pole motor reverse	61232
9 pin connector plug	61255
12 pin connector plug	61266
Buzzer 24VAC	10445
8 cam timer with 1 rpm motor (modified)	40980
Timer Micro Switch	60947
Diode 400PIV 1 amp	61210
3 pin connector socket	61252
4 pin connector socket	61254
6 pin connector socket	61156
9 pin connector socket	61256
12 pin connector socket	61267
Zipper Changeover plug	61574
Zipper changeover socket	61573
AC power cord	20599