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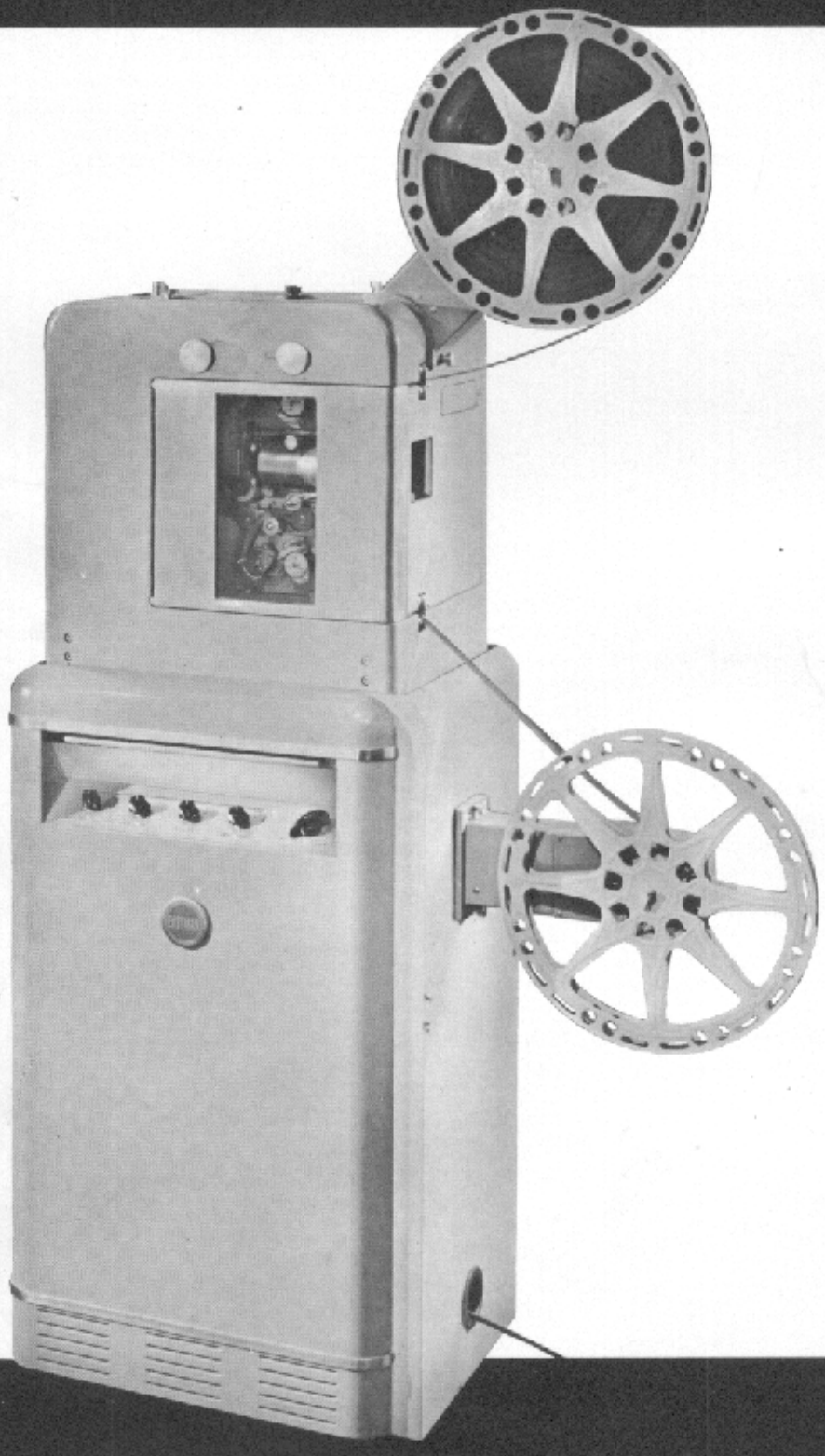
No. 7512

SERVICE INSTRUCTIONS FOR THE

EASTMAN 16mm PROJECTOR



MODEL 25B

Service Instructions for the EASTMAN 16mm PROJECTOR, MODEL 25B

The Eastman 16mm Projector, Model 25B, is a precision instrument in which timing, looseness, tightness, or synchronization can affect materially the operation of the equipment. While this manual has been prepared to help you keep the projector in good operating condition, it will not supplant the need of a skillful, precision-instrument mechanic. Every effort has been made to give guiding information, but much will depend upon the mechanical experience of the repairman.

When it is necessary to remove or readjust any part, it is good practice to use scribe marks so that accurate re-orientation is possible. Changing one adjustment quite often upsets other adjustments so that these, in turn, will require attention. It is advantageous, therefore, to be able to return to the starting point.

Similarly, trouble should be pinpointed before changes are made. Don't rush in without "thinking through" the possible causes. More important, if changes are made, determine what effect these adjustments will have on other operating parts.

The Trouble and Remedy Chart found on page 18 will be of assistance in locating many causes of trouble.

LUBRICATION: Use CW6229A oil (Part No. 119221) in the mechanism and intermittent only. For other bearing points, use Gulf Crest (C), Standard Oil of Indiana No. 35, or a similar grade of oil.

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REMOVAL OF PARTS

1. REMOVAL OF CASE ASSEMBLY

a. Loosen the setscrew and remove the LAMP HOUSE LEVER, figure 1.

b. Loosen the setscrews in the FRAMING KNOB AND SHAFT, FOCUSING KNOB AND SHAFT, and LOCK LEVER AND SHAFT. These setscrews are located near the ends of the shafts. Pull the assemblies from the case.

c. Disconnect the plug to the SUPPLY REEL ARM and remove the arm.

d. From beneath the mechanism, turn out the two knurled lock screws from the tilting platform.

e. Remove the eight CASE SCREWS.

f. Remove the condenser lens assembly.

g. Lift the case assembly straight up; the operator's door must be open.

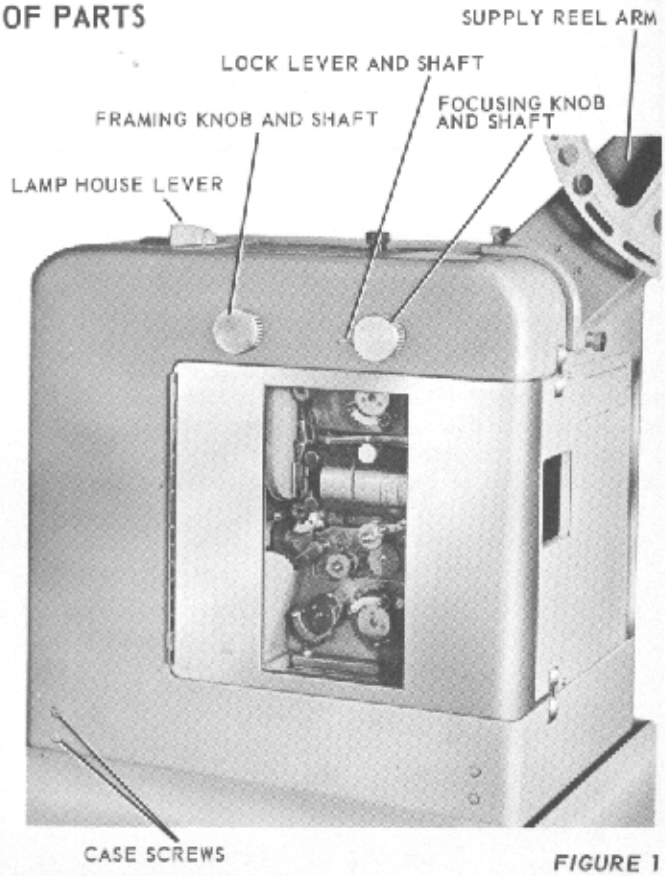


FIGURE 1

2. REMOVAL OF SPROCKETS AND SPROCKET CLAMPS

NOTE: The SUPPLY, the HOLDBACK, and the SOUND SPROCKETS, figure 2, are all similar. However, the base circle of the supply and sound sprockets has a greater diameter than the holdback sprocket. Scratched on the inner side of each sprocket is the diameter of the base circle. Be sure that the sprockets are replaced on the correct shafts.

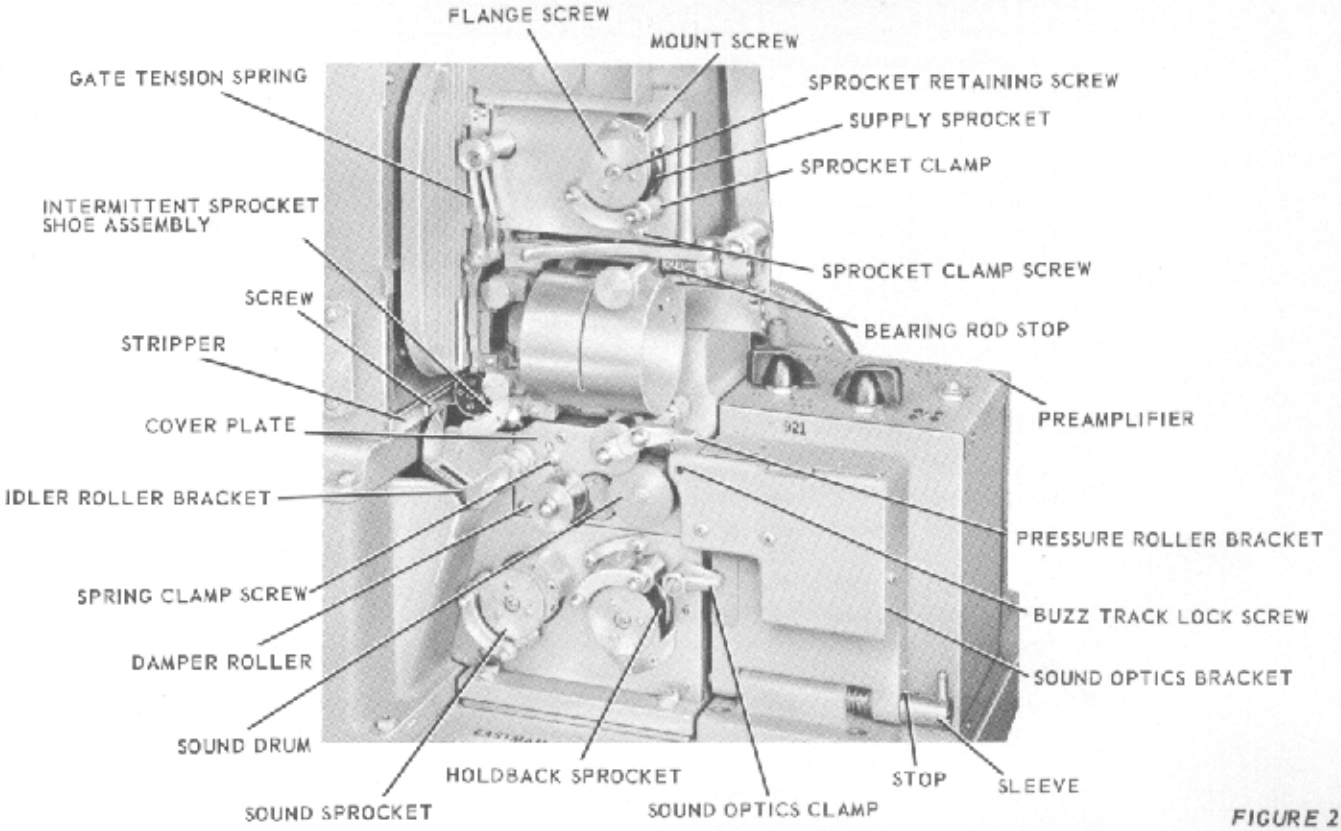


FIGURE 2

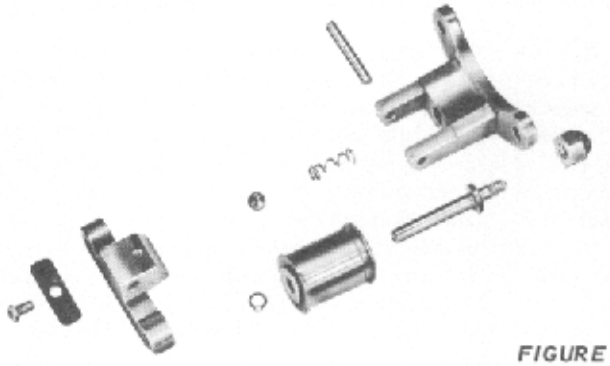


FIGURE 3

a. Remove the two SPROCKET CLAMP SCREWS and the SPROCKET CLAMP. Disassemble the clamp as shown in figure 3.

b. Remove the three FLANGE SCREWS, figure 2, and the flange. Remove the two MOUNT SCREWS, stripper, and spacer (a shim may or may not be included in this assembly). Remove the SPROCKET RETAINING SCREW and pull the sprocket assembly from the shaft. Component parts are shown in figure 4.

3. REMOVAL OF DAMPER ASSEMBLY (See Paragraph 14 for Recharging)

NOTE: The cover plate over the damper assembly has been cut into two parts (Part No. 140201 and 140202); it is necessary to remove only the small plate, Part No. 140201, to remove the damper.

a. Remove the IDLER ROLLER BRACKET, figure 2, by removing the two attaching screws. Be careful not to drop the screws into the fan housing directly beneath.

b. Remove the INTERMITTENT SPROCKET SHOE ASSEMBLY* by removing the two attaching screws.

*On later model projectors, the intermittent sprocket shoe assembly, Part No. 150000, replaces the intermittent sprocket roller bracket assembly, Part No. 119059. The new shoe assembly has been found to improve the steadiness of the projected image. This assembly may be purchased from the Apparatus Parts Service, Eastman Kodak Company, Rochester 4, N.Y.

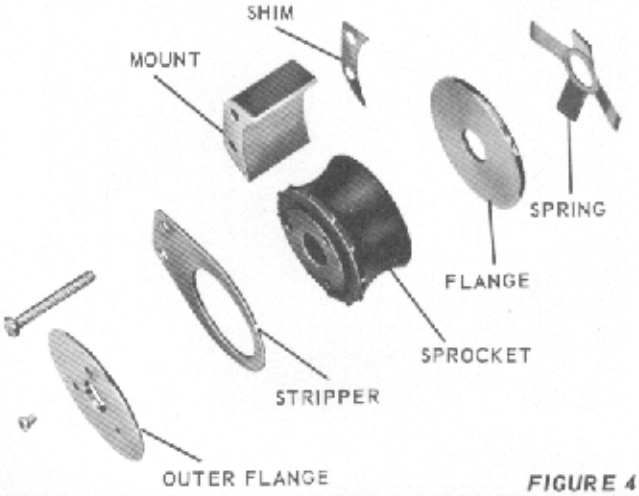


FIGURE 4

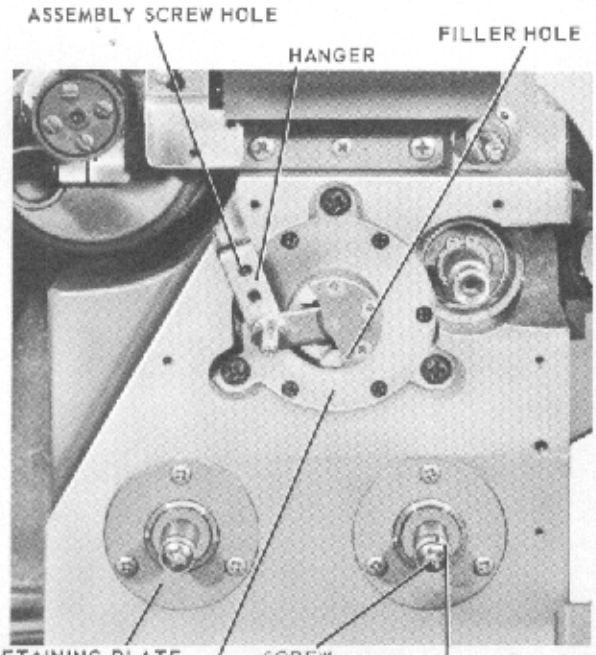


FIGURE 5

c. Remove the DAMPER ROLLER.

d. Remove the SPRING CLAMP SCREW.

e. Remove the nut from the PRESSURE ROLLER BRACKET, lift the arm so that the roller is clear of the sound drum, and withdraw the assembly.

f. Mark the position of the SOUND DRUM in relation to its shaft so it can be replaced in the same relative position. Remove the screw and the sound drum.

g. Remove the four screws and the small COVER PLATE with the sound prism attached.

h. Remove the three screws and the DAMPER ASSEMBLY, figure 5. Before disassembling the damper assembly, mark the front and back housing and indicate the arm position in relation to the casting, figure 6. Disassemble the damper assembly as shown in figure 7.

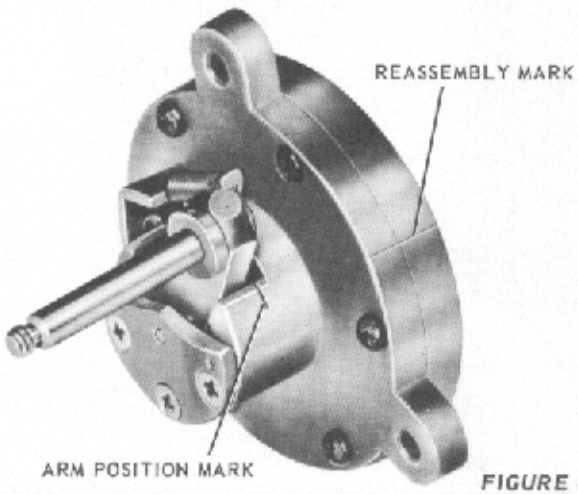


FIGURE 6

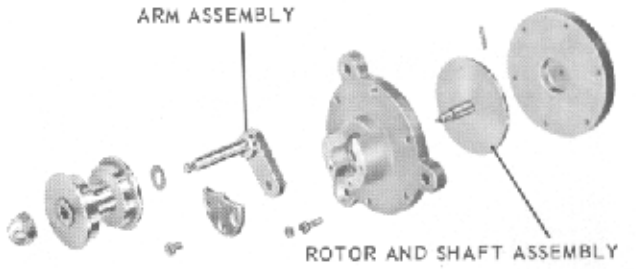


FIGURE 7

4. REMOVAL OF PREAMPLIFIER

a. Disconnect the cord from the SOUND OPTICS BRACKET, figure 2, to the PREAMPLIFIER.

b. Beneath the mechanism plate, disconnect the cable from the exciter lamp and amplifier. Unscrew the knurled screw beneath the mechanism plate, and lift off the preamplifier.

5. REMOVAL OF FLYWHEEL

Remove the three screws and lift off the FLYWHEEL, figure 8. Be very careful not to disturb the PERMANENT MAGNET.

6. REMOVAL OF INTERMITTENT ASSEMBLY

NOTE: First remove the following parts: case assembly, paragraph 1; idler roller bracket and intermittent sprocket shoe assembly, paragraph 3.

a. Remove the four screws from the INTERMITTENT MOTOR MOUNTING BASE. Use a punch to drive out from beneath the mechanism plate the two dowel pins locating the intermittent motor mounting base on the mechanism plate.

b. Loosen the two SETSCREWS in the hub of the INTERMITTENT SYNCHRO GEAR and pull the motor assembly away from the mechanism, figure 9. It may be necessary to wedge against the SYNCHRO GEAR HUB in order to free the intermittent motor.

CAUTION: Do not distort, by twisting, the rubber coupling inside the synchro gear hub.

c. Figure 9 shows the motor pulled back and the TIMING MARKS on the synchro gears. The end of the motor shaft is also marked for correct positioning during reassembly. (If these marks are missing, they should be added before the disassembly). Leads from the motor can be removed from the terminal strip to free the motor completely.

d. Remove the screw from the slotted hole in the intermittent synchro gear and remove the gear. Also loosen two setscrews and remove the MECHANISM SYNCHRO GEAR.

e. Loosen two setscrews in the rubber coupling and pull the coupling from the intermittent shaft.

*See footnote page 5.

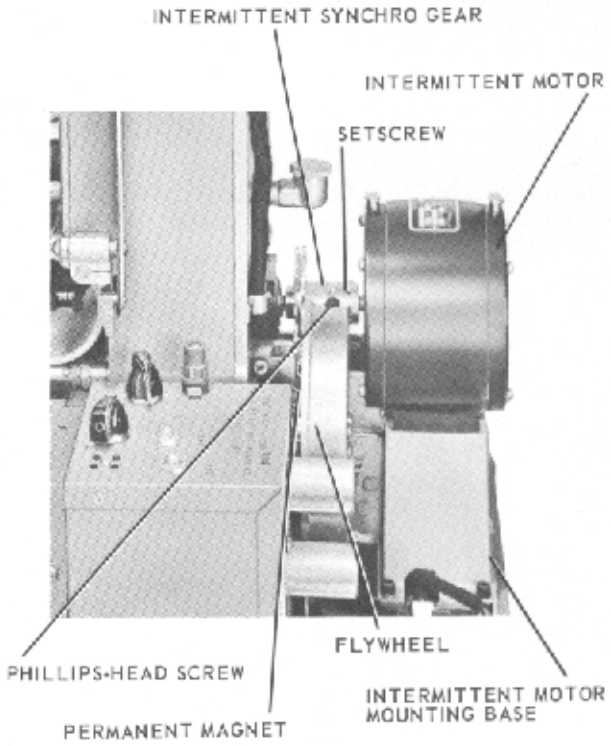


FIGURE 8

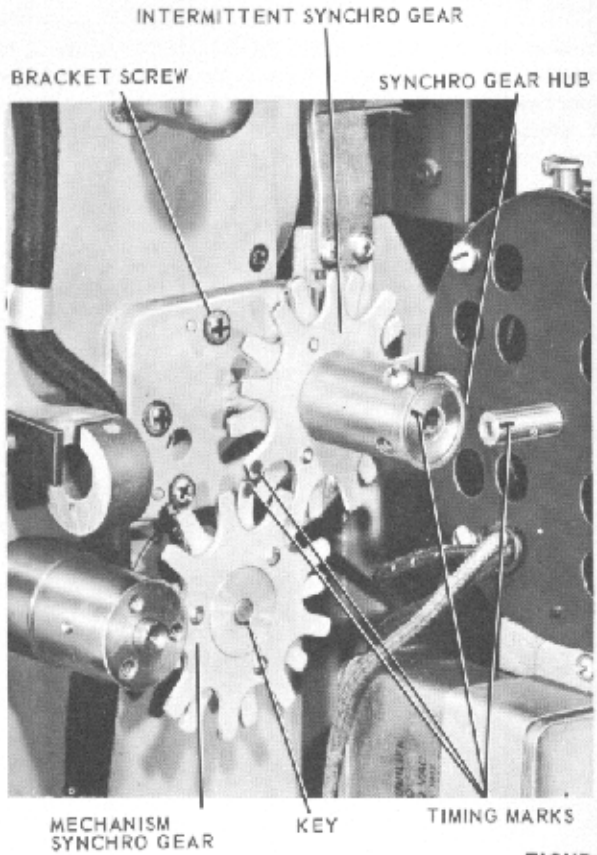


FIGURE 9

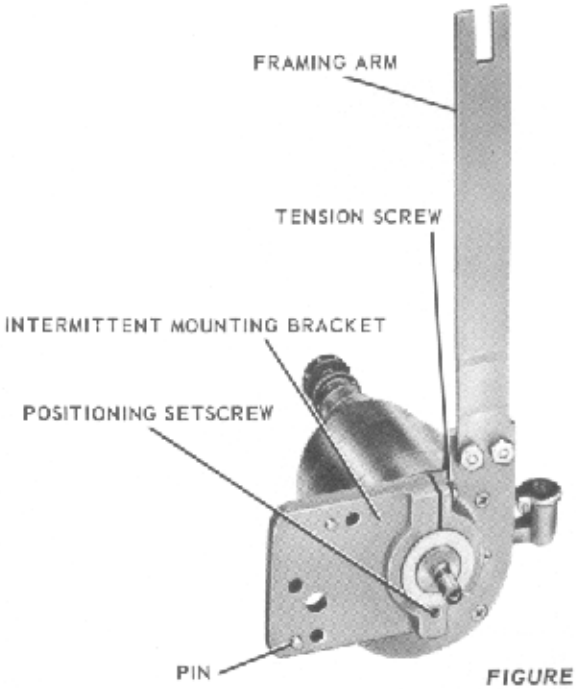


FIGURE 10

f. Loosen the SCREW, figure 2, in the outer end of the STRIPPER and lower the end of the stripper to clear the intermittent sprocket.

g. Remove the three BRACKET SCREWS, figure 9, and withdraw the entire assembly, as shown in figure 10. It may be necessary to pry the bracket slightly to break it loose. Be very careful not to damage the intermittent sprocket as the assembly is withdrawn from the front trunnion. There may be a spacer between the front locating surface of the intermittent housing and the front trunnion. This is used, when necessary, to center the sprocket teeth in the film perforations.

h. Remove the INTERMITTENT MOUNTING BRACKET and the FRAMING ARM from the intermittent.

i. Disassembly of the intermittent should not be made in most cases and under no circumstances should the intermittent be disassembled beyond removal of the BRACKET AND BUSHING ASSEMBLY, figure 11. Travel ghost that can be corrected in no other way may be due to a loosened or shifted SPLINE in either stage of acceleration. If the relationship of the parts of the bracket and bushing assembly is not as shown in figure 11, loosen the spline and realign the second PIN with the first.

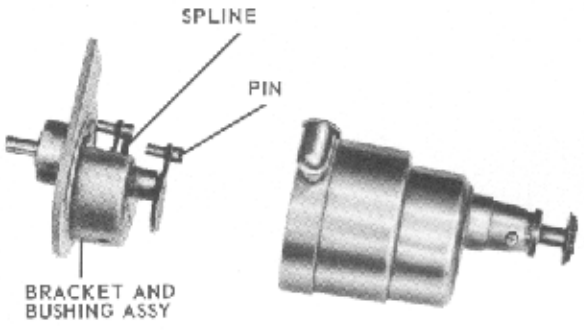


FIGURE 11

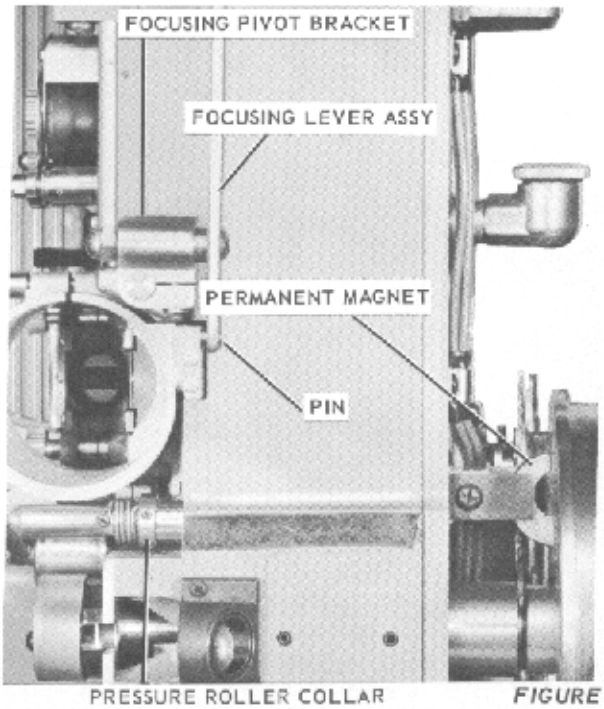


FIGURE 12

CAUTION: Do not remove the intermittent sprocket. The relationship between the sprocket and its shaft has been set at the factory and should not be changed. If the sprocket is damaged or worn, return the entire intermittent assembly to Eastman Kodak Company, Apparatus Service Department, Rochester 4, N. Y., for repair.

7. REMOVAL OF FOCUSING MECHANISM

NOTE: First remove the following: case assembly, paragraph 1; gate, lens, and pressure pad.

a. Remove the cap nut from the FOCUSING PIVOT BRACKET, figure 12, and remove the FOCUSING LEVER ASSEMBLY.

b. Remove the screw from the BEARING ROD STOP, figure 2.

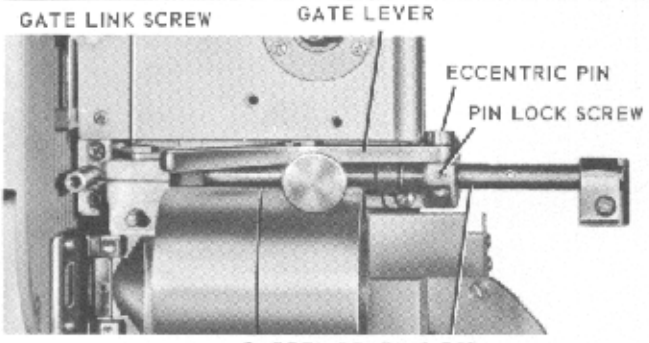


FIGURE 13

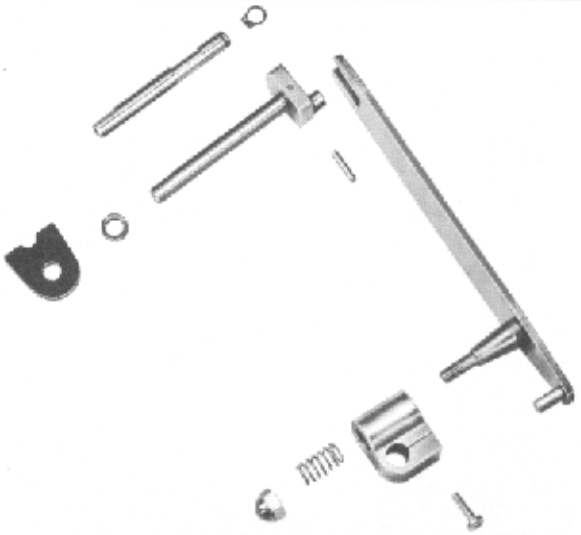


FIGURE 14

c. Loosen the GATE LINK SCREW, figure 13, with a thin 3/8-inch wrench.

d. Pull the BARREL BEARING ROD toward the front of the projector and catch the bearing rod stop and spring as the rod is withdrawn.

e. Component parts are shown in figures 14, 15, and 16.

8. REMOVAL OF BLOWER MOTOR AND BLOWER ASSEMBLY

NOTE: First remove the case assembly, paragraph 1.

a. Remove the four SOCKET HEAD SCREWS, figure 17, from the LAMP HOUSE. Remove the plate screw and WIRE CLIP. Pull the lamp house toward the rear of the projector until the SHUTTER SPRING COUPLING, figure 18, is exposed; then move the lamp house out of position.

b. Remove the remaining three PLATE SCREWS, figure 17.

c. Remove the FAN HOUSING SCREW, figure 19, and the SOCKET HEAD SCREWS in the lamp house support. Lift off the support to expose the blower assembly.

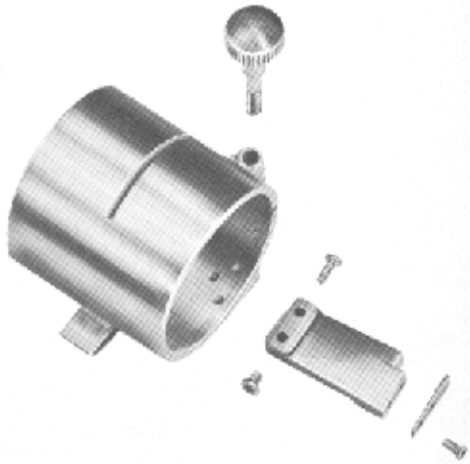


FIGURE 16

NOTE: A set of extension wrenches for socket-head screws (such as distributed by Vaco Products Corp., Chicago, Ill.) will simplify disassembly.

9. REMOVAL OF SHUTTER

NOTE: First remove following parts: case assembly, paragraph 1; lamp house, paragraph 8a.

a. Remove the shutter housing COVER PLATE, figure 18.

b. Loosen the two SETSCREWS in the hub of the shutter spring coupling and pull the shutter from the shaft. Be careful not to damage the coupling when removing the shutter. The shutter is shown removed in figure 20.

10. REMOVAL OF STATOR HOUSING AND ROTOR AND QUILL ASSEMBLY

NOTE: First remove the case assembly, paragraph 1.

a. Remove the CAPACITOR, figure 21, and THREAD LIGHT SOCKET. Disconnect the stator leads.

b. Remove the four HOUSING SCREWS and lift off the housing and stator assembly as a unit.

c. Disassemble the ROTOR AND QUILL ASSEMBLY as shown in figure 22.

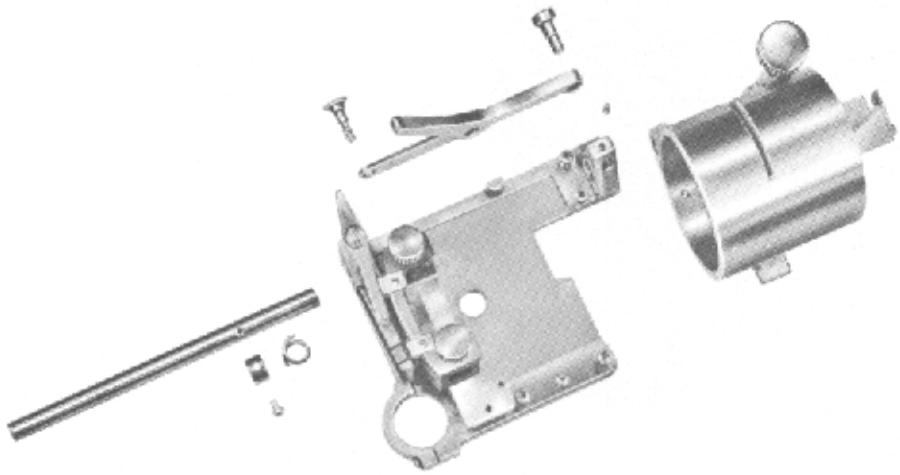


FIGURE 15

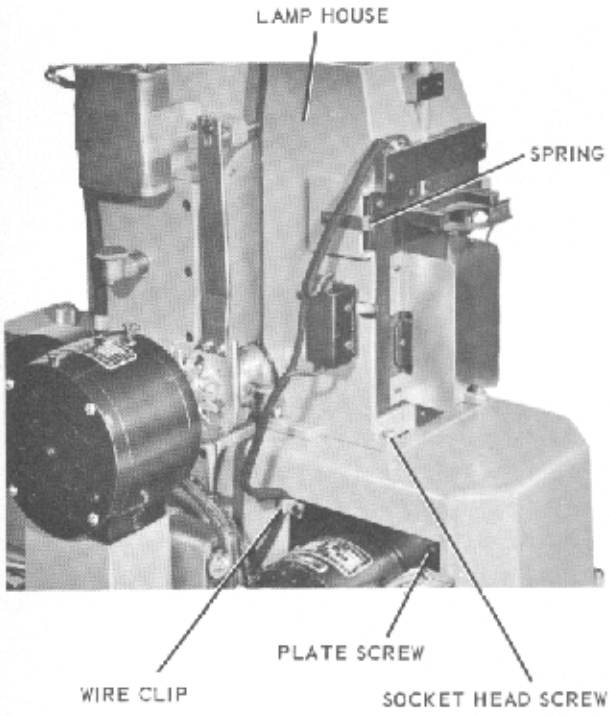


FIGURE 17

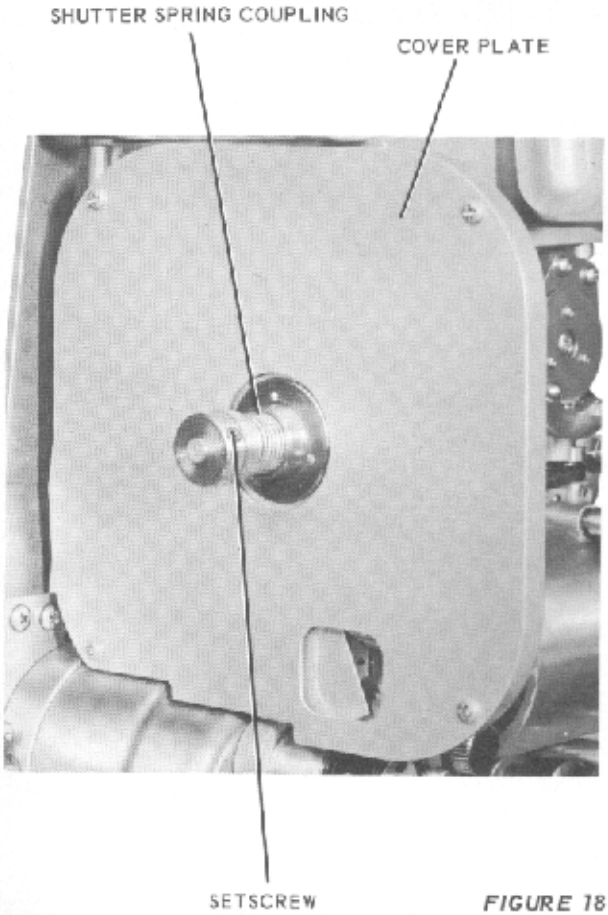


FIGURE 18

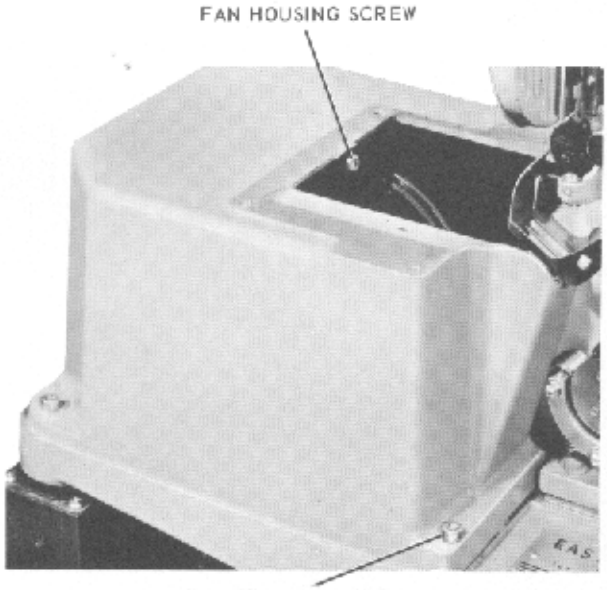


FIGURE 19

11. REMOVAL OF MECHANISM SYNCHRO GEAR SHAFT AND MECHANISM COVER PLATE

NOTE: First remove the following parts: case assembly, paragraph 1; flywheel, paragraph 5; intermittent motor and intermittent, paragraph 6; and capacitor, paragraph 10a.

a. Remove the three WIRE CLAMPS, figure 21.

b. Drain the oil through the petcock which is located directly beneath the mechanism.

c. Remove the screw at the top of the OIL LEVEL INDICATOR and withdraw the window tube.

d. Scribe a mark to orient the MECHANISM SYNCHRO GEAR SHAFT with respect to the VERTICAL DRIVE SHAFT. Use the key slot on the mechanism synchro gear shaft as an index. Rotate the vertical shaft to bring the key slot to a

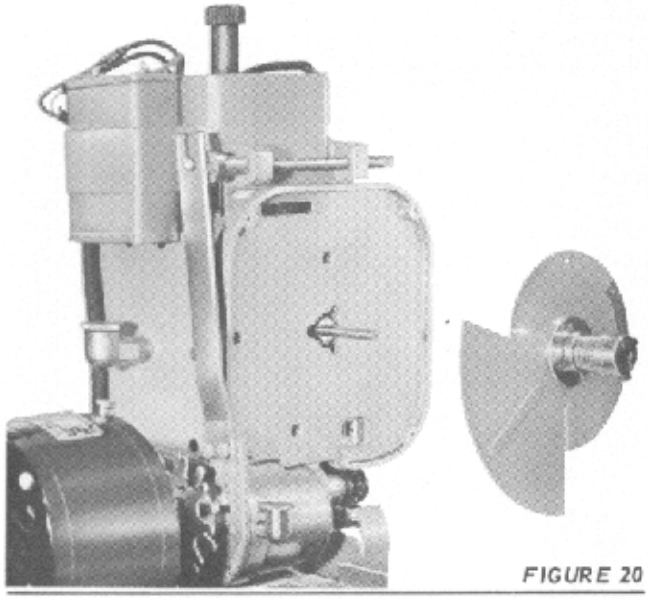


FIGURE 20

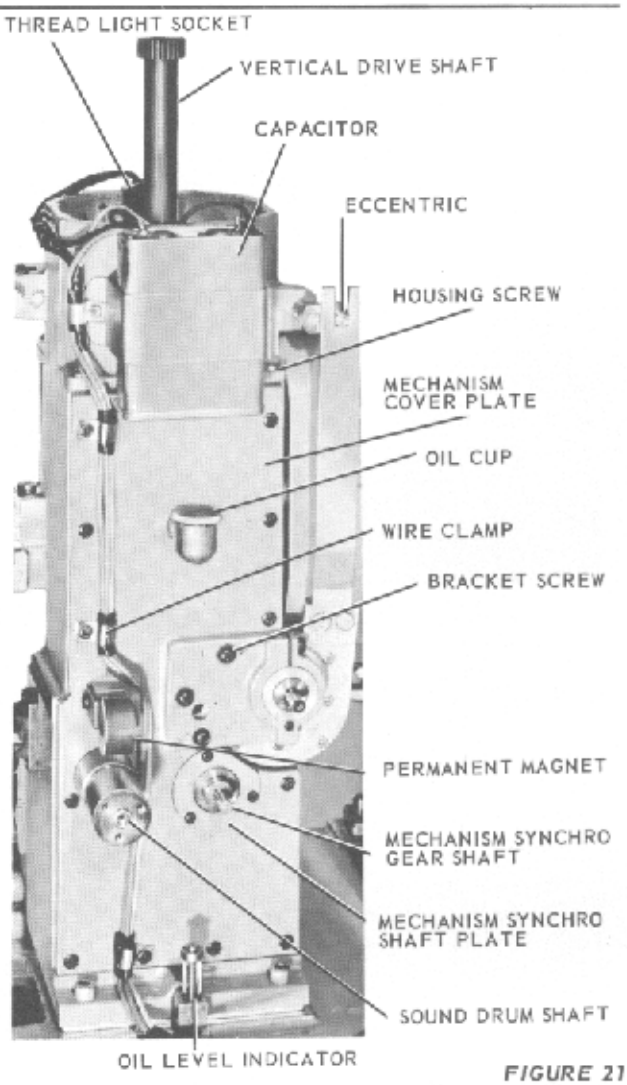


FIGURE 21

convenient position to scribe the main casting, not the cover plate. Maintaining this same setting, put two orientation marks at the end of the vertical drive shaft; one on the shaft, the other on the main casting.

e. Remove the three screws from the MECHANISM SYNCHRO SHAFT PLATE and remove the plate. Withdraw the mechanism synchro gear shaft and assembled parts. Component parts of the shaft are shown in figure 23.

f. Remove all screws holding the MECHANISM COVER PLATE, figure 21, and remove the plate. Be careful of the SOUND DRUM SHAFT and the PERMANENT MAGNET. The

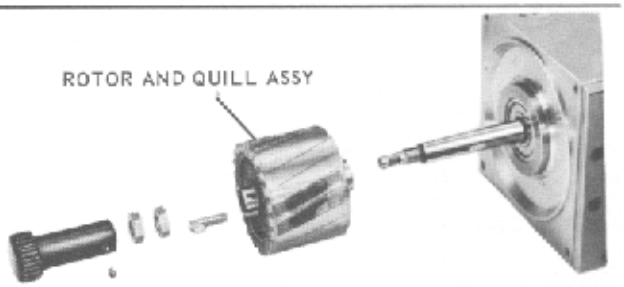


FIGURE 22

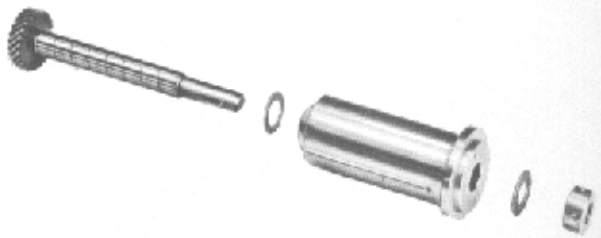


FIGURE 23

cover, gasket, and mechanism housing are shown in figure 24. The SOUND, SUPPLY, and HOLDBACK SPROCKET GEARS and shaft assemblies can be removed from the mechanism housing by first removing the NUTS, LOCKWASHERS, and GEARS, figure 25; and then the RETAINING PLATES, figure 5. Component parts are shown in figure 25.

12. DISASSEMBLY OF SUPPLY AND TAKE-UP REEL ARMS

a. Disassemble the supply reel arm as shown in figures 26 and 27.

b. Disassemble the take-up reel assembly as shown in figures 28 and 29.

REASSEMBLY & ADJUSTMENT

13. REASSEMBLY OF MECHANISM HOUSING

a. Reassemble the SUPPLY, HOLDBACK, and SOUND SPROCKET GEARS and shaft assemblies to the mechanism housing as shown in figure 24. By means of the ECCENTRIC BUSHING (sound sprocket shown), figure 30, adjust the lateral position of the shafts so that they run freely and have very little backlash on the vertical drive shaft.

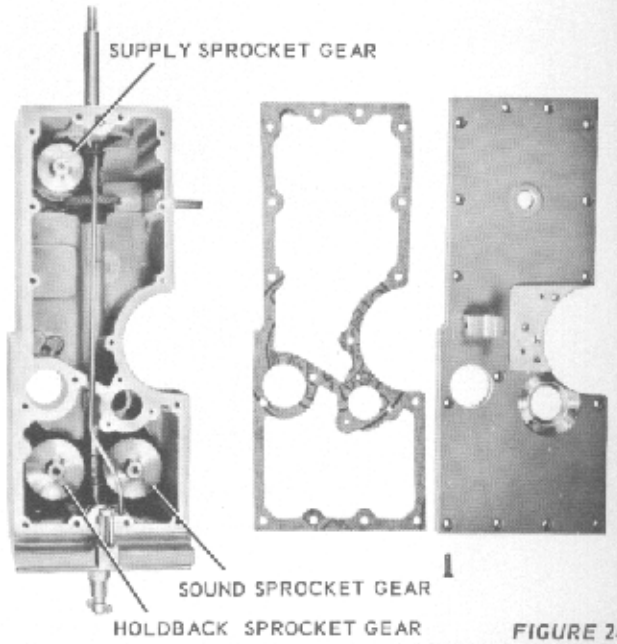


FIGURE 24

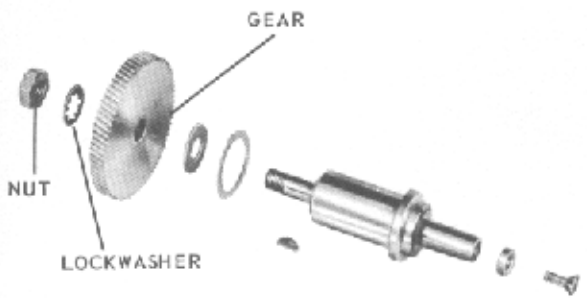


FIGURE 25

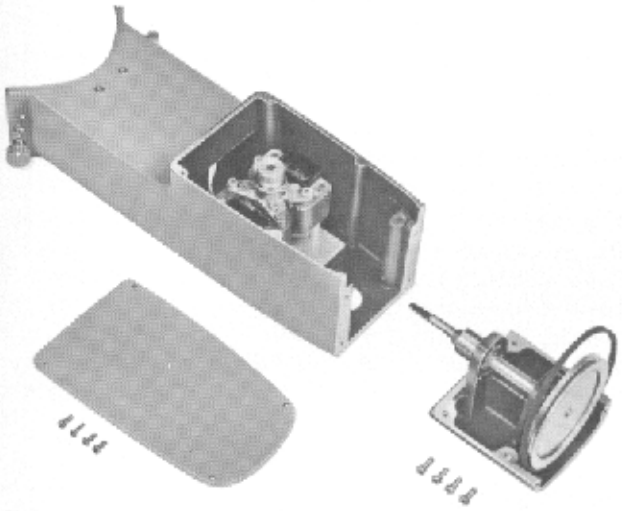


FIGURE 26

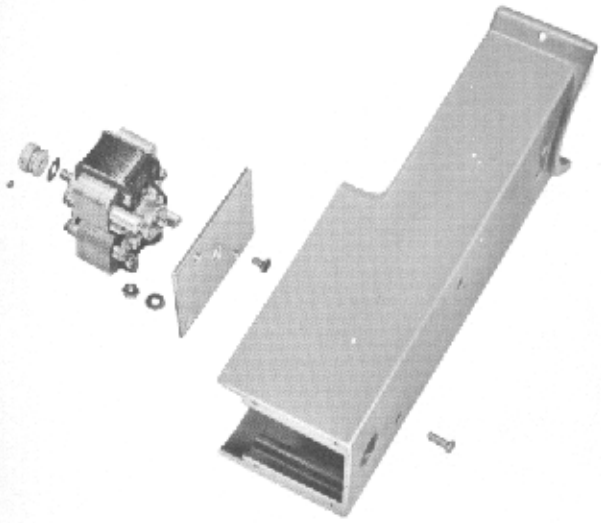


FIGURE 27

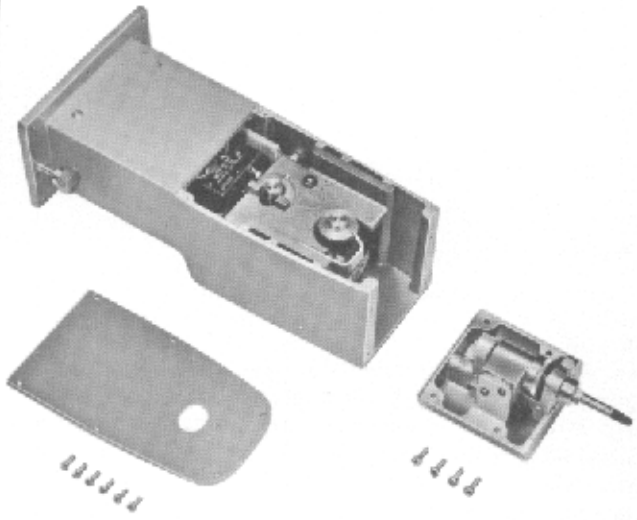


FIGURE 28

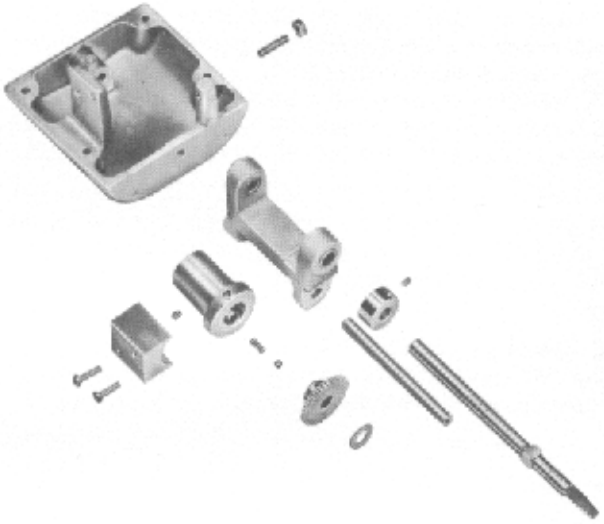


FIGURE 29

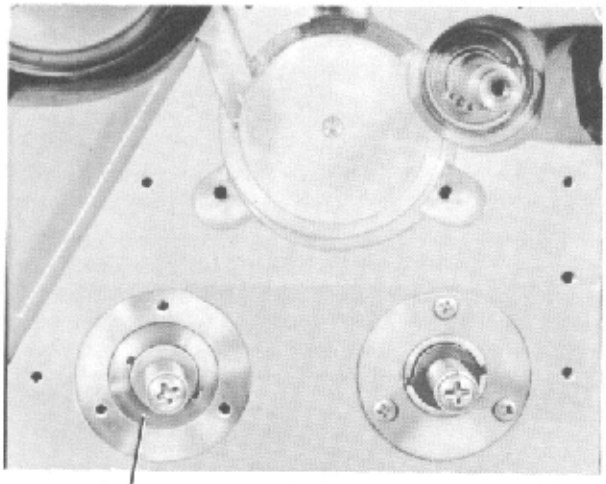


FIGURE 30

NOTE: The following procedures are necessary for installation of a new mechanism cover plate. It will not be necessary to relocate the intermittent mounting bracket pins or use the plug gage if the original cover plate is reinstalled.

b. If a new cover plate is to be installed, assemble the OIL CUP, figure 21, to the new plate and use sealing compound. Place a new gasket on the main casting, but seal only on the side toward the main casting.

c. Place the new cover plate in position on the casting, but, before drawing up the screws, insert the MECHANISM SYNCHRO GEAR SHAFT in the cover and check for clearance. Be careful not to damage the teeth of the gear as it is engaged with the vertical drive shaft. Clearance with the cover plate should be uniform so that the flange of the quill bearing does not interfere. Tighten all screws on the cover plate. Remove the INTERMITTENT MOUNTING BRACKET, figure 10, from the intermittent, loosening the TENSION SCREW and pulling the bracket from the intermittent housing. Remove the two PINS in the bracket.

d. Insert the plug gage* in place of the intermittent so that the smaller diameter goes through the trunnion support nearest the operator's side of the projector. Slip the intermittent mounting bracket over the large diameter and locate the bracket on the cover plate. Do not draw up the screws as this bracket must be positioned accurately.

e. Position the INTERMITTENT MOTOR, figure 8, with the output shaft inserted into the hole at the large end of the plug gage. Place the locating pins in the intermittent motor support and fasten the support to the base plate with four screws.

f. Tighten the three BRACKET SCREWS, figure 21, in the intermittent mounting bracket. Remove the intermittent motor again and slip out the plug gage.

g. Again remove the mechanism synchro gear shaft and the cover plate. Do not loosen the intermittent mounting bracket.

h. Set the cover plate and bracket on a drill press and, with a No. 31 drill, drill holes in the cover plate through the pin holes in the bracket. Set the drill so that a .050-inch wall remains in the cover plate; be very careful not to break through the inner wall of the plate. Insert dowel pins in the bracket.

i. Place sealing compound between the cover plate and the gasket and reassemble the plate with bracket to the main casting. Do not tighten the cover plate screws.

j. Again insert the plug gage and assemble the intermittent motor to the projector. Alignment should be made by moving the cover plate to establish a line through the center of the motor shaft and the center of the forward trunnion support. When alignment is correct, put sealing compound on each cover plate screw and draw it up tightly.

k. Orient the MECHANISM SYNCHRO GEAR SHAFT by use of the scribe marks previously placed at the top of the vertical shaft and between the main casting and the key slot in the mechanism synchro gear shaft.

l. When the shaft is oriented, rotate the bushing about the shaft. The bushing is slightly eccentric and provides adjustment for spacing the gear on the synchro gear shaft and the teeth on the vertical drive shaft. When the movement is free, insert the MECHANISM SYNCHRO SHAFT PLATE over the flange of the bushing and fasten it with the three screws. Check the shaft again for freedom.

m. Again remove the intermittent motor, the plug gage, and the intermittent mounting bracket. Leave the pins in the bracket.

n. Pass the sprocket end of the intermittent through the forward trunnion. Be very careful not to damage the teeth of the intermittent sprocket. Engage the framing ECCENTRIC, figure 31, in the slot of the FRAMING LEVER and push the intermittent forward until the registering surface is in contact with the front trunnion.

o. Place the intermittent mounting bracket in position on the intermittent housing and locate the bracket on the cover plate, but do not tighten the screws.

p. The POSITIONING SETSCREW, figure 10, is to keep the intermittent assembly against the forward trunnion, yet allow sufficient freedom for rotating the intermittent. The positioning setscrew is locked in place by another setscrew entering the casting from the bottom. Loosen both the positioning and the locking setscrews; then place sealing compound on the three intermittent mounting bracket screws and draw them up tightly.

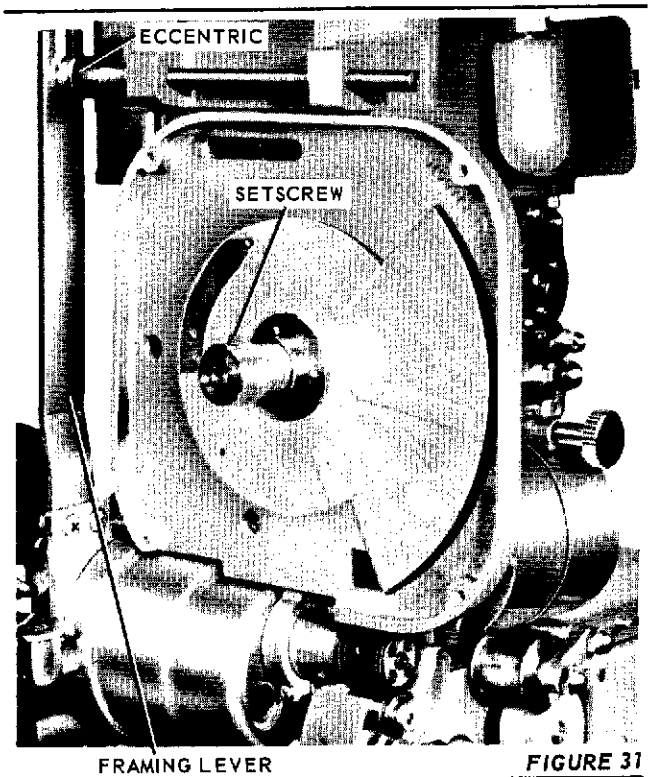


FIGURE 31

*This gage is necessary for realignment only when a new cover plate is installed. The gage is available from Apparatus Service Department, Rochester 4, N.Y., on loan.

q. Turn in the positioning setscrew until it just touches the intermittent housing when the intermittent is firmly against the forward trunnion support. Lock the positioning screw with the lock screw after applying sealing compound to both screws.

r. Draw up the TENSION SCREW until there is tension on the intermittent, but do not tighten it enough to interfere with rotation of the intermittent.

s. Replace the KEY, figure 9, in the mechanism synchro gear shaft, place the synchro gear on the shaft, and tighten the setscrews.

t. Place the rubber coupling on the intermittent shaft; locate according to the orientation marks, tighten, and seal the two setscrews. Place the synchro gear over the rubber coupling and engage the marked teeth of the two synchro gears. Insert the hub and add the two PHILLIPS-HEAD SCREWS, figure 8, which hold the hub to the synchro gear. Also replace the Phillips-head screw which secures the rubber coupling to the synchro gear through the slot on the gear shaft.

u. Position the intermittent motor so that the output shaft enters the hole in the synchro gear hub. Engage as indicated by the red dots and lock the hub to the shaft with the two setscrews. Both synchro gears should be in line. If adjustment is necessary, move the mechanism synchro gear along its shaft. Replace the screws and pins in the intermittent motor mount and connect the wiring.

v. Reposition the wiring harness and capacitor for the vertical shaft motor; reassemble the oil level gage; and replace the FLYWHEEL using the three screws.

w. Make the following tests and adjustments.

1. Close the oil drain petcock and fill the mechanism until the oil indicator shows a level halfway up the tube. Be careful to apply the oil slowly and allow it to settle before adding more.

2. Check to see that all parts are free of the intermittent sprocket at the operator's side of the projector. If so, start the mechanism. If proper orientation marks were made, synchro gears will float free of engagement once the motors are up to speed.

3. With the power off, replace the STRIPPER, figure 2.

4. Replace the INTERMITTENT SPROCKET SHOE ASSEMBLY, following the instructions in paragraph 16k2.

5. Replace the IDLER ROLLER BRACKET.

6. Remove the preamplifier, paragraph 4.

7. Holding the PERMANENT MAGNET with a flat piece of steel (.010 to .015-inch thick) at the slot, place it over the flange of the flywheel and attach it as shown in figure 12. After the clamp is tight, remove the piece of steel. Lift the pressure roller of the sound drum free of the drum and rotate the flywheel. The flange of the flywheel should be free to rotate in the slot of the magnet.

8. Lock the SOUND OPTICS BRACKET, figure 2, into place by means of the SOUND OPTICS CLAMP.

9. Thread the projector with a loop of film. Start the projector and observe the DAMPER ROLLER. If the magnet is in proper position radially out from the flywheel shaft, the damper roller will assume a position near the center position of its over-all range of travel. It should also remain in the same position. If these conditions are not met, move the magnet to a new radial position and make the check again. Once the optimum position of the damper roller is established, clamp the magnet tightly. After each adjustment, check the clearance between the magnet and the flange of the flywheel.

10. Replace the preamplifier and the projector lens and swing the sound optics bracket down.

11. Connect the exciter lamp lead to the preamplifier.

14. RECHARGING DAMPER ASSEMBLY

NOTE: The damper assembly, figure 6, is charged with a silicone fluid. After a long period of time, the damping action may be come less effective. This will result in a longer sound stabilization time.

The damper can be recharged quickly by injecting a few drops of silicone fluid (Part No. 119145) into the FILLER HOLE, figure 5. A hypodermic-type applicator is a convenient tool for this operation.

Some older projectors did not include the filler hole. In this case, it can be added as follows:

a. Completely disassemble the damper assembly, paragraph 3.

b. Replace the semicircular cover plate on the outer damper casting, using the three screws.

c. The semicircular cover has two small alignment holes drilled in it. Using the lower hole as a guide, see figure 5, drill a No. 55, or .052-inch, hole directly through the casting. Carefully remove all burrs from the rear casting so that the motion of the rotor will not be impaired.

d. Clean all the old fluid from the inner side of the housing and the ROTOR AND SHAFT ASSEMBLY, figure 7. Apply about 0.1 cc of silicone fluid (Part No. 119145) to each side of the rotor and replace the rotor in the housing. Be sure that the orientation marks on the two sections of the housing coincide.

e. Place the ARM ASSEMBLY on the shaft and lock it in position with the setscrew. Tighten the setscrew very securely. Be sure that the arm lines up with the previously scribed marked so that the roller assembly will be in line with the film path. Use sealing compound on the setscrew.

f. Replace the end plate and try the mechanism for freeness. There must be no bind throughout the travel of the arm.

15. REPLACING DAMPER ASSEMBLY, SPROCKETS, SPROCKET CLAMPS, AND SOUND DRUM

a. Attach one end of the spring to the arm assembly and connect the other end of the spring to the right-angle bend of the HANGER, figure 5. Figure 5 shows the correct position of the hanger, with its right-angle bend away from the damper and extending toward the mechanism casting.

b. Use the three screws to attach the damper assembly to the casting.

c. As an aid to assembly, place a No. 6-32 x 1-inch screw (no head) in the ASSEMBLY SCREW HOLE of the hanger.

d. Replace the side plate, with the assembly screw extending through the slot of the plate. Hold the hanger in position with the long screw and replace the regular No. 6-32 screw in the lower hanger hole. Remove the assembly screw. Replace the DAMPER ROLLER, figure 2.

NOTE: For the spring adjustment, see paragraph 20c.

e. Replace sprocket and sprocket clamp assemblies as follows:

IMPORTANT: See note in paragraph 2 for differences in base-circle size of sprockets.

1. Place the SPRING, FLANGE (beveled edge out), and SPROCKET, figure 4, on the shaft and temporarily lock it to the shaft with the SPLIT RING, figure 5, and SCREW.

2. Replace the sprocket clamp assemblies. The supply clamp has longer screws than the other two clamps.

3. Close the clamp. Loosen the SPROCKET RETAINING SCREW, figure 2, and move the sprocket so that the teeth are centered in the undercut of the sprocket clamp roller.

4. Loosen the two SPROCKET CLAMP SCREWS, and place two thicknesses of film between the clamp and sprocket; then move the clamp toward the sprocket until the film is held against the sprocket. Be sure both ends of the clamp roller are in contact; then tighten the two sprocket clamp screws. Clamp should be adjusted to close positively on two thicknesses of film, but should not close on three thicknesses.

5. Replace the SHIM (if used), figure 4, MOUNT, and STRIPPER. Be sure to center the hole in the stripper with respect to the flange on the sprocket.

NOTE: The screws for the supply sprocket stripper mount are 1/8 inch longer (No. 4-40 x 1 inch) than for the mounts on the sound and holdback sprockets.

6. With three screws, attach the OUTER FLANGE (beveled edge in) to the sprocket. Check to see that the sprocket shoulder does not rub on the stripper.

7. Use a mirror for good visibility and check clearances of the assembly.

f. Replace sound drum as follows:

NOTE: Relative position of sound drum and shaft was marked prior to removal.

1. Assemble the drum to the shaft in the same relative position.

2. Check runout with a dial indicator. Runout must not exceed .0002 inch.

3. If a new sound drum is installed, cancellation of excessive runout can be obtained by trying several positions relative to the shaft.

4. See paragraph 21d for prism clearances.

5. Replace the pressure roller and sound optics clamp.

16. REPLACING INTERMITTENT ASSEMBLY

a. Add oil to the intermittent and attach the FRAMING ARM as shown in figure 10, but tighten one nut only.

b. Insert the intermittent assembly through the forward trunnion and engage the framing arm in the ECCENTRIC, figure 21. Place the INTERMITTENT MOUNTING BRACKET, figure 10, over the end of the intermittent and locate it on the main mechanism. Locating pins are in the bracket. Be sure that the intermittent assembly is positioned against the locating surface on the front trunnion.

c. The POSITIONING SETSCREW is to keep the intermittent assembly against the forward trunnion, yet allow sufficient freedom for rotating the intermittent. The positioning setscrew is locked in place by another setscrew entering the casting from the bottom. Loosen both the lock screw and the positioning setscrew; then replace the three intermittent mounting bracket screws. Turn in the positioning setscrew until it just touches the intermittent housing when the intermittent is firmly against the forward trunnion support. Lock the positioning screw with the lock screw and apply sealing compound to both screws.

d. Check alignment of the intermittent sprocket teeth in the film perforations. If the sprocket teeth are too near the outer edge of the perforation, correction can be made by adding a spacer (Part No. 123147) between the front locating surface on the intermittent housing and the front trunnion.

e. If the teeth are too near the inner filet of the perforation, it will be necessary to move the sprocket on the intermittent shaft. This is a critical operation, and the relative position of the sprocket and the shaft must be maintained. Rotate the input shaft of the intermittent until the pulldown sprocket has completed the pulldown and has entered the dwell, or hold, period. Loosen the four screws on the end of the sprocket and carefully move the sprocket to the desired position without rotating it. Tighten the four screws. These screws clamp dished washers that lock the sprocket to the shaft.

f. Draw up the TENSION SCREW until there is tension on the intermittent, but do not tighten it enough to interfere with rotation of the intermittent.

g. Place the coupling on the intermittent shaft. Locate according to the orientation marks, and tighten and seal the two setscrews. Place the synchro gear over the coupling and engage the marked teeth of the two synchro gears, figure 9. Insert the SYNCHRO GEAR HUB and add the two Phillips-head screws which hold the hub to the synchro gear. Also replace the Phillips-head screw which secures the coupling to the synchro gear through the slot in the gear hub. This screw should be in the center of the slot to permit adjustment for travel ghost later.

h. Place the intermittent motor in its approximate position with the output shaft entering the hole in the synchro gear hub. Engage as indicated by the red dots and lock the rubber coupling to the shaft with the two setscrews.

i. Replace the four screws in the intermittent motor support but do not tighten. Replace the two locating pins in the intermittent motor support, then tighten the four base screws.

j. Reconnect the intermittent motor leads.

k. Checks and Adjustments

1. Start the projector and watch the synchro gears. If proper orientation marks were followed, the synchro gears will float free of engagement once the motors are up to speed and no clashing will be noticed during the running of the projector. Shut off the projector. Should the synchro gears clash once the projector is up to speed, it is necessary to move the synchro gear hub with relation to the intermittent motor shaft. This is a trial-and-error process. Hold the intermittent motor shaft and loosen the two setscrews which hold the hub to the shaft; then move the hub a few degrees in either direction. Tighten the assembly and start the projector. It is helpful to use a stroboscopic light to determine the direction in which the hub should be turned in order to make the gears free-floating.

2. Replace the INTERMITTENT SPROCKET SHOE ASSEMBLY*, figure 2. Before tightening the screws, close the gate and swing up the left end of the bracket until it touches the sprocket end of the intermittent housing. Then lower it to provide a little clearance (one or two film thicknesses) and tighten the screws. Make sure that the outer surface of the white shoe is flush with the side of the rim of the sprocket.

*See footnote page 5.

If it is not, loosen the setscrew in the bracket and turn the large nut to the proper position. The white shoe should be pressed firmly against the sprocket by its internal spring, but it should be free to move back enough to let splices pass freely. If adjustment is needed, loosen the setscrew in the large nut and turn the main pivot screw to the proper position. Then lock both setscrews.

3. Replace the STRIPPER.

4. Replace the IDLER ROLLER BRACKET.

5. Check the timing of the shutter to the pulldown. See paragraph 18.

6. After the shutter is timed, framing must be adjusted. The framing arm was attached to the intermittent by tightening only one nut. This should be sufficient for initial tests. With film (frame line accurately centered between frames) running through the projector, observe the image and turn the framing shaft from one extreme to the other. If the frame line is equidistant from top and bottom at the extremes of framing, tighten the second nut on the framing lever. If not, change the angle slightly between the intermittent and framing lever. When the best position is found, tighten the nut.

17. REPLACING FOCUSING MECHANISM

a. Insert the BARREL BEARING ROD, figure 13, through the rod support; place the spring and bearing rod stop on the rod; then insert the rod through the rod brackets of the barrel and rear gate support. Replace the screw through the stop and into the barrel bearing rod.

b. Push the barrel bearing rod toward the rear of the projector until the end of the rod has .002- to .003-inch clearance between the rod and the mask support plate. Push the GATE LEVER in and tighten the GATE LINK SCREW.

c. Loosen the PIN LOCK SCREW and adjust the ECCENTRIC PIN until the gate lever moves past dead center as it is pushed in. The lever should meet a definite point of resistance and then pass through, at which point the barrel is held firmly in its operating position.

d. To center range of focus, adjustment can be made by moving the FOCUSING PIVOT BRACKET, figure 12, relative to the BARREL BEARING ROD, figure 13. The focusing eccentric should be set in its mid position, and the bracket should be moved on the rod until the picture is in focus.

18. REPLACEMENT AND TIMING OF SHUTTER

a. Place the shutter on the shaft as shown in figure 31. Slide it well on, but be sure there is adequate clearance between the shutter and the casting.

b. Move the FRAMING LEVER to the center position, with the ECCENTRIC straight up.

c. Turn the intermittent motor until the intermittent is at the end of the dwell, or hold, period; then move the shutter clockwise on the shaft until the closed section just covers the aperture. Tighten one SETSCREW.

d. Move the framing lever to one of the extreme positions and, by means of the threading knob, turn the mechanism to the beginning of the next pulldown. If the shutter is covering the aperture just before the pulldown begins, try the same procedure with the framing lever in the opposite extreme position. When the position of the closed shutter section is approximately equalized in the two extreme positions, check the coverage again with the synchro gears floating free. To do this, turn the threading knob until the very instant the intermittent sprocket starts the pulldown; then back off the mechanism synchro gear to the "floating" position. If there is coverage at the extreme framing lever positions, tighten the two setscrews.

e. Replace the COVER PLATE, figure 18, and turn the threading knob several times to be sure the shutter clears the casting and the cover plate.

NOTE: The shutter operates at 2880 rpm, giving two interruptions per frame of film.

19. REASSEMBLY OF SUPPLY AND TAKE-UP REEL ARMS

a. See figures 26, 27, 28, and 29.

b. Replacing the take-up clutch assembly can be simplified by placing the ball and spring in position in the clutch; then, with a punch, depress the ball as shown in figure 32 and insert the small hub. Place the unit on the shaft, and tighten the setscrews through the hole in the clutch.

c. With the GEARS, figure 33, engaged, adjust the STOP SCREW so there is about a .0156-inch (three thicknesses of film) clearance between the screw and the BEARING ASSEMBLY.

20. ADJUSTMENT OF PRESSURE ROLLER, DAMPER ASSEMBLY, AND PERMANENT MAGNET

NOTE: The adjustment of each of these three assemblies has an effect on the stabilization time and the damping of the sound system.

a. The pressure exerted by the sound drum pressure roller is the pressure required to just raise the roller off the sound drum. It is measured at the thumb pad of the roller assembly and should be adjusted to give 10 to 11 ounces. Pressure is increased or decreased by rotation of the PRESSURE ROLLER COLLAR, figure 12. Loosen the setscrew in the collar and make this adjustment before proceeding.

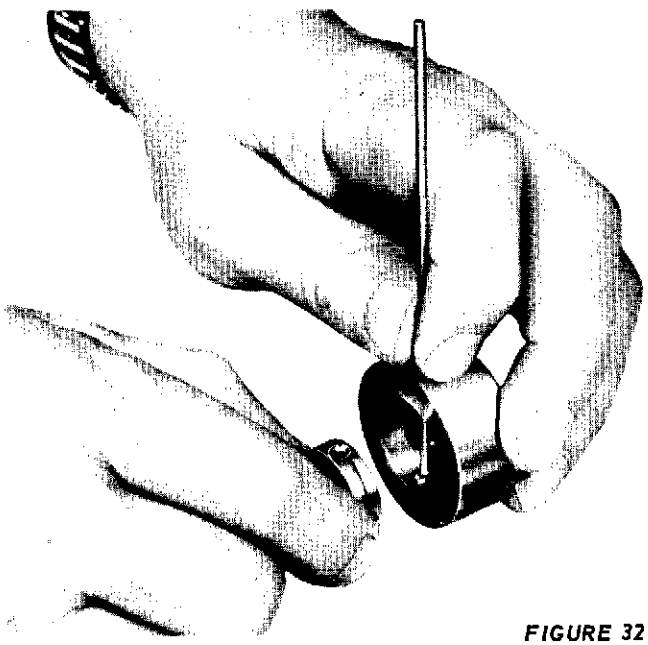


FIGURE 32

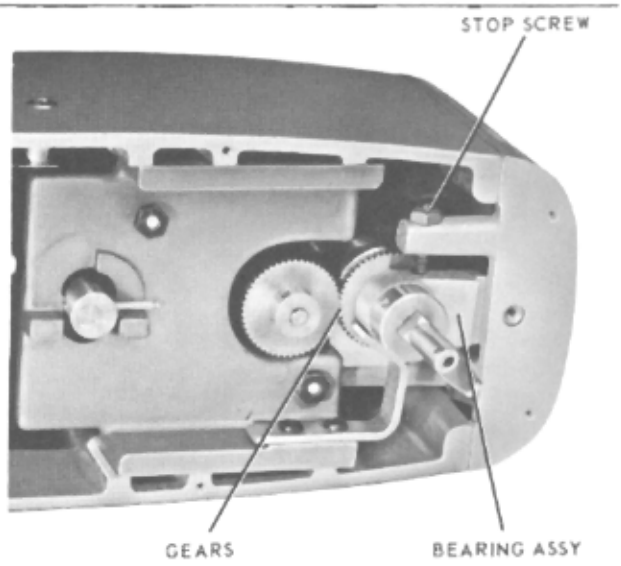


FIGURE 33

b. The PERMANENT MAGNET sets up an eddy-current drag on the flywheel, and the amount of this drag is determined by the radial position of the magnet out from the center of the flywheel. Use a gage (.010 inch thick, or two thicknesses of 16mm film) to set the space between the magnet and the flange on the flywheel. Be sure that the magnet clears the flange through the whole rotation of the flywheel. The top of the magnet should be about 3/4 inch below the top of the flywheel.

c. Thread the projector with film and start the mechanism. Observe the action of the damper roller. When starting, the roller should be drawn to the low end of its travel, from where it will rise and assume a fixed position. This fixed position should be at the approximate center of the range of travel. With the projector running, loosen the SPRING CLAMP SCREW, figure 2, and adjust the damper roller until it is in the approximate center of the range of travel. If properly adjusted, stabilization time will be less than two seconds. If stabilization time is over two seconds, move the magnet out on the radius of the flywheel and observe the action of the damper roller. This is a trial-and-error adjustment.

21. ADJUSTMENT OF SOUND OPTICS

NOTE: Test films are available through the Society of Motion Picture and Television Engineers, 55 West 42nd Street, New York 36, N. Y.

a. Focus Adjustment

NOTE: For focus and azimuth adjustment, use a 5,000-cycle-per-second, square-wave film (PH22.42-5000) threaded through the projector, with the emulsion side toward the projection lens. Set the low and high frequency dials of the amplifier at the No. 3 position.

1. Remove the setscrew and SLEEVE, figure 2, to expose a slotted adjusting nut.

2. Turn on the projector and the sound system. Adjust the slotted nut by means of a screwdriver until the peak output is determined. Use a meter for this check. When the peak is obtained, reassemble the sleeve and lock it in place with the setscrew. Be sure that the STOP is in the slotted section of the sleeve. As locked, the sleeve must have the "F" end of the slot in contact with the stop. Be sure that the sleeve does not rub on the casting when it is rotated.

FIGURE 34

3. Once again check the output level of the sound system. If it is unchanged from the previous peak reading, stop the projector, remove the film, and rethread the projector with the emulsion side of the film toward the projection lamp. Start the projector, move the sound focus sleeve to position "R," and read the output meter. This reading should be within 2 db of the previous reading. If the reading is within this tolerance, the focus is correct. However, if it is impossible to observe levels within the 2 db tolerance, an azimuth adjustment of the optics should be made. See paragraph b.

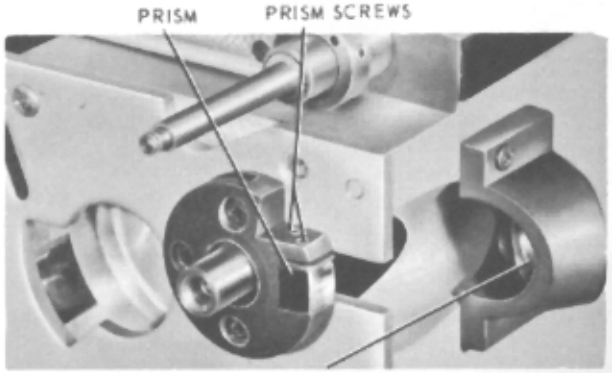


FIGURE 35

b. Azimuth Adjustment

1. The AZIMUTH ADJUSTMENT SCREWS, figure 34, serve to rotate the optics. Make the adjustment by loosening one screw and tightening the other.

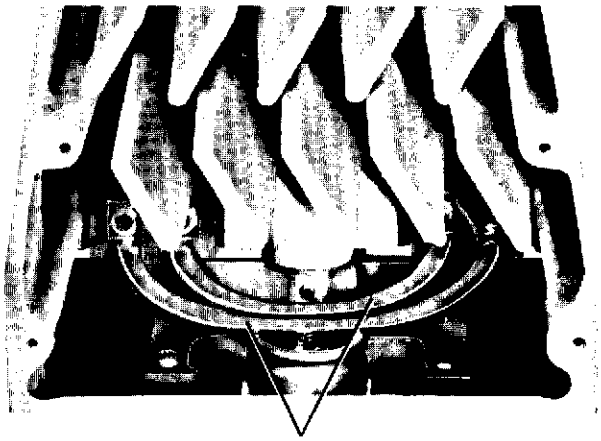
2. When balance is obtained for both emulsion positions of the film (within 2 db), the azimuth of the optical slit is in proper adjustment. Be sure that both screws are tight.

c. Buzz Track Adjustment

Thread a standard buzz track film (PH22.57), 300 cycle and 1,000 cycle, into the projector. Check the sound system for correct position of the scanning light beam. If either frequency is heard, make the following adjustment. Remove the BUZZ TRACK LOCK SCREW, figure 2, and turn the BUZZ TRACK ADJUSTMENT SCREW, figure 34, in or out. This adjusts the lateral position of the sound optics assembly. Positioning of the adjustment screw is a trial-and-error adjustment and must be checked with the sound optics assembly firmly locked in position by the SOUND OPTICS CLAMP, figure 2.

d. Prism Adjustment

NOTE: The purpose of this adjustment is to center the sound track of the film on the face of the PRISM, figure 35, and to center the light beam on the COLLECTING LENS.



LAMP HOUSE CONTACTS

FIGURE 36

1. Loosen the thumbscrew on the bottom of the preamplifier and move the preamplifier sufficiently to permit your seeing the collecting lens.

2. Thread the projector with film and lower the sound optics for a straight-on view, figure 12, of the sound drum and prism. The sound track must be contained within the width of the base of the prism, and there must be adequate clearance between the edge of the sound drum and the edge of the prism. If adjustment is necessary, loosen the two PRISM SCREWS, figure 35, and shift the position of the prism.

3. With the prism adjusted correctly for sound-track position, unthread the projector and lock the sound optics in operating position. Observe the light beam with reference to the collecting lens. If the prism is positioned correctly, the light beam will fall at the center of the collecting lens. Use a small piece of paper on the collecting lens so that the pattern of the light can be seen.

4. If the beam of light does not fall at the center of the collecting lens, move the prism forward or backward from its present position. Make each adjustment with a check of the track position relative to the face of the prism and the clearance of the sound drum with reference to the prism. Film must not be in contact with the front surface of the prism. Once the best position for the light beam is obtained, tighten the prism screws.

22. ADJUSTING LAMP MICROSWITCH

a. The LAMP HOUSE CONTACTS, figure 36, must be in firm contact with the lamp when the microswitch is tripped. If contact is not firm, bend the lamphouse contacts to insure a positive contact.

b. Adjust the position of the SPRING, figure 17, so that the switch is not actuated until the lamp house contacts and the lamp are in good contact.

23. RESPONSE-FREQUENCY TESTS

NOTE: Use SMPTE frequency test film PH22.44.

Results of response-frequency tests made on the sound system should agree with the curves of figure 37 within plus or minus 2 db. This group of curves shows the three steps of low frequency equalization of the A-25B Amplifier and the three steps of equalization of the Pre-MO2 Preamplifier. Before the response curve is checked, be sure that the sound focusing lever is in the proper position. Position "F" is for film with emulsion toward the lens (front), and position "R" is for film with emulsion toward the lamp (rear). If adjustments are necessary for correct focus or azimuth, follow the procedure outlined in paragraph 21a and b.

TROUBLE CHART

Trouble	Probable Cause
Vertical Picture Unsteadiness	Unlubricated film
	Emulsion deposit on rails of gate
	Intermittent sprocket shoe assembly* not functioning
	Gate tension not adjusted properly
	Gate not closed
	Broken rubber coupling (paragraphs 6 and 16)
	Rear edge guides dirty or not adjusted
Horizontal Picture Unsteadiness	Failure of rear edge guide
	Dirt deposit holding rear edge guides from proper position
	Gate and pressure pad badly worn
Rotational Picture Unsteadiness	Rear edge guide failure
	Intermittent sprocket shoe assembly* not functioning
Travel Ghost (Whole Frame)	Broken rubber coupling (paragraphs 6 and 16)
	Spline slipped in intermittent (paragraph 6)
Travel Ghost (Top or Bottom)	Spline slipped in intermittent
Long Sound Stabilization Period	Weak magnet (paragraph 20)
	Magnet not located properly (paragraph 20)
	Damper needs recharging (paragraph 14)
	Sound drum polished
	Insufficient pressure applied by sound drum pressure roller (paragraph 20)
Repeated Early Failure of Exciter Lamp	Voltage across lamp higher than 6 volts dc
Repeated Early Failure of Projection Lamp	Arcing of lamp contacts (paragraph 22)
	Failure of microswitch
	Overvolting of lamp
Bulging of Projection Lamp	Failure of blower system
	Use of old blackened lamps
Clashing of Synchro Gears	Bad electrical contact at terminal block
	Gears not adjusted properly (paragraph 16k1)
	Low voltage
	Mechanism below normal room temperature
	Bearing drag at intermittent motor
In and Out of Focus	Bent rear edge guide exerting heavy pressure against film
	PIN, figure 12, in focusing lever assembly does not have firm fit between plate and extension of lens block
	Gate tension too low
Out of Focus After Passage of Splice	Gate tension too low. Splice moves pressure pad away from gate and it cannot return
	Film changes emulsion position after splice
Non-Uniform Focus Across Field	GATE TENSION SPRING, figure 2, distorted or inner finger of spring cocked by protruding screw head
Splice Damage or Film Break	Intermittent sprocket shoe assembly* set too tight against sprocket (paragraph 16)
Film Scratches in Picture Area	"Green" or unlubricated film
	Emulsion build-up on rails of gate
	Damaged gate
	Damaged sprocket
Failure at Take-Up on Small Core Reels	This is not considered a failure, since take-up was designed for standard 1600-foot and 2000-foot reels

*See footnote page 5.

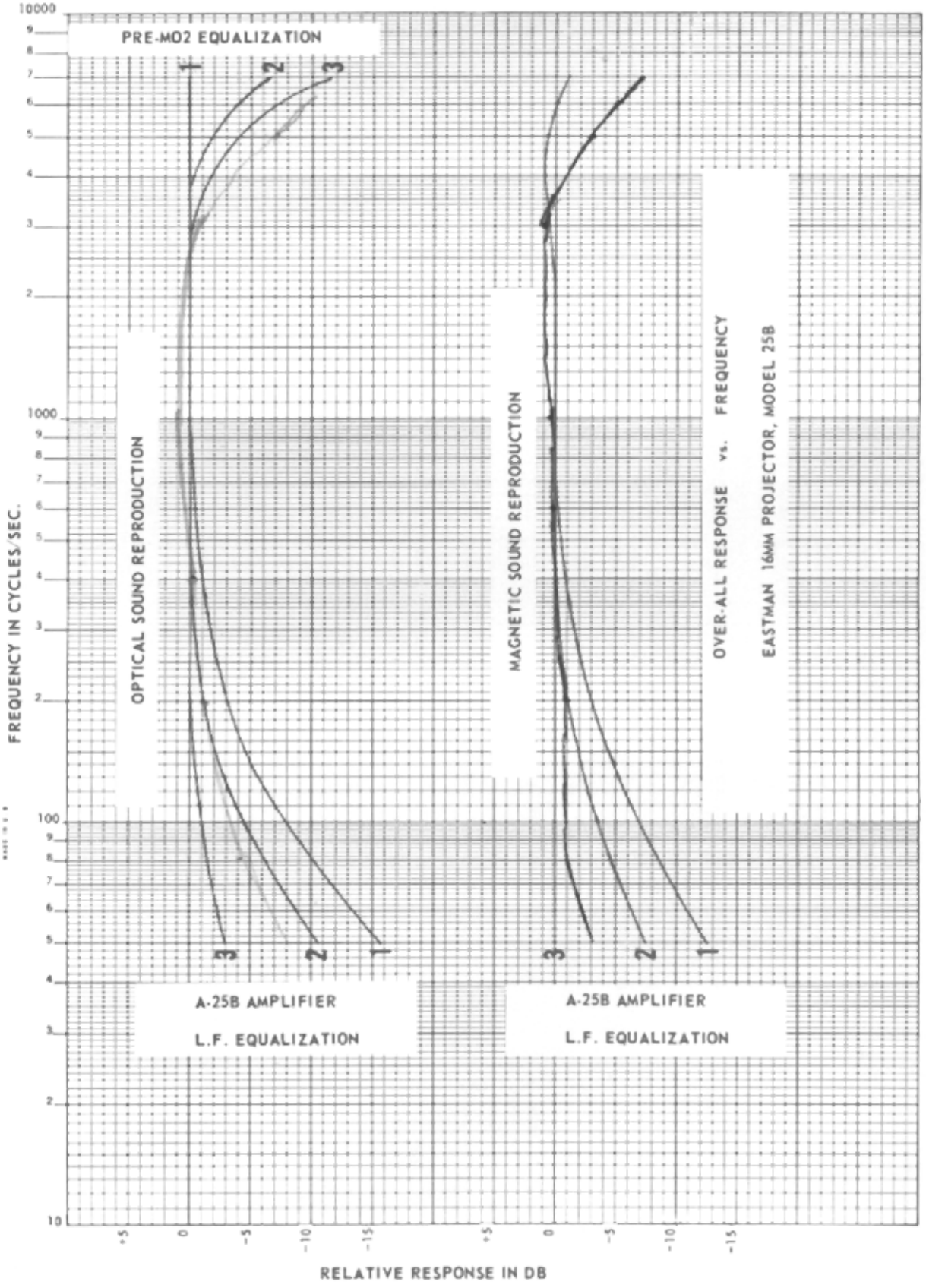
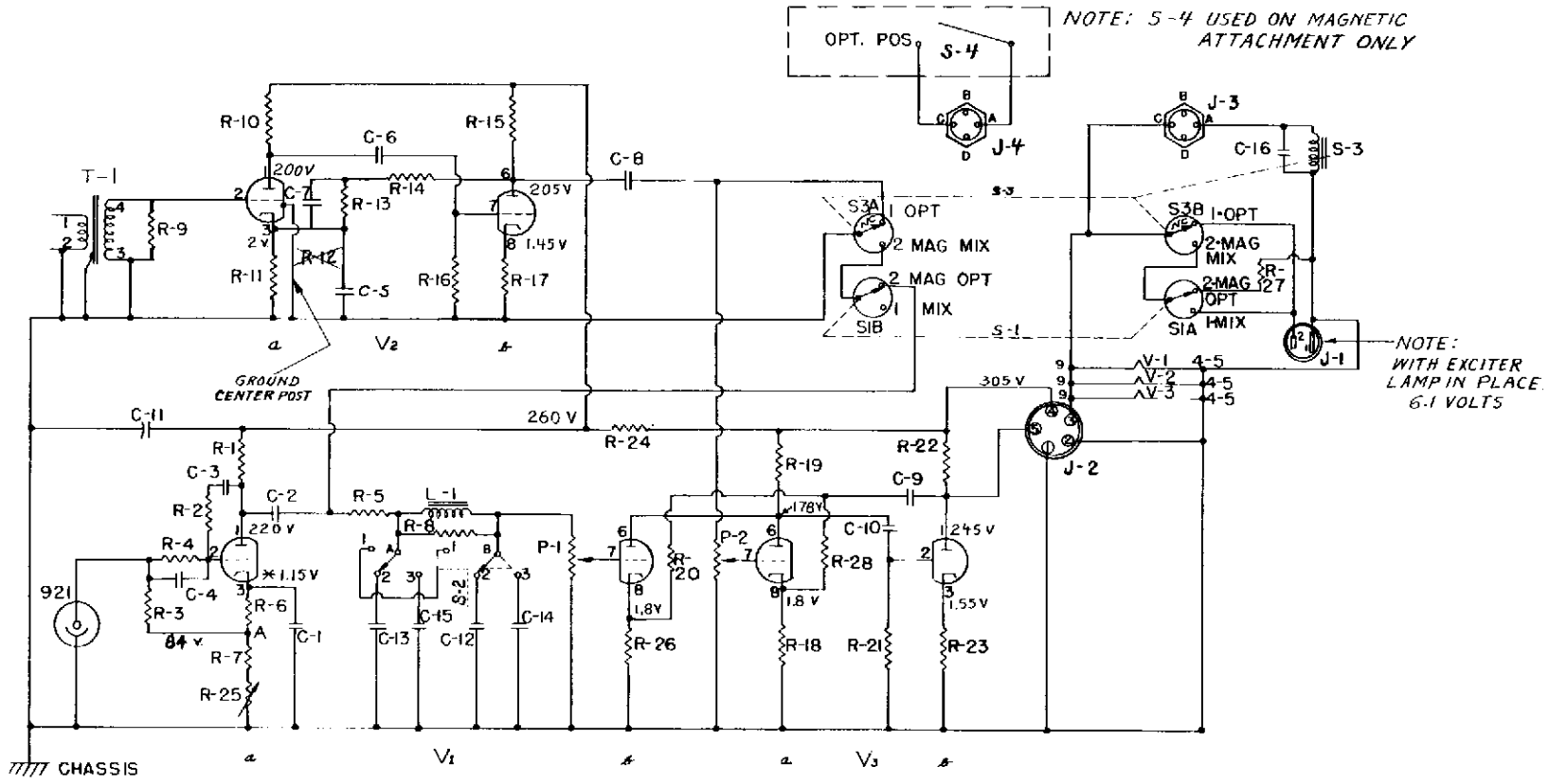

PRE-MO2 EQUALIZATION
OPTICAL SOUND REPRODUCTION
MAGNETIC SOUND REPRODUCTION
OVER-ALL RESPONSE vs. FREQUENCY
EASTMAN 16MM PROJECTOR, MODEL 25B
A-25B AMPLIFIER
L.F. EQUALIZATION
A-25B AMPLIFIER
L.F. EQUALIZATION
FREQUENCY IN CYCLES/SEC.
RELATIVE RESPONSE IN DB
10000
1000
100
10
+5
0
-5
-10
-15

FIGURE 37

PREAMPLIFIER CIRCUIT (PRE-MO-2)



V1a. * MEASURED TO A
ADJUST R-25 TO GET 84 V AT POINT A
RIPPLE VOLTAGE MAX. LIMITS { FILAMENT .006 V / B+ .0003V

NOMENCLATURE FOR RESISTORS & CONDENSERS

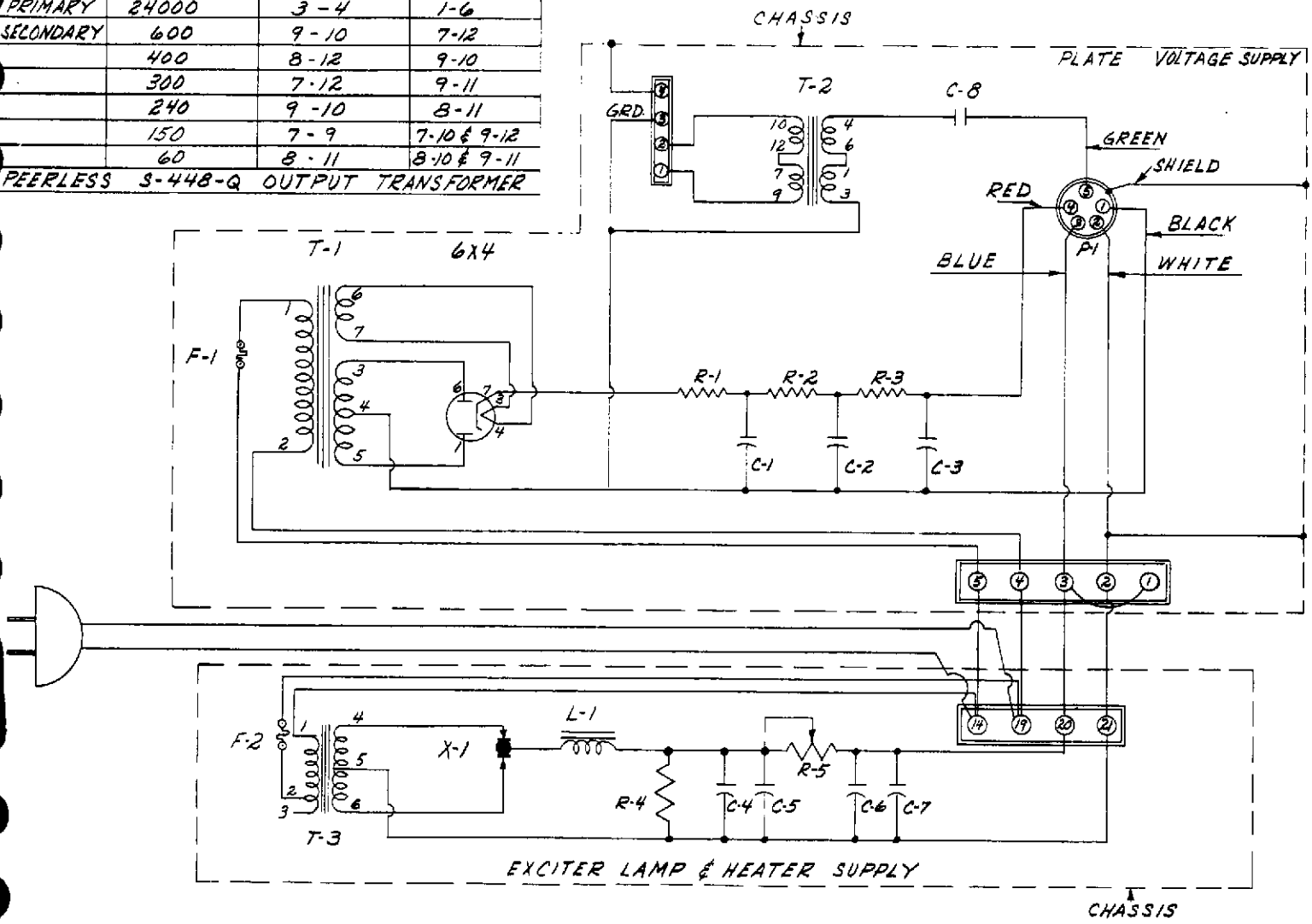
P-1, P-2	144186	.5 MEG ±10%
R-1	144188	47 K +5% 1/2 WATT
R-2	144189	3.3 MEG ±5% 1/2 WATT
R-3	74940	1 MEG ±5% 1/2 WATT
R-4	144294	820 K ±5% 1/2 WATT
R-5	124178	62 K ±5% 1/2 WATT
R-6	144192	1.5 K ±5% 1/2 WATT
R-7	144185	100 K ±5% 1/2 WATT
R-8	144200	180 K ±5% 1/2 WATT
R-9	74940	1 MEG ±5% 1/2 WATT
R-10	144194	120 K ±5% 1/2 WATT
R 11	144195	3.3 K ±5% 1/2 WATT
R-13	144197	1.5 MEG ±5% 1/2 WATT
R-14	144198	33 K ±5% 1/2 WATT
R-15	144198	33 K ±5% 1/2 WATT
R-16	74940	1 MEG ±5% 1/2 WATT
R-17	144199	1 K ±5% 1/2 WATT
R-18	144195	3300 ±5% 1/2 WATT
R-19	144194	120 K ±5% 1/2 WATT
R-20	144293	390 K ±5% 1/2 WATT
R-21	74940	1 MEG ±5% 1/2 WATT
R-22	144198	33 K ±5% 1/2 WATT
J-1	119821	SOCKET CINCH-JONES S-302-AB
J-2	144172	SOCKET CANNON WK-5-32-3
J-3	144173	SOCKET WINCHESTER M4S-LRN
J-4	144174	PLUG WINCHESTER M4P-LSHIO
R-23	144201	820 ±5% 1/2 WATT
R-24	144202	18K ±5% 1 WATT
R-25	144187	25K MIN. VARIABLE
R-26	144195	3300 ±5% 1/2 WATT
R-27	144203	6 ±3% 25 WATT
R-28	144293	390 K +5% 1/2 WATT
C-1	144204	.5 MFD 200 V ±10%
C-2	144209	.005(±5%) MFD 600 V±10% SELECT
C-3	144206	.02 MFD 500 V +80% -20%
C-4	144295	.000056 500 V ± 2%
C-5	144208	.01 MFD 500 V ± 2%
C-6	144209	.005 MFD 600 V ±10%
C-7	144210	.002 MFD 500 V ± 2%
C-8	144209	.005(.9%) MFD 600V±10% SELECT
C-9	124163	.1 MFD 600 V ±10%
C-10	144209	.005 MFD 600 V ±10%
C-11	144211	12 MFD 450 W V
C-12	144290	.0003 MFD 500 V ±5%
C-13	144290	.0003 MFD 500 V ±5%
C-14	144212	.0005 MFD 300 V ±5%
C 15	144212	.0005 MFD 300 V ±5%
C-16	144206	.02 MFD 500 V +80% -20%
S-1	144270	ROTARY SWT. GRIGSBY-ALLISON, INC.
S-2	144170	ROTARY SWT. GRIGSBY-ALLISON, INC.
S-3	144169	RELAY POTTER-BRUMFIELD MR-3035
S-4	144216	MICRO-SWT.
L-1	144184	INDUCTOR 2.8 H. U.T.C. MSE-15
T-1	129395	TRANS. U.T.C. 6322

TUBES USED
V1 V2 V3 12AX7

T-2

WINDING	IMPEDANCE	CONNECT TO	STRAP
PRIMARY	24000	3 - 4	1-6
SECONDARY	600	9 - 10	7-12
	400	8 - 12	9-10
	300	7-12	9-11
	240	9 -10	8-11
	150	7 - 9	7-10 & 9-12
	60	8 - 11	8-10 & 9-11

PEERLESS S-448-Q OUTPUT TRANSFORMER



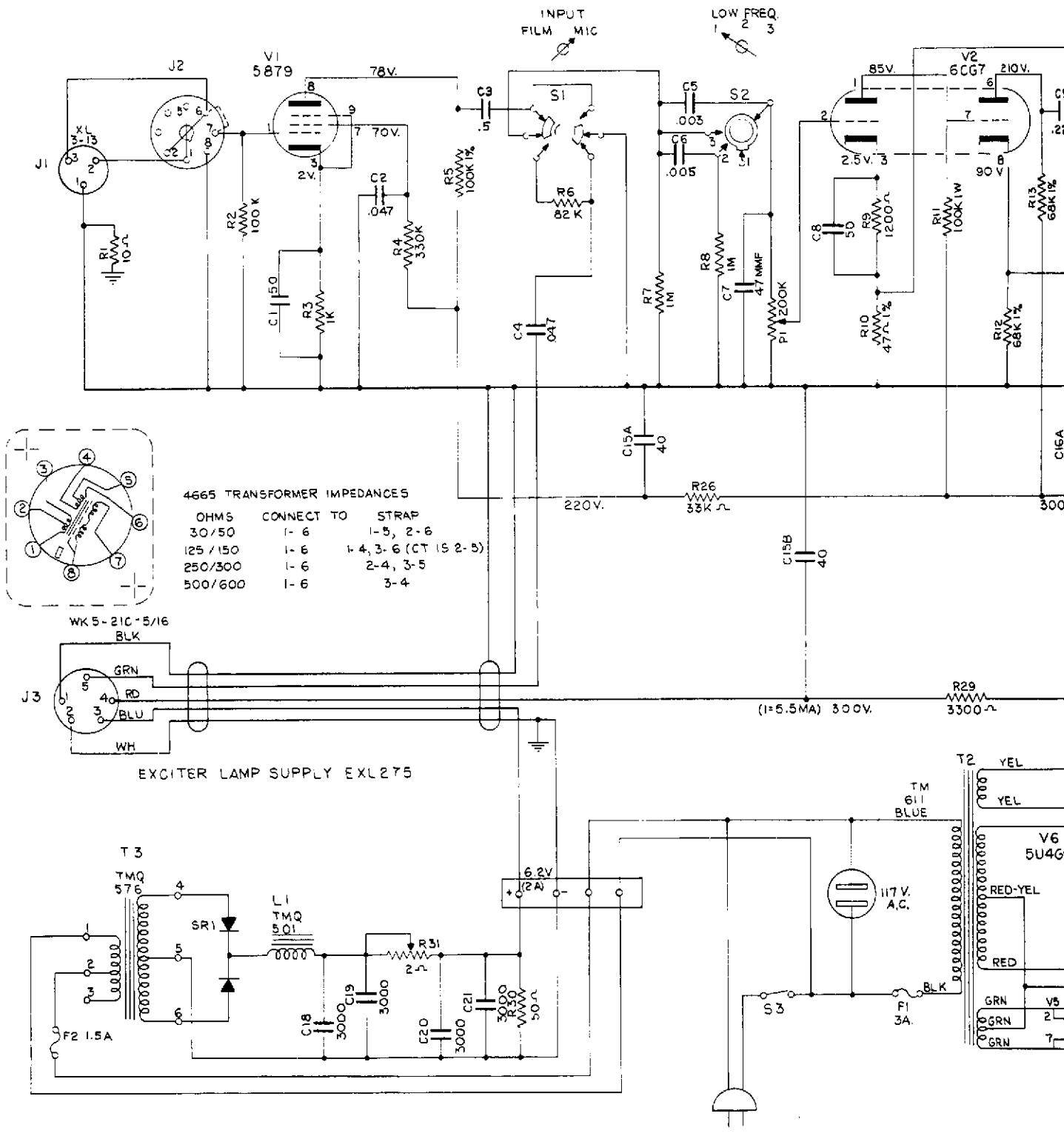
CODE	PART	EK NO.
C-1	40 MFD. - 450 V.D.C.	144158
C-2	30 MFD. - 450 V. D.C.	144158
C-3	50 MFD. - 450 V.D.C	144158
C-4	3000 MFD. - 10 V. D.C.	119839
C-5	3000 MFD. - 10 V.D.C.	119839
C-6	3000 MFD. - 10 V.D.C	119839
C-7	3000 MFD. - 10 V.D.C	119839
R-1	500 Ω ±5% 5 WATT	144162
R-2	2500 Ω ±5% 5 WATT	144165
R-3	2500 Ω ±5% 5 WATT	144165

CODE	PART	E.K. NO.
R-4	50 Ω 10 WATT	119838
R-5	2 Ω 25 WATT	119915
T-1	CHICAGO TRANS. - P.H.C. 20-	144160
T-2	PEERLESS - ALTEC - S448Q - AUDIO OUTPUT -	144161
T-3	PEERLESS - ALTEC - TMQ576-	147555
L-1	PEERLESS - ALTEC - TMQ 501-	119835
X-1	MODEL 25B G.E. 4JA211FC1AC1	147545
C-8	.5 MFD. - 600 V.D.C.	124095
P-1	CANNON WK-5-21C 5/16"	119894
F-1	1.5 AMP. 3AG	124096
F-2	1.5 AMP. 3AG	124096

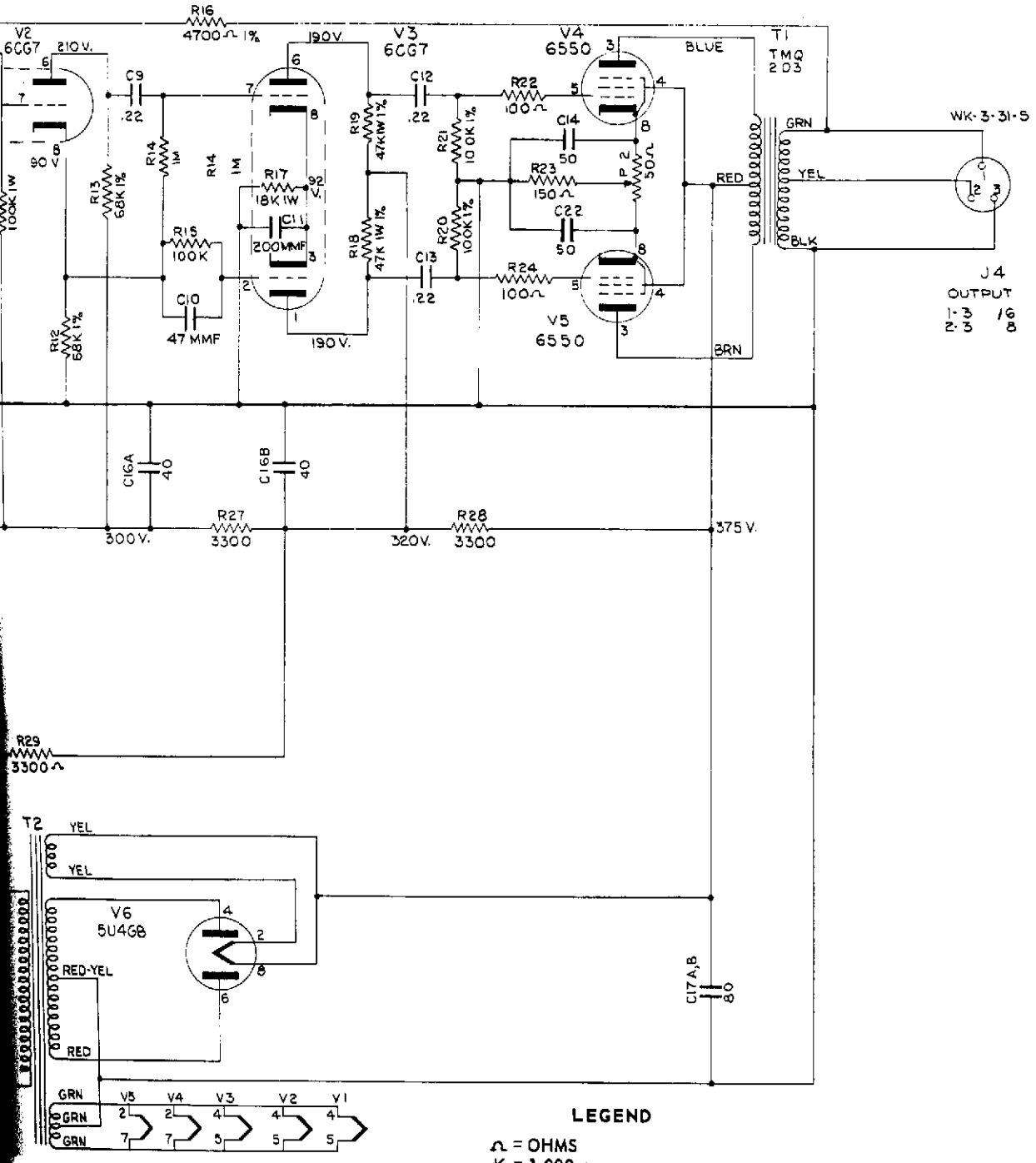
EASTMAN POWER SUPPLY UNIT – MODEL 25B

CODE FOR MODEL 25B AMPLIFIER DIAGRAM

CODE	PART	EK NO.
C1,8	50 MFD 3V	147506
C2,3,4	.047 MFD 400V	126392
C5,6	.003 MFD ± 20% CERAMIC DISC	147508
C7,10	47 MMF ± 10% CERAMIC	147509
C9,12,13	.22 MFD 50V	147510
C11	200 MMF ± 10% CERAMIC	147511
C14,22	50 MFD 50V	119861
C15,16,17	40–40 MFD 500V MALLORY FP288	119862
C18,19,20,21	3000 MFD 10V SPRAGUE TVL–1140	119839
R1	10 OHMS ± 10% 1W	147515
R2,15	100,000 OHMS ± 10% 1/2W	126100
R3	1000 OHMS ± 10% 1/2W	119816
R4	330,000 OHMS ± 10% 1/2W	126098
R5,11,20,21	100,000 OHMS ± 1% 1/2W	147519
R6	82,000 OHMS ± 10% 1/2W	120507
R7,8,14	1 MEGOHM ± 10% 1/2W	122538
R9	1200 OHMS ± 10% 1/2W	872379
R10	47 OHMS ± 1% 1/2W	147523
R12,13	68,000 OHMS ± 1% 1/2W	147524
R16	4700 OHMS ± 1% 1/2W	147525
R17	18,000 OHMS ± 10% 1W	126894
R18,19	47,000 OHMS ± 1% 1W	147527
R22,24	100 OHMS ± 10% 1/2W	872378
R23	150 OHMS 10W WIRE	147529
R26	33,000 OHMS ± 10% 1/2W	120504
R27,29	3300 OHMS ± 10% 1W	155847
R28	3300 OHMS ± 10% 2W	829520
R30	50 OHMS 10W WIRE	119838
R31	2 OHMS 25W WIRE ADJ.	119915
P1	200,000 OHMS ALTEC 12435	147536
P2	50 OHMS IRC W50	147537
S1	ALTEC 12601	147538
S2	ALTEC 12600	147539
S3	ALTEC 12602	147540
F1	3 AMP 3AG FUSE	137144
F2	1.5 AMP 3AG FUSE	124096
J1	CANNON XL-3-13	147543
J2	CINCH 12543	147544
J3	CANNON WK 5-21C-5/16	119894
J4	CANNON WK-3-31-S	119891
SR1	MODEL 25B GE 4JA211FC1ACI	147545
T1	ALTEC TM Q203	147546
T2	ALTEC TM 611	147547
T3	ALTEC TM Q576	147555
V1	5879	126422
V2,V3	6CG7	147550
V4,V5	6550	147551
V6	5U4GB	852361
	MATING PLUG FOR J1-CANNON XL-3-12	147553
L1	ALTEC TMQ501	119835

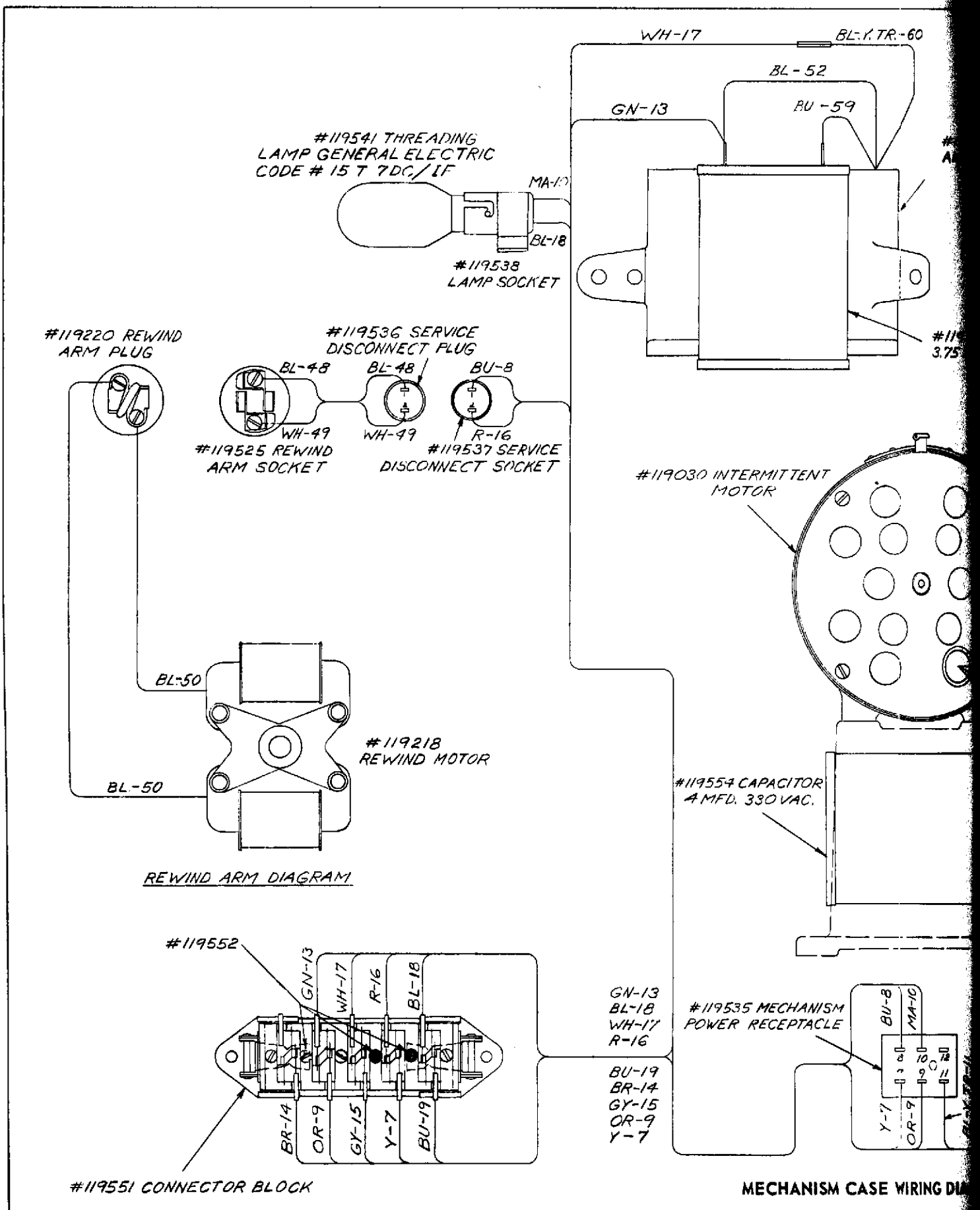


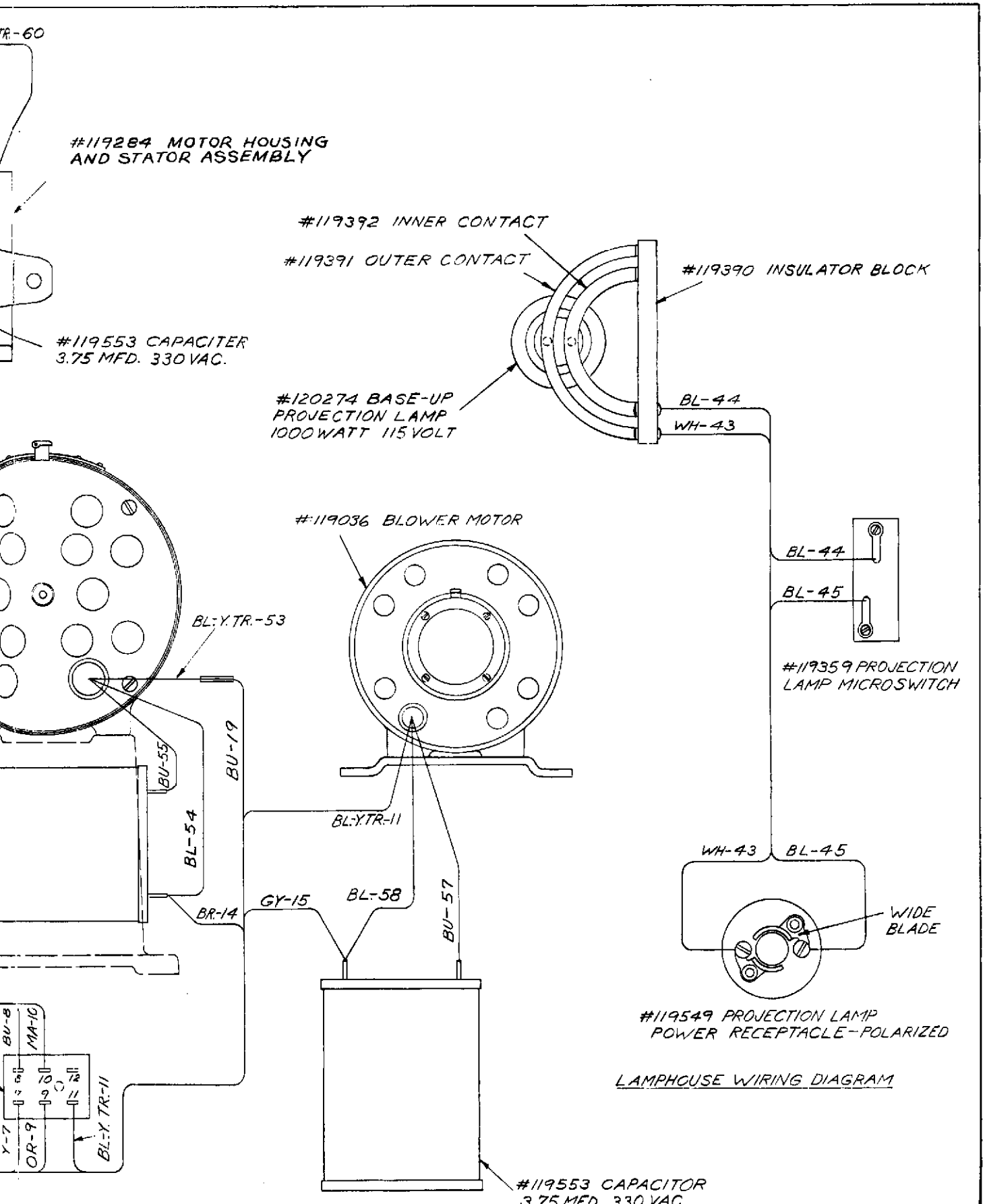
AMPLIFIER A-25B



LEGEND

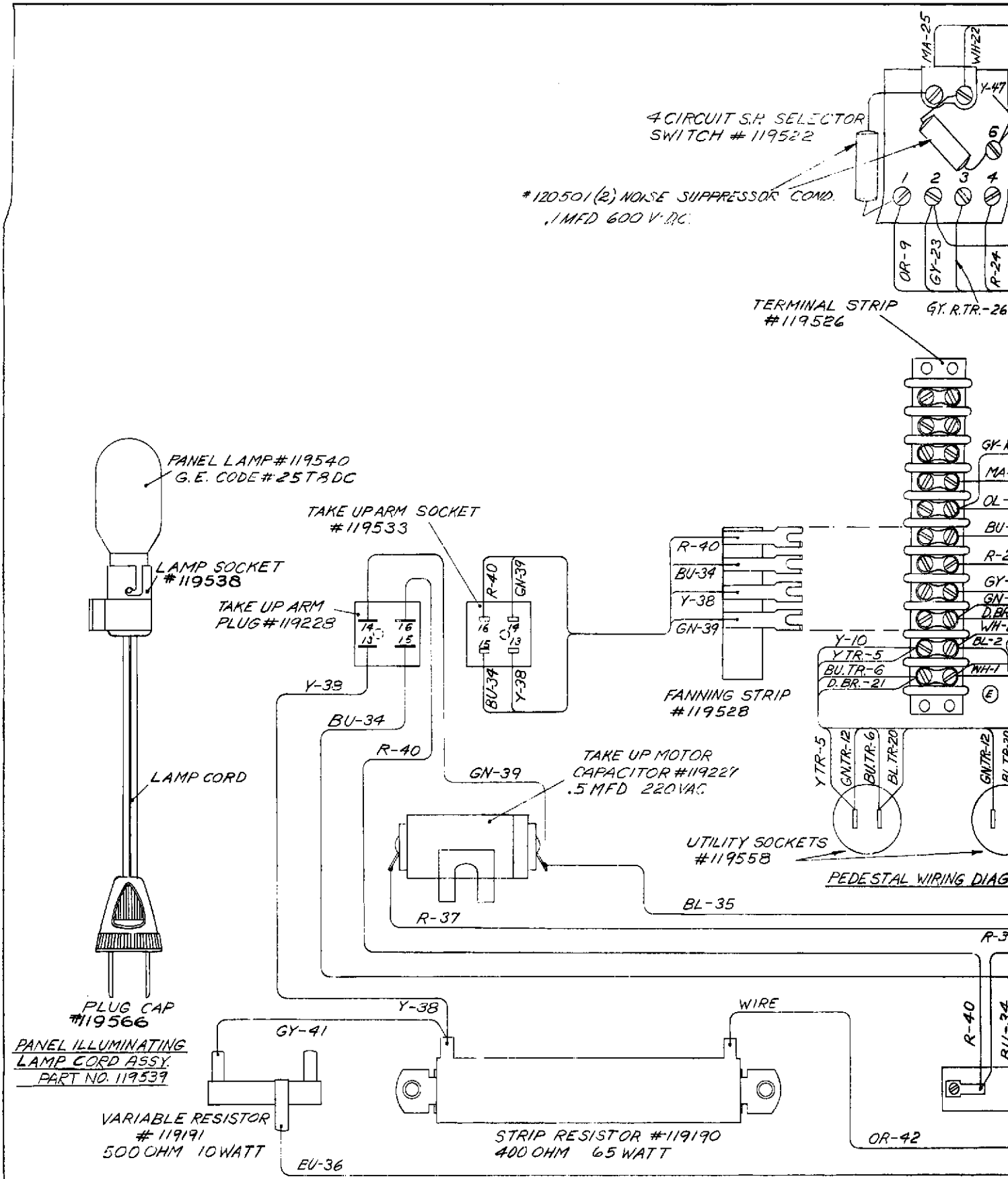
Ω = OHMS
K = 1,000Ω
M = 1,000,000Ω
ALL CAPACITANCE VALUES IN MFD. UNLESS OTHERWISE INDICATED


WH-17
BL-TR-60
BL-52
GN-13
BU-59
#119541 THREADING
LAMP GENERAL ELECTRIC
CODE # 15 T 7DC/LF
MA-10
BL-18
#119538
LAMP SOCKET
#119220 REWIND
ARM PLUG
#119536 SERVICE
DISCONNECT PLUG
BL-48
BL-48
BU-8
WH-49
WH-49
R-16
#119525 REWIND
ARM SOCKET
#119537 SERVICE
DISCONNECT SOCKET
#119030 INTERMITTENT
MOTOR
BL-50
BL-50
#119218
REWIND MOTOR
#119554 CAPACITOR
4 MFD. 330 VAC.
REWIND ARM DIAGRAM
#119552
GN-13
WH-17
R-16
BL-18
BR-14
OR-9
GY-15
Y-7
BU-19
GN-13
BL-18
WH-17
R-16
BU-19
BR-14
GY-15
OR-9
Y-7
#119535 MECHANISM
POWER RECEPTACLE
BU-8
MA-10
Y-7
OR-9
#119551 CONNECTOR BLOCK
MECHANISM CASE WIRING DI

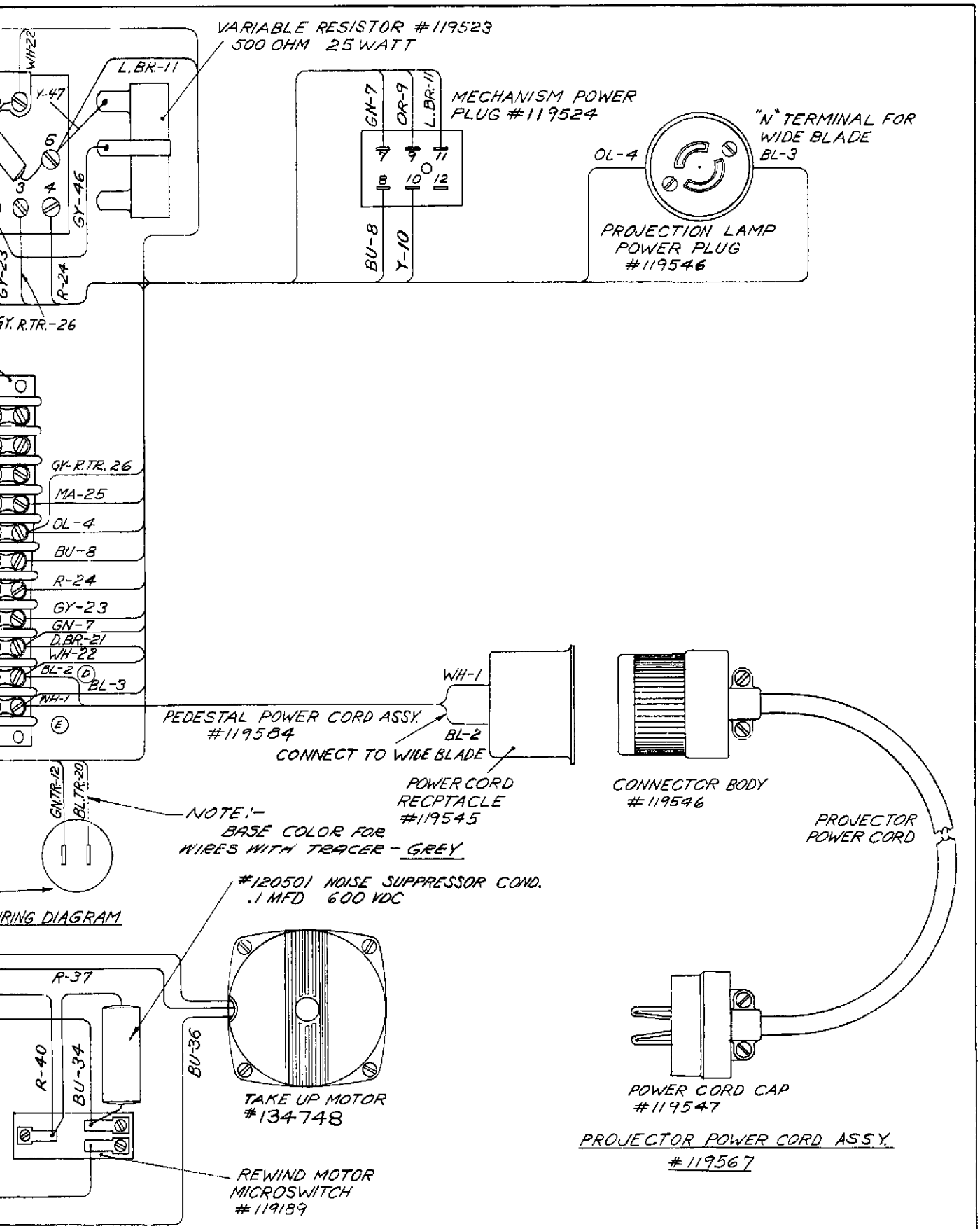


LAMPHOUSE WIRING DIAGRAM

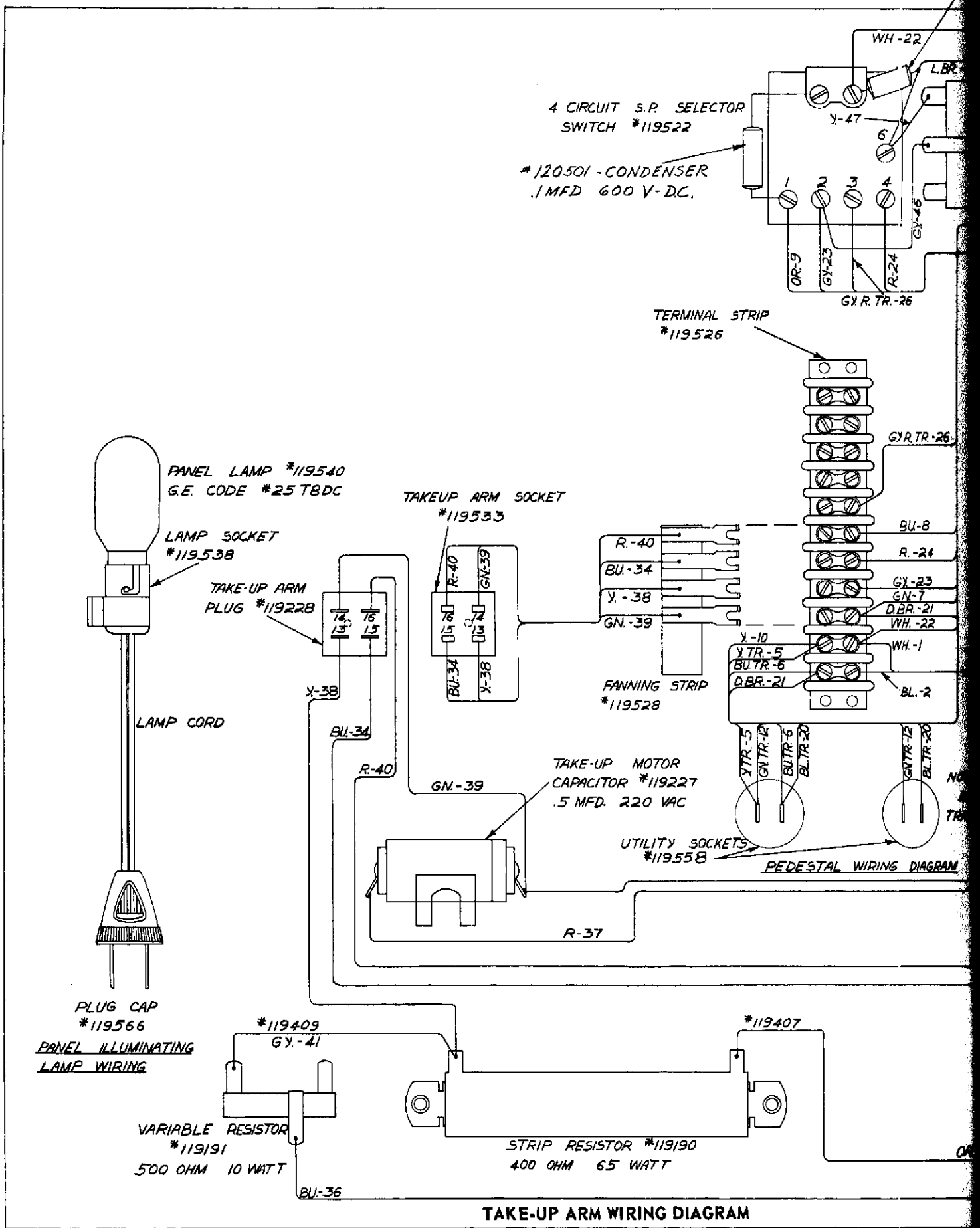
E WIRING DIAGRAM



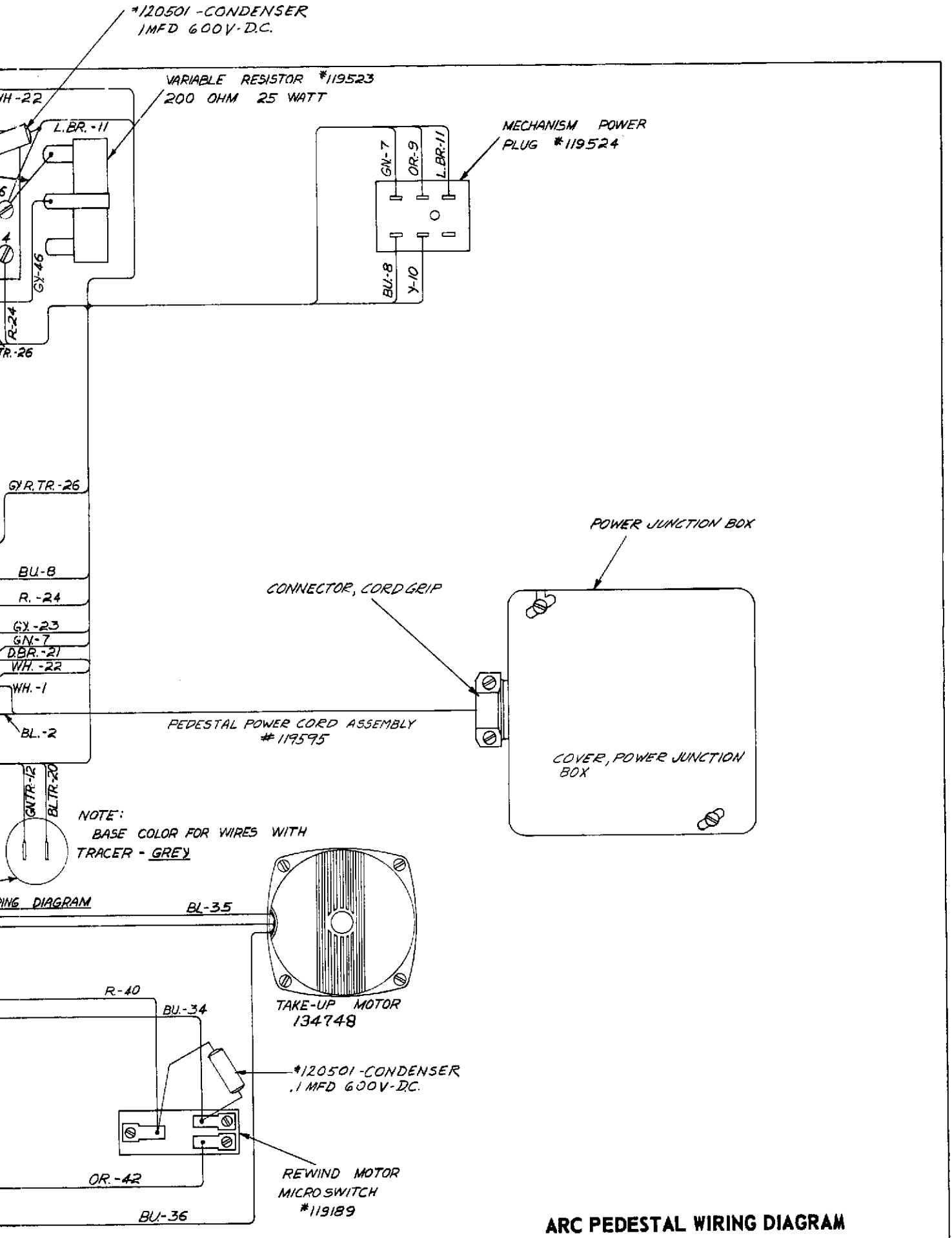
TAKE-UP ARM WIRING DIAGRAM



TUNGSTEN PEDESTAL WIRING DIAGRAM



TAKE-UP ARM WIRING DIAGRAM



ARC PEDESTAL WIRING DIAGRAM