



SERVICE & PARTS MANUAL

**16mm
SOUND MOTION PICTURE
PROJECTORS**

Model 70-15, Model 70-15 MP

Model 70-25, Model 70-25MP

Model 70-0 Silent

KALART VICTOR CORPORATION
PLAINVILLE, CONNECTICUT 06062 U.S.A.

Form 2515F

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FOREWORD

This Service and Parts Manual has been prepared for your information and guidance. It is given to you as confidential matter.

It contains all data, drawings, and wiring diagrams for the servicing of Kalart Victor 16mm Sound Motion Picture Projectors - Model 70 Series. The Manual is organized so that data appears on left hand pages with corresponding drawings on right hand pages, opposite.

On pages that show general assemblies, a column will be found directly to the right of nomenclature giving page number of assembly breakdown.

You will note that various parts are NOT numbered. These are factory operations and have been purposely excluded for reasons of simplification.

Read and observe the following so there will be no misunderstanding in regard to the Kalart Victor Service Policy:

- A. All parts orders and correspondence pertaining to service should be sent directly to our Service Manager, and not included in correspondence for other departments.
- B. When ordering, the number of each part and its description should be given, as well as the model and serial number of equipment, if available.
- C. The Kalart Victor Warranty does not cover lamps or tubes, or the replacement of parts which become inoperative because of misuse, accident or negligence, nor if the part or parts have been repaired or altered in any way which, in our judgment, affects their condition or operation. Also, our Warranty does not cover labor charges unless the equipment is shipped pre-paid to the factory at Plainville, Conn., U.S.A.
- D. All parts taken from equipment in guarantee must be returned to the factory for inspection before "No Charge" replacements can be made. Full information must be given as to serial number, model and date of sale of said equipment.
- E. Authorization must be received from the factory before any parts or equipment may be returned for credit. A ten percent (10%) handling charge will be deducted from all credits issued for parts that have been overstocked.
- F. Minimum order - \$5.00 list. Any orders received from individuals or firms will be referred to the Kalart Victor Service Center nearest them for handling.

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PLAINVILLE, CONN., 06062, U. S. A.



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GENERAL INSPECTION

A general inspection will be adequate in most cases, especially where the projector has been checked periodically and its general performance known in advance. In any case, the preliminary check will soon indicate if there is any need to disassemble the projector for a more elaborate overhaul.

PROCEDURE

A. INSPECTING THE PROJECTOR

Set-up

Set the machine up as for a show and check all cords and plugs in the process. Make certain that the power cord plug is fully engaged onto amplifier male receptacle.

Belts and Pulleys

Replace belts if stretched or kinked. Check pulleys for excessive wear.

Sprockets

Make sure the sprocket guards have the proper clearance and see that the sprocket teeth are not worn. Worn and undercut teeth can be extremely damaging to film.

Rollers

Make sure all rollers are clean and revolve freely. Make a special check to see if the rollers have any flat surfaces. If so, replace.

Gate

Clean the channel and pressure plate, aperture and sound drum. Remove all encrusted emulsion. An orangewood manicure stick is very good for removing encrusted emulsion and "fuzz" from the edges and corners of the aperture. Check carefully for wear of side tension film guides and rails on which the film rides.

Lens

Clean the projection lens carefully. Use lens cleaning tissue in preference to a handkerchief although this is satisfactory if it is laundered soft and the glass not pressed hard. (Remember that optical glass is much softer than ordinary glass).

Lamphouse

Release lamphouse lock screw and remove lamphouse cover. Remove lamphouse sleeve. Clean the condenser and reflector with tissue. Make sure that condenser lens has not been disturbed on its seat in order to maintain necessary optical alignment.

Lamp

Check the lamp for excessive blackening adjacent to the condenser and reflector and wipe it clean. If the glass is blistered, or if filaments appear to sag, replace the lamp.

Motor

- a. Check the motor brush accessible from the front. If worn, remove the projector from the case and check the rear brush. Replace both if necessary.
- b. Make sure that the bearing surface of the brush is smooth and shiny. If rough and oily, the commutator needs cleaning.
- c. The commutator can be cleaned moderately well if not in bad condition by using a small piece of cheese cloth or extra fine abrasive.
- d. Care should be exercised in replacing the brushes to align concave brush surface with cylindrical surface of commutator.

Speeds

Turn the motor on, listen to the sound. Mechanism should operate at 16.7 frames per second for silent, and 24 frames per second for sound speed. (Count 84 and 120 R.P.M. of the 12 tooth feed sprocket for the 16.7 and 24 f.p.s. respectively). The operation of silent-sound and reversing switches can be determined at this time.

For sound film, the projector must run at exactly 24 frames per second. With 60 cycle A.C. supply current, a Neon lamp may be used to check for sound speed. Using a Neon light stroboscope, shade the feed sprocket from outside light. By the light of the Neon lamp the teeth of the feed sprocket will appear to stand still when the projector is running at the proper speed.

Governor

If the projector is not running at proper speed, the governor should be adjusted. Access to governor may be made by removing governor cover opening in the base of the case.

- a. First clean the contact points using ignition file, check speeds with Neon lamp. Contacts controlling the sound speed (24 frames per second) are carried on the heavier set of springs. The lighter contact springs for silent speed are marked by a red mark adjacent to adjusting screw. Turn screw clockwise to increase speed, counterclockwise to decrease speed.
- b. Adjust the governor speed controlling screw until speeds are correct.
- c. Clean the commutator ring at the back of the governor to make sure the brushes are not worn, and that they are making good contact. Space between governor brush holders and governor ring should be $1/32$ to $1/16$ ".

Clutch and Trip

The trip should operate freely. Clutch pulleys must be free and have visible end play, if end play is not visible, the clutch actuating spring may be out of position, acting against pulley rather than against the ball retainer.

Takeups

The operation of these is best checked with film threaded on the projector. Inadequate pull or jerkiness may require new belts or adjustment of the clutch pulleys.

Illumination

Turn on the lamp and make sure the illumination on the screen is uniform. (A photo-cell type exposure meter will be found useful

for this, although visual inspection will usually be satisfactory). Refer to Page 9 for lamp adjusting instructions.

Still Picture

The still picture embodies two pieces of heat absorbing glass. These may be removed for cleaning when required.

Film Scratches

Make a loop of about 36" of new (light struck) film which is very soft. Run it through the projector for several minutes. This will quickly indicate scratching caused by any element in the film path. If any abrasion marks appear, inspect each individual part of projector - (channel, pressure plate, sound core, sprockets, rollers, film shoes) for source of scratching. Check and clean very carefully.

Lubrimatic Oil System

The lubrimatic oil system is designed for maximum performance with a minimum of maintenance and attention. It is arranged to "demand feed" the shuttle cams. The wicking on the oiler tube should be positioned so that it touches only the main cam when the high lobe of the cam passes the wick. Provision for external oiling is found on the main body immediately under the rear reel arm.

B. INSPECTING THE SOUND REPRODUCTION SYSTEM

Exciter Lamp

Remove and check for excessive blackening and for sagging filament. Wipe clean and replace. Using a single frequency film, 3000 or 5000 cycle, either listen to or check output of amplifier with a db meter. Move exciter lamp in all directions to determine whether output increases. Be certain that solder contact base and socket base is clean and unoxidized, scrape or sand the contact if required.

Photocell

Remove cap, wipe clean. Correct functioning can be determined by turning amplifier volume control full on with no film in the mechanism. Photocell breakdown may also be checked by listening to a test film with another photocell in the projector. Photocells may be compared by using a standard test film and amplifier output checked with VTVM.

Tubes

While the operation of tubes can be gauged by listening to a test reel, it is preferable to remove and check all tubes in a standard tube tester. A good tester will show when a tube is near the end of its useful life. Replacement of these tubes will avoid subsequent trouble.

Fuse

The fuse is for the protection of the amplifier. A 3 ampere fuse is the maximum size to be used on the Victor amplifiers.

Test Film

Use a sound subject. The S.M.P.T.E. "Jiffy" test reel or some other good subject with which you are thoroughly familiar will enable you to quickly recognize any variation from standard which will point up need for further investigation.

Sound Quality

- a. Wows. Slow speed oscillations are usually caused by improper operation of the impedance roll assembly. Make sure that the impedance flywheel is working smoothly and the pressure roller runs free.
- b. Flutter. Relatively high speed oscillations are usually caused by improper functioning of the sound sprocket filter mechanism. Check the clearance and smoothness of the sound sprocket and its roller. (See page 11).

CLEANING THE SOUND LENS

Normal Cleaning

Remove the sound drum by pulling directly out after loosening set screw. Use pipe

cleaner to clean the film channel slot and the groove in the top of the sound lens. Also clean the lower side of the sound lens inside the sound drum. Be sure no lint remains on lens or slot. Also be sure sound drum is fully seated with slot in top position.

Hundred Hour Cleaning

Remove sound drum as above. Remove screws A and B. (Illustration I). Lift out sound channel with the sound lens assembly and place in inverted position. Next remove screws C and D (Illustration II) and lift out sound lens unit. (WARNING - Do not tamper with or loosen screw "E" which is sealed with glyptol. To do so will necessitate return of the entire assembly to the factory or nearest Victor Service Center for re-setting of lens). With a clean lintless cloth polish sound slot "F" (Illustration III) by placing cloth over thumb nail. Also polish condenser lens "G" (Illustration IV). Re-assemble sound drum in reverse order of disassembly, taking care that position of screw E is as noted in Illustration II.

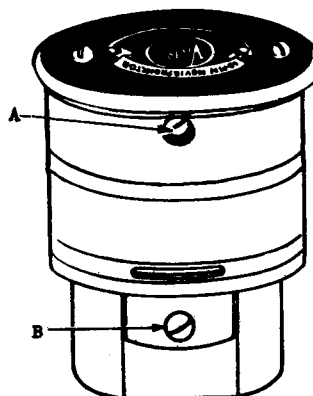


Illustration I

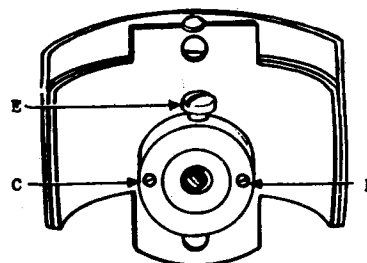


Illustration II

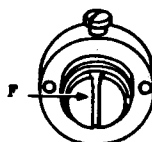


Illustration III

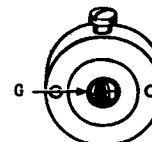


Illustration IV

GENERAL OVERHAUL

A periodical overhauling is indicated when the equipment has been in frequent use even though the General Inspection shows that it is functioning satisfactorily. Such an overhaul may be likened to the 10, 000 and 20, 000 mile checkups on your car.

The following overhaul procedure is indicated also where there is any question about the proper performance of the projector, irrespective of the amount of use it has had.

The General Overhaul involves dismantling the projector as below:

1. Remove Projector from the Case

The projector is held in the case by four screws at the bottom of the case and two at the top. Remove tube access grill on rear of projector. Disconnect P.E.C. input. After removing the screws, slide projector forward, tilt carefully to gain access to the plugs connecting the projector to the amplifier. Disconnect these plugs and remove the projector.

2. Remove the Lamphouse

Loosen lamphouse cover lock screw. Remove lamphouse cover, remove lamp baffle assembly, remove lamp. This exposes the greatest part of the mechanism for adjustment. If further disassembly is necessary, insert allen wrench into opening of fan housing and loosen fan screw. Remove four screws holding lamphouse base assembly to the main casting of projector. Loosen two screw holding wires in the terminal board under the impedance flywheel, and remove "C" washer holding rewind pulley. Remove casting assembly allowing the fan to lie inside of the fan housing.

3. Remove the Motor

This is necessary only when the commutator or bearings need attention. The motor armature, 47661, should be checked when giving the projector a complete overhaul. The commutator can be turned on a lathe. Care should be exercised to remove a minimum amount of material from the commutator for if the cut taken is too deep, the armature will not operate satisfactorily and should be replaced.

Under the following headings are given the steps most often necessary for properly checking the projector mechanism. Owing to the extreme accessibility of the mechanism, replacements even of vital parts are easy and positive.

4. Shuttle

Part 48016-A is the heart of the entire mechanism and must be checked carefully.

- a. Check cam follower, 47531, for wear on both the main cam and oscillator cam wear surfaces.
- b. Check pawls for wear or roughness. Ascertain proper mounting of sapphire tip. Sapphire tip should show no signs of "grooving". If necessary, minor rough spots on the steel shuttle pawl may be "stoned" smooth provided care is used.
- c. Check ball seat of shuttle to ascertain excessive wear. Felt pad, 47633, must be oily at all times.
- d. When installing a new shuttle, the oscillating sleeve and hub assembly, 47520-A, should be adjusted to allow the shuttle teeth in their pulldown position, to extend through the film channel 1/16". This adjustment of moving the oscillating assembly can be made by using tool, T-9159. Make sure that shuttle spring, 47638, is adjusted to seat properly against the cam follower.

In the event of any question of the best functioning of this vital part, replace the entire shuttle to circumvent subsequent complaints.

5. Drive Belts

"O" Ring drive belt, 47609, and flat belt, 47610, should be checked and replaced if they show signs of wear.

6. Belt Idler

Remove pulley by removing "C" washer, see that bearing is held tight by push on fastener. Soak felt wick in oil and

replace onto bearing making certain that felt rests on the oilite surface and is spaced away from the Idler plate. Reassemble.

7. Safety Shutter

If a dark shadow appears either at the top or bottom of the screen, the fire shutter, 47695-A, is out of adjustment and the shutter aperture must be aligned with the optical centerline. This is done by adjusting the eccentric on the screw holding the safety shutter lever directly over the center of the motor. This adjustment raises or lowers the fire shutter in relation to the main aperture. Make certain that the shutter slides quite freely between the guides, 19471, so that when mechanism is tripped it will drop of its own weight.

8. Flywheel Units

The necessary end play for flywheel shafts is .004. Occasionally this tolerance will need adjusting. Use a feeler gage to check this. In the absence of a feeler gage, a single film thickness (.006) is satisfactory for this adjustment. Do Not tighten up end play too close to the bushing or too much drag will occur. This is worse than if they were a bit loose. The filter flywheel 47223A should be checked to make certain that the filter springs are not touching the gear assembly. This would result in an uneven action and poor sound reproduction. One of the filter springs is straight while the other one has a small bend or angle.

9. Takeup Pulleys

Uneven action of the takeup pulleys causes jumpy action of the takeup and may result in the film "spilling over". This uneven action, in turn, may be caused by wear or oil and grease in the assembly. The takeup clutch assembly 26836A should be checked to see if it is working correctly and is clean. This assembly must be removed from the projector to disassemble. Extreme caution should be exercised in taking this assembly apart so that the clutch actuating spring and the small clutch balls will not become lost. It may be reassembled dry or with light oil.

Carbon tetrachloride may be used to clean it. In reassembling, care should be taken to have the clutch actuating spring engage the ball retainer, and when assembled the spring should have no lateral pressure on the pulley. This can be determined by ascertaining the "free" end play of the pulleys.

10. Governor

Occasionally the brushes need replacement. (The governor itself rarely needs replacement).

To remove the governor, first remove the end plate and speed switch from the motor housing. Then loosen the locking screw on the governor hub and slide off the motor shaft.

- a. The motor governor 47745 should be checked to make certain that the points are smooth. If the points are found rough or pitted, a regular point file should be used.
- b. The governor rings can be polished if mounted on a 1/4" arbor either in a lathe or drill press.
- c. When replacing the governor be sure that there is at least 1/16" clearance between the governor brush holders and the governor.
- d. The set of contacts marked with red is used for controlling the silent speed, the unmarked (and stiffer) contacts are used for adjusting sound speed.

11. Film Shoes—Upper and Lower

Film shoes should be properly adjusted to drive sprocket. Clearance between shoe and sprocket should be .009 to .015 or 1 1/2 to 2 1/2 film thicknesses.

12. Feed Sprocket

Part #36154 should be checked after excessive use for grooves in the sprocket teeth which will result in film noise. If this should occur, sprocket should be replaced holding .004" end play.

13. Sound Sprocket

The teeth of the soundsprocket #30368-A will also become grooved after extensive use which will result both in noise and flutter in sound reproduction. This should also be replaced when sprocket is worn.

14. Hand Control Shaft

The hand control shaft 48003-A requires a little grease in the slotted shaft end and oil on the bearing area. This shaft should be checked when the projector is given a complete overhaul.

15. Film Channel Clips

#19316 should be cleaned thoroughly and checked for wear to make certain they are functioning properly. If necessary to replace the clips, unscrew the four screws holding the film channel and remove clips.

To reinstall, place film channel beneath the film tension clip spring. Hold one film channel clip in each hand and place the clips over clip tension spring. Move these into position on casting, holding in this position with index fingers.

With thumb of each hand slide the film channel into position and reassemble four holding screws. Side tension of clips should not exceed 1 3/4 oz.

16. The Film Channel

47519 should be checked for worn rails, if these show wear, the channel should be replaced.

17. Pressure Plate

The Pressure Plate 47502A used on earlier models should provide a tension of approximately 4 oz. Pressure Plate 48022A used on later models should provide a tension of approximately 3 oz. - but not to exceed 4 oz. If too much tension is applied it will result in excessive shuttle pawl wear and loss of loop when running new film.

18. Lens Mount

The Lens mount may be aligned to correct a picture that is out of focus on one side by adjusting the lens mount stop screw #19301, located under and to the inside of the lens mount.

19. Lamp Adjusting Nut

When replacing projection lamp, if shaded areas or banding of light is in evidence on the screen, this would indicate that the projection lamp is not in correct alignment. This can be corrected by loosening the Hex nut under lamp socket and moving socket from side to side as required to clear up dark areas. The nut, directly under the lamp socket can be reached with a 3/8" box wrench through front of lamp house casting after removing lamp house name plate.

20. Projection Lamp

The projection lamp should be replaced after excessive darkening of inside of lamp envelope. This darkening causes loss of light and formation of blisters on envelope in line with filaments. It is good practice to allow motor to run for a few minutes after the lamp has been turned off to cool the lamphouse and the lamp.

21. Projection Lamp & Motor Switches

Circuitry is arranged so that motor switch must be turned on before lamp can be turned on.

22. Oscillating Gear Assembly

The oscillating gear assembly, 47520A, should be checked for wear making certain there is not over .003" end play as this assembly controls action of the shuttle.

23. Exciter Lamp

If the exciter lamp, 19299, lights intermittently, check for corroded contact on the lamp socket base. This can be quickly corrected by scraping base clean with sharp tool or polishing it with a piece of emery cloth. See page 5, paragraph B.

24. Impedance Loop Roll Assembly

Inspect impedance Loop Roll Assembly part 30369A for uneven wear or flats.

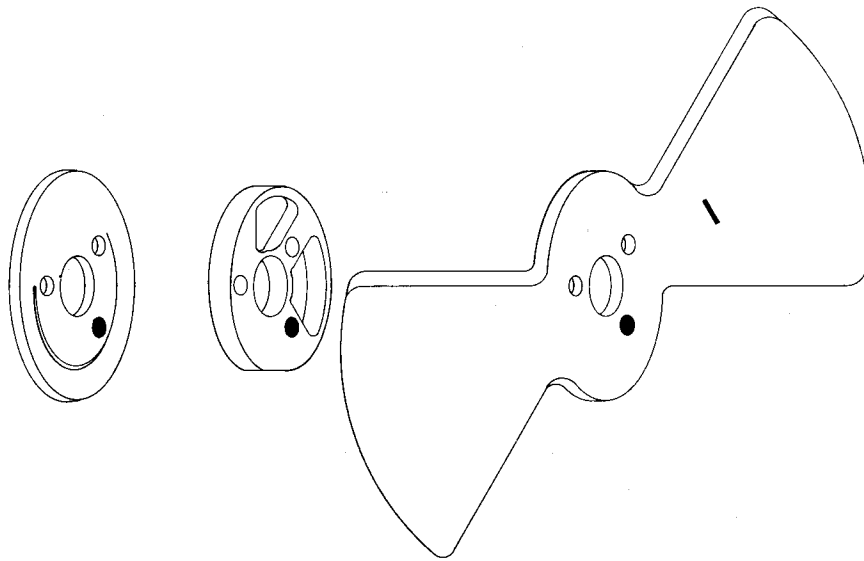
Assembly should spin easily with minimum end play of .002 to .005.

25. Timing the Projector

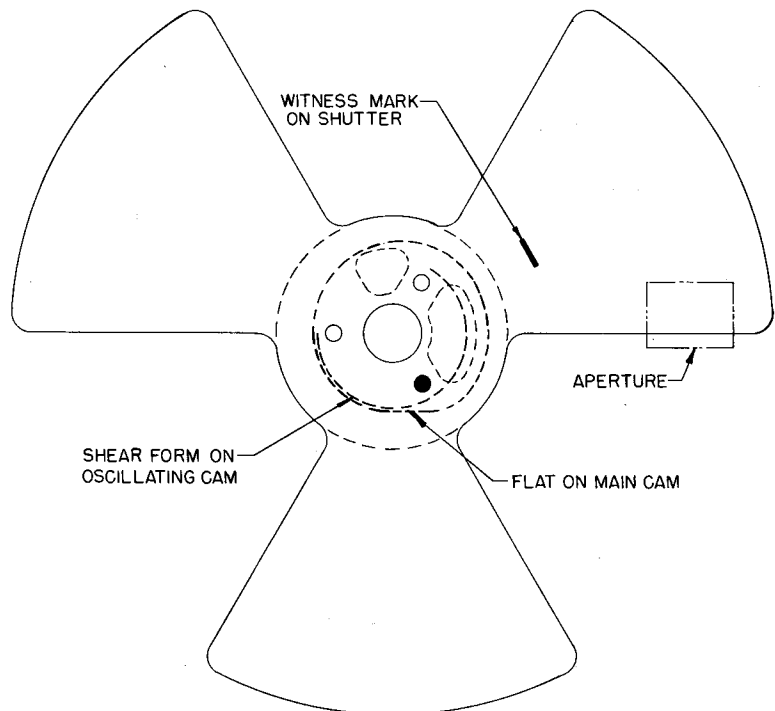
Remove head from $3/56 \times 7/8$ lg. screw, leaving screwdriver slot to use as pilot and insert into one hole in oscillator. Assemble oscillator cam with hole in center of shear form onto this screw, add spacer, assemble main cam with hole at sharp radius onto this screw, add spacers as required to allow shutter to clear framing mechanism.

Assemble shutter onto screw with witness mark blade at aperture and with location of blades as shown.

When the shuttle is in the top of its pulldown position, the shutter blade with witness mark must cover the aperture. This applies to both two interruption and three interruption units. In changing from Mark II to Mark III care should be exercised in retaining shutter and cam combination in pairs as these are balanced as a set. If travel ghost appears at the top of the picture the shutter is following and should be rotated clockwise slightly with respect to the cam. Tighten (3) screws to keep shutter blade from shifting.



**MARK II SHUTTER
(2 Interruption)**



**MARK III SHUTTER
(3 Interruption)**

TOLERANCES

30369-A	Impedance Roll (end play)	.002 to .005
30368-A	Sound Sprocket (end play)	.001 to .004
26836A	Feed Sprocket Clutch and Shaft Assembly (end play)	.001 to .004
47520A	Oscillating Gear Assembly (end play)	.001 to .003
47745	Governor Setting 1/16" clearance between Brush Holders and Commutator	
47502-A	Aperture Plate (Float) .020" Side to Side, 1/32" in and out, tension not to exceed 4 oz.	
48022	Aperture Plate tension not to exceed 4 oz.	
48017-A	Shuttle Pawls extend through Film Channel 1/16" Distance between upper and lower pawl .272	
47638	Spacing between under side of spring and casting to be 3/8"	

NOTE: Single Film Thickness is .006 inches, in the absence of proper thickness gage. A single film thickness may be used for making field adjustments for end play.

MOTOR WIRING COLOR CODE

Governor:

Black
Yellow
Red - white tracer

Motor Brushes:

Blue
White

Field:

Green
Green with tracer
Red with tracer
Red

TERMINAL STRIP COLOR CODE

70 Ohm Resistor:

Yellow
Red - white tracer
Red - orange tracer
(joined together)

Reverse Switch:

White
Blue
Green - tracer

Speed Switch:

Black

AC Input:

Green
Red

Some Possible Projector Troubles and their Remedies

1. Premature Lamp Blow Out

a. High Line Voltage:

This is nearly always the cause of the trouble. Check line with a good meter. The power companies often boost the supply voltage to compensate for heavy loads in outlying districts. Voltages also tend to vary with the general industrial load and may vary greatly in different parts of the same area at the same time.

b. Incorrect Lamp Used:

The lamps usually stocked by the

dealer are rated for 110 volts and are suitable for line voltages of from 100 volts to 115 volts. While they can be used on 120 volt lines, their life will be curtailed, especially the ten hour lamps.

Lamps rated at 100 V, 105 V, 115 V, 120 V, and 125 V can be obtained on order. (Use of a low voltage rated lamp increases illumination at the expense of lamp life). Occasionally we run into line voltages of 130 and 135 volts. Obviously, even a 125 volt lamp will burn out on such a line.

2. Main Line Fuse Blows

This indicates a short or ground in the wiring. Test the projector and amplifier separately. Localize the fault by disconnecting motor, lamp, governor, etc., as necessary until the faulty part is found.

3. Motor Will Not Run

- a. Check cords and plugs.
- b. Check motor brushes.
- c. Check main switch contacts.
- d. Check governor brushes and contacts.
- e. Check line fuse.

4. Speed Variation

Clean governor contact points and readjust setting if necessary.

5. Loss of Top Loop

Check for:

- a. Improper seating of upper film shoe.
- b. Torn film perforations.

6. Loss of Lower Loop

Check for:

- a. Torn film perforations.
- b. Film not threaded properly at gate.
- c. Film shoes and gate clearance.
- d. Excessive wear of shuttle.

7. Film Scratches

This is usually due to an accumulation of hardened emulsion on aperture plates or film channel because these parts have not been kept clean. It may also be due to physical damage to extremely smooth surface of gate plates or wear of guides on back film channel, aperture plate, or sound drum. If so, replacement is indicated.

8. Pictures Unsteady

- a. Film badly shrunken and perforations chipped.
- b. Wear on shuttle or other parts of intermittent mechanism.
- c. Pressure plate not properly seated in film channel.

9. Flicker

- a. Governor set too slow.
- b. Cam gear replaced "out of time."
- c. Light shutter "out of time."

10. Film Spills Over

- a. Insufficient friction on feed spindle.
- b. Worn takeup clutch.
- c. Rewind belt not in place on reel arm.

11. "Motor-Boating"

- a. Sound drum not replaced properly, causing film misalignment.
- b. Impedance roll sticking.
- c. Weak photocell.

12. Film Tears at Drive Sprocket

- a. If sprocket is replaced without hardened thrust washer between it and the casting, the sprocket teeth will not align with groove of idler rollers.
- b. Film shoes too tight. Adjust with 2 thicknesses of film.

13. Film Perforations Chip

- a. Worn sprocket teeth.
- b. Worn shuttle or shuttle teeth.
- c. Tension at gate insufficient.
- d. Badly shrunken film.

14. Insufficient Light on Screen

- a. Dirty lens, condenser, or reflector.
- b. Lamp old, blackened or dirty.
- c. Low line voltage.
- d. Dirty screen.
- e. Lamp improperly seated.

15. Picture Partly Out of Focus

- a. Aperture plate improperly aligned - must be parallel to film channel.

- b. Too little tension at gate allows film to move in and out of focus.
- c. Dirt on lens.
- d. Projector not at 90° angle with screen.

16. Travel Ghost

A picture with a streaked effect, particularly on white scenes, is caused by light shutter not properly timed.

Possible Amplifier Troubles and their Remedies

1. Hum

- a. Shield off of 1st stage or tube or P. E. Cell.
- b. Check all condensers, particularly filter condensers.
- c. Check phone and mic. jack.

2. Noise

- a. Try reversing plug in power supply line.
- b. Check speaker cord and connections.
- c. Defective or microphonic 1st stage tube. Try one or two other tubes.
- d. A loose connection, particularly in the plugs connecting to the projector.
- e. Check resistors.
- f. Check condensers.

3. Low Volume

- a. Defective tubes, P. E. Cell, or exciter lamp.
- b. Make certain exciter lamp is aligned with slit.

- c. Dirt or oil on optical slit or lens.
- d. Low line voltage.

4. No Sound Response

- a. Check power source, cords, etc. Check fuse (see items listed under FUSE).
- b. Check output transformer, speaker, etc.
- c. Check speaker for ground, short, or open circuit.
- d. Check amplifier tubes to see if filaments are lit and seat them properly.
- e. Check exciter lamp, if burned out.

5. Fuse

- a. Blows as power is switched on - probably a short in power transformer.
- b. If amplifier warms up and then fuse blows, check the rectifier and output tubes and then the filter condensers.

PROJECTOR HEAD — OPERATOR'S VIEW

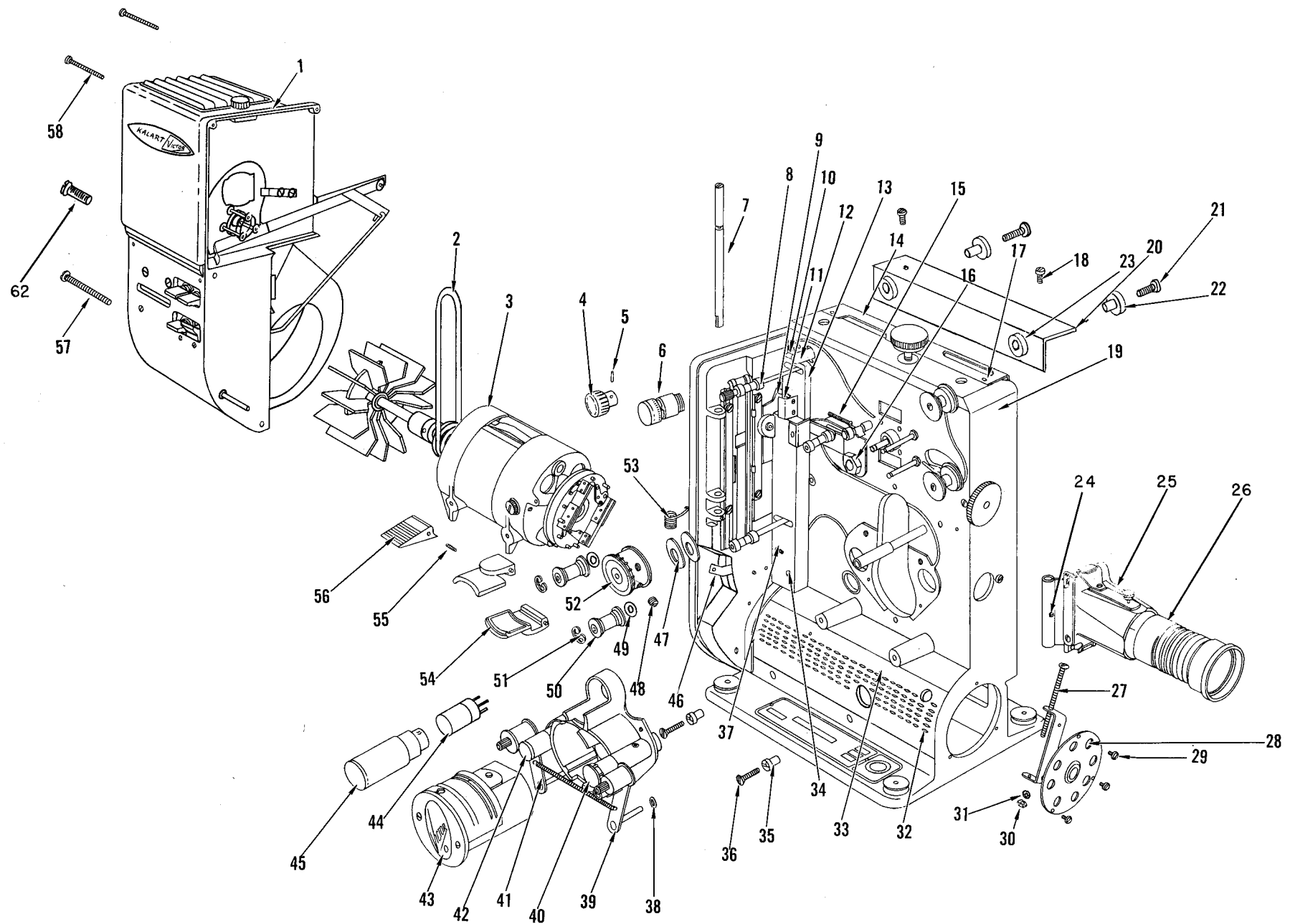
No.	Part No.	Part Name	Page	Qty.
	47689A	Projector mech. assem. complete		1
1	47544-A	Lamp house casting assembly	33	1
2	47609	O ring drive belt		1
3	47660A	Motor assembly	37	1
4	47629	Framing knob		1
5	S277-540-2	5-40 x 1/8 Socket set screw		1
6	46212	Pilot light cap		1
#7	47657	Lens mount pivot		1
8	46145AR	Automatic trip lever assembly	29	1
9	19303	Lens mount lock plate spacer		2
10	S254-540-2	5-40 x 1/8 Binder head screw		1
11	46160	Lens mount lock plate		1
12	28130	Pilot lamp		1
13	46150-A	Trip cover assembly		1
14	46376	Belt separator		1
15	S253-540-12	5-40 x 3/4 Fillister head screw		2
16	S321-5/16-24	5/16-24 Hex cap nut		1
17	S251-440-3	4-40 x 3/16 Rd. head screw		2
18	S254-832-6	8-32 x 3/8 Binder head screw		2
19	47505-A	Body casting assembly	17	1
20	47586	Casting mounting bracket		1
21	S254-832-8	8-32 x 1/2 Binder head screw		2
22	S196-2	Eyelet washer		2
23	S589-2	Rubber grommet		2
24	20046	Lens mount plate screw		1
*25	48033-AR	Lens mount assembly	29	1
26	46230	Lens projection field flattener 2" F1.6		1
26A	20120	Lens projection standard 2" F1.6		1
27	S2511-632-36	6-32 x 2 1/4 Brass round head screw		1
28	19019-2R	Body plate assembly		1
29	S254-540-3	5-40 x 3/16 Binder head screw		3
30	S324-632	6-32 Hex nut		1
31	S200-6	#6 Internal tooth lockwasher		1
32	47841	Silent-sound nameplate		1

No.	Part No.	Part Name	Page	Qty.
33	S290-0-3	#0 x 3/16 Drive screw		2
34	S251-540-16	5-40 x 1" Round head screw		1
35A	19015	Motor support sleeve		* 1
35	30520	Motor support sleeve		3
36A	S252-832-6	8-32 x 3/8 Flat head screw		1
36	S250-832-8	8-32 x 1/2 Truss head screw		3
37	S277-540-3	5-40 x 3/16 Socket set screw		1
38	19482	Thrust washer		As req'd
39	26726AR	Sound sprocket tension arm assem	31	1
40	30368-A	Sound sprocket assembly		1
41	26725AR	Reverse loop tension arm assem	31	1
42	30369-A	Shaft assembly loop roll		1
43	30428-A	Sound core assembly	31	1
44	19210	Photo electric cell		1
45	46163-A	Photo cell cover		1
46	47635	Starting lever	23	1
47	19494	Thrust washer		As req'd
48	S277-832-2	8-32 x 1/8 Socket set screw		1
49	19369	Shim washers		As req'd
50	36159A	Film roll assembly		2
51	S235-3	#3 "E" ring		2
52	36154	Feed sprocket (solid)		1
53	47685	Lens mount spring		1
54	47515-A	Film shoe assembly	31	2
54A	48034-A	Film shoe assembly - stainless steel		
55	S277-540-3	5-40 x 3/16 Socket set screw		1
56	47863	Starting lever tab		1
57	S251-832-20	8-32 x 1 1/4 Round head screw		1
58	S253-540-12	5-40 x 3/4 Fillister head screw		2
62	S254-540-5	5-40 x 5/16 Binder head screw		1

* Note motor support sleeve 19015 must be used to effect proper ground between projector head and motor.

*See page 29 for additional information.

48031 Pivot - lens mount assem. new style

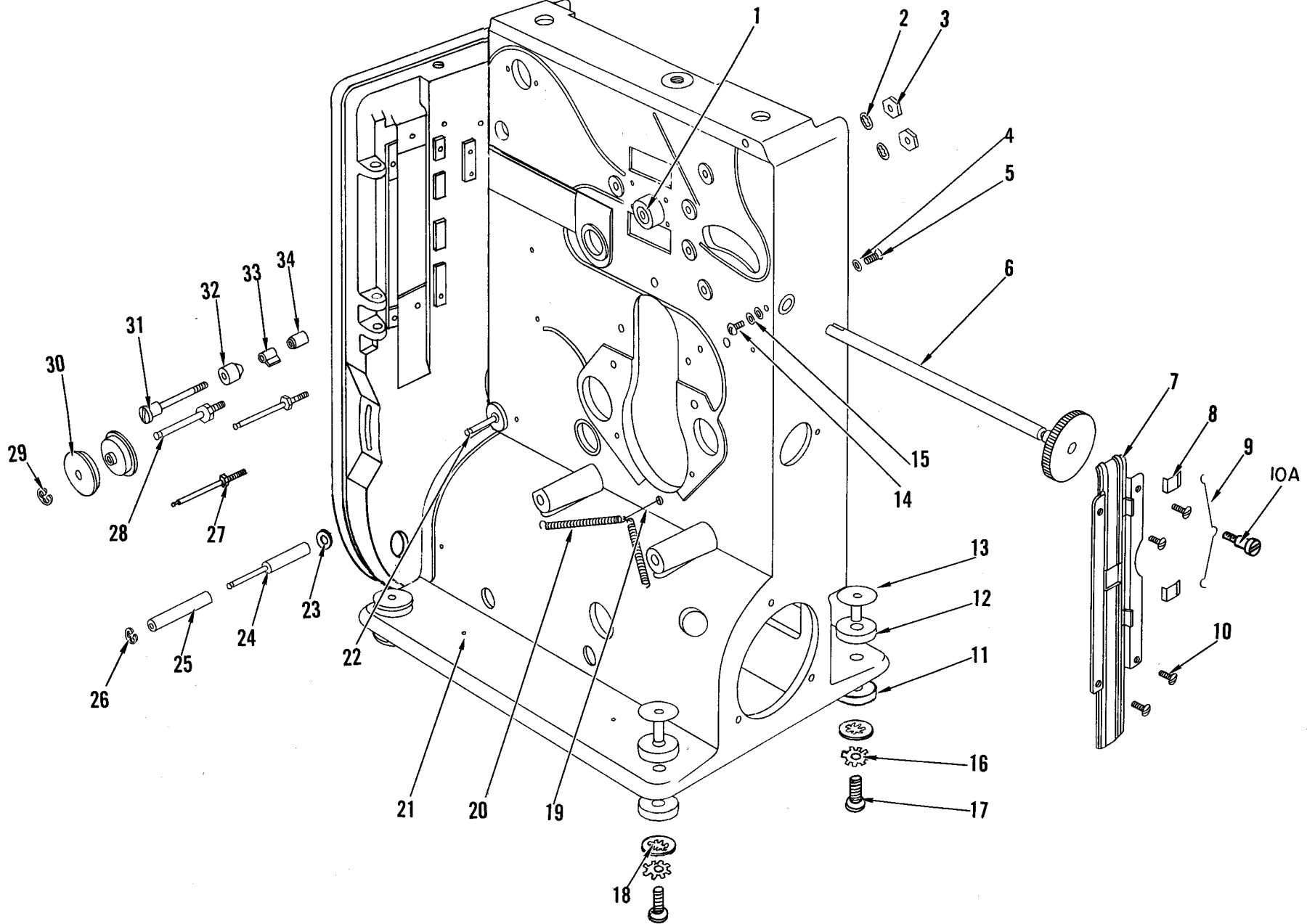


PROJECTOR HEAD — OPERATOR'S VIEW

PROJECTOR HEAD — OPERATOR'S VIEW

(Complete Breakdown)

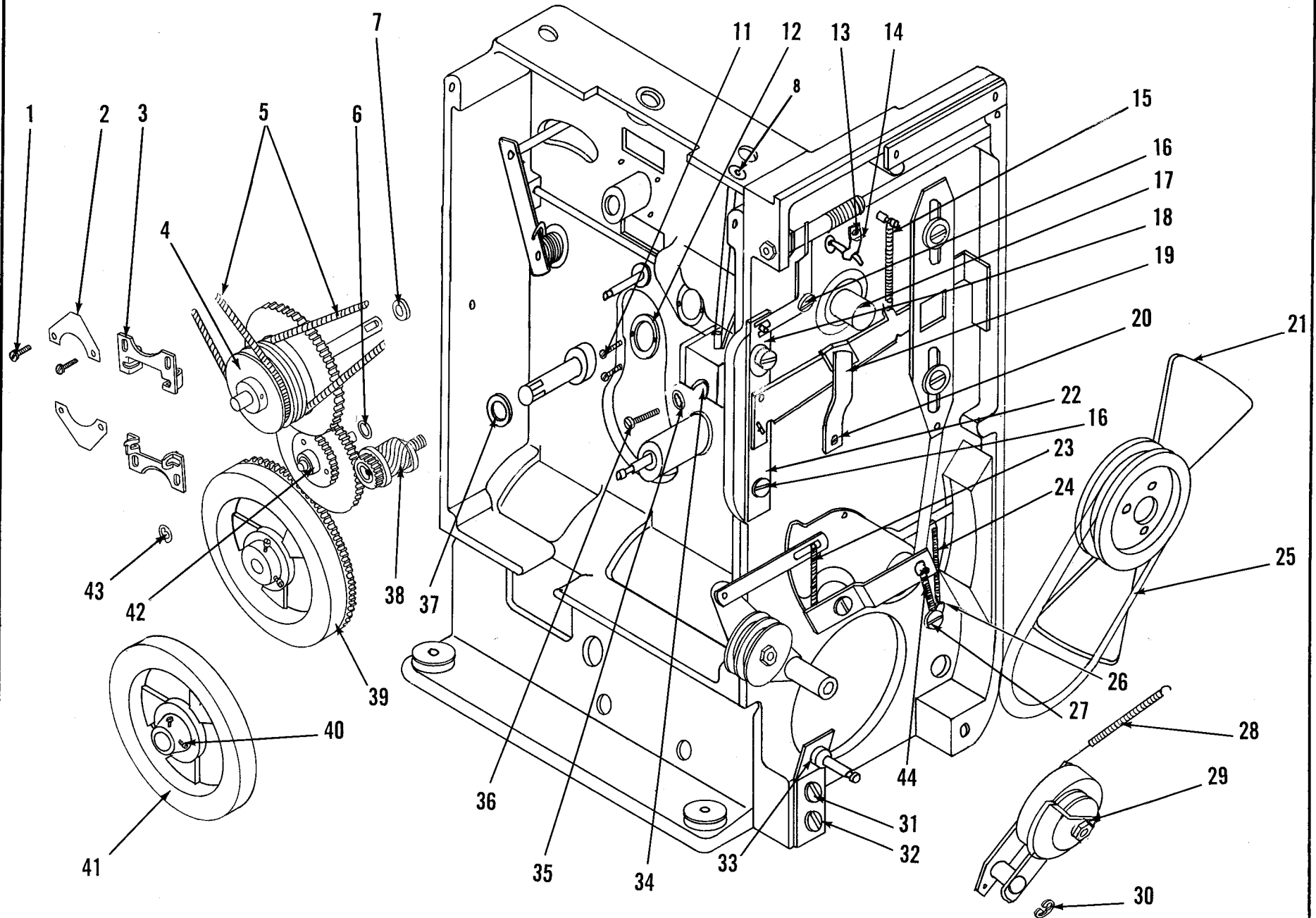
No.	Part No.	Part Name	Qty.	No.	Part No.	Part Name	Qty.
1	19480	Feed sprocket bearing	2	20	19104	Tension roll spring	1
2	S200-10	#10 Lockwasher	2	21	47505-A	Body casting assembly	1
3	S324-1032	10-32 Hex nut	2	22	46216	Automatic trip pivot	1
4	S202-6	#6 External tooth C'sunk lockwasher	1	23	S199-6	#6 Plain washer	1
5	S252-632-6	6-32 x 3/8 Flat head screw	1	24	26734	Film support roll shaft	1
6	48003-A	Hand operating shaft assembly	1	25	19086	Film support roll	1
7	47519	Film channel	1	26	S235-1	#1 "E" ring	1
8	19316	Film channel tension clip	2	27	36158	Film roller shaft	2
9	47998	Film channel tension clip spring	1	28	26749	Film trap roll shaft	1
10	S254-540-3	5-40 x 3/16" Binder head screw	4	29	S235-3	#3 "E" ring	1
10A	47999	Screw, shoulder	1	30	26208	Take off feed roll	4
11	47860	Bushing rubber	4	31	20047	Film guard screw	1
12	22091	Base support washer	4	32	19875	Film guard screw roller	1
13	47815-A	Base support sleeve assembly	4	33	36302	Film guard	1
14	20044	Hand shaft retaining screw	1	34	19089	Film guard spacer	1
15	S199-5	#5 Plain washer	As req'd				
16	S201-8	#8 Shakeproof external tooth lockwasher	4				
17	S254-832-10	8-32 x 5/8 Binder head screw	4				
18	S355-250	Fastex spring grip	4				
19	19105	Tension roll spring hook	1				



PROJECTOR HEAD — OPERATOR'S VIEW
(Complete Breakdown)

PROJECTOR HEAD — BACK SIDE AND REAR VIEW

No.	Part No.	Part Name	Page	Qty.	No.	Part No.	Part Name	Page	Qty.
1	S254-832-4	8-32 x 1/4 Binder head screw		4	28	47952	Rewind spring		1
2	36155	Film shoe spring	31	2	29	46138A	Rewind disc bar & pulley assembly	35	1
3	36156	Film shoe bracket	31	2	30	S235-3	#3 "E" ring		1
4	26836-A	Takeup clutch assembly	27	1	31	S254-540-5	5-40 x 5/16 Binder head screw		1
5	23217	Takeup belt		2	32	S251-832-28	8-32 x 1 3/4 Round head screw		1
6	19482	Thrust washer		As req'd	33	47697A	Rewind pulley bracket assembly		1
7	19494	Thrust washer		As req'd	34	47603A	Oil reservoir	29	1
8	47895-A	Oiler assembly		1	35	S199-5	#5 Plain washer		1
11	S252-172-3	1-72 x 3/16 Flat head screw		2	36	S251-540-22	5-40 x 1 3/8 Round head screw		1
12	36153	Felt retaining washer		1	37	11120	Fibre shim		1
13	S254-540-2	5-40 x 1/8 Binder head screw		1	38	47535-A	Spiral intermediate gear & shaft assembly	27	1
14	47608	Oil tube support		1	39	47223-A	Filter flywheel assembly	27	1
15	47639	Shuttle spring		1	40	S253-540-5	5-40 x 5/16 Fillister head screw		2
16	47630	Shoulder screw		2	41	47222-A	Loop roll flywheel (includes 40)		1
17	47520A	Osc. sleeve & Cam hub assembly	23	1	42	19180-A	Sound sprocket drive gear assem	27	1
18	47631	Bowed spring		2	43	S235-3	#3 "E" ring		1
19	47638	Shuttle oscillator spring		1	44	19469	Safety shutter trip spring		1
20	S254-540-2	5-40 x 1/8 Binder head screw		1					
21	47527A	Shutter & cam (matched pair)	23	1					
22	48017A	Shuttle and mounting arm assembly	25	1					
23	47637	Spring starting lever plate		1					
24	23381	Spring, start lever		1					
25	47610	Flat drive belt		1					
26	47177	Lug, start lever spring		1					
27	S254-540-2	5-40 x 1/8 Binder head screw		1					



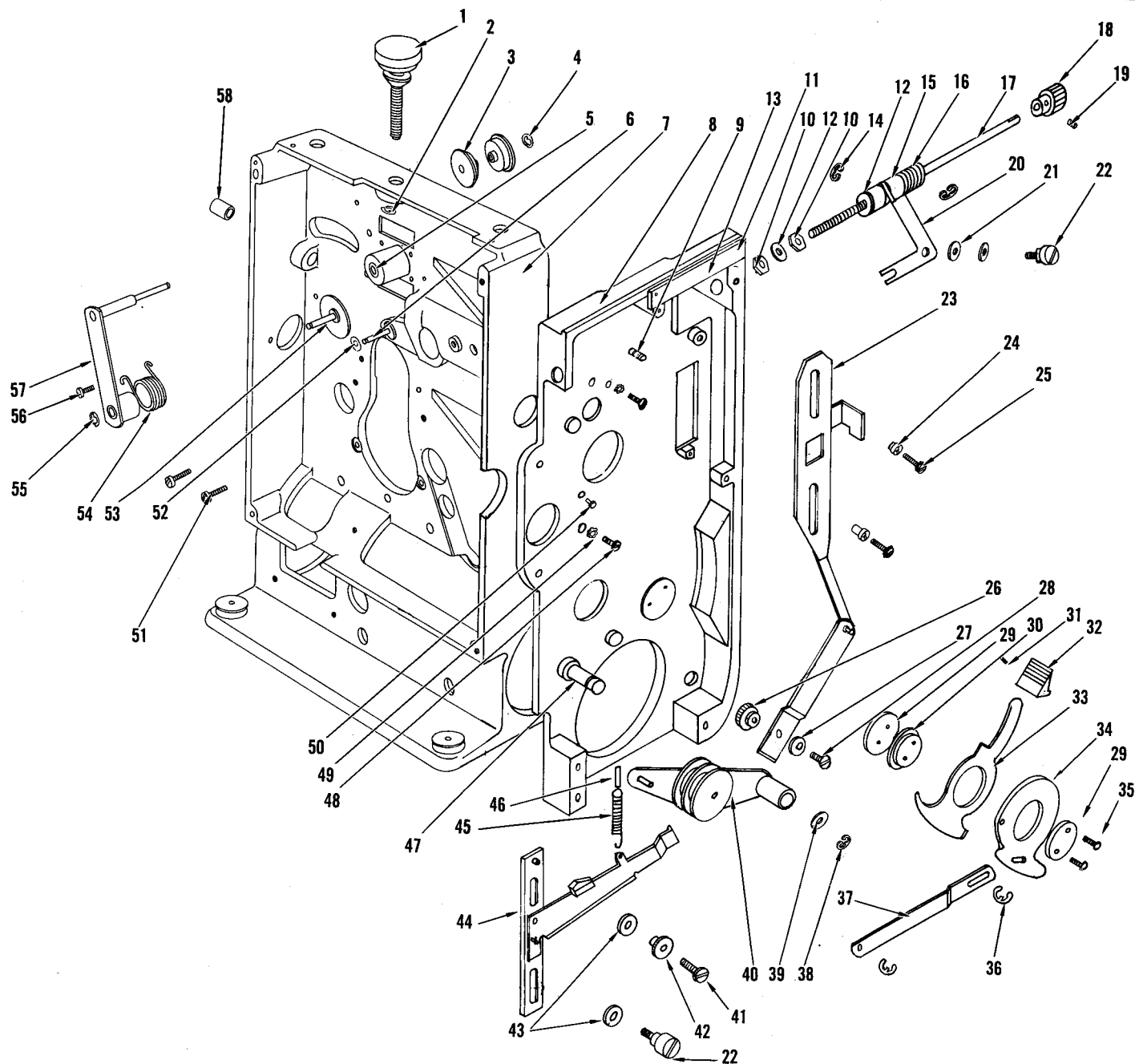
PROJECTOR HEAD — BACK SIDE AND REAR VIEW

PROJECTOR HEAD — BACK SIDE AND REAR VIEW

(Complete Breakdown)

No.	Part No.	Part Name	Qty.
1	30254A	Reel arm locking screw assembly	1
2	S235-3	#3 "E" ring	1
3	26208	Take off feed roll	2
4	S235-3	#3 "E" ring	1
5	19480	Feed sprocket bearing	2
6	30463-A	Shaft and sleeve assembly	1
7	47532	Body casting	1
8	47504	Shutter housing casting	1
9	47640	Shuttle spring pin	1
10	S318-1032	10-32 Elastic stop nut	2
11	S290-0-2	#0 x 1/8 Drive screw	2
12	W-5	.010 Thick x 3/16 I.D. x 5/16 O.D. plain washer	4
13	47643	Shutter housing cover	1
14	S235-2	#2 "E" ring	2
15	47627	Framing spacer	2
16	47628	Framing spring	1
17	47620	Framing shaft	1
18	47629	Framing knob	1
19	S277-540-2	5-40 x 1/8 Socket set screw	1
20	47621	Framing bell crank	1
21	S195-29	Plain washer 1/32 thick x 3/16 I.D. x 5/16 O.D.	4
22	47630	Shoulder screw	2
23	47695A	Fire shutter assembly	1
24	19471	Safety shutter guide	2
25	S278-540-5	5-40 x 5/16 "Sems" flat head screw with lockwasher	2
26	20084	Safety shutter eccentric	1
27	S195-5	#5 Steel flat washer	1
28	S254-540-6	5-40 x 3/8 Binder head screw	1
29	19172	Starting lever pivot washer	2
30	19171	Starting lever pivot	1
31	S254-540-3	5-40 x 3/16 Binder head screw	1
32	47863	Starting lever tab	1

No.	Part No.	Part Name	Qty.
33	47635	Starting lever	1
34	47634-A	Start lever plate sub assembly	1
35	S254-540-4	5-40 x 1/4 Binder head screw	2
36	S235-1	#1 "E" ring	2
37	47619	Drive mech link	1
38	S235-3	#3 "E" ring	1
39	19369	Plain washer	As req'd
40	47555-A	Start lever idler assembly	1
41	S254-540-6	5-40 x 3/8 Binder head screw	1
42	47632	Framing eccentric	1
43	47631	Bowed spring	2
44	48017-A	Shuttle and mounting arm assembly	1
45	47639	Shuttle spring	1
46	S555-5-8	#5 x 1" Vinyl sleeving	1
47	47615	Belt idler mounting stud	1
48	S251-832-6	8-32 x 3/8 Round head screw	2
49	S201-8	#8 External tooth lockwasher	2
50	26716	Shutter housing pivot pin	1
51	S253-540-7	5-40 x 7/16 Fillister head screw	2
52	19482	Thrust washer	As req'd
53	26728	Operating lever pivot	1
54	19506	Takeup spring	1
55	S235-3	#3 "E" ring	1
56	S254-540-3	5-40 x 3/16 Binder head screw	1
57	26722-A	Takeup lever assembly	1
58	19500	Hand operating shaft bearing	1



PROJECTOR HEAD — BACK SIDE AND REAR VIEW
 (Complete Breakdown)

OSCILLATING SLEEVE & CAM HUB ASSEMBLY

No.	Part No.	Part Name	Qty.
	47520A	Oscillating sleeve & cam hub assembly	1
1	47521-A	Oscillating hub and shaft assembly	1
2	S220-1	1/16 x 9/32 Drive lock pin	1
3	S195-12	Shim washer	2
4	19479-2	Oscillating sleeve & bushing assembly	1
5	19481	Shim washer (As req'd)(2 min)	1
6	S220-4	1/16 x 3/8 Drive lock pin	1
7	47533	Spiral drive pinion	1

STARTING LEVER ASSEMBLY

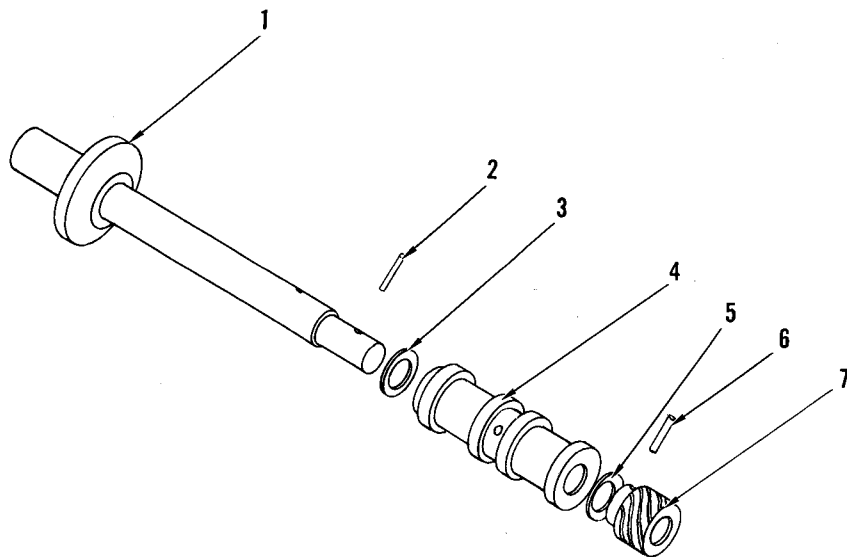
No.	Part No.	Part Name	Qty.
1	19172	Starting lever pivot washer	2
2	19171	Starting lever pivot	1
3	47635	Starting lever	1
4	S277-540-3	5-40 x 3/16 Socket set screw	1
5	47863	Tab, starting lever	1
6	47637	Spring, start lever plate	1
7	47634-A	Start lever plate sub assembly	1
8	S254-540-4	5-40 x 1/4 Binder head screw	2

CAM SHUTTER & OSCILLATOR ASSEMBLIES

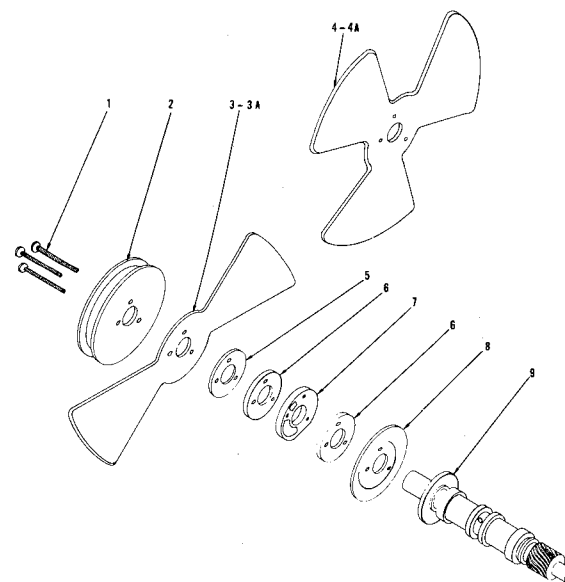
No.	Part No.	Part Name	Qty.
1	S251-356-14	3-56 x 7/8 Round head screw	3
2	47611	Pulley	1
3	47527A	Main cam & shutter 2 interr (matched pair) includes 3A and 7	1
3A	47527	Shutter, two interr	1
4	47526A	Main cam & shutter 3 interr (matched pair) includes 4A and 7	1
4A	47526	Shutter - three interr	1
5	47822	Spacer, washer (thin)	As req'd
6	47525	Spacer, washer (thick)	3
7	47523	Main cam	1
8	47524	Oscillating cam	1
9	47520A	Oscillating sleeve & cam hub assem	1

BODY PLATE ASSEMBLY

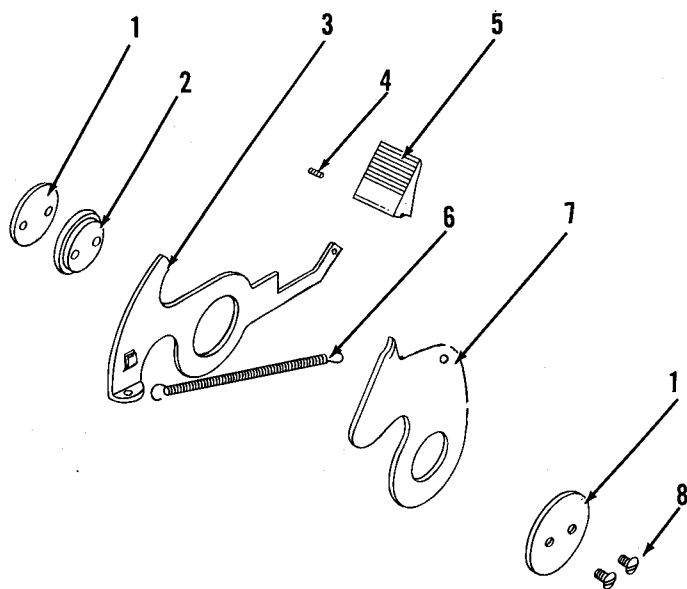
No.	Part No.	Part Name	Qty.
59	47924-A	Body plate assembly	1
60	S254-540-2	5-40 x 1/8 Binder head screw	2
61	48004	Shutter guard	1
62	S276-4-3	#4 Truss head sheet metal screw	1



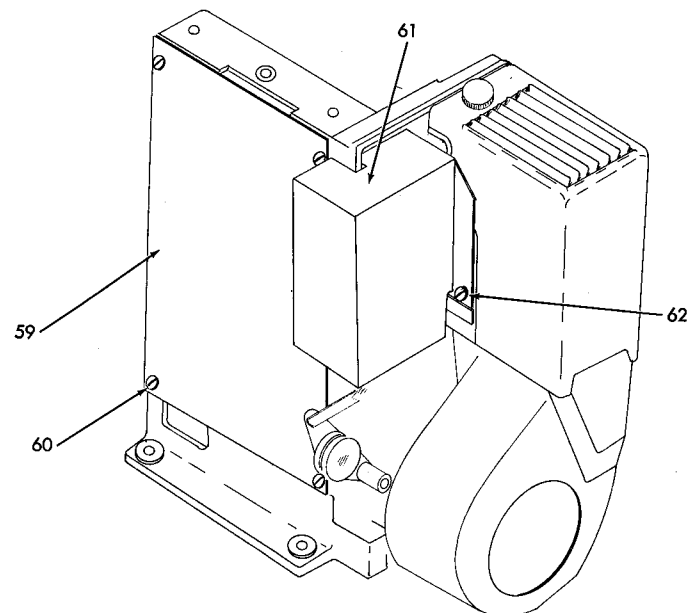
OSCILLATING SLEEVE & CAM HUB ASSEMBLY



CAM SHUTTER & OSCILLATOR ASSEMBLIES



STARTING LEVER ASSEMBLY



BODY PLATE ASSEMBLY

STARTING LEVER IDLING ASSEMBLY

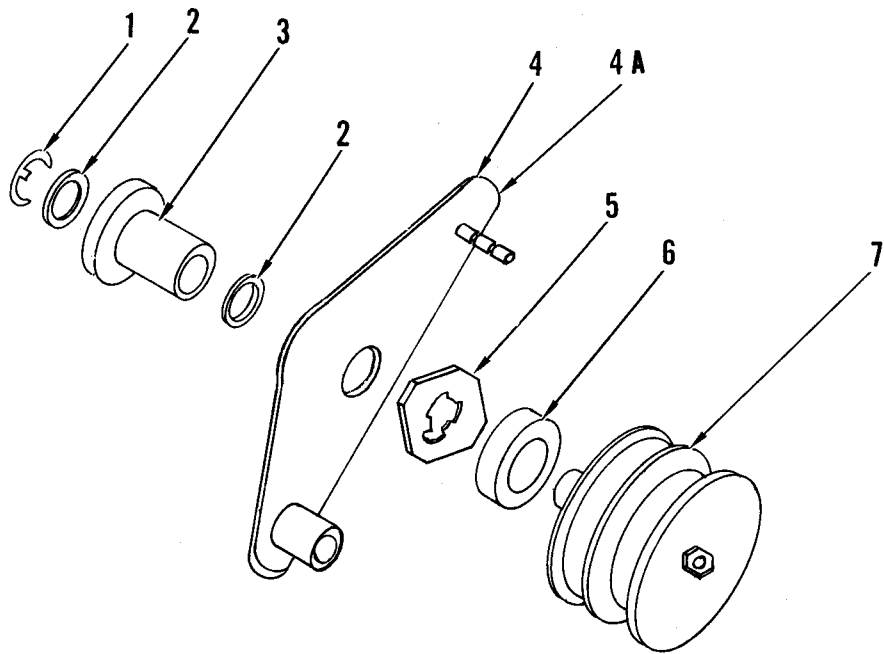
No.	Part No.	Part Name	Qty.
	47555A	Starting lever idler assembly	1
1	S235-3	#3 "E" ring	1
2	19482	Shim washer	2
3	47598	Idler bearing	1
4	47596A	Starting lever idler plate assembly (includes 3, 4A, 5)	1
4A	47596-2	Start lever idler plate sub assembly	1
5	S354-1M	Retainer	1
6	47618	Felt, oiling	1
7	47600A	Idler pulley assembly	1
	47602	Stud	

SHUTTLE AND MOUNTING ARM ASSEMBLY

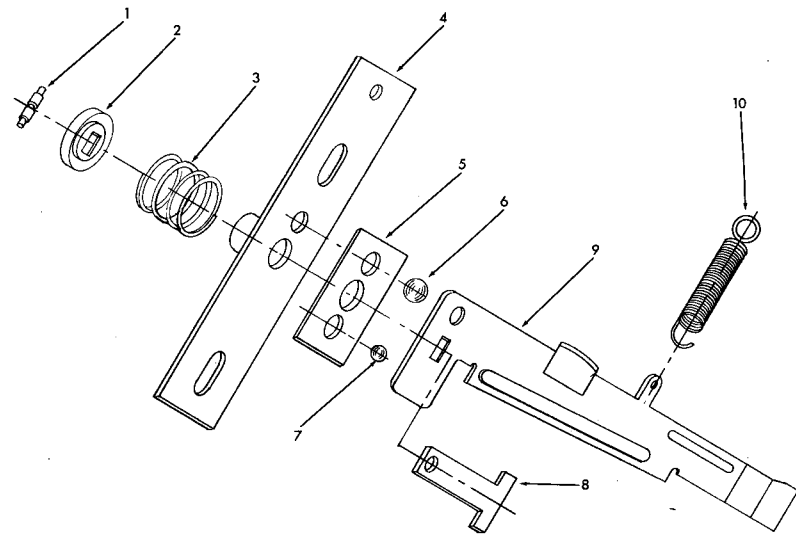
No.	Part No.	Part Name	Qty.
	48017-A	Shuttle and mounting arm assembly	1
1	47591	Spring pin	1
2	48002	Spring retainer	1
3	48000	Spring, shuttle	1
4	47593-A	Mounting arm assembly	1
5	47633	Shuttle ball felt	1
6	47589	3/16 Dia Steel ball	1
7	47590	1/8 Dia Steel ball	1
8	48001	Link, spring	1
9	48016-A	Shuttle assembly	1
10	47639	Shuttle spring	1

STILL PICTURE SHUTTER ASSEMBLY

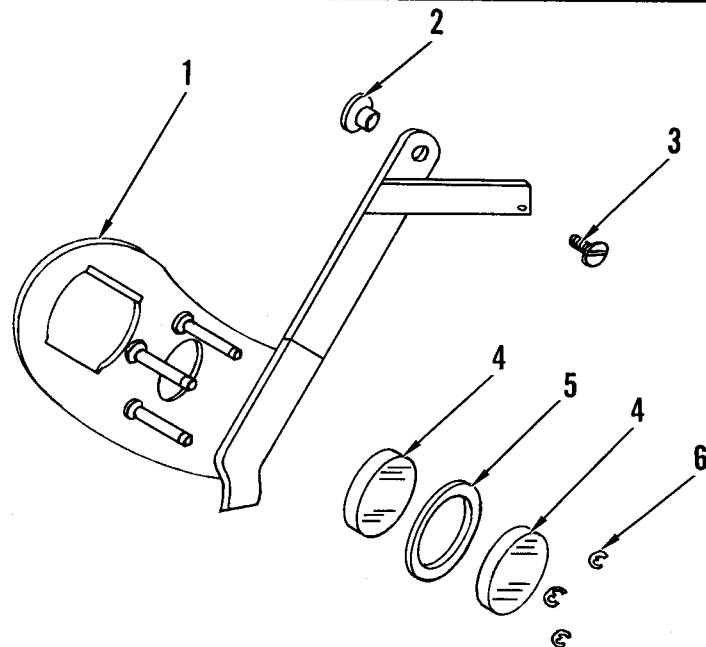
No.	Part No.	Part Name	Qty.
	47549-A	Still picture shutter assembly	1
1	47549-2	Still picture shutter sub assembly	1
2	19345	Still picture shutter pivot	1
3	S254-540-4	5-40 x 1/4 Binder head screw	1
4	47271	Filter glass	2
5	47556	Glass separating spring	1
6	S235-2	#2 "E" ring	3



STARTING LEVER IDLING ASSEMBLY



SHUTTLE AND MOUNTING ARM ASSEMBLY



STILL PICTURE SHUTTER ASSEMBLY

TAKE-UP CLUTCH ASSEMBLY

No.	Part No.	Part Name	Qty.
	26836A	Take up clutch assembly complete	1
1	26836-2	Gear and hub assembly	1
2	26826	Clutch ball	6
3	26825	Clutch ball retainer	2
4	26859-A	Take up pulley assembly	2
5	23063	Thrust washer	1
6	S277-832-2	8-32 x 1/8 Socket set screw	2
7	26860-A	Cam and hub assembly	1
8	46430	Clutch actuating spring	2

See page 8 for Service and Care.

SPIRAL INTERMEDIATE GEAR & SHAFT ASSEMBLY

No.	Part No.	Part Name	Qty.
	47535-A	Spiral intermediate gear and shaft assembly	1
1	S301-5/16 24	5/16-24 Hex cap nut	1 *
2	30190-2	Spiral intermediate gear shaft & hub assembly	1
3	S195-16	3/16 x 3/8 x .004 Flat washer	As req'd
4	47536-A	Spiral intermediate pinion assembly	1
5	S195-9	3/16 x 3/8 x 1/64 Flat washer	1
6	S235-3	#3 "E" ring	1

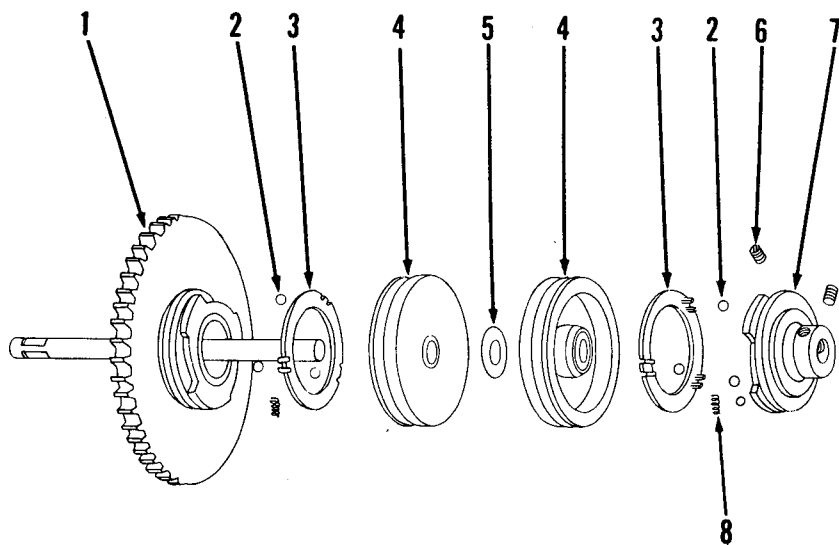
* Not furnished as part of assembly.

FILTER GEAR AND FLYWHEEL ASSEMBLY

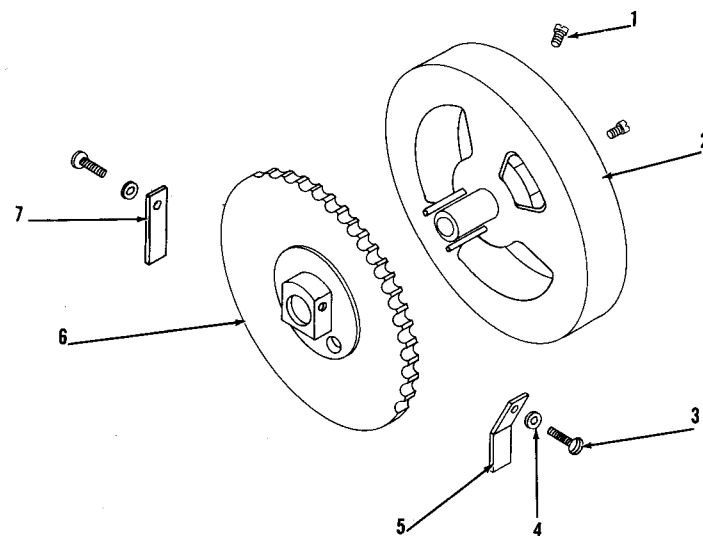
No.	Part No.	Part Name	Qty.
	47223A	Filter flywheel & gear assembly	1
1	S253-540-5	5-40 x 5/16 Fillister head screw	2
2	47223-2	Sound sprocket flywheel & hub assembly	1
3	S251-256-2	2-56 x 1/8 Round head screw	2
4	S199-2	#2 Plain washer	2
5	19248-50	Sound filter spring	1
6	19270-2	Sound sprocket gear assembly	1
7	19248	Sound filter spring	1
	19270-A	Hub assembly sound sprocket gear (assembly of 3, 4, 5, 6, 7)	

FEED SPROCKET DRIVE GEAR ASSEMBLY

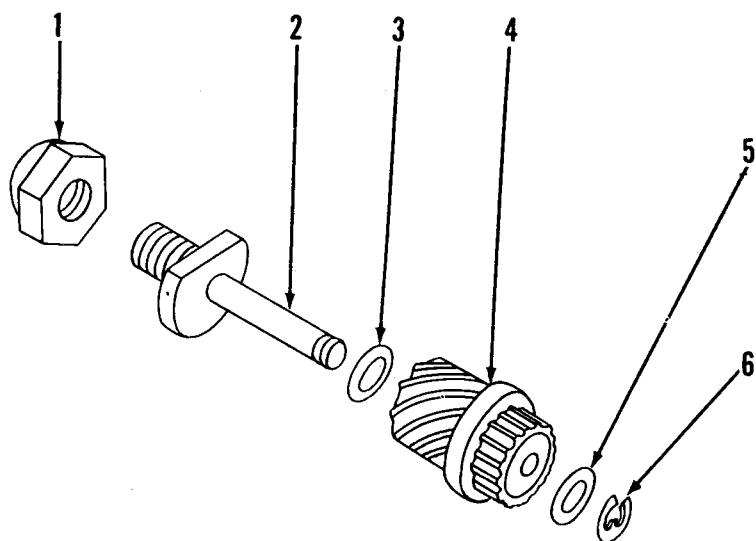
No.	Part No.	Part Name	Qty.
	19180-A	Feed sprocket drive gear assembly	1
1	S254-540-5	5-40 x 5/16 Binder head screw	3
2	19180	Sound sprocket drive gear	1
3	19496-A	Feed sprocket drive pinion assembly	1



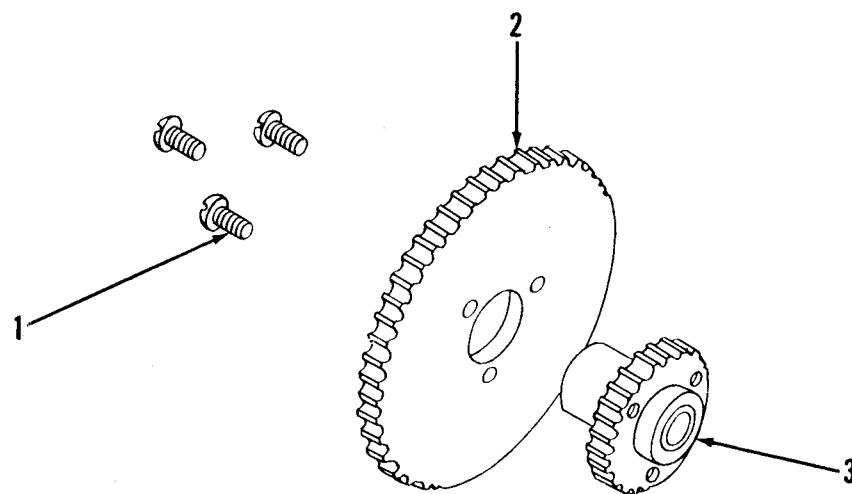
TAKE-UP CLUTCH ASSEMBLY



FILTER GEAR AND FLYWHEEL ASSEMBLY



SPIRAL INTERMEDIATE GEAR & SHAFT ASSEMBLY



FEED SPROCKET DRIVE GEAR ASSEMBLY

AUTOMATIC TRIP LEVER ASSEMBLY

(Safety Film Trips)

No.	Part No.	Part Name	Qty
	46145-AR	Automatic trip lever assembly	1
1	46145-3R	Automatic trip lever sub assembly	1
2	T-149	Inside automatic trip roll	3
3	T-148	Outside automatic trip roll	3
4	26739	Hand trip knob	1
5	S235-1	#1 "E" ring	3
6	47303	Eccentric pivot	1
7	S254-440-5	4-40 x 5/16 Binder head screw	1
8	S235-2	#2 "E" ring	1
9	S199-6	#6 Plain steel washer	1
10	46223	Automatic trip lever tension spring	1
11	19369	Shim washer	As req'd
12	20215	Automatic trip plunger	1

LENS MOUNT ASSEMBLY (New Style)

No.	Part No.	Part Name	Qty.
	48033-A	Lens mount assembly	1
1	48022	Pressure plate	1
2	48023	Guide, pressure plate	2
3	48030	Spring, pressure plate	2
4	48026	Lens spring	1
5	48028	Lens lock screw	1
6	48038	Lens lock spring	1
7	48024	Lens block screw	2
8	30165	Lens mount lock plunger	1
9	19301	Lens mount stop screw	1
10	48025	Lens mount	1
11	30163	Lens mount spring release	1
12	48029	Hinge spring	1
13	S251-436-3	4-36 x 3/16 Round head screw	1
14	S251-436-2	4-36 x 1/8 Round head screw	1
15	48135	Lens retaining tip	1

* See page 14 - 48031

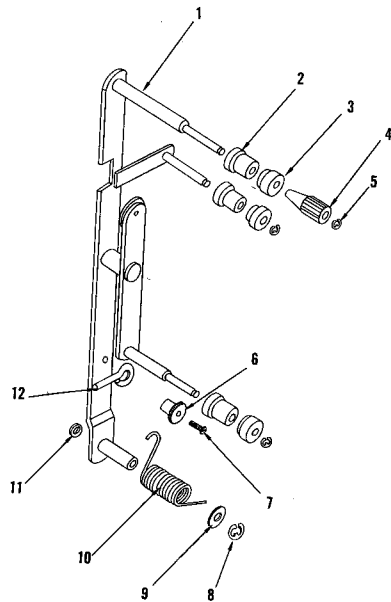
LENS MOUNT ASSEMBLY

No.	Part No.	Part Name	Qty.
	47501-AR	Lens mount assembly	1
1	47502-A	Aperture plate assem (includes 2 & 3)	1
2	19289	Aperture plate rivet	1
3	30153A	Aperture retaining plate assembly	1
4	S254-632-3	6-32 x 3/16 Binder head screw	2
5	19859	Lens mount pivot plate	1
6	19209	Aperture plate guide	1
7	20045	Lens spring tension screw	1
8	13327	Lens lock screw	1
9	30100-A	Lens tension spring	1
10	30165	Lens mount lock plunger	1
11	23240	Lens mount stop retainer	1
12	19301	Lens mount stop screw	1
13	19254-2R	Lens mount sub assembly (includes 4, 5)	1
14	S251-436-3	4-36 x 3/16 Round head screw	1
15	30163	Lens mount spring release	1
16	20046	Lens mount plate screw	1
17	S254-632-2	6-32 x 1/8 Binder head screw	2

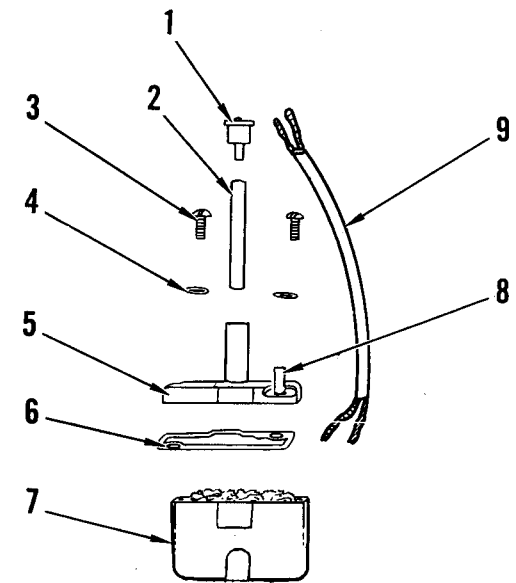
OIL RESERVOIR ASSEMBLY

(Lubrimatic)

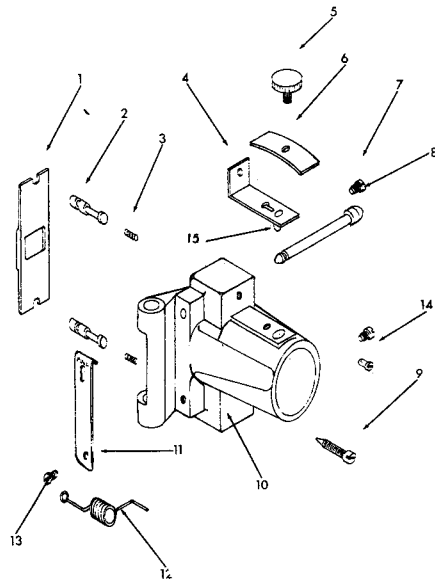
No.	Part No.	Part Name	Qty.
	47603A	Oil reservoir assembly	1
1	47895-A	Oiler assembly	1
2	47896-A	Oil tube	1
3	S251-540-4	5-40 x 1/4 Round head screw	2
4	W-74	#5 Fibre washer	2
5	47605-A	Cover assembly (includes 8 and 9)	1
5A	47605	Cover, oil reservoir	1
6	36270	Gasket	1
7	47604	Oil reservoir body	1
8	46220	Tube, oil	1
9	47890A	Oil reservoir tube & wick assembly	1



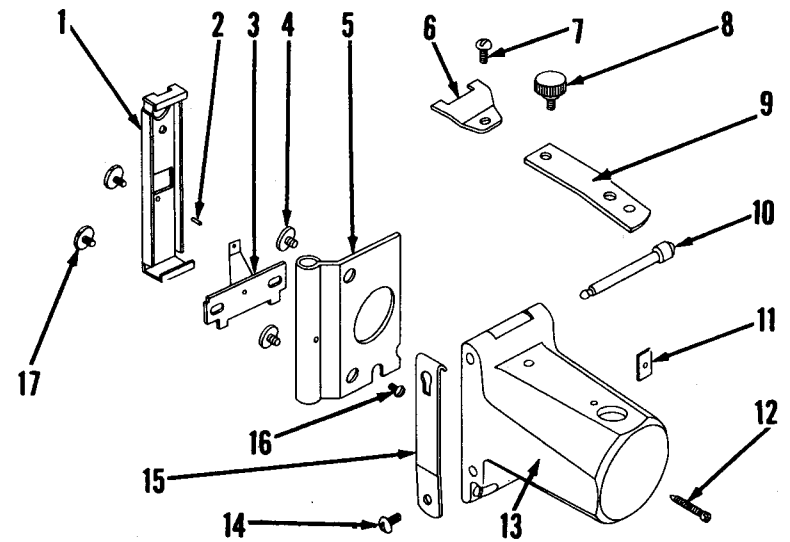
AUTOMATIC TRIP LEVER ASSEMBLY
(Safety Film Trips)



OIL RESERVOIR ASSEMBLY
(Lubrimatic)



LENS MOUNT ASSEMBLY (New Style)



LENS MOUNT ASSEMBLY

SOUND CORE ASSEMBLY

No.	Part No.	Part Name	Qty.
	30428-A	Sound core assembly	1
1	S254-540-3	5-40 x 3/16 Binder head screw	1
2	30428-3	Sound channel assembly	1
2A	26546-2	Sound channel sub assembly	1
3	20593	Sound lens holder	1
4	20761	Sound lens holder screw	2
5	30428-2	Sound lens assembly	1
6	26545-2	Sound core sub assembly	1
7	36161	Escutcheon cap nameplate	1
8	S257-348-4	3-48 x 1/4 Oval head machine screw	2
9	S277-540-2	5-40 x 1/8 Socket set screw	1
10	19221	Plug	1
11	S253-540-3	5-40 x 3/16 Fillister head screw	1

SOUND UNIT CASTING ASSEMBLY

No.	Part No.	Part Name	Qty.
1	46153-AR	Sound unit casting assembly	1
2	787	Sound core lock screw	1 *
3	46154	Insulating pad	1
4	S253-832-6	8-32 x 3/8 Fillister head screw	2 *
5	19179	Bushing 1/4" I.D.	2
6	19063	Bushing 3/16" I.D.	2

* Order separately. Not included in 46153AR assembly.

LOOP TENSION ARM ASSEMBLY

No.	Part No.	Part Name	Qty.
	26725-AR	Loop tension arm assembly	1
1	26725-2R	Loop tension arm sub-assembly	1
2	18058-A	Loop tension roll	1
3	26727	Tension roll grip	1
4	S235-2	#2 "E" ring	1

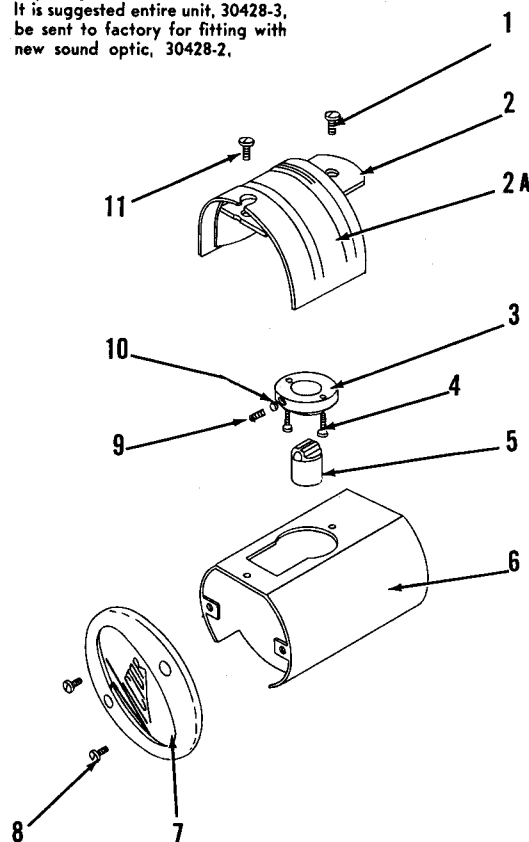
SOUND SPROCKET TENSION ARM ASSEMBLY

No.	Part No.	Part Name	Qty.
	26726-AR	Sound sprocket tension arm assembly	1
1	26726-2R	Sound sprocket tension arm sub-assem.	1
2	19233-A	Sound sprocket tension roll	1
3	26727	Tension roll grip	1
4	S235-2	#2 "E" ring	1
5	S235-3	#3 "E" ring	1
6	19579	Reverse sprocket tension roll	1

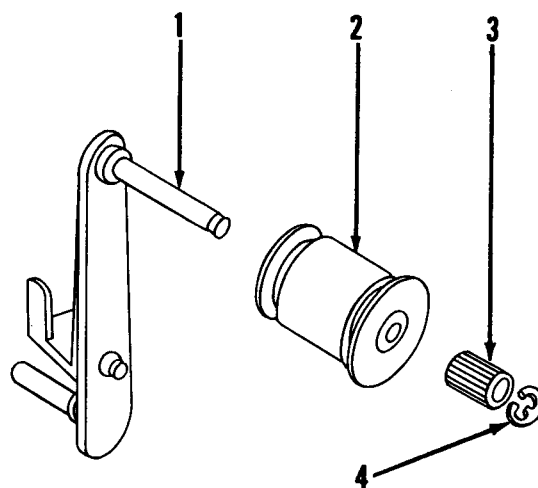
FILM SHOES

No.	Part No.	Part Name	Qty.
1	47515A	Film shoe assembly	2
1A	48034A	Film shoe assembly (stainless steel)	2
2	36156	Film shoe bracket	2
3	36155	Film shoe spring	2
4	S254-832-4	8-32 x 1/4 Binder head screw	4

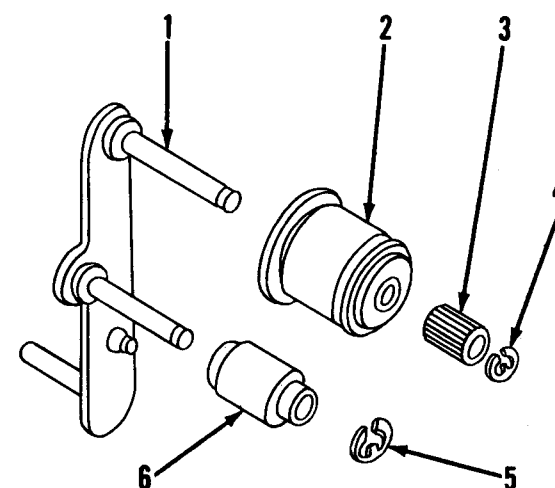
WARNING: Do not tamper with lock screw No. 9. Resetting this screw requires use of sound lens adjusting fixture, Part No. T8793. It is suggested entire unit, 30428-3, be sent to factory for fitting with new sound optic, 30428-2.



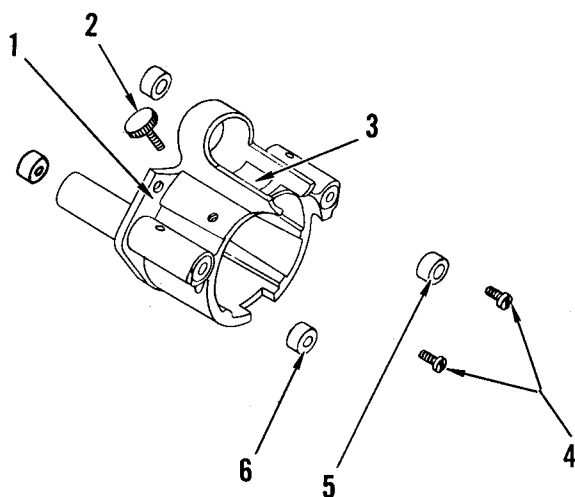
SOUND CORE ASSEMBLY



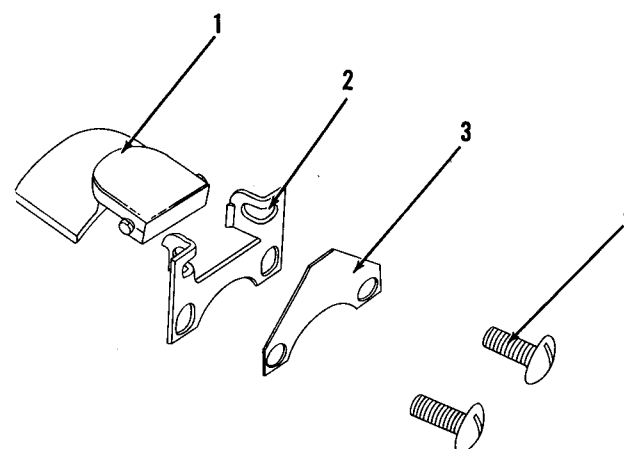
LOOP TENSION ARM ASSEMBLY



**SOUND SPROCKET
TENSION ARM ASSEMBLY**



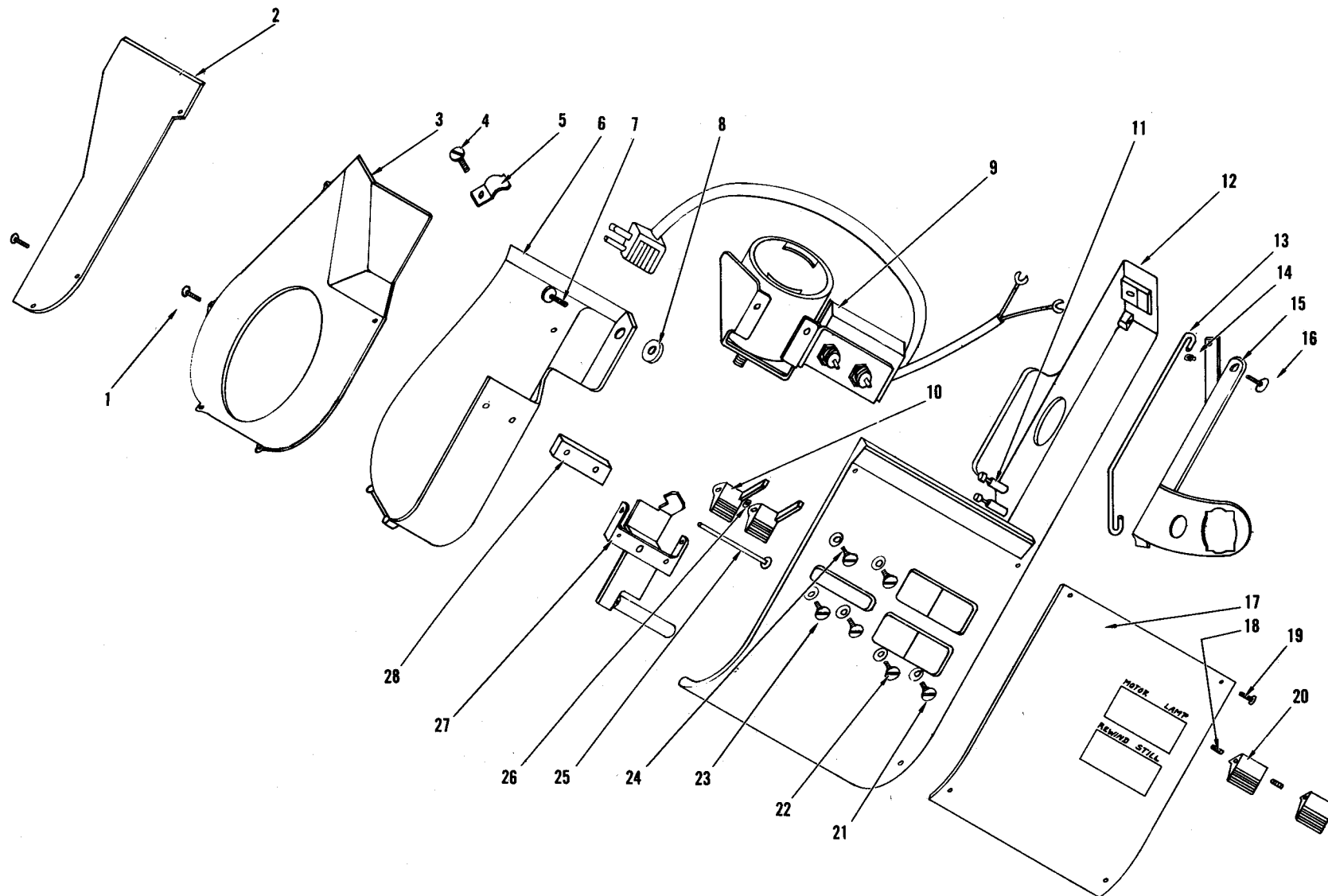
SOUND UNIT CASTING ASSEMBLY



FILM SHOES

LAMPHOUSE ASSEMBLY

No.	Part No.	Part Name	Page	Qty.	No.	Part No.	Part Name	Page	Qty.
	47544A	Lamp house assembly		1	19	S254-440-2	4-40 x 1/8 Binder head screw		4
1	S279-256-2	2-56 x 1/8 Round head thread cutting screw		8	20	46128	Switch lever		2
2	47578	Cover plate		1	21	S252-540-6	5-40 x 3/8 Flat head screw		1
3	47691	Scroll cover		1	22	S252-540-8	5-40 x 1/2 Flat head screw		1
4	S254-540-2	5-40 x 1/8 Binder head screw		1	23	S252-540-5	5-40 x 5/16 Flat head screw		2
5	S360-1	Wire clamp		1	24	S252-832-6	8-32 x 3/8 Flat head screw		2
6	47690	Diecast scroll		1	25	46135	Lever pivot		1
7	S254-540-4	5-40 x 1/4 Binder head screw		1	26	S199-5	#5 Plain washer		1
8	S195-4	Fibre washer		1	27	47568A	Rewind lock bracket assembly		1
9	47553-A	Power lead wire assembly	35	1	28	47563	Scroll cushion		1
10	46127A	Still and rewind lever tab		2		47545A	Lamp baffle assembly	35	1
11	47559	Stud, lamp baffle		2		47817A	Lamp house cover assembly	35	1
12	47551A	Lamp house sub assembly		1					
13	47558	Still shutter connecting wire		1					
14	19345	Still picture shutter pivot		1					
15	47549-A	Still picture shutter assembly		1					
16	S254-540-7	5-40 x 7/16 Binder head screw		1					
17	47824	Nameplate		1					
18	S277-540-3	5-40 x 3/16 Socket set screw		2					

**LAMPHOUSE ASSEMBLY**

LAMPHOUSE COVER ASSEMBLY

No.	Part No.	Part Name	Qty.
	47817A	Lamphouse cover assembly	1
1	47819-R	Lamphouse cover	1
2	47818-A	Grill assembly	1
3	46103	Retaining screw	1
4	S301-121-12	1/8 x 3/16 Rivets	4
5	S235-3	#3 "E" ring	1
6	47840	Emblem	1

REWIND DISC BAR AND PULLEY ASSEMBLY

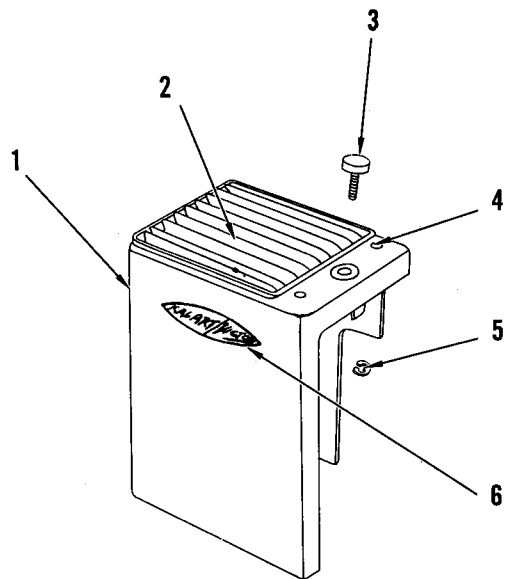
No.	Part No.	Part Name	Qty.
	46138-A	Rewind disc bar and pulley assembly	1
1	46138-2	Rewind pivot assembly	1
2	26883-2	Rewind pulley assembly	1
3	26909	Rewind pulley spacer	1
4	26916	Rewind belt guard	1
5	S200-10	#10 Internal tooth lockwasher	1
6	S324-1032	10-32 Hex nut	1

LAMP BAFFLE ASSEMBLY

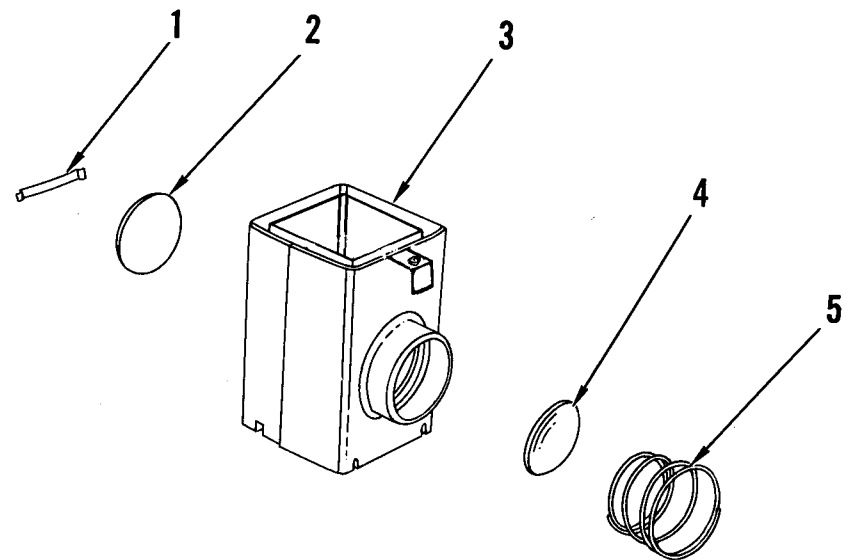
No.	Part No.	Part Name	Qty.
	47545-A	Lamp baffle assembly	1
1	46111	Spring, reflector	1
2	46110	Reflector	1
3	47545-2	Lamp baffle sub assembly	1
4	20510	Condenser lens	1
5	46109	Lens spring	1

POWER LEAD WIRE ASSEMBLY

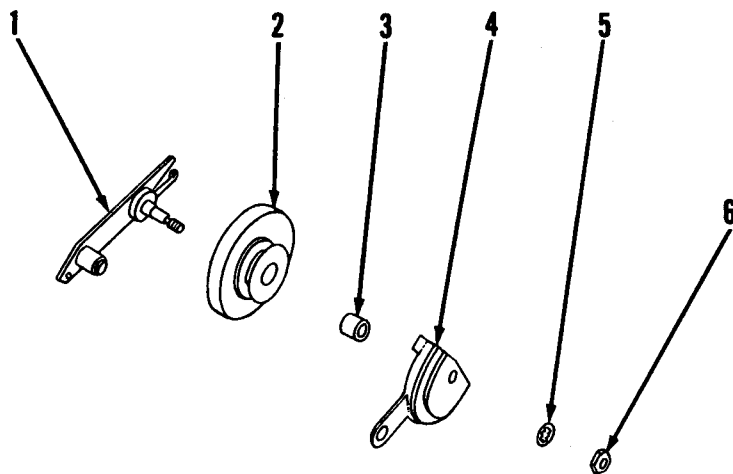
No.	Part No.	Part Name	Qty.
	47553A	Power lead wire assembly	1
1	20490	Lamp socket	1
2	S555-3-32	#3 x 4" Vinyl tubing	1
3	47566-A	Lamp adjusting plate assembly	1
4	47151	Motor and lamp switch	2
5		Switch nut	4
6	47573	Lamphouse terminal insulator	1
7		Switch washer	2
8	S324-1024	10-24 Hex nut	1
9	S199-10	#10 Plain washer	2
10	47625	Bowed washer	1
11	47565A	Lamp and switch bracket assembly	1
12	47576	Lamp adjusting spacer	As req'd
13	S252-436-7	4-36 x 7/16 Flat head screw	2
14	47652	Mechanism power cord	1



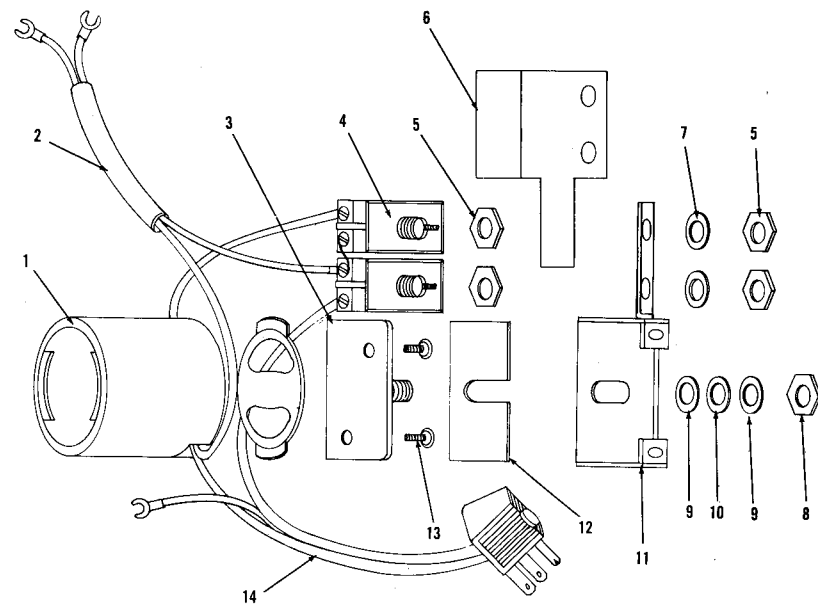
LAMPHOUSE COVER ASSEMBLY



LAMP BAFFLE ASSEMBLY



REWIND DISC BAR AND PULLEY ASSEMBLY

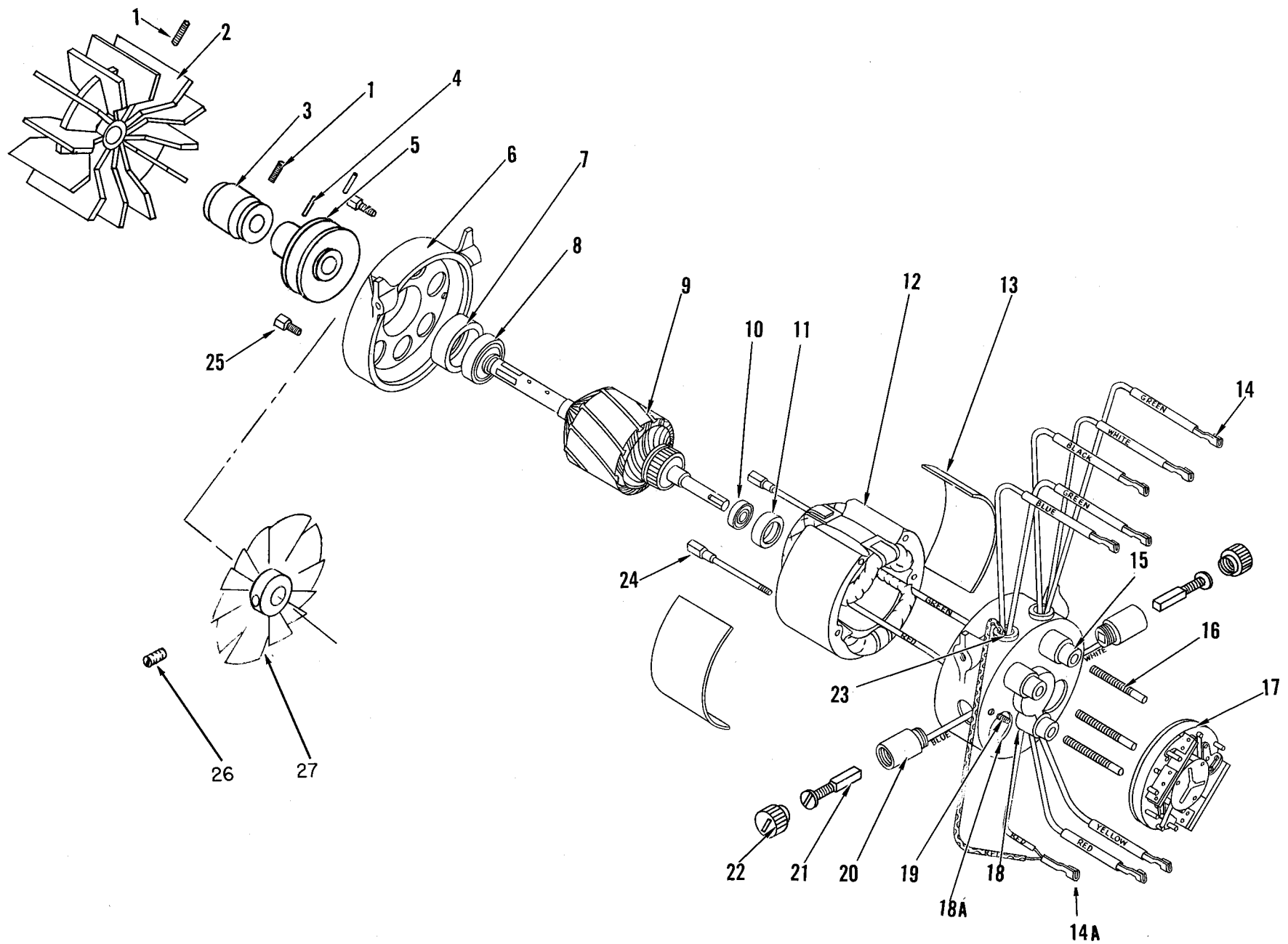


POWER LEAD WIRE ASSEMBLY

MOTOR ASSEMBLY

No.	Part No.	Part Name	Qty.	No.	Part No.	Part Name	Qty.
	47660-A	Motor assembly	1	14A	S622-2	Knife connector	1
1	S277-832-3	8-32 x 3/16 Socket set screw	2*	15	26839	Governor brush insulator	3
2	47530	Fan, paddle	1*	16	19534	Governor brush	3*
3	47658	Rewind sheave molded assembly	1*	17	47745	Governor, two speed	1*
4	S223-062-500	1/16 x 1/2 Roll pin	2	18	47660	Brush end motor cap casting	1
5	47539	Pulley, motor	1	18A	47660-2	Motor brush end cap assembly	1
6	26840	Cap, pulley end, motor	1	19	20774	Brush holder set screw	2
7	47291	5/16 Ball bearing rubber mounting	1	20	47542	Motor brush holder	2
8	26864	5/16 Ball bearing	1	21	47624	Motor brush	2
9	47661	Armature, motor	1	22	47623	Motor brush cap	2
10	26862	1/4 Ball bearing	1	23	19788	Insulator, motor cap	3
11	47292	1/4 Ball bearing rubber mounting	1	24	19080	Motor field clamp stud	2
12	30519	Field, motor	1	25	26872	Motor cap screw	2
13	19010	Motor field sleeve	2	26	S277-832-2	8-32 x 1/8 Socket set screw	1
14	S622-1	Knife connector	7	27	47923	Fan auxiliary, motor	1

* Order separately, not furnished as part of 47660-A.

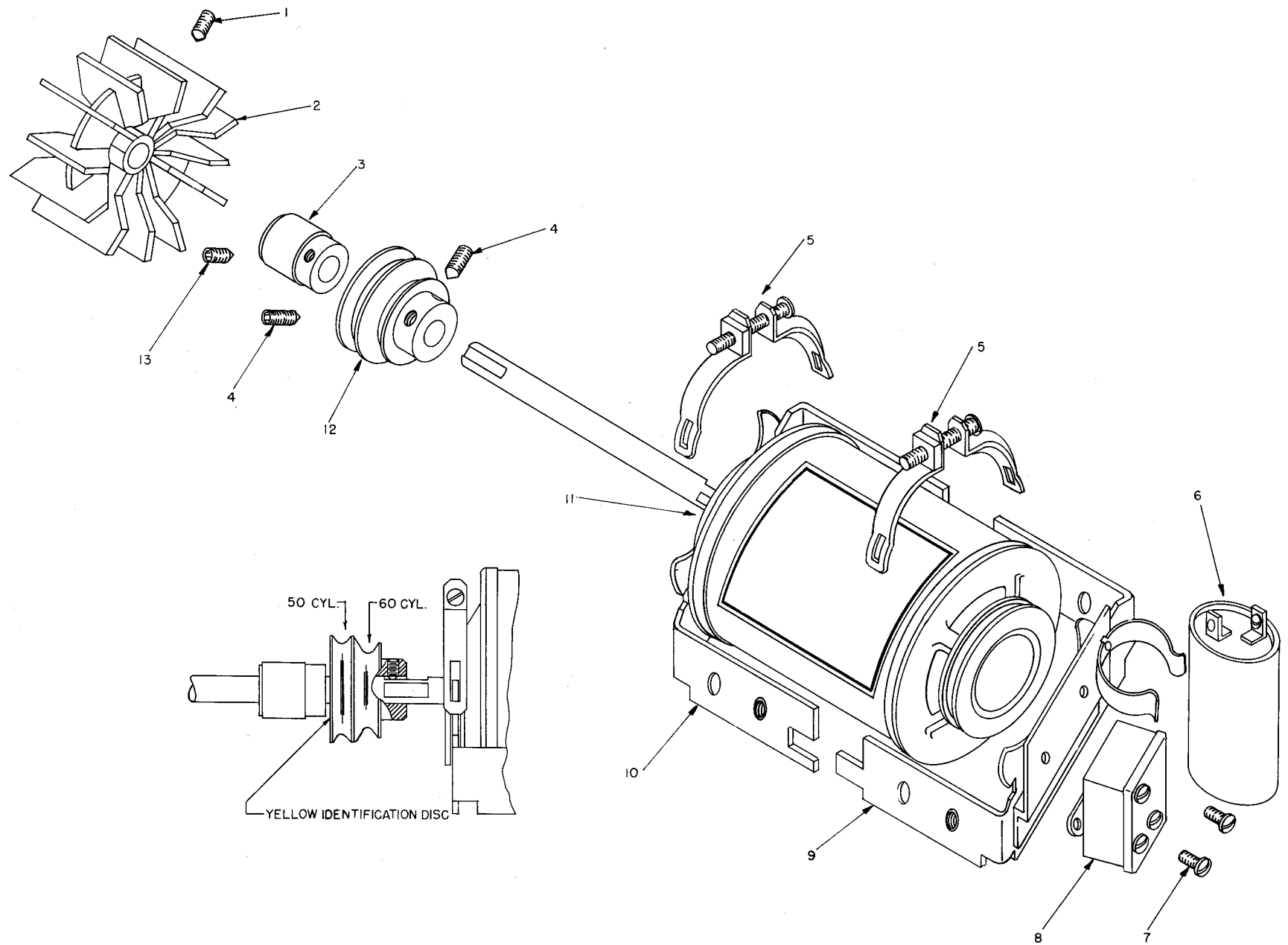


MOTOR ASSEMBLY

INDUCTION MOTOR ASSEMBLY

No.	Part No.	Part Name	Qty
	48195-SP	Induction motor assembly	1
1	S277-832-3	8-32 x 3/16 Socket set screw	2*
2	47530	Fan, paddle	1*
3	47658	Rewind sheave molded assembly	1
4	S277-832-3	8-32 x 3/16 Socket set screw	2
5	48192-1	Clamp	2
6	48198	Condenser, motor starting	1
7	S254-540-3	5-40 x 3/16 Binding head screw	2
8	48199	Relay, motor starting	1
9	48193-A	Bracket assembly	1
10	48193-1	Bracket	1
11	48192-SP	Induction motor	1
12	48196	Pulley, 50/60 cycle	1
13	S277-832-3	8-32 x 3/16 Socket set screw	1

* Order separately, not furnished as part of 48195-SP.

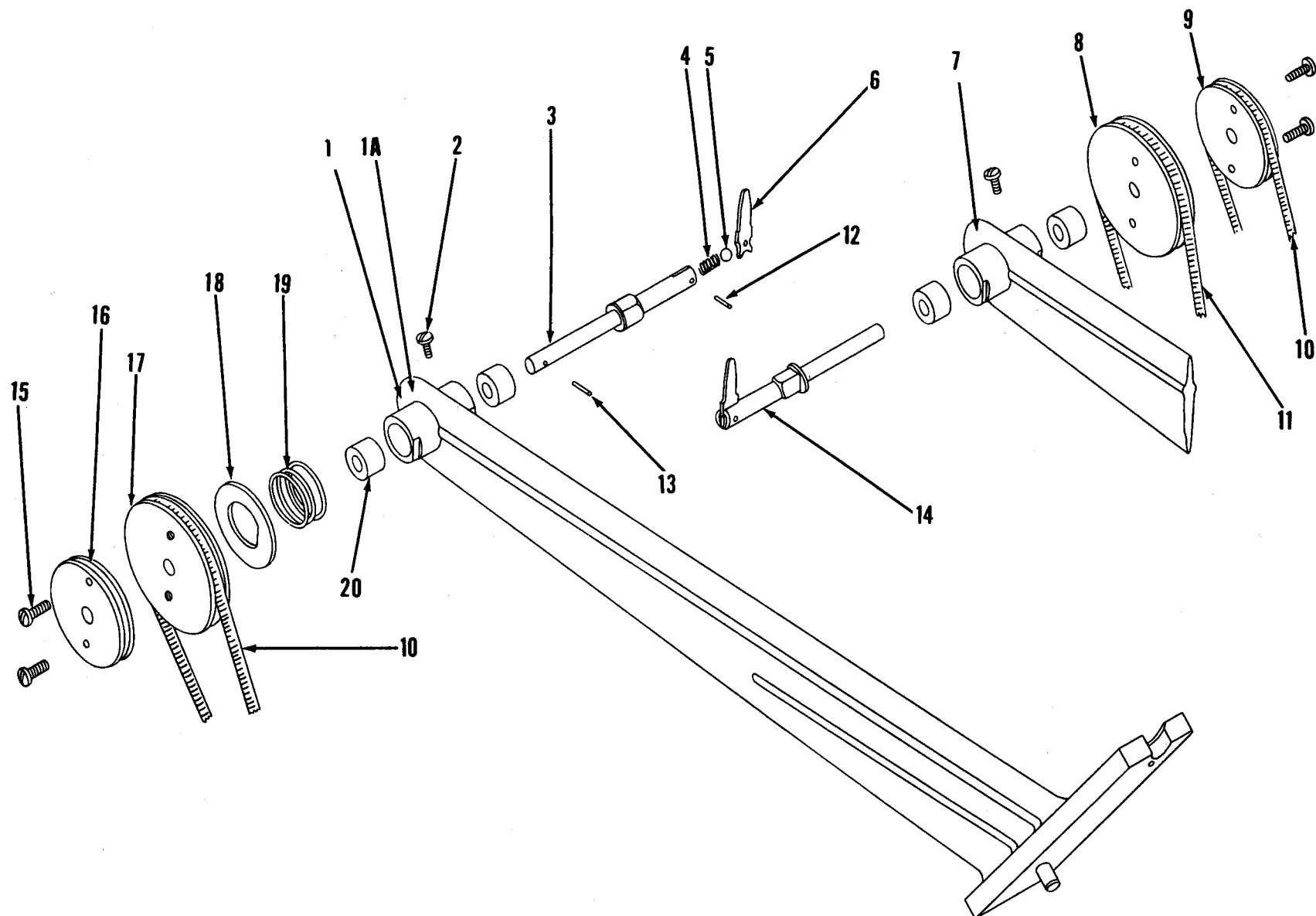


INDUCTION MOTOR ASSEMBLY

FRONT AND REAR REEL ARMS

No.	Part No.	Part Name	Qty.	No.	Part No.	Part Name	Qty.
1	30380-A	Front reel arm assembly, complete	1	10	23217	Take-up belt	1*
1A	30379-2	Reel arm sub-assembly (front or rear)	1	11	23216	Rewind belt	1*
2	S253-632-2	6-32 x 1/8 Fillister head screw	1	12	S223-062-0305	Reel lock pin	1
3	22143	Reel shaft	1	13	S223-062-500	1/16 x 1/2 Roll pin	1
4	20358	Reel lock spring	1	14	22143-A	Reel shaft assembly	1
5	20359	Reel lock ball	1	15	S254-632-6	6-32 x 3/8 Binder head screw	2
6	2307	Reel lock	1	16	22042-50-R	Reel arm auxiliary pulley	1
7	30379-AR	Rear reel arm assembly, complete	1	17	30382-R	Take-up reel pulley	1
8	30383-R	Rewind reel pulley	1	18	27307	Reel arm friction washer	1
9	22042-50-R	Reel arm auxiliary pulley	1	19	19595	Reel arm friction spring	1
				20	26937	Reel arm bushing	2

*Order separately. Not furnished as part of reel arm assembly.



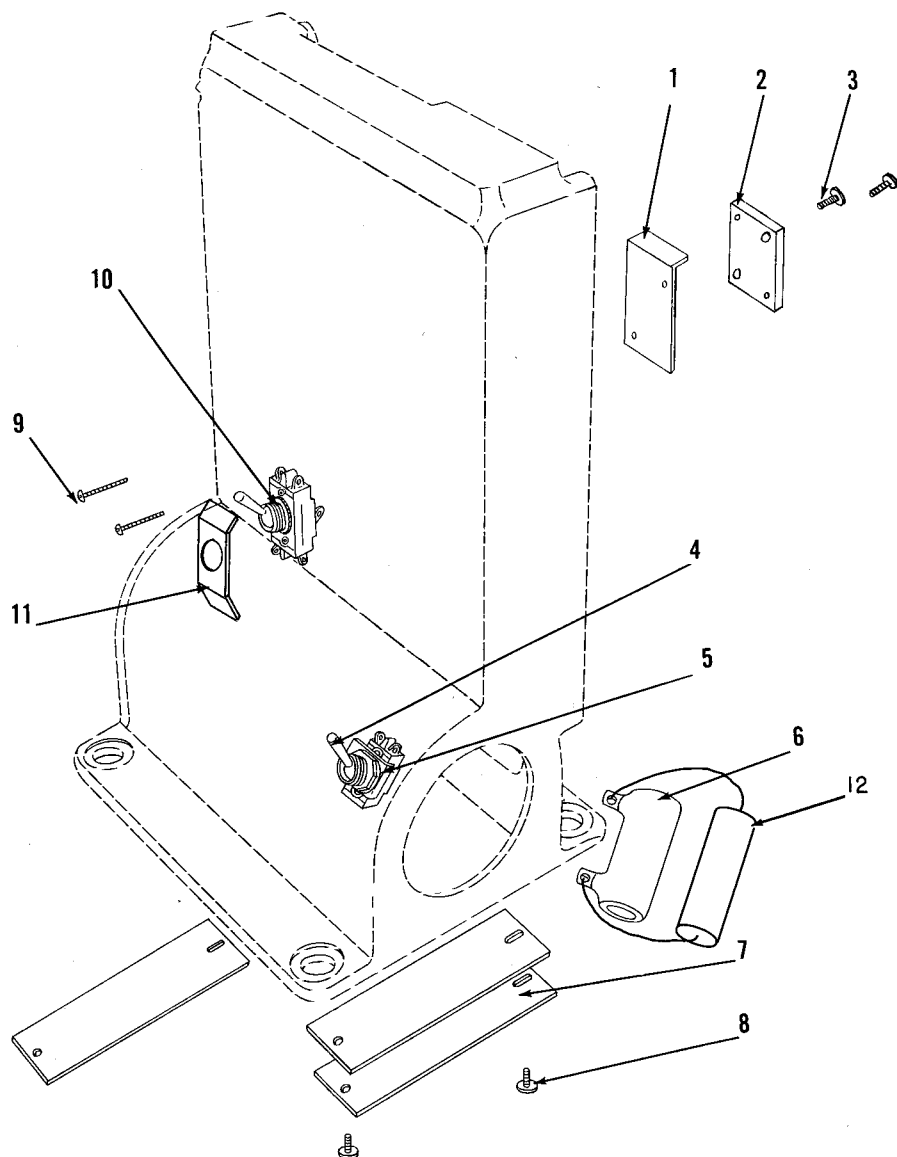
FRONT AND REAR REEL ARMS

ELECTRICAL COMPONENTS

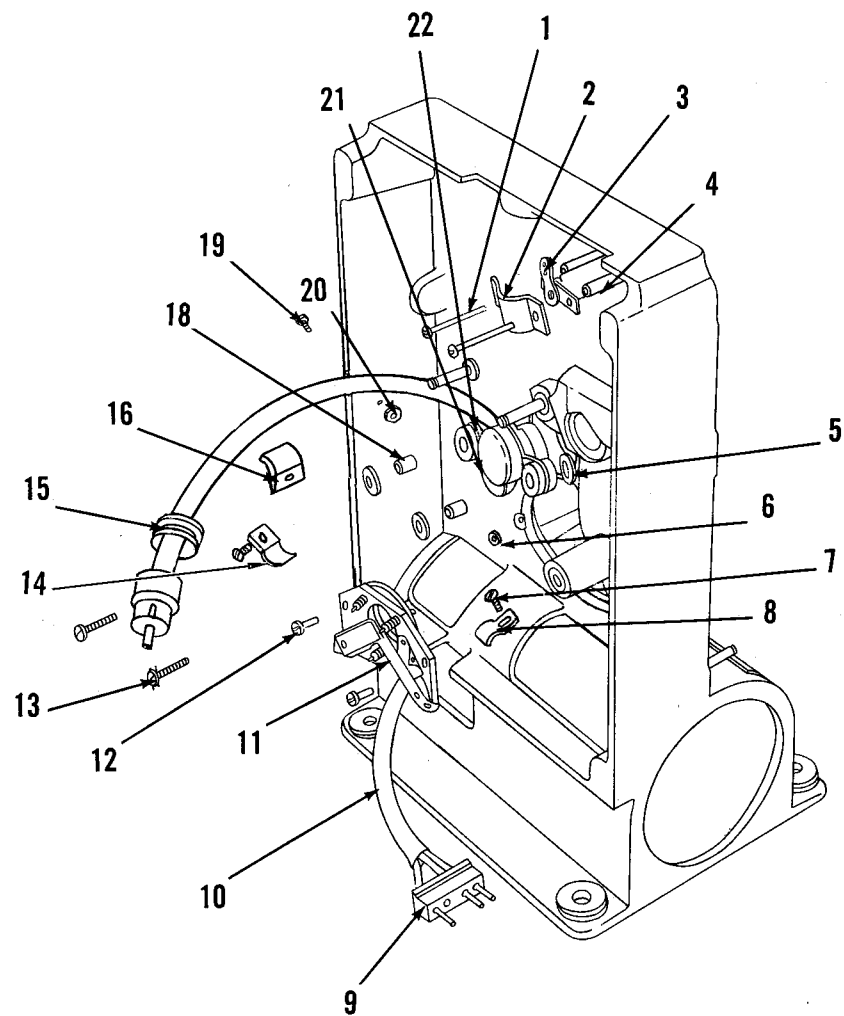
No.	Part No.	Part Name	Qty.
	47554-A	Motor wiring harness	1
1	26950	Insulator	1
2	47642	Block, connector	1
3	S254-540-4	5-40 x 1/4 Binder head screw	2
4	23340	Switch S.P.S.T.	1
5	30531	Lock, switch	1
6	19685	Resistor 70-ohm 30 watt	1
7	19862	Motor terminal insulator	3
8	S254-540-5	5-40 x 5/16 Binder head screw	2
9	M.S. 253	2-56 x 3/8 Self tapping type F screw	2
10	11026	Switch D.P.D.T.	1
11	19223	Insulator	2
12	36228	Motor, condenser .22 MFD, 400 V.	1

P.E.C. LEAD & EXCITER LAMP COMPONENTS

No.	Part No.	Part Name	Qty.
1	S251-540-18	5-40 x 1 1/8 Round head screw	2
2	19389	Pilot lamp socket insulator	1
3	19296	Pilot lamp socket	1
4	47101	Pilot lamp sleeve	2
5	23144	Washer	2
6	S198-6	#6 Small brass flat washer	As req'd
7	S254-540-3	5-40 x 3/16 Binder head screw	1
8	20063	Cable clamp	1
9	20628	Exciter lamp socket plug, male	1
10	26904-A	Exciter lamp base plate assembly	1
11	19547-51-2	Exciter lamp socket assembly	1
12	S253-540-5	5-40 x 5/16 Fillister head screw	2
13	S254-540-8	5-40 x 1/2 Binder head screw	2
14	S360-1	Cable clamp	1
15	20078	Rubber grommet	1
16	38001	Clamp	1
18	23076	P.E.C. screw sleeve	2
19	S254-540-5	5-40 x 5/16 Binder head screw	1
20	S324-540	5-40 Hex nut	1
21	47766-A	P.E.C. lead & socket assembly	1
22	19143	Rubber grommet	2



ELECTRICAL COMPONENTS



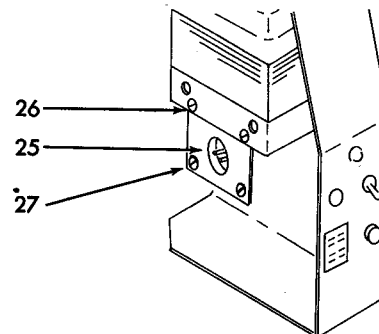
P.E.C. LEAD & EXCITER LAMP COMPONENTS

70-15 AMPLIFIER

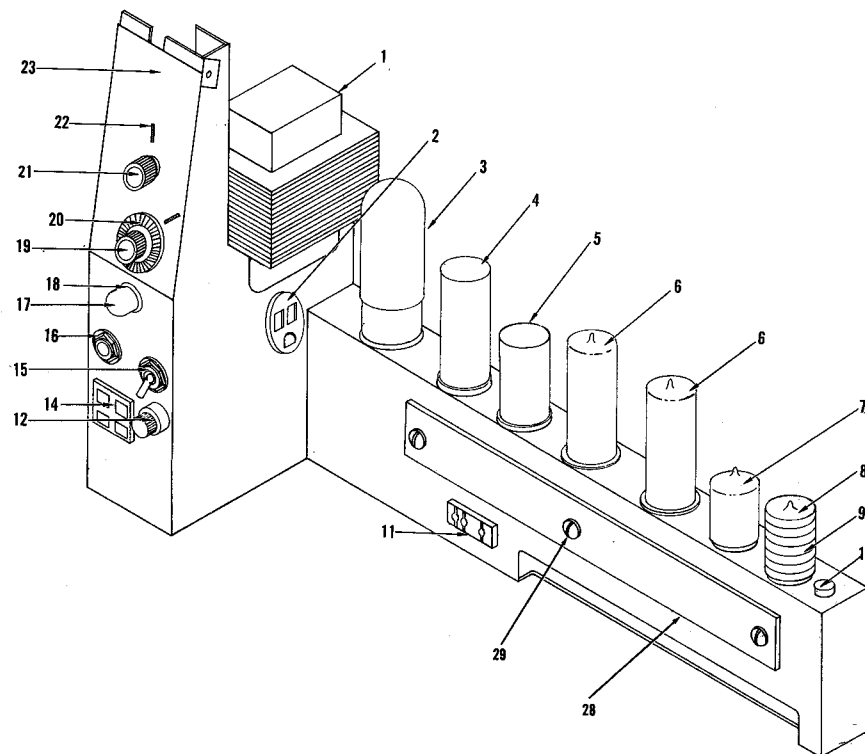
No.	Part No.	Part Name	Qty.
	47770-A	Amplifier complete	1
1	47767	Power transformer	1
2	47700	Female power plug	1
3	5Y3GT	Tube	1
4	36261	Condenser 30/350V, 20/350V, 20/25V, Can	1
5	36294	Condenser electrolytic 30/450V, Can	1
6	6973	Tube	2
7	12AX7	Tube	1
8	7025	Tube	1
9	30562-9A	Tube shield assembly with lead	1
10	47753	Photocell input	1
11	20629	Exciter lamp socket (female)	1
12	23128	Fuse holder	1
14	26787-1	Speaker socket	1
15	18641	Switch, S.P.S.T.	1
16	18643	Phono jack	1
17	47760	Pilot light lens	1
17A	S701-1-1	Pilot light GE #47	1
18	47759	Pilot light socket	1
19	47780	Center tone control knob	1
20	47781	Outer tone control knob	1
21	47825	Knob, volume control	1
22	S277-832-2	8-32 x 1/8 Socket set screw	2
23	47801	Nameplate	1
	47855A	Tone control assembly (includes 47776 & 47779)	1
	S254-832-6	8-32 x 3/8 Binder head screw for mounting to case	6
	47304A	Cable assembly coax.	1
	47853	Cable tone control 3 conductor	1
	47854	Cable volume control 2 conductor	1
28	48094	Cover	1
29	S254-540-4	5-40 x 1/4 Binding head screw	3
	S199-5	Washer	3

70-25 AMPLIFIER

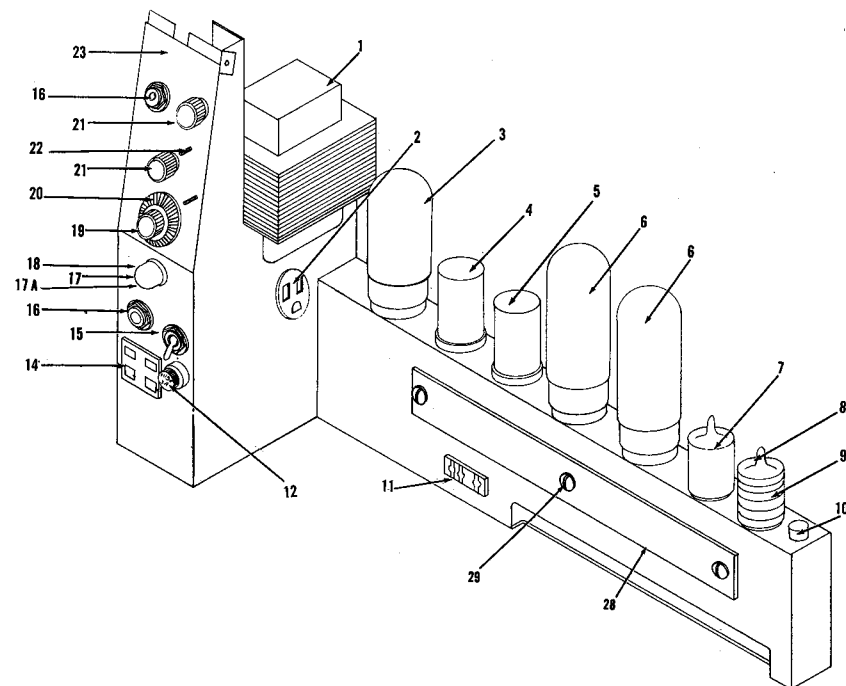
No.	Part No.	Part Name	Qty.
	47901-A	Amplifier complete	1
1	26925	Power transformer	1
2	47700	Female power plug	1
3	5U4	Tube	1
4	36210	Condenser electrolytic 10/450V, 16/450V, Can	1
5	36294	Condenser electrolytic 30/450V, Can	1
6	6L6	Tube	2
7	12AX7	Tube	1
8	7025	Tube	1
9	30562-9A	Tube shield assembly w/lead	1
10	47753	Photocell input	1
11	20629	Exciter lamp socket (female)	1
12	23128	Fuse holder	1
14	26787-1	Speaker socket	1
15	18641	Switch S.P.S.T.	1
16	18643	Phono jack	2
17	47760	Pilot light lens	1
17A	S701-1-1	Pilot light GE #47	1
18	47759	Pilot light socket	1
19	47780	Center tone control knob	1
20	47781	Outer tone control knob	1
21	47825	Knob, volume control	2
22	S277-832-2	8-32 x 1/8 Headless set screw	3
23	47762	Nameplate	1
	S254-832-6	8-32 x 3/8 Binder head screw for mounting to case	6
	47855-A	Tone control assembly (includes 47776 & 47779)	1
25	47908-A	Flush mount receptacle - 2 wire	1
25A	47927A	Flush mount receptacle - 3 wire	1
26	S252-632-6	6-32 x 3/8 Flat head screw	2
27	S254-632-6	6-32 x 3/8 Binder head screw	2
28	48094	Cover	1
29	S254-540-4	5-40 x 1/4 Binder head screw	3
	S199-5	Washer	3



70-15, 70-25 Amplifier
with Rear Mounted
Power Plug



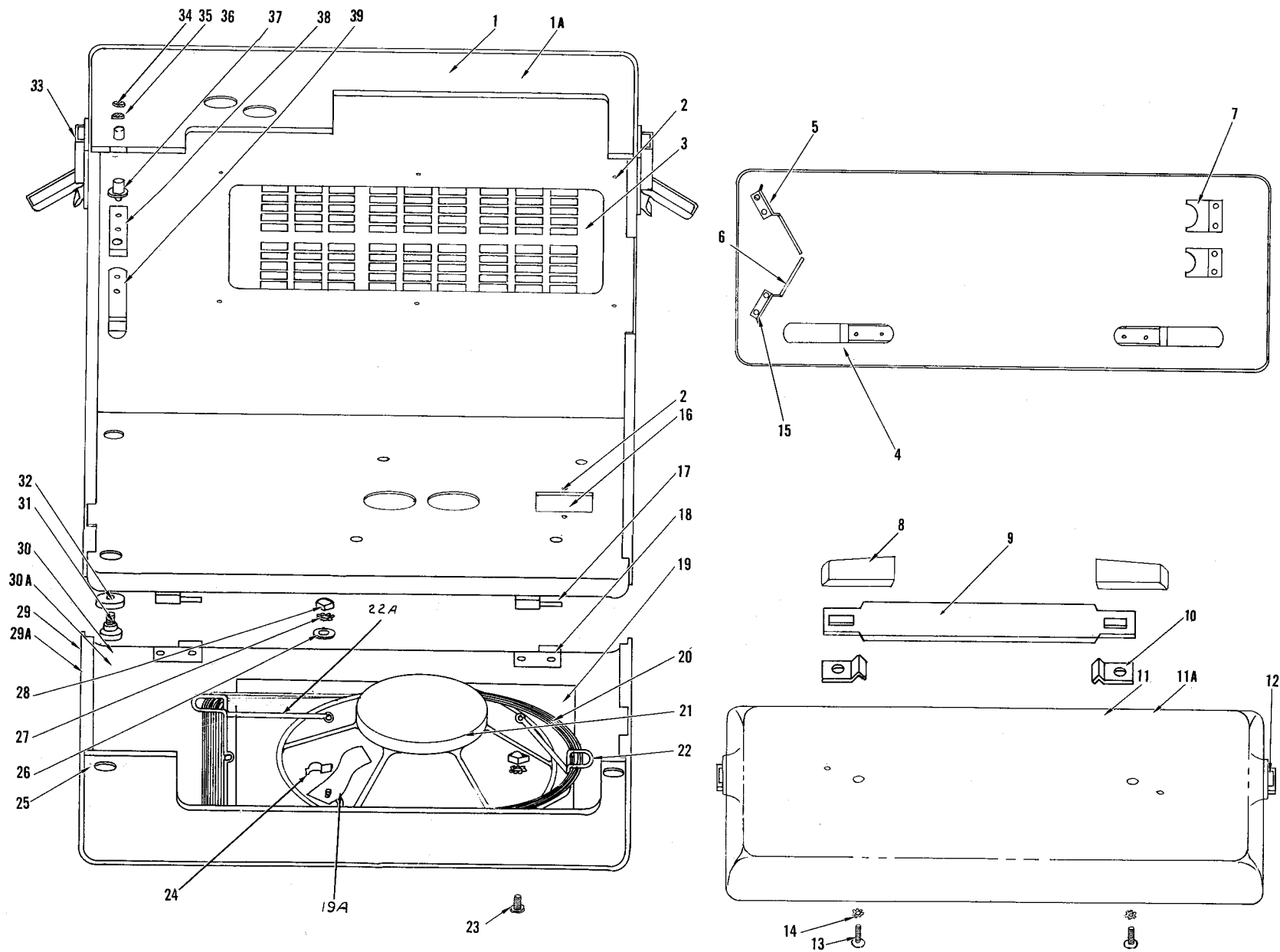
70-15 AMPLIFIER



70-25 AMPLIFIER

70-15 PROJECTOR CASE

No.	Part No.	Part Name	Qty.	No.	Part No.	Part Name	Qty.
	47886-A	Proj case complete w/5 x 7 in door spkr. w/lifftop w/components as noted	1	22	47836	Cord rack	2
	47887-A	Proj case complete w/lifftop w/o spkr.	1	22A	47906	Cord rack	1
1	47500A	Projector case body assembly includes 16, 17, 31 thru 39	1	23	S250-832-12	8-32 x 3/4 Truss head screw	4
				24	38001	Cord clamp	1
				25	47864	Rubber bumper	3
2	S276-4-3	#4 x 3/16 Sheet metal screw	6	26	S199-8	#8 Plain washer	3
3	47758	Case grille	1	27	S200-8	#8 Internal tooth lockwasher	4
4	23371	Cord rack	2	28	S321-832	8-32 Cap nut	4
5	30419-A	Reel arm bracket & clip assembly	1	29	48048A	Case door assembly w/spkr. includes items 18 thru 30A, 34 thru 39	1
6	30357-A	Reel arm bracket & clip assembly	1	29A		Door riveted assembly, plain. Refer 30	
7	30256	Reel arm holder	2	29B		Door riveted assembly (w/speaker openings) refer 30A	1
8	47798	Retainer, handle	2	30	47865-A	Case door assembly w/o speaker includes 18, 25, 29A, 34 thru 39	1
9	48125-A	Handle insert & filler assembly	1				
10	48123	Handle lift	2				
11	47803-A	Lift top assembly includes 4, 5, 6, 7, 8, 9, 10, 11A, 12, 13, 14, 15	1	30A	47809-3	Case door sub assembly (for speaker) includes 18, 25, 29B, 34 thru 39	1
12	23198	Case catch, hook	2	31	23111	Rubber foot screw	2
				32	22259	Rubber foot	2
13	S254-832-5	8-32 x 5/16 Binder head screw	2	33	23197	Catch case, body	2
14	S200-8	#8 Internal tooth lockwasher	2				
15	S301-141-14	9/64 dia x 7/32 long Tubular rivet	12	34	S254-540-4	5-40 x 1/4 Binder head screw	4
16	30513	Governor opening cover	1	35	S199-5	#5 Lockwasher	4
17	48019	Pin end hinge	2	36	S324-540	5-40 Hex nut	4
				37	23196	Door catch release button	2
				38	23118	Door catch spring	2
18	48018	Hinge catch	2	39	23200	Case door catch	2
19	48046	Speaker baffle	1		47839	Kalart Victor escutcheon (not shown)	1
19A	48049	Cover speaker terminals	1		23120	Victor escutcheon (not shown)	1
20	47988	Speaker cable assembly	1		47842	Nameplate 70-fifteen (not shown)	1
21	48044	Speaker, 5 x 7 P.M.	1		47872	Nameplate 70-twenty five (not shown)	1



70-15 PROJECTOR CASE

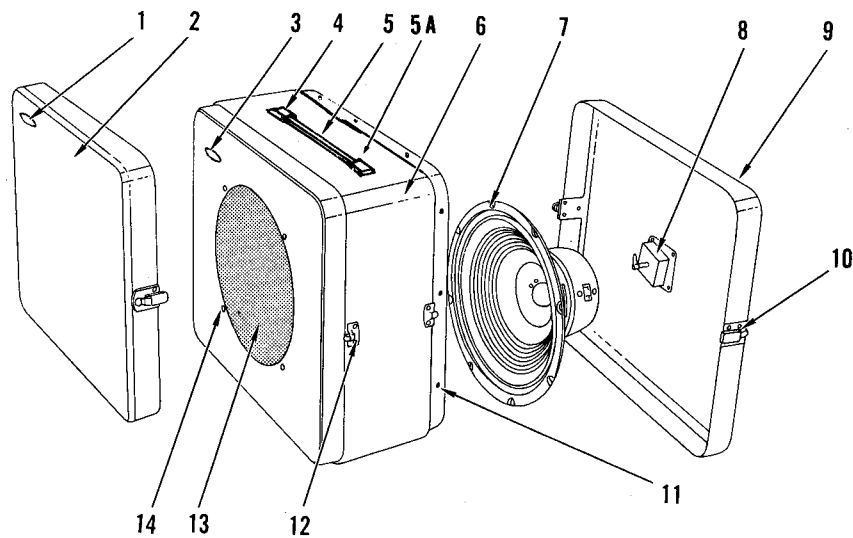
J3B METAL SPEAKER

No.	Part No.	Part Name	Qty.
	47846-A	Speaker assembly complete J3B	1
1	47839	Case emblem (Kalart Victor)	1
1A	23120	Case emblem (Victor)	1
2	47847A	Speaker case front assembly	1
3	47840	Escutcheon	1
4	47798	Handle retainer	2
5	48125-A	Handle insert & filler assembly	1
5A	48123	Handle lift	2
6	47848-3	Speaker body case	1
7	46450	12" P.M. speaker	1
8	23179A	Reel holder assembly	1
9	23172A	Rear speaker case cover assembly	1
10	23175	Case catch body	4
11	47864	Rubber bumper	11
12	23174	Case catch, hook	4
13	26649-R	Speaker grille	1
14	S250-832-12	8-32 x 3/4 Truss head screw	4
14A	S206-1	Lockwasher internal & external #8 I.D. *	4
14B	S324-832	8-32 Hex nut *	4
	47251	Speaker cord 75' (2 plug) (not shown)	1
	46353	Speaker cord rack (not shown)	2

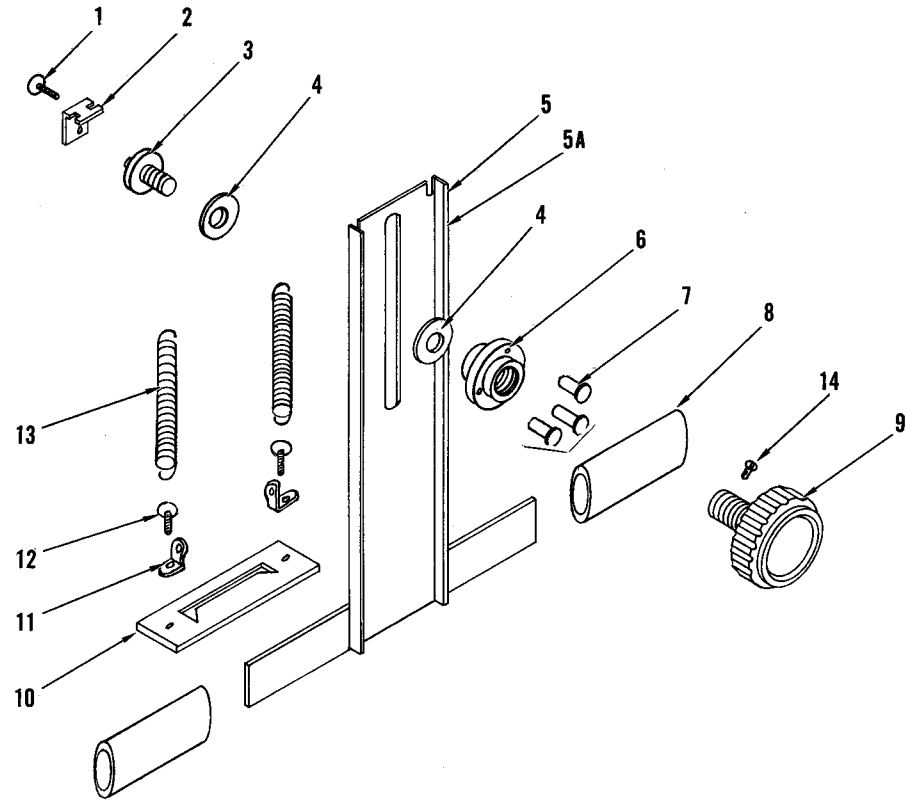
* Not shown on drawing.

TILT MECHANISM

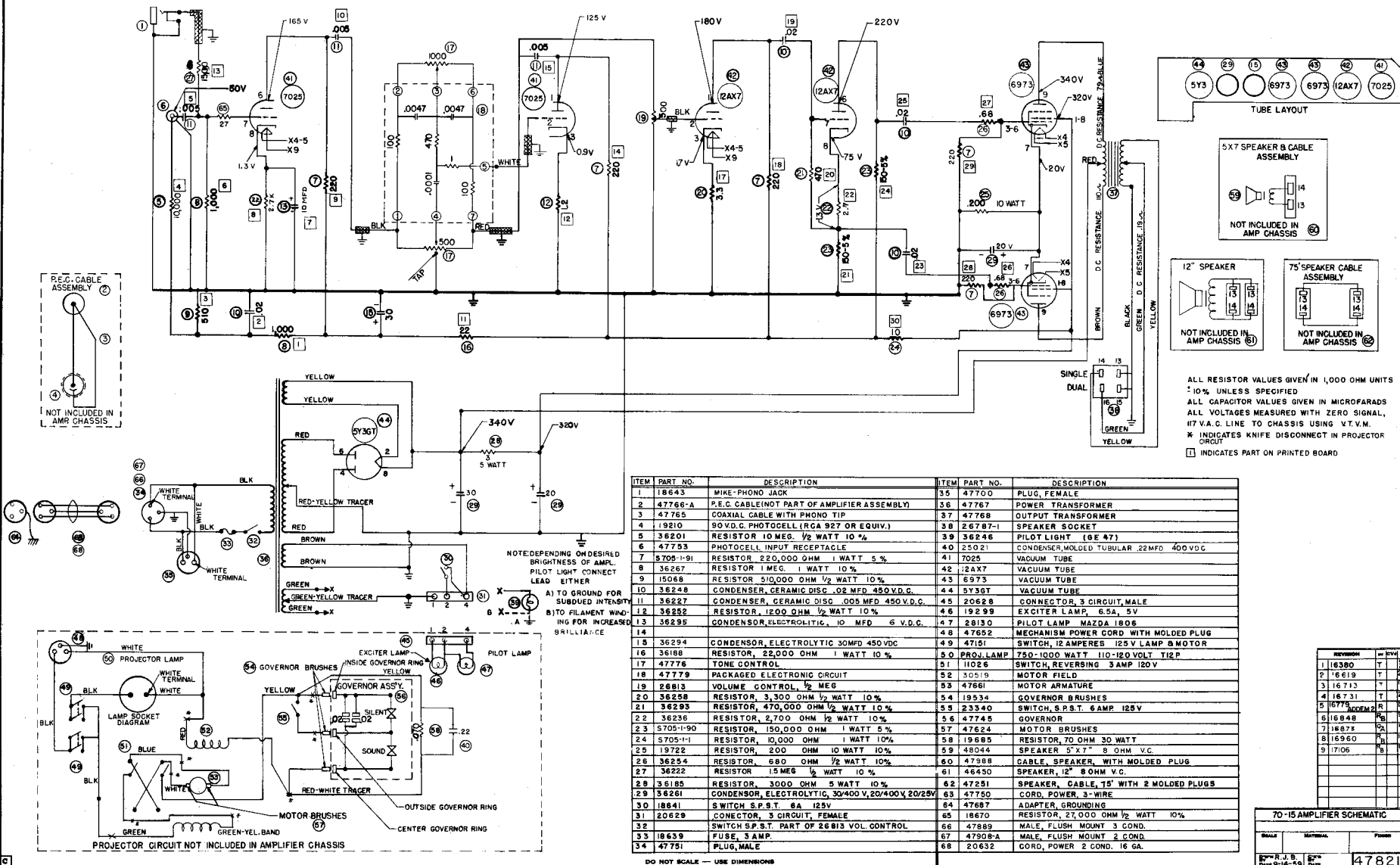
No.	Part No.	Part Name	Qty.
1	S254-540-2	5-40 x 1/8 Binder head screw	1
2	47744	Safe lock	1
3	47743	Screw slide lock	1
4	11120	Fibre shim	2
5	47733-A	Tilt foot assembly (includes 5A, 8)	1
5A	47734A	Tilt foot sub assembly	1
6	47742	Screw guide	1
7	S301-121-14	Rivet	3
8	47737	Rubber foot	2
9	47740-A	Tilt knob	1
10	47739	Slide guide plate	1
11	18823	Soldering lug	2
12	S254-540-4	5-40 x 1/4 Binder head screw	2
13	47738	Tilt spring	2
14	M.S.19	1-72 N. F. x 3/32 Round head screw	1

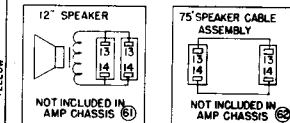
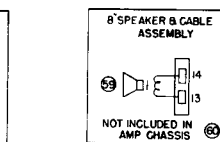


J3B METAL SPEAKER



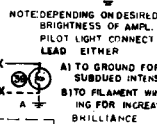
TILT MECHANISM





ALL RESISTOR VALUES GIVEN IN 1,000 OHM UNITS
: 10% UNLESS SPECIFIED
ALL CAPACITOR VALUES GIVEN IN MICROFARADS
ALL VOLTAGES MEASURED WITH ZERO SIGNAL,
117 V.A.C. LINE TO CHASSIS USING VTVM.
* INDICATES KNIFE DISCONNECT IN PROJECTOR
CIRCUIT

INDICATES PART ON PRINTED BOARD

[illegible]

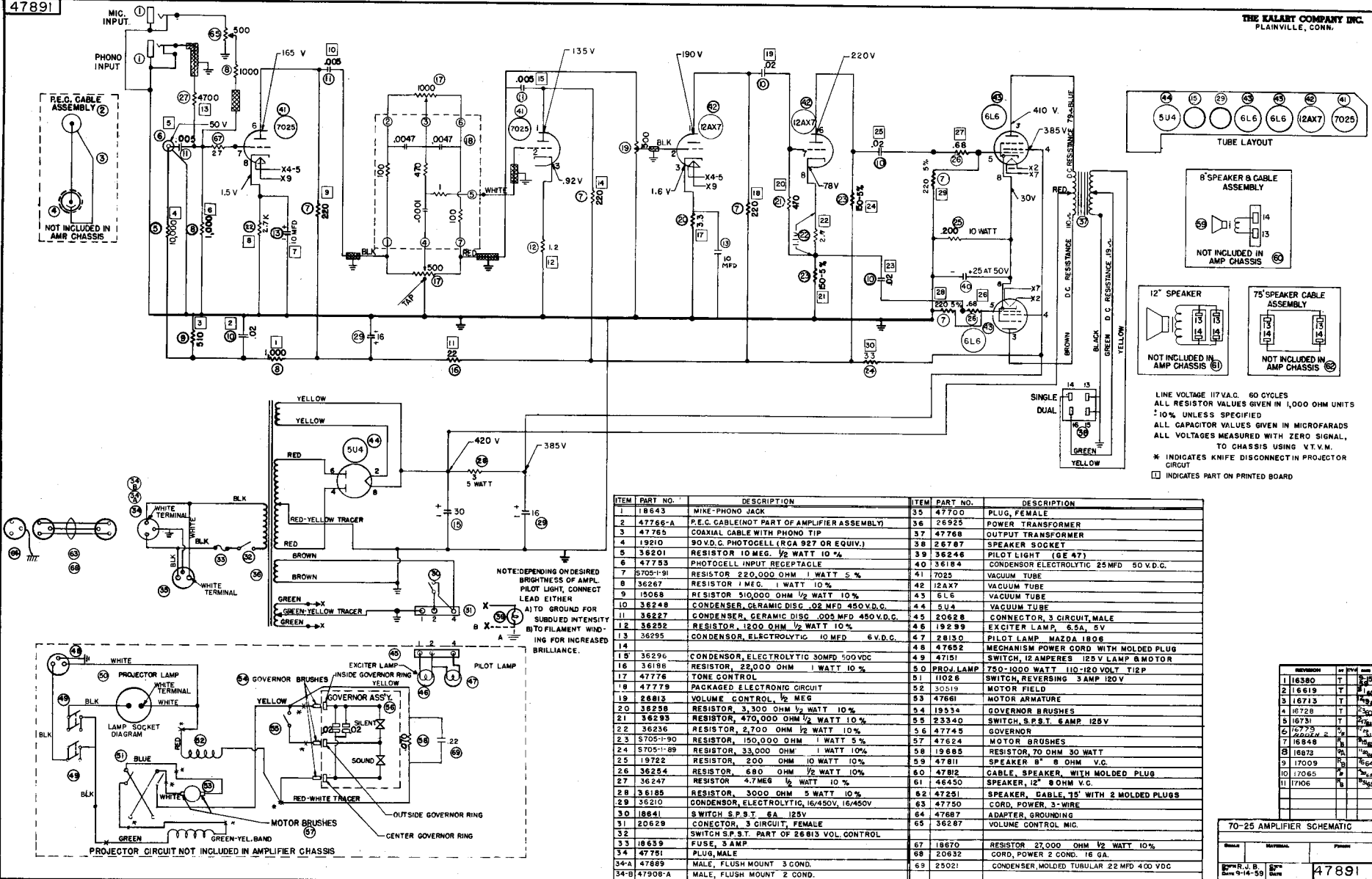
MAGESOUND PLAYBACK		
Roll #	Machine	Reel
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
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97	97	97
98	98	98
99	99	99
100	100	100

[illegible]

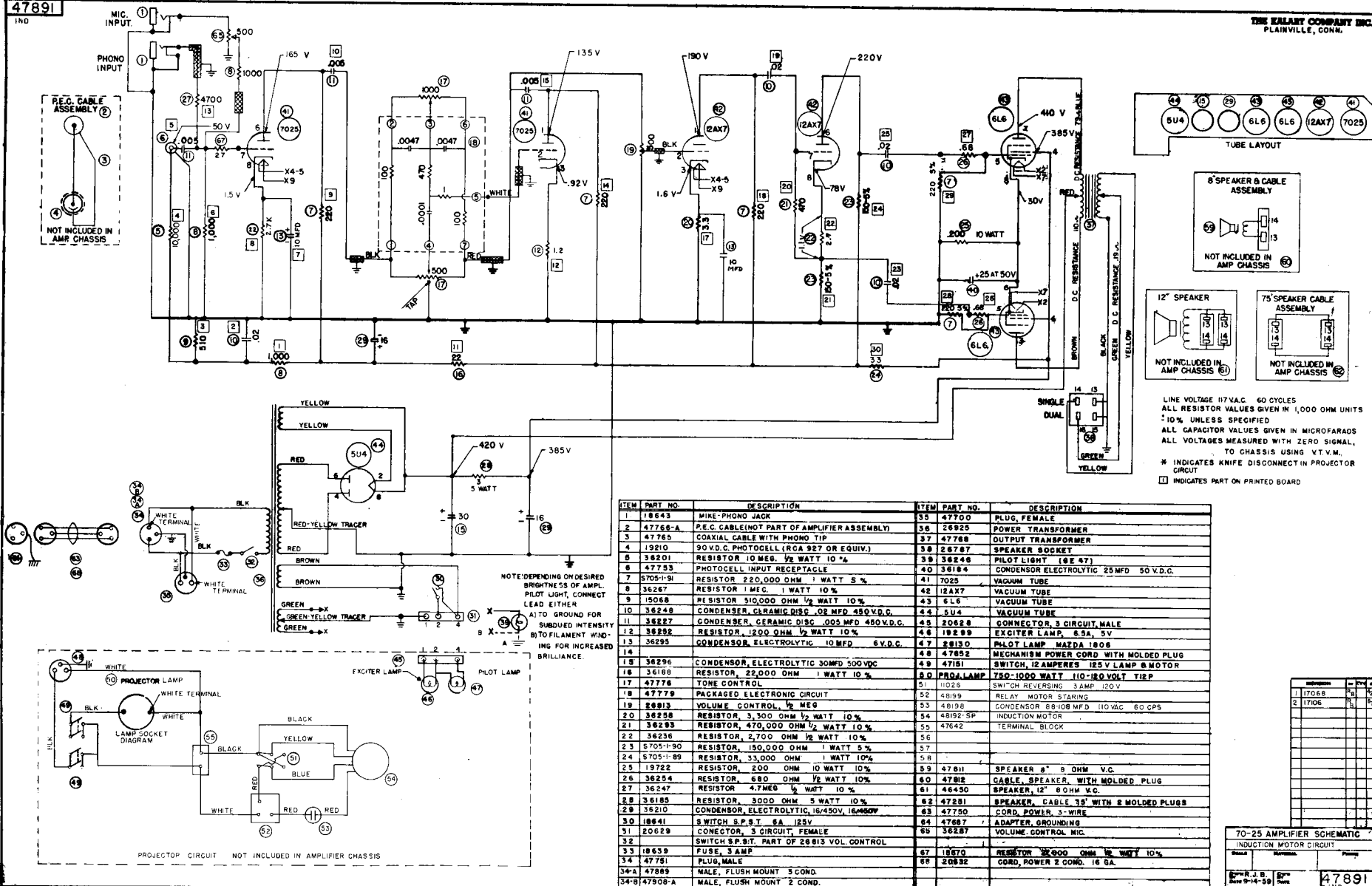
47821-



47891

THE KALART COMPANY INC.
PLAINVILLE, CONN.

47891

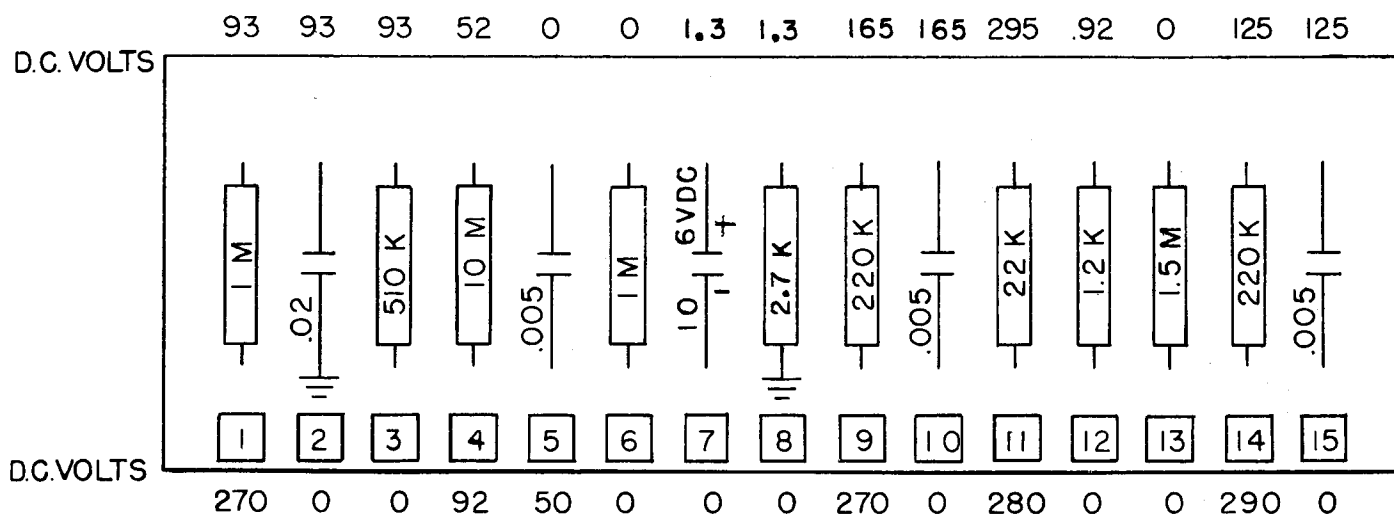
THE KALANT COMPANY INC.
PLAINVILLE, CONN.

SERVICING DATA

ETCHED CIRCUIT MOUNTING BOARDS

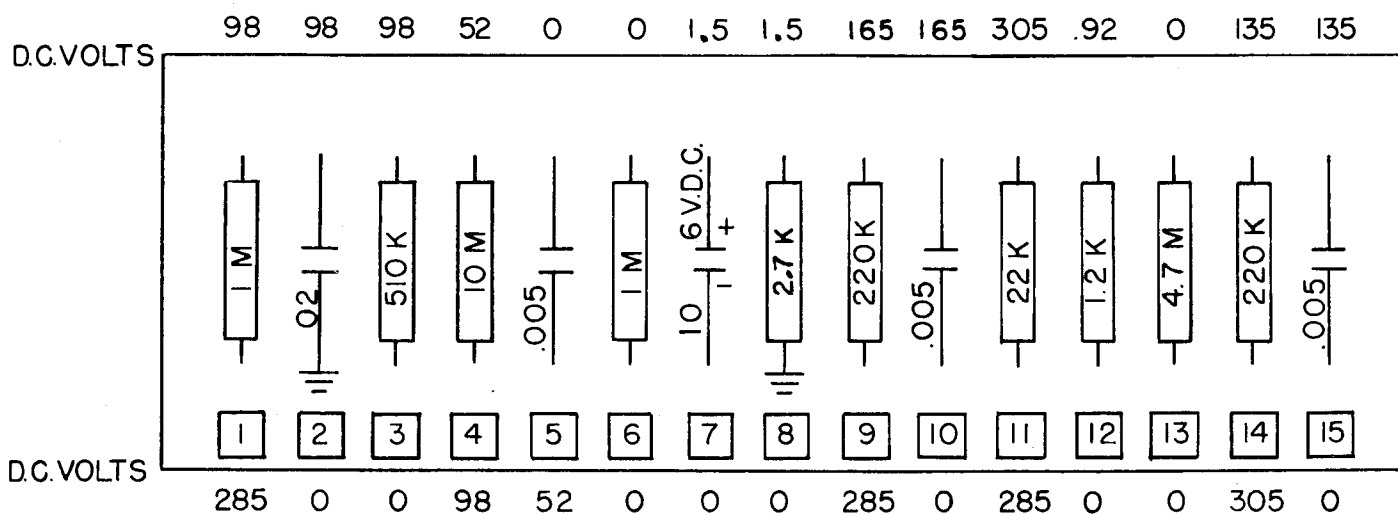
DETAILS DESIGNATED IN REFER TO SIMILARLY MARKED COMPONENTS IN SCHEMATIC DRAWINGS

70-15



47876-A PRE AMPLIFIER

70-25



47904-A PRE AMPLIFIER

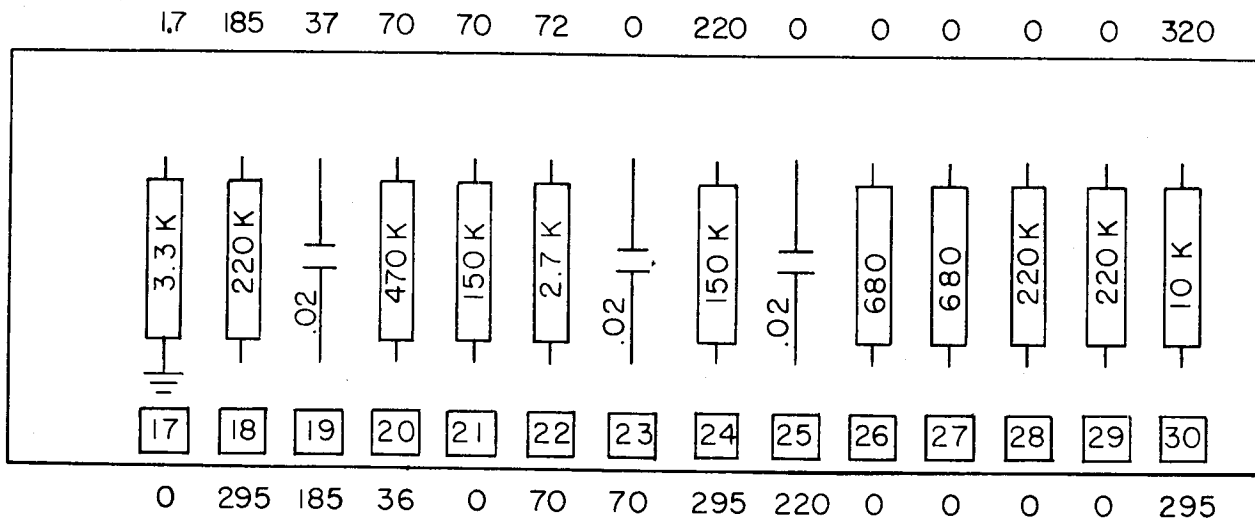
ALL RESISTOR VALUES GIVEN IN OHMS

ALL CAPACITOR VALUES GIVEN IN MICROFARADS

ALL VOLTAGES D.C. NO SIGNAL INPUT — MEASURED WITH V.T.V.M. TO GROUND

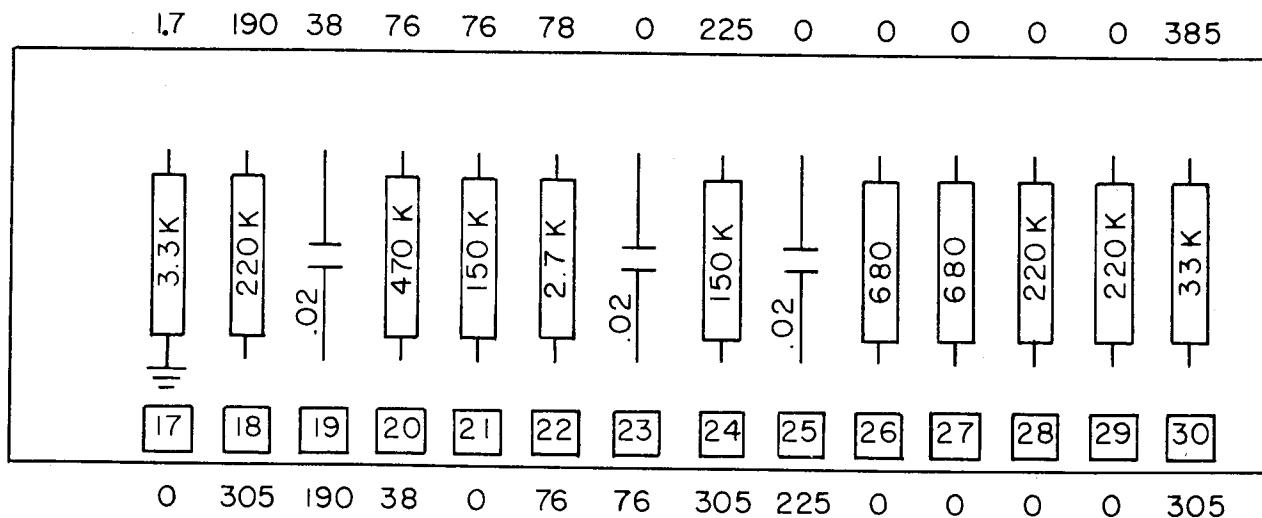
K= 1,000 ; M= 1,000,000

70 - 15



47874-A PHASE INVERTER

70 - 25



47903-A PHASE INVERTER

NOTES

TECHNICAL DATA

PROJECTOR

105/130 Volts 50/60 Cycles A.C.

Power Cord: 2 Conductor 12 ft., 16 ga.
3 Conductor 12 ft., 16 ga.
Grounding Adapter

VAC #20632
VAC #47750
VAC #47687

FILM SPEED

24 frames per second Sound
16.7 frames per second Silent

FILM CAPACITY

2000 ft. reels maximum

PHOTO CELL

RCA 927 or equiv.

VAC #19210

PROJECTION LAMP

750 Watt Standard DDB (25 hour)
1000 Watt (Optional) DFD (10 hour)
1200 Watt (Optional) DHT (10 hour)

VAC #47125
VAC #47130
VAC #47316

EXCITER LAMP

6.5A/T8/ISCP (BVK)

VAC #19299

AMPLIFIER

Power required

105 to 130 Volts 50/60 cycles

TUBE COMPLEMENT

Voltage Amplifier
Amplifier Phase Inverter
Output (2 tubes)
Rectifier

70-15

7025
12AX7
6973
5Y3

70-25

7025
12AX7
6L6
5U4

Fuse: 3 Ampere Buss 3AG or equiv.

Amplifier Load Impedance: 4 and 8 Ohms.

TECHNICAL DATA

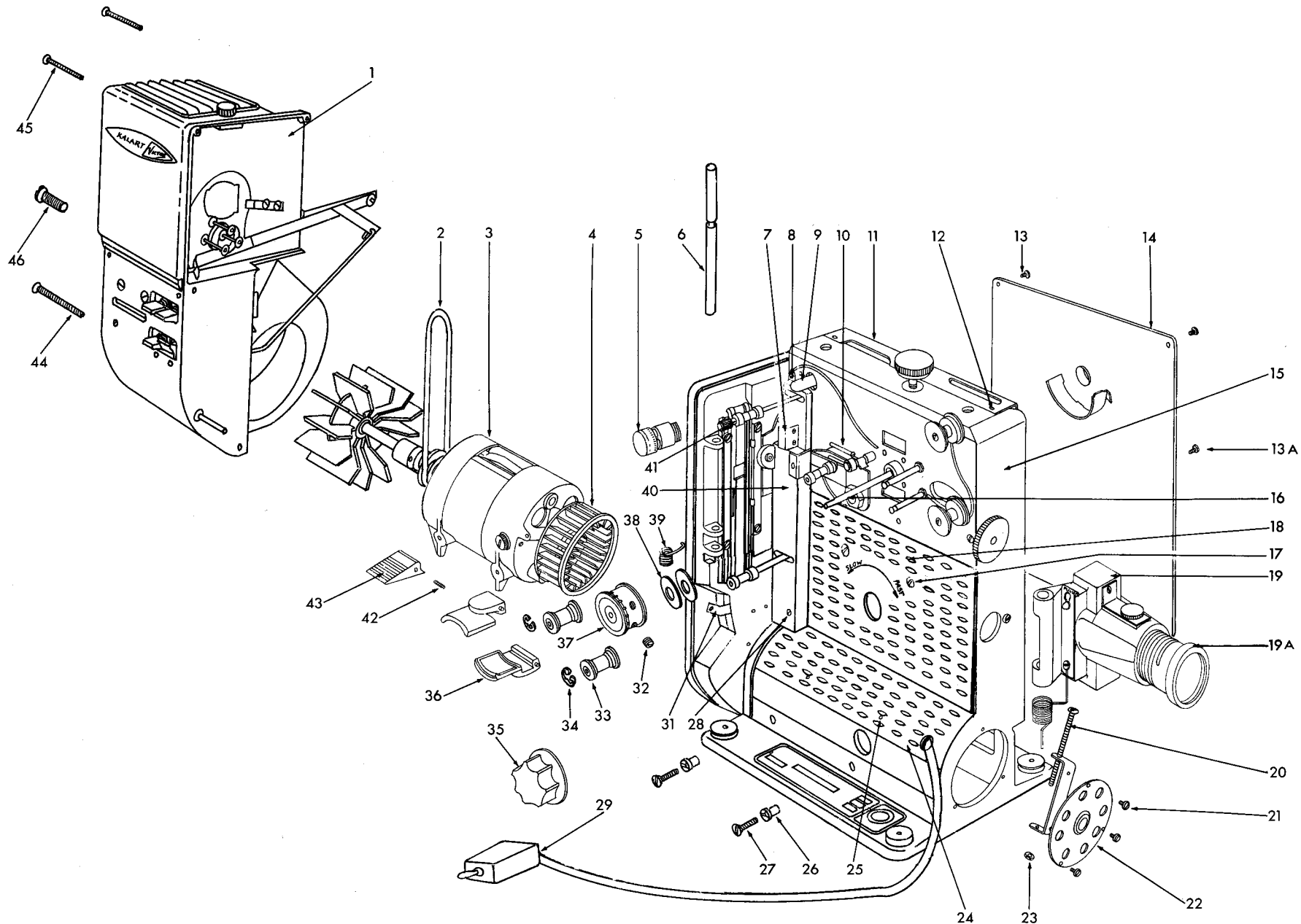
<u>Projection Lens:</u>	70-15	70-25
Standard	2" F:1.6 petzval	2" F:1.6 field flattener
Optional	5/8", 1", 1 1/2", 2 1/2", 3", 3 1/2", 4",	
<u>Speaker:</u>	Zoom Lens (35 mm - 60mm)	
Permanent Magnet	8 Ohm Impedance	

WEIGHTS AND DIMENSIONS

	70-15 w/5x7 speaker	70-15 w/o Spkr.	70-25	J3B	U6
Length Overall	15 1/2"	15 1/2"	15 1/2"	19"	18 1/8"
Height Overall	14 1/2"	14 1/2"	14 1/2"	18"	18"
Width Overall	9 1/2"	9 1/2"	9 1/2"	10 1/4"	10"
Equipment Weight	40 lbs.	36 1/2 lbs.	39 lbs.	21 1/2 lbs.	22 lbs.
Shipping Weight	47 lbs.	43 1/2 lbs.	46 lbs.	28 1/2 lbs.	28 lbs.

PROJECTOR HEAD — OPERATOR'S VIEW MODEL 70-0

No.	Part No.	Part Name	Qty.	No.	Part No.	Part Name	Qty.
1	37319-A	Lamp house casting assembly	1	24	37327	Silent nameplate	1
2	47609	O Ring drive belt	1	25	S290-0-2	#0 x 3/16 Drive screw	2
3	37317-A	Motor assembly	1	26	30520	Motor support sleeve	4
4	36310	Blower wheel	1	27	S250-832-8	8-32 x 1/2 Truss head screw	4
5	46212	Pilot lamp cap	1	28	S251-540-16	5-40 x 1 Round head screw	1
6	48031	Lens mount pivot	1	29	47114-A	Remote control assembly	1
7	46160-R	Lens mount lock plate	1	31	47635	Starting lever	1
8	S254-540-2	5-40 x 1/8 Binder head screw	1	32	S277-832-2	8-32 x 1/8 Socket set screw	2
9	28130	Pilot lamp	1	33	36159-A	Film roll assembly	2
10	S253-540-12	5-40 x 3/4 Fillister head screw	2	34	S235-3	#3 "E" ring	2
11	46376	Belt separator	1	35	36331	Rheostat knob	1
12	S251-440-3	4-40 x 3/16 Round head screw	2	36	47515-A	Film shoe	2
13	S254-832-5	8-32 x 5/16 Binder head screw	2	37	36154	Feed sprocket	1
13A	S254-540-2	5-40 x 1/8 Binder head screw	2	38	19494	Thrust washer	2
14	47924-A	Back cover plate	1	39	48029	Lens mount spring	1
15	36316-A	Body casting assembly	1	40	46150-AR	Trip cover assembly	1
16	S321-5/16-24	5/16-24 Hex cap nut	1	41	46145-AR	Automatic trip lever assembly	1
17	S254-832-4	8-32 x 1/4 Binder head screw	2	42	S277-540-3	5-40 x 3/16 Socket set screw	1
18	37328	Nameplate slow-fast	1	43	47863	Starting lever tab	1
19	48033-A	Lens mount assembly	1	44	S251-832-20	8-32 x 1 1/4 Round head screw	1
19A	46230	Lens projection field flattener 2" F1.6	1	45	S253-540-14	5-40 x 7/8 Fillister head screw	2
20	S2511-632-36	6-32 x 2 1/4 Brass round head screw	1	46	S254-540-5	5-40 x 5/16 Binder head screw	1
21	S254-540-3	5-40 x 3/16 Binder head screw	3		19303-R	Lens mount lock plate spacer (not shown)	2
22	19019-2R	Body plate assembly	1		48043	Motor pulley (not shown)	1
23	S324-632	6-32 Hex nut	1				

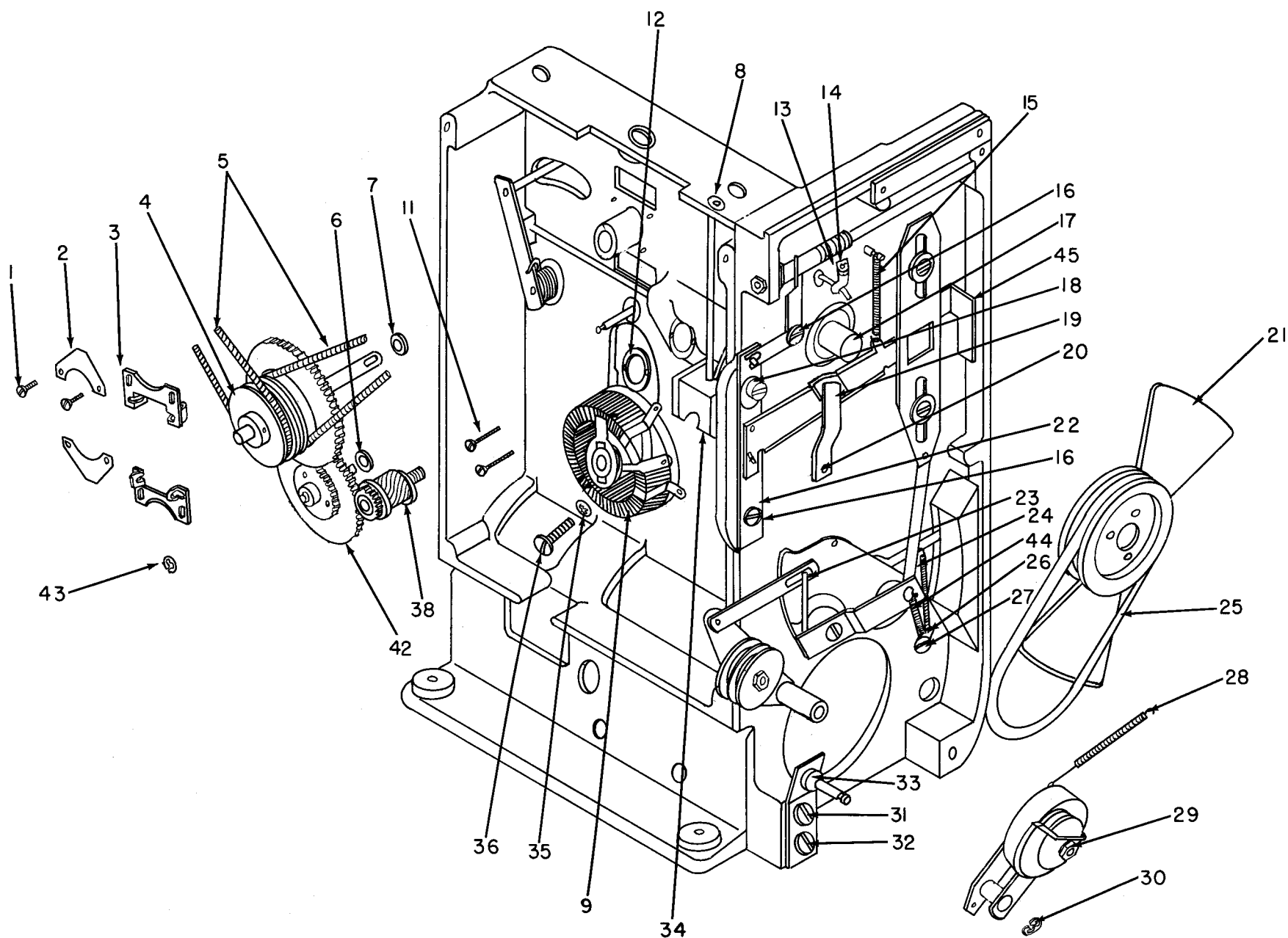


**PROJECTOR HEAD — OPERATOR'S VIEW
MODEL 70-0**

PROJECTOR HEAD — BACK SIDE AND REAR VIEW MODEL 70-0

No.	Part No.	Part Name	Page	Qty.	No.	Part No.	Part Name	Page	Qty.
1	S254-832-4	8-32 x 1/4 Binder head screw		4	27	S254-540-2	5-40 x 1/8 Binder head screw		1
2	36155	Film shoe spring	31	2	28	47952	Rewind spring		1
3	36156	Film shoe bracket	31	2	29	46138-A	Rewind disc bar & pulley assembly	35	1
4	26836-A	Takeup clutch assembly	27	1	30	S235-3	#3 "E" ring		1
5	23217	Takeup belt		2	31	S254-540-5	5-40 x 5/16 Binder head screw		1
6	19482	Thrust washer		As req'd	32	S251-832-28	8-32 x 1 3/4 Round head screw		1
7	19494	Thrust washer		As req'd	33	47697-A	Rewind pulley bracket assembly		1
8	47895-A	Oiler assembly		1	34	47603-A	Oil reservoir	29	1
9	36309	Variable speed rheostat		1	35	S199-5	#5 Plain washer		1
11	S252-172-3	1-72 x 3/16 Flat head screw		2	36	S251-540-22	5-40 x 1 3/8 Round head screw		1
12	36153	Felt retaining washer		1	38	47535-A	Spiral intermediate gear & shaft assembly	27	1
13	S254-540-2	5-40 x 1/8 Binder head screw		1	42	19180-A	Sound sprocket drive gear assembly	27	1
14	47608	Oil tube support		1	43	S235-3	#3 "E" ring		1
15	47639	Shuttle spring		1	44	19469	Safety shutter trip spring		1
16	47630	Shoulder screw		2	45	47993-A	Fire shutter assembly with heat filter		1
17	47520-A	Osc. sleeve & cam hub assembly	23	1					
18	47631	Bowed spring		2					
19	47638	Shuttle oscillator spring		1					
20	S254-540-2	5-40 x 1/8 Binder head screw		1					
*21	47527-A	Main cam & shutter 2 interruption (matched pair)	23	1					
22	48017-A	Shuttle & mounting arm assembly	25	1					
23	47637	Spring starting lever plate		1					
24	23381	Spring, start lever		1					
25	47610	Flat drive belt		1					
26	47177	Lug, start lever spring		1					

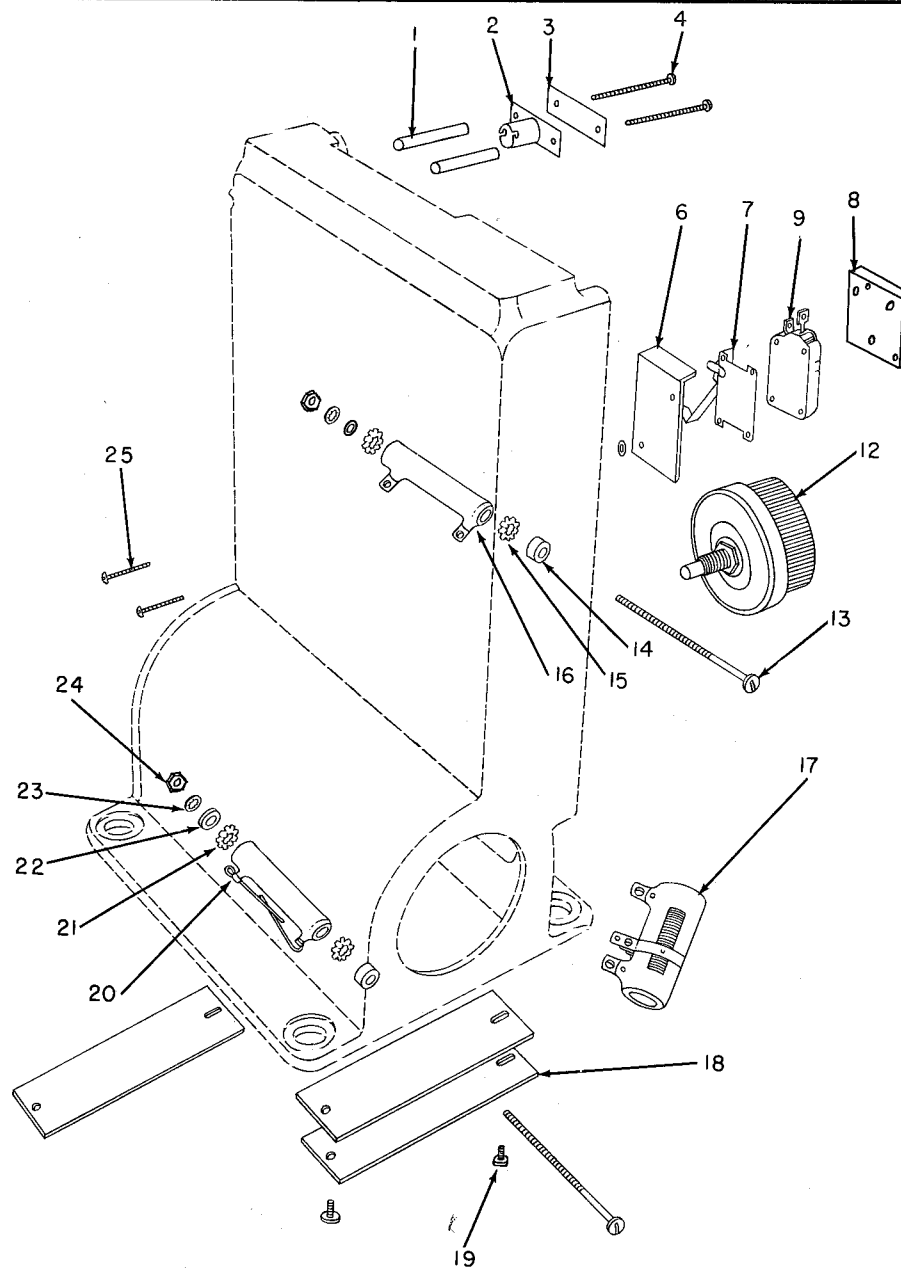
* 47526-A is 3 interruption shutter (matched pair)



**PROJECTOR HEAD — BACK SIDE AND REAR VIEW
MODEL 70-0**

ELECTRICAL COMPONENTS MODEL 70-0

No.	Part No.	Part Name	Qty.	No.	Part No.	Part Name	Qty.
1	47101	Pilot lamp sleeve	2	16	36306	Resistor, 750 ohm, 20 watt	1
2	19296	Pilot lamp socket	1	17	36308	Resistor, 150 ohm, 30 watt w/tap	1
3	19389	Pilot lamp socket insulator	1	18	19862	Motor terminal insulator	3
4	S251-540-18	5-40 x 1 1/8 Round head screw	2	19	S254-540-5	5-40 x 5/16 Binder head screw	2
6	26950	Snap switch insulator	1	20	36307	Resistor, 25 ohm, 20 watt	1
7	26944	Switch leaf bracket	1	21	S206-1	1/2 O.D. x 1/8 I.D. Inter. & exter. lockwasher	2
8	37335	Connector block	1	22	26954	Resistor washer	2
9	26949	Acro snap switch	1	23	S200-6	#6 Internal tooth lockwasher	2
12	36309	Variable resistor, 50 watt 150 ohm w/stop	1	24	S324-632	6-32 Hex nut	2
13	S251-632-44	6-32 x 2 3/4 Round head screw	2	25	S251-256-10	2-56 x 5/8 Round head screw	2
14	26953	Resistor spacer	2		26587	Remote control switch (not shown)	1
15	S206-1	1/2 O.D. x 1/8 I.D. Inter. & exter. lockwasher	2				



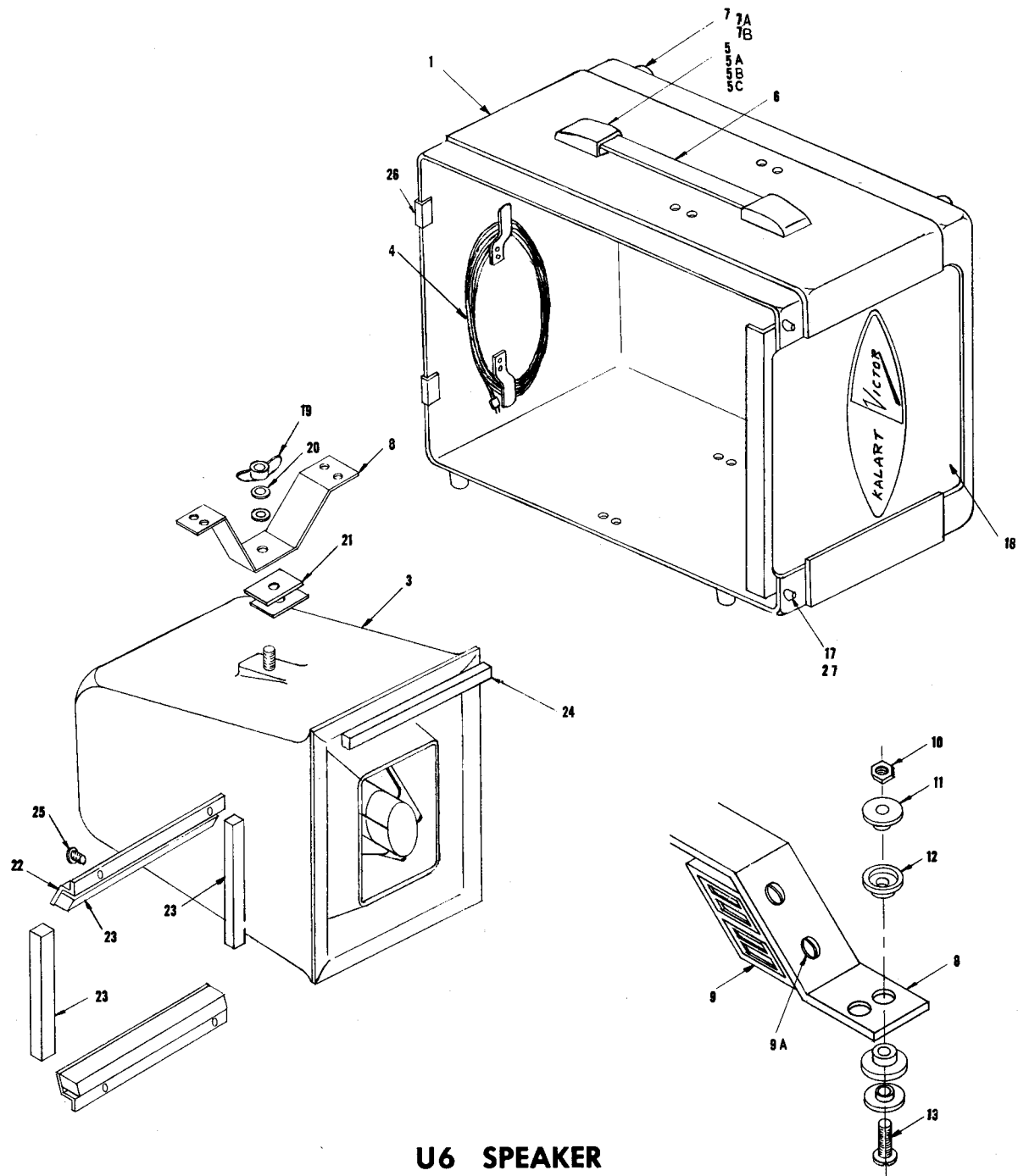
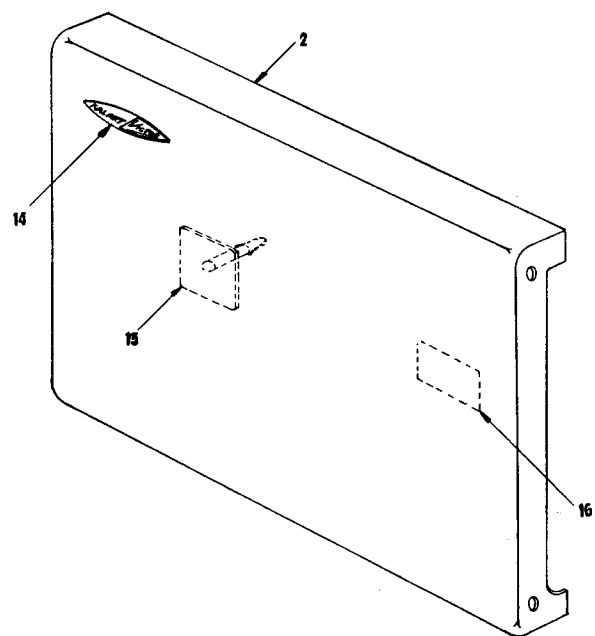
**ELECTRICAL COMPONENTS
MODEL 70-0**

U6 SPEAKER

No.	Part No.	Part Name	Qty.
	48101-A	Speaker assembly complete U6	1
1	48112-A	Speaker case assembly includes 2, 5, 5A, 5B, 5C, 6, 7, 7A, 7B, 17, 18	1
2	48104-A	Speaker door assembly includes 14, 15, 16	1
3	48100	Speaker	1
4	47251	Speaker cord	1
5	47798	Handle retainer	2
5A	48123	Handle lift*	2
5B	S254-832-5	8-32 x 5/16 Binding head screw*	2
5C	S200-8	#8 Internal tooth lock washer*	2
6	48125-A	Handle assembly	1
7	S582-1-2	Rubber foot	8
7A	S251-632-9	6-32 x 9/16 Round head screw*	8
7B	S320-632	6-32 Hex nut*	8
8	48108	Speaker bracket	2
9	48109-A	Speaker plug assembly	1
9A	S254-540-4	5-40 x 1/4 Binding head screw	2
10	S320-632	6-32 Hex nut	8
11	48116	Shockmount backup	16
12	47860	Rubber bushing	16

No.	Part No.	Part Name	Qty.
13	S250-632-16	6-32 x 1" Truss head screw	8
14	47840	Escutcheon	1
15	48115-A	Reel holder assembly	1
16	48110	Speaker position instruction plate	1
17	48114	Pilot pin	2
18	48105A	Grill Assembly	1
19		1/4-20 Wing nut	2
20	S199-1/4L	1/4" Washer	4
21	47576	Spacer	4
22	48107	Speaker support	2
23	48111-1	Speaker cushion	4
24	48111	Speaker cushion	1
25	S254-540-3	5-40 x 3/16 Binding head screw	4
26	48139	1" Rubber moulding	2
27	W-143	Neoprene washer	2

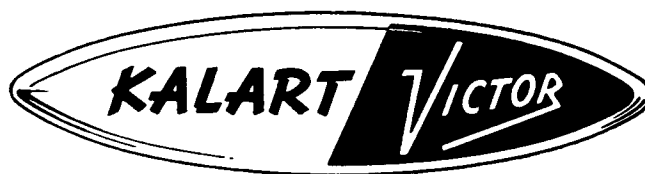
*Not shown



U6 SPEAKER

NOTES





Changes in

SERVICE AND PARTS MANUAL
MODEL 70-15, MODEL 70-25
FORM 2515E

<u>PAGE</u>	<u>ITEM</u>	<u>ALTERATION</u>
16	4	Change S202-6 to S202-5
16	18	S355-250 change to S356-250
22	1	S251-356-14 3-56 x 7/8 change to S251-356-12 3-56 x 3/4
22	60	S254-540-2 5-40 x 1/8 change to S254-540-3 5-40 x 3/16
26	1	S301- 5/16-24 change to S321-5/16-24
26	3	S251-256-2 change to S211B-256-2
26	4	S199-2 change to S198-2
40	10	11026 change to 11026-1 (Heading P.E.C. Lead, etc.)
40	7	S254-540-2 ---etc. change to M.S. 267 5-40x 1/4 self tapping screw
40	16	38001 change to S360-9
40	20	S324-540 5-40 hex nut change to S320-540 5-40 "KEPS" nut
42	23	47801 change to 47916
42	23	47762 change to 47915
44	4	23371 change to 47936
44	11	47803-A change to 47935-A
46	4	11120 change to S195-7
46	14	M.S. 19 change to M.S. 133 word round change to fillister
48	5	36201 change to S-705-1-95 1/2 Watt changed to 1 Watt

<u>PAGE</u>	<u>ITEM</u>	<u>ALTERATION</u>
48	9	15068 change to S705-1-66 $\frac{1}{2}$ watt changed to 1 watt
48	51	11026 change to 11026-1
48A	9	Same as change on Page 48
48A	5	" " " " " "
48A	51	" " " " " "
49	5	" " " " " "
49	9	" " " " " "
49	51	" " " " " "
49A	5	" " " " " "
49A	9	" " " " " "
49A	51	" " " " " "
49B	5	" " " " " "
49B	9	" " " " " "
49B	51	" " " " " "
50		Change 510K to 560K 1 watt
53		Under Projection lens 70-25, transfer 2" F:1.6 field flattener to line below zoom lens
54	19A	Change to 2" standard lens 20120