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16 mm Motion Picture Equipment

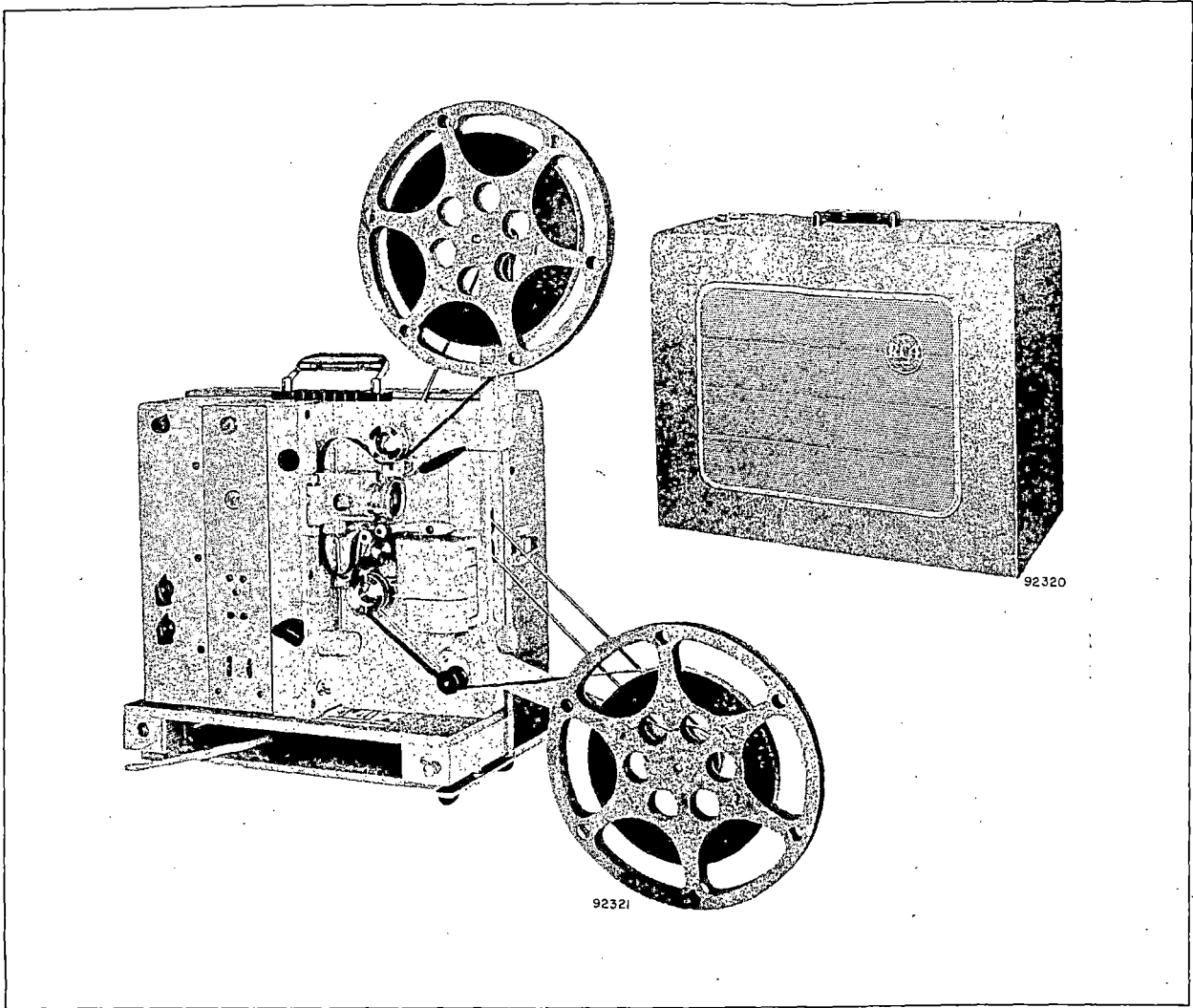
RCA 400

SERVICE MANUAL

RADIO CORPORATION OF AMERICA
INDUSTRIAL ELECTRONIC PRODUCTS, CAMDEN, N. J.

PRINTED IN U.S.A.
DU-599

IB-24933-1



RCA 400 Senior Projector and Speaker

RCA 400

16mm MOTION PICTURE EQUIPMENT

SENIOR

MI-1338-C Projector, Sound and Silent Speed
MI-1312-C Speaker and Accessories

JUNIOR

MI-1345-C Projector, Sound and Silent Speed

AUXILIARY SPEAKER FOR BOTH MODELS

MI-1312-C Auxiliary Speaker

TECHNICAL DATA

*Power Required

MI-1338-C

1000 watts—with 750 watt lamp
1150 watts—with 1000 watt lamp
1350 watts—with 1200 watt lamp

MI-1345-C

975 watts—with 750 watt lamp
1150 watts—with 1000 watt lamp
1350 watts—with 1200 watt lamp
* 105 to 125 volts, 60 cycles

Projection Lens

Speed: f/1.6
Focal length: 2 inches
Coated on all air-to-glass surfaces

Projection Lamp

1000-watt, 115-volt, T12P

Sound Lamp

$\frac{3}{4}$ -ampere, 4-volt, prefocused, S-8 double contact

Tube Complement

MI-1338-C

1 RCA 6J7
1 RCA 6J5
1 RCA 6SL7GT
3 RCA 6V6GT
1 RCA 5Y3GT
1 RCA 921

MI-1345-C

1 RCA 6SL7GT
2 RCA 50L6GT
1 RCA 6V6GT
1 GE 12AY7
1 RCA 921

Dimensions	Inches		
	MI-1338-C	MI-1312-C	MI-1345-C
Length	15 $\frac{1}{2}$	19 $\frac{5}{8}$	13 $\frac{7}{8}$
Height	15	15 $\frac{5}{8}$	15
Width	10	9 $\frac{1}{4}$	9 $\frac{5}{8}$
Weight	Pounds		
	MI-1338-C	MI-1312-C	MI-1345-C
Equipment	39 $\frac{1}{4}$	19	33
Shipping	46	26 $\frac{1}{2}$	39

NOTE

This Manual also applies to the 50-cycle equipments: MI-1338-CF and MI-1345-CF

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SERVICE OPERATIONS

RCA 400 JUNIOR PROJECTOR AND SPEAKER (IN COVER)

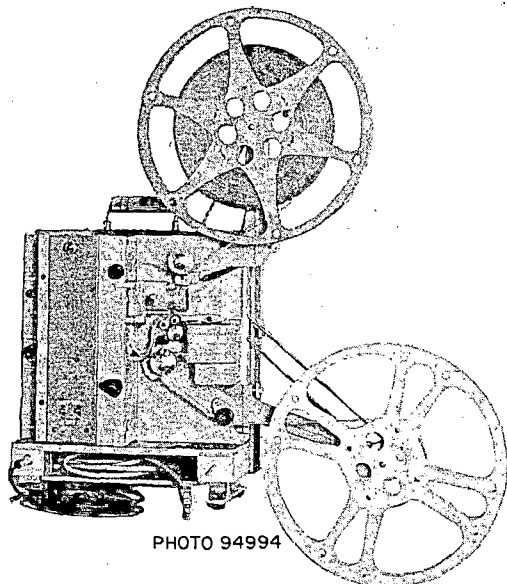
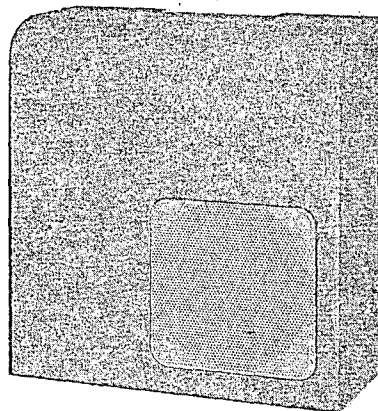
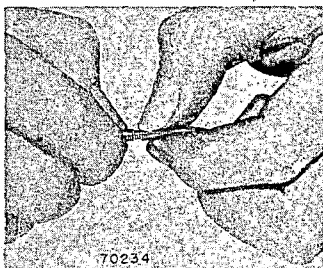


PHOTO 94994



94995

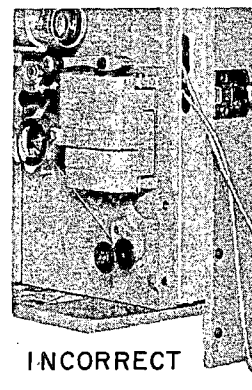
REMOVING BELTS



PUSH FIRST TURN
WITH THUMB NAIL
OR STRETCH SPLICE
OUT AND UNSCREW.

REPLACING BELTS

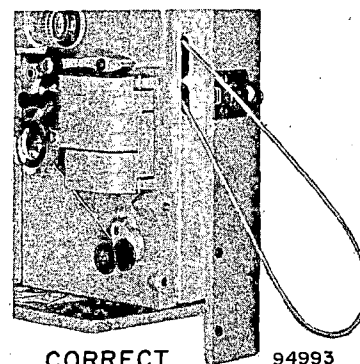
1. BEFORE PULLING OUT OLD BELT ATTACH ONE END OF NEW BELT TO AN END OF OLD BELT.
2. IF REPLACING TOP BELT PLACE REWIND LEVER IN OPERATE POSITION. IF REPLACING LOWER BELT PLACE REWIND LEVER IN REWIND POSITION.
3. PULL NEW BELT INTO MACHINE BY PULLING OUT UNATTACHED END OF BELT. UNATTACH OLD BELT.
4. COUNT NUMBER OF TURNS ON SMALL END OF NEW BELT.
5. TWIST SMALL END OF BELT BACKWARDS- AS IF REMOVING A SCREW- AN EQUAL NUMBER OF TURNS.
6. SCREW ENDS OF BELT TOGETHER. THIS METHOD PREVENTS BELT FROM COMING APART DURING OPERATION.



INCORRECT

94992

TO IDENTIFY UPPER AND
LOWER BELTS REMEMBER
"LOWER IS LONGER."



CORRECT

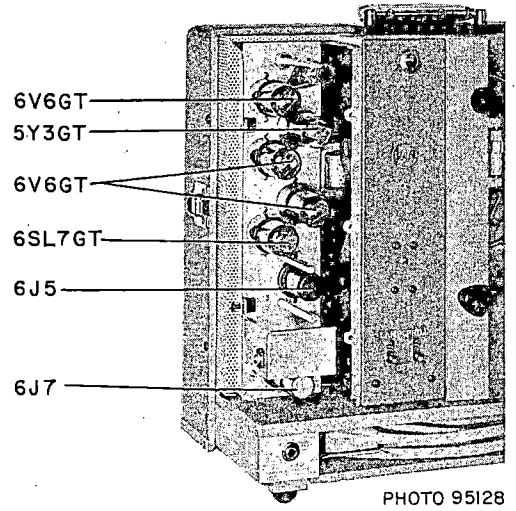
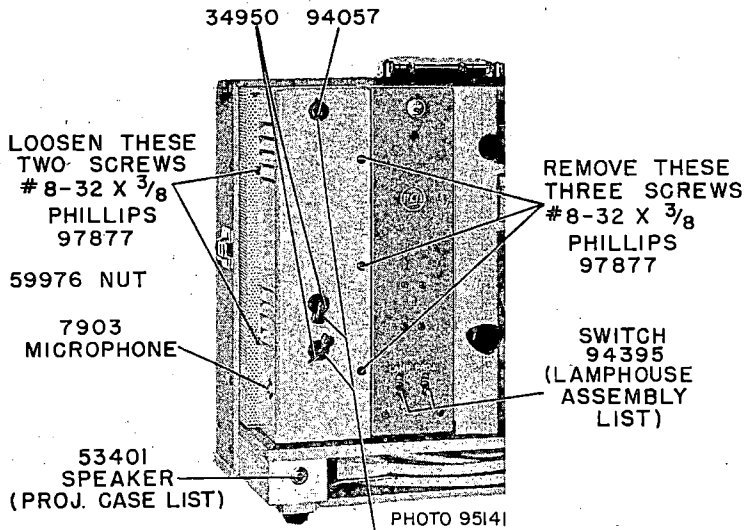
94993

PARTS

Stock No.	Drawing No.	Description
215670	184261-8	Belt, rewind spring belt, upper
215671	184261-9	Belt, take-up spring belt, lower

RCA 400 SENIOR AMPLIFIER TO INSPECT AMPLIFIER TUBES

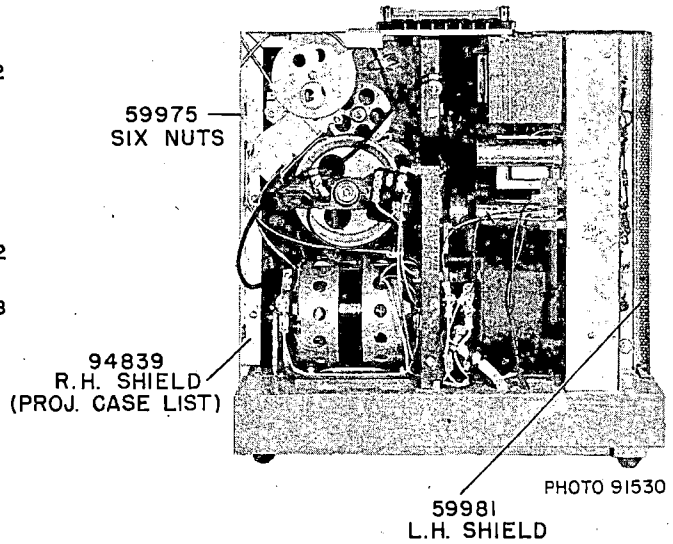
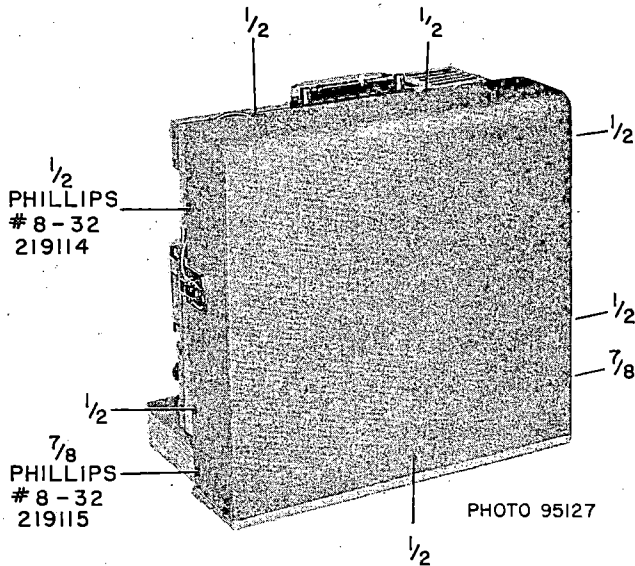
TUBE LOCATION



LOOSEN THESE #8 AND #6-32 SETSCREWS AND REMOVE KNOBS. REMOVE COVER.

MAKE SURE ALL TUBES ARE FIRMLY SEATED

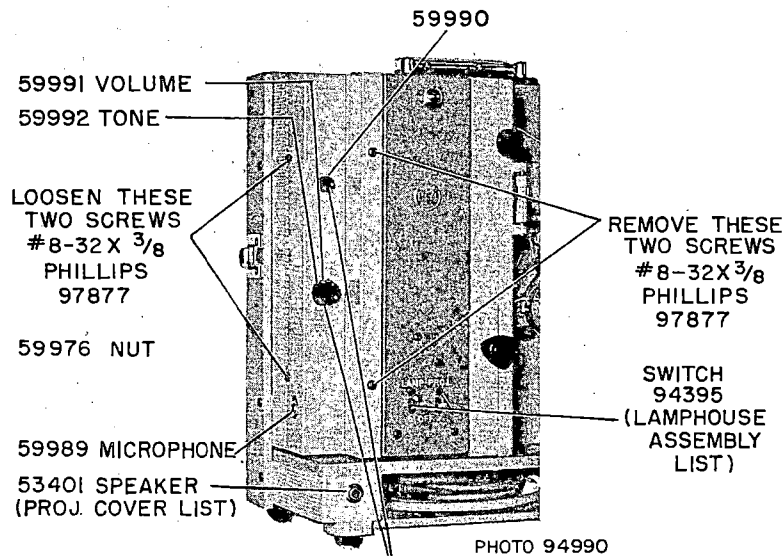
TO OBTAIN ACCESS TO BACK OF PROJECTOR



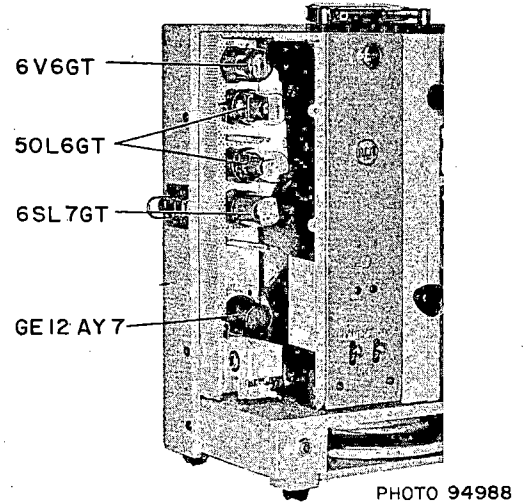
REMOVE NINE #8-32 SCREWS LENGTH AS SHOWN.

FOR AMPLIFIER COMPONENTS SEE PAGES 52 THROUGH 54

RCA 400 JUNIOR AMPLIFIER TO INSPECT AMPLIFIER TUBES



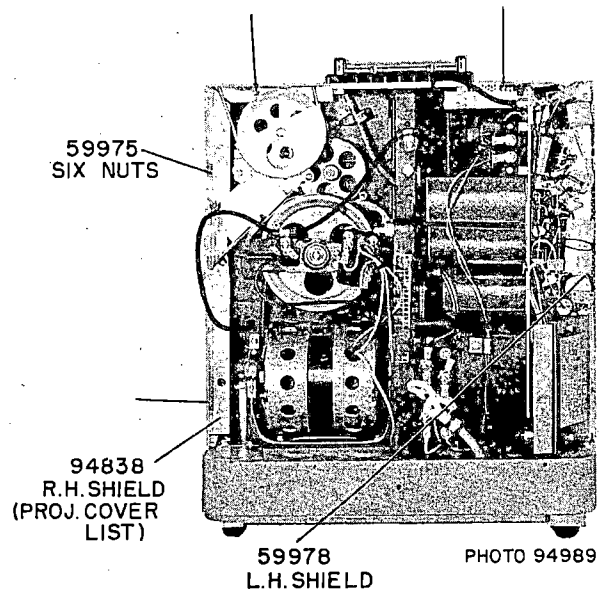
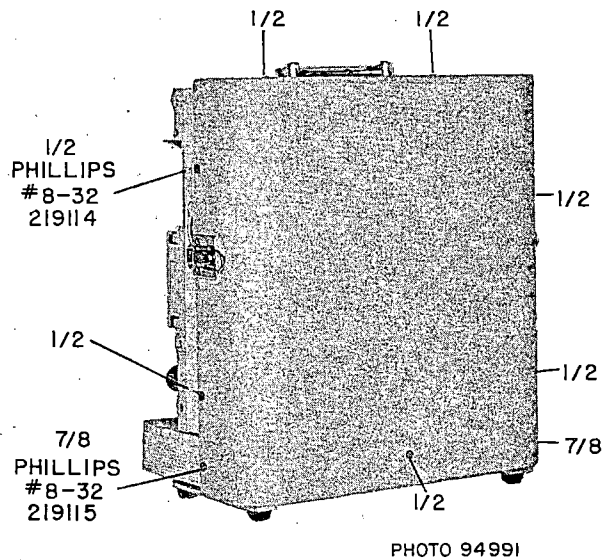
TUBE LOCATION



LOOSEN THESE TWO SETSCREWS #6-32 X 1/8
AND REMOVE KNOBS. REMOVE COVER.

MAKE SURE ALL TUBES
ARE FIRMLY SEATED

TO OBTAIN ACCESS TO BACK OF PROJECTOR



REMOVE NINE #8-32 SCREWS,
LENGTH AS SHOWN.

FOR AMPLIFIER COMPONENTS SEE PAGES 54 THROUGH 57

RCA 400 "SENIOR" AND "JUNIOR" AMPLIFIERS TO SERVICE AMPLIFIERS

SENIOR

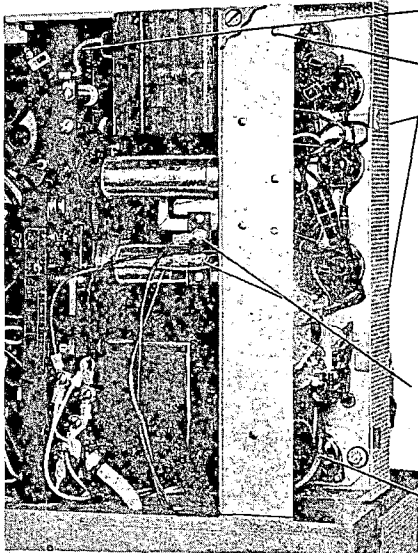


PHOTO 95129

DISCONNECT EXCITER LAMP CABLE. REMOVE THIS #8-32 X 1/4 SCREW AND THESE TWO #8-32 X 3/8 PHILLIPS SCREWS (INSIDE OF SHIELD.)

DISCONNECT SPEAKER LEADS

DISCONNECT PHOTOTUBE CABLE

IF AMPLIFIER ONLY IS TO BE REMOVED, DISCONNECT 2 AMPLIFIER LEADS-BUT NOT THE RED LEAD-FROM 2 UPPER TERMINALS. IF AMPLIFIER AND LAMPHOUSE ARE TO BE REMOVED DISCONNECT THE RED LEAD FROM THE UPPER-LEFT-TERMINAL AND ALL LEADS FROM THE LOWER 2 TERMINALS.

JUNIOR

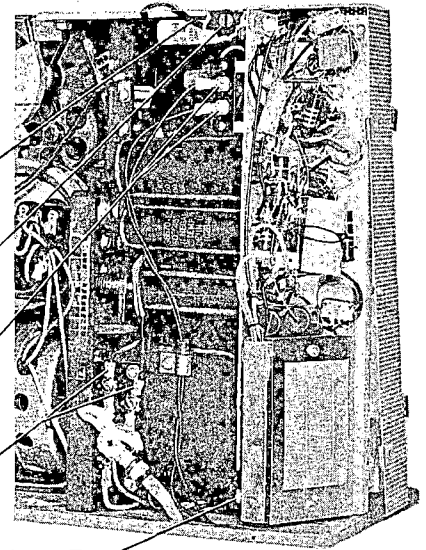


PHOTO 94973

DISCONNECT EXCITER LAMP CABLE.

REMOVE THIS #8-32 X 1/4 SCREW TO REMOVE SHIELD

DISCONNECT SPEAKER LEADS

DISCONNECT PHOTOTUBE CABLE

IF AMPLIFIER ONLY IS TO BE REMOVED, DISCONNECT 2 LEADS FROM UPPER TERMINALS. IF AMPLIFIER AND LAMPHOUSE IS TO BE REMOVED DISCONNECT 2 BLACK LEADS FROM 2 UPPER TERMINALS AND 2 LEADS FROM 2 LOWER TERMINALS.

TO REMOVE AMPLIFIER

SENIOR

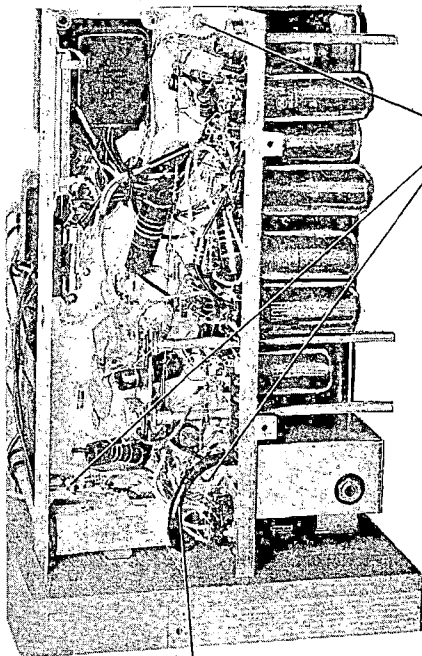


PHOTO 95134

REMOVE THESE THREE #10-32 X 5/16 SCREW

REMOVE THESE THREE SCREWS (#10-32 X 5/16) (#8-32 X 1/4) (#8-32 X 3/4)

DISCONNECT PHOTOTUBE CABLE

JUNIOR

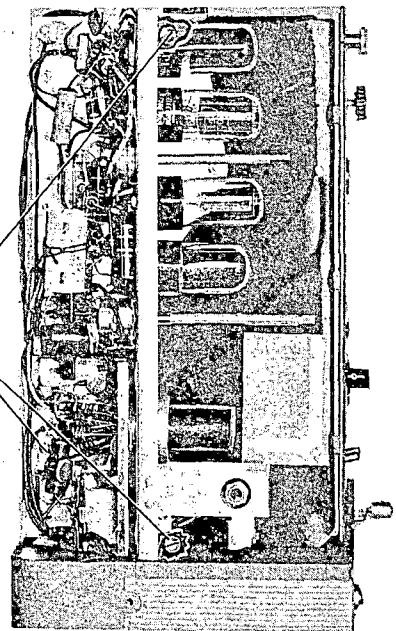


PHOTO 94974

LAMPHOUSE AND DOOR ASSEMBLY

TO REMOVE LAMPHOUSE

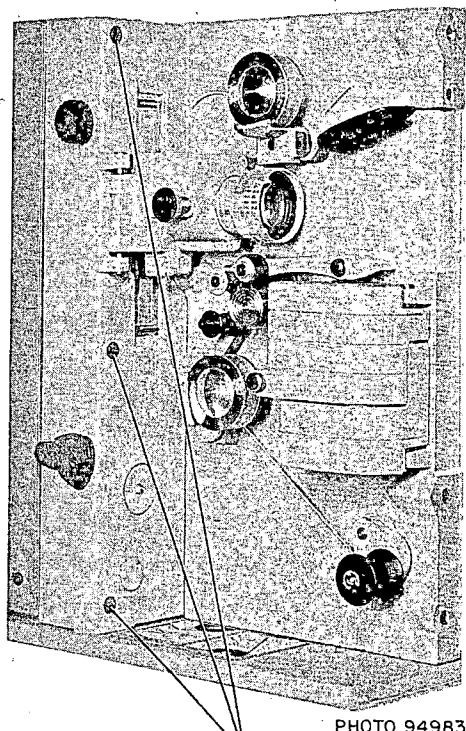


PHOTO 94983

REMOVE THESE THREE SCREWS
#10-32 X 7/8
PHILLIPS

"SENIOR"

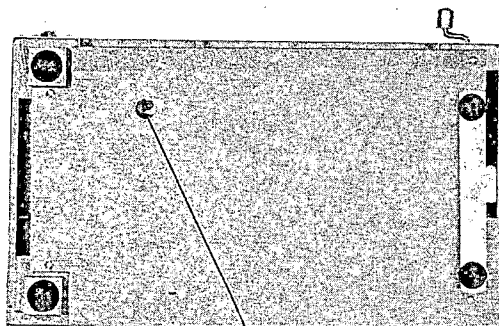


PHOTO 95135

REMOVE THIS SCREW
#10-32 X 7/8

"JUNIOR"

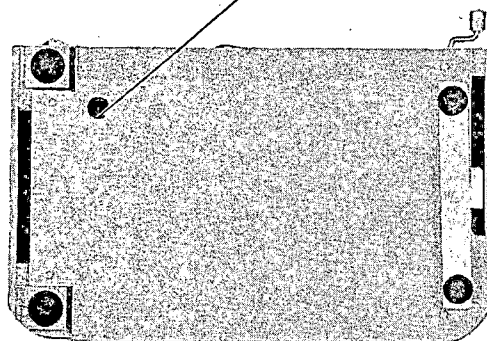
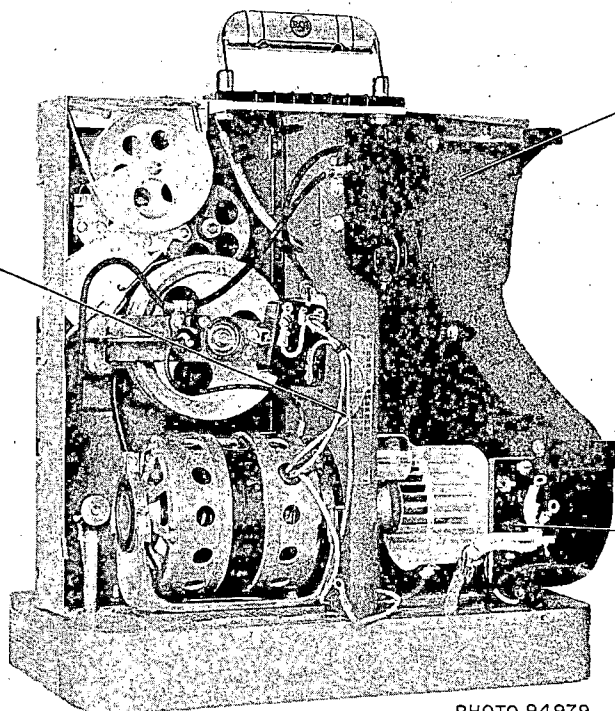


PHOTO 94984



REMOVE THIS SCREW
#10-32 X 7/8
PHILLIPS

215102 (JUNIOR)
215103 (SENIOR)

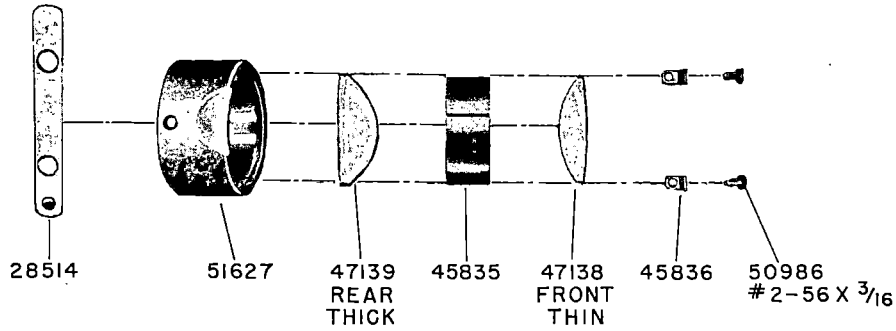
SLIDE LAMPHOUSE OFF TO THE RIGHT BEING CAREFUL NOT TO LET BLOWER ROTOR BIND IN HOUSING. BLOWER ROTOR MAY BE DAMAGED IF NOT CAREFULLY REMOVED.

59832

PROJECTION LAMP
28448

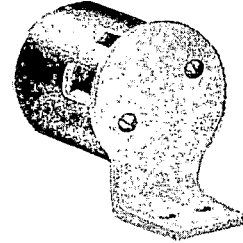
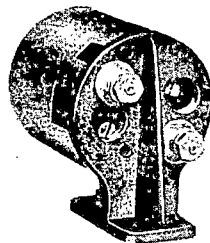
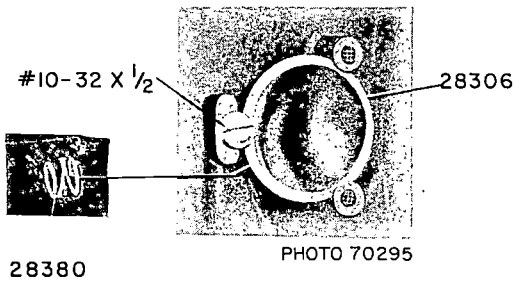
PHOTO 94979

LAMPHOUSE AND DOOR ASSEMBLY



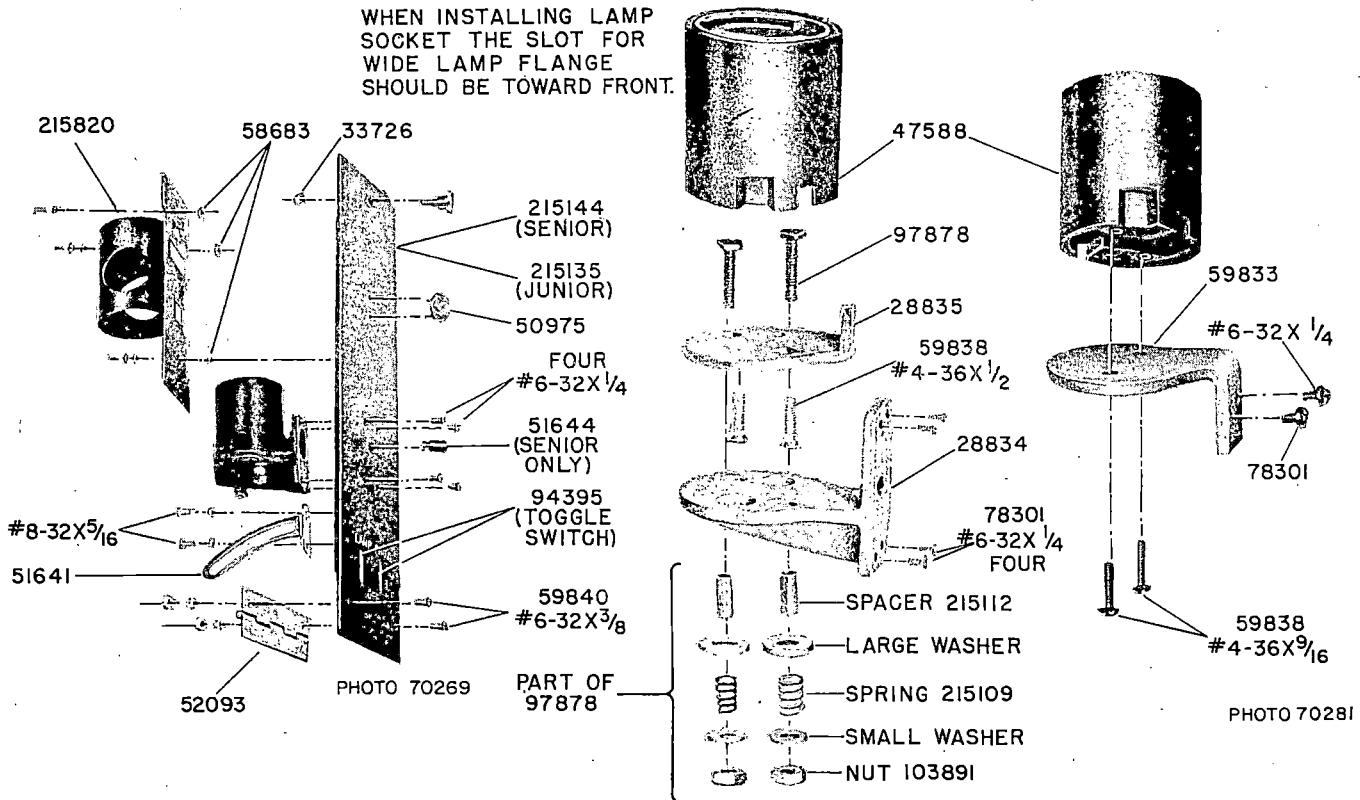
"SENIOR"

"JUNIOR"



SOCKETS ASSEMBLED - BOTTOM VIEW

WHEN INSTALLING LAMP SOCKET THE SLOT FOR WIDE LAMP FLANGE SHOULD BE TOWARD FRONT.



PARTS

<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
LAMPHOUSE ASSEMBLY FOR MI-1338-C, -CF AND MI-1345-C		
59832	8876364-1	Board, terminal
59833**	8876064-1	Bracket, projection lamp, stationary
28834*	182040-3	Bracket, projection lamp, stationary
28835*	182041-3	Bracket, projection lamp, adjustable
215820	148370-502	Chimney, lamp chimney and baffle assembly
215144*	175483-4	Door, lamphouse
215135**	148375-502	Door, lamphouse door, machining
52093	181297-3	Hinge, lamphouse door
215103*	8876067-505	Lamphouse, blower housing assembly (left half)
215102**	8876067-504	Lamphouse, blower housing (left half)
215119	176972-2	Lamphouse, blower housing assembly (right half)
45304	810897-5	Lamp, projection, 1000 w. 115 v.
47138	181279-3	Lens, front condenser
47139	181279-4	Lens, rear condenser
50975	8958720-1	Monogram, door, RCA
103891*	57435-104	Nut, 6-32, adjustable bracket
28514	8876095-501	Spring, and pin assembly - condenser lens
28306	181289-2	Reflector, projection lamp
51627	8875977-1	Mounting, lens
51664*	8850740-2	Screw, projection lamp adjusting screw
97878*	182043-1	Screw, adjustable bracket, screw, spring, nut and washers, spacer
51631	185629-3	Screw, lamphouse door thumbscrew
59838	73101-106	Screw, projection lamp socket
78301	990106-605	Screw, projection lamp bracket
59840	8876207-2	Screw, door hinge
50986	57452-403	Screw, lens retaining spring, 2-56 x 3/16
47588	185610-1	Socket, projection lamp
45835	182923-1	Spacer, condenser lens
28380	286418-7	Spring, reflector coil spring
45836	182842-2	Spring, condenser lens retaining
51641	189368-1	Support, door fall support
94395	8890681-3	Switch, toggle SPST
215112*	181437-124	Spacer, adjustable bracket
215109*	819107-14	Spring, adjustable bracket
33726	82639-1	Washer, "C" washer, door thumbscrew
58683	76709-11	Washer, lamp chimney and baffle, insulating

* MI-1338-C, -CF only

** MI-1345-C, -CF, -CT only

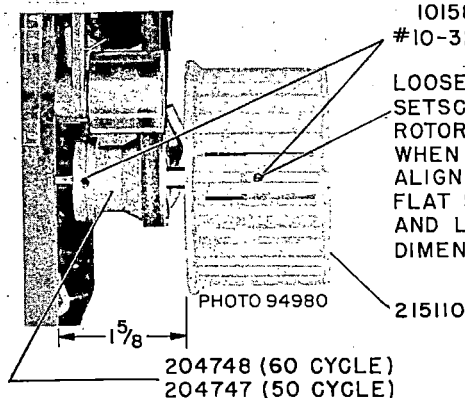
PARTS

<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
MOTOR AND BLOWER ASSEMBLY 60 CYCLE OPERATION - MI-1338-C, MI-1345-C,-CT		
94290	145285-3	Belt, motor drive (green dot)
215110	8412419-1	Blower, rotor
215619	484379-1	Motor, drive 115 V, 50/60 cycles
204748	148332-3	Pulley, motor drive
59811	8876288-1	Relay, drive motor starting relay
101589	8888539-183	Screw, blower rotor setscrew, 10-32 x 1/4 stl.
94309	8876398-6	Spacer, motor mounting spacer

<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
50 CYCLE OPERATION - MI-1338-CF, MI-1345-CF		
94285	145285-4	Belt, motor drive (white dot)
215110	8412419-1	Blower, rotor
215619	484379-1	Motor, drive 115 V, 50/60 cycles
204747	148938-3	Pulley, motor drive
94987	8876288-2	Relay, drive motor starting
101589	8888539-183	Screw, blower rotor setscrew
94309	8876398-6	Spacer, motor mounting spacer
96473	145331-3	Rod, belt shifter

MOTOR AND BLOWER ASSEMBLY

TO REMOVE BLOWER ROTOR AND MOTOR DRIVE PULLEY

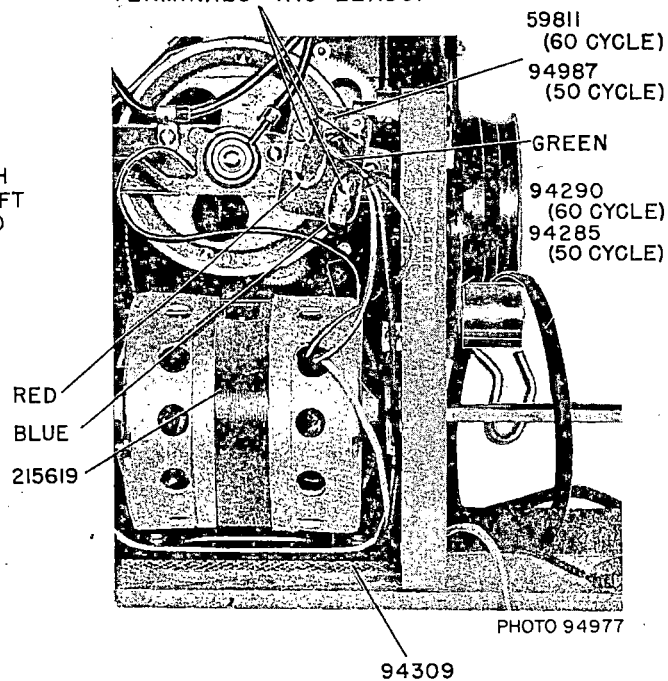


LOOSEN THIS ALLEN SETSCREW AND PULL ROTOR OFF SHAFT. WHEN REINSTALLING, ALIGN SETSCREW WITH FLAT SURFACE ON SHAFT AND LOCATE ROTOR TO DIMENSION SHOWN.

SLIP DRIVE BELT OFF PULLEY. LOOSEN ALLEN SETSCREW AND REMOVE PULLEY FROM SHAFT. WHEN REASSEMBLING ALIGN SETSCREW WITH FLAT SURFACE ON SHAFT. ALIGN THE TWO PULLEY BELT DRIVE SURFACES WITH THOSE OF LARGE PULLEY IMMEDIATELY ABOVE. WHEN REINSTALLING DRIVE BELT, PLACE RUBBER SIDE OF BELT AGAINST PULLEY.

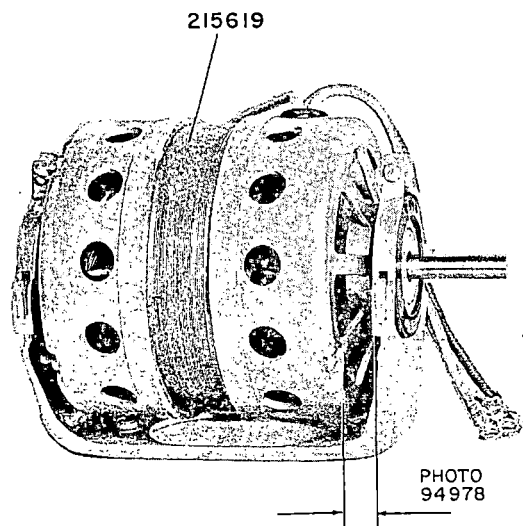
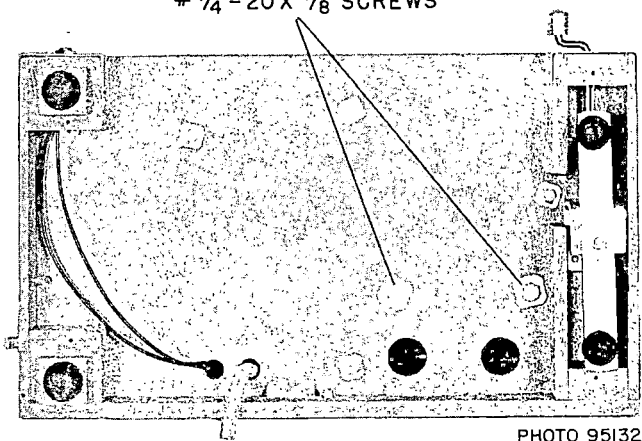
TO DISCONNECT MOTOR

DISCONNECT THREE LEADS FROM RELAY TERMINALS TAG LEADS.



TO REMOVE MOTOR FROM WOOD BASE

REMOVE THESE TWO # 1/4 - 20 X 7/8 SCREWS



IF MOTOR MOUNTING BRACKET IS REMOVED, REASSEMBLE WITH SHORT DIMENSION AT THIS END. SEE PAGE 14, PHOTOGRAPH NO. 70272 FOR MOTOR SHAFT LOCATING DIMENSION WHEN REASSEMBLING.

PULLEY (LARGE), DRIVE SHAFT AND WORM GEAR ASSEMBLIES

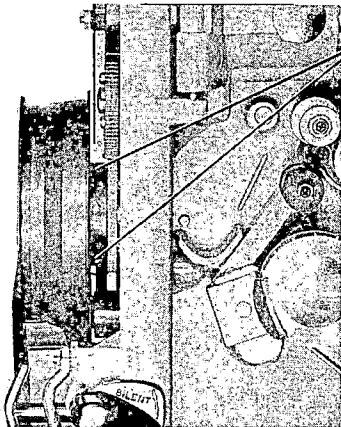


PHOTO 94985

TO REMOVE LARGE DRIVE PULLEY, LOOSEN ALLEN SCREWS ABOUT 3 TURNS.

59860
RETAINING SCREW FOR
DRIVE SHAFT BEARING

BE SURE POINT OF RETAINING SCREW ENTERS HOLE IN SHAFT BUSHING. MAKE CERTAIN THAT WORM SHAFT DOES NOT BIND AFTER RETAINING SCREW IS TIGHTENED.

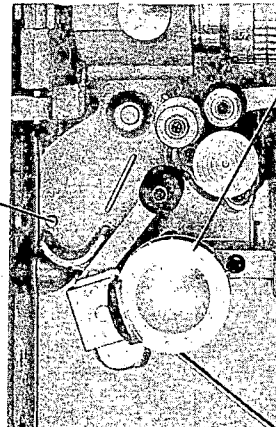
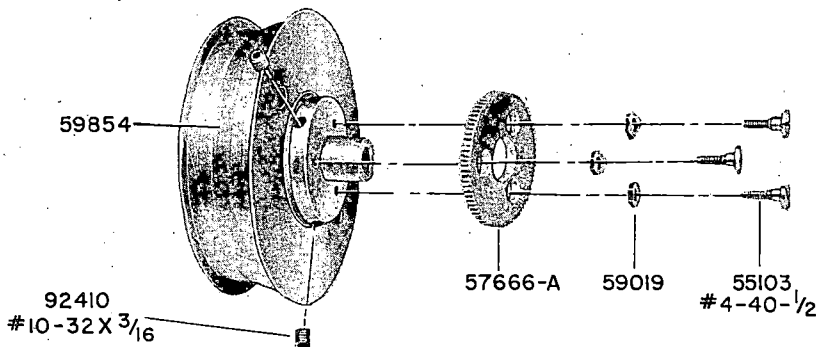


PHOTO 94996

TO REINSTALL PULLEY, HOLD LOWER SPROCKET IN EXTREME COUNTERCLOCK-WISE POSITION TO TAKE UP END PLAY IN PULLEY SHAFT. AFTER REINSTALLING PULLEY THERE SHOULD BE .003 END PLAY AFTER SETSCREWS ARE TIGHTENED. USE A THICKNESS GAUGE.

BE SURE TO REPLACE BOTH 1/16 THRUST WASHERS

BE CAREFUL TO REASSEMBLE STEEL WASHER BETWEEN BRONZE WASHER AND SHAFT BUSHING.



WORM GEAR ASSEMBLY

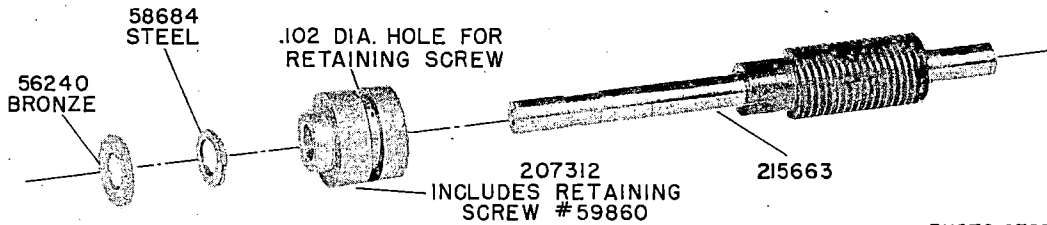
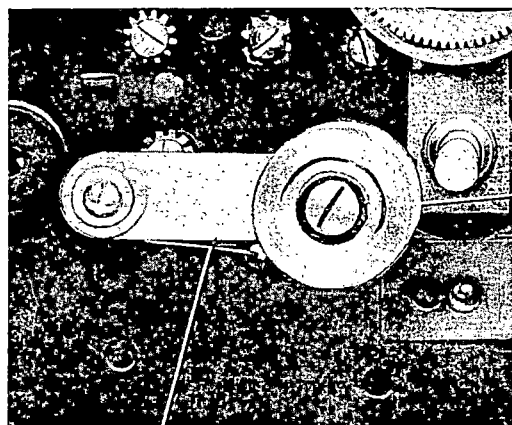


PHOTO 87051

PARTS

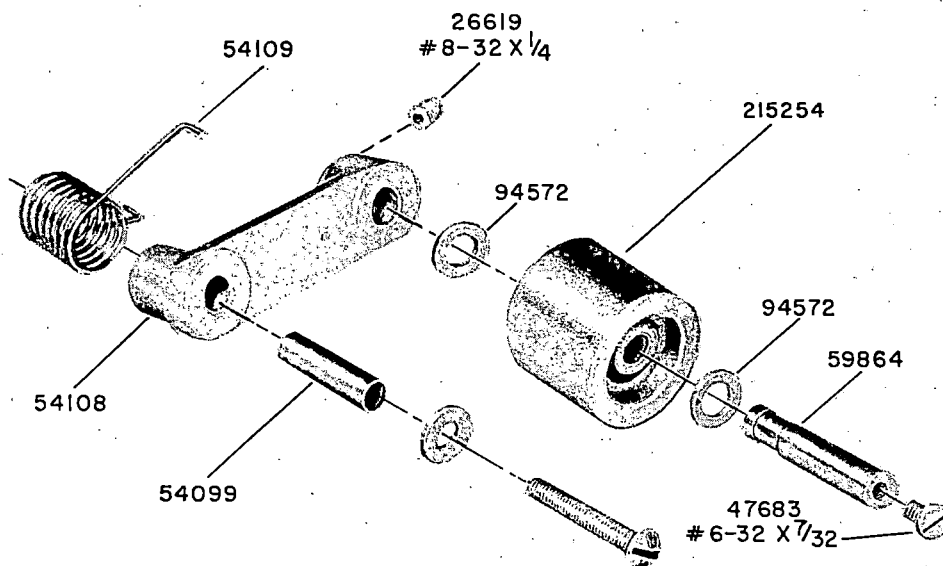
Stock No.	Drawing No.	Description
PULLEY (LARGE), DRIVE SHAFT AND WORM GEAR ASSEMBLIES		
207312	8874353-2	Bearing, drive shaft (includes 59860 retaining screw)
56240	877803-3	Bearing, pulley thrust
59019	182882-4	Bushing, gear mounting bushing, rubber
57666-A	147771-1	Gear, drive pulley gear (nylon)
59854	148380-1	Pulley, large drive pulley only
59860	8877233-1	Screw, shaft bearing retaining screw
92410	8888539-182	Screw, pulley setscrew, 10-32 x 3/16, SH
55103	8872159-1	Screw, shoulder, gear, 4-40 x 1/2
215663	8412598-501	Shaft, drive shaft and worm gear assembly
58684	286391-27	Washer, drive shaft thrust washer

DRIVE BELT IDLER ROLLER ASSEMBLY



70274

CORRECT POSITION OF IDLER ROLLER,
BELT REMOVED. IF INCORRECT, ADJUST
BY BENDING THIS SPRING

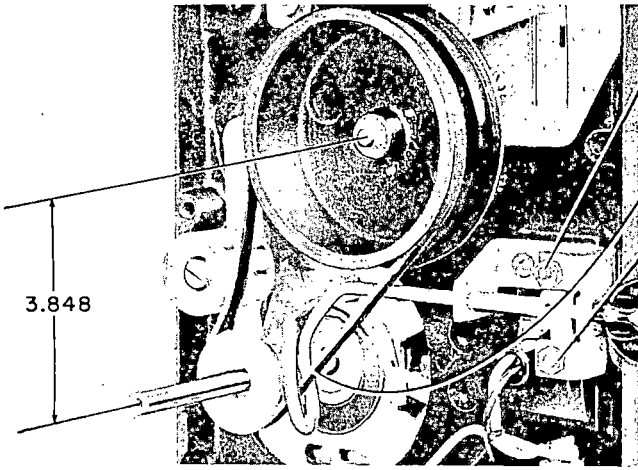


PARTS

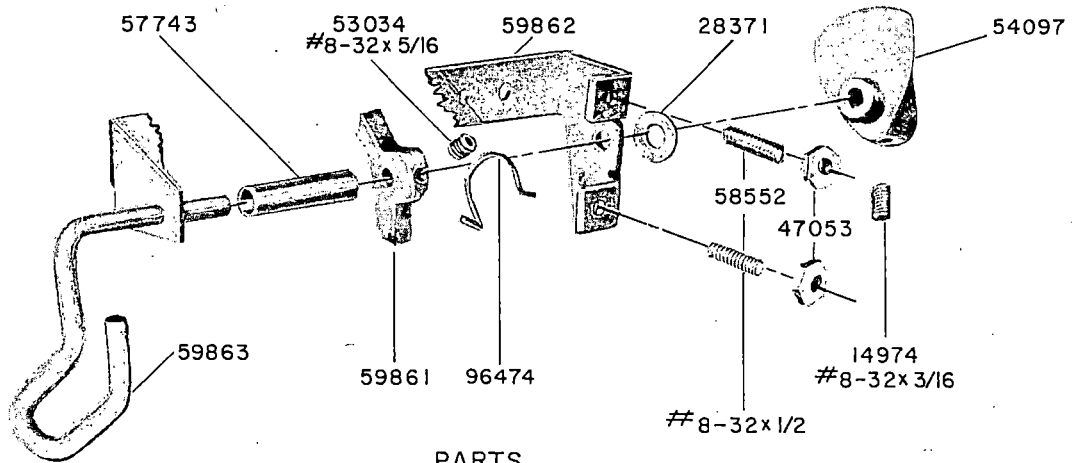
Stock No.	Drawing No.	Description
DRIVE BELT IDLER ROLLER ASSEMBLY		
54108	8853592-1	Arm, idler roller
215254	8928699-501	Roller, idler roller and bushing assembly
26619	8888539-143	Screw, roller arm setscrew, 8-32 x 1/4
47683	182812-2	Screw, roller shaft
59864	8853597-2	Shaft, idler roller
54099	8887098-14	Spacer, idler arm
54109	8853593-1	Spring, idler roller arm
94572	868561-6	Washer, roller

BELT SHIFTER ASSEMBLY (SPEED CHANGER)

TO ADJUST BELT SHIFTER



1. WITH SPEED CONTROL UP IN SILENT POSITION, LOOSEN THIS NUT AND ADJUST SCREW TO RIGHT OR LEFT UNTIL BELT DOES NOT RUB EITHER SIDE OF BELT SHIFTER ARM. TIGHTEN LOCK-NUT.
2. MOVE SPEED CONTROL DOWN TO SOUND SPEED POSITION AND REPEAT ABOVE ADJUSTMENT OF LOWER SET SCREW.
3. BELT MUST NOT RUB AGAINST SHIFTER ROD IN ANY POSITION.



PARTS

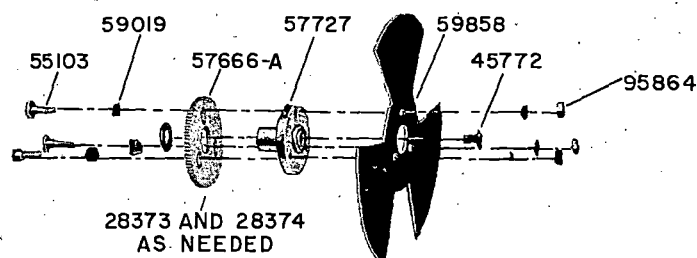
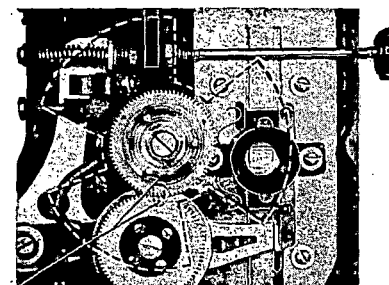
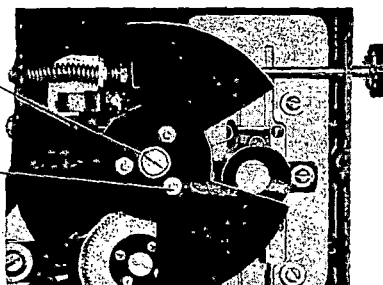
Stock No.	Description	Drawing No.
BELT SHIFTER ASSEMBLY		
59861	8876701-1	Arm, shifter rod stop
59862	145332-2	Bracket, shifter rod
57743	8876293-1	Collar, shift rod spacer
54097	148366-501	Knob, shift
47053	57435-105	Nut, stop screw
59863	145331-2	Rod, belt shifter, 4-7/8" long
14974	8888539-142	Screw, shift knob setscrew, 8-32 x 3/16
53034	8888539-144	Screw, stop arm setscrew, 8-32 x 5/16
58552	56442-108	Screw, stop, 8-32 x 1/2
96474	184300-5	Spring, shift rod "C" spring
28371	82278-106	Washer, shift rod, No. 10

SHUTTER ASSEMBLY

TO REMOVE SHUTTER ASSEMBLY TAKE OUT THIS SCREW.

TO DISASSEMBLE SHUTTER ASSEMBLY

1. REMOVE SHUTTER ASSEMBLY.
2. REMOVE THE 3 NUTS AND WASHERS
3. UNSCREW SCREWS AT BACK.
4. DO NOT MISPLACE SHIM, THRUST WASHERS-IF ANY-ON SHUTTER SHAFT.



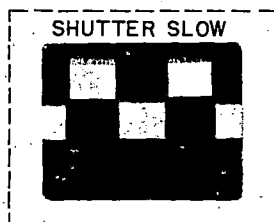
TO INSTALL SHUTTER ASSEMBLY

1. LINE UP MARK ON CAM GEAR WITH ANY ONE OF THREE HOLES IN SHUTTER GEAR. ALIGN THE GEARS AT THE POINT OF QUIETEST OPERATION.
2. INSTALL SHUTTER SO THAT DOTS ON CAM AND SHUTTER GEARS CAN BE SEEN THROUGH SLOT IN SHUTTER.

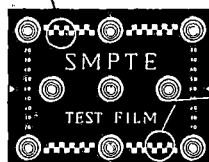
ADJUSTING SHUTTER

WHITE STREAKS OF LIGHT ABOVE OR BELOW WHITE AREAS ON BLACK BACKGROUND ARE GENERALLY REFERRED TO AS "TRAVEL GHOST." A FIVE FOOT LOOP OF TITLE FILM WITH TRANSPARENT LETTERS ON A BLACK BACKGROUND MAKES A HANDY TEST FILM FOR CHECKING "TRAVEL GHOST."

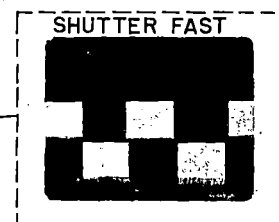
PROJECT S.M.P.T.E TEST FILM ON SCREEN AND FOCUS SHARPLY.



IF WHITE AREA STREAKS UPWARD, LOOSEN 3 NUTS HOLDING SHUTTER AND MOVE SHUTTER SLIGHTLY CLOCKWISE.



S.M.P.T.E. REGISTRATION 16
TEST FILM

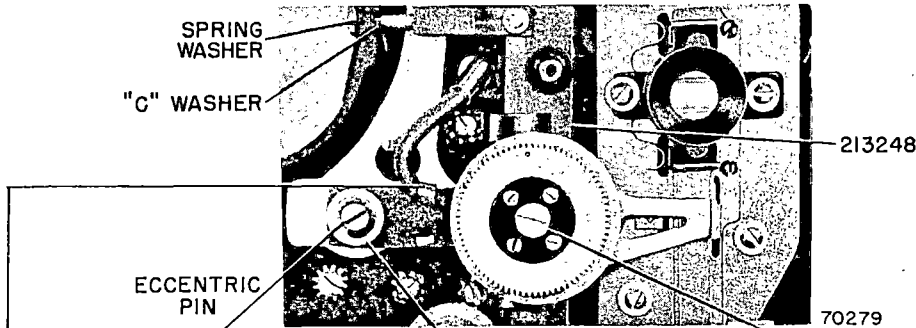


IF WHITE AREA STREAKS DOWNWARD, MOVE SHUTTER SLIGHTLY COUNTERCLOCKWISE. WHEN CORRECTLY ADJUSTED ANY TENDENCY TO "TRAVEL GHOST" SHOULD BE EVENLY BALANCED TOP AND BOTTOM.

PARTS

Stock No.	Drawing No.	Description
SHUTTER ASSEMBLY		
59019	182882-4	Bushing, shutter gear, rubber
57727	8874324-502	Flange, shutter flange and bushing assembly
57666-A	147771-1	Gear, shutter, nylon
95864	57435-103	Nut, shutter mounting, 4-40 hex
55103	8872159-1	Screw, shutter gear mounting, shoulder
45772	182812-1	Screw, shutter assembly retaining
59858	8852431-2	Shutter, 70° blade
28374	286391-34	Washer, .003" thick for adjusting
28373	286391-33	Washer, .002" thick shutter, gear, cam and gear assemblies

INTERMITTENT MECHANISM CLAW ASSEMBLY TO REMOVE INTERMITTENT MECHANISM

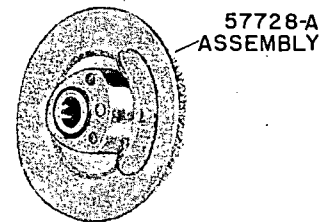
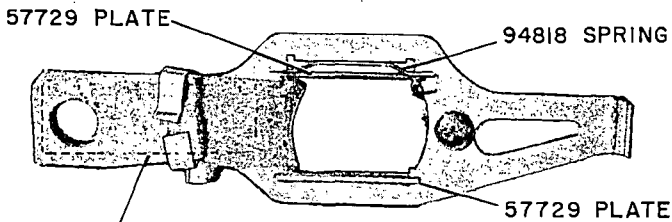
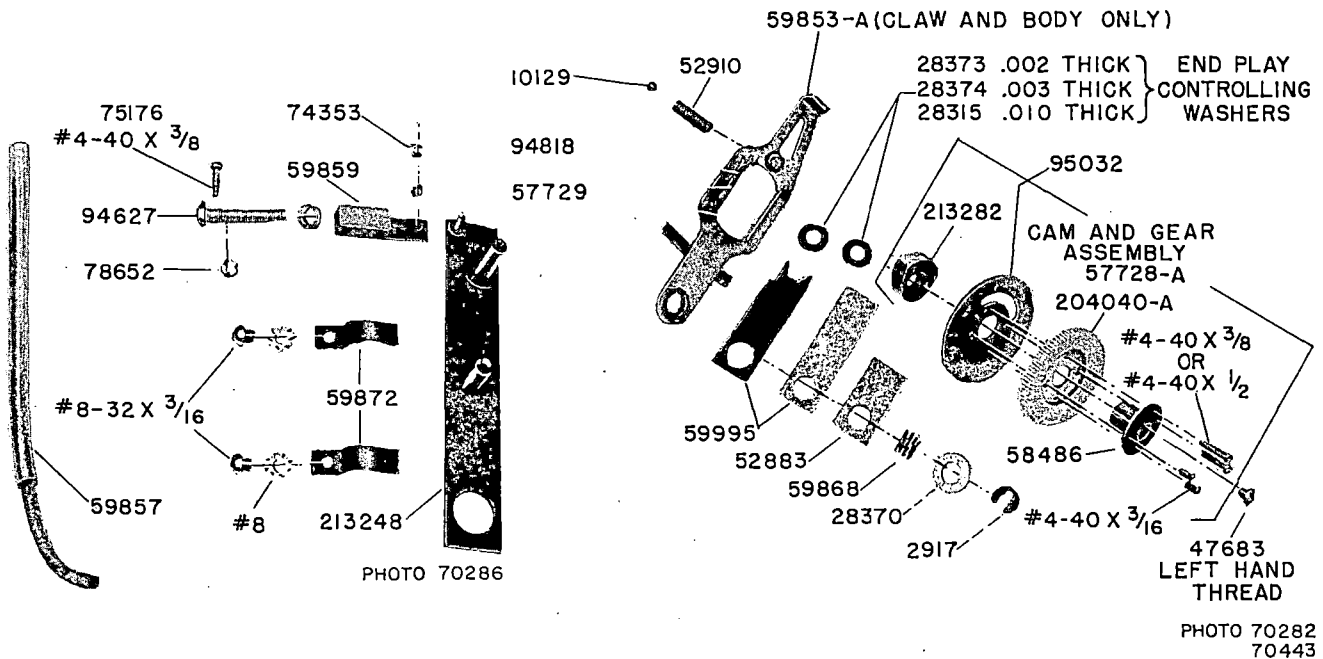


1. SPREAD THIS BAND AND REMOVE WICK

2. REMOVE "C" WASHER, FLAT WASHER AND SPRING. (DO NOT TURN SLOTTED ECCENTRIC PIN.) (DURING REASSEMBLY MAKE SURE #59868 SPRING PASSES FREELY THROUGH INSERT AND FELT PADS AND THAT END OF ROUND OIL WICK DOES NOT EXTEND UNDER IN AND OUT CAM.)

3. REMOVE THIS LEFT-HAND THREADED SCREW BY TURNING CLOCKWISE.

4. PULL OFF CAM GEAR ASSEMBLY. DO NOT LOSE $\frac{3}{16}$ DIA. BALL FOR THRUST SPRING LOCATED IN COUNTERSUNK HOLE IN BACK PLATE.



NOTE PROPER ASSEMBLY OF TWO OIL PADS. CAM FOLLOWER PLATES MUST BE PERFECTLY SMOOTH. NOISY OPERATION OF INTERMITTENT WILL RESULT IF RAIL SPRING HAS LOST ITS TENSION. DO NOT ATTEMPT TO BEND TO GIVE MORE TENSION, REPLACE #52882 SPRING.

CAM SURFACE MUST BE PERFECTLY SMOOTH.

PARTS

<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
INTERMITTENT MECHANISM AND CLAW ASSEMBLY		
10129	76757-8	Ball, claw thrust spring ball, 3/16" dia.
57728-A	147807-501	Cam, cam and gear assembly
213282	8926401-1	Cam, intermittent up-down cam
95032	147825-1	Cam, intermittent in-out cam
59853-A	173066-504	Claw, intermittent claw and bushing assembly
58486	188557-501	Bushing, intermittent cam and gear
204040-A	147771-4	Gear, cam assembly gear only, nylon laminate
94566	146860-2	Gauge, claw protrusion gauge
94565	8877523-1	Gauge, claw travel gauge
59859	8876086-1	Link, gear plate adjusting link
52883	8852695-2	Pad, intermittent oil pad, outer
59995	8852695-1	Pad, oil and insert, long
59857	8876081-502	Pipe, intermittent oil pipe assembly
213248	8410108-501	Plate, intermittent gear plate
57729	8874821-1	Plate, cam follower - up-down - plate
47683	182812-2	Screw, cam and gear assembly retaining screw
94627	8876388-1	Screw, gear plate adj. screw, 10-32 x 1/8 special
75176	57474-159	Screw, adj. screw lock screw, 4-40 x 3/8"
94818	8851479-2	Spring, cam follower plate spring
52910	8853059-1	Spring, in and out claw, thrust
59872	8876089-1	Spring, gear plate clamp spring
28373	286391-33	Washer, .002" thick for adj. shutter, gear cam & gear assy.
28374	286391-34	Washer, .003" thick for adj. shutter, gear cam & gear assy.
74353	61933-5	Washer, link retaining "C" washer
78652	60503-3	Washer, adj. screw "C" washer
59868	8853059-11	Spring, eccentric pin coil spring
2917	61933-1	Washer, eccentric pin spring washer tension

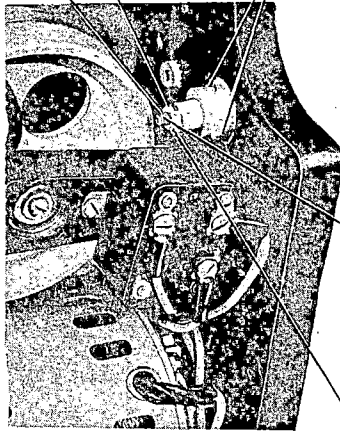
INTERMITTENT CLAW ASSEMBLY ADJUSTMENTS

ADJUSTING CLAW PROTRUSION THROUGH APERTURE PLATE

4. PLACE ALLEN WRENCH
IN THIS ALLEN ADJ. SCREW.

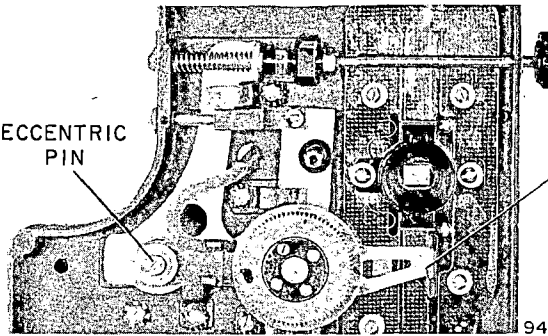
5. LOOSEN THIS NUT SLIGHTLY.

6 LOOSEN THESE TWO
ALLEN SCREWS.



70273

ECCENTRIC
PIN



94987

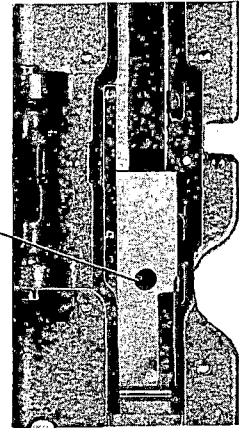
2. SET CLAW HALFWAY
DOWN IN ITS TRAVEL.

1. TURN FRAMING KNOB SO THAT SPACE
BETWEEN BLOCK AND STOP-NUTS IS
EQUAL ON BOTH SIDES.

3. PLACE PROTRUSION GAUGE 94566 ON
APERTURE PLATE AS SHOWN, (WITH
WORD "HIT" VISIBLE). IF PROTRUSION
GAUGE IS NOT AVAILABLE USE THICK
SIDE OF CLAW TRAVEL GAUGE 94565.

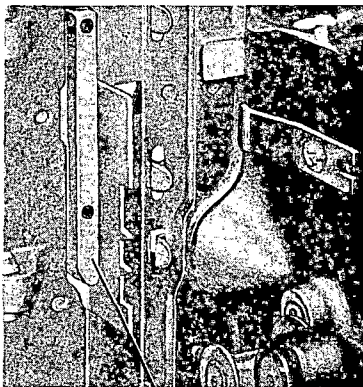
7. PUSH IN ON ECCENTRIC PIN AND
SIMULTANEOUSLY TURN ALLEN HEAD
ADJUSTMENT SCREW - ITEM 4 -
COUNTERCLOCKWISE UNTIL PROTRUSION
GAUGE 94566 DOES NOT HIT CLAW
TEETH WHEN SLID PAST CLAW.
THEN TURN ADJUSTMENT SCREW CLOCKWISE
UNTIL GAUGE JUST HITS CLAW TEETH.
LOCK ONE SETSCREW - ITEM 6. TURN GAUGE
AROUND EXPOSING WORD "CLEAR" AND SLIDE
GAUGE PAST CLAW. WHEN CORRECTLY ADJUSTED
CLAW TEETH WILL CLEAR THE GAUGE.

8. TIGHTEN LOCKNUT AND BOTH SETSCREWS SECURELY.



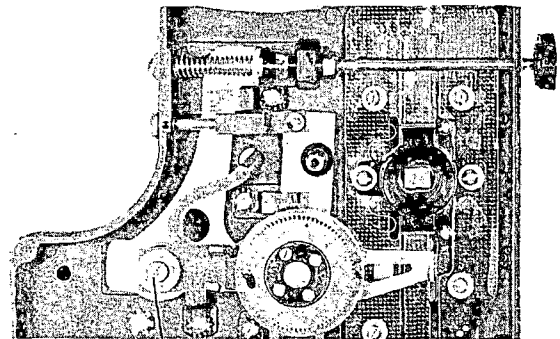
70514

ADJUSTING CLAW LATERAL POSITION IN APERTURE PLATE



1. INSERT EDGE OF CLAW TRAVEL
GAUGE 94565 BETWEEN CLAW
AND FIXED FILM GUIDE.

2. REPEAT "CLAW PROTRUSION"
ADJUSTMENTS 1, 2 AND 6 (ABOVE).



94987

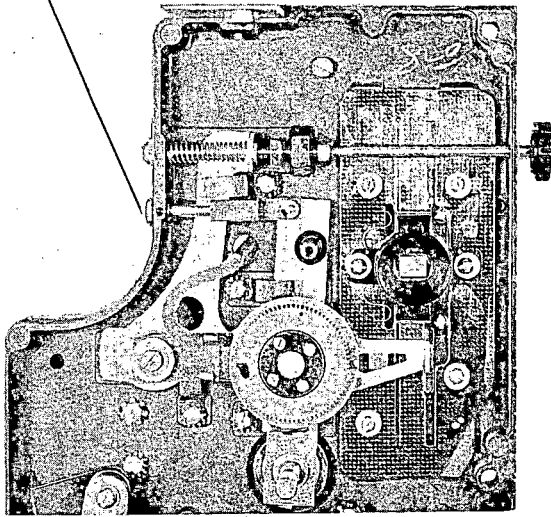
3. TURN ECCENTRIC PIN COUNTERCLOCKWISE UNTIL
CLAW PRESSES FIRMLY AGAINST GAUGE. TO INSURE
EXACT ADJUSTMENT USE A SCREWDRIVER LARGE
ENOUGH TO FIT SNUGLY IN ECCENTRIC PIN SLOT.

4. TURN ECCENTRIC PIN SLOWLY CLOCKWISE UNTIL
CLAW GAUGE JUST DROPS OUT BY ITS OWN WEIGHT.

5. MAKE SURE THAT ECCENTRIC PIN IS PUSHED IN ALL
THE WAY AND TIGHTEN ALLEN SETSCREWS ON BACK.

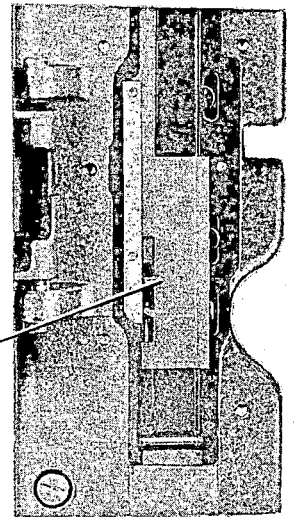
CLAW TRAVEL ADJUSTMENT (UP-DOWN EXCURSION IN APERTURE PLATE)

1. REPEAT CLAW PROTRUSION ADJUSTMENT NUMBER ONE.
2. LOOSEN SETSCREW ON BACK AND TURN SCREW COUNTERCLOCKWISE UNTIL GEAR PLATE CORNER TOUCHES APERTURE PLATE.



94987

3. WITH CLAW AT TOP-START OF PULL DOWN TRAVEL- PLACE CLAW GAUGE 94566 FLAT ON APERTURE PLATE AS SHOWN.



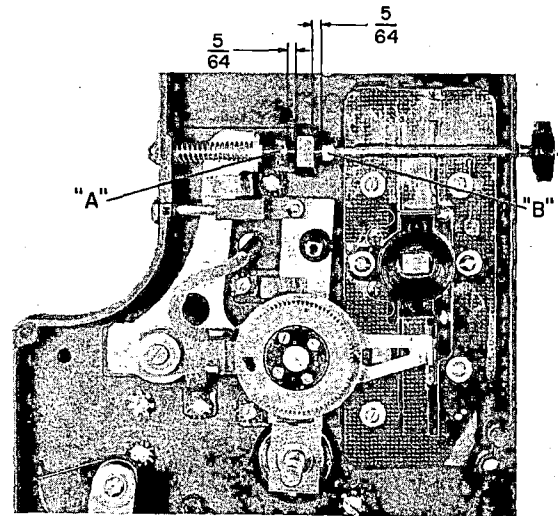
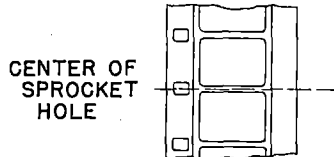
70284

4. SLOWLY ROTATE CAM GEAR COUNTERCLOCKWISE ONE COMPLETE REVOLUTION. (ONE COMPLETE CLAW EXCURSION).
5. WHEN CLAW COMES THROUGH APERTURE PLATE AT START OF SECOND PULL DOWN IT WILL PUSH GAUGE AWAY FROM APERTURE PLATE. (OBSERVE THIS ACTION CLOSELY.)
6. TURN SCREW-STEP "2" ABOVE-CLOCKWISE ONE TURN-THIS LENGTHENS CLAW TRAVEL .002 INCH.
7. REPEAT STEPS 4,5 AND 6 UNTIL CLAW DOES NOT PUSH GAUGE AWAY FROM PLATE. DO NOT TURN SCREW MORE THAN ONE TURN AT A TIME.
8. CHECK FOR TRAVEL GHOST AND ADJUST SHUTTER AS NECESSARY.
9. AFTER THE ABOVE ADJUSTMENTS HAVE BEEN MADE, AND FOR REFERENCE PURPOSE, SCRIBE A LINE ALONGSIDE OF GEAR.

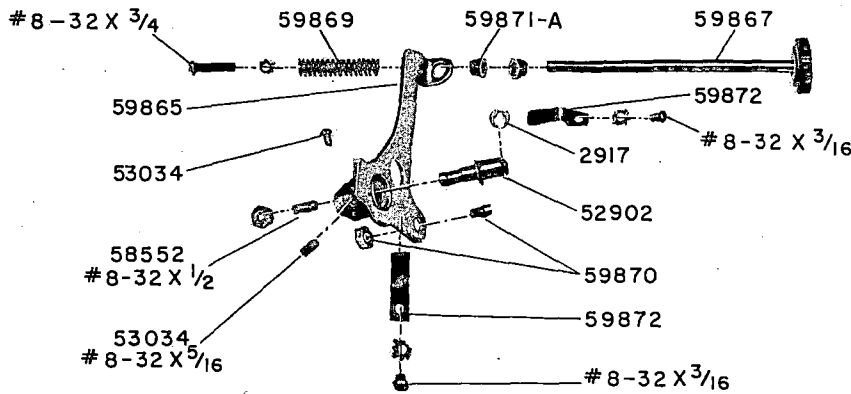
FRAMING DEVICE ASSEMBLY

TO ADJUST FRAMING DEVICE

1. WITH THE AID OF A MAGNIFYING GLASS, SELECT A PIECE OF FILM ON WHICH THE TOP AND BOTTOM EDGES OF ADJACENT PICTURES ARE EQUALLY SPACED FROM THE CENTER OF THE SPROCKET HOLE AS SHOWN IN ILLUSTRATION BELOW.



2. PROJECT AND FOCUS PICTURE ON SCREEN.
3. TURN FRAMING KNOB UNTIL PICTURE IS CENTERED ON SCREEN VERTICALLY.
4. HOLD FRAMING KNOB TO PREVENT TURNING AND WITH SUITABLE WRENCH ROTATE NUTS "A" AND "B" TO OBTAIN SPACING CALLED FOR IN ILLUSTRATION ABOVE.



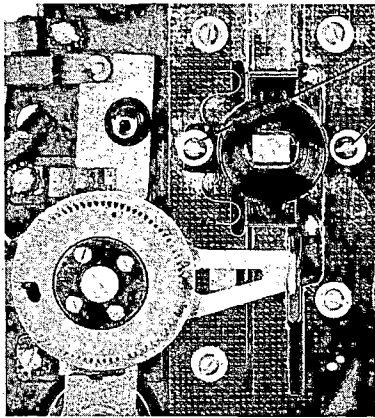
70287

PARTS

Stock No.	Drawing No.	Description
FRAMING DEVICE ASSEMBLY		
2917	61933-1	Washer, "C" for eccentric & framing arm pivot pin
59865	8876231-501	Arm, framing arm and bushing assembly
52902	8851762-1	Eccentric, claw eccentric pivot pin
59871-A	486019-6	Nut, framing arm shaft stop nut, 10-32
58552	56442-108	Screw, eccentric pin adjusting screw, 8-32 x 1/2
53034	8888539-144	Screw, framing arm bushing setscrew
59870	8876083-1	Screw, framing arm pivot screw and nut
59867	148367-501	Shaft, framing shaft and knob assembly
59869	8853059-10	Spring, framing arm tension spring
59872	8876089-1	Spring, framing arm clamp spring

APERTURE PLATE ASSEMBLY

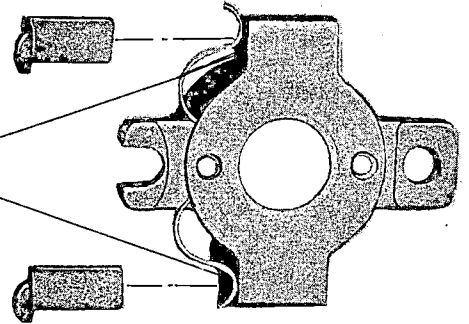
TO REPLACE SIDE PRESSURE SHOES



94987

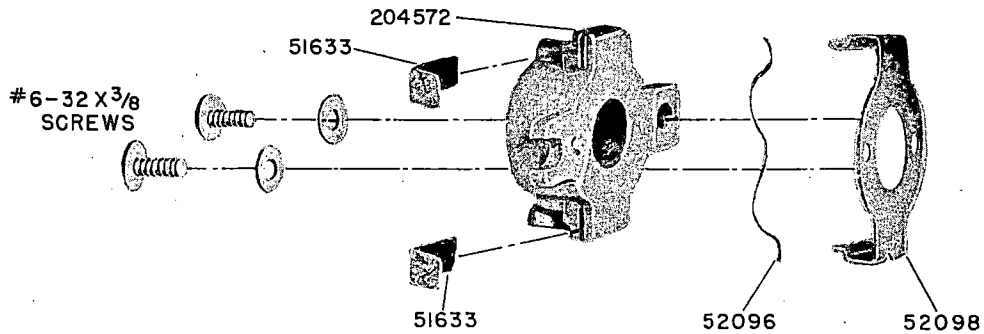
1. REMOVE THESE TWO SCREWS TO REMOVE FLARE ASSEMBLY.

2. SLIP SHOES FROM UNDER SPRING AND OUT OF SLOTS.



SIDE PRESSURE SHOES SHOULD BE REPLACED IF EVIDENCE OF GROOVING IS APPARENT. MOVEMENT OF NEW SHOES SHOULD BE PERFECTLY FREE IN A HORIZONTAL PLANE, WITH SHOE SPRING EXERTING AN EVEN PRESSURE.

FLARE ASSEMBLY

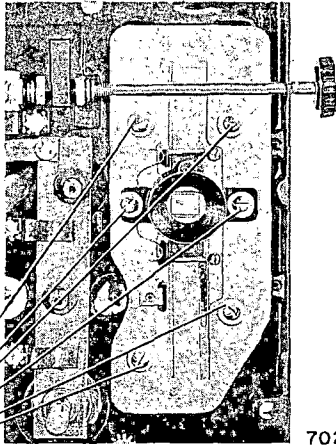


PARTS

Stock No.	Drawing No.	Description
APERTURE PLATE		
52098	188807-1	Clip, light flare
204572	142637-2	Flare, light
51642	189436-1	Guide, film guide, stationary
53017	143663-501	Plate, aperture plate & rail assembly
38605	57454-205	Screw, film guide, 4-40 x 1/4, RH
51633	187598-1	Shoe, side pressure
52096	8878903-1	Spring, side pressure shoe

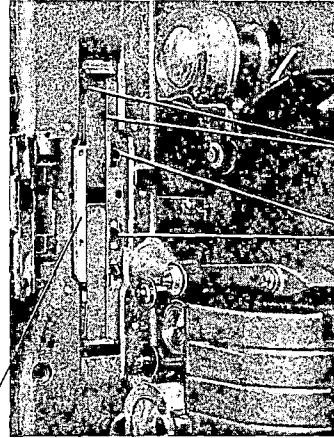
APERTURE PLATE ASSEMBLY

TO REMOVE APERTURE PLATE



70288

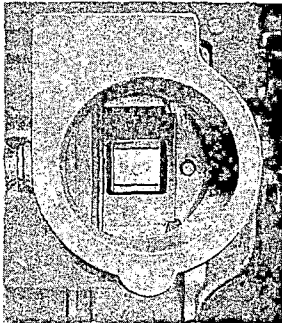
TAKE OUT THESE SIX SCREWS. FRAME CASTING SHOULD BE SCRIBED AROUND OUTLINE OF APERTURE PLATE BEFORE REMOVAL TO FACILITATE RELOCATING IT.



70268

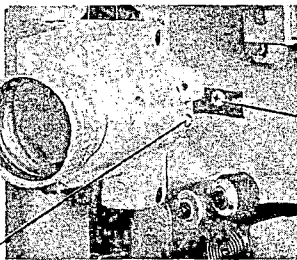
1. INSPECT RAILS FOR EXCESSIVE WEAR.
2. CHECK SIDE SHOES FOR GROOVING AND FREE HORIZONTAL MOVEMENT.

INSPECT FIXED FILM GUIDE FOR GROOVING. IF NECESSARY TO REPLACE, ASSEMBLE NEW FIXED GUIDE SNUGLY AGAINST APERTURE PLATE. PROJECT FILM ON SCREEN—PREFERABLY A TITLE FILM. MOVE FIXED GUIDE SLIGHTLY TOWARDS APERTURE OPENING IF SOUND TRACK IS VISIBLE ON SCREEN. MOVE FIXED GUIDE SLIGHTLY AWAY FROM APERTURE OPENING IF SPROCKET HOLES ARE VISIBLE ON THE SCREEN. MAKE CERTAIN FULL LENGTH OF FIXED GUIDE IS PARALLEL TO RAIL ON APERTURE PLATE BEFORE TIGHTENING TWO HOLDING SCREWS.



TO REPLACE APERTURE PLATE

PLACE NEW PLATE IN APPROXIMATE CORRECT POSITION AND REPLACE THE SIX HOLDING SCREWS, LEAVING THEM SLIGHTLY LOOSE. CLOSE PICTURE GATE ASSEMBLY AND CAREFULLY CENTER APERTURE IN APERTURE OF FILM SHOE. TIGHTEN THE SIX HOLDING SCREWS. CHECK ALL CLAW ADJUSTMENTS AFTER REPLACING APERTURE PLATE.

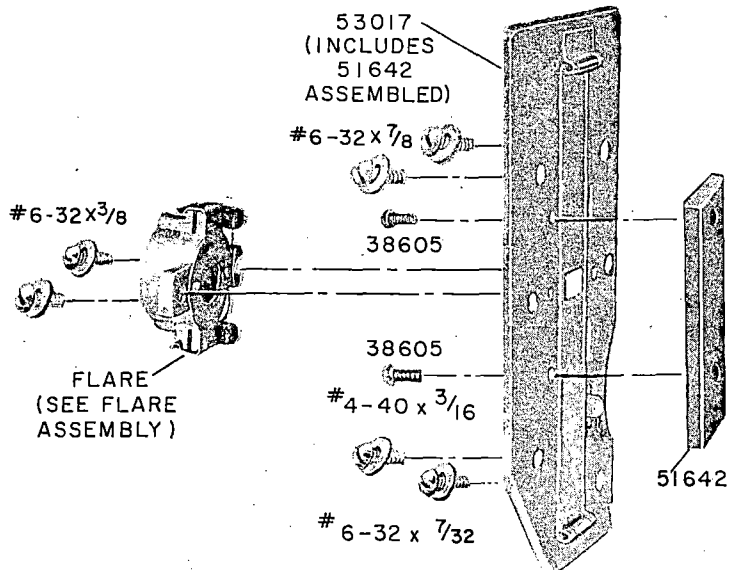


204904

ADJUSTMENT FOR PICTURE SHARPNESS

WITH THE AID OF A GOOD TITLE FILM PROJECTED ON THE SCREEN, ADJUST LENS GATE WITH THIS SETSCREW IN ORDER TO OBTAIN EQUAL PICTURE SHARPNESS ON RIGHT AND LEFT SIDE OF SCREEN. READJUST LOCK SPRING IF NECESSARY TO HOLD GATE SECURELY IN CLOSED POSITION.

94986



FILM GATE ASSEMBLY

TO REMOVE FILM GATE

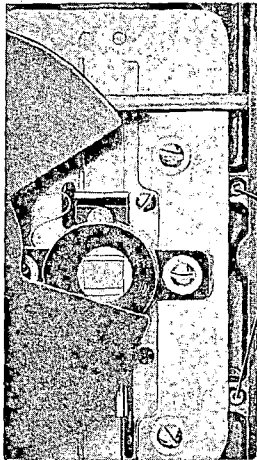


PHOTO 70276

LOOSEN THESE TWO ALLEN SCREWS AND REMOVE PINS

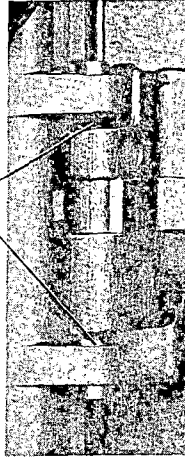
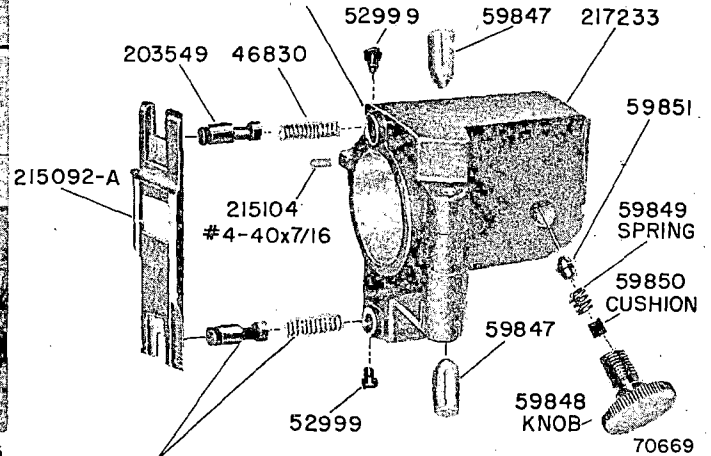


PHOTO 70285

TO REMOVE FILM SHOE ONLY, OPEN GATE AND REMOVE TOP AND BOTTOM SCREW 52999 AT BACK OF GATE ASSEMBLY



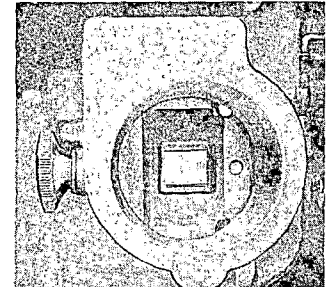
CLEAN THESE PARTS AND LUBRICATE WITH ONE DROP OF LIGHT OIL BEFORE REASSEMBLING. FILM SHOE PLUNGERS MUST MOVE IN AND OUT VERY FREELY.

INSPECT FILM RAILS OF SHOE FOR EXCESSIVE WEAR. THEY MUST BE PERFECTLY SMOOTH.

TO RECENTER GATE

1. REPLACE GATE BETWEEN HOLDING PINS 59847
2. REMOVE LENS AND CLOSE GATE
3. CAREFULLY SIGHT THROUGH LENS HOLDING BRACKET AND MOVE GATE ASSEMBLY UP OR DOWN TO LINE UP APERTURE OF FILM SHOE WITH APERTURE OF APERTURE PLATE
4. TIGHTEN PIN-HOLDING ALLEN SETSCREW WHILE SQUEEZING PINS TOGETHER TO AVOID ENDPLAY

NOTE: IF APERTURE PLATE IS NOT IN PLACE ASSEMBLY LENS GATE EQUALLY SPACED BETWEEN HINGE LUGS ON BACK PLATE

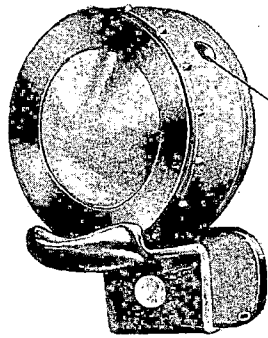


PARTS

Stock No.	Drawing No.	Description
FILM GATE AND PROJECTION LENS ASSEMBLY		
57928	8874976-1	*Spring, film gate latching
59850	985465-28	Cushion, lens-locking pin cushion
217233	148385-5	Gate, film gate assembly
59848	8875966-1	Knob, lens-locking knob
204904	472146-3	Lens, projection lens
59847	182837-5	Pin, film gate hinge pin
203549	182292-4	Pin, film shoe pin
59851	8876268-1	Pin, lens-locking pin
52999	8850645-1	Screw, shoe pin retaining screw
46830	180444-9	Spring, film shoe spring
59849	8853059-9	Spring, lens-locking pin spring
215092-A	474093-2	Shoe, film shoe
215104	844378-16	Screw, film gate setscrew

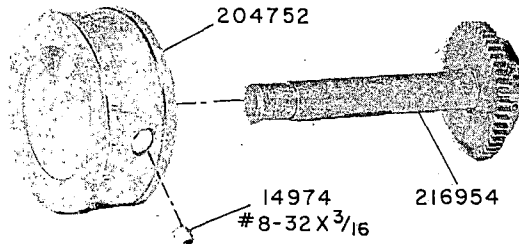
* illus. on page 26 (with Guide Roller)

SPROCKET, SHAFT AND GEAR ASSEMBLY UPPER AND LOWER



TO REMOVE SPROCKET
LOOSEN THIS SCREW

PHOTO 70397



SPROCKET SHOE ASSEMBLY

TO REMOVE SHOE ASSEMBLY

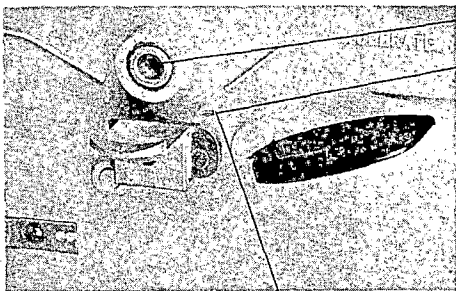
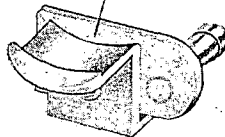


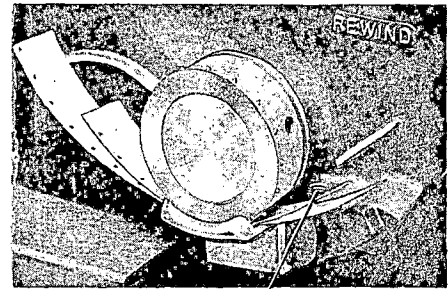
PHOTO 95042

LOOSEN THIS ALLEN SETSCREW AND
PULL OUT BRACKET ASSEMBLY

KEEP THIS AREA CLEAN



TO ADJUST SPROCKET SHOE



1. LOOSEN ALLEN SETSCREW
2. PLACE TWO THICKNESSES OF FILM
BETWEEN SPROCKET AND SHOE
3. PUSH SHOE UP EVEN AND SNUG
AGAINST SPROCKET. CENTER
SHOE SO THAT IT DOES NOT RUB
AGAINST EITHER SIDE OF THE
SPROCKET.
4. TIGHTEN ALLEN SETSCREW.

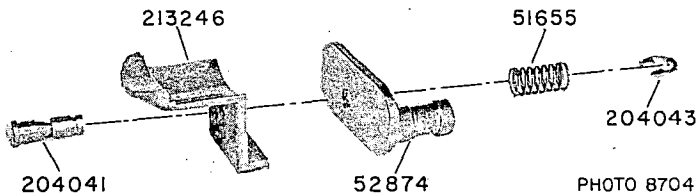
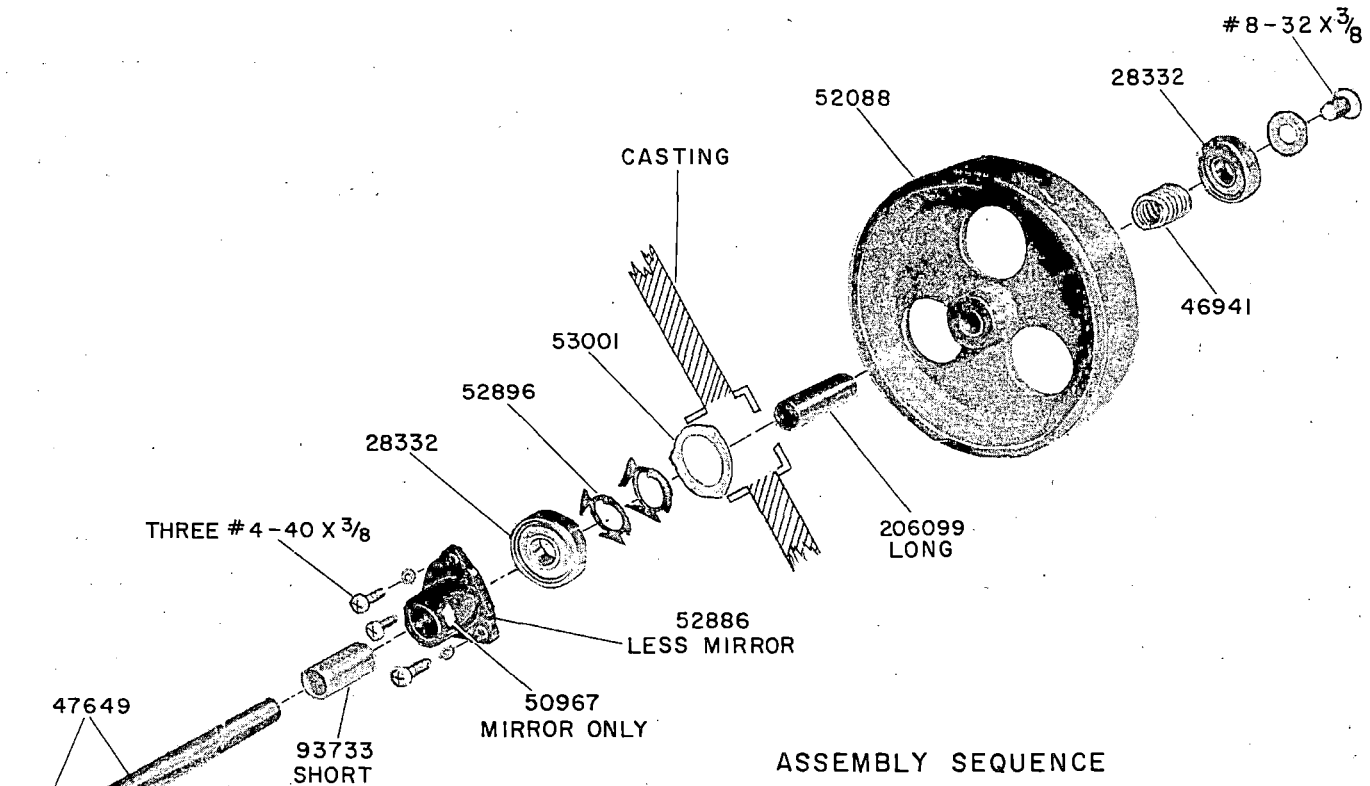


PHOTO 87049

PARTS

Stock No.	Drawing No.	Description
SPROCKET, SHAFT AND GEAR ASSEMBLY UPPER AND LOWER		
51613 216954 14974 204752	182051-19 8954274-501 8888539-142 465648-1	Bushing, upper & lower sprocket shaft. Gear & shaft assembly, upper & lower Screw, sprocket setscrew, 8-32 x 3/16 stl. Sprocket, film sprocket with setscrew.
SPROCKET SHOE ASSEMBLY		
52874 204041 92410 213246 51655 204043	8850021-503 8862335-1 8887072-403 749703-1 8850022-1 93605-6	Bracket, sprocket shoe bracket assembly Pin, sprocket shoe mounting Screw, bracket pin set, 10-32 x 3/16 Shoe, film sprocket, nylon resin Spring, film sprocket shoe Washer, "C" shoe pin

DRUM SHAFT, MIRROR BRACKET AND FLYWHEEL ASSEMBLY



TO DISASSEMBLE, HOLD DRUM WITH LEFT HAND AND REMOVE SCREW FROM RIGHT END OF DRUM SHAFT. PULL DRUM SHAFT OUT FROM FRONT AND LIFT OUT FLYWHEEL. NOTE LOCATION OF SHORT AND LONG SPACERS.

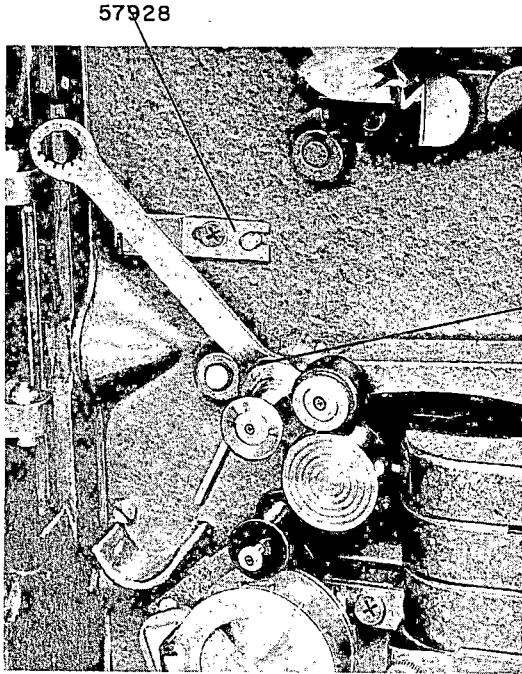
AFTER REASSEMBLY, THE DRUM AND FLYWHEEL SHOULD ROTATE WITH NO EVIDENCE OF ROUGHNESS IN THE BALL-BEARINGS.

PARTS

Stock No.	Drawing No.	Description
DRUM SHAFT, MIRROR BRACKET AND FLYWHEEL ASSEMBLY		
28332	8874348-11	Bearing, drum shaft ball bearing
52886	142645-2	Bracket, mirror bracket, less mirror (magnesium)
52088	143768-1	Flywheel, drum shaft
50967	181306-1	Mirror, optical system
53001	8852935-2	Retainer, drum shaft bearing
47649	141135-504	Drum, sound drum and shaft assembly
93733	8876680-1	Spacer, drum shaft spacer, short
206099	8876680-3	Spacer, drum shaft spacer, long
46941	183734-2	Spring, drum shaft coil spring
52896	825283-4	Washer, spring, drum shaft

GUIDE ROLLER ASSEMBLY

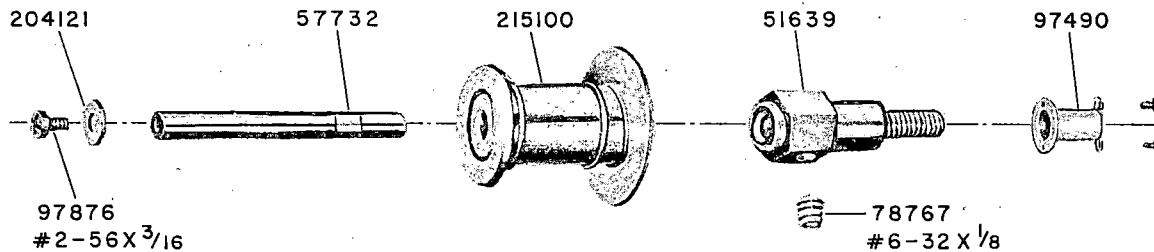
LATERAL ADJUSTMENT OF SOUND TRACK



1. CONNECT SPEAKER AND POWER CORDS TO PROJECTOR - AMPLIFIER.
2. THREAD LOOP OF S.M.P.T.E. Z 22-57-1947 BUZZ TRACK FILM IN PROJECTOR.
3. TURN AMPLIFIER "ON", SET VOLUME CONTROL AT 5.
4. PLACE $\frac{5}{16}$ " END-WRENCH OVER HEX NUT AT REAR OF GUIDE ROLLER. DO NOT LOOSEN SETSCREW IN THIS NUT. THIS SETSCREW IS ONLY USED TO ADJUST END PLAY-0.002 - WHEN NEW ROLLER IS INSTALLED.
5. START PROJECTOR. TURNING HEX NUT CLOCKWISE WILL PRODUCE A LOW FREQUENCY NOTE. TURNING IT COUNTERCLOCKWISE WILL PRODUCE A HIGH FREQUENCY NOTE. WHEN PROPERLY ADJUSTED NEITHER NOTE WILL BE HEARD.

CLEANING AND LUBRICATING

1. REMOVE PHILLIPS - HEAD SCREW, WASHER AND ROLLER FROM SHAFT
2. CLEAN THE ROLLER WITH CARBON TETRACHLORIDE INSIDE AND OUTSIDE
3. APPLY ONE DROP OF LIGHT OIL TO SHAFT HOLE IN ROLLER



PARTS

Stock No.	Drawing No.	Description
GUIDE ROLLER ASSEMBLY		
97490	8850656-32	Nut, anchor nut for roller shoulder screw
215100	188822-503	Roller, guide roller assembly
51639	189351-1	Screw, shaft shoulder screw
78767	8888539-121	Screw, roller shaft setscrew, 6-32 x 1/8 long
57732	8874872-2	Shaft, guide roller
97876	990072-603	Screw, roller shaft, 2-56 x 3/16 stl.
204121	89799-614	Washer, guide roller

SOUND PRESSURE ROLLER ASSEMBLY

ADJUSTMENT

ROLLER SHOULD JUST LEAVE SOUND DRUM AT AN 8 OZ. PULL. PRESSURE IS CONTROLLED BY SPRING IN BACK OF ROLLER ARM. BEND SPRING TO GIVE CORRECT PRESSURE. TO REMOVE ROLLER ARM, REMOVE THIS SCREW.

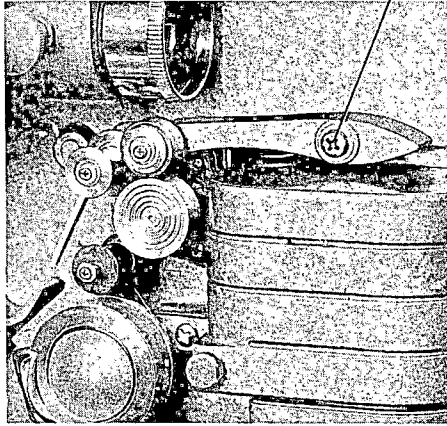


PHOTO 70395

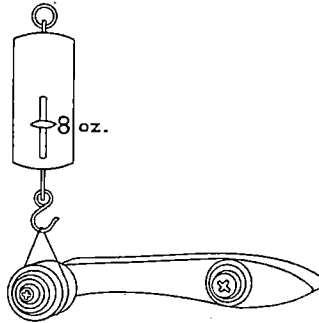


PHOTO 70409

TO REMOVE ROLLER FOR CLEANING, REMOVE SCREW FROM ROLLER. DO NOT LOOSEN SETSCREW. THIS SETSCREW IS USED ONLY TO ADJUST ENDPLAY WHEN A NEW ROLLER IS INSTALLED. ROLLER SHOULD ROTATE FREELY WITH MINIMUM ENDPLAY.

CAUTION:- IF PRESSURE ROLLER FAILS TO ENGAGE SOUND DRUM, PHOTO CELL SHIELD MAY HAVE SPRUNG OUT OF NORMAL POSITION AND BE OBSTRUCTING ROLLER ARM. PUSH SHIELD BACK INTO PLACE.

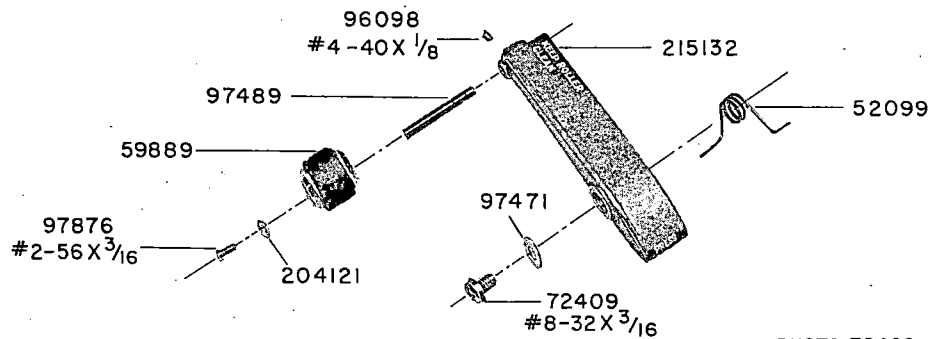


PHOTO 70409

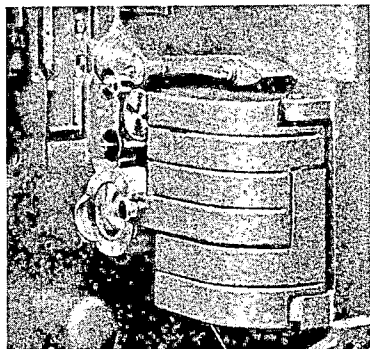
PARTS

Stock No.	Drawing No.	Description
SOUND PRESSURE ROLLER ARM ASSEMBLY		
215132	143189-5	Arm, pressure roller
96098	8888539-1	Screw, roller shaft setscrew, 4-40 x 1/8
72409	82289-403	Screw, roller arm, 8-32 x 3/16
97876	990072-603	Screw, roller retaining screw, 2-56 x 3/16
97489	8875967-1	Shaft, pressure roller
52099	8851714-1	Spring, pressure roller arm
59889	188808-502	Roller, pressure roller assembly
97471	868141-17	Washer, roller arm pivot
204121	89799-614	Washer, roller retaining
52888	188806-3	Stud, pressure roller arm

SOUND OPTICAL BRACKET ASSEMBLY

CENTERING SOUND SCANNING LIGHT BEAM

1. LOOSEN ALLEN SETSCREWS HOLDING OPTICAL BRACKET HINGE PINS ALLOWING SOUND OPTICAL BRACKET TO BE MOVED UP OR DOWN. TO REACH SETSCREWS REMOVE METAL SHIELD.



#14974
TWO #8-32x3/16
ALLEN SETSCREWS
HOLDING HINGE PINS
ARE IMMEDIATELY
BEHIND MAIN FRAME
AT THESE POINTS.

PHOTO
70268

6. MOVE COMPLETE OPTICAL BRACKET UP OR DOWN UNTIL ENLARGED IMAGE OF SCANNING LIGHT BEAM IS EXACTLY CENTERED ON DRUM SHAFT - 5/16 DIAMETER. SQUEEZE HINGE PINS TIGHTLY TOGETHER TO AVOID ENDPLAY.

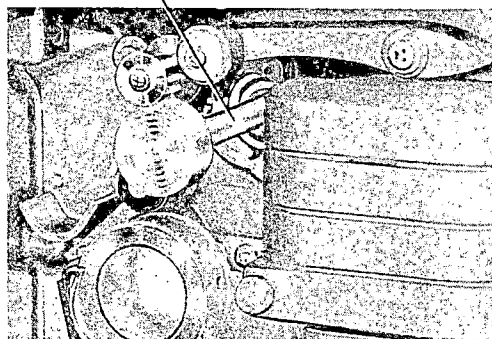


PHOTO
70391

2. REMOVE FLYWHEEL AND WITHDRAW SOUND DRUM
3. REMOVE MIRROR BRACKET
4. REPLACE SOUND DRUM SHAFT UNTIL IT JUST ENGAGES BACK BEARING
5. TURN AMPLIFIER "ON" AND CLOSE SOUND OPTICAL BRACKET.

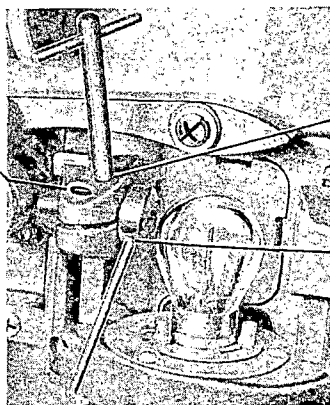
7. RETIGHTEN OPTICAL BRACKET HINGE PIN SETSCREWS
8. REMOVE SOUND DRUM AND REINSTALL MIRROR BRACKET, LEAVING SCREWS SLIGHTLY LOOSE
9. CENTER SCANNING BEAM ON PHOTOCELL CATHODE BY TURNING MIRROR BRACKET TO RIGHT OR LEFT, SO THAT ALL OF THE REFLECTED LIGHT WILL ENTER PHOTOTUBE SHIELD WINDOW
10. TIGHTEN MIRROR BRACKET SCREWS
11. REPLACE SOUND DRUM AND FLYWHEEL

FOCUSING THE SOUND OPTIC AND ADJUSTING ITS AZIMUTH POSITION

THESE TWO ADJUSTMENTS ARE MADE SIMULTANEOUSLY AND ARE CRITICAL, REQUIRING THE USE OF SPECIAL TOOLS AND EQUIPMENT. SEE "TOOLS" (ON "THREADING LAMP" PAGE)

1. THREAD A 5-FT. LOOP OF 5000 CYCLE FREQUENCY FILM (S.M.P.T.E. Z 22.42-1946) IN PROJECTOR, EMULSION SIDE TOWARDS SCREEN.
2. CLIP THE LEADS OF A LOW READING A.C. VOLTMETER ACROSS THE SPEAKER VOICE COIL IN THE SPEAKER CASE, WHICH SHOULD BE ON TEST BENCH.

3. BREAK RCA SEAL IN SOUND OPTIC BRACKET AND LOOSEN SETSCREW JUST SUFFICIENTLY TO PERMIT MOVEMENT OF SOUND OPTIC.

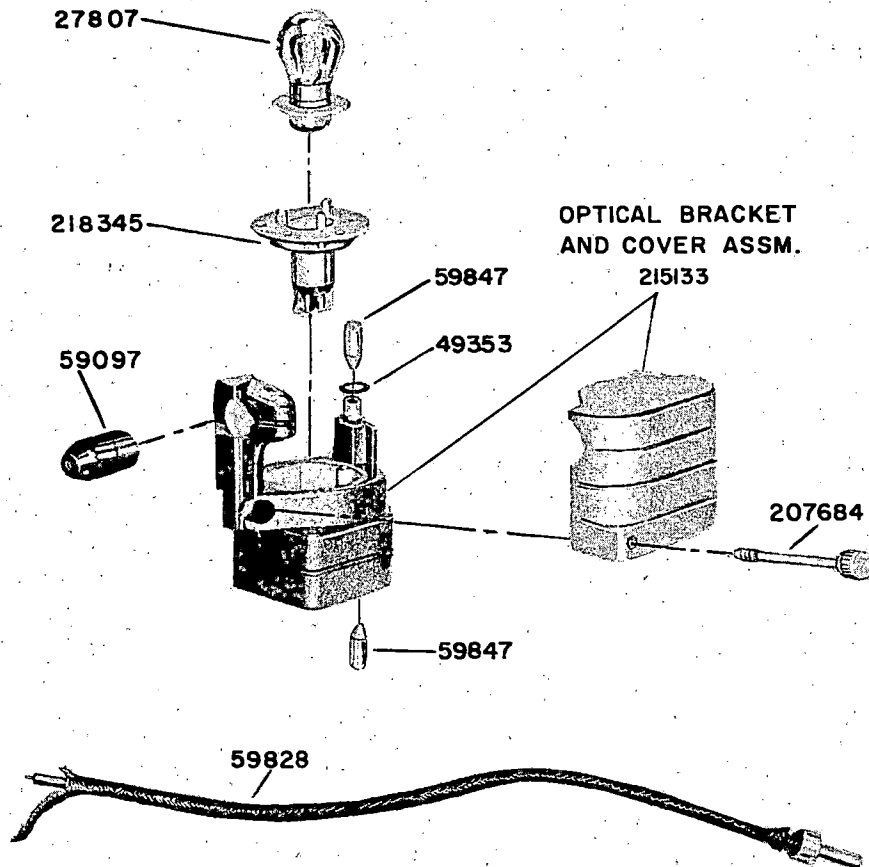


INSERT #49101 FOCUS ADJUSTMENT
WRENCH HERE.

INSERT #49108 AZIMUTH ADJUSTMENT
PIN HERE

4. INSERT SPECIAL OPTIC ADJUSTMENT TOOLS AS ILLUSTRATED
5. TURN AMPLIFIER "ON". SET VOLUME CONTROL FOR A CONVENIENT METER READING AND START PROJECTOR, TONE CONTROL ON "10"
6. SIMULTANEOUSLY ADJUST OPTIC AZIMUTH (ROTATIONAL) AND FOCAL ADJUSTMENTS FOR MAXIMUM VOLTAGE READING
CAREFULLY TIGHTEN OPTIC SETSCREW CHECKING METER THAT OUTPUT DOES NOT DROP, WHICH WOULD INDICATE A CHANGE OF OPTIC ADJUSTMENT.
8. RESEAL OPTIC SETSCREW WITH SEALING WAX.

SOUND OPTICAL BRACKET



PARTS

<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
SOUND OPTICAL BRACKET ASSEMBLY		
215133	8876200-504	Cover, optical bracket & cover assembly
59828	144252-3	Cable, exciter lamp, single contact
59097	174619-1	Optical, Sound Unit
27807	180599-2	Lamp, exciter
59847	182837-5	Pin, optical bracket pivot pin
207684	185794-6	Screw, exciter lamp cover thumbscrew
14974	8888539-142	Screw, set hinge pin, 8-32 x 3/16
218345	8976903-1	Socket, exciter lamp
49353	286391-21	Washer, bracket shaft
49101	185142-501	Wrench, sound optical focusing wrench
49108	180001-9	Pin, sound optical azimuth adjusting wrench

PHOTOTUBE BRACKET ASSEMBLY

E PHOTOTUBE IS HELD IN PLACE IN ITS BRACKET BY A SPRING CONTACTOR PRESSING DOWN FROM THE TOP

TO REMOVE PHOTOTUBE

1. TURN OFF POWER
2. RAISE THE SOUND PRESSURE ROLLER; INSERT A SMALL SCREWDRIVER IN WINDOW IN PHOTOTUBE COVER AND PULL OUTWARD.
3. HOLD PHOTOTUBE ENVELOPE WITH LEFT HAND.

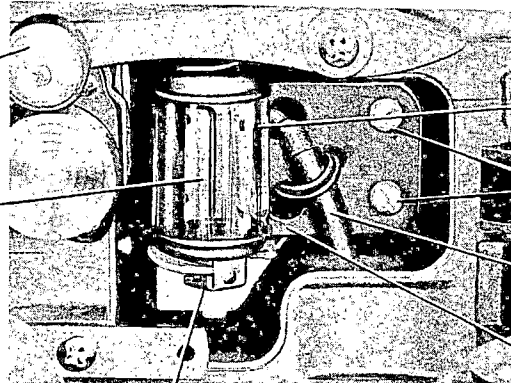
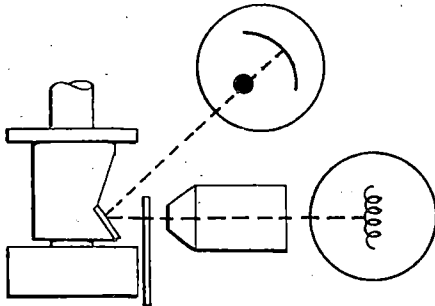


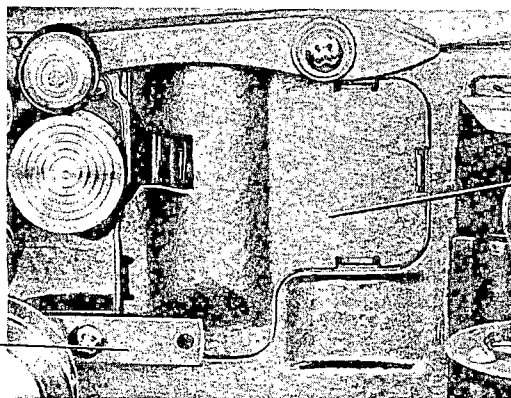
PHOTO 70394

4. WITH RIGHT FOREFINGER, PRESS UP ON SQUARE BASE CONTACTOR AND LIFT PHOTOTUBE OUT TO THE RIGHT. NOTE POSITION OF PHOTOTUBE CATHODE WHEN PHOTOTUBE IS CORRECTLY INSTALLED.



TO INSTALL PHOTOTUBE

PRESS UPPER SPRING CONTACTOR UP WITH TOP OF PHOTOTUBE AND SLIP SQUARE BASE CONTACTOR INTO POSITION IN ITS RECEPTACLE. REPLACE TUBE COVER BY PRESSING FIRMLY INTO PLACE MAKING SURE IT DOES NOT INTERFERE WITH OPERATION OF PRESSURE ROLLER ARM. CORRECT POSITION OF PHOTOTUBE CATHODE IS SHOWN IN ILLUSTRATION ABOVE.



COVER SHIELD IN PLACE

PHOTO
70393

PARTS

Stock No.	Drawing No.	Description
PHOTOTUBE BRACKET ASSEMBLY		
59829	144766-1	Bracket, phototube bracket assembly, includes clip and rivet
31048	82373-4	Connector, male 2 contact
59830	148415-501	Cable, shielded phototube
215134	173080-4	Cover, phototube
29407	57456-107	Screw, bracket mounting, phototube
215130	8850647-3	Plate, optical bracket

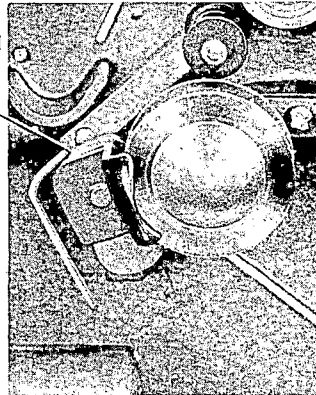
TENSION ROLLER ASSEMBLY

THIS ROLLER CONTROLS "FLUTTER AND WOW" (HIGH AND LOW FREQUENCY SOUND VARIATIONS) THE ROLLER AND ARM ARE HELD IN CORRECT POSITION BY A SHAFT ATTACHED TO A FLAT SPRING BEARING AGAINST A FELT PAD LOCATED IMMEDIATELY BEHIND THE CASTING THROUGH WHICH THE ARM SHAFT PASSES. IT IS REACHED THROUGH THE REAR OF THE PROJECTOR.

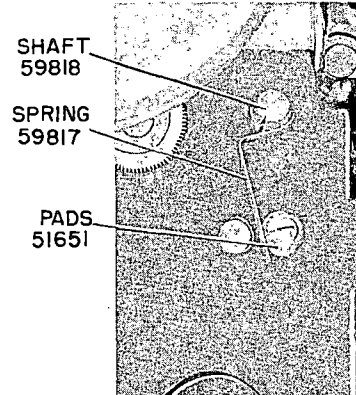
TO ADJUST TENSION ROLLER TO REPLACE SPRING 59817

1. LOOSEN THIS ALLEN SETSCREW
2. HOLD ARM UP AGAINST STOP
3. RETIGHTEN SET-SCREW

WHEN CORRECTLY ADJUSTED, FILM IN MOTION WILL BE APPROX. HORIZONTAL LEAVING SOUND DRUM



"A" PHOTO 70396



"B" PHOTO 70392

1. LOOSEN ALLEN SET-SCREW (FIG. "A")
2. PULL OUT SPRING AND SHAFT WITH LONG NOSE PLIERS
3. INSTALL NEW SPRING ON SHAFT ASSEMBLY
4. HOLD WITH PLIERS AND CAREFULLY GUIDE FLAT SPRING AGAINST FELT PAD AND INTO CASTING HOLE
5. PUSH FIRMLY INTO PLACE
6. ADJUST TENSION ARM, FIG. "A"

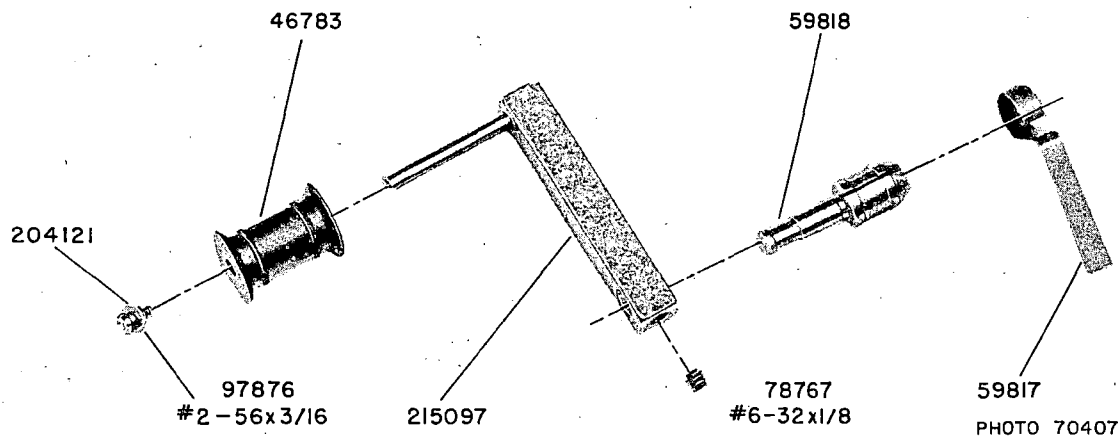
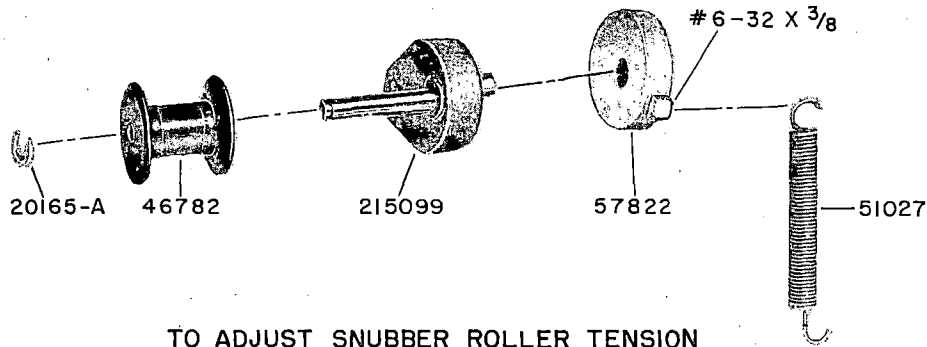


PHOTO 70407

PARTS

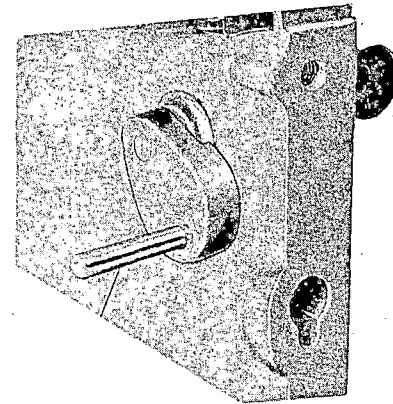
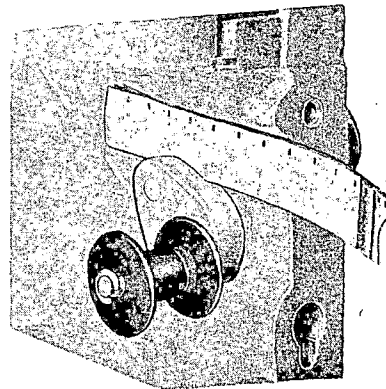
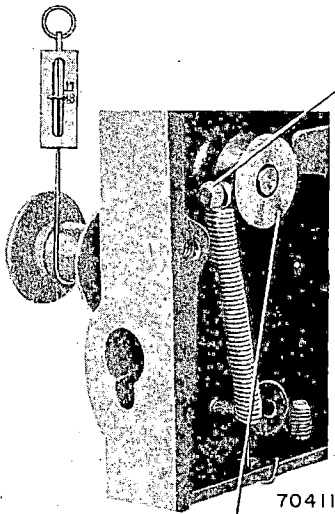
<i>Stack No.</i>	<i>Drawing No.</i>	<i>Description</i>
TENSION ROLLER ASSEMBLY		
215097	189898-503	Arm, tension roller arm and shaft assembly
51651	189915-1	Pad, tension roller spring
46783	182370-1	Roller, tension
97876	990072-603	Screw, roller shaft 2-56 x 3/16" lg.
59817	8876294-1	Spring, roller arm shaft
59818	8876292-1	Shaft, roller arm
78767	8888539-121	Screw, set, roller arm shaft 6-32 x 1/8" lg.
204121	89799-614	Washer, guide roller

SNUBBER ROLLER ASSEMBLY



TO ADJUST SNUBBER ROLLER TENSION

I. LOOSEN THIS SET SCREW



3. INSERT 3 THICKNESS OF FILM BETWEEN ROLLER ARM AND FRAME TO ADJUST END-PLAY.

IF ROLLER STICKS OR SQUEAKS REMOVE 20165-A RETAINING WASHER AND 46782 ROLLER AND POLISH THIS SHAFT. LUBRICATE BY RUBBING WITH SOFT LEAD PENCIL OR MICROFINE GRAPHITE. CLEAN SHAFT HOLE IN ROLLER.

2. ROTATE COLLAR (WHICH CONTROLS SPRING TENSION) UNTIL A POSTAL SCALE, HOOKED OVER SNUBBER ROLLER, INDICATES A PULL OF 17 TO 18 OUNCES TO RAISE IT OFF ITS STOP

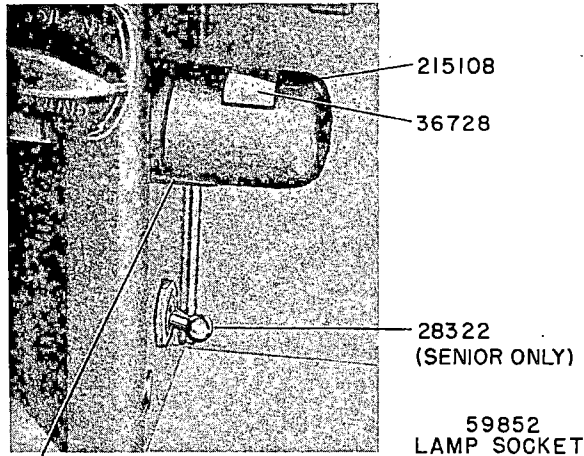
4. BEFORE TIGHTENING COLLAR SET SCREW, PRESS COLLAR AND ROLLER ARM SNUG AGAINST FRAME. FILM STRIPS WILL SUPPLY CORRECT END PLAY SPACING (.015 TO .020). ARM MUST ROTATE FREELY. SNUBBER ROLLER SHOULD ROTATE FREELY WHEN FILM IS IN MOTION.

PARTS

Stock No.	Drawing No.	Description
SNUBBER ROLLER ASSEMBLY		
215099	189841-504	Arm, snubber roller arm and shaft assembly
57822	8874709-1	Collar, snubber arm tension spring
46782	182370-2	Roller, snubber
51027	189850-1	Spring, snubber roller arm
20165-A	60503-3	Washer, "C" snubber roller, retaining

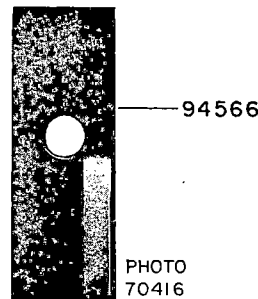
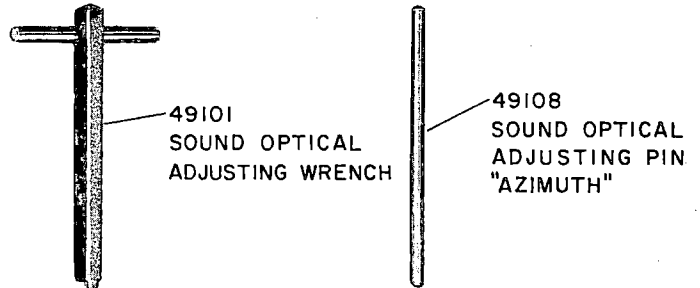
THREADING LAMP ASSEMBLY AND TOOLS

THREADING LAMP

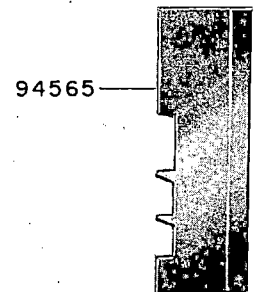


TO REPLACE LAMP, SQUEEZE SIDES OF SHIELD NEAR BASE AND PULL OUT. UNSCREW LAMP

TOOLS (SERVICE)



CLAW PROTRUSION
GAUGE



CLAW TRAVEL
GAUGE

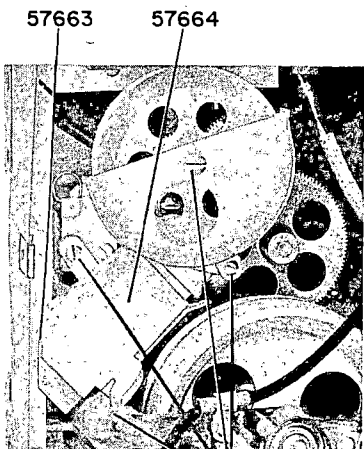
PARTS

Stock No.	Drawing No.	Description
THREADING LAMP FOR MI-1338-C, -CF		
36728	849546-2	Lamp, threading
207305	983541-7	Nut, speed nut for threading lamp socket
215108	8874766-2	Shield, threading lamp
59852	8876217-1	Socket, threading lamp
28322	8976882-1	Switch, threading lamp
59813	8872221-40	Plug button, tumbler switch hole MI-1345-C only
TOOLS (SERVICE)		
49237	184682-2	Brush, aperture plate, cleaning
94565	8877523-1	Gauge, claw travel
94566	146860-2	Gauge, claw protrusion
49108	180001-9	Pin, sound optical azimuth, adj. wrench
49101	185142-501	Wrench, sound optical focusing wrench

TAKEUP AND REWIND MECHANISM

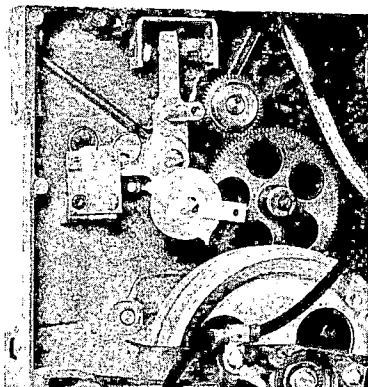
"OPERATE" - "REWIND"

TO DISASSEMBLE



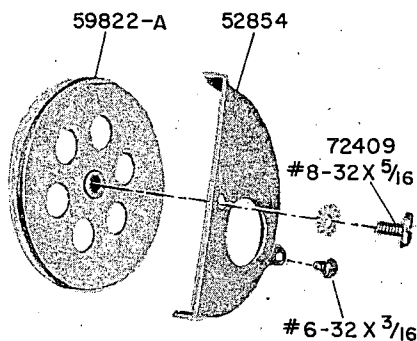
94976

REMOVE THESE FOUR SCREWS TO REMOVE BELT GUARDS, LARGE PULLEY GUARD AND PULLEY.



95033

LARGE PULLEY AND GUARD REMOVED. PULLEY MUST ROTATE FREELY AFTER ASSEMBLY.

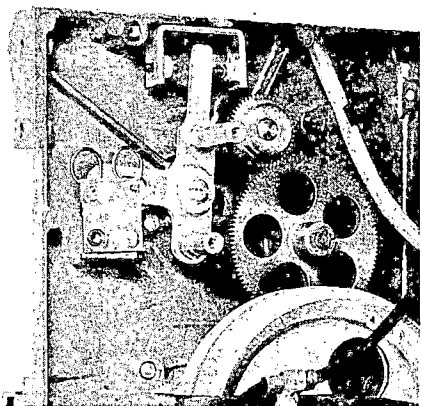


REMOVE 3 SHIELD MTG. SCREWS

SPRING BELTS

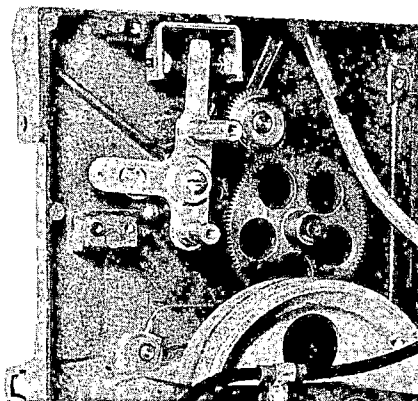
215671
LOWER

215670
UPPER



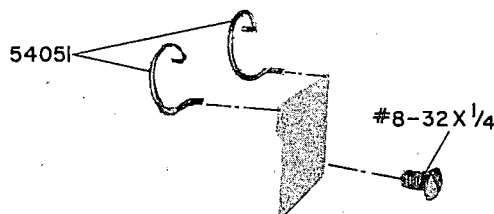
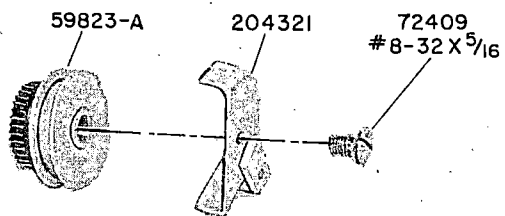
95035

REMOVE SMALL PULLEY AND GEAR ASSEMBLY. PULLEY MUST ROTATE FREELY AFTER ASSEMBLY.

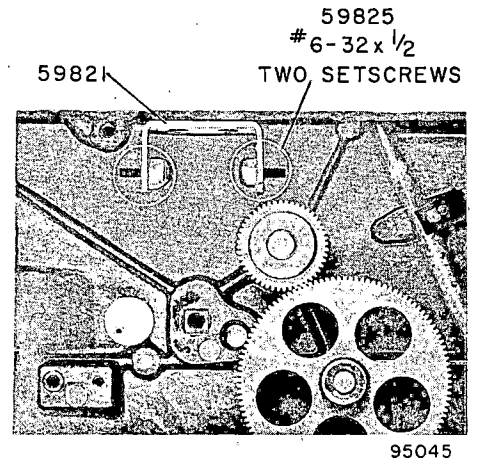
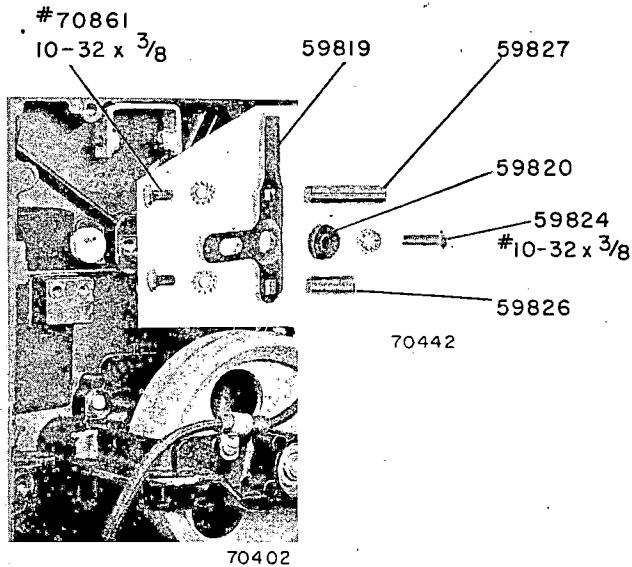


95044

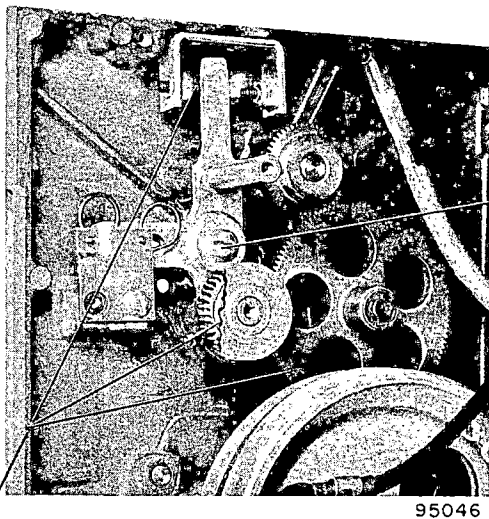
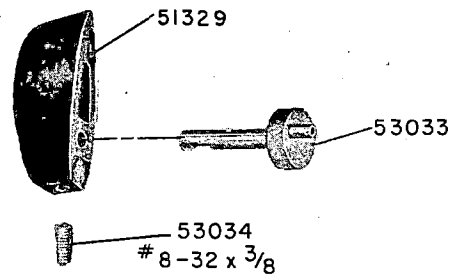
REMOVE SPRINGS AND BRACKET.



TAKEUP AND REWIND MECHANISM

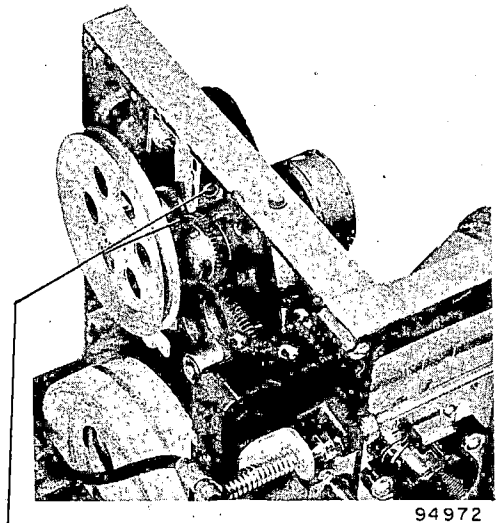


WHEN ASSEMBLING KNOB ALLOW
TWO THICKNESSES OF FILM
BETWEEN MAIN FRAME AND KNOB



WITH SHIFT KNOB IN "OPERATE" POSITION,
ADJUST THIS SCREW TO ALLOW A SMALL
AMOUNT OF BACKLASH BETWEEN THESE
TWO GEARS

TAKEUP REWIND
BRACKET MUST
MOVE FREELY
WHEN THIS SCREW
IS TIGHTENED



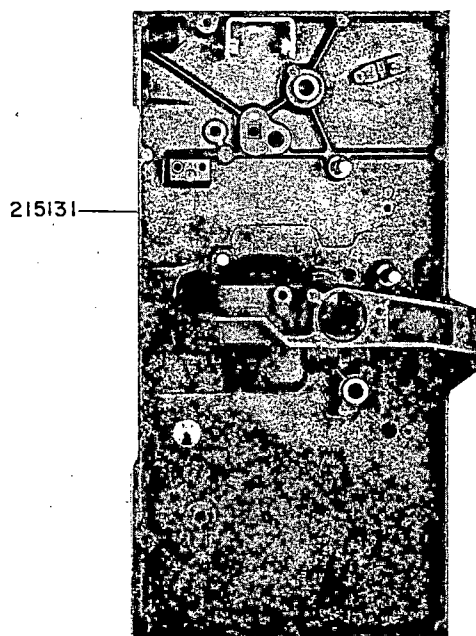
WITH SHIFT KNOB IN "REWIND" POSITION,
ADJUST THIS SCREW TO ALLOW A SMALL
AMOUNT OF BACKLASH BETWEEN THIS
GEAR AND LARGE PULLEY GEAR

AN ADDITIONAL HALF-TURN "IN" OF THE ADJUSTING SCREWS AFTER THE GEARS JUST
BECOME FREE WILL PROVIDE THE CORRECT BACKLASH

PARTS

<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
TAKEUP AND REWIND ASSEMBLY		
59819	8854540-2	Arm, pulley shift
215670	184261-8	Belt, rewind spring belt, upper
215671	184261-9	Belt, take-up spring belt, lower
59820	8876298-1	Bearing, pulley arm, oilite
59821	8876234-501	Bracket, arm stop bracket assembly
204321	184536-503	Guard, assembly small pulley
52854	8850527-2	Guard, large pulley
57663	147035-2	Guard, belt, lower section
57664	147036-2	Guard, belt, upper section
51329	142738-501	Knob, take-up & rewind, shift
204050	187555-2	Plate, take-up & rewind
59822-A	184307-504	Pulley, and gear assembly, large
59823-A	8853177-504	Pulley, and gear assembly, small
59824	57460-115	Screw, pulley arm, shoulder
53033	184291-503	Shaft, shift knob and pin assembly
54051	184300-3	Spring, take-up and rewind bracket
53034	8888539-144	Screw, shift knob, S.S.
59825	189195-16	Screw, stop bracket adj. 6-32 x 1/2" lg.
59826	8876222-1	Shaft, stud, small pulley, 0.700" lg.
59827	8876222-2	Shaft, large pulley, 1.22" lg.
70861	90445-105	Screw, pulley stud
72409	990318-107	Screw, pulley

MAIN FRAME AND BACK PLATE



MAIN FRAME

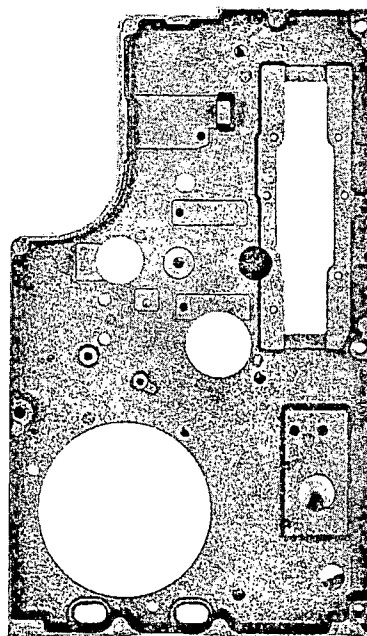


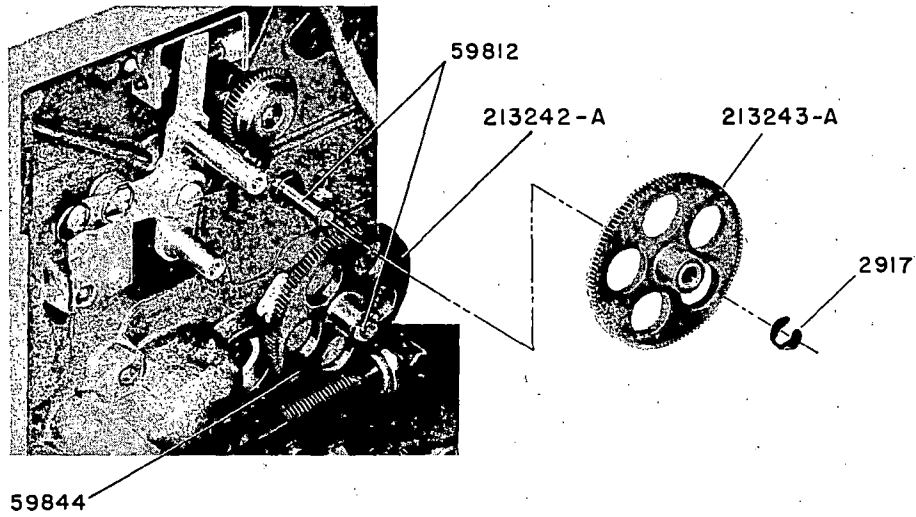
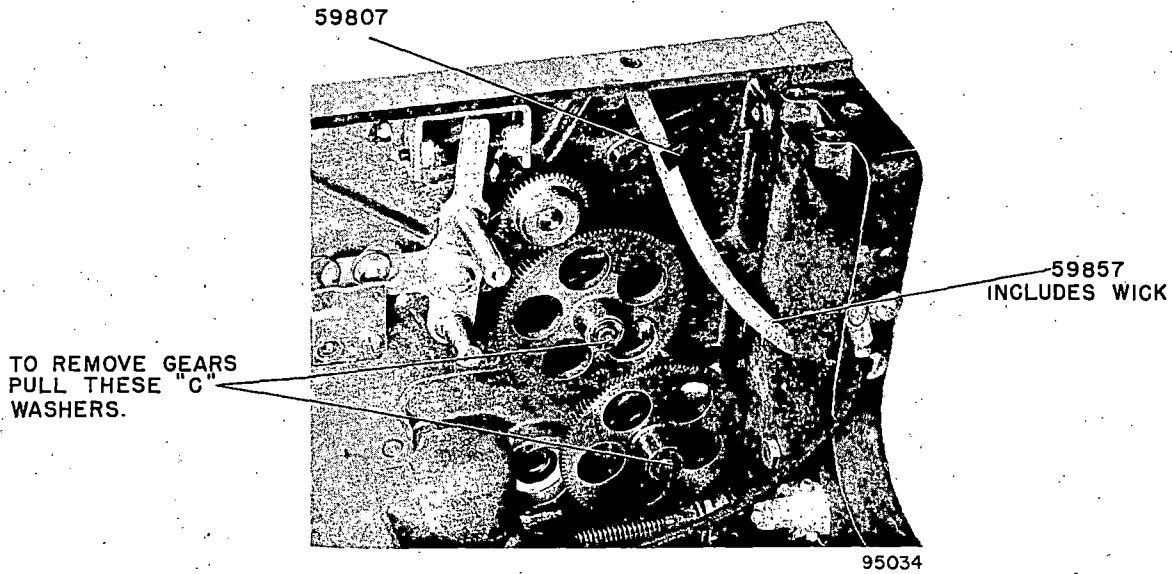
PHOTO 95043

BACK PLATE

PARTS

<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
MAIN FRAME AND BACK PLATE		
215131	175461-504	Frame, main frame assembly with shafts and oilite bearings
215117	166545-2	Plate, back

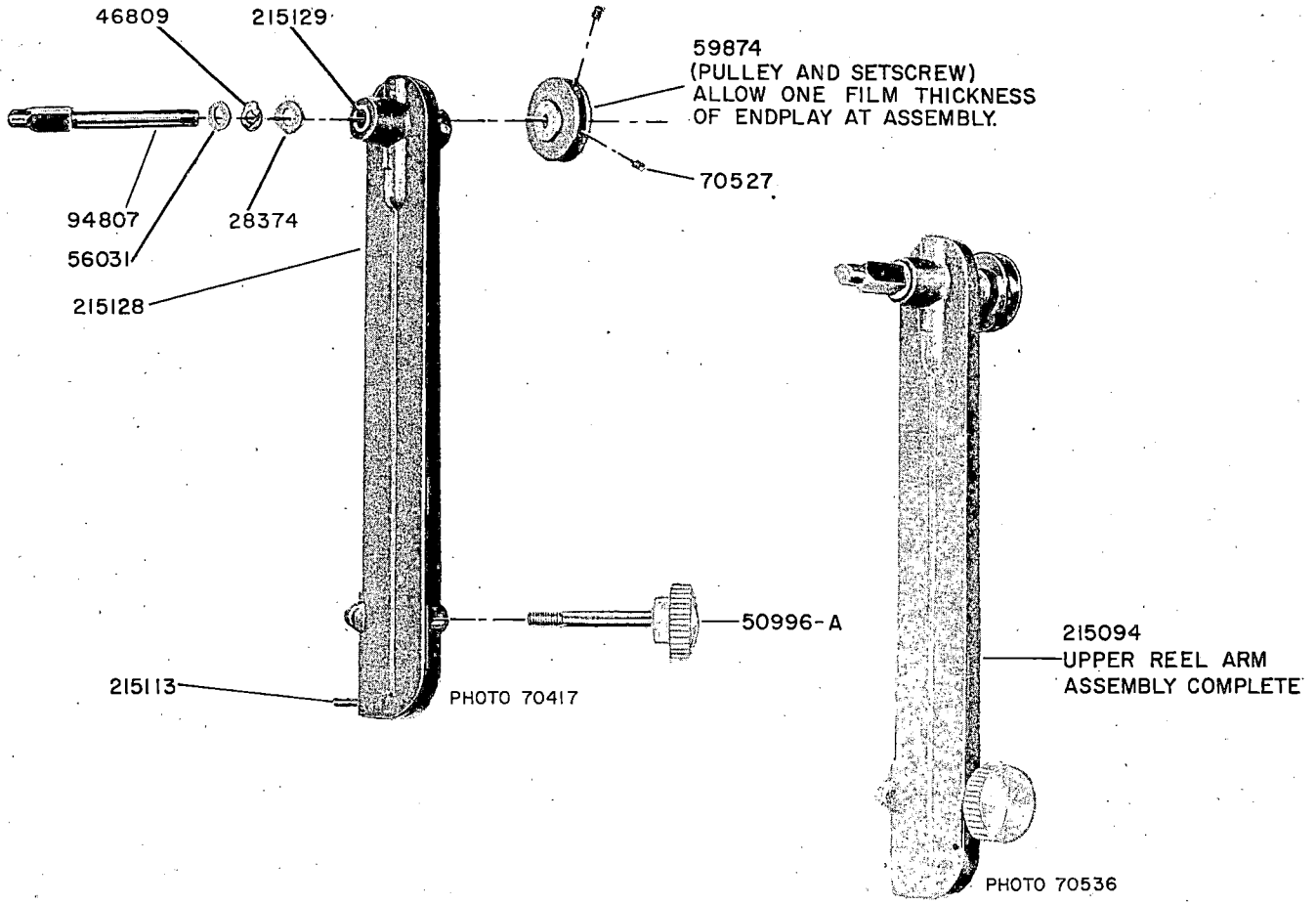
IDLER GEAR ASSEMBLIES, UPPER AND LOWER



PARTS

Stock No.	Drawing No.	Description
IDLER GEAR ASSEMBLIES		
213242-A	177687-501	Gear, idler gear powder iron lower
213243-A	177687-502	Gear, idler gear powder iron upper
59807	990502-8	Nut, oil pipe speed nut
59857	8876081-502	Pipe, oil pipe (includes wick)
59812	8875958-1	Shaft, upper and lower idler gear shaft
2917	61933-1	Washer, idler gear, spring

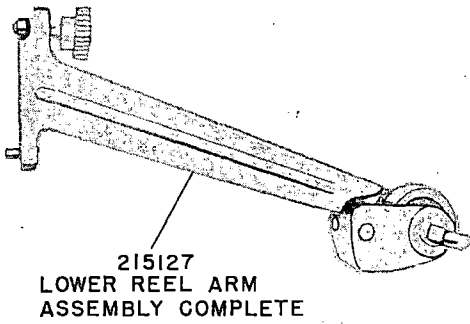
REEL ARM ASSEMBLY, UPPER



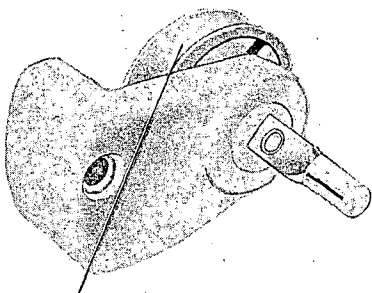
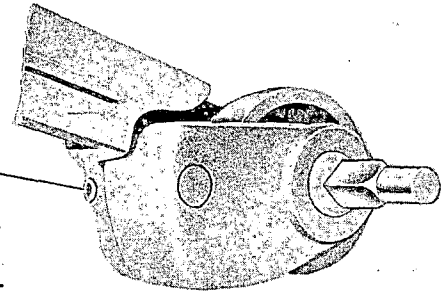
PARTS

Stock No.	Drawing No.	Description
REEL ARM - UPPER		
215113	184720-70	Pin, groove, upper reel arm, positioning
215094	148300-503	Arm, upper reel arm, complete
215128	8875945-502	Arm, upper reel arm, with bushing and pin assembly
215129	8876243-3	Bushing, upper reel arm
59874	8875943-1	Pulley, drive and setscrew
70527	8888539-122	Screw, pulley setscrew, 6-32 x 3/16" lg. cup point
50996-A	8434454-2	Screw, upper reel arm thumb screw
94807	185986-506	Shaft, reel shaft assembly, upper
56031	889534-32	Washer, 1/2" OD x 1/4" ID x 0.20 thick
28374	286391-45	Washer, flat, 1/2" OD x 1/4" IDX .002 thick
46809	183750-1	Washer, spring, 7/16" OD x 1/4" IDX .0065 thick

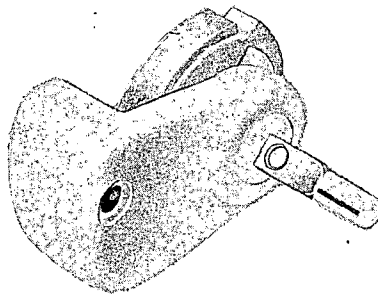
REEL ARM ASSEMBLY (LOWER) TO SERVICE LOWER REEL ARM ASSEMBLY



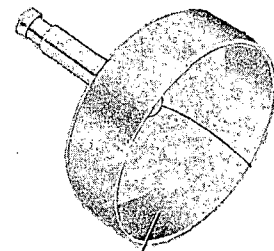
LOOSEN THIS SETSCREW (#10-32 X 3/16) TO REMOVE FRICTION CLUTCH ASSEMBLY. WHEN REINSTALLING USE TWO THICKNESSES OF FILM FOR ENDPLAY ADJUSTMENT.



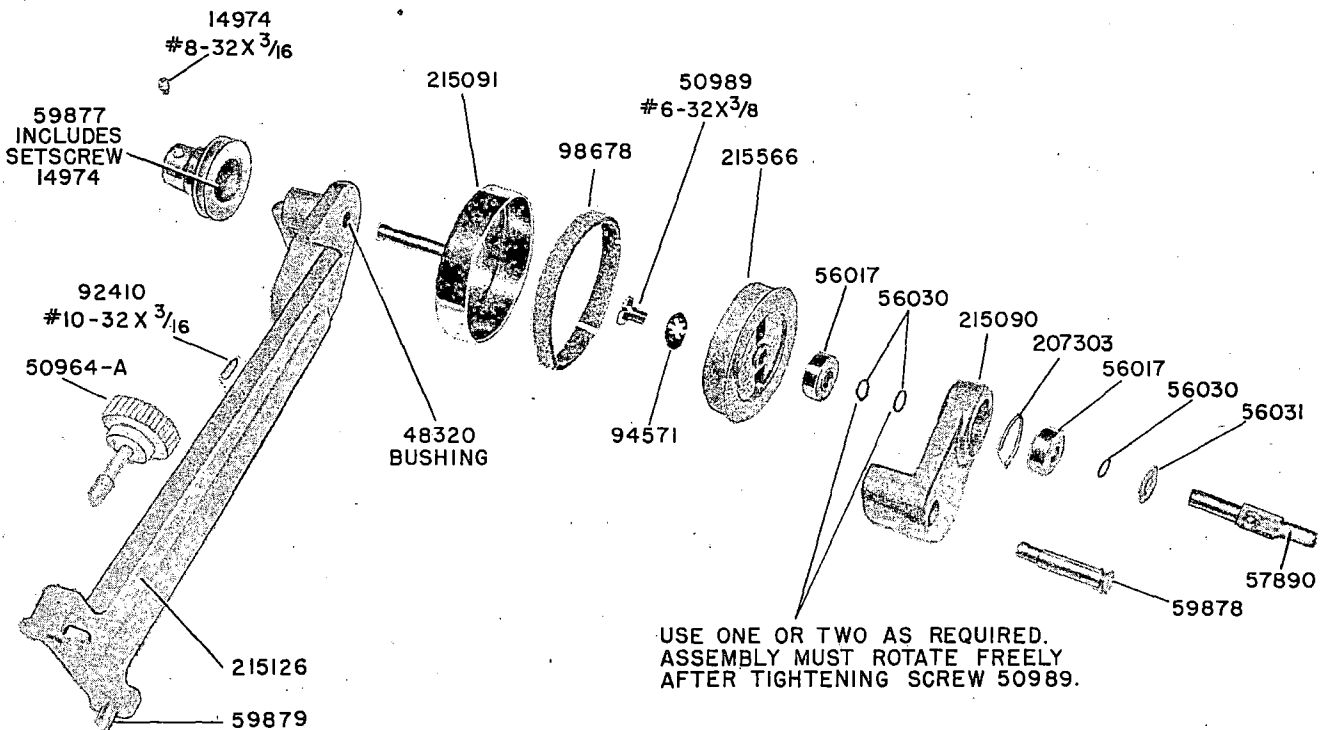
CLUTCH SURFACE SHOULD BE SMOOTH. REEL SHAFT SHOULD ROTATE FREELY.



FELT SHOULD BE SLIGHTLY NARROWER THAN CLUTCH GROOVE AND ENDS SHOULD BE APPROXIMATELY 1/8" APART WHEN WRAPPED AROUND CLUTCH.



INNER SURFACE SHOULD BE SMOOTH AND UNDEDENTED. FLANGE MUST NOT WOBBLE ON SHAFT.

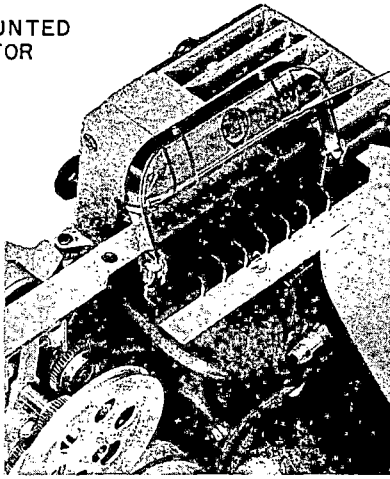


PARTS

<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
REEL ARM - LOWER		
215127	175460-503	Arm, lower reel arm, complete
215126	148307-502	Arm, reel arm with bushing and pin assembly
56017	8890619-2	Bearing, ball
215090	188647-9	Bracket, lower reel arm clutch
48320	8876243-4	Bushing, lower reel arm, oilite
215091	187588-505	Flange, drive flange and shaft assembly
59879	8853169-2	Pin, reel arm positioning pin
59877	188637-3	Pulley, belt drive and setscrew
215566	148102-7	Pulley, clutch
207303	142510-104	Ring, bearing retaining
98678	183551-3	Ring, felt clutch drive
92410	8888539-182	Screw, set clutch pivot shaft, 10-32 x 3/16" lg.
14974	8888539-142	Screw, pulley setscrew
50964-A	8434454-1	Screw, lower reel arm thumbscrew
94571	8875665-1	Lockwasher, dished, type No. 6, reel shaft screw
50989	8885470-4	Screw, reel shaft binder head, 6-32 x 3/8
59878	188582-2	Shaft, clutch pivot
57890	185987-506	Shaft, reel shaft assembly, lower
56030	82237-31	Washer, flat 5/16" O.D., stl.
56031	889534-32	Washer, flat 1/2" O.D.

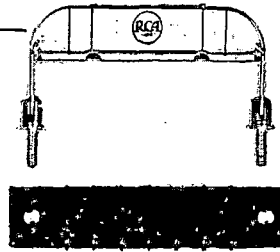
HANDLE

HANDLE MOUNTED ON PROJECTOR



94975

215148
HANDLE
COMPLETE



10 - 32 x 1/2

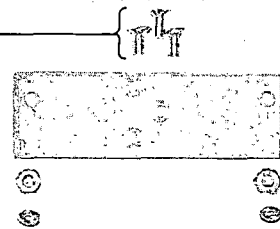
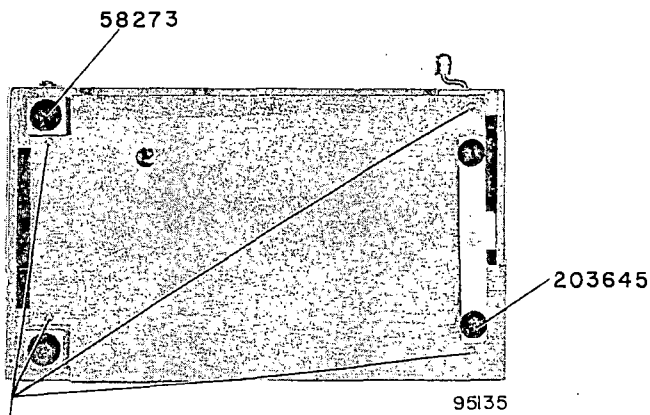


PHOTO 95040

PARTS

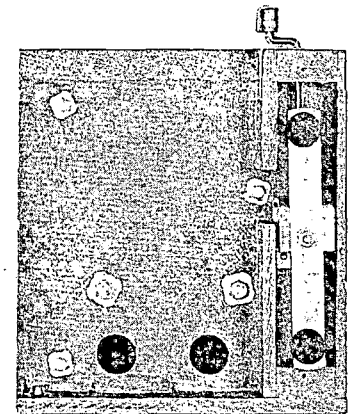
Stock No.	Drawing No.	Description
HANDLE		
215148	8943888-501	Handle Assembly, projector, speaker case

TILT MECHANISM TO DISASSEMBLE TILT MECHANISM



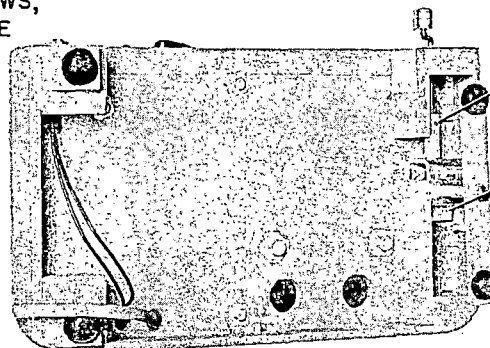
95135

1. REMOVE THESE FOUR SCREWS,
RAISE LEFT END AND SLIDE
COVER OFF TO LEFT.



95132

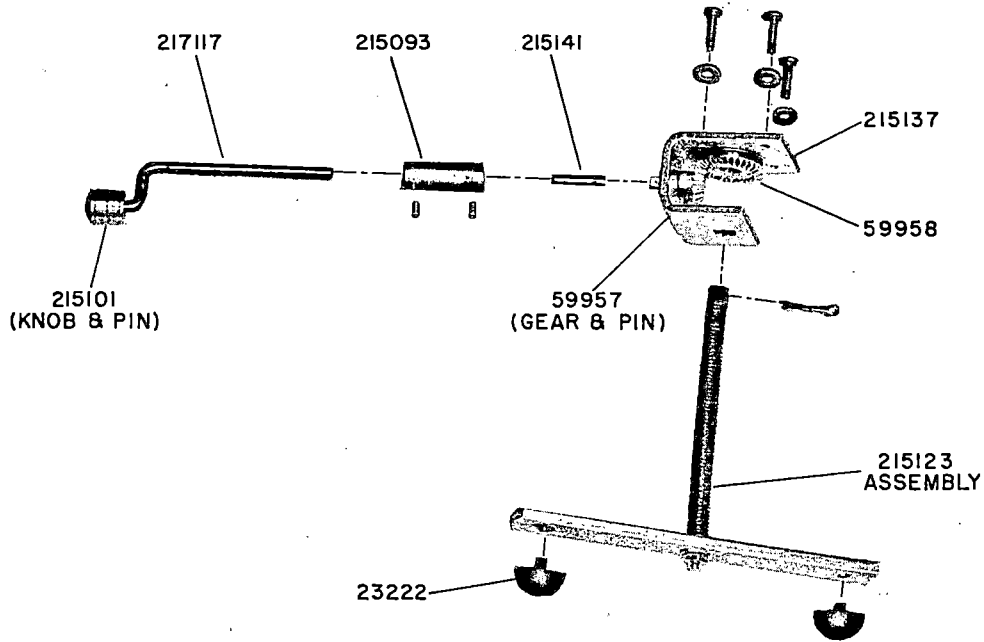
2. REMOVE THIS SETSCREW.



94981

3. REMOVE THREE SCREWS.
(UNSCREW FROM OTHER
SIDE.)

TILT MECHANISM FOR RCA 400 JUNIOR AND SENIOR

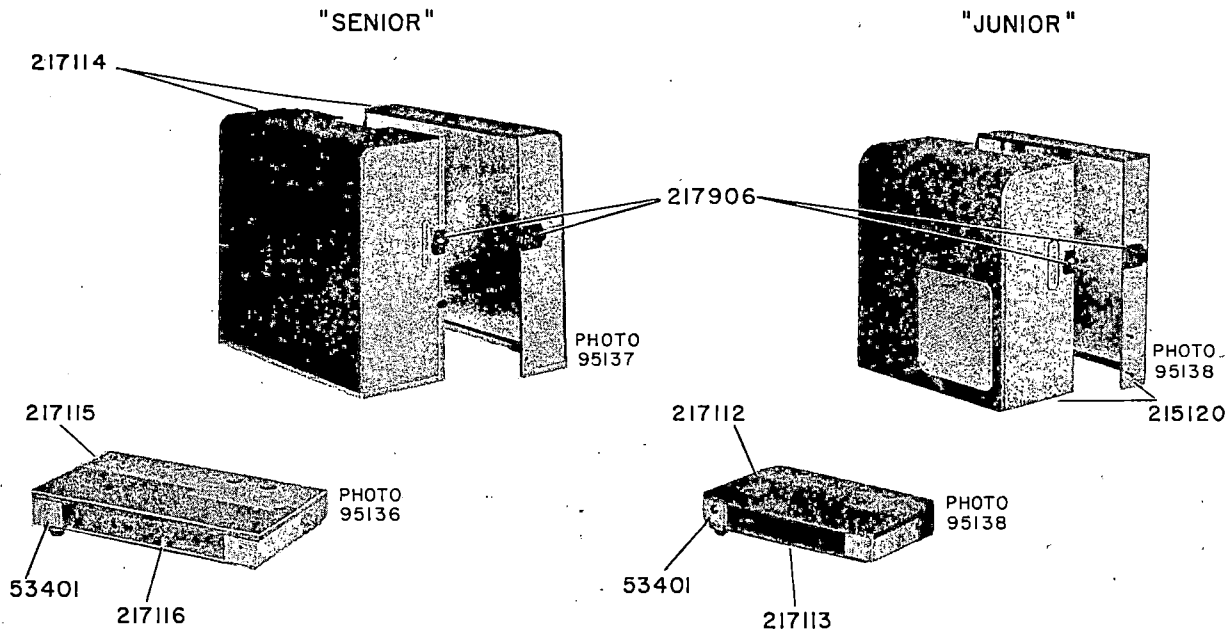


PHOTOS 95274,95275,95276

PARTS

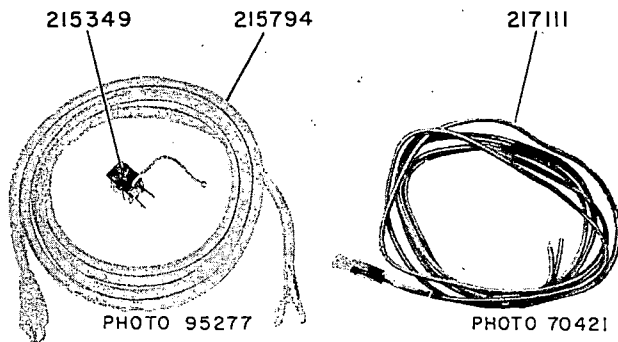
Stock No.	Drawing No.	Description
TILTING MECHANISM		
215137	8412490-2	Bracket, tilt mechanism
215093	8943873-1	Coupling, crankshaft, and setscrew
217117	8943877-501	Crank, shaft tilt assembly
215125	8876396-502	Foot, and tilt shaft assembly
23222	8853143-2	Foot, elastic tip
59957	8876006-3	Gear, crank shaft bevel gear and pin
59958	8876006-2	Gear, tilt shaft bevel gear
215101	8943874-1	Knob, crank & pin
215141	8943872-2	Shaft, drive gear

PROJECTOR CASES

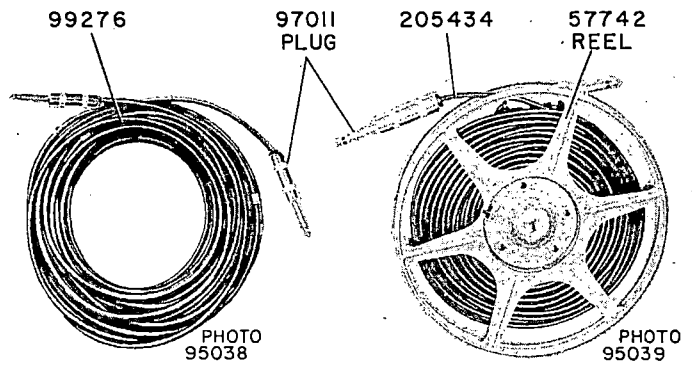


CORDS

POWER CORDS



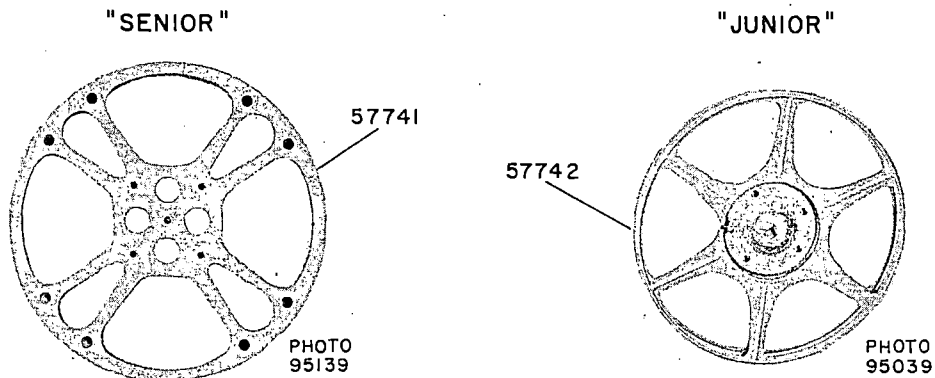
SPEAKER CORDS



"SENIOR"
OR
(MI-1338-C,-CF
AND MI-1345-CT)

"JUNIOR"
(MI-1345-C,-CF)

REELS



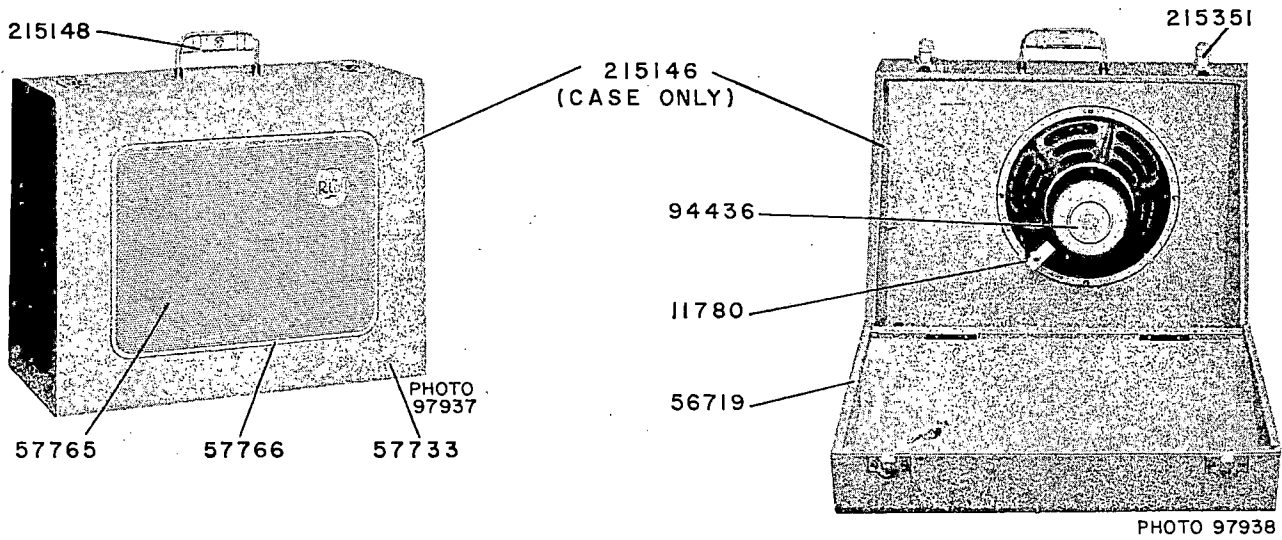
PARTS

<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
PROJECTOR CARRYING CASE FOR MI-1338-C,-CF "SENIOR"		
217115	166669-501	Base, projector base only
217114	8942554-501	Case; carrying, case, complete
217906	8973664-2	Catch, cover with rivets (bright finish)
217116	177350-501	Cover, bottom, Sr.
58273	8874660-2	Foot, elastic tip
215148	8943888-501	Handle, carrying
53401	8876524-1	Jack, sound output (on base)
59975	990303-6	Nut, speed, 8-32 rear cover screw retaining
217817	8957494-1	Plate, carrying handle, plastic
204037	8876326-4	Plate, carrying handle, support
219114	990108-613	Screw, Phillips Hd. No. 8-32 x 1/2
219115	990108-619	Screw, Phillips Hd. No. 8-32 x 7/8
59981	175545-1	Shield, projector, left hand
94839	175487-9	Shield, projector, right hand
PROJECTOR COVER AND SPEAKER HOUSING FOR MI-1345-C,-CF,-CT "JUNIOR"		
217112	166670-501	Base, projector
215124	8876040-504	Bracket, lower reel arm storage bracket
205389	8876520-3	Cable, speaker cable only, bulk
217906	8973664-2	Catch, cover with rivets, bright finish
205434	8876521-503	Cable, speaker cable and connectors 50 ft.
97011	8876516-2	Connector, male, 2 contact, speaker cable plug
217113	177346-501	Cover, carrying case, bottom cover
215120	8942555-504	Case, carrying case junior
58273	8874660-2	Foot, elastic tip
59969	148400-1	Grille, speaker
53401	8876524-1	Jack, speaker, sound output (on base)
59975	990303-6	Nut, speed, No. 8-32, rear cover screw retaining
59976	8876514-1	Nut, speed, No. 8-32, clamp type
57742	141983-8	Reel, speaker cable mounting film, 400 feet (not used in 1338-C)
59966	8887774-3	Screw, No. 8-32 x 3/8 Phillips Hd.
59974	8876035-1	Shaft, reel storage
59978	175488-1	Shield, projector, left hand
94838	175487-8	Shield, projector, right hand
215806	177498-1	Speaker, 8" P.M. - V.C.
218385	8876053-4	Spacer, speaker
219114	990108-613	Screw, Phillips Hd. No. 8-32 x 1/2
219115	990108-619	Screw, Phillips Hd. No. 8-32 x 7/8

PARTS

<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
SPEAKER AND ACCESSORY CARRYING CASE, MI-1312-C		
56719	8872118-1	Angle, lid hinge, rubber
97470	8876511-1	Bracket, speaker jack mounting
99276	8876517-502	Cable, speaker cable & connector
215146	8874808-505	Case, speaker carrying case
215351	8874659-5	Catch, speaker case
97011	8876516-2	Connector, 2 contact, male, grounding speaker cable (plug)
57733	8874660-1	Foot, rubber
57766	8874874-1	Gasket, grille
57765	147810-2	Grille, rectangular, speaker
215148	8943888-501	Handle assembly carrying case
53401	8876524-1	Jack, speaker
57741	141983-12	Reel, film, 1600 feet
94436	165437-1	Speaker, 10" P.M. Speaker, 6-8 V.C. imp.
POWER CABLE AND ADAPTOR FOR MI-1338-C, -CF AND MI-1345-CT		
215349	8943815-1	Adaptor, 3 conductor to 2 conductor
215794	8946155-2	Cable, power, 3 conductor with 3 contact male connector, 10 feet lg., 15 amp, 125 V
POWER CABLE FOR MI-1345-C, -CF		
217111	8946159-2	Cable, power, 2 conductor with 2 contact male connector, 10 feet lg.

MI-1312-C SPEAKER AND ACCESSORIES CARRYING CASE AND MI-12453 AUXILIARY SPEAKER



MI-12453 SPEAKER MECHANISM (10-INCH) FOR MI-1312-C

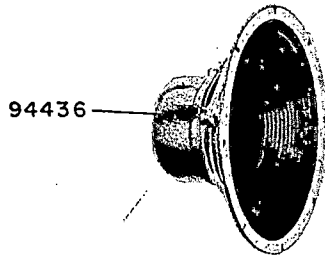
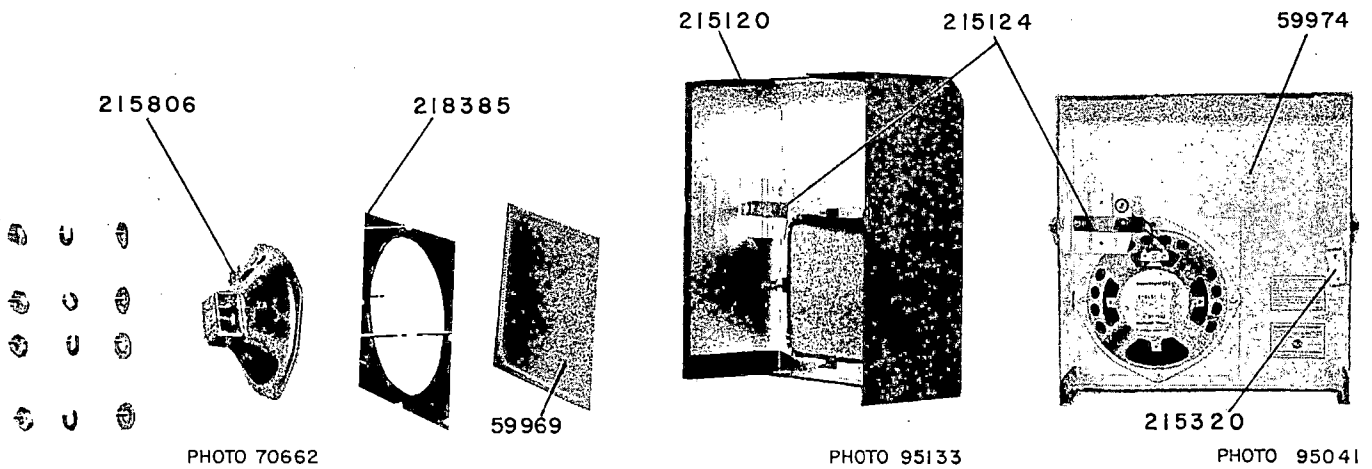


PHOTO 70425

ASSEMBLY OF RCA 400 JUNIOR SPEAKER



LUBRICATION, CLEANING AND CARE OF SINTERED IRON GEARS, AND THE NYLON WORM GEAR

The upper and lower idler gears and the two sprocket drive gears on the projector are made of porous sintered iron, saturated with oil. The proper lubrication of these gears depends on the oil seeping from the porous iron to the surface to be lubricated. *Therefore, grease or other compounds containing soaps, graphite, or molybdenum disulphite (molycote) should never be used on the teeth or bearings of these gears* (nor on the nylon worm gear or the rewind pulley gear, both of which contact the sintered gears).

These gears will require attention only every 1000 hours. *Do not clean them in an oil solvent such as carbon tetrachloride or xylol.* The gears have been saturated with oil by a vacuum impregnation process and if the oil is dissolved out of the gears a resaturation treatment will have to be given (see below). They should be cleaned by allowing them to soak in S.A.E. 30 oil for an hour and then brushing the bore and teeth with a wire brush using the oil as a cleaning fluid. After brushing, the gears should be soaked in the oil for two hours, and excess oil should be wiped off before assembly to the projector. Apply a few drops of oil to the gear shafts prior to assembly of the gears and then add several drops of oil to the gear teeth.

The nylon worm may be cleaned in carbon tetrachloride or xylol. Brush a coating of S.A.E. 30 oil on the nylon worm gear teeth and apply oil to the shafts as in *General Cleaning and Lubrication* instructions, below. Do not use any other lubricant on the worm gear.

The following treatment is recommended for a reimpregnation of the sintered iron gears, if such is necessary, because of unusual conditions such as accidental washing of gears in solvent, or several thousand hours of operation without proper servicing:

1. Submerge the gears in hot (220°F) oil for a minimum of one hour or until bubbling stops.
2. Plunge the gears directly from hot oil into a container of cold oil and allow to soak overnight.

GENERAL CLEANING AND LUBRICATION

Inspect all bushings, bearings, and other parts for cleanliness.

Thoroughly clean all parts (except sintered iron gears) before reassembly with carbon tetrachloride or other solvent to avoid abrasive action of dirt on moving parts.

Apply four or five drops of light oil such as Socony Vacuum "Vactra Light X" (RCA Stock 25367) to all shafts and bushings prior to their reassembly.

Lightly apply Lubriplate 110 to the teeth of the intermittent gear train after reassembly.

Place a few drops of light oil in motor oil holes once every 1000 hours.

Felt oil pads and the wick in the oiling tube should be saturated with "Sta-Put 370 Oil" (E.F. Houghton Co.).

Lubricate shafts carrying plastic rollers with micro-fine graphite or a soft lead pencil.

Do not use carbon tetrachloride or other solvent to clean coated lens surfaces. Breathe on lens and clean with lens tissue.

Do not force the assembly of parts. It should not be necessary to alter any parts by operations such as filing, tapping, drilling, scraping, etc., to enable them to be assembled.

Always use the proper tool designed to do the job.

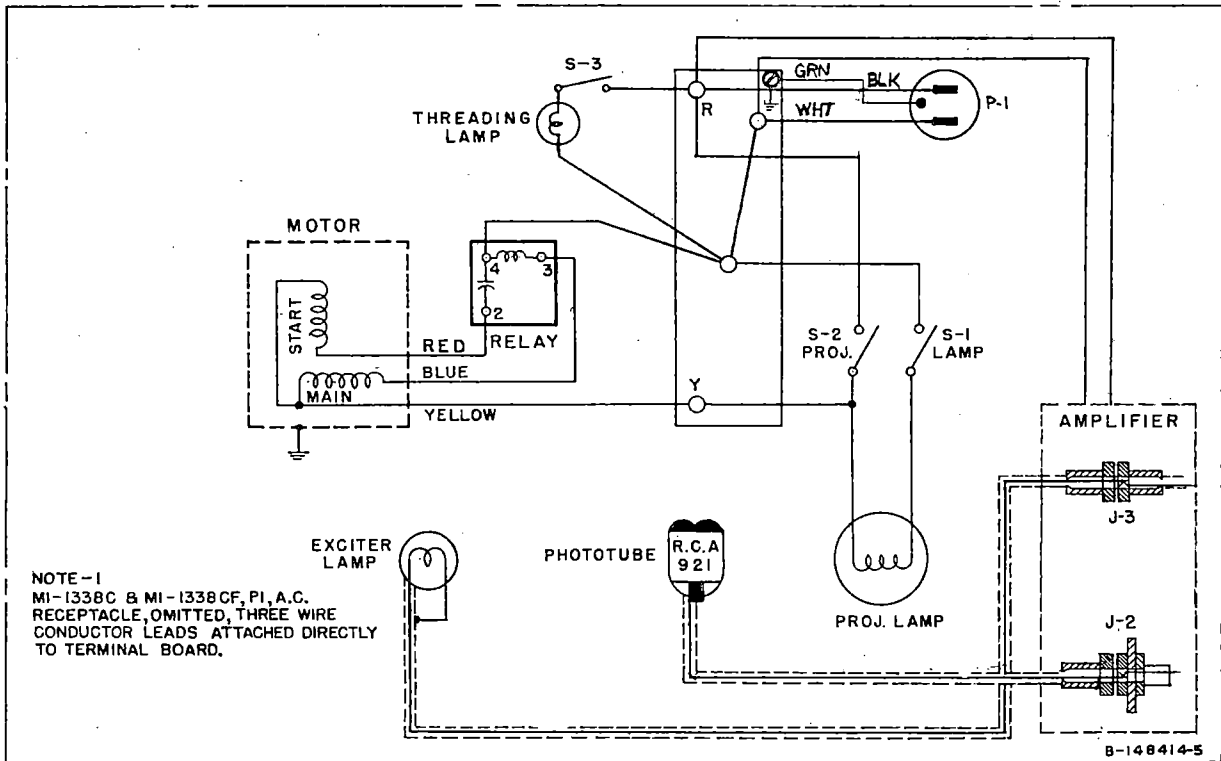
SERVICE AIDS

These notes have been prepared to aid the 16mm technician to quickly localize the cause of a given effect when its symptom is apparent and to suggest the required corrective action.

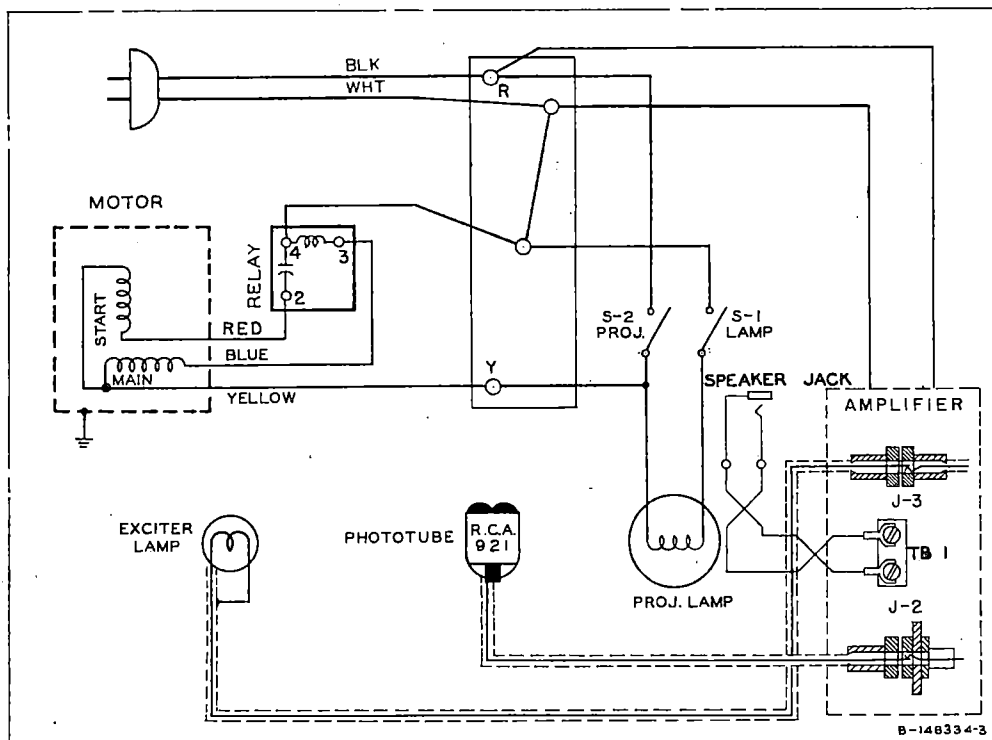
SOUND SYSTEM

<i>Symptom</i>	<i>Probable Cause</i>	<i>Correction</i>
Weak or no sound, projection lamp lighted.	AMPL switch off. Volume control off. Loudspeaker not connected. Power cord not connected to proper source of supply. Exciter lamp out. Defective Oscillator coil. Weak rectifier tube 5Y3GT(MI-1338) Open speaker voice coil circuit. Sound optic dirty or out of adjustment. Sound mirror dirty or out of adjustment. Phototube installed incorrectly.	Turn switch on. Adjust control. Plug in. Check frequency and voltage. Replace. If new exciter lamp does not light, replace Oscillator tube 6V6GT. Replace Replace. Replace cone after first checking speaker connections. Clean, see Page 28. Clean, see Page 25. Install in correct position, see Page 30.
Sound on MIC—no sound on FILM.	Microphone plug in jack. Exciter lamp out. Sound optic dirty or out of adjustment. Sound mirror dirty or out of adjustment. Photocell defective or installed incorrectly.	Remove plug from jack. Replace—Check Oscillator tube. Clean, see Page 28. Clean, see Page 25. See Page 30.
Sound on FILM—no sound on MIC.	Microphone plug not in jack. Microphone plug or receptacle defective. Microphone defective.	Insert plug in jack. Repair or replace. Replace.
Sound microphonic (Ringing noise) (a) With Volume control on. (b) With Volume control off.	Phototube loose or hitting cover. Defective 6J7 tube (MI-1338). Defective 12AY7 tube (MI-1345) Defective 6J5 or 6SL7GT tube (MI-1338) Defective 6SL7GT tube (MI-1345)	See Page 30. Replace. Replace. Replace. Replace.
Tone unsteady. (High or low frequency variations in pitch.)	Film threaded under tension roller. Sound drum, shaft or bearings. Pressure roller incorrectly adjusted. Pressure roller dirty or binding. Tension roller incorrectly adjusted.	Thread over tension roller. See Page 25. See Page 27. Clean, see Page 27. See Page 31.
Tone unsteady (continued)	Sound drum dirty. Guide roller sticking. Phototube cover interfering with pressure roller arm. Erratic takeup tension.	Clean. See Page 26. Install cover correctly, see Page 30. See Page 40.
Motor "hash" in sound.	Lock washers missing from screws holding amplifier cover.	Replace.

<i>Symptom</i>	<i>Probable Cause</i>	<i>Correction</i>
Sound but no picture.	Lamp switch off. Projection lamp missing or burned out.	Turn on. Replace.
Loses both film loops.	Upper sprocket shoe out of adjustment.	Adjust, see Page 24.
Loses lower loop.	Broken sprocket holes. Bad splices. Film binding in gate. Claw out of adjustment. Dirty claw.	Cut out and splice film. Resplice. Check for thick splices. Check side pressure shoes. Adjust, see Pages 16-18-19. Remove dirt and emulsion from claw.
Improper takeup operation.	Takeup bearing sticking. Excessive takeup tension.	See Page 40. See Page 40.
Projector mechanism noisy.	Claw travel excessive.	See Page 19.
Tears sprocket holes.	Upper reel arm shaft binding. Under-cut claw. Under-cut film sprocket teeth. Excessive takeup tension.	See Page 39—Adjust end play. See Page 16. See Page 24. See Page 40.
Travel ghosts. White streaks above or below white areas on screen image.	Shutter out of adjustment.	See Page 15.
Picture motion unsteady.	Unsteadiness present in picture print. Claw travel too short. Improper threading. Claw undercut. Side pressure shoe springs on aperture plate too weak. Picture gate not latched securely.	See Page 19. Check loops for proper length. See Page 18. See Page 22. Bend latch spring, see Page 22.
Picture indistinct or illumination low.	Projection lens dirty. Condenser lens dirty. Condenser lens incorrectly assembled. Reflector dirty or damaged. Projection lamp black or blistered. Low line voltage.	Clean, see Page 49. Clean, see Page 8. See Page 8. Clean or replace, see Page 8. Replace lamp. Use a Voltage Booster.
Film scratched.	Film pressure shoe dirty or damaged. Sound pressure roller dirty or damaged. Emulsion hardened on film-gate shoe. Aperture plate dirty or damaged. Guide roller dirty or sluggish. Snubber roller damaged.	Clean or replace, see Page 23. Clean, see Page 27. Remove emulsion. Clean or replace, see Page 22. Clean, see Page 26. See Page 32.



MI-1338-C,-CF Equipment Schematic Diagram

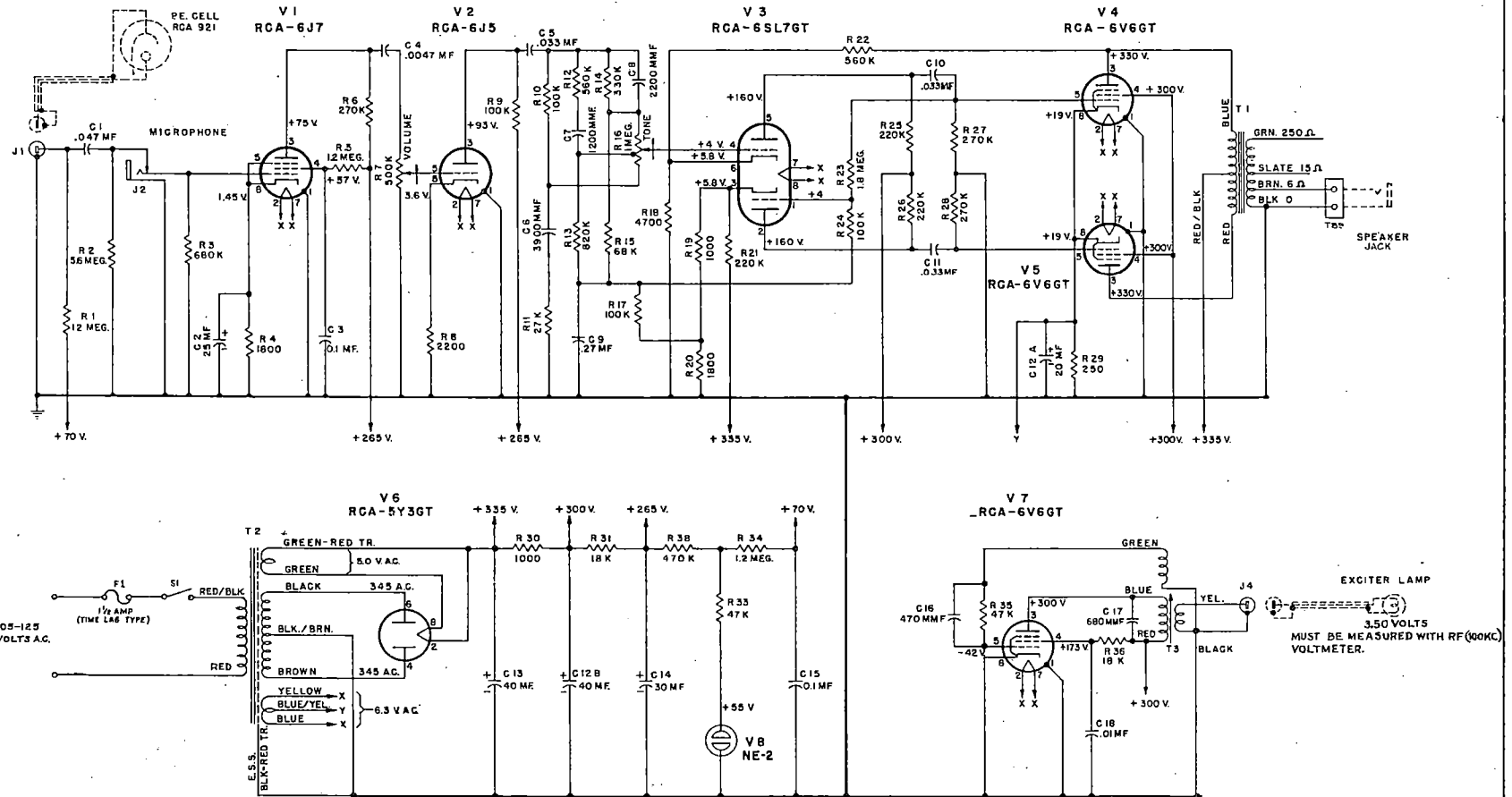


MI-1345-C,-CF,-CT Equipment Schematic Diagram

LIST OF AMPLIFIER PARTS

Symbol No.	Stock No.	Drawing No.	Description
RCA - 400 SENIOR - MI-1338-C, -CF			
			Note: Resistors are fixed composition unless otherwise indicated.
C1		735715-171	Capacitor, 0.047 mf, 400 v - Paper, Tubular
C2	52518	442901-47	Capacitor, 25 mf, 25 v
C3		735715-175	Capacitor, 0.1 mf, 400 v - Paper, Tubular
C4		735715-259	Capacitor, 0.0047 mf, 600 v - Paper, Tubular
C5		735715-269	Capacitor, 0.033 mf, 600 v - Paper, Tubular
C6	39666	727871-161	Capacitor, 3900 mmf, 500 v
C7	39654	727871-149	Capacitor, 1200 mmf, 500 v
C8	39660	727871-155	Capacitor, 2200 mmf, 500 v
C9		735715-80	Capacitor, 0.27 mf, 200 v - Paper, Tubular
C10, C11		735715-269	Capacitor, 0.033 mf, 600 v. Same as C5
C12A/B	59980	95695-35	Capacitor, electrolytic, 20/40 mf, 25/450 v
C13	37308	95695-33	Capacitor, electrolytic, 40 mf, 450 v
C14	205298	442901-77	Capacitor, electrolytic, 30 mf, 450 v
C15		735715-175	Capacitor, 0.1 mf, 400 v. Same as C3
C16	39644	727856-139	Capacitor, 470 mmf, 500 v
C17	39648	727861-143	Capacitor, 680 mmf, 500 v
C18		735715-163	Capacitor, 0.01 mf, 400 v - Paper, Tubular
C19			Not Used
J1	35787	82373-6	Receptacle
J2	7903	7862660-5	Jack, microphone, input
J3			Not Used
J4	35787	82373-6	Receptacle. Same as J1
F1	98682	990157-109	Fuse, 1-1/2 amp, 125 v, time lag
R1		82283-99	Resistor, 1.2 meg., 1/2 w
R2		82283-107	Resistor, 5.6 meg., 1/2 w
R3		82283-96	Resistor, 680,000 ohm, 1/2 w
R4		82283-65	Resistor, 1800 ohm, 1/2 w
R5		82283-99	Resistor, 1.2 meg., 1/2 w. Same as R1
R6		82283-91	Resistor, 270,000 ohm, 1/2 w
R7	94528	148407-7	Resistor, variable, 500,000 ohm
R8		82283-66	Resistor, 2200 ohm, 1/2 w
R9, R10		82283-86	Resistor, 100,000 ohm, 1/2 w
R11		82283-79	Resistor, 27,000 ohm, 1/2 w
R12		82283-95	Resistor, 560,000 ohm, 1/2 w
R13		82283-97	Resistor, 820,000 ohm, 1/2 w
R14		82283-92	Resistor, 330,000 ohm, 1/2 w
R15		82283-84	Resistor, 68,000 ohm, 1/2 w
R16	94529	148407-8	Resistor, variable, 1 meg. tapped at 500,000 ohm
R17		82283-86	Resistor, 100,000 ohm, 1/2 w. Same as R9
R18		82283-175	Resistor, 4700 ohm, 1/2 w
R19		82283-159	Resistor, 1000 ohm, 1/2 w
R20		82283-165	Resistor, 1800 ohm, 1/2 w
R21		99126-215	Resistor, 220,000 ohm \pm 5%, 2 w

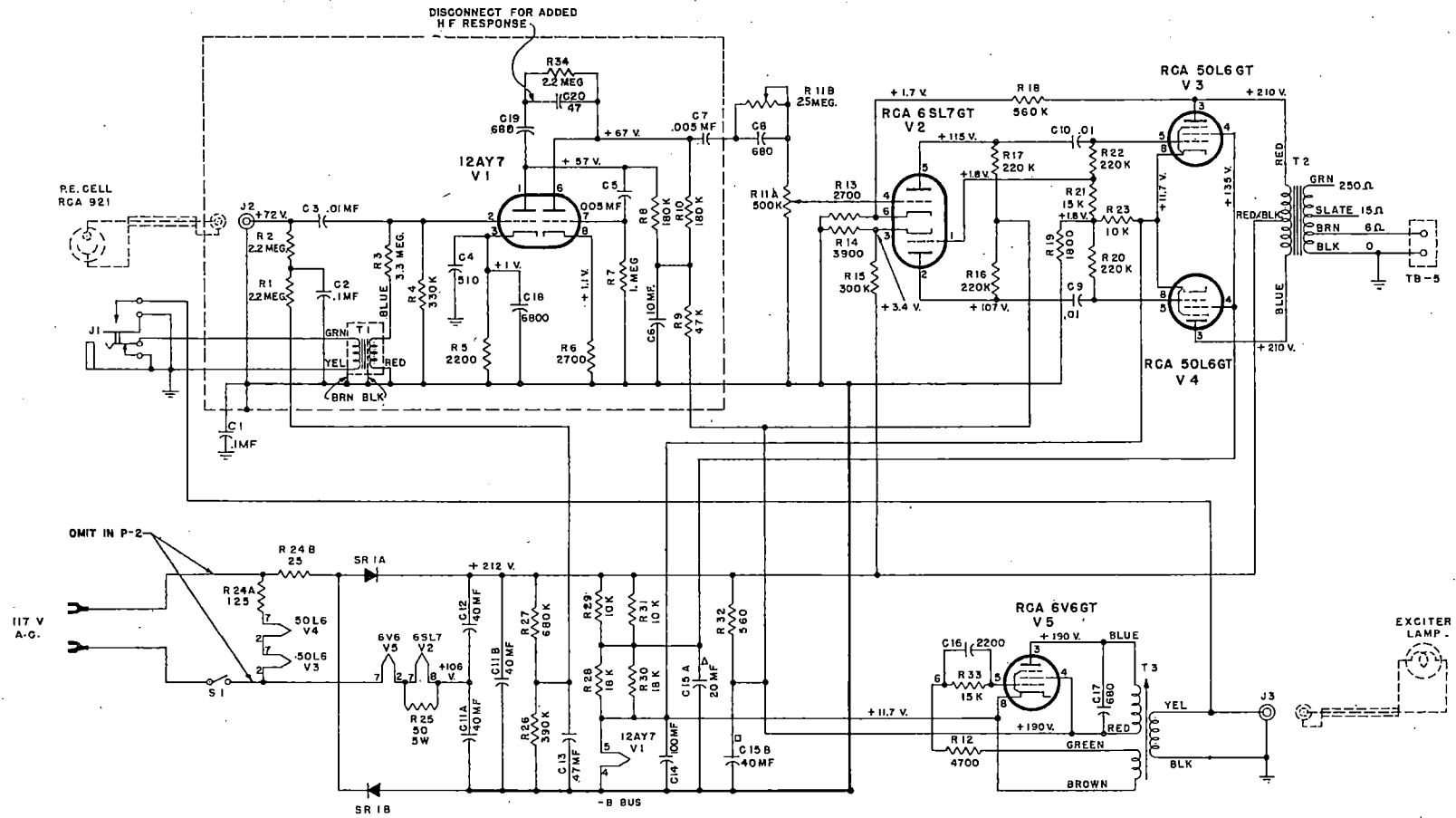
M1-1338-C, -CF Amplifier Schematic Diagram



166190-2

Symbol No.	Stock No.	Drawing No.	Description
RCA - 400 SENIOR - MI-1338-C, -CF (Continued)			
R22		90496-225	Resistor, 560,000 ohm \pm 5%, 1 w
R23		82283-237	Resistor, 1.8 meg., 1/2 w
R24		82283-207	Resistor, 100,000 ohm, 1/2 w
R25, R26		90496-90	Resistor, 220,000 ohm, 1 w
R27, R28		82283-91	Resistor, 270,000 ohm, 1/2 w. Same as R6
R29	51340	181165-16	Resistor, 250 ohm \pm 10%, 7.4 w - w.w.
R30	52938	181165-20	Resistor, 1000 ohm \pm 10%, 10.9 w - w.w.
R31		82283-77	Resistor, 18,000 ohm, 1/2 w
R32			Not Used
R33		82283-82	Resistor, 47,000 ohm, 1/2 w
R34		82283-99	Resistor, 1.2 meg., 1/2 w. Same as R1
R35		82283-82	Resistor, 47,000 ohm, 1/2 w. Same as R33
R36		99126-77	Resistor, 18,000 ohm, 2 w
R37			Not Used
R38		82283-94	Resistor, 470,000 ohm, 1/2 w
S1	59988	449605-8	Switch, rotary, "OFF-ON" SPST, 125 v, 3 amp
S2			Not Used
T1	57828	949135-2	Transformer, output
T2	53030	901876-2	Transformer, power
T3	59887	175512-1	Transformer, oscillator
T4			Not Used
V8	48474	872291-4	Lamp, neon
XV2 to XV7	68590	895999-6	Socket, tube, octal for V2 to V7
	13526	8875711-1	Block, fuse
	12110	79034-3	Cap, tube shield
	71851	982437-4	Grommet, power cord, feed-thru
	28452	85558-2	Plate, capacitor mtg.
	52937	185640-502	Socket, cushion, for V1
	211857	99163-60	Washer, laminated phenolic
	94057		Knob, "OFF-ON" switch
	34950		Knob, volume and tone control
RCA - 400 JUNIOR - MI-1345-C, -CF, -CT			
			Note: Resistors are fixed composition unless otherwise indicated.
C1		735715-275	Capacitor, 0.1 mf, 600 v - Paper, Tubular
C2		735715-75	Capacitor, 0.1 mf, 200 v - Paper, Tubular
C3	73960	984661-3	Capacitor, 0.01 mf, 500 v
C4	90009	727868-240	Capacitor, 510 mmf, 500 v
C5	73473	984661-1	Capacitor, 0.005 mf, 500 v
C6	91391	442901-63	Capacitor, 10 mf, 250 v
C7	73473	984661-1	Capacitor, 0.005 mf, 500 v. Same as C5
C8	39648	727856-143	Capacitor, 680 mmf, 500 v
C9, C10		735715-263	Capacitor, 0.01 mf, 600 v - Paper, Tubular
C11A/B	102913	987441-502	Capacitor, 40/40 mf, 450 v
C12	59983	986570-504	Capacitor, 40 mf, 450 v
C13		735715-83	Capacitor, 0.47 mf, 200 mf, 200 v - Paper, Tubular

MI-1345-C, -CF, -CT Amplifier Schematic Diagram



ALL CAPACITORS IN MMF UNLESS OTHERWISE SPECIFIED.
 ALL RESISTANCE VALUES IN OHMS
 K = 1000
 ALL VOLTAGES READ WITH RCA VOLT-OHMYST WITH
 RESPECT TO -B BUS AT 117 VOLTS LINE VOLTAGE.
 HEATER VOLTAGES SHOULD BE READ WITH A
 THERMAL METER. NOMINAL VOLTAGES FOLLOW:
 V1-6.3; V2-6.3; V3, V4-50; V5-6.4, EXCITER LAMP 3.75

- ① MI-1345A & MI-1345B & MI-1345C
- ② MI-1345AT & MI-1345BT & MI-1345CT

D-165042-8

Paper, Tubular
 Paper, Tubular
 200 mf, 200 v - Paper, Tubular

Symbol No.	Stock No.	Drawing No.	Description
RCA - 400 JUNIOR - MI-1345-C, -CF, -CT (Continued)			
C14	211091	442901-54	Capacitor, 100 mf, 50 v
C15	59984	986570-505	Capacitor, 20/40 mf, 250 v
C16	39660	727868-155	Capacitor, 2200 mmf, 500 v
C17	39648	727856-143	Capacitor, 680 mmf, 500 v. Same as C8
C18		735715-161	Capacitor, 6800 mmf, 400 v - Paper, Tubular
C19	39648	727856-143	Capacitor, 680 mmf, 500 v. Same as C8
C20	95320	727853-115	Capacitor, 47 mmf - 500 v
J1	59989	8876366-1	Jack, mic. input
J2, J3	35787	82373-6	Socket, 2 contact, P.E. cell & exciter lamp
R1, R2		82283-102	Resistor, 2.2 meg. 1/2 w
R3		82283-104	Resistor, 3.3 meg. 1/2 w
R4		82283-219	Resistor, 330,000 ohm, 1/2 w
R5		99126-167	Resistor, 2200 ohm, 2 w
R6		82283-67	Resistor, 2700 ohm, 1/2 w
R7		82283-98	Resistor, 1 meg. 1/2 w
R8		82283-89	Resistor, 180,000 ohm, 1/2 w
R9		82283-82	Resistor, 47,000 ohm, 1/2 w
R10		82283-89	Resistor, 180,000 ohm, 1/2 w. Same as R8
R11/A/B	59880	737815-6	Resistor, variable, dual, 2.5 meg/500,000 ohm
R12		82283-70	Resistor, 4700 ohm
R13		82283-67	Resistor, 2700 ohm, 1/2 w. Same as R6
R14		82283-69	Resistor, 3900 ohm, 1/2 w
R15		82283-218	Resistor, 300,000 ohm, 1/2 w
R16, R17		82283-90	Resistor, 220,000 ohm, 1/2 w
R18		82283-95	Resistor, 560,000 ohm, 1/2 w
R19		82283-65	Resistor, 1800 ohm, 1/2 w
R20		82283-90	Resistor, 220,000 ohm, 1/2 w. Same as R16
R21		82283-76	Resistor, 15,000 ohm, 1/2 w
R22		82283-90	Resistor, 220,000 ohm, 1/2 w. Same as R16
R23		82283-74	Resistor, 10,000 ohm, 1/2 w
R24A/B	59986	737833-1	Resistor, 125/25 ohm, 25 w - w.w.
R25	59987	443853-67	Resistor, 50 ohm, 5 w - w.w.
R26		82283-93	Resistor, 390,000 ohm, 1/2 w
R27		82283-96	Resistor, 680,000 ohm, 1/2 w
R28		99126-77	Resistor, 18,000 ohm, 2 w
R29		99126-74	Resistor, 10,000 ohm, 2 w
R30		99126-77	Resistor, 18,000 ohm, 2 w. Same as R28
R31		99126-74	Resistor, 10,000 ohm, 2 w. Same as R29
R32		99126-59	Resistor, 560 ohm, 2 w
R33		82283-76	Resistor, 15,000 ohm, 1/2 w
R34		82283-102	Resistor, 2.2 meg. 1/2 w. Same as R1
S1	59988	449605-5	Switch, rotary, "OFF-ON" SPST
SR1A/B	59881	449678-1	Rectifier, selenium
T1	59882	949313-1	Transformer, input
T2	57828	949135-3	Transformer, output
T3	59884	175514-1	Transformer, oscillator
	215145	8412513-1	Transformer, isolation (MI-1345-CT only)
	59885	8876368-1	Cover, shield for V1
	215787	148419-502	Cover, amplifier

<i>Symbol No.</i>	<i>Stock No.</i>	<i>Drawing No.</i>	<i>Description</i>
RCA - 400 JUNIOR - MI-1345-C, -CF, -CT (Continued)			
	37396	65415-10	Grommet, shield box mtg.
	59990	148418-1	Knob, "OFF-ON" switch
	59991	148418-3	Knob, volume control, dual, used with stock number 59992
	59992	148418-2	Knob, tone control, dual, used with stock number 59991
	18469	85558-3	Plate, capacitor mtg. for C11
	28452	85558-2	Plate, capacitor mtg. for C12 & C15
	78767	8888539-121	Screw, control knob S.S. #6-32 x 1/8 lq.
	56359	8858642-3	Shield, tube for V1
	68590	895999-6	Socket, tube, octal V2 to V5
	94880	984055-2	Socket, tube for V1