

16 mm Motion Picture Equipment

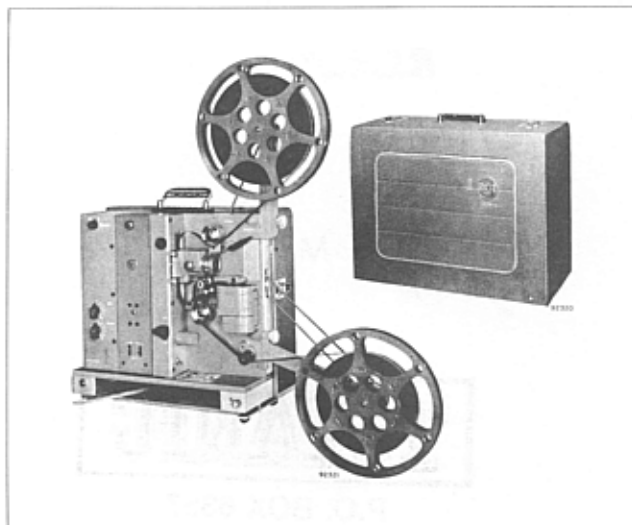
RCA 400

SERVICE MANUAL



**P.O. BOX 6357
CINCINNATI, OHIO 46206**

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



RCA 400 Senior Projector and Speaker

LAMPs:

BTR - 1000W 200 HR.
 DFT - 1000W 25 HR.
 DHT - 1200W 10 HR.
 DFD - 1000W 10 HR.
 DDB/DDW 750W 25 HR.

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 B&B/B&K

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

	Inches		
Dimensions	MI-1338-C	MI-1312-C	MI-1345-C
Length	15½	19½	13½
Height	15	15½	15
Width	10	9¼	9½
	Pounds		
Weight	MI-1338-C	MI-1312-C	MI-1345-C
Equipment	39¼	19	33
Shipping	46	26¼	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)

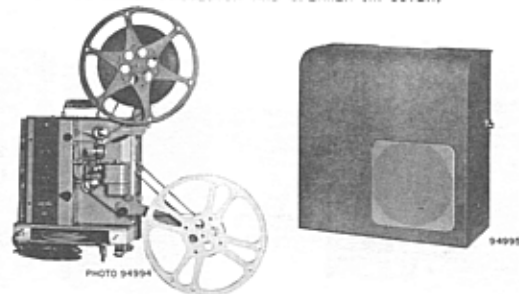
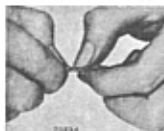


PHOTO 94994

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



CORRECT

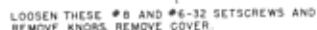
94993

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

PARTS

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

4



MAKE SURE ALL TUBES
ARE FIRMLY SEATED

Diagram 1 (Left): Exterior view of the PHOTODUO 95127 camera. Dimensions are indicated: 1 1/2" (top), 1 1/2" (right), 7/8" (bottom right), and 1 1/2" (bottom). Phillips screws are specified: #8-32 219114 (top left), #8-32 219115 (bottom left), and #8-32 219116 (bottom right).

Diagram 2 (Right): Interior view of the PHOTODUO 95127 camera. Components labeled include: 59975 SIX NUTS (top left), 94839 R.H. SHIELD (PROD. CASE LIST) (center), 59981 L.H. SHIELD (bottom right), and PHOTO 95130 (bottom right).

REMOVE NINE #8-32 SCREWS
LENGTH AS SHOWN

FOR AMPLIFIER COMPONENTS SEE PAGES 52 THROUGH 54

5



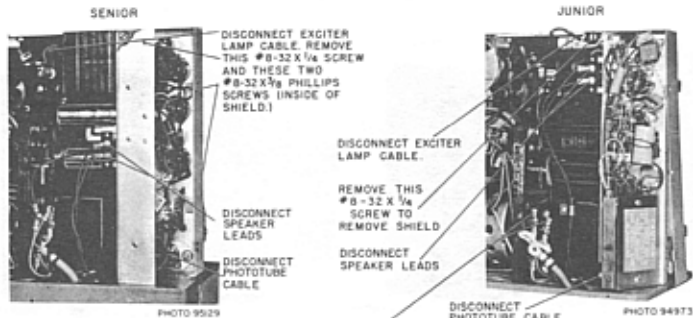
MAKE SURE ALL TUBES
ARE FIRMLY SEATED

[illegible]

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

FOR AMPLIFIER COMPONENTS SEE PAGES 54 THROUGH 57

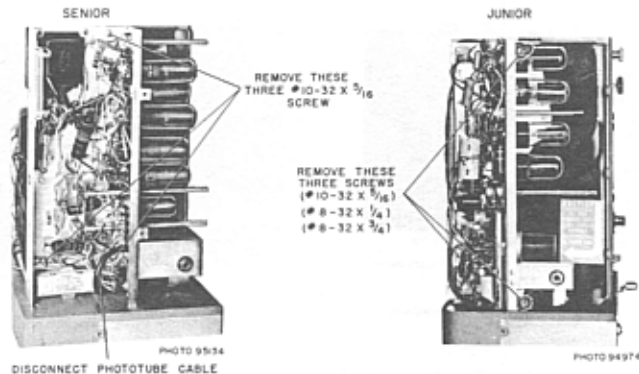
RCA 400 "SENIOR" AND "JUNIOR" AMPLIFIERS TO SERVICE AMPLIFIERS



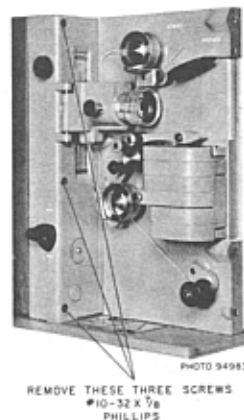
IF AMPLIFIER ONLY IS TO BE REMOVED, DISCONNECT 2 AMPLIFIER LEADS-BUT NOT THE RED LEAD-FROM 2 UPPER TERMINALS. IF AMPLIFIER AND LAMPHOUSE ARE TO BE REMOVED DISCONNECT THE RED LEAD FROM THE UPPER-LEFT-TERMINAL AND ALL LEADS FROM THE LOWER 2 TERMINALS.

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.

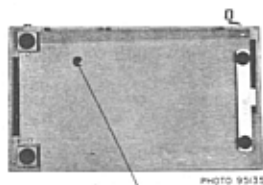
TO REMOVE AMPLIFIER



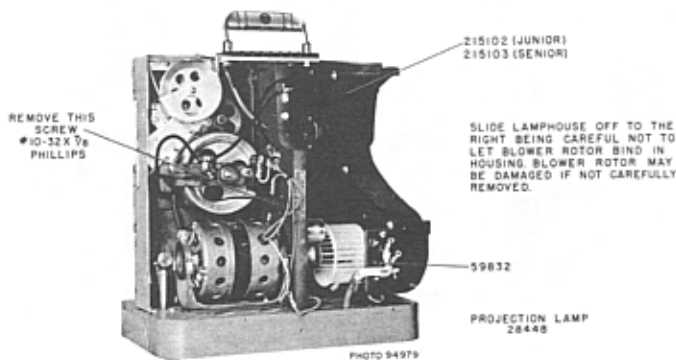
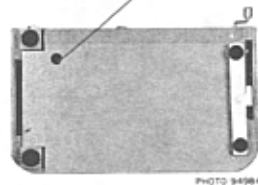
LAMPHOUSE AND DOOR ASSEMBLY TO REMOVE LAMPHOUSE



"SENIOR"



"JUNIOR"



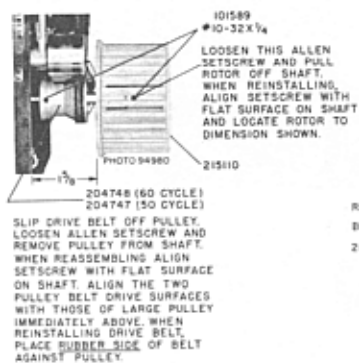
PARTS

Stock No.	Drawing No.	Description
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
101509	8888539-183	Screw, blower rotor setscrew, 10-32 x 1/4 slt.
94309	8876398-6	Spacer, motor mounting spacer

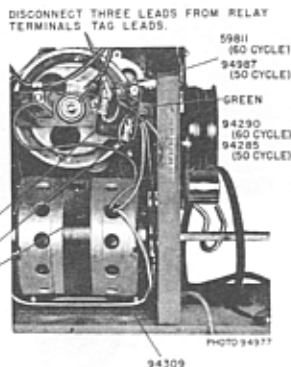
Stock No.	Drawing No.	Description
50 CYCLE OPERATION - MI-1338-CF, MI-1345-CF		
94285	145285-4	Belt, motor drive (white dot)
215110	8412419-1	Blower, rotor
215619	484379-1	Motor, drive 115 V, 50/60 cycles
204747	148938-3	Pulley, motor drive
94587	8876288-2	Relay, drive motor starting
101509	8888539-183	Screw, blower rotor setscrew
94309	8876398-6	Spacer, motor mounting spacer
96473	145331-3	Rod, belt shifter

MOTOR AND BLOWER ASSEMBLY

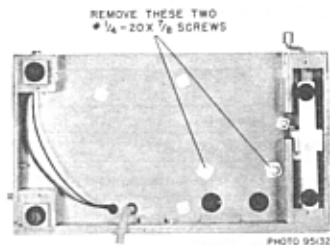
TO REMOVE BLOWER ROTOR AND MOTOR DRIVE PULLEY



TO DISCONNECT MOTOR

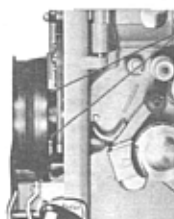


TO REMOVE MOTOR FROM WOOD BASE



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



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.

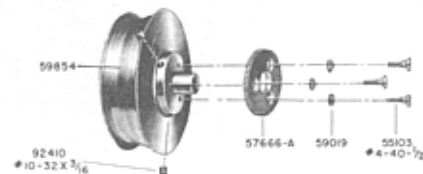
PHOTO 94985



TO REINSTALL PULLEY, HOLD LOWER SPROCKET IN EXTREME COUNTERCLOCKWISE 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 $\frac{1}{4}$ THRUST WASHERS. BE CAREFUL TO REASSEMBLE STEEL WASHER BETWEEN BRONZE WASHER AND SHAFT BUSHING.

PHOTO 94996



WORM GEAR ASSEMBLY

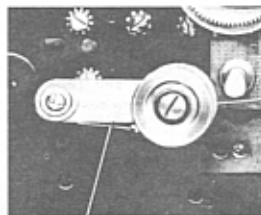


PARTS

PHOTO 87051

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)
56854	148380-1	Pulley, large drive pulley only
59860	8877233-1	Screw, shaft bearing retaining screw
92410	888539-182	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

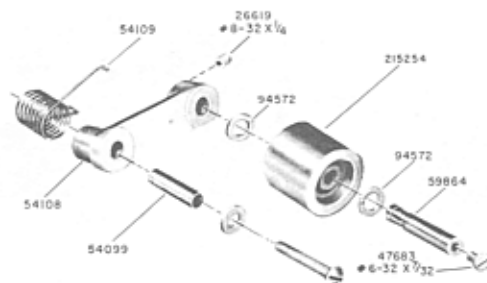
DRIVE BELT IDLER ROLLER ASSEMBLY



HOLD END-PLAY
OF ROLLER TO
MINIMUM

70274

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

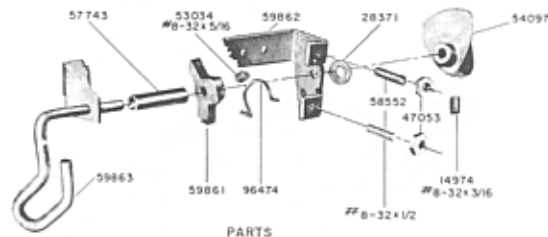
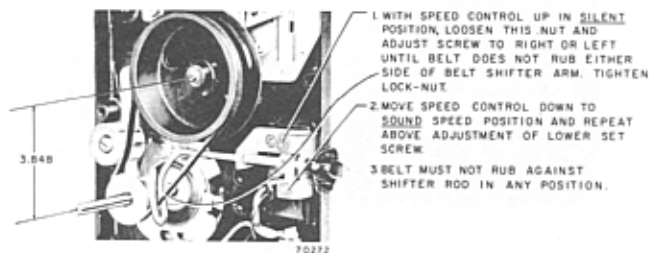


PARTS

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, B-32 x 1/4
47683	162812-2	Screw, roller shaft
59864	8853597-2	Shaft, idler roller
54099	8887096-14	Spacer, idler arm
54109	8853593-1	Spring, idler roller arm
94572	886561-6	Washer, roller

BELT SHIFTER ASSEMBLY (SPEED CHANGER)

TO ADJUST BELT SHIFTER



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 OFF THIS SCREW.

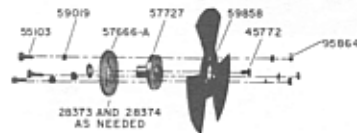
TO DISASSEMBLE SHUTTER ASSEMBLY

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

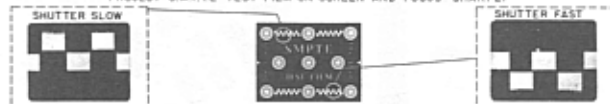
1. LINE UP MARK ON CAM GEAR WITH ANY ONE OF THREE HOLES IN SHUTTER GEAR. ALIGN THE GEARS AT THE POINT OF QUIETEST OPERATION.
2. INSTALL SHUTTER SO THAT DOTS ON CAM AND SHUTTER GEARS CAN BE SEEN THROUGH SLOT IN SHUTTER.



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 COUNTERCLOCKWISE.

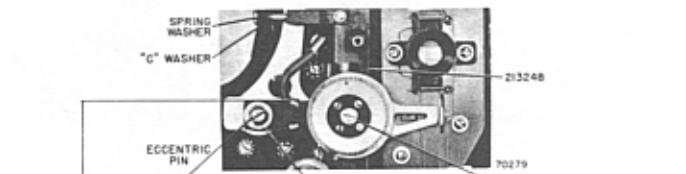
S.M.P.T.E. REGISTRATION 16 TEST FILM

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

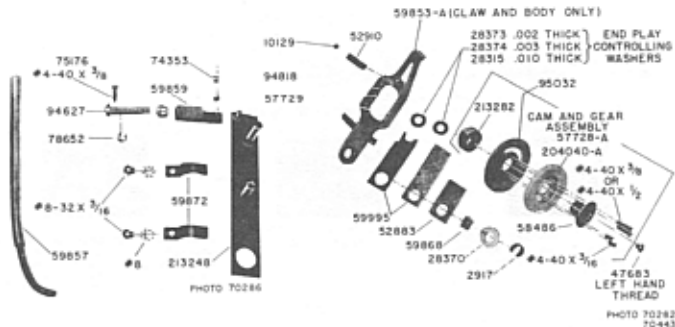
PARTS

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	182882-1	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 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.

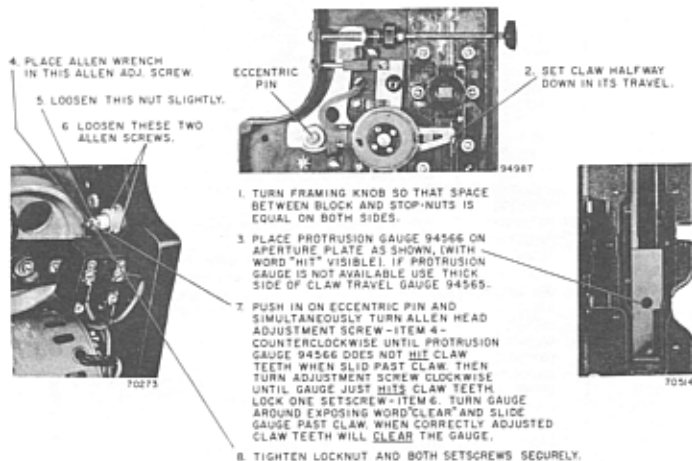
CAM SURFACE MUST BE PERFECTLY SMOOTH.

PARTS

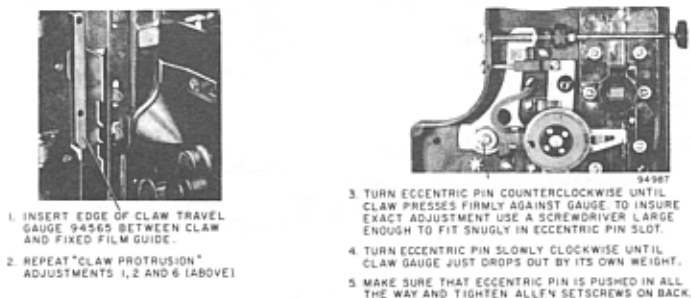
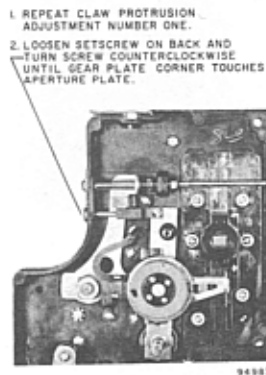
Stock No.	Drawing No.	Description
INTERMITTENT MECHANISM AND CLAW ASSEMBLY		
10129	76757-8	Ball, claw thrust spring ball, 3/16" dia.
57728-A	147807-501	Cam, cam and gear assembly
213282	8926401-1	Cam, intermittent up-down cam
95032	147825-1	Cam, intermittent in-out cam
59853-A	173006-504	Claw, intermittent 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 - updown - 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



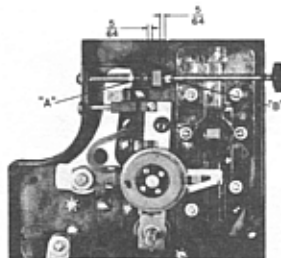
ADJUSTING CLAW LATERAL POSITION IN APERTURE PLATE

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

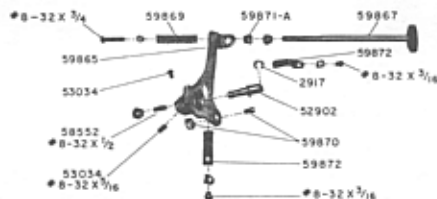
FRAMING DEVICE ASSEMBLY

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.



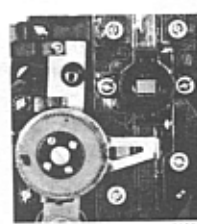
70287

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

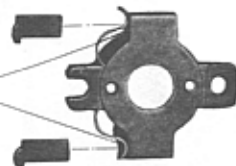
TO REPLACE SIDE PRESSURE SHOES



94987

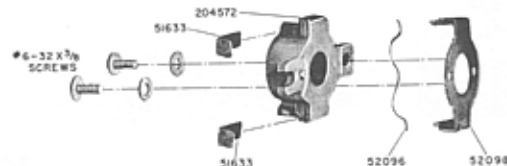
REMOVE THESE TWO SCREWS TO REMOVE FLARE ASSEMBLY.

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

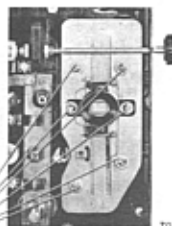


PARTS

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



70268

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



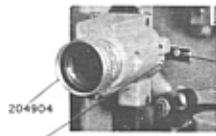
70268

1. INSPECT RAILS FOR EXCESSIVE WEAR.
2. CHECK SIDE SHOES FOR GROOVING AND FREE HORIZONTAL MOVEMENT.
INSPECT FILM GUIDE FOR GROOVING. IF NECESSARY TO REPLACE, ASSEMBLE NEW FILM GUIDE SNUGLY AGAINST APERTURE PLATE. PROJECT FILM ON SCREEN—PREFERABLY A TITLE FILM. MOVE FILM GUIDE SLIGHTLY TOWARDS APERTURE OPENING IF SOUND TRACK IS VISIBLE ON SCREEN. MOVE FILM GUIDE SLIGHTLY AWAY FROM APERTURE OPENING IF SPROCKET HOLES ARE VISIBLE ON THE SCREEN. MAKE CERTAIN FULL LENGTH OF FILM GUIDE IS PARALLEL TO RAIL ON APERTURE PLATE BEFORE TIGHTENING TWO HOLDING SCREWS.



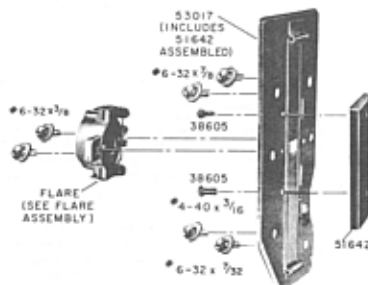
TO REPLACE APERTURE PLATE

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.



94986

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.



FILM GATE ASSEMBLY

TO REMOVE FILM GATE



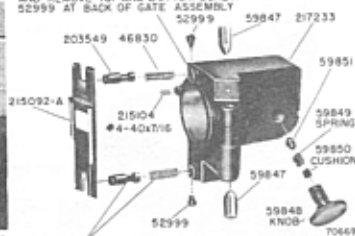
PHOTO 70276

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

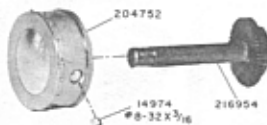
Stock No.	Drawing No.	Description
FILM GATE AND PROJECTION LENS ASSEMBLY		
57928	8874976-1	*Spring, film gate latching
59850	985465-28	Cushion, lens-locking pin cushion
217233	148385-5	Gate, film gate assembly
59848	8875966-1	Knob, lens-locking knob
204904	472146-3	Lens, projection lens
59847	182837-5	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 set screw

* illus. on page 26 (with Guide Roller)

SPROCKET, SHAFT AND GEAR ASSEMBLY UPPER AND LOWER



PHOTO 70397



SPROCKET SHOE ASSEMBLY

TO REMOVE SHOE ASSEMBLY



KEEP THIS AREA CLEAN

PHOTO 95042
LOOSEN THIS ALLEN SETSCREW AND
PULL OUT BRACKET ASSEMBLY

TO ADJUST SPROCKET SHOE

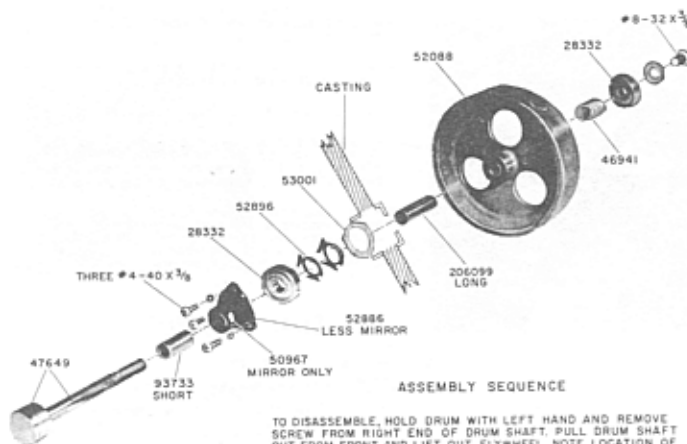


1. LOOSEN ALLEN SETSCREW
2. PLACE TWO THICKNESSES OF FILM
BETWEEN SPROCKET AND SHOE
3. PUSH SHOE UP EVEN, AND SNUG
AGAINST SPROCKET CENTER
SHOE SO THAT IT DOES NOT RUB
AGAINST EITHER SIDE OF THE
SPROCKET.
4. TIGHTEN ALLEN SETSCREW

PARTS

Stock No.	Drawing No.	Description
SPROCKET, SHAFT AND GEAR ASSEMBLY UPPER AND LOWER		
51613	182051-19	Bushing, upper & lower sprocket shaft
216954	8954274-501	Gear & shaft assembly, upper & lower
14974	888539-142	Screw, sprocket setscrew, 8-32 x 3/16 stl.
204752	465648-1	Sprocket, film sprocket with setscrew
SPROCKET SHOE ASSEMBLY		
52874	8850021-503	Bracket, sprocket shoe bracket assembly
204041	8062335-1	Pin, sprocket shoe mounting
92410	8887072-403	Screw, bracket pin set, 10-32 x 3/16
213246	749703-1	Shoe, film sprocket, nylon resin
51655	8850022-1	Spring, film sprocket shoe
204043	93605-6	Washer, 1/16" shoe pin

DRUM SHAFT, MIRROR BRACKET AND FLYWHEEL ASSEMBLY



ASSEMBLY SEQUENCE

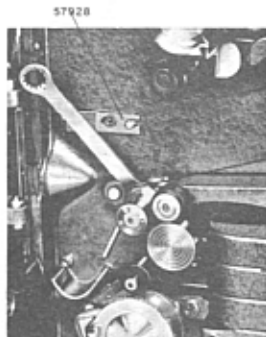
TO DISASSEMBLE, HOLD DRUM WITH LEFT HAND AND REMOVE
SCREW FROM RIGHT END OF DRUM SHAFT. PULL DRUM SHAFT
OUT FROM FRONT AND LIFT OUT FLYWHEEL. NOTE LOCATION OF
SHORT AND LONG SPACERS.

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

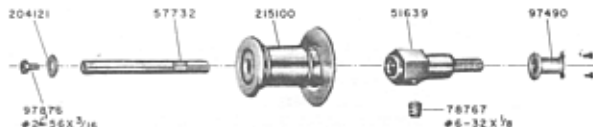
GUIDE ROLLER ASSEMBLY LATERAL ADJUSTMENT OF SOUND TRACK



1. CONNECT SPEAKER AND POWER CORDS TO PROJECTOR-AMPLIFIER.
2. THREAD LOOP OF SMPTE. Z22-57-1947 BUZZ TRACK FILM IN PROJECTOR.
3. TURN AMPLIFIER "ON", SET VOLUME CONTROL AT 5.
4. PLACE $\frac{3}{16}$ " 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 set screw, 6-32 x 1/8 long
57732	8874872-2	Washer, guide roller
97876	990072-603	Screw, roller shaft, 2-56 x 3/16 std.
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.

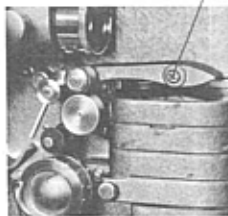


PHOTO T0395



PHOTO T0409

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.

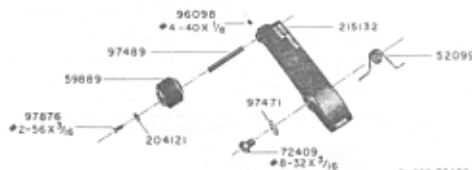


PHOTO T0409

PARTS

Stock No.	Drawing No.	Description
SOUND PRESSURE ROLLER ARM ASSEMBLY		
215132	143189-5	Arm, pressure roller
96098	8888539-1	Screw, roller shaft set screw, 4-40 x 1/8
72409	82289-603	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
97471	188808-502	Roller, pressure roller assembly
204121	868141-17	Washer, roller arm pivot
52088	89799-614	Washer, roller retaining
	188806-3	Stud, pressure roller arm

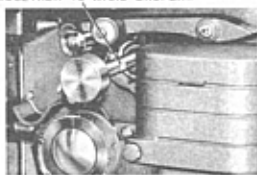
SOUND OPTICAL BRACKET ASSEMBLY CENTERING SOUND SCANNING LIGHT BEAM

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.



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

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 ENDOPLAY.



7. RETIGHTEN OPTICAL BRACKET HINGE PIN SETSCREWS
8. REMOVE SOUND DRUM AND REINSTALL MIRROR BRACKET, LEAVING SCREWS SLIGHTLY LOOSE
9. CENTER SCANNING BEAM ON PHOTOCATHODE 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)

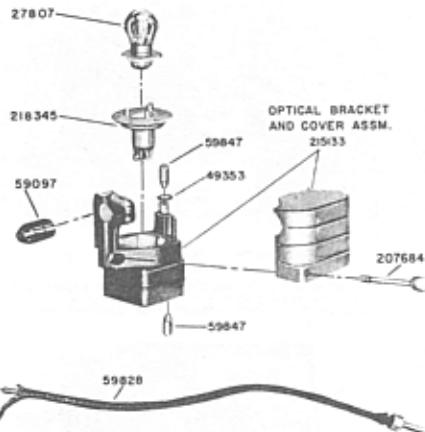
1. THREAD A 5-FT. LOOP OF 5000 CYCLE FREQUENCY FILM (S.M.R.T.E. Z 22-42-1946) IN PROJECTOR, EMULSION SIDE TOWARDS SCREEN
2. CLIP THE LEADS OF A LOW READING A.C. VOLT METER ACROSS THE SPEAKER VOICE COIL IN THE SPEAKER CASE, WHICH SHOULD BE ON TEST BENCH

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



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
7. 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

Stock No.	Drawing No.	Description
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 thumb screw
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