SERVICE INSTRUCTIONS

SUPER-8
SOUND MOVIE CAMERA

BEAULIEU 1008XL

MARCH 1978

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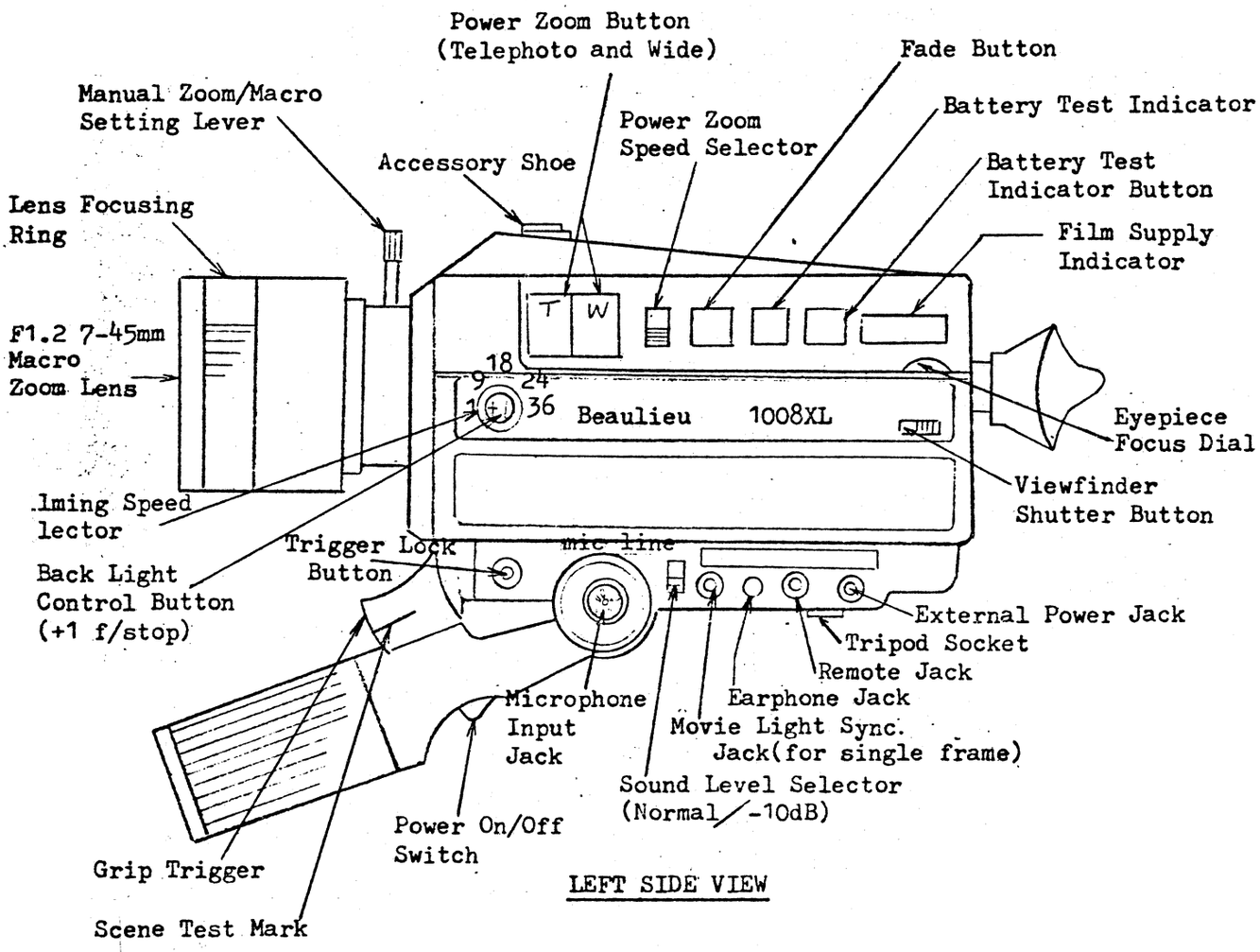
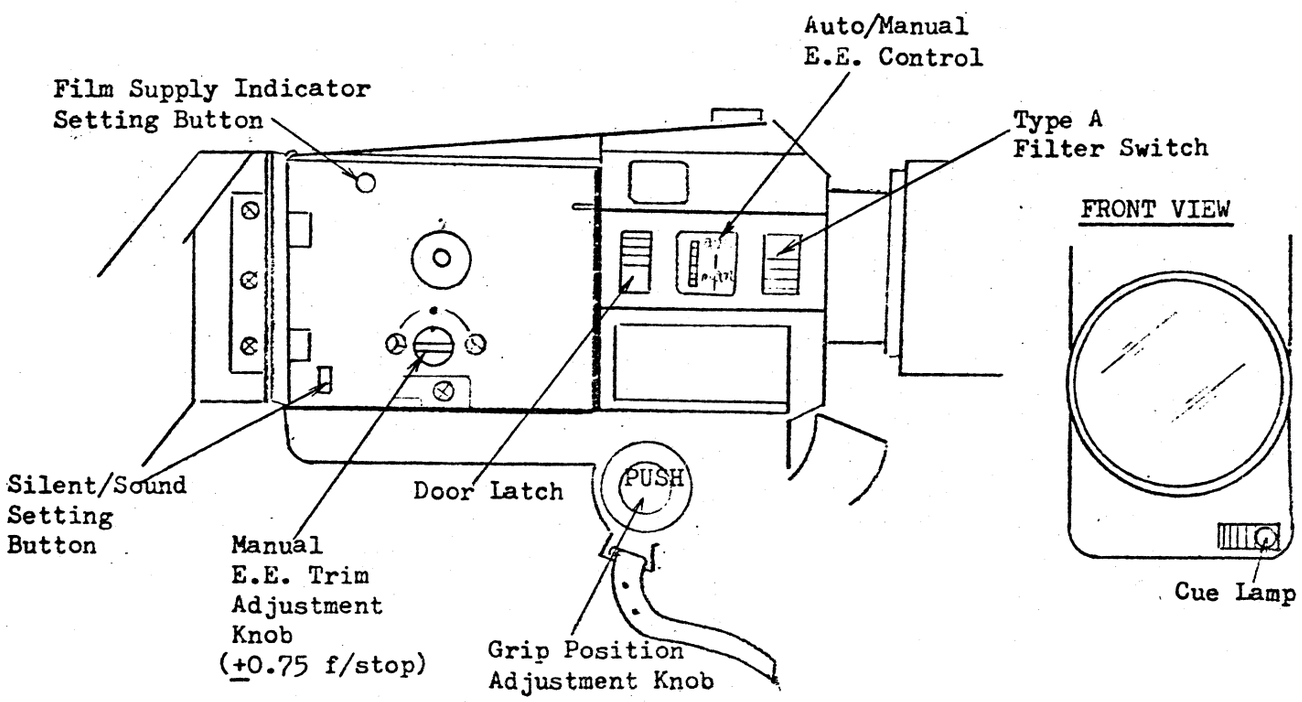


LEFT SIDE VIEW



RIGHT SIDE VIEW

1. FEATURE DESCRIPTION

Beaulieu 1008XL Super-8 Sound Movie Camera

FILM SIZE: Super-8 silent and sound film cartridges

LENS: F/1.2 7-45 mm with macro focus

FOCUSING: 1.5 meters to infinity with manual focus ring and Dichroic mirror rangefinder.

ZOOM: Manual zoom and 2-speed power zoom

Power Supply: Six AA batteries in grip or external power supply through connection socket

Exposure Control: Automatic/Manual exposure control by TTL servo type electric eye system, backlight control (+1 f/stop), under exposure indicator in viewfinder, manual E.E. trim adjustment knob in cartridge compartment

Iris Range: F/1.2 to F/45 with ND filter

Camera Speed:
Silent film: single frame, 9, 18, 24 and 36 fps
Sound film : single frame, 18 and 24 fps

A.S.A. Control: Film cartridge automatically sets correct ASA 40, 160 and 400 filter positions

Viewfinder: Reflex, positive image, with film transport indicator, type A filter position indicator, recoring indicator, last five feet film indicator, iris scale with under exposure indicator, manual exposure setting indicator, viewfinder shutter and manual focusing knob

Run Control: Trigger, run/lock button, remote control

Sound System: Built-in amplifier

Recording Level: Normal/Low (-10 dB) sound recording level switch with ALC (Automatic Level Control), green LED in viewfinder

Normal: 0.1 mV
Low (-10 dB): 0.3 mV

Trigger Operation: First step ("TEST") - Trigger actuates zoom motor, audio amplifier, E.E. meter, and indicators (type A position, iris scale manual exposure setting, recording level, etc.)

Second Step - camera drive mechanism

Picture to Sound: 18 frames separation

Fade: Picture and sound fade-in/out by push button

Microphone: Omnidirectional 500 ohm dynamic microphone with 5 m cord

Microphone Jack: Din type (5-pole) with remote switching capability

Earphone Monitor: 2K ohm dynamic earphone with 1 meter cord

Other features: Built-in battery checker, cue light with slide cover, eyepiece adjustment knob, flash synchro socket, remote control jack, folding grip, accessory shoe, provision for 77 mm filter, footage counter with automatic reset.

2. INTRODUCTION

General

This service manual has been prepared to aid the serviceman in the overhaul and repair of the Beaulieu 1008XL Super-8 sound/zoom movie camera.
Special camera features are listed in the Feature Description List on the preceding page.

Six 1.5-volt size AA batteries housed in the grip or DC power supply plugged into the external power inlet provides the power to operate the amplifier and three motors with the sound film cartridge loaded in the camera. The three motors are; one is for camera mechanism drive, another for capstan drive and the third for zoom mechanism drive. When the silent film is used, only the camera drive motor and zoom motor are operated.

(1) CAMERA DRIVE MECHASNISM

The solenoid is fitted on the bottom of the front chassis and the arm of the solenoid is engaged with the shutter. When the trigger of the grip is pulled, the solenoid is energized so that the solenoid arm is disengaged from the shutter and presses the spring contact to conduct current to the main motor.

The rotation of the main motor is transmitted to the shutter through the idler gear, and the cam on the shutter drives the shuttle to pull the film.

The shaft of the idler gear is linked to the take-up shaft, and the worm gear on the take-up shaft is engaged with the take-up gear as shown below.

As the take-up gear is also engaged with the pinion gear on the another shaft, the revolution is transferred to the upper worm gear.

When loading the film cartridge in the compartment of the camera, the small setting button in the upper wall of the cartridge compartment is pressed, and the foregoing worm gear is meshed with the gear engaged with the rack of the film supply indicator. Thus, the film supply indicator starts to operate.

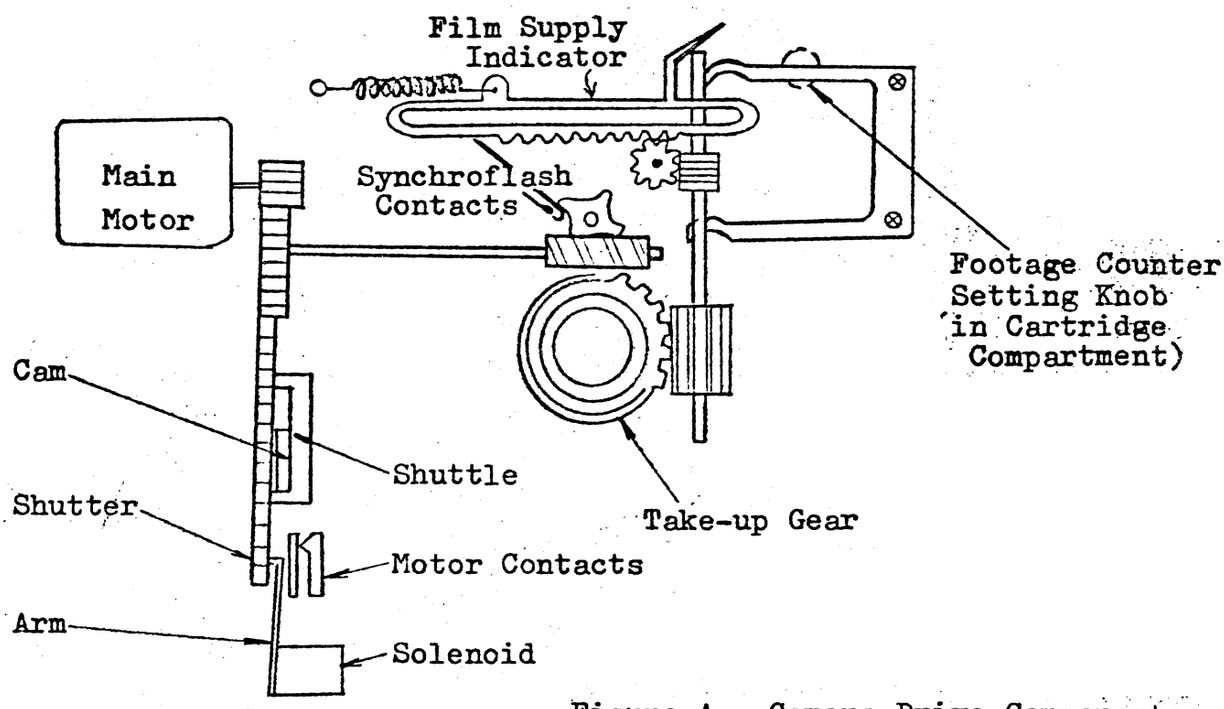


Figure A. Camera Drive Components

(2) OPTICAL SYSTEM

The light enters the zoom lens, passes through the opening formed by the meter iris blades, and then through the prime lens. At this point, the light is directed alternately to the film and to the photo-conductive cell by means of a mirror attached to the rotary shutter. When the mirror on the shutter is in the "down" position, the light passes through the aperture opening to the film; When the mirror on the shutter is in the "up" position, the shutter mirror is in front of the aperture and the light is directed to the photoconductive cell, which automatically establishes the correct light level at the film plane.

The peek-in mirror having the dichroic coating is placed just behind the zoom lens and the light passing through the zoom lens is reflexed with the peek-in mirror. The reflexed light, then, reaches the 45° mirror and conducted to the viewfinder tube as shown in the pictorial layout of the optical system. (Refer to Fig. C)

The light passing through the viewfinder tube arrives and forms an image at the viewfinder.

In addition to the image, some indicators are arranged to be observed in the viewfinder field-of-view as illustrated below.

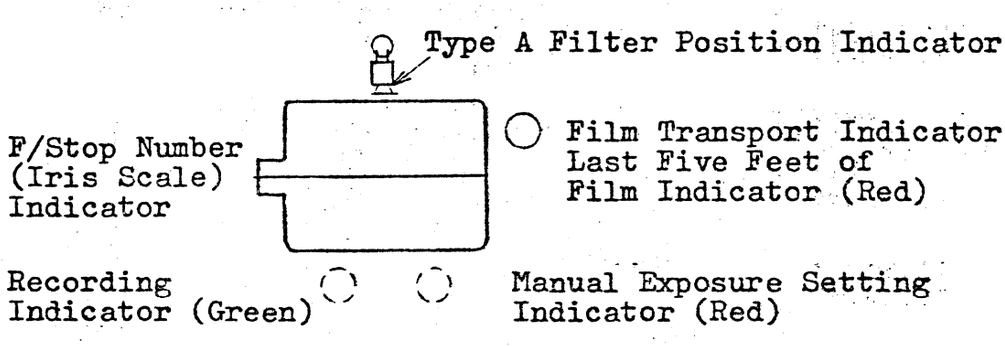


Figure B. Information in Viewfinder

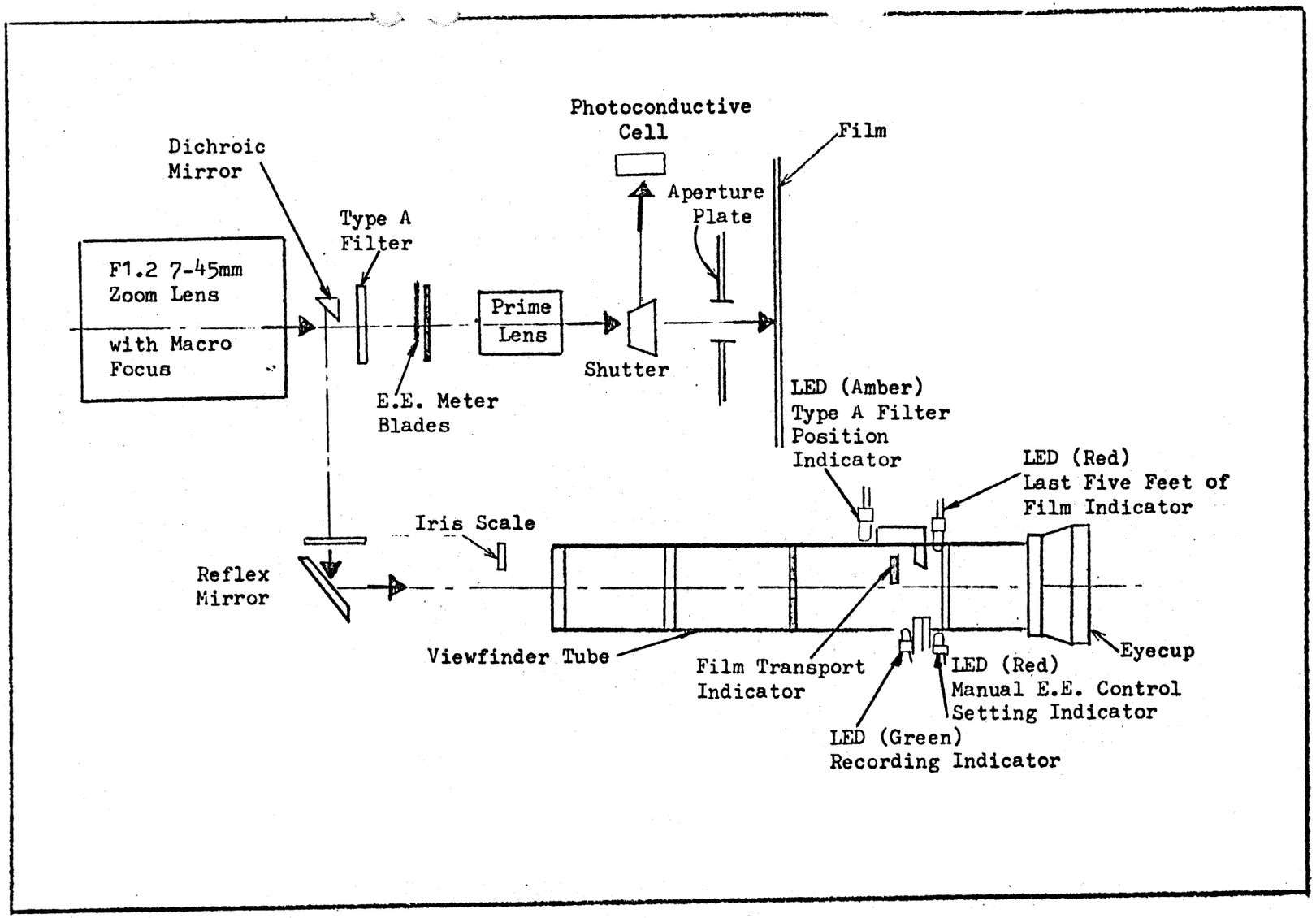


FIGURE C. Pictorial Layout of Optical System

(3) SOUND FILM RUNNING (at 18 fps)

The insertion of the sound film cartridge into the camera depresses the silent/sound select button in the cartridge compartment, and the amplifier and the capstan drive motor is energized with the master switch set at "ON" and the trigger pulled to start. When the conventional silent film cartridge is inserted into the camera, the select button is not depressed with the film cartridge, and therefore the amplifier and the capstan drive motor are not operated.

When the cartridge door is closed, the door latch arm actuates the extending arm of the pinch roller bracket so that (1) the film gate guard is closed, (2) the pad presses the film towards the recording head and (3) the pinch roller pressed the film to the capstan.

The film exposed at aperture is fed with the shuttle to the lower portion where the recording head is fitted on.
When the loop of the film is formed before entering the film gate guard, the loop presses the sensor and in turn the current being applied to the power motor (shuttle drive) is changed, resulting in change of the shuttle speed. (Refer to Fig. D)

The capstan drive motor revolves at constant speed of 18 fps, while the speed of the power motor may vary within the limits of 16 to 21 fps in order to change the shuttle speed and to supply the film smoothly.
When a larger film loop is formed, the speed of the power motor is changed to feed the film slowly and when the film loop is reduced in size the sensor will return to the normal position. This process is repeatedly performed whenever the film loop is formed.

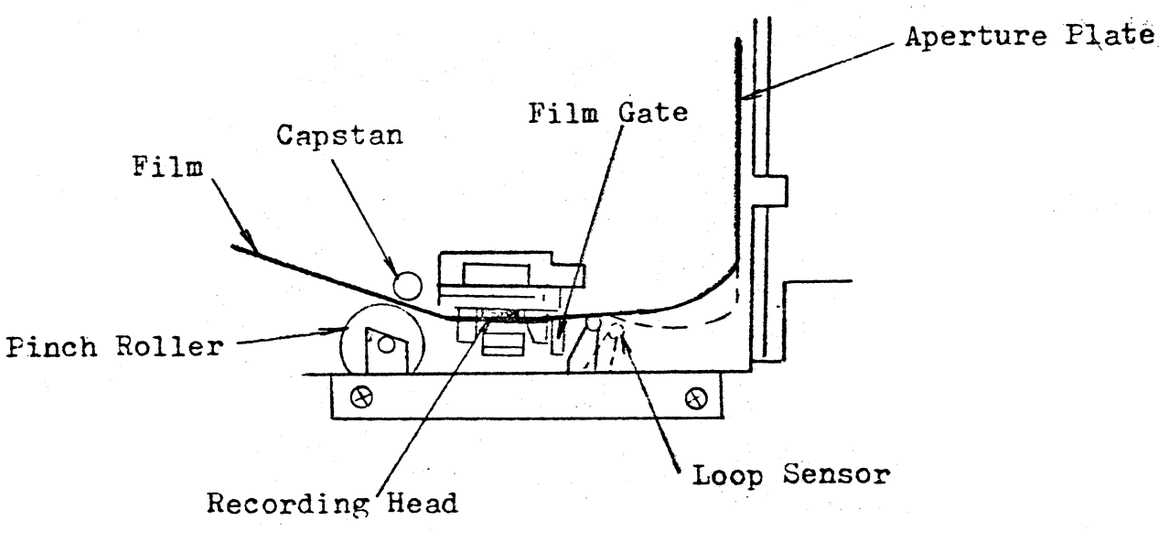


Figure D. Film Transport and Loop Sensor

(4) "DICHROIC MIRROR" RANGEFINDER

The Design 1008XL camera is fitted with the peek-in mirror having a dichroic coating on the forward surface and totally reflecting mirror coating on the rearward surface as shown in Figure E.

Because of the selective light transmission and reflection characteristic of the dichroic coating, the forward surface reflects an image of one chromatic content (red) and transmits the remaining characteristic content (blue) of the image. The latter image is reflected through the first coating to form in the viewfinder second image of second chromatic content (blue).

When the objective is out-of-focus, the bundles of light rays travelling along different paths generate discrete color fringed images. However, when the objective is in focus, the bundles of light rays are superimposed and by the principles of additive color combine in the viewfinder to form the natural color of the subject.

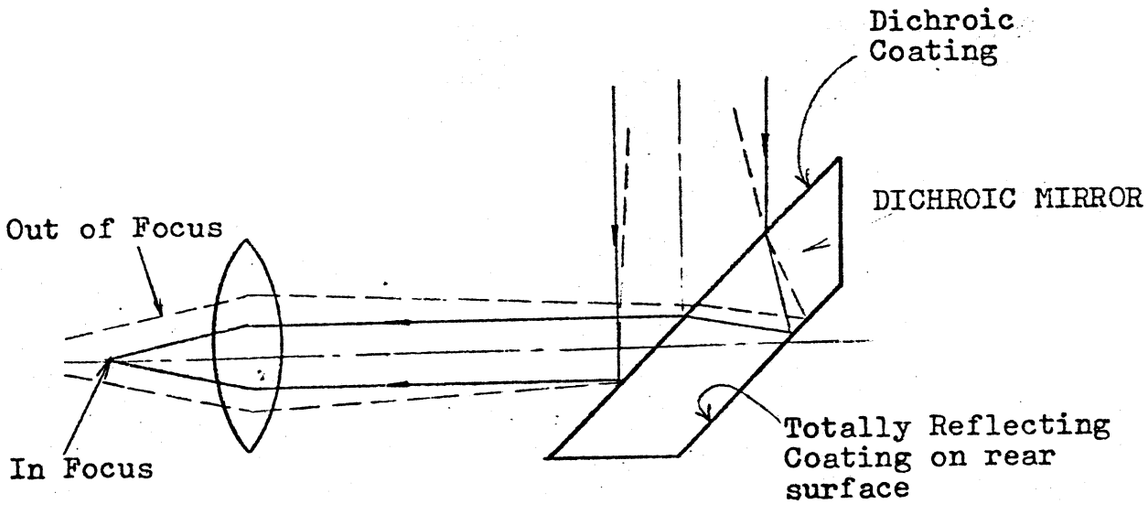


Figure E. Dichroic Mirror

(5) AUTOMATIC ASA CONTROL

With the conventional 8mm cameras, the ASA filter is placed in front of the photocell so that light amount entering the photocell can be changed to ASA ratio (4 times at the rate of ASA 40 and 160).

However, the 1008XL camera makes it completely electrical without the ASA filter.

When a certain ASA type of film cartridge is inserted into the camera, the ASA lever corresponding to the film type is actuated, and the change in ASA ratio can be obtained by changing electric connections.

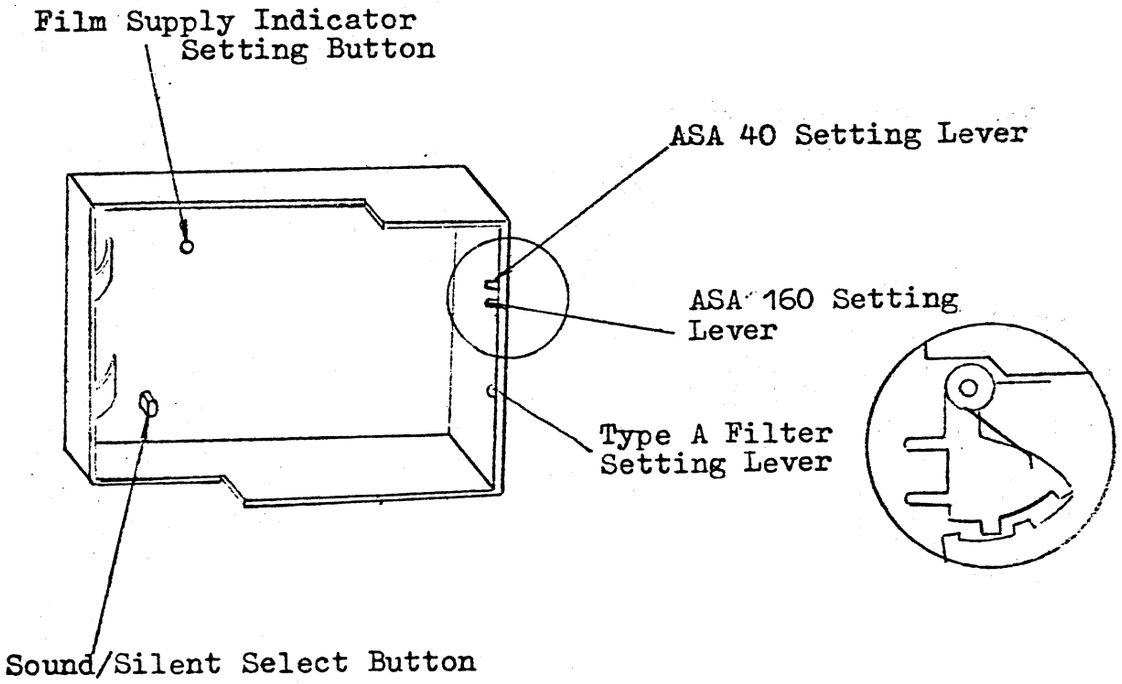


Figure F. Buttons in Film Cartridge Compartment

(6) RECORDING SYSTEM

The 1008XL camera is provided with ALC (automatic level control circuit) to record input signal properly, and the level setting knob is fitted on the grip to select the recording level. Under the normal recording condition, the knob is set to "Normal" position. When the knob is set at "Low" position, the recording level of the input is decreased by 10dB from that of the normal.

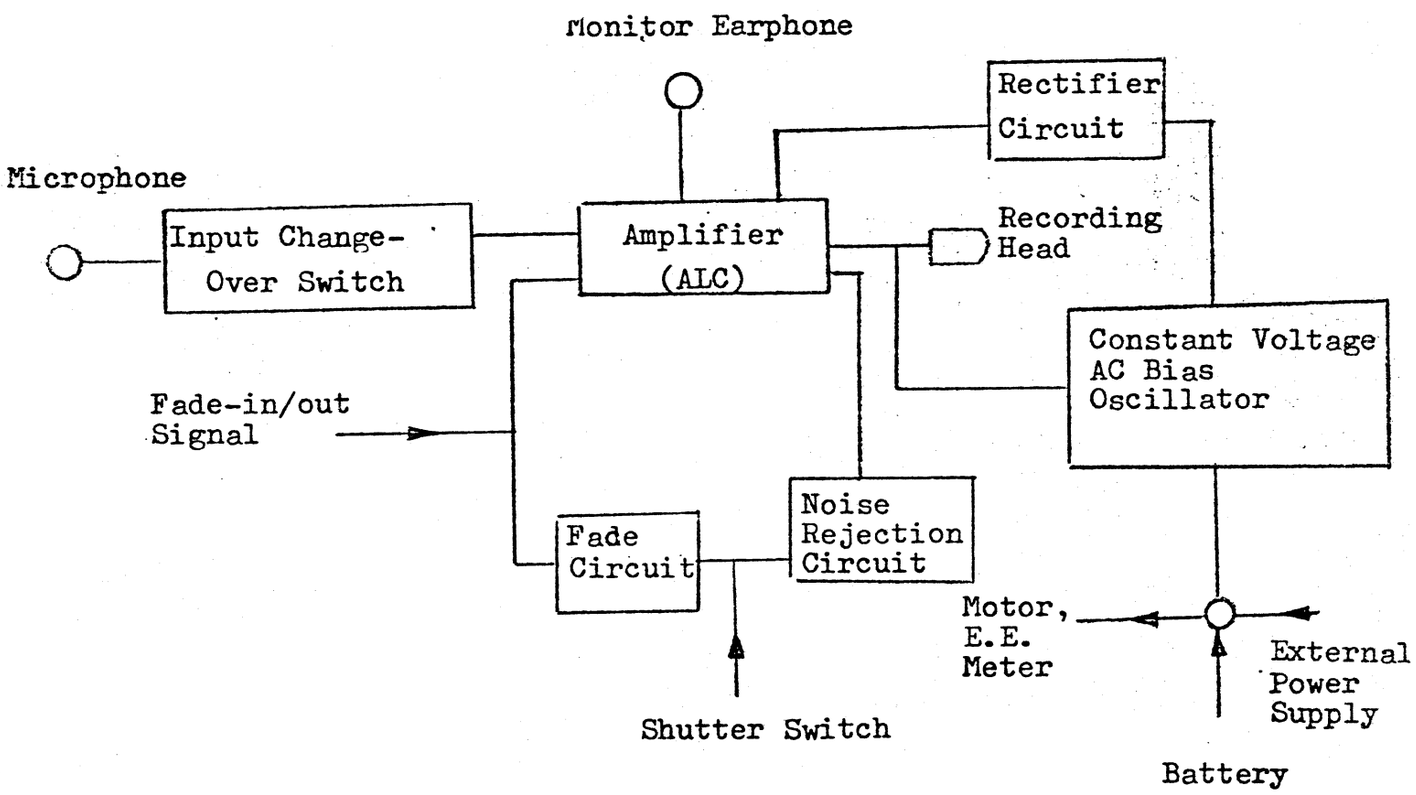


Figure G. Block Diagram

3. SERVICE TOOLS AND TEST EQUIPMENT

During repairs, the removal and installation can be accomplished with tools normally available in photo repairs: retaining pliers, assorted screwdriver, screw wrench, etc.
The special tools used for the Design 1008XL camera are as follows.

A. Tools Available from BHJ

Description	Tool No.	Application
Take-Up Torque Gauge	NT010-58	Check camera take-up torque.
Shuttle Height Gauge	NMS1-1576	Check shuttle height.
Loop Sensor Positioning Gauge	NFM1-921	Check loop sensor position (See Note 1).
Filler Gauge 0.15 - 0.30 mm	(No Number)	Check clearance between film gate guard and recording head (See Note 1).
Special Wrench (make at service stations)	UWR51-123	Remove/Install DIM jack (See paragraph C-1).
Pointing Adjustment Tool (make at service stations)	UHT51-279	Adjust peek-in mirror position (See paragraph C-2).
Focus Adjusting Tool	UHT51-276	Adjust prime lens position.

Note (1) The loop sensor positioning gauge need not be used unless the replacement of the pinch roller bracket assembly is performed.

(2) The filler gauge will not be required unless the recording head or film guard is replaced.

B. Equipment

Because of possible damage in transit, high packing and transportation cost, it is highly recommended you to procure all the following equipment on the market.

Autocollimator, Light Box, Amplifier Unit, Oscillator, ACVTVM, (Fade Checker), Attenuator (Speed Meter), DC Power Supply, Signal Generator, Super-8 Sound Projector, etc.

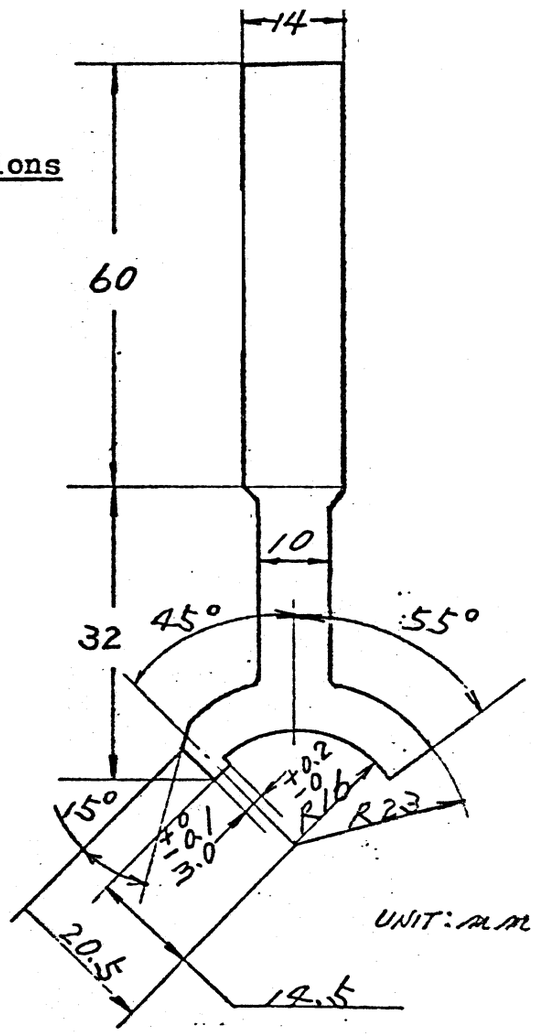
C. Tools which can be made by service stations

(1) SPECIAL WRENCH

This wrench is to be used to remove/assemble the bracket being employed to secure the DIM jack to the camera grip, and can be made at service stations.

Material: 1.5t x 38w x 921(mm) Steel Plate

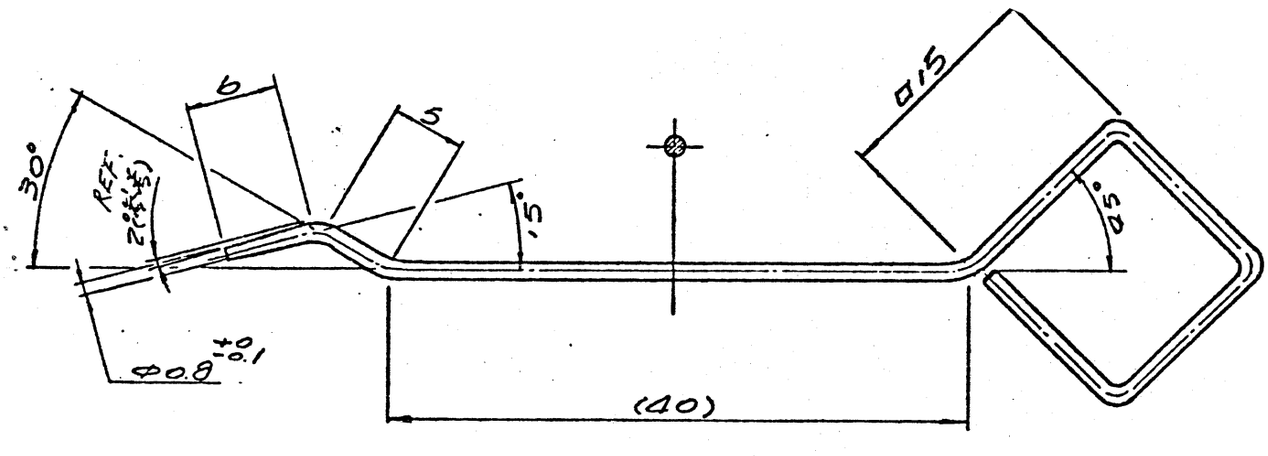
(BHJ Tool No. UWR51-123)



(2) Pointing Adjustment Tool

To adjust the peek-in mirror position, the tool described below is useful.

Material: 1.2 Dia. 102mm long Steel Rod (BHJ Tool No. UHT51-279)



(3) SPECIAL FILM CARTRIDGE AND FILM REWINDING FIXTURE

In order to check recording efficiency of the sound movie camera, it is requested that the recorded film be removed from the film cartridge as soon as recording is completed and the film be threaded into a sound projector.

The film can be repeatedly used for this check if the recorded sound is erased, and the film is loaded in the cartridge.

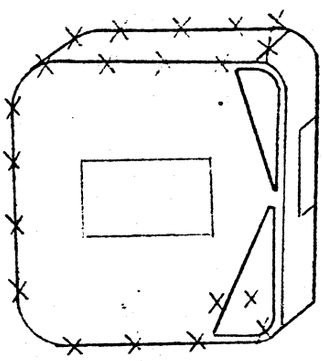
The following special film cartridge and fixture which can be made at service stations will be useful for this purpose.

*How to make and use the special film cartridge and rewinding fixture.

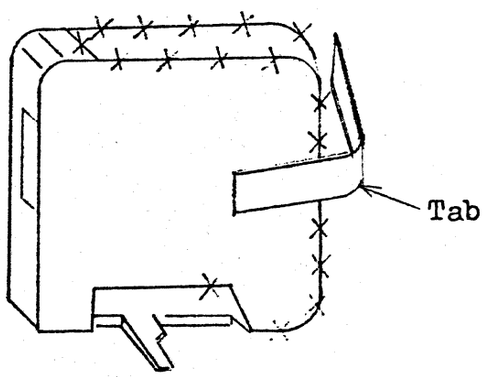
1) •Cut the edge of the film cartridge to separate the inner and outer covers as shown below. It is recommended to make one set of inner and outer covers from two film cartridges.

•The surface of the film cartridge should be free from burr, and both the inner and outer covers must be properly fitted when assembled.

Attach a tab to the rear of the film cartridge. The film cartridge will be easily removed from the camera by pulling this tab.



Front View



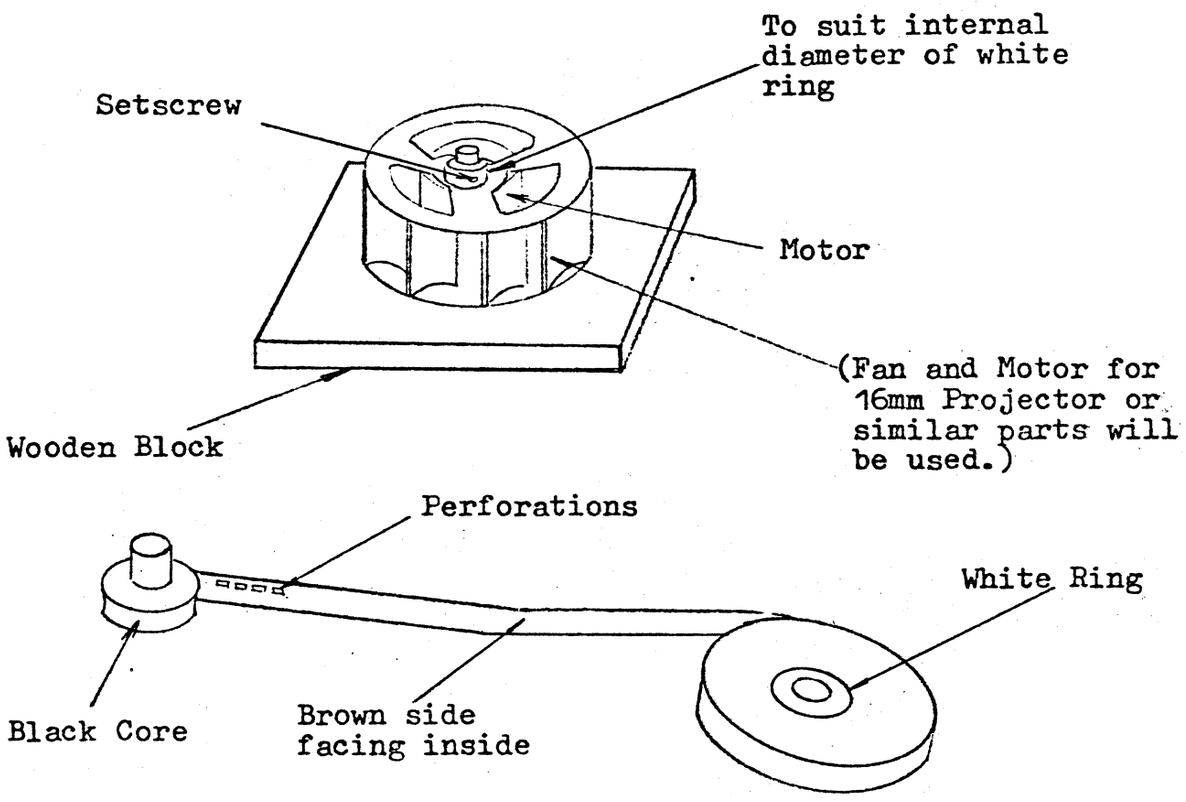
Rear View

2) Load the film cartridge into the camera and run the camera to record the sound.

3) Remove the film cartridge from the camera, and take off the film from the cartridge.

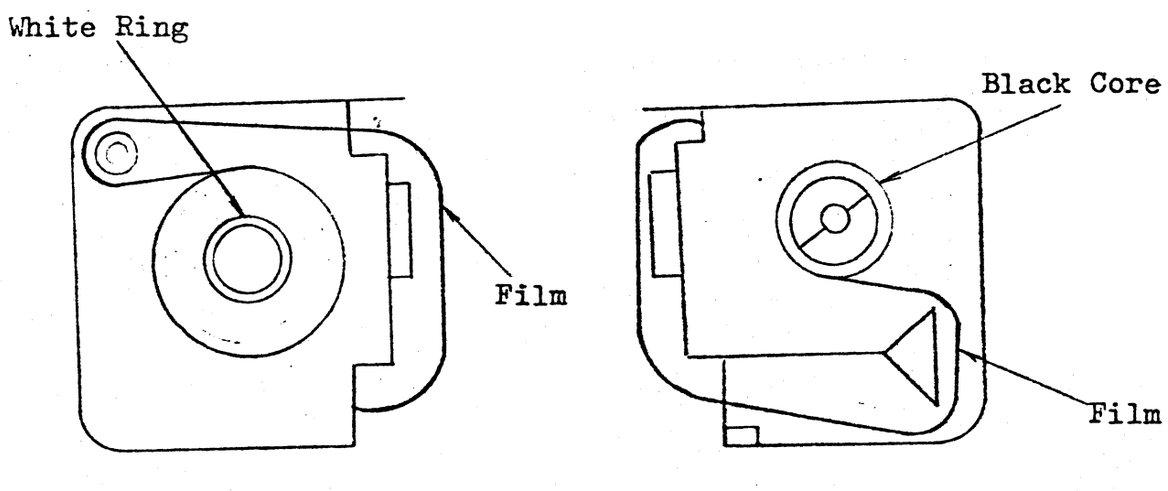
Thread the film into the sound projector to check the sound recorded.

4) Rewind the film on the white ring in the film cartridge. The following fixture will be useful for effective film rewinding.



5) Erase the recorded signals with the bulk eraser or magnet.

6) Place the film on the original position in the cartridge and put the cover while holding the film.



Front View

Rear View

4. DISASSEMBLY AND REASSEMBLY PROCEDURE

GENERAL INSTRUCTIONS

DISASSEMBLY

a. Before proceeding with disassembly, remove the battery case with batteries.

b. Always handle the meter and photocell assembly with extreme care to avoid bending or distorting the meter blades. Keep the camera and the photocell assembly away from any electrical equipment characterized by strong magnetic fields during repair operations.

c. Avoid leaving fingerprints on the surfaces of optical components and windows. All of these parts can be cleaned while in their fixed, mounted positions.

d. Parts which are staked or heat-sealed in position should not be removed unless obviously in need of replacement. If such parts are merely bent or slightly distorted, make every attempt to straighten the part in its mounted position. This can usually be accomplished by gripping the part firmly with a pair of long-nose pliers and using a second pair of pliers to carefully twist or bend the part back into its proper shape. If the part must be replaced, carefully file away the stking points until the part can be lifted from its mounting post or pin.

e. When replacing riveted parts, drill out the old rivet with a drill equal to, or slightly smaller than, the diameter of the rivet. Blow away filings or drill chips with a low-pressure jet of compressed air.

f. Trimplates and nameplates are cemented in position, either with special adhesives or by means of their own adhesive backing, and should only be removed if this is necessary to gain access to parts which lie beneath them. To remove such items, carefully pry one end with a tweezers, knife blade or pointed implement; then insert a piece of firm shim stock of the same approximate width beneath raiesd end and carefully force it the entire length of the trimplate. After removing cemented parts, be sure to clean old cement from the mounting area on the camera.

g. When the disassembly procedure calls for the unsoldering of leadwires, make a careful note of such leadwire connections before proceeding. Use a penciltype soldering gun and take care not to come in direct contact with electrical components.

Note: Do not attempt to remove the complete circuit boards when the replacement of parts which lie beneath the circuit board are required. Unsolder only the minimum number of leadwires from circuit board and replace the parts while lifting up the circuit board.

h. Repairs to the printed circuit boards are not recommended except as an emergency measure, and then only if qualified electronics repair personnel are available. If trouble shooting procedures indicate that either or both of the printed circuit boards are the source of camera troubles, it is recommended that the complete circuit board assembly be replaced.

REASSEMBLY

a. When the reassembly procedure requires the riveting or staking of parts, such parts should be installed before continuing with other reassembly procedures. Be sure to support the main casting squarely on a plastic block to prevent the distortion of parts or damage to the casting during staking operations.

b. Before reassembly, clean all parts thoroughly. All metal parts (except electrical and optical components) are to be cleaned with naphtha or other non-corrosive grease solvent. Blow dust and dirt from printed circuit board components with a low-pressure jet of compressed air. Remove hardened deposits of film emulsion from the aperture plate with alcohol and a sharpened orange stick. Clean plastic optical elements with a special plastic and vinyl cleaner and all glass elements (windows, lenses) with lens fluid and lens tissue. Remove hardened deposits of adhesive from trimplate locations with a good cleaning solvent.

c. When installing "cemented" components (trimplates, nameplates, windows, etc.), be sure that the mating surfaces are clean and free of old, dried adhesive. When the adhesive is "tacky", press the part firmly and squarely into place until fully seated; then wipe away excess adhesive with a clean, dry cloth. Immediately after installing window, clean them with lens fluid and lens tissue to remove fingerprints.

d. Whether the meter and photocell assembly is removed or assembled to the chassis, be very careful to avoid bending or distorting the iris blades. During repair operations, keep this assembly away from equipment characterized by strong magnetic fields, and avoid leaving fingerprints on the iris blades.

e. During reassembly, be sure to lubricate parts with the specified lubricants. Always lubricate sparingly, and avoid getting oil and grease on optical parts. Wipe away excess grease with a clean, lint-free cloth.

(1) ACCESSORY SHOE (Refer to Figure 1 of the parts catalog.)

Removal

a. Take off the screw (5) and the spring (6). Then, remove the three screws (7).

Reassembly

a. Install the parts in the reverse order of disassembly.

(2) RIGHT SIDE HOUSING ASSEMBLY (Refer to Figure 1)

Before proceeding disassembly, remove the accessory shoe (8) on the top of the camera.

a. Carefully peel off the inital plate (9) and the trim-plate (10) with a screwdriver or a tool with thin blade, and a total of five screws (11, 12 and 13) are exposed.

b. Open the cartridge compartment door (33). Remove the five screws (11, 12 and 13) from the right side housing (14).

c. Slide the type A filter knob(11, Fig. 5) to expose the "sun" mark, and carefully lift up the right side cover assembly (14).

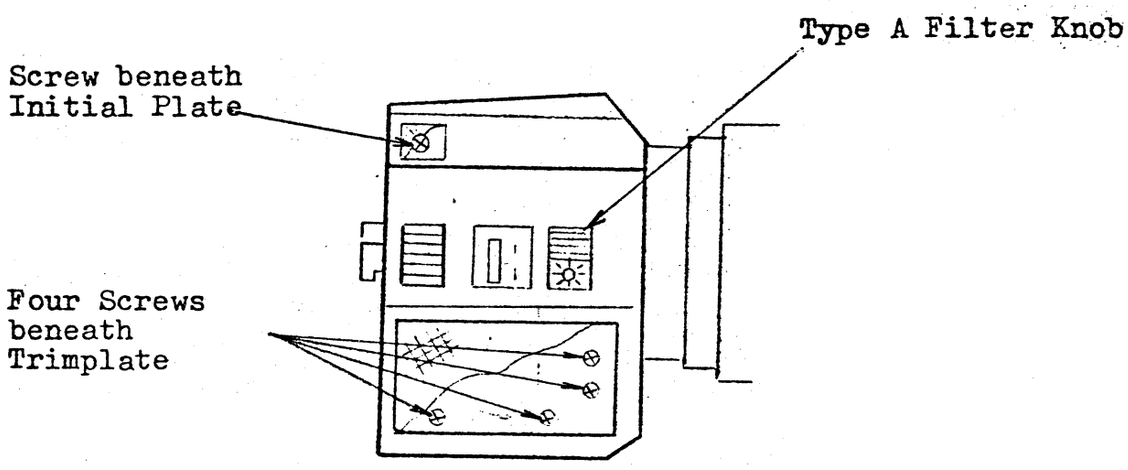


Figure I. Right Side Housing

Reassembly

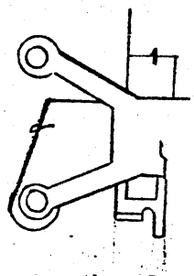
The reassembly is made in the reverse order of disassembly. Before assembling the right side cover, make certain that the filter knob is set at the "sun" mark.

(3) PARTS ON RIGHT SIDE HOUSING ASSEMBLY (Refer to Figure 5)

Removal

a. Loosen the lower screw (1), and the cartridge door knob (7) comes down.

b. Remove the two screws (1) and disassemble the parts.



c. The cartridge door knob (7) and the type A knob (11) are staked to the bracket (6) and lever (10), respectively. They should not be removed unless in need of replacement.

d. If the replacement of the knob (7 or 11) is required, drill out or file out the staked part. (Refer to General Instructions for Disassembly and Reassembly.)

Reassembly

Reassemble the parts in the reverse order of disassembly, noting that the legs of the spring (3) are hooked on the door latch arm and the door bracket as shown above.

(4) LEFT SIDE HOUSING ASSEMBLY (Refer to Figure 1)

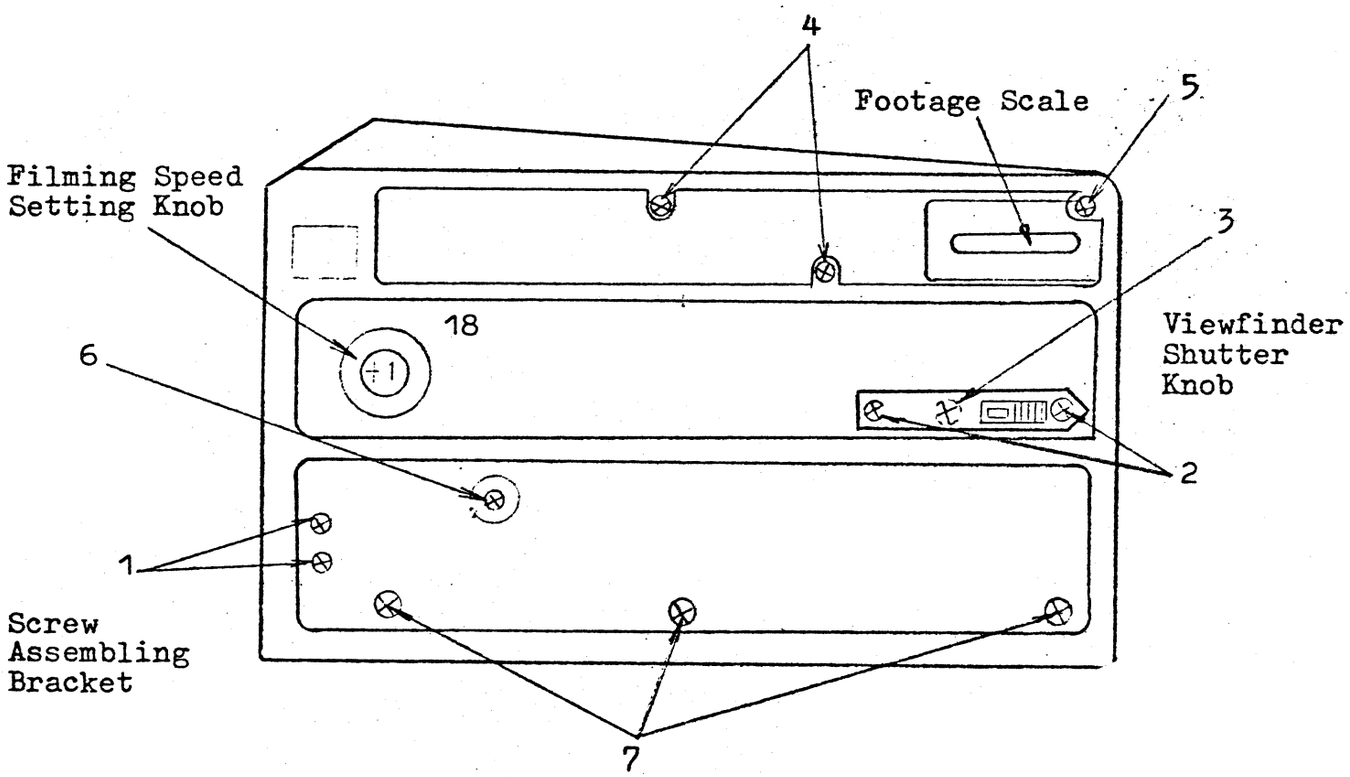


Figure K. Screws on Left Side Housing

Removal (Refer to Fig. 1)

a. Remove the accessory shoe (8) and right side housing assembly (14) as instructed in the preceding section.

b. Take off the eyeshade (15).
Peel off the control panel trimplate (16), middle and bottom viewfinder trimplates (20 and 21).

c. If possible, set the filming speed knob at 18 fps. This will be useful when running the camera without the left side housing for test.

d. Detach the footage window (17) and scale (18).
Be careful not to distort or damage the footage pointer (13, Fig. 4).

e. Open the cartridge compartment door and pry off the shield plate (32, FIG 2) attached between the top of the camera chassis and the left side housing.

f. Remove the screws securing the left side housing to the camera body. (Refer to Figure K).

- First remove the two screws in extreme left. These screws are used to assemble the bracket to the housing (See Fig. K).
- Then, take off the two screws and the holder (23) with the knob positioned right, and an access hole for the screw is exposed.
- Also remove the remaining screws shown in Figure K.

g. Before detaching the left side housing assembly (30) from the camera body, make sure that the bracket (2, Fig. 7) is not fitted on the housing.

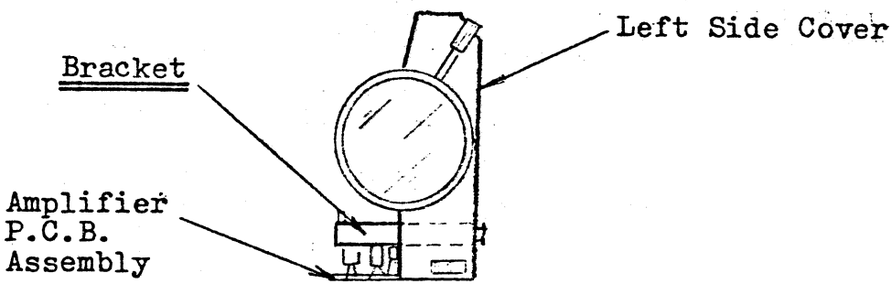


Figure L. Camera Front View

Reassembly

The left side housing assembly (30) is installed to the camera body in the reverse order of disassembly, noting the following special precautions.

a. The viewfinder shutter knob (24) is inserted in the rectangular hole in the holder (23) and the boss is engaged with the viewfinder shutter (17, Fig. 7) on the left side housing assembly. After assembling the viewfinder shutter holder (23) to the cover, slide the shutter knob (24) several times and make certain that the viewfinder shutter moves smoothly without binding.

(5) PARTS ON LEFT SIDE HOUSING ASSEMBLY (Refer to Figure 7)

Removal

a. Remove the screw (3) assembling the support bracket (4) to the left side housing (23). Pry off the support bracket to detach the back light button (5).

b. The removal of the two screws (6) from the detent (7) allows the speed selector knob to be free.

c. Slide the cue light knob (11) to left, and then remove the screw (9) and the bracket (10). The light emitting diode (12) is a press-fit in the opening of the left side cover, and should not be removed unless in need of replacement.

d. Eyepiece Assembly Removal (Refer to sketch below.)

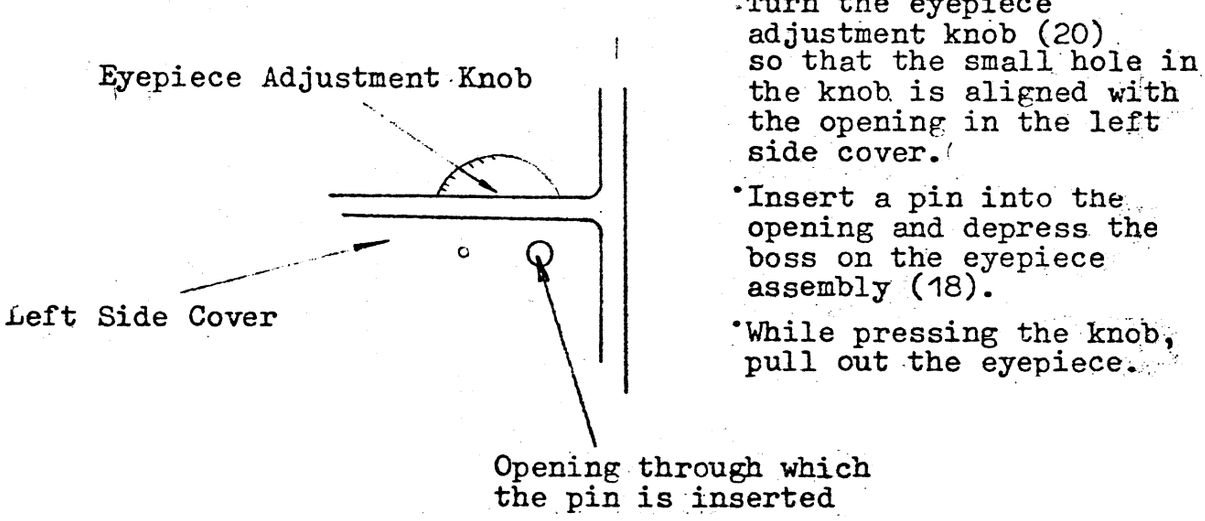


Figure M. Removal of Eyepiece

e. The eyepiece holder (19, Fig. 7) is cemented to the left side housing.

Reassembly (Refer to Fig. 7)

Reassemble the parts in the reverse order of disassembly, noting the following special precautions.

a. Insert the eyepiece (18) into the holder so the boss on the eyepiece is fitted in the groove in the eyepiece knob.
Turn the eyepiece knob and make sure that the eyepiece moves fore and aft smoothly.

b. Assemble the detent (7) to the speed selector knob (8) with the two screws (6).

(6) CONTROL PANEL AND FLEXIBLE P.C.B. ASSEMBLY (Refer to Figure 2)

Removal

a. To gain access to the above assembly, remove the right and left side housings.

b. Remove the one of two screws (7) on the E.E. circuit board assembly. Slightly raise the control panel assembly (6) and slide it outward to disengage.
Be careful not to distort the footage pointer (13, Fig.4) when removing the control panel assembly.

c. The lower end of the flexible circuit board is soldered to the E.E. Circuit Board Assembly, and should not be removed unless in need of the replacement.

Reassembly

Reassemble the control panel and flexible P.C.B. assembly in the reverse order of disassembly.

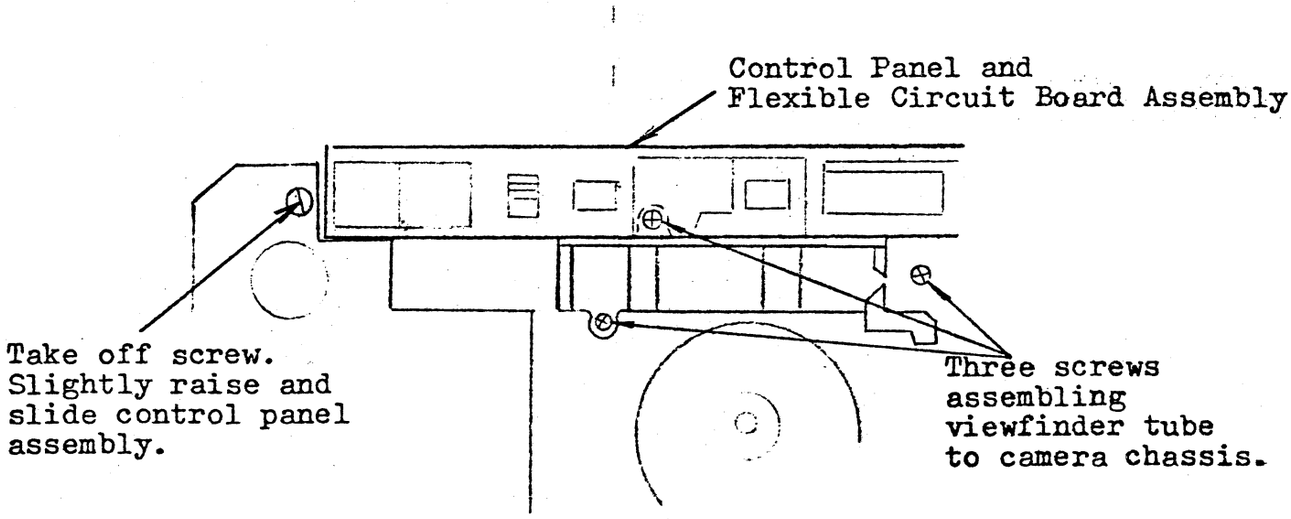


Figure N. Control Panel and Viewfinder Tube

(7) PARTS ON CONTROL PANEL AND FLEXIBLE P.C.B. ASSEMBLY

(Refer to Figure 11.)

Removal

a. The flexible circuit board assembly (18) should not be unsoldered unless in need of replacement.

b. The micro switches (1) for the battery check and fade can be detached by lifting up them, and the respective buttons (3 and 4) are disassembled from the control panel (17) by pressing them from the back of the panel.

c. Pry off the window (5) for the battery check meter (6) as it is cemented in place.
Depress the rear of the battery check meter (6) to remove.

d. Press the tip of the shaft (13) exposed in the small rectangular hole adjacent to the WIDE button (15), and pull out the shaft (13) from the right side of the control panel (17).

e. When removing the zoom speed knob (12), be careful not to lose the steel ball (10).

Reassembly

Reassemble the parts in the reverse order of disassembly, noting the following special precautions.

a. Assemble the zoom buttons (14 and 15) in the control panel (17) so that;

   1. The "telephoto" button (14) is placed in the left hand side.
   2. The shaft is inserted into the holes in the buttons and two micro switches (16).
   3. Seal the shaft with adhesive.

b. The fade button (4) has a small boss on the face and be assembled in the rectangular hole near the zoom speed knob (12).

c. If the battery check meter (6) is replaced, assemble it in place and solder the two leadwires as illustrated below.

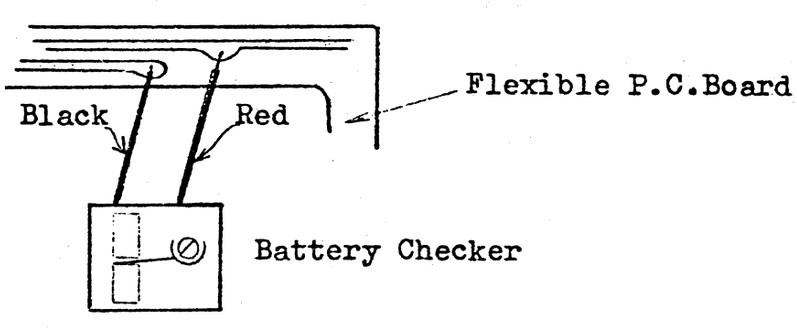
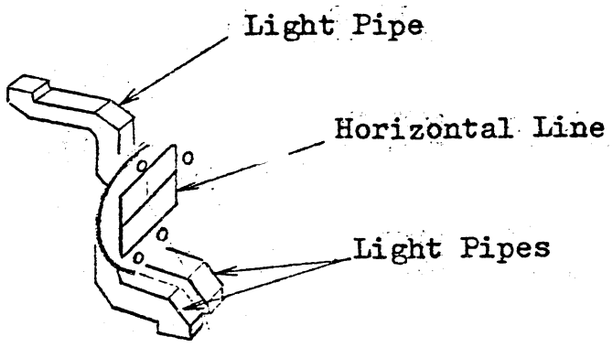


Figure 0. Leadwires for Battery Checker

(8) VIEWFINDER TUBE ASSEMBLY (Refer to Figure 2)

The viewfinder tube assembly (15) is held firmly with the three screws (13 and 14).

When handling the assembly, care should be taken not to detach the light pipes and damage the horizontal line in the viewfinder mask. The viewfinder elements must be free from dirt, stains, fingersprints and foreign matter.



(9) GRIP AND HOLDER ASSEMBLY (Refer to Figure 1)

Removal

a. Remove the right and left side covers. (Refer to previous pages.)

b. Disassemble the mechanism cover (35) by removing the two screws (34).

c. Detach the grip and holder (38) assembly from the camera body, noting that the four jacks and the recording level switch knob are inserted into the respective holes in the grip.

d. Disconnect the socket connecting the four wires between the grip and camera body.

e. The shielded wires leaded from the amplifier P.C. board should not be unsoldered if the repair to the grip and holder assembly is performed.

(10) PARTS ON GRIP AND HOLDER ASSEMBLY (Refer to Figure 9)

Disassembly

a. Remove the coil spring (1). Disengage the adjacent grip ring (2) and withdraw the push button assembly (3) from the grip body.

b. The removal of the three screws (4) allows the ring (6), right side hinge pin (5), and strap and ring assembly (7) to achieve detaching.

c. Turn the bracket (nut) (10) in a counter-clockwise direction with the special wrench (BHJ Tool No. UWR 51-123) and detach the DIN Jack assembly (11). (Refer to the section for service tools.)

d. To pry off the shield plates (13), press the plate with the corner of the screwdriver edge. Then, remove the exposed two screws (14).

e. Disengage the U-formed lock plate from the trigger shaft (33). Hold the grip and holder by hand and detach the holder from the grip.

f. Pry off the shield plate (30) attached on the holder, and the screw (31) is exposed. Remove this screw (31) and disengage the retaining ring (29) from the trigger shaft (33).

g. Press the trigger lock bracket (35) and move it to right, so that the bracket is kept away from the lock button (32). Insert a small screwdriver into the hole from which the screw (31) was removed, and press out the lock button (32) and the trigger shaft (33).

h. The trigger assembly (37) can be removed from the holder by removing the screw (36) in the corner of the front bottom.

i. To separate the right and left side holder (48 and 49)——First pry off the trimplate (37, Fig. 1) attached on the bottom of the holder. Then, detach the reinforced plate (43) by removing the two screws (42).

j. The tripod stud (44) becomes free when the two holders are separated.

k. If the further disassembly of the switch lever (24) is desired, proceed as follows:

•Unhook the legs of the spring (19) from the bracket (27).
•Disengage the retaining ring (18) and disassemble the lock plate assembly.
•When removing the switch lever (24), be careful not to lose the small steel ball (22).
•The stud (25) is staked to the bracket to secure the micro switch (26).

Reassembly

Reassemble the parts in the reverse order of disassembly, noting the following special precautions.

a. An adhesive tape will aid the 1/16" steel ball (22) in assembling to the spring (23) in the lever switch (24).

b. The longer-bent log of the cam spring (21) is hooked to the hole in the lock plate (20).

c. Assemble the tripod stud (44) with the elongated portion inserted into the grooves in both the holders.

d. The DIM jack assembly (11) must be assembled in the holder with the five jacks placed upwards.

e. Note the position of the letter "PUSH", when installing the push button assembly (3) in the holder.

(11) FLYWHEEL (4, Figure 2)

a. Detach the right side housing, left side housing and grip.

b. Take off the head cover (22) and the decorative plate (24) by removing the screws (21 and 23).

c. Make a note that either of the two grooves in the flywheel is used for installing the rubber belt.

d. Take off the rubber belt (1) from the flywheel (4).

e. Disengage the retaining ring (2) and the washer (3) from the capstan at the film cartridge compartment.

f. Carefully withdraw the flywheel (4).

Reassembly

Reassemble the parts in reverse order of disassembly, noting the following special precaution.

a. The rubber belt (1) should be installed to the previous position without torsion.

(12) CAPSTAN DRIVE MOTOR (Refer to Figure 4)

The capstan drive motor (2) is located at the rear bottom corner of the camera chassis.
In order to take off the motor, unsolder the red and yellow wires and then remove the two screws (1) after detaching right side housing, left side housing, grip, rubber belt. Before taking off the rubber belt (1, Fig. 2), make a short note indicating which groove has the belt installed.

(13) ZOOM LENS ASSEMBLY (Refer to Figure 2)

Removal

The zoom lens assembly (11) should not be removed unless any of parts on the assembly, E.E. meter, main motor, iris scale, etc., are in need of replacement.

a. Remove the right and left side housing assemblies.

b. Take off the two screws (7) assembling the E.E. circuit P.C.B. assembly to the camera body.

c. Unsolder the black and red wires carrying from the zoom motor.

d. Also, unsolder the two contacts from the main P.C.B. assembly. (Refer to Figure P.) To facilitate unsoldering operation, it is recommended to remove the grip from the camera body and move the E.E. circuit P.C.B. assembly (8) from the original position.

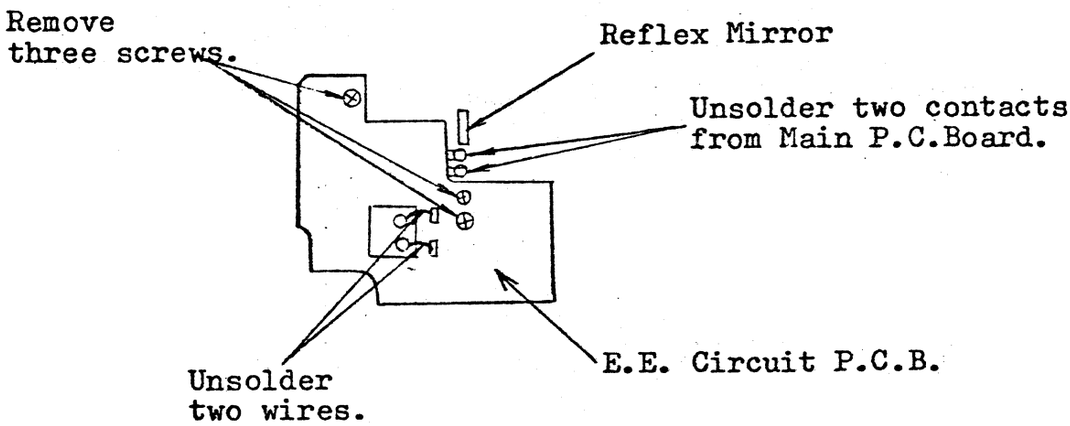


Figure P. E.E. Circuit P.C. Board

e. Unhook the lug on the front top of the lens mounting plate and move the bundle of the wires away from the lens mounting plate.

f. Remove the four screws (9 and 10) and slowly lift the zoom lens assembly from the chassis.

Reassembly

The installation of the zoom lens assembly to the camera chassis is performed in the reverse order of disassembly, noting the following special precautions.

a. The lens, mirror and filter must be free from dirt, stains and fingerprints.

b. The two wire contacts must be firmly soldered to the main P.C. board.

(14) PARTS ON ZOOM LENS ASSEMBLY (Refer to Figure 8)

Removal

a. The zoom lens assembly should not be further disassembled unless any of parts are obviously damaged and in need of replacement. If further disassembly is required, proceed as follows:

b. Remove the type A contacts by removing the screw (4). Unhook the spring (1) and disengage the retaining ring (2) that assembles the type A filter (3).

c. ZOOM MOTOR

The zoom motor assembly is secured to the lower corner of the lens mounting plate with two screws. and when replacement is required, remove the screw.

d. The actuator arm can be detached by removing two screws (12) and the guide stud.

e. The reflex mirror (18) and the first viewfinder element (19) are cemented in place.

f. The dichroic mirror (20) should not be disturbed and the screw securing the mirror bracket should not be removed unless the dichroic mirror is in need of replacement.

g. The zoom lens unit assembly (15) is secured to the lens mounting plate (21) with the following four screws (12 and 14).

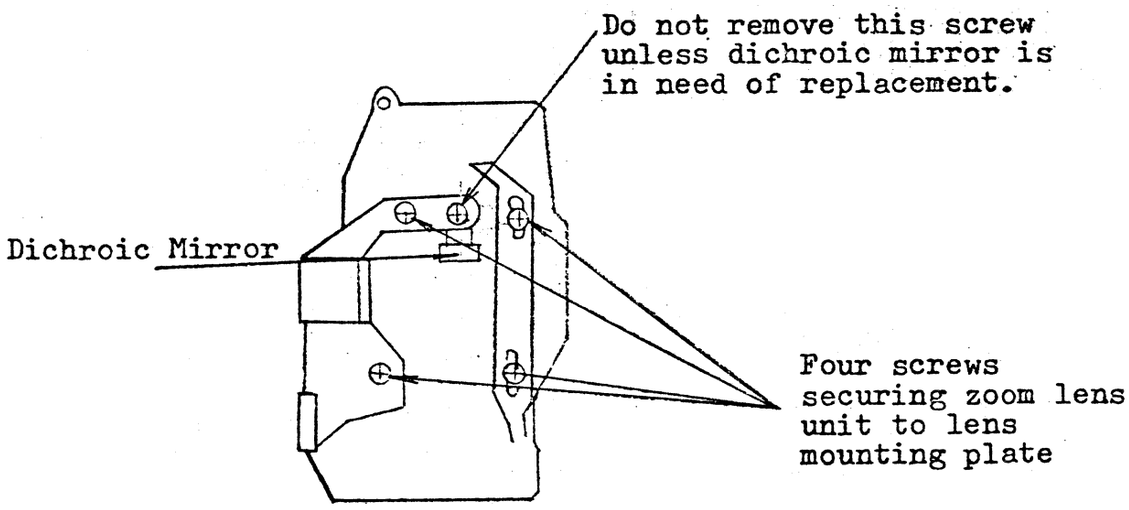
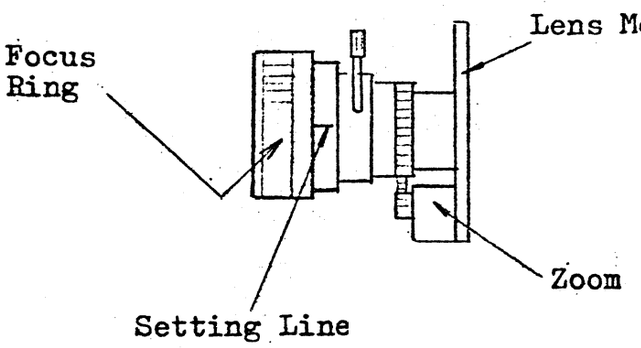


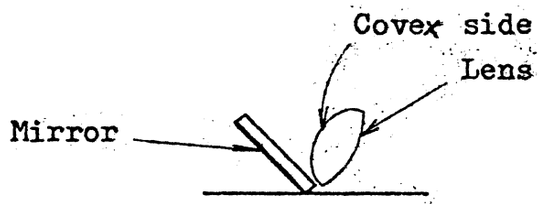
Figure Q. Screws on Lens Mounting Plate

Reassembly (Refer to Fig. 8)

Reassemble the parts in the reverse order of disassembly, noting the following special precautions.

a. The zoom lens unit assembly (15) is assembled to the lens mounting plate (21) with the four screws (12 and 14) so that the focus setting line on the zoom lens unit is placed at the zoom motor side of the lens mounting plate.

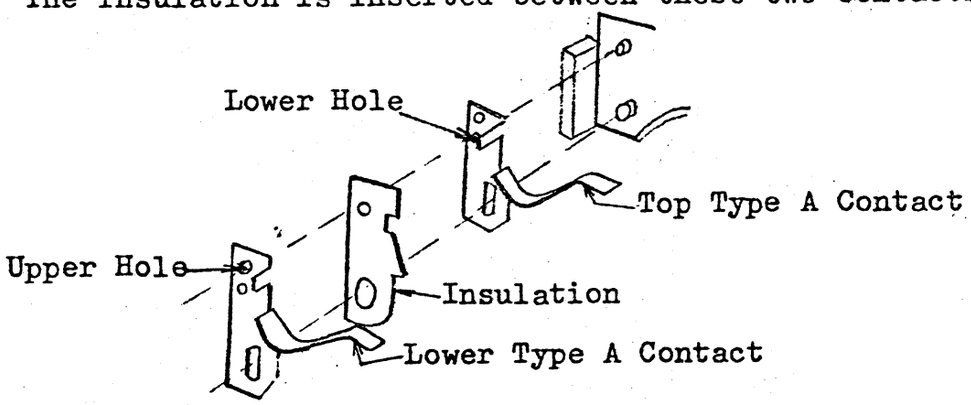




b. If the dichroic mirror and bracket assembly (20) is replaced, camera pointing adjustment is absolutely necessary.

c. Optical parts and type A filter must be free from dust, stain, fingerprints and other foreign matter.

d. Install the two type A contacts (6) and the insulation (7) to the lens mounting place as shown below.
- The boss on the lens mounting plate is inserted into the lower hole in the top type A contact, and the upper hole in the lower type A contact.
- The insulation is inserted between these two contacts.



(15) AMPLIFIER ASSEMBLY (Refer to Figure 4)

The amplifier P.C.B. Assembly (23) is secured to the front bottom of the rear chassis with the screw (22).

To gain access to the assembly, remove the right side housing, grip and zoom lens as instructed in the earlier sections.

(16) E.E. METER ASSEMBLY (Refer to Figure 2)

Removal

a. Take off the right and left side housings.

b. Also remove the zoom lens assembly.

c. Unsolder the green and gray wires carrying from the E.E. Meter to the E.E. circuit board through the slot in the main P.C. board.
Refer to Figure R for wire connection.

d. Remove the three screws (25 and 26) assembling the E.E. meter assembly (27) to the chassis as shown in Figure Q.

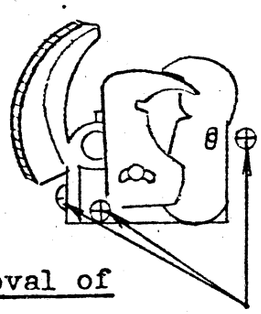


Figure Q. Removal of E.E. Meter

Remove three screws to detach E.E. Meter

e. Slowly lift up the E.E. meter by holding the terminal on the rear of the assembly with a pair of tweezers.

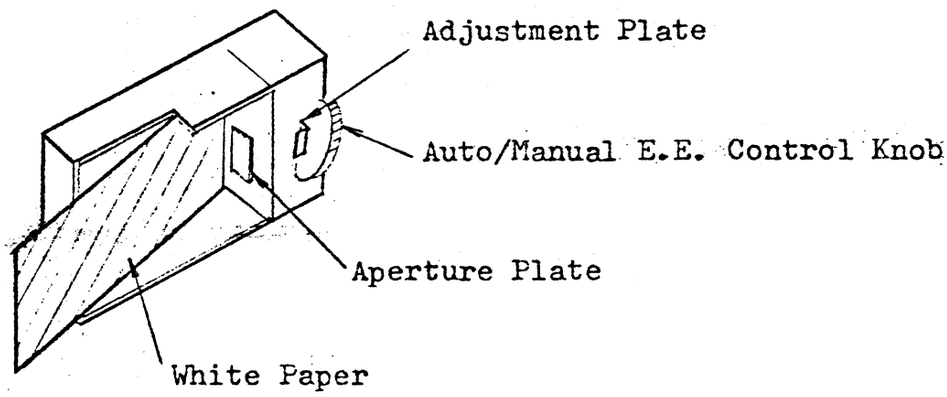
Reassembly

Install the E.E. meter assembly (27) to the chassis in the reverse order of disassembly, noting that the small stud on the iris scale and blade assembly (28) is fitted to the groove in the meter blade.
If replaced, the adjustment shown in Paragraph (16A) is absolutely necessary.

(16A) ADJUSTMENT OF E.E. METER AND IRIS SCALE POSITION

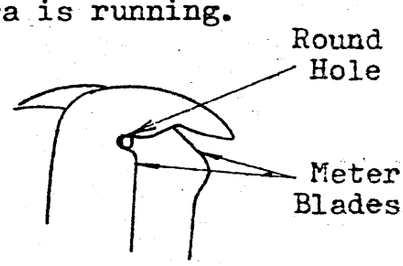
If either or both of the E.E. meter assembly and the iris scale and third blade assembly are replaced, the following adjustment is absolutely necessary.
This adjustment may be accomplished with the grip, left side housing and zoom lens assembled to the camera body, but the removal of the right side housing is required.

1. Slide the adjustment plate on the auto/manual E.E. control knob outside as far as it will go.

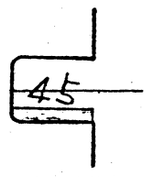


2. Place a sheet of white paper over the cartridge compartment and the rear of the camera so that the opening formed by two E.E. meter blades may be observed through the camera lens while the camera is running.

3. Run the camera.
While looking through the camera lens, turn the auto/manual E.E. control knob until the perfectly round opening is formed by the E.E. meter blades.

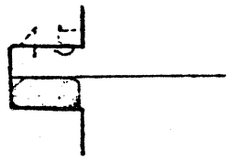


4. Look through the viewfinder and adjust the knob to have the figure 45 of the iris scale placed in the center of the left sidesmall window of the viewfinder.



5. If the figure 45 is not set in place, slightly move the bracket of the iris scale and third blade assembly right or left through the access hole in the left side cover. This adjustment will be desired when the iris scale and third blade assembly is disturbed.

6. Slide the foregoing adjustment plate inward so that the top of the red mark (over exposure indicator) is flush with the horizontal center line in the viewfinder.



(16B) IRIS SCALE AND BLADE ASSEMBLY (28, Fig. 2)

a. Never attempt to remove or disturb the assembly unless in need of the replacement.

b. When the replacement is required, take off the part from the pin.

c. If the position of the iris scale bracket of the assembly is disturbed or the new assembly is installed, adjust the iris scale position as instructed in Paragraph (16A) "Adjustment of E.E. Meter and Iris Scale position."

(17) E.E. CIRCUIT P.C.B. ASSEMBLY (Refer to Figure 2)

Removal

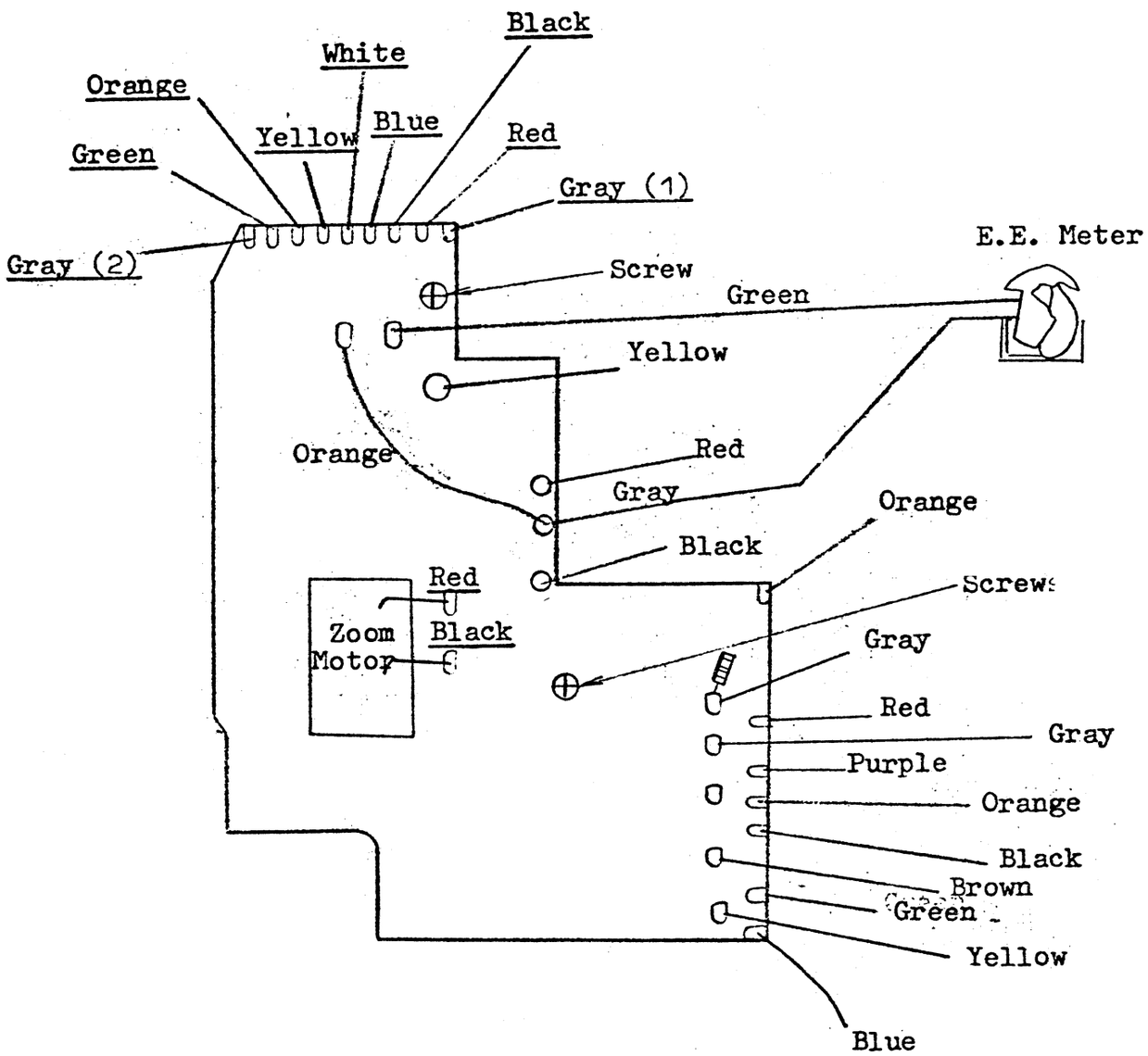
The E.E. circuit P.C.B. assembly (8) should not be completely detached from the camera body unless in need of replacement.

a. When the removal of the parts beneath the main P.C. board (20) are required, take off the two assembling screws (7) and unsolder the black and red wires carrying from the zoom motor.

b. If the replacement of the complete E.E. Circuit P.C.B. assembly is required, make a note of the wire connections, and carefully unsolder the wires from the circuit board. (Also refer to the sketch shown below and pictorial diagram in the parts catalog.)

Reassembly

Assemble the E.E. circuit P.C.B. assembly (8) in the reverse order of disassembly.



* Wire colors subject to change without notice

Figure R. Wires on E.E. Circuit P.C. Board

(18) MAIN PRINTED CIRCUIT BOARD ASSEMBLY (Refer to Figure 2.)

Removal

- Do not attempt to remove the main printed circuit board assembly (20) completely unless the replacement is absolutely necessary.

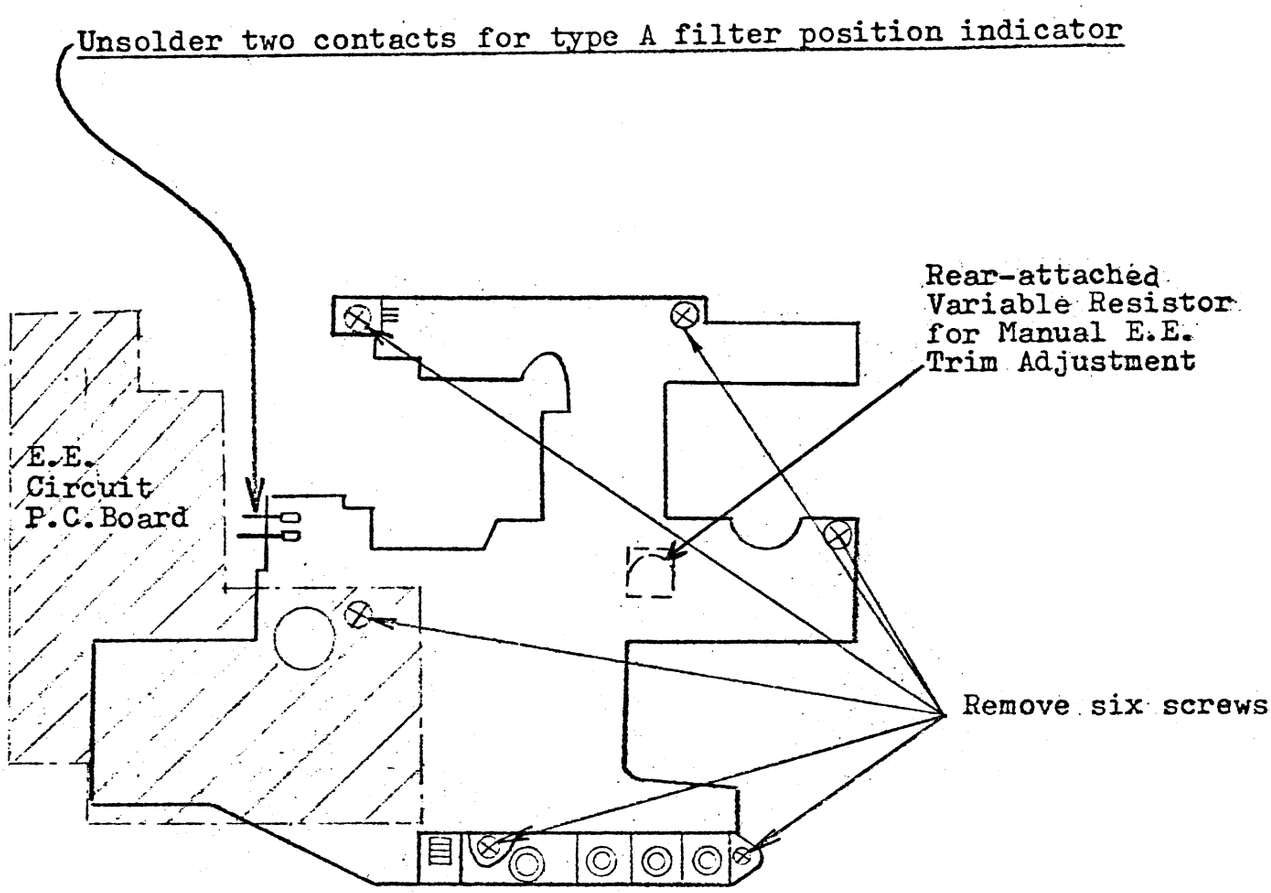
- When the removal of the circuit board assembly is required to replace the parts beneath the circuit board, it is recommended that the main circuit board be removed with flexible and E.E. circuit boards attached.
  In this case, unsolder only a minimum number of leadwires from the respective circuit boards.

- Before removing the leadwires from the main circuit board, make a short note in the pictorial diagram, circuit diagram or illustration on the later page so that you can perform the proper leadwire connections at reassembling.
  The use of small tags and your own note for leadwire connections will also be very useful.

- Repairs to the printed circuit board should be attempted only as an emergency measure, and then only by a qualified electronics technician.

- When replacing components on the circuit board, use a heat sink during unsoldering and soldering to avoid direct application of heat to the adjacent components.

- Be careful not to drop solder bit on the printed circuit board during operation. Careless handling of a soldering iron often causes short circuit and defective circuit.



REMOVAL

a. First set the manual E.E. trim adjustment knob (16) on the cartridge compartment wall in the utmost position.

b. Remove a total of six screws (18) from the main circuit board. (Refer to the above sketch.)
One out of six is located below the E.E. circuit P.C.Board (8) and, when the main circuit board is removed with the E.E. circuit board, move the E.E. circuit board so that the screw can be removed by inserting a screwdriver.

c. Unsolder the two contacts for type A filter position indicator.

d. Unsolder a minimum number of the leadwires to detach the main circuit board.

(19) MECHANISM ASSEMBLY (Refer to Fig. 4)

REMOVAL

When removing the mechanism assembly, do not attempt to completely detach the main and E.E. circuit boards from the camera body. Unsolder only minimum number of leadwires to remove the mechanism assembly.

a. Remove the screws (21 and 23, Fig. 2) to detach the head cover (22, Fig. 2) and the decorative plate (24, Fig. 2).

b. Remove a total of three assembling screws (24, Fig. 4) shown in Figure S.

c. Unsolder the leadwires as necessary.

d. Carefully withdraw the mechanism assembly (26, Fig. 4) from the camera chassis.

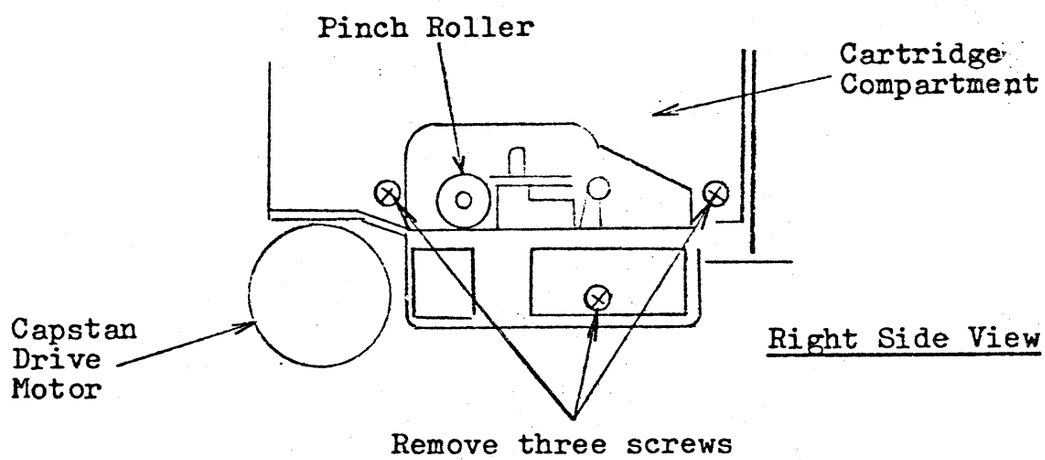


Figure S. Screws Securing Mechanism Assembly

REASSEMBLY

a. Assemble the mechanism assembly into the chassis with the trigger arm spring (34, Fig. 2) engaged as shown in Figure T.

b. Secure the mechanism assembly with three rear attaching screws (24, Fig. 4) and check to make sure that the link of trigger arm and actuator arm operates smoothly without binding.

c. Solder the detached leadwires in place.

d. Install the parts in reverse order of disassembly.

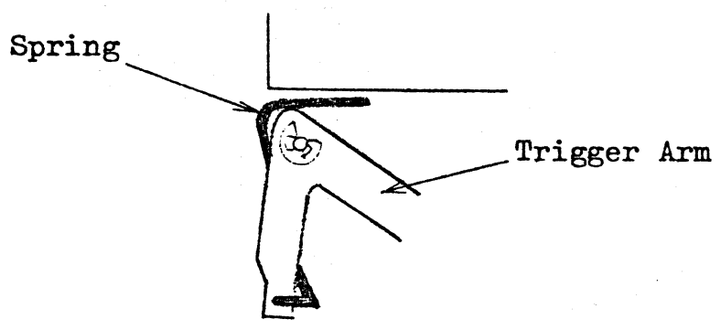


Figure T. Installation of Mechanism Plate

(20A) REMOVAL OF PARTS IN FIGURE 10 - MECHANISM ASSEMBLY

Remove parts, as necessary, in their indexed order of disassembly, noting the following special precautions.

a. The pinch roller bracket assembly (6) should not be replaced unless the gauge (NFM1-921) is provided. This gauge is to be used to check the loop sensor position after installing the pinch roller bracket assembly to the mechanism plate. Remove the retaining ring (3) attaching the pinch roller bracket assembly (6) to the mechanism plate assembly (28), and then disengage the shorter leg of the spring on the torsion arm assembly (7) from the arm of the pinch roller bracket. Lift out the pinch roller bracket assembly (6) from the shaft on the mechanism plate assembly (28).

b. Turn the torsion arm assembly (7) until the larger groove in the mechanism plate assembly (28), and lift it out from the position.

c. Disengage the grip ring (9) and disassemble the washer (10) and the film gate guard (11). The pressure pad pivot (13) is staked to the mechanism plate assembly with the pressure pad assembly installed, and therefore these parts should not be removed.

d. The removal of the retaining ring (15) allows detaching the arm assembly (16). Disassemble the retaining ring (17) and the pressure pad spring (18).

e. The recording head assembly (22), the ejector arm (23) and the head spacer are disassembled from the mechanism plate assembly by removing the screw (21). Remove three screws (25) and the bearing (26) will come free.

(20B) REASSEMBLY OF PARTS IN FIGURE 10 - MECHANISM ASSEMBLY

Reassemble the parts in the reverse order of disassembly, noting the following special precautions.

a. If the pressure pad assembly (14) was removed, insert the pivot into the hole in the pressure pad assembly, and then assemble the pivot to the mechanism plate so that the clearance between the pressure pad assembly and the mechanism plate is within 0.03 to 0.05mm. (Refer to Fig. U) Stake the pivot to the mechanism plate assembly (28). Secure the capstan bearing (26) to the mechanism plate with three screws (25).

b. Place the head spacer on the mechanism plate with small studs fitted into the corresponding holes, and assemble the ejection arm (23) to the recording head assembly (22) so that the longer arm can be placed on the capstan bearing side when the recording head assembly is assembled to the mechanism plate with the screw (21).

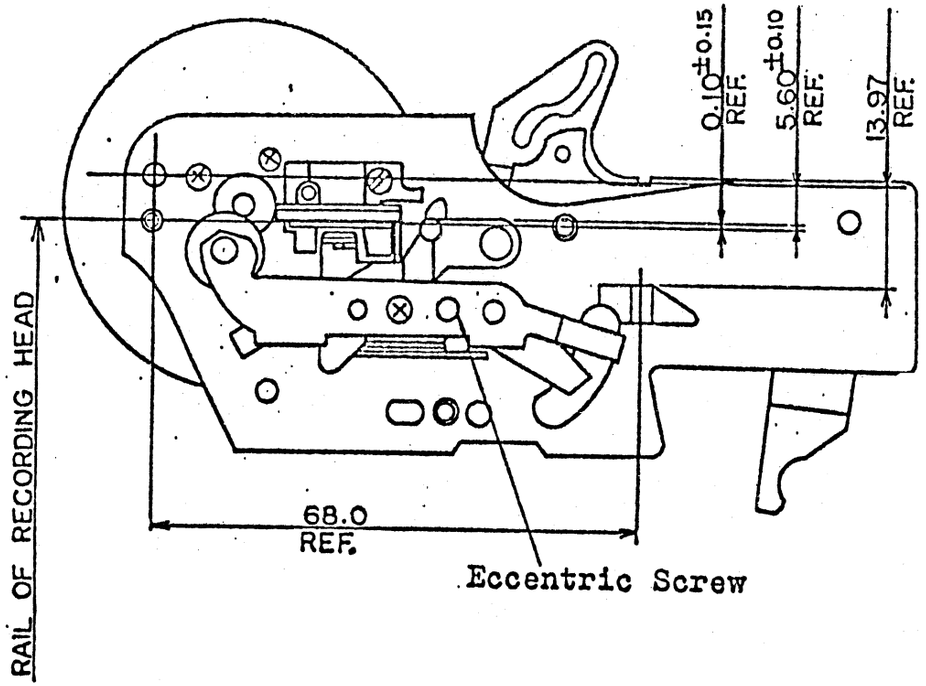
c. Install the spring (27) on the boss on the mechanism plate with the longer leg placed between the capstan bearing (26) and the recording head assembly (22) and the shorter leg hooked on the ear of the pressure pad assembly (14). Install the retaining ring (17) on the boss on the mechanism plate.

d. Install the arm assembly (16) on the boss on the mechanism plate so that the molded portion is in contact with the switch contact and the arm is slid in the molded support on the mechanism plate. Assemble the retaining ring (15) to the boss on the mechanism plate.

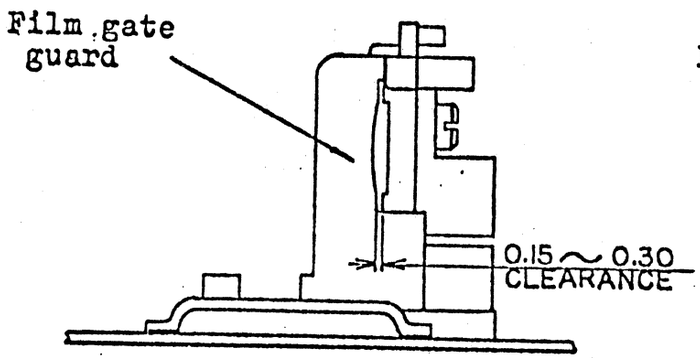
e. Assemble the spacer (12), the film gate guard (11), the washer (10) to the pivot (13) and secure them with the grip ring (9). Check to make sure that the clearance between the film gate guard (11) and the recording head assembly (22) is within 0.15 to 0.30mm. (Refer to Figure U) Install the torsion arm assembly (7) on the shaft protruding from the mechanism plate, with the light shield plate assembled.

f. Install the pinch roller bracket assembly (6) to the shaft on the mechanism plate and secure it with the retaining ring. Then, hook the shorter leg of the spring on the torsion arm assembly (7) to the shorter arm of the pinch roller bracket assembly.

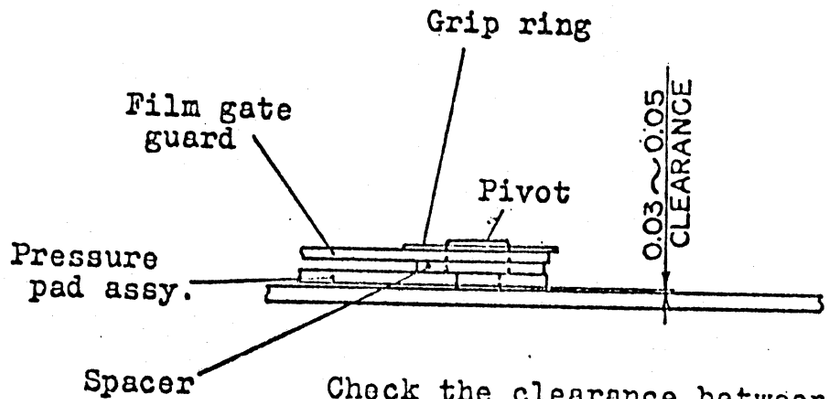
If the pinch roller bracket assembly is replaced, use the checking gauge (NFM1-921) and make sure that the loop sensor is properly positioned as shown in Figure U. When the position of the loop sensor is not proper, turn the eccentric screw in the pinch roller bracket and adjust the loop sensor position.



Check the position of the loop sensor with the checking gauge (NFM1-921).
If necessary, turn the eccentric set screw.



Check the clearance with a filler gauge.



Check the clearance between the mechanism plate and pressure pad assembly with a filler gauge.

Figure 4. Reassembly of Mechanism Assembly

(21) TAKE-UP GEAR AND FILM FOOTAGE CCUNTER COMPONENTS

A. TAKE-UP GEAR (Figure 4)

a. Rotate the take-up spring (4) in a clockwise direction until the spring is at the cut-down portion of the adjustment rim on the take-up gear (5).

b. Disengage the retaining ring (3) while holding the pin and stud assembly at the cartridge compartment side.

c. The removal of the retaining ring (3) allows the take-up gear (5) as weel as the following part to be removed.

*Pin and stud assembly (6), pawl (8), washer (7), and take-up spring (4).

d. The reassembly is made in reverse order of the disassembly.

e. The take-up torque must be within 36-80 g-cm.

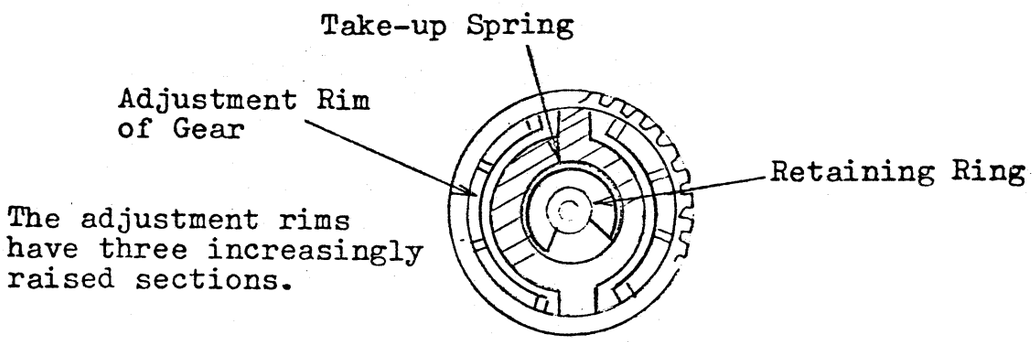


Figure W. Take-up Gear

B. FILM FOOTAGE COUNTER (Figure 4)

IMPORTANT: Never attempt to remove the two push nuts (11) assembling the footage pointer (13) because the small boss on which the push nuts are installed are damaged during the removal.

(22) FRONT AND REAR CHASSIS ASSEMBLIES (Refer to Fig. 2)

TO SEPARATE FRONT AND REAR CHASSIS ASSEMBLIES

The front chassis should not be separated from the rear chassis unless any of the parts shown below are obviously damaged and in need of replacement.

Aperture plate assembly, Shutter assembly, Shuttle assembly, Idler gear, and Main motor.

If the separation is required, proceed as follows.

a. Remove the right and left side housings, grip, and the zoom lens assembly

b. Remove the E.E. Circuit and main circuit boards.

c. Unhook the two grip rings(29) as shown in Figure V.

d. Put the camera chassis on a workbench, with the main motor facing upward. Insert a screwdriver into top left corner of main motor compartment, and remove the screw (30).

e. Then, insert a screwdriver into lower left corner of E.E. meter compartment in the chassis to remove the screw (30). Refer to Figure V.

f. Carefully detach the front chassis assembly from the rear chassis.

REASSEMBLY

Reassembly is made in the reverse order of the foregoing disassembly procedure.

Important:

When reassembling the front chassis to the rear chassis, the relation of the white idler gear, shutter and take-up shaft must be as shown in Paragraph (27) - Synchroflash Cam.

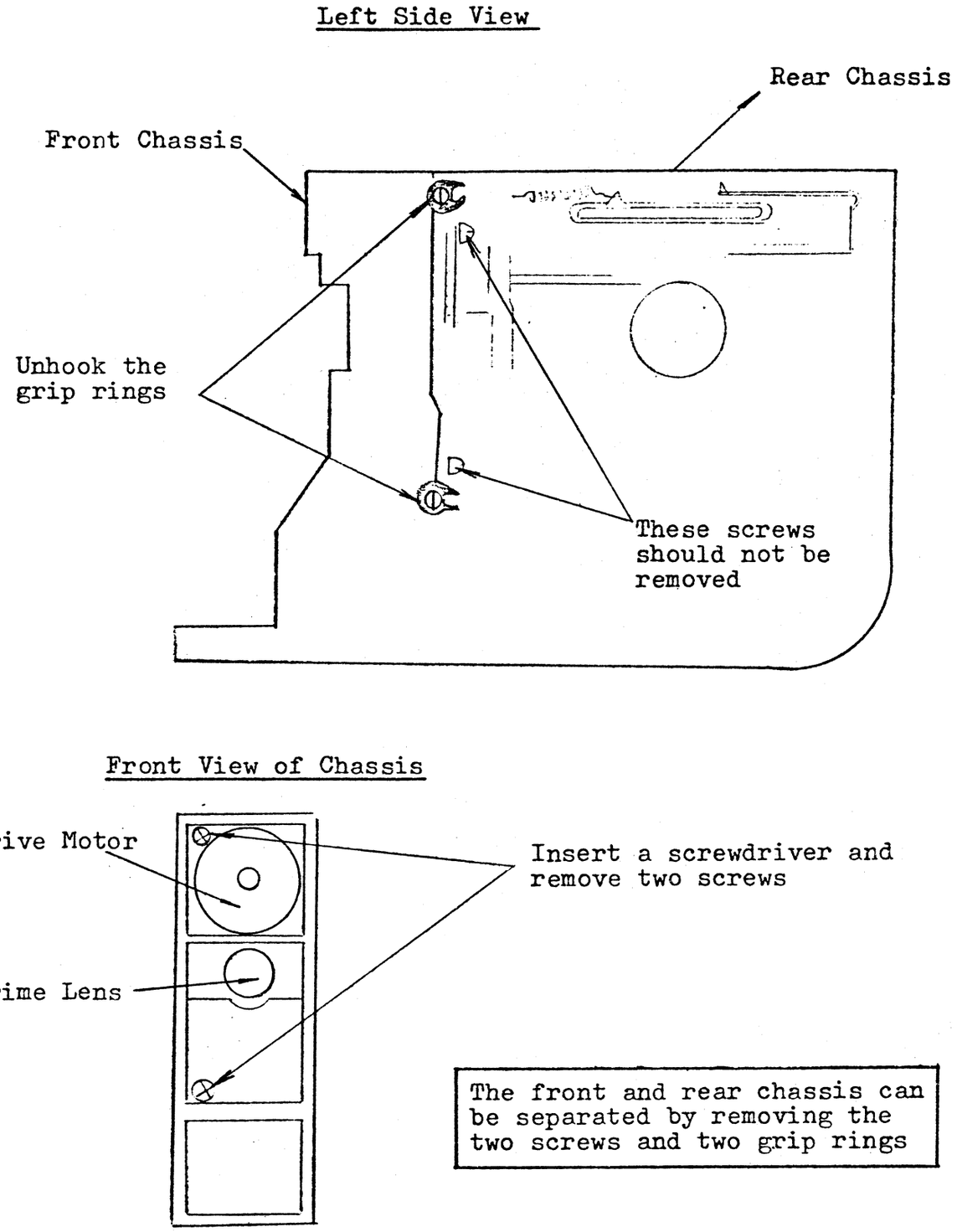


Figure V. Separating Front and Rear Chassis

(23) APERTURE PLATE ASSEMBLY AND SHUTTLE ASSEMBLY (Fig. 3)

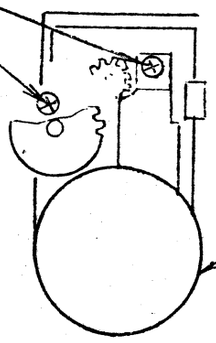
The aperture plate assembly can be easily removed by removing the three screws (7 and 8).

(24) MAIN MOTOR (18, Fig. 3)

Remove the screw (11) and support plate. Take off the white idler gear (13), and screw is exposed. The main motor is assembled to the front chassis with these two rear attaching screws.

Two screws securing main motor to chassis

Important: The shutter and the white nylon idler gear must be assembled as shown in Paragraph (27) on page because of the relation with the synchroflash cam.



Rear View of Chassis

Shutter (Refer to Paragraph 27 for assembling.)

Figure X. Removal of Main Motor

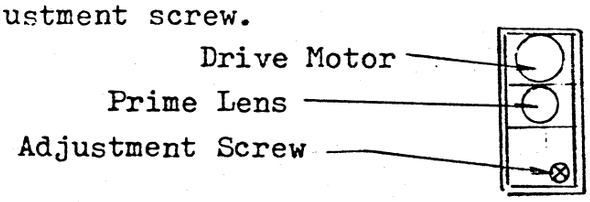
(25) SOLENOID ASSEMBLY

The solenoid is assembled to the front chassis with the two screws (19).

(26) ADJUSTMENT OF SOLENOID AND MOTOR CONTACTS

A. Adjustment of Leaf Contacts for Main Motor

1. Remove right and left housings. Take off the zoom lens.
2. Detach the E.E. meter from the chassis to expose the adjustment screw.

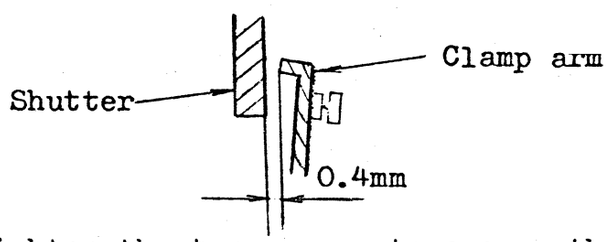


3. Slightly turn the screw in a clockwise direction, and the contacts are gradually closed. The contacts tend to open when turning the screw in a counter-clockwise direction.
4. Run the camera several times and check to make sure that the camera stops running as soon as the trigger is released.

B. Adjustment of Solenoid Position

If the solenoid (20, Fig. 3) is replaced, make the following adjustment,

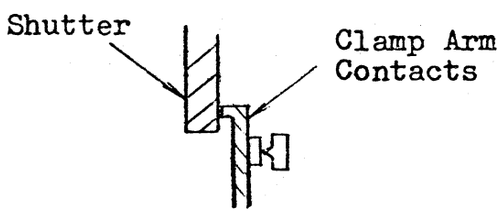
1. Apply voltage (DC 4V) to the solenoid and adjust the position of the solenoid so that the clearance between the shutter and the clamp arm is 0.4 mm.

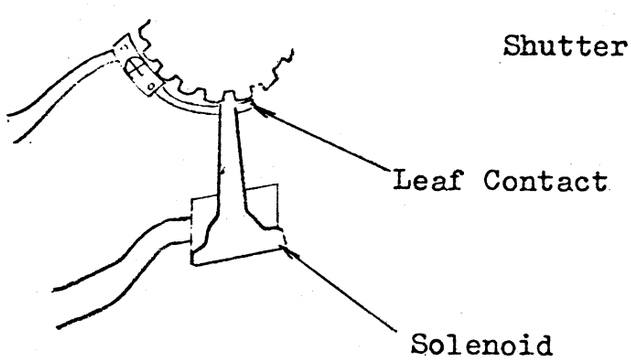


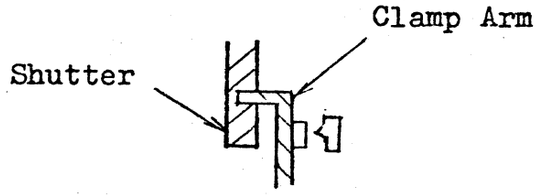
2. Tighten the two screws to secure the solenoid to the chassis.

3. When switching off the power supply, the clamp arm should be in contact with the face of the shutter. Turn the adjustment screw on the chassis as instructed in the previous paragraph (26)-A. Adjustment of Leaf Contacts.

4. Manually rotate the shutter. The contacts must be separated when the ear of clamp arm is placed in the cut-out portion of the shutter.





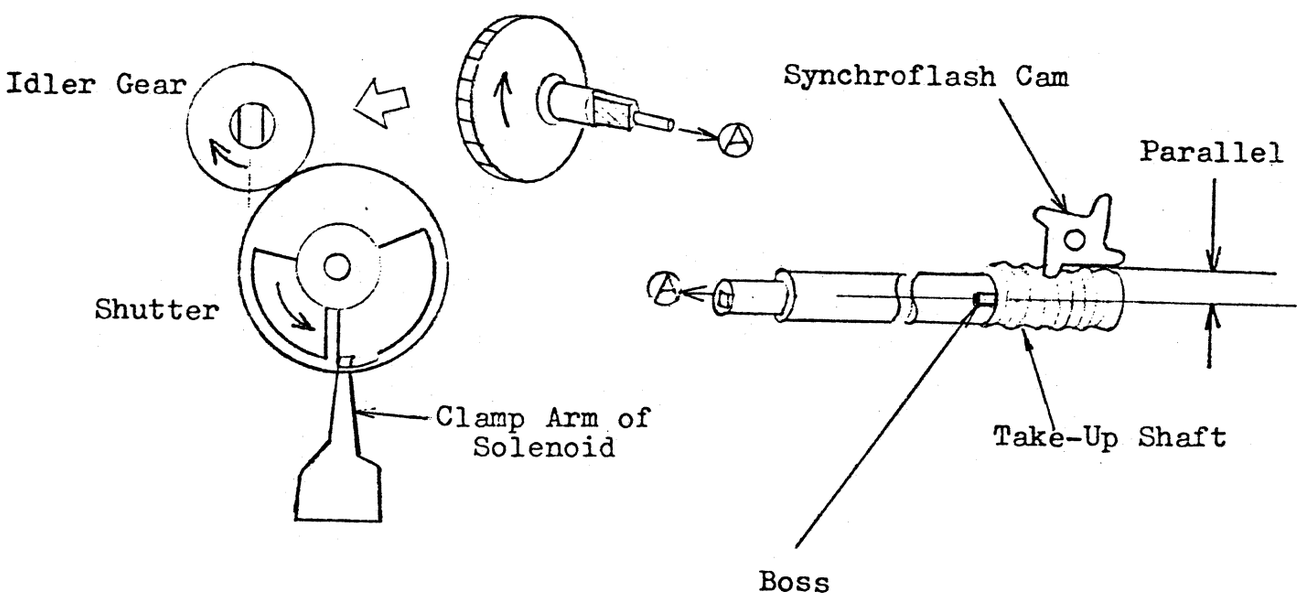


(27) SYNCHROFLASH CAM (33, Fig. 2)

If removed, the synchroflash cam must be installed to the pin on the chassis as shown below.

a. Before installing, check to make sure ——
The small boss on the take-up shaft faces up, when the white nylon gear adjacent to the main motor is turned clockwise as far as it goes.
When the gear rotation stops, the clamp arm of the solenoid is in contact with the rib of the shutter.

b. Install the synchroflash cam on the pin so that the verge of the cam is parallel to the take-up shaft.



5. CHECKING AND ADJUSTMENT

(1) GENERAL INSPECTION PROCEDURES

a. Visually inspect the camera for obvious physical damage (broken window, cracks in access doors and housings, badly scratched or defaced nameplates or trimplates, etc.).
Also, check for loose or missing parts.

b. Check to see that the cartridge door latch operates smoothly, and that the cartridge door opens and closes without binding. There should be only a minimum of play in the cartridge door with the latch closed.

c. While looking through the viewfinder, point the camera lens at a bright light and check for flaws, stains (such as a yellowish tinge), fingerprints, etc. Viewfinder elements can be cleaned by removing the viewfinder tube, however, if the elements are discolored or badly scratched, the complete viewfinder tube must be replaced.

d. While looking through the viewfinder, manually zoom the lens back and forth between the "Telephoto" and "Wide", and make sure that the zooming is performed smoothly without any binding.

(2) GENERAL OPERATING TESTS

Note: Be sure to install fresh batteries before making the following operating test, and observe the polarity markings on the battery case.
(The battery must be within a voltage of 6 to 9 volts.)
When DC power supply is to be used for these tests, set voltage at 7.5 volts.

a. Press the power "On-Off" switch (Master switch) and pull the trigger for several seconds. The film drive mechanism should not cause unusual camera noise not normally associated with camera operation. If camera noise appears excessive when running, check for lack of lubrication in the gearing or broken gear teeth.

b. Zoom the lens back and forth several times while observing through the viewfinder eyepiece. The image, as observed through the viewfinder, should zoom through the complete range smoothly and without hesitation or binding.

c. Press the "On-Off" button and set the filter knob in the "lamp bulb" position. Then set the trigger of the grip at "Test". With a film test cartridge inserted in the cartridge compartment, sight the camera at a scene of normal brightness while looking through the viewfinder and slowly cover the camera lens with your hand. The red tilt stripes should appear in the viewfinder to indicate an underexposure condition. Remove your hand and the red strips signal should disappear.

d. Place a pencil mark on the film at the aperture of a film test cartridge and insert the cartridge into the camera. Briefly run the camera, then remove the cartridge and check to see that the film has advanced. Take-up torque must be sufficient to pull the film smoothly but not so strong as to tear the film perforations. Take-up torque adjustment is outlined in paragraph (7).

(3) CHECKING BATTERY TEST INDICATOR OPERATION

a. Connect the DC power supply to "ex-power" socket and set to DC power supply at 6.0 volts.

b. Press the battery test button and make sure that the white pointer is positioned between the red and green zones or in red zone.

c. When the DC power supply is set at 7 volts, the pointer must be within the green zone.

d. Set the power supply at 5.5 volts and make sure that the pointer is within the red zone.

e. If the battery test meter does not operate properly, replace the battery test meter.

(4) CHECKING TYPE A FILTER OPERATION

Zoom the camera lens to "TELEPHOTO" position and check the type A filter operation as follows:

a. Slide the filter knob on the right side cover to the "lamp bulb" mark and remove the type A filter from its normal position in front of prime lens.

b. Slide the filter knob to the "sun" mark, and the type A filter should cover the prime lens, which could be seen as dark orange through the lens.

c. Perform above check several times.
The type A filter should move smoothly without binding.

d. Set the main switch at "on" and then slide the type A filter knob in the right side cover to "lamp bulb" mark. When pulling the trigger until "TEST", the yellow "lamp bulb" mark must appear at the top of the viewfinder field of view.

e. The "lamp bulb" mark must also be observed in the viewfinder whenever the "G" type film cartridge is inserted into the camera. (Even when the knob is set at the "sun" mark, the "lamp bulb" mark is observed.)

f. If the mark is not observed in the viewfinder, check the parts on the rear of the lens mounting plate and the light emitting diode on the main circuit board.

(5) FOOTAGE COUNTER, TRANSPORT INDICATOR AND LAST FIVE FEET INDICATOR

Connect the DC power supply (7.5V) to the camera or insert the batteries (within 6 to 9 volts) into the grip and check the function of footage counter as follows:

a. When the film cartridge is inserted in the camera the footage counter indicator should be positioned at the start mark on the footage scale.

b. The footage indicator should not operate when the camera is in operation without installing the film cartridge.

c. Run the camera with the film cartridge inserted. The footage counter indicator should move toward the "END" mark and should stop in "END" position. The film should be completely exposed after the indicator has reached the 2/3 of "END" position.

d. The indicator should return to the start position after the cartridge is removed.

e. When the camera is in operation with a new or partially used film cartridge loaded, the transport indicator should blink on and off. (The indicator should also blink when the camera is operated without the cartridge or whenever the take-up pawl is in operation.)

f. While the camera is running with completely exposed cartridge, the transport indicator must stop blinking.

g. When the last five feet indicator lights up, the length of the film remaining in the cartridge must be within $5 \begin{smallmatrix} +1 \\ -3 \end{smallmatrix}$ feet.

h. If the last five feet film indicator does not operate properly, check the position of the contacts located at the top right corner of the main circuit board, and also check for the light emitting diode.

(6) MASTER SWITCH, RUN CONTROL, AND REMOTE CONTROL

The tool to be used is a push-pull scale being capable of measuring 2500 grams.

a. Connect the DC power supply (7.5V) or install the batteries (within 6 to 9 volts) into the grip. Secure the camera on a tripod.

b. Press the power on/off switch (master switch) and hook the push-pull scale on the trigger.

c. Pull the trigger until the "lamp bulb" mark is observed in the viewfinder.
The force required should be between 200 and 750 grams.

d. Also measure the force required to energize the drive mechanism by further pulling the trigger. It must be within 2200 grams and the force required to keep mechanism running should not exceed 750 grams.

e. The camera must continue to run when the trigger lock button is depressed and the trigger is released.

f. When the trigger lock button is released, the camera must stop running.

g. Insert the remote control kit into the socket in the camera and check the function of the remote control.

(7) CHECKING TAKE-UP TORQUE

a. Install the batteries (within 6 to 9 volts) into the grip and install the torque gauge to the camera. The cartridge door may be kept open. Run the camera and read the torque. The proper take-up torque should be within the limit of 36 to 80 g-cm.

b. When necessary, adjust the take-up spring friction by repositioning the spring (4, Fig. 4) on adjustment rims with use of a pair of tweezers.

(8) UNDER/OVER EXPOSURE INDICATOR CHECKING

Light source and camera with batteries (6 to 9 volts)

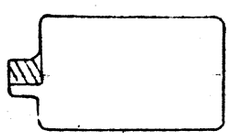
a. Decrease light level of the light source and aim the camera at light source.

b. Set the iris control knob on the right side housing at "AUTO", and pull the camera trigger until "TEST". Note the movement of iris scale.

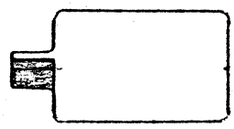
c. The under exposure mark (red and white striped pattern) on the iris scale should appear in the left side of the viewfinder field of view.

d. Increase the light level, and the over exposure signal (red alone) appears.

e. The indicator marks should exceed half space of the window as illustrated below.



Under Exposure



Over Exposure

Iris Scale

(9) POWER ZOOM OPERATION

A stop watch or watch with the sweep hand is required for this check.

a. The power zoom from wide angle to telephote, and vice versa should be performed within 5 ± 1 seconds, with the zoom speed knob set at "slow".

b. In "fast" position, the time required for zooming should be less than 4.5 seconds (75 percent or less than the time needed at "slow").

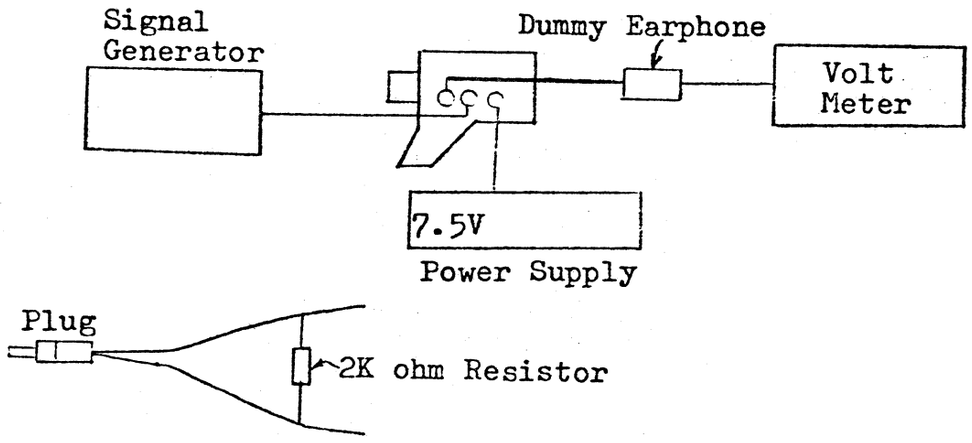
c. When the zoom button (wide/telephoto) is depressed, the zooming must be performed smoothly without any binding.

(10) SOUND MONITOR OPERATION CHECKING (REFERENCE ONLY)

The most convenient way to check the sound monitor operation is to plug an earphone into the camera and to hear monitor sound, but in order to check more accuretely, the following procedure is recommended.

Tools and instruments required for this check are: dummy earphone (with a 2KΩ resistor). See illustration, signal generator, AC volt meter, power supply, cartridge (sound cartridge without film).

a. Set equipment as shown below.



b. Set the power supply at 7.5 volts. Insert the dummy cartridge into the camera and run the camera.

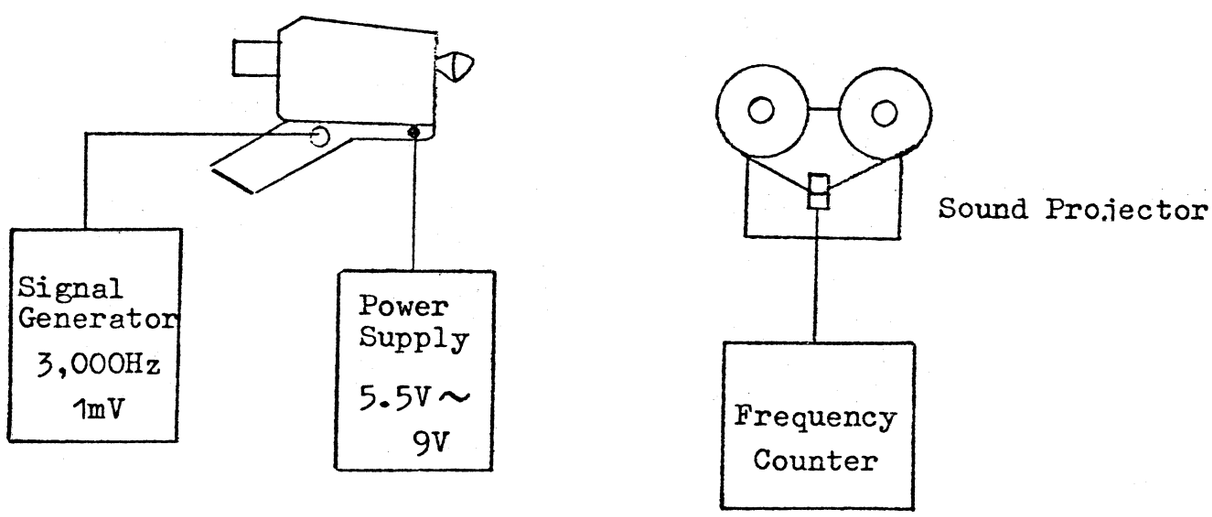
c. Set the output of the signal generator at 0.2mV 400Hz.

d. The reading on the volt meter should be within the limits of $0.5 \begin{smallmatrix} + 0.2 \\ - 0.15 \end{smallmatrix}$ volts ($\pm$ 3 dB).

(11) CAPSTAN SPEED CHECKING (REFERENCE ONLY)

Instruments required for this check are the signal generator, sound cartridge, sound projector, frequency counter and DC power supply.

a. Insert the sound cartridge into the camera. Set the DC power supply at 7.5 volts and connect the signal generator to the camera. Slide the level switch on the camera to "NORM".



b. Run the camera and record 0.1mV, 3000Hz signal on the full length of the film.

c. Repeat the above steps with the power supply set to 9.0, 6.0 and 5.5 volts respectively.

d. Remove the cartridge from the camera and play back the recorded signal by threading the film into the sound projector.
Note frequency readings.

e. The capstan speed should be within the limits of 18.2 $\pm$ 1.0 fps at 6.0 volts and 24.3 $\pm$ 1.3 fps at 9.0 volts.
(The capstan speed is calculated by the following formula.)

$$\text{Capstan Speed} = \frac{3000\text{Hz}}{\text{Frequency Reading}} \times \text{Playback Speed(fps)}$$

f. If the capstan speed is not within the above limits, shift the belt to another groove on the capstan drive motor or replace the motor.

(12) RECORDING LEVEL CONTROL (REFERENCE ONLY)

The recording level control check requires the signal generator, attenuator, sound cartridge, voltmeter, sound projector, DC power supply, and level recorder.

a. Insert the cartridge into the camera. Set the recording level switch on the camera in "NORM" position and also set the camera speed knob at 18 fps.

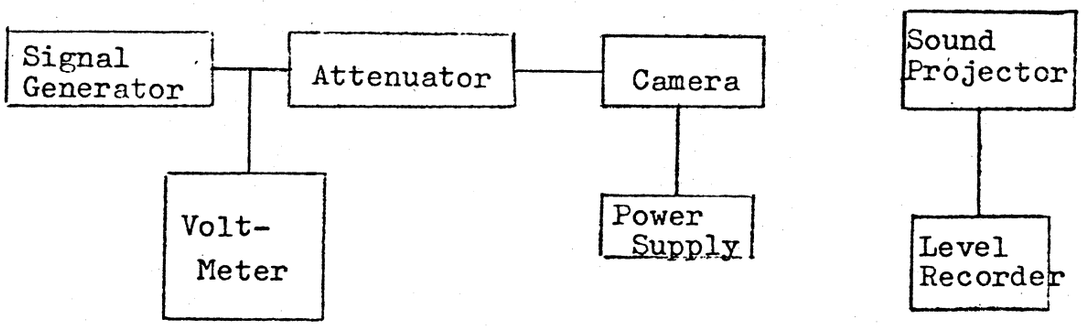
b. Set the DC power supply at 7.5 volts and apply 0.1mV 400Hz signal to the camera.

c. After holding the trigger in "Test" position for approximately two seconds, run the camera with the signal level increased to +20dB. While running the camera, decrease the level by 10dB, and then further decrease the level by 10dB.

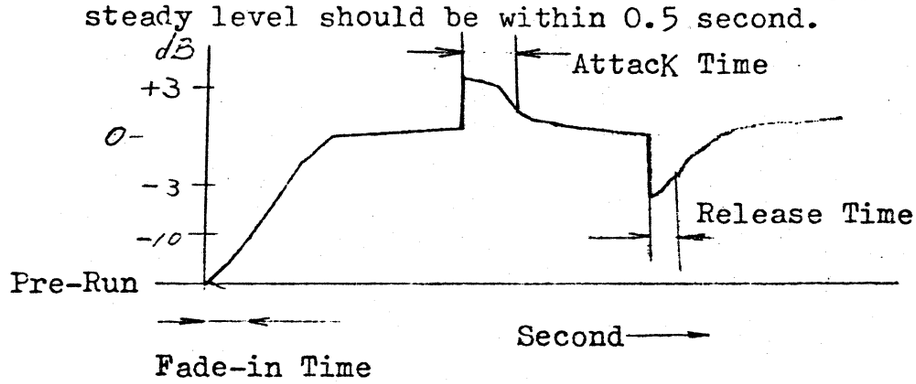
d. Remove the film cartridge from the camera. Thread the film into the sound projector, and check for the recording level.

e. The "attack time" from the final steady level to +3dB should be within 0.5 second.

The "release time" to reach -3dB from the final steady level should be within 0.3 to 3 seconds.



f. The "fade-in time" to reach -10dB from the final steady level should be within 0.5 second.



(13) "DICHROIC" RANGEFINDER ACCURENCY CHECK

Tools to be used: Dioptric tester and test target with a 10 mm width of white vertical line on a mat black plate.

a. Mount the camera on a rigid support. Place the dioptric tester just behind the camera eyepiece.

b. Set the dioptric tester at infinity and focus the camera eyepiece on the horizontal line in the viewfinder.

c. Place the camera (film plain mark) at a distance of 2 meters from the test target.

d. Set the zoom lens to extreme telephoto position and turn the camera focus ring until the single image (no color fringe) of the vertical line is observed.

e. The focusing scale distance should be within the limits shown below.

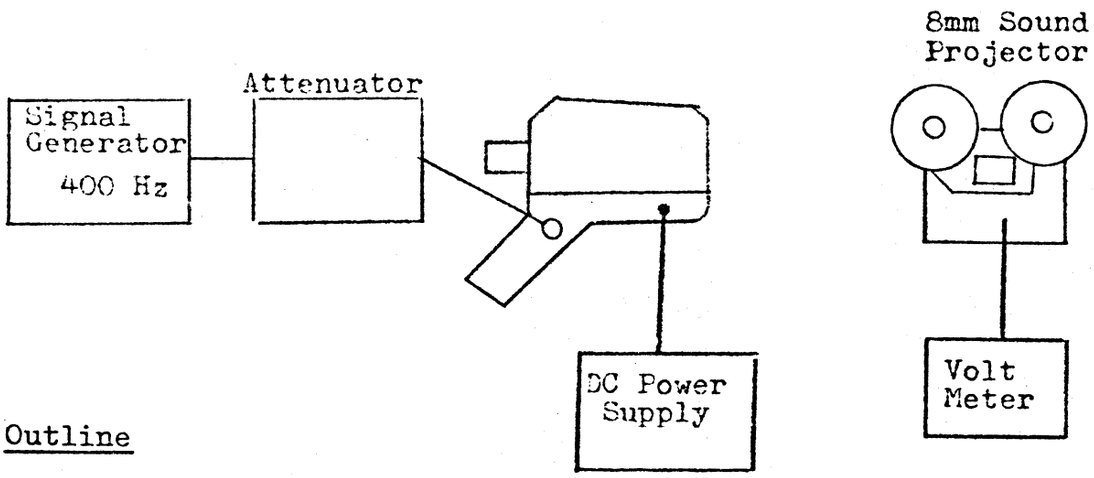
f. Change the distance between the camera and the test target and repeat the step d.

The allowable ranges are as follows:

Actual Distance(M)	Allowable Range of Focus Ring
2.0	1.86 - 2.14 (M)
3.0	2.7 - 3.3
4.0	3.47 - 4.53
6.0	4.89 - 7.11
10.0	7.3 - 12.8

(14) RECORDING SENSITIVITY (REFERENCE ONLY)

Equipment to be used: signal generator, attenenuator, DC power supply, sound projector and electric voltmeter. SMPTE standard film



Outline

a. Set the equipment as above.
Play back the SMPTE standard film on the projector at 18 fps, and turn the volume control knob to read 2.5V on the volt meter.

b. Load the cartridge in the camera.
Set the level switch to "Norm", and also set the camera speed at 18 fps.

c. Run the camera and apply a 0.2 mV 400 Hz signal into the camera. Make sure that the recording signal in the viewfinder is bright.
The output level of the 400 Hz 0.2 mV input should be greater than -5 dB as compared with that of the step a.

d. Change the input signal level to 0.03, 0.05, 1.0 and 3.0 mV, and record on the film.
The output of each signal should be with the following limits.

Input (mV)	0.2	0.03	0.05	1.0	3.0
Output (dB)	0	-8 ± 4	-4 ± 3	1.5 ± 3	3 ± 3

e. The recording signal in the viewfinder should be dull or go out at 0.03 mV of the input signal.

f. Shift the level switch to -10 dB.
Run the camera and record a 400 Hz 0.15 mV signal on the film.
Then slide the switch to "Norm", and feed 0.05 mV to record.
The difference in the output should not exceed 2 dB.

(15) REMOTE CONTROL AND SINGLE FRAME CHECK

To avoid the variations of the exposure value at each frame, the single frame filming is usually performed with the camera mounted on a rigid support and by the remote control kit.

Therefore, when the single frame operation check is required, check it by using the remote control kit as well as depressing the trigger.

In this case, depress the trigger lock button and then set the camera speed selector at 18 fps.

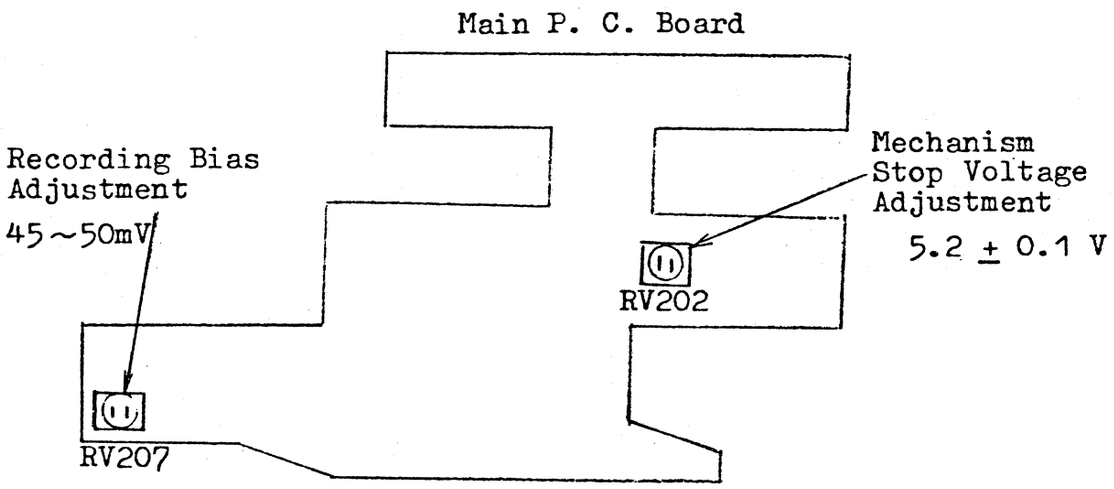
Run the camera and make sure that;

1. The camera motor should not run when the remote switch is set at "off".

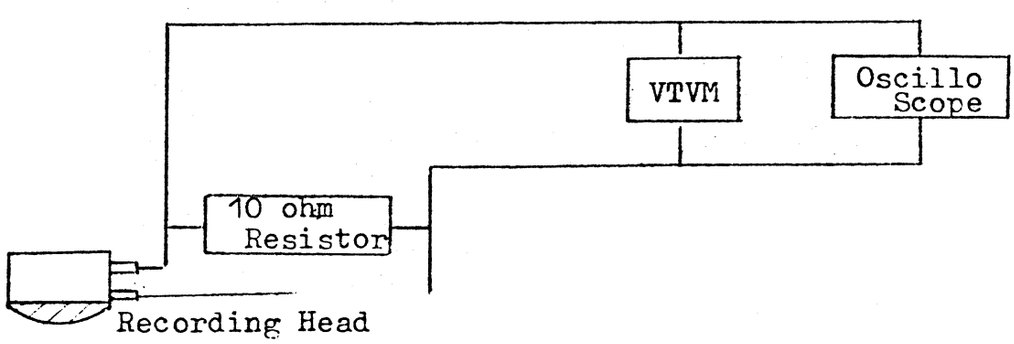
2. During single frame operation only one frame must be exposed by each switch operation.

(16) MECHANISM STOP AT LOW SUPPLY VOLTAGE

When DC power supply is set at 5.2 ± 0.1V, the camera running of 24 fps with sound mode must be stop.
If necessary, adjust the variable resistor (RV202) on the main printed circuit board so that the camera mechanism stops running within the above limits.



(17) RECORDING BIAS



This adjustment requires a 10 ohm resistor, the VTVM, DC power supply and oscilloscope.

a. Connect a 10 ohm resistor to the recording head in series and set the DC power supply at 7.5 volts.

b. While pressing the select button (35, Fig. 4) in the cartridge compartment, take a reading of voltage across the resistor. Turn the wiper arm of the variable resistor (RV207) on the left side housing of the main circuit board so that the reading is between 45 to 50 mV.

c. The wave form of the oscilloscope must be symmentric at upper and lower sides.

(18) CAMERA SPEED ADJUSTMENT

Camera speed can be checked by inserting the mirror block into the camera and using a shutter strobo, or by means of an accurate stop watch for timing and countering the revolution of the take-up gear. The take-up gear makes approximately one revolution per frame at each of speed settings.

Shutter Strobo Method

a. Connect the power supply to the camera and set the voltage at 7.5 volts.

b. Set the camera speed knob at 24 fps. While camera running, adjust the strobo until the shutter appears motionless. Nominal shutter speed at 24 fps is 1440 r/min, but a speed between 1320 and 1560 r/min is acceptable. (24 ± 2 fps)

c. Adjustment is made by means of turning the variable resistor (RV203) on the main printed circuit borad.

d. In the same manner as above, check camera speed at the setting of 18 fps. Nominal shutter speed at 18 fps is 1080 rpm. (Acceptable range: 960 to 1200 r/min - 18 ± 2 fps.)

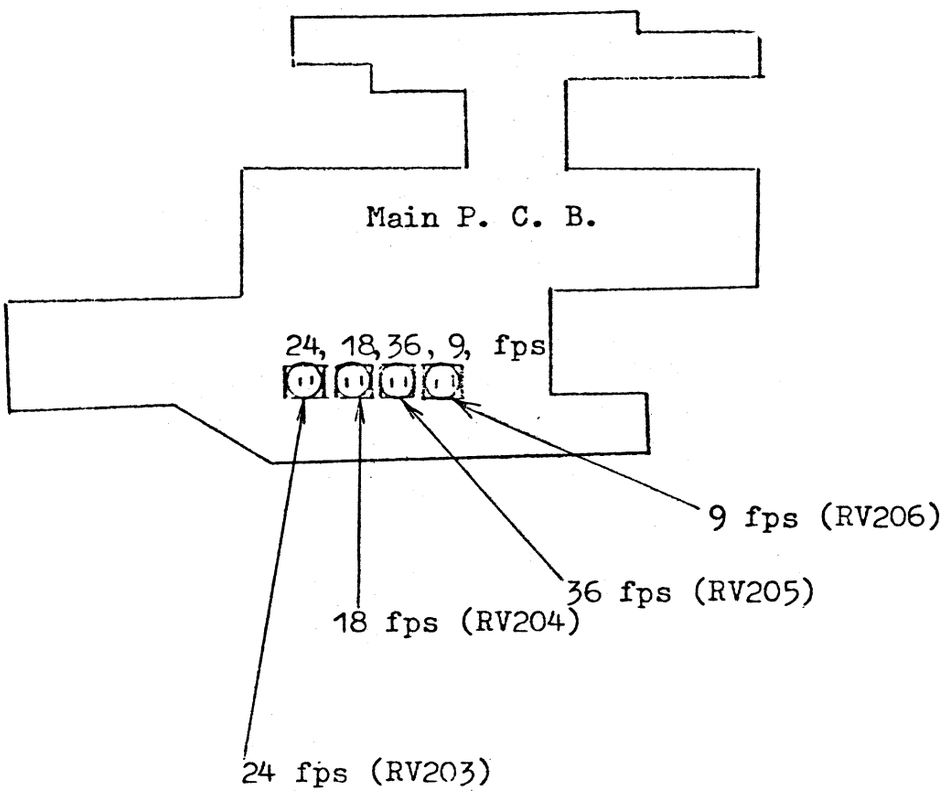
e. If necessary, turn the wiper arm on the variable resistor (RV204) on the main printed circuit board.

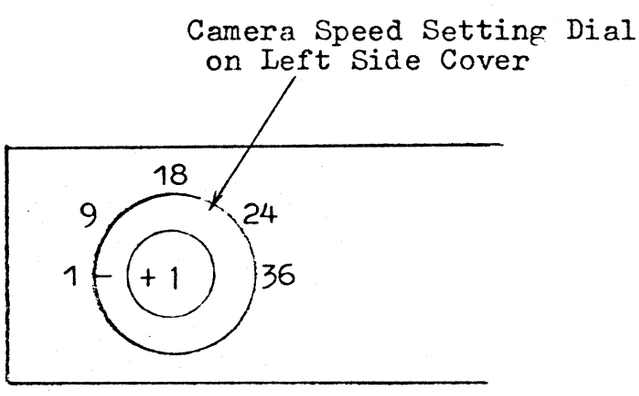
f. Similarly, check the camera speed for 36 fps and 9 fps.
Acceptable ranges are as follows:

36 fps:	36 ± 2 fps	(2040 to 2280 r/min)
9 fps:	9 ± 1 fps	(480 to 600 r/min)

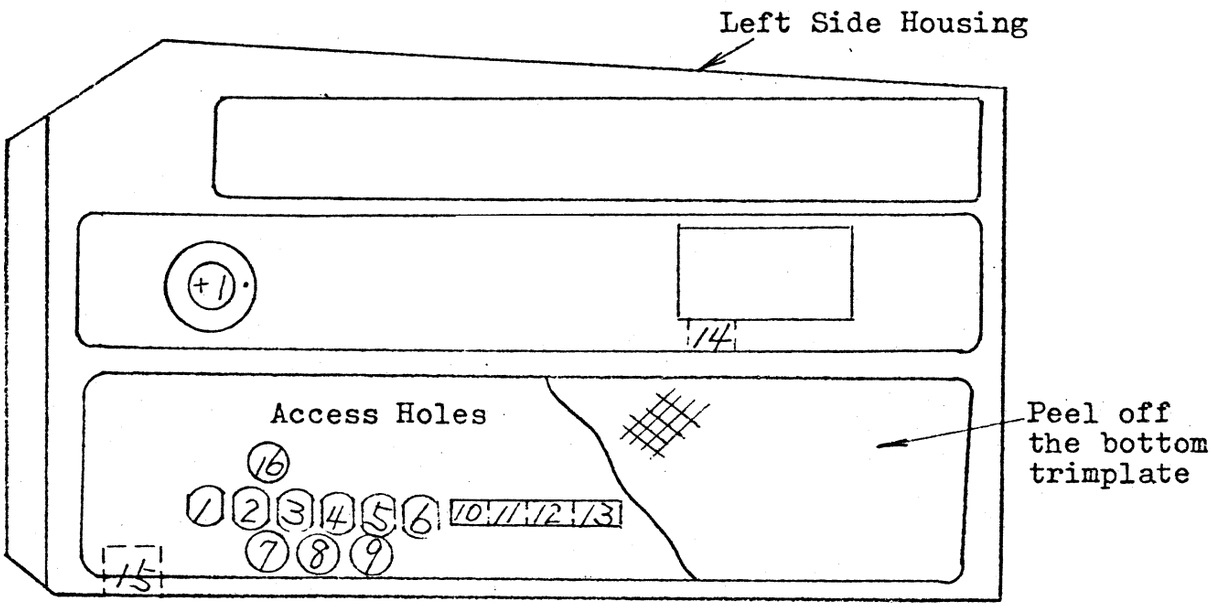
The adjustment is made by turning the variable resistors. (RV205 for 36 fps and RV206 for 9 fps.)

Variable Resistors for Camera Speed Adjustment





VARIABLE RESISTORS



1. E.E. Trim Adjustment at back light (+1 f/stop)
2. E.E. Trim Adjustment at 18 fps (ASA 40)
3. E.E. Trim Adjustment at 18 fps (ASA 160)
4. Sound and Picture Synchronization
5. Fade-In Adjustment
6. Fade-Out Adjustment
7. E.E. Trim Adjustment at 9 fps.
8. E.E. Trim Adjustment at 24 fps
9. E.E. Trim Adjustment at 36 fps

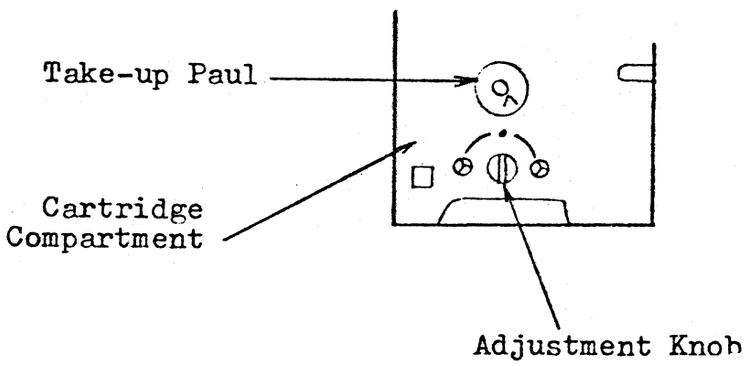
10. Camera Speed Adjustment (24 fps)
11. Camera Speed Adjustment (18 fps)
12. Camera Speed Adjustment (36 fps)
13. Camera Speed Adjustment (9 fps)
14. Camera Mechanism Stop Voltage Adjustment
15. Recording Bias Adjustment
16. E.E. Trim Adjustment at 18 fps (ASA 400)

(19) CHECK FOR MANUAL E.E. TRIM FINE CONTROL

Equipment to be used for this check are:
light source, dummy cartridge and electric volt meter.

a. Insert the dummy cartridge into the camera, with ASA knob set at ASA 40.

b. Set the illumination of light source at 600 foot-Lambert and also set the manual E.E. trim adjustment knob in the cartridge compartment at "dot" position.
The reading should be within the limits of the normal E.E. trim adjustment.



c. Turn the control knob to iris-closing side and check the reading, the focal plane illumination change should be more than +0.75 f/stop.

d. When turning the control knob to iris-opening side, the iris change should be more than -0.75 f/stop.

e. Should the above limits are not obtained, replace the variable resistor or check the electric circuit on the camera.

(20) E.E. TRIM CHECK AND ADJUSTMENT

Tools and instruments required for the camera E.E. trim adjustment are dummy cartridge, light box, amplifier, VTVM, D.C. power supply unit and dummy battery.

a. Set-up Instructions

The light box, VTVM and amplifier should be turned on 10 minutes or so before starting the check. The light box should be calibrated to ensure 600 F.L. at high light setting and 150 F.L. at low light setting. Also, check to make sure that the amplifier secures the proper sensitivity.

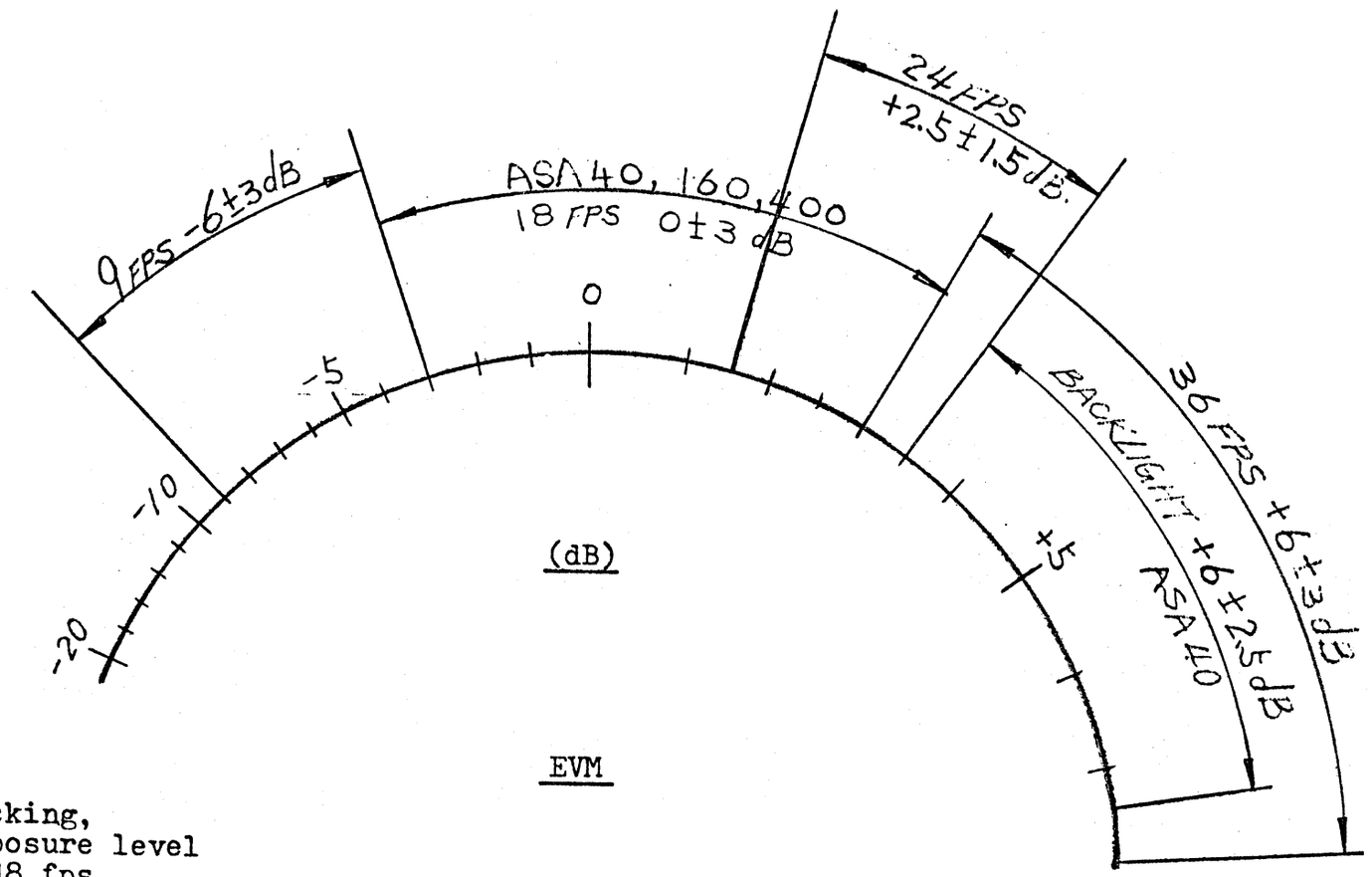
b. A.S.A. 40 Trim at 18 fps (Refer to Fig. Y)

1. Place the camera in position in front of the light box.
2. Install the dummy cartridge to the camera.
3. Slide the actuator knob to "lamp bulb" mark and the type A filter is removed from its normal position in front of the prime lens.
4. Set the camera speed dial at 18 fps.
5. Set the cartridge A.S.A. setting knob to A.S.A. 40.
6. Turn the amplifier switch to A.S.A. 40.
7. Set the VTVM voltage range to read 15mV full scale.
8. Set the D.C. Power supply at 7.5 volts.
9. Run the camera. The VTVM should read within the limits of 0±3 dB.

When necessary, adjust the trimmer (RV 8) that is third from the left of six variable resistors on the E.E. circuit board. (Refer to Fig. Z)

DES. 1008XL

FIG. Y LIMITS OF EXPOSURE LEVEL



*Before checking, set the exposure level of ASA 40 18 fps as "0"(zero).

c. ASA 160/400 Trim at 18 fps (Refer to Fig. Y and Z)

1. Proceed check as in ASA 40 trim with the amplifier set at 160/400.

2. The VTVM (EVM) should read within the limits of 0±3 dB. If adjustment is required, turn the wiper arm of the variable resistor on the E.E. circuit board.

d. E.E. Trim at 24 fps (Refer to Fig. Y and Z)

1. Set the camera speed dial at 18 fps and turn the ASA setting knob on the dummy cartridge to ASA 40.

2. Set the light box at "high light" (600 FL). Set the VTVM (EVM) pointer to "0 dB". (Refer to step b - ASA 40 trim at 18 fps.)

3. Trun the camera speed selector to 24 fps. VTVM should read +2.5±1.5 (dB).

4. The adjustment can be made by turning the wiper arm of the variable resistor in the center of the three variable resistor on the E.E. circuit board.

e. E.E. Trim at 9/36 fps (Refer to Fig. Y and Z)

1. Proceed check as in ASA 40 trim check.

2. Set the camera speed selector to 9/36 fps. The reading on the VTVM should be -6±3 dB for 9 fps setting and +6±3 dB for 36 fps setting.

3. If required, adjust the variable resistors as shown in Fig. Z.

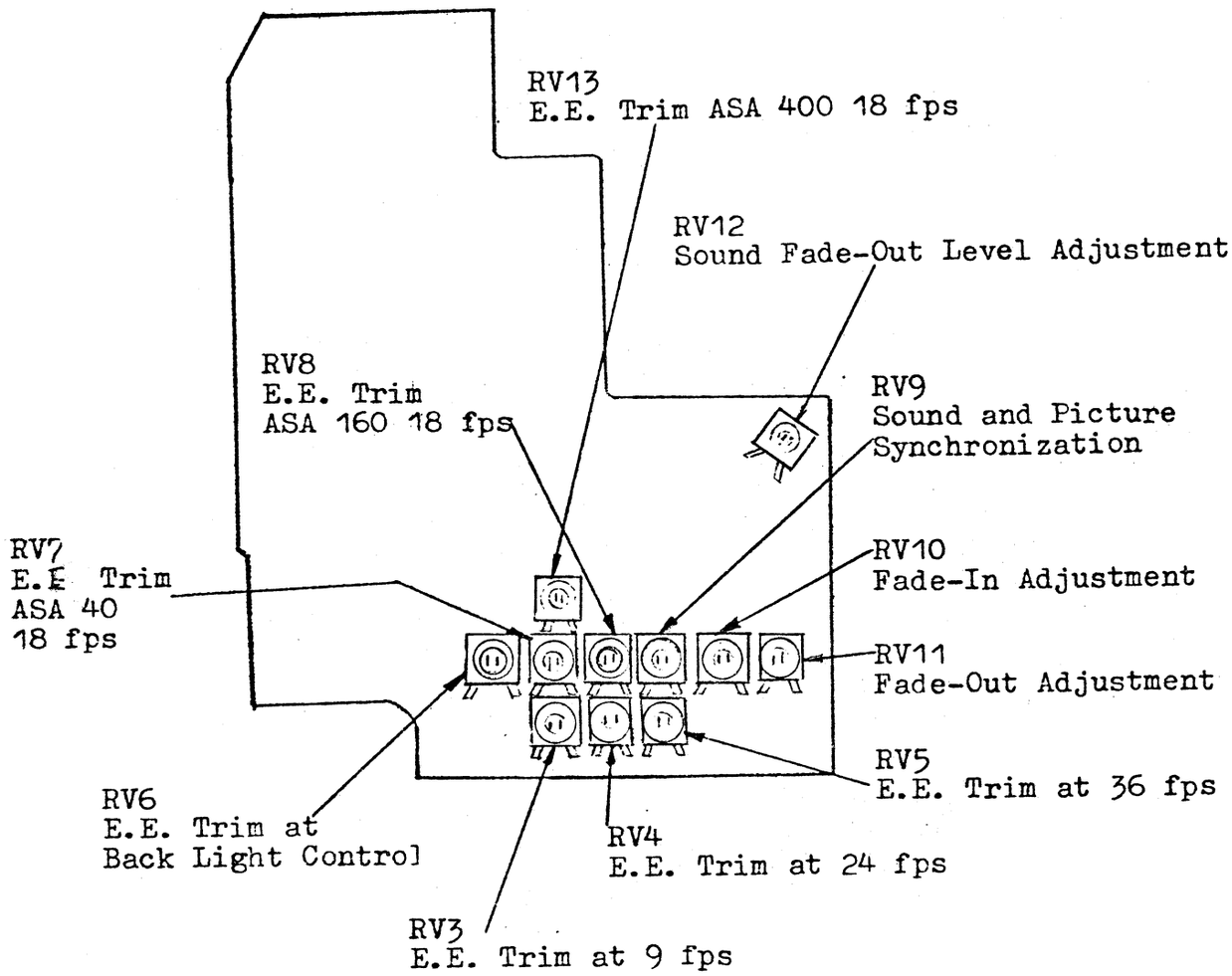


Figure Z. Variable Resistors for Exposure Control

(21) EXPOSURE FADE AND SOUND FADE

A. Fade Control Check

a. Turn the ASA setting knob on the dummy cartridge to ASA 40 and set the light box at 50 foot-Lambert.

b. Feed a 400Hz 0.1mV signal into the camera, and make sure that sound is heard through a monitor earphone.

c. Run the camera and depress the fade button.

d. Make sure that exposure and sound are gradually decreased and finally red mark appears as soon as f/45 mark is passed over.

e. The iris scale must move smoothly without any jumping.

B. Fade-Out (Refer to Fig. A1)

a. Insert the dummy cartridge into the camera with ASA setting knob set at ASA 40.

b. Set the camera speed control at 18 fps and also set the scene brightness at 50 FL.

c. Depress the fade button. While observing the iris scale in the viewfinder, make sure that -

- The fade-out starts within 2±1 seconds after the fade button is depressed.
- The iris scale moves smoothly without any jumping.
- The exposure change (fade-out) is made within 2±1.2 seconds.

d. If necessary, turn the arms of the variable resistors so that fade-out is performed as shown in Fig. A1.

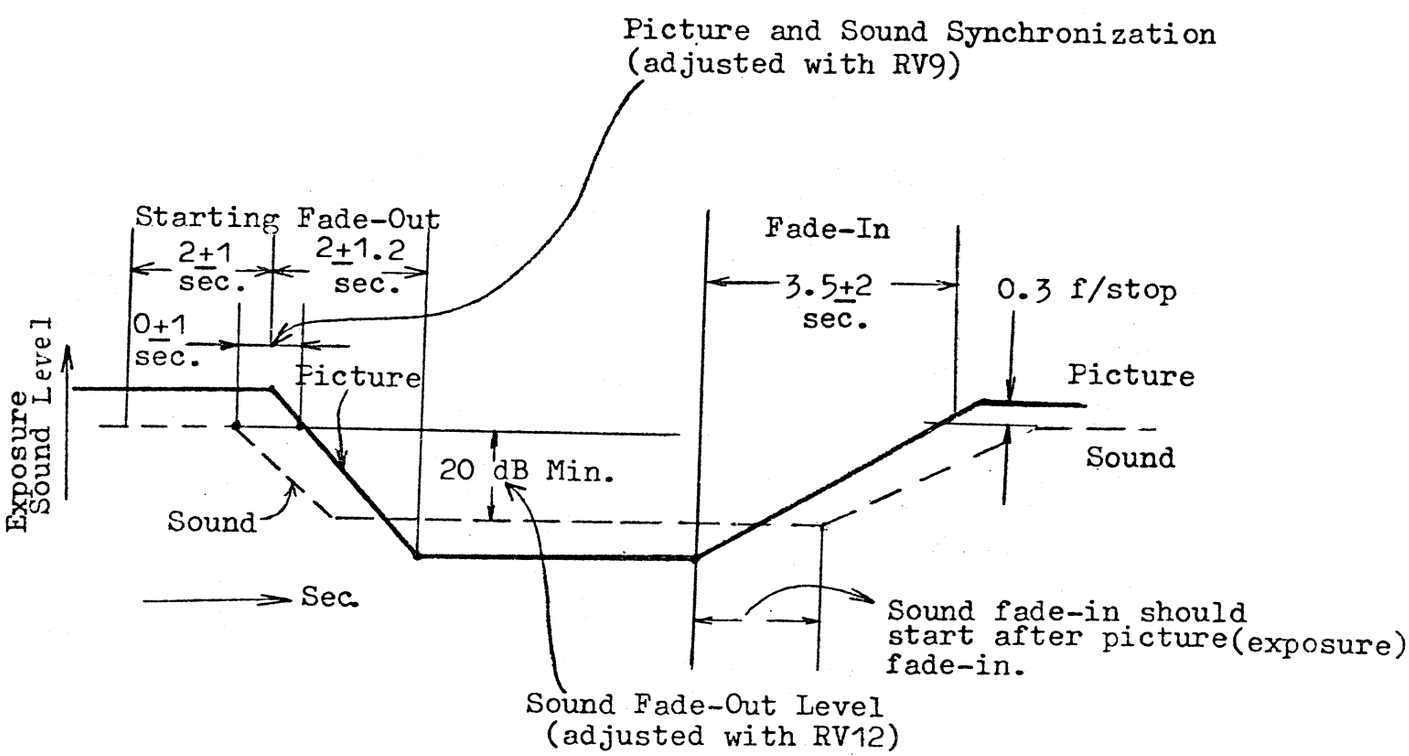


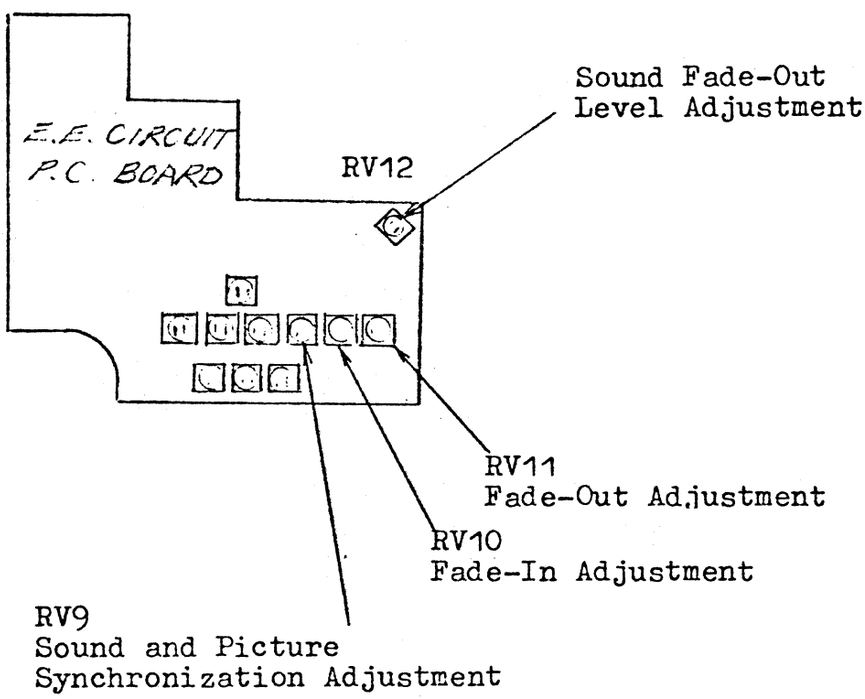
Figure A1. Fade-In/Out

C. Fade-In (Refer to Fig. A1)

a. Release the fade button as soon as red mark appears in the left of the viewfinder.

b. While observing the viewfinder, make sure that

- The picture (exposure) fade-in starts before the sound fade-in.
- The completion of the picture fade-in is made within 3.5±2 seconds.



(22) BACK LIGHT CONTROL CHECK

a. Proceed the check as in ASA 40 trim check.

b. When the back light button is depressed, the reading should be +6 ±1.5 dB greater than that of ASA 40 check. (Refer to Fig. Y.)

PARTS CATALOG

SUPER 8
SOUND MOVIE CAMERA

BEAULIEU 1008 XL

FEBRUARY 1978

Replacement Parts

The following pages illustrate and list, by part number and description, all replaceable parts for the Beaulieu 1008XL Super-8 sound movie camera.

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
			FIGURE 1. CAMERA BODY ASSEMBLY (1)	
	1	044562	EARPHONE ASSEMBLY	1
	2	044550	MICROPHONE SET	1
	3	044472	HOOD AND RING ASSEMBLY	1
	4	044592	LENS CAP ASSEMBLY	1
	5	437845	SCREW, Accessory shoe	1
	6	437844	SPRING, Accessory shoe	1
	7	439131	SCREW, M2x6, flat head	3
	8	437843	SHOE, Accessory	1
	9	437856	PLATE, Initial	1
	10	437863	TRIMPLATE, Right side	1
	11	438719	SCREW, M2.3x8, self tap	1
	12	438562	SCREW, M2.6, B-tite	2
	13	439412	SCREW, M2x4, flat head	2
	14	044570	RIGHT SIDE HOUSING ASSEMBLY (Refer to Figure 5 for breakdown of components)	1
	15	437849	EYESHADE	1
	16	437853	TRIMPLATE, Control panel	1
	17	437871	WINDOW, Footage	1
	18	437872	SCALE, Footage	1
	19	437873	BRACKET, Footage	1
	20	437854	TRIMPLATE, Middle, viewfinder	1
	21	437855	TRIMPLATE, Bottom, viewfinder	1
	22	439131	SCREW, M2x6, flat head	2
	23	437851	HOLDER, Shutter Knob, eyepiece	1
	24	437850	KNOB, Shutter, eyepiece	1
	25	436602	SCREW, M3x8, B-tite	1
	26	438883	SCREW, M2.3x6	2
	27	439140	SCREW, M2.3x10, B-tite	1
	28	437161	SCREW, M2.6x12, B-tite	1
	29	438562	SCREW, M2.6x6, B-tite	3
	30	044565	LEFT SIDE HOUSING ASSEMBLY (Refer to Figure 7 for breakdown of components)	1
	31	439682	SCREW, M2x3	3
	32	437917	TRIMPLATE, Serial number	1
	33	044551	CARTRIDGE DOOR ASSEMBLY (Refer to Figure 6 for breakdown of components)	1
	34	438719	SCREW, M2.3x8, self tap	2
	35	438542	COVER, Mechanism	1
	36	044552	BATTERY CASE ASSEMBLY	1
	37	437837	SHIELD PLATE, Grip	1
	38	044553	GRIP AND HOLDER ASSEMBLY (Refer to Figure 9 for breakdown of components)	1
	39	437968	ARM, Door latch	1
	#1	441025	SPACER, TAKE UP SHAFT.	1

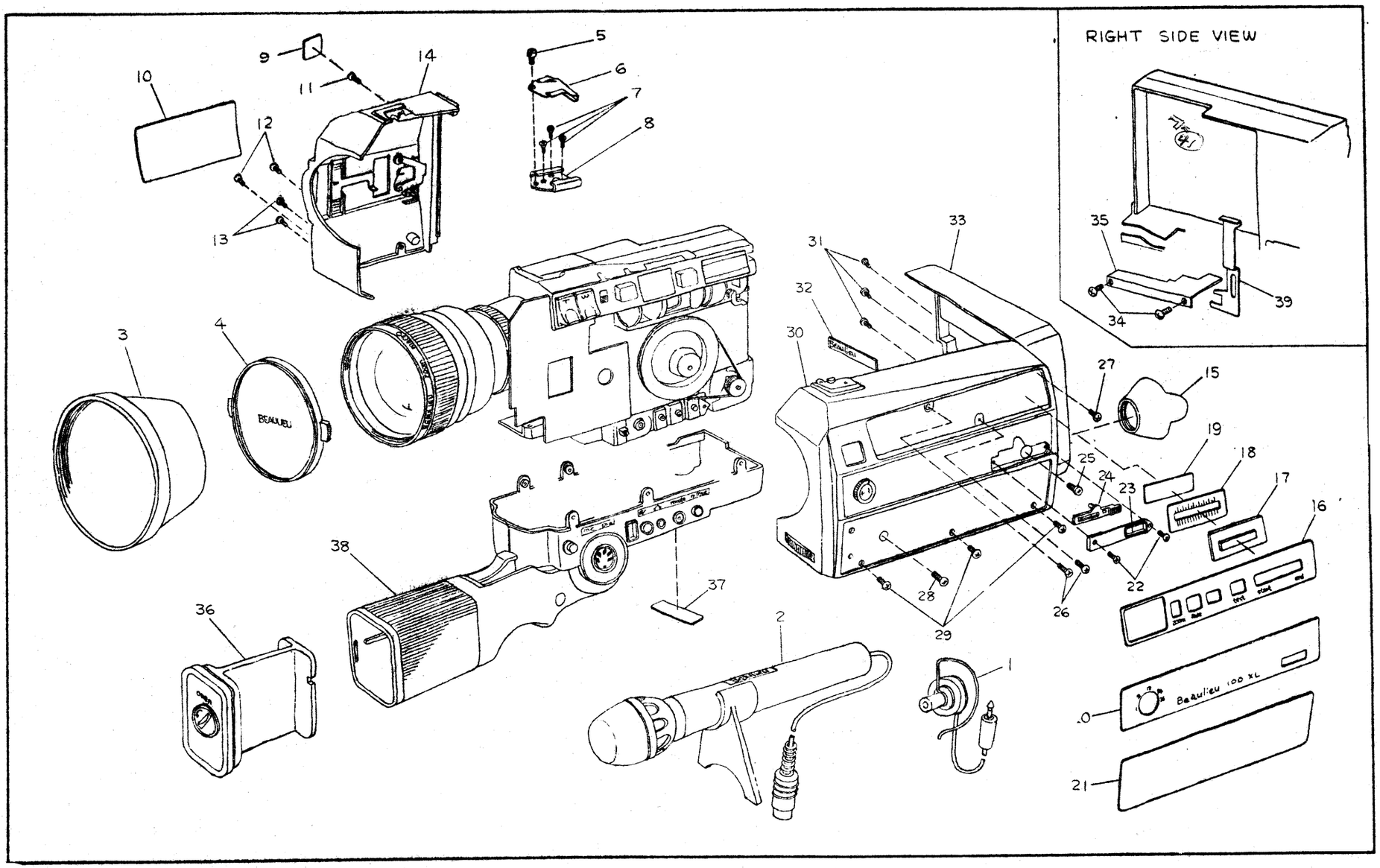


Figure 1 Camera Body Assembly (1) - CAMERA COMPLETE - **1008 XL**

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
			FIGURE 2. CAMERA BODY ASSEMBLY (2)	
	1	438412	BELT, Rubber	1
	2	438558	RING, Retaining	1
	3	438450	WASHER, Thrust	1
	4	043844	FLYWHEEL ASSEMBLY	1
	5	440051	WASHER, Flat	1
	6	044574	CONTROL PANEL AND FLEXIBLE P.C.B.ASSEMBLY (Refer to Figure 11 for breakdown of components)	1
	7	436239	SCREW , M2.3x5, B-tite	2
	8	044573	E.E. CIRCUIT P.C.B. ASSEMBLY	1
	9	436362	SCREW, M2.6x7, B-tite	2
	10	439516	SCREW, M2.6x10	2
	11	044584	ZOOM LENS ASSEMBLY (Refer to Figure 8 for breakdown of components)	1
	12	439279	LEVER, Filter	1
	13	436357	SCREW, M2x3	1
	14	439097	SCREW, M2x6	2
	15	044568	VIEWFINDER TUBE ASSEMBLY	1
	16	437919	KNOB, Trim adjustment	1
	17	437918	LINK, Trim adjustment	1
	18	436239	SCREW, M2.3x5	3
	18A	439140	SCREW, M2.3x10, B-tite	1
	19	436412	SCREW, M2.3x7, B-tite	1
	20	044595	MAIN P.C.B. ASSEMBLY (Refer to Figure 14 for breakdown of components)	1
	21	438769	SCREW, M2x6, pan head	1
	22	438665	COVER, Head, recording	1
	23	436357	SCREW, M2x3	1
	24	437920	DECORATIVE PLATE	1
	25	439021	SCREW, M2x4	1
	26	439140	SCREW, M2.3x10, B-tite	2
	27	044571	E.E. METER ASSEMBLY	1
	28	044757	IRIS SCALE AND BLADE ASSEMBLY	1
	29	439262	GRIP RING	2
	30	436362	SCREW, M2.6x7, B-tite	2
	31	044575	FRONT CHASSIS ASSEMBLY (Refer to Figure 3 for breakdown of components)	1
	32	437955	SHIELD PLATE	1
	33	437836	CAM, Synchroflash	1
	34	438425	SPRING, Trigger arm	1
	35	044579	REAR CHASSIS ASSEMBLY (Refer to Figure 4 for breakdown of components)	1
	36	25964	CLAMP	1
	37	436239	SCREW, M2.3x5	1

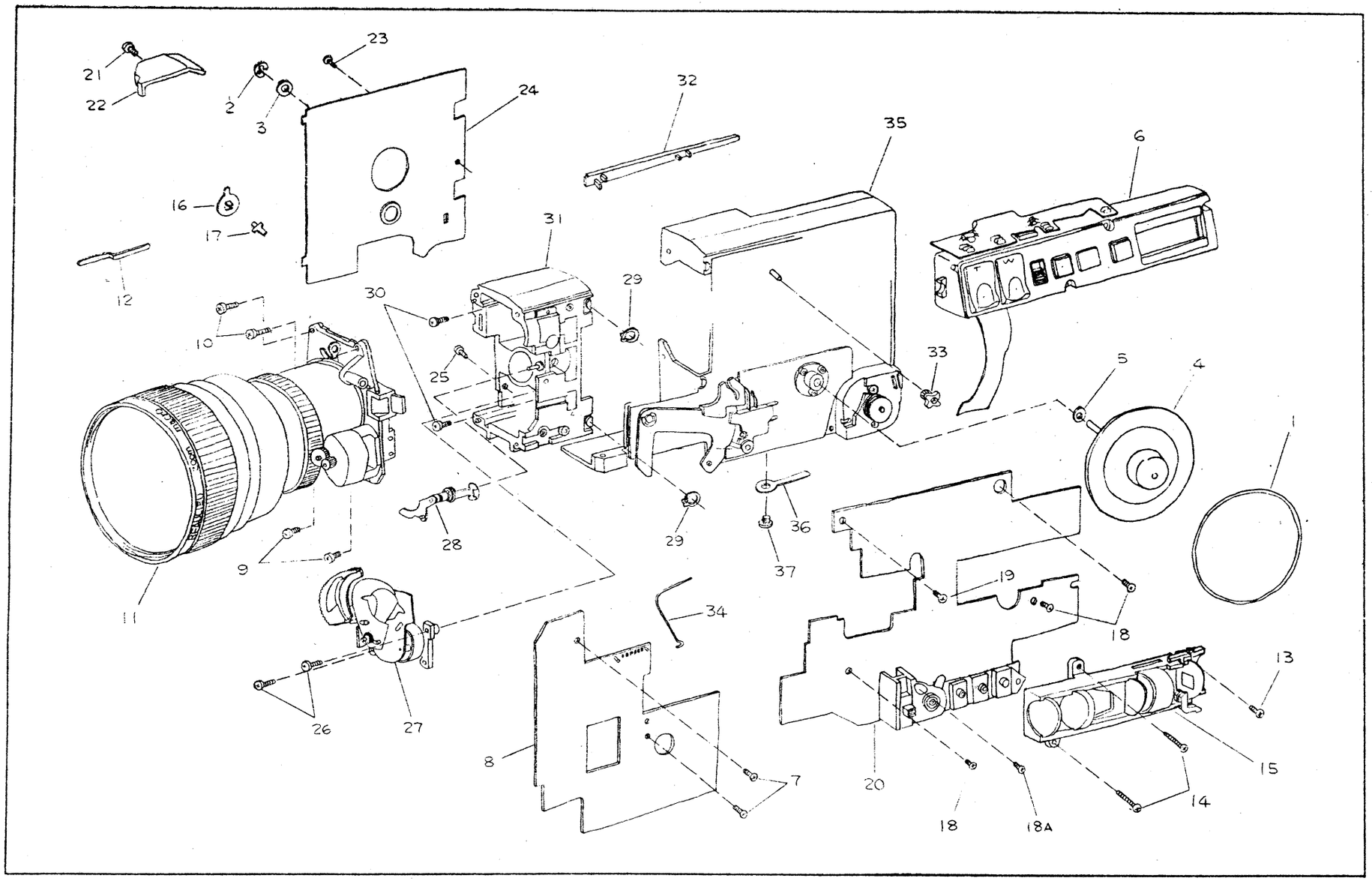


Figure 2. Camera Body Assembly (2) - CAMERA COMPLETE-1008 XL

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
			FIGURE 3. FRONT CHASSIS ASSEMBLY (P-044575)	
	1	436604	SCREW, M2X5	2
	2	439288	PLATE, Stay, ASA	1
	3	044129	ASA CONTACT ASSEMBLY	1
	4	439147	SPRING, ASA	1
	5	044576	ASA P.C.B. ASSEMBLY	1
	6	044682	STUD AND WIRE ASSEMBLY	1
	7	439133	SCREW, M2X5, B-tite	2
	8	439131	SCREW, M2X6, Flathead	1
	9	044221	APERTURE ASSEMBLY	1
	10	440265	SLEEVE	1
	11	438702	SCREW, M2.5X6	2
	12	439676	SUPPORT, Photocell	1
	13	439149	GEAR, Idler	1
	14	044346	SHUTTER ASSEMBLY	1
	15	434439	PIN, Shutter – 440958	1
	16	439307	LIGHT PIPE, Photocell	1
	17	439780	LIGHT EMITTING DIODE (cement in place)	1
	18	044189	MAIN MOTOR ASSEMBLY	1
	19	436604	SCREW, M2X5	2
	20	044356	SOLENOID AND WIRE ASSEMBLY	1
	21	436604	SCREW, M2X5	1
	22	439289	HOLDER, Motor contact	1
	23	439142	CONTACT, "A" Motor	1
	24	439145	INSULATION	1
	25	439144	CONTACT, "B" Motor	1
	26	439021	SCREW, M2 (motor contact adjustment)	1
	27	436604	SCREW, M2X5	1
	28	439138	SPRING, Focus adjustment	1
	29	439137	SLEEVE, Focus adjustment	1
	30	[illegible]	[illegible] (cement in place)	1
	31	[illegible]	SPACER, right side housing [illegible] (cement in place)	1
	32	439099	SPACER, Left side housing (cement in place)	1
	33	021322	PRIME LENS ASSEMBLY	1
	34	437935	CHASSIS, Front	1
	35	439844	SPRING, Clamp	1
	36	436336	PHOTOCELL, Cds	1

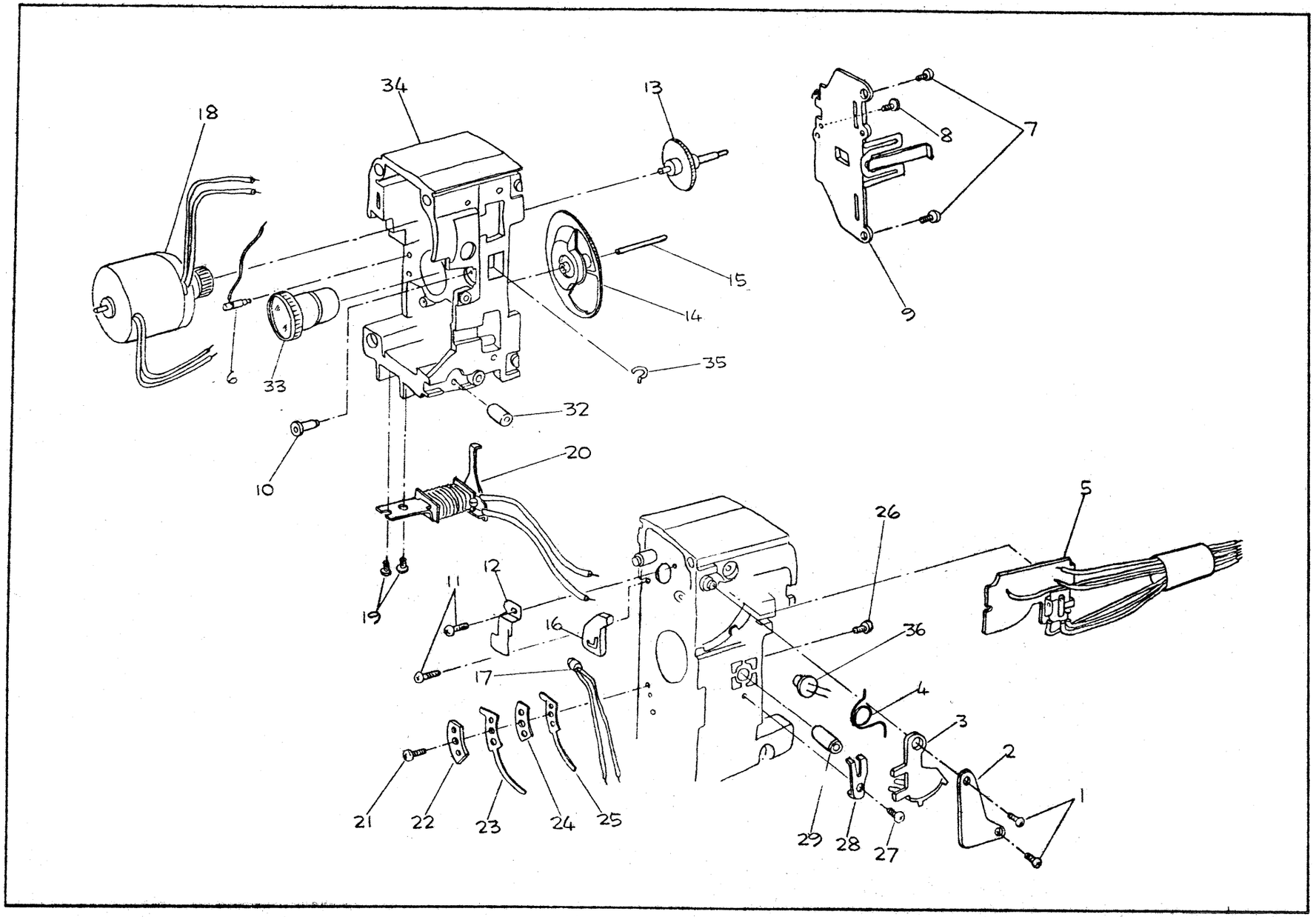
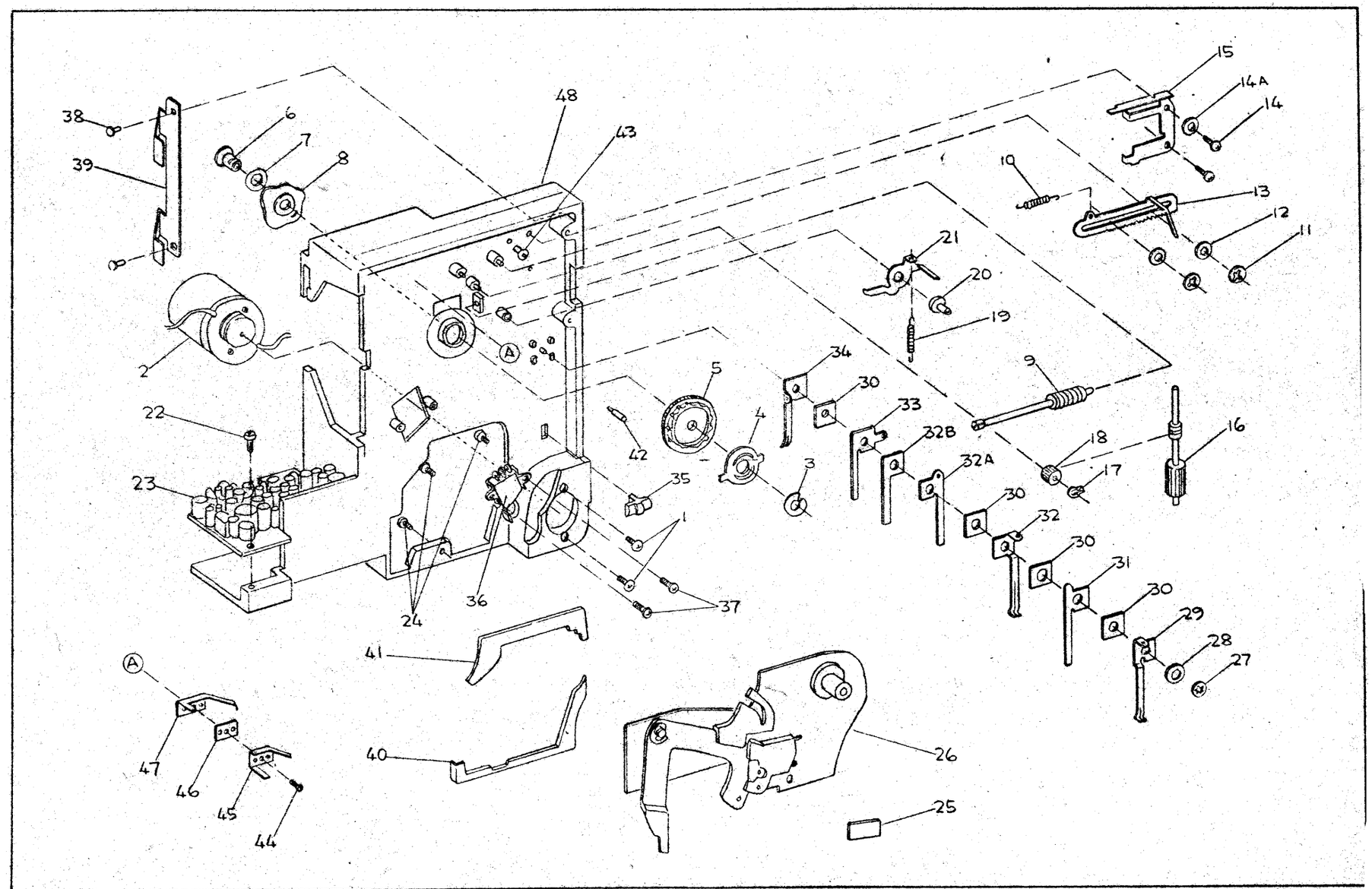


Figure 3. Front Chassis Assembly SUPPORT PRIMAIRE **1008 XL**

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
			FIGURE 4. REAR CHASSIS ASSEMBLY (P-044579)	
	1	439538	SCREW, M2.5	2
	2	044668	CAPSTAN DRIVE MOTOR ASSEMBLY	1
	3	439159	RETAINER, Take-up	1
	4	439627	SPRING, Take-up	1
	5	439155	GEAR, Take-up	1
	6	044283	PIN AND STUD ASSEMBLY, Take-up	1
	7	439317	WASHER, Take-up	1
	8	439158	PAWL, Take-up	1
	9	044138	TAKE-UP SHAFT ASSEMBLY	1
	10	436148	SPRING, Footage counter	1
	11	434726	GRIP RING	2
	12	439165	WASHER	2
	13	437874	POINTER, Footage	1
	14	436357	SCREW, M2X3	2
	14A	438058	WASHER	1
	15	439591	BRACKET, Footage gear	1
	16	044120	FOOTAGE GEAR ASSEMBLY	1
	17	439104	SNAP RING	1
	18	439163	GEAR, Idler, footage counter	1
	19	436148	SPRING, Film transport indicator	1
	20	439942	SLEEVE, Film transport indicator	1
	21	439974	INDICATOR, Film transport	1
	22	436239	SCREW, M2.3, B-tite	1
	23	044583	AMPLIFIER P.C.B. ASSEMBLY (Refer to Fig. 12 for breakdown of components)	1
	24	438516	SCREW, M2.5	3
	25	438776	TAPE, Insulator "A"	2
	26	044581	MECHANISM ASSEMBLY (Refer to Fig. 10 for breakdown of components)	1
	27	439007	PUSH NUT,	1
	28	438654	WASHER	1
	29	438448	CONTACT, Motor "B"	1
	30	438543	INSULATOR	4
	31	438447	SPRING, Motor "B"	1
	32	437977	CONTACT "S"	1
	32A	440054	CONTACT	1
	32B	438361	INSULATOR	1
	33	438360	CONTACT, "E"	1
	34	438359	CONTACT, "D"	1
	35	438446	BUTTON, Select	1
	36	044172	SWITCH ASSEMBLY	1
	37	436604	SCREW, M2X5	2
	38	438804	RIVET	2
	39	438513	SPRING, Cartridge compartment	1
	40	438711	GASKET, Mechanism, (lower)	1
	41	438703	GASKET, Mechanism, (upper)	1
	42	437953	SHAFT, Synchro Cam	1
	43	439592	KNOB, Footage Gear	1
	44	439021	SCREW, Contact	1
	45	044596	CONTACT ASSEMBLY, "B"	1
	46	437908	INSULATOR, Synchroflash contact	1
	47	044597	CONTACT ASSEMBLY, "A"	1
	48	437934	CHASSIS, Rear	1



Flaure 4. Rear Chassis Assembly - SUPPORT CASSETTE - 1008 XL

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
			FIGURE 5. RIGHT SIDE HOUSING ASSEMBLY (P-044570)	
	1	436604	SCREW, M2x5	2
	2	438745	SPRING, Latch lock	1
	3	438744	SPRING, Door knob	1
	4	438058	WASHER, Brass	1
	5	438742	ARM, Door latch	1
	6	438743	BRACKET, Door knob	1
	7	437857	KNOB, Cartridge door	1
	8	438811	SHIELD, Knob	2
	9	437860	TRIMPLATE, Cartridge door	1
	10	439758	MANUAL LEVER, Type A filter	1
	11	437858	KNOB, Type A	1
	12	437861	TRIMPLATE, Type A filter	1
	13	437859	TRIMPLATE, Manual	1
	14	437970	COVER, Right side	1

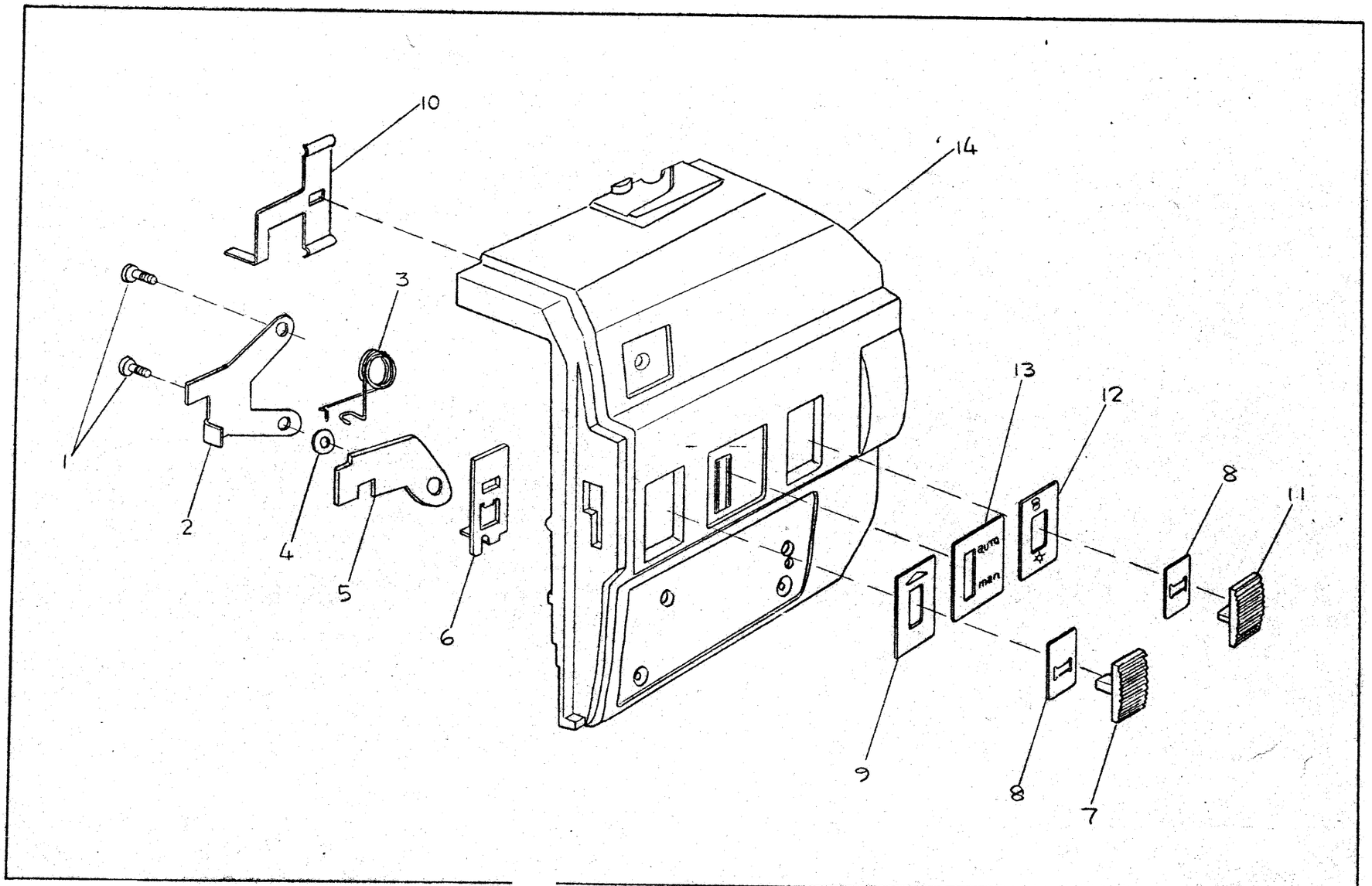


Figure 5. Right Side Housing Assembly - CARTER DROIT - 1008 XL

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
		FIGURE 6.	CARTRIDGE DOOR ASSEMBLY (P-044551)	
	1	437878	TRIMPLATE, Cartridge door	1
	2	438536	LIGHT SHIELD	1
	3	437877	WINDOW, Cartridge door	1
	4	437813	DOOR, Cartridge compartment	1

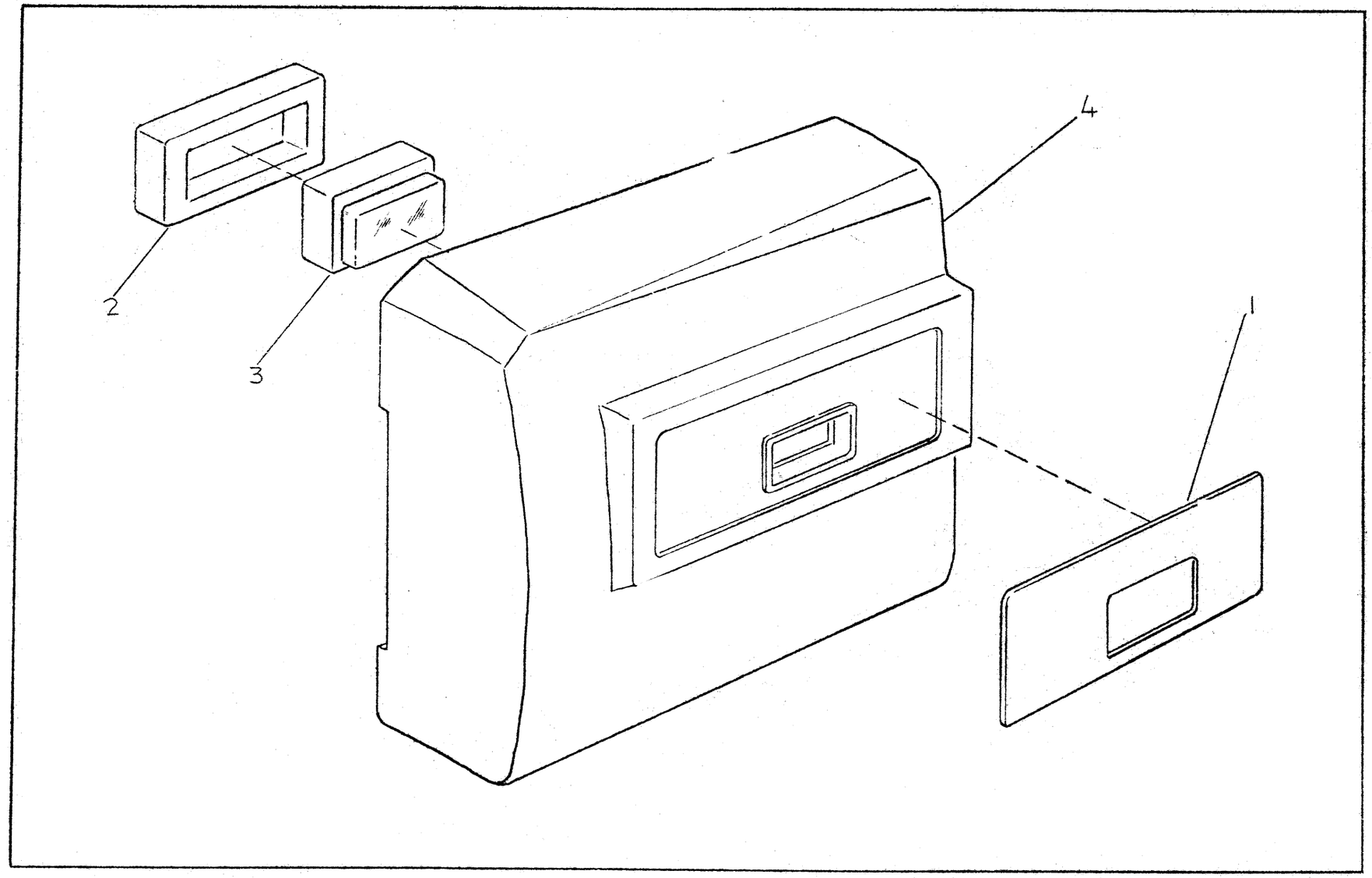


Figure 6. Cartridge Door Assembly - PORTE DE CASSETTE - 1008 XL

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY

FIGURE 7. LEFT SIDE HOUSING ASSEMBLY (P-044565)

	1	439412	SCREW, M2x4, flat head	2
	2	437946	CLAMP	1
	3	439133	SCREW, M2x7	1
	4	437928	BRACKET, Support	1
	5	437841	BUTTON, Back-light	1
	6	437817	SCREW, M1.4x3.5	2
	7	437842	DETENT	1
	8	437840	KNOB, Speed selector	1
	9	437817	SCREW, M1.4x3.5	1
	10	437904	BRACKET, Knob, cue light	1
	11	437903	KNOB, Cue light	1
	12	044556	CUE LIGHT ASSEMBLY	1
	13	439133	SCREW, M2x7	1
	14	438492	STOPPER, Capstan	1
	15	439133	SCREW, M2x7	1
	16	437951	WASHER, Flat	1
	17	437852	SHUTTER, Viewfinder	1
	18	044566	EYEPIECE ASSEMBLY	1
	19	437848	HOLDER, Eyepiece	1
	20	437846	KNOB, Eyepiece	1
	21	437948	SPRING, Washer	1
	22	437937	HINGE, Cartridge door	1
	23	437954	HOUSING, Left side (painted)	1

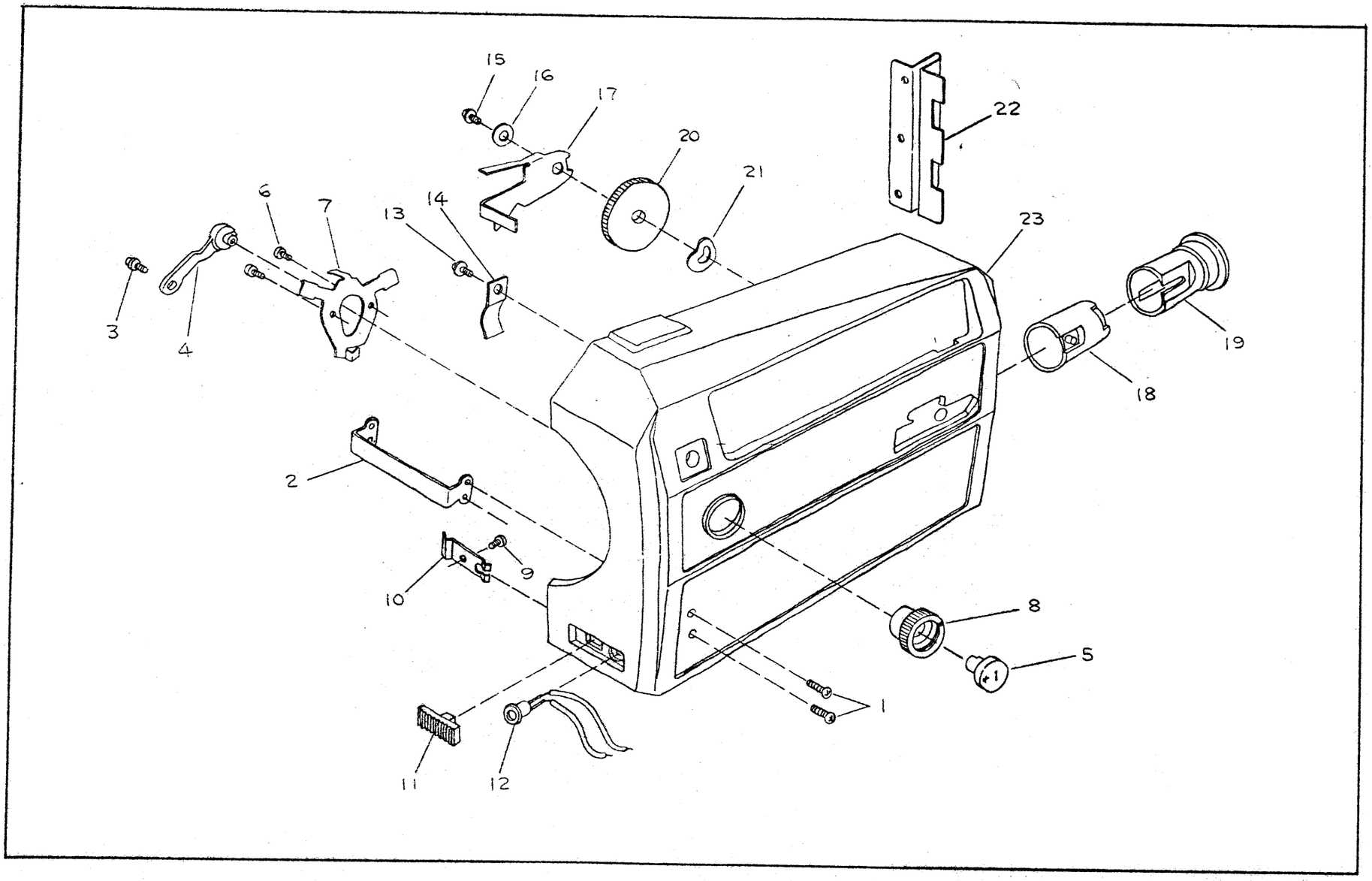


Figure 7. Left Side Housing Assembly - CARTER GAUCHE - **1008 XL**

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
			FIGURE 8. ZOOM LENS ASSEMBLY (P-044584)	
	1	436148	SPRING, Extension	1
	2	437169	RING, Retaining	1
	3	044557	TYPE A FILTER ASSEMBLY	1
	4	439021	SCREW, M2x4	1
	5	437973	WASHER, Nylon	1
	6	440052	CONTACT, Type A	2
	7	440053	INSULATOR, Type A	1
	8	439515	SCREW, Zoom motor	2
	9	439821	WASHER, Internal toothed washer	1
	10	044235	ZOOM MOTOR ASSEMBLY	1
	11	439511	MOUNT BLOCK, Zoom motor	1
	12	439986	SCREW, M2x10, pan head	2
	13	439056	ACTUATOR, Arm, type A filter	1
	13A	439433	STUD, Guide	2
	14	439445	SCREW, M2x8, pan head	2
	15	044587	F1.2 6.5x ZOOM LENS UNIT ASSY	1
	16	044585	LENS MOUNTING PLATE ASSEMBLY (including items 17 thru 20)	1
	17	044277	*ACTUATOR AND BRACKET ASSEMBLY	1
	18	439616	*MIRROR, Reflex, viewfinder	1
	19	204522	*LENS ELEMENT, First, viewfinder	1
	20	044622	*DICHROIC MIRROR AND BRACKET ASSEMBLY	1
	21	Order P-044585 Lens Mounting Plate Assembly		

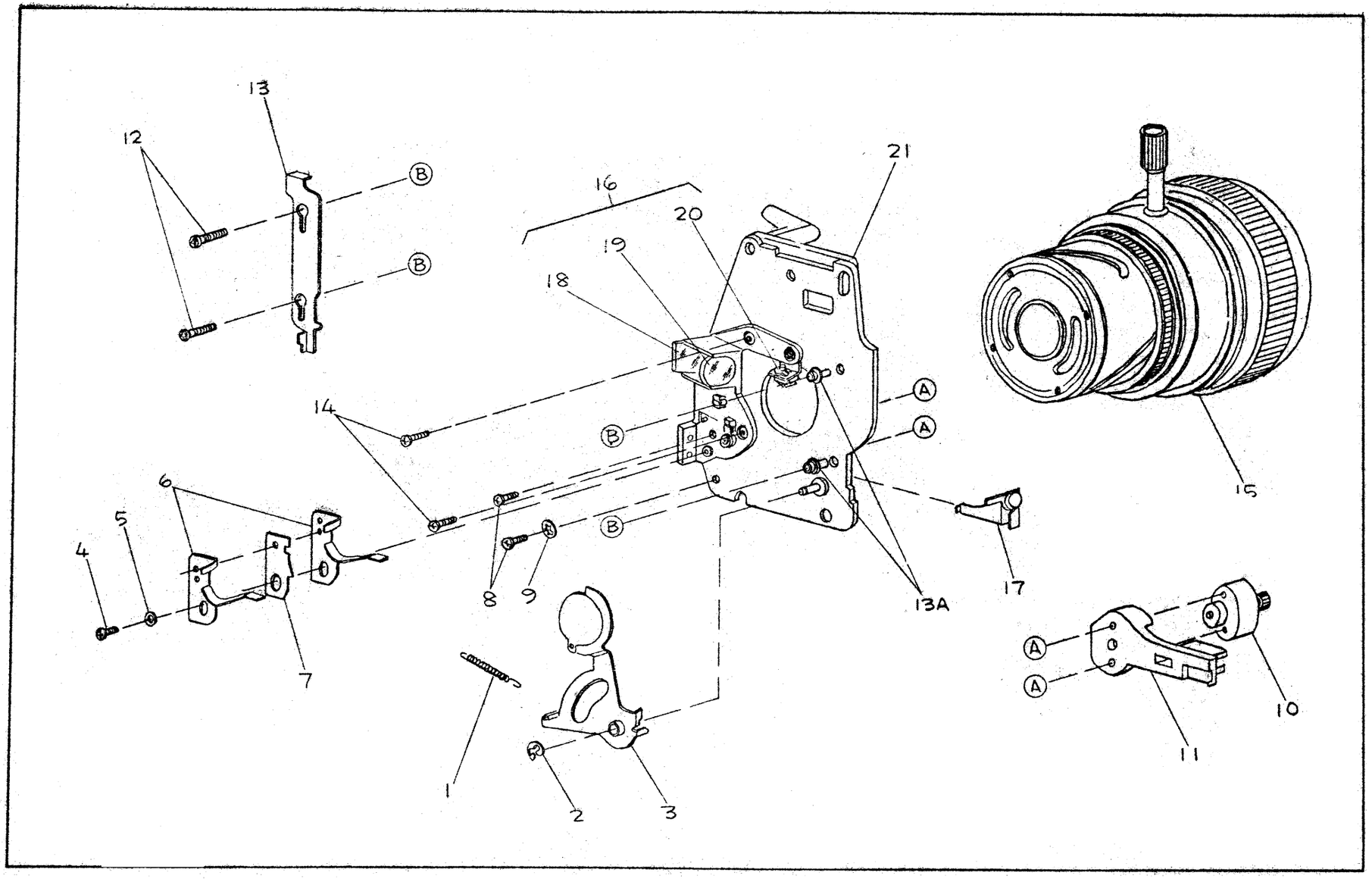


Figure 8. Zoom Lens Assembly - OBJECTIF COMPLET 1008 XL

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY

FIGURE 9. GRIP AND HOLDER ASSEMBLY (P-044553)

1	437938	SPRING, Lock button	1
2	439262	GRIP RING	1
3	044600	PUSH BUTTON ASSEMBLY	1
4	438373	SCREW, M2x10	3
5	437834	HINGE PIN, Right side	1
6	437916	RING, Washer	1
7	044702	STRAP AND RING ASSEMBLY	1
8	440138	WASHER	1
9	440139	WASHER, Wave	1
10	437825	BRACKET, Hinge Pin, left side	1
11	044561	DIN JACK ASSEMBLY	1
12	437881	RUBBER, Grip	1
13	437957	SHIELD PLATE, Grip	2
14	437826	SCREW, Stud, lock	2
15	044653	CONNECTOR ASSEMBLY, "B"	1
16	044598	SWITCH AND BRACKET ASSEMBLY (including items 16 thru 27)	1
17	437965	*PAD, Trigger	1
18	21736	*RING, Retaining	1
19	437950	*SPRING, Switch	1
20	044555	*LOCK PLATE ASSEMBLY	1
21	437949	*SPRING, Cam	1
22	433275	*STEEL BALL, 1/16"	1
23	431967	*SPRING, Compression	1
24	437830	*LEVER, Switch	1
25	437952	*STUD, Switch	1
26	438888	*SWITCH, Micro	1
27	437824	*BRACKET, Main switch	1
28	044554	GRIP ASSEMBLY	1
29	438560	RING, Retaining	1
30	437838	SHIELD PLATE, Screw	1
31	438702	SCREW, M2.5, pan head	1
32	437822	BUTTON, Lock	1
33	437821	SHAFT, Trigger	1
34	436357	SCREW, M2x3, tapping screw	1
35	437823	BRACKET, Trigger lock	1
36	439140	SCREW, M2.3x10, B-tite	1
37	044559	TRIGGER ASSEMBLY (including items 38 thru 41.)	1
38	436357	*SCREW, M2x3, tapping	1
39	438654	*WASHER	1
40	437820	*ROLLER, Trigger	1
41	044580	*TRIGGER AND TRIMPLATE ASSEMBLY	1
42	439412	SCREW, M2x4, flat head	2
43	437839	PLATE, Reinforced	1
44	438472	STUD, Tripod	1
45	437828	TRIMPLATE, Mic. (Grip)	1
46	437829	TRIMPLATE, Jack	1
47	437827	TRIMPLATE, Yellow	1
48	437975	HOLDER, Right, grip	1
49	437976	HOLDER, Left, grip	1

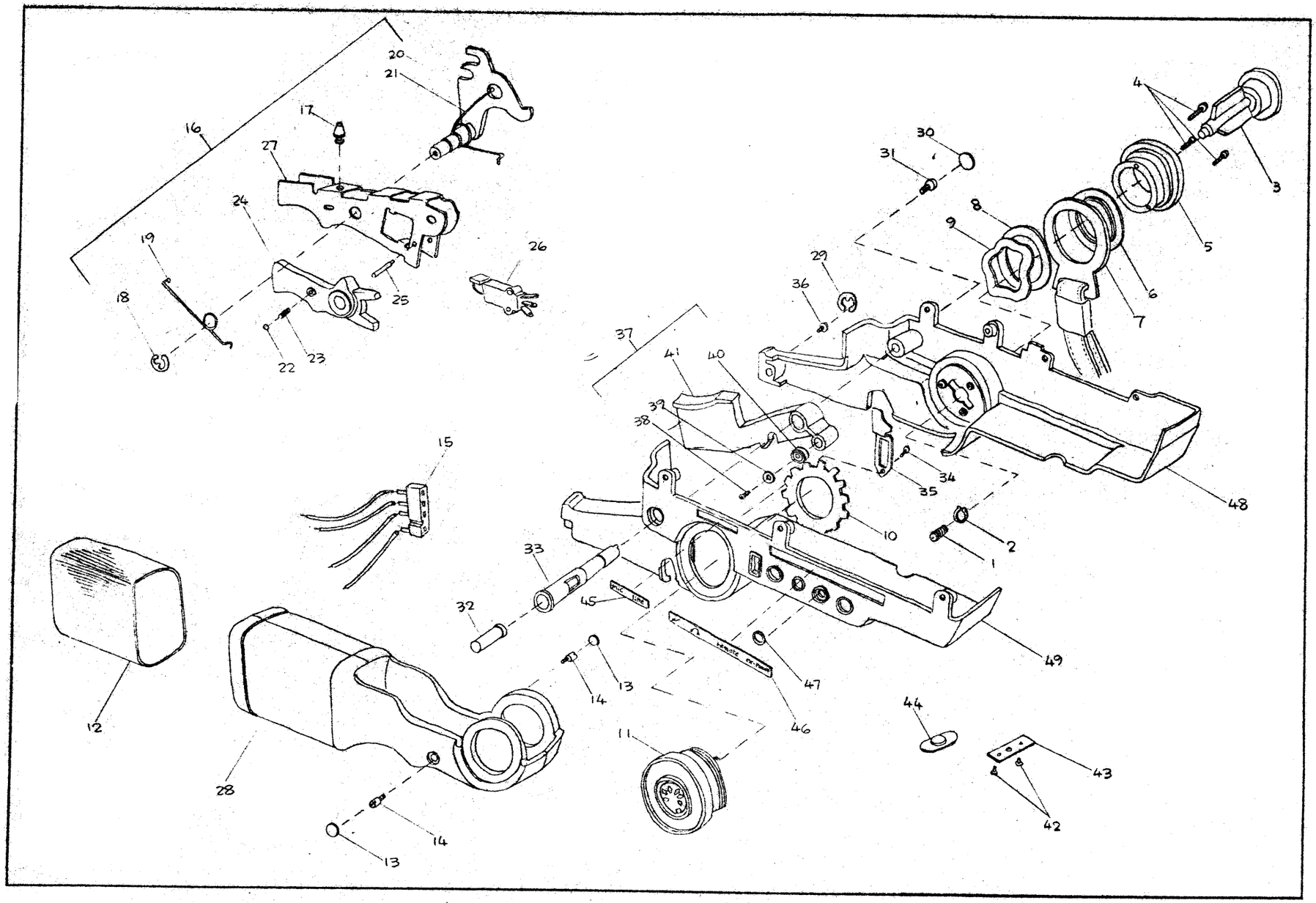


Figure 9 Grip and Holder Assembly

POIGNEE ET SUPPORT
POIGNEE

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REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY

FIGURE 10. MECHANISM ASSEMBLY (P-044581)

1	438814	GRIP RING, Protector	1
2	438813	PROTECTOR, Cartridge	1
3	438558	RING, Retaining, Type E	1
4	438782	WIRE, Vinyl, sensor	2
5	438781	WIRE, Vinyl, sensor	2
6	044006	PINCH ROLLER BRACKET ASSY	1
7	043827	TORSION ARM ASSEMBLY	1
9	438784	GRIP RING	1
10	436732	WASHER	1
11	438435	GUARD, Film gate	1
12	438788	SPACER, Film guard	1
13	438419	PIVOT, Pressure pad	1
14	043824	PRESSURE PAD ASSEMBLY	1
15	438560	RING, Retaining, Type E	1
16	044582	ARM TRIGGER ASSEMBLY	1
17	438557	RING, Retaining, Type E	1
18	438420	SPRING, Pressure pad	1
19	434747	WIRE, Vinyl	1
20	439546	WIRE, Vinyl	1
21	439740	SCREW, M2x8, pan head	1
22	043930 or 043845	RECORDING HEAD ASSEMBLY	1
23	438685	ARM, Ejector	1
24	438662	SPACER, Head	1
25	436604	SCREW, M2	3
26	044031	CAPSTAN BEARING ASSEMBLY	1
27	438812	SPRING, Protector	1
28	044486	MECHANISM PLATE ASSEMBLY	1

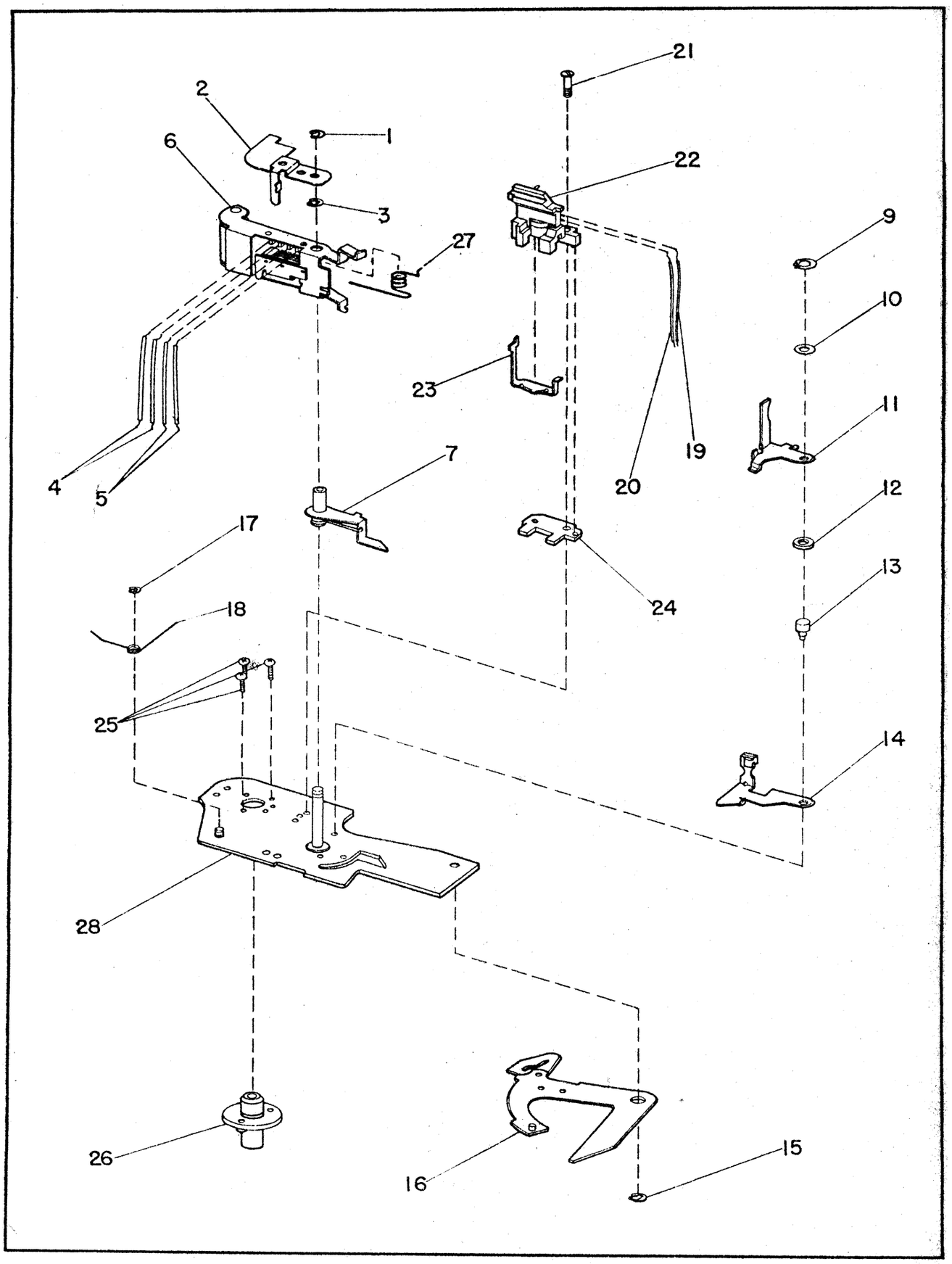

Figure 10. Mechanism Assembly 1008 XL

MECANISME COMPLET

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
		FIGURE 11.	CONTROL PANEL AND FLEXIBLE P.C.B. ASSEMBLY (P-044574)	
	1	437940	MICRO SWITCH	2
	2	440073	STOPPER, Micro switch	2
	3	440056	BUTTON, Battery test	1
	4	440057	BUTTON, Fade	1
	5	437868	WINDOW, Meter, battery check,	1
	6	437869	METER, Battery check	1
	7	436604	SCREW, M2x5	2
	8	044593	ZOOM SPEED P.C.B. ASSEMBLY	1
	9	437876	CONTACT, Zoom speed	1
	10	433275	STEEL BALL, 1/16"	1
	11	431967	SPRING, Compression	1
	12	044564	ZOOM SPEED KNOB ASSEMBLY	1
	13	437865	SHAFT, Zoom button	1
	14	437866	BUTTON, Zoom, telephoto	1
	15	437867	BUTTON, Zoom, wide	1
	16	440055	MICRO SWITCH	2
	17	437810	PANEL, Control	1
	18	044577	FLEXIBLE P.C.B. ASSEMBLY (including items 19 through 24)	1
	19	438801	*THERMISTOR, Disc	1
	20	438388	*RESISTOR, Mini	1
	21	438095	*VARISTOR, MV-13	1
	22	439853	*CAPACITOR, Tantalum	1
	23	439344	*RESISTOR, Metalic, 15 ohm	1
	24	438776	*TAPE, Insulation	1

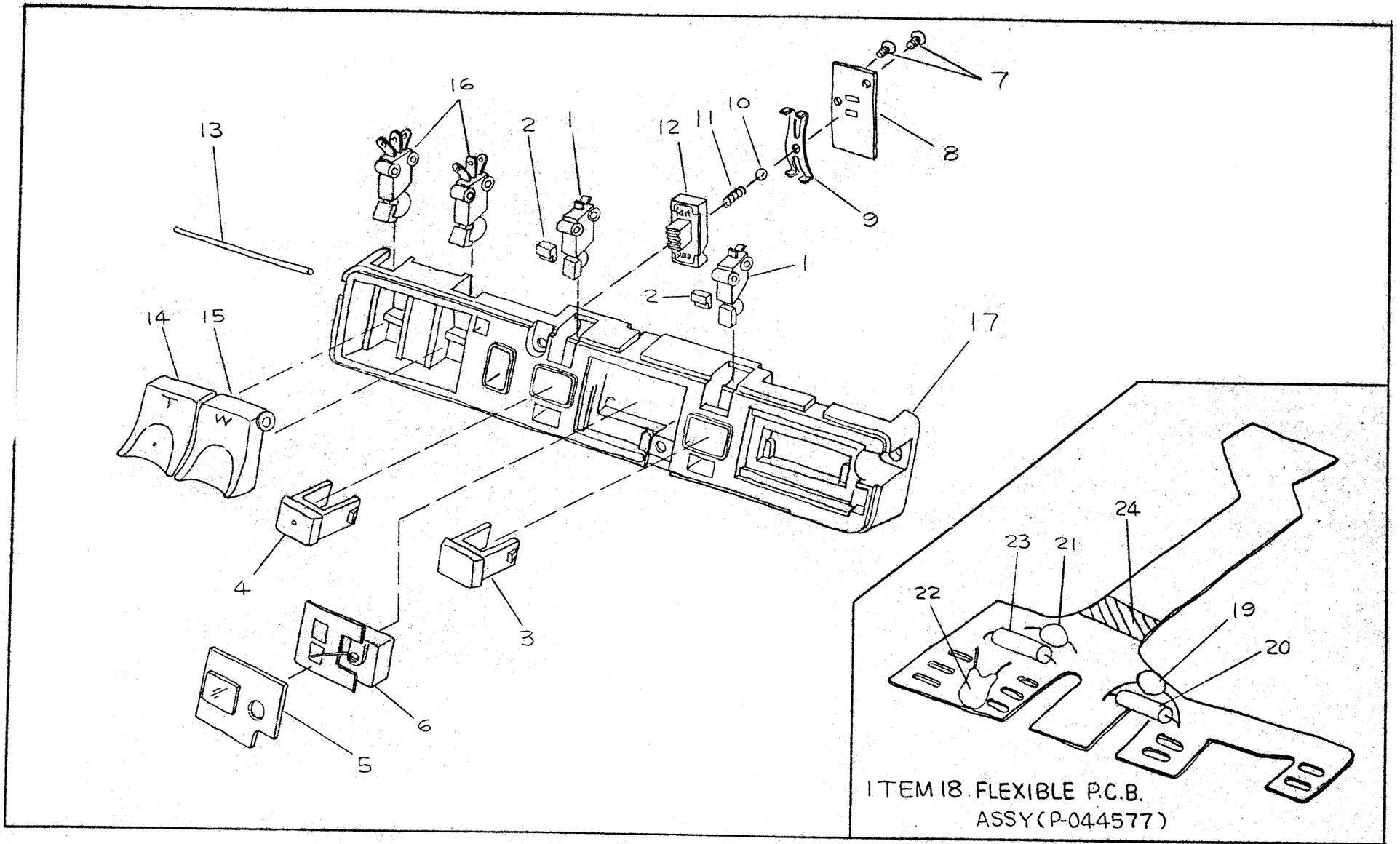

TABLEAU DE BORD ET CIRCUIT IMPRIME FLEXIBLE

Figure 11. Control Panel and Flexible P. C. B. Assembly

1008 XL

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY

FIGURE 12. AMPLIFIER P.C.B. ASSEMBLY (P-044583)

C1	439009	CAPACITOR, Nonpole	1
2	437352	CAPACITOR, Electrolytic, 47uF 6.3V	1
3	437350	CAPACITOR, Electrolytic, 10uF 16V	1
4	438798	CAPACITOR, Plastic film, 0.033uF	1
6	435003	CAPACITOR, Electrolytic, 0.47uF 6.3V	1
7	431569	CAPACITOR, Ceramic, 470pF	1
8	437350	CAPACITOR, Electrolytic, 10uF 16V	1
9	435354	CAPACITOR, Electrolytic, 1uF 6.3V	1
10	437350	CAPACITOR, Electrolytic, 10uF 16V	1
11	437350	CAPACITOR, Electrolytic, 10uF 16V	1
12	435352	CAPACITOR, Electrolytic, 0.22uF	1
13	433314	CAPACITOR, Plastic film, 0.015uF	1
14	435897	CAPACITOR, Electrolytic, 33uF 6.3V	1
17	435005	CAPACITOR, Electrolytic, 100uF 6.3V	1
18	437350	CAPACITOR, Electrolytic, 10uF 16V	1
19	435004	CAPACITOR, Electrolytic, 3.3uF 6.3V	1
20	435002	CAPACITOR, Electrolytic, 0.33uF 25V	1
21	438728	CAPACITOR, Electrolytic, 10uF 10V	1
C&R	044266	CAPACITOR AND RESISTOR ASSEMBLY (180 ohm and 10uF)	1
D1	438726	DIODE, Silicon	1
2	438726	DIODE, Silicon	1
3	438095	VARISTOR, Mini	1
4	435884	VARISTOR, Mini	1
10	438726	DIODE, Silicon	1
IC1	438615	INTEGRATED CIRCUIT, UPC566H	1
L1	437344	INDUCTOR	1
R2	438610	RESISTOR, 1K ohm	1
3	438607	RESISTOR, 100K ohm	1
4	438598	RESISTOR, 33K ohm	1
5	438600	RESISTOR, 5.6K ohm	1
6	438738	RESISTOR, 2K ohm	1
8	438602	RESISTOR, 10K ohm	1
9	438605	RESISTOR, 8.2K ohm	1
10	438603	RESISTOR, 22K ohm	1

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
	11	438604	RESISTOR, 68K ohm	1
	12	438606	RESISTOR, 680K ohm	1
	13	438607	RESISTOR, 100K ohm	1
	14	438604	RESISTOR, 68K ohm	1
	15	438607	RESISTOR, 100K ohm	1
	16	438602	RESISTOR, 10K ohm	1
	17	438602	RESISTOR, 10K ohm	1
	18	438609	RESISTOR, 560 ohm	1
	19	438610	RESISTOR, 1K ohm	1
	20	438610	RESISTOR, 1K ohm	1
	21	438610	RESISTOR, 1K ohm	1
	22	438613	RESISTOR, 3.9K ohm	1
	23	438606	RESISTOR, 680K ohm	1
	24	438612	RESISTOR, 3.3K ohm	1
	25	438610	RESISTOR, 1K ohm	1
	26	438604	RESISTOR, 68K ohm	1
	63	438610	RESISTOR, 1K ohm	1
	RV1	436514	RESISTOR, Trimmer 10K ohm	1
	RV2	438133	RESISTOR, Trimmer 6.8K ohm	1
	TR1	436836	TRANSISTOR, 2SC644	1
	TR2 through TR8	439523	TRANSISTOR, 2SC828A-S or T	1

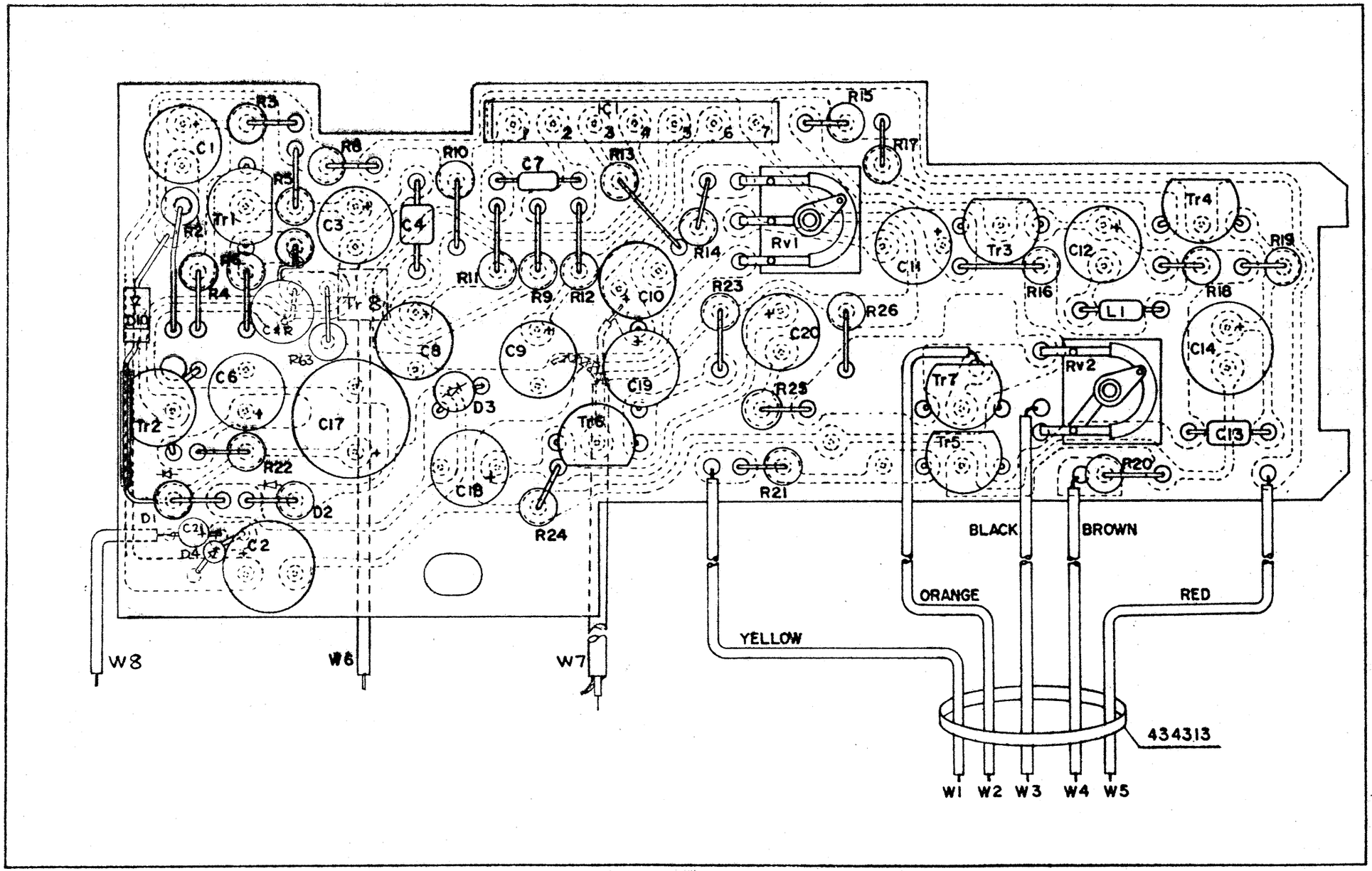

Figure 12. Amplifier P. C. B. Assembly CIRCUIT IMPRIME AMPLIFICATEUR 100 . XL

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY

FIGURE 13. E.E. CIRCUIT P.C.B. ASSEMBLY (P-044573)

1	438595	PIN, Terminal	2
2	437900	CONTACT, Back light -- 045047	1
3	438814	GRIP RING	1
4	437909	HOLDER, Contact	1
5	437898	CONTACT, Speed select	1
6	437899	STUD, Speed select	1
C25	439792	CAPACITOR, Tantalum, 3.3uF	1
C26	438944	CAPACITOR, Tantalum, 33uF	1
C27	440037	CAPACITOR, Tantalum, 47uF	1
C28	439008	CAPACITOR, Polyester, 0.0047uF	1
C29	438797	CAPACITOR, Film, 0.01uF	1
D12	438726	DIODE, Silicon	1
D13	438725	VARISTOR, SV-4A	1
D14	438726	DIODE, Silicon	1
D15	438726	DIODE, Silicon	1
D16	438726	DIODE, Silicon	1
D17	438726	DIODE, Silicon	1
D18	438095	VARISTOR, MV-3	1
D19	435884	VARISTOR, MV-2	1
D20	438095	VARISTOR, MV-3	1
D21	438095	VARISTOR, MV-3	1
IC2	438676	DIFFERENTIAL AMPLIFIER	1
IC3	437966	QUAD BILATERAL SWITCH,	1
R30	439013	RESISTOR, 220K ohm	1
R31	439012	RESISTOR, 390K ohm	1
R32	439012	RESISTOR, 390K ohm	1
R33	436992	RESISTOR, 5.6K ohm	1
R34	436991	RESISTOR, 10K ohm	1
R35	438386	RESISTOR, 22K ohm	1
NOT NEEDED — R36	438733	RESISTOR, 3.3K ohm	1
R37	438392	RESISTOR, 1M ohm	1
R38	438392	RESISTOR, 1M ohm	1
R39	438392	RESISTOR, 1M ohm	1
R40	438392	RESISTOR, 1M ohm	1
R41	433442	RESISTOR, 1K ohm	1
R42	439501	RESISTOR, 510 ohm	1
R43	438386	RESISTOR, 22K ohm	1
R44	438386	RESISTOR, 22K ohm	1
R45	438381	RESISTOR, 1K ohm	1
R46	438733	RESISTOR, 3.3K ohm	1
R47	440119	RESISTOR, 330K ohm	1
R48	440119	RESISTOR, 330K ohm	1
R49	438382	RESISTOR, 100K ohm	1
R50	439632	RESISTOR, 2.7M ohm	1
R51	438388	RESISTOR, 330 ohm	1
R52	439937	RESISTOR, 10K ohm	1

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
	RV3	439724	VARIABLE RESISTOR, 33K ohm	1
	4	439386	VARIABLE RESISTOR, 100K ohm	1
	(NOT NEEDED) —5	439386	VARIABLE RESISTOR, 100K ohm	1
	6	439386	VARIABLE RESISTOR, 100K ohm	1
	7	439452	VARIABLE RESISTOR, 47K ohm	1
	8	439386	VARIABLE RESISTOR, 100K ohm	1
	9	439386	VARIABLE RESISTOR, 100K ohm	1
	10	439018	VARIABLE RESISTOR, 500K ohm	1
	11	439018	VARIABLE RESISTOR, 500K ohm	1
	12	439524	VARIABLE RESISTOR, 10K ohm	1
	13	439018	VARIABLE RESISTOR, 500K ohm	1
	TH1	439584	THERMISTOR	1
	TR9	438891	TRANSISTOR, 2SC1541	1
	10	438398	TRANSISTOR, 2SA786	1
	11	438891	TRANSISTOR, 2SC1541	1
	12	438891	TRANSISTOR, 2SC1541	1
	13	438398	TRANSISTOR, 2SA786	1
	14	438398	TRANSISTOR, 2SA786	1
	15	436809	TRANSISTOR, 2SA678	1
		t 45096	PCB ASSBLY	

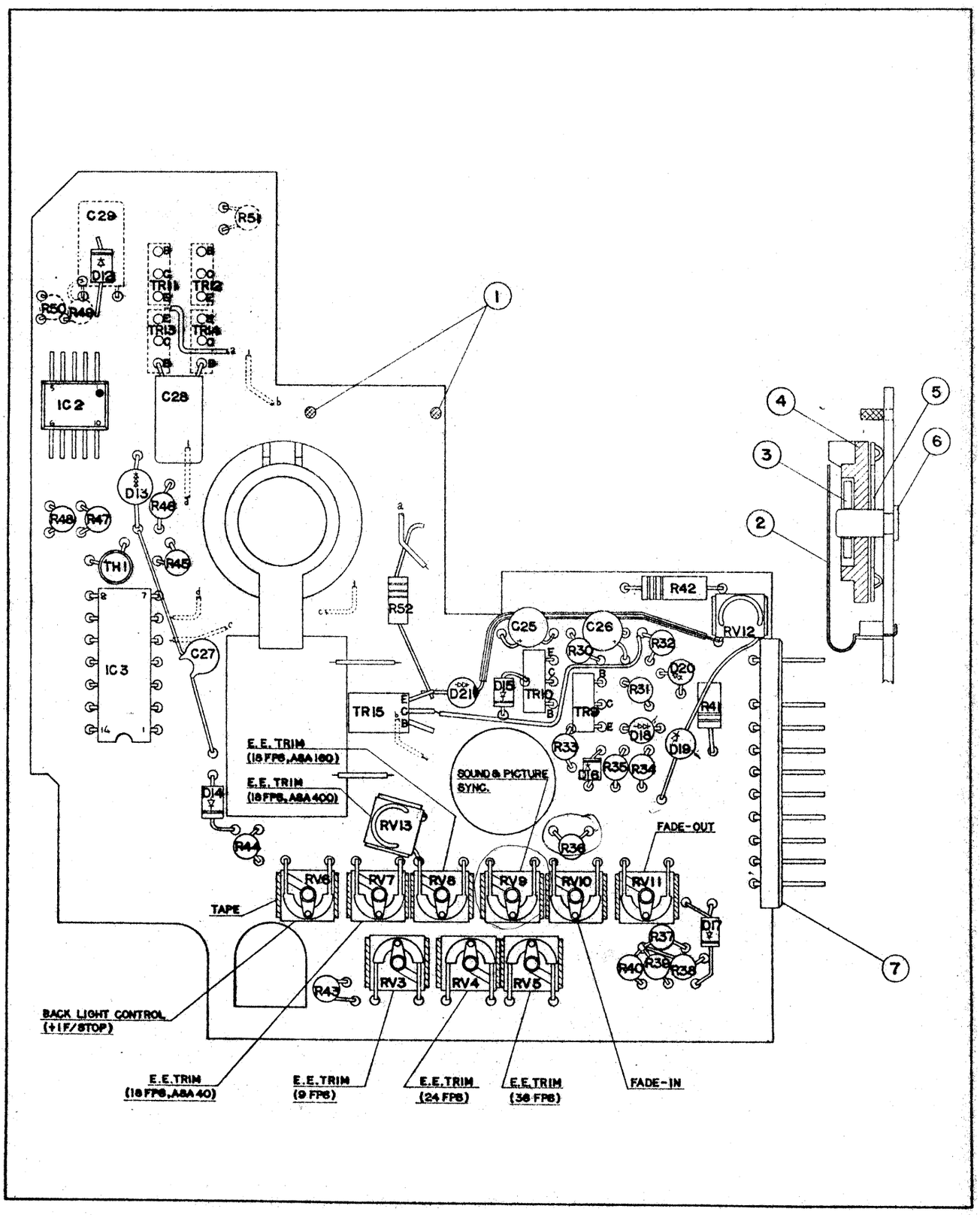

Figure 13. E. E. Circuit P. C. B. Assembly **1008 XL**

CIRCUIT IMPRIME POSEMETRE

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
FIGURE 14.			MAIN PRINTEC CIRCUIT BOARD ASSEMBLY (P-044595)	
	1	436604	SCREW, M2x5	1
	2	044578	JACK ASSEMBLY (incorporating item 3 thru 9)	1
	3	044560	*SOCKET AND WIRE ASSEMBLY, Synchroflash	1
	4	438893	*LUG, Solder	1
	5	436357	*SCREW, M2x3	1
	6	437913	*ACTUATOR, Spring	1
	7	437914	*TRIMPLATE, Level control,	1
	8	437912	*KNOB, Level control, recording	1
	9	437818	*HOLDER, Jack	1
	10	440114	INSULATOR, P.C.B.	1
	11	044667	CONNECTOR ASSEMBLY	1
	12	044660	POWER CONNECTOR ASSEMBLY	1
	C201	439853	CAPACITOR, Tantalum, 1uF	1
	C202	438944	CAPACITOR, Tantalum, 33uF	1
	C203	439033	CAPACITOR, Tantalum, 22uF	1
	C204	438729	CAPACITOR, Tantalum, 1uF	1
	C205	438729	CAPACITOR, Tantalum, 1uF	1
	C206	438728	CAPACITOR, Tantalum, 10uF	1
	C207	438728	CAPACITOR, Tantalum, 10uF	1
	C208	438944	CAPACITOR, Tantalum, 33uF	1
	C209	438729	CAPACITOR, Tantalum, 1uF	1
	C210	439008	CAPACITOR, Film, 0.0047uF	1
	C211	438797	CAPACITOR, Film, 0.01uF	1
	C212	439008	CAPACITOR, Film, 0.0047uF	1
	C213	438729	CAPACITOR, Film, 1uF	1
	C214	439345	CAPACITOR, Electrolytic, 100uF	1
	C215	439017	CAPACITOR, Film, 0.015uF	1
	C216	437350	CAPACITOR, Tantalum, 10uF	1
	C217	438597	CAPACITOR, Film, 0.0027uF	1
	C218	438729	CAPACITOR, Tantalum, 1uF	1
	C219	439345	CAPACITOR, Electrolytic, 100uF	1
	*For C220 and C221, see below TR211 on next page.			
	D201	435884	VARISTOR, Mini	1
	D202	438399	DIODE, Zener, 3.0V	1
	D203	~~438726~~	DIODE, Silicon — 440106	1
	D204	~~438726~~	DIODE, Silicon	1
	D205	~~438726~~	DIODE, Silicon	1
	D206	436522	DIODE, Silicon	1
	IC201	438395	IC, Convertor	1
	IC202	438379	IC, Motor control	1
	IC203	437966	IC, UPD 4066C	
	J1	437943	JACK, Monitor, 2.5mm	1
	J2	437943	JACK, Remote, 2.5mm	1
	J3	437942	JACK, External power, 3.5mm	1
	LED201	437983	LIGHT EMITTING DIODE (Orange)	1
	LED202	437962	LIGHT EMITTING DIODE (Red)	1
	LED203	437963	LIGHT EMITTING DIODE (Red)	1
	LED204	437964	LIGHT EMITTING DIODE (Green)	1
	R201	438387	RESISTOR, 47K ohm	1
	R202	436620	RESISTOR, 510 ohm	1
	R203	436620	RESISTOR, 510 ohm	1
	R204	438388	RESISTOR, 330 ohm	1
	R205	436991	RESISTOR, 10K ohm	1

REF. BULLETIN SECTION	FIG. & INDEX NUMBER	PART NO.	DESCRIPTION	UNIT PER ASSY
	R206	440111	RESISTOR, 820 ohm	1
	R207	438733	RESISTOR, 3.3K ohm	1
	R208	438733	RESISTOR, 3.3K ohm	1
	R209	439389	RESISTOR, 150 ohm	1
	R210	438733	RESISTOR, 3.3K ohm	1
	R211	438733	RESISTOR, 3.3K ohm	1
	R212	436991	RESISTOR, 10K ohm	1
	R213	436991	RESISTOR, 10K ohm	1
	R214	438386	RESISTOR, 22K ohm	1
	R215	436991	RESISTOR, 10K ohm	1
	R216	438382	RESISTOR, 100K ohm	1
	R217	438388	RESISTOR, 330 ohm	1
	R218	436991	RESISTOR, 10K ohm	1
	R219	438170	RESISTOR, 39K ohm	1
	R220	438733	RESISTOR, 3.3K ohm	1
	R221	438381	RESISTOR, 1K ohm	1
	R222	436620	RESISTOR, 510 ohm	1
	R223	436991	RESISTOR, 10K ohm	1
	R224	438733	RESISTOR, 3.3K ohm	1
	R225	436991	RESISTOR, 10K ohm	1
	R226	440112	RESISTOR, 2.2K ohm	1
	R227	438733	RESISTOR, 3.3K ohm	1
	R228	438575	RESISTOR, 130 ohm	1
	R229	436814	RESISTOR, 220 ohm	1
	RV201	438675	RESISTOR, Variable, 100k ohm	1
	RV202	439451	RESISTOR, Variable, 10K ohm	1
	RV203	439386	RESISTOR, Variable, 100K ohm	1
	RV204	439386	RESISTOR, Variable, 100K ohm	1
	RV205	439386	RESISTOR, Variable, 100K ohm	1
	RV206	438564	RESISTOR, Variable, 220K ohm	1
	RV207	434533	RESISTOR, Variable, 3.3K ohm	1
	SW1	438471	CONTACT "A", Indicator, last five feet	1
	SW2	438539	CONTACT "B", Indicator, last five feet	1
	TH201	439584	THERMISTOR	1
	TR201	437986	TRANSISTOR, 2SC1568	1
	TR202	439523	TRANSISTOR, 2SC828	1
	TR203	438614	TRANSISTOR, 2SC1634	1
	TR204	440283	TRANSISTOR, 2SC982	1
	TR205	439523	TRANSISTOR, 2SC828	1
	TR206	438891	TRANSISTOR, ~~2SC1541~~ 2SC2021	1
	TR207	438891	TRANSISTOR, ~~2SC1541~~ 2SC2021	1
	TR208	439523	TRANSISTOR, 2SC828	1
	TR209	440028	TRANSISTOR, 2SC1383	1
	TR210	440028	TRANSISTOR, 2SC1383	1
	TR211	436809	TRANSISTOR, 2SA678	1
	C220	438944	CAPACITOR, Tantalum, 33uF	1
	C221	438728	CAPACITOR, Tantalex, 10uF	1

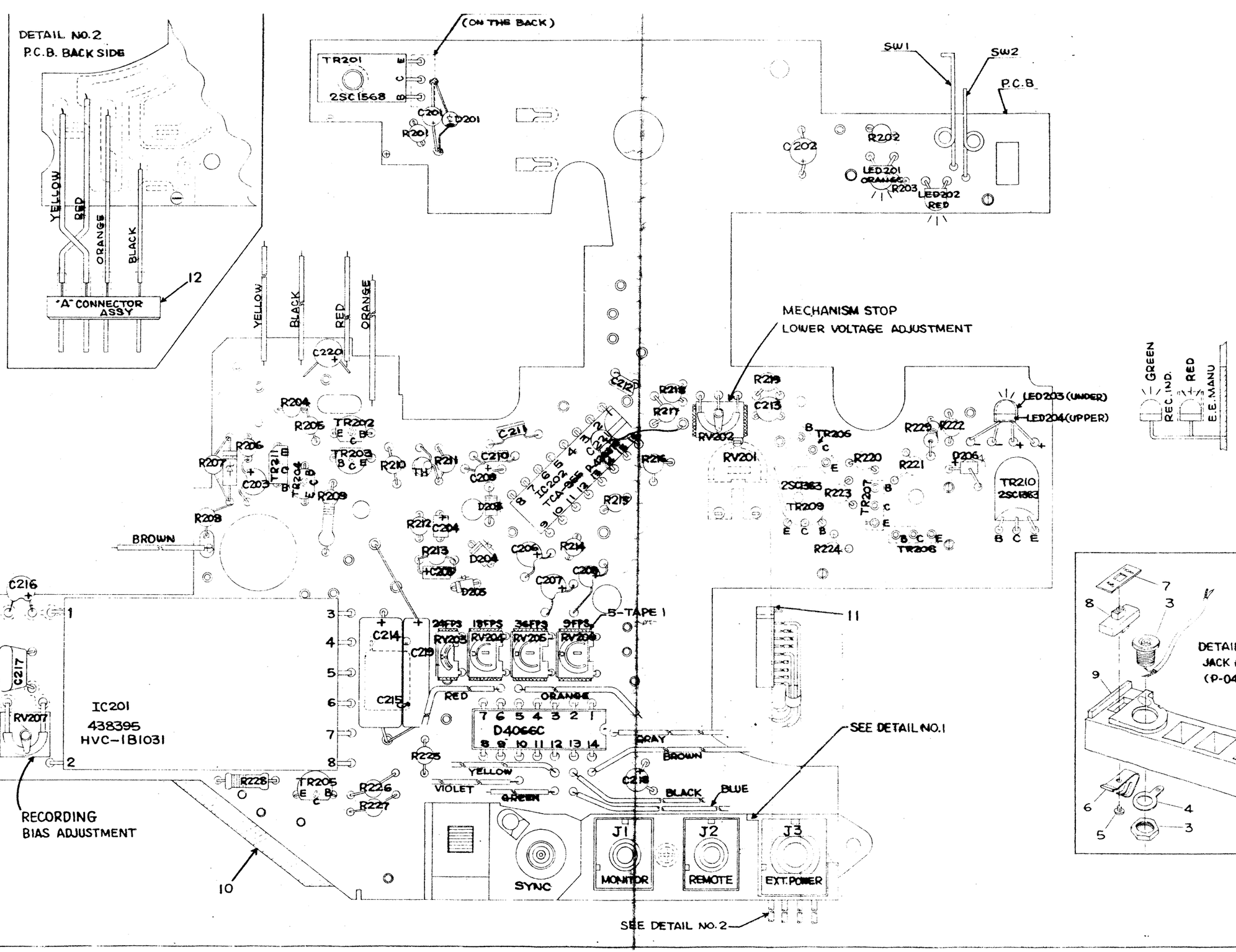

Figure 14. Main P. C. B. Assembly

CIRCUIT IMPRIME PRINCIPAL

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SWITCH OPERATION FOR SOUND/SILENT.

FILM MODE \ SW.	SWITCH. ①-②	③-④	⑤-⑥
SILENT	ON.	OFF.	OFF.
SOUND	OFF	ON.	ON.

L.E.D. FADE
ASA SELECT SW.
CdS
GRAY/BLACK
GREEN
ORANGE
YELLOW
WHITE
BLUE
BLACK
RED
GRAY
F.P.C.
F.P.C. ASS'Y
BLACK
RED
METER, BATT. TEST.
MOTOR, CAMERA DRIVE
BLACK
BLACK
BLUE
RED
SYNCHRO SW.
YELLOW
RED
GREEN
GRAY
BLACK
E.E. METER
ORANGE
FILTER IND. SW.
RUN SW.
+1
MOTOR, ZOOM
RED
BLACK
E.E. CIRCUIT ASS'Y
BLACK
RED
BLUE
PLUG ASS'Y FROM MAIN P.C.B. ASS'Y
BROWN
GREEN/BLACK
ORANGE
RUN IND.
BROWN
YELLOW
ORANGE
RED
WHITE
SHIELDED WIRE (MONITOR)
RECORDING AMP. ASS'Y
SOLENOID ASS'Y
RECORDING HEAD.
YELLOW
BLACK
SHIELDED WIRE
SYNCHRO SOCKET
FLAT WIRE
DIN JACK.
GRIP ASS'Y
BLUE
GREEN
GREEN
BLUE
WHITE
GREEN
BROWN
RUN SW.
MAIN P.C. BOARD ASS'Y
ORANGE
PRE RUN SW.
RED
RED
ORANGE
RED
YELLOW
BLACK
MOTOR, CAPSTAN DRIVE
P.
S.
LOOP SENSOR
BLACK
YELLOW
RED
ORANGE
MAIN SW.
BATT. HOLDER AA ×6
③
⑤
④
⑥
②
①
SOUND/SILENT SW.
GREEN
GREEN
YELLOW
YELLOW
BLUE
BLUE

SCHEMA DE CABLAGE

Figure 15. Pictorial Circuit Diagram

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