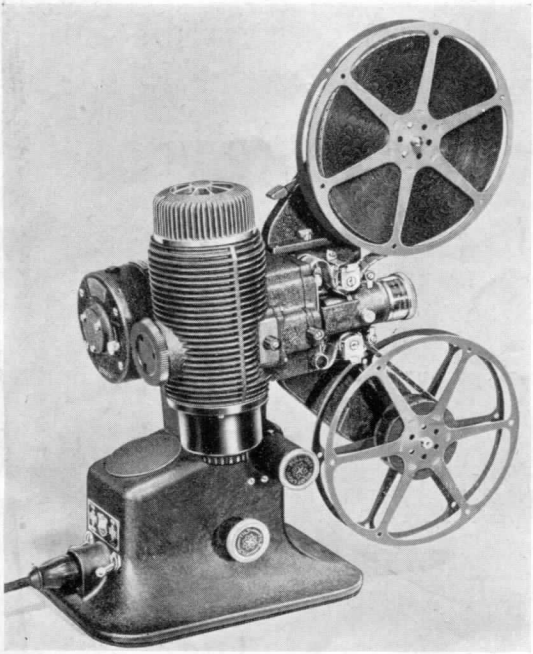
OPERATION AND CARE OF THE BELL & HOWELL



Filmo

"DIPLOMAT"

16mm.
MOTION PICTURE PROJECTOR

Professional Results with Amateur Ease

IMPORTANT

Be sure to fill in and mail the accompanying registration card. This will:

1. Bring you "Filmo Topics," an interesting and informative periodical on personal movie making.

2. Let us help you find your equipment in case of loss or theft.

3. Enable our Personal Service department to cooperate with you intelligently.

BELL & HOWELL COMPANY

7100 McCormick Road, Chicago 45

New York 20 _ _ _ _ _ _ _ _ _ **30 Rockefeller Plaza**

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Washington 5, D. C. _ _ _ _ _ **1221 G Street N. W.**

London _ _ _ _ _ _ _ _ _ _ _ _ _ **14 Great Castle**

Established 1907

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Operation and Care of the BELL & HOWELL Filmo Diplomat

Preparing to Operate the Filmo Diplomat. Familiarize yourself with the elements of the machine's construction which you must thoroughly understand if you are to operate it with trouble-free efficiency. See Pages 4 and 5. A complete study of these instructions is recommended before operating the projector.

Operating Controls. On the base under the motor housing, see page 4, is a switch marked "AC" and "DC." Set the switch for the type of current that you have in your locality. No damage will result if the motor is set for AC when the current is DC, but the speed of the motor will be too great to be controlled by the brake. If set for DC when the line current is AC, sufficient speed cannot be attained even though the brake is fully released.

Two switches will be found on the rear of the base. The "line" switch controls the motor, the "lamp" switch controls the projector lamp. The projection lamp will not operate unless the motor is running. The projection lamp should be turned off while rewinding, to preserve the life of the lamp.

The pilot lamp, see page 5, is automatically switched on when it is pulled out and automatically turned off when it is pushed back into the housing. This lamp operates independently of the motor or lamp switch. To replace the pilot light bulb, unscrew the guard by turning it counter-clockwise.

Threading and Operation

Be sure that the "line" and "lamp" switch are in the "off" position. Plug the line cord into the receptacle at the back of the projector and connect to your wall or extension cord receptacle. Turn on the "line" switch and "lamp" switch. With the projector operating and the lamp turned on, loosen the lens locking screw LL, Figure 1, by turning to the left, and slide the lens, L, forward or backward until the outlines of the aperture or frame are sharply defined. To further sharpen the focus, revolve the lens first in one direction and then in the other. Lock lens in position by turning screw LL to the right. The projector is tilted to the required angle by turning the tilt adjustment knob, see page 5. If the projected image is larger than the screen, move the projector closer. If the image is too small, move the projector farther from the screen. If room size limits the throw, select the correct lens, as indicated in table on page 7.

Speed Control. If the light on the screen flickers, turn speed control knob F, Figure 6 counter-clockwise to increase the speed. The proper projection speed for silent films is just above the point of noticeable flicker.

Threading the Film. Place the loaded reel on the spindle of the front reel arm. The films should be wound on

the reel with the emulsion, or dull, side out. (Exception: Duplicates from original reversal film, prints of 16mm. negatives and Kodachrome films are wound and projected with the emulsion side in.) The films should come off the bottom of the reel as shown on page 5 and the objects on the films should be up-side-down as they pass through the projector mechanism.

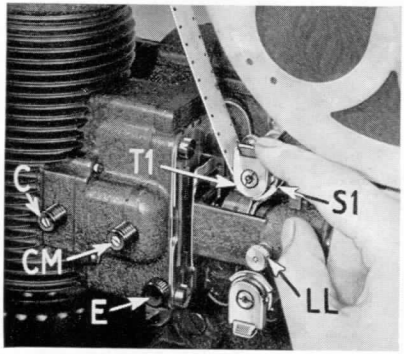


FIGURE 1

Lead the film above the roller J, Figure 3, and below sprocket S1, Figure 1. Slide the film as far toward the machine as it will go. Holding the film snugly around the sprocket with the right thumb and index finger, press on tab T1 Figure 1 to open the guard. Pull gently on the film until the perforations seat on the sprocket teeth.

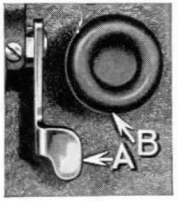


FIGURE 2

A. Gate lever

B. Hand setting knob

Then release tab T1 locking the film on the sprocket. Swing lever A, Figure 2, upward which will open the film

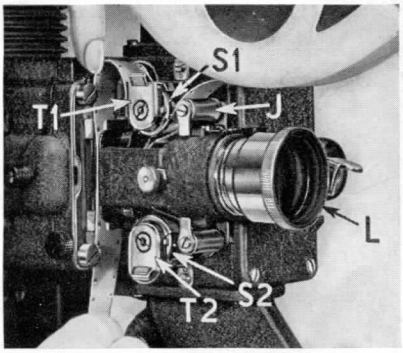


FIGURE 3

gate. Place the film in the channel as in Figure 3 and form the first loop, following the loop outline on the side of the gear case as shown in Figure 3, being certain that it is fully seated in this channel. Form the second loop, according to the outline on the gear case, and slip the film over the second sprocket, S2, Figure 4. Again press the film as far toward the projector as it will go and, while maintaining correct loop size, lock the film on the sprocket as for sprocket S1. Close the gate by pressing down lever A, as far as it will go. With clutch, see page

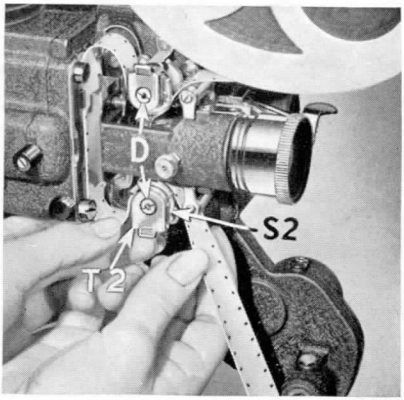
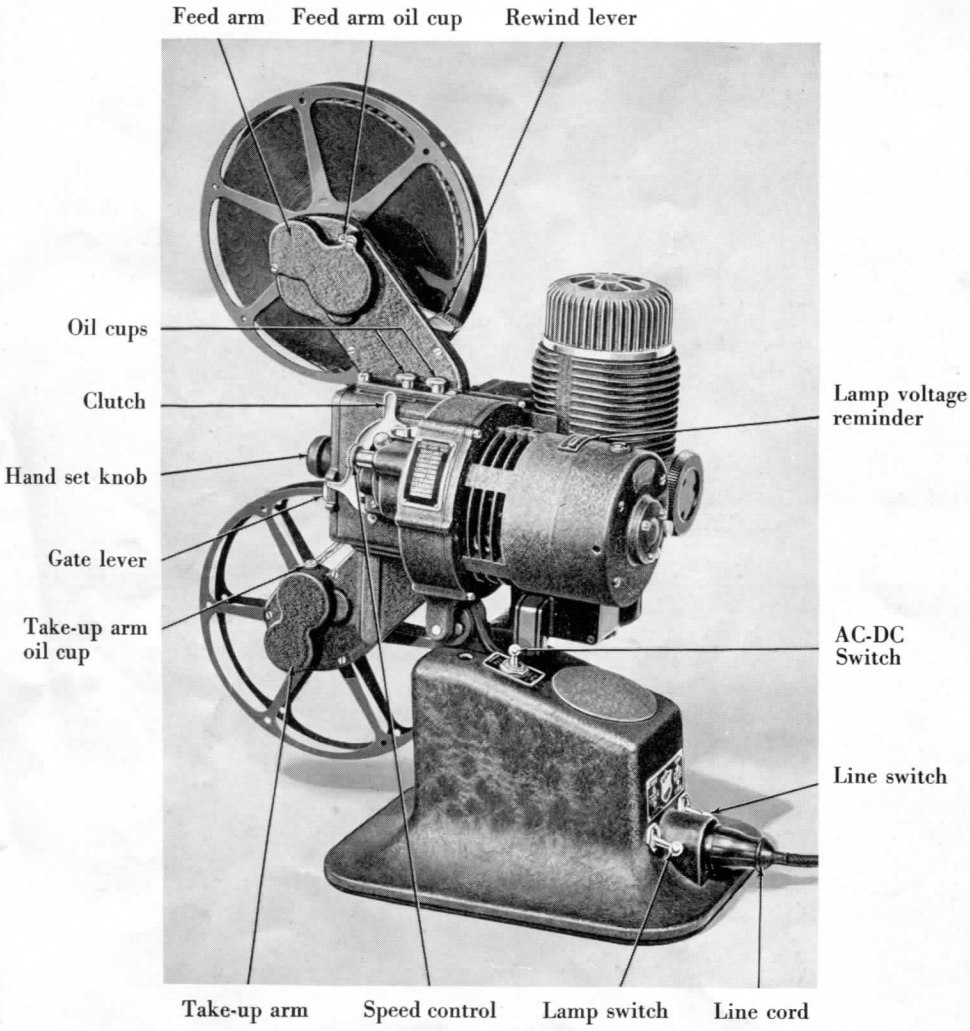
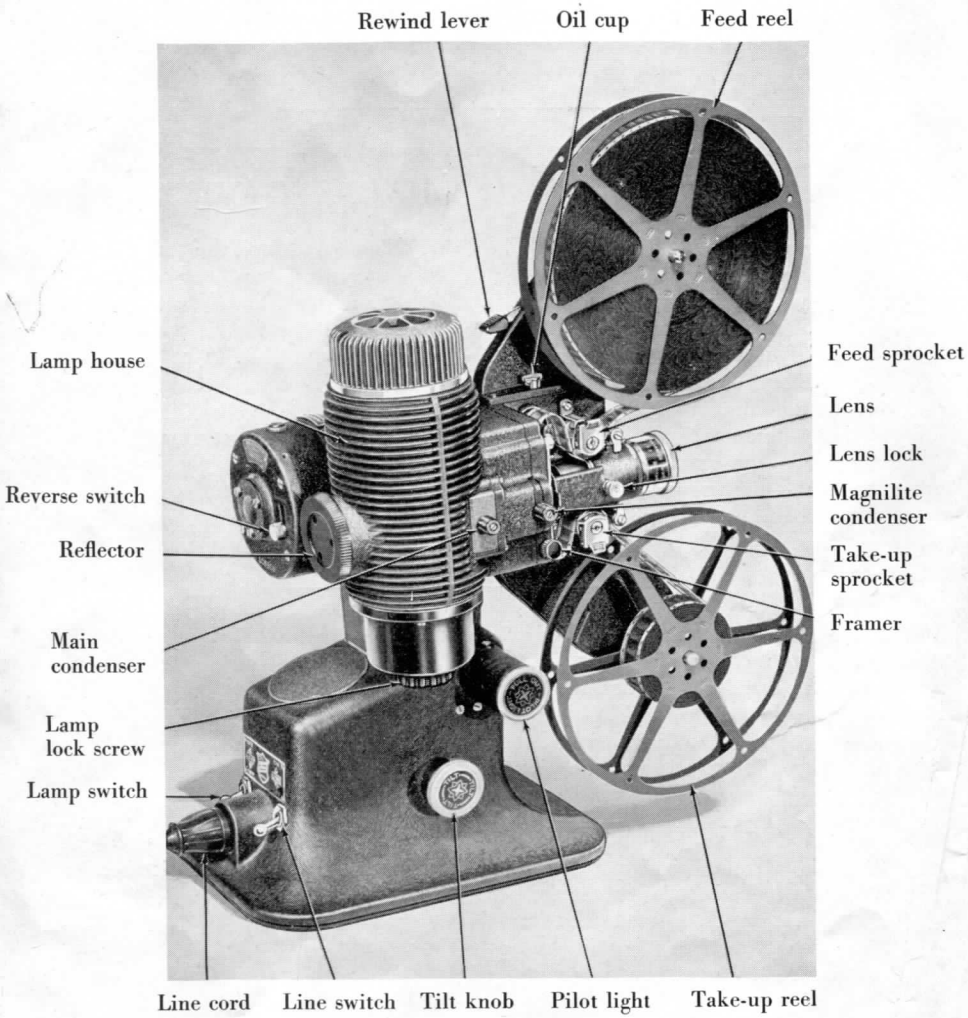


FIGURE 4


Feed arm
Feed arm oil cup
Rewind lever
Oil cups
Clutch
Hand set knob
Gate lever
Take-up arm oil cup
Lamp voltage reminder
AC-DC Switch
Line switch
Take-up arm
Speed control
Lamp switch
Line cord


Rewind lever
Oil cup
Feed reel
Lamp house
Reverse switch
Reflector
Main condenser
Lamp lock screw
Lamp switch
Feed sprocket
Lens
Lens lock
Magnilite condenser
Take-up sprocket
Framer
Line cord
Line switch
Tilt knob
Pilot light
Take-up reel

4, disengaged, turn the hand setting knob B, Figure 2, several clockwise revolutions. This will engage the film with the shuttle teeth. Should the lower loop slip upward, reopen the gate and reset the loop to the outline on the gear case. Close gate and again test the threading with the hand setting knob. The film should pass over the top of the take-up reel and is held in place by pressing the film against the hub of the reel where it is held in place by spring clips (on B&H reels). The slack in the film should be removed before starting the projector by revolving the take-up reel clockwise.

BEFORE PROJECTING, YOU MUST BE ABLE TO ANSWER "YES" TO THE FOLLOWING QUESTIONS:

1. Have you read the preceding instructions?
2. Have you cleaned the aperture and optical components? (See page 8).
3. Are both loops of the correct size?
4. Is the film properly engaged on all sprockets?
5. Is the film gate closed?
6. Is the film properly started on the take-up reel, with all slack removed?
7. Have you tested the threading by turning the hand set knob?
8. Have you learned from the ensuing pages of this manual, how to use the clutch, frame, rewind —run lever, and reverse-forward switch?
9. Is the clutch disengaged?
10. Is the reverse switch, see page 5, set at "Forward?"
11. Is the rewind lever, see pages 4 and 5, at "run" position?

Projecting. Turn on the "line" switch, engage the clutch and turn on the lamp. As the first title or picture appears on the screen, carefully revolve the lens first in one direction and then the other until the title or the picture appears in sharp focus. Lock lens with screw LL, Figure 1.

Framing. If the picture frame line shows on the screen, turn the framer knob E, Figure 1, to make the frame line disappear. If the framing moves the picture off the screen, readjust the tilt control, see page 5.

Still Picture Projection. To project a still picture, the clutch control lever, see page 4, should be pushed back thus disengaging the projector mechanism. If no picture appears on the screen, the closed section of the shutter is obscuring the light. A small movement of the hand setting knob B, Figure 2, will bring the open section of the shutter into correct position, thus permitting the projection of still pictures. It will be necessary to adjust the lens to focus a still picture. Refocus when motion is resumed.

Reversing. Always disengage the clutch before changing the film movement direction. The reversing switch, see page 5, is on the rear of the motor housing. By pushing this up to the "reverse" position the film may be reversed at any time during projection.

Rewinding. To rewind the film, lead the end of the film on the lower reel arm to the empty reel on the top arm and fasten to the reel.

On the upper reel arm is the rewind lever, see pages 4 and 5. Disengage the clutch and swing the lever from the "RUN" position to "REW" position. Do not force the lever if it does not swing easily, but turn the hand setting knob slightly to disengage the gear.

Disengage the clutch until the motor gains speed, then, release the clutch and the film will be rewound rapidly. Immediately after rewinding, and before removing the loaded reel, change the lever to "run" position.

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PROJECTED PICTURE SIZES OBTAINED WITH FILMO PROJECTION LENSES

LENS FOCAL LENGTH	DISTANCE IN FEET FROM SCREEN TO FILM															
16mm Projector	8′	10′	12′	15′	20′	25′	30′	35′	40′	45′	50′	60′	75′	100′	125′	150′
	WIDTH AND HEIGHT OF PICTURE															
5/8″	4′9″ 3′6″	5′11″ 4′5″	7′2″ 5′4″	9′0″ 6′8″	12′0″ 8′11″					Upper Dimension is Width of Picture						
3/4″	0′11″ 2′11″	4′11″ 3′8″	5′11″ 4′5″	7′6″ 5′7″	9′11″ 7′5″	12′6″ 9′3″				Lower Dimension is Height of Picture						
1″	2′11″ 2′2″	3′8″ 2′9″	4′5″ 3′4″	5′7″ 4′2″	7′5″ 5′7″	9′4″ 6′11″	11′3″ 8′4″	13′1″ 9′9″								
1½″	1′11″ 1′5″	2′5″ 1′10″	2′11″ 2′2″	3′8″ 2′9″	4′11″ 3′8″	6′2″ 4′7″	7′6″ 5′7″	8′9″ 6′6″	10′0″ 7′5″	11′3″ 8′4″	12′6″ 9′4″					
2″	....	1′10″ 1′4″	2′2″ 1′8″	2′9″ 2′1″	3′8″ 2′9″	4′8″ 3′5″	5′7″ 4′2″	6′6″ 4′10″	7′5″ 5′7″	8′5″ 6′3″	9′4″ 6′11″	11′3″ 8′4″	14′0″ 10′5″	18′9″ 13′11″	23′5″ 17′6″	28′2″ 21′0″
2½″	....	1′5″ 1′1″	1′9″ 1′3″	2′2″ 1′8″	2′11″ 2′2″	3′8″ 2′9″	4′5″ 3′4″	5′3″ 3′11″	5′11″ 4′5″	6′8″ 5′0″	7′5″ 5′7″	9′0″ 6′8″	11′3″ 8′4″	15′0″ 11′2″	18′9″ 13′11″	22′6″ 16′9″
3″	....	....	....	....	....	3′1″ 2′3″	3′8″ 2′9″	4′4″ 3′3″	4′11″ 3′8″	5′7″ 4′2″	6′2″ 4′7″	7′5″ 5′7″	9′4″ 6′11″	12′6″ 9′3″	15′7″ 11′7″	18′9″ 14′0″
3½″	....	....	....	....	....	2′7″ 1′11″	3′2″ 2′4″	3′8″ 2′9″	4′3″ 3′2″	4′9″ 3′7″	5′4″ 3′11″	6′5″ 4′9″	8′0″ 5′11″	10′8″ 7′11″	13′4″ 9′11″	16′1″ 12′0″
4″	....	....	....	....	....	2′3″ 1′8″	2′9″ 2′1″	3′3″ 2′5″	3′8″ 2′9″	4′2″ 3′1″	4′8″ 3′5″	5′7″ 4′2″	7′0″ 5′2″	9′4″ 6′11″	11′8″ 8′8″	14′0″ 10′5″

Care and Maintenance of Filmo Diplomat

Cleaning Optical Parts. Before every show, and at any other time that appears necessary, the projection lens and both condensers should be cleaned. Use the B&H lens cleaning kit or Filmo lens cleaning tissue, either of which may be secured from your Filmo dealer at small expense.

The projection lens is removed merely by pulling it forward by the outer lens barrel. The front and rear elements are then accessible for cleaning.

If only a slight amount of dust has accumulated on these lenses, merely use lens cleaning tissue to remove the dust. If, however, finger prints, oil, grease, or other accumulations of dirt are present, lens cleaning fluid should be wiped on the lens surface and followed by a thorough cleaning with lens cleaning tissue.

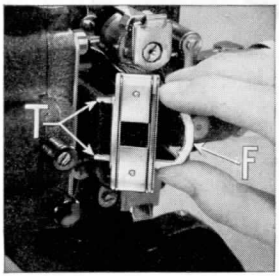
The same treatment should be given the Magnilite condenser CM, Figure 1, and the main condenser C, Figure 1, which are removed from the projector by pulling on the holder handles.

Cleaning Film Handling Parts. Preparatory to cleaning the aperture, open the film gate, remove the lens, and the removable gate shoe.

To remove the gate shoe, grasp the metal frame F, Figure 5, and withdraw. *Use no tools!* Clean and polish with a soft cloth. If dirt or emulsion has gathered and hardened on the shoe, remove by rubbing with a soft dampened cloth. To avoid scratching polished surface, *use no sharp tools.* To clean the aperture, insert the brush supplied with the projector through the opening, being careful to stop forward motion of the brush at the first sign of contact with the safety shutter. Slowly withdraw the brush, turning it in a clockwise and counter-clockwise direction to remove all dust and dirt. Clean the film channel by opening the gate and inserting the brush into the channel in a vertical position. With the gate partially closed, move the brush up and down to remove all dirt and emulsion. *The machine must not be running.*

When replacing the gate shoe, be sure that the guides T, Figure 5, are placed in the grooves formed by the metal plate attached to the back of the lens casting. An audible click will be heard when the metal frame, F, is correctly positioned.

FIGURE 5



Projector Lubrication. The main oil cup MO should receive one drop of oil after each 8 hours of operation. Cups SO should receive one drop of oil after every 32 hours of operation, see Figure 6. The sprockets D, Figure 4 should be saturated with oil every six months. To saturate these felts, have the projector disconnected from the

line and lay it on its side. Insert the tip of the Filmo oil can into the holes D, Figure 4, and squeeze the sides of the oil can about three times. The feed and take-up reel arm spindle bearings, C, Figure 6, should be oiled after every 32 hours of operation. Push spring ball down with oil can spout.

Projector Lamp Replacement. To replace the projector lamp, unscrew the

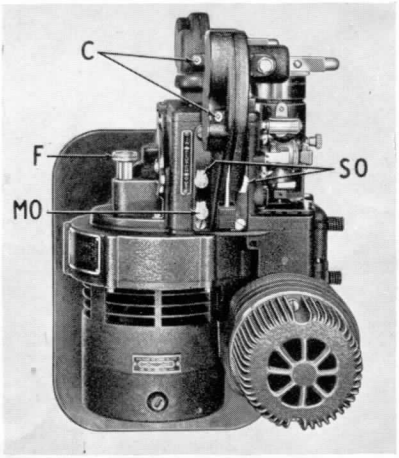


FIGURE 6

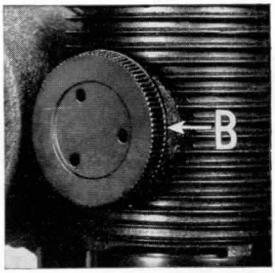
cap at the bottom of the lamphouse and allow the lamp to slide out into the hands. It may be necessary for you to tip the projector slightly. If a projector lamp is being replaced during the show, be careful as the lamp slides down to grasp it by the relatively cool centering ring. This operation should be performed quickly, since a moment or two after the lamp is disengaged from the socket, the centering ring, acting as a cooling flange, becomes quite warm. If the lamp does not readily drop out, insert the eraser end of a pencil through the top of the lamphouse and rock the lamp until it is dislodged.

Insert the new lamp with the vertical tongue on the centering ring toward the front of the projector and revolve it slightly one way or the other until the tongue settles into the centering slot in the bottom of the lamphouse. Replace the screw cap, making sure that it screws in squarely and tightly to lock the lamp in the proper position. *Never attempt to change a lamp with the current on.*

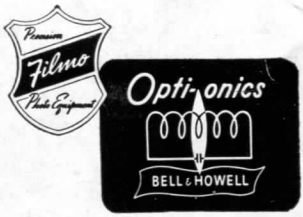
Since the lamps are designed to burn base down, the machine must not be turned upside down or laid on its side while the lamp is burning.

Reflector Adjustment. The reflector, B, Figure 7, is permanently adjusted at the factory and no further adjustments should be attempted. Occasionally it is desirable to polish this reflector in the same manner as the projection lens or the Magnilite condenser. The reflector is removed by turning the holder B, Figure 7, counterclockwise. Polish carefully and replace.

FIGURE 7



Pilot Lamp Replacement. Unscrew the metal cover turning it counterclockwise. Unscrew the lamp and replace it with another and put the cover on again.



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