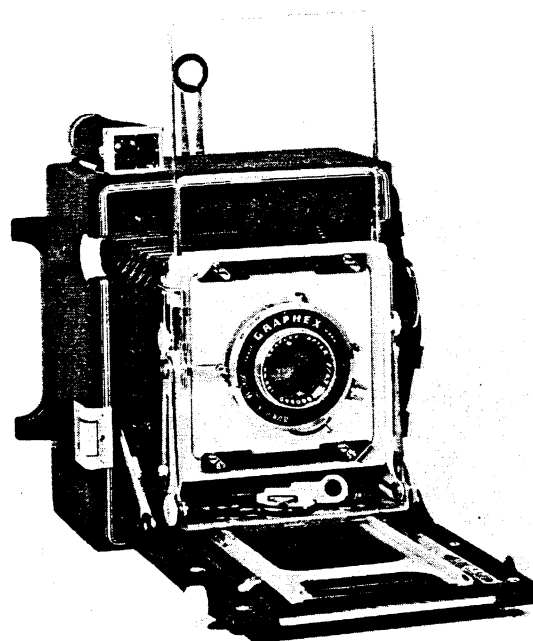
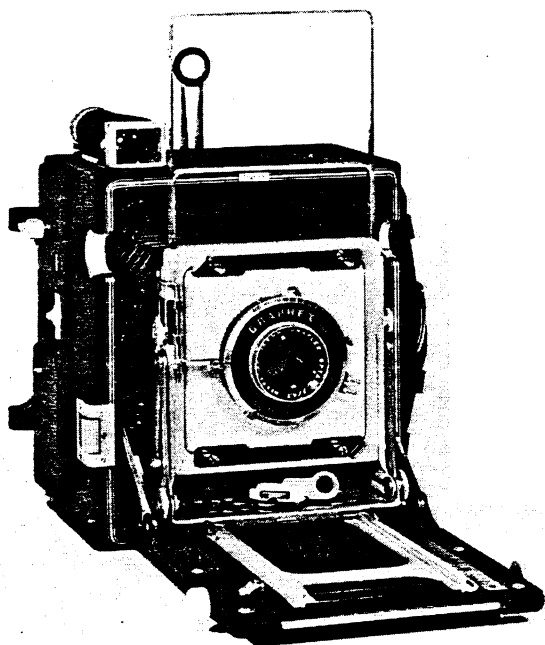


"45"

PACEMAKER SPEED & CROWN GRAPHIC

INCLUDES TEXT FOR SECTIONS 4, 5, AND 6.



GRAFLEX, INC.
Rochester 8, New York

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SERVICE INFORMATION BULLETIN #1

GRAFLEX, Inc.
Rochester 8, New York

15 May 55

SUBJECT: FLEXIBLE OPEN FRAME FINDER - PACEMAKER "45" - INSTALLATION OF:

REASON FOR CHANGE: To provide latest features of improved design.

ACCOMPLISHMENT: This change is recommended whenever replace of the open frame finder is necessary.

DESCRIPTION OF CHANGE: This change involves disassembly of the Front Standard Frame Assembly, replacement of parts and rear peepsight and reassembly.

CATALOG NO. 9444 CONSISTING OF PARTS REQUIRED TO MODIFY:

Qty.	Part No.	Nomenclature
2	30425-G5	Plate Assembly - Frame clamp
1	34620-G4	Frame Assembly - Outer front
1	34848-G1	Finder Assembly - Flexible
1	34793-P1	Carrier - Peepsight
1	34794-G1	Peepsight Assembly
1	30385-P2	Frame - Inner front

SPECIAL TOOLS REQUIRED:

Drill press and end mill cutter 0.094" (or 3/32") diam. or thin file.

DISPOSITION OF REMOVED PARTS: Scrap

MAN HOURS REQUIRED: Normal replacement time (Approximately 1/3 hour additional for optional back modification).

1. DISASSEMBLY

1.1. From the front standard, remove the vertical lock nut on each side of the frame assembly. Spread the standard enough to remove the frame assembly.

1.2. Remove four slide lock screws and disassemble the frames.

1.3. Remove the peepsight from the back, and for convenience, remove the back to modify width of peepsight slot.

2. Discard the following old parts:

Qty.	Part No.	Nomenclature
2	30719-P1	Bracket - Plunger
1	31923-G1	Finder Complete
1	30382-P1	Frame Assembly - Outer front

Qty.	Part No.	Nomenclature
1	30385-G1	Frame - Inner front
1	30369-G2	Peepsight
2	31292-G1	Plate Assembly - Frame clamp
2	30378-P1	Plunger - Finder
1	30404-P1	Sleeve - Finder plunger
1	30438	Spring - Finder plunger

3. Frame Reassembly

3.1. Reassemble the clamp plate and the inner and outer frames. Lubricate the clamp plate (inner surface) lightly with Lubriplate grease.

3.2. Slide the flexible finder frame assembly into the frames.

3.3. Replace the slide locks, washers, and screws as illustrated below and attach bellows.

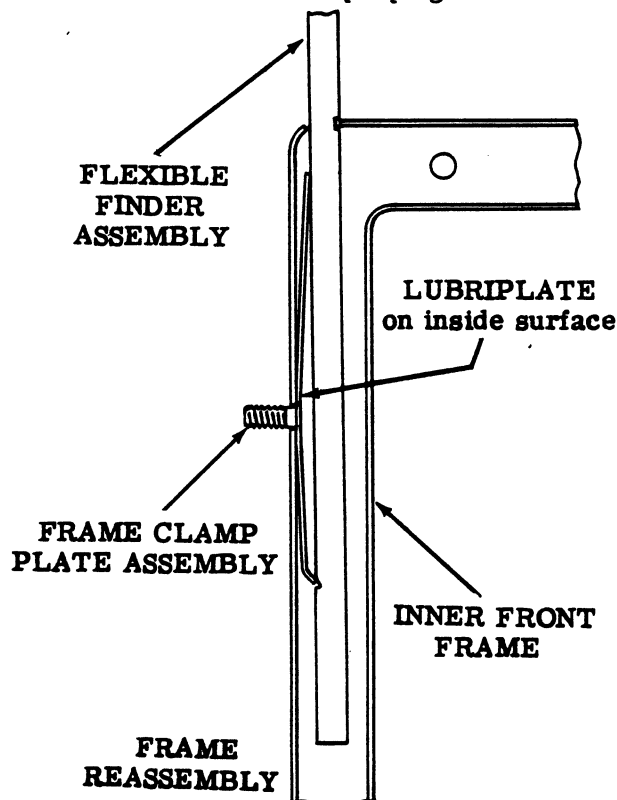
4. Peepsight Reassembly (Steps 4.1 and 4.2 are optional).

4.1. Set up drill press with end mill cutter and fence 4 to 7 inches high to slide the back against and modify the slot as dimensioned in the illustration below. Feed very slowly or the slot may be filled.

Caution: The casting is made of magnesium; its chips are combustible under extreme heat; dust is combustible under lower heat. Clean work area and dispose of dirt in a safe manner.

4.2. Clean milling chips and touch up with flat black paint.

4.3. Assemble new peepsight with its washer, cap, and screw as originally assembled.

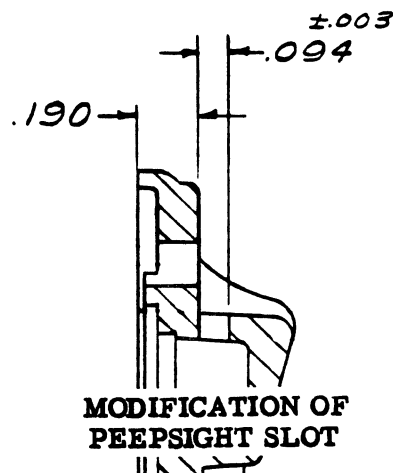


REASSEMBLY OF FRAME WASHERS

WASHER, 7/32 OD,
0.089 ID, 0.010 thk.

WASHER, 0.203 OD,
0.117 ID, 0.010 thk.

WASHER, SPRING, 0.203 OD, 0.117 ID, 0.031 thk.



NOTE: In due time, Service Information Bulletins will be incorporated with the Service Instructions of the Graflex Service Parts Manual.

SERVICE INFORMATION BULLETIN #3

GRAFLEX, Inc.

Rochester 8, New York

30 December 1955

SUBJECT: BELLOWS REPLACEMENT - PACEMAKER "45".

REASON FOR CHANGE: Easier and Quicker Assembly.

ACCOMPLISHMENT: When new bellows is required; also, early style bellows will be discontinued to eliminate stocking two similar parts.

DESCRIPTION OF CHANGE: Drill four holes in camera case partition for bellows clips.

PARTS REQUIRED TO MODIFY:

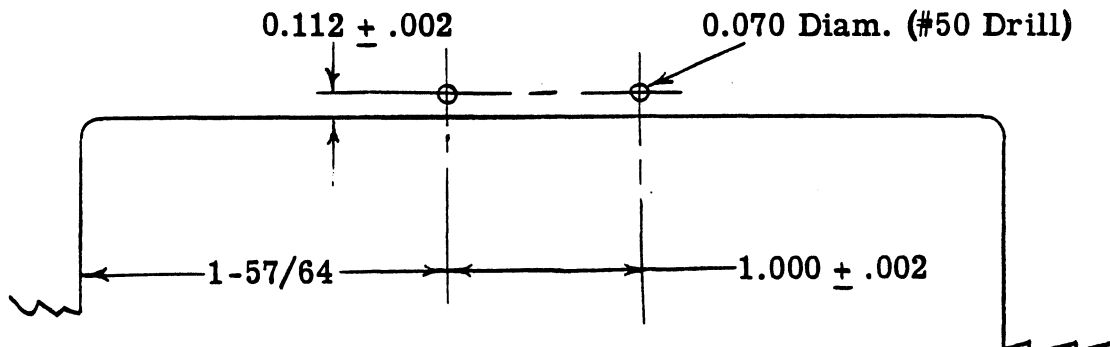
Qty.	Part No.	Nomenclature
1	31061-G3	Bellows (Instead of 31061-G1)
2	32459	Clip - Bellows retaining

SPECIAL TOOLS REQUIRED: None

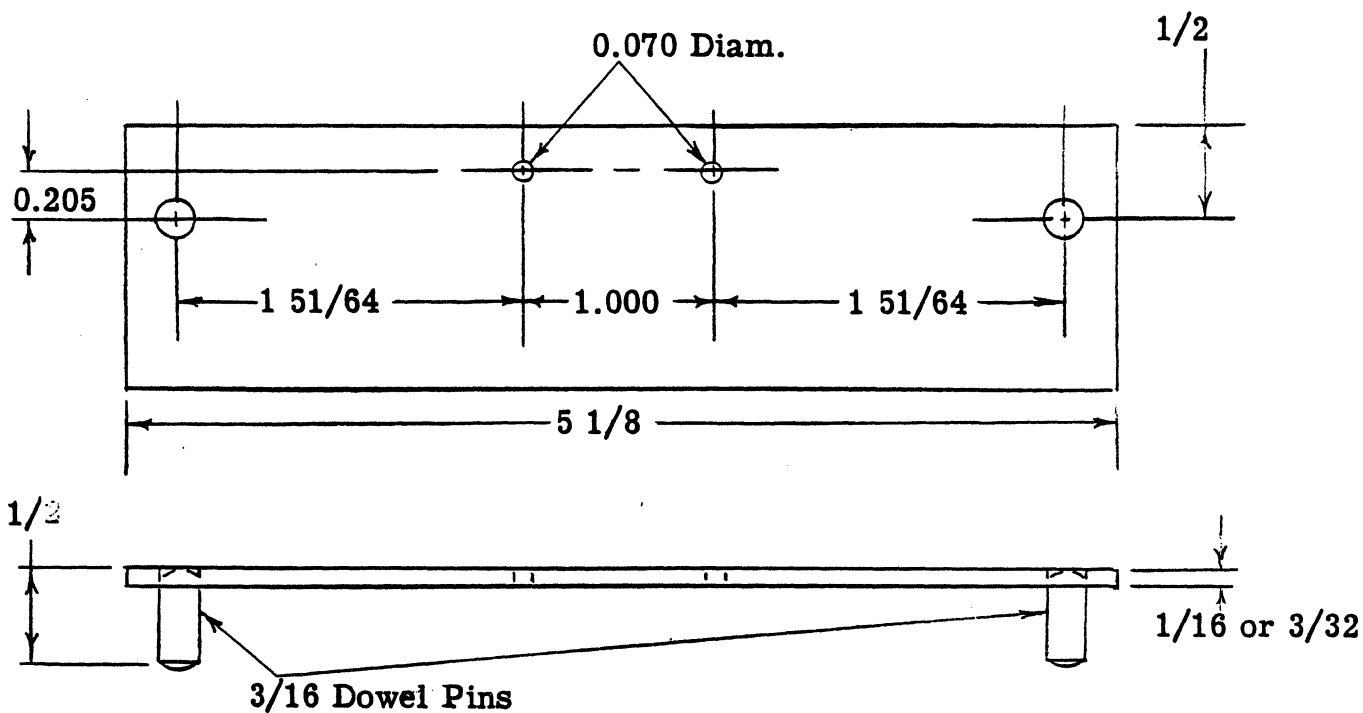
MAN HOURS REQUIRED: About 1/4 hour for drilling holes. Quicker assembly and easily removed for future service.

1. **DISASSEMBLE.** Remove the old bellows from the camera (see Section 6 of Service Manual).

2. **LAYOUT.** Centrally locate two holes, 1 inch center to center, 0.112 inch from the horizontal inside edge of the camera case partition.

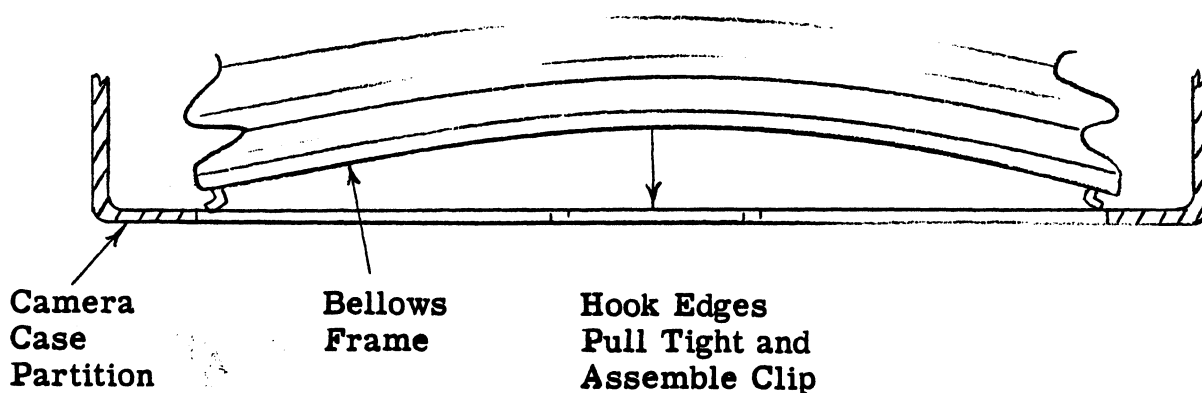


The drill jig drawn below will facilitate locating and drilling the holes.



MATERIAL: Cold Roll Steel or Ground Flat Tool Steel.

3. REASSEMBLE. The rear bellows frame is slightly curved. The sides of the frame hook on the camera case partition. Pull the top and bottom of the bellows frame tightly against the partition and assemble a bellows retaining clip. Dimple in the clip will fit into the newly drilled holes.



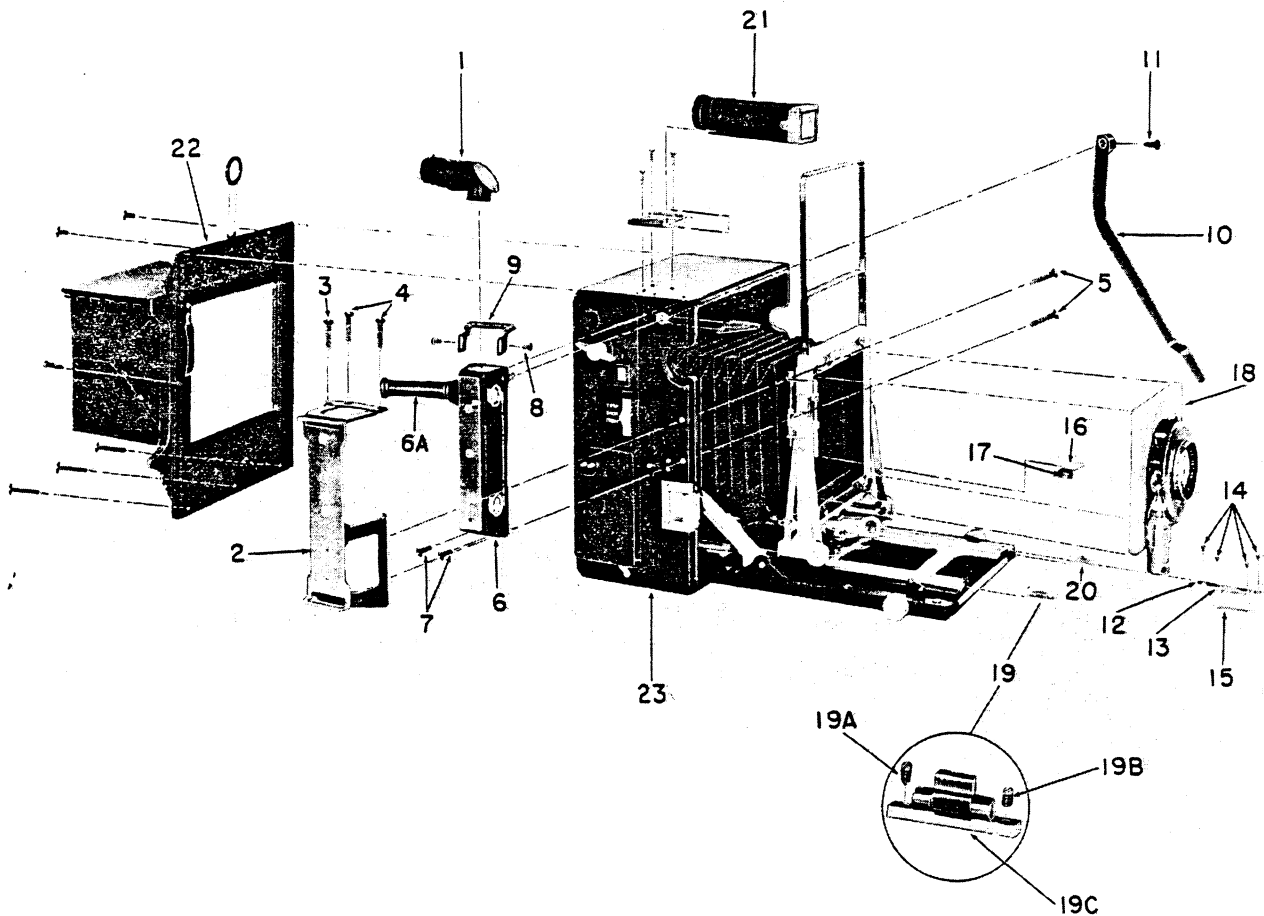


Figure 1. 4 x 5 Camera, Exploded view

- | | |
|--|---|
| 1. Focuspot | 13. Scale - Index (See Section 102) |
| 2. Bracket - Battery case mounting | 14. Screw - Index and focusing scale |
| 3. Screw - Wood (See Parts List for dimensions) | 15. Plate - Index scale clamp |
| 4. Screw - Wood (See Parts List for dimensions) | 16. Arm - Manual trip |
| 5. Screw - Machine (See Parts List for dimensions) | 17. Screw - Machine (See Parts List for dimensions) |
| 6. Rangefinder | 18. Lensboard and Shutter |
| 6A. Eyepiece - Extension | 19. & 20. Stop Assembly Complete - Infinity |
| 7. Screw - Special | 19A. Screw - Infinity stop - pointed |
| 8. Screw - Machine (See Parts List for dimensions) | 19B. Screw - Infinity stop - flat |
| 9. Bracket - Rangefinder mounting | 19C. Stop Assembly - Infinity |
| 10. Arm Assembly - Rangefinder | 21. Viewfinder Complete with mounting clip |
| 11. Screw - Set - Rangefinder | 22. Back Complete |
| 12. Scale - Focusing (See Section 102) | 23. Camera (Reference only) |

INTRODUCTION

This section of the Graflex Service Parts Manual covers the service of the Pacemaker Speed and Crown Graphic "23", "34" and "45". The text and illustrations are based on the "45" Speed Graphic since the "23" and "34" cameras are partially identical in construction and service; however, the differences are described in the text and illustrated. Similar parts found on the Crown Graphic are handled in the same manner.

I. OPTICAL VIEWFINDER

Information pertaining to the Optical Viewfinder can be found in Section 102.

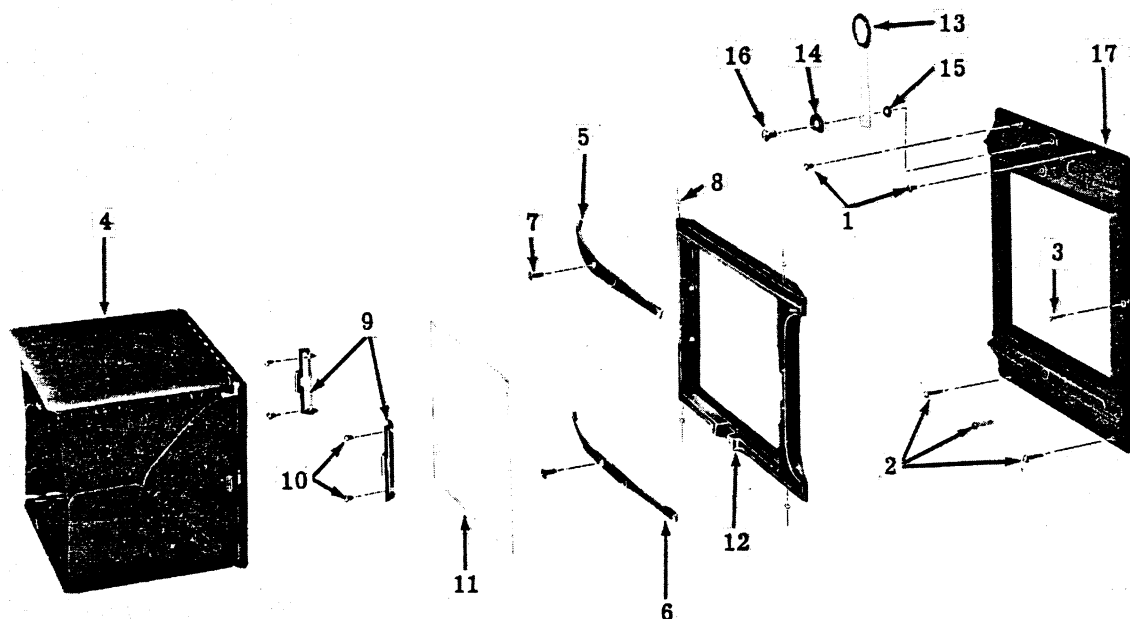


Figure 3. 4x5 Graphic Camera Back

- | | |
|--|--|
| 1. Screw - Self-tapping, 3/16 in. No. 2 Binding Head | 9. Retainer - Hood Assembly |
| 2. Screw - Self-tapping, 1/2 in. No. 2 Binding Head | 10. Screw - Machine, 3/16 in. No. 2-56 Flat Head |
| *3. Screw - Wood, 3/8 in. No. 1, Flat Head | 11. Screen - Focusing |
| 4. Hood Assembly | 12. Frame Assembly - Focusing |
| 5. Spring Assembly - Focusing frame, top | 13. Peepsight Assembly |
| 6. Spring Assembly - Focusing frame, bottom | 14. Cap - Peepsight |
| 7. Screw - Sems unit fastener, 5/16 in. No. 4-40 | 15. Washer - Peepsight |
| 8. Washer - Flat, Focusing frame spring, 5/32 in.
OD, 0.067 in. ID, 0.005 in. thick Brass | 16. Screw - Machine, 1/4 in. No. 6-32 Oval Head |
| | 17. Back |

*Not used on "23" Graphic Back

II. GRAPHIC BACK

A. GRAPHIC CAMERA BACK, DISASSEMBLY

1. Loosen the top and bottom focusing frame spring assemblies (5 and 6, figure 3) that are secured by machine screw and washer (7).

2. Remove two short self-tapping screws at the top (1) and the long self-tapping screws (2) at the bottom and one wood screw (3) at the right side, if used.

3. Remove the hood assembly (4) by pressing outward on the tab of the hood retainer (9).

4. To remove the focusing screen (11), remove the two hood assembly retainers (9).

Note: A peepsight erecting spring is located in a cavity on the inside of the back and concealed by a peepsight spring plate.

5. To remove this spring, use a sharp pointed instrument to pry out the peepsight plate; however, do not disassemble unless the peepsight will not stand erect.

B. GRAPHIC CAMERA BACK, CLEANING AND INSPECTION.

1. Wash the ground glass focusing screen with soap and water; rinse thoroughly and dry.

2. Examine the top and bottom focusing frame spring assemblies (5 and 6). If necessary, reform to give added pressure to the focusing panel.

Note: The hood assembly (4) is assembled with staked pins. It should not be disassembled, but replaced as a unit so that the trouble free operation can be maintained.

3. Check the focusing frame assembly (12, figure 4) and the back (17) on a machined surface plate. If these parts do not lie absolutely flat they must be straightened.

C. GRAPHIC CAMERA BACK, REASSEMBLY.

1. Assemble peepsight as follows:

(a) If the peepsight erecting spring has been removed from the inside frame cavity, position the new spring in the cavity with the open end of the spring at the bottom. Place the cover plate in the cavity and stake at several points along the edge.

(b) To assemble the peepsight assembly (13, figure 3) position the peepsight washer (15) over the mounting hole on the outer surface, lay the peepsight assembly (13) in the slot provided, po-

sition the peepsight cap (14) and assemble the machine screw (16). The washers should all lay with their flat side toward the base of the sight. The sight should swing in the slot. Apply a touch of shellac beneath the screw head and tighten.

2. Assemble the focusing screen as follows:

(a) The focusing screen (11) is assembled to the focusing frame assembly (12) with the polished side of the focusing screen to the outside. Position the hood assembly retainer (9) at each side and assemble two machine screws (10) in each retainer.

(b) The top and bottom focusing frame spring assemblies (5 and 6) are different. With the spring curving away from the camera, the long loop is to the right and the straight edge of the spring is toward the center. Hook the loop over the right pin, assemble the washer (8) to the left pin, slip the spring over the left pin. Lay this assembly in the back (17) and secure with a screw and lock washer unit (7) at the center of each focusing frame spring assembly.

(c) Fold the focusing hood (4) by squeezing the sides together, swinging up on the bottom and lastly, swing the top down to latch.

(d) Lay the back on the camera making sure that the leather covering of the camera case is tucked under all overlapping edges of the back. Assemble the wood screw (3), is used, the short self-tapping screws (2) at the bottom and two long self-tapping screws (1) at the top.

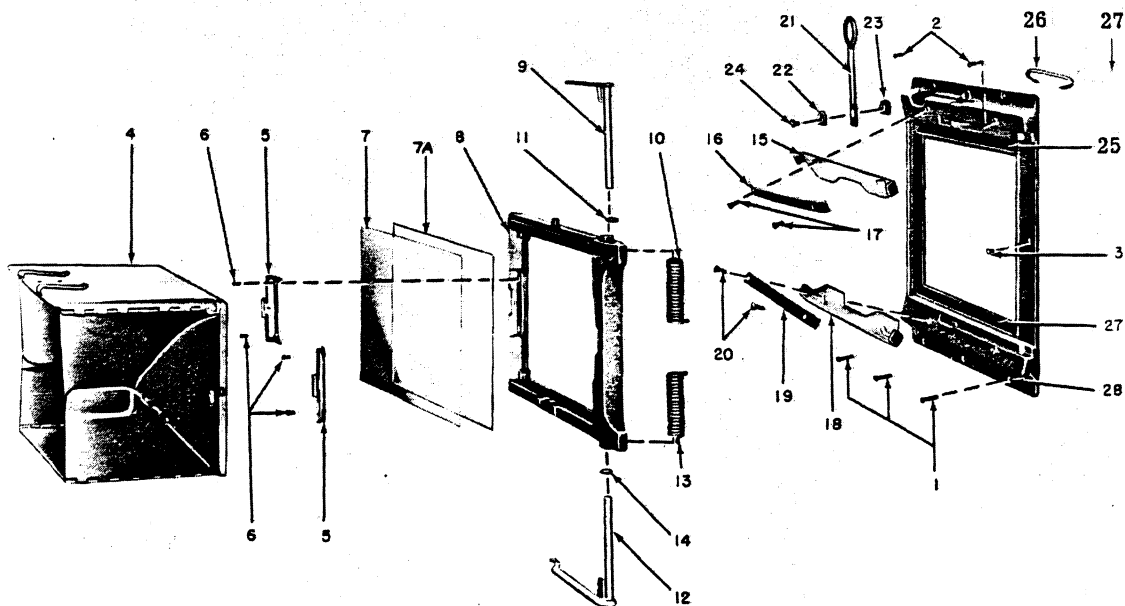


Figure 4. 4x5 Graflok Camera Back

III. GRAFLOK BACK

A. GRAFLOK CAMERA BACK, DISASSEMBLY

1. Remove the focusing panel frame assembly (8, figure 4) by simultaneously pressing the knurled finger pads of the upper and lower arm assembly (9 and 12) and sliding the frame to the right, free of the arm hooks.

2. Remove the long self-tapping screws at the bottom (1), short self-tapping screws at the top (2) and one wood screw (3) at the right side, if used.

3. Remove the hood assembly (4) by pressing outward on the tab of the hood retainer (5).

4. Remove the focusing screen (7) and the two hood assembly retainers (5).

Note: A peepsight erecting spring (25) is located in the cavity on the inside of the back and is concealed by a peepsight spring plate (26).

5. To remove the peepsight erecting spring (25) use a sharp pointed instrument to pry out the peep-sight plate (26); however, do not disassemble unless the peepsight will not stand erect.

Caution: When performing the next operation, hold the panel so that the springs will not fly loose into the face.

6. Pry the arm assemblies (9 and 12) from their respective bearing holes, ease each spring terminal from its associated arm tab, and remove washer (11) or (14) from the arm shafts.

B. GRAFLOK CAMERA BACK, CLEANING AND INSPECTION.

1. Wash the ground glass focusing screen with soap and water; rinse thoroughly and dry.

Note: The hood assembly (4) is assembled with staked hinge pins. It should not be disassembled, but replaced as a unit so that the trouble free operation can be maintained. Clean the upper and lower slidelocks (15 and 18) in solvent, AN-T-37a.

3. Check focusing frame assembly (12, figure 3) and back (17), or check focusing frame assembly (8, figure 5) and back (28) on a machined surface plate. If these parts do not lie flat they must be straightened.

C. GRAFLOK CAMERA BACK, REASSEMBLY.

1. Reassemble the peepsight as instructed in paragraph II.C.1.

2. The slidelocks should be lubricated by wiping both sides lightly with a block of paraffin wax, Federal Specification VV-P-121a. Position the slidelocks (15 and 18, figure 4) so that the slots angle to the left and toward the center. Reassemble the slidelocks, the spring (16 or 19) and the special slidelock screw (17 or 20) so that the screw shoulder fits within the slot of the slidelock.

3. Focusing panel, arm and spring replacement. To simplify the following step, fabricate a special spring tool from a 1/4 inch diameter rod about 6 inches long. Drill a hole, in the end, to the diameter listed below:

For "23" Graflok backs, drill a .067 (No. 51) diameter hole.

For "34" Graflok backs, drill a .076 (No. 48) diameter hole.

For "45" Graflok backs, drill a .086 (No. 44) diameter hole.

If facilities do not permit fabrication of this tool, use heavy pliers.

Warning!!

Hold the frame in a position so spring will not hit the face of the repairman if it should kick out.

(a) To reassemble the arms and spring, first place one washer (11 or 14) over the arm shaft. Spring (10) actuates the upper arm (9), and spring (13) actuates the lower arm (12). Drop the straight end of one spring into its correct relative position in the cavity of the focusing panel (8). Slip the tool over the formed end of the spring or use a heavy duty pliers and wind the terminal 1/2 turn clockwise and hold. Then push the arm shaft through the outer casting hole and

Key to Figure 4. 4 x5 Graflok Camera Back

- | | |
|---|--|
| 1. Screw - Self-tapping, 1/2 in. No. 2 Oval Binding Head, Steel, Jetal | 15. Slidelock - Upper |
| 2. Screw - Self-tapping, 3/16 in. No. 2 Oval Binding Head, Steel, Jetal | 16. Spring |
| *3. Screw - Wood, 3/8 in. No. 2, Brass, Ebonol | 17. Screw - Slidelock - special |
| 4. Hood Assembly | 18. Slidelock - Lower |
| 5. Retainer | 19. Spring |
| 6. Screw - Machine, 3/16 in. No. 2-56 Flat Head, Steel, Jetal | 20. Screw - Slidelock, special |
| 7. Screen - Ground glass focusing | 21. Peepsight Assembly |
| 8. Frame | 22. Cap |
| 9. Arm Assembly - Upper | 23. Washer - Flat, special |
| 10. Spring - Upper | 24. Screw - Machine, (See Parts List for dimensions) |
| 11. Washer - Flat (See Parts List for dimensions) | 25. Strip - Light seal |
| 12. Arm Assembly - Lower | 26. Spring |
| 13. Spring - Lower | 27. Plate |
| 14. Washer - Flat (See Parts List for dimensions) | 28. Back |

PACEMAKER GRAPHIC "23", "34" & "45" SPEED & CROWN

the spring into the center casting hole. Release the spring terminal so that it bears on the arm tab.

(b) Reassemble the focusing screen (7) with the polished side of the focusing screen to the outside. Position the hood assembly retainer (5) at each side and assemble with two machine screws (6).

(c) Fold the focusing hood (4) by squeezing the sides together, swinging up on the bottom and lastly, swinging the top down to latch.

(d) Lay the back on the camera and be sure that the leather covering of the camera base is tucked under all overlapping edges of the back. Assemble the short self-tapping screws (1) on the bottom, two long self-tapping screws (2) on the top and one wood screw (3) on the right center edge if used.

(e) Lay the frame assembly on the back and slide to the left to hook the upper and lower arms (9 and 12) under the back frame hooks.

D. EKTALITE FIELD LENS INSTALLATION.

1. This applies only to those cameras having Graflok back or die cast Graphic or Graflex focusing panels that use the metal 4-sided, removable focusing hood.

Caution: Do not attempt to machine the panel without proper equipment that will work within the tolerance.

2. Tools:

Vertical head mill
1/4 to 5/16 inch end mill cutter
Height gauge or depth micrometer
Screwdriver
5X Magnifier

3. Parts:

31935-P1 Lens - Ektalite field - "45" 1 req.
30414-P4 Lens - Ektalite field - "34" 1 req.
30414-P5 Lens - Ektalite field - "23" 1 req.

4. Procedure:

(a) Remove the focusing panel and disassemble ground glass and retainers.

(b) Mill the ground glass pads to the dimensions shown in the table.

	A	B	C
Camera	±.002 inch (±.051mm)	±.005 inch (±.127mm)	±.005 inch (±.127mm)
"23"	See Note A	0.059 inch (.1497mm)	3.290 inch (83.503mm)
"34"	See Note A	0.086 inch (2.182mm)	4.144 inch (105.177mm)
"45"	See Note A	0.086 inch (2.182mm)	4.860 inch (123.350mm)

Note A: Top of pad to bottom of frame

Graphic: .139 inch (3.528mm)

Graflok: .139 inch (3.528mm)

Graflex: .170 inch (4.315mm) 4x5 only. Other

sizes - see above.

Note B: Width of pads on ends.

Note C: Inside length required for screen assembly.

(c) If the mill cut is too deep it will be necessary to shim the screen assembly. Cut the shim to the width of the "B" dimension (0.086 inch) and cement in position on all four pads.

(d) Assemble the Ektalite field lens underneath the glass with the grooved side toward the frosted side of the ground glass.

VI. FOCAL PLANE SHUTTER

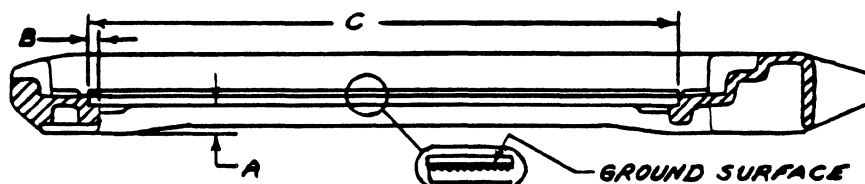
A. FOCAL PLANE SHUTTER, DISASSEMBLY.

Operate the shutter to check time and synchronization. The figures appearing in the shutter cover window are fractional parts of a second. The synchronized speeds, marked in black, are 1000, 500, 250, and T (Time) for class FP (Focal Plane) flash lamps. Unsynchronized speeds are marked in red.

B. SHUTTER PLATE REMOVAL AND DISASSEMBLY.

1. Remove the shutter plate cover assembly (1, figure 2), that is secured by the machine screws (2) and two wood screws (3).

2. Remove the shutter plate cover assembly.



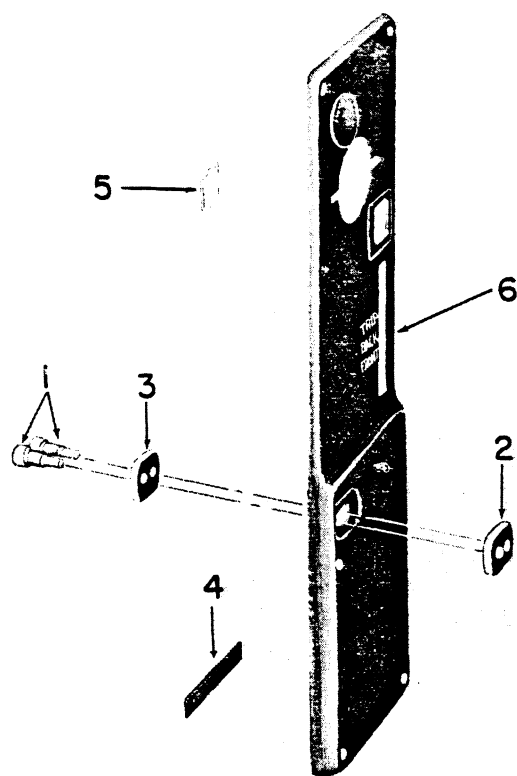


Figure 5. Cover Shutter Plate

1. Stud - Receptacle contact
2. Insulator - Receptacle
3. Washer - Receptacle
4. Seal - Dust
5. Window - Shutter plate
6. Cover - Shutter plate

C. SHUTTER MECHANISM PLATE, REMOVAL AND DISASSEMBLY.

1. Remove the slide dial (7) from the governor stud. On the "23" Speed Graphic, the slide dial is riveted to the top bracket assembly and should not be removed unnecessarily. Remove the shaft retainer screw (5) and slowly unwind the tension shaft retainer (6). Swing the retard cam lever assembly (17A, figure 6) forward to raise the governor. Remove four wood screws (8, figure 2) and lift the shutter mechanism plate assembly (4) from the camera.

2. The shutter plate is disassembled in four stages; disassemble the portion necessary.

(a) Escapement, Master Gear, Winding Key. The escapement (1, figure 6) is secured by two escapement screws (2). Remove and unhook the escapement spring (3). Remove the taper pin (5), the winding key assembly (4) and then the master gear assembly (6) from the inside. Lift the shutter dial (7) from the inside.

(b) Shift Slide (8). To remove, unscrew the

machine screw (9) and lock washer (10). Lift off the shift slide spring (11) and the shift slide plate (12) and the shift slide spacer (13).

Note: Do not remove governor assembly (15) from the plate unless necessary.

(c) Governor. Disconnect the governor spring (14). Remove two hexagonal machine screw nuts (15B), two lock washers (15C) and two dowel studs (15A). Lift the top bracket assembly (15D) from the governor pinion assembly (15E) and take particular care to note the washers (15G) that may or may not be used. Remove the governor shoes (15F) from the pinion assembly. The bottom bracket assembly (15H) can now be removed from the plate.

(d) Lever Assembly. If the retard cam lever assembly (17A) has become bent or damaged, drill out the brass stud (17B) using a No. 50 (.070 inch dia.) drill.

D. CURTAIN AND ROLLERS, REMOVAL AND DISASSEMBLY.

1. To remove the curtain and rollers assembly (9, figure 2) it will be first necessary to tear out the tension roller seal (10), cemented around the lower tension roller gear. This seal is no longer considered necessary and can be discarded since light seals (4, figure 6) and (16, figure 7) are sufficient protection. Shift the curtain and roller assembly to the right out of the camera case bearings and lift from the camera case. Do not loose spacer washers that may or may not be used to prevent too much end play of the rollers. Do not disassemble the rollers from the curtain unless necessary. In the case of a defective roller, replace as a unit. . . do not disassemble.

E. FOCAL PLANE SHUTTER, CLEANING AND INSPECTION.

1. Shutter Plate Cover. Examine the shutter plate cover (1, figure 2) for dents that will obstruct the working of the dial slide (7) or governor assembly. Using a stiff brush, brush the fabric dust seal (4, figure 6) to remove dust and grit that may have collected.

2. Shutter Mechanism Plate Assembly. Clean all parts of the shutter plate (figure 7) with solvent, trichlorethylene (AN-T-37a). Dry all parts thoroughly before reassembly. Check the springs (3 and 4); replace if stretched or deformed. Inspect the gears for worn teeth and loose stop pins.

3. Curtain and Rollers. Examine the curtain for pin holes, tears or weak points near the struts. If the curtain and rollers have been disassembled, remove all old cement before reassembly. Rough the brass rollers with very coarse sand paper. To check the curtain for distortion or stretching that will permit the curtain to run off the edge of the roller, when reassembled, hang the curtain so that the top roller is absolutely level; then check the edges to see that they hang absolutely perpendicular to within 1/4 inch at the base. Replace the curtain if it has been distorted or stretched.

Caution: Do not allow cleaning fluid, trichlorethylene, AN-T-37a, to contact rubber shutter curtain.

PACEMAKER GRAPHIC "23", "34" & "45" SPEED & CROWN

Key to Figure 6.

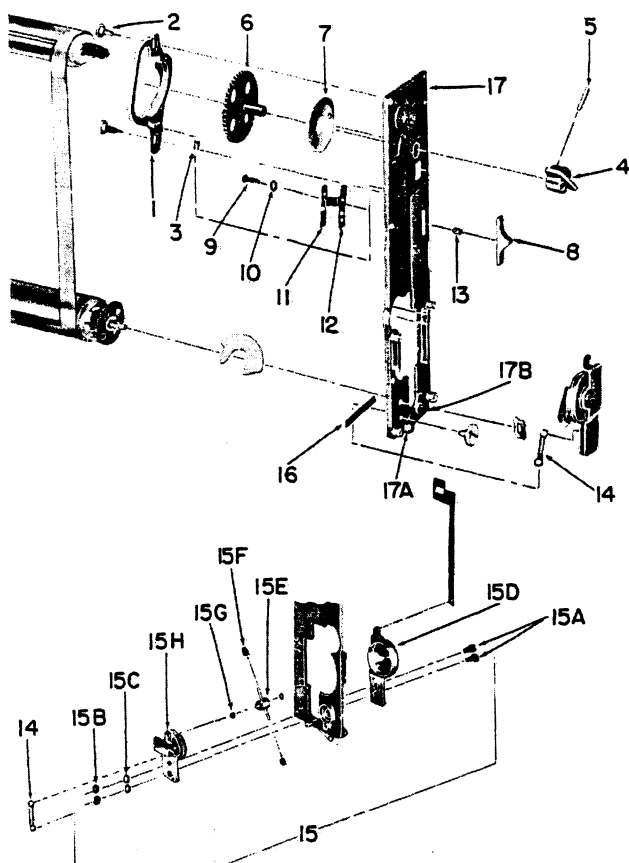


Figure 6. Shutter Plate

4. Contacts. Check the height of the receptacle contact (27, figure 10) and the receptacle jumper (28). Both of these must be arched above the wood surface at least $\frac{3}{16}$ inch so that they will make positive contact with the receptacle contact studs (1, figure 6). Check the curvature of the spring finger contact (13, figure 2); these contacts should be arched evenly not more than $\frac{5}{32}$ inch above the block. If the short and long switch contacts (30 and 91, figure 10) are causing an electrical short, remove the body release plate assembly (34), paragraph VII.A. and replace the contacts.

F. FOCAL PLANE SHUTTER, REASSEMBLY.

1. Focal Plane Shutter Contacts. Reposition the jumper assembly (16, figure 2) and form the right angle tabs at a slight arch so that they will make positive contact with the case contacts (25, figure 10). Slip the spring finger contacts (13, figure 2) into the grooves from the back of the right contact block (12). Replace the machine screws (14) at the top and bottom of the right block.

2. Roller and Curtain Assembly. Assemble the gear roller to the curtain at the end which has the largest aperture. The tension drive roller is assembled to the end of the curtain having the narrowed slits. The silvered contacts are on the right curtain edge facing the spring finger contacts (13).

1. Escapement Assembly
2. Screw - Escapement
3. Spring - Escapement
4. Key Assembly - Winding
5. Pin - Taper, std, No. 5/0, 0.092 in. dia. by 7/16 in. lg., stainless steel
6. Gear Assembly - Master
7. Dial - Shutter
8. Slide - Shift
9. Screw - Machine - See Parts List for dimensions.
10. Washer - Lock
11. Spring - shift slide
12. Plate - Shift slide
13. Spacer - Shift slide
14. Spring - Governor
15. Governor Complete
- 15A. Screw - Dowel, 1/4 in. No. 2-56 SS Bind head Brass
- 15B. Nut - Machine, No. 2-56, hexagonal, brass
- 15C. Washer - Lock, 3/16 in. OD, 0.086 in. ID, 0.012 in. thick, steel
- 15D. Bracket Assembly - Top
- 15E. Pinion Assembly - Governor
- 15F. Shoe - Governor
- 15G. Washer
- 15H. Bracket Assembly - Bottom
16. Strip - Light seal
17. Plate Assembly
- 17A. Lever Assembly - Retard cam
- 17B. Stud - Retard cam lever

(a) Check the ends of the curtain for squareness; then apply cement (MIL-C-4003) to the rollers and curtain ends.

(b) Attach the ends of the curtain to the rollers; it is essential that the ends of the curtain be placed parallel to the longitudinal axis of the rollers to insure proper alignment in the roll-up.

Note: Do not replace the curtain in the camera until the cement is firmly set.

3. Shutter Mechanism Plate Reassembly. If the governor assembly (15, figure 6) has been dismantled, lubricate by wiping the outside ends of the governor shoes (15) and governor pinion assembly (15E) with graphite powder, AN-G-24. The governor shoes must slide freely on the cross shaft of the pinion assembly. Reassemble the governor as follows:

(a) Position the bottom bracket assembly (15H) on the lower cut-out of the plate assembly (17).

(b) Place the governor pinion assembly (15E) with the governor shoes (15F) and any washers (15G), that may have been used, in position between the top and bottom bracket assembly (15D and 15H).

(c) Secure the bracket assembly with two dowel screws (15A) and secure with lock washers (15C) and machine nuts (15B).

Note: If the governor shoes bind on either the drum container or the fiber idler gear, build up with spacer washers (15G).

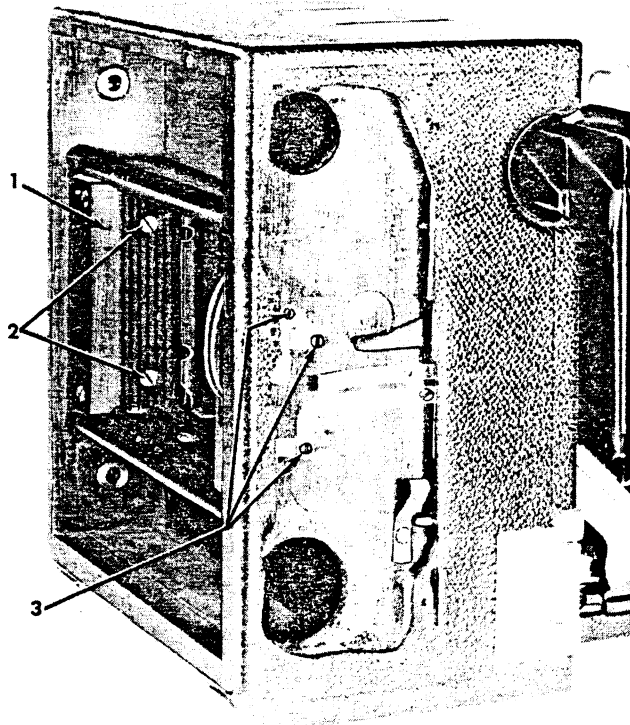


Figure 7. "23" Speed Contact Frame
Assembly Removal

(d) Hook the governor spring (4) to the bottom bracket assembly (15H) and to the lower stud on the plate assembly (17).

4. Plate Assembly.

(a) Assemble the lock washer (10), the shift slide spring (11), the shift slide plate (12) and the shift slide spacer (13) on the machine screw. Position this assembly in the long slot and screw on the shift slide. Turn the shift slide (8) to a vertical position and tighten the machine screw.

(b) Position the shutter dial (7) on its boss at the back of the plate.

(c) Lubricate the master gear lightly with grease, AN-G-25, and insert. Make sure that the stem gears mesh with the shutter dial.

(d) Note the taper of the pin hole of the winding key assembly (4) and position it on the master gear shaft to coincide with the taper of that hole. Assemble taper pin (5) and set the pin with a drive punch and light hammer.

(e) Attach the escapement spring to the necked stud of the escapement assembly (1) attached to the stud at the back of the plate assembly (17). Position the escapement (1) over its bosses and assemble the escapement screws (2).

(f) With the escapement in release position (up) make sure that the master gear stop pins cannot snap back beneath the escapement brake springs; if the latch is not positive, bend the tip of the escapement brake spring down so that it snaps 1/32 inch below the top of the stop pin.

(g) Lubricate the escapement brake spring and the escapement slide slots with grease, AN-G-6.

5. Focal Plane Shutter, Mounting and Timing.

a. Position the curtain and rollers assembly (9, figure 2) after lubricating the bearings of the rollers with grease, AN-G-25.

b. Wind the curtain so that the open "0" aperture is showing.

c. Rotate the winding key until "0" appears squarely in the upper half of the speed shutter dial window (7, figure 7) when the upper master gear pin is stopped against the top step of the escapement (1).

d. With the bottom strut of the curtain 1/4 inch from the upper, inside edge of the frame, position the shutter mechanism plate assembly (4, figure 2) over the pinion ends of the curtain rollers (9). The escapement actuating lever of the concealed body release plate must contact the bottom stud of the escapement assembly (1) and the shutter selector shift slide and the shutter selector lever of the concealed body release (located near the middle) must contact the bottom shift plate slide (12, figure 7). The gear of the top roller meshes with the master gear assembly (6).

e. Swing the retard cam lever assembly (17A) forward to raise the governor assembly (15). Drop the bearing shaft of the tension roller in the lower bearing hole of the plate. At the forward edge of the plate is a narrow cut-out which fits with a raised lip of the concealed body release plate.

f. Note the horizontal side play of each roller. If this side play is more than 1/32 inch, place 0.007 inch washers at the camera case bearing end of the shafts.

g. With a screw driver, obtain tension on the lower roller by winding the slotted shaft counter clockwise. Hold the roller and pull the curtain out by hand several times to remove the cloth slack; then release the spring tension slowly.

h. Position the tension shaft retainer (6, figure 2) over the shaft and start the shaft retainer screw (5). Draw a pencil line on the retainer, and using this as an index, wind the slotted shaft counter clockwise to the number of turns indicated below:

1. "23" Speed Graphic - 4 revolutions.
2. "34" Speed Graphic - 5 revolutions.
3. "45" Speed Graphic - 6 revolutions.

i. Tighten the shaft retainer screw so that the screw shoulder fits into the tension shaft retainer cut-out edge.

Caution: If it is necessary to wind the initial tension one and one-half revolutions more than have been recommended, check for possible area of binding. Check roller bearing, master gear, and governor.

j. Wind and release the full length of the curtain several times. Check the distance of the top strut of the open aperture from the top inside edge of the case. If this distance is not 1/4 inch from the bottom of the curtain strut to the upper, inside edge of the frame it will be necessary to change the gear positions of the upper roller and the master gear assembly. To correct this gear

PACEMAKER GRAPHIC "23", "34" & "45"
SPEED & CROWN

position, remove the wood screws (8), lift the upper edge of the shutter mechanism plate assembly, and raise or lower the mesh of the gears by one or two teeth as necessary.

k. Check the strut position after relocation and reassemble the wood screws (8).

l. Replace the shutter plate cover assembly (1) and assemble two wood screws (3) at the top and four machine screws (2) at the bottom.

m. Lay the camera face down and draw a pencil line across the center of the top roller; lift the curtain and below the line which shows, apply a thin film of cement, MIL-C-4003, about 1/2 inch wide.

n. Wind the curtain until the smallest slit is at the top. Repeat the procedure on the bottom roller as was used to cement the top curtain.

o. Arch the spring finger contacts (13) at least 3/16 inch above the block. The arch must be curved evenly and as long as permissible.

p. Assemble the camera back (22, figure 1).

6. Focal Plane Shutter Check. Check focal plane

shutter speeds as follows:

a. Set the shutter at the open "0" aperture; with the camera either horizontal or vertical, the shutter opening should move slowly and smoothly across the camera. The curtain should latch in this position when the shutter release is depressed. The winding key should lock and not rotate.

b. If the curtain movement is not smooth and even, and if the curtain does not latch when the movement is completed, the tension of the lower roller must be increased as described in paragraph IV.F.8. The tension should be added and checked by half turns above the turns prescribed.

c. If the equipment is available, the shutter should be tested further and more accurately with an electronic tester or stroboscopic light source.

d. Check the flash contact of the curtain by inserting a test lamp in the battery case. Contact should be tested at settings of 1000, 500, 250, and 0. See paragraph IV.A. for operational procedure.

V. FRONT STANDARD

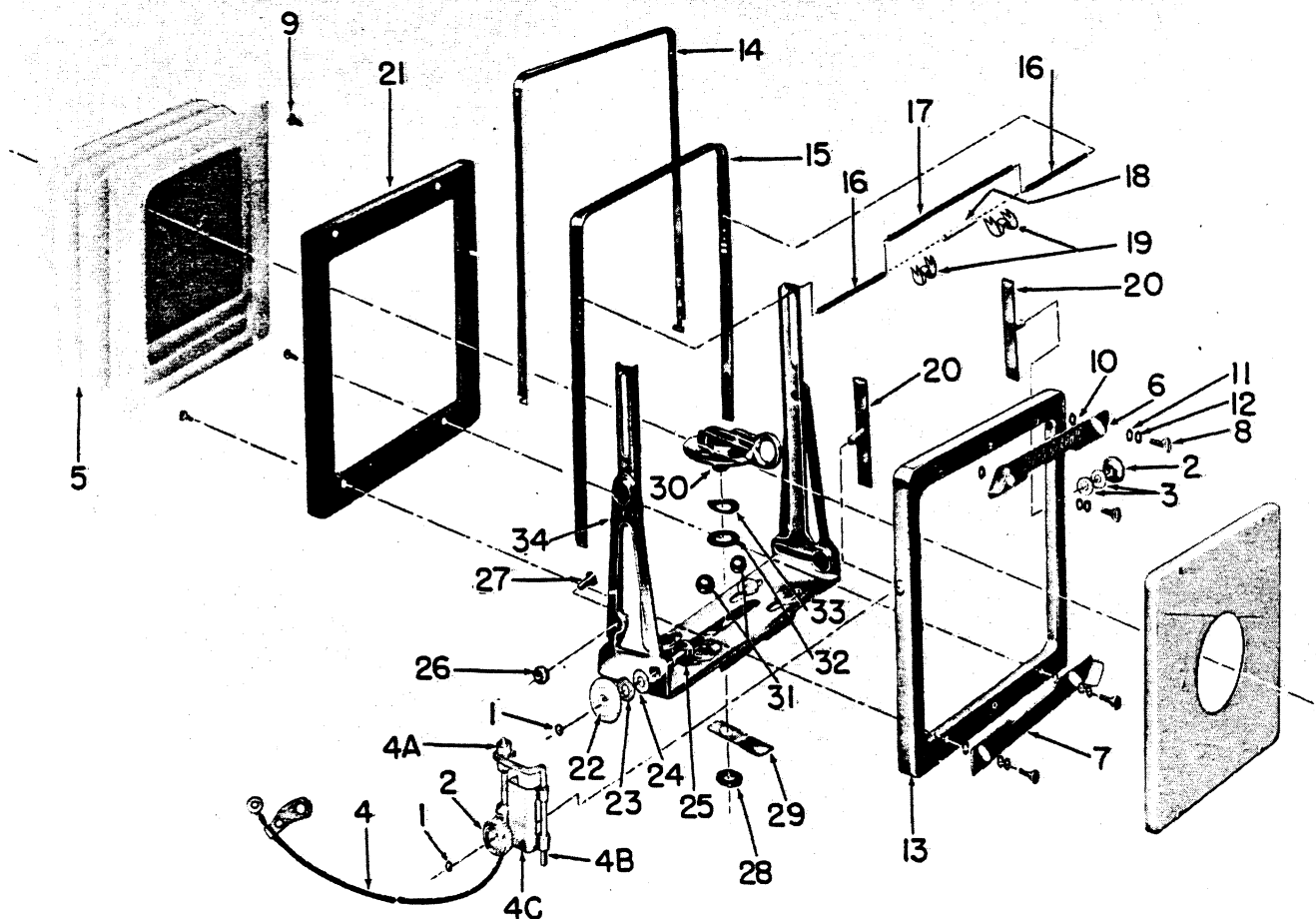


Figure 8. Front Standard

A. FRONT STANDARD DISASSEMBLY.

Note: If it is not necessary to remove the bellows assembly (5, figure 8), slide the front standard from the bed and proceed from paragraph C.

1. Bellows Removal, 4x5 Camera.

(a) Remove the camera back.

(b) Open the camera bed (27, fig. 2) and snap into normal position.

(c) On "45" cameras, remove four machine screws (36). On "23" and "34" cameras, remove the four wood screws (2, fig. 7) holding the frame and contact assembly (1).

(d) Withdraw several inches of the curtain from the bottom roller and remove the inside frame. It is not necessary to disassemble this frame.

Note: If it is found difficult to remove the frame and contact assembly do not attempt to force the frame out. This can be remedied by removing the shutter plate (4, figure 2), as described in paragraph IV.V. and partially unscrewing the contact screws (3, fig. 7).

(e) The rear metal bellows frame is crimped at each corner to the metal box frame. Straighten this crimped edge to remove the rear bellows frame from the camera body.

(f) To remove the bellows from the frame and support section, remove the lower slide lock (9, fig. 8) that is secured by two slide lock screws (8). Swing the lower edge of the front bellows frame back and drop the upper edge free from the slide lock nut head.

2. Cable Release Assembly, Removal. To replace the cable release assembly (4) proceed as follows:

a. Remove the frame clamp knob (rising front) (2) from the right side of the front standard. Slip the manual trip bracket (4C) from the stud.

1. On "23" cameras. Release pressure of spring (10, fig. 11) by removing wood screw (11). Remove cable mounting screw (9). From the cable mounting clip remove two wood screws (12).

2. On "34" cameras. Release pressure of spring (10) by removing wood screw (12). Remove cable mounting screw (14). From the cable mounting clip remove two wood screws (12 and 15).

3. On "45" cameras. Release pressure of spring (10) by removing wood screw (12) and washer (13). From the cable release lever assembly (16) remove the mounting screw (15). Remove two wood screws (12 and 15) from the cable mounting clip.

b. Slip the terminal end of the cable through the bellows hangers to free the cable release assembly from the main subassembly.

3. Front Sight Disassembly.

a. Remove the knob retaining ring (1, fig. 8), used on early models, from each side of the frame clamp (rising front knob) (2) and unscrew the knob of each side of the frame. Later models have stud threads staked. Remove the upper and lower lensboard lock (6 and 7) that are attached by slide lock screw (8), flat washers (10 and 11) and spring washer (12).

b. Spread the standard support assembly (34) enough to slide the lensboard frame upward and free of the channel.

Key to Figure 8. Front Standard

1. Ring - Knob retaining
2. Knob - Frame clamp (Rising front)
3. Washer - Flat, 5/16 in. OD, 0.128 in. ID, 0.015 in. thick fiber.
4. Release Assembly - Cable
- 4A. Nut - Cable release
- 4B. Rod - Manual trip
- 4C. Bracket - Manual trip
5. Bellows Assembly - Second
6. Lock - Lensboard
7. Lock - Lensboard
8. Screw - Slidelock
9. Nut - Slidelock
10. Washer - Flat, 7/32 in. OD, 0.089 in. ID, 0.010 in. thick stainless steel
11. Washer - Flat, 0.203 in. OD, 0.117 in. ID, 0.010 in. thick stainless steel
12. Washer - Spring, 0.203 in. OD, 0.017 in. ID, 0.031 in. thick, spring steel
13. Frame - Outer front assembly
14. Finder
15. Frame - Finder
16. Plunger - Finder

17. Sleeve - Finder lock spring
18. Spring - Finder
19. Bracket - Plunger
20. Plate Assembly - Front frame clamp
21. Frame - Inner front
22. Knob - Support locking (Tilt front)
23. Washer - Flat, 0.312 in. OD, 0.128 in. ID, 0.012 in. thick fiber.
- *24. Washer - Flat - See Parts list for dimensions.
25. Screw - Support locking
- †26. Nut - Front standard eccentric
- †27. Eccentric - Front standard
28. Nut - Special
29. Spring - Shift locking
30. Lever Assembly
31. Ball - Steel
32. Washer - Flat, 0.375 in. OD, 0.218 in. ID, 0.010 in. thick fiber
33. Washer - Lever Assembly, spring, 17/32 in. OD, 0.265 in. ID, 0.007 in. thick, 5/16 in. radius spring steel
34. Standard Support Assembly

*Not used on "34" Speed Graphic

†Not used on "23" Speed Graphic

c. Lift the outer front assembly frame (13) evenly from the assembly to expose the inner parts of the frame.

Note: Disassemble the finder plunger (16) carefully so that the finder spring (18) does not throw and lose the finder plungers (16).

d. Lift the finder (14) and the finder frame (15) from the assembly.

4. Lateral Shift Spring and Lock Lever Disassembly. The lever assembly (30) and the shift locking spring (29) are secured by the special hex nut (28). Unscrew the special nut (28) from the bottom of the standard support assembly (34). The shift locking spring may now be removed. Unscrew the slotted stud of the lever assembly (30) taking care not to lose the steel lock balls (31), one flat washer (32) and one lever assembly spring washer (33).

B. FRONT STANDARD AND BELLOWS INSPECTION AND CLEANING.

1. The bellows (5) should be wiped free of dirt on the outside with a damp cloth. Scrub the inside surface with a stiff brush (old toothbrush) and blow out all loose dirt and grit.

2. Inspect the finder frame (15) and if the parallax detent holes are worn by the finder plunger (16) so that the plunger does not quickly snap into the selected parallax height, the finder frame (15) should be replaced.

3. If the finder plungers do not snap audibly in position and hold the finder frame the finder spring (18) should be replaced.

4. Clean the sliding area of the finder (14), the finder frame (15) and the front frame clamp plate assemblies (20) in solvent (AN-T-37a) and dry before reassembly.

5. Squareness adjustment is set by the front standard eccentric (27) and special lock head nut (28) located on each side.

Note: A height gauge, surface gauge, with dial indicator, parallel blocks, and a surface plate should be used for this adjustment.

6. Remove the focusing spring screw (7, fig. 3), and remove the focusing panel (12). Set the camera back on the parallel blocks, pull the front standard forward on the bed against both infinity stops and lock. Check the height with indicator at each corner and adjust the eccentrics (27, fig. 8) or relocate the infinity stop (19 or 20, fig. 1).

C. FRONT STANDARD AND BELLOWS REPAIR.

1. Straighten the crimped edges of the metal back frame.

2. Stretch the bellows to its full extension and inspect for pin holes by inserting an electric light bulb inside, being careful not to burn the inside fabric.

3. Inspect the finder (14, figure 8) and finder frame (15) for squareness. If the detent holes of the finder frame (15) have become worn by the finder plungers (16) it will be necessary to replace the finder frame in order to hold in the desired parallax height.

D. FRONT STANDARD REASSEMBLY.

1. Lateral Shift and Lock Lever. To the lever assembly (30, figure 8) assemble the lever assembly spring washer and the flat washer. Fit the two steel balls (31) into their position between the lever assembly (30) and the standard support assembly (34) and thread the lever assembly stud through the standard support assembly. Lay the shift locking spring (29) in position and assemble the special hexagon nut (28).

2. Adjusting Lock Lever. Check the front standard to determine how tightly it will lock, by placing on the sliding yoke of the bed and setting the lock lever (30). It should clamp tightly enough to prevent slippage when the bellows and lens are assembled. To tighten the lock lever, loosen the lock nut (28) on the bottom side and turn the screw in a counter clockwise direction; to loosen the lock, turn the screw in a clockwise direction and then tighten the nut.

3. Lensboard Frame and Sight Reassembly. Lubricate the flat surface of each front frame clamp plate assembly (20) with grease, AN-G-6. Lubricate the sliding areas of the finder (14) and the finder frame (15) with grease, AN-G-6.

a. To the outer front assembly frame (13) assemble the front frame clamp plate assembly (20) on each side. Assemble the finder to the finder frame (15) and lay in position. Assemble the finder spring (18) to the finder lock spring sleeve (17) and insert a finder plunger (16) at each end. Compress the finder plungers and drop into position between the uprights of the finder frame (16). Assemble a finder bracket (19) at each end of the finder lock spring sleeve (17) and center the middle section of the plunger bracket over the hole intended for the slide lock screw (8). Assemble the inner front frame (21) to this assembly and position the upper slide lock nuts to the top rear holes. Position the flat washers (10), lay the upper lensboard lock in position and assemble the slide lock screw (8) that has been fitted with spring washer (12) and flat washer (11).

b. Attach the frame assembly to the bellows by sliding the top edge of the front bellows frame under the slide lock nuts (8). Swing the lower edge of the front bellows frame against the frame and assemble the lower slide lock nuts through the lower bellows frame slots. Assemble the lower lensboard lock (7) and its attaching parts.

c. To assemble the lensboard frame assembly to the standard support assembly (34) spread the upright channels and drop the lensboard frame into position with the threaded studs of the front frame clamp assembly (20) extending through the vertical section. To the stud on the left side, assemble two flat fibre washers (3) and a frame clamp knob (2). Peen the first thread lightly to prevent loss of the knob.

4. Cable Release Replacement. Attach the cable release assembly (4) as follows:

a. On "23" cameras. Attach the cable mounting clip with two wood screws (12). Place the large loop end of the spring (10), as shown in figure 11, over the stud of the body release lever,

which extends inside the case, and retain by securing the end of the cable to the stud with machine screw (14). Secure the small loop end of spring (10) to camera body with wood screw (11).

b. On "34" cameras. Follow the same procedure as for the "23" camera. Refer to illustration in figure 11.

c. On "45" cameras. Attach the cable mounting clip with wood screws (12 and 15). Position the fork of the cable release lever (16) around the stud of the body release lever, which extended inside the case, and assemble the lever mounting screw (15) at the bottom of the cable release lever. Assemble the special block screw (14) to secure the lever fork in position with the body release lever stud. Assemble the washer (13) through the wood screw (12) and anchor the large loop end of the spring (10) as shown in figure 11.

d. Thread the manual trip bracket (4, figure 8) through the bellows hangers and mount the bracket over the right front frame clamp plate stud. Assemble the frame clamp knob (2) and peen the first thread of the stud at one point.

5. Bellows Replacement. Attach the front bellows frame as instructed in paragraph V.D.3.b. above.

a. Position the rear bellows frame inside of the camera case frame and crimp the rear bellows frame to the camera frame at each of the four

corners.

b. On "45" cameras, replace the inside frame made up of the right and left guide blocks (11 and 12, figure 2), the two curtain guides (15), the strip and spacer (34 and 35) and assemble four machine screws (36).

c. On "23" and "34" cameras, replace the frame and contact assembly (1, figure 7) and assemble four wood screws (2).

d. Replace the camera back (11, figure 1) as instructed in paragraph II.C.2.c.

6. Cable Release Adjustment.

a. The manual trip clamp (16, figure 1) is clamped to the manual trip rod (4B, figure 8) and the relationship of the manual trip clamp to the shutter release lever is adjusted by means of the twin cable release nuts (4A).

b. Set the shutter shift slide (8, figure 6) so that the raised portion of the slide is opposite "FRONT". Release the shutter from the body shutter release (15). The shutter should be released from any position of the front standard from minimum to maximum bellows extension. . . start preliminary adjustments with the minimum bellows extension and adjust the height of the manual trip rod so that the body release is set with the minimum travel.

VI. BED

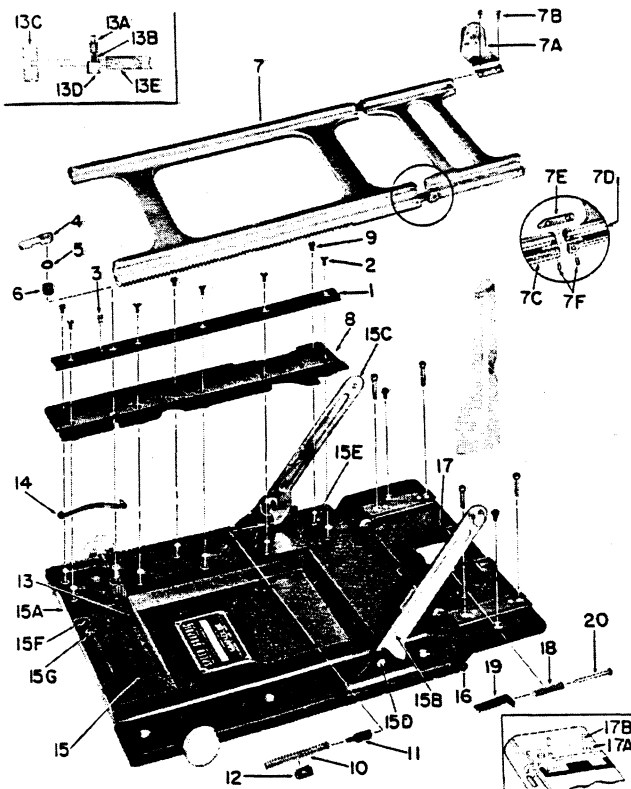


Figure 9. "34" and "45" Graphic Bed

A. BED DISASSEMBLY.

1. Removal. If it is not necessary to remove the bed (27, figure 2) from the camera body (37) proceed from paragraph VI. 2. below.

a. Slide the front standard (17) forward and free of the bed yoke.

Note: If bellows assembly is to be removed refer to paragraph V.1.

b. Remove the right and left bed brace plates (1, figure 11) that are secured by screws as illustrated in figure 11.

Caution: Hold the plate to prevent stripping the last few wood screw holes as the bed brace arms are under spring tension.

c. From the bed hinge, remove two wood screws (31). Remove four yoke guide case screws (32) that are screwed into machine nuts (37, figure 12) located in the case feet (36).

d. Lift the bed from the camera case.

2. Disassembly. Open the bed but do not lock in a horizontal position, allowing the bed to slide freely in the bed brace plates (28 and 29, figure 2). Disassemble the left side first.

a. Remove the focusing scale (12, figure 1).

b. On "34" and "45" cameras remove the bed section guide (1, figure 9) by removing machine screws (2).

Key to Figure 9. "34" and "45" Graphic Bed

1. Guide - Right - Bed section
2. Screw - Machine, 1/4 in. No. 2-56 Flat head
3. Screw - Special Fillister head
4. Lever - Yoke lock
5. Washer - Flat, 9/32 in. OD, 0.177 in. ID, 0.010 in. thick brass
6. Sleeve - Yoke lock
7. Yoke Assembly
- 7A. Bracket Assembly - Rangefinder
- 7B. Screw
- 7C. Yoke - Bed section
- 7D. Yoke - Case section
- 7E. Link - Yoke
- 7F. Pin - Yoke link
8. Block - Right bed
- *9. Screw - Block
10. Spring - Bed brace
11. Plunger - Bed brace
12. Clip - Spring retaining
13. Pinion Assembly
- 13A. Screw - Set, 3/16 in. No. 3-48 slotted, flat point, steel
- 13B. Pad - Yoke lock
- 13C. Knob - Focusing
- 13D. Post - Yoke lock
- 13E. Pinion - Focusing
14. Spring - Focusing pinion
15. Bed Assembly
- 15A. Escutcheon - Bed
- 15B. Brace Assembly - Left
- 15C. Brace Assembly - Right
- 15D. Rivet - Bed brace assembly
- 15E. Bushing - Guide and block screw
- 15F. Catch - Bed
- 15G. Rivet
16. Pin - Hinge, See Parts list for dimensions
17. Hinge Assembly
- 17A. Guide - Right - Case section
- 17B. Pin - Dowel, 0.082 ± .0003 in. dia x 0.195 in. lg., stainless steel
18. Spring
19. Slide
20. Pin - Escutcheon, 0.082 in. x 1 in. lg.

*Not used on "34" camera bed.

c. On "23" cameras remove the bed section guide (1, figure 10) by removing guide and block screws (2).

d. Rack the yoke assembly (7) forward until the rear case yoke section is free of the hinge guides. Lift the yoke assembly (7) from the bed.

e. On "34" and "45" cameras remove block screws (9, figure 9) from the bed block (8). When the bed block is lifted from its position care should be taken so that the bed brace spring (10) does not throw and lose the bed brace plunger (11).

f. On "23" cameras lift the bed block from its position being careful that the bed brace spring (8, figure 10) does not throw and lose the bed brace plunger (9).

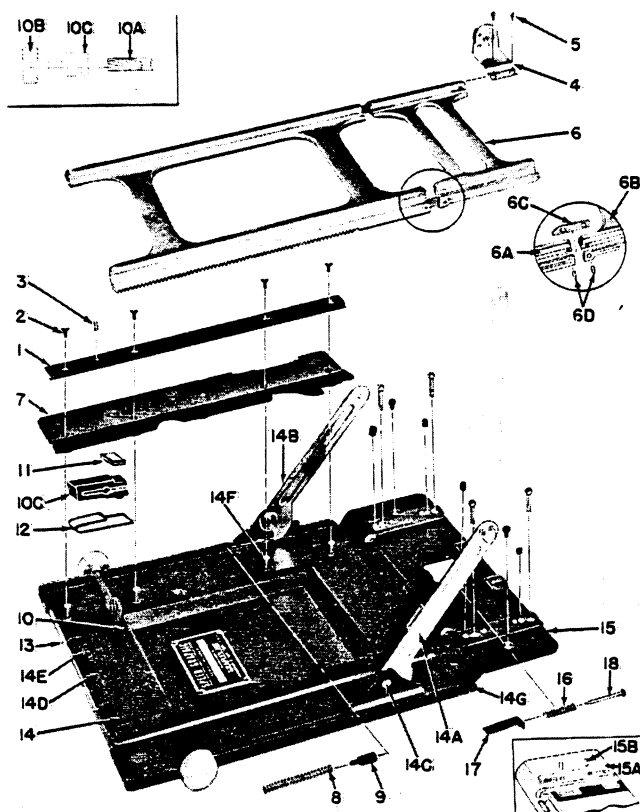


Figure 10. "23" Speed Bed

g. On "34" and "45" Graphic beds swing the yoke lock lever (4, figure 9) clockwise so that the special fillister head screw (3) can be removed. Unscrew the yoke lock lever (4). Remove the flat washer (5) and the yoke lock sleeve (6).

h. Follow the above steps for right side disassembly.

i. Lift the pinion assembly (13) from the bed. Do not lose the focusing pinion springs at each side.

Note: Do not disassemble the yoke assembly (7), the pinion assembly (13), or the bed assembly (15).

B. BED CLEANING AND INSPECTION.

1. Clean the bed, the bed blocks, and the bed section guides with a cloth moistened in solvent. Wash all other metal parts in solvent, trichlorethylene, and dry thoroughly.

2. Check the top surface of the bed blocks (8) with a straight edge to be sure they are absolutely flat. Check the bed section guide (1) for straightness. Check the yoke assembly for flatness in all directions.

3. Check the bed hinge for smooth operation and no binding. Replace if the hinge binds.

4. Re-cement loose leather with adhesive MIL-C-4003, assuring that the edge of the leather is bound beneath the bed block.

Key to Figure 10. "23" Graphic Bed

1. Guide - Right - Bed section
2. Screw - Machine, 1/4 in. No. 2-56 Flat head, brass
3. Screw - Set, 1/8 in. No. 3-48 Oval point
4. Bracket Assembly - Rangefinder
5. Screw - Machine, 0.145 in. No. 1-64 Flat head brass
6. Yoke Assembly
- 6A. Yoke - Bed section
- 6B. Yoke - Case section
- 6C. Link - Yoke
- 6D. Pin - Yoke link
7. Block - Right bed
8. Spring - Bed brace
9. Plunger - Bed brace
10. Shaft Assembly - Pinion
- 10A. Pinion - Focusing
- 10B. Knob - Focusing
- 10C. Brake - Yoke lock
11. Plate - Brake
12. Spring - Focusing pinion
13. Escutcheon - Bed
14. Bed Assembly - Second
- 14A. Brace Assembly - Left
- 14B. Brace Assembly - Right
- 14C. Rivet - Bed brace
- 14D. Catch - Bed
- 14E. Rivet - Bed catch
- 14F. Bushing - Guide and block screw
- 14G. Pin - Hinge, 0.062 in. dia x 4.093 in. lg.
15. Hinge Assembly
- 15A. Guide - Right - Case section
- 15B. Pin - Dowel, 0.082 ± .0003 in. dia x 0.195 in. lg.
16. Spring
17. Slide
18. Pin - Escutcheon, 0.082 in. dia x 1 in. lg.

C. BED REASSEMBLY

1. Hinge. Use grease, AN-G-6, and lubricate the following hinge parts.

a. The case section guide (17A, figure 9) should have the sliding grooves wiped with a film of the above lubricant.

b. The bed throw-out slide (19) should have its sliding surfaces wiped with a film of the above lubricant.

c. Assemble the case section guide (17A) to the hinge assembly (17) by using two dowel pins (17B) in each guide.

d. After the bed is assembled to the camera and checked by sliding the front standard from the bed to the hinge section, it may be found necessary to shim the case section guide, see paragraph VI.C.7.

2. Focusing Pinion Reassembly

a. On "34" and "45" cameras lay the focusing pinion assembly (13) in the bed with the yoke lock post (13B) on the right hand side. Position the focusing pinion spring (14) at the extreme inside end of the pinion.

b. On "23" cameras position the pinion assembly (10, figure 10) on the bed with the four yoke lock brakes (10C) close together and resting on the focusing pinion spring (12).

c. Hold the pinion in position at this time by snapping a rubber band around the knob, across the outside of the bed and around the other knob.

Lubrication Note: Use grease, AN-G-6, as indicated. Pinion assembly (13, figure 9) - reasonable amount on helical gear teeth and wipe small diameter of shaft.

Yoke assembly (7, figure 9) - wipe guide edges and a reasonable amount on gear teeth. Roll over pinion to distribute grease in bottom teeth and wipe off excess.

Guide, right and left bed section (1, figure 9) - wipe sliding groove.

3. Block Assembly.

a. To assemble the bed block (8) on "34" and "45" cameras, insert the stud of bed brace plunger (11) into the bed brace spring into space provided on the under side of the bed block and hold in position by use of the spring retaining clip (12) that clips around the spring and over the rib on the bottom of the block. Check the position of the focusing pinion spring (13) so that it will fit in the block cavity that is provided. Lower the block into position over the guide and block screw bushings (15E). Be sure that the edge of the leather is tucked in between the block and the bed. On "45" cameras only, assemble three bed block screws (9).

b. On "23" cameras insert the stud of the bed brace plunger (9, figure 10) into the space provided on the under side of the bed block (7). Place the brake plate (11) on the cut-out portion on top of the yoke lock brake (10C) and lower the block into position over the guide and block screw bushings (14F). Assemble the bed section guide (1) and secure with four machine screws (2).

c. Assemble the opposite bed block as instructed in the preceding paragraphs.

4. Yoke Lock Lever, "34" and "45" cameras only.

a. Assemble the right bed section guide (1, figure 9) and attach with machine screws (2).

b. Insert the yoke lock sleeve (6) and assemble the flat washer (5), if required. This flat washer is a spacer washer that may or may not be needed, depending on the position of the yoke lock lever when it is assembled.

c. Assemble the yoke lock lever (4) and tighten. Note the position and if the lever does not tighten in convenient position it should be removed and the thread started in a different position; it has a triple lead thread. If it is not possible by trial and error to have the lever lock in a convenient position, one or more of the flat washers (5) should be positioned above the yoke lock.

d. After the yoke lock lever position has been found to be satisfactory, assemble the special fillister head screw (3).

Note: Old style bed guides with countersunk holes require the flat head screw; the newer bed guides

have counterbored holes and require the binding head screws. See parts list.

5. Guide Assembly and Adjustment.

a. Position the yoke assemble forward so that the bed section guide will engage both the bed and case section of the yoke.

b. Position the left bed section guide and assemble machine screws (2, figures 9 and 10).

c. With the bed section guide screw (2, figure 9) loosened on both sides, slide the yoke back so that the case section will partially engage in the case section guide (17A). This will center the front section in relation to the case section. Draw both bed section guides (1) together evenly with the fingers and tighten the guide screws (2) on both sides.

d. Check the assembly at this point by sliding the yoke assembly back and forth several times. It should work smoothly without binding or jumping. There should be enough side tension so that the yoke will not slide by itself when the bed is held vertically.

e. On "34" and "45" cameras it may be necessary to readjust the guides or to increase the tension on the yoke lock post (13D). Tighten the center set screw (13A). If the set screw can not be tightened enough it will be necessary to add an additional yoke lock pad (13B) beneath the set screw.

f. On "23" cameras it may be necessary to readjust the guides or to increase tension on the yoke lock brake (10C, figure 10) by gently tightening the set screw (3) until the desired tension on the pinion is reached.

6. Bed Reassembly to Camera.

a. Place the bed in position in the camera case and reassemble four yoke guide case screws (32, figure 2) that are screwed into the machine nut (37, figure 12) located in the foot (36). Assemble two wood screws (31, figure 2).

b. Engage each bed brace with its proper bed brace plate (28 and 29). Allow the bed brace arm to slide freely in the slot and assemble the mounting screw in the old mounting hole.

Note: If any of the mounting holes have been stripped or become enlarged they should be plugged with a hard wood dowel that is cemented in place; use Federal Specification C-G-451.

c. On "23" cameras attach the left bed brace plate (1, figure 11) with one wood screw (3) at the top, screw (3) at the side and screw (6) at the bottom. Attach the right bed brace plate with one wood screw (2) at the top and one wood screw (4) at the side and screw (5) at the bottom.

d. On "34" cameras attach the left bed brace plate (1) with five wood screws (7). Attach the right bed brace plate with one wood screw (7) at the top and four wood screws (8) at the bottom.

e. On "45" cameras attach the left bed brace plate (1) with five wood screws (7). Attach the right bed brace plate with one wood screw (7) at the top and four wood screws (8) at the bottom.

7. Checking Bed Alignment.

a. Test the bed with a straight edge to make certain that it is level with the bottom of the case. Lay the straight edge across the bed emboss to the camera bottom. The bed brace plates may have to be moved up or down slightly to attain this level. If adjustment is necessary, first loosen the screws and try to obtain alignment without completely removing the plate.

b. Secondly, lay the straight edge across the bed section guide and case section guide.

c. Next check the top surface of the yoke assembly (7, figure 2). If the top surfaces of the yoke guide are not level, the front standard will not slide smoothly on the yoke. If necessary,

shim the case section guide as follows:

1. Loosen the case yoke guide screws (32) and slip the blade of a knife beneath the guide to raise it enough to insert the necessary number of shims. On newer model "23" cameras the adjustment of the case yoke guide is made with the two set screws on each guide. Older model cameras require adjustment with shims.

2. The case yoke guide shim (33, figure 2) is available in three thicknesses; .016 inch, .040 inch and .060 inch thick; adjust as necessary by trial and error until the top surface of the yokes are level.

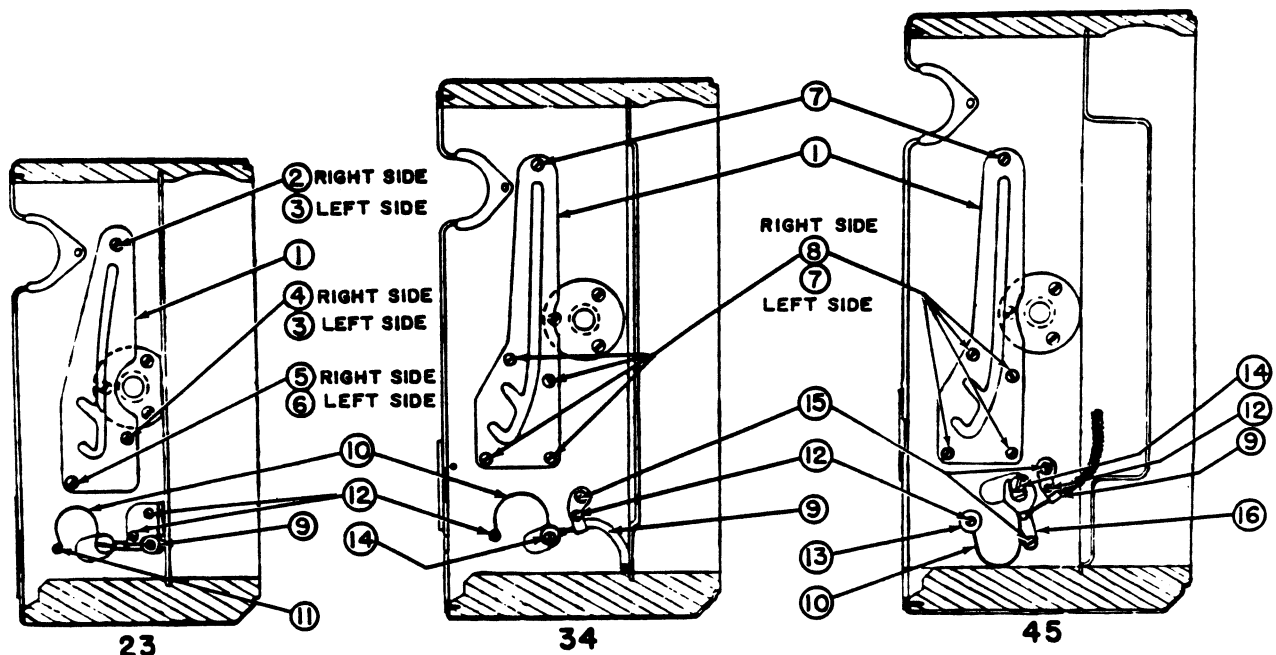


Figure 11. Right Bed Brace Plate and Cable Release Mounting

- | | |
|--|---|
| 1. Plate - Right - Bed brace | 6. Screw - Machine, 3/16 in. lg., No. 3-48 Flat H Brass |
| 2. Screw - Machine, 3/8 in. lg., No. 3-48 O Bind H, Phillips | Screw - Wood, 1/4 in. lg., No. 2 Flat H Brass (For older model cameras) |
| 3. Screw - Machine, 3/16 in. lg., No. 3-48 O Bind H, Phillips | 7. Screw - Wood, 1/4 in. lg., No. 2 Flat H Brass |
| Screw - Wood, 1/4 in. lg., No. 2 Flat H Brass (For older model cameras) | 8. Screw - Wood, 3/16 in. lg., No. 2 Flat H Brass |
| 4. Screw - Machine, 1/8 in. lg., No. 3-48 O Bind H, Phillips | 9. Release Assembly - Cable |
| Screw - Wood, 3/16 in. lg., No. 2 Flat H Brass (For older model cameras) | 10. Spring - Cable release |
| 5. Screw - Machine, 1/8 in. lg., No. 3-48 Flat H Brass | 11. Screw - Wood, 3/16 in. lg., No. 1 Flat H Steel |
| Screw - Wood, 3/16 in. lg., No. 2 Flat H Brass (For older model cameras) | 12. Screw - Wood, 3/16 in. lg., No. 1 Round H Steel |
| | 13. Washer - Flat, 0.281 in. OD, 0.093 in. ID, 0.012 in. thick steel |
| | 14. Screw - Cable, special |
| | 15. Screw - Wood, 3/16 in. lg., No. 2 Round H Steel |
| | 16. Lever Assembly - Cable release |

PACEMAKER GRAPHIC "23", "34" & "45" SPEED & CROWN

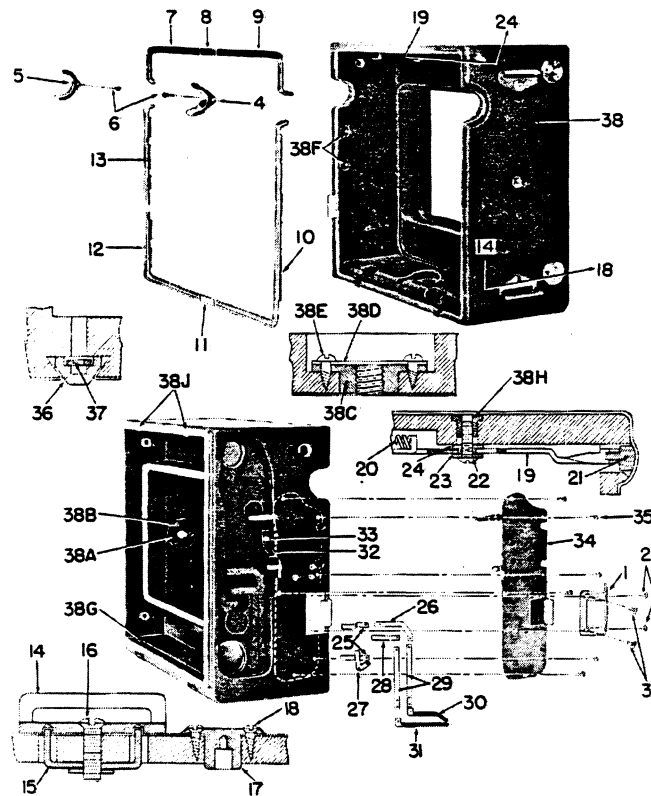


Figure 12. Case

1. Plate - Release slide
2. Screw - Wood, 1/4 in. lg., No. 2 Oval H Brass, Chrome plated, Phillips drive
3. Screw - Slide release plate, special
4. Escutcheon, Left - Focusing knob
5. Escutcheon, Right - Focusing knob
6. Pin - Escutcheon 0.042 in. dia x 1/4 in. lg.
7. Moulding - Upper right
8. Plate - Moulding, top "GRAFLEX"
9. Moulding - Upper left
10. Moulding - Lower left
11. Plate - Moulding, bottom
12. Moulding - Lower right
13. Moulding - Right
14. Bracket - Handle
15. Nut - Handle bracket
16. Screw - Machine, 1/2 in. lg., No. 6-32 Oval H, Brass, Chrome plate, Phillips drive
- †17. Bearing - Roller (replacement)
18. Screw - Wood, 1/4 in. lg., No. 2 Oval H, Brass, Chrome plate, Phillips drive
19. Latch - Bed
20. Spring - Bed latch
21. Button - Bed release
22. Screw - Machine, See Parts list for dimensions.
23. Washer - Flat, See Parts list for dimensions.
24. Collar - Bed latch insert
25. Contact - Case

- *26. Jumper - Contact
27. Contact - Receptacle
- *28. Jumper - Receptacle
- *29. Jumper - Switch
30. Contact - Switch, short
31. Contact - Switch, long
32. Spring - Shift slide, case
33. Screw - Wood, 3/16 in. lg., No. 1 Flat H, Brass, (FMG No. 150B1-3, compl mfr by RP)
34. Plate Assembly - Body release
35. Screw - Wood, 3/8 in. lg., No. 1 Flat H, Brass
36. Foot - Case
37. Nut - Machine, 3-48 square
38. Case Assembly
- 38A. Socket - Tripod side
- 38B. Screw - Wood, 1/4 in. lg., No. 2 Flat H, Brass
- 38C. Socket - Tripod, bottom
- 38D. Cover - Bottom tripod socket
- 38E. Screw - Wood, 1/4 in. lg., No. 2 Round H, Brass
- 38F. Insert - Battery case mounting
- 38G. Insert - Back mounting
- 38H. Insert - Bed latch
- 38J. Lug - Back mounting

*Not used on "23" and "34" Cameras

†Standard part on "45" camera. Used as replacement on "23" and "34" cameras.

VII. CASE

A. BODY RELEASE PLATE DISASSEMBLY.

1. Remove the release slide plate (1, figure 12).
2. Remove the right focusing knob escutcheon (5) that is held by escutcheon pin (6). Pry up the right moulding (13) and the right edge of the lower right moulding (12).

Caution: Extreme care should be taken when the moulding is removed to avoid splitting the edge of the case when breaking the glue that holds the moulding.

3. Remove the shutter plate cover assembly and shutter mechanism plate assembly, see paragraphs IV.B. and C.

4. With a sharp knife cut the leather below the shutter plate cut-out to the bottom corner of the camera. Cut along the lower camera corner to the front edge. Pull the leather up as far as the focusing knob cut-out.

5. From the body cable release, remove the special block screw (23, figure 2).

6. Remove six wood screws (35, figure 12) that secure the body release plate assembly (34), and remove the plate assembly.

B. BODY RELEASE PLATE, CLEANING AND INSPECTION.

1. Inspect the sliding action of the shutter selector shift slide located near the back center of the plate. Pull the slide down against the spring action assuring that it returns freely, without binding or catching. All levers on the back of the plate should work freely without interference or binding.

2. Inspect the short and long switch contacts (30 and 31). These contacts complete the focal plane synchronization circuit and are closed by pressure action of the long lever inside the plate that has the insulated spring terminal bushing. If this insulated bushing has become worn so that the lever might make contact with the short switch contact (30) the body re-

lease plate assembly must be replaced.

3. Wash the body release plate assembly in solvent, trichlorethylene (AN-T-37a), and dry thoroughly. Lubricate with graphite powder, AN-G-24.

C. BODY RELEASE PLATE REPLACEMENT.

1. Before replacing the body release plate assembly (34, figure 12) the mounting holes that are used to mount the rangefinder base and housing should be covered with transparent tape to prevent the tapped holes from becoming plugged with adhesive.

2. Position the body release plate assembly (34) and assemble six wood screws (35).

3. Apply adhesive, MIL-C-4003, to the leather and to the body release plate and edges of the wooden case. Allow the adhesive to dry enough to become tacky and smooth the leather covering back into place.

4. Using the edge of a knife, work adhesive into the slots at the front edge of the case, and replace the right moulding (13) and the lower right moulding (12). Replace the focusing knob escutcheon (5) that is secured with the escutcheon pin (6).

5. Reassemble the focal plane shutter mechanism plate and adjust the timing as instructed in paragraphs IV.F.4 and 5. Replace the rangefinder and adjust as instructed by rangefinder manufacturer.

6. Replace the special block screw (23, figure 2).

D. TRIPOD SOCKET REPLACEMENT.

1. To remove the side tripod socket it is first necessary to remove the right bed brace plate as described in paragraph VI.B.2. Remove the three flat head wood screws securing the tripod socket.

2. To remove the bottom tripod socket it is first necessary to remove the bed assembly (27, figure 2) as described in paragraph VI.B. Remove three round head wood screws (38E, figure 12) and remove the cover plate (38D) and tripod socket (38C).

PACEMAKER GRAPHIC "23", "34" & "45"
SPEED & CROWN

LUBRICATION, CLEANING SOLVENTS, ADHESIVES

Materials are specified for general reference by U. S. Government Specifications. If the recommended material cannot be located, local suppliers can advise a substitute that meets the specification numbered.

<u>Compound</u>	<u>U.S. Government Specification</u>	<u>Manufacturer</u>	<u>Use or Application</u>
<u>LUBRICANTS</u>			
Graphite-Micro fine	AN-G-24	Joseph Dixon Company Division 48-C Jersey City 3, N. J.	Body release plate Shutter governor
Lubricant #SG4455	AN-G-25	Standard Oil of Indiana Chicago, Illinois	Shutter master gear Shutter bearings Bed pinion teeth and bearings
#107 Lubriplate	AN-G-6	Fiske Bros. Refining Co.	Bed and front standard sliding surfaces
<u>CLEANING SOLVENTS</u>			
Trichlorethylene (2nd Choice - Carbon tetrachloride)	AN-T-37a		Cleaning metal parts
<u>ADHESIVES</u>			
Adhesive 3M-EC-880	MIL-C-4003	Minnesota Mining and Manufacturing Company Detroit, Michigan	Shutter curtain to roller Covering to body
#1 Ground Joint Glue	C-G-451 (Animal glue)	Peter Cooper Gowanda, New York	Wood to wood
Wood-lock #3030	-----	National Adhesives Co,	Threads of small wood screws
Glyptol #1276	-----	General Electric Co. Pittsfield, Mass.	Threads of machine screws

PARTS LIST

The Group Assembly Parts Lists are listed in disassembly order. The list divides the components into major assemblies, their subassemblies and parts. By the use of indented columns, the relationship of the assemblies to the subassemblies and parts is obtained.

The column titled "Figure and Index No." contains the index number in disassembly order of the items illustrated. Do not use the figure or index number in correspondence. . . specify the catalog or part number and name.

The column titled "Part Number" contains the Graflex part and drawing number, or the catalog number of the item listed.

The column titled "Nomenclature" (including numbered columns) lists item nomenclature on the Graflex drawing. In this column the relationship of the item listed to the final assembly is indicated. If the nomenclature begins in the column marked "4", this item will be a component of the first assembly above which precedes it in column marked "3". The assembly in the column marked "3" will be a component of the first assembly which preceded it in the column marked "2" etc.

The column titled "Qty." lists the quantity required at that assembly. . . it is not necessarily the total. When the quantity figure is omitted, the code "AR" or "NP" will appear. The code "AR" is used for bulk items when an indefinite amount may or may not be used "as required". The code "NP" is used for items that are part of a riveted assembly and the next higher assembly should be ordered as these parts are "not procurable".

The column titled "List Price" contains the list price for each item. The prices listed are for one item. . . not the quantity listed in the preceding column. When the price is omitted, the code "NP" will indicate that this part is "not procurable" and that the next higher assembly should be ordered.

PACEMAKER GRAPHIC "45"
SPEED & CROWN

INTRODUCTION

This section of the Graflex Service Parts Manual covers the Pacemaker Speed and Crown Graphic "45". The text and illustrations are aimed at the Speed Graphic; however, similiar parts found on the Crown Graphic are handled in a like manner. The Parts List illustrates and indexes the Speed Graphic. . . similiar parts for the Crown Graphic follow immediately in the list. REFER TO PART NUMBER, NOT INDEX NUMBER, IN CORRESPONDENCE AND ORDERS.

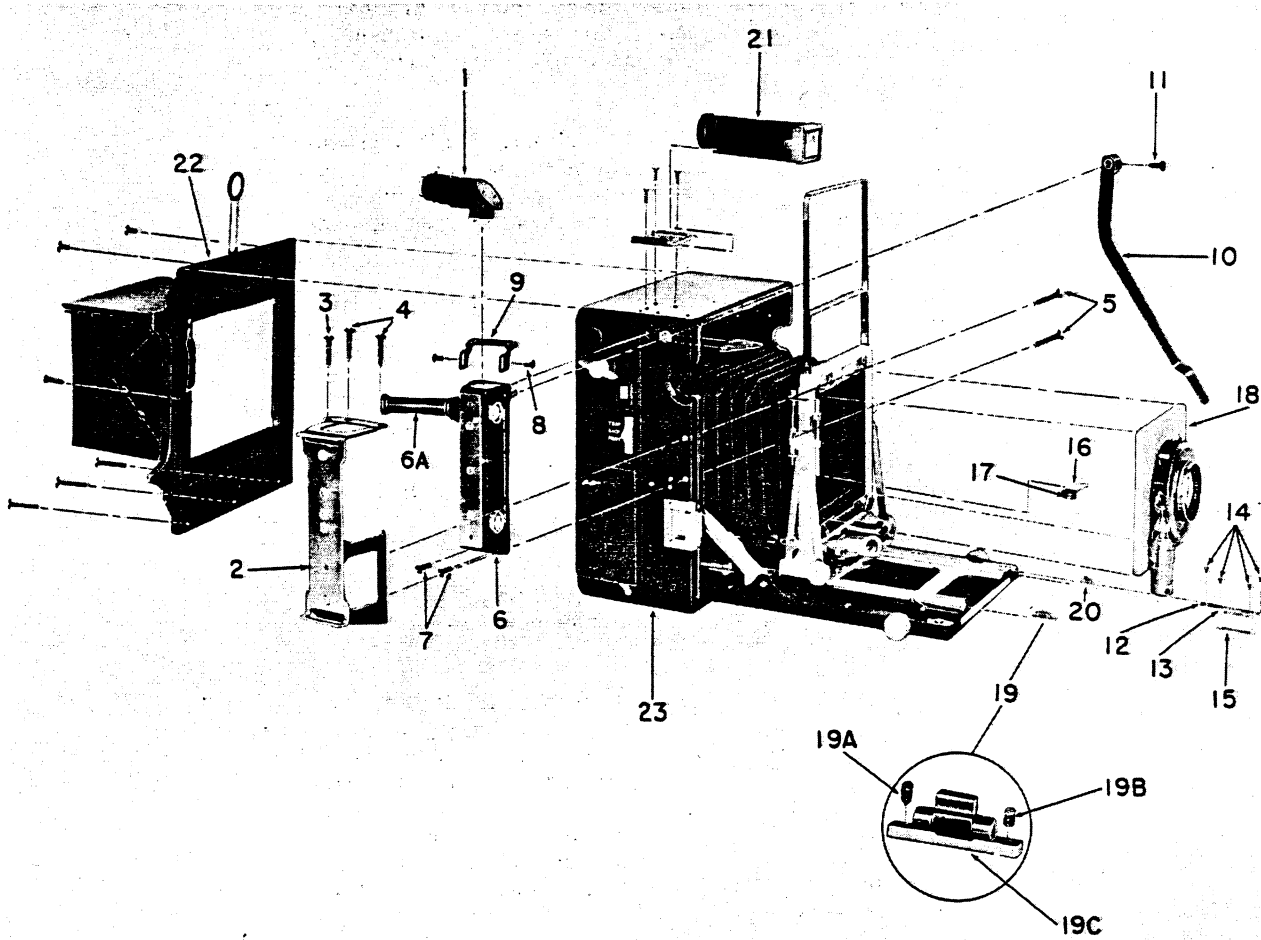


Figure 1. Camera Complete

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.	List Price
Camera - Pacemaker Speed Graphic "45"									
1-1	No number	.					Focuspot Assembly	1	See Price List
Battery Case Mounting									
-2	Cat. #2752	.					Bracket - Battery case mounting and attaching parts	1	See Price List
	31114-P1	.					Bracket - Outer	NHA	
	31037-P1	.					Insulation	NHA	

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
State quantity. Prices subject to change without notice.
NHA - Next higher assembly

PACEMAKER GRAPHIC "45"
SPEED & CROWN

Section 6

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	List Price
			Attaching Part		
	104-4-3	. .	Screw - Machine, 3/16 in. lg., #4-40 OH Steel, Chrome plate	3	.01
	30473-P36	. .	Washer - Flat, 0.250 in. OD, 0.115 in. ID, 0.025 in. thick fiber	3	.01

	31115-P1	. .	Bracket - Battery case mounting	NP	
			Attaching Part		
1-3	152B4-8	. .	Screw - Wood, 1/2 in. lg., #4 slotted OH Brass, Ebonol (S-18)	2	.01
-4	152B4-10	. .	Screw - Wood, 5/8 in. lg., #4 slotted OH Brass, Ebonol (S-18)	1	.01
-5	101B4-9	. .	Screw - Machine, 9/16 in. lg., #4-40 FH Brass, Ebonol (S-18)	2	.01
			Range finder Mounting		
-6	See Catalog	. .	Range finder less attaching parts	Ref	
-6A	No number	. .	Eyepiece - rubber extension	Ref	
-7	31134	. .	Screw - Special, 0.218 in. lg., #2-56 OH Brass, Ebonol (S-18)	2	.01
-8	110B3R3	. .	Screw - Machine, 3/16 in. lg., #3-48 SS Bind H, Phillips, Brass, Ebonol (S-18)	2	.01
-9	30777-P1	. .	Bracket - Range finder mounting	1	.95
-10	30769-G1	. .	Arm Assembly - Range finder	1	1.60
			Attaching Part		
-11	30776	. .	Screw - Set, Range finder, 1/4 in. lg., #5-40 Hex H, hanger point	1	.06

-12	30881-P44	. .	Scale - Focusing, uncalibrated (NOTE: Calibrated scales are not procurable separately - they must be matched to actual lens focal length. See Section 101)	1	.75
-13	30817-P1	. .	Scale - Index, blank	Ref	
			Attaching Part		
-14	30819	. .	Screw - Index and focus scale	4	.01
-15	30815	. .	Plate - Index scale clamp	1	.08

-16	31102-P1	. .	Arm - Manual trip #3 shutter - 4x5 Graphic	1	.25
	31102-P3	. .	Arm - Manual trip #2 shutter - 4x5 Graphic	1	.25
	31102-P4	. .	Arm - Manual trip #1 shutter - 4x5 Graphic	1	.25
-17	107-2-2	. .	Screw - Machine, 1/8 in. lg., #2-64 O Fil H, Steel, Chrome plate	1	.01
-18		. .	Lensboard & Shutter	Ref	
-19 & 20	30655-G1	. .	Stop Assembly Complete - Infinity	2	.55
-19A	30661	. .	Screw - Infinity stop - pointed (rear)	1	.03
-19B	30662	. .	Screw - Infinity stop - flat	1	.03
-19C	30655-P1	. .	Stop Assembly - Infinity	2	.55
-21	Cat. #9132	. .	View finder Complete with mounting clip (long) (See Section 102)	Ref	
-22	30313-G3	. .	Back Complete - 4x5 Graphic (See figure 9) Including panel and hood, for Speed	NP	Obsolete
	30313-G4	. .	Back Complete - 4x5 Graphic (Including panel and hood for Crown	NP	order Graflok
	Cat. #9055	. .	Back Complete - 4x5 Graflex (See figure 10) Including Ektalite, less hood	Ref	See Price List
	Cat. #9291	. .	Back Complete - 4x5 Graflok (See figure 8) Including Ektalite, less hood	Ref	See Price List

DO NOT ORDEF PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
State quantity. Prices subject to change without notice.
NP - Non Procurable

PACEMAKER GRAPHIC "45" SPEED & CROWN

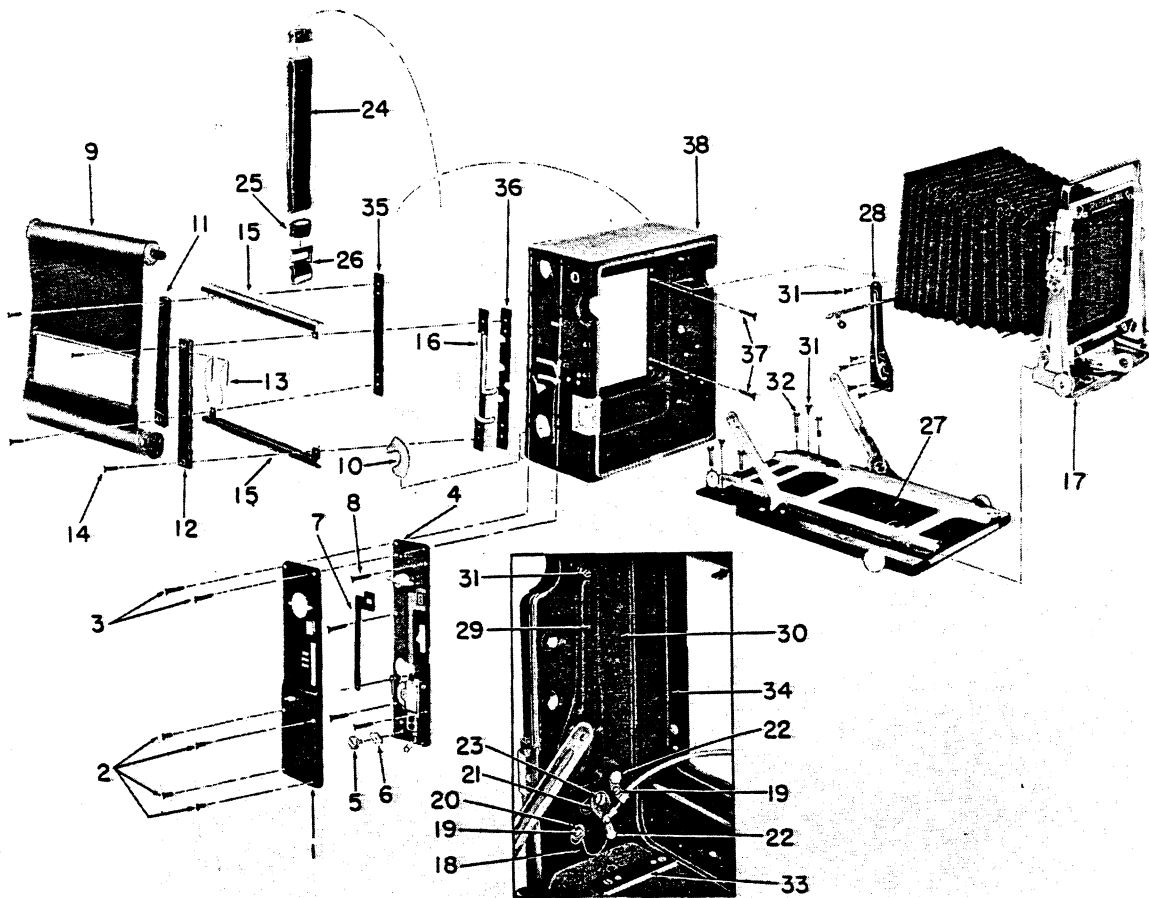


Figure 2. Basic Camera

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	List Price
	30654-G1		Camera - Basic, 4x5 Speed Graphic (See figure 1-23).	Ref	
	30751-G1		Camera - Basic, 4x5 Crown Graphic.	Ref	
2-1	30351-G1		. Cover Assembly - Shutter plate (See figure 3)	1	2.60
			Attaching Part		
-2	104B1-3		. Screw - Machine, 3/16 in. lg., #1-64 OH Brass, (L-26 finish - head only)	4	.01
-3	152B1-8		. Screw - Wood, 1/2 in. lg., #1 OH Brass, (L-26 finish - head only).	2	.01

-4	30652-G6		. Plate Assembly - Shutter mechanism (See figure 4).	1	26.00
			Attaching Part		
-5	30213-P1		. Screw - Shaft retainer	1	.05
-6	30212-P1		. Retainer - Tension shaft.	1	.03
-7	30346-P2		. Slide - Dial	1	.20
-8	150B1-8		. Screw - Wood, 1/2 in. lg., #1 FH Brass	4	.01

-9	30350-G1		. Curtain and Rollers Complete	1	14.80
			Attaching Part		
-10	30698		. Seal - Tension roller.	NP	
	30473-P15		. Washer - Flat, 0.287 in. OD, 0.147 in. ID, 0.010 in. thick Brass	AR	.01

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.

State quantity. Prices subject to change without notice.

NP - Non Procurable

AR - As Required

PACEMAKER GRAPHIC "45"
SPEED & CROWN

Section 6

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	List Price
	30473-P24	.	Washer - Flat, 0.287 in. OD, 0.147 in. ID, 0.020 in. thick Brass	AR	.01

	30211-G1	.	Roller Assembly - Tension	1	4.85
	30196-G3	.	Roller Assembly - Gear	1	3.35
	30409-G1	.	Curtain Assembly	1	6.00
	31112	.	Contact curtain	3	.05
	30192-P1	.	Bearing - Roller (Selected fit) 0.359 in. lg. (See figure 7-17)	AR	.60
	30192-P2	.	Bearing - Roller (Selected fit) 0.389 in. lg. (See figure 7-17)	AR	.60
			Attaching Part		
	152B2R4	.	Screw - Wood, 1/4 in. lg., #2 OH, Phillips drive, Brass, Chrome plate (See figure 7-18)	6	.01

2-11	30582-P1	.	Block - left	1	.50
-12	30888-P1	.	Block - right	1	.50
-13	30572	.	Contact - Spring finger	2	.15
			Attaching Part		
-14	100B2-7	.	Screw - Machine, 7/16 in. lg., #2-56 FH Brass, Ebonol (S18).	4	.01

-15	30632-P1	.	Guide - Curtain	2	.40
-16	30893-G1	.	Jumper Assembly	1	.85
-17	30538-G1	.	Standard Complete - Front (See figure 5) Speed Graphic (Includes bellows and cable release)	1	39.60
	30538-G2	.	Standard Complete - Front - Crown Graphic	1	39.60
			Attaching Part		
-18	31189	.	Spring - Cable release	1	.20
-19	151-1-3	.	Screw - Wood, 3/16 in. lg., #1 RH Steel, Cadmium plate.	2	.01
-20	30473-P25	.	Washer - Flat, 0.281 in. OD, 0.093 in. ID, 0.012 in. thick steel, Jetal finish (S-7)	1	.01
-21	31030-G1	.	Lever Assembly - Cable release	1	.25
-22	151-2-3	.	Screw - Wood, 3/16 in. lg., #2 RH Steel, Cadmium plate.	2	.01
-23	31226-P2	.	Screw - Block, special	1	.01

-24	33779-G1	.	Handle Complete	1	1.85
-25	33779-P2	.	Loop - Strap (Included with 33779-G1)	3	
-26	30305-G1	.	Snap Assembly - Handle	1	1.15
-27	30586-G2	.	Bed Complete (See figure 6)	1	39.60
			Attaching Part		
-28	30718-P1	.	Plate - Left - Bed brace	1	.50
-29	30718-P2	.	Plate - Right - Bed brace	1	.50
-30	150B2-3	.	Screw - Wood, 3/16 in. lg., #2 FH Brass, Ebonol (S-18)	4	.02
-31	150B2-4	.	Screw - Wood, 1/4 in. lg., #2 FH Brass, Ebonol (S-18)	8	.02
-32	31925-P2	.	Screw - Yoke guide, Case	4	.03
-33	30488-P1	.	Shim - Yoke guide, Case, 0.040 in. thick	AR	.01
	30488-P2	.	Shim - Yoke guide, Case, 0.060 in. thick	AR	.01
	30488-P3	.	Shim - Yoke guide, Case, 0.016 in. thick	AR	.01

-34	30895-P1	.	Strip - Mounting insulation	1	.50
-35	30896-P1	.	Spacer - Left block	1	.50
-36	30995-P1	.	Spacer - Right block	1	.41
37	112B2-2	.	Screw - Machine, 1/8 in. lg., #2-56 O Bind H, Brass, Ebonol (S-18)	4	.01

38	30559-G1	.	Case Complete, Speed Graphic (See figure 7)	Ref	
	30559-G4	.	Case Complete, Crown Graphic	Ref	

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
State quantity. Prices subject to change without notice.
AR - As Required

PACEMAKER GRAPHIC "45" SPEED & CROWN

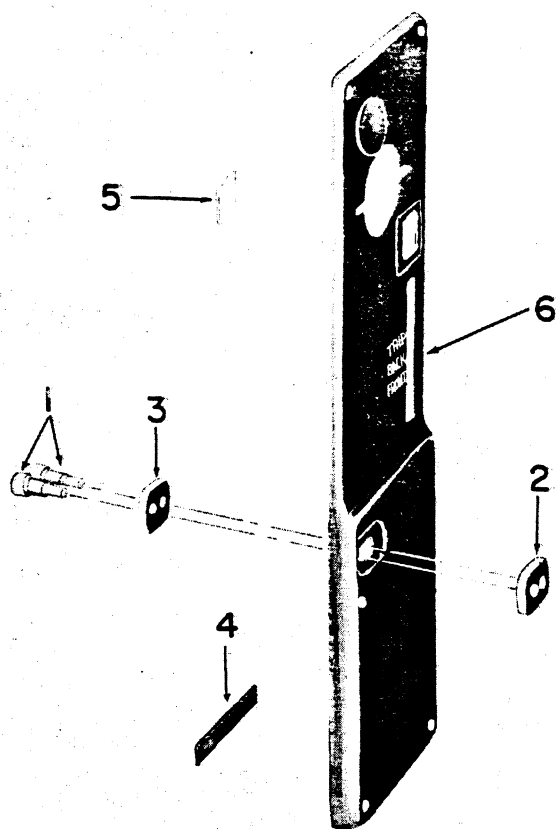


Figure 3. Shutter Cover Plate

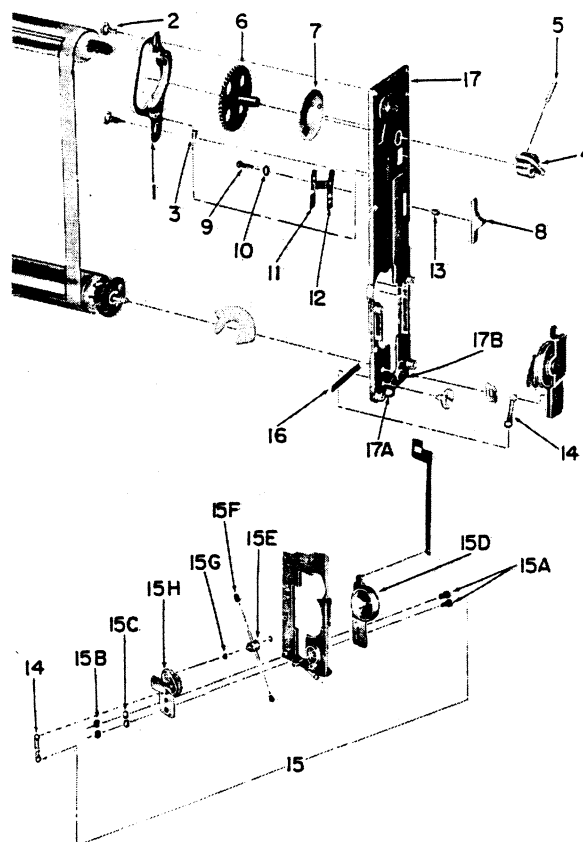


Figure 4. Shutter Plate

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	List Price
	30351-G1		Cover assembly - Shutter plate (See figure 2-1).....	Ref	
3-1	30359-P1	.	Stud - Receptacle contact	2	.10
-2	30357	.	Insulator - Receptacle	1	.05
-3	30358	.	Washer - Receptacle	1	.05
-4	30846	.	Seal - Dust	1	.05
-5	30356	.	Window - Shutter plate.....	1	.10
-6	30353-P1	.	Cover - Shutter plate	NP	

Shutter Plate

4-1	30652-G6		Plate Assembly - Shutter mechanism (See figure 2-4).....	Ref	
	31085-G1	.	Escapement Assembly	1	.65
	Attaching Part				
-2	30187-P1	.	Screw - Escapement	2	.08

-3	30186	.	Spring - Escapement	1	.04
	30652-G3N	.	Winding Key & Master gear assembly.....	1	4.60
-4	30681-G1	.	Key Assembly - Winding	1	.95
	Attaching Part				
-5	30663-P1	.	Pin - Taper, #5/0, 0.092 in. dia x 7/16 in. lg., Stainless Steel	1	.01

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
 State quantity. Prices subject to change without notice.
 NP - Non Procurable

PACEMAKER GRAPHIC "45"
SPEED & CROWN

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Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	List Price
4-6	30513-G1	. .	Gear Assembly - Master	NP	
-7	30504-P1	. .	Dial - Shutter (Replaced by #30504-P5)	NP	
	30504-P5	. .	Dial - Shutter (Replaces #30504-P1)	1	.60
-8	30297-P1	. .	Slide - Shift	1	.40
	Attaching Part				
-9	102-2-5	. .	Screw - Machine, 5/16 in. lg., #2-56 RH Steel, Jetal finish (S-7)	1	.01
-10	221-2	. .	Washer - Lock, 3/16 in. OD, 0.086 in. ID, 0.012 in. thick Steel, Jetal finish (S-7)	1	.01

-11	30303-P2	. .	Spring - Shift slide	1	.15
-12	30299-P1	. .	Plate - Shift slide	1	.50
-13	30298-P1	. .	Spacer - Shift slide	1	.04
-14	30340	. .	Spring - Governor	1	.05
-15	30459-G1	. .	Governor Complete	1	8.80
-15A	30341	. .	Stud - Dowel (Replaced by #110B2-4)	NP	
	110B2-4	. .	Screw - Machine, 1/4 in. lg., #2-56 SS Bind H, Brass (Replaces #30341)	2	.02
-15B	200-2H	. .	Nut - Machine, #2-56 Hex Brass, Jetal (S-7)	2	.01
-15C	221-2	. .	Washer - Lock, 3/16 in. OD, 0.086 in. ID, 0.012 in. thick Steel, Jetal (S-7)	2	.01
	30344	. .	Spacer - Governor	NP	
	30320-P2	. .	Pin - Dial slide	NP	
-15D	30682-G1	. .	Bracket Assembly - Top	NP	
-15E	30458-G1	. .	Pinion Assembly - Governor	NP	
-15F	30454	. .	Shoe - Governor	NP	
	33500-P17	. .	Washer - Shoe	NP	
-15G	30473-P1	. .	Washer - Flat, 5/32 in. OD, 0.067 in. ID, 0.005 in. thick Brass	NP	
-15H	30343-G1	. .	Bracket Assembly - Bottom	NP	
	30335-G1	. .	Idler Assembly - Governor	NP	
	30683-G1	. .	Bracket & Bearing Assembly - Bottom	NP	
	30338	. .	Stud	NP	
	30685-P1	. .	Pin	NP	
-16	30301	. .	Strip - Light seal	1	.02
-17	30348-G2	. .	Plate Assembly	1	6.00
-17A	30315-G1	. .	Lever Assembly - Retard cam	1	.50
	Attaching Part				
-17B	30318	. .	Stud	1	.03

	30184-P1	. .	Post - Escapement Spring	NP	
	30345-P1	. .	Post - Governor spring	NP	
	30517	. .	Bushing - Master gear	NP	
	30191	. .	Bearing - Gear roller	NP	

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
State quantity. Prices subject to change without notice.
NP - Non Procurable

PACEMAKER GRAPHIC "45" SPEED & CROWN

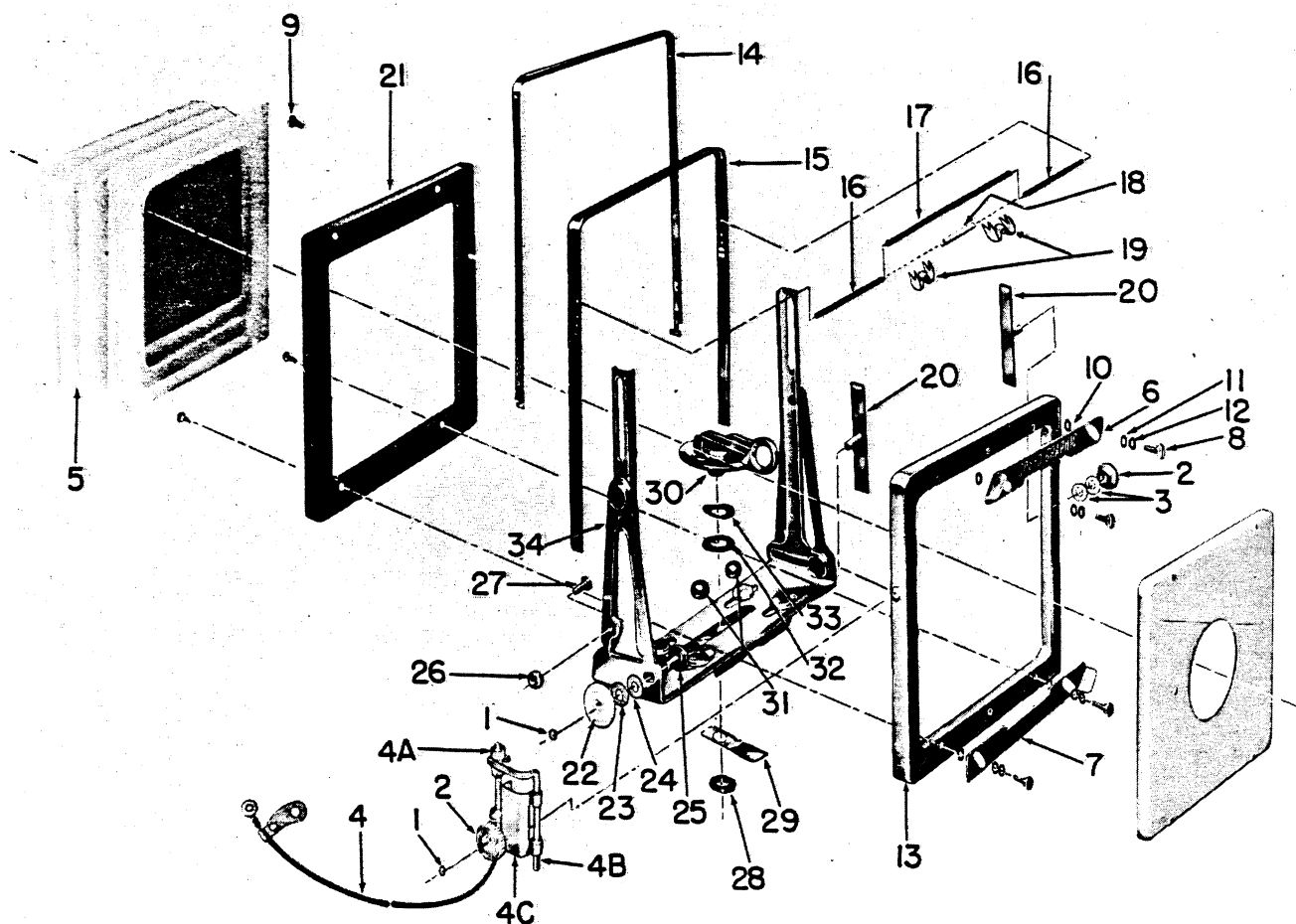


Figure 5. Front Standard

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.	List Price
	30538-G1						Standard Complete - Front (See figure 2-17) - Speed Graphic...	Ref	
	30538-G2						Standard Complete - Front - Crown Graphic	Ref	
5-1	30442-P1						. Ring - Knob retaining (Obsolete - stake threads).....	NP	
-2	30444-P1						. Knob - Frame clamp	2	.25
-3	30473-P6						. Washer - Flat, 5/16 in. OD, 0.128 in. ID, 0.015 in. thick fiber	2	.01
-4	30798-G1						. Release Assembly - Cable	1	3.50
-4A	30843-P1						. . Nut - Cable release	2	.14
-4B	31097-P1						. . Rod - Manual trip	1	.13
	Attaching Part								
-4C	31098-P1						. . Bracket - Manual trip.....	1	.30

	30839-P1						. . Body - Cable release	1	.25
	30844-P1						. . Stem - Cable release	NP	
	30841						. . Spring - Cable	NP	
	30840-P1						. . Bushing - Cable release	NP	
	30836-P1						. . Casing - Cable release	NP	
	Attaching Part								
	30792-P1						. . Clip - Cable release.....	NP	
	30837-P1						. . Cable - release	NP	
	30857						. . Terminal - Cable release	NP	

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.

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NP - Non Procurable

PACEMAKER GRAPHIC "45"
SPEED & CROWN

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Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	List Price
5-5	31061-G1	.	Bellows Assembly - Second	1	12.50
	31183-P1	.	Hanger - Cable release	2	.08
			Attaching Part		
	31148-P1	.	Hanger - Cable release	1	.08
			---***---		
	31149-P1	.	Strip - Cable release hanger	3	.08
	30669-G1	.	Bellows Assembly	NP	
	30538-G1T	.	Front Standard Assembly - 4x5 Speed Graphic	1	24.00
	30538-G2T	.	Front Standard Assembly - 4x5 Crown Graphic	1	24.00
	30538-G1N	.	Frame Assembly - Front standard - 4x5 Speed Graphic	1	11.00
	30538-G2N	.	Frame Assembly - Front standard - 4x5 Crown Graphic	1	11.00
-6	30470-P2	.	Lock - Lensboard - upper - Speed Graphic	1	.65
	30470-P4	.	Lock - Lensboard - upper - Crown Graphic	1	.65
-7	30470-P3	.	Lock - Lensboard - lower	1	.65
			Attaching Part		
-8	30401-P1	.	Screw - Slide lock	4	.08
-9	30377-P1	.	Nut - Slide lock	4	.05
-10	30473-P2	.	Washer - Flat, 7/32 in. OD, 0.089 in. ID, 0.010 in. thick Stainless Steel	4	.01
-11	30473-P20	.	Washer - Flat, 0.203 in. OD, 0.117 in. ID, 0.010 in. thick Stainless Steel	4	.01
-12	30540-P3	.	Washer - Spring, 0.203 in. OD, 0.117 in. ID, 0.031 in. thick Stainless Steel	4	.02
			---***---		
-13	30538-G1M	.	Frame - Outer front assembly	1	1.75
	31923-G1	.	Finder Complete	1	4.85
-14	31291-P1	.	Finder Assembly	1	2.35
-15	31295-P1	.	Frame - Finder	1	2.50
-16	30378-P1	.	Plunger - Finder	2	.10
-17	30404-P1	.	Sleeve - Finder lock spring	1	.15
-18	30438	.	Spring - Finder	1	.05
-19	30719-P1	.	Bracket - Plunger	2	.05
-20	31292-G1	.	Plate Assembly - Front frame clamp	2	.55
-21	30385-P1	.	Frame - Inner front	1	1.00
	30538-G1S	.	Standard support assembly Complete	1	13.25
-22	30436-P1	.	Knob - Support locking	2	.25
-23	30473-P7	.	Washer - Flat, 0.312 in. OD, 0.128 in. ID, 0.012 in. thick fiber	2	.01
-24	30473-P5	.	Washer - Flat, 0.375 in. OD, 0.250 in. ID, 0.010 in. thick Stainless Steel	2	.01
-25	30543-P1	.	Screw - Support locking	2	.35
	30473-P22	.	Washer - Flat, 0.375 in. OD, 0.218 in. ID, 0.010 in. thick fiber	2	.01
-26	30440-P1	.	Nut - Front standard eccentric	2	.25
-27	30441-P1	.	Eccentric - Front standard	2	.25
-28	30553-P1	.	Nut - Special	1	.08
-29	30541-P1	.	Spring - Shift locking	1	.32
-30	30537-G1	.	Lever Assembly	1	2.00
-31	30539-P4	.	Ball - Steel, 0.250 in. dia.	2	.01
-32	30473-P9	.	Washer - Flat, 17/32 in. OD, 0.265 in. ID, 0.032 in. thick Brass	1	.03
-33	30540-P1	.	Washer - Lever Assembly - Spring, 17/32 in. OD, 0.265 in. ID, 0.007 in. thick, 5/16 in. radius Spring Steel	1	.03
-34	30538-G1R	.	Standard support assembly	1	8.50

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NP - Non Procurable

PACEMAKER GRAPHIC "45" SPEED & CROWN

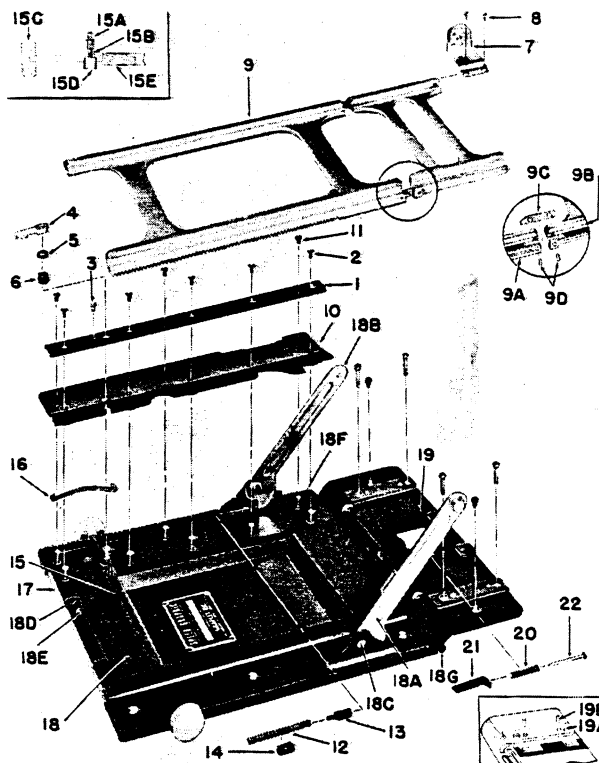


Figure 6. Bed Complete

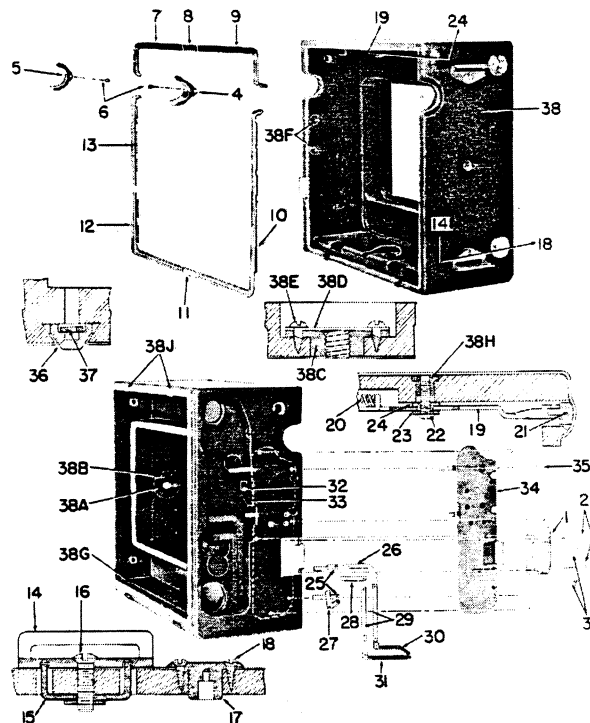


Figure 7. Camera Case

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.	List Price
6-1	30586-G2						Bed Complete (See figure 2-27).	1	39.60
	30625-P1						. Guide, left - Bed section	1	1.00
	30625-P2						. Guide, right - Bed section	1	1.00
	Attaching Part								
-2	110B2-4						. Screw - Machine, 1/4 in. lg., #2-56, FH Brass, Ebonol (S-18) (Used on bed guides with countersunk holes)	10	.01
	31089-P6						. Screw - Machine, special, 1/4 in. lg., #2-56 Bind H, Brass, Chrome plate	10	.03

-3	31246-P2						. Screw - Special Fil H	1	.01
-4	30629-P1						. Lever - Yoke lock	1	.35
-5	30473-P11						. Washer - Flat, 9/32 in. OD, 0.177 in. ID, 0.010 in. thick Brass	AR	.01
-6	30628						. Sleeve - Yoke lock	1	.05
	34617-G4						. Yoke Assembly Complete	1	15.80
-7	30775-G1						. Bracket Assembly - Range finder	1	1.00
	Attaching Part								
-8	30830						. Screw - Machine, 0.145 in. lg., #1-64 FH Brass, Chrome	2	.05

	30655-G1						. Stop Assembly - Right, infinity (See figure 1-19)	1	.60
	30655-G2						. Stop Assembly - Left, infinity (See figure 1-20)	1	.60
	30661						. Screw - Infinity stop, pointed (rear)	1	.02
	30662						. Screw - Infinity stop, flat (front)	1	.02
	30655-P1						. Stop Assembly - Infinity	1	.55
	30817-P2						. Scale - Index	1	.10
	30815						. Plate - Index scale	1	.10

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AR - As Required

PACEMAKER GRAPHIC "45"
SPEED & CROWN

Section 6

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	List Price
	Attaching Part				
	30819	.	Screw - Index scale	2	.01

6-9	30596-G1	.	Yoke Assembly	1	15.80
-9A	30597-P1	.	Yoke - Bed section	1	10.00
-9B	30600-P1	.	Yoke - Case section	1	4.00
	30605	.	Pin - Front standard stop	1	.01
-9C	30602	.	Link - Yoke	1	.10
-9D	30603	.	Pin - Yoke link	1	.01
	30617-P2	.	Block - Left bed	1	1.65
-10	30618-P2	.	Block - Right bed	1	1.65
	Attaching Part				
-11	31226-P2	.	Screw - Block, special	6	.01

-12	30616	.	Spring - Bed brace	2	.08
-13	31766-P1	.	Plunger - Bed brace	2	.08
	Attaching Part				
-14	31271	.	Clip - Spring retaining	2	.08

-15	30586-G2M	.	Shaft Assembly - Pinion	1	4.00
-15A	170D3-3	.	Screw - Set, 3/16 in. lg., #3-48 slotted, flat pt, Steel, Nickel plate	1	.03
-15B	30630	.	Pad - Yoke lock	2	.03
-15C	30612-P1	.	Knob - Focusing	2	.30
-15D	30607-P1	.	Post - Yoke lock	1	.40
-15E	30606-P1	.	Pinion - Focusing	1	3.00
-16	30610	.	Spring - Focusing pinion	2	.05
-17	31730-P2	.	Escutcheon - Bed	1	.10
-18	34615-G4	.	Bed Assembly - Second	1	10.75
-18A	30421-G1	.	Brace Assembly - Left	1	1.50
-18B	30421-G2	.	Brace Assembly - Right	1	1.50
	Attaching Part				
-18C	30623-P1	.	Rivet - Bed brace assembly	2	.08

	32671-P1	.	Covering	1	1.40
-18D	30506	.	Catch - Bed (used on older model cameras)	1	.08
	Attaching Part				
-18E	30948	.	Rivet - Bed catch	2	.01

	33903-P4	.	Name plate	NP	
	Attaching Part				
	30363-P22	.	Rivet - Name plate	NP	

	31096-G3	.	Bed Assembly - First	1	6.00
-18F	30915-P1	.	Bushing - Guide and block screw	8	.03
	30587-P2	.	Bed	NP	
	Attaching Part				
-18G	30172-P25	.	Pin - Hinge, 5.688 in. lg., 0.062 in. dia. Phosphor Bronze	1	.08

-19	30586-G2R	.	Hinge Assembly	1	2.40
	30590-P1	.	Guide - Left - Case section	NP	
-19A	30590-P2	.	Guide - Right - Case section	NP	
	Attaching Part				
-19B	30685-P2	.	Pin - Dowel, 0.082 in. \pm .0003 in. x 0.195 in. lg. Stainless Steel	4	.01

	30433-P1	.	Hinge - Bed	NP	

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Section 6

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Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	List Price
6-20	30639-P	.	Spring	1	.05
-21	30637	.	Slide	1	.16
	Attaching Part				
-22	30638-P1	.	Pin - Escutcheon, 0.082 in. dia x 1 in. lg.	1	.01

	Case Complete				
	30559-G1		Case Complete - 4x5 Speed Graphic (See figure 2-37)	Ref	
	30559-G4		Case Complete - 4x5 Crown Graphic	Ref	
7-1	30534-P1	.	Plate - Release slide	1	1.00
	Attaching Part				
-2	152B1R4	.	Screw - Wood, 1/4 in. lg., #2 OH Brass, Chrome plate, Phillips drive.	2	.03
-3	30749-P1	.	Screw - Machine, slide release plate, special	2	.07

-4	30647-P1	.	Escutcheon - left - Focusing knob (Crown requires 2)	1	.25
-5	31135-P1	.	Escutcheon - right - Focusing knob (Speed only)	1	.25
	Attaching Part				
-6	30638-P2	.	Pin - Escutcheon, 0.042 in. dia x 1/4 in. lg.	2	.01

-7	30645-P6	.	Moulding - Upper right	1	.65
-8	30640-P2	.	Plate - Moulding, top, "Graflex"	1	.10
-9	30645-P5	.	Moulding - Upper left.	1	.65
-10	30641-P1	.	Moulding - Lower left	1	.80
-11	30640-P1	.	Plate - Moulding - bottom	1	.05
-12	30642-P1	.	Moulding - Lower right	1	.65
-13	30643-P1	.	Moulding - Right	1	.60
-14	30374-P1	.	Bracket - Handle.	2	.40
	Attaching Part				
-15	30375-P1	.	Nut - Handle bracket	2	.10
-16	104B6R8	.	Screw - Machine, 1/2 in. lg., #6-32 OH Phillips drive, Brass, Chrome plate.	2	.05

-17	30192-P1	.	Bearing - Roller, Selected fit, 0.359 in. lg.	AR	.60
	30192-P2	.	Bearing - Roller, Selected fit, 0.389 in. lg.	AR	.60
	Attaching Part				
-18	152B2R4	.	Screw - Wood, 1/4 in. lg., #2 OH Phillips drive, Brass, Chrome plate.	6	.01

-19	*30511-P1	.	Latch - Bed	1	.25
	31729-P2	.	Latch - Bed (newer model cameras)	1	.15
-20	*30664	.	Spring - Bed latch	1	.05
-21	*30507	.	Button - Bed release	1	.05
	31907	.	Button - Bed latch (newer model cameras)	1	.05
	Attaching Part				
-22	*102B2-4	.	Screw - Machine, 1/4 in. lg., #2-56 RH Brass, Ebonol (S-18).	2	.01
	112B3R3	.	Screw - Machine, 3/16 in. lg., #3-48 O Bind H, Phillips drive, Brass, Jetal (S-7).	1	.01
	*221-2	.	Washer - Lock, 3/16 in. OD, 0.086 in. ID, 0.012 in. thick Steel	2	.01
-23	*30473-P8	.	Washer - Flat, 0.240 in. OD, 0.090 in. ID, 0.025 in. thick Brass	2	.01
-24	*30508	.	Collar - Bed latch insert	2	.03

-25	30820	.	Contact - Case	2	.05
-26	30304	.	Jumper - Contact	1	.05
-27	30822	.	Contact - Receptacle	1	.05

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
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AR - As Required

*Order for replacement on older model cameras only.

PACEMAKER GRAPHIC "45"
SPEED & CROWN

Section 6

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.	List Price
7-28	30491-P1	.	Jumper - Receptacle					1	.05
-29	30561	.	Jumper - Switch					2	.08
-30	31269	.	Contact - Switch, short					1	.08
-31	31268	.	Contact - Switch, long					1	.08
	Attaching Part								
	151B0-2	.	Screw - Wood, 1/8 in. lg., #0 RH Brass					5	.01
	30638-P1	.	Pin - Escutcheon, 0.082 in. dia x 1 in. lg.,					1	.01

-32	30303-P1	.	Spring - Shift slide, case					1	.10
	Attaching Part								
-33	150B1-3	.	Screw - Wood, 3/16 in. lg., #1 FH Brass					1	.01

-34	30525-G1	.	Plate Assembly - Body release, Speed Graphic					1	9.40
	30874-G1	.	Plate Assembly - Body release, Crown Graphic					1	7.80
	Attaching Part								
-35	150B1-6	.	Screw - Wood, 3/8 in. lg., #1 FH Brass					6	.01

	30532-G1	.	Slide Assembly - Release					NP	
	32668-P1	.	Covering - Vinyl					AR	2.50
-36	30747-P1	.	Foot Case, Speed Graphic					2	.25
	30899-P1	.	Foot Case, Crown Graphic					2	.25
-37	200-3S	.	Nut - Machine, #3-48 square					4	.03
-38	30560-G2	.	Case Assembly					NP	
-38A	30372-P2	.	Socket - Tripod, side					1	.20
	Attaching Part								
-38B	150B2-4	.	Screw - Wood, 1/4 in. lg., #2 FH Brass					3	.01

-38C	30372-P1	.	Socket - Tripod, bottom					1	.20
-38D	30721	.	Cover					1	.05
	Attaching Part								
-38E	151B2-4	.	Screw - Wood, 1/4 in. lg., #2 RH Brass					3	.01

-38F	31186	.	Insert - Battery Case mounting					2	.05
-38G	30673-P1	.	Insert - Back mounting, bottom					1	.05
-38H	30509-P1	.	Insert - Bed latch (older model cameras)					2	.05
	31905-P1	.	Insert - Bed latch (newer model cameras)					1	.05
-38J	*30370	.	Lug - Back mounting (replaced by #30673-P4)					2	.10
	*30673-P4	.	Insert - Back mounting, top					1	.10
	Attaching Part								
	*150B2-3	.	Screw - Wood, 3/16 in. lg., #2 FH Brass					4	.03

*NOTE: Part #30370, Lug is for older 4x5 Speed Graphic cameras and has been replaced with Insert, part #30673-P4 on the newer cameras. Screws #150B2-3 are needed only when Lug #30370 is used.

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.

State quantity. Prices subject to change without notice.

NP - Non Procurable

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SPEED & CROWN

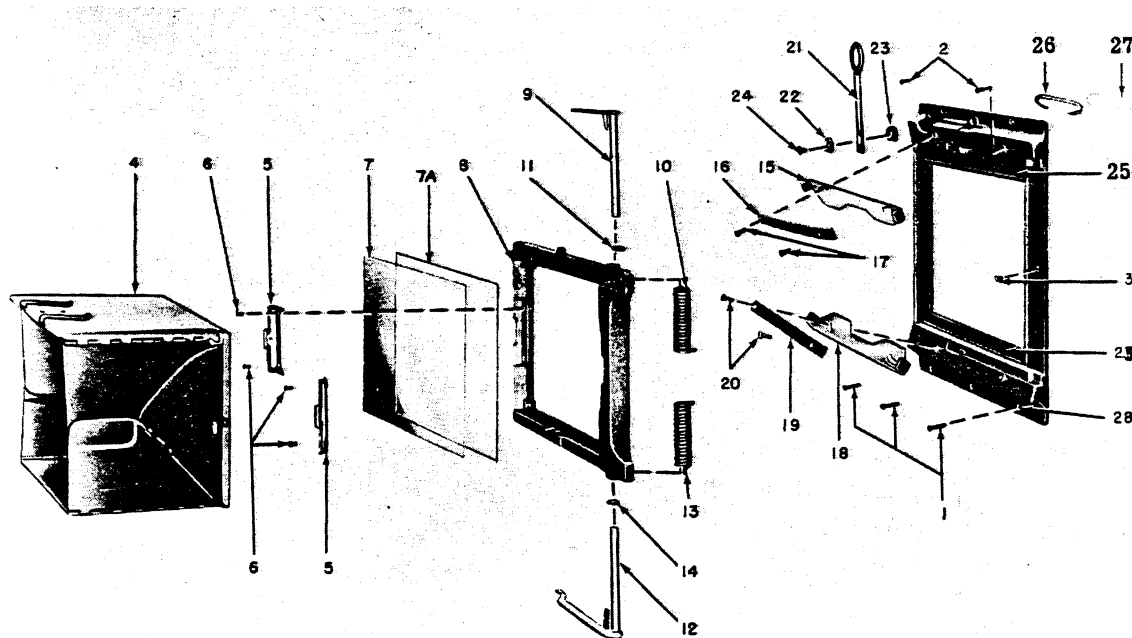


Figure 8. Graflok Back

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.	List Price
	Cat. #9291	Back Complete - Graflok - 4x5 with Ektalite, Including panel, less hood (See figure 1-22).....						Ref	
	Attaching Parts (Order separately - not included with Cat. #9291)								
8-1	30921-P7	Screw - Self tapping, 1/2 in. lg., #2 Oval Bind H, Steel, Jetal (S-7) for Speed Graphic						3	.01
-2	30921-P6	Screw - Self tapping, 3/16 in. lg., #2 Oval Bind H, Steel, Jetal (S-7) for Speed Graphic						2	.01
-1 & 2	30921-P6	Screw - Self tapping, 3/16 in. lg., #2 Oval Bind H, Steel, Jetal (S-7) for Crown Graphic.						5	.01
-3	150B1-6	Screw - Wood, 3/8 in. lg., #1 FH Brass, Ebonol.....						1	.01

-4	Cat. #9147	Hood Assembly						1	See Price List
	31715-G3	Frame Assembly - Without Ektalite (Replace with Cat. #9281).						NP	
	Cat. #9281	Frame Assembly - With Ektalite (less hood)						1	See Price List
-5	30371-P1	Retainer.....						2	.12
	Attaching Part								
-6	100-2-3	Screw - Machine, 3/16 in. lg., #2-56 FH Steel, Jetal (S-7) .						4	.01

-7	30414-P1	Screen - Ground glass focusing.						1	1.10
-7A	*31935-P1	Screen - Ektalite						1	4.00 3.15 3.70
	33837-G4	Frame Assembly - Focusing (For use with Ektalite).						1	6.00
-8	31915-P1	Frame - (Replace with #31915-P2 plus Ektalite screen part #31935-P1).....						NP	
	31915-P2	Frame - For Ektalite.						1	6.00

*NOTE: The Ektalite screen can be used only on Frame #31915-P2 and as a part of Frame Assembly Cat. #9281.

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
State quantity. Prices subject to change without notice.
NP - Non Procurable

PACEMAKER GRAPHIC "45"
SPEED & CROWN

Section 6

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.	List Price
8-9	31717-G6	.	.	.	.	.	Arm Assembly - Upper	1	1.00
-10	31916-P1	.	.	.	.	.	Spring - Upper	1	.25
-11	30473-P53	.	.	.	.	.	Washer - Flat, 0.312 in. OD, 0.219 in. ID, 0.010 in. thick Brass	1	.01
-12	31717-G5	.	.	.	.	.	Arm Assembly - Lower	1	1.00
-13	31916-P2	.	.	.	.	.	Spring - Lower	1	.25
-14	30473-P53	.	.	.	.	.	Washer - Flat, 0.312 in. OD, 0.219 in ID, 0.010 in. thick Brass	1	.01
	31710-G3	.	.	.	.	.	Back Assembly - Excluding panel and hood	1	15.00
-15	‡31920-P1	.	.	.	.	.	Slide lock - Lower	1	.95
-16	30937-P3	.	.	.	.	.	Spring	1	.15
	Attaching Part								
-17	30939-P1	.	.	.	.	.	Screw - Slide lock special	2	.10

-18	‡31920-P2	.	.	.	.	.	Slide lock - Upper	1	.95
-19	30937-P3	.	.	.	.	.	Spring	1	.15
	Attaching Part								
-20	30939-P1	.	.	.	.	.	Screw - Slide lock special	2	.10

-21	30369-G2	.	.	.	.	.	Peepsight Assembly	1	.50
	Attaching Part								
-22	30366	.	.	.	.	.	Cap	1	.16
-23	30368	.	.	.	.	.	Washer - Flat	1	.03
-24	104B6-4	.	.	.	.	.	Screw - Machine, 1/4 in. lg., #6-32 OH Brass, Chrome... ..	1	.03

-25	31722-P3	.	.	.	.	.	Strip - Light seal	2	.15
	33836-G3	.	.	.	.	.	Back Assembly - First	1	4.85
-26	30367	.	.	.	.	.	Spring	1	.07
-27	30364	.	.	.	.	.	Plate	1	.04
-28	31914-P1 P 3	.	.	.	.	.	Back	NP	

13.00
STRIPEL

‡NOTE: Slide locks closing to the LEFT are no longer available for Pacemaker "34" or "45" Graflok Backs; therefore, if one of these must be replaced, it will be necessary to replace it with both top (#31920-P1) and bottom (#31920-P2) slide locks that close to the RIGHT.

*NOTE: The Ektalite screen can be used only on Frame, part no. 31915-P2 and as a part of Frame Assembly, Catalog no. 9281.

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
State quantity. Prices subject to change without notice.
NP - Non Procurable

PACEMAKER GRAPHIC "45"
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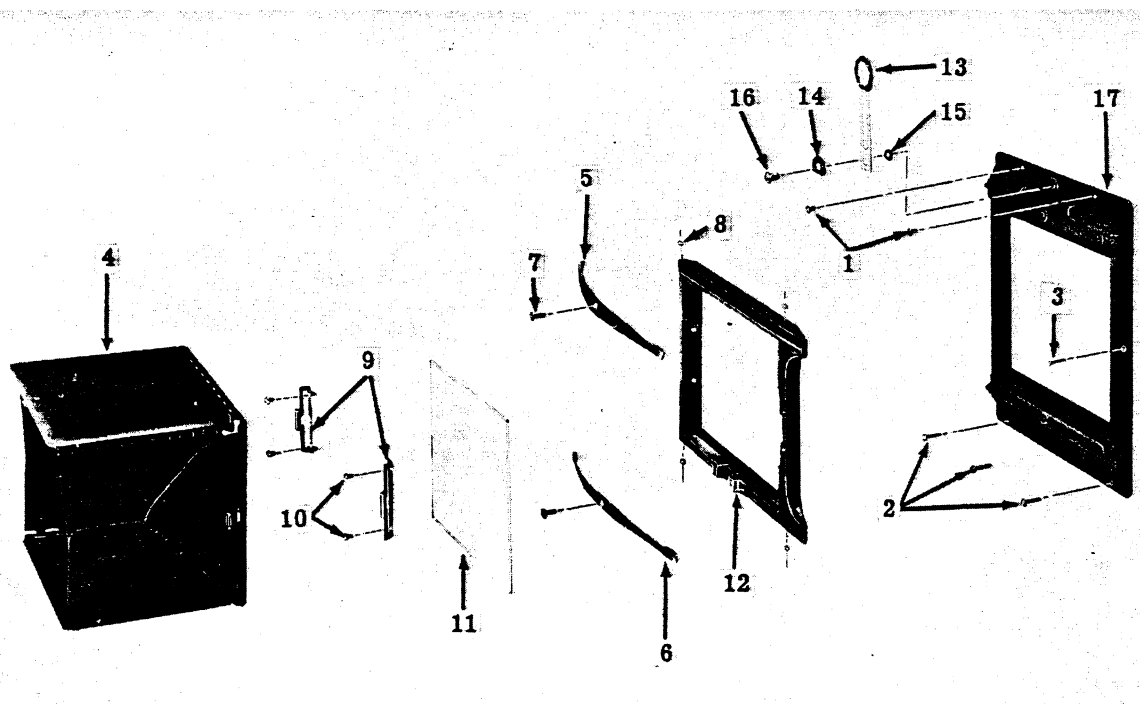


Figure 9. Graphic Back

Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	List Price
	30313-G4		Back Complete - 4x5 Speed Graphic (See figure 1-22)	NP	Obsolete
	30313-G3		Back Complete - 4x5 Crown Graphic	NP	Order Graflok
			Attaching Part		
9-1	30921-P6		. Screw - Self tapping, 3/16 in. lg., #2 Oval Bind H, Steel Jetal (S-7) for Speed	2	.01
-2	30921-P7		. Screw - Self tapping, 1/2 in. lg., #2 Oval Bind H, Steel, Jetal (S-7) for Speed	3	.01
-1 & 2	30921-P6		. Screw - Self tapping, 3/16 in. lg., #2 Oval Bind H, Steel, Jetal (S-7) for Crown	5	.01
-3	150B1-6		. Screw - Wood, 3/8 in. lg., FH Brass, Ebonol (S-18) for Speed and Crown	1	.01

-4	Cat. #9147		. Hood Assembly	1	See Price List
-5	30415-G5		. Spring Assembly - Focusing frame, top	1	.60
-6	30415-G6		. Spring Assembly - Focusing frame, bottom	1	.60
			Attaching Part		
-7	31270-P1		. Screw - Sems unit fastener (washer with screw, 5/16 in. lg., #4-40)	2	.03
-8	30473-P1		. Washer - Flat, focusing frame spring, 5/32 in. OD, 0.067 in. ID, 0.005 in. thick Brass	2	.01

	30405-G4		. Frame Assembly Complete - Focusing	1	7.00
-9	30371-P1		. Retainer - Hood Assembly	2	.12
			Attaching Part		
-10	100-2-3		. Screw - Machine, 3/16 in. lg., #2-56 FH Steel, Jetal (S-7)	4	.01

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
State quantity. Prices subject to change without notice.
NP - Non Procurable

PACEMAKER GRAPHIC "45"
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Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.	List Price
9-11	30414-P1	Screen - Focusing	1	1.10
-12	30405-G4M	.	.	.	.	.	Frame Assembly - Focusing	1	6.00
	30310-G4	.	.	.	.	.	Back Assembly	1	9.90
-13	30369-G2	.	.	.	.	.	Peepsight Assembly	1	.50
	Attaching Part								
-14	30366	.	.	.	.	.	Cap - Peepsight	1	.16
-15	30368	.	.	.	.	.	Washer - Peepsight	1	.03
-16	104B6R4	.	.	.	.	.	Screw - Machine, 1/4 in. lg., #6-32 OH Brass, Chrome, Phillips drive	1	.04
	---***---								
	30364	.	.	.	.	.	Plate - Peepsight spring	1	.04
	30367	.	.	.	.	.	Spring - Peepsight	1	.07
	*31239-P1	.	.	.	.	.	Spring - Curtain pressure	1	.05
	Attaching Part								
	*31238	.	.	.	.	.	Screw - Curtain pressure spring	2	.01
	---***---								
-17	30156-P1	.	.	.	.	.	Back	NHA	

*NOTE: Available for replacement only.

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
State quantity. Prices subject to change without notice.
NHA - Next Higher Assembly.

PACEMAKER GRAPHIC "45"
SPEED & CROWN

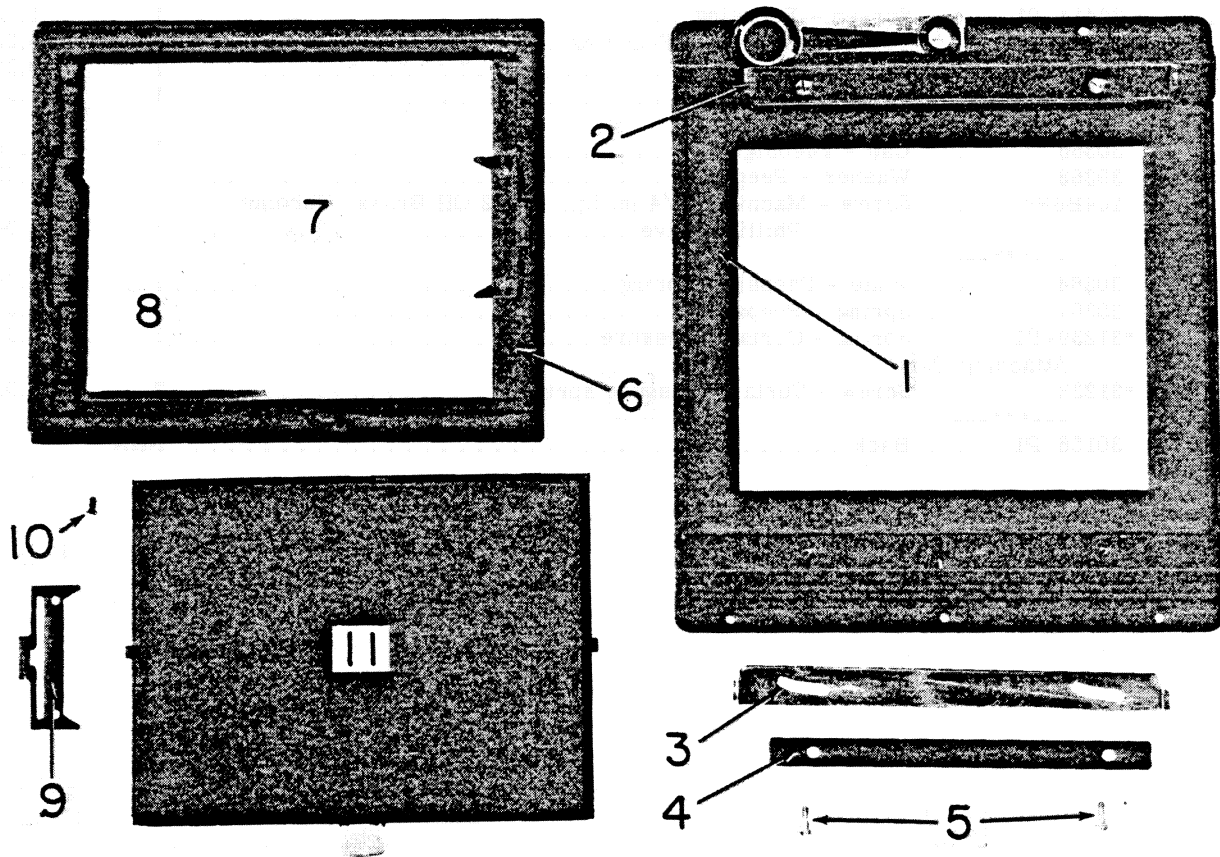


Figure 10. Graflex Back

Figure and Index No.	Part Number	1	2	3	4	5	Nomenclature	Qty.	List Price
	Cat. #9055	Back Complete - Graflex 4x5, including panel, less hood (See figure 1-22)						Ref	
	Attaching Part (Order separately - not included with Cat. #9055)								
	†30921-P6	Screw - Self tapping, 3/16 in. lg., #2 Oval Bind H, Steel, Jetal (S-7) for Speed Graphic						2	.01
	†30921-P7	Screw - Self tapping, 1/2 in. lg., #2 Oval Bind H, Steel, Jetal (S-7) for Speed Graphic						3	.01
	†30921-P6	Screw - Self tapping, 3/16 in. lg., #2 Oval Bind H, Steel, Jetal (S-7) for Crown Graphic.						5	.01

10-1	30928-P1	.	Back					1	8.00
-2	30938-P1	.	Slide lock - Top					1	.95
-3	30938-P2	.	Slide lock - Bottom					1	.95
-4	30937-P1	.	Spring - Slide lock					2	.35
	Attaching Part								
-5	30939-P1	.	Screw - Slide lock					4	.10

	†30369-G2	.	Peepsight Assembly					1	.50

†NOTE: See Figure 8 for these parts.

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
State quantity. Prices subject to change without notice.

PACEMAKER GRAPHIC "45"
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Figure and Index No.	Part Number	1 2 3 4 5	Nomenclature	Qty.	List Price
			Attaching Part		
	†30366		. Cap	1	.16
	†30368		. Washer - Flat	1	.03
	†104B6R4		. Screw - Machine, 3/16 in. lg., #6-32 OH Phillips drive, Brass, Chrome plate	1	.04
			-----*		
	†30367		. Spring - Peepsight	1	.07
	†30364		. Plate - Peepsight spring	1	.04
	30934-G1		. Panel Complete - Graflex focusing, without Ektalite, including hood	NP	Order Cat. #9046
	Cat. #9046		. Panel Complete - Graflex focusing, with Ektalite, including hood	1	See Price List
	30931-P1		. . Frame - Focusing, for use without Ektalite (Order part #30931-P2)	NP	
10-6	30931-P2		. . Frame - Focusing, for use with Ektalite	1	5.00
-7	30414-P1		. . Screen - Focusing	1	1.10
-8	*31935-P1		. . Screen - Ektalite	1	4.50
-9	30371-P1		. . Retainer - Hood Assembly	2	.12
			Attaching Part		
-10	100-2-3		. . Screw - Machine, 3/16 in. lg., #2-56 FH Steel, Jetal (S-7) .	4	.01
			-----*		
-11	Cat. #9147		Hood Assembly	1	See Price List

†NOTE: See Figure 8 for these parts.

*NOTE: The Ektalite screen can be used only on Frame #30931-P2 and as a part of Focusing Panel
Cat. #9046.

DO NOT ORDER PARTS BY FIGURE INDEX NUMBER. SPECIFY CATALOG OR PART NUMBER AND NAME.
State quantity. Prices subject to change without notice.

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STANDARD PARTS

Part No.	Finish	Use	Fig. Ref.	Qty.	Description	Net per 25
<u>Standard Screws</u>						
100-2-3	S-7	Holds ground glass retainer to back frame	8-6	4	#2-56 FH, 3/16"	.20
			9-10	4		
			10-10	4		
100B2-4	S-18	Holds yoke guide to bed	6-2	10	#2-56 FH, 1/4"	.20
100B2-7	S-18	Spacer block screw	2-10	6	#2-56 FH, 7/16"	.20
101B4-9	S-18	Holds Graflite encircling bracket to camera	1-5	2	#4-48 FH, 9/16"	.20
102B2-4	S-18	Holds bed latch into case	7-22	2	#2-56 RH, 1/4"	.20
102-2-5	S-7	Holds shift slide in place	4-9	1	#2-56 RH, 5/16"	.20
104B1-3	L-26	Holds shutter plate to camera	2-2	4	#1-64 OH, 3/16"	.20
104-4-3	Chrome	Graflite mounting bracket	1-	3	#4-40 OH, 3/16"	.20
104B6-4	Chrome	Holds peepsight to camera back	8-24	1	#6-32 OH, 1/4"	.40
104B6R4	Chrome	Holds peepsight assembly to back	10-	1	#6-32 OH, 1/4" Phillips	.60
104B6R8	Chrome	Handle bracket screw	7-16	2	#6-32 OH, 1/2" Phillips	.80
107-2-2	Chrome	Holds manual trip arm to manual trip rod	1-17	1	#2-56 O Fil H, 1/8"	.20
110B2-4		Holds governor mechanism together	4-15A	2	#2-56 SS Bind H, 1/4"	.40
✓110B3R3	S-18	Range finder mounting	1-8	2	#3-48 SS Bind H, 3/16"	.20
112B2-2	S-18	Block spacer screw	2-36	4	#2-56 O Bind H, 1/8"	.20
112B3R3	S-7	Bed latch screw	7-22	1	#3-48 O Bind H, 3/16" Phillips	.20
150B0-3	S-18	Holds long switch contact in place	7-	7	#0 FH, 3/16"	.20
150B1-3	S-18	Holds shift slide spring to case	7-33	1	#1 FH, 3/16"	.20
150B1-6	S-18	Holds body release plate assembly to case Holds back to case for Graphic and Grafluk backs	7-35	6	#1 FH, 3/8"	.20
			8-3	1		
			9-3	1		
150B1-8		Holds shutter mechanism to camera	2-8	4	#1 FH, 1/2"	.20
150B2-3	S-18	Holds top back mounting lug in place	7-	4	#2 FH, 3/16"	.20
		Holds bed brace plates in place				
150B2-4	S-18	Holds bed brace plates in place	2-31	8	#2 FH, 1/4"	.20
		Holds side tripod socket to case	7-38B	3		
151-1-3	P-21	Holds end of body cable release spring	2-19	2	#1 RH, 3/16"	.20

PACEMAKER GRAPHIC "45"
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Part No.	Finish	Use	Fig. Ref.	Qty.	Description	Net per 25
151-2-3	P-21	Anchors end of cable release in place Body release pivot screw	2-22	2	#2 RH, 3/16''	.20
151B0-3		Holds contacts to camera case	7-	5	#0 RH, 1/8''	.20
151B2-4	S-18	Holds bottom tripod socket to case	7-38E	3	#2 RH, 1/4''	.20
152B1-8	L-26	Holds shutter plate to camera	2-3	2	#1 OH, 1/2''	.20
152B4-8	S-18	Holds Graflite encircling bracket to camera	1-3	2	#4 OH, 1/2''	.20
152B4-10	S-18	Holds Graflite encircling bracket to camera	1-4	1	#4 OH, 5/8''	.20
152B1R4	Chrome	Holds body release plate in place	7-2	2	#1 OH, 1/4'' Phillips	.40
152B2R4	Chrome	Holds rear curtain bearing in place	7-18	6	#2 OH, 1/4'' Phillips	.40
170B3-3	P-15	Adjusts tension on pinion pad	6-13A	1	#3-48 slotted headless set, 3/16''	.20
30921-P6	S-7	Holds back to case on Crown	8-1&2	5	#2 Self tapping, Pan H	.20
			9-1&2	5		
			10-	5		
		Top screws that hold back to camera case on Speed	8-2	2		
			9-2	2		
			10-	2		
30921-P7	S-7	Bottom screws that hold back to camera case on Speed	8-1	3	#2 Self tapping, Pan H	.20
			9-1	3		
			10-	3		
<u>Special Screws</u>						
30187-P1		Holds escapement to shutter plate	4-2	2		1.20
30213-P1		Holds shutter mechanism to camera	2-5	1		.60
30401-P1		Slide lock screw	5-8	4		1.20
30543-P1		Front standard tilt locking screw	5-25	2		4.80
31925-P2		Yoke guide case screw	2-32	4		.40
30661		Infinity stop (rear)	1-19A	2	Pointed	.40
30662		Infinity stop	1-19B	2	Flat point	.40
30749-P1		Holds body release plate in place	7-3	2	Special	1.20
30776		Range finder mounting	1-8	2		.80
30819		Index and focusing scale	1-14	4		.20
30830	Chrome	Holds rangefinder bracket assembly to yoke case section	6-8	2		.80
30939-P1		Holds slide lock to camera back	8-17	2	Special	2.40
			8-20	2		

Section 6

PACEMAKER GRAPHIC "45"
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Part No.	Finish	Use	Fig. Ref.	Qty.	Description	Net Per 25
31089-P4		Holds yoke guide to bed	6-2	10	Special, 1/4" #2-56 Bind H	.20
31134	S-18	Range finder mounting	1-7	2		.20
31226-P2	Chrome	Holds end of cable release to body release	2-23	1		.20
		Holds bed blocks to bed	6-9	6		
31238		Holds curtain pressure spring to back	9-16	2		.20
31246-P2		Yoke lock lever limiting screw	6-3	1	Special Fil H	.20
31270-P1		Holds focusing frame spring to camera back	9-7	2		.40
<u>Nuts</u>						
200-2H		Holds governor mechanism together	4-15B	2		.20
200-3S		Holds case foot in place	7-37	4		.40
30375-P1		Nut for handle bracket	7-15	2		1.00
30377-P1		Nut for slide lock screw	5-9	4		.60
30440-P1		Front standard eccentric nut	5-26	2		3.60
30553-P1		Front standard lever assembly lock nut	5-28	1		1.00
30843		Cable release nut for manual trip rod	5-4A	2		1.60
<u>Washers</u>						
221-2		Washer for #102-2-5	4-10	1		.20
		Lock washer for Nut 200-2H that holds governor mechanism together	4-15C	2		
		Washer for part #102B2-4	7-	2		
30358		Receptacle washer	3-3	1		.20
30368		Peepsight washer	8-23	1		.40
			9-15	1		
			10-	1		
30473-P1		Washer for focusing frame spring screw	9-8	2		.20
30473-P2		Washer for slide lock screw	5-10	4		.20
30473-P5		Washer for front standard locking screw	5-24	2		.20
30473-P6		Front frame clamp washer	5-3	2		.20
30473-P7		Washer for front standard locking screw	5-23	2		.20
30473-P8		Washer for part #102B2-4	7-	2		.20
30473-P9		Washer for front standard locking screw	5-32	1		.40

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Part No.	Finish	Use	Fig. Ref.	Qty.	Description	Net Per 25
30473-P11		Yoke lock lever washer	6-5	AR		.20
30473-P15		Curtain and rollers washer	2-10	1		.20
✓ 30473-P20		Washer for slide lock screw	5-11	4		.20
30473-P22		Front standard tilt locking washer	5-25	2		.20
30473-P24		Curtain and rollers washer	2-10	AR		.20
30473-P25		Washer for body cable release end spring	2-20	1		.20
30473-P36		Graflite Mounting bracket	1-	3		.20
30473-P53		Graflok back, panel, arm washer	8-11 8-14	1 1		.20
30540-P1		Washer for front standard lock lever	5-33	1		.40
✓ 30540-P3		Washer for slide lock screw	5-12	4		.40

Finish Code

L-26 Black wrinkle
P-15 White nickel
P-21 Cadmium
S-7 Jetal
S-18 Ebonol

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