

Omega®

Technical Service Manual

For the following enlargers:

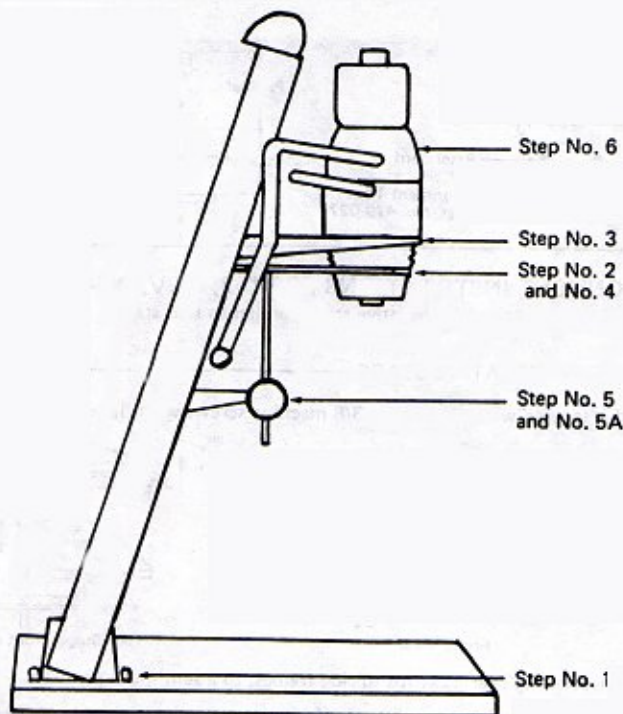
A2,
B22S, B7, B8, B9, B10, B22
D2, D2V, D2 Special, DM2, D3,
D3V, DM3, D4
E5, E6

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Simmon Omega enlargers have been designed to withstand the rugged requirements of everyday professional use. Nevertheless, care and maintenance are required to keep the mechanical functions of the enlarger in good working order.

This manual contains simple basic instructions on realignment of your equipment and for other minor adjustments to maintain the proper functions of the working parts, so as to get the full benefit of this fine Omega equipment for many years to come.



SIMPLE BASIC INSTRUCTIONS ON RE-ALIGNMENT OF SIMMON OMEGA ENLARGERS

FOR THE 3 BASIC PLANES OF ALIGNMENT OF ALL OMEGA ENLARGERS

See Page 4

STEP BY STEP PROCEDURES

Step Number 1 - Tighten column to baseboard.

Group (A) A, B-22, see page 10

Group (B) B-8, B-10, D-2, D-2V, D-M2, see page 6

Group (C) B-7, B-9, D-4, D-3, D-3V, E-5 see page 10

Step Number 2 - Align lens stage front to rear,
left to right

(A) see page 5

(B) see page 5

(C) see page 6

Step Number 3- Align negative stage front to rear

(A) see page 5

(B) see page 6

(C) see page 8

Step Number 4 - Align negative stage left to right

(A) see page 5

(B) see page 6

(C) see page 7

Step Number 5- Adjust focusing movement (Rod Type)

(A) see page 9

(B) see page 9

(C) none (see step 5A)

Step Number 5A - Adjust focusing movement
(Cam Type)

(C) see page 10

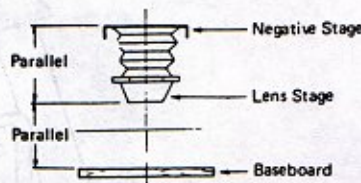
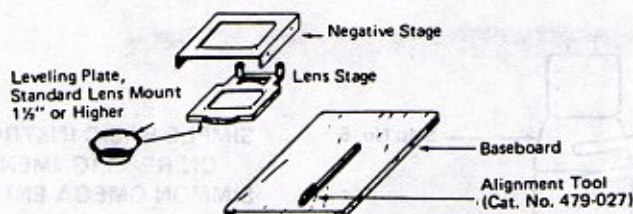
Step Number 6 - Align lamphouse - To be level to
filmstage

(A) see page 9

(B) see page 9

(C) see page 9

THE 3 BASIC PLANES OF ALIGNMENT ON ALL MODELS OF ENLARGERS

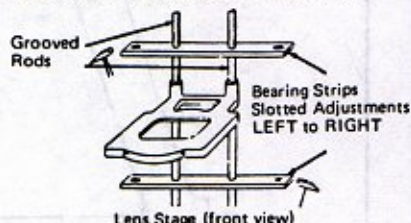
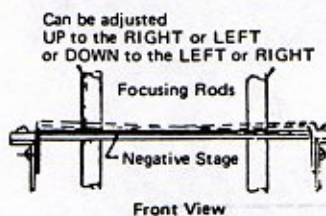
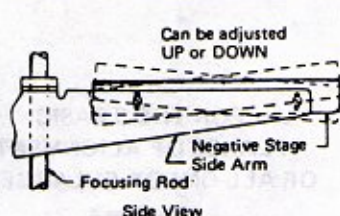


ILLUSTRATED ALIGNMENT INSTRUCTIONS FOR D-2, D-2V, DM-2, E-6

This adjustment is provided to make negative stage parallel to lens stage.

NEGATIVE STAGE

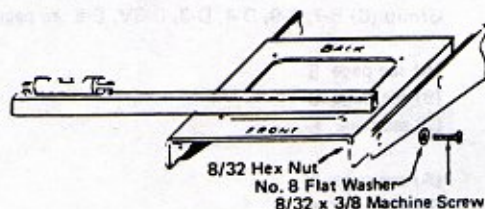
Negative stage has slotted adjustments and is secured with (4) 8/32 X 3/8 machine screws with flat washers and hex nuts.



Loosen screws (10/32 X 1/2 with cap nuts), securing bearing strips to side frames, to a semi-tight position.

This adjustment is provided for making lens stage parallel to baseboard. If lens stage needs correction, strike bottom bearing strip toward the left and top bearing strip toward the right. Reverse procedure if adjustment is necessary in opposite direction. NEVER attempt to make total adjustment on one bearing strip only. This would lead to extreme wear on brass groove rods causing rough focusing "Action".

NEGATIVE STAGE ADJUSTMENT



Check Front End - LEFT to RIGHT

Make adjustments with 8/32 screws holding film stage to side frame.

Next check negative stage in the back.

NOTE: Be sure to tighten hex nuts on other end of 8/32 screws. (Use 11/32 open end wrench or 5/16" open end wrench).

ECCENTRIC ROD ADJUSTMENT

This adjustment is provided to make lens stage and film stage parallel to baseboard.



The eccentric rod located on bottom front of carriage assembly is secured with (2) 8/32 hex head screws.

Loosen screws and insert pointed tool in hole of rod and turn. Clockwise will raise enlarger. Counter clockwise will lower enlarger.

Select adjustment for your requirements to make level parallel. Level is placed on filmstage with lamphouse resting on it. If you cannot get enough adjustment, check for the following:

- Loose baseboard nuts.
- Gears are meshing too tightly into teeth on girder. Loosen bearing plates supporting hand wheel assembly (located on each side of side frame toward the rear) and force backward.
- Film stage out of alignment. Follow leveling procedure outlined for left to right and apply them to front to back check.

ALIGNMENT PROCEDURES ON B22

THE POINTS OF ADJUSTMENT ON B22 ENLARGERS ARE:

1. Film Stage 2. Lifting Levers 3. Focusing

Step

1. Check the three knurled type Bakelite baseboard knobs for tightness. (see page 10)
2. Grease grooved rod with number 5 Mobil black grease.
3. Grease tape of balance spring with vaseline (commercial type).
4. Place level in center of baseboard (front to back) and make note of position of air bubble.
5. Bring level directly to center of film stage with lamphouse resting on it to hold it in place.
6. The film stage of a B-22 is a die casting. The side arms have slots to provide full adjustment from side to side and front to back. Loosen any two machine screw fasteners securing film stage. If stage has to be raised loosen 2 front fasteners. If stage has to be lowered, loosen 2 back screws.
7. Bring level to center of baseboard for left to right check. Make note of position of air bubbles.
8. Repeat step number 5, but have level in center from left to right.
9. Loosen two screw fasteners on left side or right side to make necessary adjustment and retighten.
10. The lens stage assembly is factory locked in design to film stage and will automatically be in parallel after above adjustments are made.
11. Check alignment of lamphouse on film stage. If lamphouse rests evenly, loosen 6/32 machine screws, two on each side of lamphouse, securing levers to metal band around condenser housing. This will automatically level lamphouse.
12. Retighten screws after adjustment.

NOTE: Lamphouse can be centered on film stage with the same adjustment described in step 11. Metal band on lamphouse is slotted to provide for this adjustment.

ALIGNMENT PROCEDURES ON D-3, D-3V, D-4, B-7, B-8, B-9, B-10, E-5, A-2, DM-3

(See illustrations on page 7)

The point of adjustment on Autofocus models are:

- Eccentric rod (top rear rollers connecting rod) (1)
- Adjustment pads (4 in B & D models - 2 on A2) (2)
- Lens stage (3)
- Negative stage (4)
- Lifting levers (5)
- Focusing movement, cam action (6) (see page 10)
- Adapter (7) for lamphouse (see page 9)

ALIGNMENT PROCEDURES ON D-3, D-3V, D-4, B-7, B-8, B-9, B-10, E-5, A-2, DM-3 (Continued)

For the purpose of identification, the enlarger surfaces to be checked (facing the enlarger) will be referred to as "left to right" and the "front to back".

Step

1. Same as D-2
2. Same as D-2.
3. Grease bearing plates (8) supporting focusing shaft.
4. Same as D-2.
5. Remove lensmount entirely and use lens stage as working surface.
6. Same as D-2.
7. Without disturbing level, pick it up and place it upon surface of negative stage (left side) with lamphouse resting. If it is too high turn eccentric rod located top rear of carriage assembly, either clockwise or counter clockwise.
8. If not enough adjustment can be made in eccentric rod, then proceed to loosen 8/32 X 3/8 screw and nut used to secure negative stage to side arms. Do not loosen both screws at one time. If front has to be raised, loosen front screw and nut or the rear screw and nut if negative stage has to be lowered.
9. Same as D-2.
10. Without disturbing spirit level, bring it to surface of negative stage (left to right). Place spirit level to the rear of negative stage against stop pins. Have lamphouse resting on it for true reading.
 - (A) One side of negative stage has already been properly leveled in the front to back check. Therefore, the right side is the side you are concerned with.
 - (B) If air bubble is towards the right from "true" center, then loosen 8/32 X 3/8 screw and nut on negative stage and tap it down slightly (a light weight hammer should be used).
 - (C) Secure screw and nut after adjustment is made.
 - (D) Repeat above procedures by placing level to front of negative stage. (See illustration on alignment instructions of D-2.

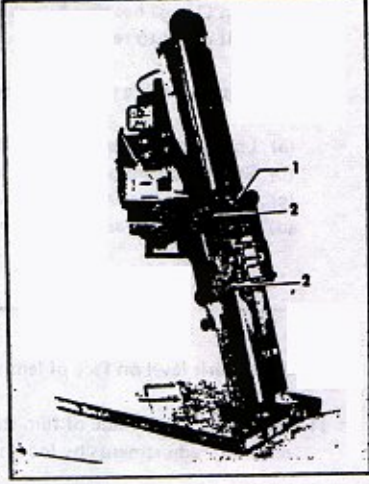
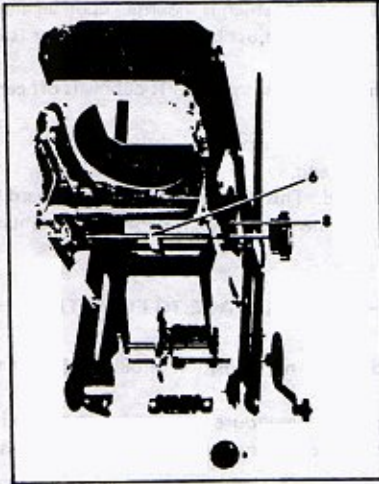
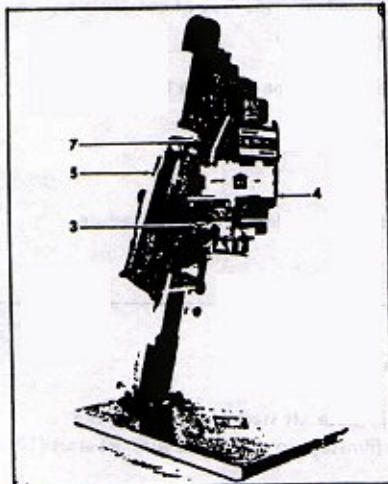
NEGATIVE STAGE TO LENS STAGE

Step

11. Place spirit level on aligned negative stage (front to back) and note position of air bubble.
12. Hold level to surface of lens stage on the right side. Lens stage is fully adjustable (except on B-7, B-8, B-9, B-10, which has 3 slotted holes and one clearance hole. The hole located on right side to the rear is a clearance hole). If stage is off level, make necessary adjustments by loosening front machine screw and hex nut.
13. Place level back on aligned negative stage left to right. Note position of air bubble.
14. Place level to lens stage (holding in place with one hand). Any adjustments, if necessary, should be done on left side of lens stage. you will note that there are two 8/32 machine screws and nuts fastening stage to support arms.
15. Final adjustment is the "front to back" on left side of negative stage. Take level to right side of lens stage (front to back) and note position of level.
16. Bring level to left side of lens stage (front to back). Back screw and nut to be loosened and retightened if necessary for proper adjustment.

AUTOMEGA D-3 and D-3V

(Note: Reference points are same for A-2, B-7, B-8, B-9, B-10, D-4, and E-5)



ALIGNMENT PROCEDURES ON D-2, D-2V, DM-2, D-2 Special, and E-6

(Also see illustrated alignment instructions -page 4)

The points of adjustments on D-2 enlargers are:

- Eccentric rods (1)
- Adjustment pads (nylon screws mounted in side frames—2 on each side of enlarger—total of 4 (2)
- Bearing strips or lens stage (3)
- Negative stage (4)
- Lifting levers (5)
- Hand wheel assembly (6)
- Focusing movement (grooved rods) (7) — Tension screws (11)
- Adapters for lamphouse, D-2V type (8) - (see page 9)

(SEE ILLUSTRATIONS FOR ABOVE ON PAGE 8)

D-2 4x5 Enlargers (D-2, D-2V, D-M2, D-2 Special)

Step

1. Check bolts holding enlarger to baseboard. Use 3/8" box wrench.
2. Adjust side "pads" (2) located on either side of carriage assembly which are locked into in place with 10/32 hex nuts. These pads are provided to "minimize" play from side to side of carriage assembly when racking it up and down. The pads are nylon screw machine parts 10/32 thread.
3. Grease groove rods with number 5 mobile black grease.
4. Grease counter balance springs (9) with commercial Vaseline.
5. Remove lensmount and check to see if it is properly leveled. If not, tap high spots with soft mallet. Re-insert mount into enlarger.
6. Place spirit level on baseboard directly in the center with level closest to you. This is a front to back inspection. Make note of position of air bubble.
7. Without disturbing level, pick it up and hold it firmly on surface of lensmount. The level should indicate that this "plane" is higher than baseboard by one line on level. If it is too high, turn eccentric rod located bottom front of assembly (1), either clock-wise or counter clock-wise. NOTE: Rod is secured with 1/4" hex head 8/32 screws, which should be loosened before making adjustment. Secure screws after making adjustment.

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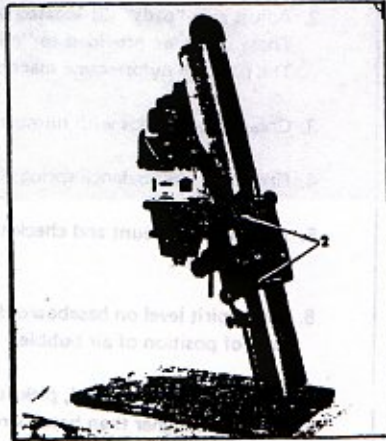
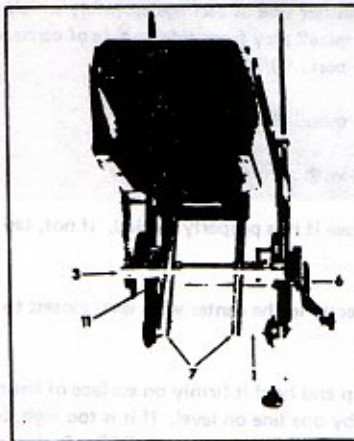
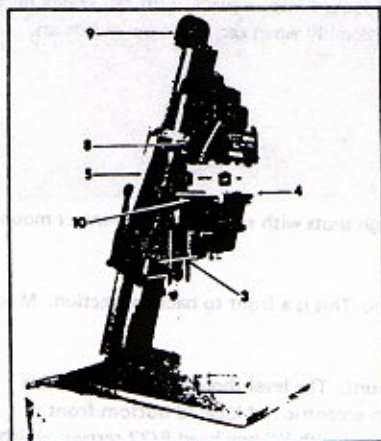
ALIGNMENT PROCEDURES ON D-2, D-2V, DM-2, D-2 Special, E-6 (Continued)

8. Place level on baseboard from left to right alignment check. The level should be in center of baseboard. NOTE: Simmon Omega has an adjustable spirit level which is mounted upon an aluminum bar. This type of construction makes it easier to read since you are able to adjust bubble to true center (see local dealer).
9. Without disturbing spirit level, bring level to lensmount. If bubble is off center toward the right, do the following:
 - (a) Loosen screws and nuts holding bearing strips (3) slightly.
 - (b) Strike bottom bearing strip on left end.
 - (c) Strike top-bearing strip on right end. This will shift the bubble toward the left.
 - (d) Secure screws and nuts after adjustment is made. If bubble is off center toward the left, reverse procedure.

LENS STAGE TO FILM STAGE

10. Place spirit level on face of lensmount and note position of bubble, (Front to back check).
11. Place level on left side of film stage with lamphouse resting on it to secure it in place. If stage is off level, make necessary adjustments by loosening one of the two machine screws fastening filmstage to side frame support arms (10).
12. Place adjustable level back to lensmount holding level to its surface. Check for alignment left to right.
13. Make note of position of bubble and place onto filmstage (front end) left to right. If adjustment is necessary, loosen screw on right side and raise or lower film stage. Secure screw. NOTE: Screws used on film stage are 8/32 X 3/8 round head. A hex nut (8/32) locks the screw into place. Be sure to loosen hex nuts before attempting to loosen screws.
14. Place level to the rear of film stage for final left to right alignment check. Make adjustments as described in step 13.
15. Check alignment of lamphouse upon film stage. If lamphouse rests unevenly then loosen allen set screws located in short lifting levers on right side of enlarger. Enlargers having long lifting lever on left side will have 2 short levers on right side. Enlargers having long lifting levers on right side will have short lifting levers on left side.
16. Adapters on lamphouses are adjustable to provide centering of lamphouse on negative carrier. Each adapter is secured with two 10/32 round head commercial screws. (Refer to lamphouse alignment instructions on page (9). On variable condenser-type adapters four screws (4/40 X 1/4) are used to secure them to housing.

OMEGA D-2 and D-2V

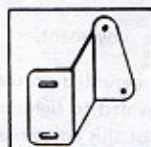
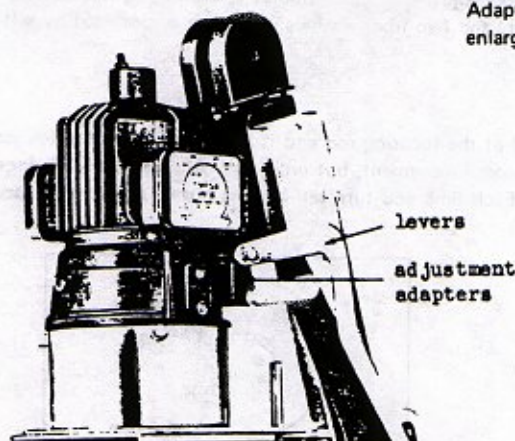


(Note: Reference points are same for DM-2, D-2 Special, and E-6)

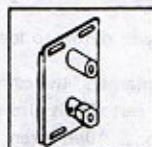
LAMPHOUSE ALIGNMENT INSTRUCTIONS

Adjust lamphouse to be level to negative stage (For all types of lamphouses — Condenser, Cold Light, Omegasphere, Chromega)

Adapters are provided on all types of lamphousings used on Omega enlargers except for A-2 and B-22 models.



D2 STANDARD
CONDENSER



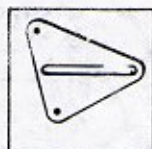
D2V



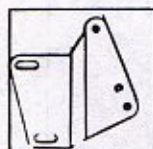
OMEGALITE



E5 CONDENSER



CHROMEGA



B7-8 CONDENSER

Step Front Side

1. If front of lamphouse strikes the negative stage before the rear:
Loosen bottom screws holding adapters to lamphouse and pull lamphouse towards you. There is enough adjustment in these adapters to cause lamphouse to "swivel" at this point. Check to see if properly aligned and tighten screws.
2. If lamphouse is off balance from left to right, then loosen allen screws in lifting levers and lamphouse will rest evenly from its own weight. Retighten allen screws. (Use number 8 or number 10 allen wrench).
3. Adapters on "V" models have an additional adjustment. Each adapter has one hex eccentric part secured with one 10/32 allen screw. Loosen screws and turn hex clockwise or counter-clockwise to raise or lower lamphouse.

ADJUST FOCUSING MOVEMENT

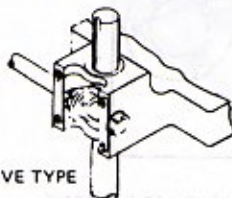
Manual D-2, D-2V, DM-2 and B-22

D-2 and B-22 enlargers have grooved rod focusing movements: Friction rollers drive these rods up or down when proper friction is maintained. The rods must be lubricated with grease to eliminate wear and excessive friction.

- (1) On D-2 models, 2 groove rods are used. You will note that there are 2 sets of rollers, mounted on focusing shaft. You will also note that there is an additional set of fiber rollers (A) on the same shaft. Tension springs (B) are "pressed" against these rollers to force the focusing rods with friction rollers deeper into grooves of rods. To increase friction, turn machine screws (C) mounted in posts located directly in back of tension springs clockwise. To relieve tension, turn these screws counter-clockwise.

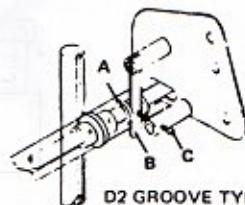
NOTE: Be sure to turn each adjustment screw an equal amount so as to avoid uneven tension and possible misalignment.

- (2) On B-22 models, only one grooved rod is used and has the same principle of adjusting the friction. To the rear of the casting, to which rod is secured, you will note two flat springs screwed into place. Each spring is secured with two machine screws.



B-22 GROOVE TYPE

- (a) Tighten bottom set of screws or all four to get more tension.
- (b) Reverse procedure to loosen. Be sure to lubricate the rod before making adjustment.



D2 GROOVE TYPE

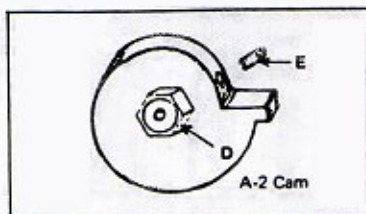
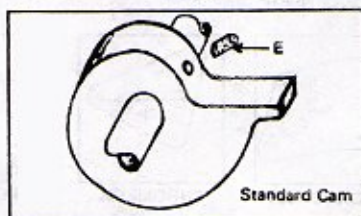
ADJUST FOCUSING MOVEMENT – CAM TYPE

Manual and Autofocus – A-2, B-7, B-8, B-9, B-10, D-3, D-3V, DM-3, D-4 and E-5.

The cam driven type of focusing movements have a simple adjustment consisting of a self-locking nut on end of shaft. The assembly itself consists of four spring washers and two fiber washers which are compressed by self-locking nut to tighten focusing movement.

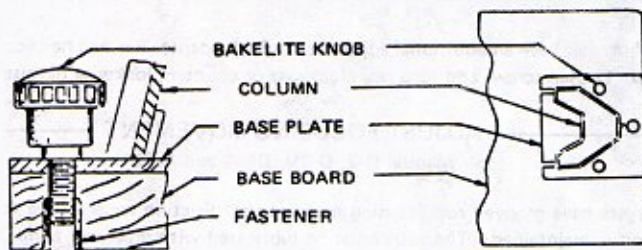
Loosen nuts if you desire to loosen movement.

On A-2 model enlargers, the cam is mounted on the end of the focusing rod and it is secured with an Allen screw. The self-locking nut (D) is also provided to tighten or loosen movement, but only after Allen screw (E) is loosened in cam. Use No. 8 Allen Wrench for this adjustment. Each time you turn self-locking nut to adjust your focusing, secure cam before testing focusing.



Most cam focusing types of enlargers have the cam mounted on the center of the focusing shaft. This cam rests on a teflon button which will wear from use. The button is provided so as to eliminate metal to metal contact of cam. Replace if necessary by inserting new button into hole already provided for it. (Remove old button by prying off or by pushing it into hole).

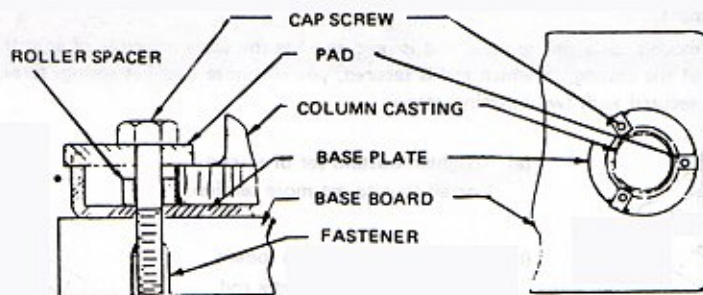
BASEBOARD INSTRUCTIONS A-2 and B-22



Tighten column to baseboard. Three bakelite knobs are used to fasten column to baseboard.

BASEBOARD INSTRUCTIONS

Models: B-7, B-8, B-9, B-10, D-2, D-2V, D-3, DM-2, D-3V, D-4, E-5, E-6.



Three cap screws with roller spacers and pads are used to fasten column to baseboard.

PERIODIC INSPECTION, MAINTENANCE AND LUBRICATION

The following items listed require pre-operational inspection and the specific conditions for which the check is to be made.

ITEM	CONDITIONS TO CHECK
Projection lens	Dust, fingerprints and scratches.
Condenser lens	Dust, fingerprints and cracks.
Bellows	Light leaks.
Lamps	Operational — defective socket.
Lamphouse assembly	Proper alignment on negative stage.
Focusing knob	Ease of movement.
Carriage assembly	Ease of movement.

Maintenance of the enlarger is limited to cleaning, tightening of loose attaching hardware and adjustment and alignment.

Cleaning: Clean the unit as follows:

- A. Remove any foreign matter from the projection lens surface with an air syringe or camel hair brush. The use of lens tissue is limited to the removal of fingerprints or moisture film.
- B. Clean the surfaces of the condensers with a lintless cloth or lens tissue. For the removal of fingerprints or moisture, clean condensers with solution of soap and water. Dry with lintless cloth
- C. Clean the bulb with a soft lintless cloth — do not insert replacement bulbs without the use of gloves or cloth (to prevent fingerprints from being etched into glass from heat).

Lubrication:

The enlarger seldom requires lubrication. Lubricate every six months with a thin film of black grease at grooved rods, indicated on page 8, No. 7, or sooner if the absence of lubricants is evidenced by stiffness in operation. Vaseline should be used on the steel tapes of balance springs. Clean parts to be lubricated with a dry cleaning solvent applied to a lintless cloth. After lubrication, operate the the mechanism concerned in order to distribute the lubricant evenly on the mating parts. Carefully remove excess lubricants.

Alignment:

Two types of alignment procedures are necessary to cover autofocus and manual machines. Select the procedures which applies to your equipment. See section on alignment procedures.

TROUBLE SHOOTING

TROUBLE	PROBABLE CAUSES	REMEDY
1. Negative "Popping"	<p>(a) Heat— Due to high watt bulb</p> <p>(b) Humidity — Room Temperature — Running Water.</p> <p>(c) Focusing movement— (lack of lubrication)</p>	<p>Heat absorbing glass — Glass Carrier</p> <p>De-humidifier or Glass Carrier</p> <p>Grease on groove rods (D-2) bearing plate (D-3, D-4, E-5, B-7 B-8). Replacement of Teflon button. Tighten loose focusing movement with proper adjustment on screws (D-2) or nut on end of shaft (all "B" and autofocus models).</p>
2. Poor Definition	(a) Alignment	<p>Check with suitable test pattern for corner to center definition. Always focus on center of pattern. Corners should be equally "out". Stopping down to F8 or F11 (performance of lens) will give best results. If distortion is considerable on one half of picture, then proceed to realign. (See alignment instructions page 4).</p>
	(b) Lens definition	<p>All four corners at F8 or F11 (quality of lens) should be suitably sharp. Compare with another lens of same focal length. Recheck alignment and lensmount.</p>
	Lens separation	<p>Lens elements sometimes become separated with "age" or by accidental dropping. Overall picture is not sharp. Return to lens manufacturer.</p>
	Lens defects	<p>Scratches on lens—dirt on condensers or lens. Replace—order from manufacturer.</p>
	Condensation	<p>Humidity and heat from enlarging bulb causes condensation to form on "optics" of enlarger. A "film" or coating on glass surfaces will act as a diffuser. Clean with suitable cleaning agents or with lens tissues.</p>
	(c) Bent lensmounts—due to accidental dropping	<p>Check with spirit level. Straighten out bent portions with soft "mallet".</p>
	(d) Warped film holders	<p>Check on level surface. Filmholders are easily straightened to conform with factory specifications. Excessively worn holders should be replaced.</p>

(Continued)

TROUBLE SHOOTING (Continued)

2. Poor Definition (Continued)	(e) Misaligned lamphouse	Loosen allen screws in lifting levers which raise and lower lamphouse. After lamphouse has assumed level position, retighten screws.
	(f) Vibration	Check base-locking screws and working table.
3. Spots on enlargement	Foreign matter on negative	Clean condensers
	Foreign matter on negative	Check negative
4. Scratch-like lines on enlargement.	Cracked condenser	Replace condenser lens
5. Evenness of illumination	(a) Wrong focal length condenser	Check for proper set (see chart on condensers in Simmon Omega General Catalogue).
	(b) Wrong focal length lens	Check for proper lens (see chart on lenses in Simmon Omega General Catalogue).
6. Portion of projected image cut off.	Improper placement of negative carrier.	Correct position of negative carrier.
7. Poor light output-Chrome	(a) Defective bulb	Replace bulbs. If only one of the two bulbs is defective, you must replace both bulbs. This results in maximum control of color temperature, important to color printing as well as achieving evenness of illumination.
	(b) Improper line voltage.	Check output on receptacle of wall outlet. Use voltage stabilizer (250W).

Specifications Subject to Change Without Notice

Omega Division

BERKEY MARKETING COMPANIES

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