

B4A Instruction Manual

Page 1

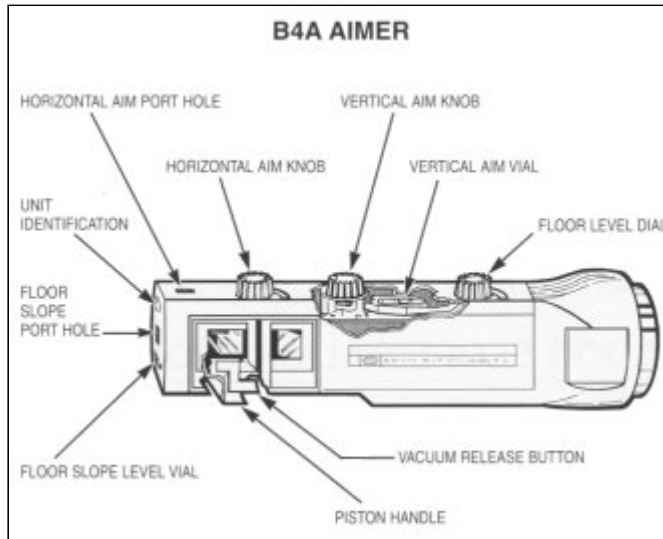


TABLE OF CONTENTS

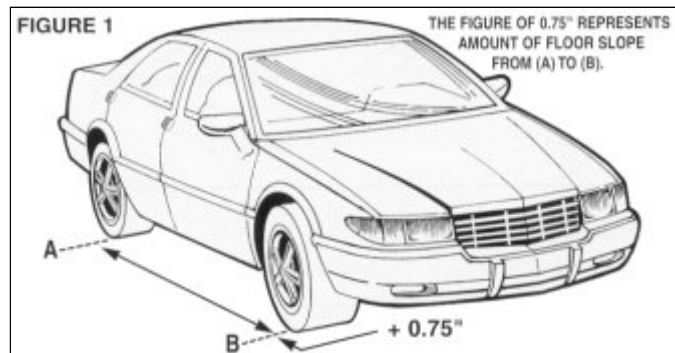
Vehicle Preparation	2
Floor Slope Calibration	2
Headlamp Aiming	4
Assembly Instructions / Large and Small Universal Adaptors	6
Aiming Instructions	8
Quick Headlamp Aim Check	15
Checking Aimer Calibration	15
Aimer Calibration	17
Location of Horizontal & Vertical Adjustment Screws	20, 21, 22
Maintenance Instructions	21

B4A Instruction Manual

Page 2

Before the headlamp aiming process begins, it is necessary to prepare the vehicle as follows:

1. Drive vehicle onto a flat surface. It isn't necessary that this surface be exactly level.
2. Remove large amounts of mud or ice from the underside of fenders.
3. Check whether tires are noticeably deflated and inflate if necessary.
4. See that there is no load in the vehicle other than the driver.
5. Rock the vehicle so as to equalize the springs. Check them for sag or broken leaves. Check functioning of any "level-ride" mechanism.
6. Clean headlamp lenses and aiming pads. CAUTION: Some solvents and cleaners will attack and /or weaken the components of the B4A Aimer. Thoroughly dry any object which has been cleaned with a solvent before attaching an aimer to it.
7. Check for bulb burnout, broken aiming pads and proper beam switching.



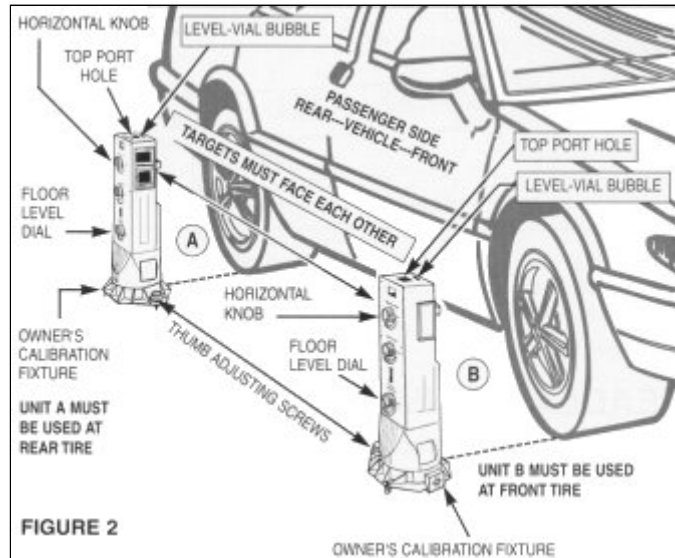
Aimers will not work correctly unless floor slope is taken into account. FLOOR SLOPE CALIBRATION must be done prior to aiming. However, if you regularly use one area to aim headlamps, rechecking the floor slope is unnecessary. Permanently mark the area as shown in (Fig. 1), calibrate floor slope, and mark the setting for that area.

Here's how to calibrate floor slope...

1. Attach OWNER'S CALIBRATION FIXTURES to aimers. The fixtures will easily snap into place on the aimers when properly positioned.

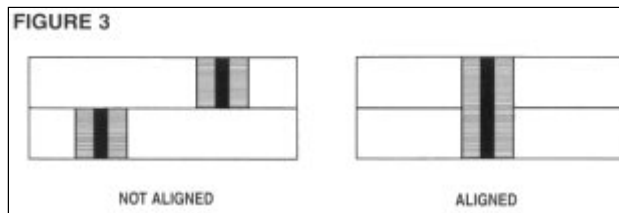
B4A Instruction Manual

Page 3



2. Place aimers at the center line of each wheel on one side of the vehicle (Fig. 2). Unit B must be placed at the front wheel with the target facing to the rear. Unit A must be placed at the rear wheel with the target facing front.

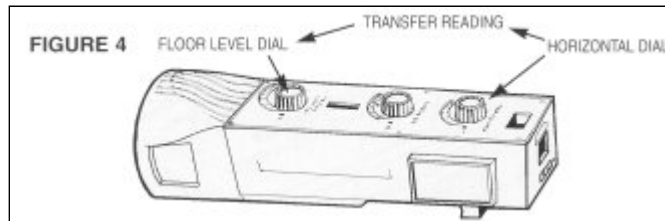
3. Level each unit by adjusting the thumb adjusting screw on each OWNER'S CALIBRATION FIXTURE. Turn the screw either clockwise or counter-clockwise until the level vial bubble registers in a centered, level position.



4. Look into top port hole of unit A. Turn horizontal knob until the split image is aligned (Fig. 3).

B4A Instruction Manual

Page 4



5. Transfer (Fig. 4) the plus or minus reading indicated on the horizontal dial to the FLOOR LEVEL DIAL on each aimer (press floor level dial inward to set reading). Turn horizontal dial back to zero.

6. Remove fixtures.

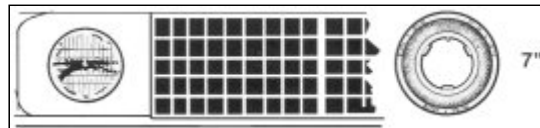
HEADLAMP AIMING

Your headlamp aimer is equipped with adaptors for lamps that have aim pads and are designed to be aimed mechanically. Regardless of configurations, headlamps are always aimed in pairs...one lamp on each side of the vehicle.

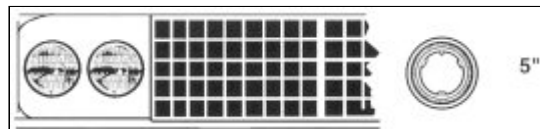
1. Attach the correct adaptor to each aimer for the kind of headlamp on the vehicle (Fig. 5). Adaptors will easily snap into place when properly positioned.

FIGURE 5

Circular two lamp systems - use 7 inch circular adaptor.



Circular four lamp systems - use 5 inch circular adaptor.



Rectangular lamp systems - use adjustable blue adaptors for some aiming pad locations.

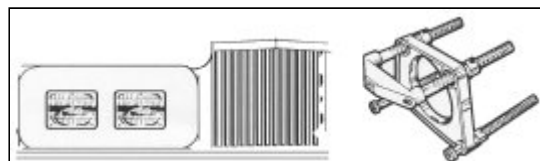


FIGURE 5 (CONT'D)

Rectangular systems - use adjustable black adaptors for some aiming pad locations.

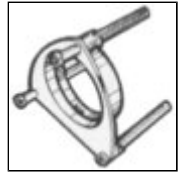
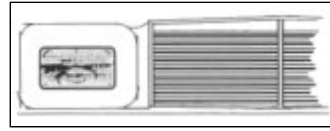
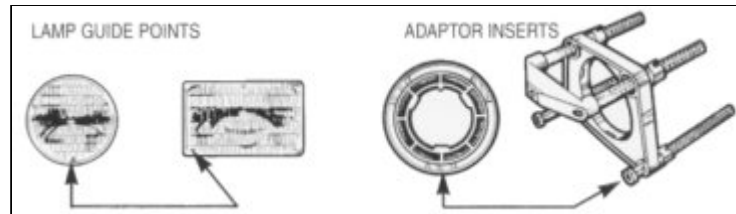
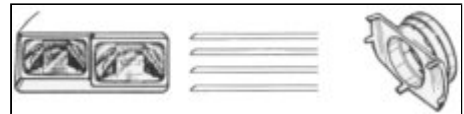


FIGURE 6

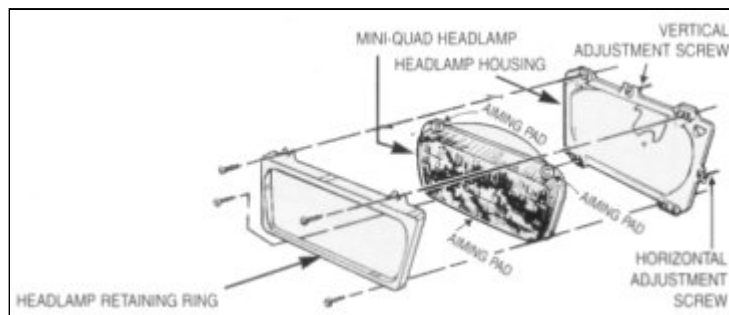
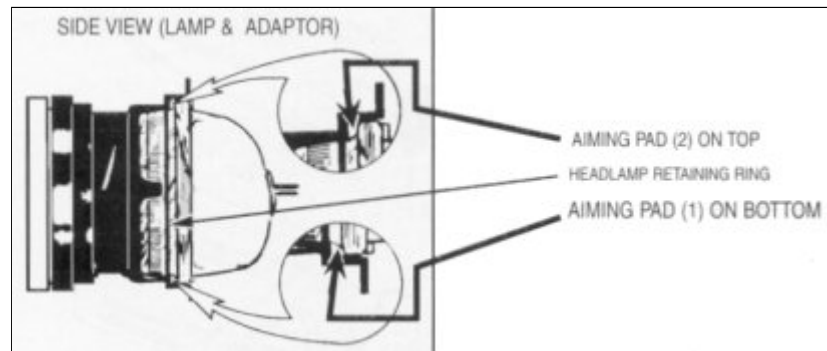


Mini-quad headlamp systems - use 90 x 150mm adaptors.



The mini-quad headlamps are so small there is no room for the pads on the lens surface. Therefore, the pads are located on the sealing flange around the lens. The adaptor rests on the retainer - aiming ring which covers the aiming pads.

FIGURE 7

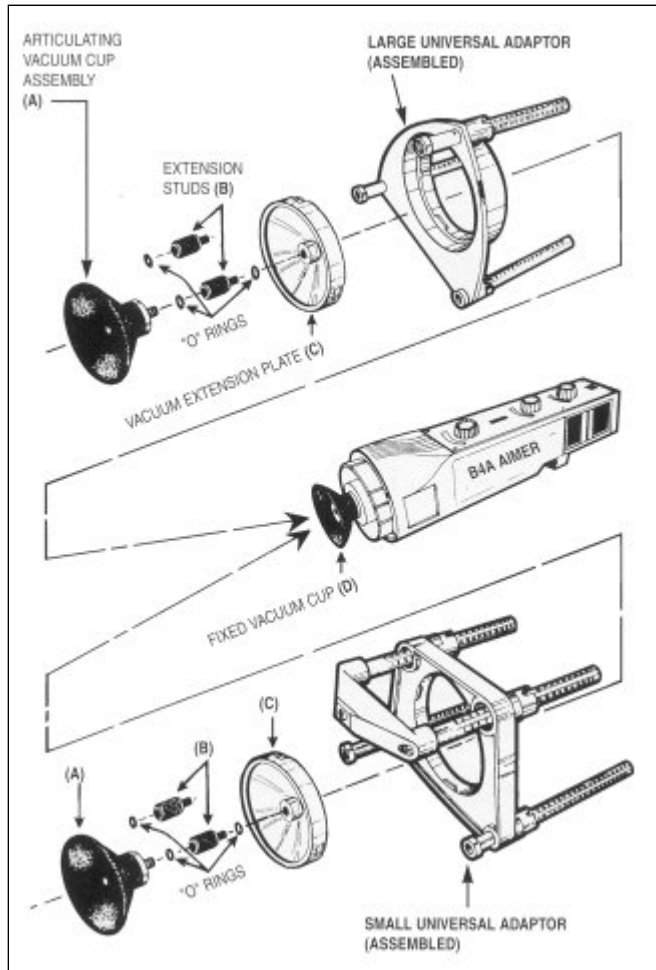


2. Steel inserts are molded into position in all adaptor except the 90 x 150mm mini-quad adaptor (See Fig. 7) to ensure accuracy. These inserts must be in contact with three aiming pads on the lamps when the aimer is properly positioned (Fig. 6).

B4A Instruction Manual

Page 6

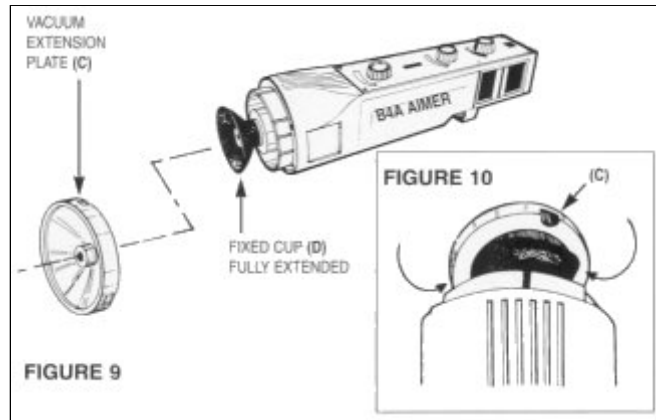
ASSEMBLY INSTRUCTIONS LARGE AND SMALL UNIVERSAL ADAPTORS



B4A Instruction Manual

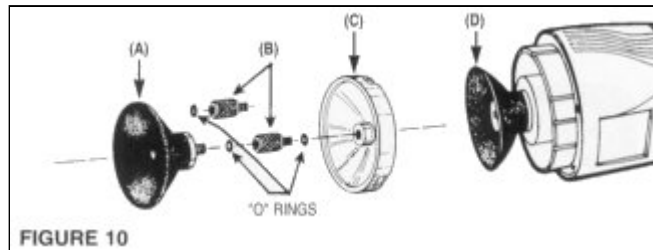
Page 7

1. Attach the vacuum extension plate assembly (C) to the fixed vacuum cup (D) on the B4A aimer. This is best accomplished with the fixed cup (D) fully extended (Fig. 9).



Squeeze the fixed cup (D) into the round hole in the back of the vacuum extension plate (Fig. 10).

2. After the vacuum cup extension plate (C) has been installed onto the fixed B4A vacuum cup (D), the articulating vacuum cup (A) can be attached to the vacuum cup extension plate (C). If used, the threaded extension studs must be seated firmly against the "O" ring in the vacuum cup extension plate (Fig. 11).



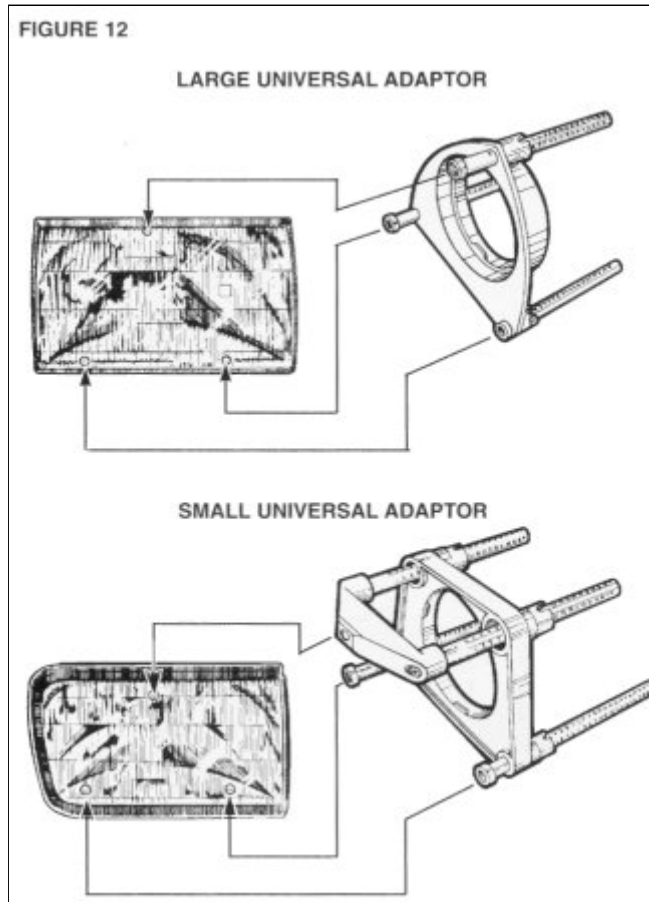
The two extension studs (B) can be placed between the vacuum cup extension plate (C) and the articulating vacuum cup assembly (A) for maximum extension when needed.

B4A Instruction Manual

Page 8

AIMING INSTRUCTIONS

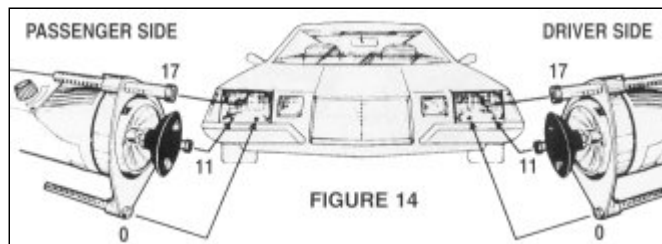
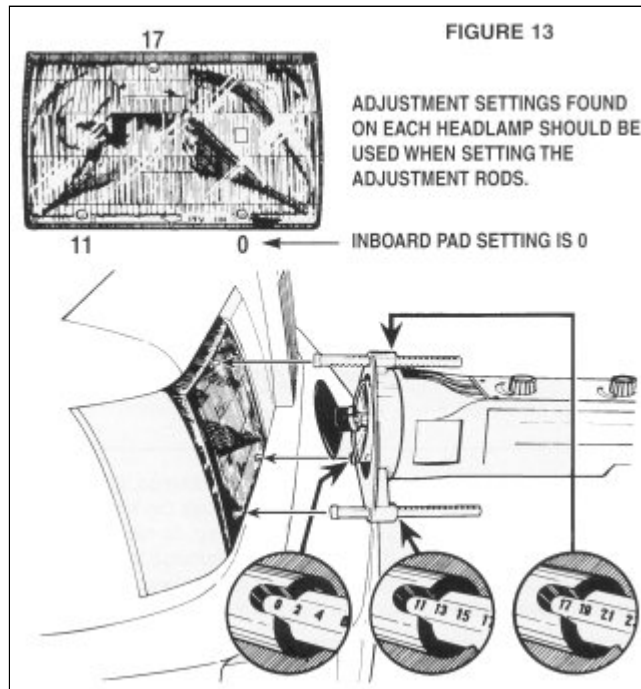
1. The Hoppy® B4A Aimer should be calibrated for floor slope as shown on page 2.
2. Select the Universal Adaptor that matches the aiming pads pattern on the lens of the headlamp (Fig. 12).



B4A Instruction Manual

Page 9

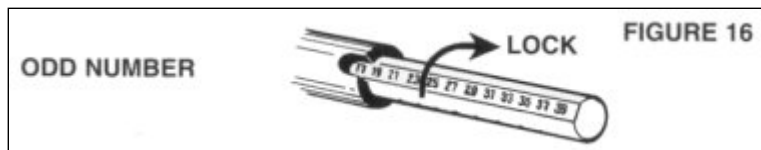
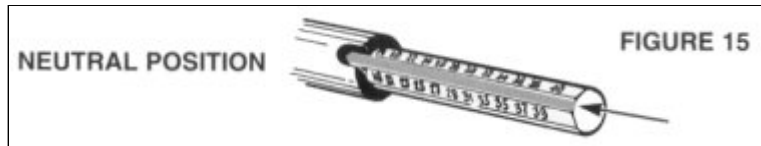
3. Align the selected adaptor to the aiming pads. Move the adjustment rod for each pad until it agrees with the number located next to the pad as shown in Fig. 13. On some lamps, the numbers are located along the lower edge or the vertical edge of the lens. (Example: 17V - 11H).



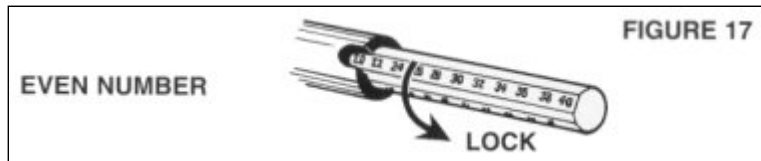
B4A Instruction Manual

Page 10

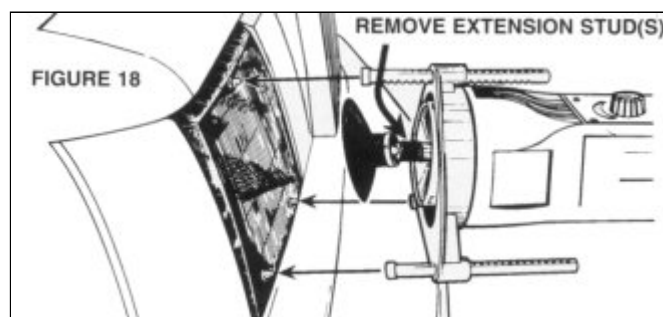
4. To adjust the rods to the required position, turn the rods to the neutral position (Fig. 15) and slide in or out to the proper setting.



Then turn the rod clockwise to lock in an odd number (Fig. 16) and counter-clockwise to lock in an even number (Fig. 17).

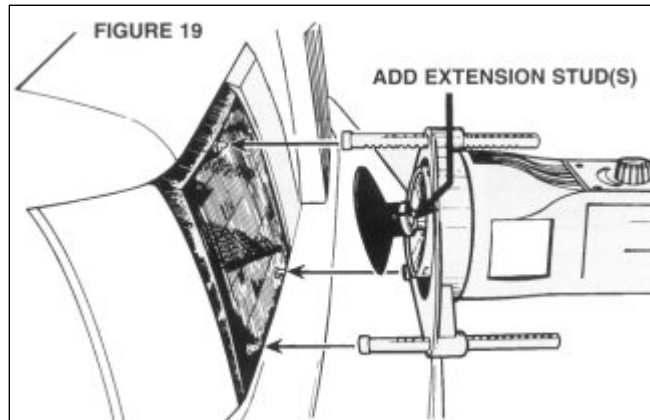


5. Place the aimers with the adaptors onto the headlamps. If the adjustment rods do not touch the aiming pads, use the extension studs to provide proper reach for the vacuum cup, or remove one or both of the extension studs (Fig. 18). If the articulating vacuum cap does not touch the lens of the headlamps, then add one or both of the extension studs to the vacuum cup assembly (Fig. 19).

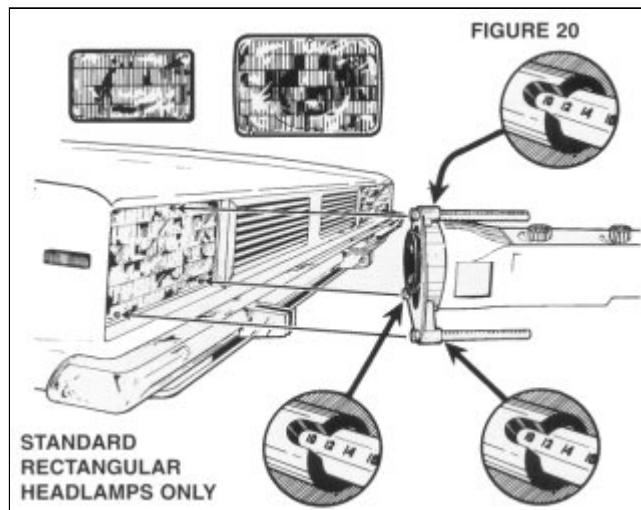


B4A Instruction Manual

Page 11



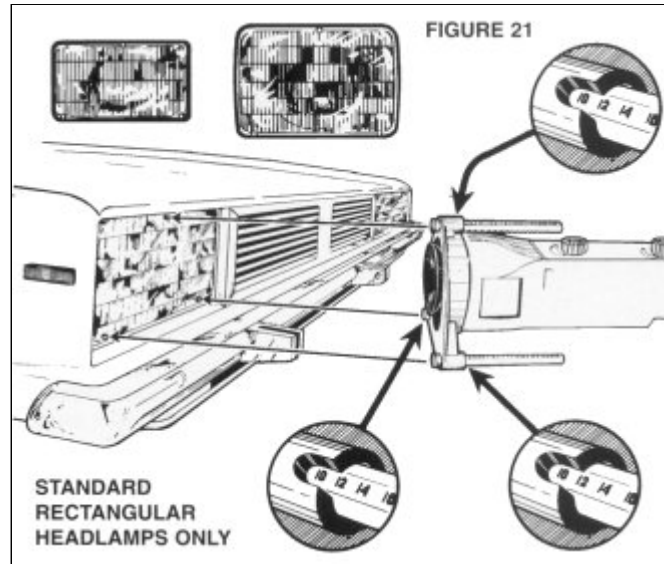
6. The aerodynamic adaptors (Blue-Small / Black-Large) replace the rectangular adaptors in the B4A Aimer Kits. When aiming standard rectangular and sealed beam headlamps, set all rods to zero when using the fixed vacuum cup (Fig. 20).



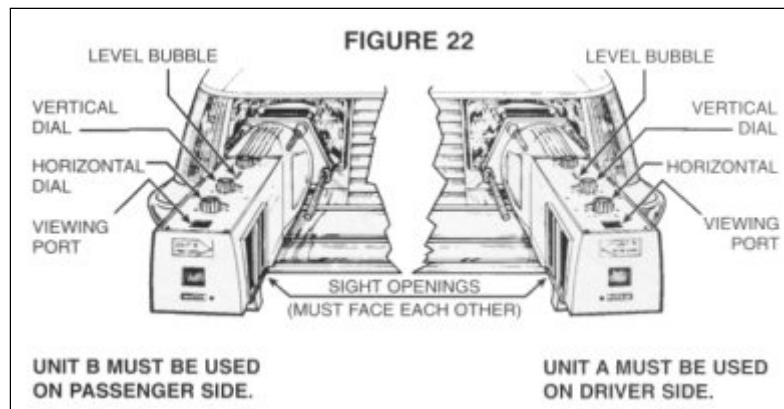
B4A Instruction Manual

Page 12

7. If the vacuum extension plate and articulating vacuum cup is on the B4A Aimer, then the rods must all be set at the same number. (Fig. 21). For the standard rectangular, this number ranges between 8 and 12.



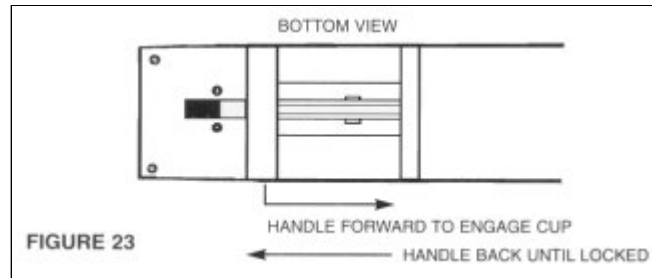
8. Perform the aiming process.



B4A Instruction Manual

Page 13

- Attach each aimer to headlamp (Fig. 22) by pushing piston handle forward, engaging rubber suction cup. Immediately pull back piston handle until it locks in place (Fig. 23).

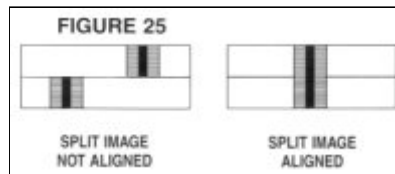
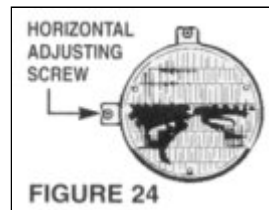


- You are now ready to aim the headlamps for both the horizontal (side to side) and the vertical (up and down).

NOTE: It is good practice to check the FLOOR LEVEL DIALS for proper setting prior to aiming headlamps.

TO SET HORIZONTAL AIM

- The horizontal dial should be set at zero (Fig. 22).
- Check to see that the split image target lines are visible in the viewing port (Fig. 22). If necessary, rotate each aimer slightly to locate the target.



- Turn horizontal adjusting screw at side of headlamp (Fig. 24) until split image of target line appears in mirrors as one solid line (Fig. 25).

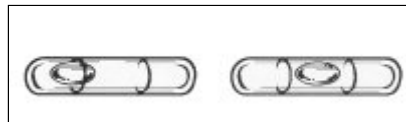
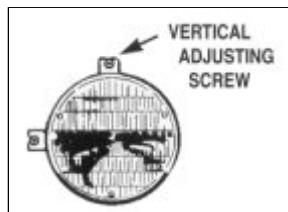
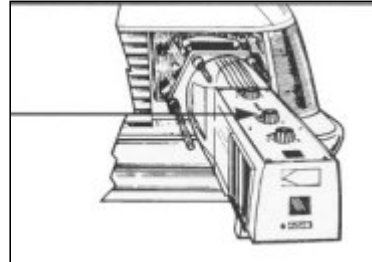
If adjusting aerodynamic headlamps, the adjusting screws are located under the hood. Refer to page 20, 21 and 22 to determine location of the adjustment screws.

To remove "backlash", make final adjustment by turning screw in a clock-wise direction.

- Repeat the last three steps with opposite aimer and headlamp.

TO SET VERTICAL AIM

1. The vertical dial should be set at zero (Fig. 26).

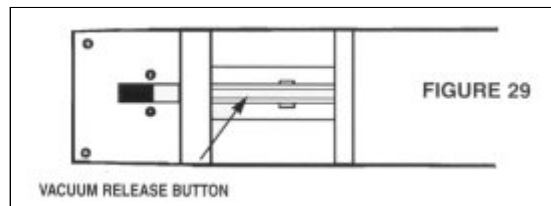


2. Turn vertical adjusting screw (Fig. 27) at top of headlamp (the location of adjusting screws may vary according to manufacturer) until the level bubble is centered between the lines (Fig. 28).

To remove "backlash", make final adjustment by turning screw in a clockwise direction.

3. Repeat the last two steps with opposite aimer and headlamp.
4. Recheck target alignment on both aimers and readjust horizontal aim if necessary.

If adjusting aerodynamic headlamps, the adjusting screws are located under the hood. Refer to page 20, 21 and 22 to determine location of the adjustment screws.



5. Remove aimer by holding aimer securely and pressing "Vacuum Release" button located on the piston handle (Fig. 29).
6. For four headlamp systems, repeat the whole aiming process for the second pair of lamps.

B4A Instruction Manual

Page 15

A QUICK ACCURATE CHECK OF AIM

You may wish to make a quick check to determine if the lamps need aiming. Headlamp trim need not be removed to check aim.

To do so:

1. Attach aimers to headlamps observing the instructions as given on the previous pages.
2. Check FLOOR SLOPE DIAL for correct setting. See instructions on page 2.
3. HORIZONTAL AIM can be checked by turning the horizontal dial until the split image is in alignment. If the horizontal dial scale reads more than the following values...HEADLAMPS SHOULD BE RE-AIMED.

	RIGHT	LEFT
Lamp identification type #1 - 5 3/4" and Rect.	4	4
Lamp identification type #2 - 5 3/4", 7" and Rect.	4	4

4. VERTICAL AIM can be checked by turning the vertical dial until the level vial is centered. If the vertical dial scale reads more than the following values, HEADLAMPS SHOULD BE RE-AIMED. VERTICAL AIM can also be checked quickly with Hoppy® Headlight Adjusters available from your local jobber.

	RIGHT	LEFT
Lamp identification type #1 and #2 - 5 3/4", 7" and Rect.	4	4

CHECKING AIMER CALIBRATION

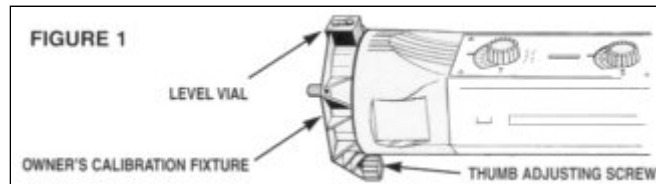
Even though the new headlamp aiming units are calibrated prior to shipment from the factory, the calibration may be affected in shipping. Please check calibration before using aimers.

It is good policy that the functions of the headlamp aimers be checked and the aimers be recalibrated at least every 30 days or after aiming headlamps on 60 vehicles, whichever comes first. Check your state regulations for maintenance and calibration requirements.

B4A Instruction Manual

Page 16

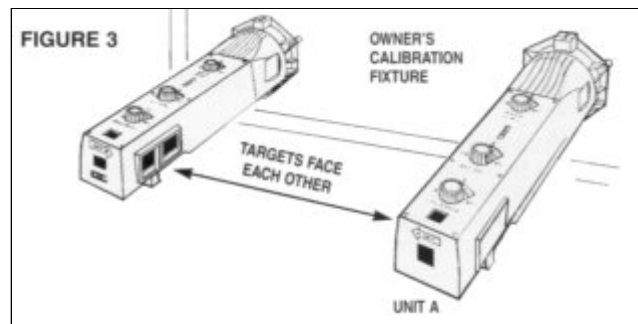
1. Attach OWNER'S CALIBRATION FIXTURES so that the level vial is at the top of each unit (Fig. 1).



2. Turn thumb adjusting screw on each OWNER'S CALIBRATION FIXTURE until it is approximately the same distance as the supporting posts (Fig. 2).



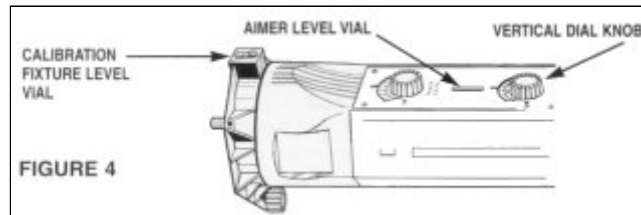
3. Secure the aimers, with OWNER'S CALIBRATION FIXTURES attached to a reasonably vertical plate glass window in the same manner as attaching the aimers to headlamps. The aimers should be spaced (3) to (5) feet apart with targets visible through the viewing ports on the aimers (Fig. 3).



4. The FLOOR LEVEL DIAL on each aimer must be set at zero.
5. Rotate the thumb adjusting screws of OWNER'S CALIBRATION FIXTURES until the level vials on them are centered.

6. TO CHECK VERTICAL AIM CALIBRATION

With OWNER'S CALIBRATION FIXTURE level vials both centered, turn vertical dial knobs of each aimer until aimer level vials are centered (Fig. 4).



If aimer vertical dial pointers read between 1/2 "up" and 1/2 "down", aimers are within allowable vertical tolerance limits. RECALIBRATE IF UNIT IS BEYOND THESE LIMITS. (See aimer calibration instructions.)

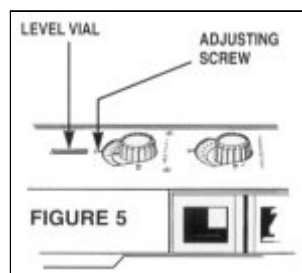
7. TO CHECK HORIZONTAL AIM CALIBRATION

Adjust horizontal dial knob of each aimer until split image targets align. If aimer horizontal dial pointers read between (1) "left", and "right", the aimers are within allowable horizontal tolerance limits. RECALIBRATE IF UNIT IS BEYOND THESE LIMITS. (See aimer calibration instructions.)

AIMER CALIBRATION

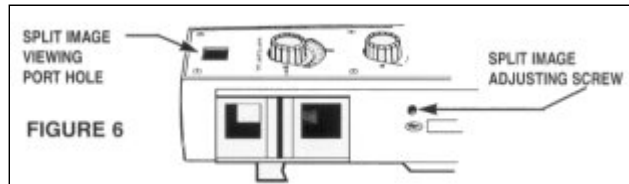
Aimers determined to be out of calibration may be adjusted as follows:

1. With aimers attached to plate glass window, check to see that both OWNER'S CALIBRATION FIXTURES level vials are centered and *both* aimer FLOOR LEVEL DIALS are set at zero.
2. Set aimer vertical dial pointers at zero on both units.
3. Set aimer horizontal dial pointers at zero.
4. TO CALIBRATE VERTICAL AIM: Using a .050 inch Allen wrench, turn level adjusting screw until the level is centered on one aimer. *Repeat this process for the opposite aimer* (Fig. 5).



B4A Instruction Manual

Page 18



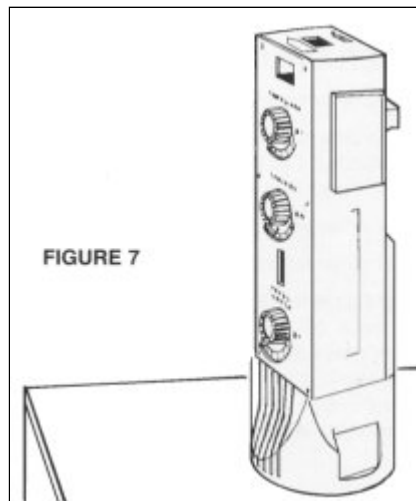
5. TO CALIBRATE HORIZONTAL AIM: Using a 1/8 inch slot screwdriver, turn the split image adjusting screw until the split image aligns on one aimer. *Repeat this process for the opposite aimer* (Fig. 6).

6. Release aimers from window in the same manner as removing aimers from headlamps (Fig. 29).

IMPORTANT: FLOOR LEVEL DIALS must be properly reset to accurately check or adjust headlamps.

7. TO CALIBRATE FLOOR SLOPE LEVEL VIAL: Extended use of your aimers may require calibration of the level vial located just below the unit identification at the end of each unit. Attach each aimer, one at a time, to a desk or table top. The surface need not be perfectly level, although the incline should not exceed 1/2 inch in 4 feet (Fig. 7).

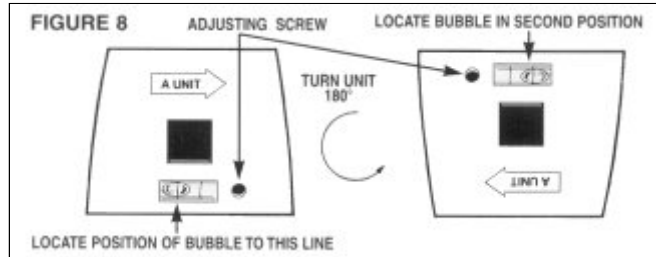
The aimer should be attached the same way as to headlamps and *without* any adaptor or calibration fixture. Calibration or the need for calibration is determined by the position of the level vial bubble in two instances:



B4A Instruction Manual

Page 19

First locate the relative position of the bubble to the outside vial line (Fig. 8). Then, with the aimer attached to the table top, rotate the unit 180 degrees to determine a second position for the bubble (Fig. 8).



If the bubble is in the same relative position in both instances, the unit is in calibration. If not, the adjusting screw should be turned (use 1/8" slot screwdriver) until the same relative position is achieved with the aimer in both positions.

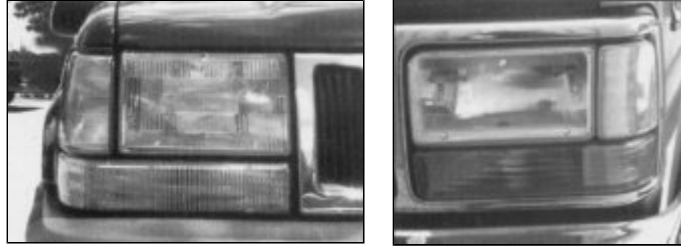
Calibration must be accomplished with the bubble free to move and not at an extreme end of the vial.

HEADLAMP CONFIGURATIONS



B4A Instruction Manual

Page 20



LOCATION OF HORIZONTAL AND VERTICAL ADJUSTMENT SCREWS

These illustrations represent only some of the locations that are being used by the automobile manufacturers. Most adjusting screws are found under the hood of the vehicle.

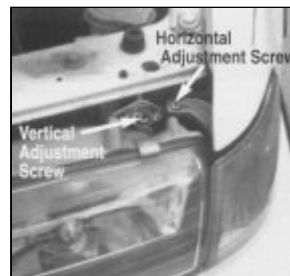
Consult the owner's manual for the specific location of the adjusting screws (Horizontal and Vertical). A few examples are illustrated here.



View looking directly in front, slightly above the headlamp.



View looking down, directly above the headlamp.

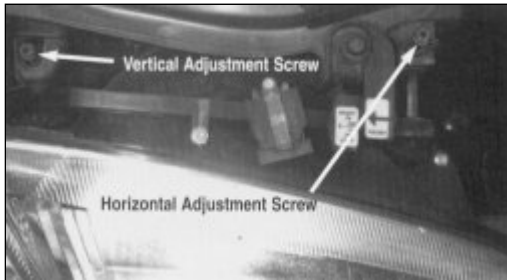


View looking directly in front, slightly above the headlamp.

B4A Instruction Manual

Page 21

LOCATION OF HORIZONTAL AND VERTICAL ADJUSTMENT SCREWS (CONT'D)



View looking down, directly above the headlamp.



View looking down, directly above the headlamp.

MAINTENANCE INSTRUCTIONS

Your B4A headlamp aimers are sensitive and very accurate. Proper care is essential to accurate aiming.

1. Clean cups with soap and water.
2. Mirrors should be carefully wiped clean periodically to ensure clear vision of target image. A clean, soft cloth or tissue is sufficient.
3. Do not use any solvents in cleaning aimers.
4. Aimers should be checked periodically for proper calibration.
5. For complete protection, a carrying case is available for your aiming equipment and accessories.
6. Parts and repairs are available at all authorized "Hoppy" repair stations.

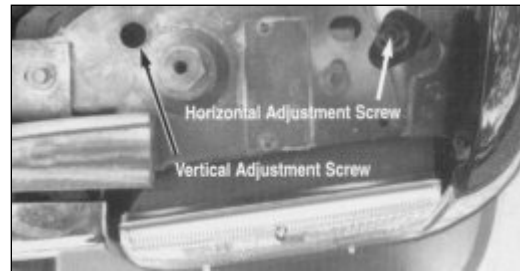
If you lose your repair station list, a new up-to-date list may be obtained from Hopkins Manufacturing Corporation, 428 Peyton Street, Emporia, Kansas 66801.

B4A Instruction Manual

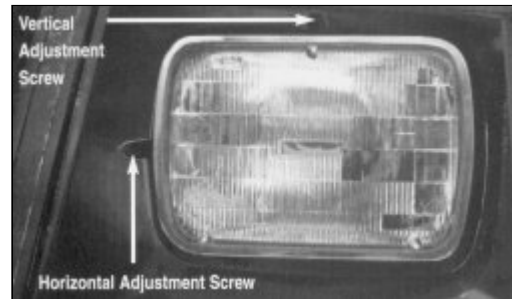
Page 22

LOCATION OF HORIZONTAL AND VERTICAL ADJUSTMENT SCREWS (CONT'D)

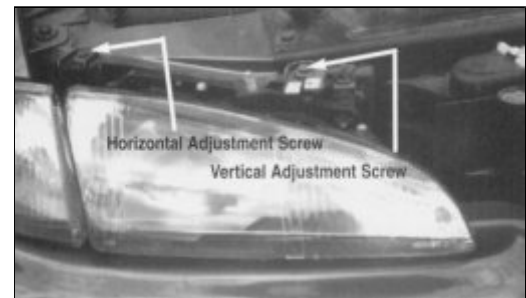
View looking down, directly above headlamp.



View looking directly in front of headlamp.



View looking directly in front slightly above the headlamp.



NEED HELP? IF YOU'RE HAVING TROUBLE, CALL HOPPY®
TOLL-FREE AT 1-800-390-7904. IN KANSAS CALL 316-342-7320.

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