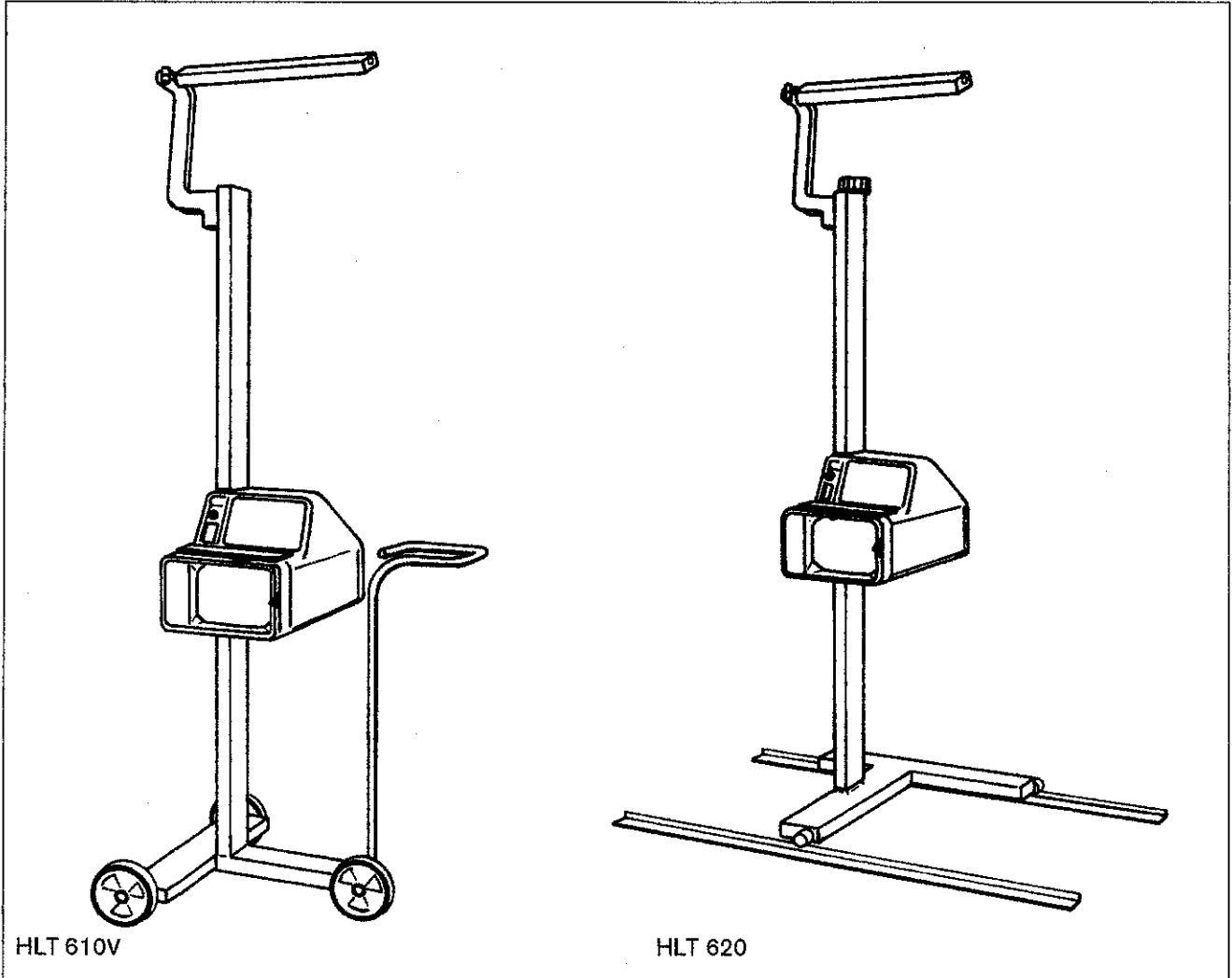



Bedienungsanleitung
Operating Instructions

Instructions d'emploi
Instrucciones de manejo



Headlight Aiming Device
HLT 510, 600, 610V, 620

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Instructions for putting into operation

Before the headlight aiming device is put into initial operation the alignment mirror and the handle on HLT 510, 600 and 610V must be turned to the working position.

Operations required to do this

- Release the locking screw (1) on the equipment support column using a 4 mm hexagon-socket screw key.
- Swing the arm holding the alignment mirror 180° upward (2).
- Tighten the locking screw again.

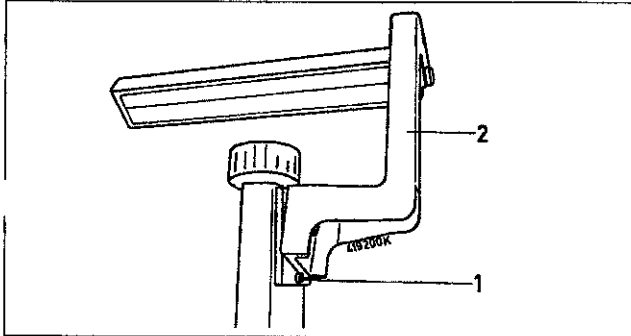


Fig. 1

Operations required to do this

- Release the locking screw (1) on the equipment support column using a 5 mm hexagon-socket screw key.
- Swing the handle 90° outwards.
- Insert the locking screw in the hole and tighten.

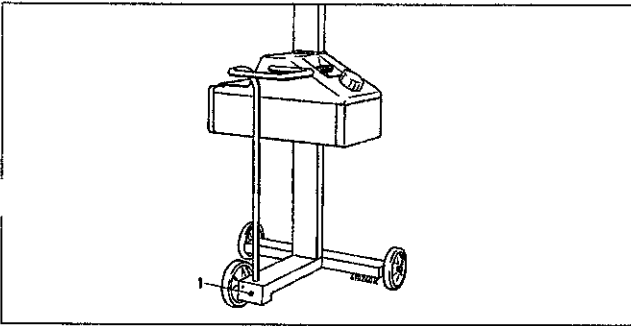


Fig. 1a

1. General

Headlamps on motor vehicles must not blind the drivers of vehicles coming from the opposite direction. The inclination and the aiming of the headlamp light beam to the side must therefore be adjusted according to legal specifications.

In order to make these legally specified adjustments of motor-vehicle headlamps, Nussbaum supplies the following aiming devices:

1.1 Mobile headlight aiming devices HLT 510, 600 and 610V

! The surface on which the headlight aiming device is set up must be even but it does not have to be horizontal.

In order to achieve the specified measurement accuracy, surface irregularities within the area where the aiming device is used must be less than 1.2 mm.

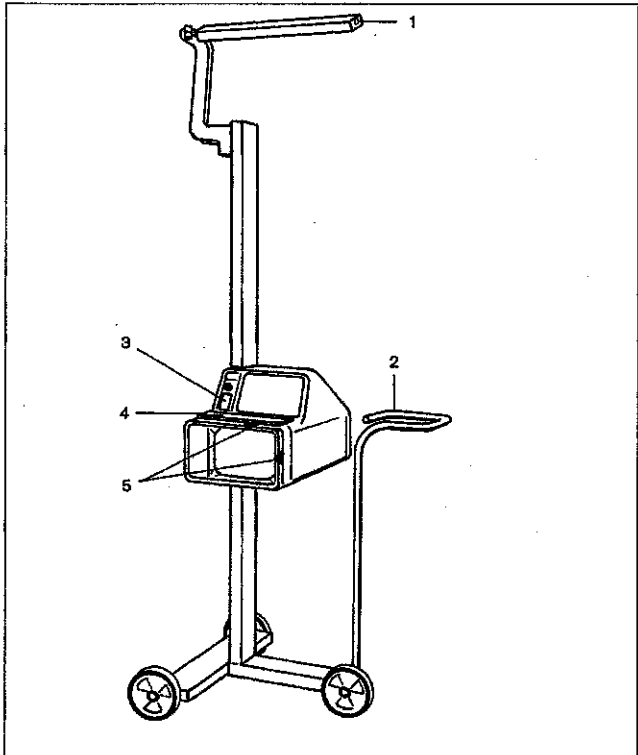


Fig. 2

- 1 alignment mirror
- 2 handle
- 3 luxmeter
- 4 deflection mirror
- 5 markings for lens center



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1.2 Headlight aiming device on floor rails HLT 610V, 620

! The standing surface for the vehicle and the guide rails of the apparatus must be horizontal and parallel to one another. In order to achieve the prescribed measuring exactness, the horizontal deviation of the guide rails must not be more than 1.3 mm out of line with respect to one another.

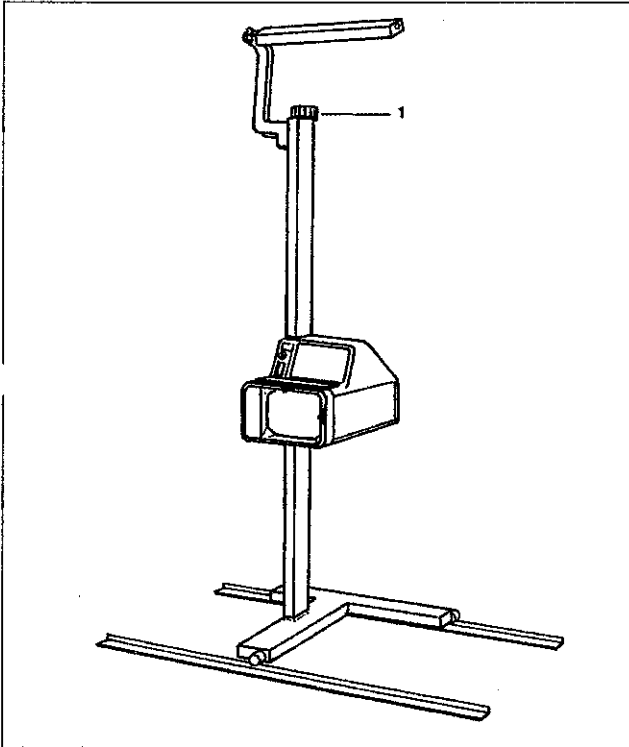


Fig. 3

1 Rotary knob for aligning the test device with the longitudinal axis of the vehicle.

2. Prerequisites for aiming the headlamps

2.1 Operating site

The operating site must meet the conditions specified in Sections 1.1 and 1.2 above.

2.2 Tire-inflation pressure

All tires must be inflated to the pressure specified for the particular vehicle.

2.3 Headlamps

Defective lenses and reflectors, as well as blackened bulbs must be replaced before the aiming adjustment.

With headlamps that are fitted with an adjusting device, observe the following:

In order to aim headlamps on vehicles fitted with a device for infinitely variable adjustment of the headlamps by hand, the adjusting device must be in the specified detent position. When the headlamps are fitted with an adjusting device that can be set to only 2 detent positions, proceed as follows:

- With vehicles in which the headlamp beams are directed upward as the load increases (loading space at the back), the headlamps should be aimed with the adjusting device in the "high" lightbeam detent position.
- With vehicles in which the headlamp beams are directed downward as the load increases (loading space at the front), the headlamps should be aimed with the adjusting device in the "low" light-beam detent position.

2.4 Setting up aiming device

The distance between the aiming device and the headlamp should be just enough so that setting operations can also be carried out on the headlamp from in front (about 30 cm).

The center of the lens on the aiming device should differ by less than 3 cm from the headlamp center. The center of the lens is identified by marks (see Fig. 2, No. 5).

In order to adjust the height of the aiming device, the hand roller is turned (1) and a brake is released. The brake automatically locks in place again when the roller is released.

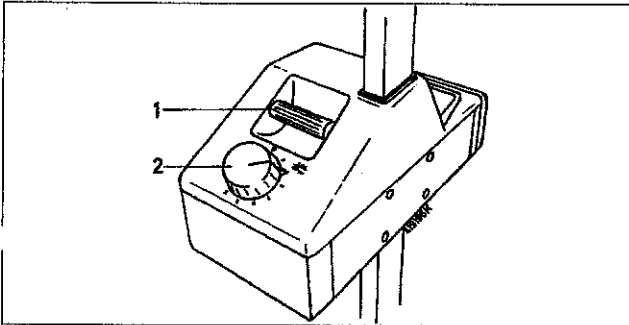


Fig. 4

- 1 control knob for height adjustment
- 2 rotary knob for setting the inclination measure

2.5 Aligning the aiming device with the longitudinal axis of the vehicle

2.5.1 Vehicles with flat engine-compartment lid

By swinging the mirror arm (Fig. 1, Pos. 2) the alignment mirror (Fig. 2, Pos. 1) is set above the head towards the operator so that the front of the vehicle with two outer symmetrical reference points (for example, the upper edge of the headlamps, joints in the engine hood, etc.) are visible in it.

The aiming device is aligned on the longitudinal axis of the vehicle so that the positioning line on the mirror touches these two outer reference points equally (see Fig. 5).

With the mobile aiming devices (HLT 510, 600 and 610V), this is done by moving the aiming device using the wheeling handle.

The floor-rail aiming device (HLT 620) is turned as required with the rotary knob at the top of the support column (Fig. 3, No. 1).

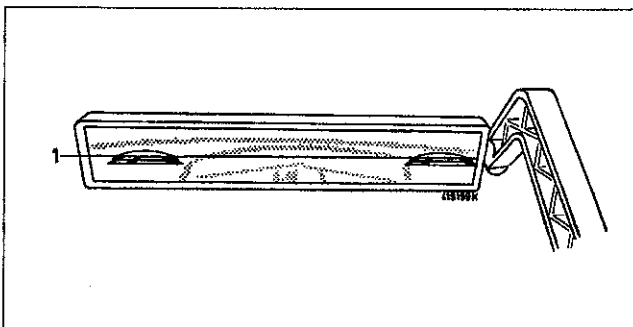


Fig. 5

2.5.2 Cab-over-engine vehicles

In vehicles with vertical front section the centres of the headlights are marked with chalk on the floor using a plumb bob. The centres can be connected with a rail. These markings are lined up in the adjusting mirror.

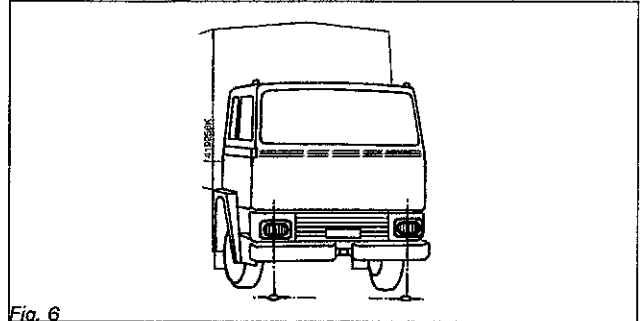


Fig. 6

2.6 Adjusting the aiming device

The setting used for aiming headlamps is the inclination value in cm which the cut-off must have at a distance of 10 m.

The Swiss versions have an extra scale for the inclination measurements indicated as a percentage % according to the regulations ECR 48.

This setting is given in Section 3.1, and is made before the test at the rotary knob (Fig. 4, No. 2).

The vehicle should be loaded as specified.

3. Aiming regulations

Please observe the aiming regulations valid in your country.



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4. Measuring images

The measuring images can also be observed from the rear of the aiming device by means of the deflection mirror (Fig. 10, No. 3).

Before every measurement the prerequisites given in Section 2 above must be complied with.

4.1 Headlamps with asymmetrical lower beam

With headlamps used for an asymmetrical lower beam, the lower beam cut-off line must coincide with the boundary line to the left of the center point. The point of intersection between the left-hand part of the lower beam cut-off line (as horizontal as possible) and the right-hand rising part of this line must be located on the vertical line that passes through the center mark. In order to determine this point of intersection more easily, the left-hand half of the handlamp can be alternately masked and unmasked several times.

After the lower beam cut-off line has been set according to specifications, the center of the high beam with headlamps on which the lower beam and upper beam can be aimed together must lie within the limit corners inscribed around the center mark.

With high-beam headlamps fitted with their own adjustment mechanisms, the center of the light beam must be positioned on the center mark.

4.2 Headlamps with symmetrical lower beam, and fog lamps

With headlamps used for a symmetrical lower beam and with fog lamps, the highest part of the lower beam cut-off line must touch the boundary line, must be as horizontal as possible across the width of the test surface.

To the side, these headlamps must be aimed so that the distribution of the light is as symmetrical as possible with respect to the vertical line that passes through the center mark.

After the lower beam cut-off line has been set according to specifications, the center of the high beam with headlamps on which the lower beam and upper beam can be aimed together must lie within the limit corners inscribed around the center mark (see Fig. 8).

With high-beam headlamps fitted with their own adjustment mechanisms, the center of the light beam must be positioned on the center mark (see Fig. 8).

Example: Boundary line for the lower beam cut-off with an asymmetrical lower beam.

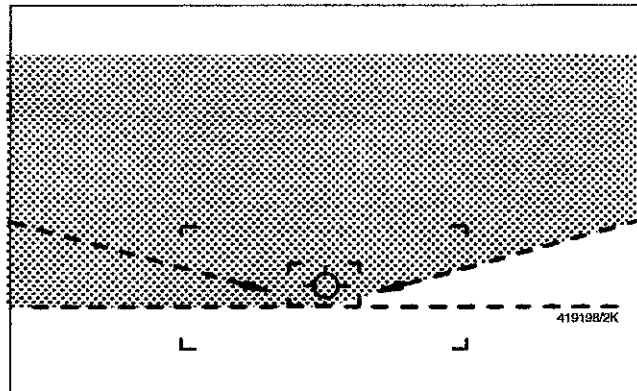


Fig. 7

Example: Center mark and boundary corners for the center of the high beam.

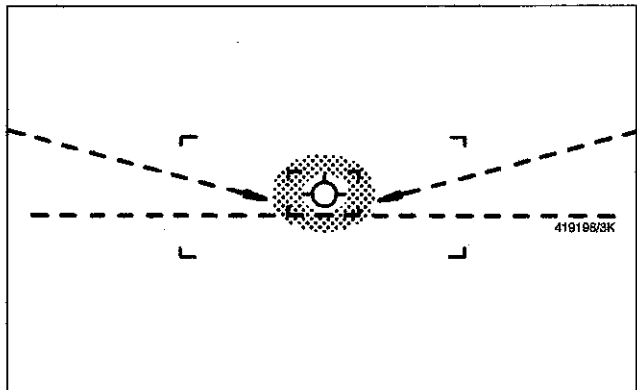


Fig. 8

Example: Boundary line for the lower beam cut-off with a symmetrical lower beam and with fog lamps.

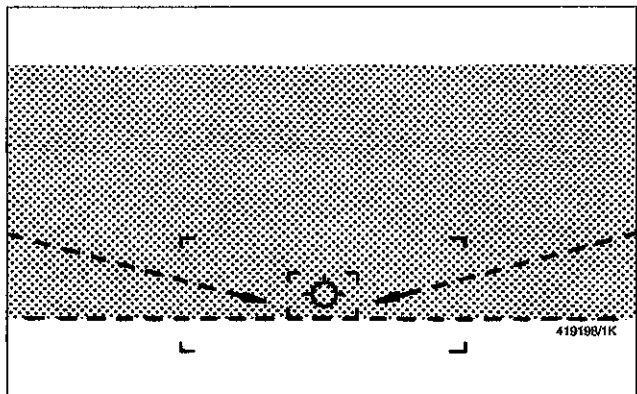


Fig. 9

4.3 Headlamps with inclination data

In the case of single-axle towing vehicles or machines with headlamps permanently set to the lower beam and on which the inclination of the light beam center is given, the center of the beam must lie on the boundary line and on the vertical line that passes through the center mark.

5. Luxmeter

Using the luxmeter, the illumination from the headlamps can be tested (measured) after they have been aimed.

During these tests the rotary knob for the setting must always be set to the position 10 cm/10m.

Lower beam: The illumination must be below the permissible glare value. Press the pushbutton on the luxmeter. The pointer must remain within the green range on the scale marked "A".

High beam: The illumination must reach the minimum permissible value. The pointer must come up to the green range on the scale marked "F".

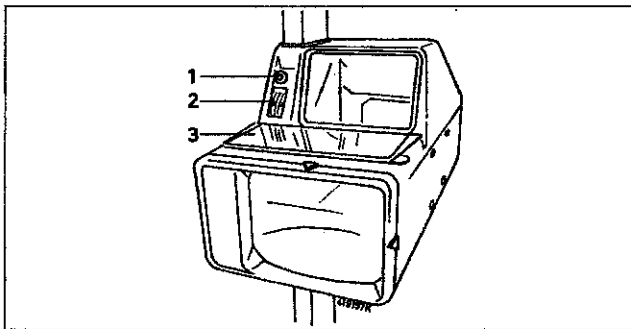


Fig. 10

- 1 Push button for luxmeter
- 2 Scale for luxmeter
- 3 Deflection mirror

6. Maintenance and care

The headlight aiming device is a high-precision optical measuring instrument. In order to preserve its measurement accuracy, shocks and rough handling must be avoided.

At regular intervals its accuracy is to be checked.

This is especially important for workshops which carry out their work according to legal regulations.

For this purpose we recommend that a maintenance contract be concluded with the responsible Nussbaum Customer Service. This will ensure that the aiming device will be checked and tested by trained personnel using the right test equipment and according to plant specifications.

For maintenance purposes the wheels should be lubricated occasionally with a few drops of oil.

The support column must be kept dry and free of grease and oil

Wipe the lens and the reflector with a soft cloth to keep them clean.



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