

Original instructions

# Deviating mirrors for light grids

## Orion Mirror Kxxx



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## Overview

### General description

The deviating mirrors Orion Mirror Kxxx are housed in an extruded aluminum column with a steel base. The base is made of two plates. Their inclination can be adjusted by means of three dowels and their angular position can be adjusted through 3 rough adjustment slots and 3 fine adjustments slots. The column contains the deviating mirrors, already mounted and ready to be adjusted - each one independently.

### Characteristics

- Protects the deviating mirrors mounted inside it from accidental collisions and vibrations.
- Single painted extruded aluminium section in different lengths, suitable for all heights.
- Sturdy steel base made of 2 plates with angle reference marks, dowels for adjustment of the vertical axis and slots for angular position adjustment.
- Spirit level to facilitate adjustment of the vertical axis.

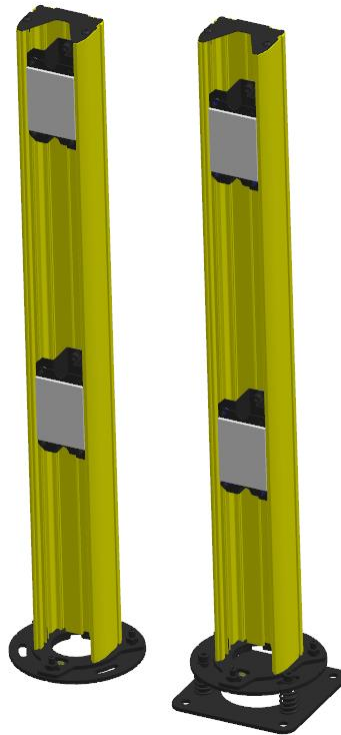


Figure 1 – Deviating mirror Orion Mirror K050, with Orion Stand Plate on the right

## Mechanical Mounting

The deviating mirrors Orion Mirror Kxxx are supplied with pre-mounted mirrors and don't require any mechanical mounting.

The Orion Stand Plate, available as accessory, is a second plate with compensation springs and can be used to compensate for the effects of collisions, vibrations and uneven floor surfaces.

### Mounting of the Orion Stand Plate

Fasten the plate to the floor with the screws and insert the 3 load-bearing springs on the spacers on the plate. Place the column on the springs so that the slots in the bottom plate are aligned with the springs. Insert the M10 UNI 5931 screws and washers, provided with the Orion Stand Plate, in the slots and tighten them while gradually pressing down upon the 3 load-bearing springs. During this phase the vertical axis can also be adjusted.

Use the spirit level as a reference and choose the rough angular position using the slots and the reference marks on the bottom plate. The optimal working height for the load-bearing springs (which corresponds to the distance between the fixed plate and the bottom plate) is approximately 42 mm. Once it rests on a level surface and the maximum angular position has been established, it is possible to perform a fine adjustment of the angular position by working on the dowels and the lock nuts of the moulded plate. (Figure 2).

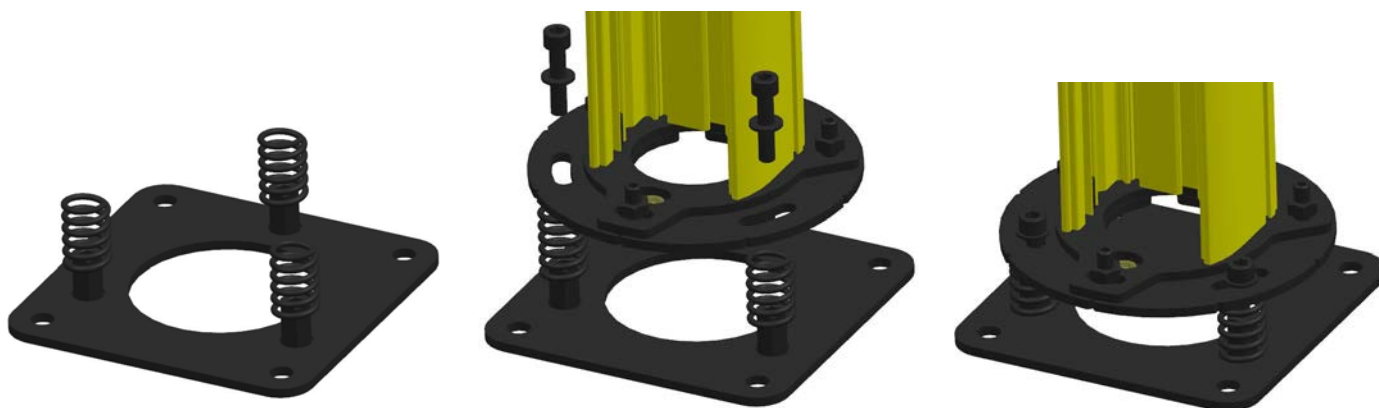


Figure 2 – Mounting of the Orion Stand Plate

## Adjustment

### Adjusting the deviating mirrors

The height and inclination of each mirror can be adjusted, in order to compensate for any misalignment.

To adjust height, loosen slightly the M8x12 UNI 5931 screws, then slide the mirror unit along the axis of the column and tighten the screws once the desired position is reached. If the column is in a vertical position, make sure the mirror does not slide accidentally towards the bottom.

To adjust the inclination of each single mirror independently, use the 3 M4x20 UNI 5931 screws (Figure 3).

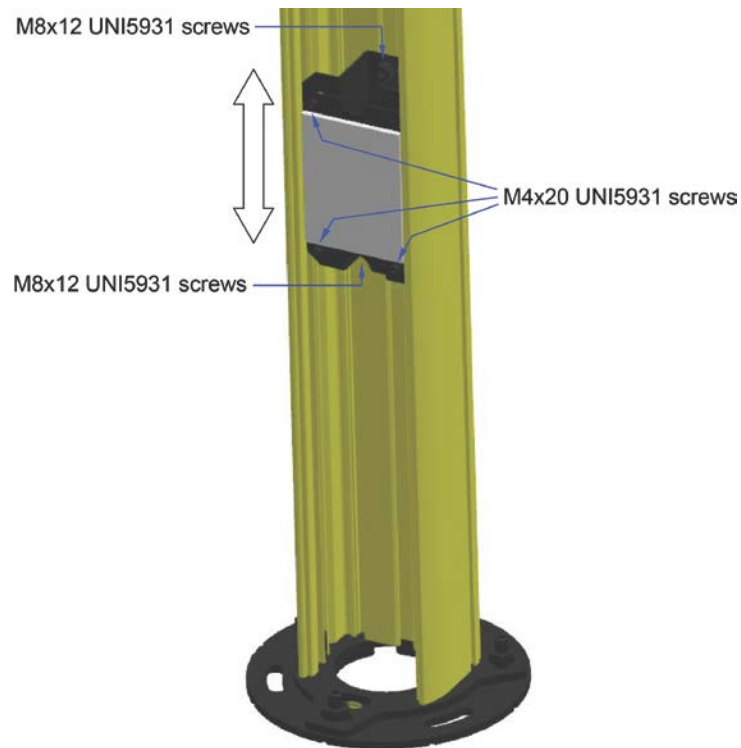


Figure 3 – Adjustment of the mirrors

Please bear in mind the following values for the reduction of the operating distance according to the number of deviations achieved through the deviating mirrors:

- 1 deviation: 15% reduction → the operating distance is 85% of the AOPD nominal operating distance
- 2 deviations: 35% reduction → the operating distance is 65% of the AOPD nominal operating distance
- 3 deviations: 50% reduction → the operating distance is 50% of the AOPD nominal operating distance

## Adjusting the vertical axis and the angular position of the plates

Fasten the plate to the floor in the desired rough angular position, according to the positions established by the reference grooves (main angles: 0° - 45° - 90° for each quadrant). To do this, use the 3 slots on the bottom plate and the M10 screws. Do not tighten the M10 screws completely. Unfasten the lock nuts on the dowels, then use the dowels to adjust the inclination. During this operation, use the spirit level as a reference. Once the desired inclination is obtained, tighten the screws to the floor. If necessary, proceed to a further adjustment by rotating the moulded plate to the desired position, then tighten the lock nuts on the dowels (Figure 4).

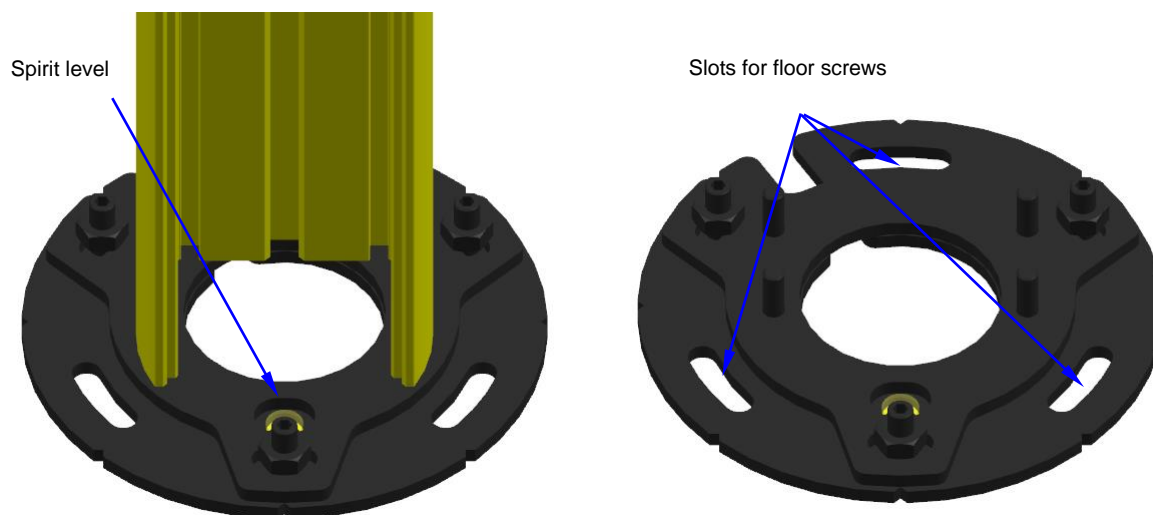


Figure 4 – Adjusting the vertical axis and the angular position of the plates

## Installation

**Warning!** The minimum installation distance must be respected. For more information about its calculation, please refer to the paragraph "Use of deviating mirrors" in the instruction manual of the AOPD or EN ISO 13855:2010.

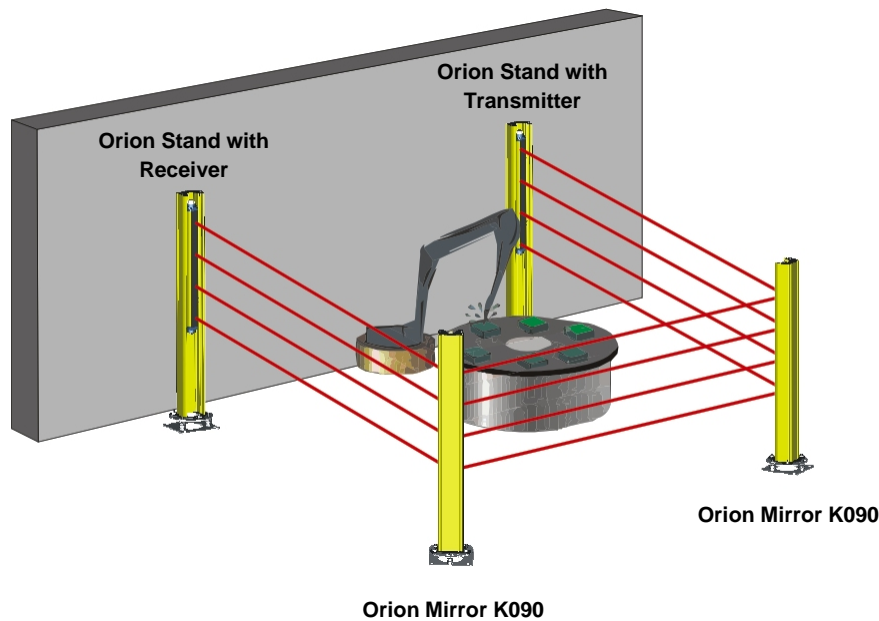


Figure 5 - An area protection system composed of an AOPD, transmitter and receiver, and two deviating mirrors.

1. Define the area to protect and the precise positions where the deviating mirrors and the transmitter and the receiver will be installed.
2. Place the floor stands in the desired positions. Fasten them (or the Orion Stand Plates) to the floor and make sure that their axes are perpendicular to the floor. Use the provided spirit level to fine adjust their inclination if necessary.
3. Orientate the mirrors to about 45° with respect to the optical path. The Orion Mirror Kxxx guarantee an adjustment interval around the vertical axis of about  $\pm 5^\circ$  once secured to the floor.
4. Insert the Orion Laser in the upper part of the transmitter and orientate the transmitter so that the laser beam hits the surface of the first mirror in a central point of the vertical axis and at the same height at which the pointer is installed.
5. Repeat the same procedure inserting the pointer in the lower part of the transmitter. If necessary, repeat these procedures until the desired result is achieved.
6. Orientate the first mirror according to the instructions provided in the section "Adjusting the deviating mirrors", so that the laser beam hits the second mirror as described above.
7. For the angular adjustment,
  - if the Orion Stand Plate is not being used, see the section "Adjusting the vertical axis and the angular position of the plates".
  - if the Orion Stand Plate is being used, see the section "Mounting of the Orion Stand Plate".

NB: It might be necessary to carry out small adjustments to the alignment of the two units of the AOPD by following the regular Alignment procedure described in the instruction manual of the AOPD. We do NOT recommend to make any further changes to the position of the mirrors, as the laser beam guarantees their perfect alignment.

## Model overview

### Orion Protective stand with mirrors

Type	Article number	Description
Orion Mirror K050	2TLA022312R1000	Orion deviating mirror with protective stand, 2 mirrors H = 500 mm
Orion Mirror K080	2TLA022312R1100	Orion deviating mirror with protective stand, 3 mirrors H = 800 mm
Orion Mirror K090	2TLA022312R1200	Orion deviating mirror with protective stand, 4 mirrors H = 900 mm
Orion Mirror K120	2TLA022312R1300	Orion deviating mirror with protective stand, 4 mirrors H = 1200 mm

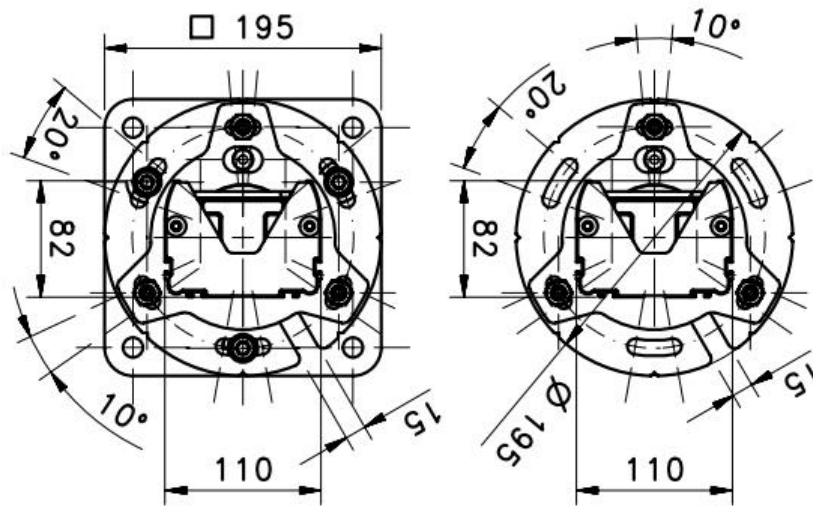
### Accessories

Type	Article number	Description
Orion Stand Plate	2TLA022312R5000	Orion Plate kit for protective stand

### Corresponding AOPD models

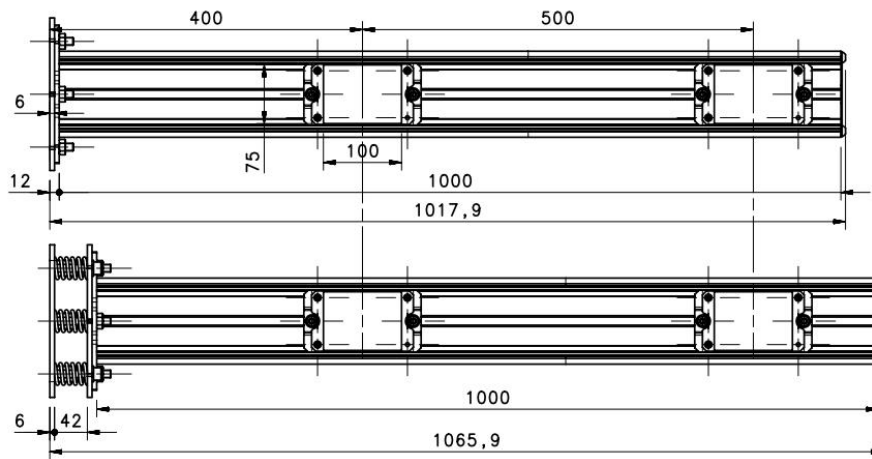
Type	Corresponding AOPDs
Orion Mirror K050	Orion2-4-K2-050-B
	Orion2-4-K2-050-E
	Orion3-4-K1C-050-B
	Orion3-4-K1C-050-E
Orion Mirror K080	Orion2-4-K3-080-B
	Orion2-4-K3-080-E
	Orion3-4-K2C-080-B
	Orion3-4-K2C-080-E
Orion Mirror K090	Orion2-4-K4-090-B
	Orion2-4-K4-090-E
	Orion3-4-K2C-090-B
	Orion3-4-K2C-090-E
Orion Mirror K120	Orion2-4-K4-120-B
	Orion2-4-K4-120-E
	Orion3-4-K2C-120-B
	Orion3-4-K2C-120-E

# Dimensions

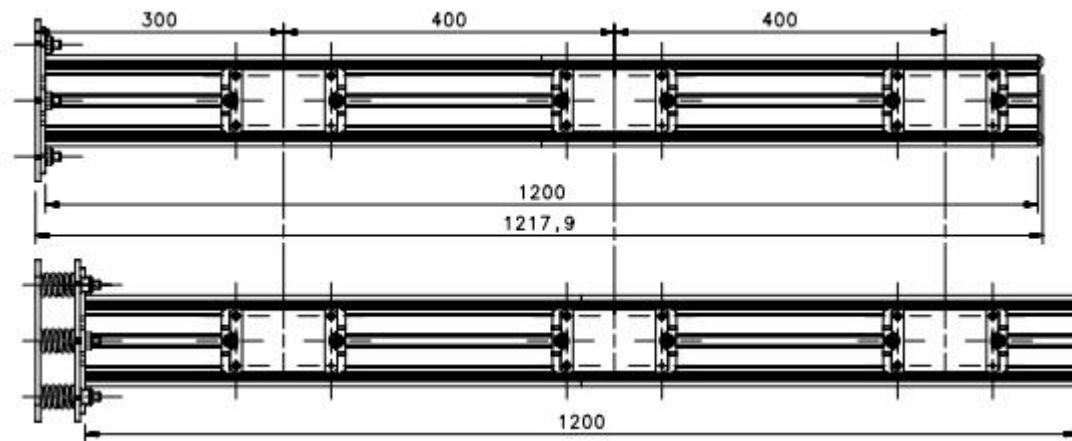


NB: All dimensions in millimetres.

## Orion Mirror K050

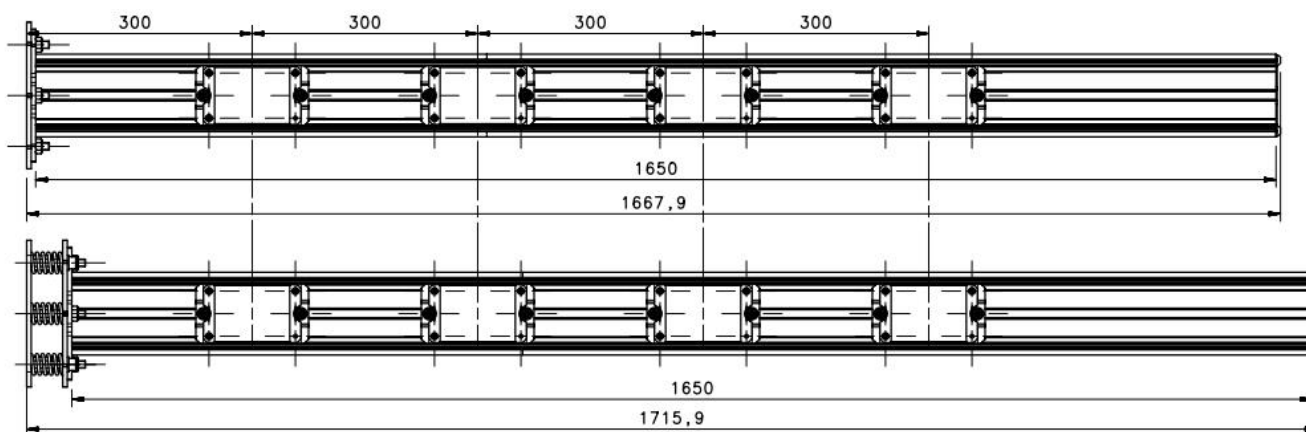


## Orion Mirror K080

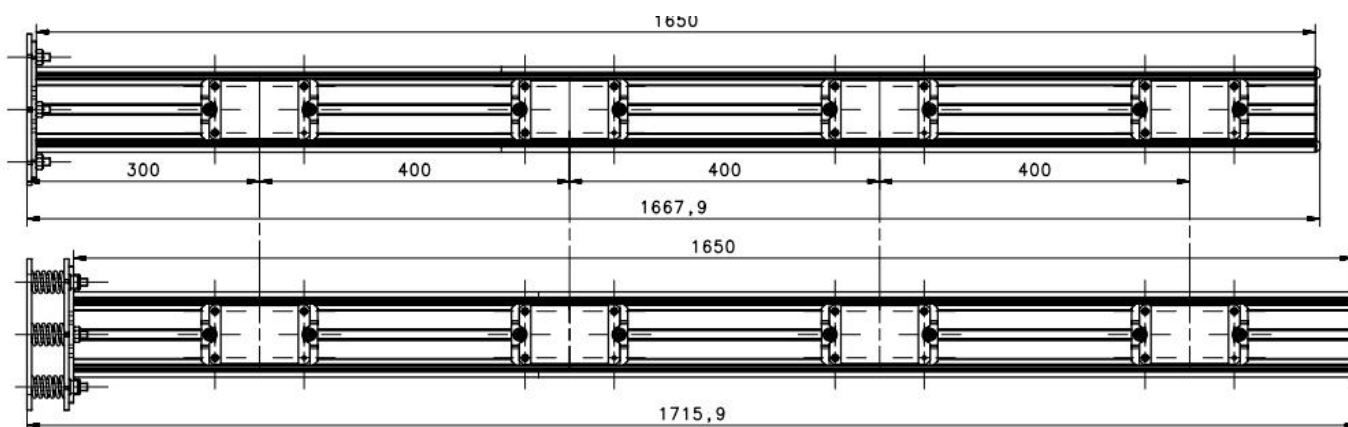




### Orion Mirror K090



### Orion Mirror K120



NB: All dimensions in millimetres.