GB

Technical Manual
Hella Optical Warning System OWS-QS

Safety precautions

Before starting installation Improper read these installation and installation can pose operating instructions a threat for the operating and observe the installation safety of your vehicle. sequence precisely.

Table of contents

General Information

System description

The Hella OWS-QS is a modular new development especially for special vehicles, such as fire engines, rescue vehicles, etc.
It stands out due to its great variance in length of 1100 mm for passenger cars/vans and up to 2200 mm for commercial vehicles.
Thanks to a length suited to length your vehicle, optimum warning effectiveness is always ensured, even at close range.

Various work lights can be installed facing the front, rear or side to illuminate the surroundings.

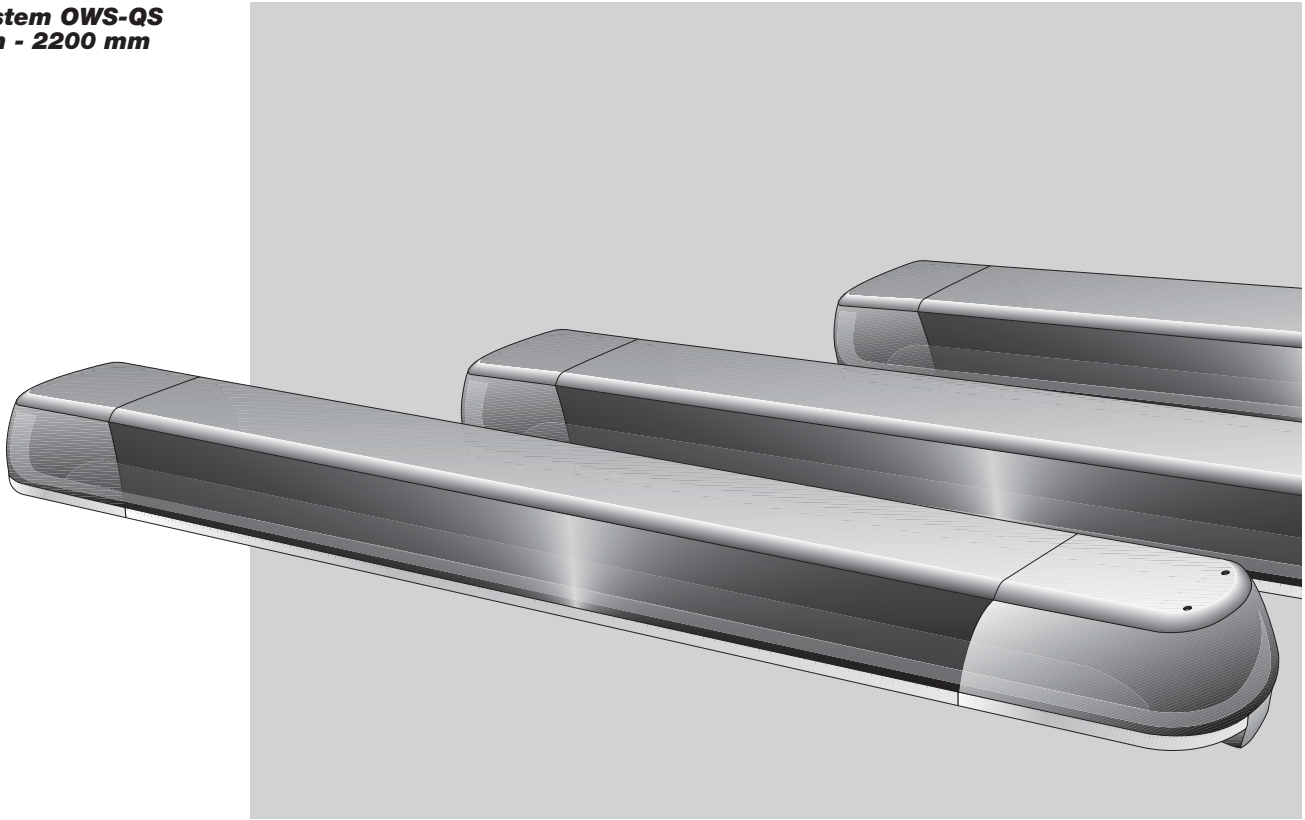
Work lights: For use only where legally permitted.
In the Federal Republic of German work lights may be used only when the vehicle is stationary. In addition direction indicators can be attached.
Strobe-type beacons:
Use of yellow strobe-type beacons only where legally permitted; Not permitted for road traffic in the Federal Republic of Germany.

The Hella OWS-QS consists of the following system parts:
Yellow rotating beacon (two or four 360° rotating beacons with rotating reflector or two lens or trough strobe-type beacons), advertising surface for retrofitting, illuminated from inside (ten bulbs in parallel circuit.).
Illuminated advertising surface: Use of illuminated advertising surface only where legally permitted;

Not permitted for road traffic in the
Federal Republic of Germany.

Scope of supply
Basic system
OWS-QS

Basic system OWS-QS
1100 mm - 2200 mm



General Installation-references

Caution:
Disconnect the vehicle battery before beginning installation work.

Make sure that the OWS-QS is connected to the vehicle chassis (ground) at low impedance via the fixing screws or the ground connection.
This is necessary for reasons of EMC and in particular for the integrated strobe-type system (KL-XL2, KL-XR2) as protection from dangerous contact voltages in the event of an insulation fault.

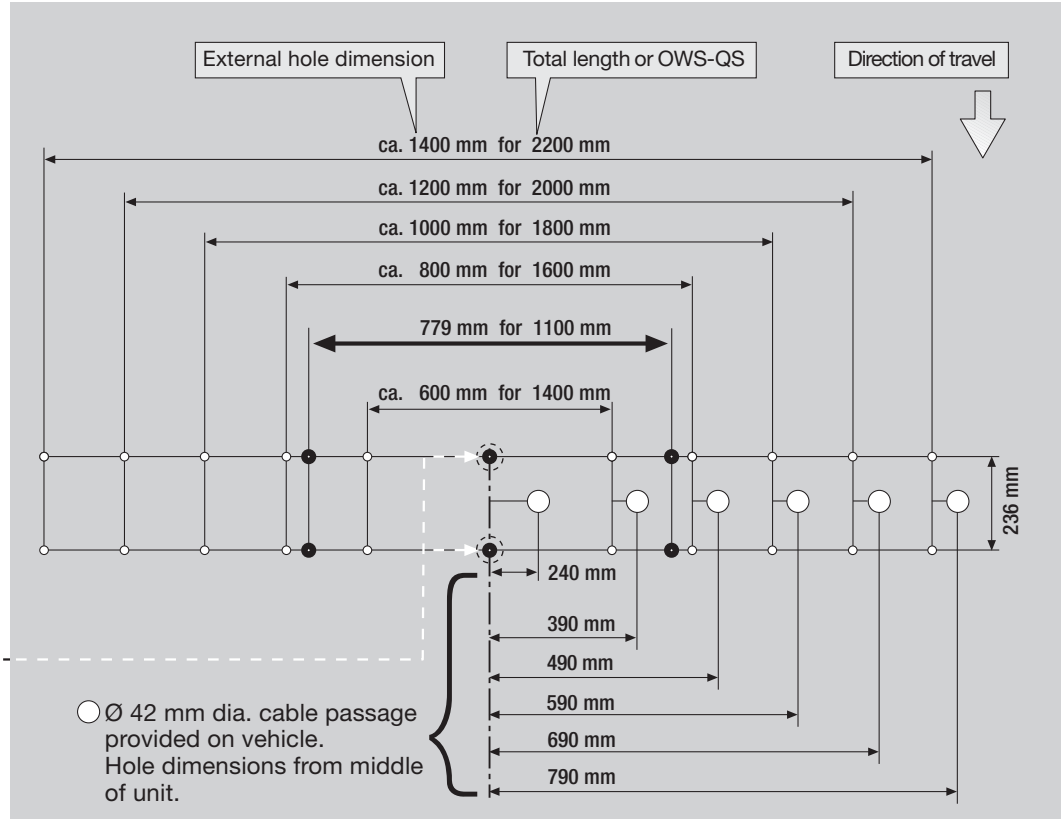
Before beginning installation work, clarify with the vehicle manufacturer whether or not roof reinforcement is necessary!

Hole pattern for OWS-QS for all length versions

For total length up to 1600 mm use 2x2 attachment screws, up to 1800 mm use 4x2 attachment screws

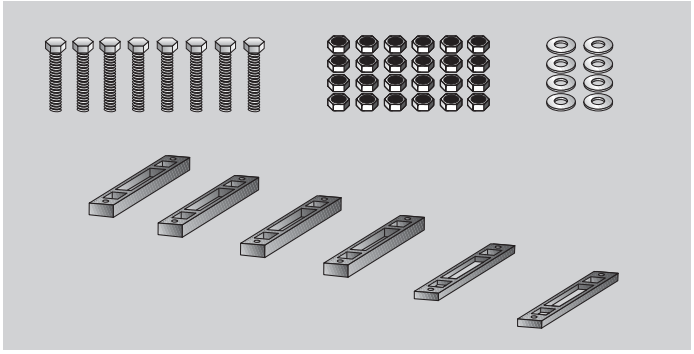
Seal all drilled metal parts with rust protection paint.

Two central drill-holes are additionally essential when mounting an 1100 mm system with mounting kit 863 122-00.



Accessory-Mounting kit 863 122-00

- Bases
- Fastening screws
- Holder system for seal

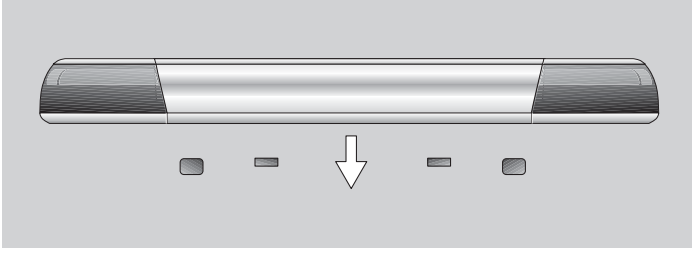


Mounting OWS-QS 1400-2200 mm

with accessory kit 863 122-00

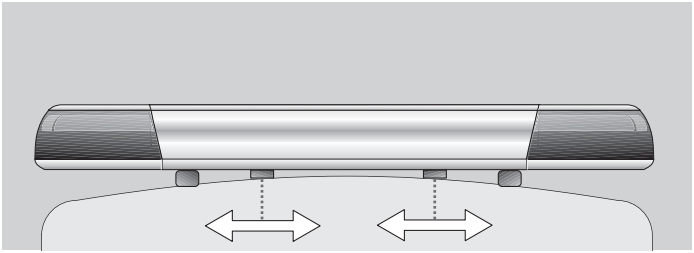
The vehicle roof support area must be freed of dirt and humidity before installation.

Mark the outline of the OWS-QS on the vehicle roof.



Put fixing bases in place (for dimensions see the drilling diagram on page 33).

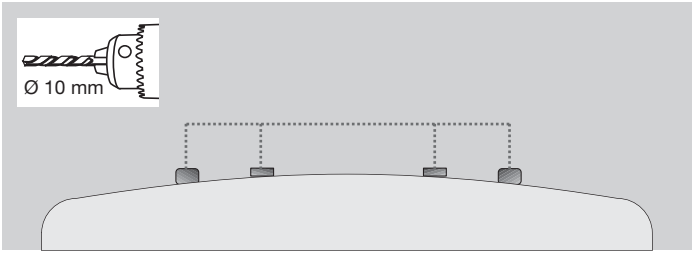
Place the required number of fixing bases on the roof in such a way that they can be mounted with the upper edge of all the fixing bases as vertical as possible and with the bases as near as possible to the outer edges of the supporting frame.



Align the central fixing bases depending on the slope of the roof.

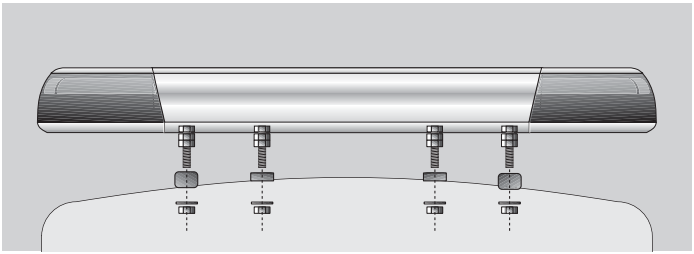
In the case of a flat roof, mount 4 fixing bases of the same height.

Drill the holes Ø 10 mm at the respective spots according to the dimension drawing.



Mark the distances between the holes and drill them.

Note the distances between the holes of the bases. Insert screws into the OWS-QS rails and tighten these to match the distance between the fixing bases using the nuts and lock-nuts included.



Insert the screws into the rails, align according to drilling dimensions, tighten (7 - 10 Nm) and add compensation nuts depending on the slope of the roof.

Mounting RTK-QS 1100 mm

with accessory kit 863 122-00

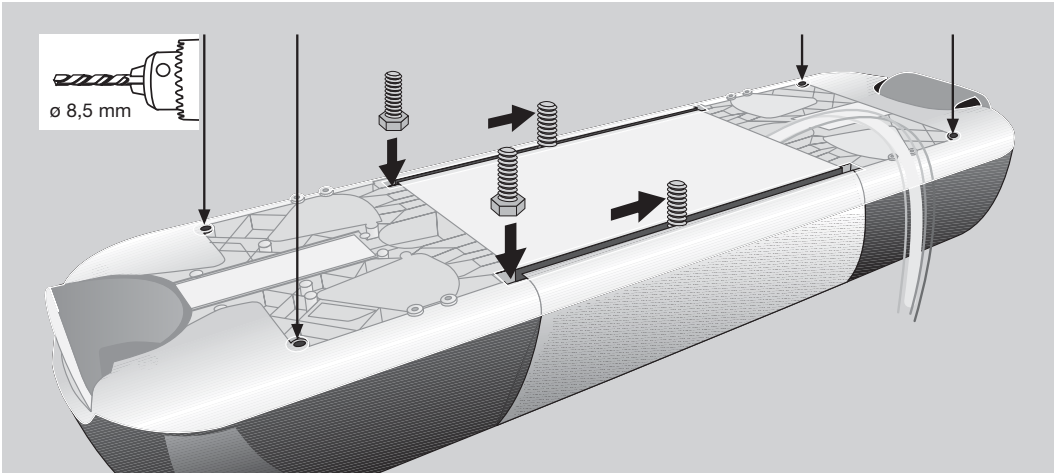
In contrast to the versions with greater overall length (see page 31-35), the 1100 mm version is additionally screwed on both sides, underneath the dome.

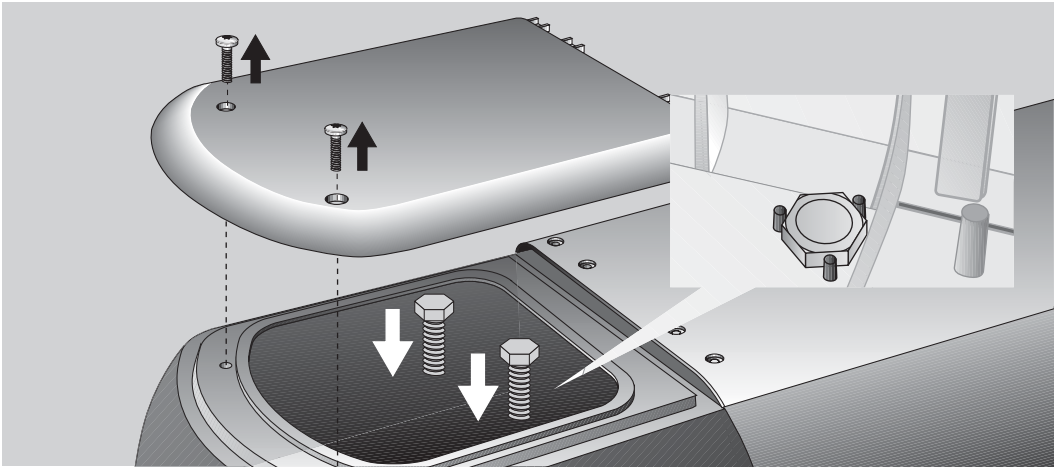
Lay the roof bar on the cover – protect against scratches.

Opening of the film below the dome, using an ø 8.5 mm diameter drill-bit.

Insertion of 2 fastening screws in the grooves of the basic carrier.

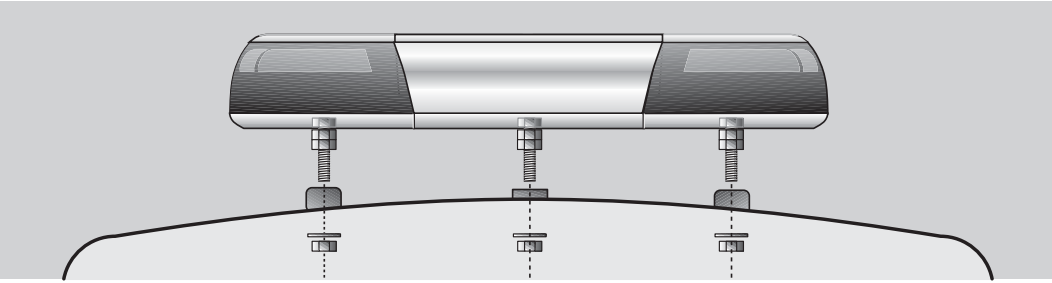
Remove the dome cover. Put 4 M8 hexagon bolts from above through the base.





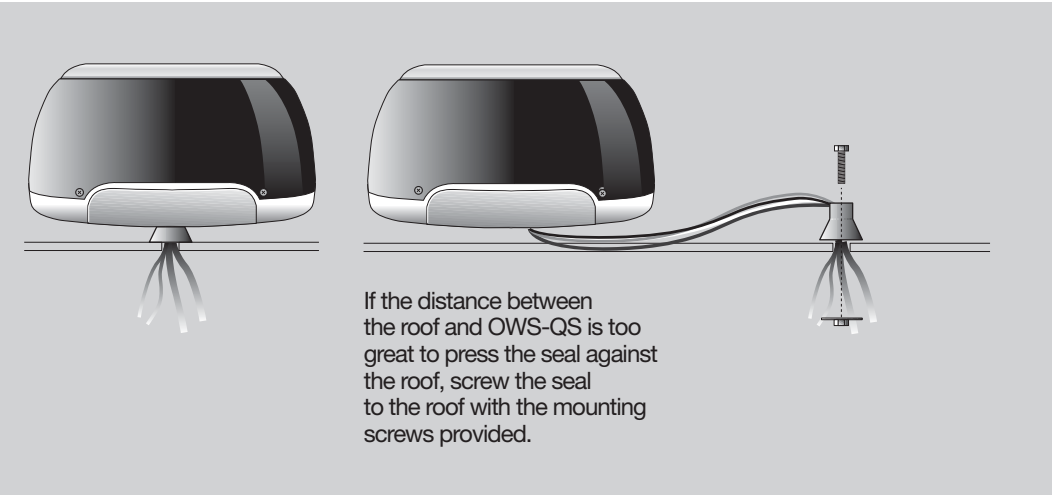
Putting the roof bar onto the roof. When doing so, put the screws and cables into the intended drill-holes.

Tightening of the screws to a torque of 5-7 Nm.



Cable passage

Drill Ø 42 mm dia. cable passage at proper position. Route cable through cable opening and install grommet in cable opening.
Tighten OWS-QS uniformly with nuts (7-10 Nm with screw retention).
Then check whether the OWS-QS is horizontal and mounted free of tension.
The level can be corrected by tightening the mounting nuts differently.



If the distance between the roof and OWS-QS is too great to press the seal against the roof, screw the seal to the roof with the mounting screws provided.

Accessories Rubber bases

The rubber base 864 285-00 has been specially developed for mounting the RTK- and OWS-QS onto a flat roof-attachment.

The rubber bases 864 286-00/01/02 have been specially developed for mounting the RTK- and OWS-QS to arched roofs.

If roof bars with Alley Lights are fitted, the necessary recess can be made with a simple cut.

1100 mm flat roof
Set 864 285-00

Base flat 2x
864 284-00

1100 mm arched roof
Set 864 286-00

Base arched 2x
864 282-00

Centre piece 200 mm 2x
864 283-00

1400 mm arched roof
Set 864 286-01

Base arched 2x
864 282-00

Centre piece 300 mm 1x
864 281-00

Centre piece 200 mm 2x
864 283-00

1600 mm arched roof
Set 864 286-02

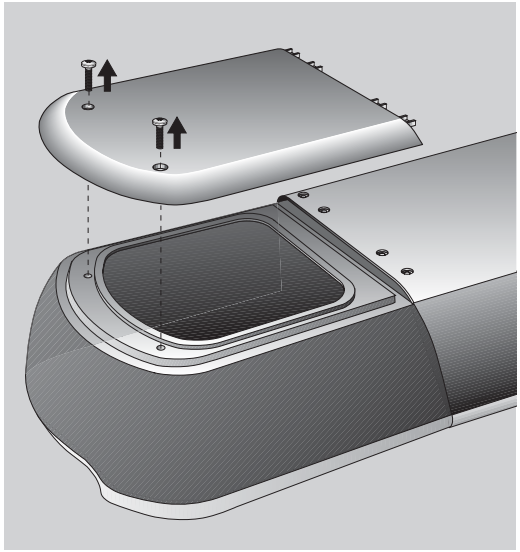
Base arched 2x
864 282-00

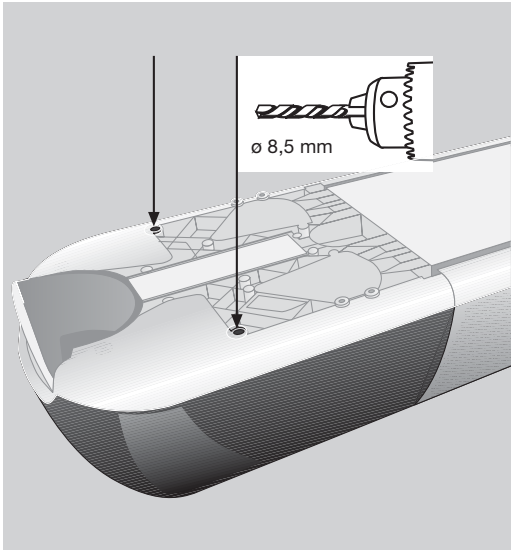
Centre piece 300 mm 3x
864 281-00

Mounting with rubber base

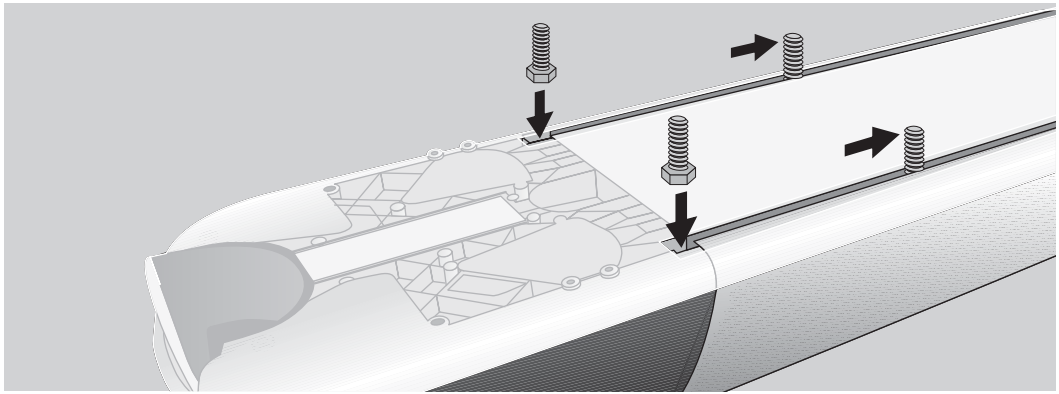
Drilling holes in accordance with the drilling diagram (see page 33) in the vehicle roof. When doing so, observe the screw holes in the base.

Only in the case of 1100 mm overall length
Remove the covers of the domes.
Opening of the film below the dome 4x with an ø 8.5 mm diameter drill-bit.



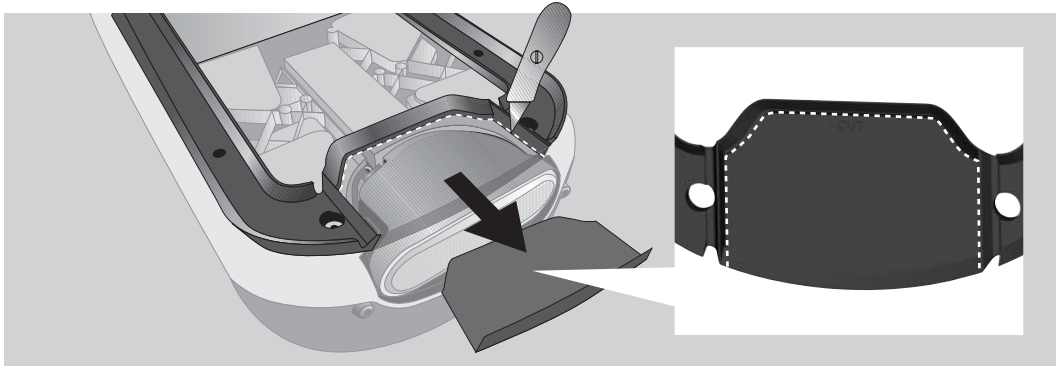


Lay the roof bar on the cover! Protect against scratches! Depending on the length of the unit, insert 4-8 fastening screws in the grooves of the basic carrier.

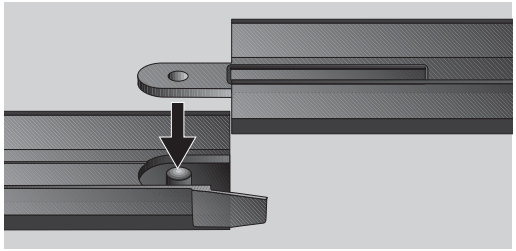


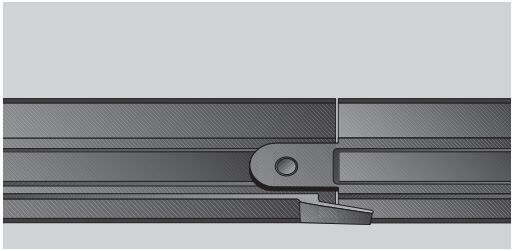
Alley Light

In the case of roof bars with Alley Light, a knife is used to make a recess in the rubber base along the specified cutting line.

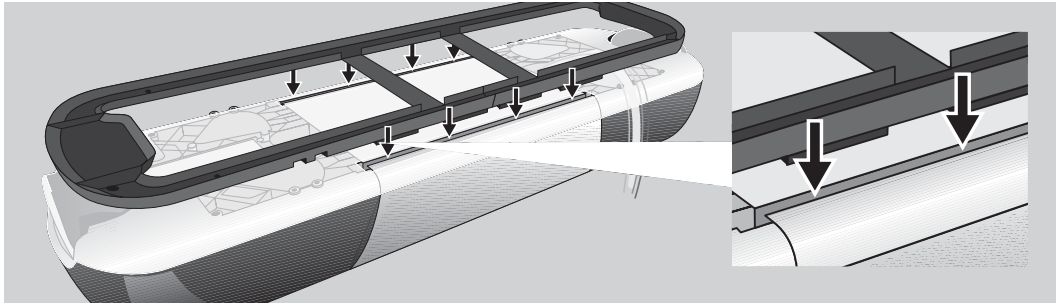


Lay the base on the intended points of the roof bar and link together.

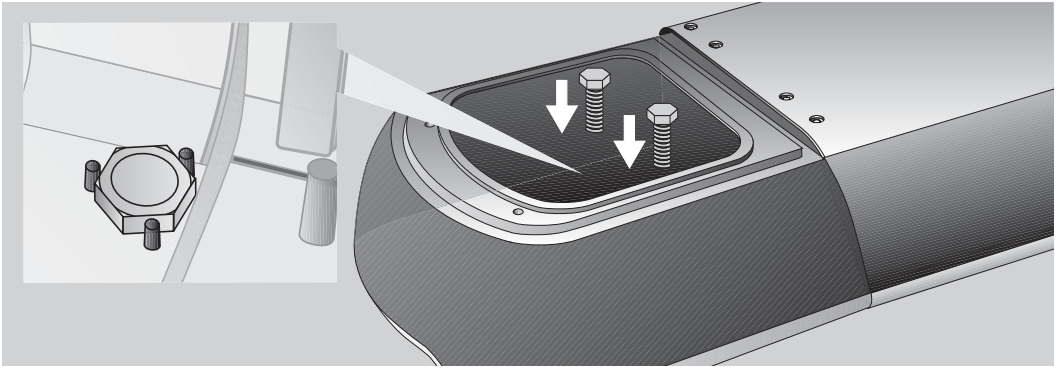




Push the base into the groove at the marked points.

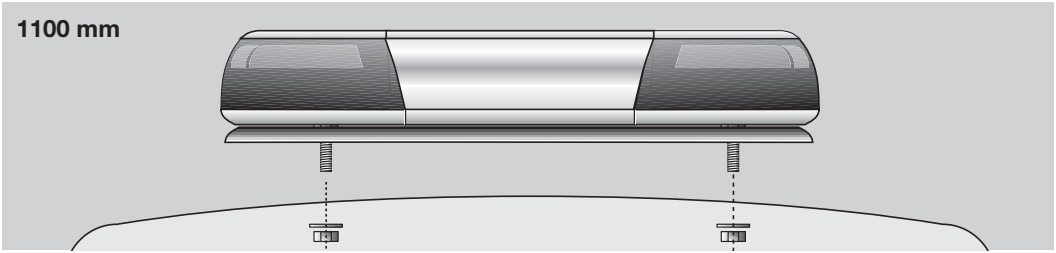


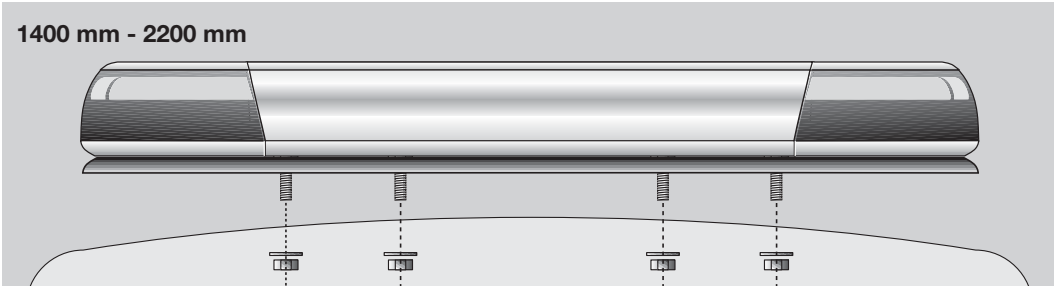
Only in the case of 1100 mm overall length
Put 4x M8 hexagon bolts from above through the base.



Putting the roof bar onto the roof. When doing so, put the screws and the cables into the intended drill-holes.

Tightening of the screws to a torque of 5-7 Nm.





Electrical Connection / Technicel Data

Electrical connection

Disconnect vehicle battery before starting installation Route wiring harness preferably over side spar of vehicle to front. Ensure that it is not kinked excessively at corners and edges. Route cable in vehicle, cut off to proper length and connect to switches.

Rotating beacons:

KL-ER 12 V = 2 x 55 W
KL-ER 24 V = 2 x 70 W
KL-MR 12 V = 4 x 55 W
KL-MR 24 V = 4 x 70 W

Strobe tubes:

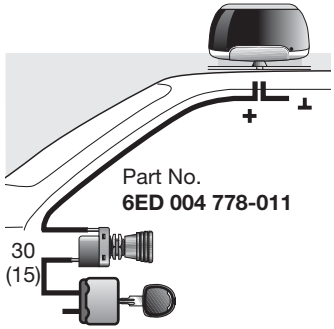
X1-Strobe tubes

Fuses:

The bulbs must have individual fuse protection.

Positive lead KL:	white and blue (on KL-MR yellow and green in addition). (fuse beacons)
Switch with warning light	(See parts list)
Negative lead	4 mm^2 brown with eye
Ground lead	4 mm^2 black with eye
Retrofit e.g.	
Inner lighting, positive:	black
Work light, positive:	red and brown

Per bulb	Halogen	10 A
Per bulb	Strobe	15 A
Per bulb	Backlighting	10 A



Note for authorized personnel in workshop:
If a defect is present in the high voltage circuit, switch off operating voltage and wait at least 3 minutes before opening unit.

Technical Data

General technical data

Operating temperature:	-40°C to + 60°C
Storage temperature:	-40°C to + 85°C
Lens and light dome material:	PC
RF suppression:	acc. to DINVDE 0879-2 (IEC-CISPR25)
Frequency range:	150kHz -200MHz
RF suppression class:	Class 5

Halogen rotating mirror system: KL-ER and KL-MR

Operating voltage range:	
12 V	10.8 -13.8 V
24 V	21.6 -27.6 V
Current consumption:	
Beacon 12 V	2 (4) x 4.7 A
Beacon 24 V	2 (4) x 2.7 A
Rear illumination 12 V	approx. 4 A
Rear illumination 24 V	approx. 2 A
Drive: belt drive	
Rotation rate:	160 rpm

Xenon double-flash system

Operating voltage range:	
12V	10-15.0 V
24 V	20-31.0 V
Current consumption:	
Beacon 12 V	2x3.5 A
Beacon 24 V	2x1.6 A
Rear illumination 12 V	approx. 4 A
Rear illumination 24 V	approx. 2 A
X-1 strobe tube	
Image frequency	2Hz

Connection table

Application:	**Cable color**	
KL1	white	0.75mm^2
KL2	blue	0.75mm^2
KL3 (for KL-MR)	yellow	0.75mm^2
KL3 (for KL-MR)	green	0.75mm^2
Alley light / work light	brown	0.75mm^2
Alley light / work light	red	0.75mm^2
Work light / interior lighting	black	0.75mm^2
Negative lead	brown	4 mm^2
Ground lead	black	4 mm^2

Replacement instructions

CAUTION!
Do not touch bulb with bare fingers.

On multi-reflector systems ensure that the position of the reflectors is not changed. (Observe pictogram in KL-MR).

Replacing bulb on KL-ER, KL-MR

If it is necessary to replace the bulbs in the beacons, proceed as follows:

1 Remove the two outer cover screws.

2 Loosen the inner cover screws.

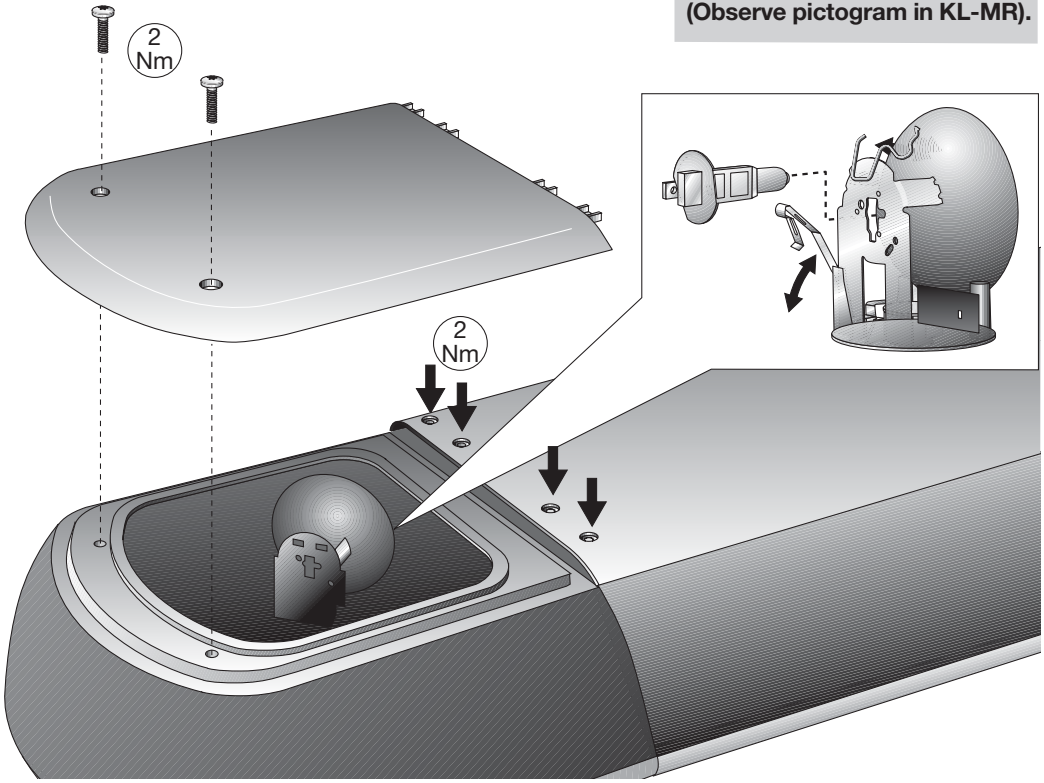
3 Remove the installation cover.

4 Disconnect electrical connection to bulb.

5 Release clamp and swing up.

6 Pull bulb out toward rear and replace.

7 Close in reverse order



Replacement instructions

CAUTION!
Do not touch bulb with bare fingers.

Replacing KL-XL2 strobe tube

1 Remove the two outer cover screws.

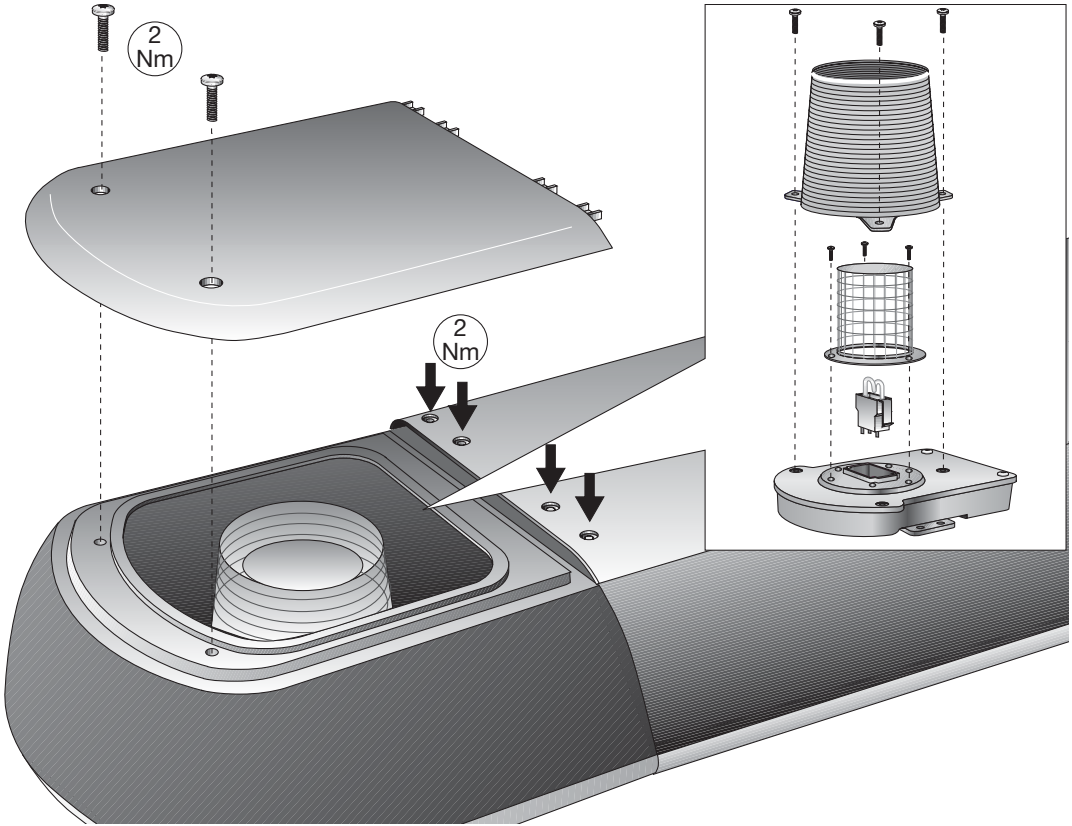
2 Loosen the inner cover screws.

3 Remove the installation cover.

4 Unscrew lens and wire grate.

5 Pull bulb out toward top and replace.

Close in reverse order



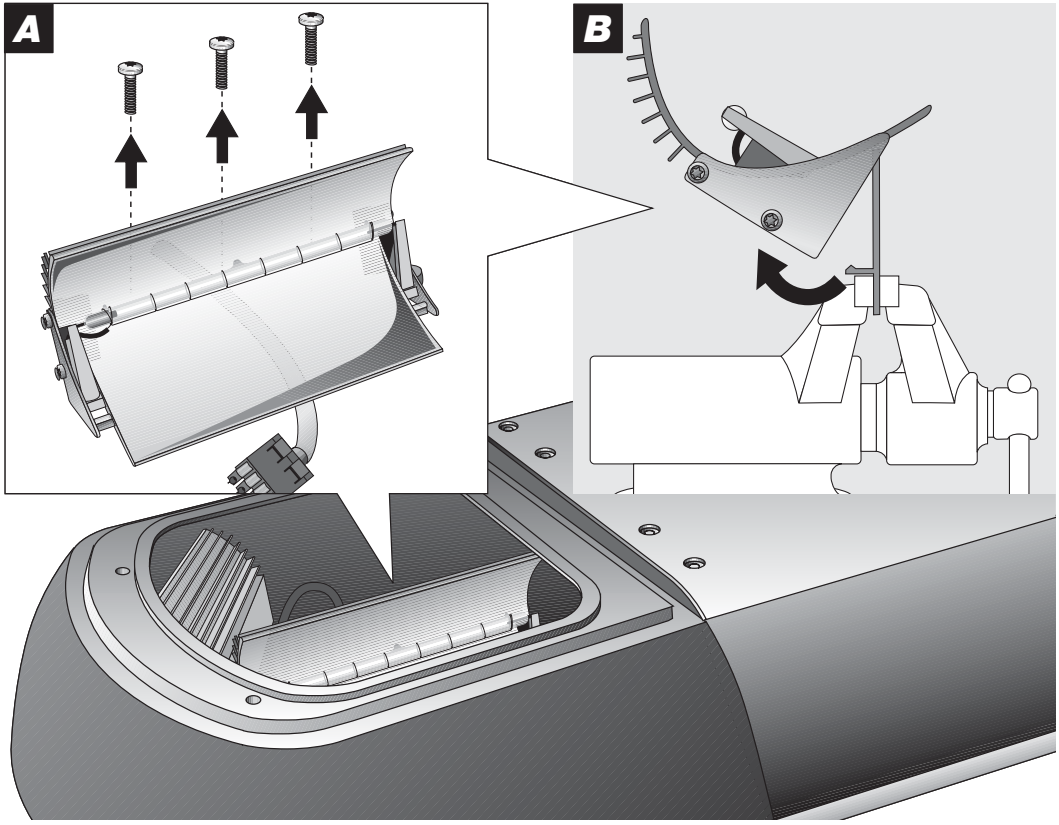
Flash-tube replacement KL-XR2

1 Opening of the mounting opening as above.

2 Removal of the fastening screws of the reflector assembly.

3 Disconnect the electrical connection.

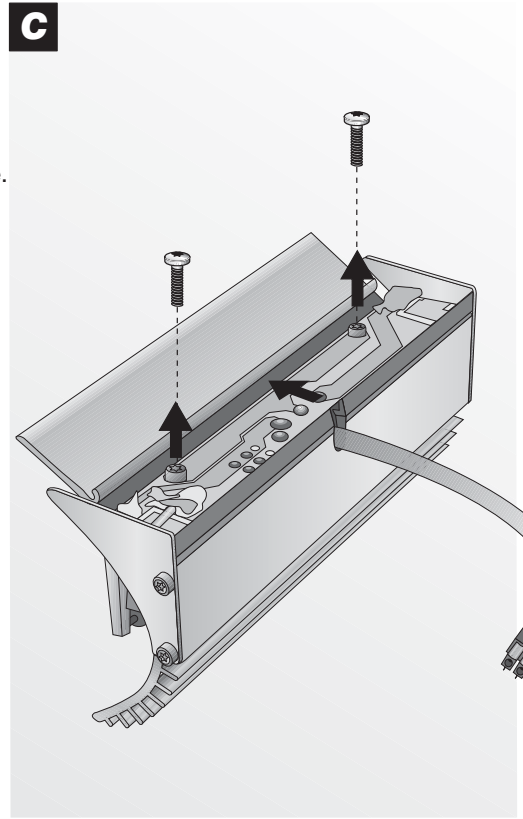
4 Tension the reflector plate in, for a example, vice, and prise the reflector from the retaining plate.

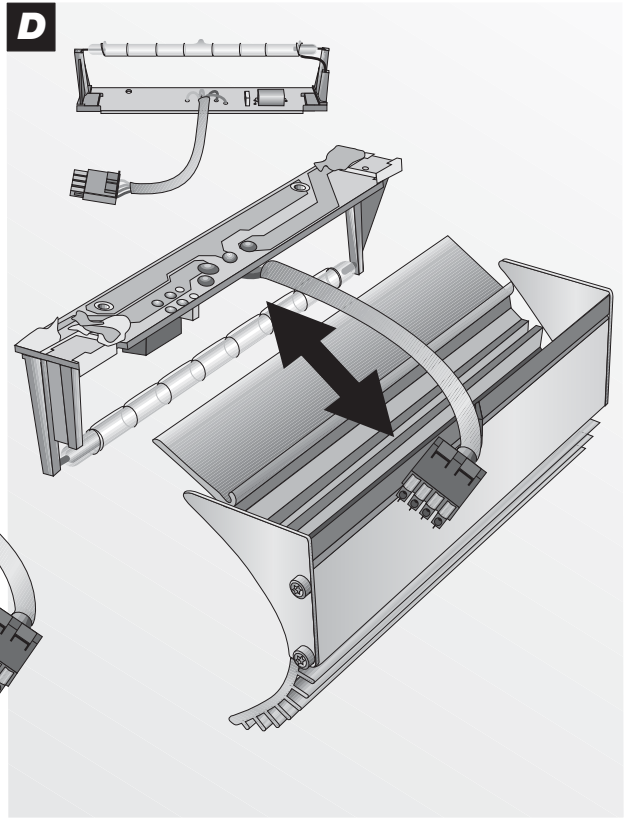


Flash-tube replacement KL-XR2

5 Remove the flash-tube screws and replace the tube.

6 Close in the reverse order.





M	S	ECE	flashing sequences	frequenzy	flash / 2 periods									
					0ms	245ms	330ms	375ms	490ms	660ms	735ms	750ms	990ms	1125ms
0	0	X	2	2,05 Hz	ABCD				ABCD					
1	1	X	1	2,05 Hz	ABCD				ABCD					
2	2		3	1,5 Hz	ABCD					ABCD				
3	3		4	1,33 Hz	ABCD							ABCD		
0	4	X	2	2,05 Hz	AB	CD			AB		CD			
1	5	X	1	2,05 Hz	AB	CD			AB		CD			
2	6		3	1,5 Hz	AB		CD			AB			CD	
3	7		4	1,33 Hz	AB			CD				AB		CD
8	8		2	2,05 Hz	AC				BD		BD			
9	9		1	2,05 Hz	AC				BD		BD			
A	A		3	1,5 Hz	AC					BD				
B	B		4	1,33 Hz	AC							BD		
8	C		2	2,05 Hz	A	C			B		D			
9	D		1	2,05 Hz	A	C			B		D			
A	E		3	1,5 Hz	A		C			B			D	
B	F		4	1,33 Hz	A			C				B		D

Replacement instructions

Use side work lights only where legally permitted.

Use of work lights in the Federal Republic of Germany is permissible only when the vehicle is stationary.

Example: Alley Light

1 Open the installation opening as above.

2 Remove the hex. nuts for the Alley Light.

3 Pull Alley Light downward and out.

4 Remove bracket bolts.

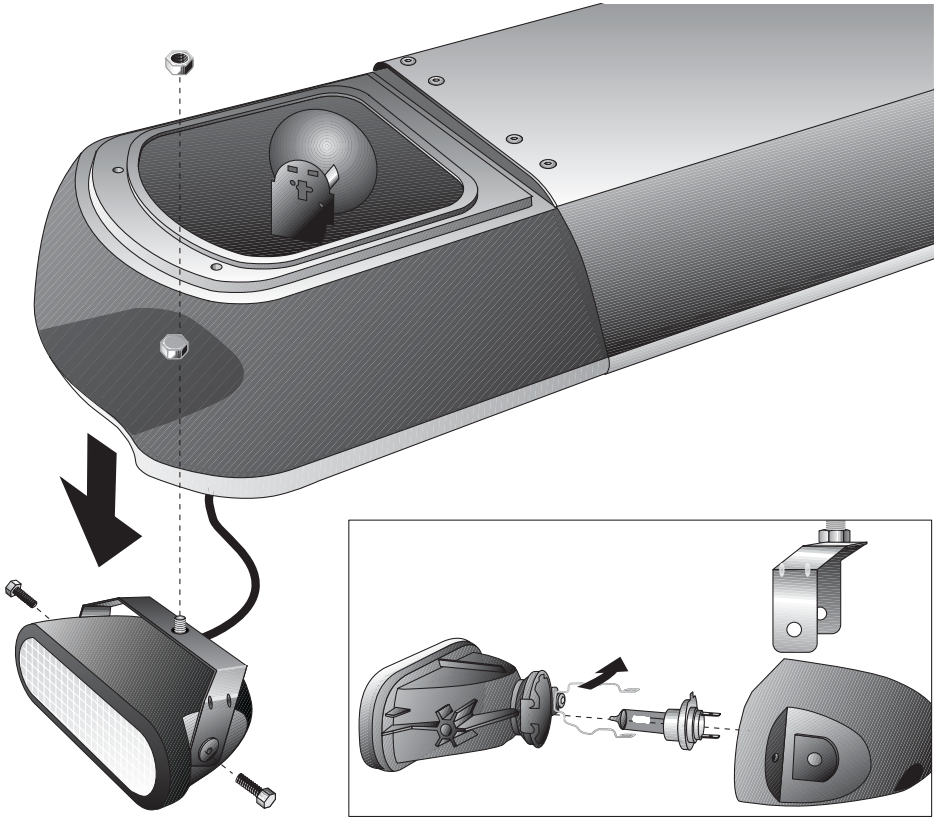
5 Remove plastic cap.

6 Replace bulb.

CAUTION! Do not touch bulb with bare fingers.

7 Close in reverse order

Ensure that the cable is installed correctly in the duct below the light dome and adjust Alley Llight to illuminate street as desired.



Replacement instructions

CAUTION!
Do not touch bulb with bare fingers.

1100 mm

Installation of central panel bulbs

1 Remove cover.

2 Remove front trim.

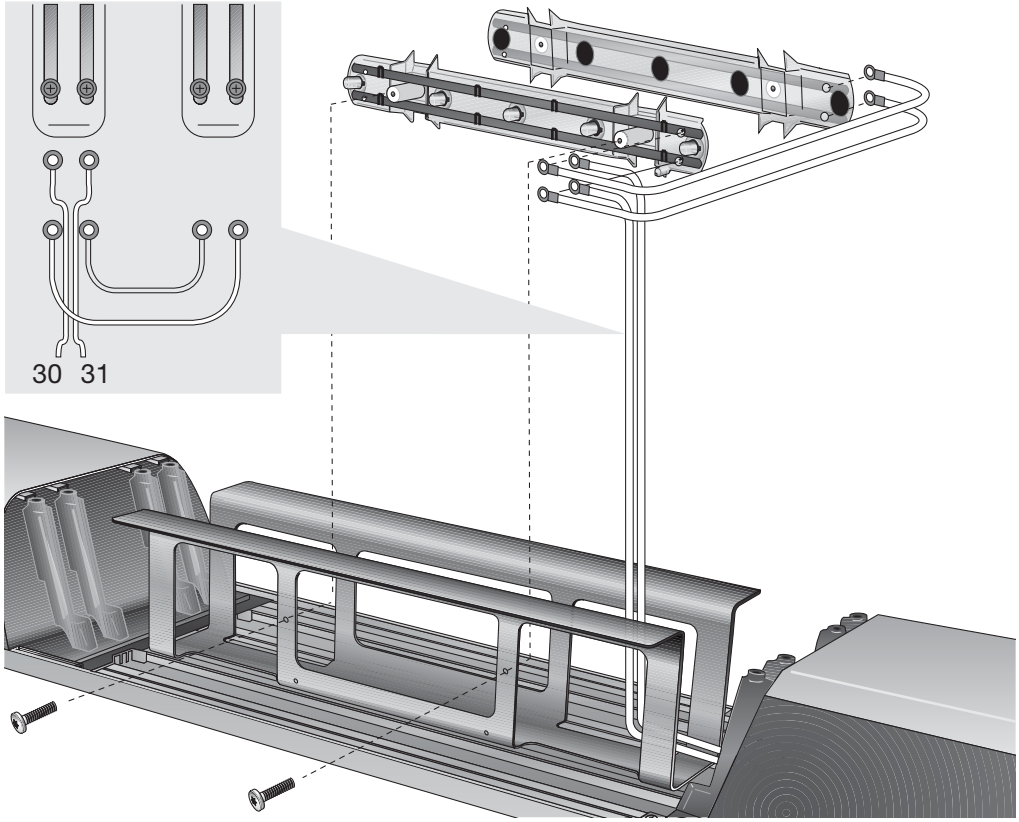
3 Insert the bulb holder in retaining frame from inside and screw down tight.

4 Connect the bulb holder with transfer cables provided.

5 Route connection cable through bottom opening to vehicle and connect.

6 Reinstall front trim and cover and screw tight.

Use central panel illumination only where legally permitted; Not permitted for road traffic in the Federal Republic of Germany.



Equipment versions, yellow

Lenght 1400 mm

Part No.:	Beacon	Voltage rating
2RL 009 279-001	KL-ER	12
2RL 009 279-001	KL-ER	24
2RL 009 279-001	KL-XL2	12
2RL 009 279-001	KL-XL2	24
2RL 009 279-001	KL-MR	12
2RL 009 279-001	KL-MR	24

Lenght 1600 mm

Part No.:	Beacon	Voltage rating
2RL 009 279-101	KL-ER	12
2RL 009 279-111	KL-ER	24
2RL 009 279-121	KL-XL2	12
2RL 009 279-131	KL-XL2	24
2RL 009 279-181	KL-MR	12
2RL 009 279-191	KL-MR	24

Lenght 1800 mm

Part No.:	Beacon	Voltage rating
2RL 009 279-211	KL-ER	24
2RL 009 279-231	KL-XL2	24
2RL 009 279-291	KL-MR	24

Replacement parts

Part	Version	Part No.:
Light dome	Yellow strobe + H1	9EL 863 117-071
Light dome	Blue H1	9EL 863 117-071
Light dome	Blue strobe	9EL 863 117-071
Light dome	Red H1 and strobe	9EL 863 117-111
KL-ER	12 V	2RL 863 132-021
KL-XL2	12 V	2RL 863 106-001
KL-ER	24 V	2RL 863 132-031
KL-XL2	24 V	2RL 863 106-011
Halogen bulb	12 V 55 W	8HG 002 089-131
Halogen bulb	24 V 70 W	8GS 002 089-251
X-1 Strobe tube	for KL-XL2	8HG 859 634-001
Toothed belt	KL-MR	9XR 861 798-021
Reflector assembly	12 V KL-MR	9XD 863 543-001
Reflector assembly	24 V KL-MR	9DX 863 543-011
Drive assembly	12 V	9MN 863 542-001
Drive assembly	24 V	9MN 863 542-011
Reflector	Strobe and H1 outside ECE jurisdiction	9EY 863 912-011*
Shield	H1 within ECE jurisdiction	9XX 863 912-021

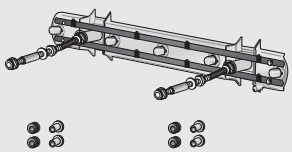
Use reflective shields only where legally permitted; Not permitted for road traffic in the Federal Republic of Germany

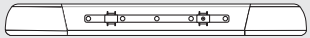
Bulb holder
(including bulbs)

Equipped with: OWS 1400 (2x)
OWS 1600 (2x)
OWS 1800 (2x)

Part No.
9FT 861 790-021 12 V
9FT 861 790-021 24 V

2 bulb holders
per package



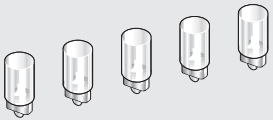


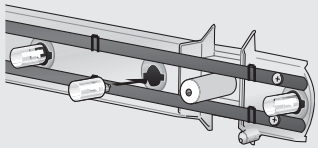
Use central panel illumination only where legally permitted; Not permitted for road traffic in the Federal Republic of Germany.

Bulbs (replacement parts)

Light panel illumination
5 x 5 W or 10 x 5 W for
retrofitting

Part No.
9GP 003 594-133 12 V
9GP 003 594-251 24 V

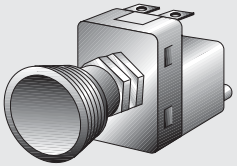


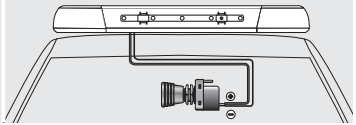


Switch with indicator light

1 each for interior lighting
1 each for beacon operation

Part No.
6ED 004 778-011





Troubleshooting

Rotating beacon

Rotating beacon	Possible cause	
One or both beacons not illuminated although reflectors rotate.	Check whether bulb is defective	
Reflector does not rotate, but bulbs are OK.	Check whether drive or motor is defective.	
Both beacons not illuminated, reflectors do not rotate.	Check whether power is present at fuse box input and output.	**Yes** = Check whether power is present in unit at terminal 72 (motor).
		No = Feed line 30 to fuse box or fuse defective.
	Check ground lead to beacon for continuity	

Illumination of advertising surface

Malfunction	Possible cause	
Lettering not completely illuminated.	Check whether bulb or fuse is defective.	