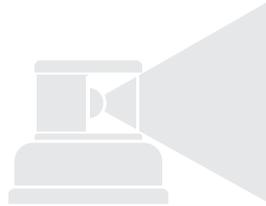


TECHNICAL MANUAL

DHR40 LED



MED96/98/EC



SINCE 1922

Den Haan Rotterdam



DISCLAIMER

Despite constant care and attention DHR puts in its manuals it is still possible that information in this manual is incomplete or incorrect.

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TECHNICAL DATA

Application:

Base and side mounting models

- As Navigation light for all sea-going vessels with a length of less than 20 metres
- As Navigation light for all vessels in Rhine and European inland navigation with a length less than 20m
- As general signalling light for all types of sea-going vessels with a length up to 50m
- As general signalling light for all vessels in Rhine and European inland navigation

Retrofit model

Designed as LED-replacement for conventional DHR35 signalling lights for all vessels in Rhine and European inland navigation

In compliance with:

- International Regulations for Preventing Collisions at Sea; COLREG 72 and latest amendments
- Rhine and European inland navigation rules
- The Directives 96/98/EC and 82/714/EC, following the European standard: EN 14744 (2005) AC(2006), Inland navigation vessels and sea-going vessels - navigation light

Approval:

MED96/98/EC Wheelmark

Materials:

- Housing: Seawater resistant aluminium, hard anodised, matt black
- LED driver: epoxy potted
- Screen: Seawater resistant aluminium, hard anodised
- Lens: Borosilicate glass
- Base: Delrin black

Min. visibility:

Sector lights

Starboard - bright	2 NM
Port - bright	2 NM
Masthead - bright	3 NM
Stern - bright	2 NM
Towing - bright	2 NM

All-round

White - bright	2 NM
Red - bright	2 NM
Green - bright	2 NM
Yellow - bright	2 NM
Blue - normal	1 NM

Electrical insulation class:

I, (grounded) / III

Power supply:

24VDC -20% +30%

Protection class:

IP X6

life time:

50,000 Hours

Operation temperature:

-25°C up to +55°C

Mounting:

Base, Side or Hoistable

Cable entry:

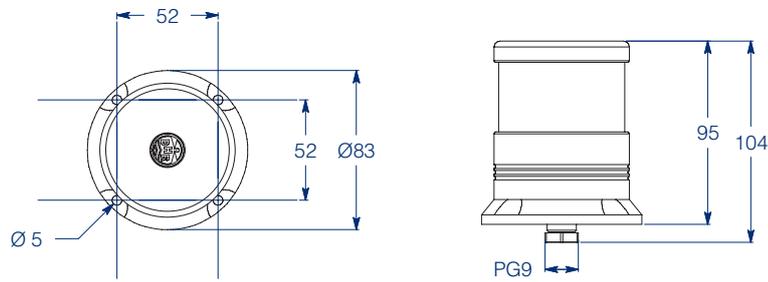
Cable gland PG9

PRODUCT PHOTOS

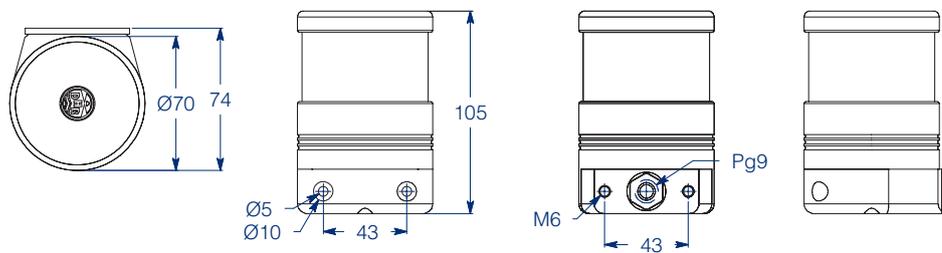


DIMENSIONS

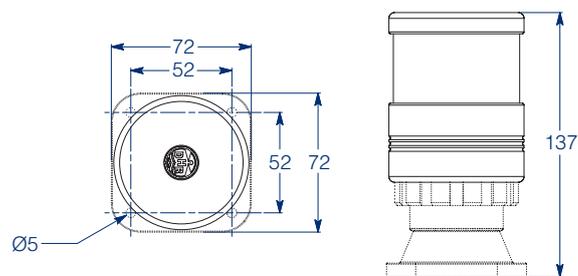
Base mounting



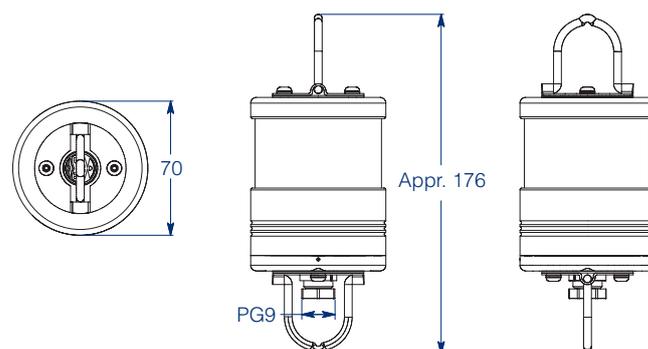
Side mounting



Retrofit



Hoistable



All dimensions in mm.

AVAILABLE MODELS

Base Mounted

Sector lights	Min. Visibility	Colour	Power	Art. Code
Starboard	2 NM	Green	3 W	40.01.00.00
Port	2 NM	Red	3 W	40.02.00.00
Masthead	3 NM	White	3 W	40.03.00.00
Stern	2 NM	White	3 W	40.04.00.00
Towing	2 NM	Yellow	3 W	40.04.09.00
Panama / Direction light	-	Blue	3 W	40.10.00.05

All-round lights	Min. Visibility	Colour	Power	Art. Code
White	2 NM	White	3 W	40.06.00.00
Red	2 NM	Red	3 W	40.07.00.00
Green	2 NM	Green	3 W	40.08.00.00
Yellow	2 NM	Yellow	3 W	40.09.00.00
Blue	2 NM	Blue	3 W	40.10.00.00

Side Mounted

Sector lights	Min. Visibility	Colour	Power	Art. Code
Starboard	2 NM	Green	3 W	40.01.00.01
Port	2 NM	Red	3 W	40.02.00.01
Masthead	3 NM	White	3 W	40.03.00.01
Stern	2 NM	White	3 W	40.04.00.01
Towing	2 NM	Yellow	3 W	40.04.09.01

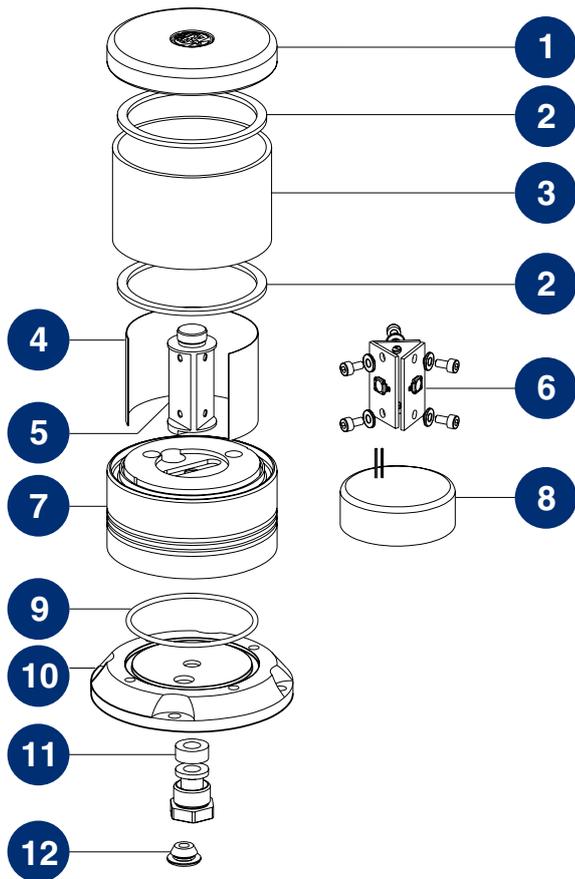
Retrofit

All-round lights	Min. Visibility	Colour	Power	Art. Code
White	2 NM	White	3 W	40.06.00.02
Red	2 NM	Red	3 W	40.07.00.02
Green	2 NM	Green	3 W	40.08.00.02
Yellow	2 NM	Yellow	3 W	40.09.00.02
Blue	2 NM	Blue	3 W	40.10.00.02

Hoistable

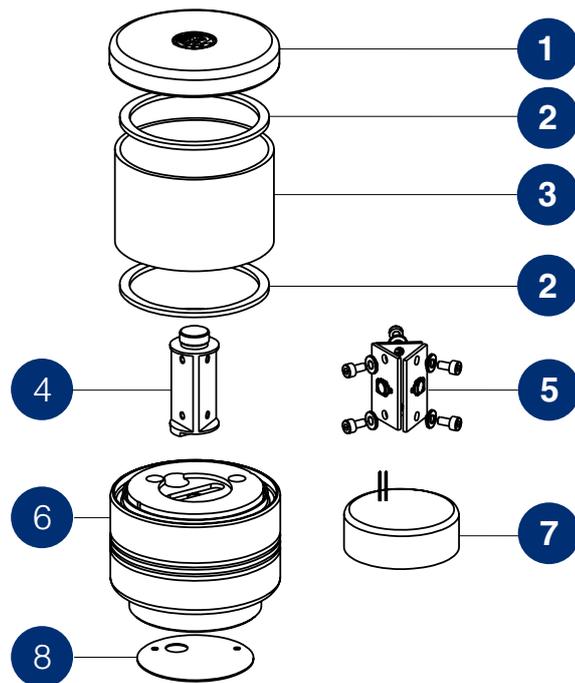
All-round lights	Min. Visibility	Colour	Power	Art. Code
White	2 NM	White	3 W	40.06.00.03
Red	2 NM	Red	3 W	40.07.00.03
Green	2 NM	Green	3 W	40.08.00.03
Yellow	2 NM	Yellow	3 W	40.09.00.03
Blue	2 NM	Blue	3 W	40.10.00.03

EXPLODED VIEW - BASE MOUNTING



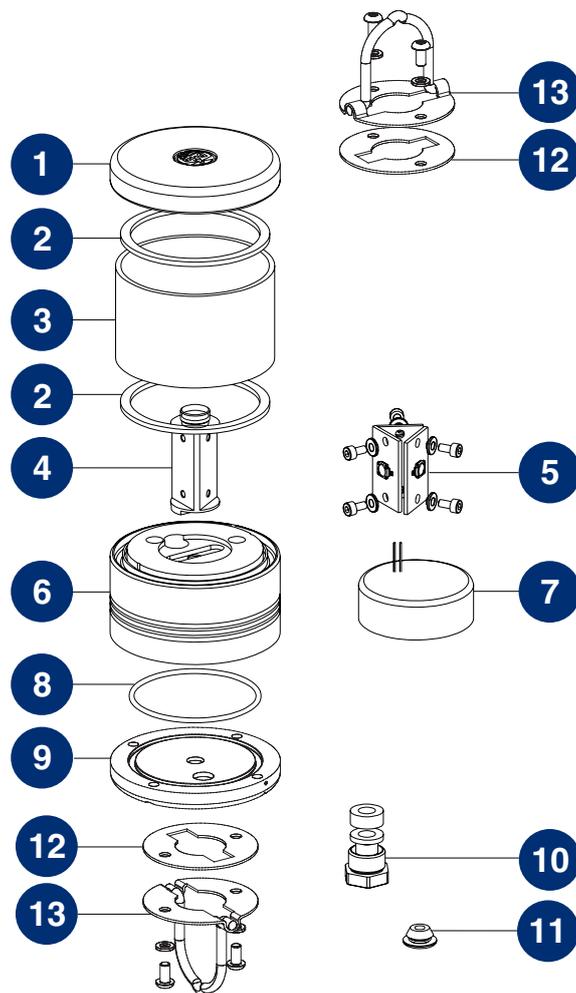
Item	Part	Material
1	Cover	Seawater resistant aluminium, hard anodized black
2	Gasket DHR40	Neoprene
3	Glass Tube	Borosilicate glass
4	Screen	Seawater resistant aluminium, anodized black
5	Heatsink	Seawater resistant aluminium
6	LED PCB	MC-PCB, aluminium 1.55 mm
7	Housing	Seawater resistant aluminium, hard anodized black
8	LED driver	Potting material: Polyurethane
9	O-ring DHR40	Neoprene
10	Base plate	Seawater resistant aluminium, hard anodized black
11	Cable gland Pg9	- Body: Polyamide - Seal: Neoprene
12	Membrane Vent	- Body: Silicone rubber - Membrane: ePTFE

EXPLODED VIEW - RETROFIT



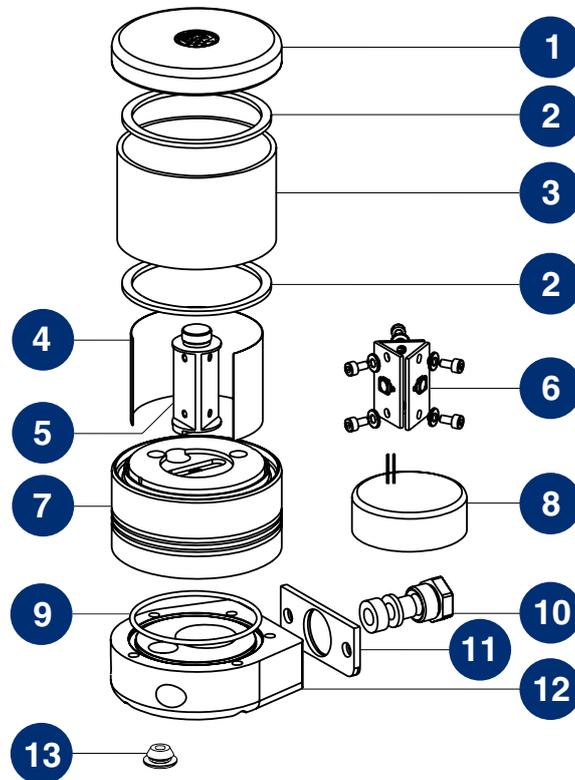
Item	Part	Material
1	Cover	Seawater resistant aluminium, hard anodized black
2	Gasket DHR40	Neoprene
3	Glass Tube	Borosilicate glass
4	Heatsink	Seawater resistant aluminium
5	LED PCB	MC-PCB, aluminium 1.55 mm
6	Housing retrofit	Seawater resistant aluminium, hard anodized black
7	LED driver	Potting material: Polyurethane
8	Gasket retrofit	Neoprene

EXPLODED VIEW - HOISTABLE



Item	Part	Material
1	Cover	Seawater resistant aluminium, hard anodized black
2	Gasket DHR40	Neoprene
3	Glass Tube	Borosilicate glass
4	Heatsink	Seawater resistant aluminium
5	LED PCB	MC-PCB, aluminium 1.55 mm
6	Housing	Seawater resistant aluminium, hard anodized black
7	LED driver	Potting material: Polyurethane
8	O-ring DHR40	Neoprene
9	Base plate hoistable	Seawater resistant aluminium, hard anodized black
10	Cable gland Pg9	- Body: Polyamide - Seal: Neoprene
11	Membrane Vent	- Body: Silicone rubber - Membrane: ePTFE
12	Gasket suspension bracket	Silicone
13	Suspension bracket	Stainless steel 316

EXPLODED VIEW - SIDE MOUNTING

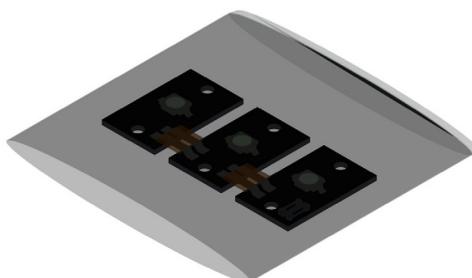


Item	Part	Material
1	Cover	Seawater resistant aluminium, hard anodized black
2	Gasket DHR40	Neoprene
3	Glass Tube	Borosilicate glass
4	Screen	Seawater resistant aluminium, anodized black
5	Heatsink	Seawater resistant aluminium
6	LED PCB	MC-PCB, aluminium 1.55 mm
7	Housing	Seawater resistant aluminium, hard anodized black
8	LED driver	Potting material: Polyurethane
9	O-ring DHR40	Neoprene
10	Cable gland Pg9	- Body: Polyamide - Seal: Neoprene
11	Gasket DHR40 Side	Neoprene
12	Side mounting piece	Delrin black
13	Membrane Vent	- Body: Silicone rubber - Membrane: ePTFE

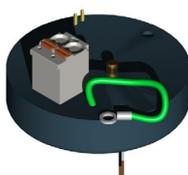
REPAIR KIT



Gasket DHR40



LED PCB



LED driver



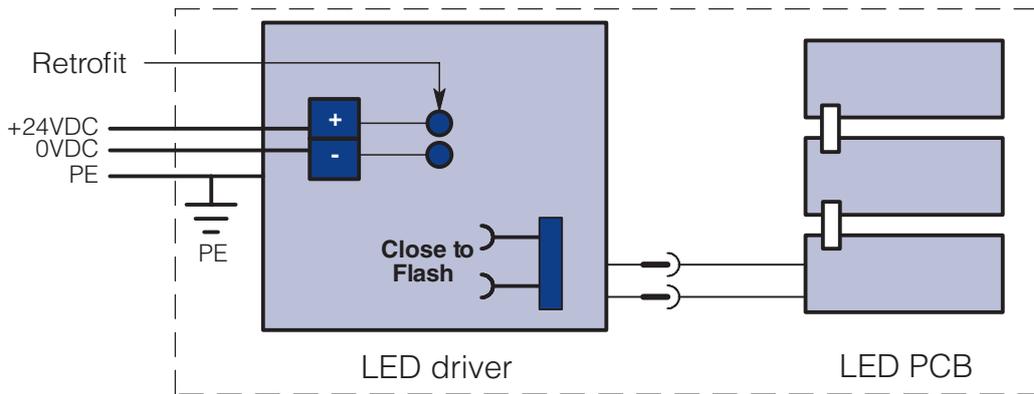
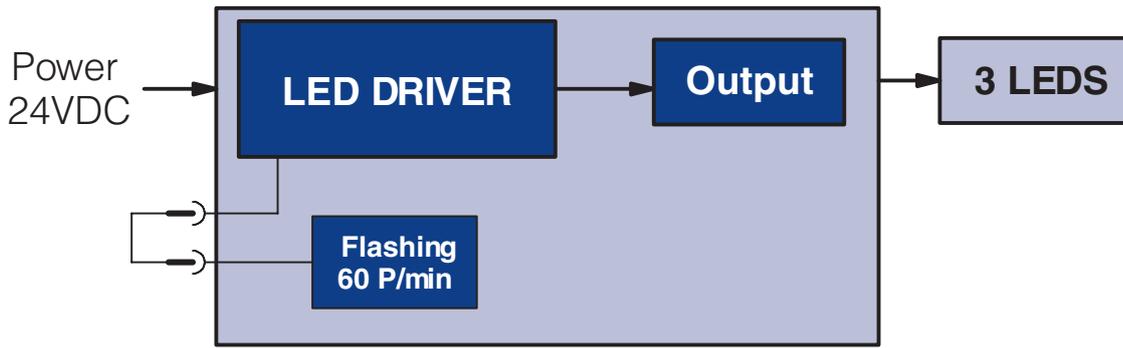
Membrane Vent



O-ring DHR40

Item	Navigation light	Description	Number
A	Starboard All-round green	Maintenance kit for: green	40.99.00.30
B	Port light Stern Red All-round red	Maintenance kit for: red	40.99.00.31
C	Masthead Stern All-round white	Maintenance kit for: white	40.99.00.32
D	Towing light All-round yellow	Maintenance kit for: yellow	40.99.00.34
E	Panama steering light All-round blue	Maintenance kit for: blue	40.99.00.35

ELECTRICAL SPECIFICATION



Grounding (PE) is not required, but gives better ESD/EMI protection

Navigation light	Power supply	Nominal voltage	Typical wattage*	Typical current*	Minimum operating current	Error current	Inrush current
AI types	350 mA	24 VDC	3W	125mA	>40 mA	<10 mA	40 A

* Depends on temperature and LED production series

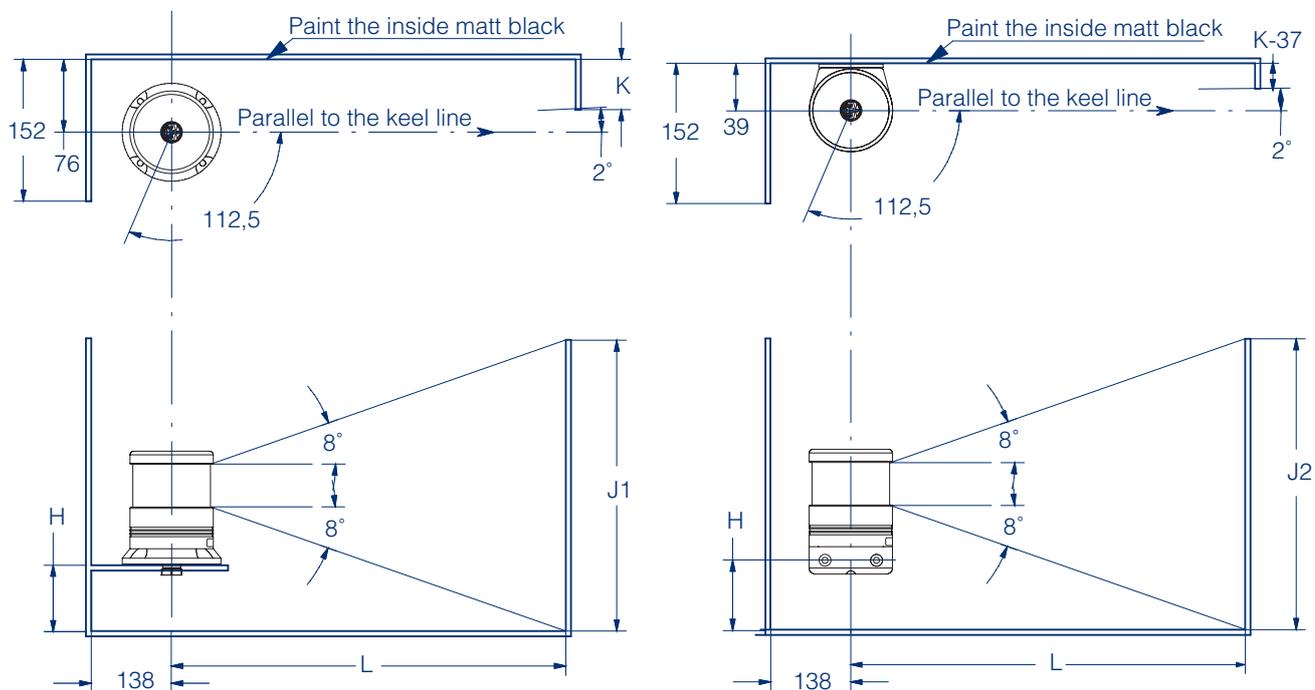
LIFETIME CONTROL

Measurements of the navigation light and specifications retrieved from the OEM, show a conformity with the minimum requirements of COLREG 72 at an operational lifetime of 50000 hrs. To guarantee a proper use of the LED navigation lights, we as a manufacturer advise the following:

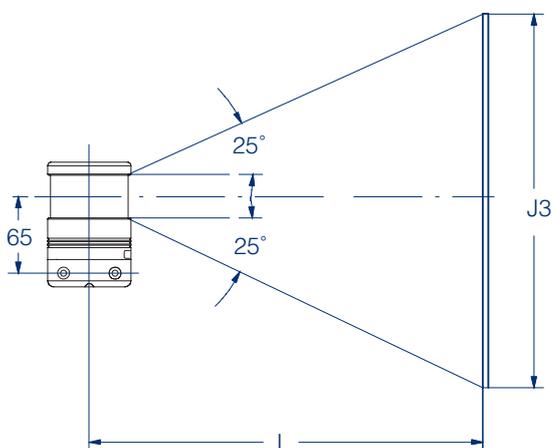
- Use the navigation light in combination with a DHR-specified control system, which monitors the status and operational life time of each individual navigation light
- Each navigation light needs to undergo a quality check at least every 5 years of use to verify it still meets the requirements of COLREG 72

POSITIONING LIGHTS

Power-driven vessels



Sailing vessels



L	H	K	J1	J2	J3
400	10	62	150	-	400
500	25	58	180	180	500
600	40	55	210	210	600
700	55	51	240	240	-
800	70	48	270	270	-
910	85	44	302	302	-

[mm]

Disclaimer:

- The minimum luminous intensity requirements in the forward direction are only guaranteed if the side-lights are mounted in accordance with this drawing and table.
- This is an illustration to indicate the dimensions of the inboard screens, relative to the keel line of the vessel. By no means may this image be used to determine the position of the sidelights on the vessel. For positioning the lights at the vessel always check for compliance with COLREG 72 or local rules.

POSITIONING ALL-ROUND LIGHT

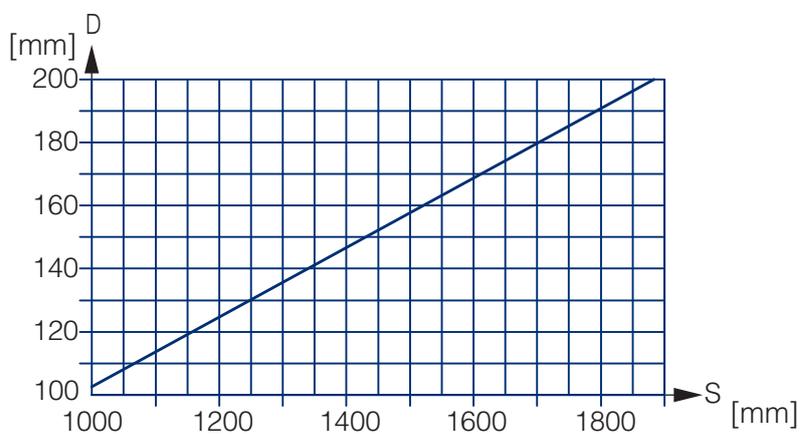
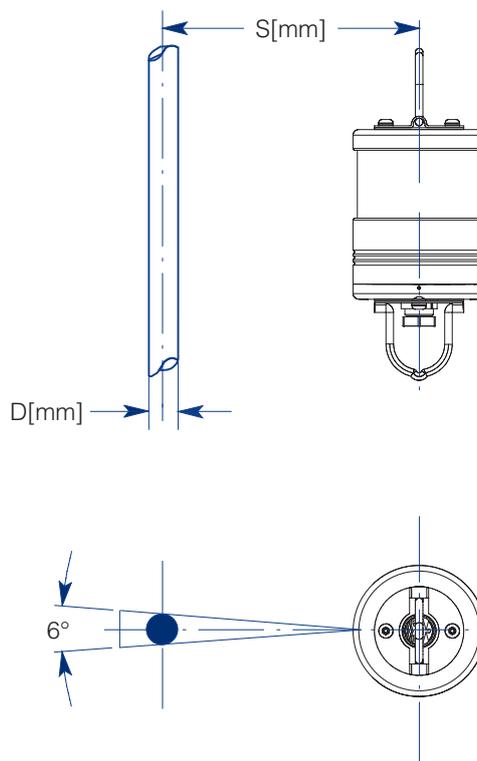


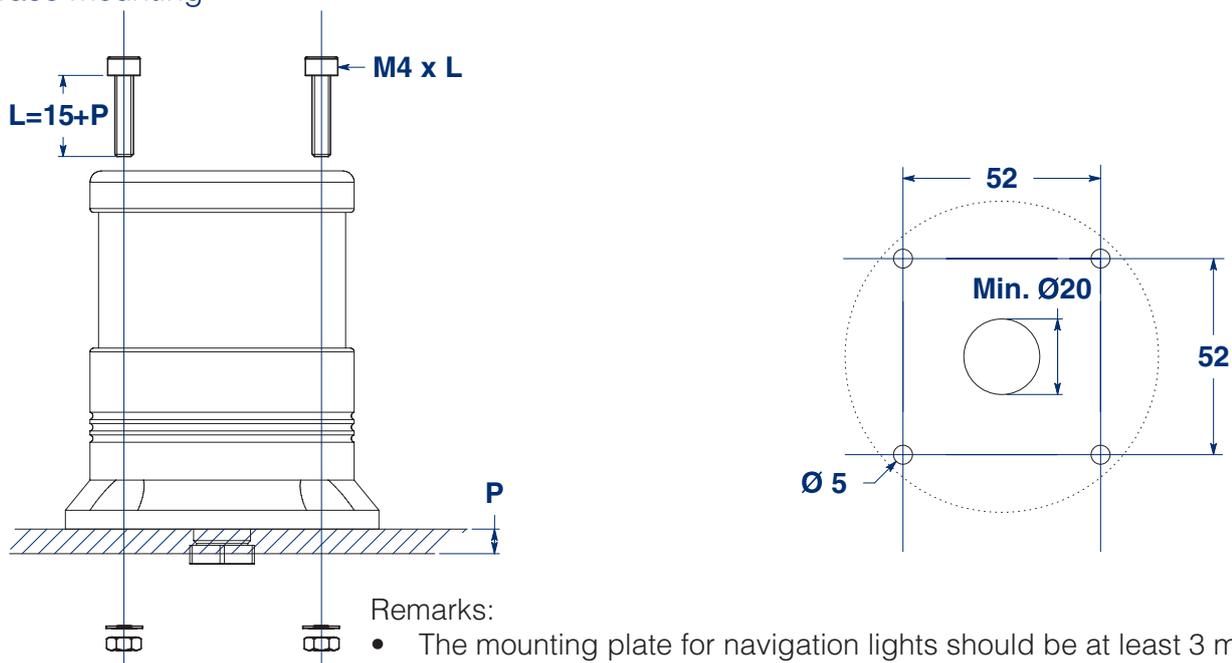
Diagram for choosing the minimum distance between obstacle and mounting plate.

Disclaimer:

This is an illustration to indicate the position of the all-round light so not to be obscured by mast, topmasts or structures within the angular sector of more than 6 degrees. By no means may this image be used to determine the position of the all-round lights on the vessel. For positioning the lights on the vessel always check for compliance with COLREG 72 or local rules.

MOUNTING INSTRUCTIONS

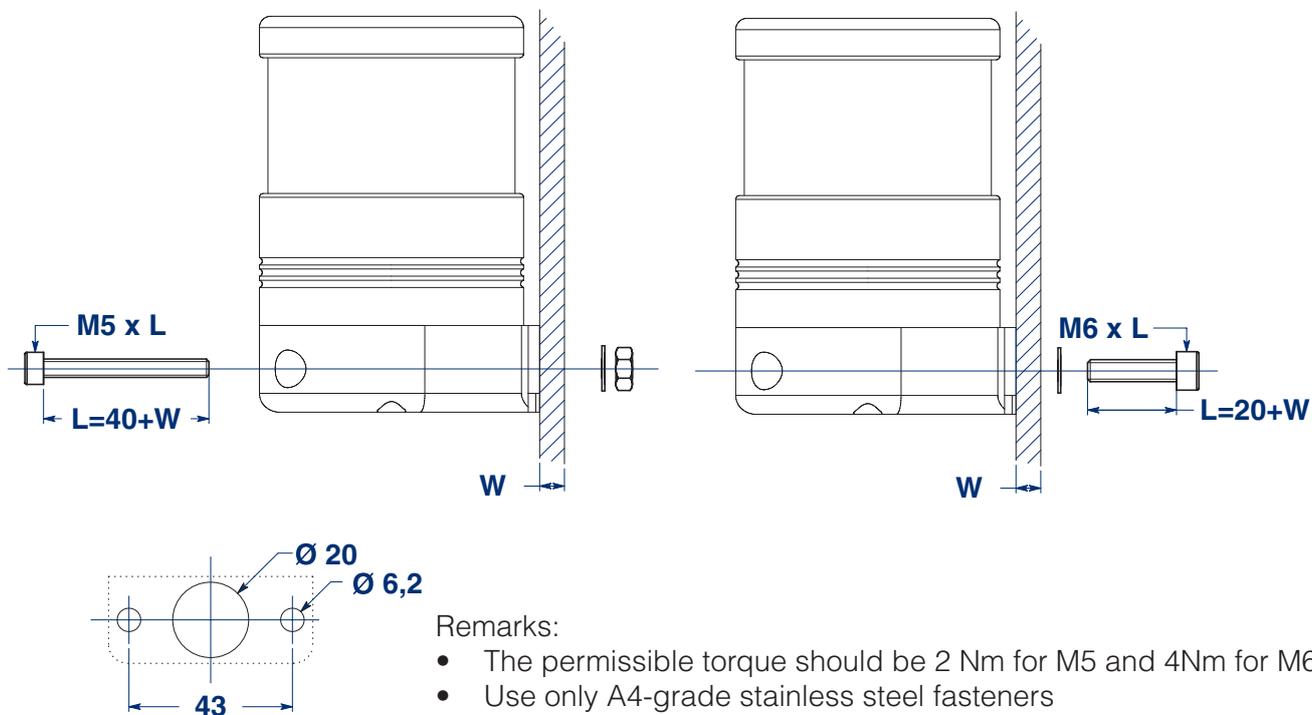
Base mounting



Remarks:

- The mounting plate for navigation lights should be at least 3 mm
- The permissible torque should be 1,5 Nm
- Use only A4-grade stainless steel fasteners

Side mounting



Remarks:

- The permissible torque should be 2 Nm for M5 and 4Nm for M6
- Use only A4-grade stainless steel fasteners

All dimensions in mm.

Important

Do not paint or use any other chemical for the lanterns, clean only with fresh water.

ADVANCED MARITIME SIGNALLING SOLUTIONS



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