



Navigation Lights



Signalling Lights



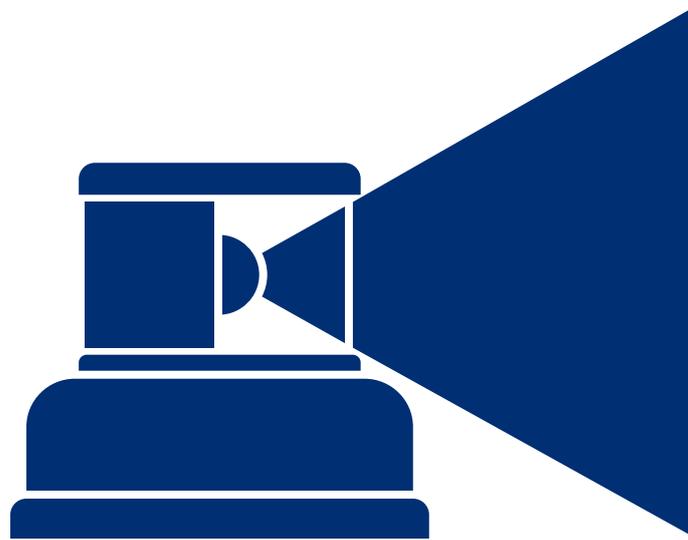
Searchlights



Whistles

TECHNICAL MANUAL

DHR60 LED



MED2014/90/EU

46 CFR 111.75-17

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

- For all vessels used in (European) inland navigation
- For all seagoing vessels with a length less than 50 meters
- UL1104 (USA): for vessels of 65 feet or more in length

In compliance with:

- Directive 2014/90/EU
- Regulation (EU) 2017/306 Annex A.1/6.1
- US Code of Federal Regulations Title 46 CFR 111.75-17

Conform standards:

- COLREG Annex I/14
- IMO Resolution A.694 (17)
- IMO Resolution MSC.253 (83)
- EN 14744 (2005) + latest amendments
- IEC 60945 (2002) + latest amendments
- UL1104 (USA) + latest revisions



EC Type Approval

- Certificate No. : 34573/A (and latest revisions)

Quality System Approval

- Certificate No. : SMS.MED2.D/47678/B (and latest revisions)



Meets UL 1104 (United States of America)

- USCG accepted laboratory: **ITL Boulder**
- Report No.: ITL87872-REPORT OF CERTIFICATION-DHR60
- Date of Type-Test: **6th of April, 2018**

Materials:

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

Min. visibility:

Sector lights

Starboard - bright	2 NM
Port - bright	2 NM
Masthead - bright	5 NM
Stern - bright	2 NM
Towing - bright	2 NM

All-round

White - bright	2 NM
Manoeuvring	5 NM
Red - bright	2 NM
Red & White	2 NM
Red & Green	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:

-30°C up to +55°C

Mounting:

Base

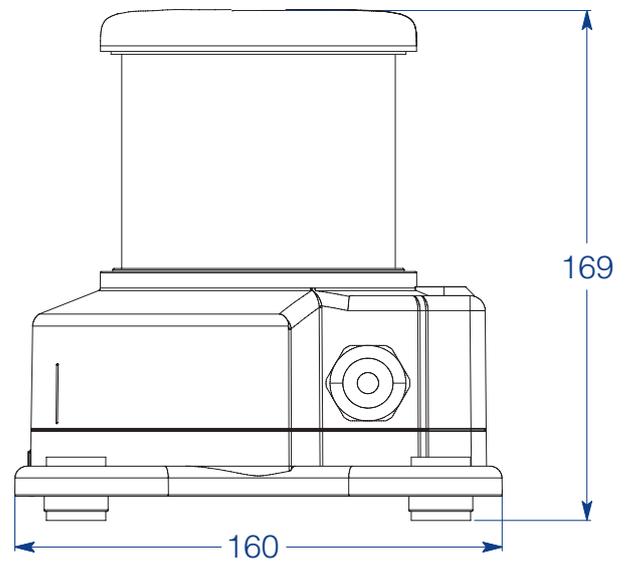
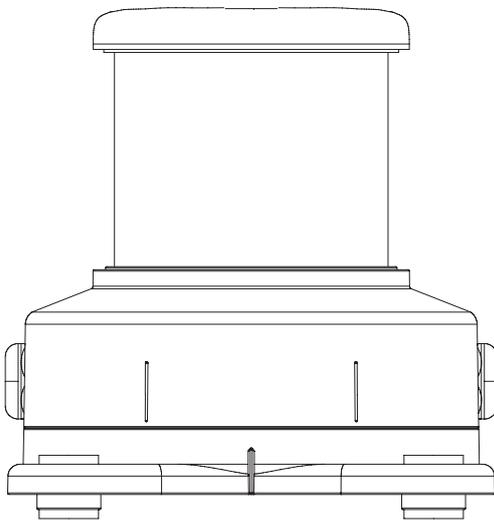
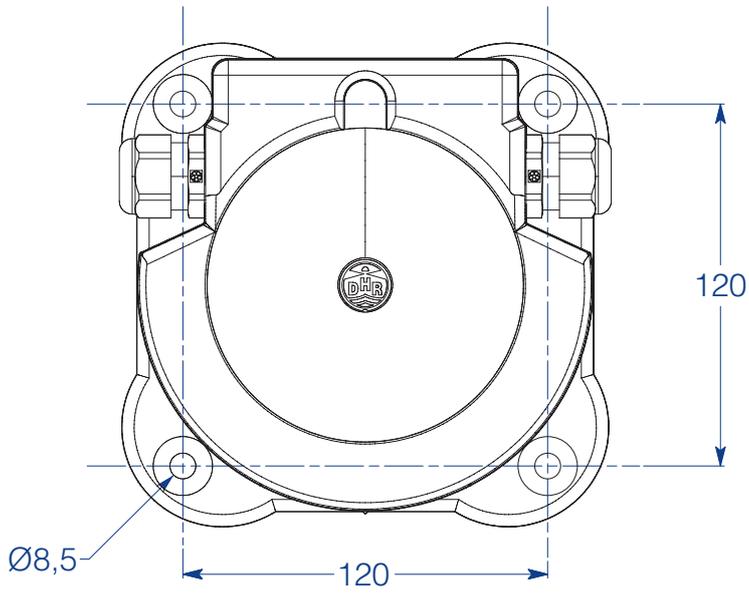
Cable entry:

Two cable glands M20x1.5, for cable diameter **6 - 9** mm

PRODUCT PHOTOS



DIMENSIONS



All dimensions in mm.

AVAILABLE MODELS

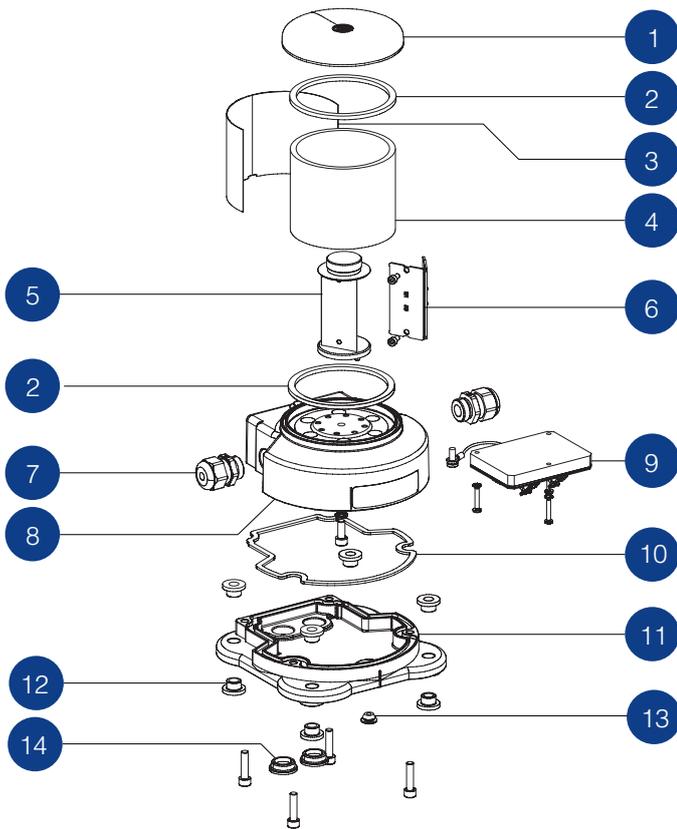
Sector lights	Min. Visibility	Colour	Nom. Power	Art. Code
Starboard	2 NM	Green	4,2 W	60.01.00.00
Port	2 NM	Red	4,3 W	60.02.00.00
Masthead	5 NM	White	11,7 W	60.03.00.00
Stern	2 NM	White	4,1 W	60.04.00.00
Stern red (Suez)	2 NM	Red	4,3 W	60.04.07.00
Towing	2 NM	Yellow	4,3 W	60.04.09.00
Convoy light	1 NM	Blue	4,1 W	60.04.10.00

All-round lights	Min. Visibility	Colour	Nom. Power	Art. Code
White	2 NM	White	4,1 W	60.06.00.00
Manoeuvring	5 NM	White	15,9 W	60.06.10.00
Red	2 NM	Red	4,3 W	60.07.00.00
Red & White	2 NM	Red/White	4,3 / 5,7 W	60.07.06.00
Red & Green	2 NM	Red/Green	4,3 / 5,9 W	60.07.08.00
Green	2 NM	Green	4,2 W	60.08.00.00
Yellow ¹⁾	2 NM	Yellow	4,3 W	60.09.00.00
Blue	1 NM	Blue	4,1 W	60.10.00.00

Screened lights²⁾	Min. Visibility	Colour	Nom. Power	Art. Code
White 180°	2 NM	White	4,1 W	60.06.01.80
Red 180°	2 NM	Red	4,3 W	60.07.01.80
Green 180°	2 NM	Green	4,2 W	60.08.01.80

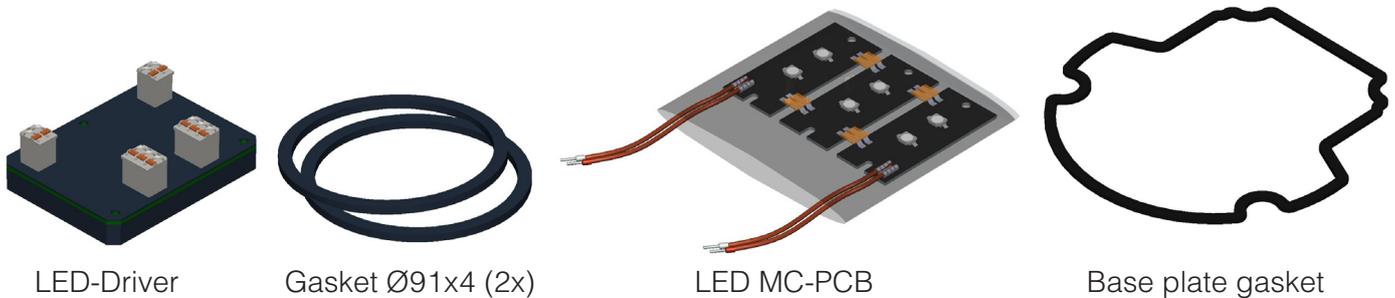
1. Yellow signal light to be used in conjunction with sound signal and only applicable for vessels navigating the European Inland Waterways
2. - Screened navigation lights should NOT be considered as an official sector navigation light, but as two navigation lights with horizontal sectors that combined form a single all round light of 360°
 - The interpretation of screened navigation lights are stipulated in IMO MSC.1/Circ.1260

EXPLODED VIEW



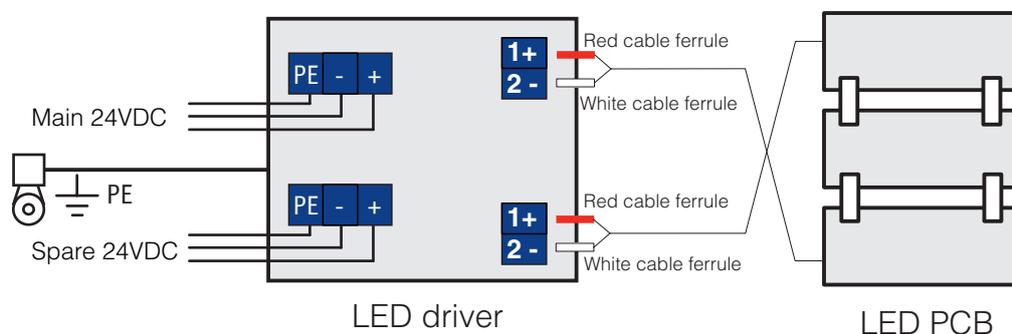
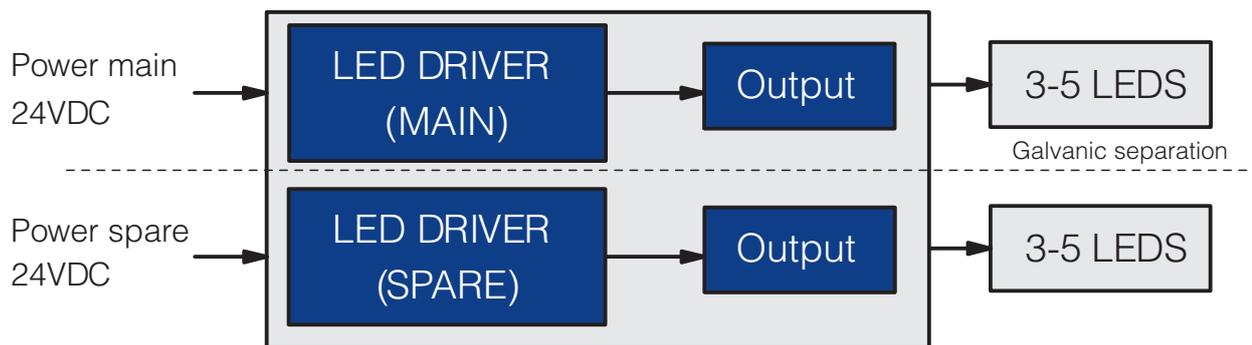
Item	Part	Material
1	Cover	Seawater resistant aluminium, hard anodized black
2	Gasket Ø91x4mm	EPDM - shore 30
3	Screen	Seawater resistant aluminium, hard anodized black
4	Glass Tube	Borosilicate glass
5	Heatsink	Seawater resistant aluminium
6	LED PCB	MC-PCB, aluminium 1.55 mm
7	Cable gland M20x15	Body: Polyamide Seal: Neoprene
8	Gasket 28x20x1,5 Housing	PTFE Seawater resistant aluminium, hard anodized black
9	LED driver	Potting material: Polyurethane
10	Base plate gasket	EPDM - shore 30
11	Base plate	Seawater resistant aluminium, hard anodized black
12	Insulation sleeve Ø8,5	Delrin - black
13	Membrane Vent	Body: Silicone rubber Membrane: ePTFE
14	Plug M20x1,5 Gasket 28x20x1,5	Polyamide PTFE

REPAIR KIT



Item	Navigation light	Description	Number
A	Starboard All-round green	Maintenance kit for: green	60.99.00.30
B	Port light Stern Red All-round red	Maintenance kit for: red	60.99.00.31
C	Masthead	Maintenance kit for: white 5NM	60.99.00.32
D	Stern All-round white	Maintenance kit for: white 2NM	60.99.00.33
E	Towing light All-round yellow	Maintenance kit for: yellow	60.99.00.34
F	All-round blue	Maintenance kit for: Blue 1NM	60.99.00.35
G	Manoeuvring light	Maintenance kit for: Manoeuvring	60.99.00.36
H	All-round Red & White	Maintenance kit for: Red & white	60.99.00.37
I	All-round Red & Green	Maintenance kit for: Red & Green	60.99.00.38

ELECTRICAL SPECIFICATION

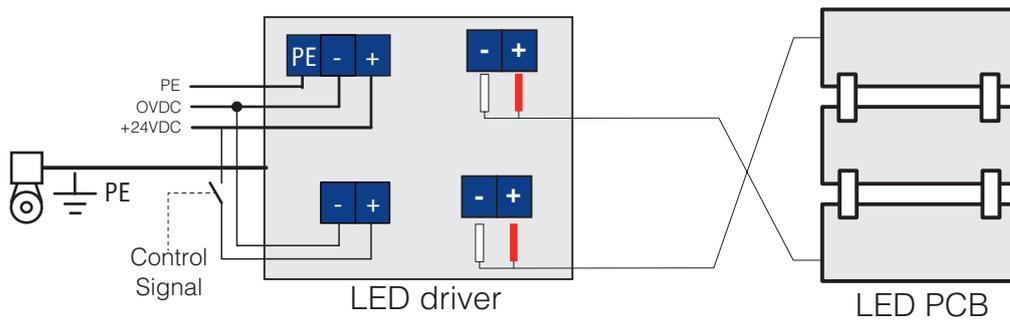
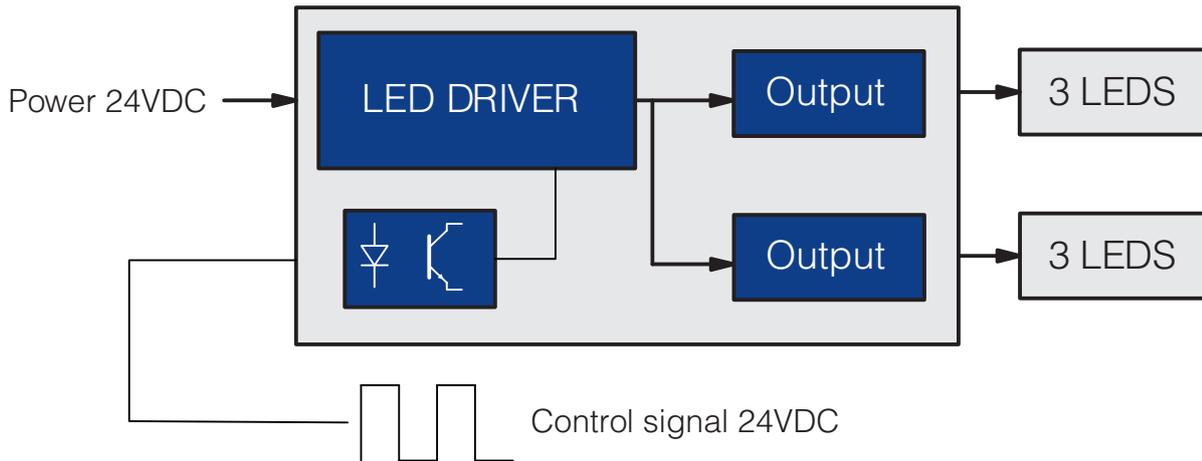


Grounding (PE) is not required, but gives better ESD/EMI protection

Navigation light	Power supply	Nominal voltage	Typical wattage*	Typical current*	Minimum operating current	Error current	Inrush current
Starboard	350 mA		4,2 W	174 mA			
Port	500 mA		4,3 W	179 mA			
Masthead	700 mA		11,7 W	489 mA			
Stern	350 mA		4,1 W	169 mA			
Stern red (Suez light)	500 mA		4,3 W	179 mA			
Towing	500 mA		4,3 W	179 mA			
Convoy light	350 mA	24 VDC	4,1 W	169 mA	>40 mA	<10 mA	20 A
All-round white	350 mA		4,1 W	169 mA			
All-round green	350 mA		4,2 W	174 mA			
All-round red	500 mA		4,3 W	179 mA			
All-round red/White	500 mA		4,3/5,7W	179/235 mA			
All-round red/Green	500 mA		4,3/5,9W	179/244 mA			
All-round yellow	500 mA		4,3 W	179 mA			
All-round blue	350 mA		4,1 W	169 mA			

* Depends on temperature and LED production series

ELECTRICAL SPEC. MANOEUVRING LIGHT



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
Manoeuvring	700 mA	24 VDC	15,9 W	662 mA	>40 mA	<10 mA	40 A

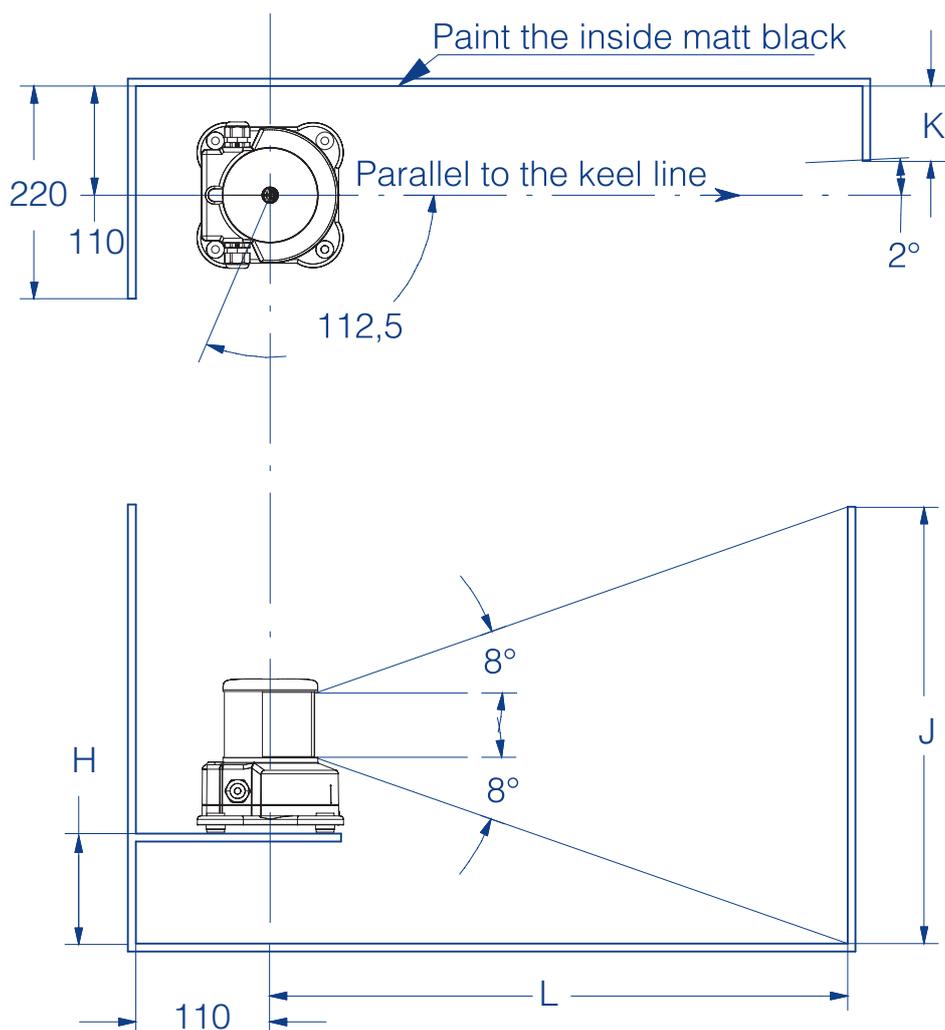
* Depends on temperature and LED production series

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



L	H	K	J
345	0	98	200
400	8	96	216
500	22	92	245
600	36	89	273
700	50	86	301
800	64	82	330

[mm]

Disclaimer:

- The minimum luminous intensity requirements in the forward direction are only guaranteed if the sidelights 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

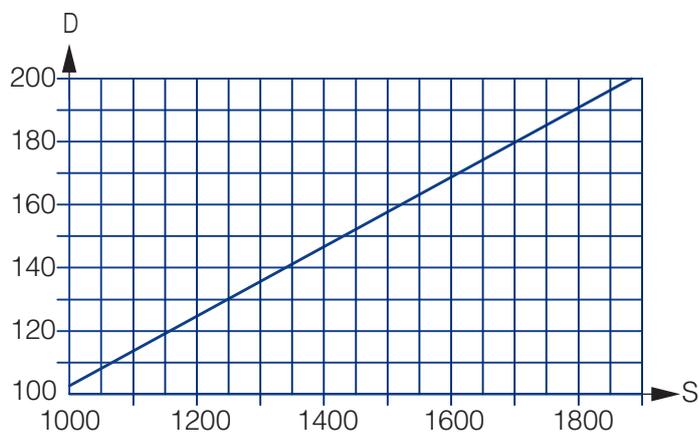
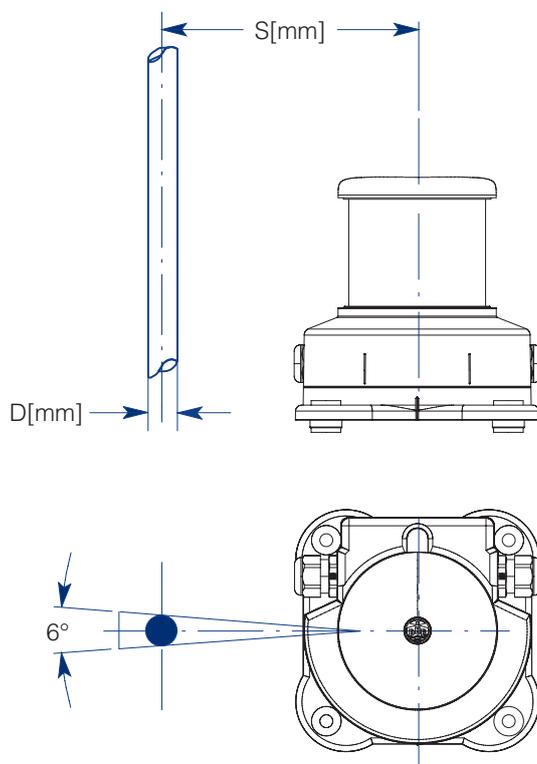
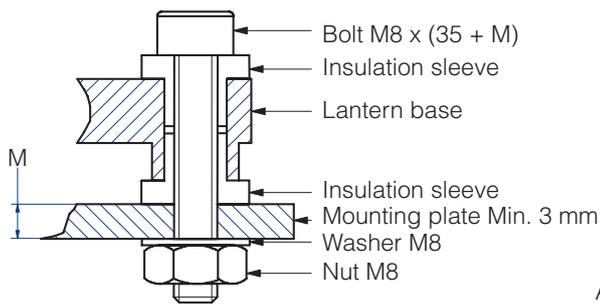


Diagram for choosing the minimum distance between obstacle and mounting plate.

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



All dimensions in mm

Mounting plate

The mounting plate for navigation lights should be at least 3 mm thick and should not exceed a parallelism of // 00,5.

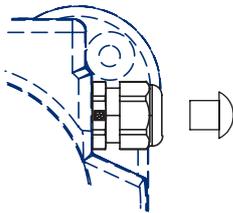
Fasteners

- The permissible torque should be 6 Nm
- Use only A4-grade stainless steel

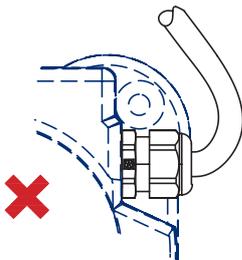
Caution!

Even though the housing is made of corrosion resistant materials, galvanic corrosion may still occur. To prevent galvanic corrosion use the insulation sleeves to isolate the aluminium housing from other metal parts.

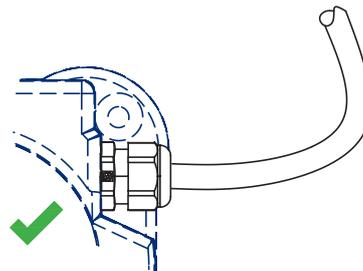
Cable glands



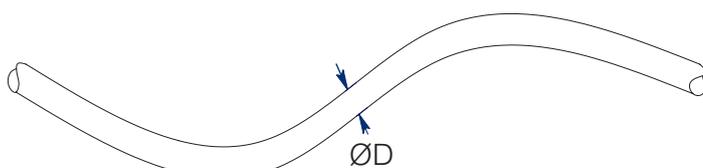
Remove the plug before placing the cable.
If no cable is connected leave the plug in place!



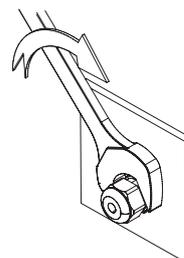
Cable too tight!
This gives unwanted stress at the sealing of the cable gland and water ingress will occur.



Include cable slack at the entering point of the cable gland



Preferred cable diameter D is 6 - 9 mm



Replacing cable gland

- Use gasket between housing and cable gland
- Tighten firmly (6Nm) with wrench

Important

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



Wiring recommendations

EU:

- Neoprene cable H07 RN3x1.5
- Cable diameter 6 - 9 mm

USA:

- Type SJ or equivalent and comply with UL 62 and IEEE 45- 83
- Wire gauge 16 AWG
- No. of conductors 3
- Cable diameter 6 - 9 mm



ADVANCED MARITIME SIGNALLING SOLUTIONS



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