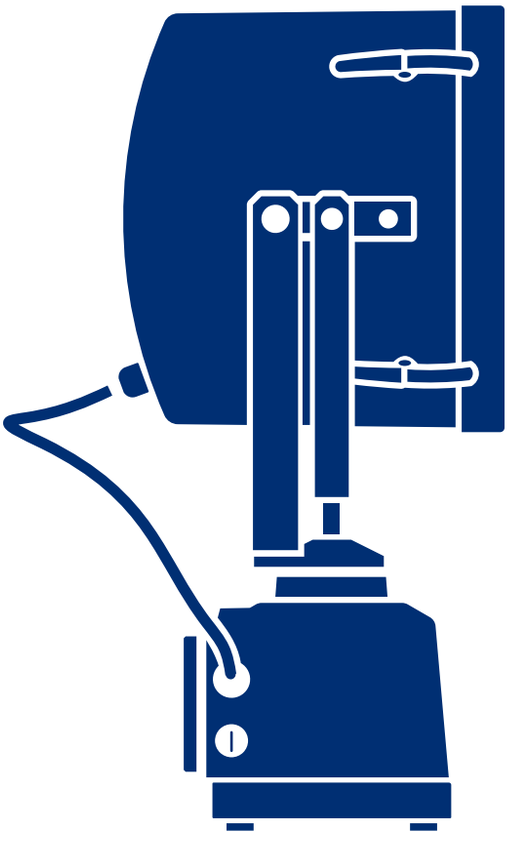
TECHNICAL DOCUMENT

DHR**210/220/260/350 RCN**-series
Remote Controlled Searchlights



Den Haan Rotterdam

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Safety notes:

- Turn power off before inspection, installation or removal
- Keep combustible materials away from lamp
- Do not exceed 105% of rated voltage
- Allow lamp/fixture to cool before handling
- Do not use the searchlight if outer glass is scratched or broken

Damage due to inappropriate handling is not covered by the warranty.

Version 2.7 February 2018

FOREWORD

Den Haan Rotterdam is a family-owned company established in 1922. Started as a small tinsmith, it has evolved into a globally respected producer of navigation lights, searchlights, air horns and a wide range of nautical lamps made from copper and brass. By introducing products with advanced LED-technology, DHR has safeguarded a visibly safe future for marine vessels in all weather conditions.

Den Haan Rotterdam manufactures halogen searchlights for over 30 years and are known for their robustness, quality and reliability: key values for marine equipment. The RCN-series is the second generation of DHR remote controlled type of searchlights introduced in 2011. This product range is very popular, because of its compact size and its simplicity in installation and operation. The RCN-series includes various types of light sources, such as: halogen bulbs, sealed beams and metal halide bulbs. Also the optical performance is top-notch, thanks to the use of silverplated mirror reflectors in the 260 & 350 models.

The application of the 260- and 350-series searchlights is limitless. Mostly they are benificial for work boats, tugs, fishing vessels, dredgers and even watch towers for land based solutions.

DEN HAAN ROTTERDAM B.V.

D.M. Den Haan
Managing Director

QUALITY STANDARDS

- Incandescent Light Source
- Remote control
- Excellent Optics
- Maintenance Friendly
- Adjustable Focus (260-series)
- Light Weight Construction
- IP66 Water Ingress Protection

TABLE OF CONTENTS

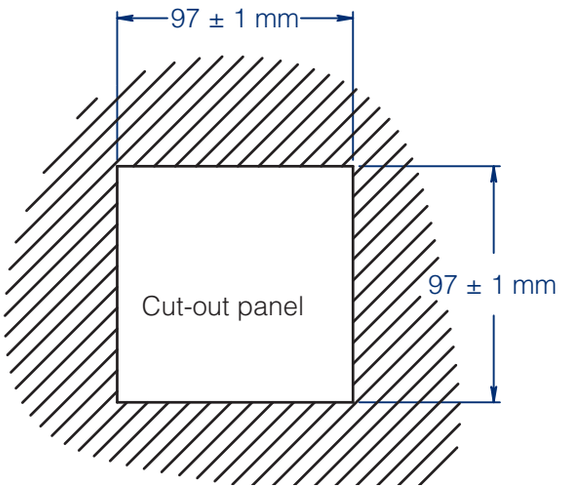
1. MOUNTING INSTRUCTIONS

Warning!
Den Haan Rotterdam does not accept responsibility for any damage if the searchlight is installed incorrectly and/or used improperly. When in doubt consult a qualified electrical technician.

Mounting the panel

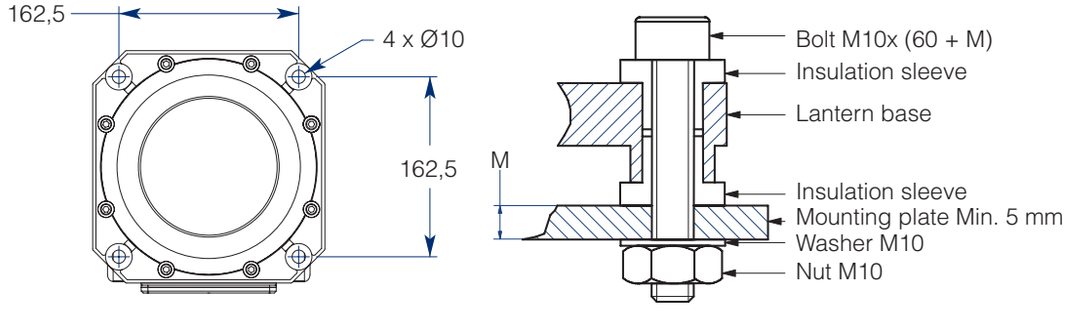
Place the control panel inside the wheelhouse, where it is protected against weather influences. The housing is especially constructed to be flush mounted in an instrument cabinet according the illustration on the right.

The minimum space needed behind the panel is 110 mm. (depth)



Searchlight installation

Install the searchlight in a horizontal upright position with sufficient space around the head of the searchlight to ensure it can move freely. The dimensions can be found on page 9.



All dimensions in mm

Fasteners

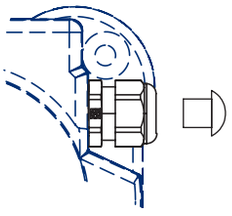
- The permissible torque should be 8 Nm
- Use only A4-grade stainless steel

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

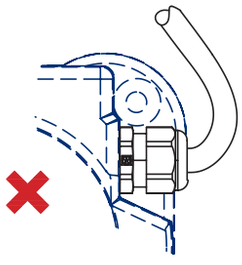
Electrical installation

Install the electrical wiring according to the wiring diagrams showed on pages 11 - 14. Keep the distance between the power supply and halogen lamp as short as possible. Long wires will increase a voltage drop near the halogen lamp, which affects the light output.

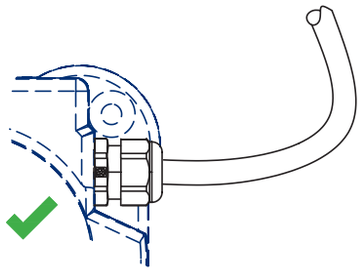
Cable glands



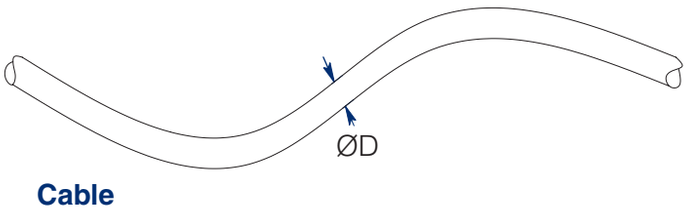
Remove the plug before placing the cable.
If no cable is connected, leave the plug in place!



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

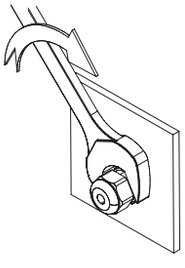


Include cable slack at the entering point of the cable gland



Cable

- Prefered diameter D is 7 - 12 mm
- Material: Neoprene H07RN-F



Replacing cable gland

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

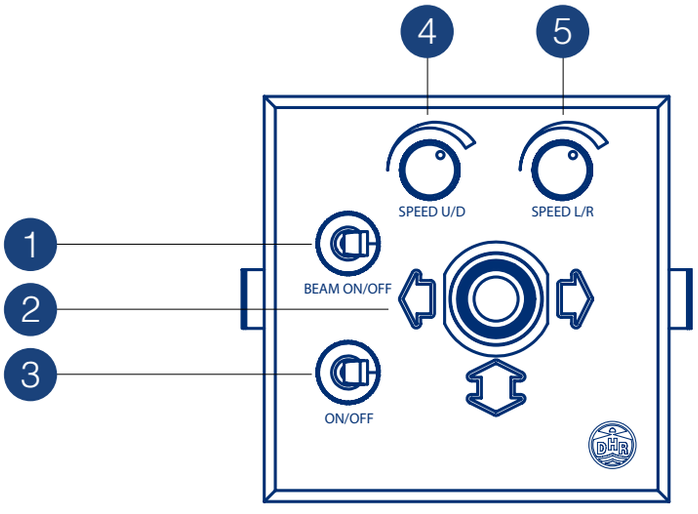
Note

The cable glands on the searchlight prevent water ingress. Do not use (electrical) tape to cover the cable where it enters the cable gland as this will cause water ingress. Do not use a rubber or shrinkable cover on the cable gland to improve water tightness.

2. SPECIFICATIONS

Control panel

Model	PAN2011
Dimensions	
Depth	110 mm
Width	110 mm
Weight	0,6 kg
Electrical	
Voltage	24 VDC±20%
Maximum wattage	20 W
Fuse	T2A
Electrical insulation class	III
Housing	
Front	Stainless steel 316
Back	Aluminium, painted black
Operating temperature	0° / + 45° C



Switches
1. BEAM ON/OFF, switches the searchlight on or off.
2. Joystick, controls the direction of the movement.
3. ON/OFF, switches the panel on or off.

Potentiometers
4. SPEED U/D, speed of the movement up and down.
5. SPEED L/R, speed of the movement left and right.

Searchlight

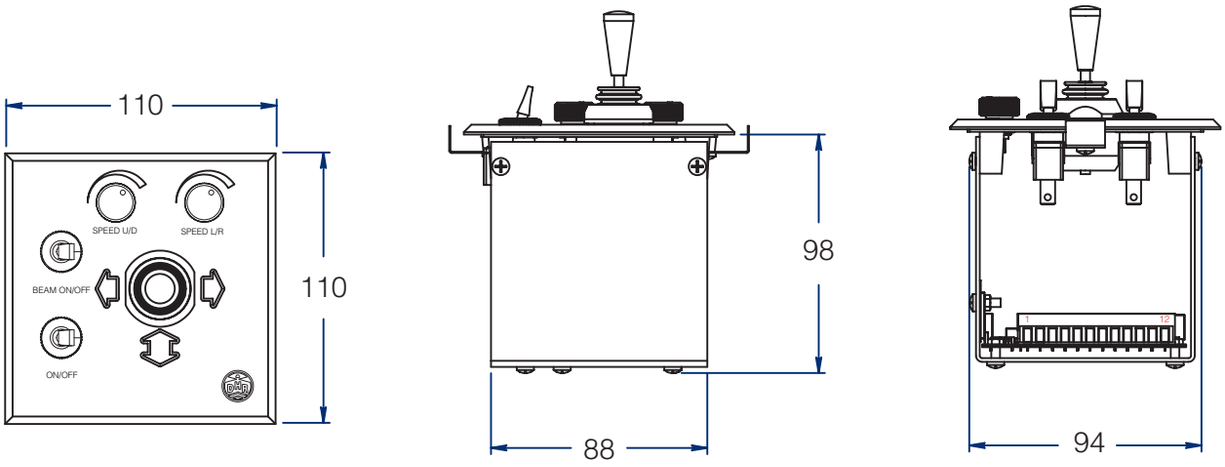
Model	210RCN220	210RCN110	210RCN024	220RCN220	220RCN024
Dimensions					
Height		570 mm		571 mm	
Width		218 mm		214 mm	
Weight		10 Kg		9,6 Kg	
Electrical					
Lamp voltage	230 VAC	115VAC	24VDC	230VAC	24VDC
Motor voltage			6-13 VDC		
Preferred cable type			H07RN-F		
Cable diameter			Ø 6-12 mm		
Optics					
Mirror		Sealed beam lamp		Aluminium Reflector	
Range	630 m	630 m	700 m	345 m	700 m
Adjustable Focus	No	No	No	No	No
Beam angle at 50%	12° x 9°	12° x 6°	7° x 8°	9,5° x 7,5°	5,5° x 3°
Luminous intensity	352.000 cd	400.000 cd	500.000 cd	120.000 cd	500.000 cd
Bulb					
Model	CP60	FNN	GE4552	64516	64657 HLX
Luminous flux	-	-	-	7400 lm	9000 lm
Rated lamp voltage	240 V	120 V	28V	230 V	24 V
Rated lamp wattage	1000 W	1000 W	250 W	300 W	250 W
Average life-time	300 h	800 h	25 h	75 h	300 h
Color temperature	3200 K	3200 K	-	3150 K	-
Base	GX16D	GX16D	G53 (Screw Terminals)	G6.35	G6.35
Heater					
Type			PTC-heater		
Voltage			24VDC		
Maximum wattage			70 W		
Motor Unit					
Tilt			+ 25° / - 25°		
PAN			340°		
Max. speed left / right approx.			34°/ sec		
Max. speed up / down approx.			3,2° / sec		
Housing					
Material			Chromated seawater resistant aluminium		
Finish			UV resistant powder coating - White RAL9016		
Front glass		-		Hardened glass	
Seals			Silicone / Neoprene, black		
Cable gland			M25x1.5		
Operating temperature			- 25° / + 45° C		
Ingress protection class Motor house			IP66 c/w Membrane vent		
Ingress protection class Head		IP X5		IP66 c/w Membrane vent	

Searchlight

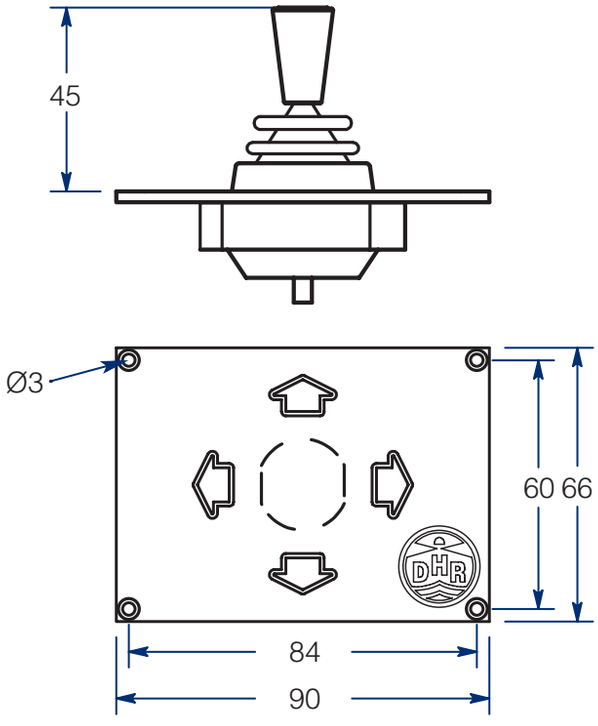
Model	260RCN220	260RCN024	350RCN220	350RCN110	350RCN024
Dimensions					
Height	685 mm			730 mm	
Width	306 mm			377 mm	
Weight	10,5 Kg	7,5 Kg		16,6 Kg	
Electrical					
Lamp voltage	230 VAC	24VDC	230VDC	115VAC	24VDC
Motor voltage			6-13 VDC		
Preferred cable type			H07RN-F		
Cable diameter			Ø 6-12 mm		
Optics					
Mirror	Parabolic mirror reflector Ø 260 mm		Parabolic mirror reflector Ø 420 mm		
Range	1100 m		1104 m	974 m	904 m
Adjustable Focus	Yes		No	No	No
Beam angle at 50%	3,5° x 2,5°		3,5° x 4°	3° x 4°	2,5° x 1,5°
Luminous intensity	1.200.000 cd		1.220.000 cd	950.000 cd	820.000 cd
Bulb					
Model	64657 HLX		6984P	GE - T11	64657 HLX
Luminous flux	9000 lm		22.500 lm	23.500 lm	9000 lm
Rated lamp voltage	24V		230 V	115/120 V	24 V
Rated lamp wattage	250W		1000 W	1000 W	250 W
Average life-time	300 h		180 h	750 h	300 h
Color temperature	-		3200 K	3050 K	-
Base	G6.35		GX 9,5	GX 9,5	G6.35
Heater					
Type			PTC-heater		
Voltage			24VDC		
Maximum wattage			70 W		
Motor Unit					
Tilt			+ 25° / - 25°		
PAN			340°		
Max. speed left / right approx.			34°/ sec		
Max. speed up / down approx.			3,2° / sec		
Housing					
Material			Chromated seawater resistant aluminium		
Finish			UV resistant powder coating - White RAL9016		
Front glass			Hardened glass		
Seals			Silicone / Neoprene, black		
Cable gland			M25x1.5		
Operating temperature			- 25° / + 45° C		
Ingress protection class Motor house			IP66 c/w Membrane vent		
Ingress protection class Head			IP66 c/w Membrane vent		

3. DIMENSIONS

Control Panel

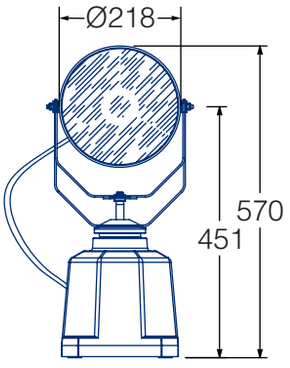


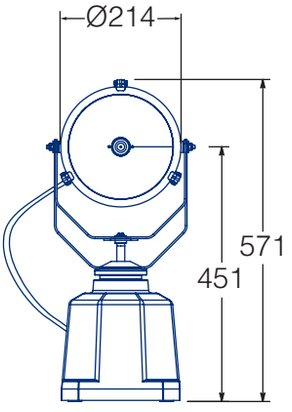
Joystick

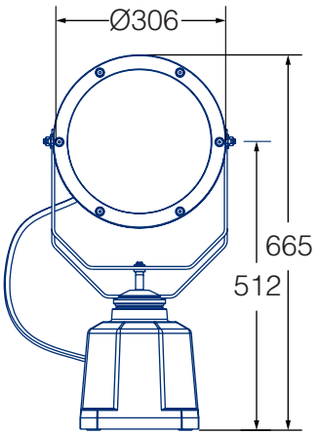


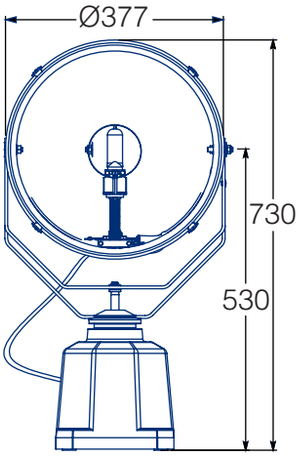
All sizes are in mm.

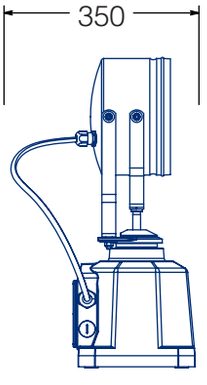
Searchlights



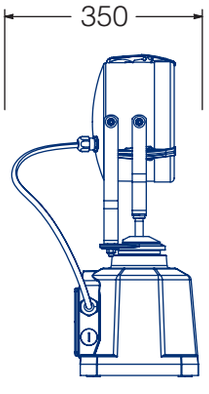




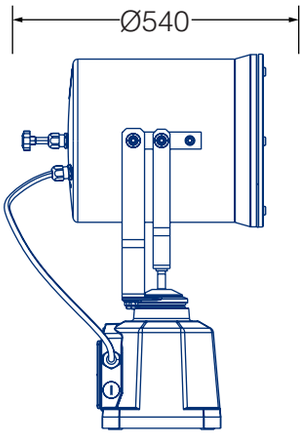




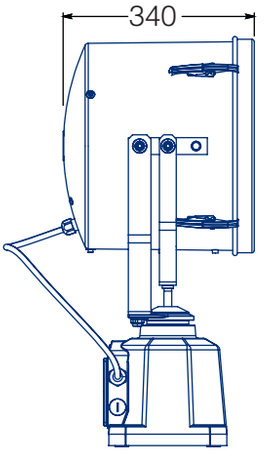
DHR210RCN



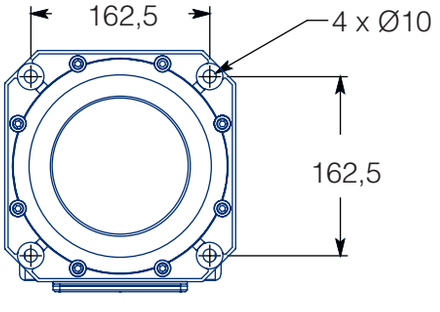
DHR220RCN



DHR260RCN



DHR350RCN



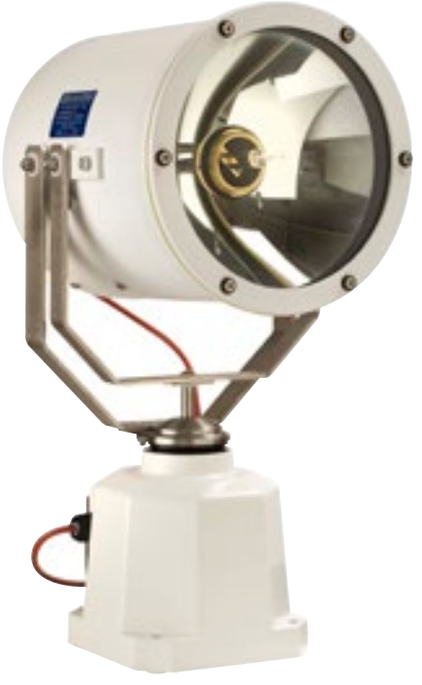
Base RCN

All sizes are in mm.

4. PHOTOS

DHR210RCN

DHR220RCN

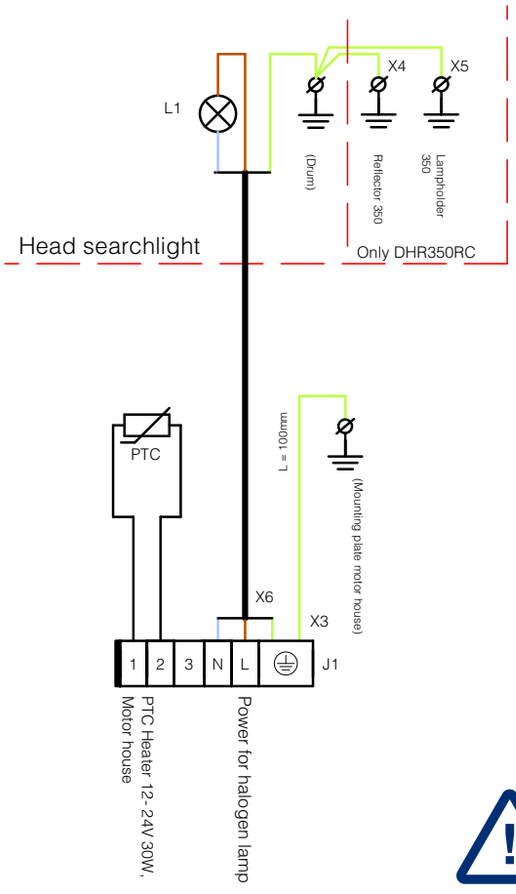


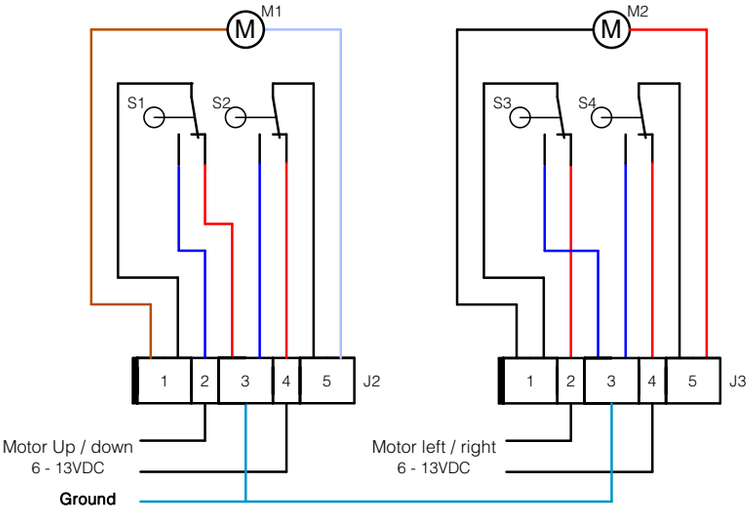
DHR260RCN

DHR350RCN

5. WIRING DIAGRAMS

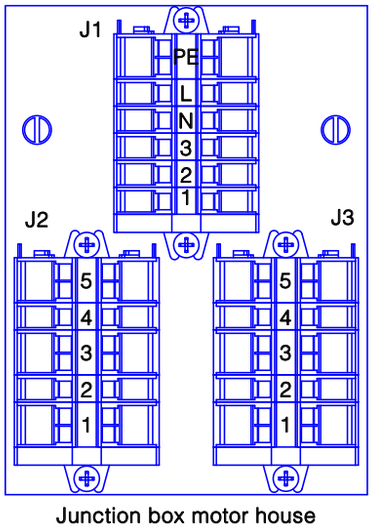
A. Internal Connections





CAUTION:
Ground is used as return pad when on the end-position switch. Always use the ground from the control panel to avoid unwanted potential differences.

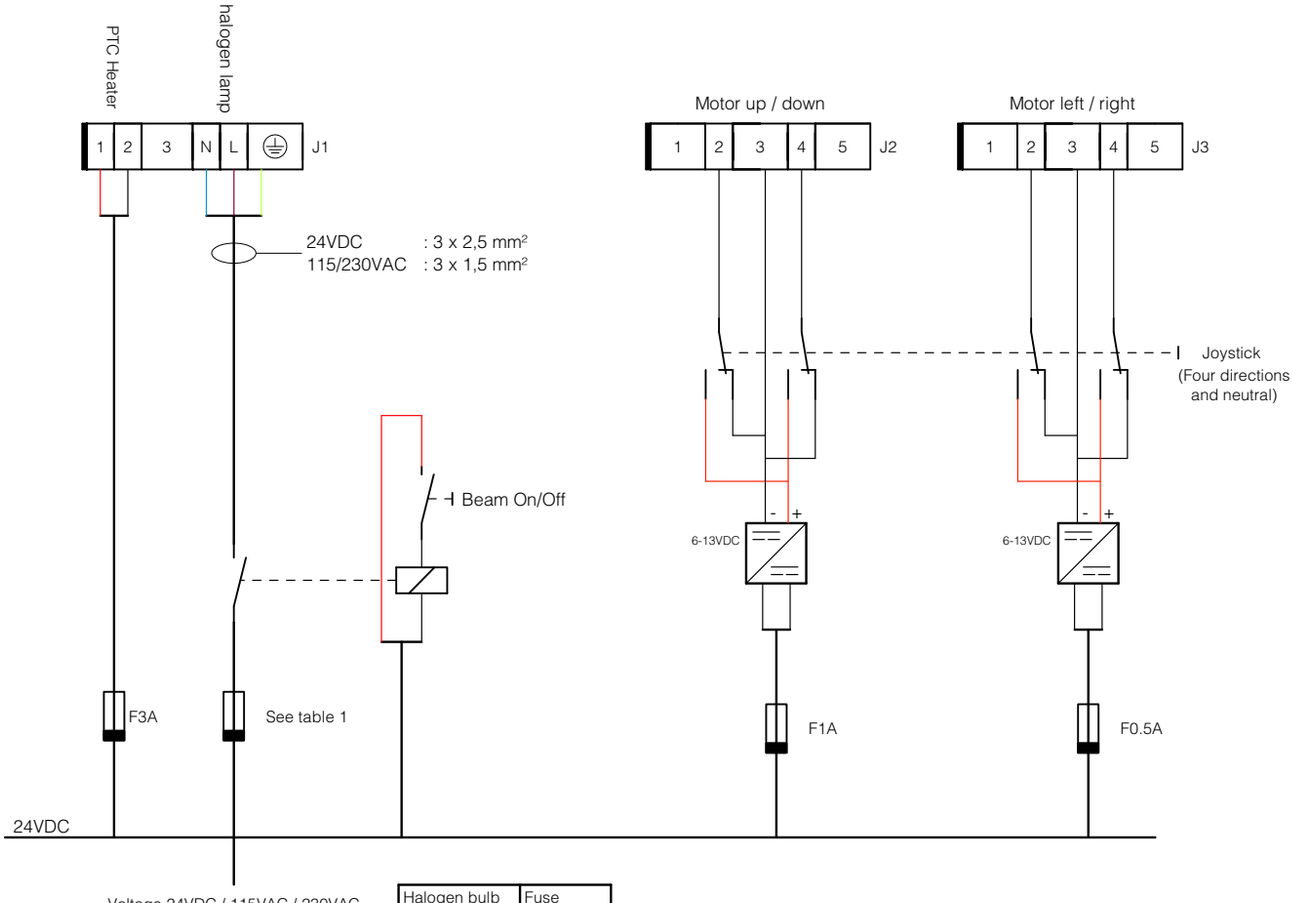
Terminal	Pole	Motor 1	Motor 2
J2-2 J2-3 J2-4	+ Ground -	Down	-
J2-2 J2-3 J2-4	- Ground +	Up	-
J3-2 J3-3 J3-4	+ Ground -	-	Left
J3-2 J3-3 J3-4	- Ground +	-	Right



Junction box motor house

S1, S2, S3, S4	Microswitch V3 with roller lever, IP67 sealed
L1	Halogen lamp
J2, J3	Terminal block 5 way - Motors
J1	Terminal block 6 way - Mains
PTC	PTC heater 12-24V 30W (self-regulating)
M2	Motor 12VDC/6W, gearhead 1:100 (right / left)
M1	Special spindle Motor 25W (up / down)
X6	Head resisting cable 3 x1,5 - 1,25 m
X3, X4, X5	Mounting wire 1,5 mm², green/yellow (earth)
Component	Description

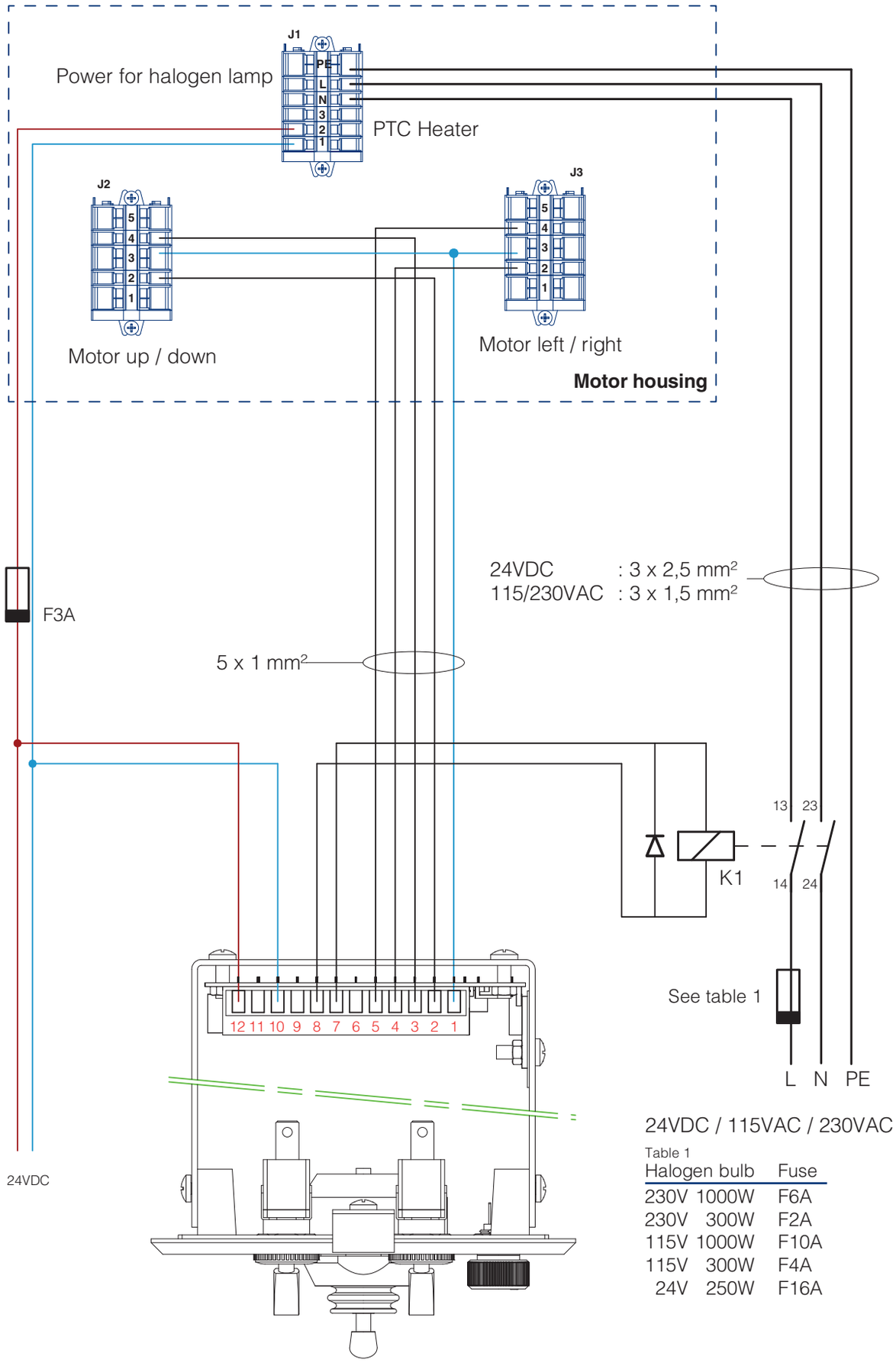
B. External Connections



Halogen bulb	Fuse
230V / 1000W	F6A
230V / 300W	F2A
115V / 1000W	F10A
115V / 300W	F4A
24V / 250W	F16A

Table 1

C. Control panel

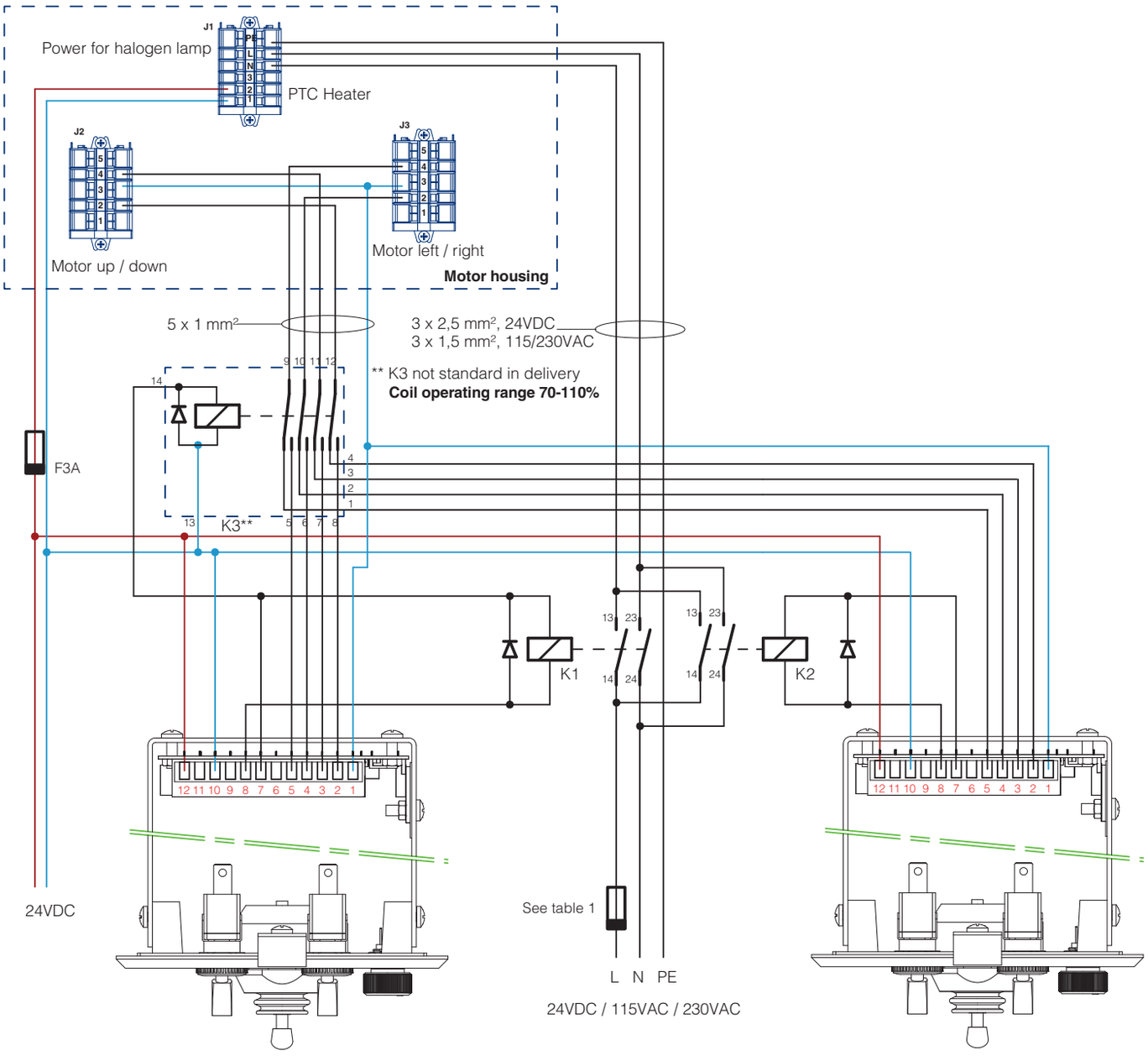


24VDC / 115VAC / 230VAC

Table 1

Halogen bulb	Fuse
230V 1000W	F6A
230V 300W	F2A
115V 1000W	F10A
115V 300W	F4A
24V 250W	F16A

D. Dual control panel



E. Joystick

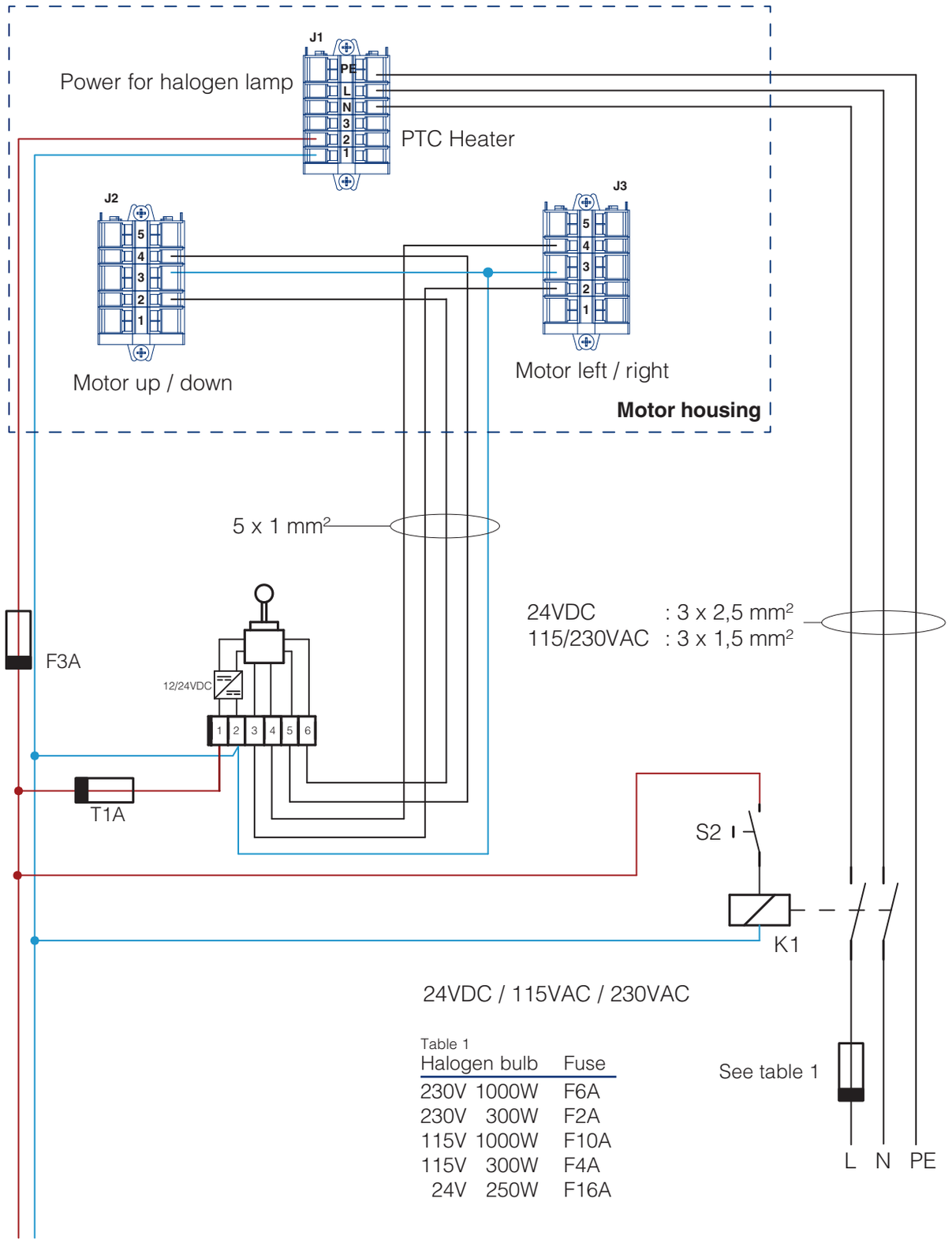


Table 1

Halogen bulb	Fuse
230V 1000W	F6A
230V 300W	F2A
115V 1000W	F10A
115V 300W	F4A
24V 250W	F16A

6. MAINTENANCE AND CORRECT USE

Safety notes

- Handle with care
- Turn off main power
- Warning, lamp is hot
- Do not touch the lamp with bare hands

Lamp replacement

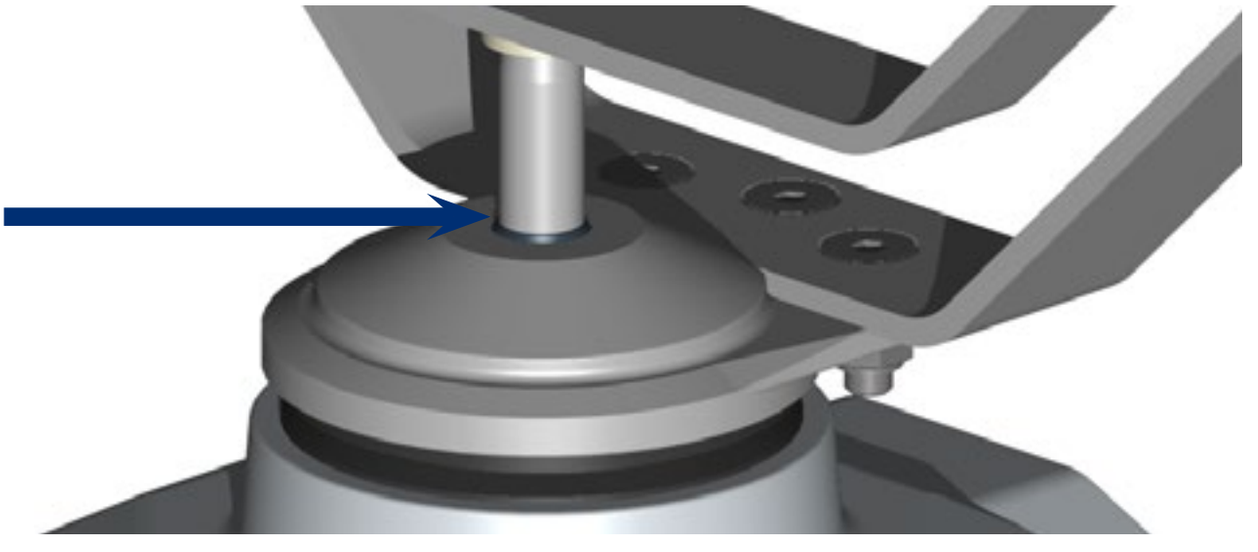
1. Switch off the main power
   Caution – hot lamp. Let the lamp cool down for at least 10 minutes before proceeding with maintenance actions
2. Open the drum
3. Remove the lamp from the lampholder
4. Ensure that the replacement lamp is of the same type
5. Take a clean cloth to place the new lamp in the lampholder
   Do not touch the lamp with bare fingers, remove any fingerprints with a cloth and alcohol and rub it dry
6. Check the neoprene sealing of the front glass and rub it in with talcum powder
7. Close the drum
8. The searchlight is ready for use

Tips for correct use

- Do not overheat the searchlight - max. burning time 20 min.
- Switch off the searchlight immediately after use, this increases the life expectancy of the bulb
- Do not light-up objects closer than 2 metres
- Clean the searchlight regularly with water
- Do not point the light beam at the eyes of humans or animals

Preventive maintenance

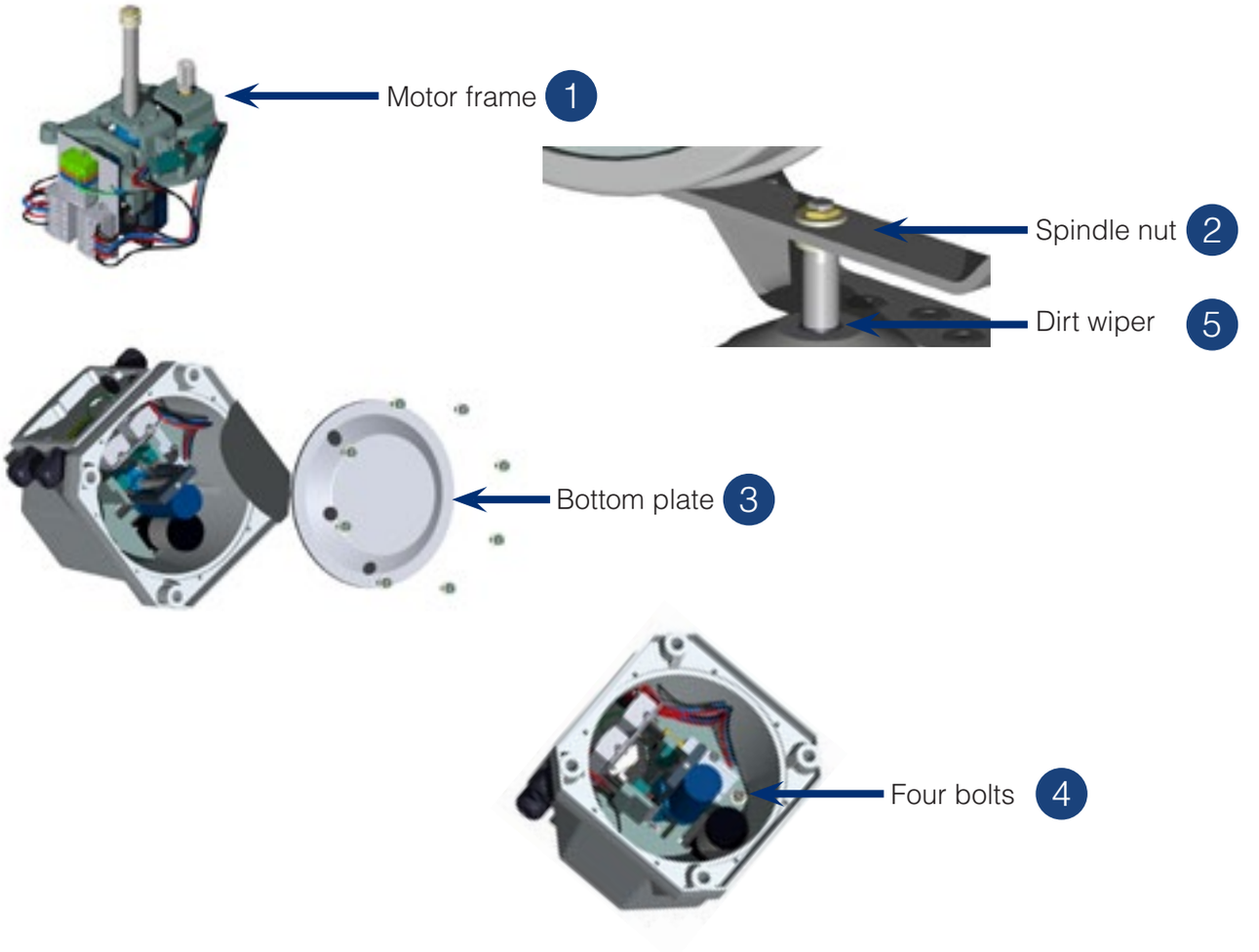
Clean the searchlight with clean water regularly. Do not use any aggressive cleaning agents. At least twice a year rub the dirt wiper, on top of the motor housing (see drawing below), in with silicone grease.



7. REPLACING OF MOTOR FRAME

Motor frame replacement

1. Switch off the main power
2. Open the backplate of the motor housing
3. Disconnect the power cables connected to the motor frame 1
4. Unscrew the four (4) bolts to dismount the searchlight from the base structure
5. Unscrew the spindle nut 2
6. Tilt the searchlight vertically
7. Disassemble the bottom plate 3
8. Unscrew the (4) bolts and carefully remove the defective motor frame 4
9. Slowly insert the new motor frame in the motor housing. ⚠ **Be careful** not to damage the dirt wiper located on top of the motor housing 5
10. Before fixing the (4) bolts of motor frame, the following steps should be taken:
    - **A.** Reconnect the power cables
    - **B.** Turn the motors left/right and up/down using the controls. This is necessary to settle the motor frame inside the motor housing
11. Close the motor housing by mounting the bottom plate
12. Reposition the searchlight and mount it on the base structure
13. Fasten the spindle nut. ⚠ **Do not overtighten it!**
14. Test the searchlight both in vertical and horizontal directions to ensure that the searchlight is functioning properly
15. Searchlight is ready for use



8. RECOMMENDED SPARE PARTS

Spare Part			DHR350			DHR260		DHR220		DHR210		
No	Description	Order code	230V	115V	24V	230V	24V	230V	24V	230V	115V	24V
1	Halogen lamp 230V/1000W	CP63	x									
1	Halogen lamp 115V/1000W	T11		x								
2	SB lamp 210mm. (PAR64) 240V/1000W	C60								x		
2	SB lamp 210mm. (PAR64) 120V/1000W	FFN									x	
2	SB lamp 210mm. (PAR64) 28V/250W	GE4552										x
3	Halogen lamp 230V/300W	M35-240						x				
3	Halogen lamp 24V/250W	M35-024			x		x		x			
4	Lampholder GX 9,5	35001	x	x								
5	Lampholder G 6,35	35002			x		x	x	x			
6	Lampholder GX16d	21001								x	x	
7	Mirror reflector 350	35005	x	x	x							
8	Front glass c/w Sealing	35008	x	x	x							
9	Motor frame	35025	x	x	x	x	x	x	x	x	x	x
10	Control Panel	PAN2011	x	x	x	x	x	x	x	x	x	x
11	Joystick	JOY2011	x	x	x	x	x	x	x	x	x	x

1

2

3

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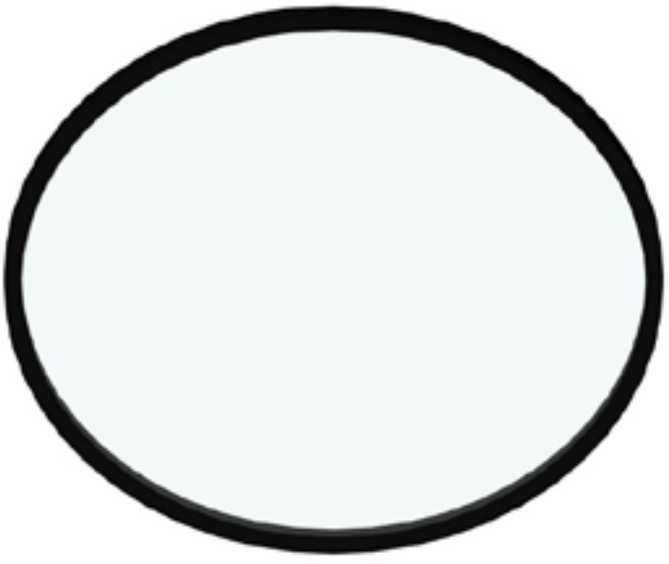

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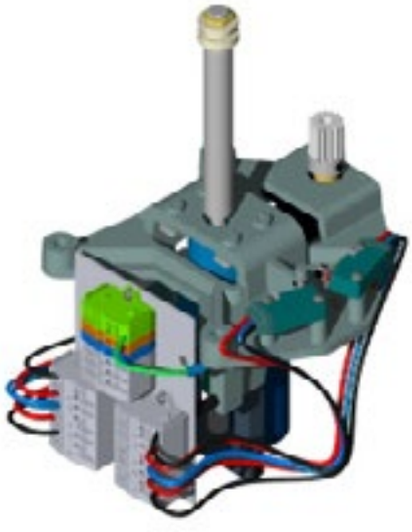

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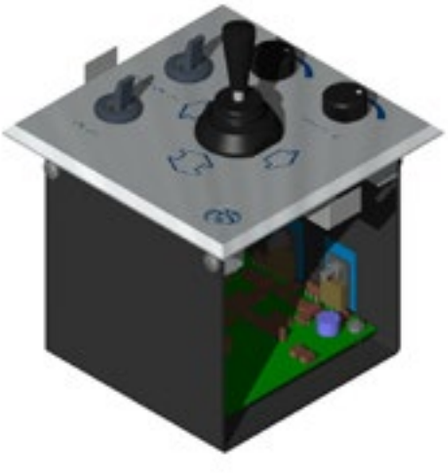

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