OPERATING INSTRUCTIONS

SEARCHLIGHT
SW400/ SW400A

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Contents

1. About this manual

1.1 Warning symbols and markings used in this manual

Danger! Failure to observe this warning poses the risk of personal injury or death.

Danger of electrical shock! Failure to observe this warning poses the risk of personal injury or death from electrocution.

Attention! Failure to observe this precaution poses risk of damage to environment and the product.

Gloves are recommended to fulfil this step in order to protect yourself or the material handled.

1, 2, 3, …

Operating instruction which are to be followed in a certain order are numbered.

•

Operating instructions consisting of only a single Step or of Steps which can be carried out in any order are set off by a bullet point.

➔

Confirmation messages in response to completed operation steps are preceded by an arrow.

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Listing items are preceded by a dash.

1.2 Who should read this instructions

These operating instructions are intended for all personal assigned to install maintain and operate a searchlight of WISKA type SW400 or SW400A or one of its versions.

Danger of electrical shock! All electrical work related to installing and repairing the searchlight should only be carried out by qualified electricians.

2. Safety

Be sure to observe the following safety instructions. Failure to do so will pose danger to yourself and others.

2.1 General information

Intended use

The searchlight SW400 or SW400A have been designed to shine a spotlight on distant objects. Depending on its version it has a range between 1125 m and 1500 m.
The searchlight is designed for use on seagoing vessels and on shore security applications.
Due to its high intensity, the searchlight is not to be used to illuminate persons near the searchlight.
It is not designed for lighting rooms on the ship or in buildings.

Danger! The searchlight should not be altered or modified in any way due to the danger this poses to persons and damage which may occur to the searchlight. Failure to observe this will void the approval certificate.
Only original spare parts may be used.
Use of unauthorized spare parts will void any warranty.

Danger of burns! Never touch the searchlight during operation. The housing may reach temperatures as high as 180 °C. Always allow the searchlight to cool down before carrying out maintenance work or repairs. In case of burns, immediately cool the burned area and get medical help.

Danger of blinding! Never look into the source of light during operation. This poses a danger to your eyesight. Never point the searchlight at people.

Danger of crushing! Danger of cutting! Be sure that there are no persons directly next to the searchlight before rotating or tilting the searchlight. Persons standing near the searchlight may get limbs caught between the searchlight and base and serious injuries may result.

2.2 Working with Halogen lamps

Transport

- Always store and transport Halogen lamps in a way that the glass body of the lamp can not break.
- Leave the lamp in its protective wrapping or case until use.
- Use its protective package to transport it
- Never touch the lamp with your bare fingers.

Operating the lamp

- Before mounting the lamp, remove any fingerprints smudges using a non-abrasive, lint-free cloth and alcohol solution.

- Use one way gloves to handle the bulb. Any fingerprint smudges or contamination of the glass bulb will reduce the lifetime of the lamp drastically.
- Check the lamp for any scratches, cracks or signs of damage. Do not use damaged lamps.

Service life

- The average life time varies between 75 and 200 operating hours depending on the its usage pattern and the manufacturer of the lamp.

Disposal

- Halogen lamps should be disposed in a orderly fashion. No special precautions are recommended.

2.3 Protective measures

Radiation/ Emission of dangerous particles

- Halogen lamps emit UV light which is hazardous to your eyes. The special design of the searchlight prevents direct eye contact with the arc searchlight.
- If a Halogen lamp should explode during operation, the robust housing will stay intact and prevent hot glass shards from being expelled.

Overload protection

Overload protection as electrical fuses have to be installed externally on site. Consult chapter *3.2 Technical specification* to find out about the power consumption of your specific searchlight.

Temperature

- The optional electromechanical pan & tilt unit FL51 or FL20 may be equipped with a thermostat controlled heater to protect it from freezing under cold weather conditions.

Attention! To ensure that the minimum temperature is maintained during cold weather conditions do not turn off the external power supply to its remote control unit RCU.

- The thermostat controlled heater will heat up the pan & tilt unit when the ambient temperature falls below 6 °C.

2.4 Operating requirements

Protection Class

The searchlight and the optional pan & tilt unit have an IP 56 protection class rating (dust-protected, heavy seas and powerful water jets). To maintain this protection class, all electrical cables may only be led in through appropriate screw-connected cable fittings.

Requirement for placement

- Under normal operating conditions the housing of the

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searchlight may reach temperatures up to 180 °C. Mount the searchlight only in environments which can resist this heat. To rule out all potential danger: do not store any explosive or easily inflammable materials in the immediate area of the searchlight. Such materials include gasoline, paper and paint.

- Make sure that, the searchlight can move freely in its complete range and its light beam is not unwillingly blocked by any obstacles. Keep in mind, that its sphere of activity has a different range depending on the tilt and pan position.

2.5 Maintenance / cleaning

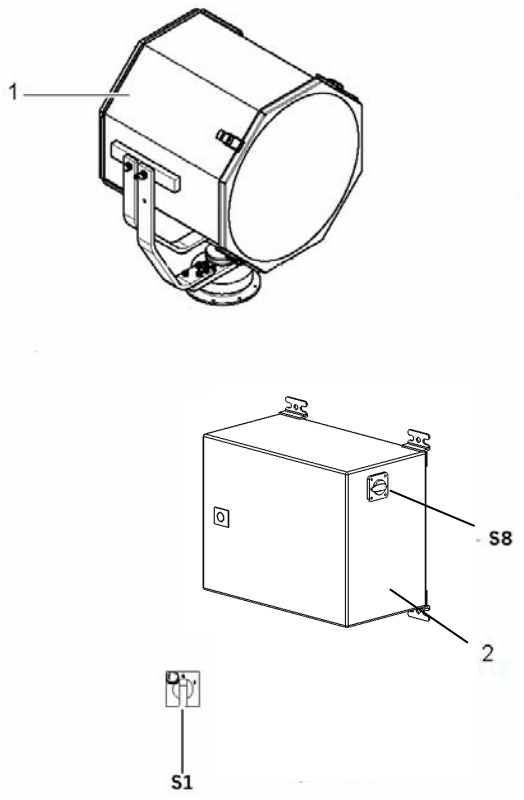
Before carrying out maintenance or cleaning work:

- Turn off the main switch.
- Make sure the entire electrical system is dead.
- Wait until the searchlight has cooled down.

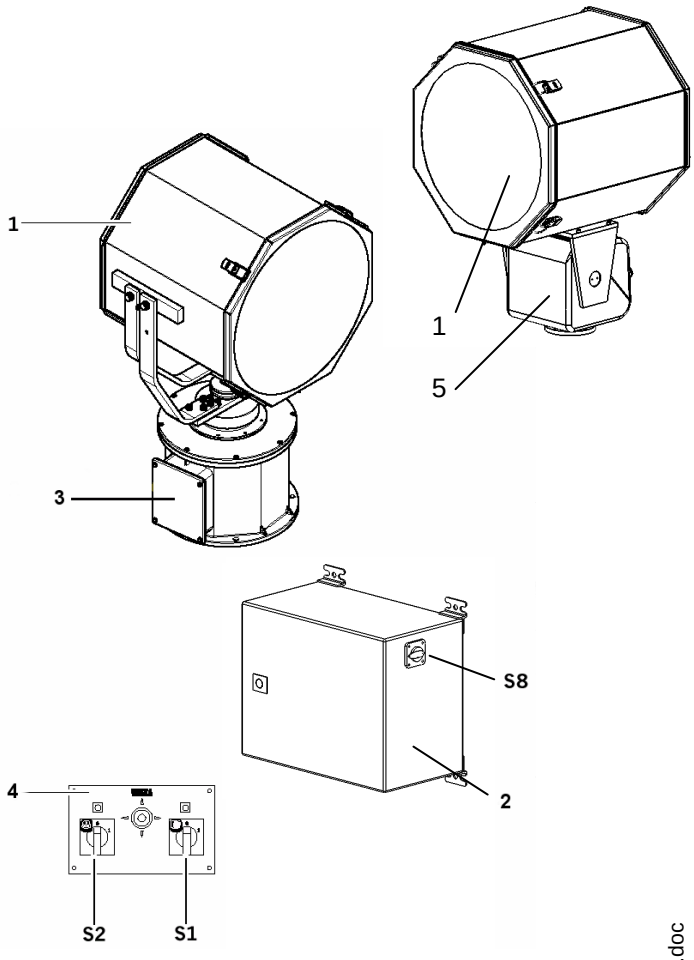
3. Overview

3.1 Assembly drawings

Basic configuration



Configuration with pan & tilt unit FL51 and FL20 and with remote control unit RCU



1 Searchlight
2 External fuse box (not supplied)
3 Pan & tilt unit FL51
4 Control unit RCU for FL51
S1 ON/OFF switch for searchlight
S8 Mains switch (not supplied)
S2 ON/OFF switch for pan & tilt unit
5 alternative pan & tilt unit FL20

3.2 Technical specifications

Type SW400, SW400A, FL51 pan & tilt unit
Manufacturer WISKA Hoppmann & Mulsow GmbH

Searchlight SW400-1000, 230V version and 115V version		
Lamp:		
Type of lamp	Halogen lamp	Halogen lamp
Operating voltage	230 VAC	115 VAC
Illumination	1,5 mio. cd	2,2 mio. cd
Range	1250 m	1500 m
Diffusion angle	6,5 ° I/10	6,0 ° I/10
Lamp power	1000 W	
Lamp power up time	Immediate	
Average service life of lamp	75.. 200 h	
Glass parabolic mirror	400 mm	
Anti dazzle screen	yes	
Fixed focus	yes	
External lamp focus adjustment	yes	
Housing:		
Material	Stainless Steel 1.4301	
Colour	RAL 9016, traffic white	
Diameter	472 mm	
Depth	511 mm	
Weight	23,5 kg	
Protection class	IP 56	
Power cable	3 m	

Searchlight SW400A-1000, 230V version and 115V version		
Lamp:		
Type of lamp	Halogen lamp	Halogen lamp
Operating voltage	230 VAC	115 VAC
Illumination	1,25 mio. cd	2,4 mio. cd
Range	1125 m	1550 m
Diffusion angle	7 ° I/10	7 ° I/10
Lamp power	1000 W	
Lamp power up time	Immediate	
Average service life of lamp	75.. 200h	
Aluminium parabolic reflector	400 mm	
Anti dazzle screen	yes	
Fixed focus	yes	
External lamp focus adjustment	no	
Housing:		
Material	Stainless Steel 1.4301	
Colour	RAL 9016, traffic white	
Diameter	472 mm	

Depth	505 mm
Weight	22,5 kg
Protection class	IP 56
Power cable	3 m

Searchlight SW400-900 and SW400A, 230V only		
Lamp:		
Type of searchlight	SW400-900	SW400A-900
Type of lamp	Halogen lamp	
Operating voltage	230 VAC	
Illumination	2,0 mio. cd	1,6 mio. cd
Range	1400 m	1260 m
Diffusion angle	6,0 ° I/10	6,0 ° I/10
Lamp power	900 W	
Lamp power up time	Immediate	
Average service life of lamp	75.. 200 h	
Parabolic mirror/reflector	Glass 400mm	Alu. 400 mm
Anti dazzle screen	Yes	
Fixed focus	no	yes
External lamp focus adjustment	yes	no
Housing:		
Material	Stainless Steel 1.4301	
Colour	RAL 9016, traffic white	
Diameter	472 mm	
Depth	511 mm	505 mm
Weight	23,5 kg	22,5 kg
Protection class	IP 56	
Power cable	3 m	

Pan & tilt unit FL51	
Pan & tilt unit FL51 made of salt water-resistant cast aluminium with stainless steel grips for holding and operating the searchlight	
Standby heater	
Power cable	3 m
Power consumption	280 W
Horizontal rotation	360°; 12,8°/s
Vertical tilt	+20°...-30°; 2,7°/s
Height of drive unit with search unit	ca. 968 mm
Base plate diameter	360 mm
Weight	29,8 kg
Protection Class	IP 56
Colour	RAL 9016

Pan & tilt unit FL20

Pan & tilt unit made of salt water-resistant cast aluminium with adapter plate for holding and operating the searchlight	
Standby heater optional	
Power cable	3 m
Power consumption	50 W
Horizontal rotation	330°; 5°/s
Vertical tilt	+25°, 2,4°/s
Height of drive unit with search unit	ca. 736 mm
Base plate diameter	120 mm
Weight	13,8 kg
Protection Class	IP 67
Colour	RAL 9016

Control unit RCU-E	
Remote control with ON/OFF switch for searchlight and pan & tilt unit, position control switch (joystick) and indicator lamps for installation in a control panel.	
Front	120 x 200 mm
Height + Joystick	90 x 170 mm
Weight	2,1 kg
Protection class	IP 23

Control unit RCU-A	
Remote control with ON/OFF switch for searchlight and pan & tilt unit, position control switch (joystick) and indicator lamps for wall mount installation.	
Front	200 x 200 mm
Height + Joystick	80+ 85 mm
Weight	2,5 kg
Protection class	IP 23

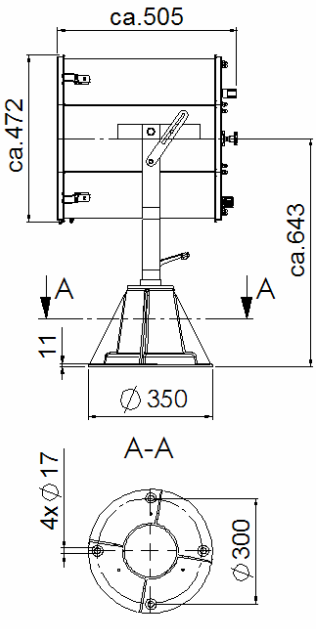
3.3 Unit nameplates

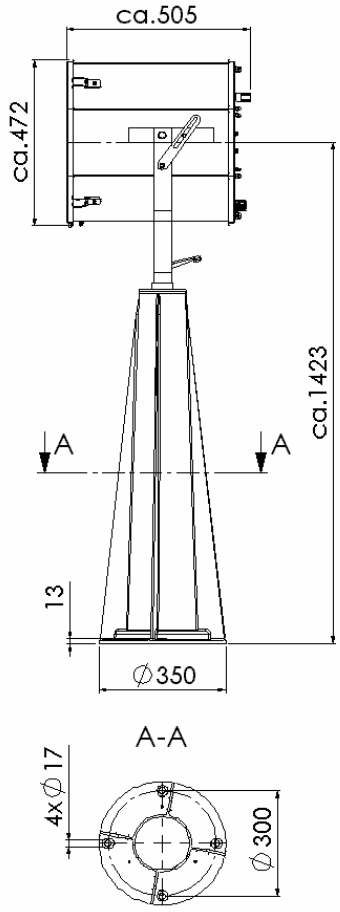
Nameplate

1 Product designation
2 Product specification
3 Product serial number
4 Manufacturer

3.4 Dimensions

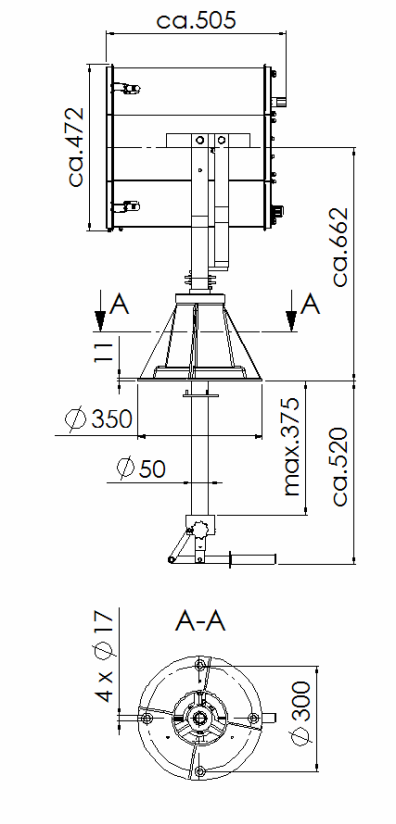
Searchlight Deck (D) base and Deck/Pedestal (DP)

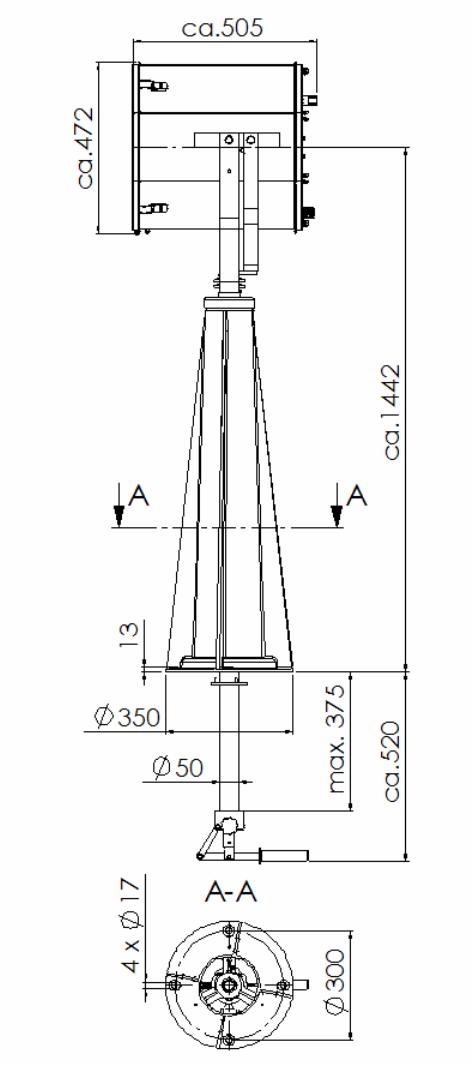




If the searchlight is equipped with the lamp focus adjustment its depth is about 511 mm instead of 505 mm.

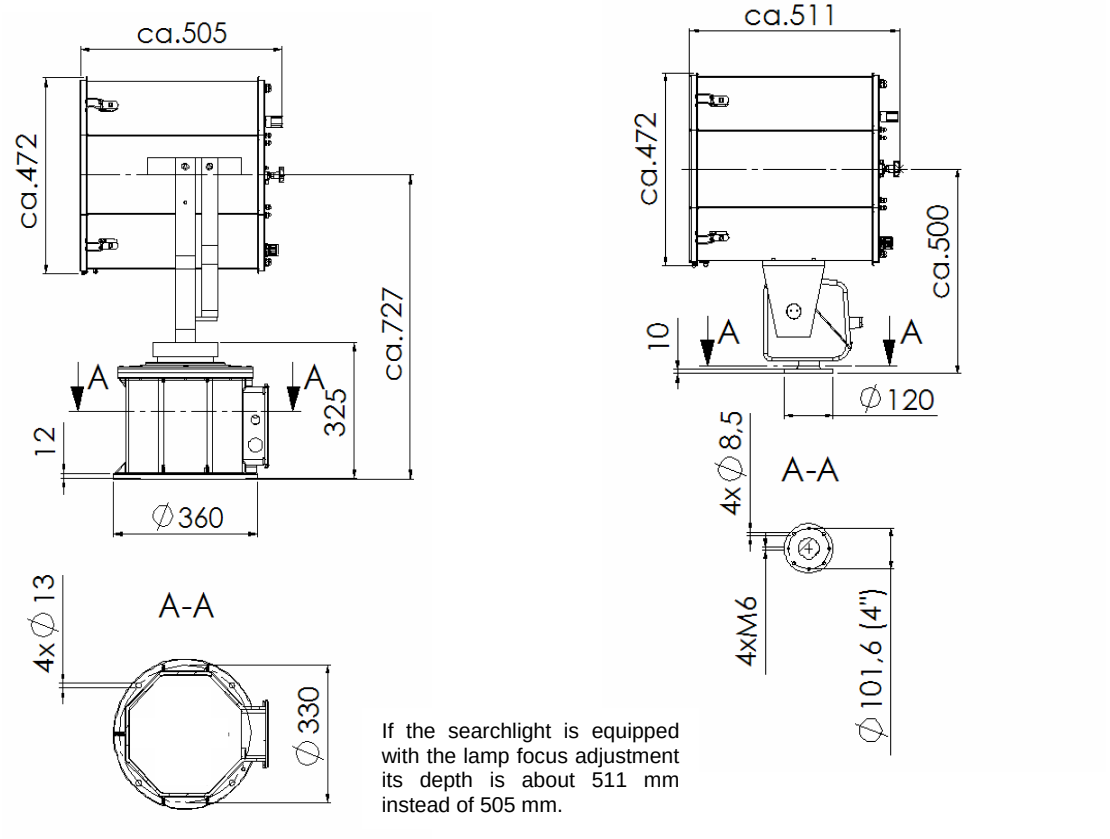
Searchlight Cabin (C) and Cabin/Pedestal (CP)





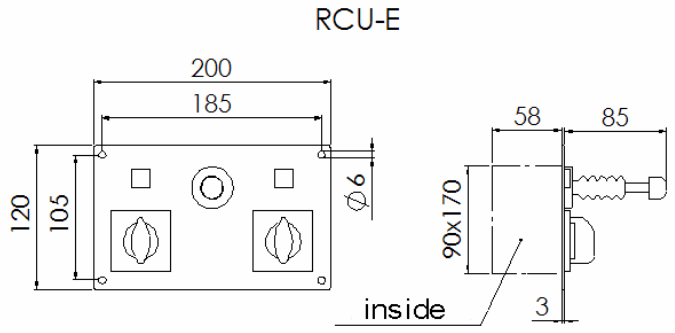
If the searchlight is equipped with the lamp focus adjustment its depth is about 511 mm instead of 505 mm.

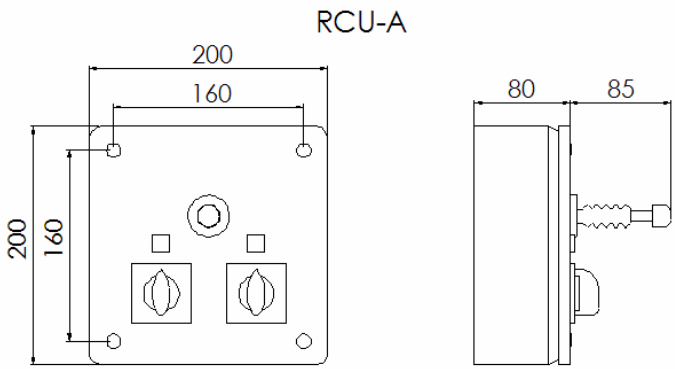
Searchlight with pan & tilt unit (RC/FL51) and (RC/FL20)



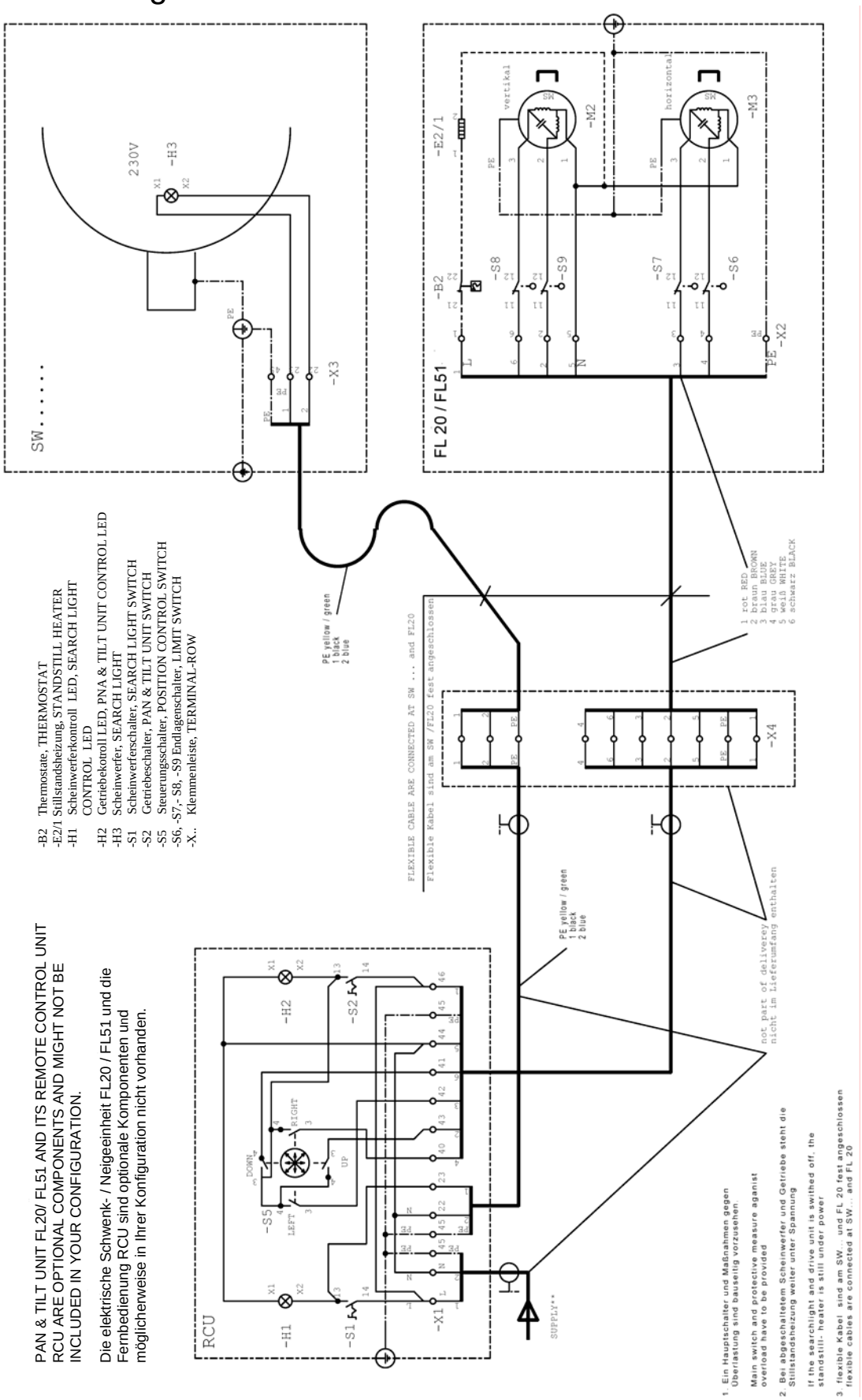
If the searchlight is equipped with the lamp focus adjustment its depth is about 511 mm instead of 505 mm.

Remote control unit RCU





3.5 Circuit diagram



-B2 Thermostate, THERMOSTAT
-E2/1 Stillstandsheizung, STANDSTILL HEATER
-H1 Scheinwerferkontroll LED, SEARCH LIGHT CONTROL LED
-H2 Getriebekotroll LED, PNA & TILT UNIT CONTROL LED
-H3 Scheinwerfer, SEARCH LIGHT
-S1 Scheinwerferschalter, SEARCH LIGHT SWITCH
-S2 Getriebeschalter, PAN & TILT UNIT SWITCH
-S5 Steuerungsschalter, POSITION CONTROL SWITCH
-S6, -S7,- S8, -S9 Endlagenschalter, LIMIT SWITCH
-X... Klemmenleiste, TERMINAL-ROW

PAN & TILT UNIT FL20/ FL51 AND ITS REMOTE CONTROL UNIT RCU ARE OPTIONAL COMPONENTS AND MIGHT NOT BE INCLUDED IN YOUR CONFIGURATION.

Die elektrische Schwenk- / Neigeeinheit FL20 / FL51 und die Fernbedienung RCU sind optionale Komponenten und möglicherweise in Ihrer Konfiguration nicht vorhanden.

4. Installation

4.1 Unpacking the unit

Check that all parts have been included in the package. Do not operate the searchlight if there has been damage during transportation or parts are missing. Please contact your WISKA agent or our distribution partner in your country. You will find the address on the back of these operating instructions or go to www.wiska.de.
Remember to protect the environment and recycle the packaging.

4.2 Installation

Installing the searchlight with pan & tilt unit FL51

If your searchlight was ordered with pan & tilt unit FL51 the searchlight comes pre-assembled on the FL51 pan & tilt unit.
At least two persons are required for installation due to the weight of the searchlight.

1. Drill four holes along a ø 330 mm circle in diameter. For more information see chapter 3.4 *Dimensions*.
2. Place the FL51 at desired location and tighten screws.
3. Connect earth cable.

Installing the searchlight with pan & tilt unit FL20

If your searchlight was ordered with pan & tilt unit FL20 the searchlight comes also pre-assembled with the FL20 pan & tilt unit.
At least two persons are required for installation due to the weight of the searchlight.

4. Drill four holes along a ø 101,6 mm circle in diameter. For more information see chapter 3.4 *Dimensions*.
5. Place the drive unit at desired location and tighten screws.
6. Connect earth cable.

Installation with a Deck (D) base or Deck/Pedestal (DP)

As an alternative, the searchlight can be mounted on a low base (D) or a pedestal (P).
At least two persons are required for installation due to the weight of the searchlight.

1. To mount it, four holes have to be drilled in a circle of ø 300 mm in diameter, see chapter 3.4 *Dimensions*.
2. Place the drive unit at desired location and tighten screws.
3. Connect earth cable.

Installation with Cabin (C) base or Cabin/Pedestal (CP)

As an option the configuration with low base (D) or pedestal (P) can be equipped with an additional internal mechanical

operation to Cabin (C) or Cabin/Pedestal (CP). The mechanical linkage runs in an internal pipe of the low base (D) or pedestal (P). Consequently the pipe must be brought down. To do so, an additional hole of **ø** 50 mm has to be drilled in the middle of the **ø** 300 mm circle.
See also chapter 3.4 *Dimensions*.

Installing the remote control unit RCU

If the searchlight is equipped with a pan & tilt unit, a remote control unit is required also.
The control unit is available as panel mount unit RCU-E and as wall mount unit RCU-A. Electrically and functionally both units are identical.
To install the units drill the required holes and make opening if required as shown in chapter 3.4 *Dimensions*.
Be sure to provide wire of sufficient size (cross-section) for the cable length.

4.3 Electrical connections

Danger of electrical shock! Electrical connections may only be completed by qualified personal. Be sure the power cord is dead and nobody can accidental resume the power supply during installation!
The circuit diagram is enclosed separately or you find it in chapter 3.5 *Diagram*.

Connected load values

Supply voltage: 230 V, 50/60 Hz.
Mains fuse needed: see e-plan.

Waterproof (IP56) installation of all cables

Attention! To ensure that the protection class IP56 is maintained all cable sheathing must have a waterproof seal:

- pull the fittings firmly into place so that the seals are wrapped tightly around the cable fitting!
- Connect cables in accordance with the circuit diagram (see separate circuit diagram or chapter 3.5 *Circuit diagram*).

Note: The cable from the searchlight and the drive unit can be connected directly to the remote control unit RCU or via a junction box.

Power supply

- Be sure to observe any applicable international or local country regulations!

Before first use

- Check that installation has been carried out correctly, wrong connections may be destructive for the equipment.
- Check to be sure that grounding and zero current works properly!
- Insert fuses.

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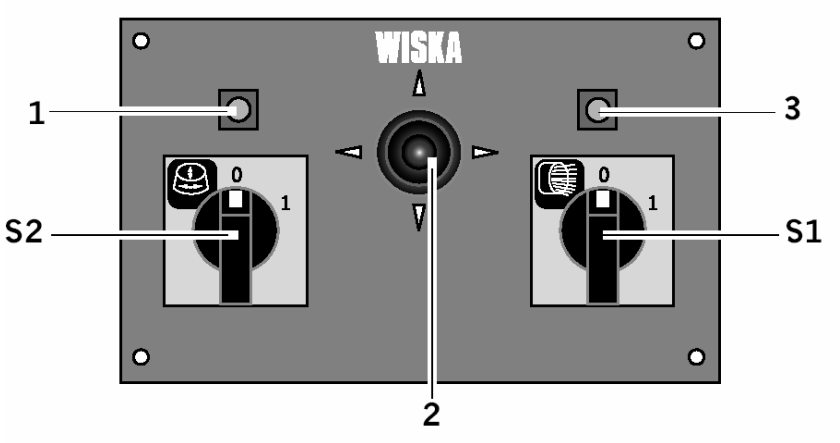
5. Operation

Further on, operation will be described together with the pan & tilt unit and its remote control unit RCU.
If your configuration is not equipped with such operating features you should have a special attention to the following points:

- To direct the searchlight, only use the appropriate handles. Do not touch the housing of the searchlight during operation, - **Danger of burns!**
- Ensure that at power on and during operation nobody is in front of the searchlight, - **Danger of blinding!**
- Switch S1 to turn on the searchlight as described in chapter 5.2 is a separate switch in your configuration and is not located in the RCU. Because there is no pan & tilt unit, switch S2 and the joy stick are not available.
- Continue reading with chapter 5.2 *Turning on the searchlight*.

5.1 Remote control unit RCU



1 Pan & tilt unit indictor lamp
S2 ON/OFF switch for pan & tilt unit
2 Joystick for pan & tilt unit
S1 On/off Switch for Searchlight
3 Searchlight indicator lamp

5.2 Turning on the searchlight

Danger of burns! Never touch the searchlight during operation. The housing may reach temperatures as high as 180 °C. In case of burns, immediately cool the burned area and get medical aid.

Danger of blinding! Never look into the light source during operation. This poses a danger to your eyesight. Never point the searchlight at people. Before you turn on the searchlight

make sure that nobody is in front of the searchlight.

1. Turn on the mains switch S8 on the external fuse box. This supplies power to the remote control unit RCU (if available) and the heating system of the pan & tilt unit FL51 or FL20 (if available).

Attention! If ambient temperatures are below 6°C, wait until the pan and tilt unit has warmed up to at least 6 °C before set in motion.

2. Turn on the lamp switch. This is S1 on the RCU. The lamp should illuminate immediately .
3. In case you operate the searchlight by means of an pan & tilt unit, you should turn it on with switch S2, which is also located on the RCU. The drive unit is now operational and can be controlled by means of the joystick on the RCU.
4. If the lamp does not illuminate, see chapter 7.3 *Changing the lamp* for more information on replacing the lamp.

5.3 Turning off the searchlight

- Turn off the searchlight with the lamp switch. If you work with a remote control unit the Lamp switch is S1 on the RCU.
- If you work with an pan & tilt unit you may turn it off with switch S2 to disable the function of the joystick.

Attention! To ensure operational readiness: the optional heating system in the pan & tilt unit will stay under power as long external power is supplied to the RCU

5.4 Focus setting

The searchlight may be equipped with a manual focus setting. The hand wheel for the focus setting is located on the rear panel and allows for diffusion angel adjustments of the light beam.
Use the hand wheel to set the focus to a convenient setting for your purpose.

6. Maintenance

6.1 Cleaning

Clean the front glass panel of the searchlight when required. When cleaning, check if the fasteners are firmly in place and check for rusting/corrosion.
No cleaning of searchlight interior is required. In the course of use, slight discoloration of the reflector surface will occur. This has no adverse effect on the unit and does not diminish the power of the lamp.
Danger of blinding! Make sure that nobody can turn on the searchlight while cleaning.

7. Replacing defective parts

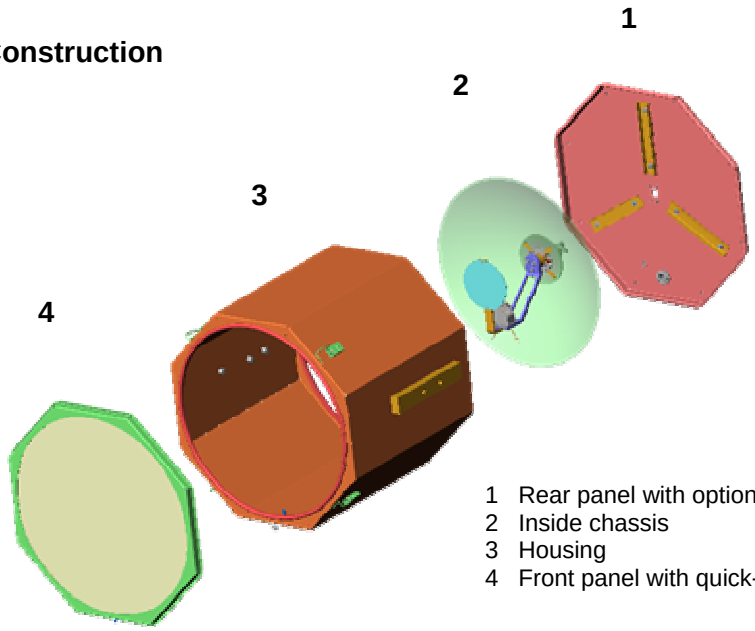
7.1 Before you begin

1. Turn off the mains switch S8 and disconnect external power.
2. Make sure the entire electrical system is dead and it can not be turned on accidentally.
3. Wait until the searchlight has cooled down.
4. Read the chapter 2.2 *Using Halogen lamps*
5. Be careful when handling the Halogen lamp and do not break it.

7.2 Construction overview

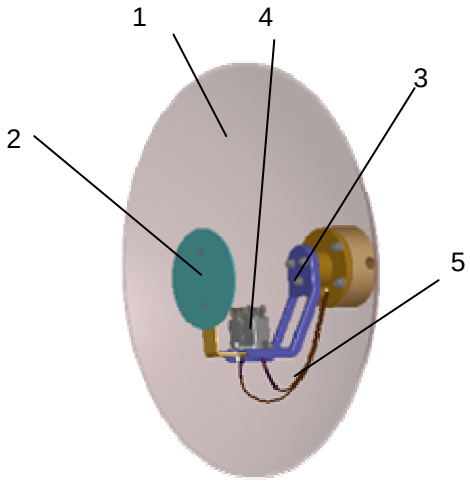
The following figure should help to understand the assembly of the searchlight before you begin with replacement work.
To do the actual replacement work follows the instructions on the following pages!

Construction



1 Rear panel with optional focus setting
2 Inside chassis
3 Housing
4 Front panel with quick-release clamps

Inside chassis



1 Primary mirror/reflector
2 Anti dazzle screen
3 Lamp carrier
4 Lamp holder
5 Electrical connections

The inside chassis carries all functional components. It is mounted directly to the rear panel and can be taken out of the housing when unscrew the rear panel.

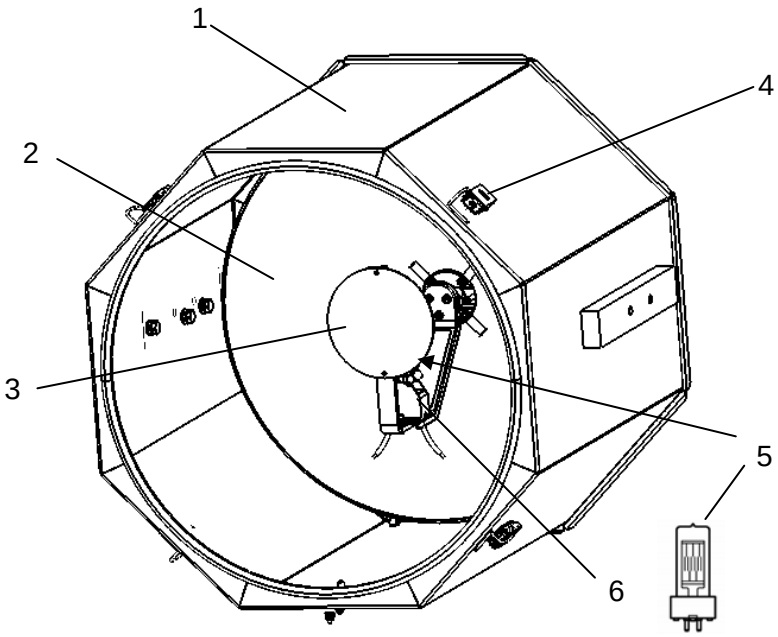
7.3 Changing the lamp

The lamp is defective if

- it does light up when turned on
- the lamp electrodes have burned out
- if the glass body is blackened.

Be sure to also replace the lamp if its average service life between 75 and 200 hours has been exceeded.

Danger! Any personnel carrying out repairs and maintenance must have been properly instructed by a qualified specialist about the dangers and required safety precautions!
Be sure to read chapter 7.1 *Before you begin.*



Replacing the lamp:

1. Loosen the quick-release clamps **4**, carefully remove front panel and place safely out of the way.

Note*:* The lamp **5** is installed in the lamp holder **6** vertically and is partly hidden by the anti dazzle screen **3**. You can see the lamp in the primary reflector **2** and observe removal and installation in this mirror.

2. Pull out the defective lamp upwards.
3. Put away the defective lamp without breaking it.

Attention! Before installing in the new lamp, check it for any fingerprint marks or damage as such as scratches and cracking. Do not use the lamp if there are any signs of damage. Remove any fingerprint smudges using a non-abrasive, lint-free cloth and alcohol solution.

4. Open the protective package of the new lamp.

5. Be careful not to touch the glass with your fingers. When you handle the lamp use one-way gloves to avoid fingerprints
6. Push the new lamp in the holder until it firmly snaps in.
7. Put the front panel back in place and tighten the quick-release clamps.
8. Dispose defective lamp in a proper way.

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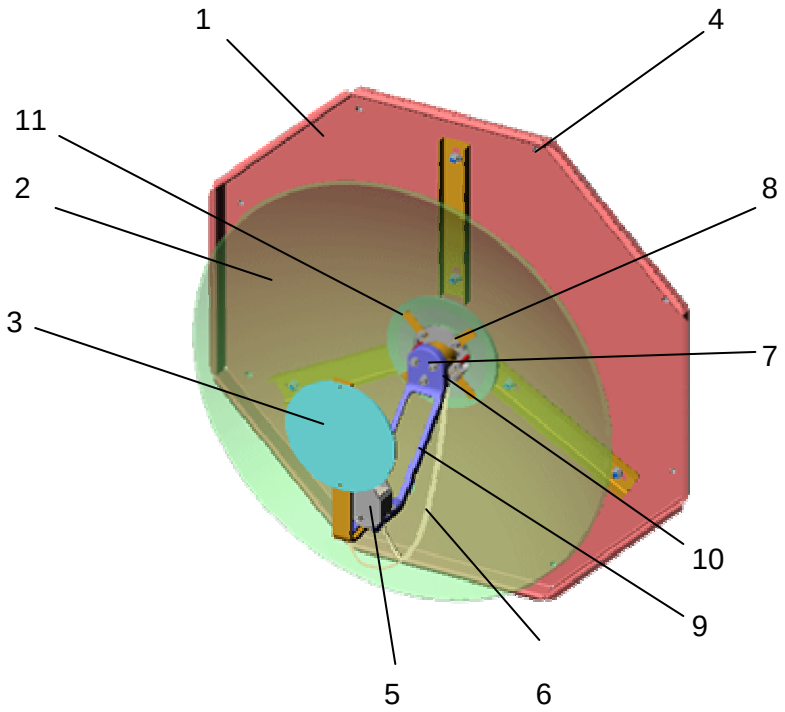
7.4 Changing the primary reflector

Danger! This repair work must be completed by a qualified electrical technician!
Be sure to read chapter 7.1 *Before you begin* first.



Removal:

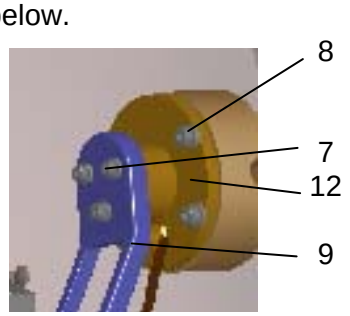
1. Loosen the 8 screws **4** on the back of the searchlight.
2. The rear panel **1** is assembled with the inside chassis. Pull the rear panel together with the inside chassis out of the housing.
3. Place the assembly on a safe and clean workbench.
4. Take out the lamp and store it in a safe place.

Note: In order to replace the reflector **2** you have to remove the lamp carrier **9** together with the lamp holder **5** and the anti dazzle screen **3**. Since the electrical connections **6** to the lamp holder **5** are fix, you have to disconnect the wires behind the reflector, to get the lamp carrier free.

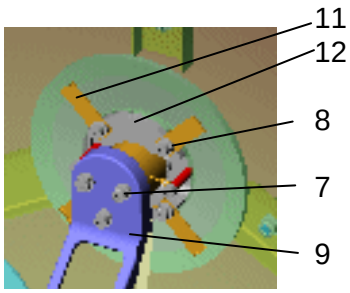
5. Unscrew the rear panel **1** from the inside chassis.
6. Disconnect the connector which connects the external power cable to the inside wiring. This is located between the reflector and the rear panel.
7. On the inside wiring there are two wires **6** which are fed through the centre of the reflector **10** and connect to the lamp holder.

8. You need to cut these wires to remove the reflector. Cut the wires in a way that you have enough length left on both sides to reconnect them in a proper way after you have replaced the reflector.

Note: Depending if you have a glass or an aluminium reflector the mounting of the reflector looks slightly different, as shown below.



aluminium reflector



glass mirror

The four screws **8** hold the aluminium reflector directly or in case of the glass mirror will hold the reflector via four leaf springs **11**.

9. Unscrew the three crews **7** which hold the lamp carrier.
10. Take off the lamp carrier **9** leading the cable carefully through the hole in the centre base **12** and put this assembly aside.

If you have a glass mirror:

11. Unscrew the four screws **8** and take off the leaf springs.
12. Cut open silicone seam on the glass reflector with a knife and remove the reflector from its retaining ring.

If you have an aluminium reflector:

13. Unscrew the four screws **8** and take off the reflector from its rest.

Installation:

If you have a glass reflector:

1. Glue the new reflector onto the retaining ring using silicone gel. Allow to dry for one day!
2. Place the reflector onto the unit and re-fasten it with the four screws **8** and the leaf springs **11**.

Attention! Only use degassed silicone gel. Vapour from silicone which has not been degassed will collect on the lamp and destroy it.

If you have an aluminium reflector:

3. Place the new reflector on the centre base **12**.
4. Screw on the reflector with the four screws **8.**

For all versions

5. Take the lamp carrier with its lamp holder and anti dazzle screen.
6. Push the cable through the hole in the centre base. Be careful not to damage the cable or scratch the reflector.
7. Screw on the lamp carrier to the centre base using the tree screws **7**.

8. Reconnect the open wires and the connector which were cut apart before. Be sure that this electrical connection is done in a proper way following acknowledged rules of technology.
9. Reconnect the external power cable and the internal wiring.
10. Reassemble the rear panel with the inside chassis.
11. Reinstall the halogen lamp.
12. Push the inside chassis with the rear panel mounted into the searchlight housing.
13. Screw on the rear panel to the housing.

8. Disposal

Electrical parts contain toxic substances. Be sure to dispose of these components properly or send defective parts to WISKA. The mailing address is found on the back cover of these operating instructions.

9. Spare parts

Searchlight head SW400 OR SW400A

Designation	Art. No.
Front frame + front glass	77815
Mirror glass (for SW400)	87151
Reflector aluminium (for SW400A)	88392
Silicone gel	88019
Halogen lamp 1000 W, 230V	87320
Halogen lamp 1000W, 115V	87322
Halogen lamp 900W, 230V	87312
Socket for halogen lamp 1000W	77197
Socket for halogen lamp 900W	87086

Remote control unit RCU

Designation	Art. No.
Position control switch (XD2-GE3)	87342
ON/ OFF Switch	87341
Lamp on indicator	87494

Pan & tilt unit FL51

Designation	Art. No.
FL51 bearing kit	21015
FL51 Z hub kit	21016
Motor bearing kit	21017
Motor Z hub kit	21018
O-ring housing	85598
O-ring bearing	89013
Drive unit seal	89021
Cover for terminal box	77892

Pan & tilt unit FL20

Designation	Art. No.
Tilt Motor Kit 230VAC	21581
Pan Motor Kit 230VAC	21582

All other parts should only be ordered after consulting with WISKA sales staff.

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