

THE SCIENCE OF SURVIVAL

TROUBLE SHOOTING AND PARTS REPLACEMENT MANUAL

FOR THE REMOTE CONTROLLED SEARCH LIGHT, RCL-100



INDEX

Troubleshooting tools needed	3
Wiring guide	3
Pointpad / Master controller compatibility	5
12V / 24V	5
Searchlight and Wiring Diagram	6
Breakdown procedure	7, 8
Slip ring and Planet gear assembly	9
Rotation motor assembly	10
Troubleshooting the light	12 – 13
Repair / Refurbishment of searchlights	14
Recommended maintenance.	15
Parts List	16

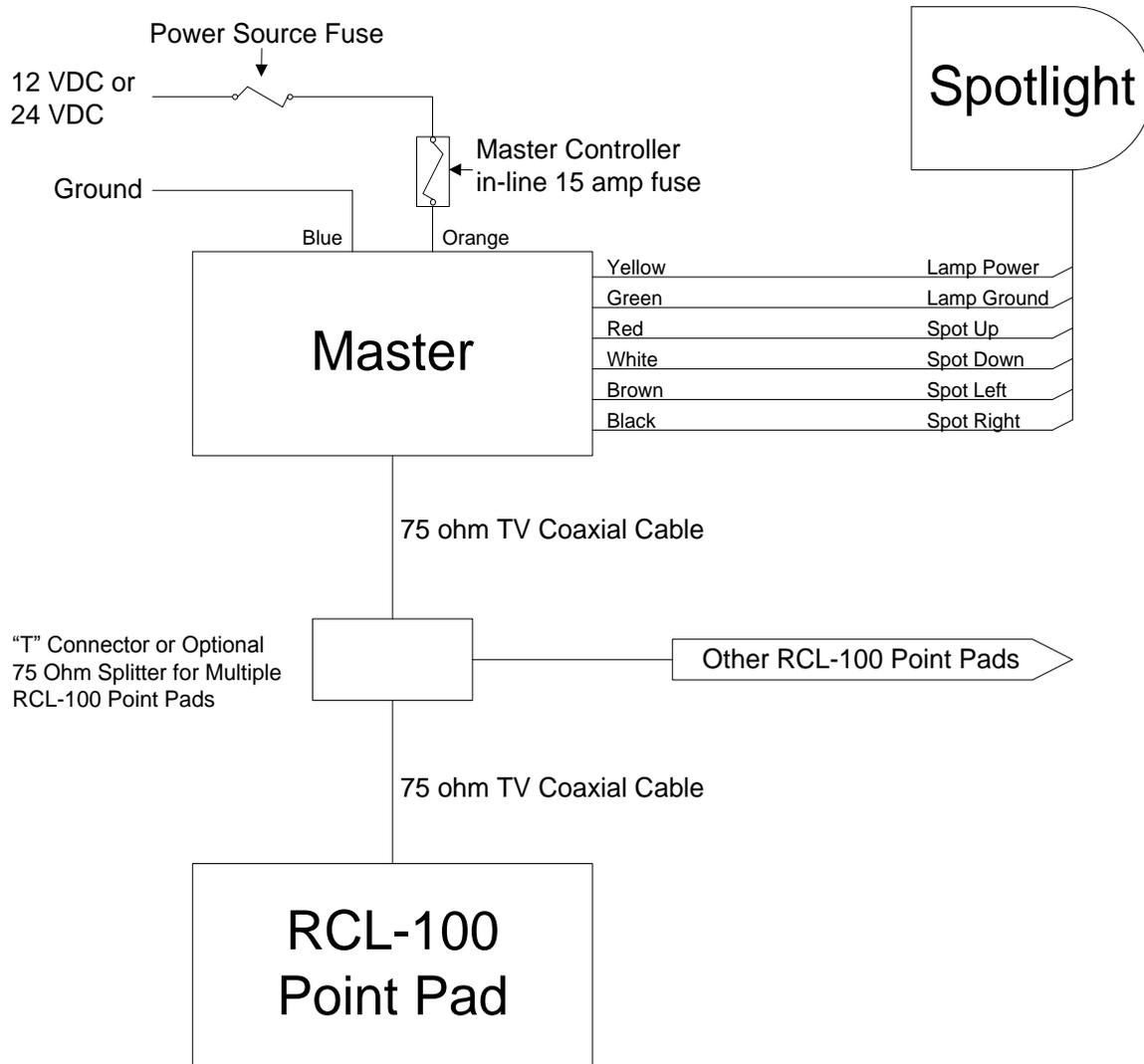
Troubleshooting tools needed.

- Ohm Meter
- Rubbing Alcohol
- Wire Brush
- Clean Rags
- #2 Phillips Screwdriver
- Length of wires (2) with crocodile clips on each end to connect to battery.
- 12V Battery or Power Supply (3.5Amp capability)

Wiring Guide.

YELLOW	Lamp power
GREEN	Lamp power
RED	Elevation motor
WHITE	Elevation motor
BLACK	Rotation motor
BROWN	Rotation motor

System Wiring Schematic.



Note: Wiring must be in accordance with this diagram. Improper wiring will damage components.

Compatibility of POINTPAD URP with MASTER CONTROLLER URC

There are 3 generations of control systems for the RCL 100 searchlight.

Model numbers **100**, **101** and **102**. If there is a 'yes' behind the combination, they can be connected together and will function properly, if the individual modules are in working condition.

URP 100	-	URC 100/101	-	yes
URP 101	-	URC 100/ 101	-	yes
URP 102	-	URC 101	-	yes
URC 102	-	URP 101	-	yes
URP 100	-	URC 102	-	no
URP 102	-	URC 100	-	no

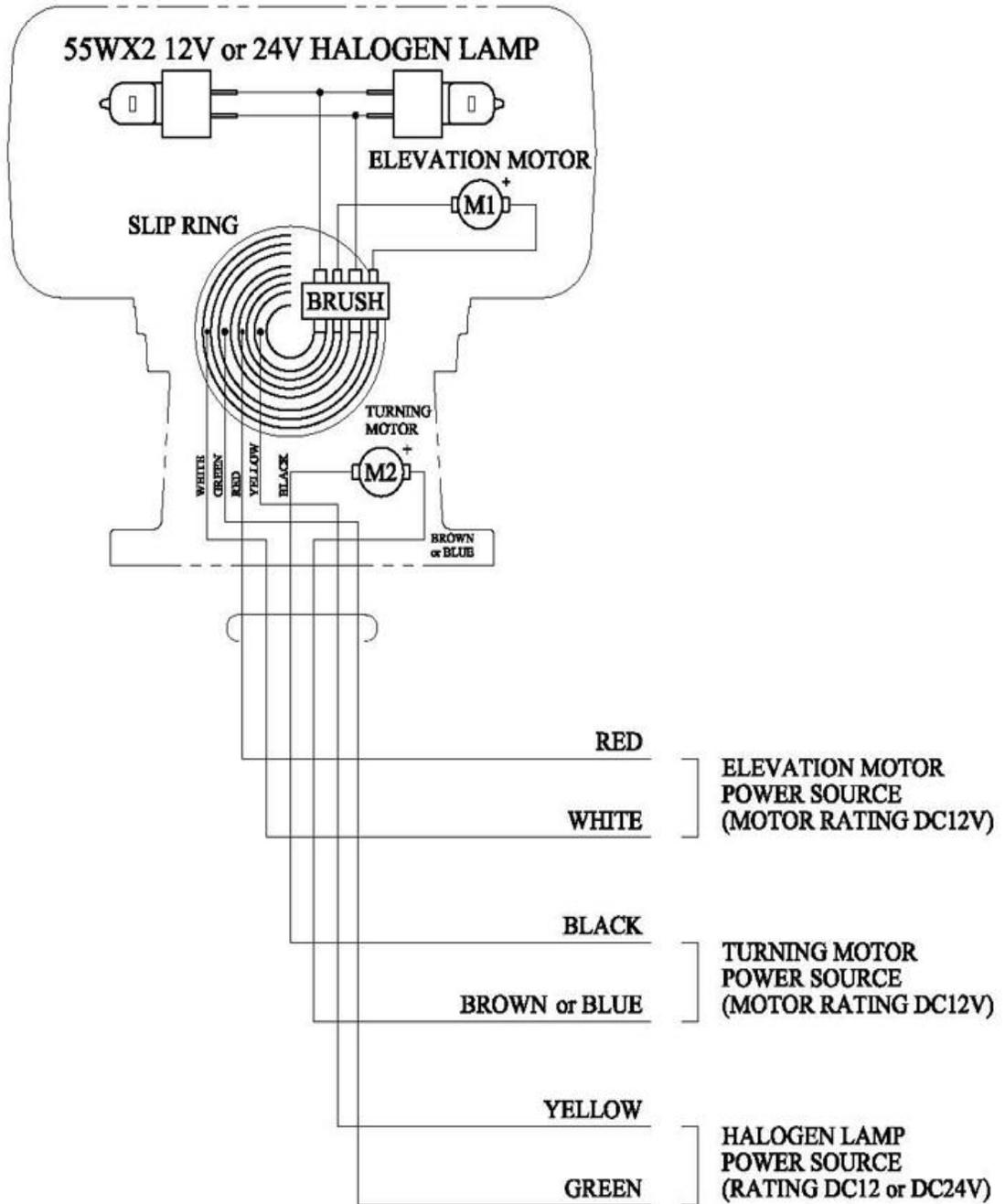
12V / 24V Lights.

The difference between a 12V light and a 24V light is ONLY the rating of the bulb. If one wants to convert the light from one voltage to another, the bulbs need to be replaced.

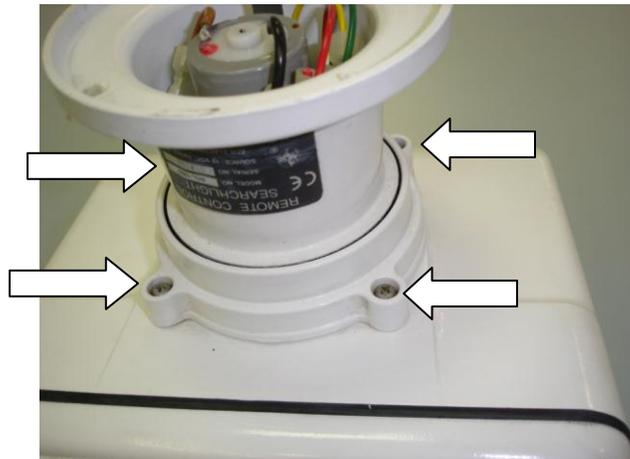
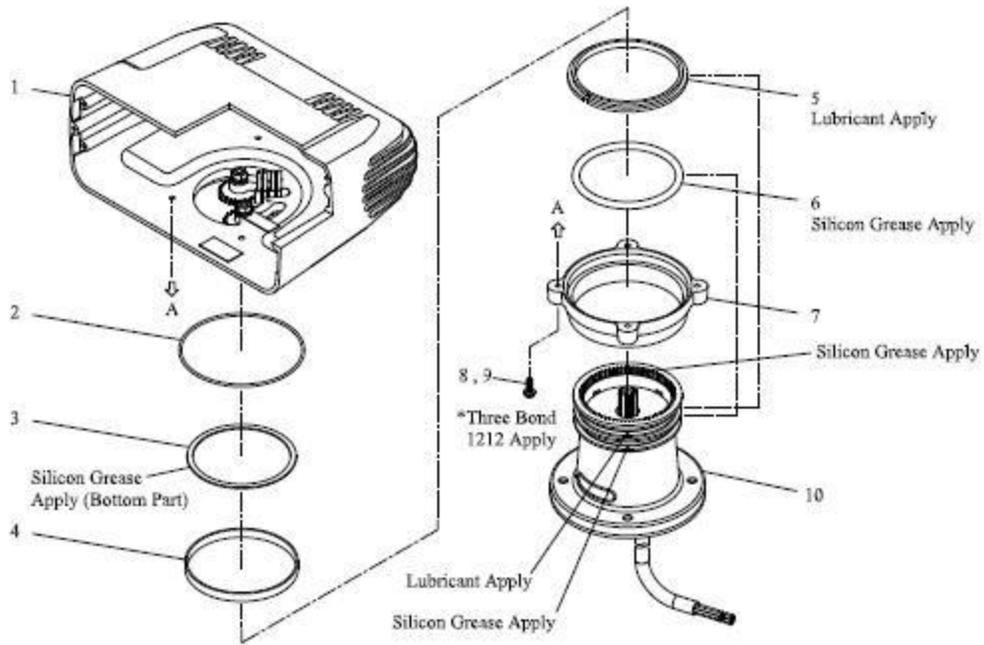
12V Part Number **6001**

24V Part Number **6003**

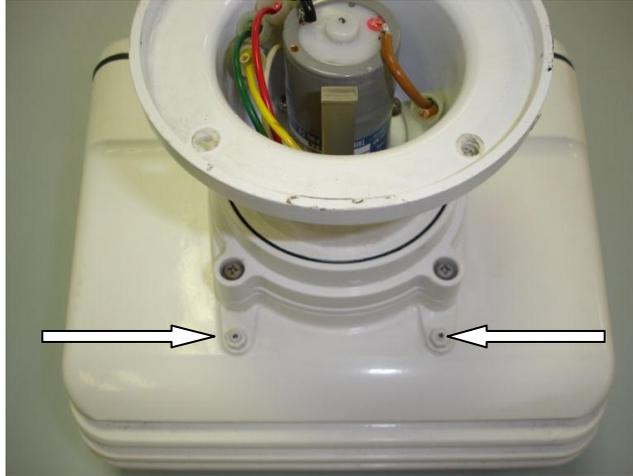
RCL-100 SEARCHLIGHT



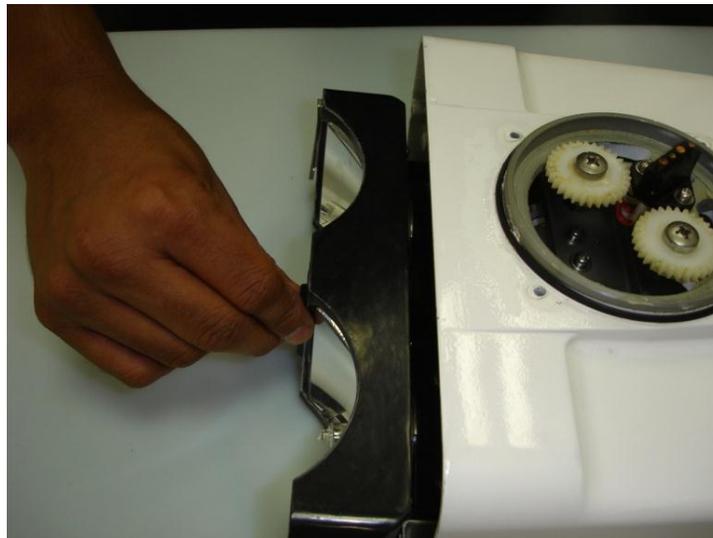
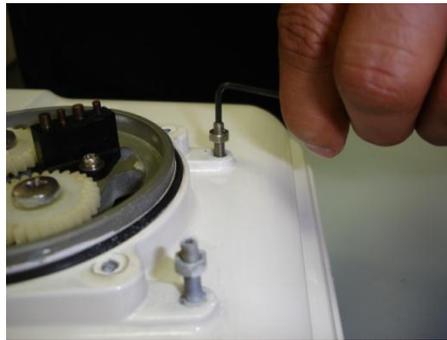
VCTF-1.25mm² - 6c - 5m



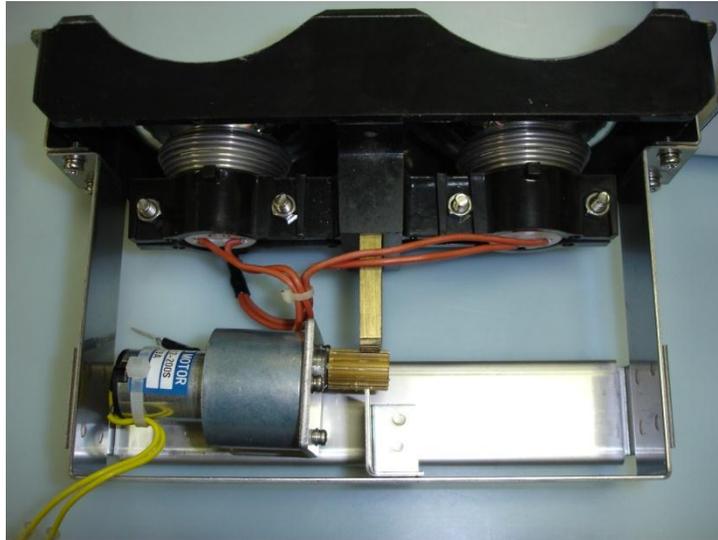
To remove the head from the base, loosen the 4 screws from the collar and carefully lift the head off the base.



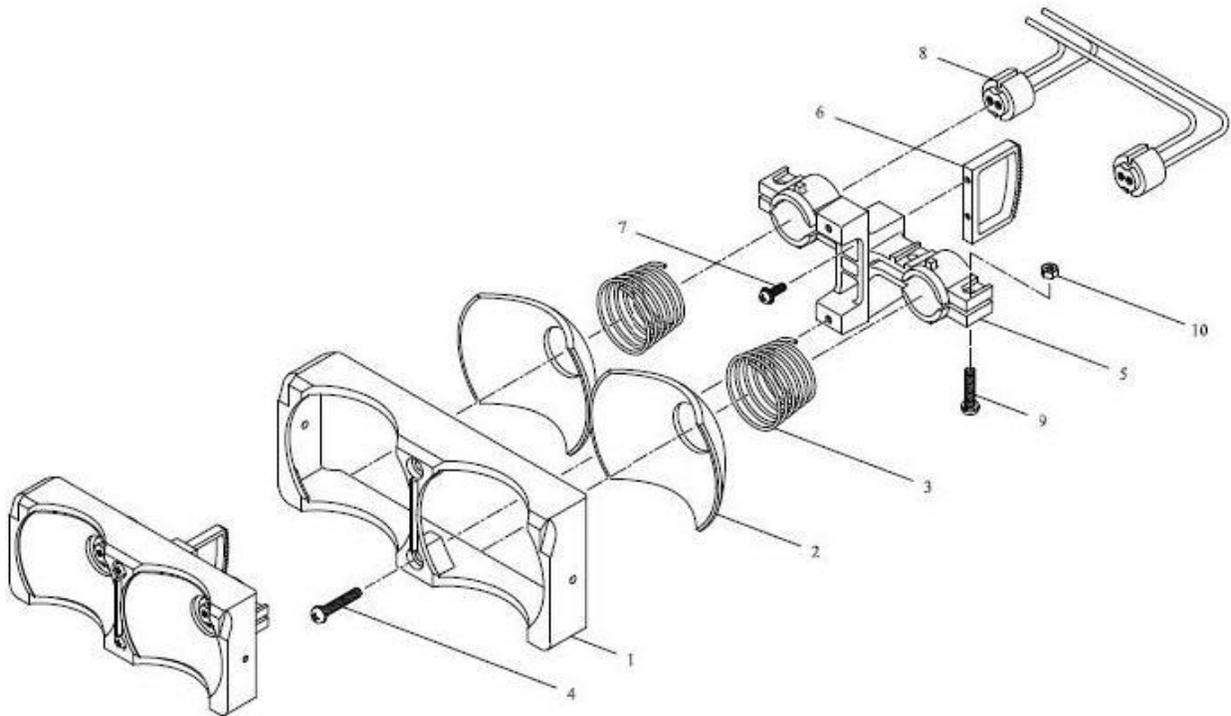
To remove the complete Front Frame assembly from the head of the light, remove the front frame and glass assembly. Loosen the two lock nuts from the hex studs and turn out the two studs sufficiently to slide the assembly out.

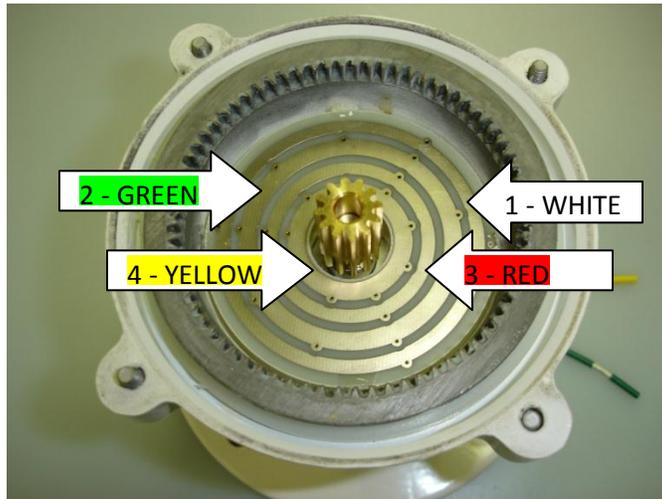


Pull the Front Frame assembly out of the searchlight.



Complete Reflector/elevation motor assembly.

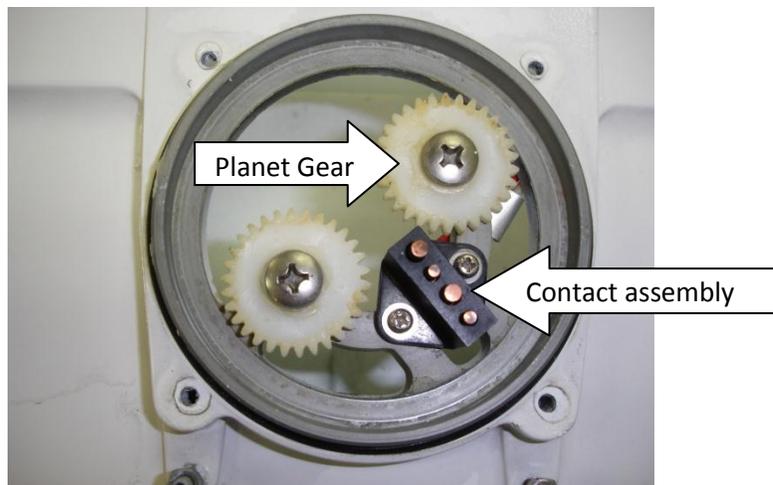




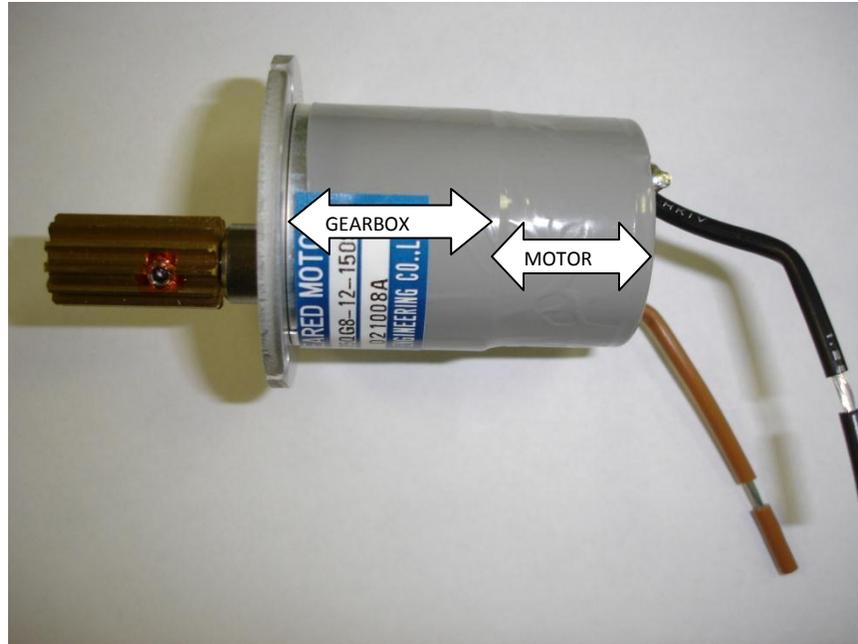
Typical view of a good and clean **slip ring** that transfers the voltage from the copper tracks to the contacts mounted in the head of the light.

RED/WHITE UP AND DOWN

GREEN/YELLOW RIGHT AND LEFT



View of the two **plastic gears**, driven by the Rotation motor, and the **contact assembly** that transfer the voltage from the **slip ring** to the bulbs and elevation motor.



Rotation motor. It is actually an assembly that consists of a motor and a gearbox with spindle gear.

TROUBLESHOOTING

Testing the system with all connected. Use a volt/ohm meter set to DC Voltage. Measure from ground to each color wire, of the **MCU** (Master Controller) going out to the light. The voltage should read between 8 to 10 Volts DC, when the point pad is activated. If, for example, you want to check the elevation, measure on the RED and WHITE when the Point pad is pressed to 'down'. There should be 8-10 V on one of these wires.

Motion is OK, but no light Disconnect the **YELLOW** and **GREEN** wires (in the 6-wire wiring harness leading out of the Master Controller) and connect the 12V battery test wires to the **yellow** and **green** wires **LEADING TO THE LIGHT**. If the lamps do not light up, check the continuity of the yellow and green wires and any splices or terminal connections through the harness to the searchlight. If the continuity tests OK, the bulbs must be checked. Do the following:

Please do not try to test the bulbs with a tester/ohm meter as you would a normal incandescent house bulb. Remove (without touching the bulb with your hand) the bulb from the socket and connect the leads to a 6V battery to test them. If the bulbs test good, check for corrosion on the brush assembly mounted at the bottom of the housing, or on the slip ring assembly mounted in the base.

If there is corrosion on either the brush or slip ring assemblies, gently clean it off with a **fine** wire brush or sanding paper and wipe clean with rubbing alcohol. If the slip ring assembly is pitted, it will need to be replaced.

If the brush and slip ring are OK, and the lamps light up when connected to the battery, the **MCU** (Master control unit) needs to be replaced.

No up and down, everything else is OK

Disconnect the **RED** and **WHITE** wires (in the 6-wire wiring harness leading out of the Master Controller) and connect the 12V battery test wires to the **red** and **white** wires **LEADING TO THE LIGHT**. The light should move either up or down. If you change the POLARITY it should move the other way. If this happens without a problem, the **MCU** (Master control unit) is faulty and needs to be replaced. If not, do the following:

Remove the four screws underneath the head of the light, to loosen the protection cover. Gently lift the head from the base in order to view the brush and slip ring assembly. If any corrosion is evident, gently clean the brush and slip ring assemblies with a **fine** wire brush, taking care to wipe clean with a rag and rubbing alcohol. If **pitting** has occurred on the slip ring, or if the brush assembly is damaged, the unit must be sent in for repair. The service agent or owner can replace the parts by ordering new ones. If these parts look OK, connect the leads from the battery to both of the small pins on the brush assembly. The elevation motor should turn. If you reverse the wires the motor should turn in the opposite direction. If the motor does not turn with this test, then the elevation motor needs to be replaced.

No left and right, everything else is OK

Disconnect the **BLACK** and **BROWN** wires (in the 6-wire wiring harness leading out of the Master Controller) and connect the 12V battery test wires to the **black** and **brown** wires **LEADING TO THE LIGHT**. The light should move either left or right. If you change the POLARITY it should move the other way. If this happens without a problem, the **MCU** (Master control unit) is faulty and needs to be replaced.

If not, do the following:

Remove the four screws underneath the head of the light, to loosen the protection cover. Gently lift the head from the base in order to view the two plastic gears by turning the head upside down to see them. If they are intact, the ROTATION motor is faulty. Replace this motor.

If the planet gears are stripped, order new and install.

Lights work but no rotation or elevation and lights will not shut off

First, disconnect the coaxial cable from the MCU and Point pad. With an ohm meter set to R x 1, check continuity of the coaxial cable by placing 1 probe to the connector shielding and the other to the center conductor. If the cable is good, you will get **NO** meter movement at all. If the cable is bad, you will get a full scale reading on any meter scale. If you get a full scale reading, replace the coaxial cable connectors. If you get no reading, then the cable is OK. Turn off the circuit breaker at the power source, wait 10 seconds and then turn the circuit back on. This should reset the MCU. Re-check the functions and they should be cleared. If you still experience the same problems, then the MCU will need to be replaced.

Light flickers on and off as it rotates.

Remove four screws from the protection cover (underside of head). Lift the head from the base and check the slip ring and brush assembly for corrosion. If corrosion is evident, clean with a wire brush. If either the brush or slip ring assembly is corroded or pitted beyond repair, they will need to be replaced.

Power to MCU, but no light on RCP and no functions of light.

Check the coaxial cable with an ohm meter by placing the probes on each end of the center conductor on the coaxial cable. If there is no meter movement, replace or repair the coaxial cable. If it registers a full meter reading, then the coax cable is ok and it is recommended that the point pad and MCU be sent in for testing and possible replacement.

Extending the coaxial cable

Please be sure to use **RG 59** coaxial cable, if there is a need to extend the coax between the Point pad and the Master Controller or if the existing cable is damaged and needs to be replaced.

Maximum cable length between the Master controller and the RCL 100 light.

WIRE SIZE	12V SYSTEM	24V SYSTEM
# 8 AWG	25 FEET	100 FEET
#10 AWG	15 FEET	60 FEET
# 12 AWG	10 FEET	40 FEET

**Need to send
the light to
ACR for
repair?**

Please send the light to:

Technical Service,
ACR Electronics Inc.
5757 Ravenswood road
Fort Lauderdale, Fl
33312

Please add a memo with the sender/company name, full return address and contact number of a person that can **OK** a quote on the service/repair of the above.

**Need to send
the light to
ACR for
complete
refurbish-
ment?**

Please send the light to:

Technical Service,
ACR Electronics Inc.
5757 Ravenswood road
Fort Lauderdale, Fl
33312

Please add a memo with what needs to be done (refurbishment), sender/company name, full return address and contact number of a person that can **OK** a quote on the complete refurbishment of the light.

Recommended Maintenance

As with any marine product, proper care and regular maintenance is highly recommended.

In order to help prevent premature failure of your ACR searchlight the following steps are recommended:

The best preventative maintenance one can do is to ensure that the best possible care is taken when installing the light. The biggest problem on these lights is water intrusion from the way it is mounted, if not done well.

During the lifetime of the light, a regular, very close inspection must be made of the paint around the base of the unit. ANY sign of lifting, flaking or 'bubbling' of the paint around the base is a sign of water intrusion. Any sign of humidity on the inside of the glass lens of the light is trouble.

The best time to inspect the light is early in the morning. During the day the light is heated by the sun, all air is pushed out, at night the humid air is pulled in and the moisture builds up.

- Always try to keep the light surface clean. Build up of salt, dirt or paint cause corrosion.
- Periodically (recommend monthly) rotate and elevate your light to help extend operational life of the motors. The URC-102 Master Controller has a built in XRCiZ feature. When this feature is enabled, the Master Controller will automatically rotate and elevate the searchlight once a month.
- Normal temperature fluctuations can cause condensation (condensation is any moisture on inside of glass) to form inside body of the light. If condensation is observed, remove the front frame and allow unit to dry.
- Whenever disassembling the searchlight, use anti-seize compound (such as Tef-gel™) on bolts and hardware. Rejuvenate gaskets with silicon grease and replace worn or missing phenolic and/or nylon shoulder washers.
- Forceful Manual turning of the light is discouraged due to the possibility of damage to internal components.
- Silicon grease can be used to rejuvenate all gasket material.
- Replace worn or missing phenolic and/or nylon shoulder washers.
- If the base of the light is removed for any reason, be sure to re-install using nylon shoulder washers in the bolt holes to help prevent the natural reaction of dissimilar metals (aluminum & stainless steel).

Parts list

6001	BULB 12V
6003	BULB 24V
HRMK 1201	WINDOW GASKET
HRMK 1204	BASE GASKET
HRMK 1300	FRONT GLASS
HRMK 1301	REFLECTOR
HRMK 1304	LAMP SOCKET ASSEMBLY
HRMK 1502	ELEVATION MOTOR HOLDER
HRMK 1503	PLANET GEAR
HRMK 1504	SLIP RING
HRMK 2100	HOUSING
HRMK 2101	FRONT FRAME
HRMK 2102	PROTECTION COVER
HRMK 2103	U TYPE BASE
HRMK 2200	FRONT FRAME GASKET
HRMK 2202	O-RING, SMALL
HRMK 2203	O-RING, LARGE
HRMK 2300	BRUSH ASSEMBLY
HRMK 2500	REFLECTOR HOLDER
HRMK 2501	SOCKET HOLDER
HRMK 4100	FRONT FRAME ASSEMBLY
HRMK 4200	ELEVATION MOTOR
HRMK 4300	ROTATION MOTOR
9283.3	COMPLETE MASTER CONTROLLER, POINT PAD AND COAXIAL CABLE SET
1927.3	MASTER CONTROLLER
1928.3	POINT PAD