

Sonavision Limited

BOREHOLE CAMERA

PANNING CAMERA UNIT

OPERATION AND INSTRUCTION MANUAL

Sonavision Limited
16 Denmore Industrial Estate
Denmore Road
Bridge of Don
Aberdeen
Scotland

Tel: +44 1224 827288
Fax: +44 1224 827289
E-Mail: info@sonavision.co.uk

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1 GENERAL INFORMATION

1.1 Introduction and Warranty

This manual accompanies the **BOREHOLE CAMERA PANNING CAMERA UNIT**. It contains information on operation and maintenance of the camera unit and provides the user with a manufacturer's recommended spares package.

The **BOREHOLE CAMERA PANNING CAMERA UNIT** is warranted against manufacturing defects in workmanship and materials for a period of 12 months from date of shipment. For more details on Sonavision Ltd warranty, please refer to Sonavision Ltd Terms and Conditions of Warranty.

1.2 Equipment Description

The **BOREHOLE CAMERA PANNING CAMERA UNIT** is an underwater camera rated for operation to 250m water depth. It consists of a plastic housing, an internal metal chassis, a colour camera module, two lights, a panning motor and a cable connector. A colour end viewing camera may also be fitted to the base of the unit as an option.

The camera module provides a view out of the side of the housing, which is clear acrylic. It can be rotated (panned) through almost 360 degrees allowing a full 360 degree view of the surrounding area. Two tungsten halogen lights are provided and are connected such that either one or both may be operated at varying intensity (dependent upon the control unit being used).

The lower end cap of the camera is fitted with an adaptor which can be removed to allow fitting of an end view camera.

WARNING

IT IS RECOMMENDED THAT THE LIGHTS ARE NOT OPERATED IN AIR EXCEPT FOR SHORT PERIODS REQUIRED FOR TESTING. OVERHEATING MAY OCCUR AND THE INTERNAL COMPONENTS AND PLASTIC HOUSING MAY BE DAMAGED AS A RESULT.

2 OPERATING INSTRUCTIONS

The following operating instructions are intended as a guide only. Details of the operation will depend upon the type of control unit which is used. These instructions relate to control units supplied by Sonavision.

PANNING CAMERA

Press the "Panning Camera" switch to operate the camera.

PANNING CAMERA LIGHTS

The Panning Camera lights are independantly controllable to adjust lighting level to suit the scene. In addition, lighting with one lamp only will highlight

surface texture which will assist in interpreting the image. Press either or both the "Upper Light" switch or the "Lower Light" switch to operate the lights.

PANNING CONTROL

To pan the camera, push the "Pan Left" or "Pan Right" switches. These are momentary switches and will pan for as long as the switch is pushed.

There are end stops at the end of the travel and the motor will eventually stop.

The unit will pan through approximately 350 degrees with full 360 degrees field of view available.

WARNING

DO NOT CONTINUE TO HOLD THE PAN SWITCH WHEN THE END STOP IS REACHED. THIS WILL CAUSE EXCESS STRAIN ON THE MOTOR CIRCUIT AND MAY SHORTEN THE LIFE OF THE CAMERA AND / OR CONTROL UNIT.

3 MAINTENANCE INSTRUCTIONS

3.1 Troubleshooting

CAMERA

Check the camera for signs of damage and possible water ingress. If there is water ingress refer to section 3.4.

LIGHTS

Refer to Light Change out procedure.

3.2 Disassembly and Reassembly Procedures

WARNING

THIS PROCEDURE SHOULD ONLY BE FOLLOWED TO ALLOW THE USER TO CHANGE THE LIGHTS OR ADJUST THE CAMERA FOCUS. IN ADDITION, IT MAY BE USED TO CARRY OUT SIMPLE MAINTENANCE OR FAULT FINDING UNDER THE GUIDANCE OF SONAVISION LTD OR ITS AUTHORISED AGENTS.

PROCEDURE FOR DISASSEMBLY

1. Remove the End View Camera (if fitted) from the base of the housing by grasping both the stainless section of the camera body and the black acetal endcap near the end of the acrylic tube. Alternatively remove the blanking cap in the same way.
2. Using a suitable box spanner or socket, remove the M14 Hexagon head nut from the central shaft of the camera and place to the side.

3. Hold the Acrylic outer casing securely and remove the acetyl bottom end cap. This is intentionally quite stiff due to the o-ring, and gentle rocking from side to side will help. Take care not to damage the extending jack connector for the End View Camera.
4. Hold the upper end cap and remove the Acrylic tube in the same manner. Take care not to scratch the acrylic tube or the inner cover whilst removing.
5. The unit is now disassembled sufficiently for replacement of bulbs, for focussing the camera lense and for any simple maintenance.

PROCEDURE FOR RE-ASSEMBLY

1. Remove, clean and apply a small amount of silicon grease to the o-ring from the upper end cap. Apply a small amount of grease between the tip of the thumb and forefinger and gently run the o-ring through the grease until it is lightly covered and shiny. This procedure greases the o-ring properly. Do not apply large quantities of grease.
2. Clean the o-ring groove and replace the o-ring in the upper end cap groove.
3. Gently rotate the camera chassis against the upper end cap to place the camera in approximately its mid position. This will ensure that any subsequent rotation during assembly does not cause the end stop to be reached.
4. Replace the outer acrylic casing, ensuring that the o-ring is not displaced. A clear black line should be visible through the acrylic where the o-ring contacts. This should be visible throughout the length of the o-ring.
5. Remove, clean and re-grease the bottom end cap o-ring as above.
6. Replace bottom end cap, locating the spigot of the metal chassis assembly into the bearing located within the bottom end cap
7. Using the box spanner, replace the M14 nut. Do not over-tighten the nut as this will damage the camera internal components. Stop as soon as the screw resists and the end caps are pulled against the acrylic tube. This should occur when the nut is little more than finger-tight. Do not allow the camera chassis to hit the motor end stop during tightening of the nut as damage to the motor shaft can occur.
8. Clean and re-grease the o-ring in the end view camera adaptor or blanking plug and replace in the o-ring groove.
9. If replacing the End View Camera module, firstly check that the jack socket on the camera is located in the centre of the recess. There is a small amount of radial float built into the connector mounting to allow movement during rotation of the camera. Screw the camera into the endcap and tighten hand tight. Do not overtighten.

3.3 Light Change Out Procedure

WARNING

DO NOT HANDLE THE LAMPS WITH BARE FINGERS AS CONTAMINATION WILL REDUCE THEIR OPERATING LIFE.

Handle them with the protective plastic covering in which the bulbs are supplied.

When one lamp has failed, the other lamp may fail within a short time since they have similar lifetimes. It is recommended that both lamps at the same time.

Follow the disassembly procedure, (section 3.2)

Remove the bulbs carefully and replace ensuring that they are correctly seated. Reassemble, (as per section 3.2.)

3.4 Flooded Housing Instructions

In the event that the camera unit has been damaged and flooded, the following procedure should be followed.

1. Turn off the power IMMEDIATELY.
2. Open the housing as per 3.2 disassembly procedure.
3. Thoroughly rinse the components in fresh or distilled water.
4. Allow the components to dry out in a warm dry environment.
5. Loosely re-assemble the camera and return to Sonavision Ltd or your agent.
6. Notify the consignee, so that we may act quickly and limit the damage when the system arrives.

4 RECOMMENDED SPARES

CAMERA

Outer Acrylic Cover.
O-Ring Kit.
Lamps (Set of 2)

GENERAL

Molycote Type MS111 Grease.
M22 socket
Selection of general electricians tools

5 SPECIFICATIONS

CAMERA

PHYSICAL

Diameter	65mm
Length	393mm

WEIGHT

In Air	3.94Kg
In Water	2Kg (approximately)

MATERIALS

Housing	Acrylic and Acetal with stainless steel fasteners
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OPTICAL (PANNING CAMERA)

Lens	f1.4 6mm angle adjustable iris
Field of view	greater than 360 degrees rotational
Focus	Adjustable after disassembly
Min Illumination	2.5 lux
Imager	1/2 inch ccd sensor
Rotation	350 Degrees approx.

LIGHTING

Construction	2 off 10W 12v tungsten halogen bulbs
Output	20 watt total (adjustable)

POWER REQUIREMENTS

Panning Camera	12vdc at 350mA approximately
Lights	Each 12vdc 10W wired in series

END OF DOCUMENT