Single Bottom Sea Valve
SB-100-SB
Operation and Installation Manual
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The SKIPPER SB Sea Valve 100 mm is used for installation of: SKIPPER speed log sensors and Echo sounder transducers fitted with adaptor for XB-100-XX.

Caution!

Be aware that the Sea Valve contains high precision parts and therefore proper handling when mounting is essential for the final result.

When handling the Sea Valve, all lifting devices must be attached on the outside of the valve. It is very important to not insert any chains, wire, rope or any other device into the valve chamber. This to avoid damaging and any kind of pollution of the Sea Valve.

Caution must be taken when mounting seavalves that all parts are aligned correctly, and that the inside is clean. DO NOT use liquid sealants, and DO NOT paint the inside of a valve.

The SKIPPER SB Sea Valve 100 mm is delivered partly assembled for transport. The parts necessary for final assembly will be found packed in a box delivered with the Sea Valve. First of all, it must be decided where the Sea Valve should be installed. Normally, this will be in the fore part of the ship, in the centerline, or as close to the centerline as possible. Optimal system operation is achieved by fitting the transducer/sensor as deep as possible on the hull.

• The active surface of the sensor must be installed with front face a maximum of +/-1 degree to the ships horizontal plane. (Speed Logs).
• The active surface of the transducer must be installed with front face a maximum of +/-7 degree to the ships horizontal plane. (Echo Sounder).

Do not mount transducers close to the bow thruster propeller outlets, or aft of other hull installations (outlets, vents or other protruding details) who may create aeration or turbulence.

It is necessary to select a part of the hull that is submerged and free from turbulence and aeration under all load and speed conditions, and to avoid positions where air is trapped in heavy weather.

If a flat, horizontal section is not available for transducer fitting, the shipyard must construct a suitable bed. Welding seams in this area should be smoothed and rounded off, in order not to create turbulence or aeration at speed.

Protect the active element of the transducer/sensors during transport and installation, and do not paint the surface.

The Sea Valve should be placed in a service accessible place, large enough for installation and disassembly of the sensor unit. See drawing: “Space considerations”.
Important

"Sensors for Speed Log and Echo Sounder are delivered with a fixed cable. Attention must be taken to allow easy replacement/pulling of new cable during maintenance”.

SKIPPER Electronics AS will recommend installation positions if GA-drawings (General arrangements), lines drawings and frame drawings are made available for study.

Condition.
The welding to hull structures and structural support of the items may be subject to separate approval by classification societies for each installation on board a ship.

Note: All “Item (X)” references on the following pages, can be found on drawing 100 mm Single Bottom Ball Valve.
2. Space considerations

The Sea Valve should be placed in a service accessible place large enough for installation and disassembly of the sensor unit.
3. Welding the bottom flange

- When the position has been decided, a 220 mm hole is cut in the hull.
- The bottom flange, Item (1), is welded into the hull. Standard welding practice, methods and procedures should be observed, but may vary. (See welding notes).

Attention:
The bottom flange is a part of the Sea Valve that is machined with high accuracy and it should be protected after mounting to avoid damage to the bottom flange surfaces. This to avoid leakage. If the valve is pre-mounted, be sure to protect the valve from being polluted by welding debris.

WELDING NOTES!

All bottom parts and flanges for welding are precisely machined parts. During welding of these parts to the ship’s hull plates, careful attention must be paid to avoid construction strain on the bottom parts and flanges.

- Let parts cool down during welding.
- Over heating may change fit and form and result in non-conformity with intended sensor/transducer.
- Welding to thick hull steel plates will exert high stress on bottom parts and flanges.
- Especially care must be taken during welding of stainless steel flanges.
- Work must be performed by a qualified and certified welder.

Welding the bottom flange in ship’s hull.
4. Sea Valve Assembly (Orientation not necessary).

Step 1
- Place 1.5 mm gasket, on top of Bottom Flange.
- Then place the Ball Valve element on top of the Bottom Flange. The 16 mm nuts and washers should be mounted, not tightened.
- Place a 1.5 mm gasket on top of the Ball Valve element.
- Mount the intermediate element on top of the Ball Valve element. The track for o-ring to be upwards.
- All 8 nuts and washers should be mounted, not tightened.

Step 2
- Place the plastic alignment tube, all the way, into the sea valve.
- Tighten 8 nuts ball valve to bottom flange.
- Tighten 8 nuts Intermediate element to ball valve.
- Remove the plastic alignment tool.

Caution must be taken when mounting seavalves that all parts are aligned correctly, and that the inside is clean. DO NOT use liquid sealants, and DO NOT paint the inside of a valve.
5. Assembling of Extension Tube and Sensor

- Gasket, Item (15)
- Washer, Item (14) (2x)
- Countersunk head Screw M4, Item (30)
  Stainless Steel
  To be locked with Loctite 222
  Torque: 1.5 Nm

The Extension Tube must be mounted with a torque between 15 and 30 Nm

Sensor Premounted from Supplier
6. Sensor installation

- Place the O-ring, Item (36) in the groove on top of the intermediate element, Item (7).
- Apply grease to the O-ring.
- Insert the 2 thread bolts, Item (11) through the flange and secure with 2 x M16 counter nuts, Item (28).
- Torque 130 Nm.
- Lower the sensor housing carefully down to the top of the valve piston.
7. Clamp Unit mounting

Mount Top Flange, Item (8). Secure with 8 washers, Item (29) and nuts, Item (28). Torque: 130 Nm.

Mount in following order:
- 2 x gasket, Item (12).
- Washer, Item (17).
- Nut M50, Item (13).
- 2 x M16 nuts, Item (28).
- Clamp Unit, Item (10).
- 2 x M16 nuts, Item (28) with spring washer, Item (29).
• Open Sea Valve, lower sensor unit and Extension Tube. (See figure 7.2 next page)
• Rotate the Extension Tube to align the sensor to point forward (ahead), (only needed for Speed Logs. See figure 7.3 next page). Use the flattened area on the Extension Tube to find correct direction.

• Open Ball Valve piston, lower sensor unit.
• Tighten up the 2 x screw M8, Item (31).
Figure 7.2 Lowering the sensor

Procedure for installing of sensor in Sea valve SB-100-XX

- Make mark
- Mark flush
- Valve closed
- Lower sensor to ball
- Mark with permanent marker
- Valve open
- Lower sensor to bottom flange

Figure 7.3 Forward position of speed log sensor

A flat object points fore/aft.

The flat side should be on the port side.
8. Final assembly

After the ship is afloat, it is necessary to let the air out of the Sea Valve:
• Loosen the nut M50, let the air out and tighten nut again.

Protect sensor!
• When launching ship, lift sensor 50 mm.
• When dry docking ship, lift sensor 50 mm.

Check that the transducer sensor housing, when fully inserted, is flush with the lower surface of the bottom flange.
9. Sensor removal

Disassembling order:
1. Unscrew and lift the Clump Unit approx. 20 mm
tighten the 2 screws M8
2. Loosen the Nut M50 carefully until Water trickles out.
3. When disassembling Extention Tube at deep drafts,
loosen the 2 screws M8 carefully.

If the Water pressure does not push the Extention Tube up,
use the to Nuts M16 to lend a hand.

When the Sensor Housing is fully hoisted
close the Ball Valve.
10. Re-installation

Same procedure as first-time mounting.

Mounting order Nut M50 and Clamp Unit:

1. Tighten the Nut M50, Item (13), Torque : 98 Nm.
2. Push down the Clamp Unit, Item (10) onto the Nut M50, and tighten the 2 screws M8 (with lock washer), Torque : 40 Nm.
3. Screw the 2 Nuts M16 slightly up to the Clamp Unit.
4. Tighten the 2 Nuts M16 (with lock washer) on the opposite side: Torque : 130 Nm.

The Clamp Unit must be fitted on Top of Nut M50 to lock the Nut. (This is done to give extra security.)
11. DB-100 Sensors

All units premounted by Skipper Electronics

Electro magnetic log sensor
EML224SDSB-SB
ETN050BEL 50kHz 25m cable
ETN050GI 50kHz 25m cable
ETN200FSX 200kHz 25m cable
ETN200SXG 200kHz 40m cable

Transducer for echo sounder
ETN050SG 50kHz 25m cable
ETN050SGX 200kHz 25m cable
ETN200SG 200kHz 25m cable

Transducer for echo sounder with Ice Protection
ETN050XGI 50kHz 40m cable
ETN050XGIX 200kHz 40m cable
ETN200FSX 200kHz 40m cable

Before inserting the Sensor, be sure that the Ahead Mark is in right position.
12. 100 mm Single Bottom Ball Valve

**Illustrated parts list**: SB-100-SB  Operation and Installation Manual

**Material**: AISI 316L/WNO 1.4404

**Dimensions**: 1234

**Weight**: 59 kg (Complete with 0.5 meter Extension Tube)

**View A**

**Handle location**

**View**

**Technical specifications**

**SKIPPER Electronics AS**
13. Maintenance

There are two areas to consider maintenance:

1: Speed log performance may be effected by growth, shell, etc on sensor head. Sensors may need carefully cleaned for growth to regain performance.

2: Sea valves consist of moving mechanical parts. Greasing of mechanical parts may be considered to ensure operation and avoid corrosion. Sea valves installed in wet areas (ballast tank etc) should be regularly inspected and greased.

Maintenance Tasks for inactive sensors
(If the system is to be off / and the vessel static for over 6 months (cold water), 3 months warm water).

When closing the vessel.
• Turn off unit at power, both Display and transceiver.
• Mark the alignment of the sensor on the gate valve and sensor flange/pole.
• Lift the sensor into the gate valve and close the valve.
• Grease the valves external moving parts

When restarting
• Heat the areas containing display, to allow condensation to evaporate.
• Lift and inspect the sensor head (or send diver). Carefully clean away growth.
• Redeploy the sensor taking care with alignment.
• Start the system.
• On first test, check alignment (Head Err in the calibration screen).

Dry docking in temperatures below freezing point
If vessel is to be dry docked in temperatures below freezing point water remained inside sea valve may cause damage to sea valve or sensor/transducer.