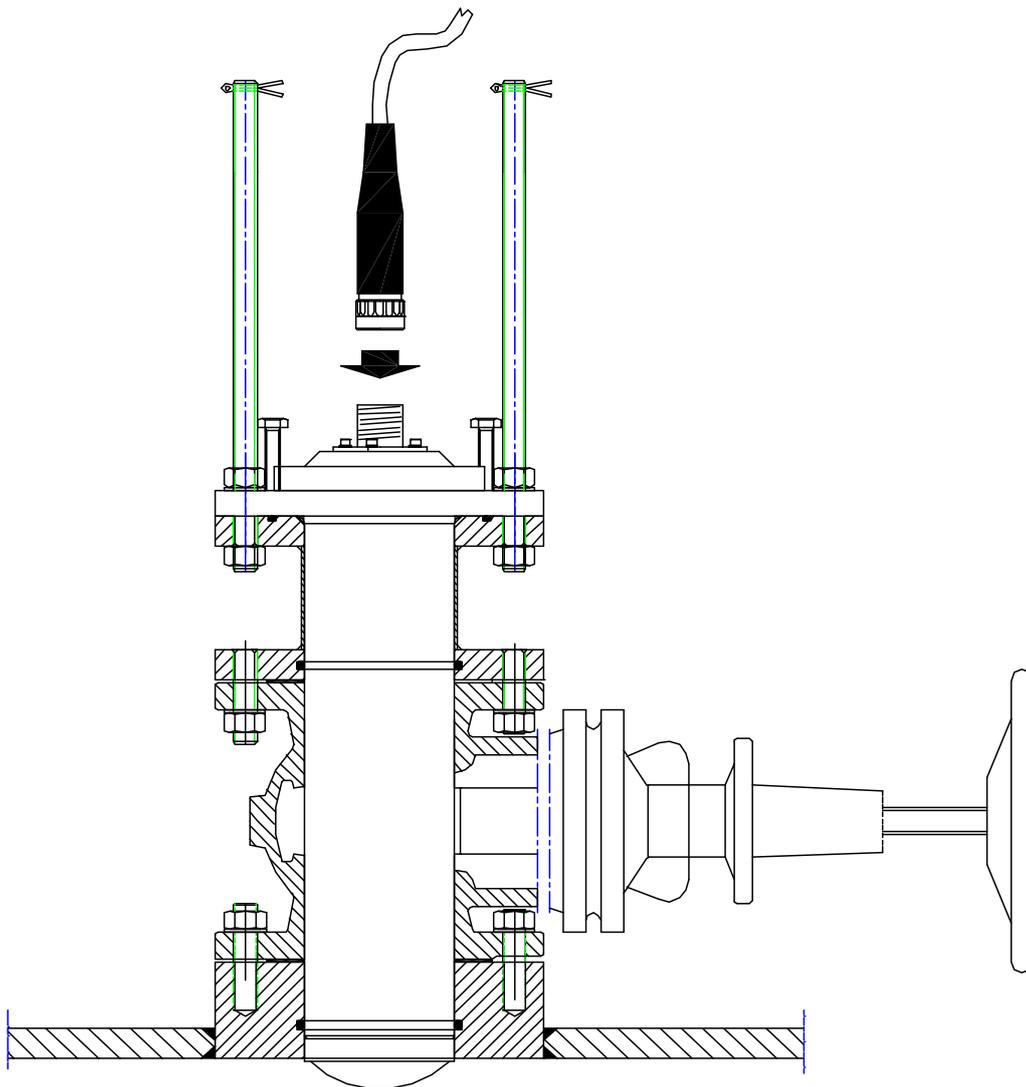


SKIPPER

Single Bottom Sea Valve

ETNSLB

Operation and Installation Manual



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1. Installation

SKIPPER ETNSLB Single Bottom Sea Valve 100 mm for DL 850 (540 kHz)

Used for installation of : Speed Log Sensor for DL850 (540 kHz) Doppler Speed Log.

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.

The SKIPPER ETNSLB Sea Valve is delivered assembled for transport. The parts necessary for final assembly will be found on the gate valve itself, or 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. There must be no protruding objects in front of the Sea Valve, or in the immediate area at both sides. Welding seams in this area should be smoothed and rounded off, in order not to create turbulence or aeration at speed.

The Sea Valve must be placed in a dry space, large enough for installation and disassembly of the sensor units. See drawing page 12.

- When the position has been decided, a suitable (220 mm) hole is cut in the hull, and the disassembled bottom flange, Item (1), is welded into the hull. Standard welding practice and procedures should be observed. See welding notes.
- The orientation of the bottom flange must be observed. The centerline (CL) or a parallel to the CL should run between two bolts, as shown on the enclosed drawing.
- The type of steel used in the Sea Valve bottom flange is: P 316/TP 316L.
- When the bottom flange has cooled off, place an O-ring item (12) in the groove inside the bottom flange. Apply ample amounts of grease on O-ring. Place a 0.5 mm Klingersil gasket, Item (14) on top. Then place the Valve element, Item (2), on top of the bottom flange. The 16 mm nuts and washers should be mounted but not tightened.
- Place a 1.5 mm Klingersil gasket on top of the valve element.
- Mount the intermediate element, Item (3), on top of the valve element.
- The flange side with only 6 pinbolts to be upwards.
- Place an O-ring, Item (12) in the groove inside the intermediate element. Apply ample amounts of grease on O-ring.
- All 8 nuts/washers should be mounted, but not tightened.
- Open the Sea Valve fully and insert sensor unit into the Sea Valve, moving it from side to side to align the different elements exactly.
- With the sensor unit still in place, tighten the 16 nuts below and above the valve element. Torque 130 Nm.
- After tightening, check that the sensor unit still moves freely, easy to pull all the way out and insert again.

- Check that the outer edges of the speed log sensor unit, when fully inserted, are flush with the lower surface of the bottom flange, leaving only the rounded part of the sensor “head” protruding below the bottom flange.
- If the two above point is not met exactly, it is possible to adjust the height of the Sea Valve by inserting thicker or more than one “Klingersil” gaskets, alternatively changing the 1.5 mm gasket to a 0.5 mm gasket.
- After the Sea Valve has been adjusted correctly, remove the sensor unit.
- Place the O-ring, Item (13), in the groove on top of the intermediate element.
- Apply grease to the O-ring.
- Install sensor unit and secure with 6 each washers/nuts. Torque 130 Nm.
- **(The arrow on the top flange of the sensor unit body must point ahead)**
- Insert the 2 safety bolts, Item (16) through the flange and secure with nuts (M16 counter nuts). Torque 130 Nm).
- Connect sensor cable.

NOTE !

The 2 safety bolts **MUST** be used during removal and installation of sensor unit when the ship is afloat.

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.
- Standard welding practice, methods and procedures should be observed, but may vary.

2. Removal of sensor unit

The sensor unit is secured with 6 each 16 mm pin bolts with nuts and washers, and two 16 mm nuts on each 16 x 300 mm safety bolts.

There should be a split pin through the hole drilled near the top of the safety bolts.

WARNING !

ON VESSELS WITH DEEP DRAFT, THE SEA PRESSURE ON THE SENSOR UNIT IS CONSIDERABLE, AND MAY PUSH THE UNIT UPWARDS, ONCE LOOSENED, WITH GREAT FORCE. WHEN REMOVING THE SENSOR UNIT ON SUCH VESSELS, AT LEAST ONE OF THE NUTS ON THE SAFETY BOLTS SHOULD BE POSITIONED CLOSE TO THE SENSOR UNIT FLANGE PRIOR TO LOOSENING THE 6 FIXING NUTS.

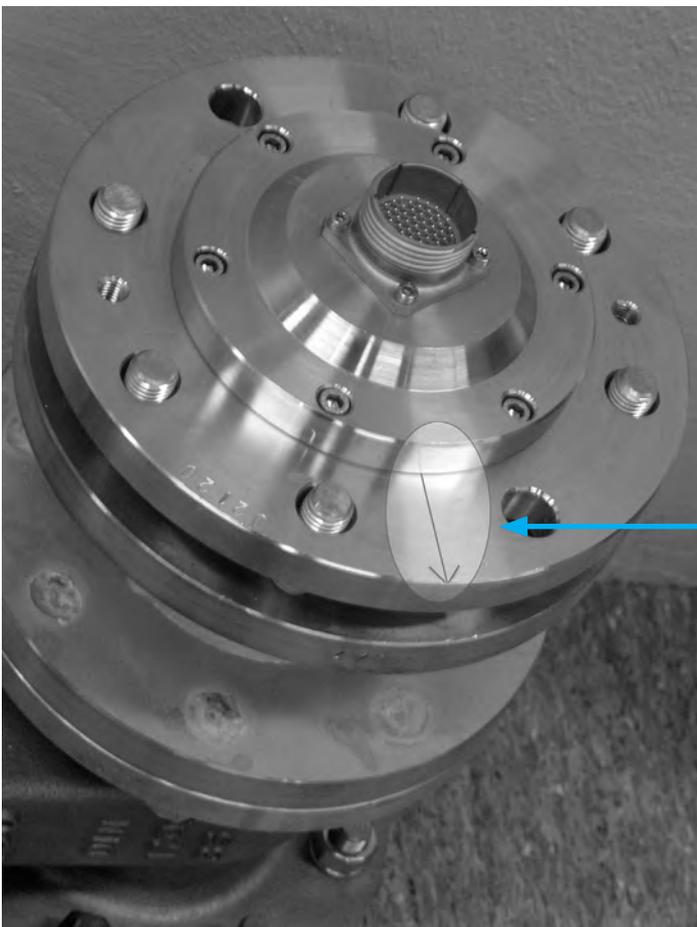
- After the safety bolts have been correctly arranged, the 6 remaining nuts and washers may be unscrewed.
- If the sensor unit sticks in its lowered position, insert the two 10 x 60 mm hexagon “lifting bolts” in the threaded 10 mm holes in the top flange and use them to “break lock”. Using the lifting bolts, it is possible to lift the sensor unit app. 40 mm, enough to provide room for other lifting tools.
- After “breaking lock” or lifting, unscrew the two 10 x 60 mm hexagon bolts and store them for future use.
- If the sea pressure is high enough to lift the sensor unit, release the nuts on the safety bolts gradually until the sensor unit is clear of the valve piston. Otherwise, lift the unit by hand or other tools until clear of the gate valve piston. The unit is clear of the valve piston when it has been lifted Min. 220 - Max. 250 mm. Do not lift more than 250 mm, as the sensor unit will clear the upper water sealing ring, and there will be water leakage.
- Close the valve element.
- Remove the split pins and nuts from the safety bolt and lift out the sensor unit.
- It may be necessary to let the valve leak somewhat while lifting out the sensor unit, as there will be vacuum between the valve piston and the sensor unit.

In installations with too low headroom, after closing the Sea Valve, it is possible to split the Sea Valve arrangement between the valve element and the intermediate element, Item (3). The sensor unit may then be removed sideways while still inside the intermediate element. It should be noted, however, that this operation is very difficult, as the fixing bolts are not so easily accessible. Such installations should therefore be avoided if possible.

3. Reinstallation of speed log sensor unit

- Before the sensor unit is reinstalled, please check that the O-ring on top of the intermediate element and also the water blocking O-ring inside the intermediate element, are free of damage and well greased.
- Grease the sensor unit with water resistant grease and insert (observe the Ahead mark) it into the top of the intermediate element, push it towards the valve piston. To avoid excessive leakage during reinstallation, it should go past the upper water blocking O-ring (min. 220 - max. 250 mm).
- Secure the sensor unit by screwing the nuts on the safety bolts firmly down on the sensor unit top flange.
- To overcome the water pressure, open valve element slightly to help sensor unit pass the O-ring.
- Open the gate valve to full opening.
- Push the sensor unit all the way down, and secure it with the 6 each 16 mm hexagon nuts and washers. On vessels with deep draft, it may be necessary to use the two nuts on the safety bolts to force the sensor unit into position.
- Securing with the 6 each 16 mm nuts and washers, and 2 each 16 mm nuts and washers on the safety bolts.
- Check for leakage, tighten or repair if necessary.

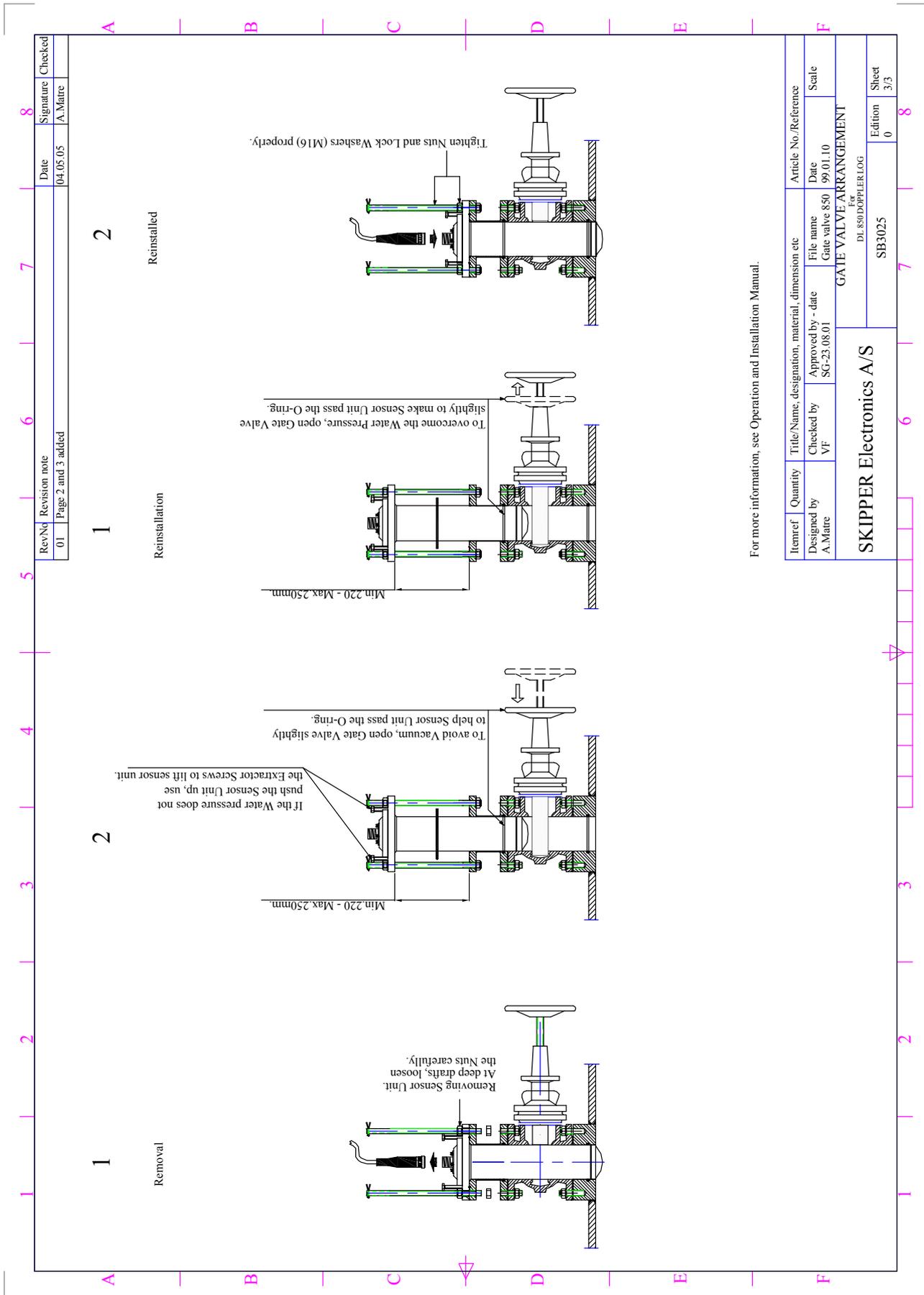
5. Arrow ahead direction



Sensor :

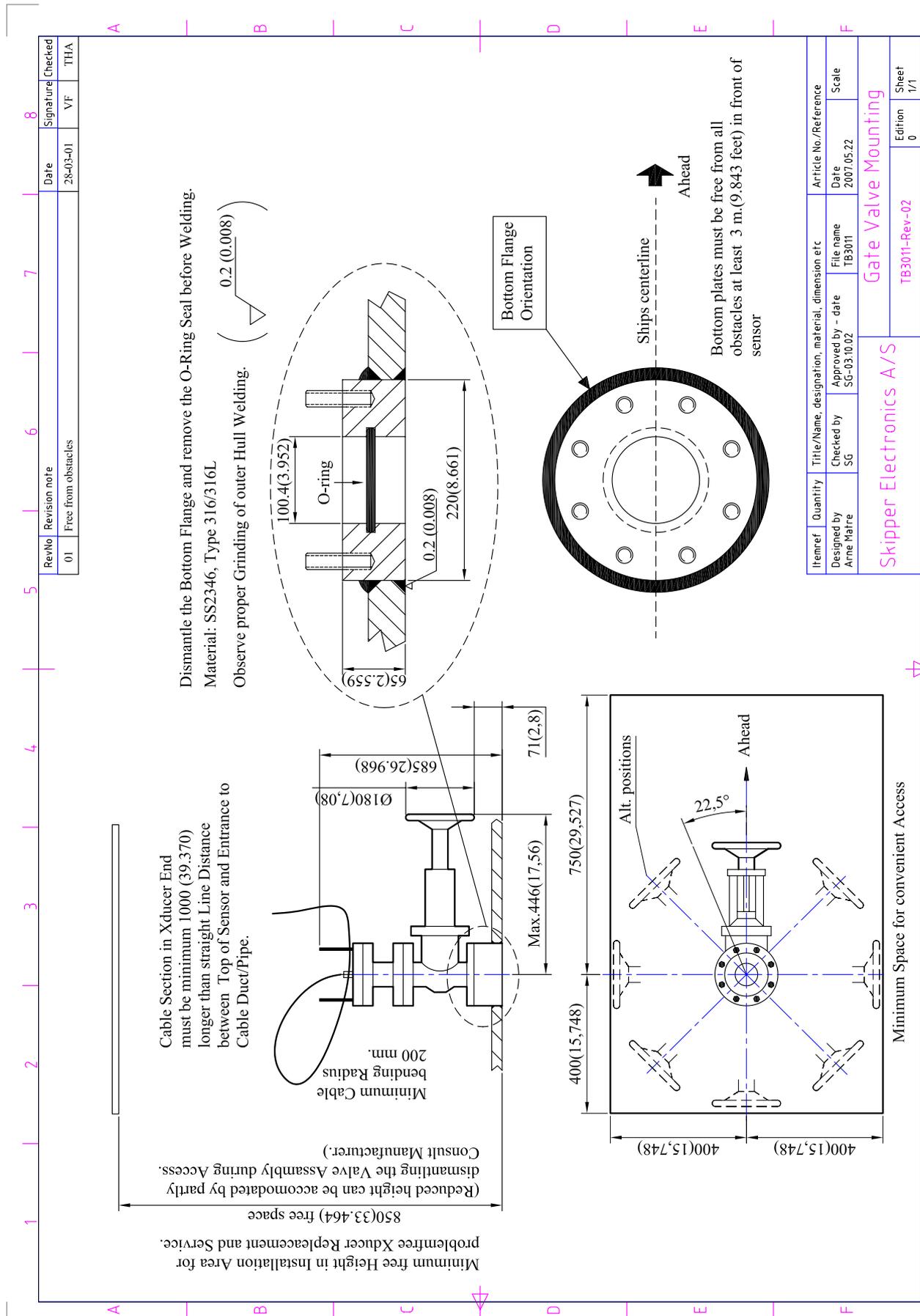
The arrow on the sensor unit must point ahead.

7. Sea Valve arrangement 3



For more information, see Operation and Installation Manual.

8. Sea Valve mounting



RevNo	Revision note	Date	Signature	Checked
01	Free from obstacles	28-03-01	VF	THA

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by Arne Matre	Checked by SG	Approved by - date SG-03.10.02	Date 2007.05.22
File name TB3011		Scale	

Gate Valve Mounting

Skipper Electronics A/S
 TB3011-Rev-02
 Edition 0
 Sheet 1/1