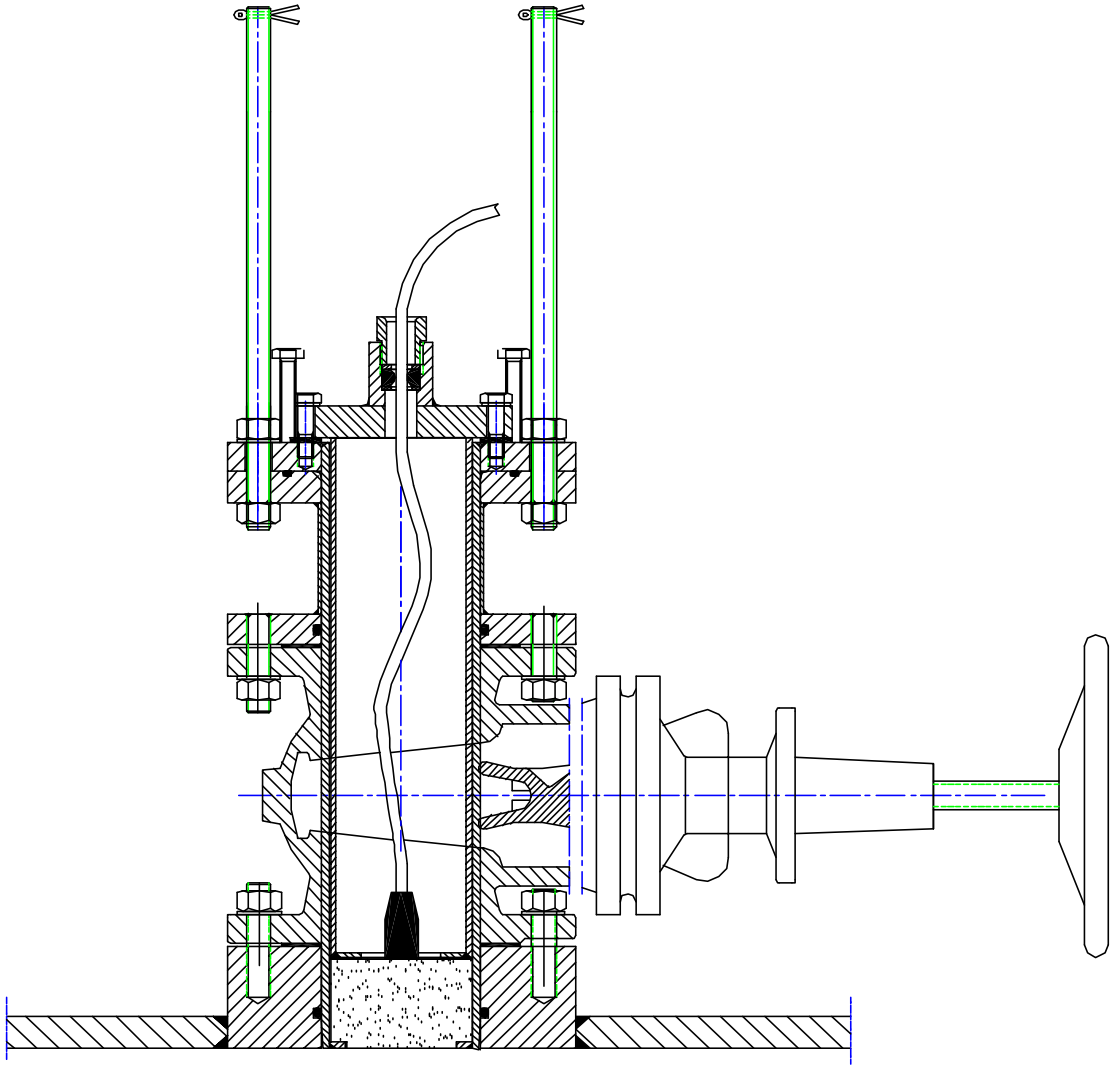
SKIPPER

Single Bottom Sea Valve

ETNSLJB
Operation and Installation Manual



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Contents

1. Installation

SKIPPER Sea Valve ETNSLJB for Echo Sounder Transducer.

Used for installation of:

1. Echo Sounder Transducer type TGM 60-50-25L (50 kHz) or TGM 50-200-25L (200 kHz).

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 ETNSLJB Sea Valve is delivered assembled for transport. The parts necessary for final assembly will be found on the Sea 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 smoothened and rounded off, in order not to create turbulence or aeration at speed.

The Sea valve should be placed in a dry space, large enough for installation and disassembly of the transducer unit. See page 11.

- When the position has been decided, the Sea valve is disassembled, a suitable (220 mm) hole is cut in the hull, and the bottom flange, Item (1), is welded into the hull . Standard welding practice and procedures should be observed. See welding notes.
- Orientation of the bottom flange is not needed, when used for Echo Sounder.
- The type of steel used in the Sea valve bottom flange is: **TP 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. and place 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 transducer housing into the Sea valve, moving it from side to side to align the different elements exactly. With the transducer housing still in place, tighten the 16 nuts below and above the Valve element. Torque 130 Nm.
- After tightening, check that the transducer still moves freely, easy to pull all the way out and insert again.

- Check that the transducer housing, when fully inserted, is flush with the lower surface of the bottom flange.
- If the above point are 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 transducer housing element.
- Place the O-ring, Item (13), in the groove on top of the intermediate element. Apply grease to the O-ring.
- Assemble transducer housing. Secure with 6 each washers/nuts. Torque 130 Nm.
- Insert the 2 safety bolts Item (16) through the flange and secure with Nuts (M16 counternuts). Torque 130 Nm.

NOTE! The 2 safety bolts MUST be used during removal and installation of sensor elements when the ship is afloat.

ASSEMBLY OF TRANSDUCER HOUSING.

- Place transducer element in the bottom of the transducer housing, Item (4).
- Slide the pressure tube, Item (5), over the cable and place it on top of the transducer element.
- Place the Nitril 3 mm gasket, Item (15), on top of the transducer housing.
- Check that the top edge of the pressure tube is level with the top surface of the Nitril gasket.
- If not, adjust with 1 mm shims plates between pressure tube and transducer element.
- Place the top flange, Item (6), on top of the Nitril gasket and secure with 4 each 10 mm bolts and washers. Torque 50 Nm.
- Install the washers, rubber gasket and bronze nut, Items (19), (20) and (21), in the cable gland and tighten until the cable can not be moved in the cable gland.
- Add washers if necessary.

The transducer housing is now ready to be installed in the Sea valve. To remove the transducer element, reverse the procedure.

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 Echo Sounder Transducer unit

- The transducer unit is secured with 6 each 16 mm pin bolts with nuts and washers, and two 16mm 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 TRANSDUCER UNIT IS CONSIDERABLE, AND MAY PUSH THE UNIT UPWARDS, ONCE LOOSENED, WITH GREAT FORCE. WHEN REMOVING THE UNIT ON SUCH VESSELS, AT LEAST ONE OF THE NUTS ON THE SAFETY BOLTS SHOULD BE POSITIONED CLOSE TO THE TRANSDUCER UNIT TOP 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 transducer 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 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 transducer unit, release the nuts on the safety bolts gradually until the transducer unit is clear of the valve piston.

- Otherwise, lift the unit by hand or other tools until clear of the valve piston.
- The unit is clear of the piston when it has been lifted Min. 220 - Max. 250mm.

- Do not lift more than 250 mm, as the unit will clear the upper water sealing ring, and there will be water leakage.

Close the valve element.

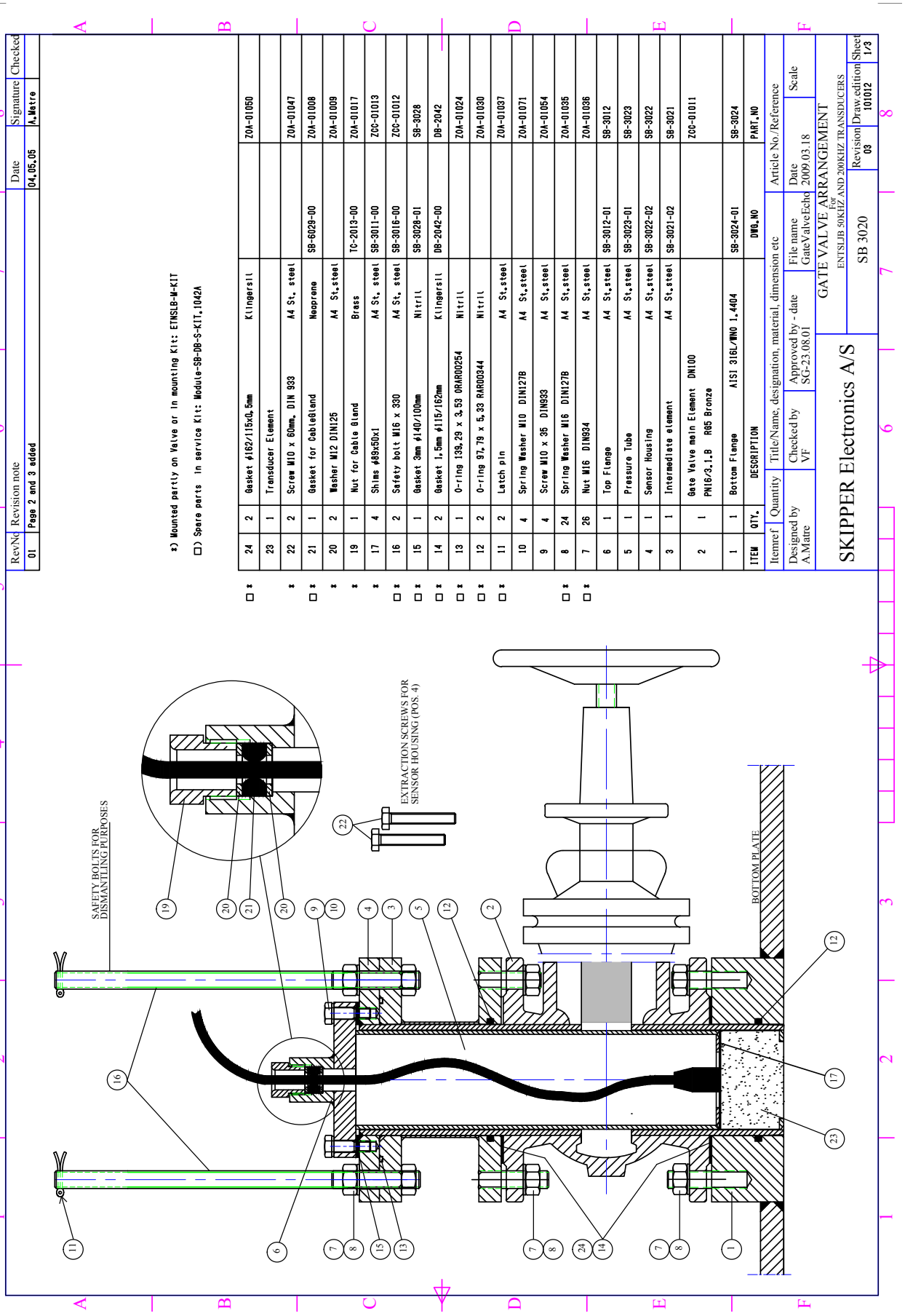
Remove the split pins and nuts from the safety bolt and lift out the transducer unit. It may be necessary to let the Sea valve leak somewhat while lifting out the unit, as there will be vacuum between the valve piston and the transducer unit.

- 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 transducer 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.

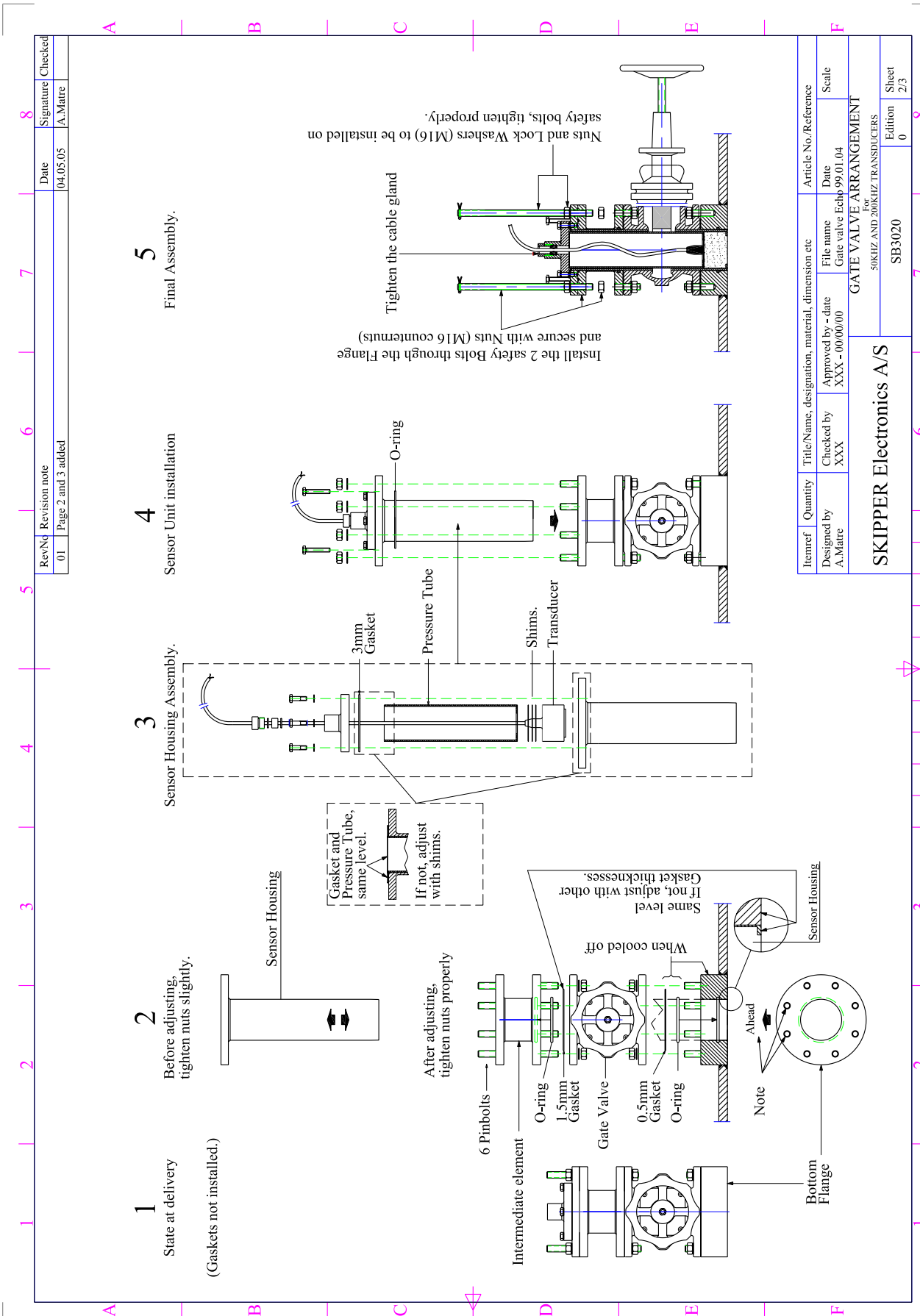
3. Re-installation of Echo Sounder Transducer unit

- Before the transducer 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 transducer unit with water resistant grease and insert it into the top of the intermediate element, pushing it as far down as it will go. To avoid excessive leakage during the reinstallation, it should go past the upper water blocking O-ring (Min. 220 - Max. 250mm) .
- Secure the transducer unit unit by screwing the nuts on the safety bolts firmly down on the transducer unit top flange.
- To overcome the water pressure, open valve element slightly to help transducer unit pass the o-ring.
- Open the valve element to full opening.
- Push the transducer 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 transducer 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.

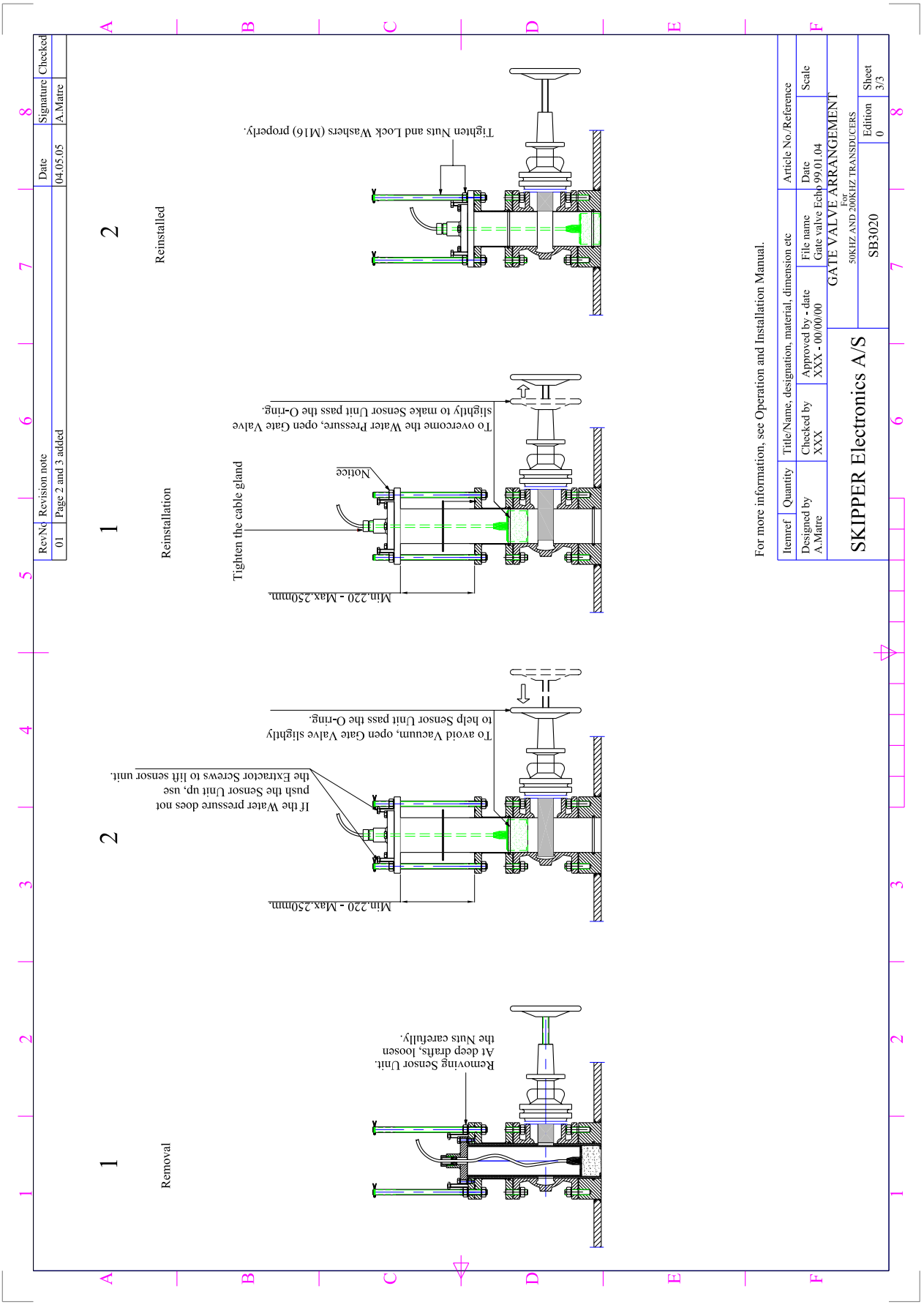
4. Sea Valve Arrangement 1



5. Sea Valve Arrangement 2



6. Sea Valve Arrangement 3



7. Sea Valve Mounting