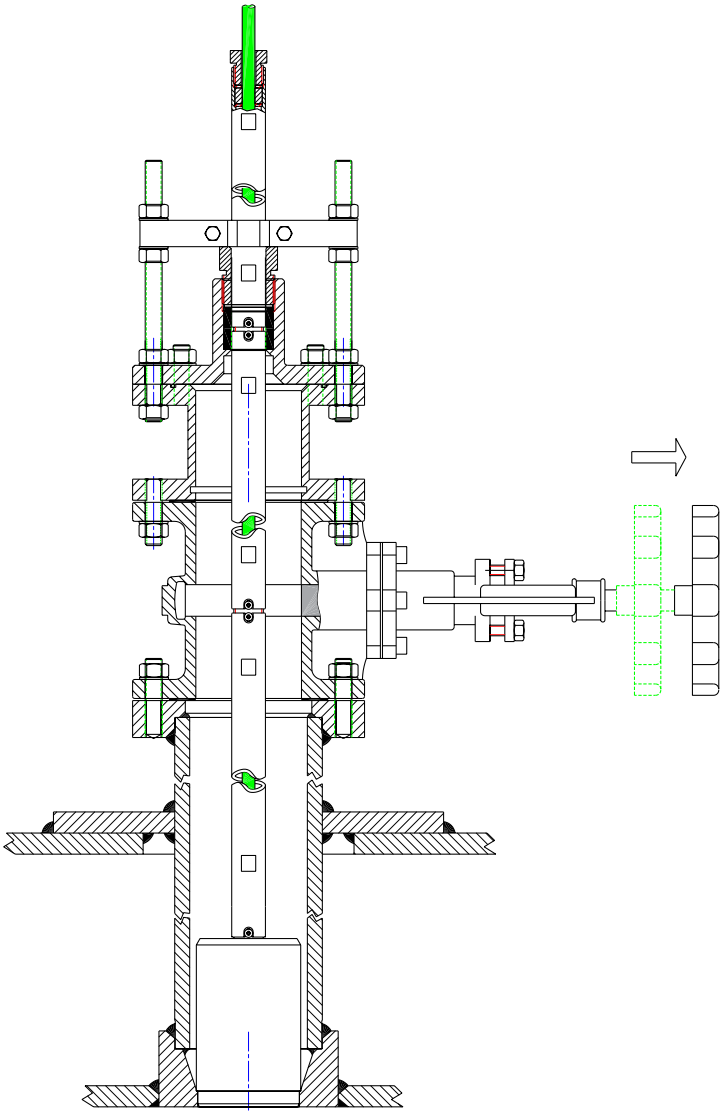
SKIPPER

Double Bottom Sea Valve

DB-100-SA
Operation and Installation Manual



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Contents

SKIPPER DB (Double Bottom) Sea Valve 100 mm

1. Installation

The SKIPPER DB Sea Valve 100 mm is used for installation of:
1. Echo Sounder transducer type (50 and 200 kHz).
2. DL850 (270 kHz) Doppler Log.
3. DL2 and DL21 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 DB 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) that 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 Sea Valve and sensor unit. See drawing: “Space considerations”.

Important

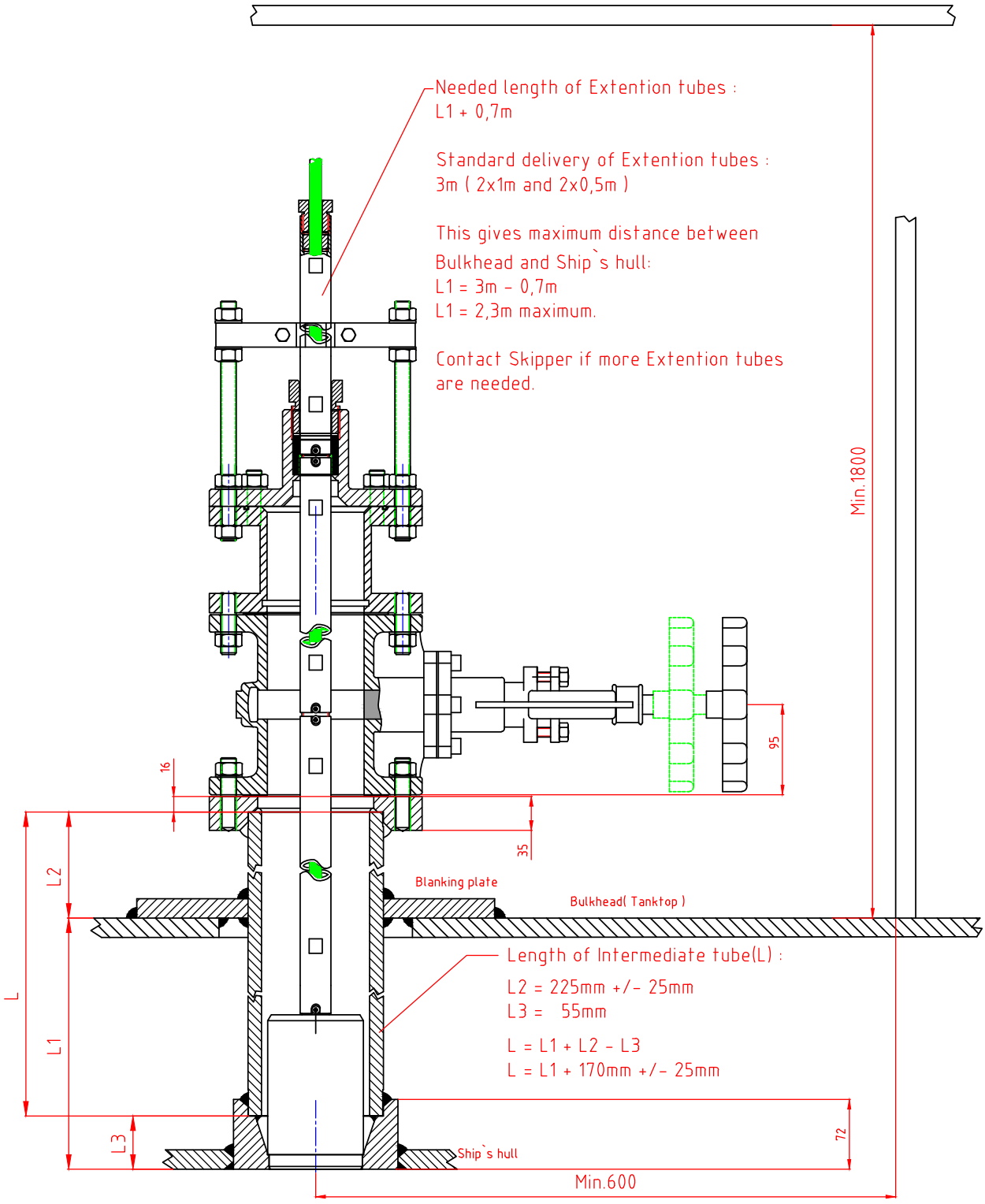
”Sensors for Speed Log and Echo Sounder are delivered with a fixed cable. Attention must be taken to allow easy replacement/pulling of new cable during maintenance”.

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 Double Bottom Sea Valve.

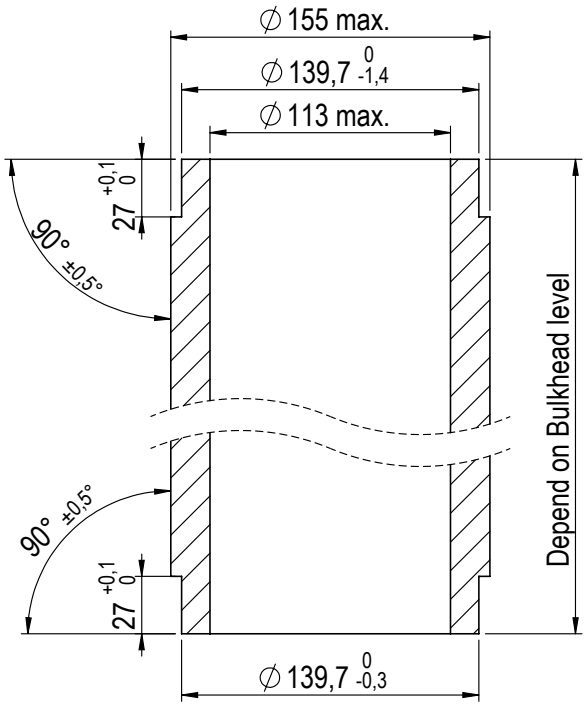
2. Space considerations

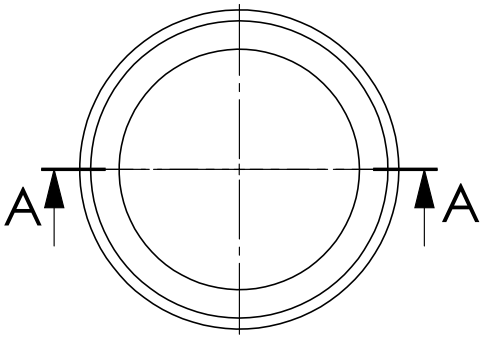


The Sea Valve should be placed in a service accessible place, large enough for installation and disassembly of the sensor unit.

3. Intermediate Tube

*** Yard supply**





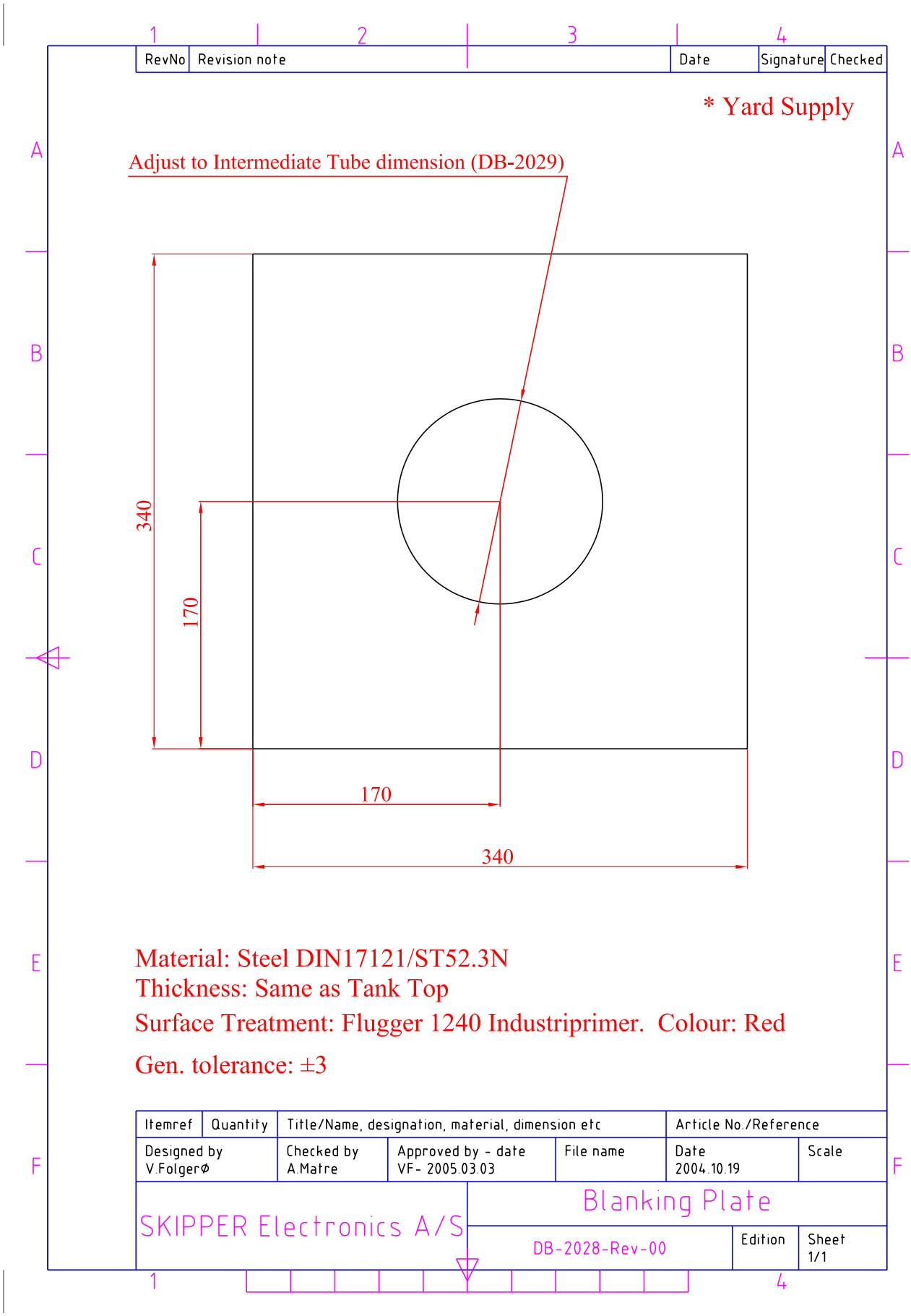
Real view
Scale: 1 : 20

Surface treatment: Red Industrial primer
Flugger 1240 or equal

Basic tube measurements: OD: Max. 155mm Min.138,5mm
ID: Max. 113mm Min.108mm
Minimum wall thickness: 12mm

CN									
Designed by - date VF 2008.09.10	Checked by ST	Approved by - date GT 2015.07.02	Material **Steel DIN17121/St52.3N or equal**						
SKIPPER Electronics AS	Name Intermediate Tube								
	Drwg. no. DB-2029								Revision 01
	Gen. tolerance ISO2768m	Eur. projection		Scale 1 : 3	Edition date 2015.07.01				Sheet 1 of 1

4. Blanking plate



5. Welding the bottom flange

- When the position has been decided, a 170 mm hole is cut in the hull, and a (200 mm) hole is cut in the bulkhead (tanktop).
- 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:

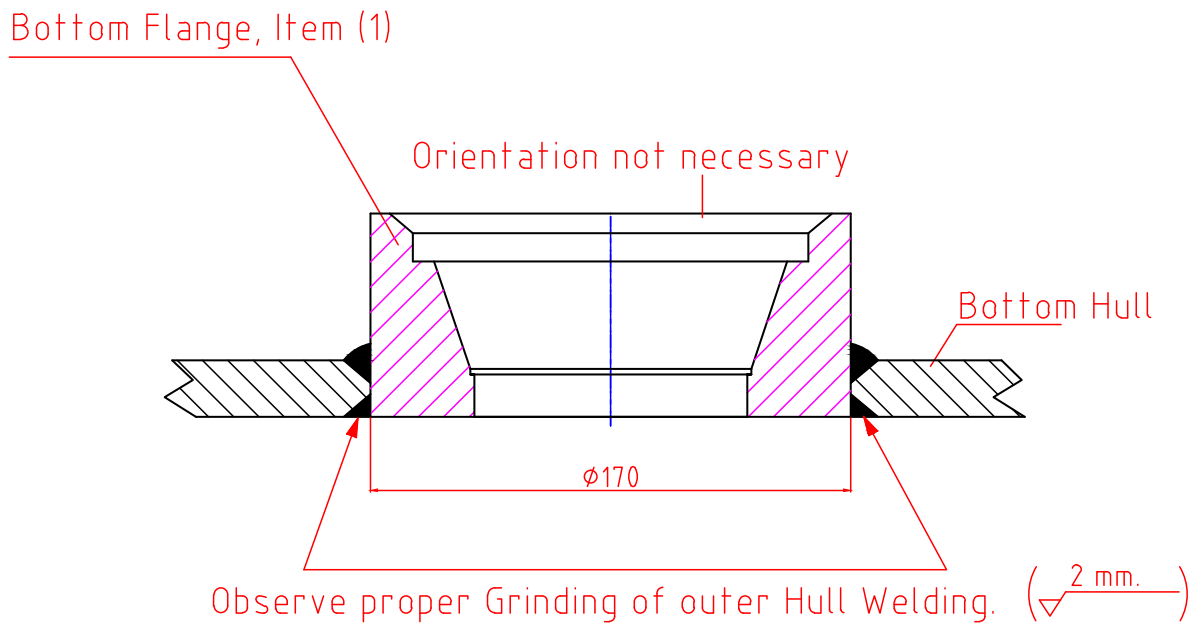
The bottom flange is a part of the Sea Valve that is machined with high accuracy and it should be protected after mounting to avoid damage to the bottom flange surfaces. This to avoid leakage. If the valve is pre-mounted, be sure to protect the valve from being polluted by welding debris.

WELDING NOTES!

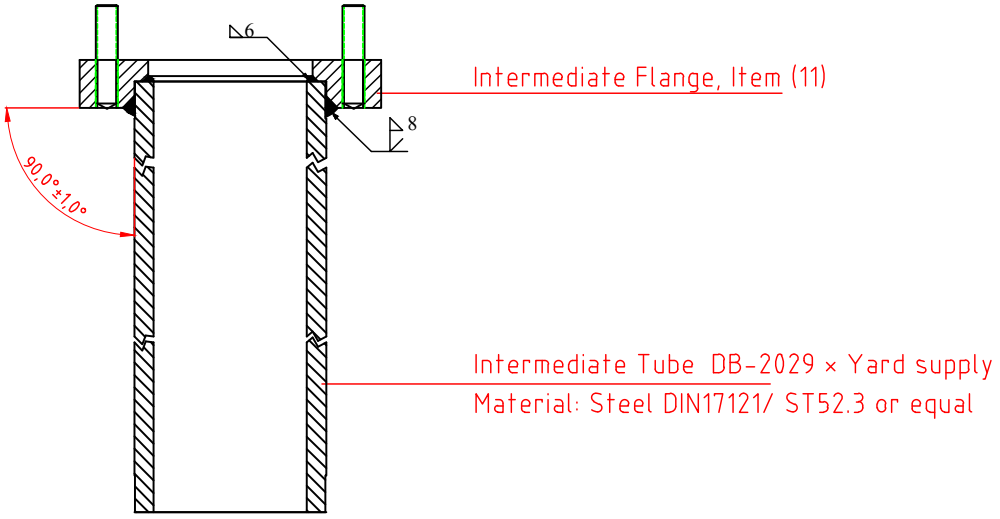
All bottom parts and flanges for welding are precisely machined parts. During welding of these parts to the ship's hull plates, careful attention must be paid to avoid construction strain on the bottom parts and flanges.

- **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.**

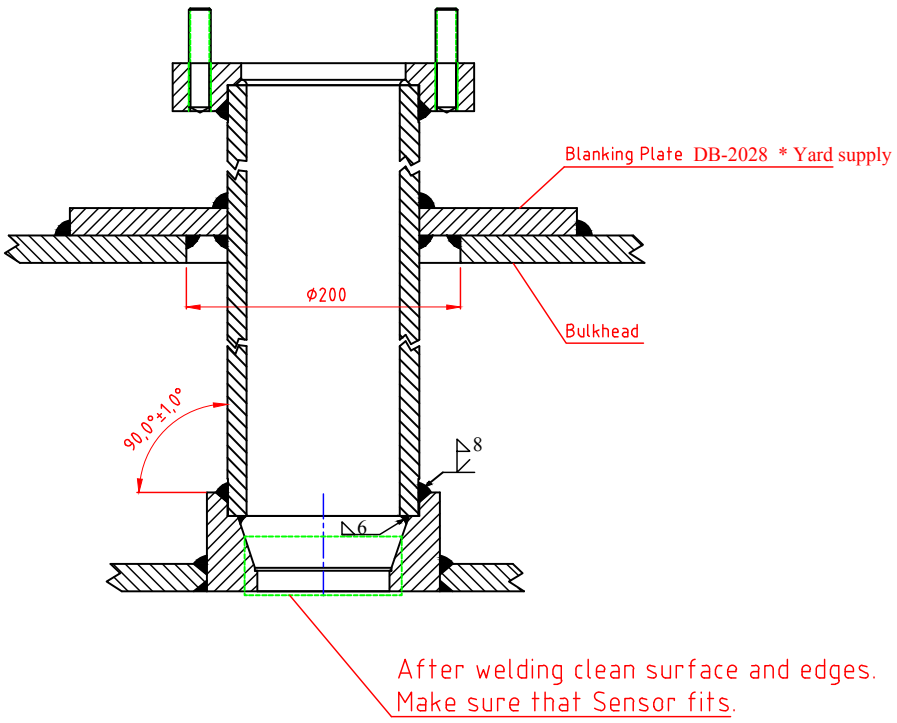
Welding the Bottom Flange in Ship`s Hull



- Intermediate Flange, Item (11) is welded into Intermediate Tube, Item (10) (*Yard supply).
- Standard welding practice, methods and procedures should be observed. (See welding notes).

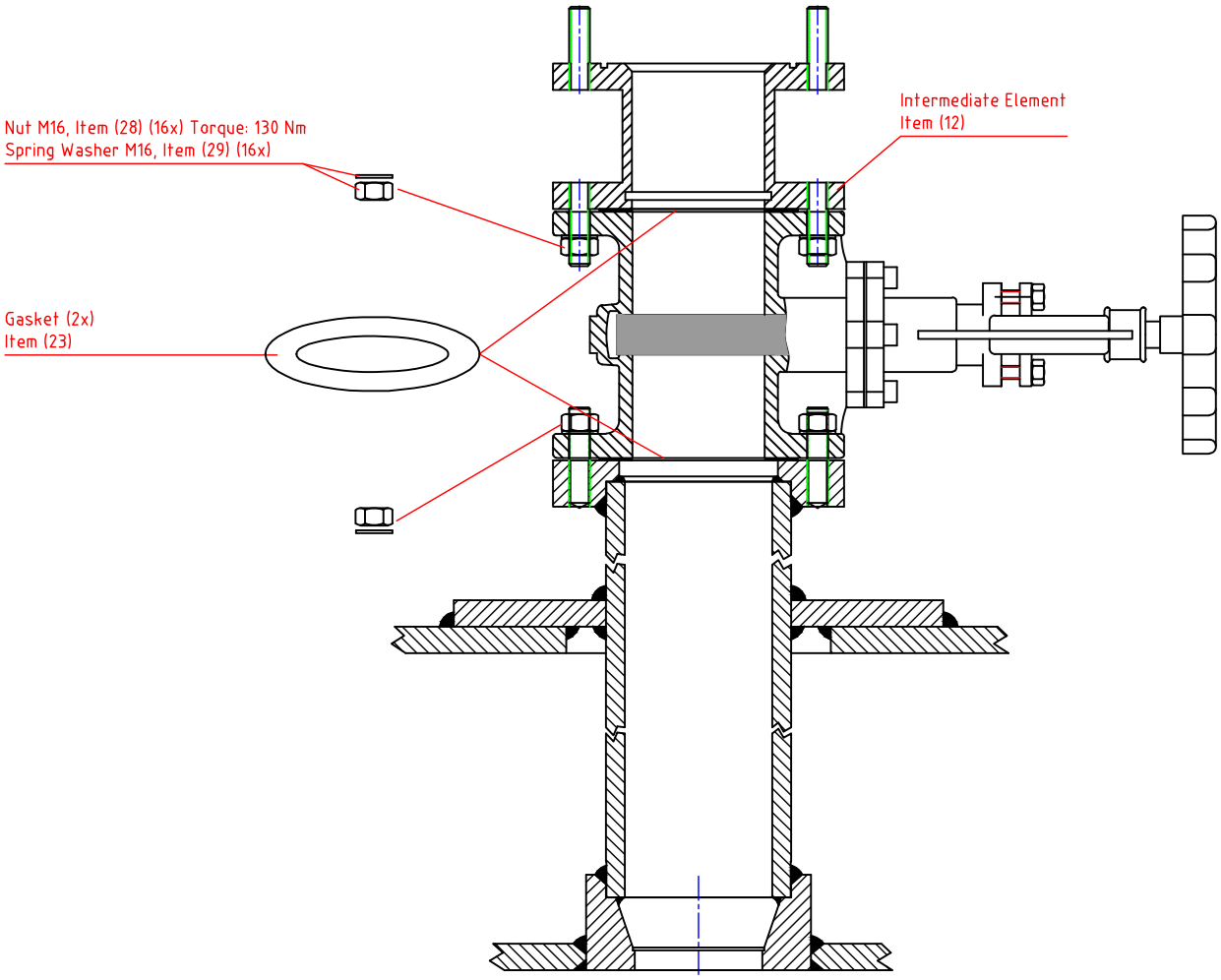


- Blanking Plate, Item (9) (*Yard supply) is placed over the 200 mm hole in the bulkhead.
- Intermediate Tube, Item (10) is tread into the Blanking Plate, Item (9) and through the 200 mm hole in the bulkhead.
- Standard welding practice, methods and procedures should be observed. (See welding notes).

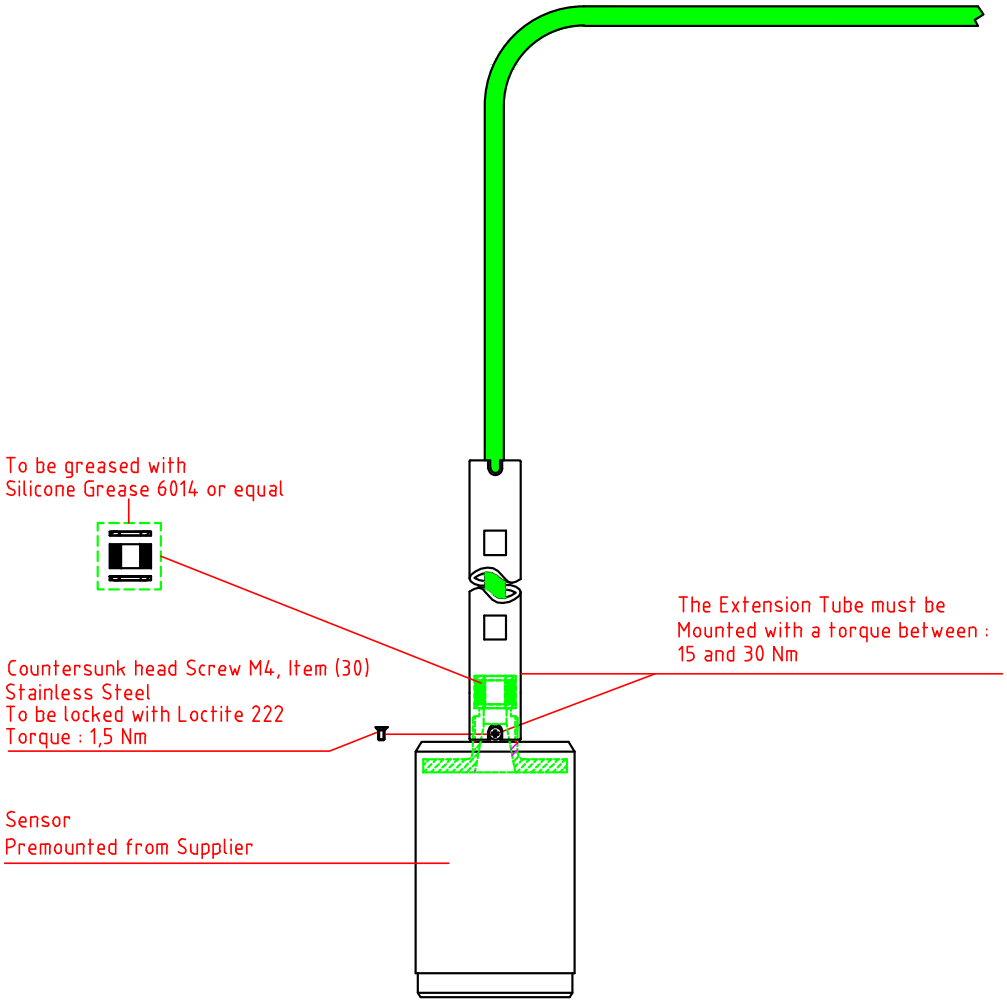


6. Sea Valve Assembly

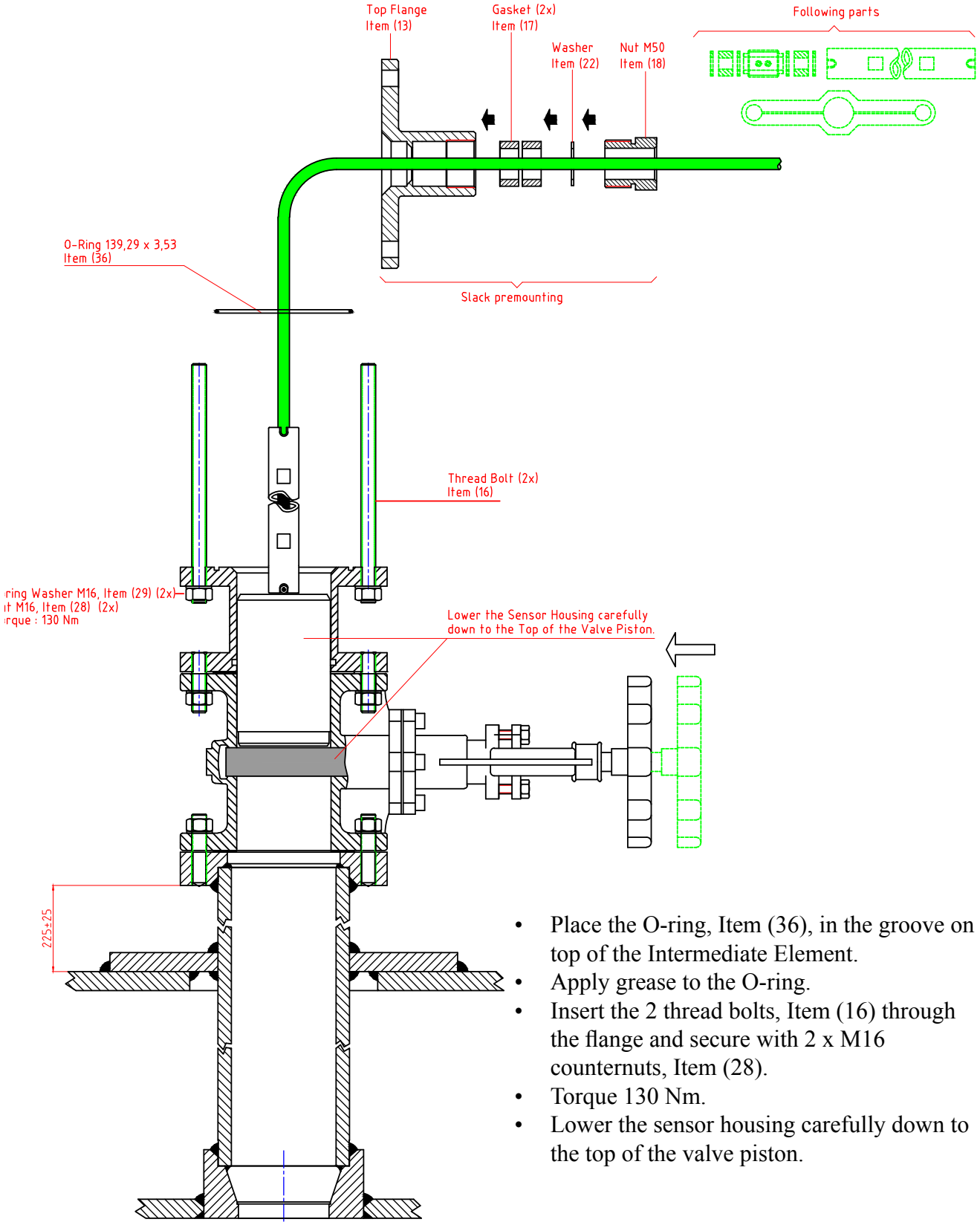
- Place 1.5 mm Klingersil gasket, Item (23) on top of Intermediate Flange, Item (11).
- Then place the Valve element on top of the Intermediate Flange. The 16 mm nuts and washers should be mounted and tightened. (Align parts before tighten nuts).
- Place a 1.5 mm Klingersil gasket on top of the Valve element.
- Mount the intermediate element, Item (12) on top of the Valve element.
- The flange with only 6 pinbolts to be upwards.
- All 8 nuts and washers should be mounted, and tightened. (Align parts before tighten nuts).



7. Assembling of first extension tube and sensor



8. Sensor installation



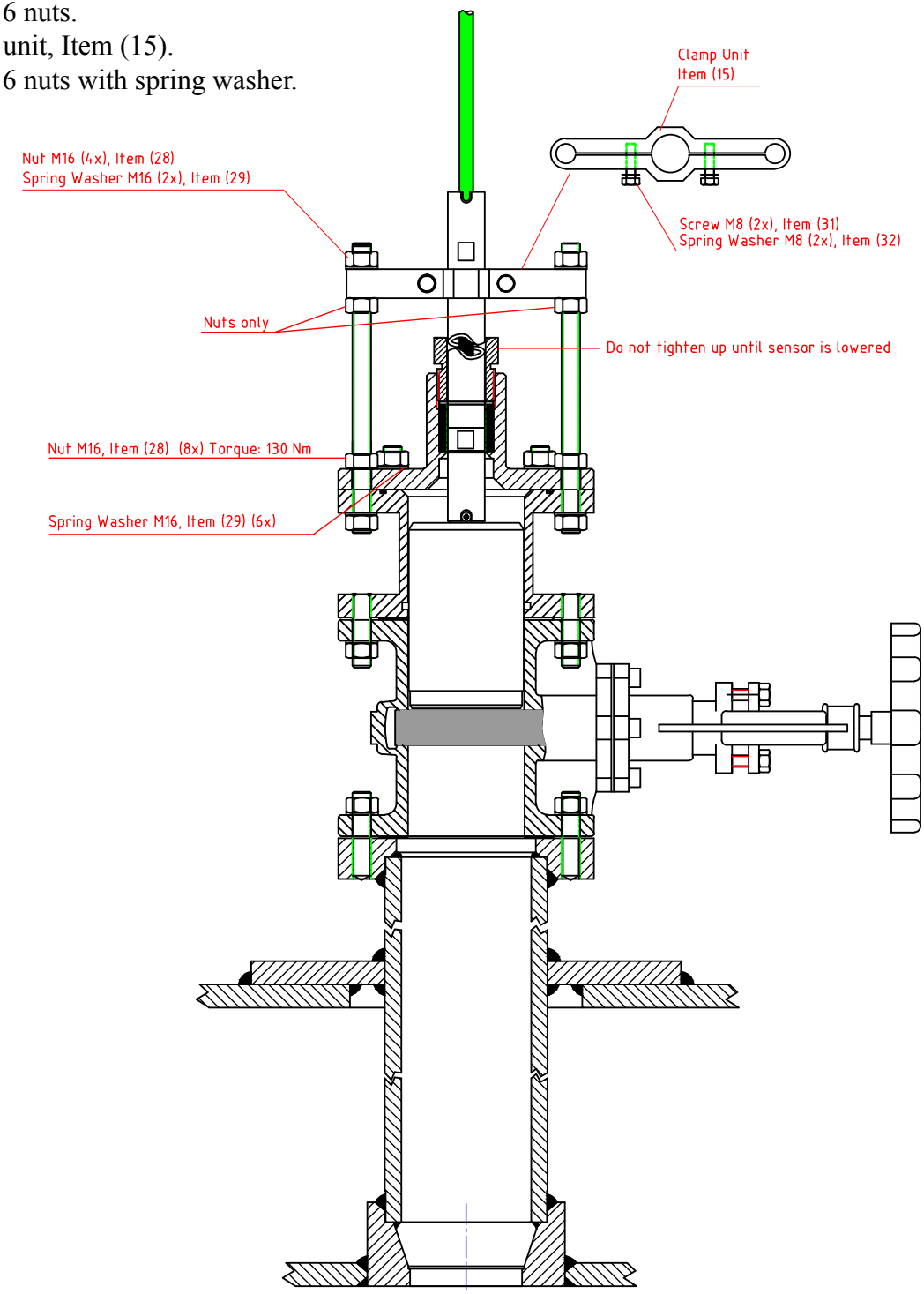
- Place the O-ring, Item (36), in the groove on top of the Intermediate Element.
- Apply grease to the O-ring.
- Insert the 2 thread bolts, Item (16) through the flange and secure with 2 x M16 counternuts, Item (28).
- Torque 130 Nm.
- Lower the sensor housing carefully down to the top of the valve piston.

9. Clamp Unit mounting

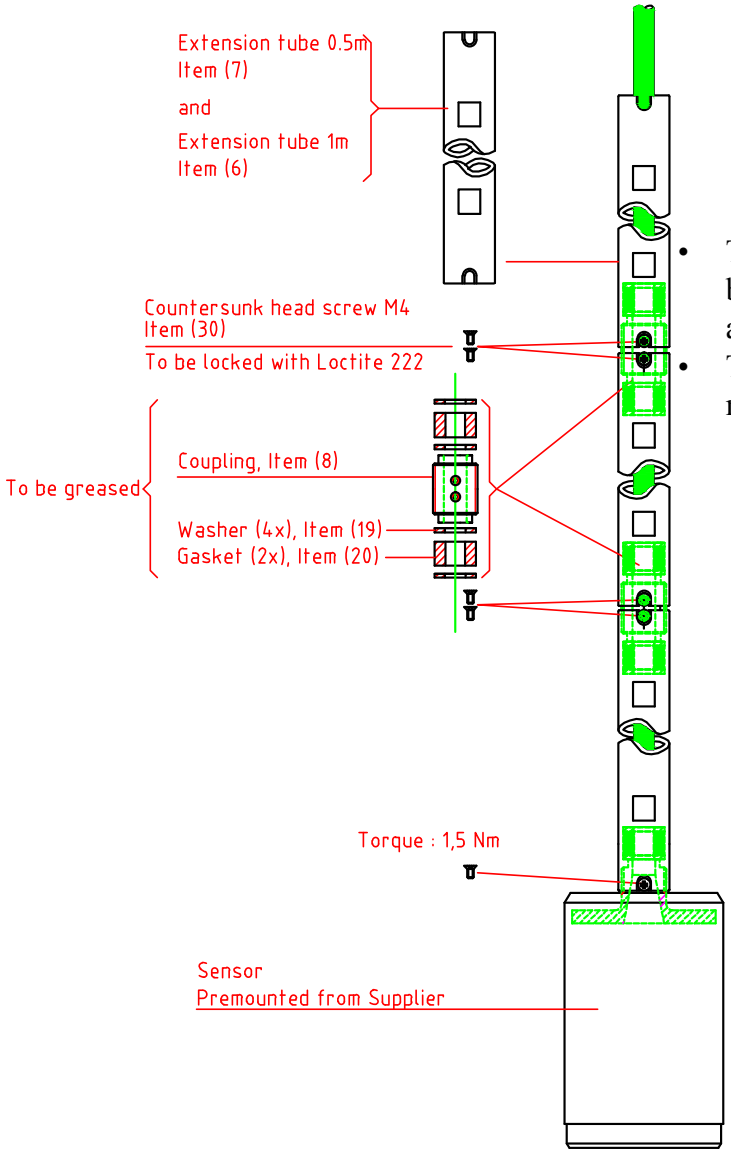
Mount Top Flange, Item (13). Secure with 8 each washers and nuts. Torque: 130 Nm.

Mount in following order:

- 2 x gasket, Item (17).
- Washer, Item (22).
- Nut M50, Item (18).
- 2 x M16 nuts.
- Clamp unit, Item (15).
- 2 x M16 nuts with spring washer.

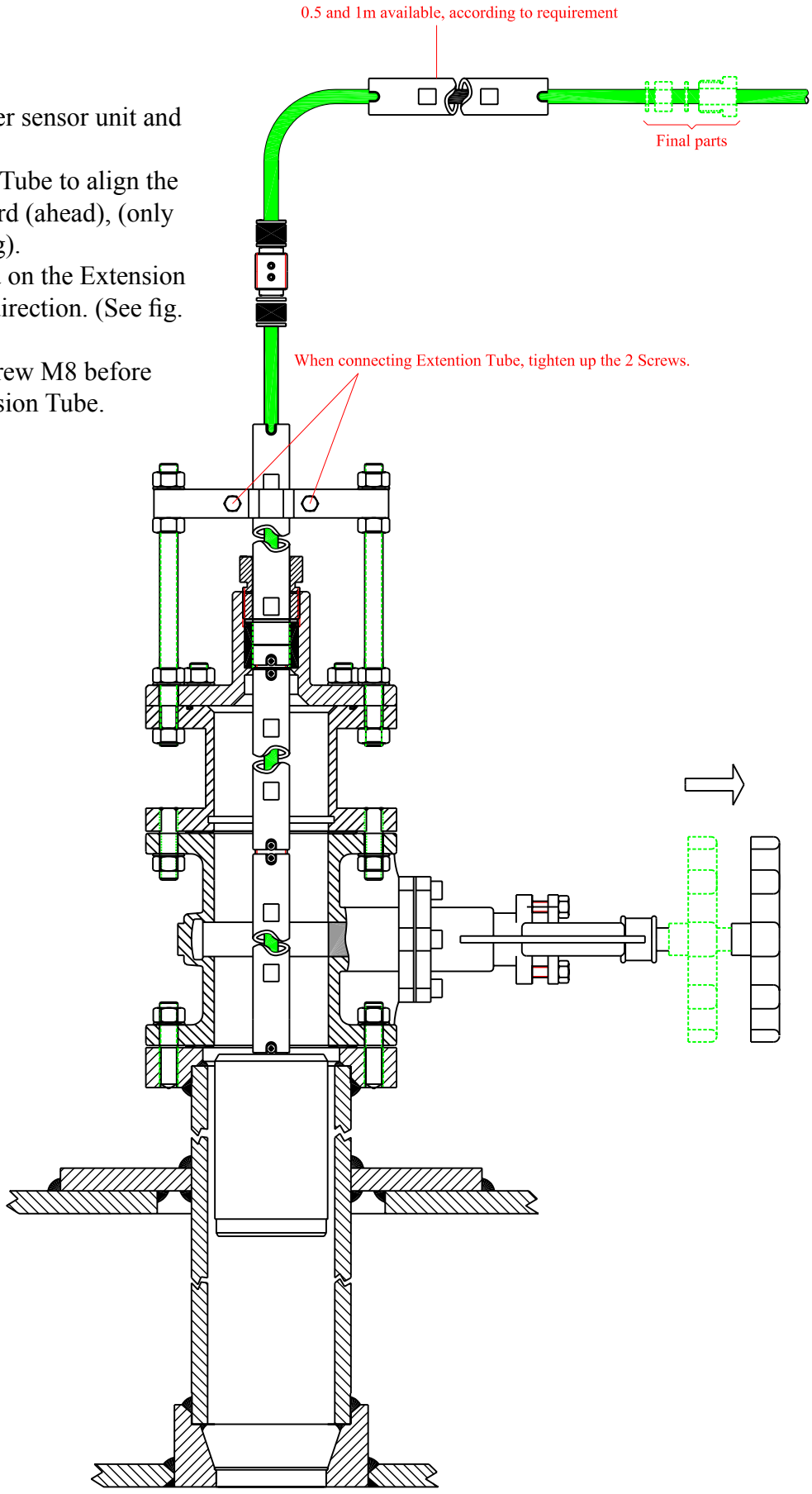


10. Extension tube mounting order



- The extension tubes and coupling must be mounted with a torque between 15 and 30 Nm.
- The countersunk head screw must be mounted with a torque 1.5 Nm

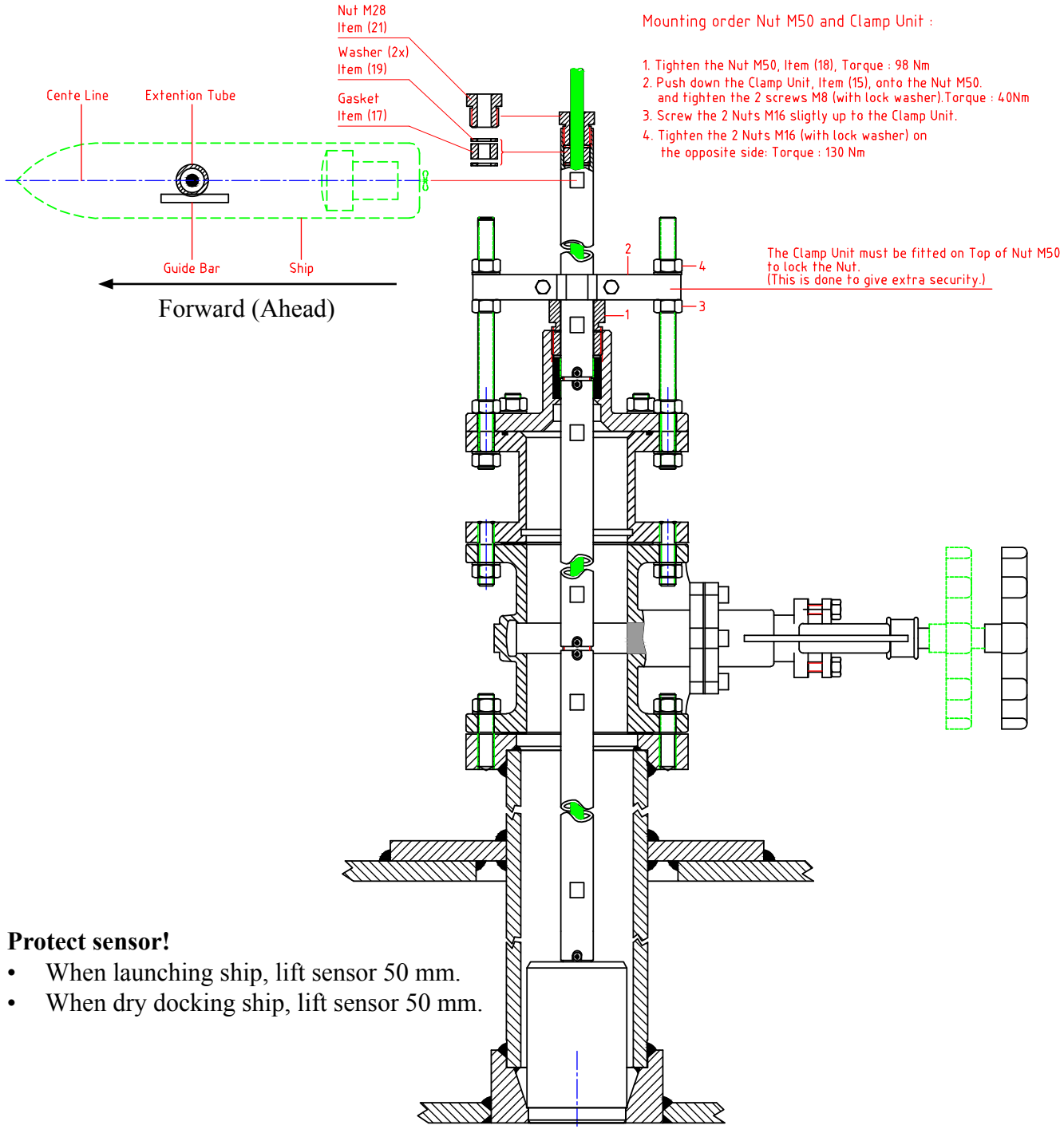
- Open Sea Valve, lower sensor unit and first Extension Tube.
- Rotate the Extension Tube to align the sensor to point forward (ahead), (only needed for Speed Log).
- Use the flattened area on the Extension Tube to find correct direction. (See fig. “11. Final assembly”.
- Tighten up the 2 x screw M8 before mounting next Extension Tube.



11. 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.

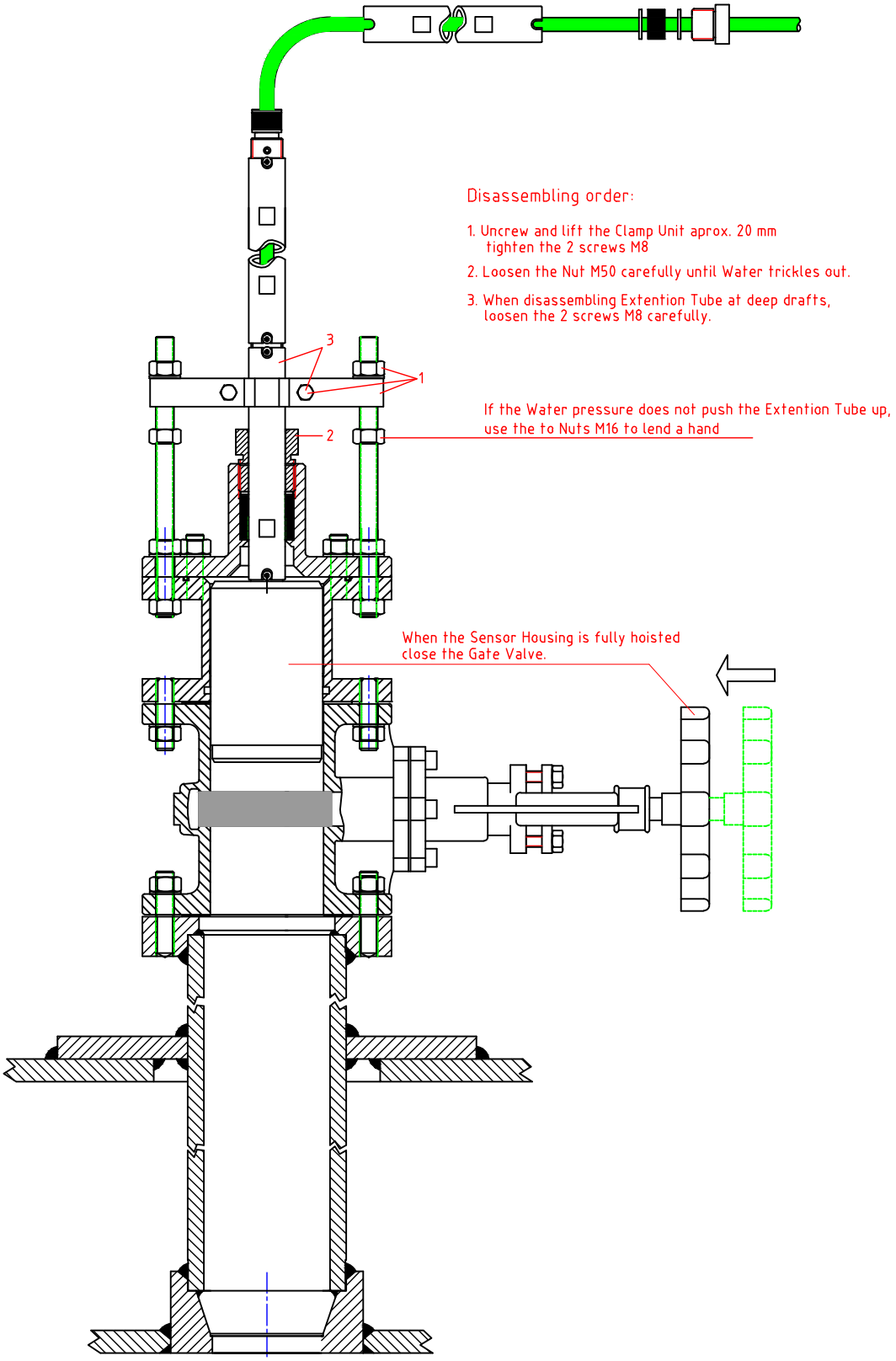


Protect sensor!

- When launching ship, lift sensor 50 mm.
- When dry docking ship, lift sensor 50 mm.

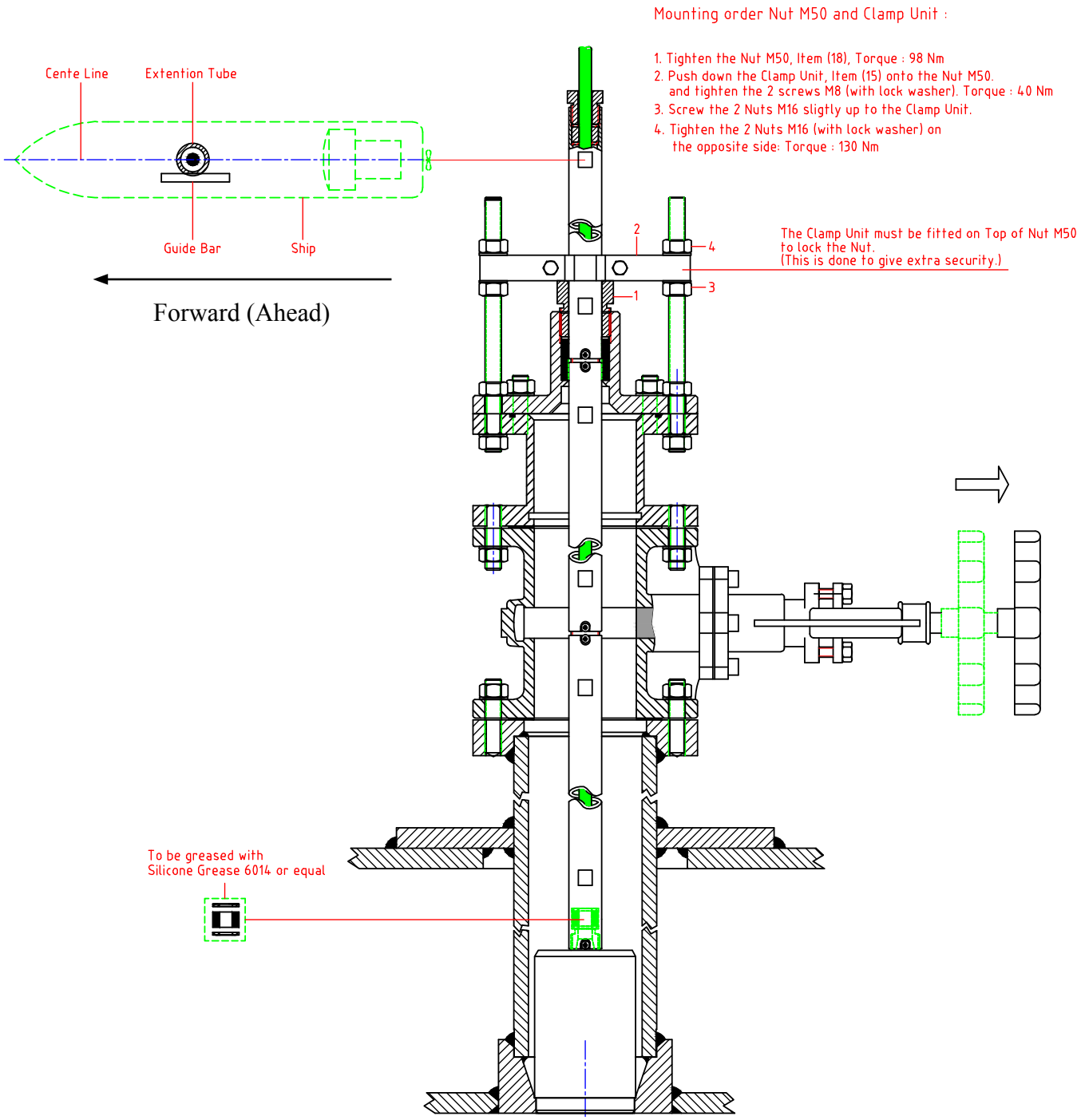
Check that the transducer/sensor housing, when fully inserted, is flush with the lower surface of the bottom flange.

12. Sensor removal

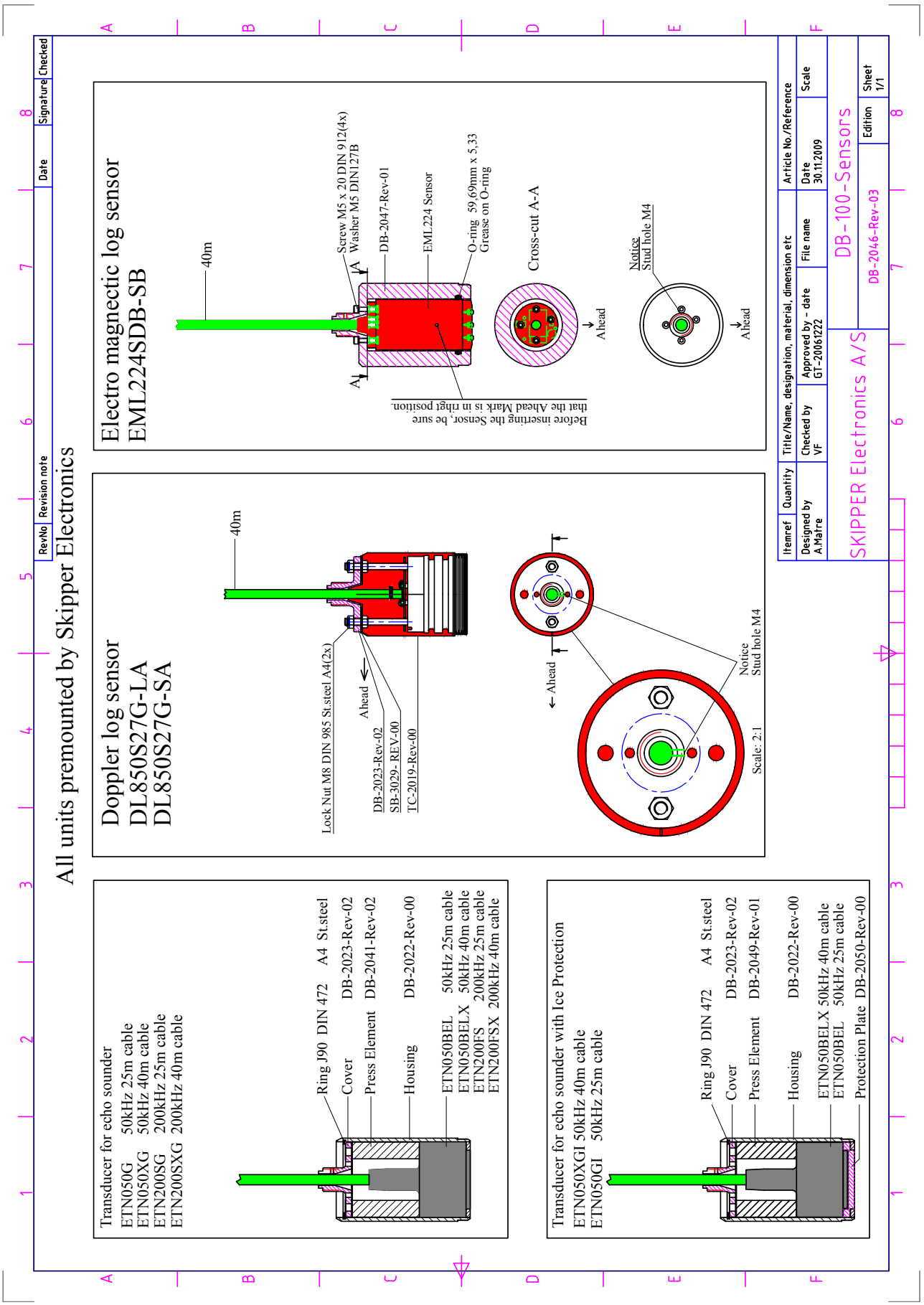


13. Re-installation

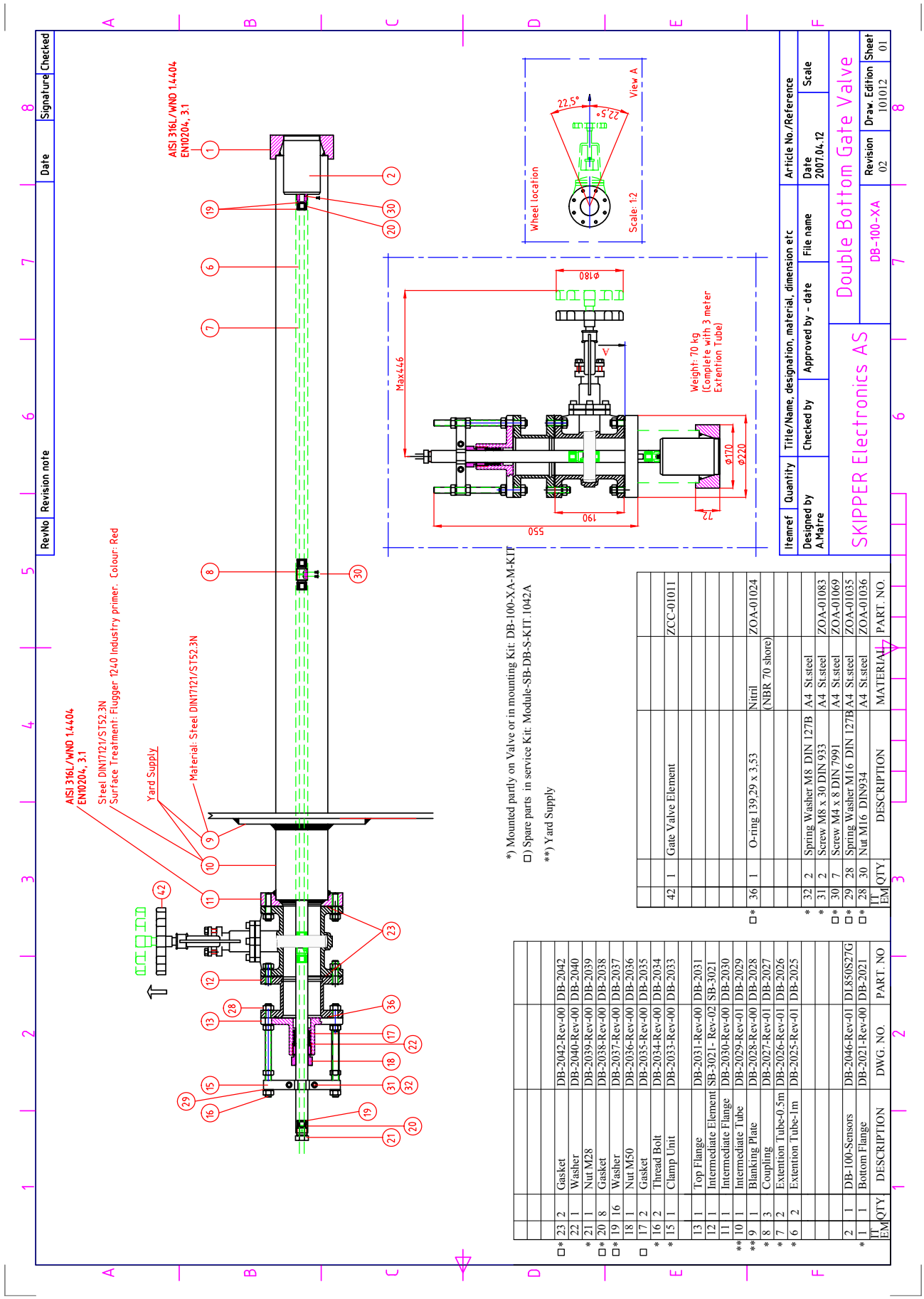
Same procedure as first-time mounting.



14. DB-100 Sensors



15. 100 mm Double Bottom Sea Valve



ITEM	QTY.	DESCRIPTION	PART. NO
42	1	Gate Valve Element	ZCC-01011
36	1	O-ring 139,29 x 3,53 (NBR 70 shore)	ZOA-01024
32	2	Spring Washer M8 DIN 127B	A4 St.steel
31	2	Screw M8 x 30 DIN 933	A4 St.steel ZOA-01083
30	7	Screw M4 x 8 DIN 7991	A4 St.steel ZOA-01069
29	28	Spring Washer M16 DIN 127B	A4 St.steel ZOA-01035
28	30	Nut M16 DIN934	A4 St.steel ZOA-01036

ITEM	QTY.	DESCRIPTION	DWG. NO.	PART. NO
23	2	Gasket	DB-2042-Rev-00	DB-2042
22	1	Washer	DB-2040-Rev-00	DB-2040
21	1	Nut M28	DB-2039-Rev-00	DB-2039
20	8	Gasket	DB-2038-Rev-00	DB-2038
19	16	Washer	DB-2037-Rev-00	DB-2037
18	1	Nut M50	DB-2036-Rev-00	DB-2036
17	2	Gasket	DB-2035-Rev-00	DB-2035
16	2	Thread Bolt	DB-2034-Rev-00	DB-2034
15	1	Clamp Unit	DB-2033-Rev-00	DB-2033
13	1	Top Flange	DB-2031-Rev-00	DB-2031
12	1	Intermediate Element	SB-3021- Rev-02	SB-3021
11	1	Intermediate Flange	DB-2030-Rev-00	DB-2030
10	1	Intermediate Tube	DB-2029-Rev-01	DB-2029
9	1	Blanking Plate	DB-2028-Rev-00	DB-2028
8	3	Coupling	DB-2027-Rev-01	DB-2027
7	2	Extention Tube-0.5m	DB-2026-Rev-01	DB-2026
6	2	Extention Tube-1m	DB-2025-Rev-01	DB-2025
2	1	DB-100-Sensors	DB-2046-Rev-01	DL850S27G
1	1	Bottom Flange	DB-2021-Rev-00	DB-2021