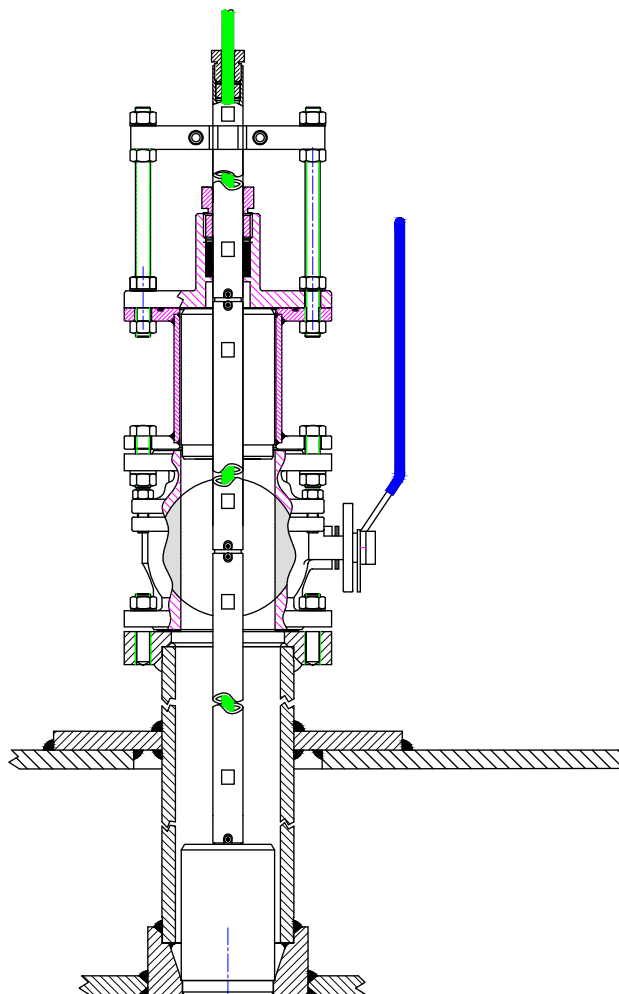


SKIPPER

Double Bottom Sea Valve

DB-100-SB

Operation and Installation Manual



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SKIPPER DB (Double Bottom) Sea Valve 100 mm

1. Installation

The SKIPPER DB 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 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) 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. Needed attention must be taken to allow easy replacement/pulling of new cable during maintenance”.

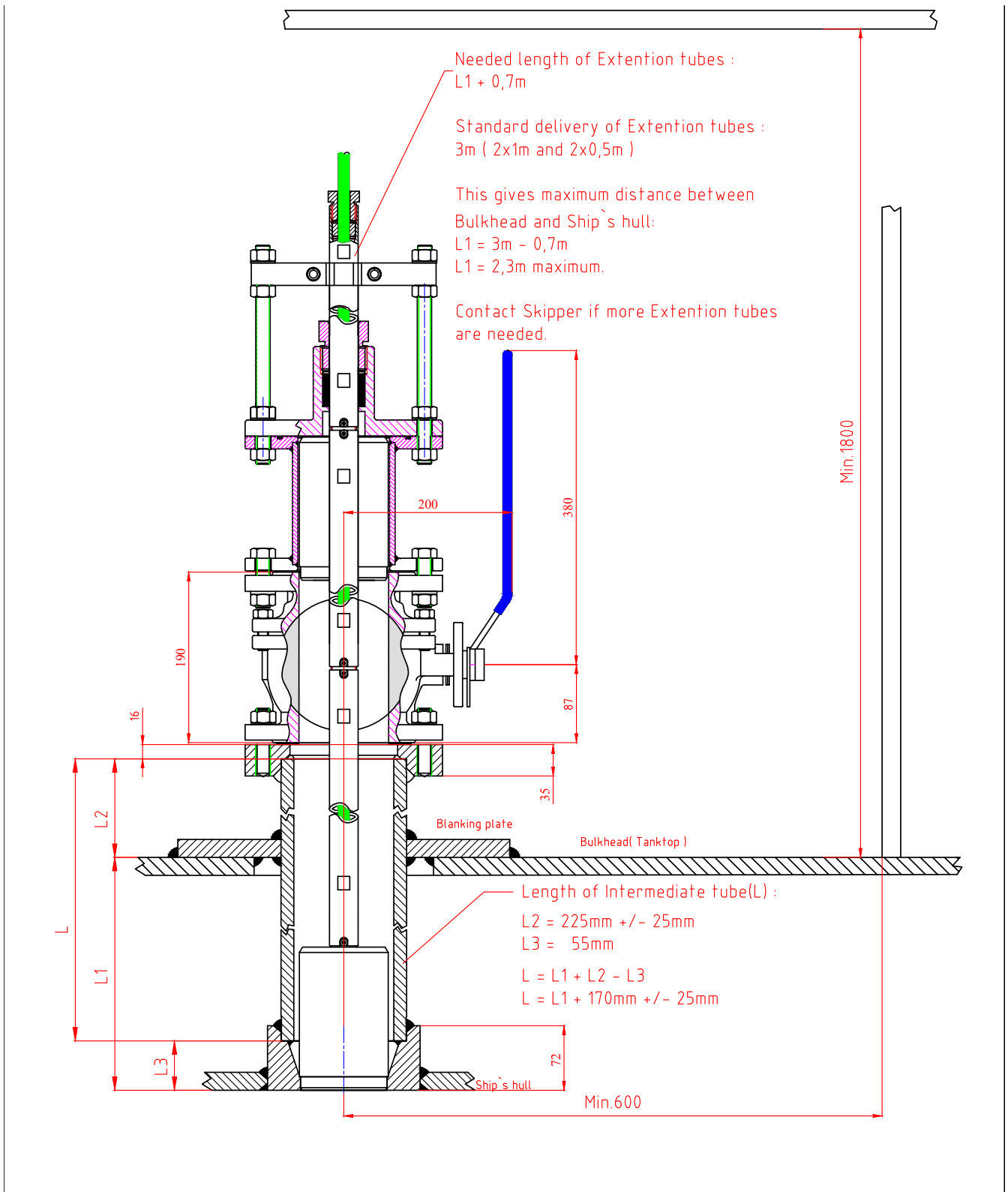
SKIPPER Electronics AS can help recommend installation positions if GA-drawings (General arrangements), lines drawings and frame drawings are made available for study.

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.

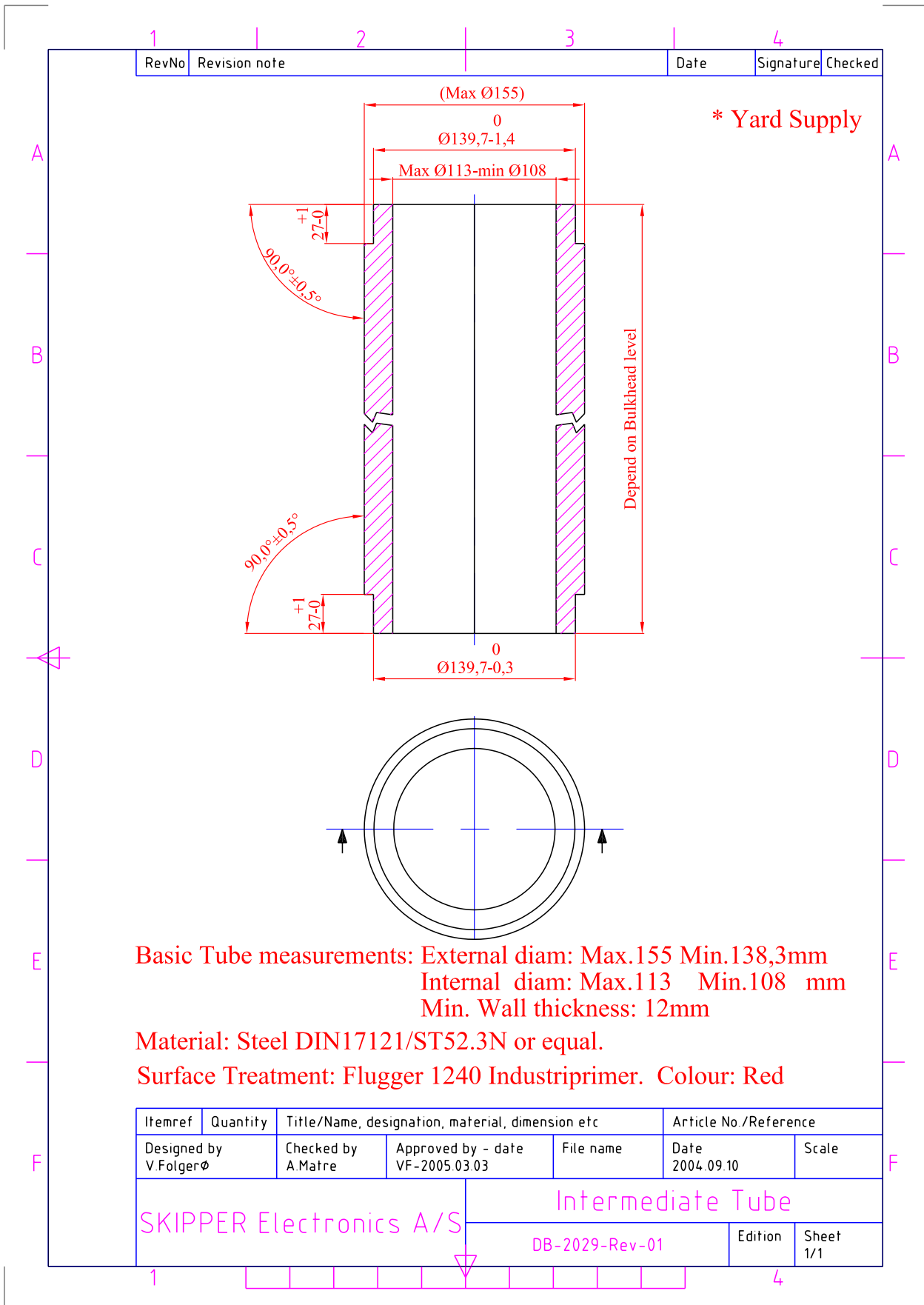
Note: All “Item (X)” references on the following pages, can be found on the drawing “100 mm Double Bottom Ball Valve” .

2. Space considerations



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

3. Intermediate Tube



4. Blanking plate

1		2	3	4
RevNo	Revision note			Date
				Signature
				Checked

* Yard Supply

Adjust to Intermediate Tube dimension (DB-2029)

Material: Steel DIN17121/ST52.3N
 Thickness: Same as Tank Top
 Surface Treatment: Flugger 1240 Industriprimer. Colour: Red
 Gen. tolerance: ±3

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference		
Designed by V.Folgerø	Checked by A.Matre	Approved by - date VF- 2005.03.03	File name	Date 2004.10.19	Scale
SKIPPER Electronics A/S			Blanking Plate		
			DB-2028-Rev-00		Edition

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:

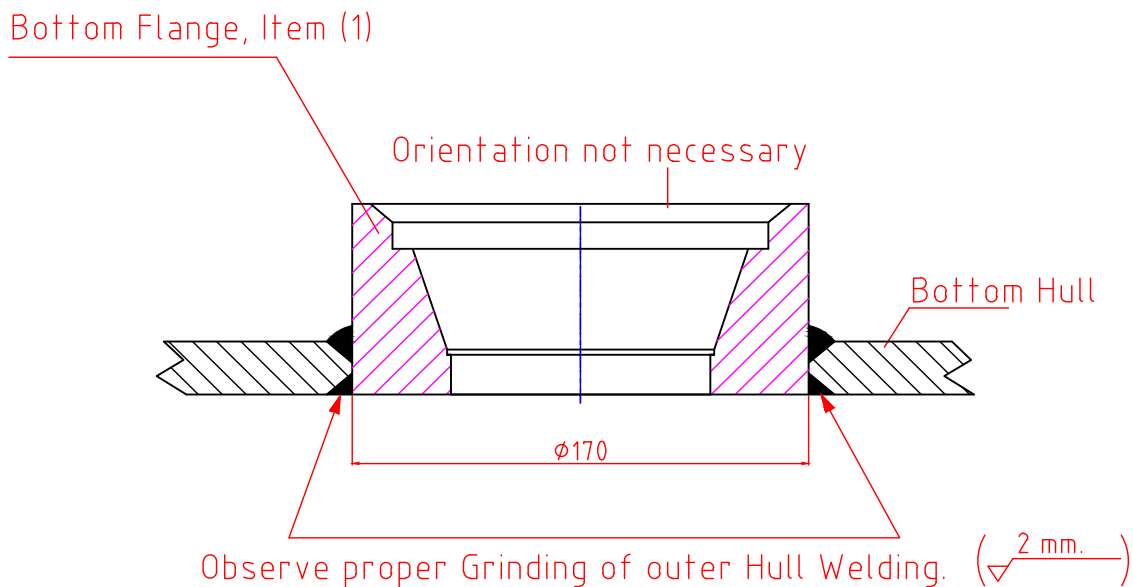
The bottom flange is a part of the Sea Valve that is machined with high accuracy and it should be protected after mounting to avoid damage to the bottom flange surfaces. This to avoid leakage. If the valve is pre-mounted, be sure to protect the valve from being polluted by welding debris.

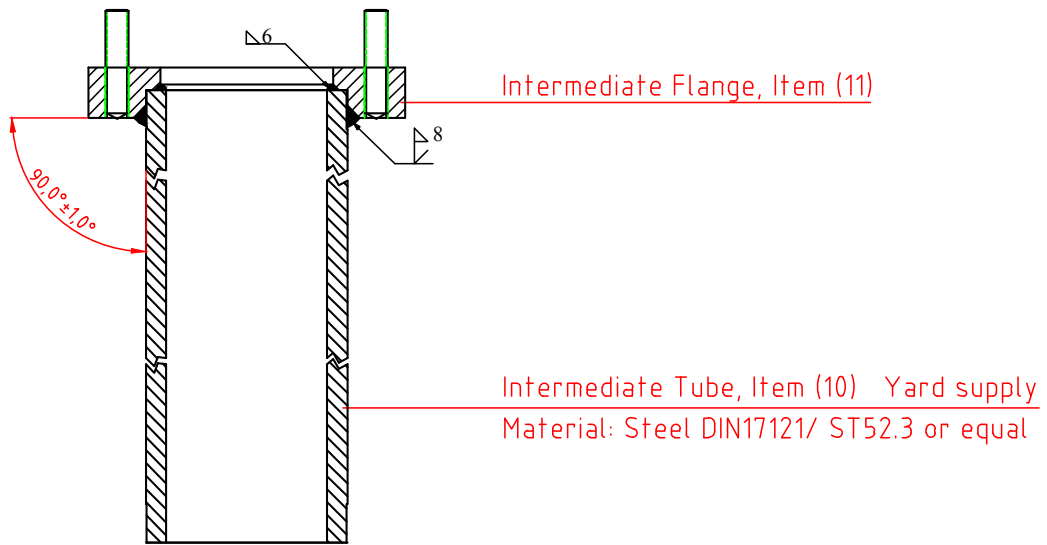
WELDING NOTES!

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.

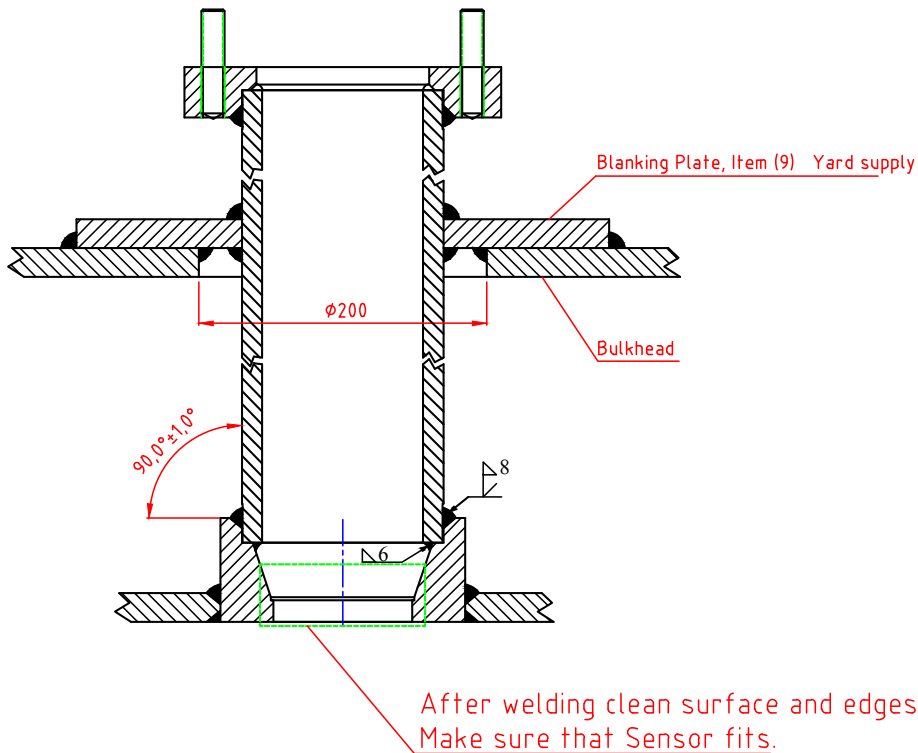
- Let parts cool down during welding.
- Over heating may change fit and form and result in non-conformity with intended sensor/transducer.
- Welding to thick hull steel plates will exert high stress on bottom parts and flanges.
- Especially care must be taken during welding of stainless steel flanges.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

Welding the Bottom Flange in Ship's Hull





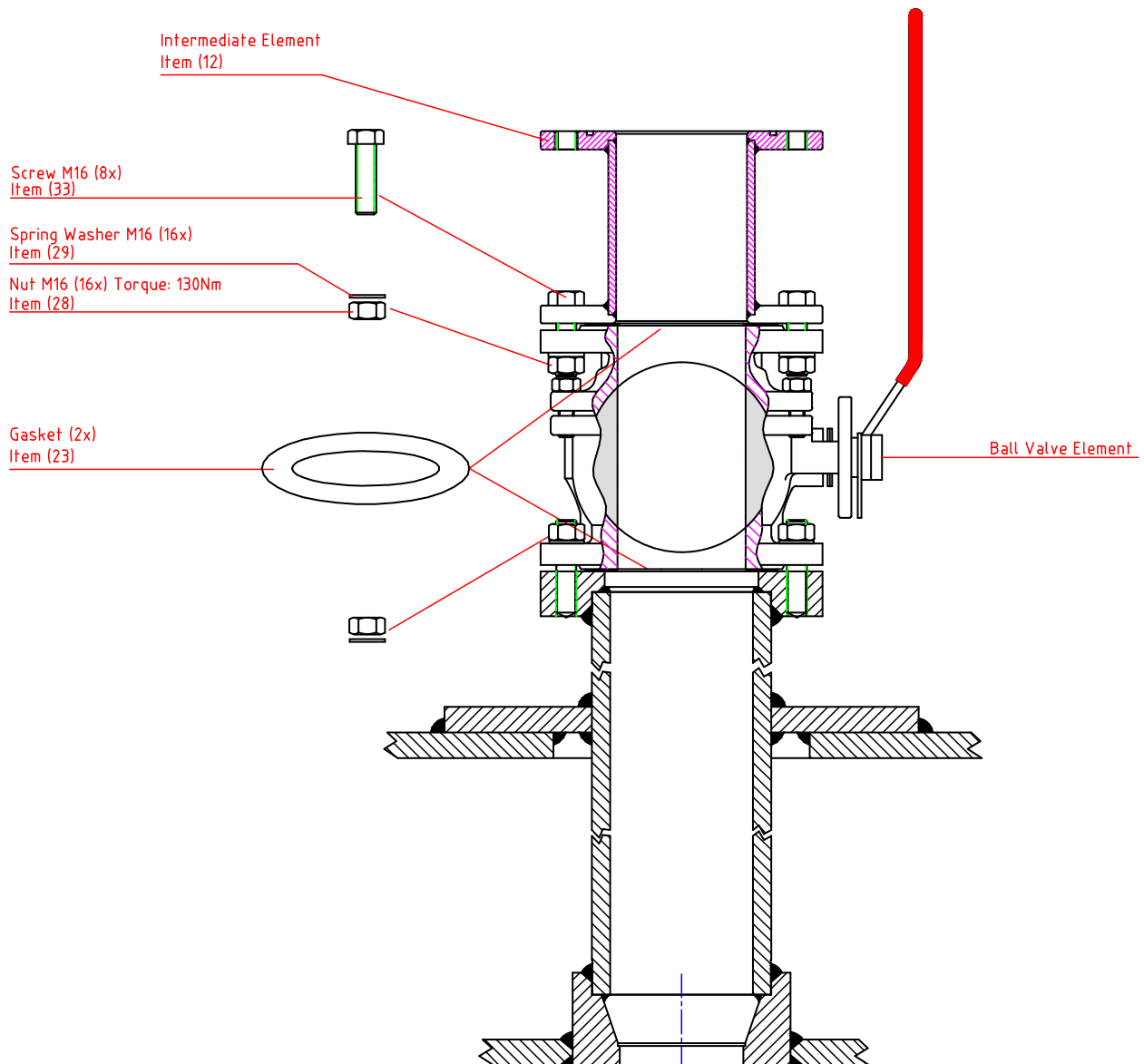
- Intermediate flange Item (11) is welded into intermediate tube Item (10). (*Yard supply). Standard welding practice, methods and procedures should be observed. (See welding notes).
- Blanking plate Item (9) (*Yard supply) is placed over the 200 mm hole in the bulkhead.
- Intermediate tube Item (10) 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).



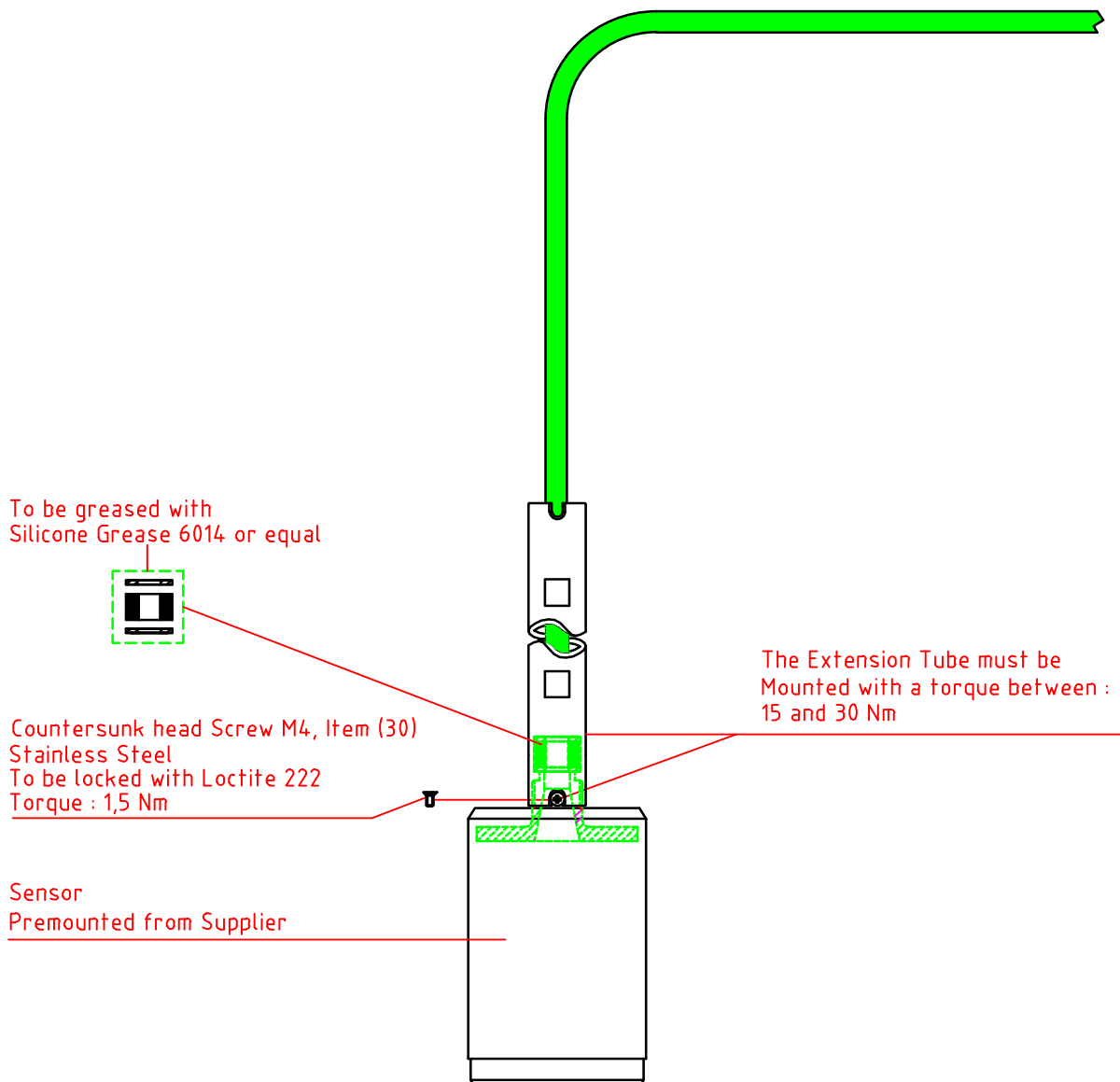
6. Sea Valve Assembly

Sea Valve Assembly (Orientation not necessary).

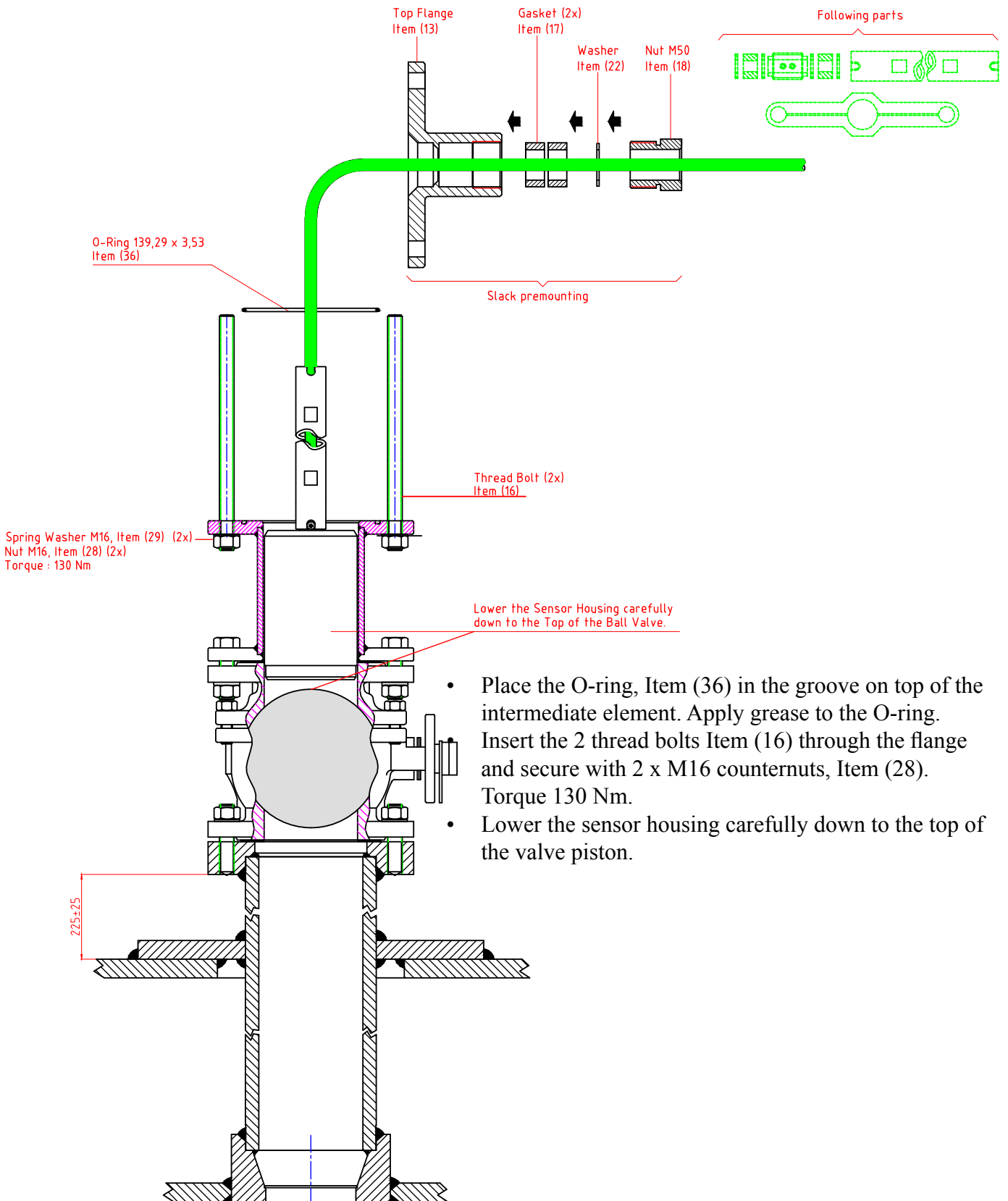
- Place a 1.5 mm Klingersil gasket, Item (23) on top of intermediate flange Item (11).
- Then place the valve element on top of the intermediate flange. The 16 mm nuts and washers should be mounted and tightened. (Align parts before tighten nuts).
- Place a 1.5 mm Klingersil gasket Item (23) on top of the valve element.
- Mount the intermediate element, Item (12) on top of the valve element.
- All 8 screws, nuts and washers should be mounted, and tightened. (Align parts before tighten nuts).



7. Assembling of first extension tube and sensor



8. Sensor installation



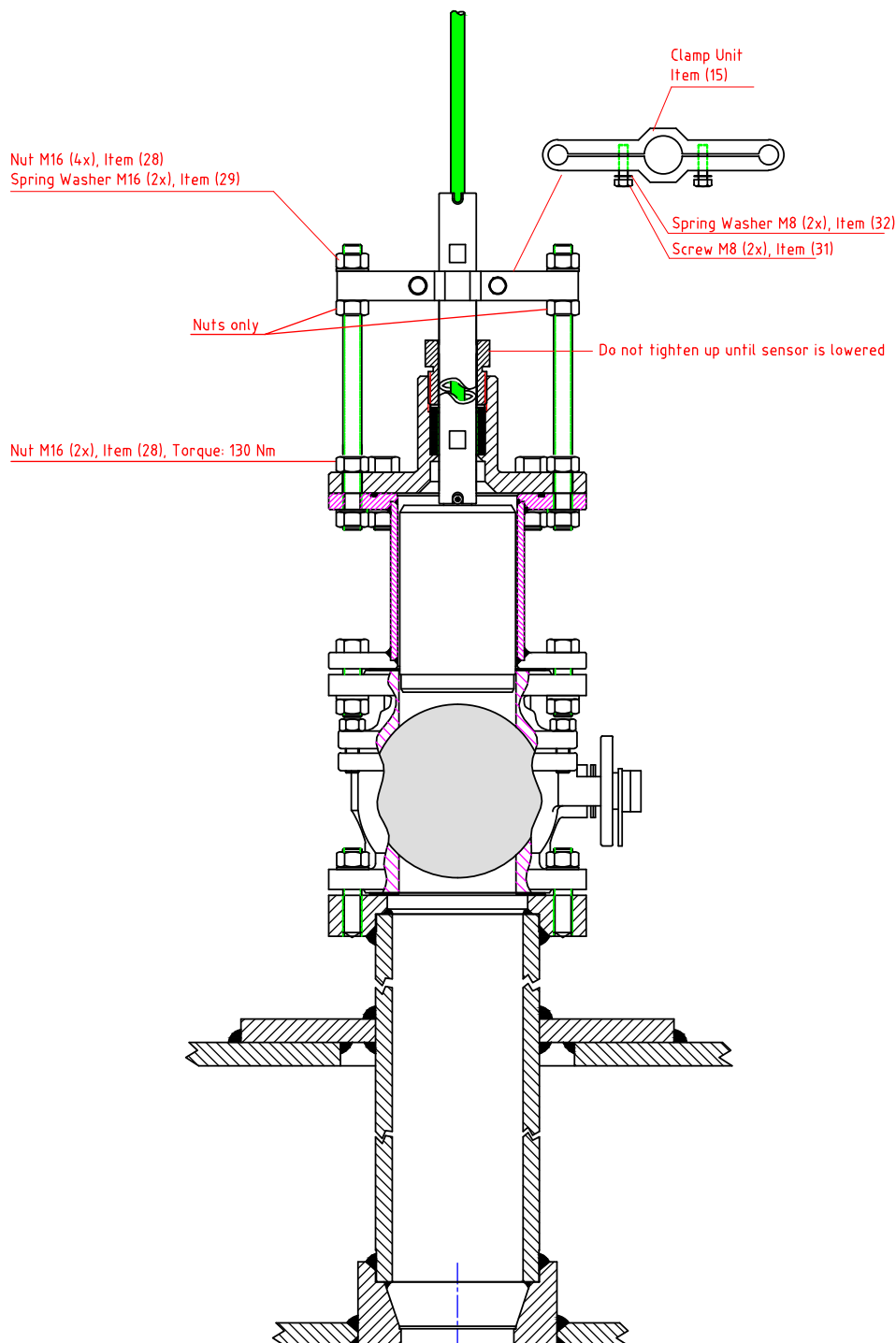
- Place the O-ring, Item (36) in the groove on top of the intermediate element. Apply grease to the O-ring. Insert the 2 thread bolts Item (16) through the flange and secure with 2 x M16 counternuts, Item (28). Torque 130 Nm.
- Lower the sensor housing carefully down to the top of the valve piston.

9. Clamp Unit mounting

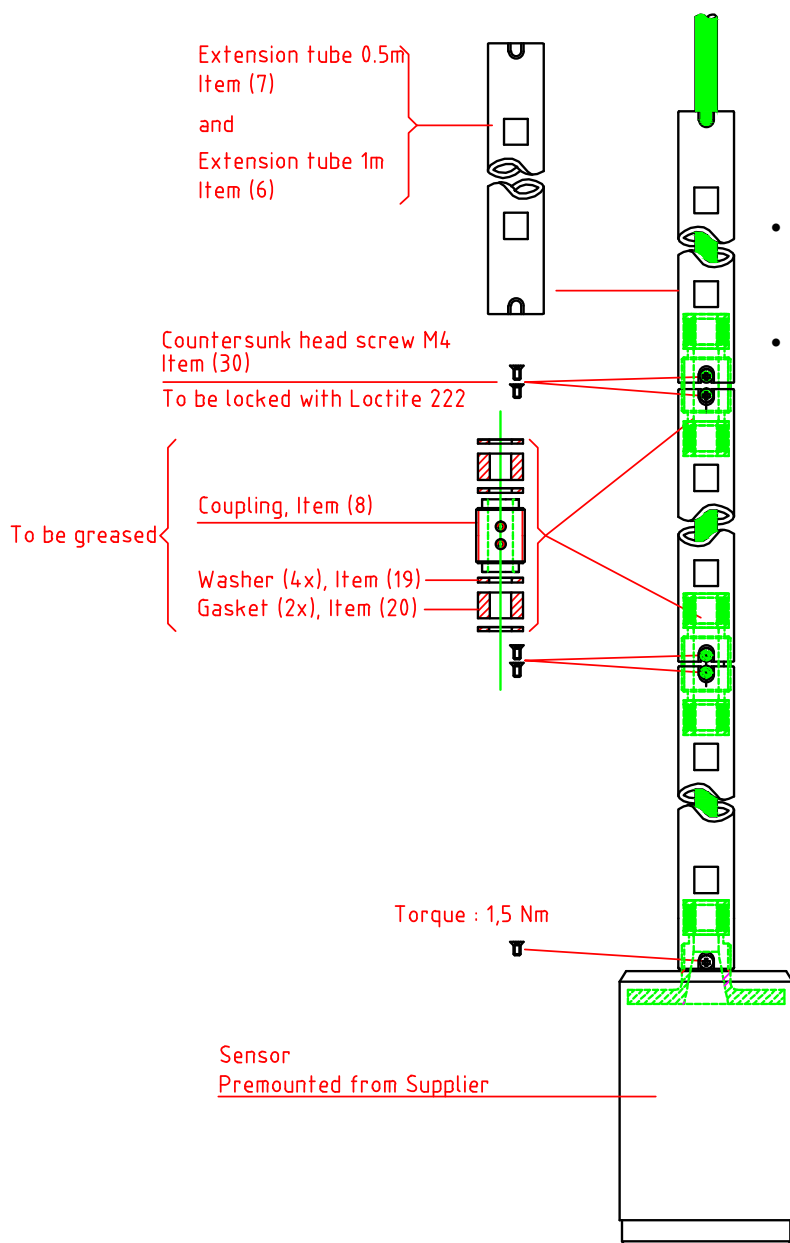
Mount top flange Item (13). Secure with 8 each washers and nuts. Torque: 130 Nm.

Mount in following order:

- 2 x gasket, Item (17).
- Washer, Item (22).
- Nut M50, Item (18).
- 2 x M16 nuts, Item (28).
- Clamp unit, Item (15).
- 2 x M16 nuts, Item (28) with spring washer, Item (29).

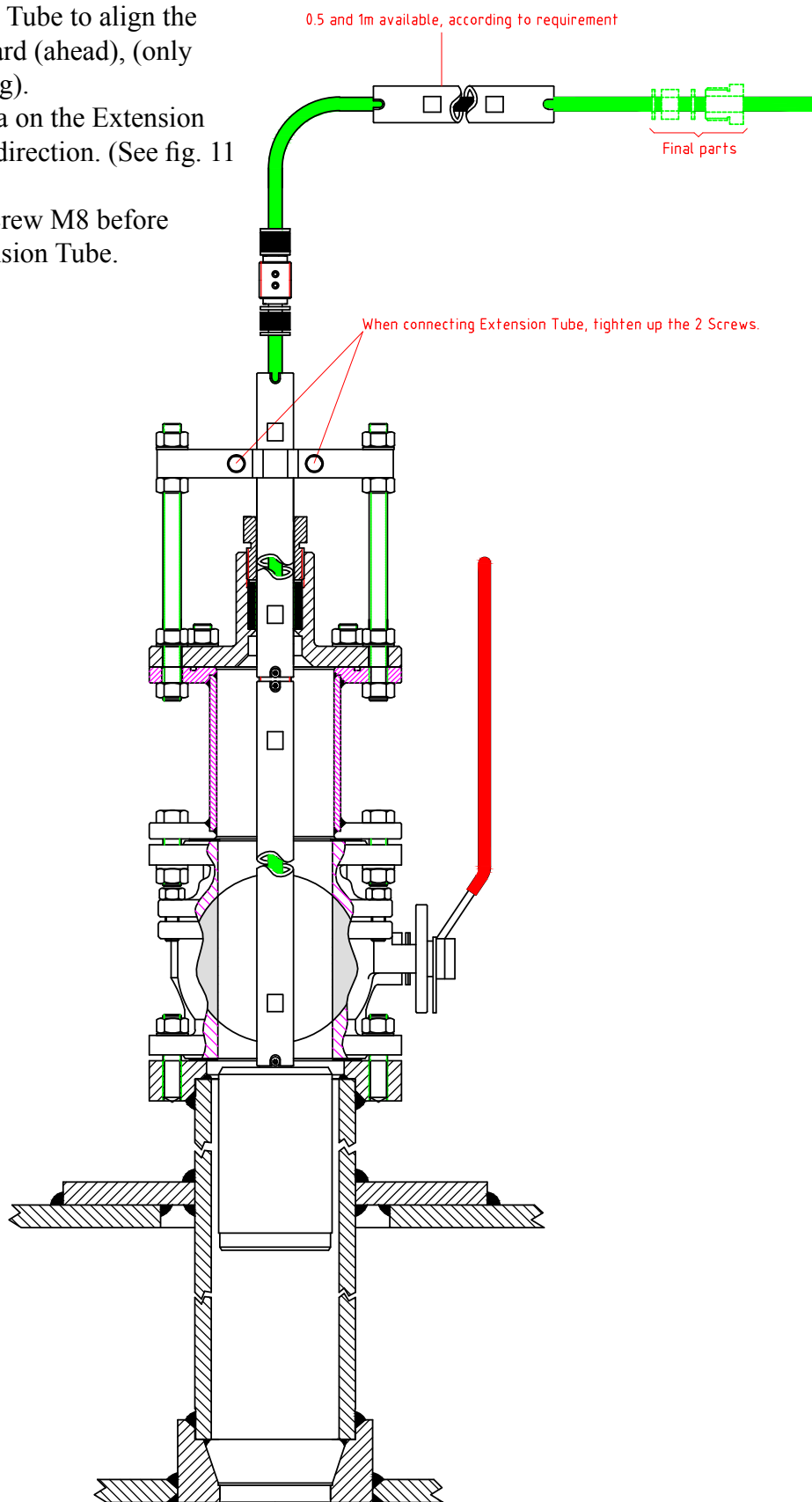


10. Extension tube mounting order



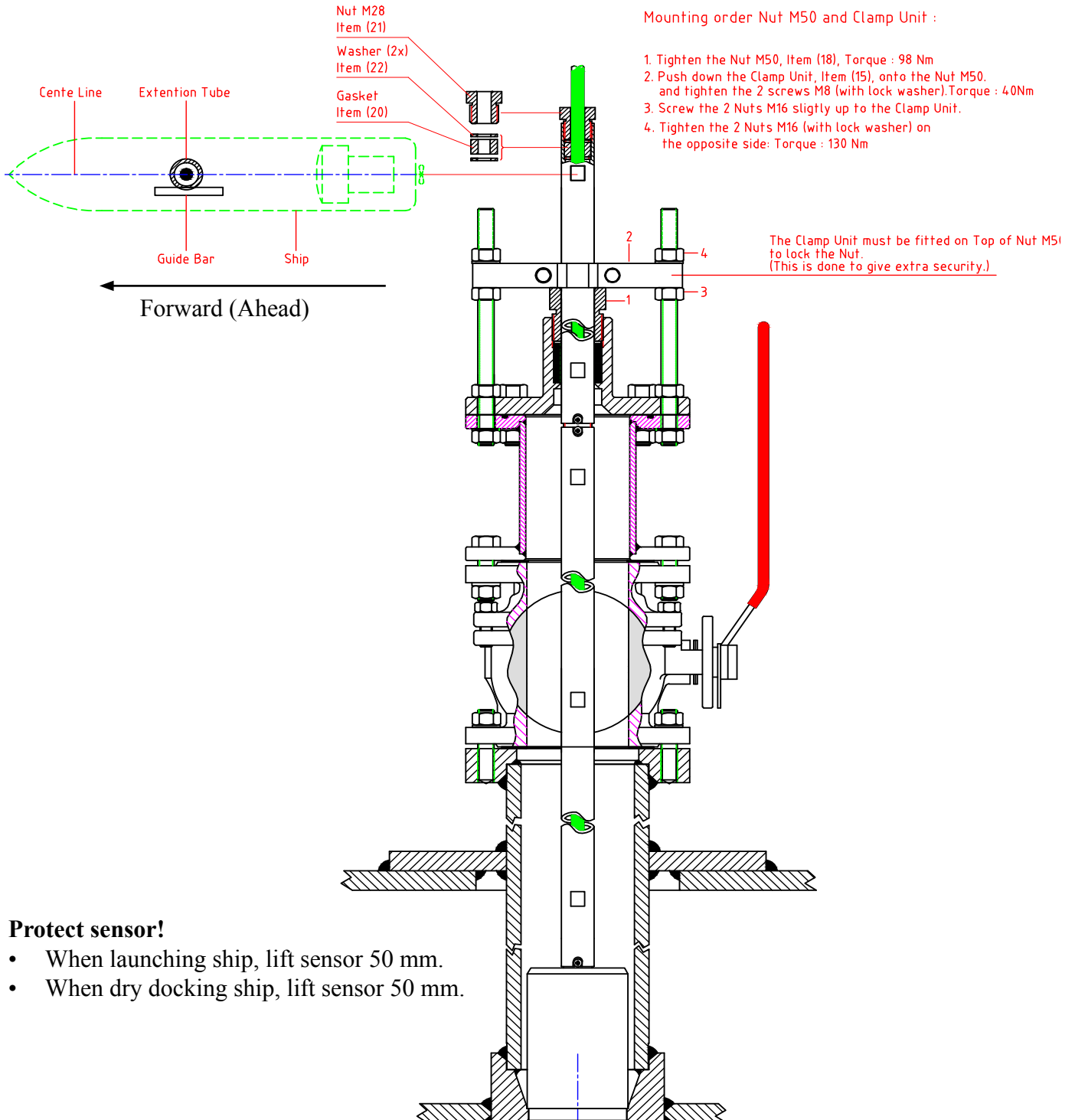
- The extension tubes and coupling must be mounted with a torque between 15 and 30 Nm.
- The countersunk head screw must be mounted with a torque 1.5 Nm.

- 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, is it necessary to let the air out of the Sea Valve.
- Loosen the M50 nut, let the air out and tighten nut again.

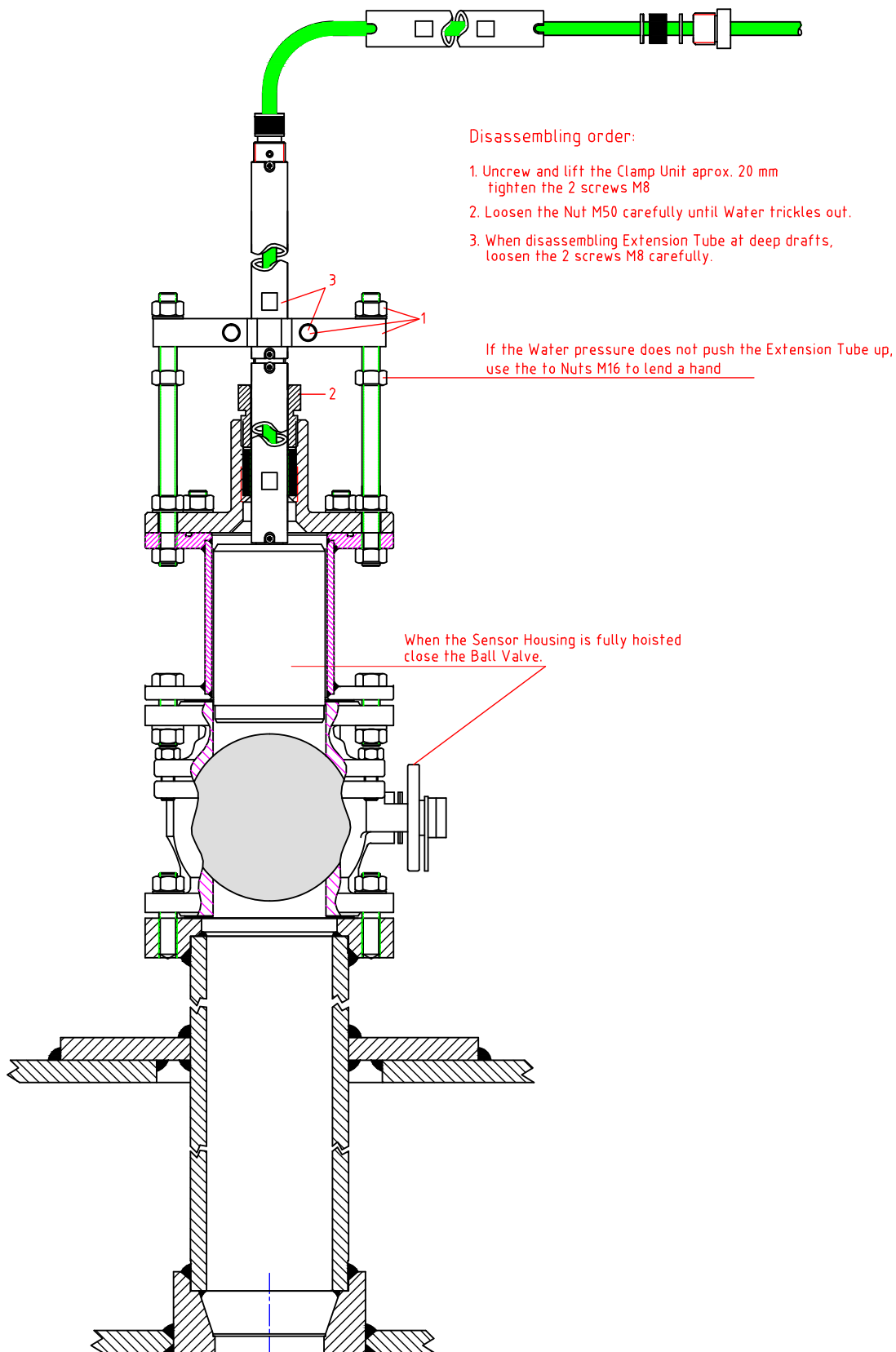


Protect sensor!

- 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



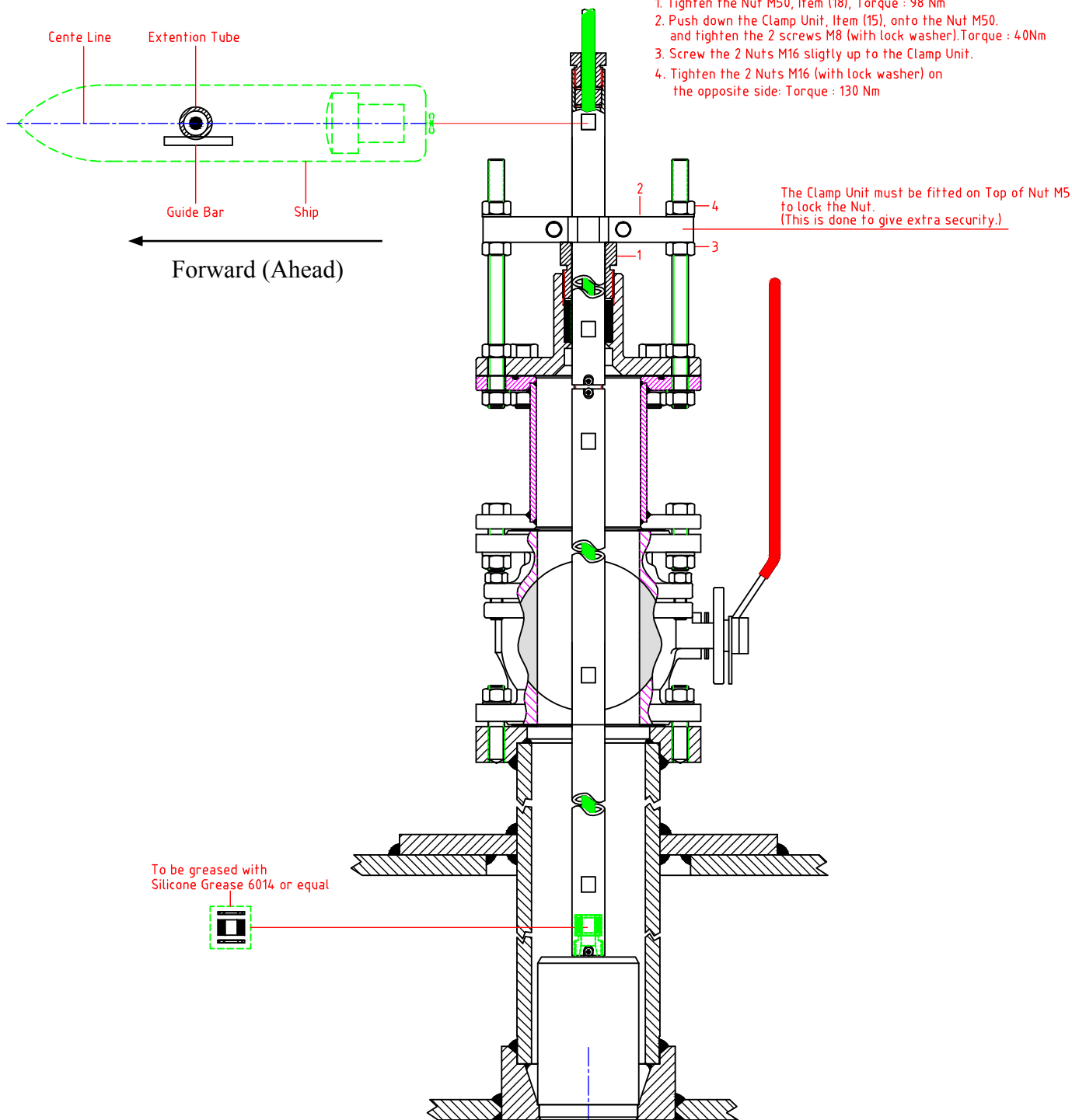
13. Re-installation

Same procedure as first-time mounting.

Mounting order Nut M50 and Clamp Unit :

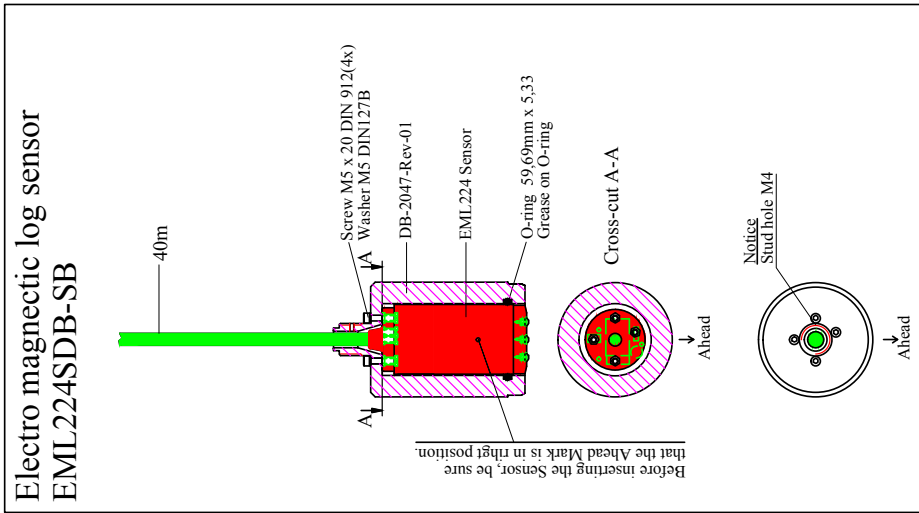
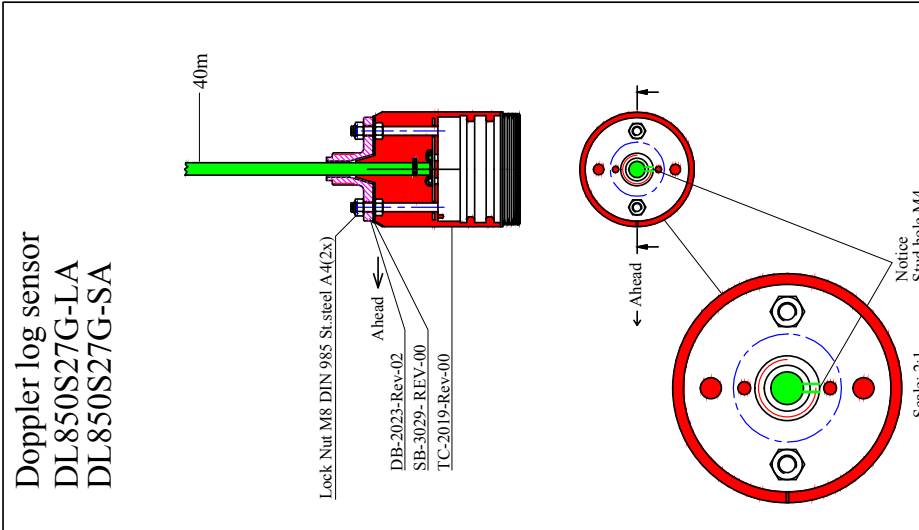
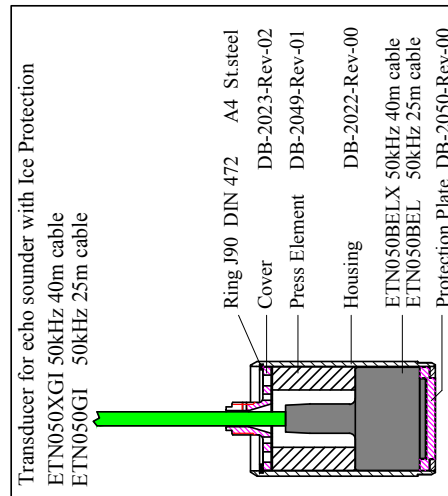
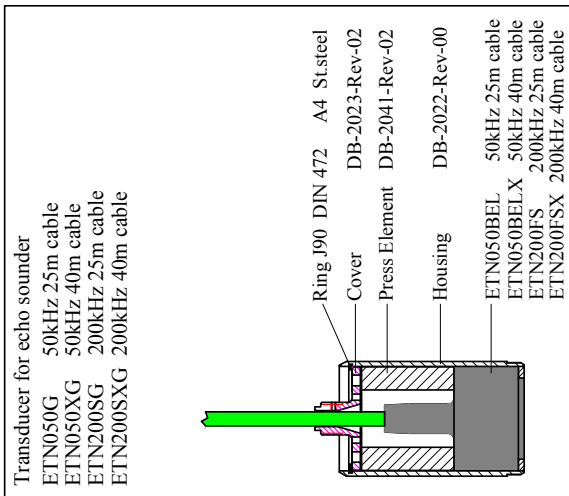
1. Tighten the Nut M50, Item (18), Torque : 98 Nm
2. Push down the Clamp Unit, Item (15), onto the Nut M50. and tighten the 2 screws M8 (with lock washer). Torque : 40Nm
3. Screw the 2 Nuts M16 slightly up to the Clamp Unit.
4. Tighten the 2 Nuts M16 (with lock washer) on the opposite side: Torque : 130 Nm

The Clamp Unit must be fitted on Top of Nut M5 to lock the Nut. (This is done to give extra security.)



14. DB-100 Sensors

All units premounted by Skipper Electronics



Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by A.Maire	Checked by VF	Approved by - date GT-2006/222	Date 30.11.2009
SKIPPER Electronics A/S		File name DB-100-Sensors	Scale 1/1
DB-2046-Rev-03		Edition	Sheet 1/1

Revision note

Signature

Date

15. 100 mm Double Bottom Ball Valve

Material Specifications:
 AISI 316L/WND 1.4404 EN10204, 3.1
 Steel DIN17121/ST52.3N Surface Treatment: Flügger 1240 Industry primer. Colour: Red
 Material: Steel DIN17121/ST52.3N

Dimensions and Features:
 Weight: 6.4 kg (Complete with 3 meter Extension Tube)
 Dimensions: 592, 190, 167, 72, 170
 Angle: 22.5°
 Offset: 35mm
 Handle location

Notes:
 *) Mounted partly on Valve or in mounting Kit: DB-100-XB-M-KIT
 □ Spare parts in service Kit: Module-SB-DB-S-KIT: 1042A
 **) Yard Supply

ITEM	QTY	DESCRIPTION	MATERIAL	PART. NO.
23	2	Gasket		DB-2042-00
22	1	Washer		DB-2040-00
21	1	Nut M28		DB-2039-00
20	8	Gasket		DB-2038-00
19	16	Washer		DB-2037-00
18	1	Nut M50		DB-2036-00
17	2	Gasket		DB-2035-00
16	2	Thread Bolt		DB-2034-00
15	1	Clamp Unit		DB-2033-01
13	1	Top Flange		DB-2031-00
12	1	Intermediate Element		DB-2051-01
11	1	Intermediate Flange		DB-2030-00
10	1	Intermediate Tube		DB-2029-01
9	1	Blanking Plate		DB-2028-00
8	3	Coupling		DB-2027-01
7	2	Extension Tube-0.5m		DB-2026-01
6	2	Extension Tube-1m		DB-2025-01
2	1	DB-100-Sensors		DL850S27G
1	1	Bottom Flange		DB-2021-00

ITEM	QTY	DESCRIPTION	MATERIAL	PART. NO.
36	1	O-ring 139.29 x 3.53	Nitril (NBR 70 shore)	ZOA-01024
40	1	Ball Valve Element	A4 St. steel	ZCC-01015
33	14	Screw M16x50 DIN933	A4 St. steel	ZOA-01075
32	2	Spring Washer M8 DIN 127B	A4 St. steel	ZOA-01083
31	2	Screw M8 x 30 DIN 933	A4 St. steel	ZOA-01069
30	7	Screw M4 x 8 DIN 7991	A4 St. steel	ZOA-01035
29	28	Spring Washer M16 DIN 127B	A4 St. steel	ZOA-01036
28	30	Nut M16 DIN934	A4 St. steel	ZOA-01036

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by A.Maire	Checked by	Approved by - date	Date 30.11.2009
File name	Scale		

Revision History:

Revision	Draw. Edition	Sheet
02	101012	01

Company Information:
 SKIPPER Electronics AS
 100mm Double Bottom Ball Valve
 DB-100-XB