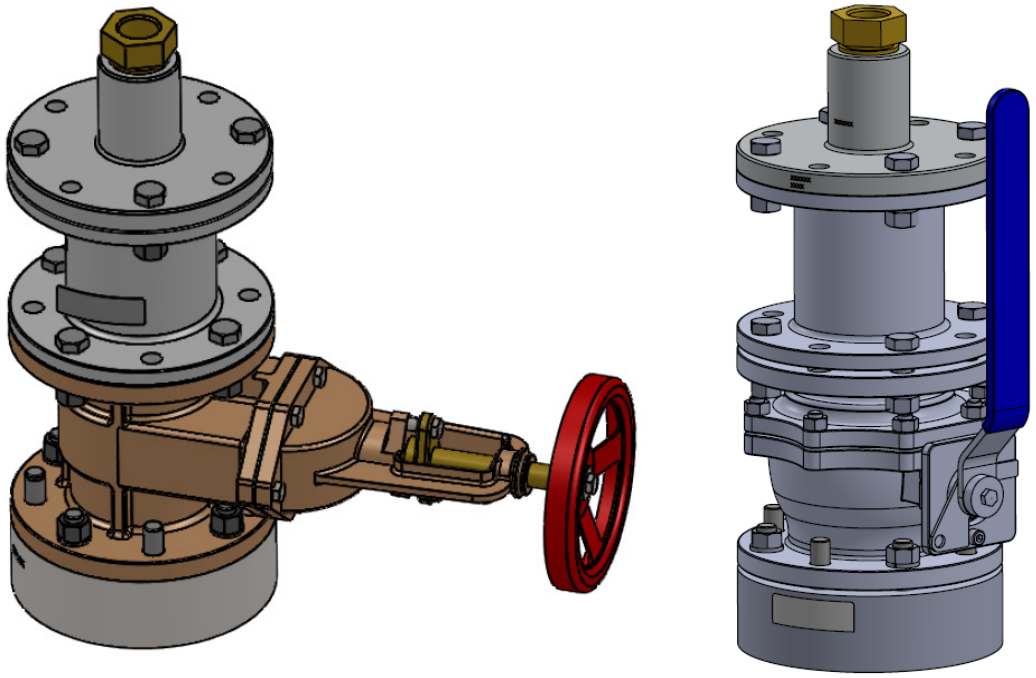
100mm
Single bottom sea valve
Installation and operation Manual
SB-100-SA
SB-100-SB



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Contents

1. INTRODUCTION

SKIPPER SB (Single Bottom) Sea Valve 100 mm

The SKIPPER SB Sea Valve 100 mm is used for installation of: SKIPPER speed log sensors and echo sounder transducers fitted with adaptors for XB-100-XX

1. Echo Sounder transducer type (50, 200 and 50/200 kHz).
2. Speed log sensors: DL2, DL21, DL1, DL850(270kHz), EML224.

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 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. (2 axis 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.

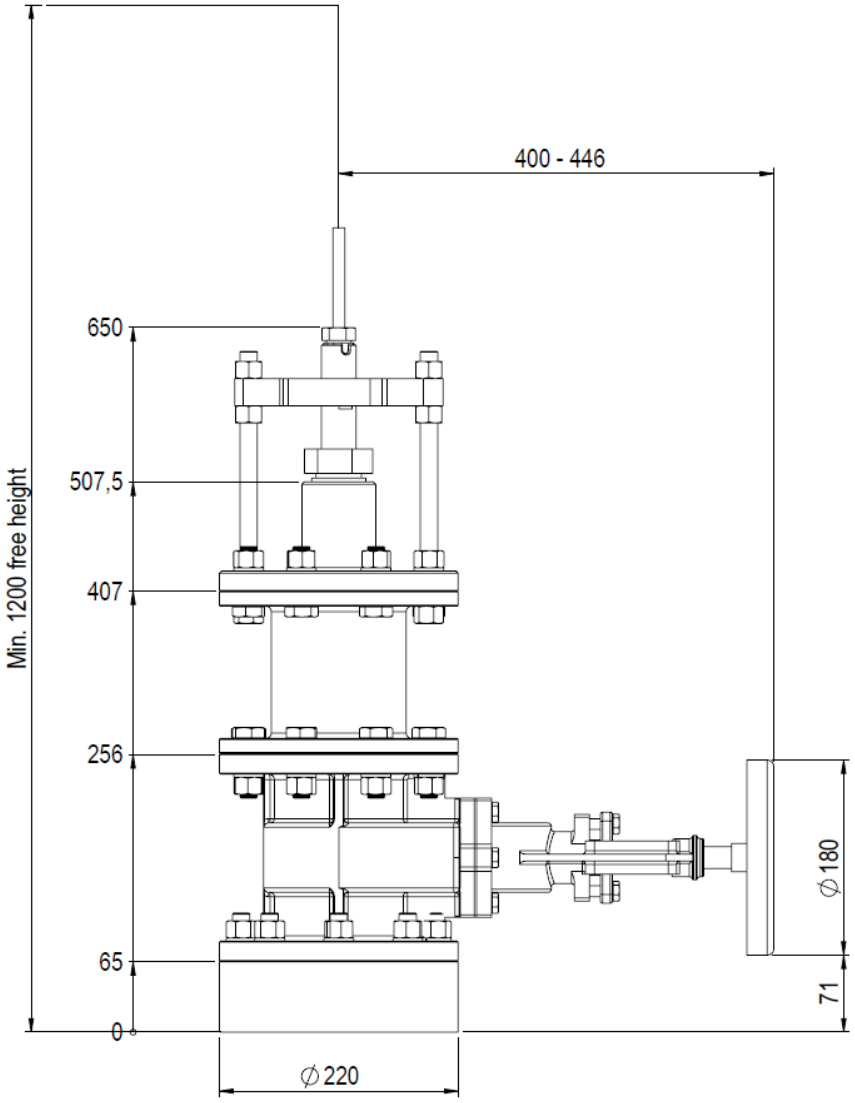
Condition.
The welding to hull structures and structural support of the items may be subject to separate approval by classification societies for each installation on board a ship.

Note: All “Item numbers” references on the following pages, can be found on drawing “Illustrated parts list. Assembled” (unless specified).

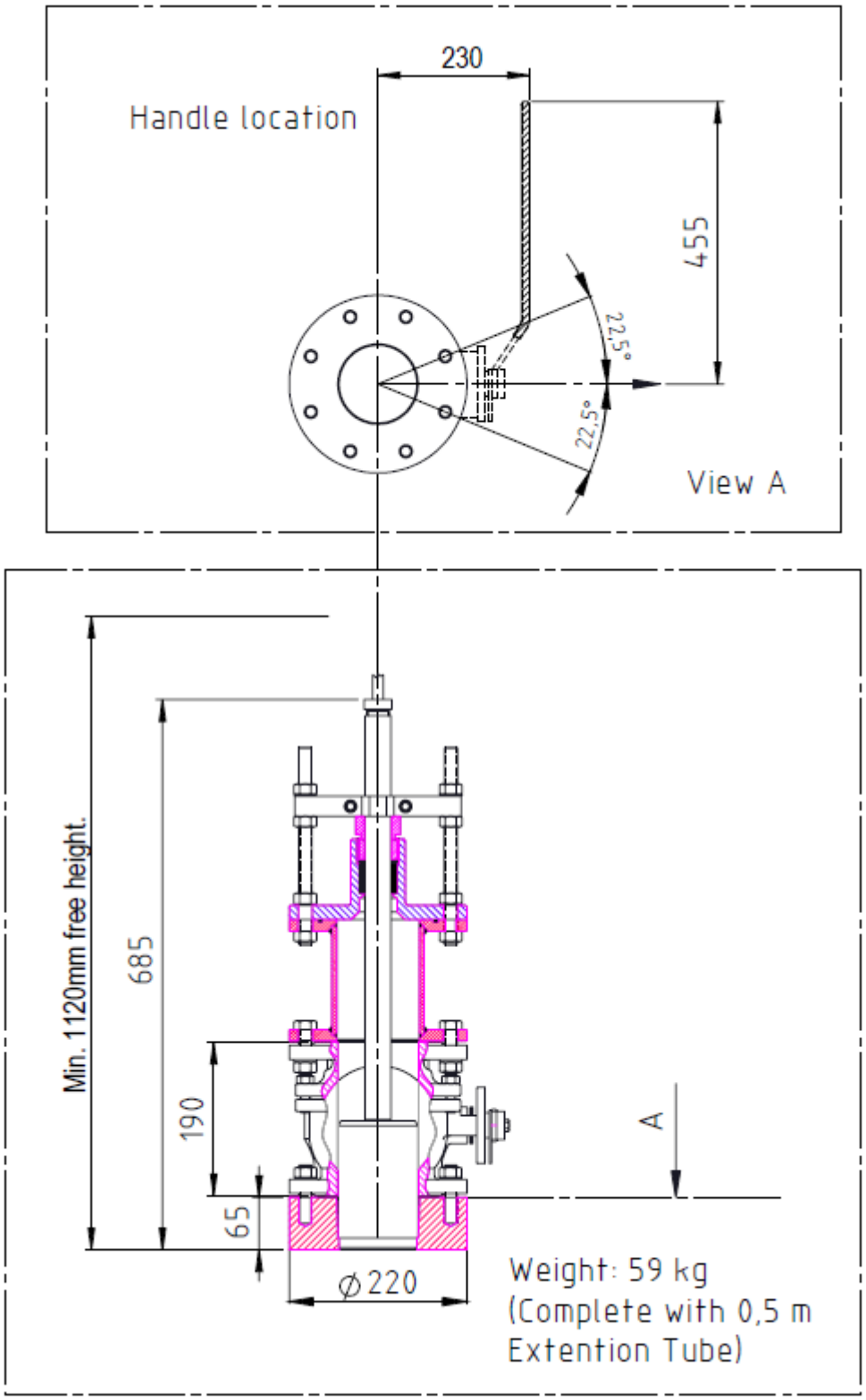
2. SPACE CONSIDERATIONS

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

Space consideration SB-100-SA



Space consideration SB-100-SB



3. WELDING THE BOTTOM FLANGE

- When the position has been decided, a hole for the 220 mm bottom flange 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:

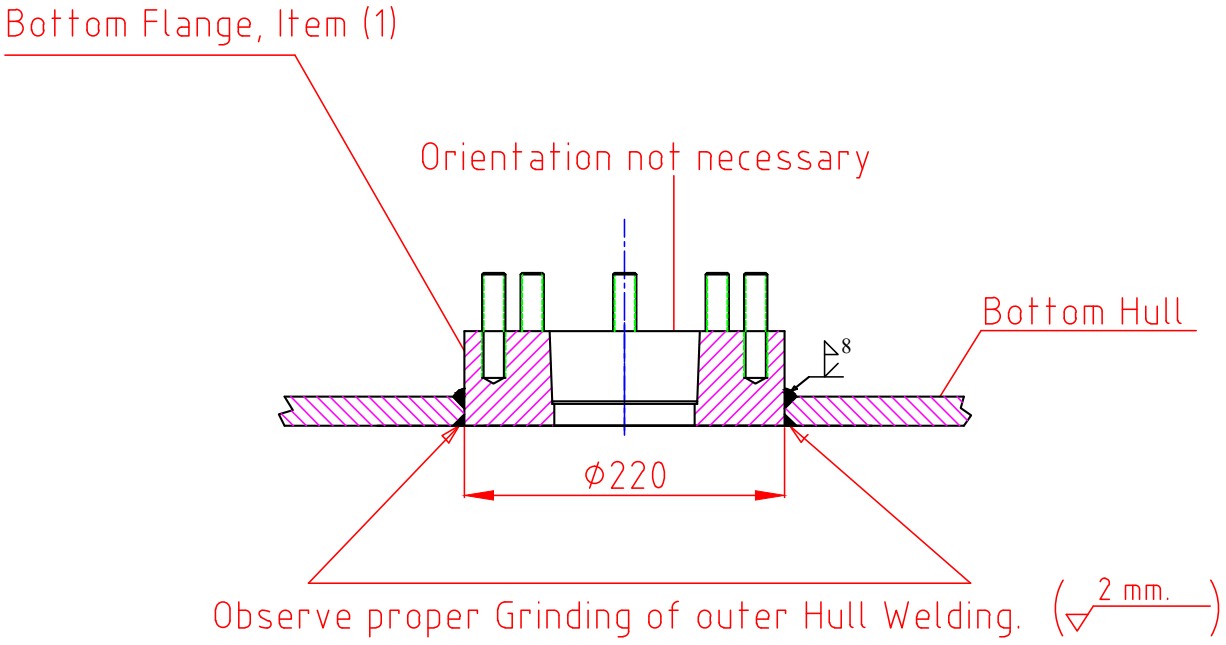
The bottom flange is a part of the Sea Valve that is machined with high accuracy and it should be protected after mounting to avoid damage to the bottom flange surfaces. This to avoid leakage. If the valve is pre-mounted, be sure to protect the valve from being polluted by welding debris.

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.

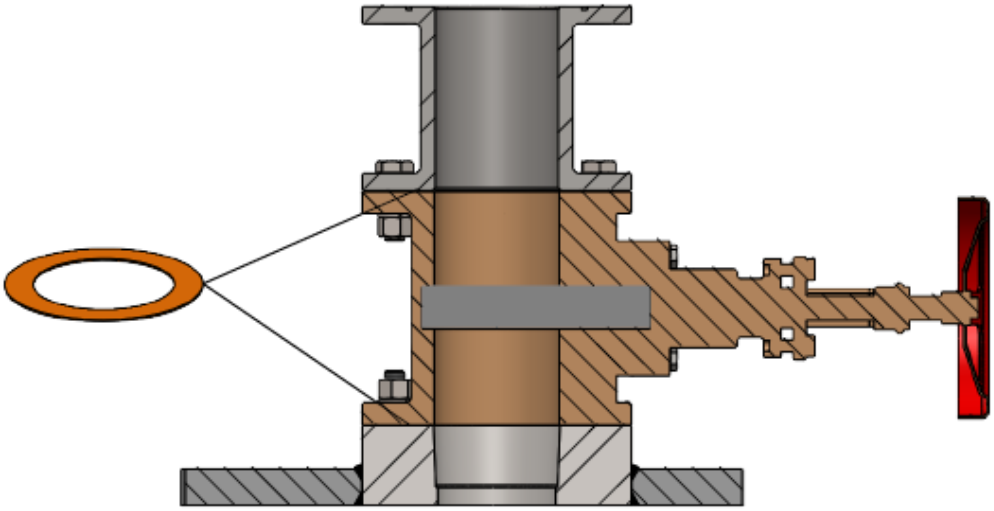


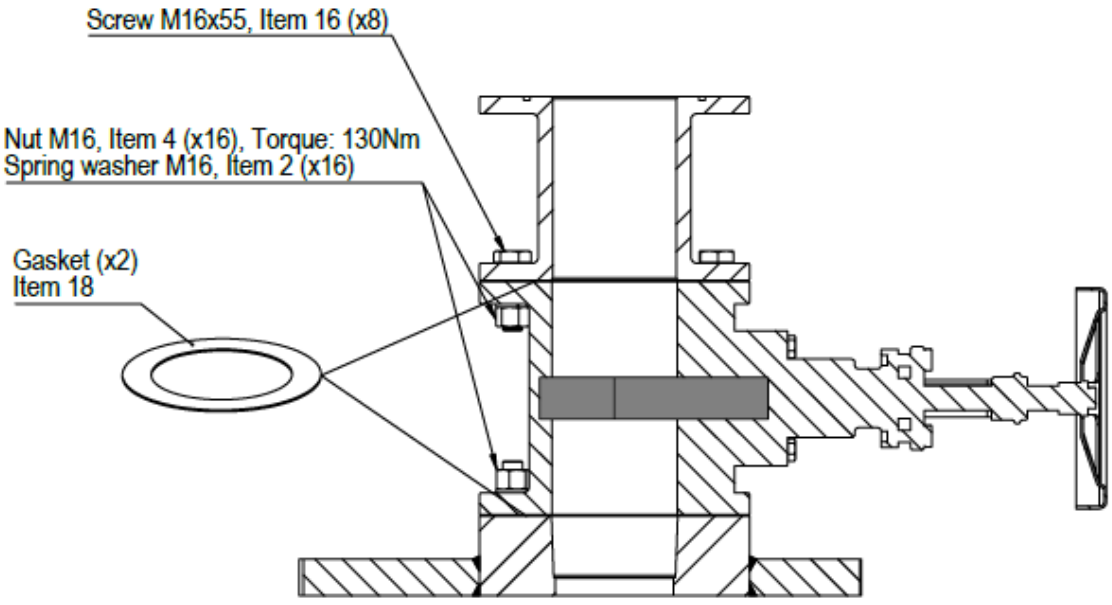
4. SEA VALVE ASSEMBLY.

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

Assembly SB-100-SA

- Place 1.5 mm gasket, Item (18) on top of Bottom Flange, Item (1).
- Then place the Main element, Item (6) on top of the Bottom Flange. The 16 mm nuts and washers should be mounted and tightened. (Align parts before tighten nuts).
- Place a 1.5 mm gasket (item 18) on top of the main element, Item (6).
- Mount the intermediate element, Item (15) on top of the main element.
- All 8 screws, nuts and washers should be mounted, and tightened. (Align parts before tighten nuts).



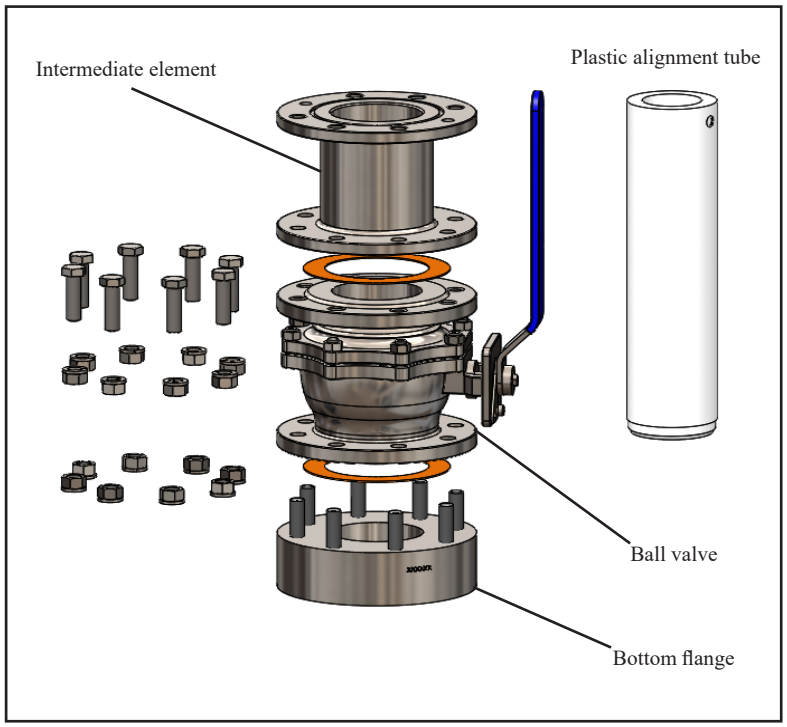


Assembly SB-100-SB

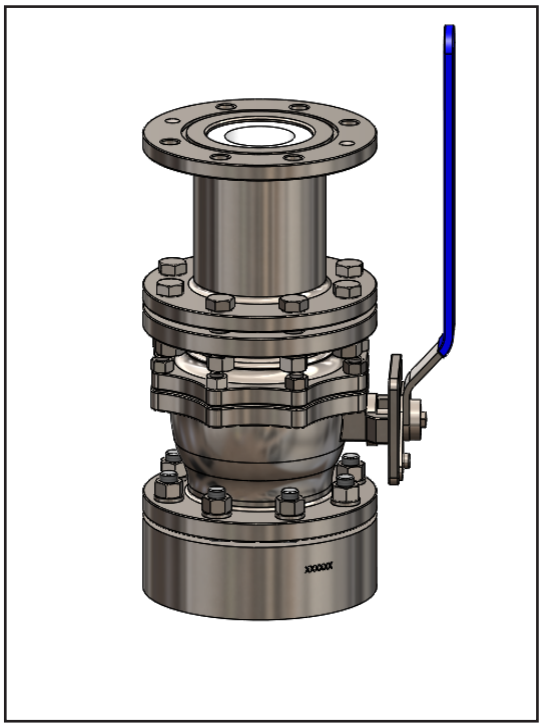
Step 1
- Place 1.5 mm gasket, on top of Bottom Flange.
- Then place the Ball Valve element on top of the Bottom Flange. The 16 mm nuts and washers should be mounted, **not** tightened.
- Place a 1.5 mm gasket on top of the Ball Valve element.
- Mount the intermediate element on top of the Ball Valve 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.

Step 1



Step 2

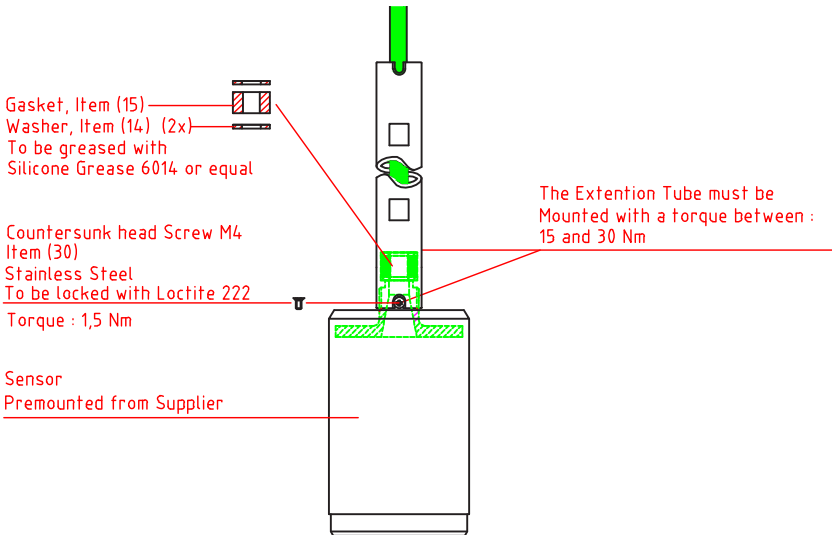


5. ASSEMBLING OF EXTENSION TUBE AND SENSOR

NOTE: Gaskets and washers are supplied as part of Speed log sensors/Echo sounder transducers

Sensor type with 11mm cable diameter:

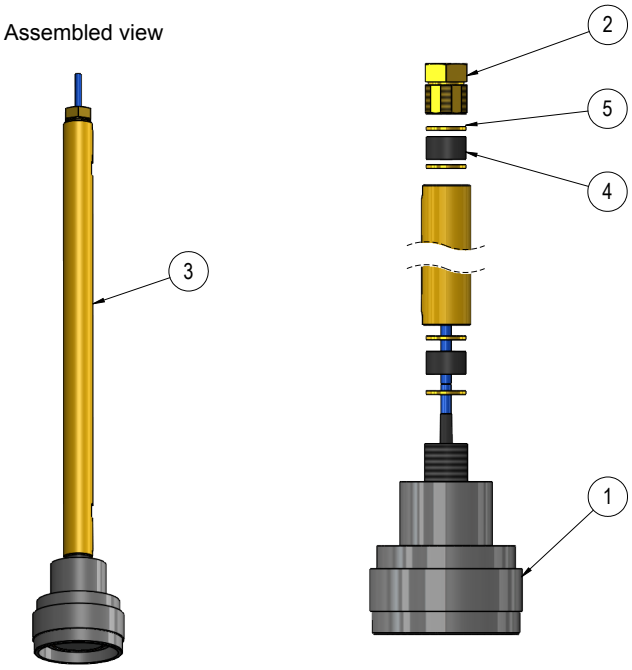
- Echo sounders:
- ETN050G, ETN050XG, ETN200SG, ETN200SXG
- Speed logs:
- DL2SG-SA, DL21SG-SA, DL850S27G-SB, EML224SDB-SD, DL1SDB-SA



Sensor type with 7mm cable diameter:

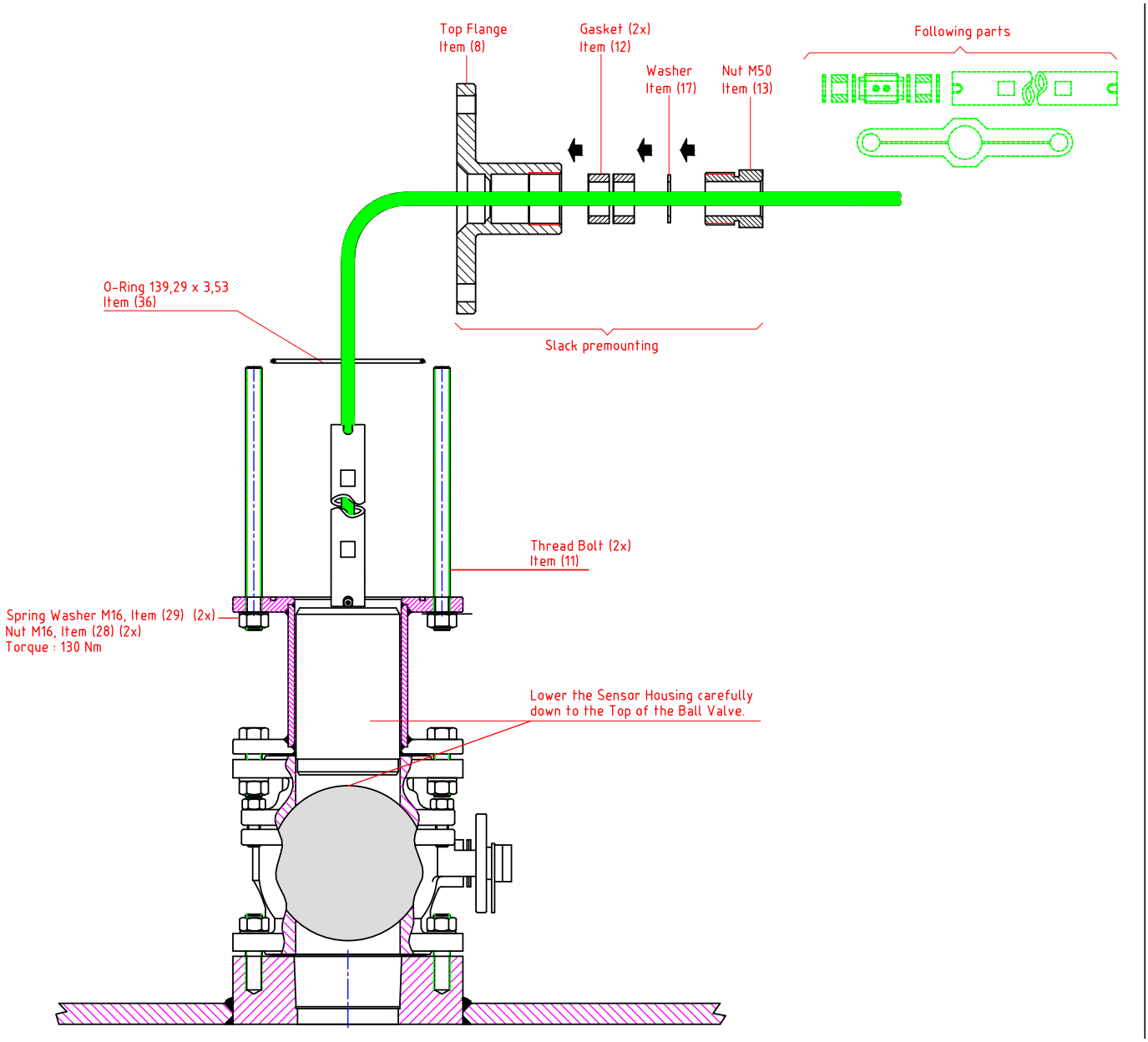
- Echo sounders:
- ETS50200G-SA, ETS50200XG-SA.

(Item numbers below)



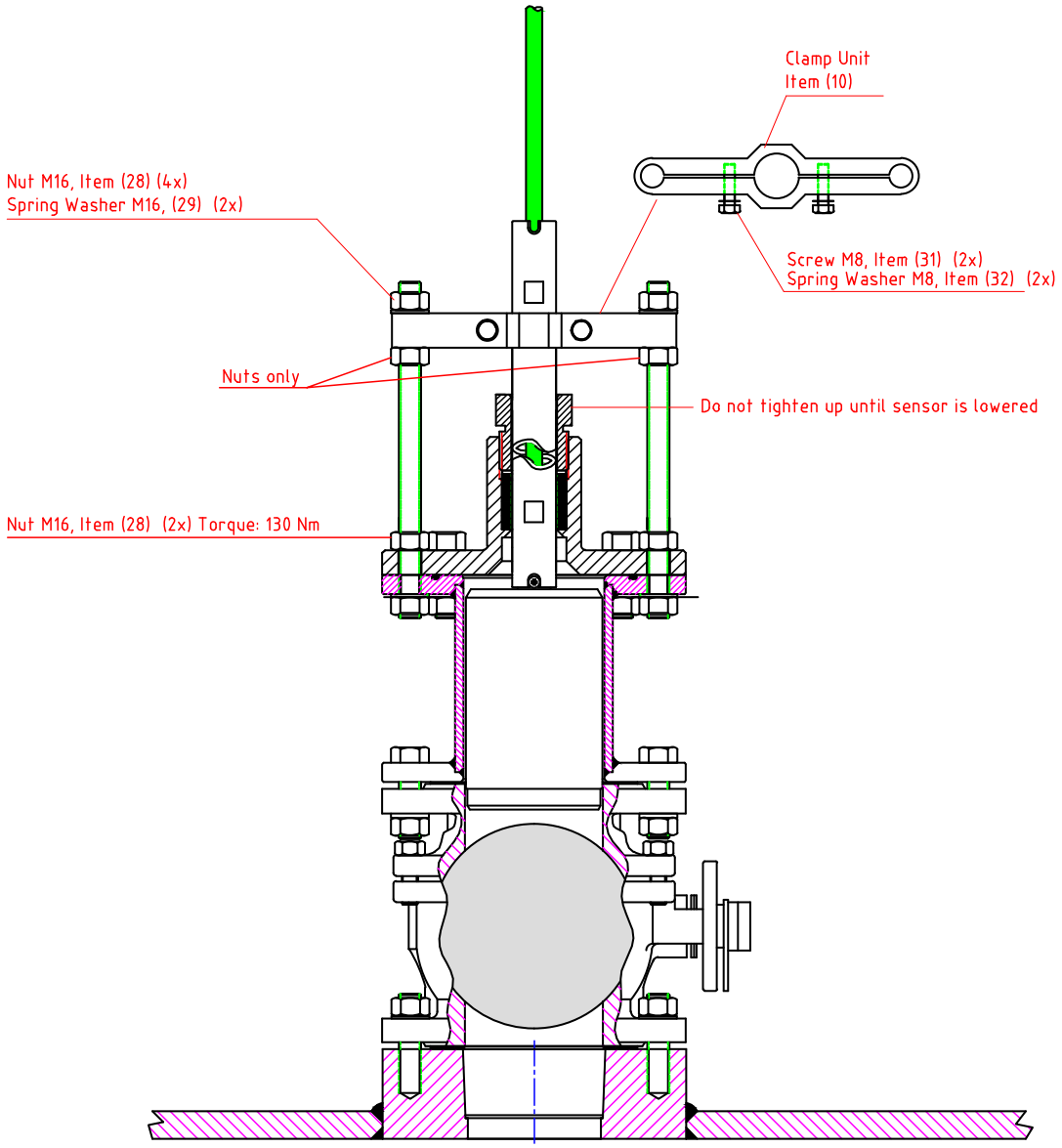
POS.	PART NR.	DESCRIPTION	QTY.
1	ETS50200-SA	Transducer 50/200kHz in 100mm housing w/25m cable	1
2	DB-2039	Nut M28 Brass	1
3	DB-2026	Extension Tube 0,5m SB-100	1
4	DB-2020	Gasket Ø25,9x15 ø8	2
5	DB-2019	Washer Brass Ø25,9 ø9 x2,5mm	4

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.

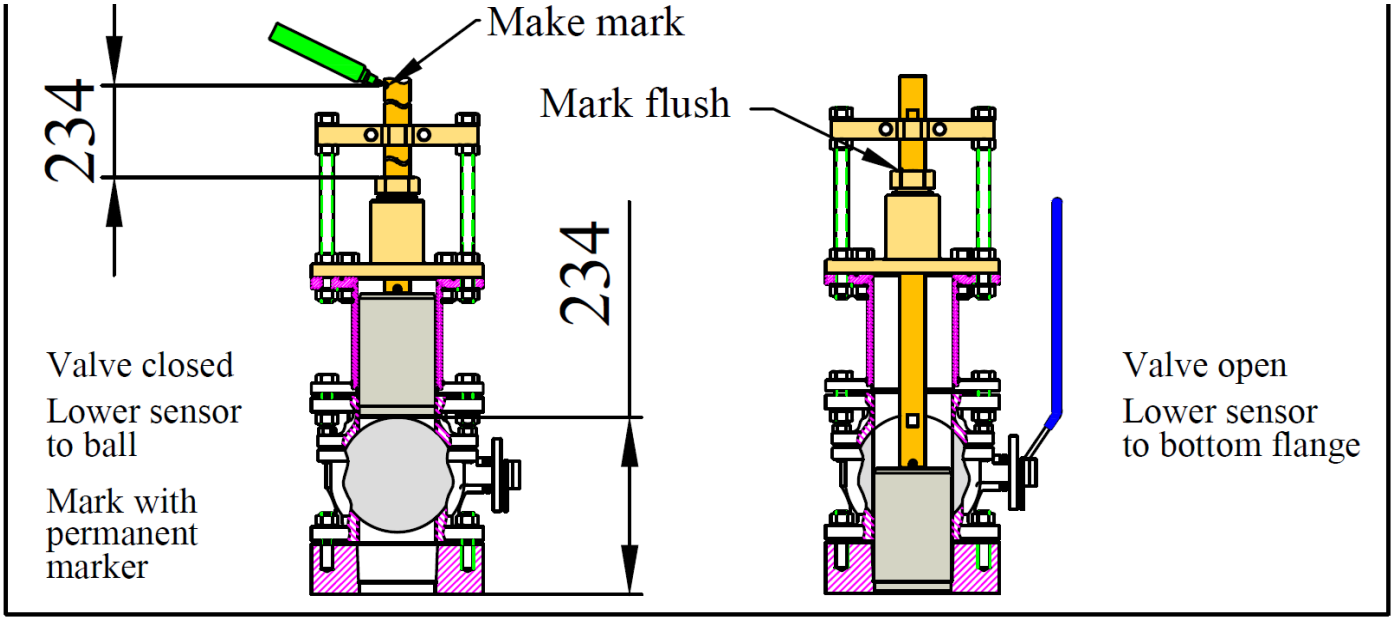
Mount in following order:

- 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).

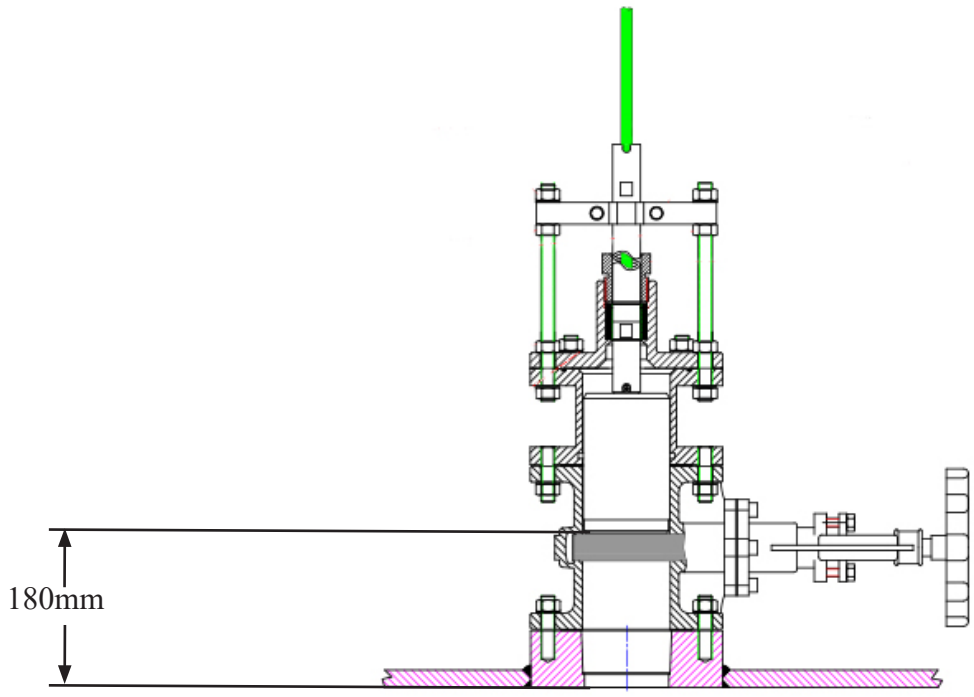
8. LOWER THE SENSOR

- To ensure sensor is properly inserted completly into the bottom flange make a distance mark to indicate when the sensor is at bottom.
- SB-100-SB/SB-100-LB distance from top of ball to bottom: 234mm
- SB-100-SA/SB-100-LA distance from top of gate to bottom: 180mm
- Before opening the sea valve. Lift up the sensor some cm to avoid scratches when valve opens.
- Open Sea Valve, lower sensor unit and Extension Tube.

Lowering sensor in SB-100-SB

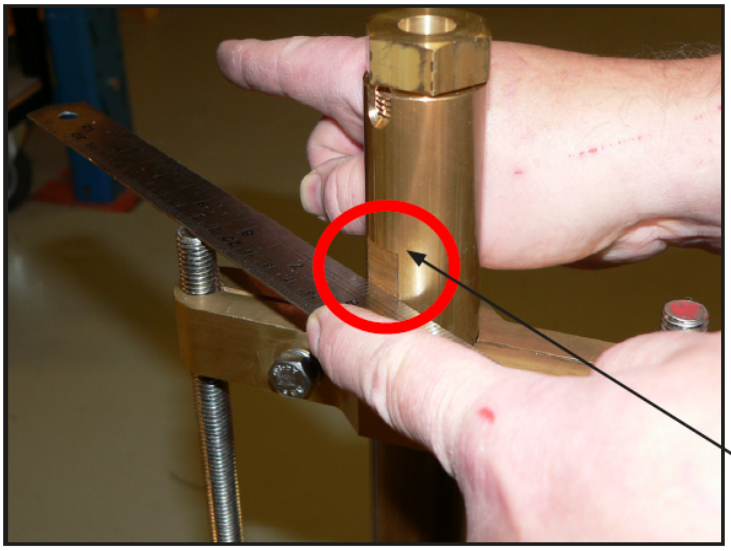


Lowering sensor in SB-100-SA

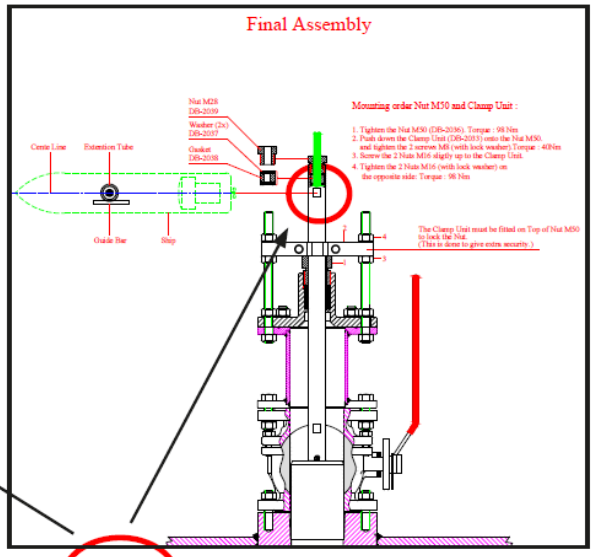


9. SENSOR FORWARD ORIENTATION

- Sensor forward orientation only required for Speed Logs. Echo sounder transducers requires no forward orientation.
- Rotate the Extension Tube to align the sensor to point forward (ahead),. Use the flattened area on the Extension Tube to find correct direction.



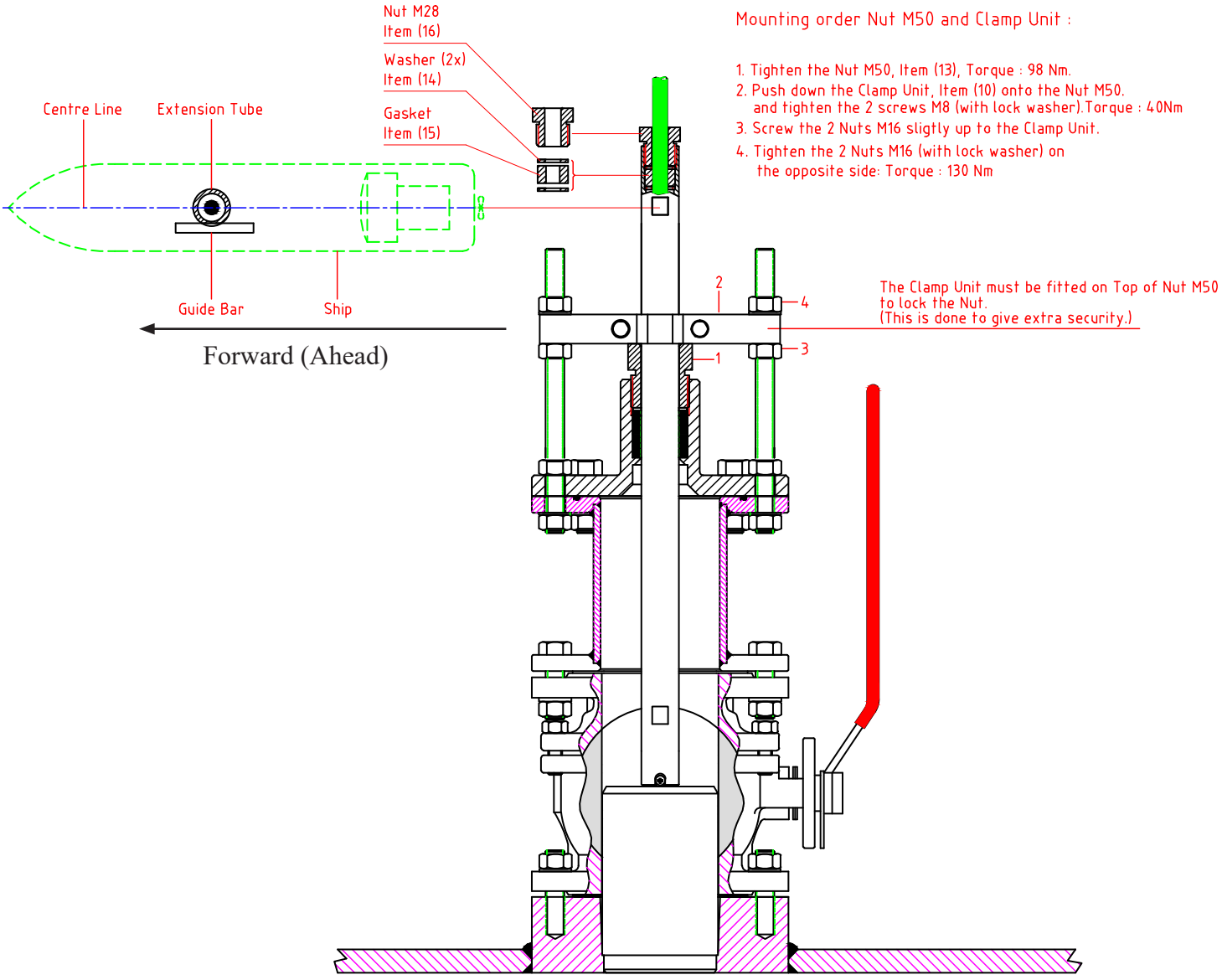
A flat object points fore/aft.



The flat side should be on the port side.

10. FINAL ASSEMBLY

- Tighten nut M50
- Push down clamp unit on to the nut M50
- Tighten the 2 screws M8 on the clamp unit
- Tighten the nuts M16

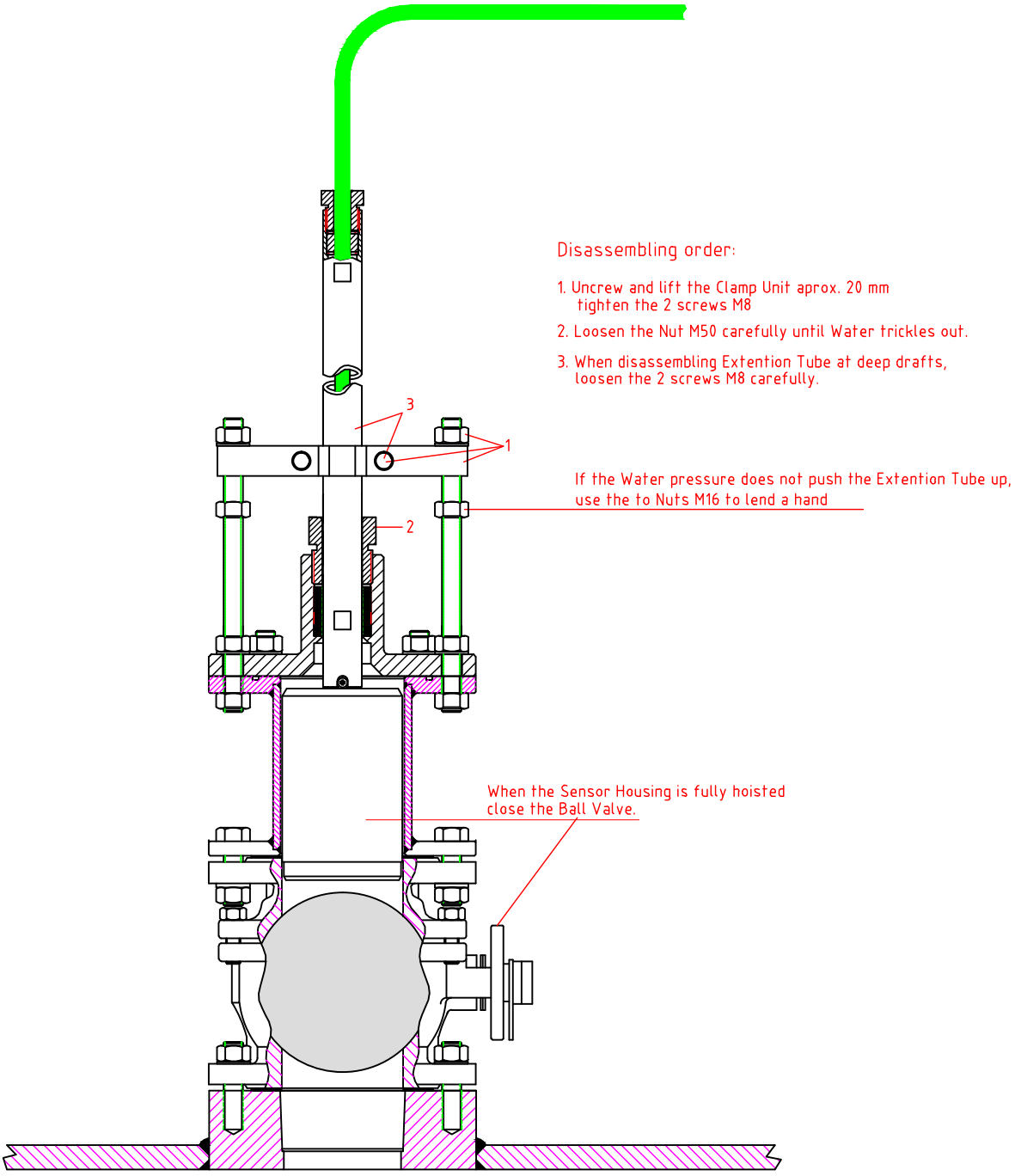


Protect sensor!

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

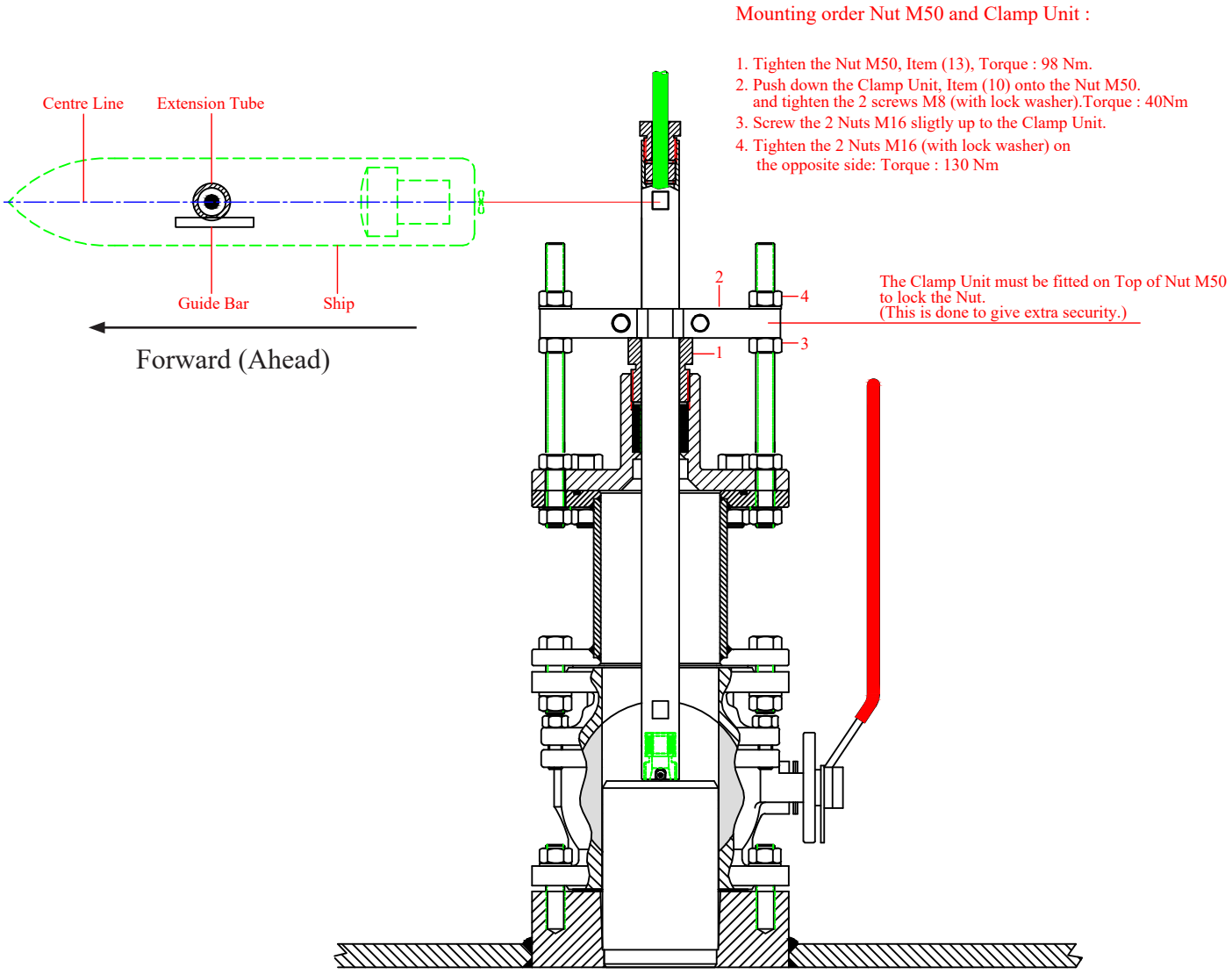
Check that the transducer sensor housing, when fully inserted, is flush with the lower surface of the bottom flange.

11. SENSOR REMOVAL

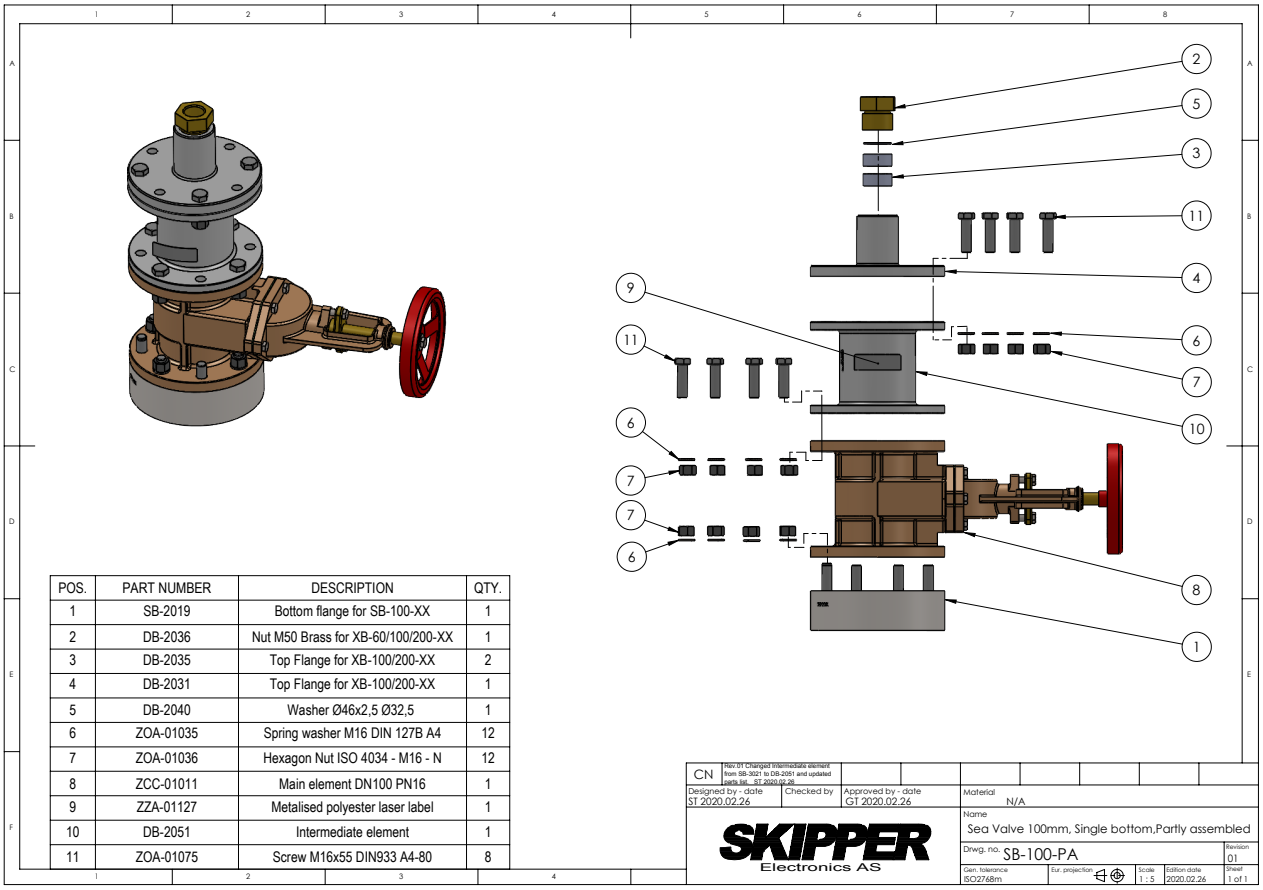


12. RE-INSTALLATION

Same procedure as first-time mounting.

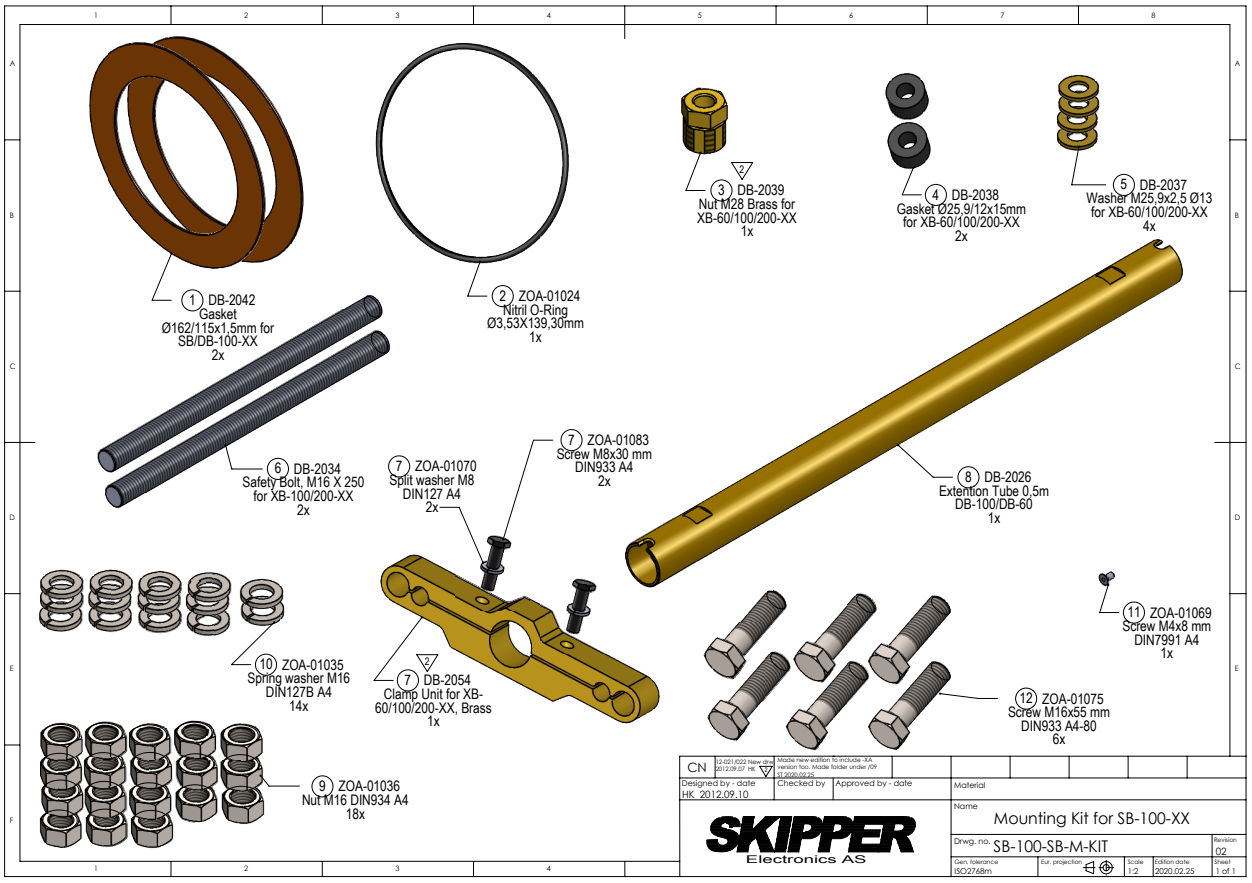


13. ILLUSTRATED PARTS LIST. SHIPMENT



POS.	PART NUMBER	DESCRIPTION	QTY.
1	SB-2019	Bottom flange for SB-100-XX	1
2	DB-2036	Nut M50 Brass for XB-60/100/200-XX	1
3	DB-2035	Top Flange for XB-100/200-XX	2
4	DB-2031	Top Flange for XB-100/200-XX	1
5	DB-2040	Washer Ø46x2,5 Ø32,5	1
6	ZOA-01035	Spring washer M16 DIN 127B A4	12
7	ZOA-01036	Hexagon Nut ISO 4034 - M16 - N	12
8	ZCC-01011	Main element DN100 PN16	1
9	ZZA-01127	Metalised polyester laser label	1
10	DB-2051	Intermediate element	1
11	ZOA-01075	Screw M16x55 DIN933 A4-80	8

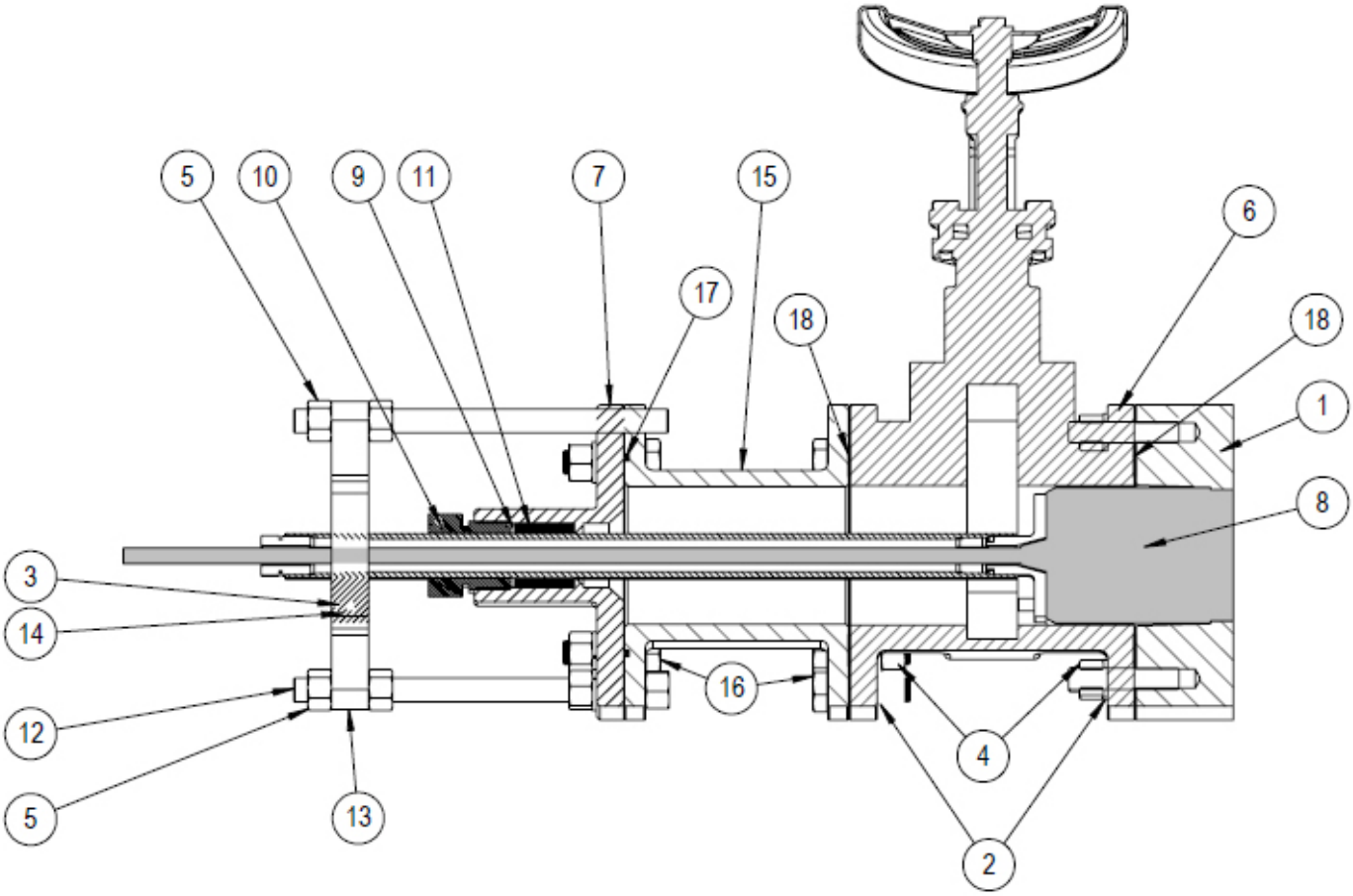
CN | Designed by - date: ST 2020.02.26 | Checked by | Approved by - date: GT 2020.02.26 | Material: N/A
SKIPPER Electronics AS
Name: Sea Valve 100mm, Single bottom,Partly assembled
Drwg. no. SB-100-PA | Revision 01 | Gen. tolerance ISO2768m | Scale 1 : 5 | Edition date 2020.02.26 | Sheet 1 of 1



CN | Designed by - date: HK 2012.09.10 | Checked by | Approved by - date | Material
SKIPPER Electronics AS
Name: Mounting Kit for SB-100-XX
Drwg. no. SB-100-SB-M-KIT | Revision 02 | Gen. tolerance ISO2768m | Scale 1:2 | Edition date 2020.02.25 | Sheet 1 of 1

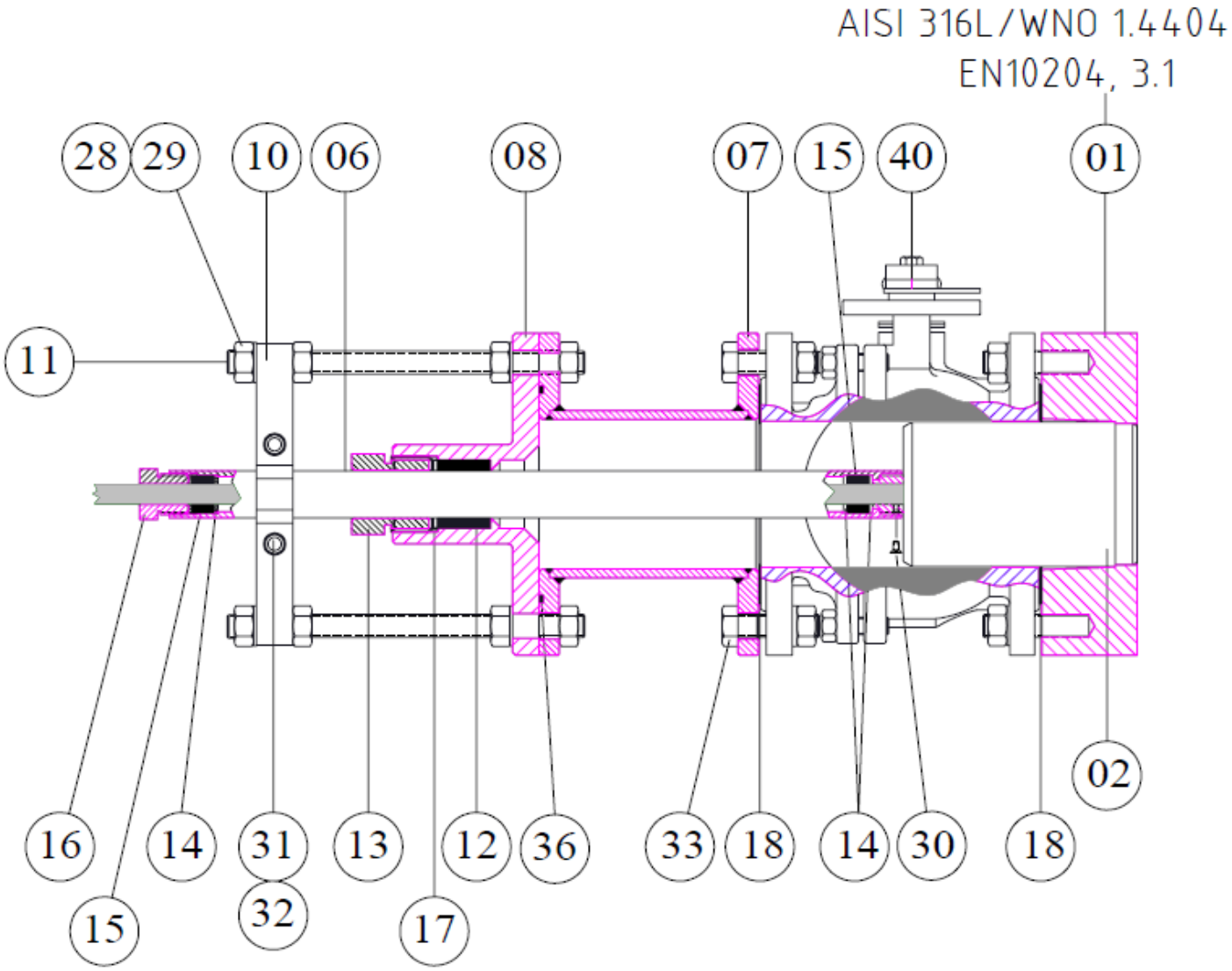
12. ILLUSTRATED PARTS LIST. ASSAMBLED

Part list SB-100-SA



POS.	PART NUMBER	DESCRIPTION	QTY.
1	SB-2019	Bottom flange for SB-100-XX	1
2	ZOA-01035	Spring washer M16 DIN127B A4	24
3	ZOA-01070	Split washer M8 DIN127 A4	2
4	ZOA-01036	Nut M16 DIN934 A4	26
5	ZOA-01036	Nut M16 DIN934 A4	4
6	ZCC-01011	Main element DN100 PN16 Bronze	1
7	DB-2031	Top Flange for XB-100/200-XX	1
8	DL2SG / DL21SG / DL850S27G	Sensor type	1
9	DB-2040	Washer Ø46x2,5 Ø32,5 for XB-60/100/200-XX	1
10	DB-2036	Nut M50 Brass for XB-60/100/200-XX	1
11	DB-2035	Top Flange for XB-100/200-XX	2
12	DB-2034	Safety Bolt, M16 X 250 for XB-100/200-XX	2
13	DB-2054	Clamp Unit for XB-60/100/200-XX, Brass	1
14	ZOA-01083	Screw M8x30 mm DIN933 A4	2
15	DB-2051	Intermediate element for XB-100-XB casted	1
16	ZOA-01075	Screw M16x55 mm DIN933 A4-80	14
17	ZOA-01024	Nitril O-Ring Ø 3,53x139,30mmRev.03	1
18	DB-2042	Gasket Ø162/115x1,5mm for SB/DB-100-XX	2

Part list SB-100-SB



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

	ITEM	QTY.	DESCRIPTION	DWG. NO.	PART. NO
□*	18	2	Gasket	DB-2042-00	DB-2042
	17	1	Washer	DB-2040-00	DB-2040
*	16	1	Nut M28	DB-2039-00	DB-2039
□*	15	2	Gasket	DB-2038-00	DB-2038
□*	14	4	Washer	DB-2037-00	DB-2037
	13	1	Nut M50	DB-2036-00	DB-2036
□	12	2	Gasket	DB-2035-00	DB-2035
*	11	2	Thread Bolt	DB-2034-00	DB-2034
*	10	1	Clamp Unit	DB-2033-00	DB-2033
	08	1	Top Flange	DB-2031-00	DB-2031
	07	1	Intermediate Element	DB-2051-00	DB-2051
*	06	1	Extention Tube - 0.5m	DB-2026-01	DB-2026
	02	1	DB-100-Sensors	DB-2046-01	DL850S27G
	01	1	Bottom Flange-SB	SB-2019-00	SB-2019

	ITEM	QTY.	DESCRIPTION	Material	
	40	1	Ball Valve Element	A4 St.steel	ZCC-01015
□*	36	1	O-ring 139,29 x 3,53	Nitril (NBR 70 shore)	ZOA-01024
*	33	14	Screw M16 x 50 DIN 933	A4 St.steel	ZOA-01075
*	32	2	Spring Washer M8 DIN 127B	A4 St.steel	
*	31	2	Screw M8 x 30 DIN 933	A4 St.steel	ZOA-01083
□*	30	2	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

13. 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.

3: Dry docking.
Gaskets and o-rings may be considered to be replaced during dry docking period.
Inspection of sea valve operation should be considered before a dry docking period to have any spare parts available at dry docking.

4: O-rings are included with sensors and should be replaced when/if sensor is replaced.

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.