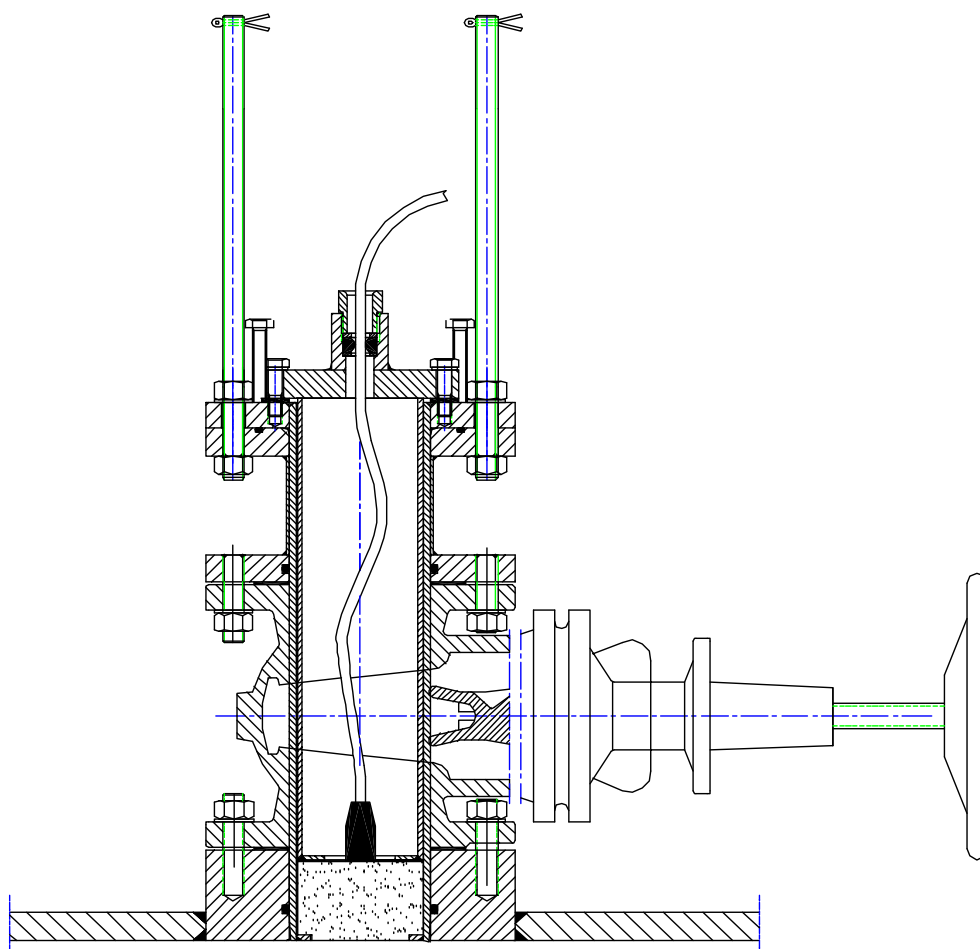


# SKIPPER ETNSLJB

## 100mm GATE VALVE FOR ECHO SOUNDER TRANSDUCER Operation And Installation Manual

Edition 20070522



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# SKIPPER 100 MM GATE VALVE FOR ECHO SOUNDER TRANSDUCER.

## INSTALLATION.

The SKIPPER 100 mm Gate Valve Echo Sounder is used for installation of :

1: Echo Sounder Transducer type TGM 60-50-25L or TGM 50-200-25L.

The SKIPPER 100 mm Gate Valve Echo Sounder 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 gate valve.

First of all, it must be decided, where the gate 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 gate 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 gate valve should be placed in a dry space, large enough for installation and disassembly of the gate valve and sensor unit. See drawing: "Minimum space for convenient access".

When the position has been decided, the gate 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.

The orientation of the bottom flange must be observed. The centerline or a parallel to the CL should run between two bolts, as shown on the enclosed drawing.

The type of steel used in the gate 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 Gate 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 gate valve element.

Mount the intermediate element, item # 3, on top of the gate valve element.

The flange 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 gate valve fully and insert sensor housing into the gate valve, moving it from side to side to align the different elements exactly.

With the sensor housing still in place, tighten the 16 nuts below and above the gate valve element.

After tightening, check that the sensor still moves freely, easy to pull all the way out and insert again.

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

If the above points are not met exactly, it is possible to adjust the height of the gate 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 gate valve has been adjusted correctly, remove the sensor housing element.

Place the O-ring, item # 13, in the groove on top of the intermediate element. Apply grease to the O-ring.

Assemble sensor housing. Secure with 6 each washers / nuts.

Insert the 2 safety bolts item # 16 through the flange and secure with Nuts ( M16 counter nuts )

#### **NOTE !**

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

#### **ASSEMBLY OF SENSOR HOUSING.**

Place transducer element in the bottom of the sensor 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 sensor 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.

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 gate valve.

To remove the transducer element, reverse the procedure.

## **REMOVAL OF ECHO SOUNDER TRANSDUCER UNIT**

The sensor unit is secured with 6 each 16 mm pinbolts 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 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 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 approx. 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 unit, release the nuts on the safety bolts gradually until the sensor unit is clear of the gate valve piston.

Otherwise, lift the unit by hand or other tools until clear of the gate 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 gate valve.

Remove the Split pins and Nuts from the safety bolt and lift out the transducer unit.

It may be necessary to let the gate valve leak somewhat while lifting out the unit, as there will be vacuum between the gate valve piston and the transducer unit.

In installations with too low headroom, after closing the gate valve, it is possible to split the gate valve arrangement between the gate valve element and the intermediate element.

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.

## **REINSTALLATION OF ECHO SOUNDER TRANSDUCER 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 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 sensor unit unit by screwing the nuts on the safety bolts firmly down on the top flange.

To overcome the water pressure, open gate valve slightly to help transducer unit pass the o-ring.

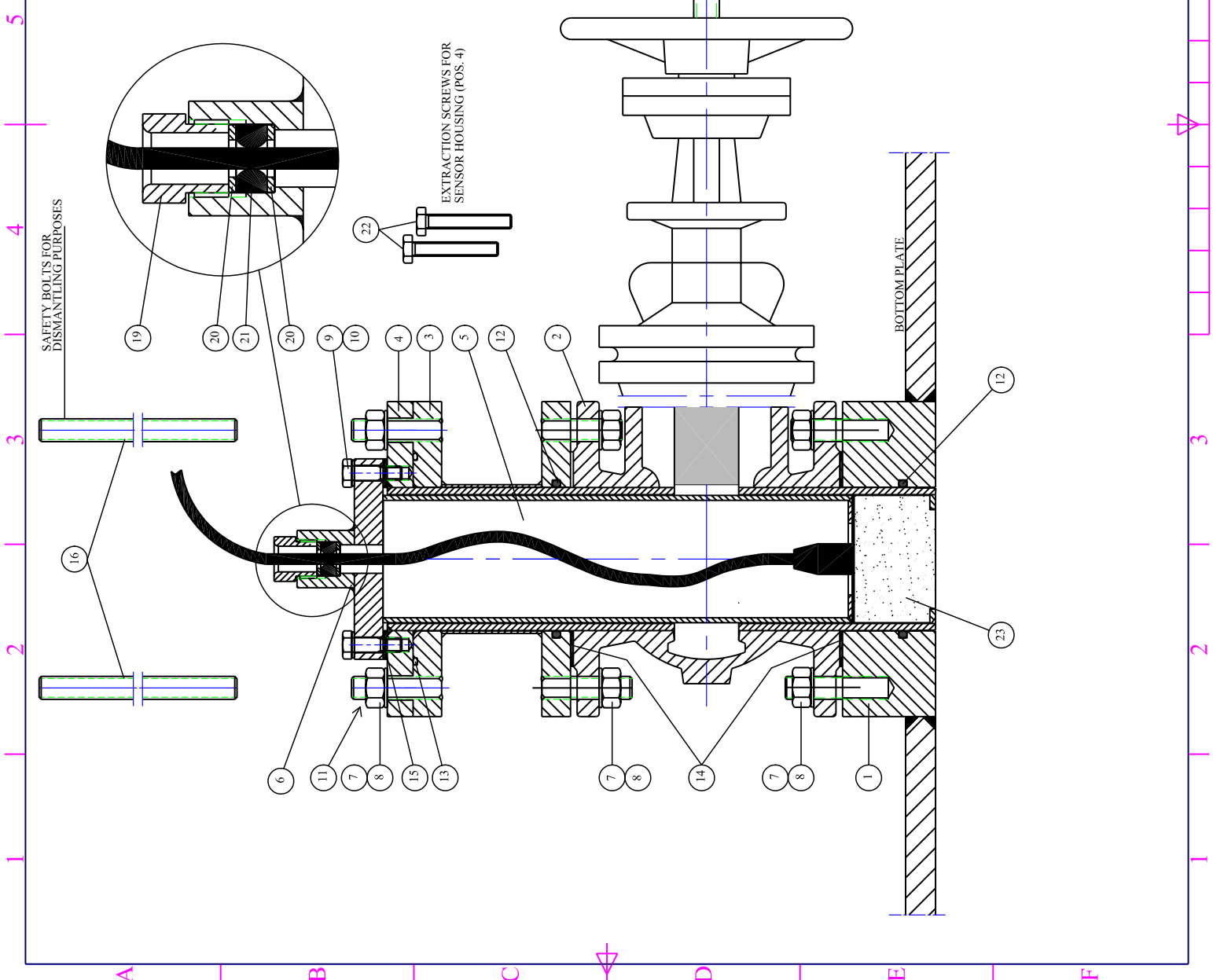
Open the gate valve to full opening.

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 transducer unit into position.

Securing with the 6 each 16 mm nuts and washers, and 2 each 16mm nuts and washers on the safety bolts.

Check for leakage, tighten or repair if necessary.

Rev/No	Revision note	Date	Signature	Checked
01	Page 2 and 3 added	04.05.05	A.Matire	



23	1	Transducer Element			
22	2	Screw M10 x 60mm. DIN 933	St. steel		
21	1	Gasket for CableGland SB-6029-Rev-00	Neoprene		
20	2	Washer M12 DIN125	A4 St. steel		
19	1	Nut for Cable Gland TC-2013-Rev-00	Brass		
18	4	Flat Washer M16 DIN125	A4 St. steel(Econosto only)		
17	4	Locking Nut M16 DIN985	A4 St. steel(Econosto only)		
16	2	Bolt M16 x 330 SB-3016-Rev-00	St. steel		
15	1	Gasket 3mm Ø140/100mm	Nitril		
14	2	Gasket 1,5mm Ø115/162mm	Klingersil, DN100		
13	1	O-ring 139,29 x 3,53 ORAR00254	Nitril		
12	2	O-ring 97,79 x 5,33 ORAR00344	Nitril		
11	2	Screw M16 x 40 DIN933	A4 St. steel		
10	4	Spring Washer M10 DIN127B	A4 St. steel		

9	4	Screw M10 x 35 DIN933	A4 St. steel		
8	24	Spring Washer M16 DIN127B	A4 St. steel		
7	22	Nut M16 DIN934	A4 St. steel		
6	1	Top Flange SB-3012-Rev-01	A4 St. steel		
5	1	Pressure Tube SB-3023-Rev-01	A4 St. steel		
4	1	Sensor Housing SB-3022-Rev-02	A4 St. steel		
3	1	Intermediate element SB-3021-Rev-00 / 01	00 = St. steel / 01 = Bronze		
2	1	Gate Valve element	St. steel		
1	1	Bottom Flange SB-3024-Rev-01	Bronze		

ITEM	QTY.	DESCRIPTION	MATERIAL
Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by A.Matire	Checked by VF	Approved by - date SG-23.08.01	Date GateValveEqd 99.01.04
GATE VALVE ARRANGEMENT For 50KHZ AND 200KHZ TRANSDUCERS			Scale
SKIPPER Electronics A/S			SB 3020
			Edition 0
			Sheet 1/3

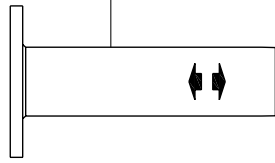




**1**

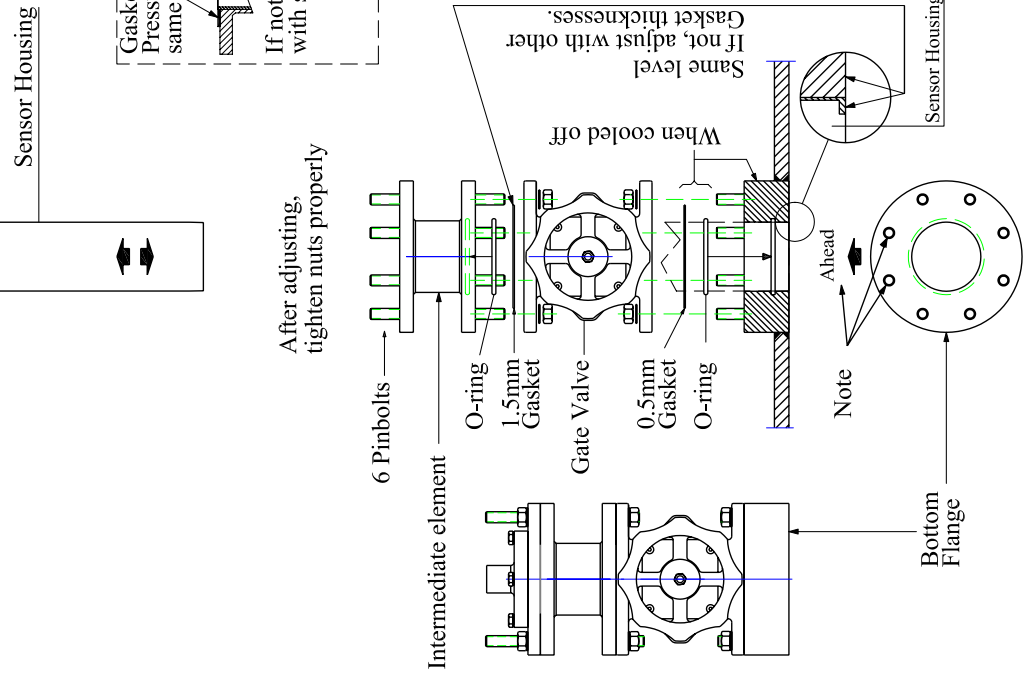
State at delivery  
(Gaskets not installed.)

Intermediate element



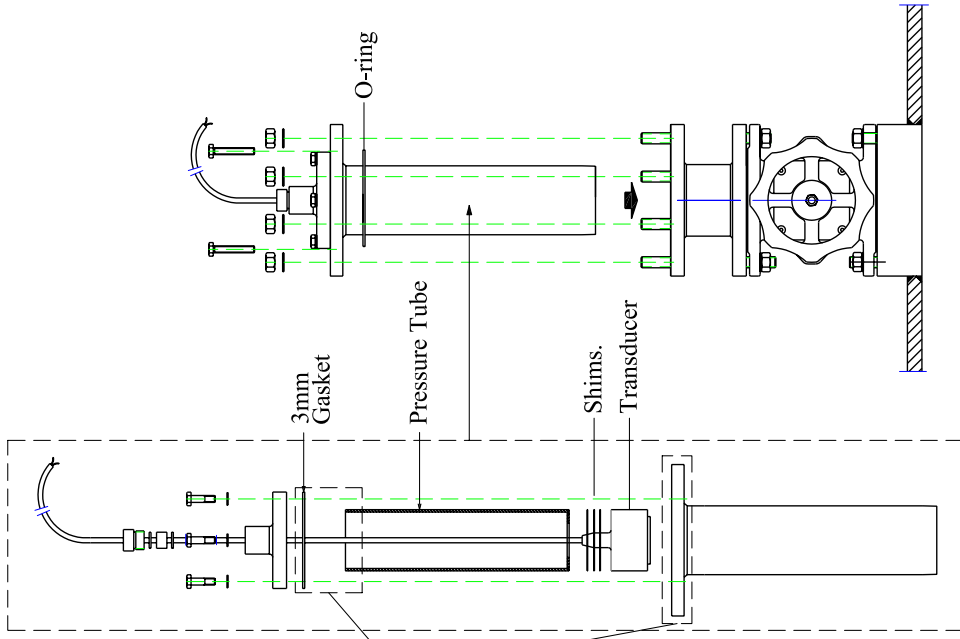
**2**

Before adjusting,  
tighten nuts slightly.



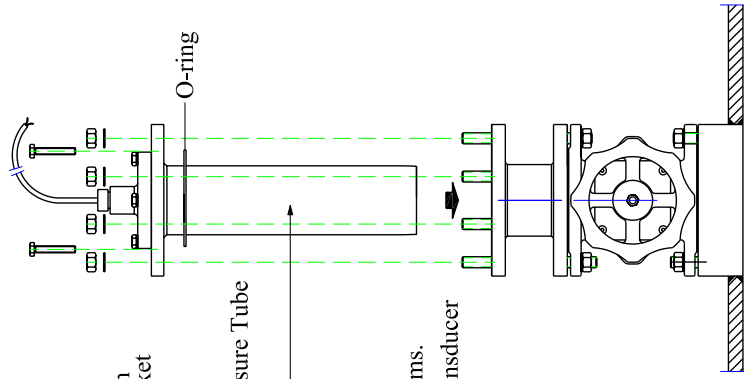
**3**

Sensor Housing Assembly.



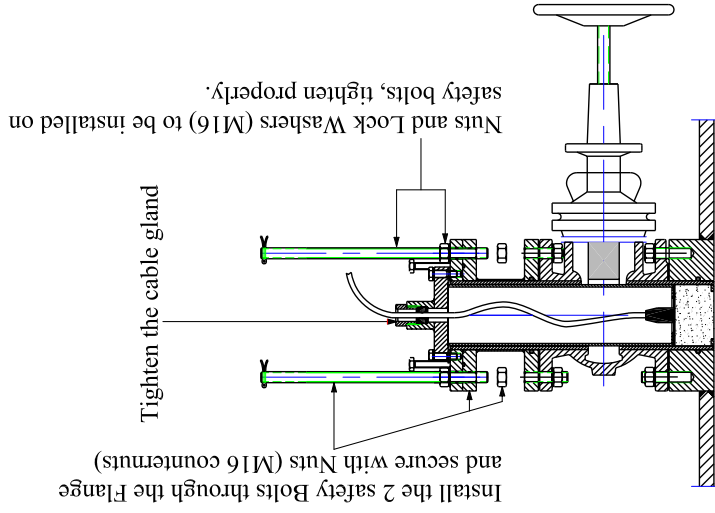
**4**

Sensor Unit installation



**5**

Final Assembly.



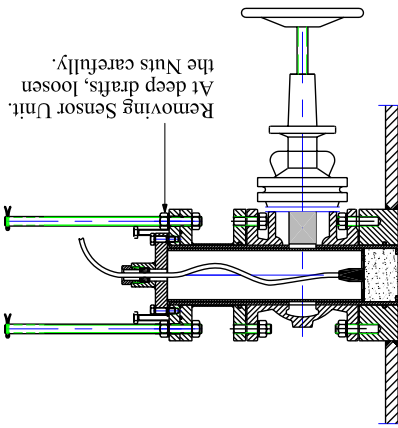
RevNo	Revision note	Date	Signature	Checked
01	Page 2 and 3 added	04.05.05	A.Matre	

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by A.Matre	Checked by XXX	File name Gate valve Echp 99.01.04	Date 99.01.04
Approved by - date XXX - 00/00/00		Scale	
<b>GATE VALVE ARRANGEMENT</b>			
For 50KHZ AND 200KHZ TRANSDUCERS			
SKIPPER Electronics A/S		SB3020	Edition 0
			Sheet 2/3



1

Removal

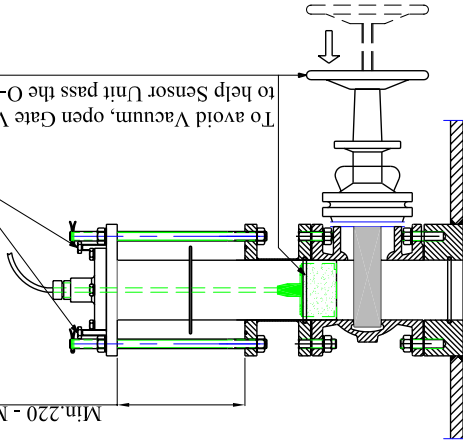


2

If the Water pressure does not push the Sensor Unit up, use the Extractor Screws to lift sensor unit.

To avoid Vacuum, open Gate Valve slightly to help Sensor Unit pass the O-ring.

Min 220 - Max 250mm



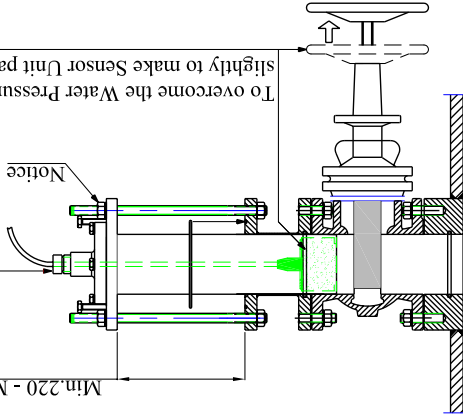
1

Reinstallation

Tighten the cable gland

To overcome the Water Pressure, open Gate Valve slightly to make Sensor Unit pass the O-ring.

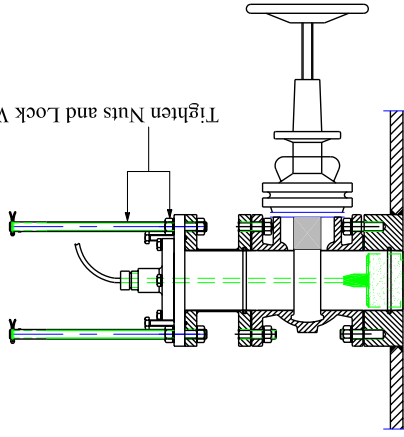
Min 220 - Max 250mm



2

Reinstalled

Tighten Nuts and Lock Washers (M16) properly.



RevNo	Revision note	Date	Signature	Checked
01	Page 2 and 3 added	04.05.05	A.Matre	

For more information, see Operation and Installation Manual.

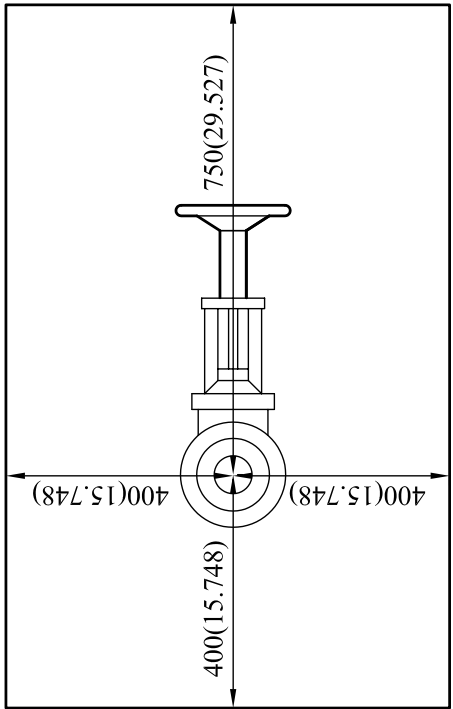
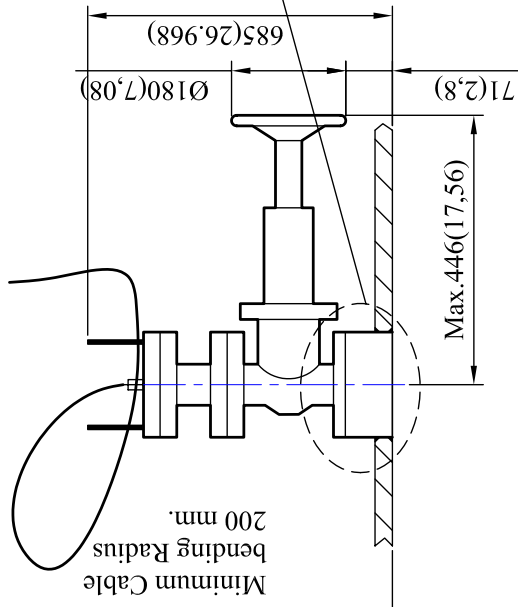
Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by A.Matre	Checked by XXX	Approved by - date XXX - 00/00/00	Date Gate valve Equip 99.01.04
Scale		GATE VALVE ARRANGEMENT For 50KHZ AND 200KHZ TRANSDUICERS	
SKIPPER Electronics A/S		SB3020	Edition 0
			Sheet 3/3



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

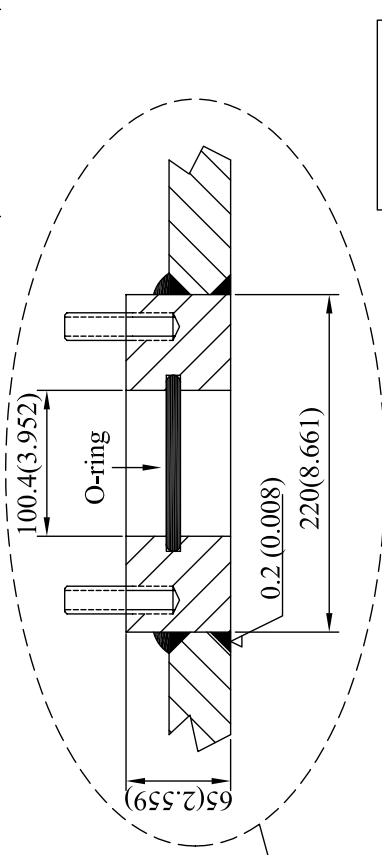
Minimum free Height in Installation Area for problemfree Xducer Replacement and Service.  
 850(33.464) free space  
 (Reduced height can be accommodated by partly dismantling the Valve Assembly during Access.  
 Consult Manufacturer.)

Cable Section in Xducer End must be minimum 1000 (39.370) longer than straight Line Distance between Top of Sensor and Entrance to Cable Duct/Pipe.

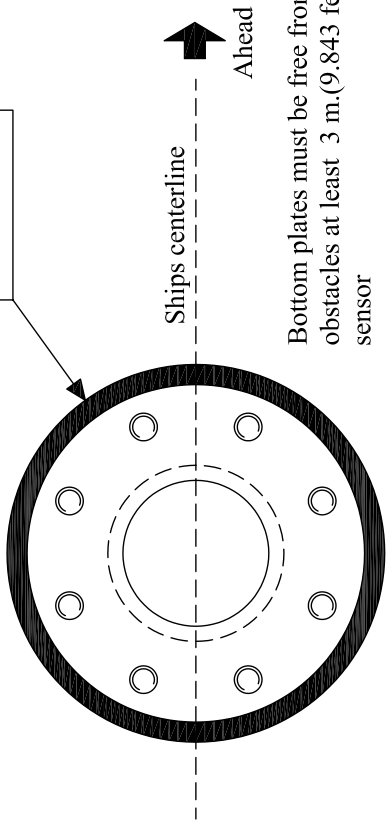


Minimum Space for convenient Access

Dismantle the Bottom Flange and remove the O-Ring Seal before Welding.  
 Material: SS2346, Type 316/316L  
 Observe proper Grinding of outer Hull Welding.



Bottom Flange Orientation



Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by Arne Mähre	Checked by SG	File name TB3011	Date 2007.05.22
Approved by - date SG-03.10.02		Scale	Scale
Skipper Electronics A/S		Gate Valve Mounting	
TB3011-Rev-02		Edition 0	Sheet 1/1

