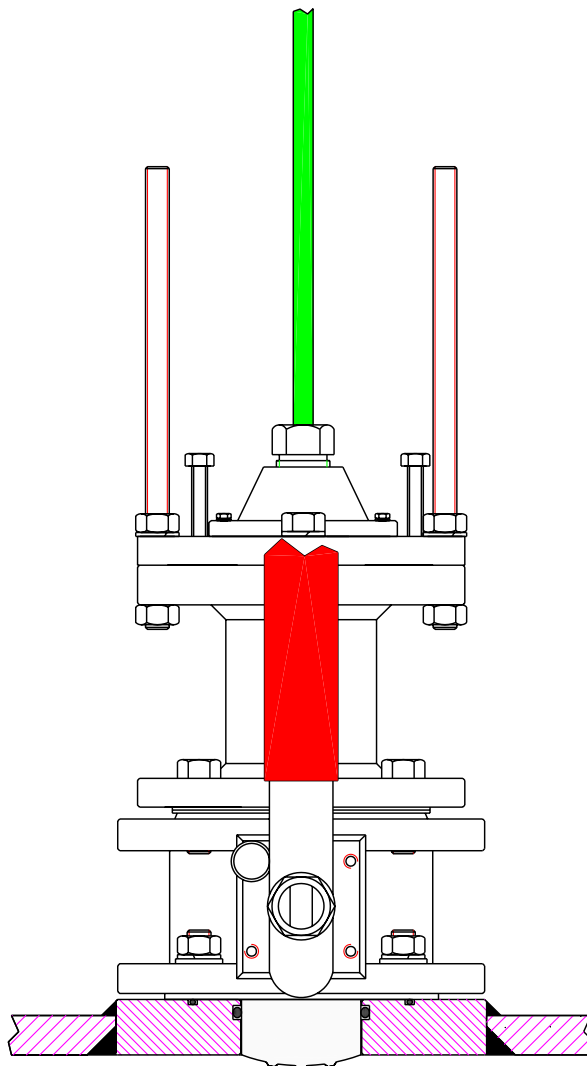


SB BALL VALVE 60mm

Operation And Installation Manual

FOR : PCSV60

Edition 20051003



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SKIPPER

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SKIPPER 60 mm Ball Valve for EML 224.

INSTALLATION.

The SKIPPER 60 mm Ball Valve for EML 224 is used for installation of :

1: EML 224 dual axis sensor (PCSV60)

The SKIPPER 60 mm Ball Valve for EML 224 is delivered assembled for transport.

The parts necessary for final assembly will be found on the ball valve itself, or packed in a box, delivered with the ball 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.

Optimal system operation is achieved by fitting the transducer as deep as possible on the hull.

The transmitting surface of the transducer must be installed with max. +/-1 degree of Horizontal / Perpendicular to the ships Horizontal plane. (Speed logs)

Do not mount transducers close to the bow thruster propeller outlets, or aft of other hull installations (outlets, vents or other protruding details).

It is of course necessary to select a part of the hull that is submerged 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 and **do not paint the surface.**

The ball valve should be placed in a dry space, large enough for installation and disassembly of the gate valve and sensor unit. See drawing: Sheet 2/3

Skipper Electronics AS will recommend installation positions if GA-drawings, Lines drawings and Frame drawings are made available for study.

Condition : The welding to hull structures and structural support of the items is subject to separate approval by DNV or other CLASSIFICATION SOCIETIES
For each installation on board a ship.

When the position has been decided, the ball valve is disassembled, a suitable (187 mm.) Hole is cut in the hull, and the bottom flange, item # 4, 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 ball valve bottom flange is: **TP 316 / TP 316L.**

When the bottom flange has cooled off,

Place an O-ring item # 9 in the groove inside the bottom flange. Apply ample amounts of grease on O-ring. And place an O-ring item # 10 on top off the bottom flange.

Then place the Ball Valve element, item # 2, on top of the bottom flange. The 12 mm nuts and washers should be mounted but not tightened.

Place a 0,5 mm Klingersil gasket, item # 15, on top of the ball valve element.

Mount the intermediate element, item # 13, on top of the ball valve element.

The flange with two O-rings have to be upwards.

Place an O-ring item # 9 in the groove inside the intermediate element.

Place an O-ring item # 10 in the groove on top off the intermediate element.

Apply ample amounts of grease on O-rings.

All 4 bolts / washers should be mounted, but not tightened.

Open the ball valve fully and insert sensor unit into the ball valve,

Moving it from side to side to align the different elements exactly.

With the sensor unit still in place, tighten the bolts and nuts below and above the ball valve element.

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

Check that the outer edges of the sensor unit, when fully inserted, are flush with the lower surface of the bottom flange, leaving only the rounded part of the sensor “head” protruding below the bottom flange.

If the above points are not met exactly, it is possible to adjust the height of the ball valve by inserting thicker or more than one “Klingersil” gaskets, alternatively changing the 0,5 mm gasket to a 1,5 mm gasket.

Insert sensor unit.

Secure with 2 screw M12 and lock washers M12, items # 20 and 11.

Insert the 2 safety bolts item # 3, through the flange and secure with Nuts (M12 counter nuts)

Secure with 2 M12 nuts and lock washers on upper side of the safety bolts.

(The arrow on the top flange of the sensor unit must point ahead)

NOTE !

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

REMOVAL OF SENSOR UNIT EML 224.

The sensor unit is secured with 2 each 12 mm pinbolts with nuts and washers, and two 12mm nuts on each 12 x 285 mm safety bolts.

WARNING !

ON VESSELS WITH DEEP DRAFT, THE SEA PRESSURE ON THE SENSOR UNIT IS CONSIDERABLE, AND MAY PUSH THE UNIT UPWARDS, ONCE LOOSEMED, 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 2 FIXING BOLTS.

After the safety bolts have been correctly arranged, the 2 remaining bolts and washers may be unscrewed.

If the sensor unit sticks in its lowered position, insert the two 8 x 70 mm hexagon “lifting bolts” item #19 in the threaded 8 mm holes in the top flange and use them to “break lock”.

Using the lifting bolts, it is possible to lift the unit approx. 50 mm, enough to provide room for other lifting tools.

After “breaking lock” or lifting, unscrew the two 8 x 70 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 ball valve piston.

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

The unit is clear of the piston when it has been lifted Min. 200 - Max. 220mm.

Do not lift more than 220 mm, as the unit will clear the upper water sealing ring, and there will be water leakage.

Close the Ball valve.

Remove the Nuts from the safety bolt and lift out the sensor unit.

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

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

The sensor 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 if possible.

REINSTALLATION SENSOR UNIT EML 224.

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 sensor unit with water resistant grease (do not grease the electrodes) and insert it into the top of the intermediate element, pushing it down past the upper O-ring.

Secure the sensor unit by screwing the nuts on the top safety bolts.

Open the ball valve to full opening.

Install the sensor unit by screwing the nuts on the top of the safety bolts firmly down.

Securing with the 2 each 12 mm bolts and washers, and 2 each 12mm nuts and washers on the safety bolts.

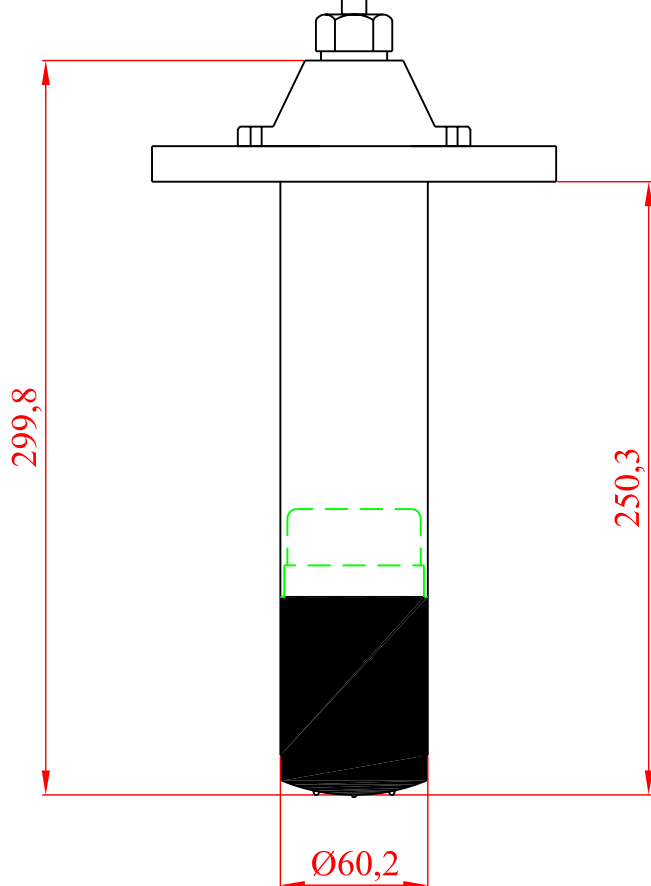
Check for leakage, tighten or repair if necessary.

1	RevNo	Revision note	2	3	Date	4	Signature	Checked
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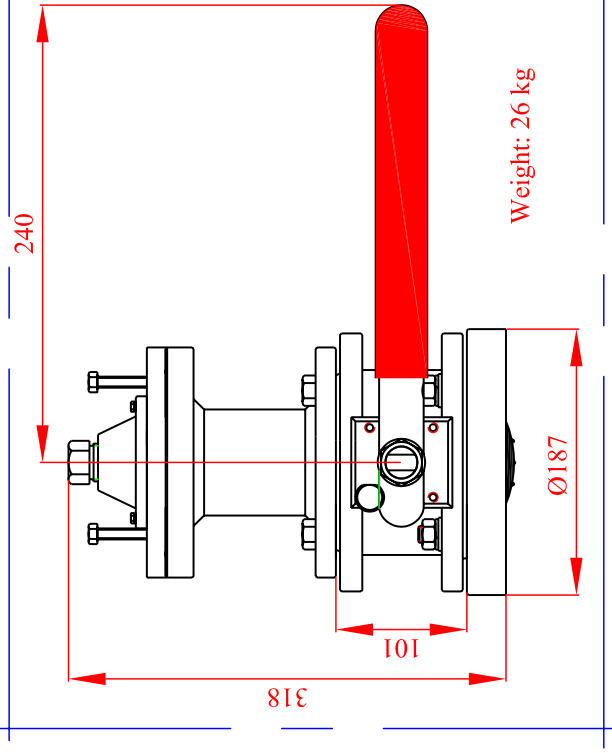
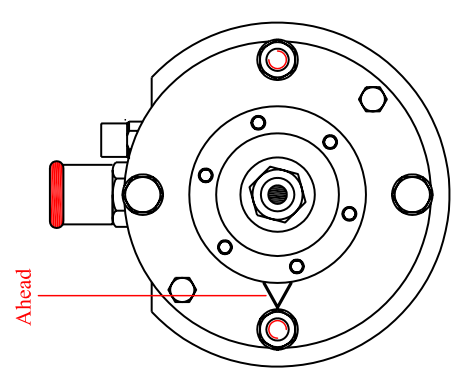
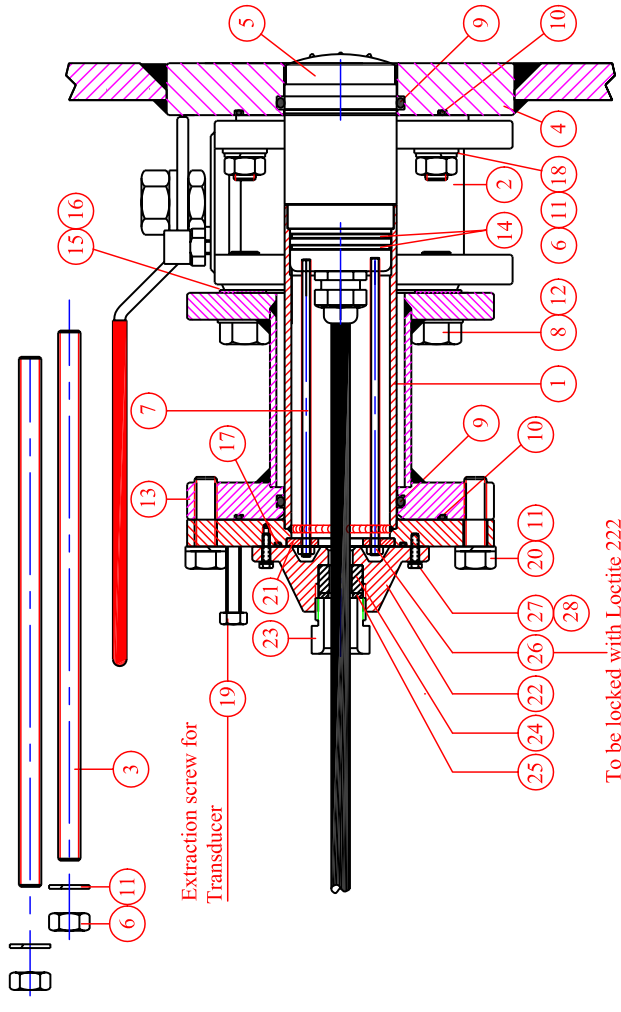
30 meter

Premounted unit
Order number : EML224S

Total weight:
9.3 kg



Itemref	Quantity	Title/Name, designation, material, dimension etc			Article No./Reference	
Designed by A.Matre	Checked by VF	Approved by - date VF-2005.03.16	File name	Date 2005.03.16	Scale	
SKIPPER Electronics A/S			Sensor EML224S			
			SB-EML224S-Rev-00	Edition	Sheet 1/1	



ITEM QTY.	DESCRIPTION	DWG.NO.	ITEM QTY.	DESCRIPTION	MATERIAL	
24	1	Gasket	28	6	Lockwasher M12, DIN 127	A4 Stainless steel
23	1	PG-Nipple	26	6	Screw M4 x 16 DIN933	A4 Stainless steel
22	1	Top Flange	26	2	Nut M5 DIN934	A4 Stainless steel
13	1	Sensor Fastner	25	1	Washer M12 DIN125	A4 Stainless steel
7	2	T. Bolt M5x160	20	2	Screw M12 x 40 DIN933	A4 Stainless steel
4	1	Bottom Flange	19	2	Screw M8 x 70 DIN933	A4 Stainless steel
5	2	Safety Bolt 12x285	18	4	Washer M12 DIN125	A4 Stainless steel
1	1	EML Sensor	17	1	"O"-ring Ø64,5 x 3mm.	Nitril
1	1	Sensor Housing	16	2	Gasket: DN 65 PN10-40 1,5mm	Nitril
1	1	Sensor Housing	15	2	Gasket: DN 65 PN10-40 0,5mm	Nitril
1	1	Sensor Housing	14	2	"O"-ring Ø50,52 x 1,78	Nitril
1	1	Sensor Housing	12	4	Lockwasher M16 DIN128	A4 Stainless steel
1	1	Sensor Housing	11	8	Lockwasher M12 DIN 127	A4 Stainless steel
1	1	Sensor Housing	10	2	"O"-ring Ø105,0 x 4,00mm.	Nitril
1	1	Sensor Housing	9	2	"O"-ring R35 Ø59,69 x 5,33mm	Nitril
1	1	Sensor Housing	8	4	Screw M16 x 40 DIN933	A4 Stainless steel
1	1	Sensor Housing	2	1	Ball Valve	A4 Stainless steel
1	1	Sensor Housing	6	8	Nut M12 DIN934	A4 Stainless steel
1	1	Sensor Housing				

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No /Reference
Designed by A.Maire	Checked by VF	Approved by - date VF-2005/02/10	Date 2005/02/10
File name		Scale	
BALL VALVE ARRANGEMENT EML224			
SKIPPER Electronics A/S		SB-PCS60-EML-Rev-01	
Edition		Sheet	
8		1/3	

1

State at delivery
(Gaskets not installed.)

Transducer removal clearance min 600mm
Valve operation clearance min 400mm

2

Adjusting
Before adjusting, tighten nuts slightly.
Insert Sensor

Sensor Unit used as Adjusting Jigg.

After adjusting, tighten nuts properly.
Check that the Sensor still moves freely, easy to pull all the way out and insert again.

Recommended hull cross section profile for welding.
0.187
Observe proper Grinding of outer Hull Welding.

3

Sensor Unit installation

Do not open the Ball Valve before Nuts and Washers are mounted at the end of the Safety Bolts.

Install the 2 safety Bolts through the Flange and secure with Nuts (M12 counter nuts)

Ahead

4

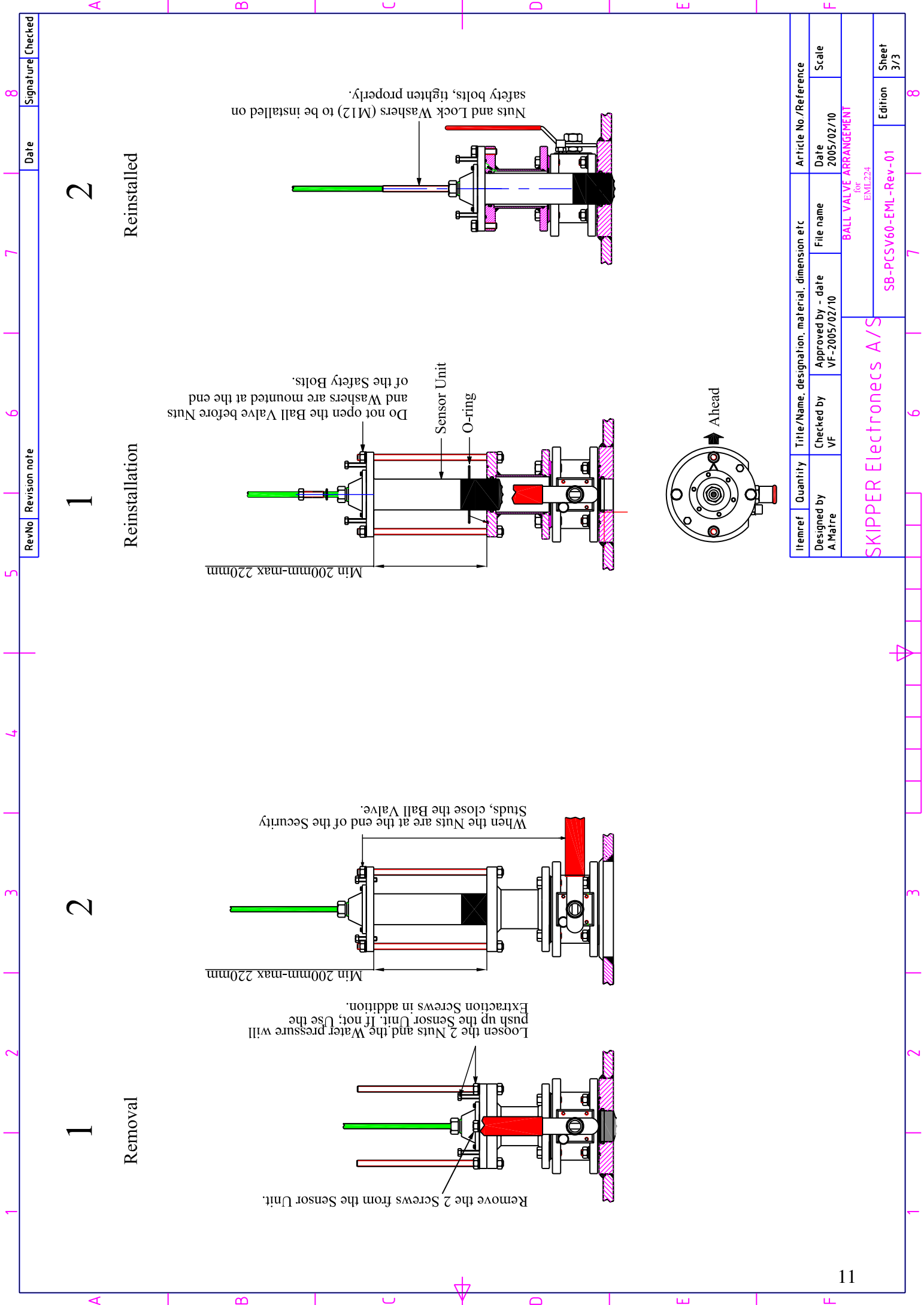
Final Assembly.

Torque : 126 Nm
Same level between Sensor edge and Bottom Flange.
If not, adjust with other Gasket thicknesses.

Nuts and Lock Washers (M12) to be installed on safety bolts, tighten properly.

RevNo	Revision note	Date	Signature	Checked
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Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by A.Maire	Checked by VF	Approved by - date VF-2005/02/10	Date 2005/02/10
File name		Scale	
BALL VALVE ARRANGEMENT for EML224			
SKIPPER Electronics A/S		SB-PCSV60-EML-Rev-01	
Edition		Sheet	
8		2/3	



1

Removal

Remove the 2 Screws from the Sensor Unit.

Loosen the 2 Nuts and the Water pressure will push up the Sensor Unit. If not; Use the Extraction Screws in addition.

Min 200mm-max 220mm

When the Nuts are at the end of the Security Studs, close the Ball Valve.

2

Reinstallation

Min 200mm-max 220mm

Do not open the Ball Valve before Nuts and Washers are mounted at the end of the Safety Bolts.

Sensor Unit
O-ring

1

Reinstalled

Nuts and Lock Washers (M12) to be installed on safety bolts, tighten properly.

2

RevNo	Revision note	Date	Signature	Checked
5				
6				
7				
8				

Itemref	Quantity	Title/Name, designation, material, dimension etc	Article No./Reference
Designed by A.Maire	Checked by VF	Approved by - date VF-2005/02/10	Date 2005/02/10
		File name	Scale
		BALL VALVE ARRANGEMENT for EML224	
SKIPPER Electronics A/S		SB-PCSV60-EML-Rev-01	Edition 3/3