

	SNORRE B FIELD DEV. PROJECT LOW TORQUE TOOL 7,5-75 Nm USER MANUAL STATOIL INDIVID NR.: OK00031		Document. No: Y49211-065	
	Rev: 1		Date: 18.02.2016	
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SNORRE B



SNORRE B FIELD DEV. PROJECT

LOW TORQUE TOOL 7,5-75 Nm USER MANUAL

Y49211-065

STATOIL INDIVID NR: OK00031

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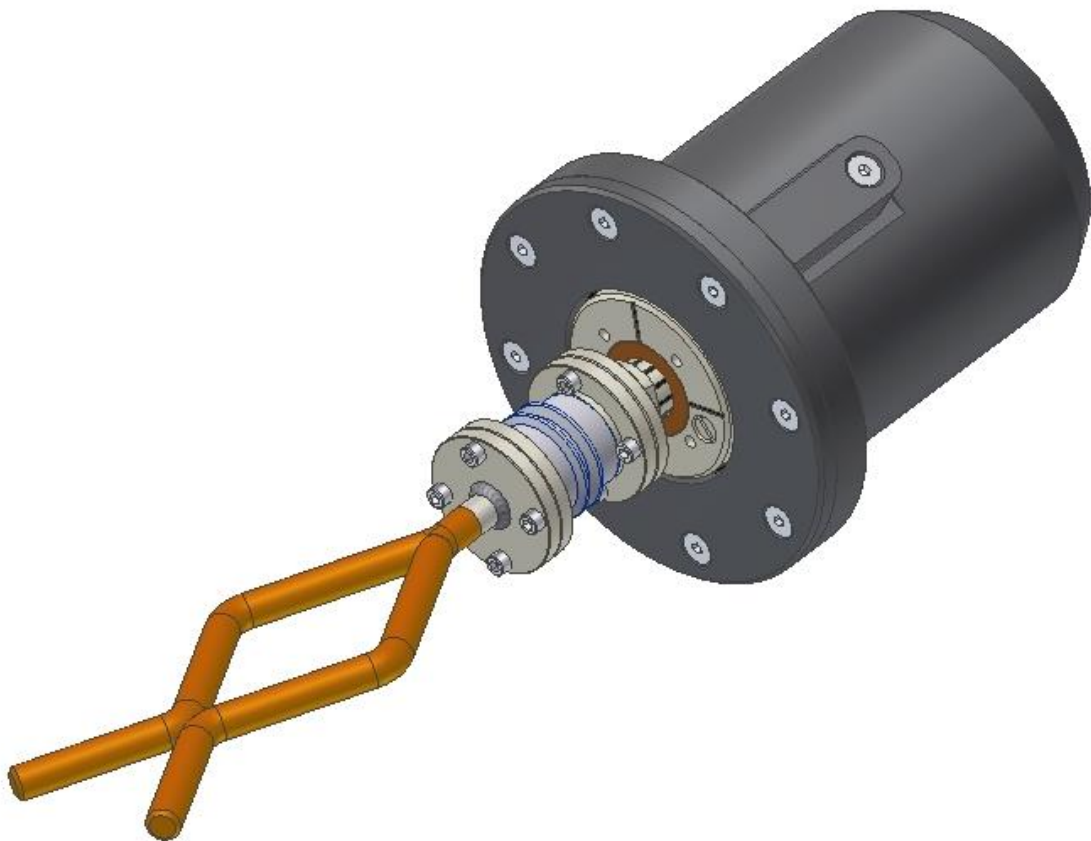
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REVISION RECORD SHEET

Revision	Reason for Change	Page Number(s)	DCN Number
A	Issued for Internal Review	All	
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1.0 GENERAL

This document covers the operational manual and instructions for the Low Torque Tool for delivery to Statoil for the Snorre B Development Project.

1.1 Scope

The purpose of this procedure is to describe the functional capabilities and general operation instructions of the Low Torque Tool.


1.2 Abbreviations

<i>DSRT</i>	<i>Dye Stick Revolver Tool</i>
<i>BOM</i>	<i>Bill of Material</i>
<i>COG</i>	<i>Centre of Gravity</i>
<i>GA-DRAWING</i>	<i>General assembly drawing</i>
<i>MC</i>	<i>Mechanical Completion</i>
<i>ROV</i>	<i>Remotely Operated Vehicle</i>
<i>RCU</i>	<i>Remote Control Unit</i>
<i>LTT</i>	<i>Low Torque Tool</i>
<i>WROV</i>	<i>Work Remotely Operated Vehicle</i>

1.3 Related Documents and Drawings

The following documents and drawings are related to this manual:

Doc. No or ref.	Description of document
1022-00	Assembly drawing – Torque Tool 7,5-75 Nm
1022-01	Assembly drawing – Torque Unit
1022-02	Assembly drawing – Torque Interface
1022-03	Assembly drawing – Outer Housing
-	Installation & Operating Instructions for ROBA®-Slip hubs sizes 0-12

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2.0 GENERAL UNIT DESCRIPTION

This chapter outlines the general description of operating the Low Torque Tool (LTT) and its functional capabilities.

The LTT contains of the following main items:

- ROV Handle with flexible joint
- Torque unit with torque adjuster
- Torque Interface with compensator piston
- Outer Housing

2.1 Main Function

The Low Torque Tool is designed to limit the torque from the ROV Gripper Arm to protect equipment (valve stems o.e.) from damage due to high torque.

The LTT is built up around a modified ROBA®-slip hub. Torque is reduced by adjusting the spring-loaded clutch pressure on a brake disc. The torque unit is oil-filled and pressure compensated by a piston.

For interface with rotary torque receptacles, the LTT is equipped with an outer housing acc. to API 17D (ISO 13628-8) classes 1 to 4. If required, the LTT can be operated without this interface.

3.0 DESCRIPTION AND TECHNICAL DATA

The LTT consists of the following main components:

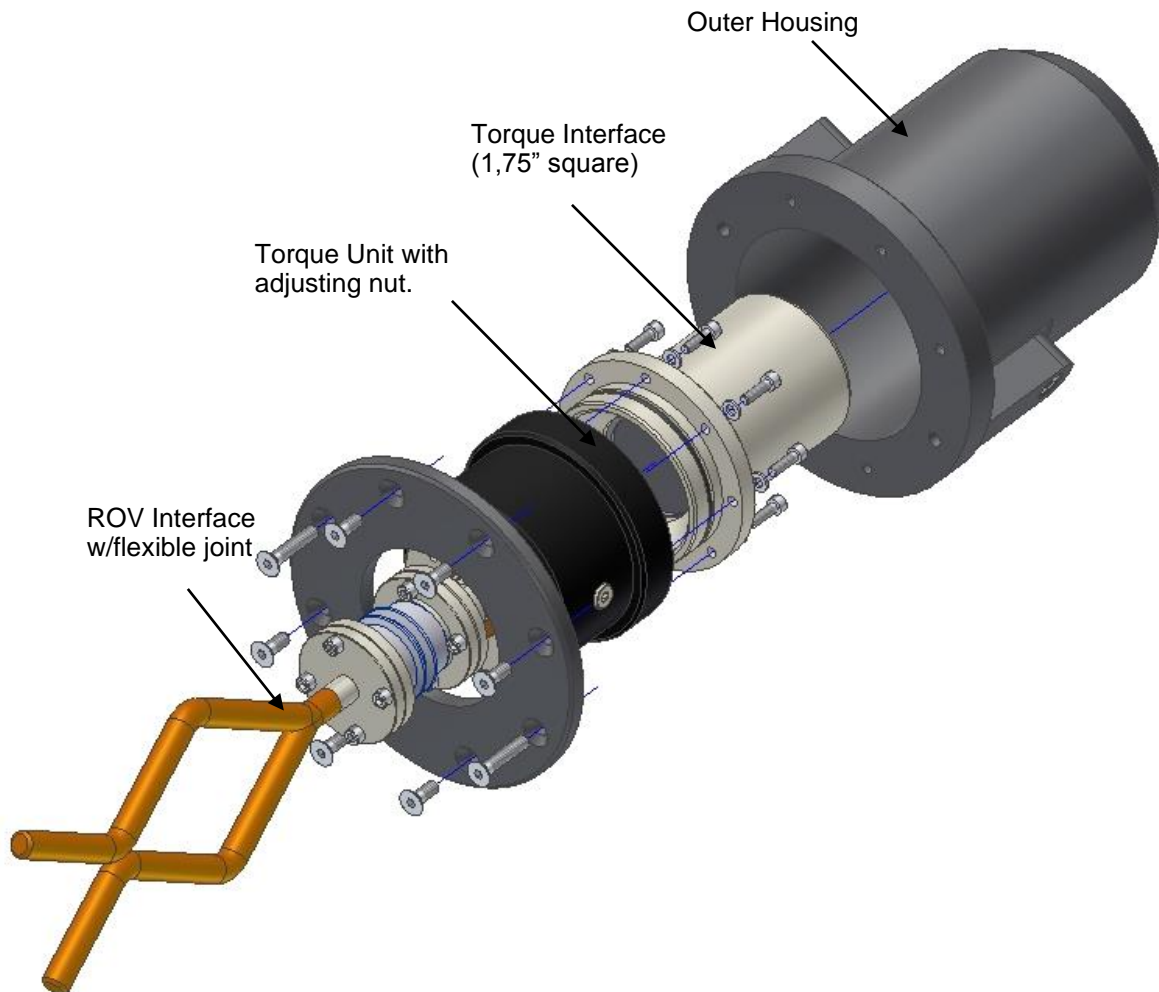


Figure 1; Low Torque Tool - Main Components



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3.1 Technical Data – Low Torque Tool

For a full detailed view of the LTT, please see drawing no. 1022-00.

Technical data	
Min. torque	7,5 Nm
Max. torque	75 Nm
Weight in air	Appr. 15,5 kg
Weight submerged	Appr. 12 kg

3.2 Hydraulic Interface

No hydraulics is required to operate the Low Torque Tool.

4.0 SAFETY

It is very important to be aware of the following safety aspects:

- Safety on deck
- Avoid any loose objects falling down in template area
- Safety of any uncontrolled movement when launching system
- Safety of both of the ROV's tether when crane hook is in water
- Risk assessment to be conducted for the complete operation
- Toolbox meeting shall be held prior to operations.
- Task plan to be issued for each operation
- Take the necessary time to ensure that the operations are performed in a safe manner
- No " stille avvik "
- Any changes to the procedure discussed in the toolbox meeting requires a "time out " and new risk evaluation

SAFETY NOTE

A strict "No Accident policy" is applied for Saipem projects. It is of paramount importance that adequate safety precautions are taken, and those relevant safety procedures are established and adhered to.

5.0 OPERATION INSTRUCTIONS

5.1 Preparations

5.1.1 Oil Filling

1. Disassemble the outer housing to access the torque unit.
2. Open the lock bolt (1022-01 pos. 6) and unlock the torque adjuster.
3. Turn the torque adjuster CCW until the 19 mm dimension is achieved (see figure 2).

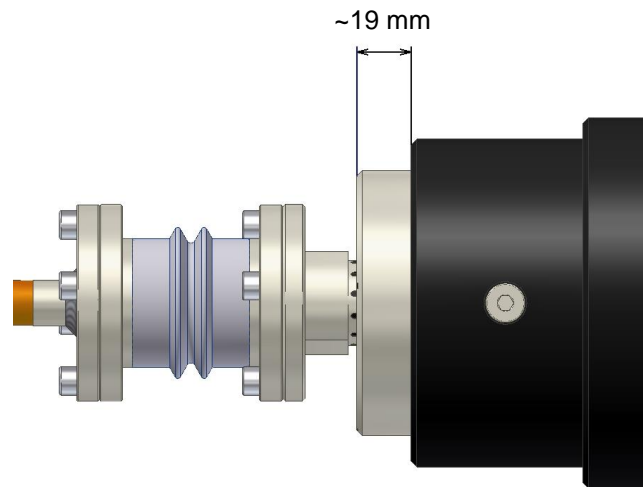


Figure 2; Torque Adjuster position when filling oil

4. Open the 1/4" BSP plug (1022-01 pos. 10)
5. Fill the reservoir with hydraulic oil type tellus 22/32 o.e. Wait for 15 minutes to let excess air evacuate, and top up the reservoir.
6. Assemble the 1/4" BSP Plug.
7. Assemble the torque tool and adjust the torque acc. to section 4.1.2.

5.1.2 Torque Adjustment

The slip-hub contain two cup springs which can be installed in two positions (single layer and double layer). The LTT is delivered with the cup springs in single layer position.

If higher torque values are required, the springs can be positioned double layer. To do this, the tool must be completely disassembled.

For further information, reference is made to the installation and operating instructions for Roba®-slip hub.

Adjustment of torque setting:

1. Open the lock bolt (1022-01 pos. 6) and unlock the torque adjuster.
2. Torque is adjusted by turning the torque adjuster (1022-01 pos. 4) with the enclosed face wrench when holding the shaft (1022-01 pos. 2) with a 32 mm spanner. Turning the torque adjuster CW will increase the torque setting.
3. Use a suitable torque transducer to check the slip torque.
4. To lock the torque setting, make sure one of the markings on the shaft are aligned with one of the four markings on the torque adjuster and tighten the lock bolt. When the bolt is locked, it shall be flush with the face on the torque adjuster.

5.2 Operation

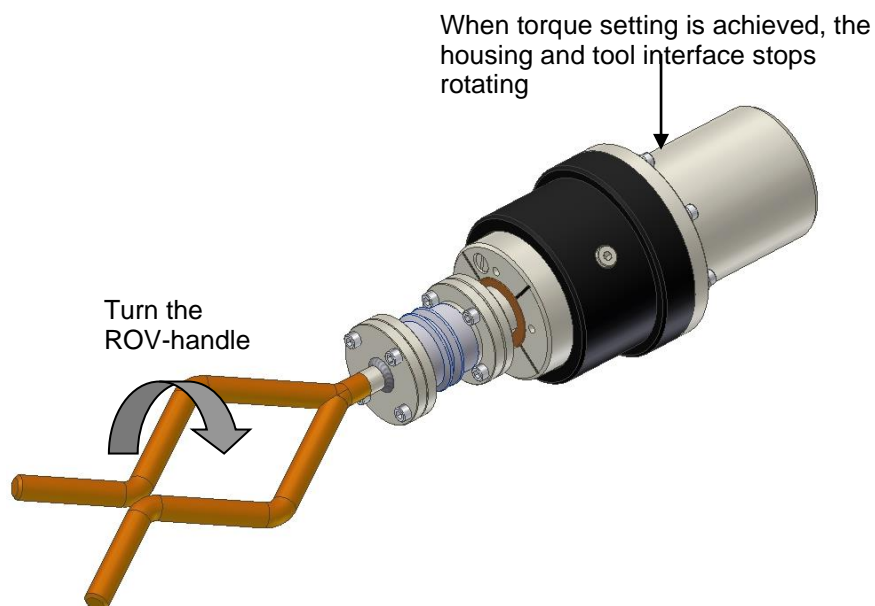


Figure 3; Operation of LTT (outer housing not shown)

1. Place the LTT into the ROV docking receptacle.
2. Rotate the ROV Handle on the LTT until the torque unit housing stops rotating.

6.0 STORAGE

1. Always clean the LTT with fresh water after use and prior to storage.
2. Let the tool dry and lubricate all metal parts with oil.
3. Store the tool in the transport box.

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7.0 ATTACHMENTS

7.1 Installation & Operating Instructions for ROBA®-Slip hubs sizes 0-12



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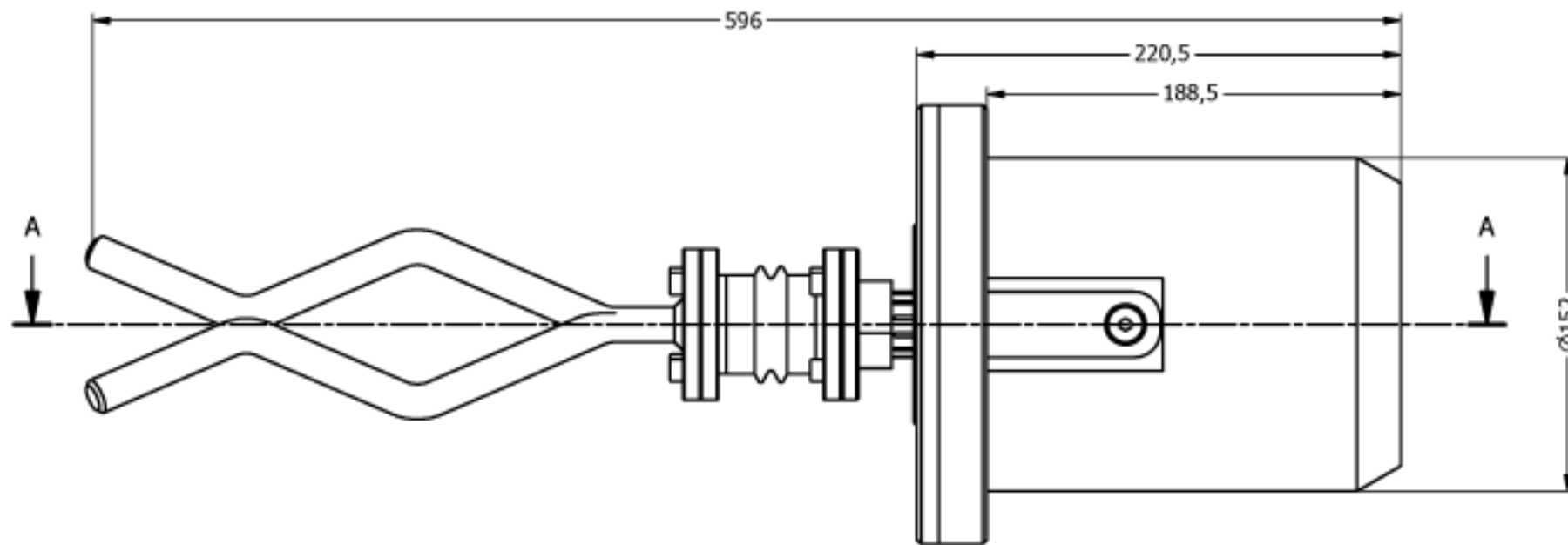
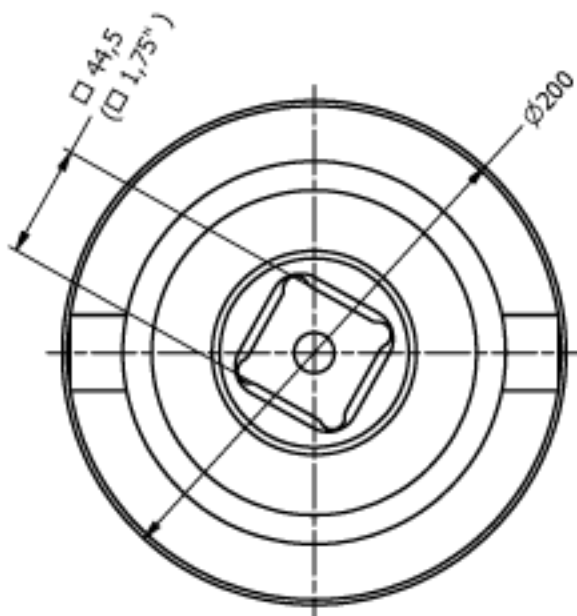
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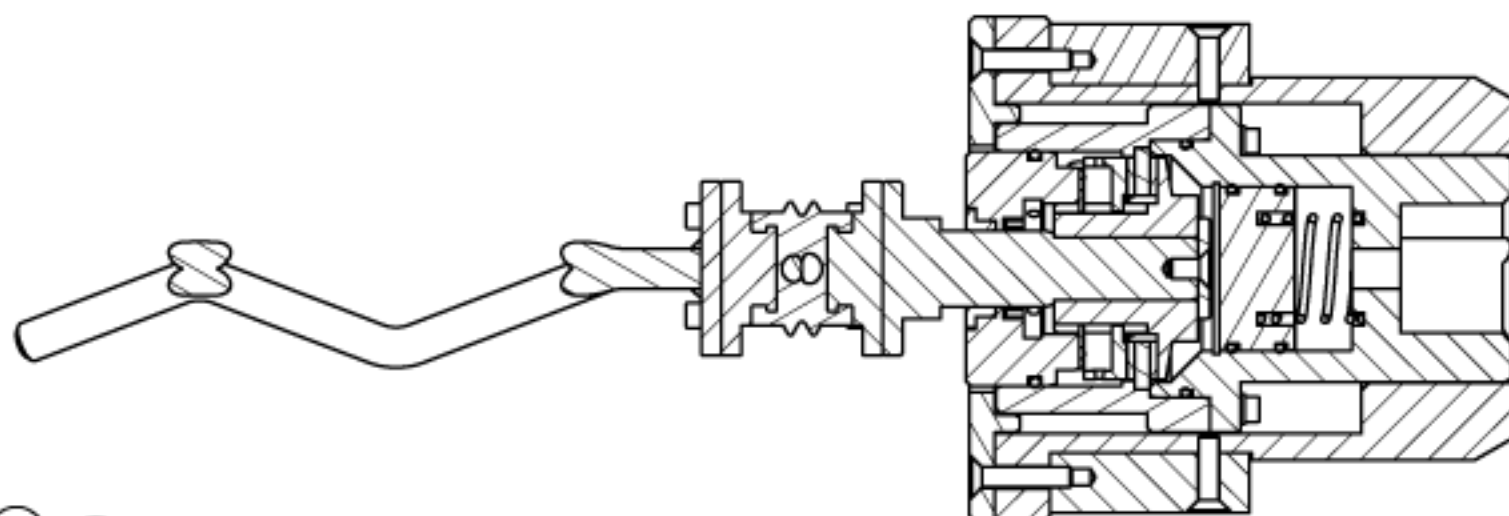
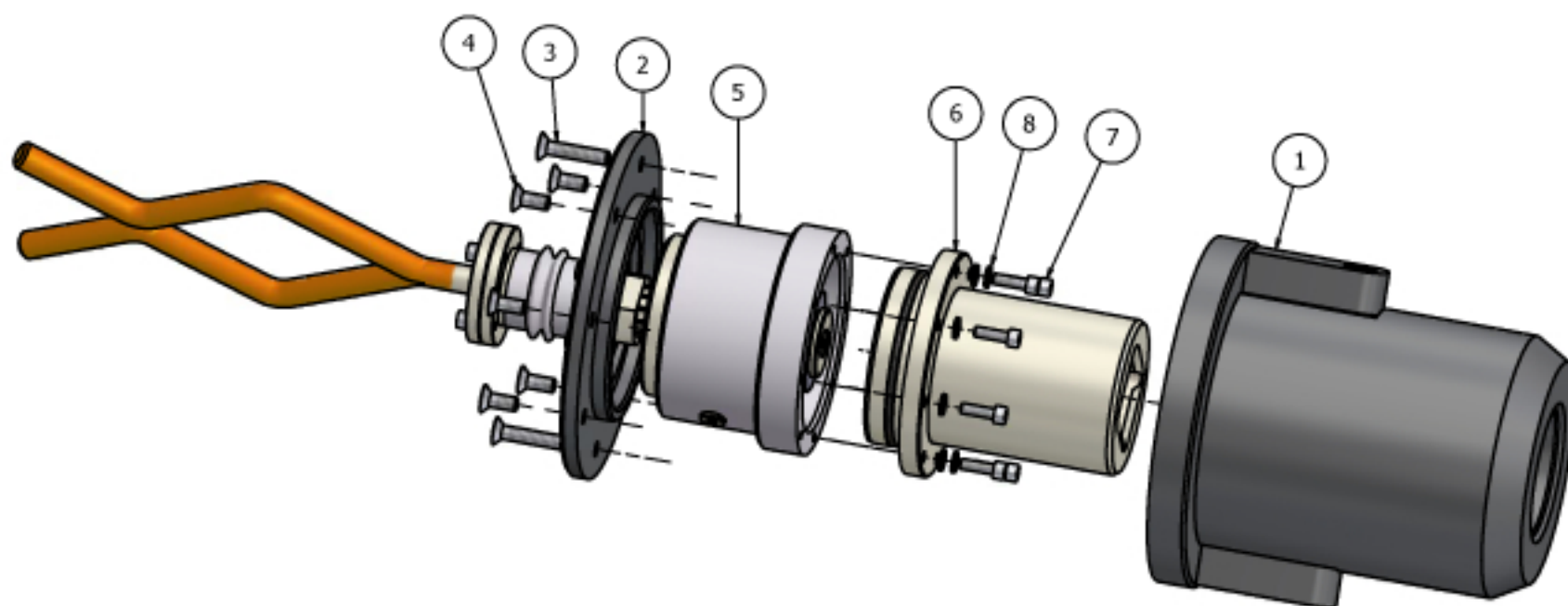
8.0 DRAWINGS

- **Assembly drawing – Low Torque Tool (No. 1022-00)**
- **Assembly drawing – Torque Unit (No. 1022-01)**
- **Assembly drawing – Torque Interface (No. 1022-02)**
- **Assembly drawing – Outer Housing (No. 1022-03)**



A-A (1:3)

EXPLODED VIEW (1:4)



NOTE:
Housing to be filled with oil Tellus 22/33 for use as compensator fluid.
See user manual for filling instructions.

Item	Qty.	Title	Ref.	Material	Weight Ea.	
1	1	Outer Housing	S022-03		2,6 kg	
2	1	Flange	S022-03-003	POHC, Black	6,4 kg	
3	2	Bolt M8x40	DEN 7991	A4	0,018 kg	
4	6	Bolt M6x20	DEN 7991	A4	0,018 kg	
5	1	Torque Unit	S022-01		7,3 kg	
6	1	Torque Interface	S022-02		6,2 kg	
7	8	Bolt M6x20	DEN 852	A4	0,008 kg	
8	8	Washer P10	DEN 125	A4	0,001 kg	
Surface Treatment:				Marking:	Est. tot. weight in air:	15,3 kg
					Est. tot. weight submerged:	N/A

General tolerances unless otherwise specified:		
Tol. class acc. to:	Roughness:	Broken edges:
ISO 2768-1 Medium	Ra μm : 6.3	(R.R. AB, AS) 0.1 - 0.5
Title:		
Torque Tool 7,5-75 Nm Assembly		
Client:	Project:	Drawing no:
Sonsub		1022-00

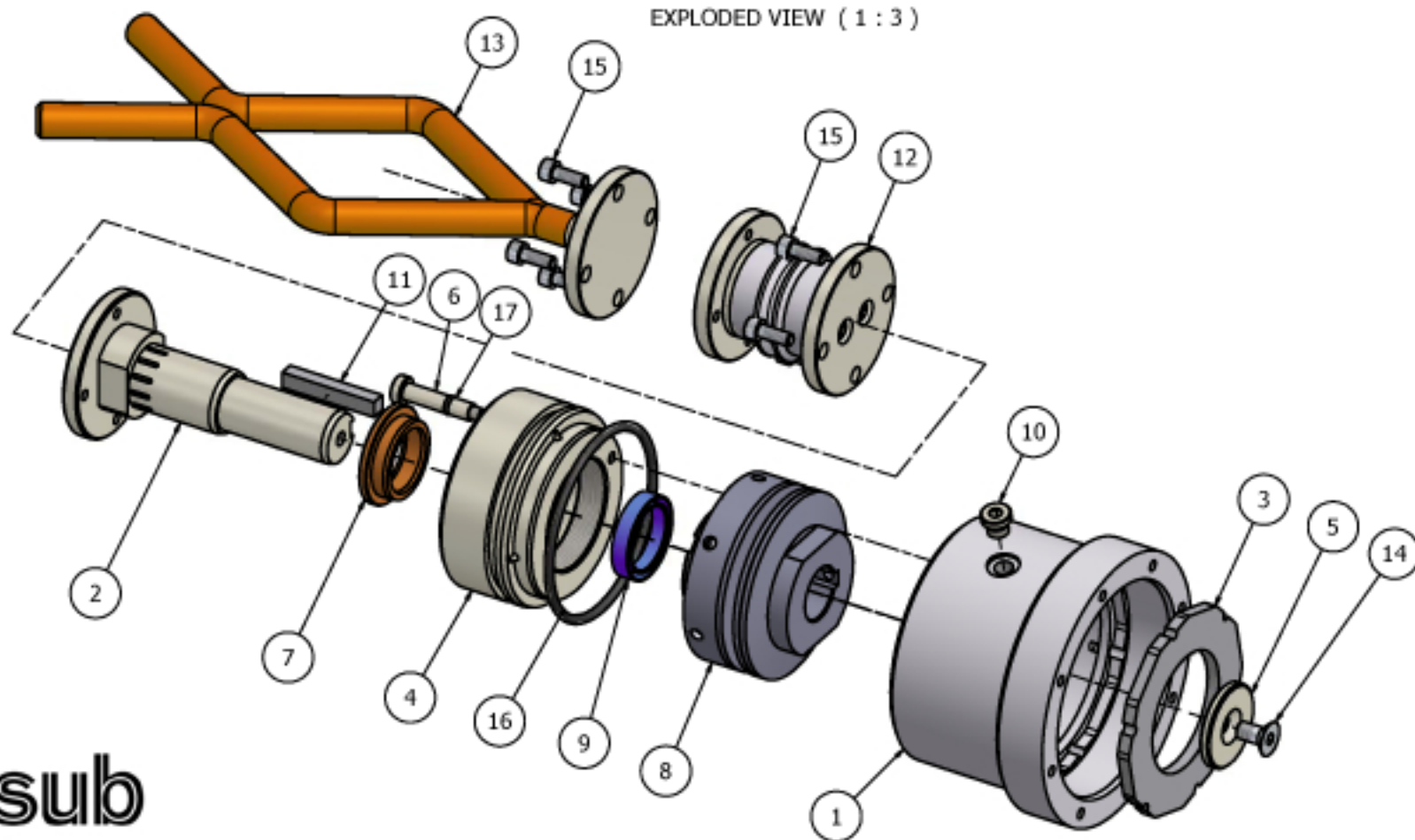
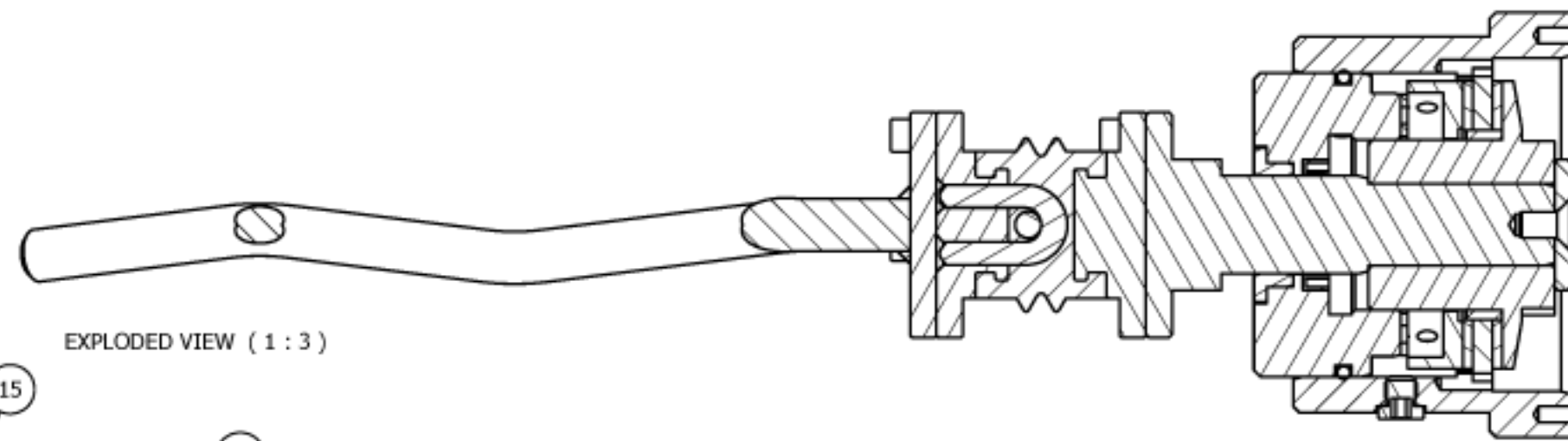
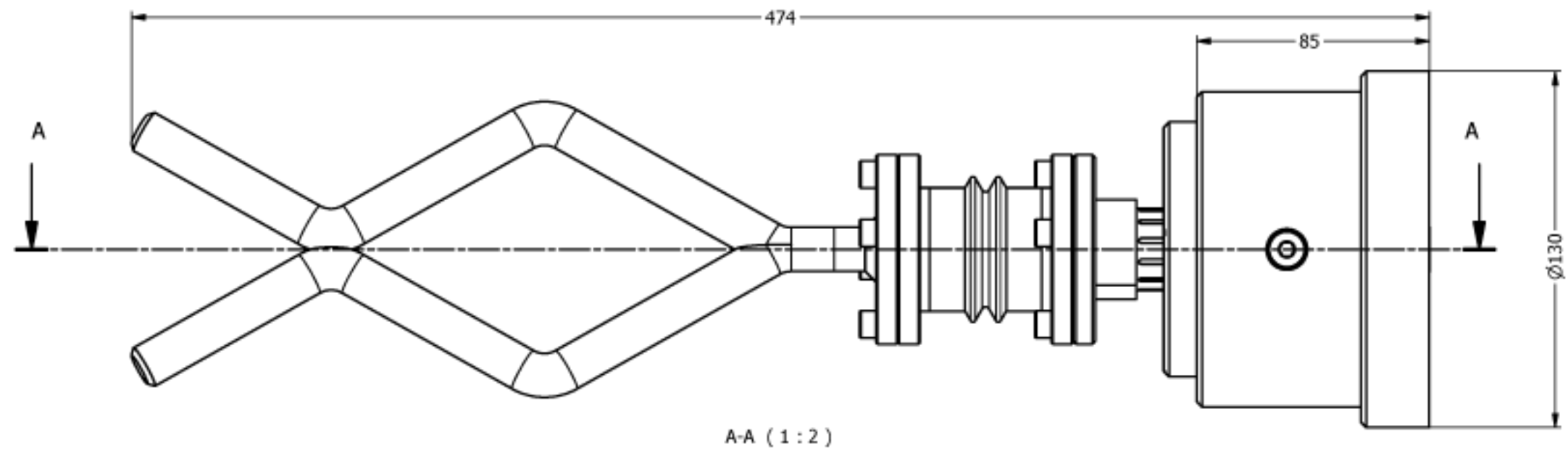
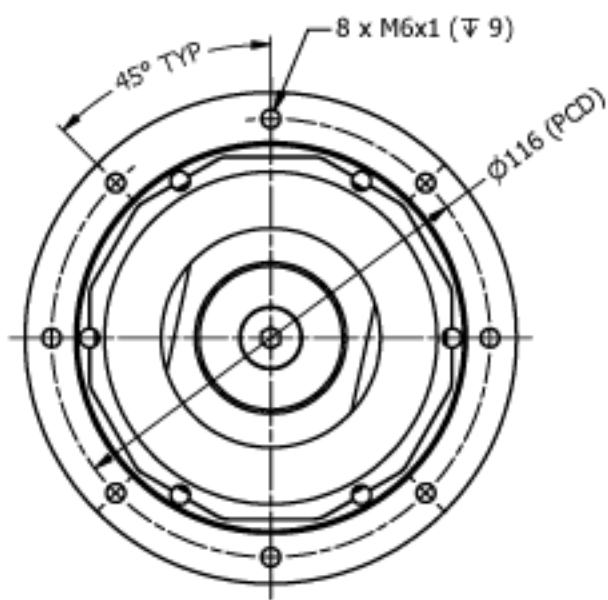
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0	30.11.2006	Issued for construction	JKB	RAN		



Size: A3
Sheet: 1 of 1
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Item	Qty	Title	Ref.	Material	Weight Ea.
1	1	Housing	1022-01-001	AL 6062-T6	6,9 kg
2	1	Shaft	1022-01-002	ASTM 316 L	6,8 kg
3	1	Clutch Disc	1022-01-003	S355J20J3	6,2 kg
4	1	Torque Adjuster	1022-01-005	S305 M	1,6 kg
5	1	Washer	1022-01-008	ASTM 316 L	6,0 kg
6	1	Lock Bolt	1022-01-003	ASTM 316 L	6,0 kg
7	1	Bearing	1022-01-007	Bronze, SFS 5756 (M7)	6,1 kg
8	1	Roller Slip-Hub Size 2	1022-00		1,4 kg
9	1	Oil Seal Ø30 x Ø40 x 8	3048 8	NBR	0,002 kg
10	1	Plug 1/8" BSP w/gasket	7503-00-025	ASTM 316 L	6,0 kg
11	1	Wedge	7x8x8	A2	6,0 kg
12	1	Flex Joint	80067-A		6,8 kg
13	1	3D-Handle	80094-A		1,1 kg
14	1	Bolt M6x16	DEM 7901	A4	0,006 kg
15	8	Bolt M6x16	DEM 912	A4	0,007 kg
16	1	O-ring 80,50 x 4,00	OR 080526V400	NBR-70	6,0 kg
17	1	O-ring 5,28 x 1,70	OR 00528x170	NBR-70	6,0 kg
Item	Qty	Title	Ref.	Material	Weight Ea.
Surface Treatment:					7,1 kg
Marking:					N/A
Est. tot. weight in air:					7,1 kg
Est. tot. weight submerged:					N/A

General tolerances unless otherwise specified

Tail. class acc. to: ISO 2768-1 Medium
Roughness: Ra µm: 6,3
Broken edges: (R.A.B. 45) 0,1 - 0,5

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Title: Torque Tool 7,5-75 Nm
Torque Unit
Assembly

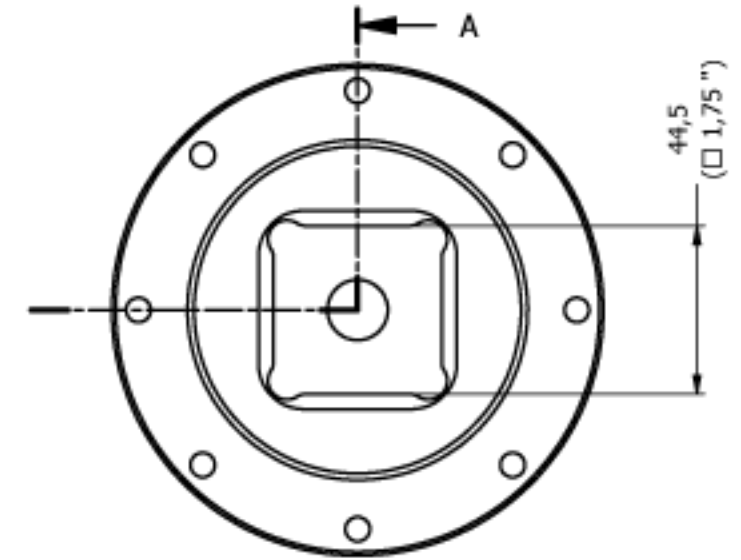
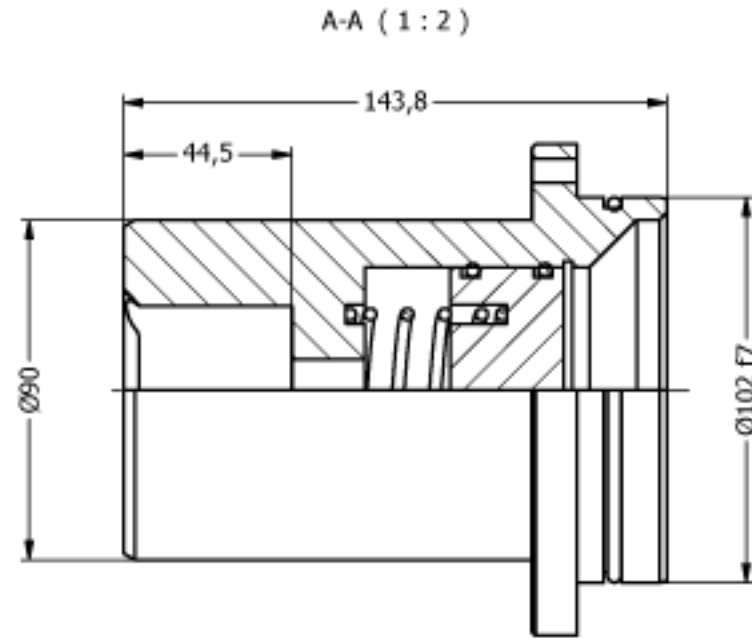
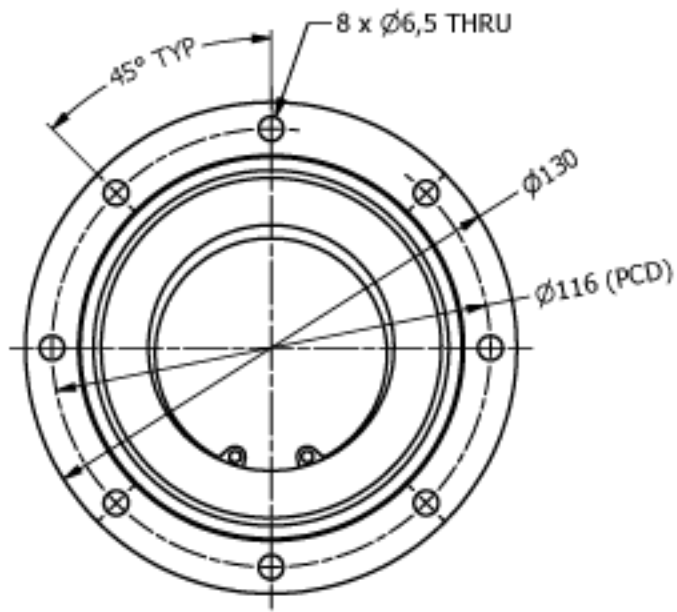
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Project:
Drawing no: 1022-01

Size: A3
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Rev: 0

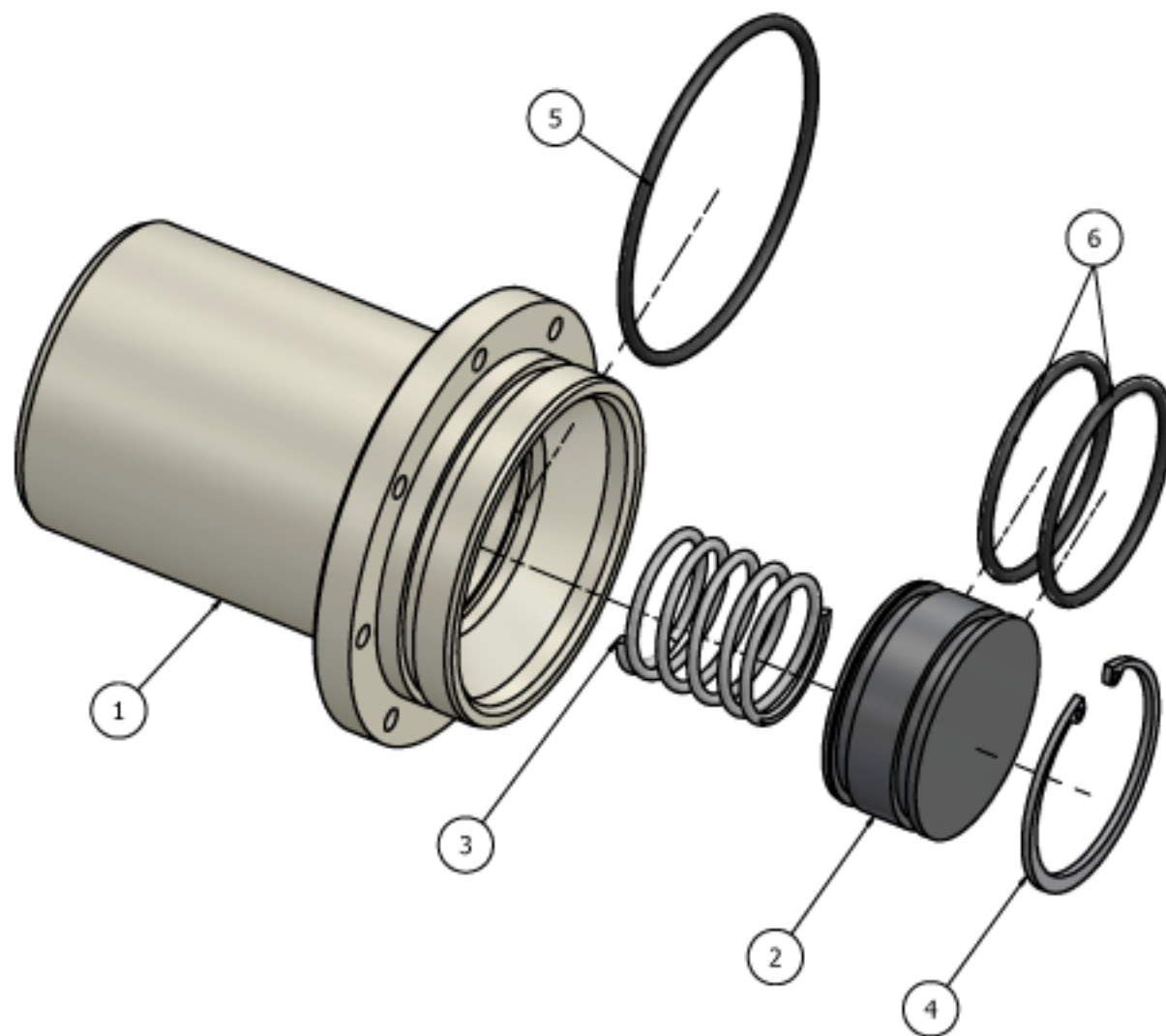
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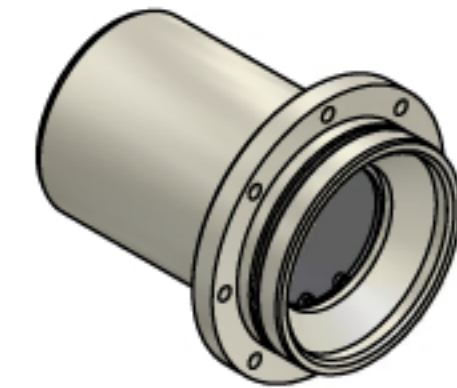
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EXPLODED VIEW (1:2)



ISOMETRIC VIEW (1:3)



Item	Qty	Title	Ref.	Material	Weight Ea.
1	1	Square Pipe	1022-02-001	AISI 316 L	5.0 kg
2	1	Piston	1022-02-002	POPC, Black	6.1 kg
3	1	Compression Spring	Lejofors 6790	SS 2331	6.0 kg
4	1	Circlip 65x2,5	DEM 472	Steel	0.013 kg
5	1	O-ring 94,94 x 3,53	OR D9494-353	NBR-70	6.0 kg
6	1	O-ring 59,92 x 3,53	OR D5992-353	NBR-70	6.0 kg
Surface Treatment:				Marking:	Est. tot. weight in air:
					5.2 kg
					Est. tot. weight submerged:
					N/A

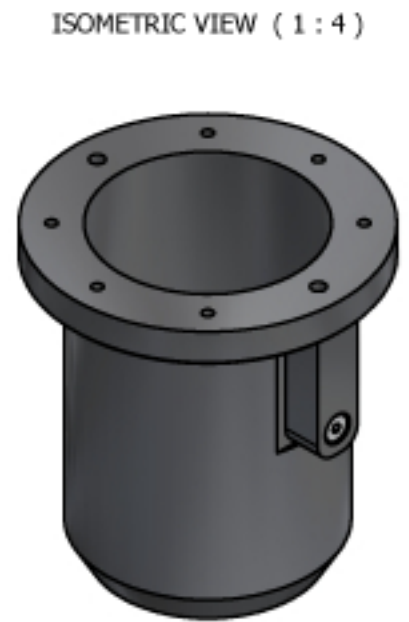
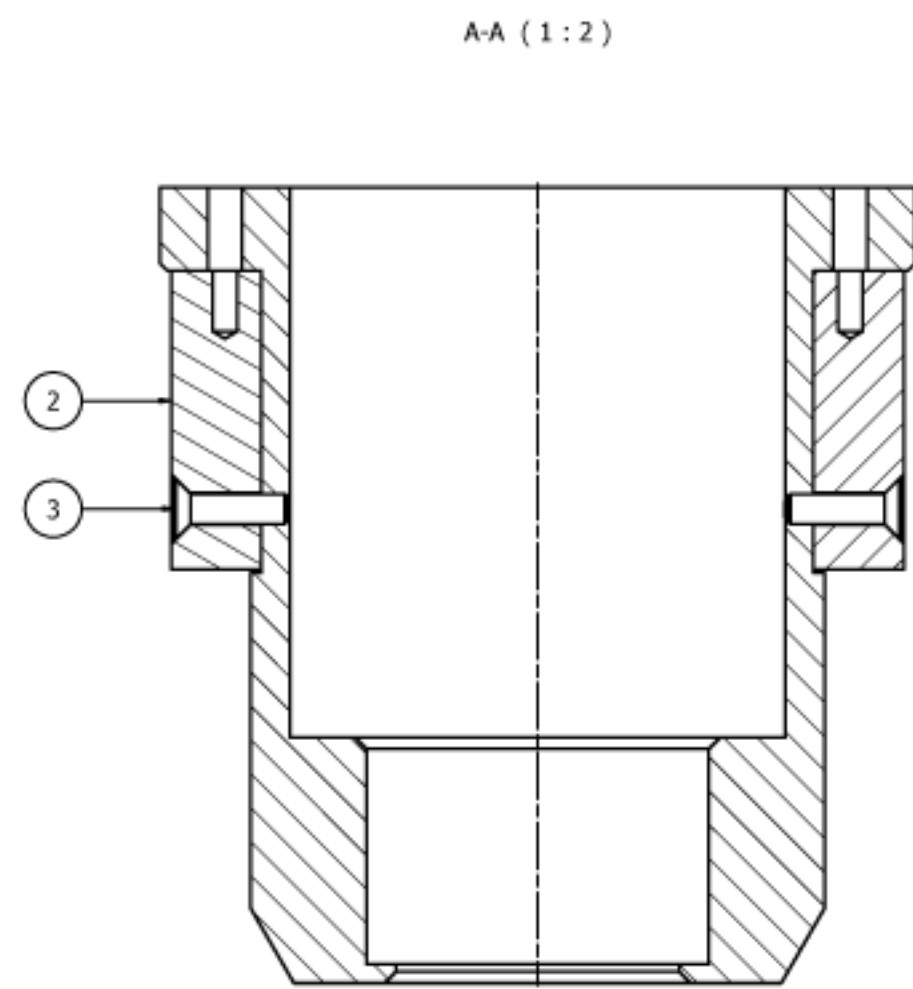
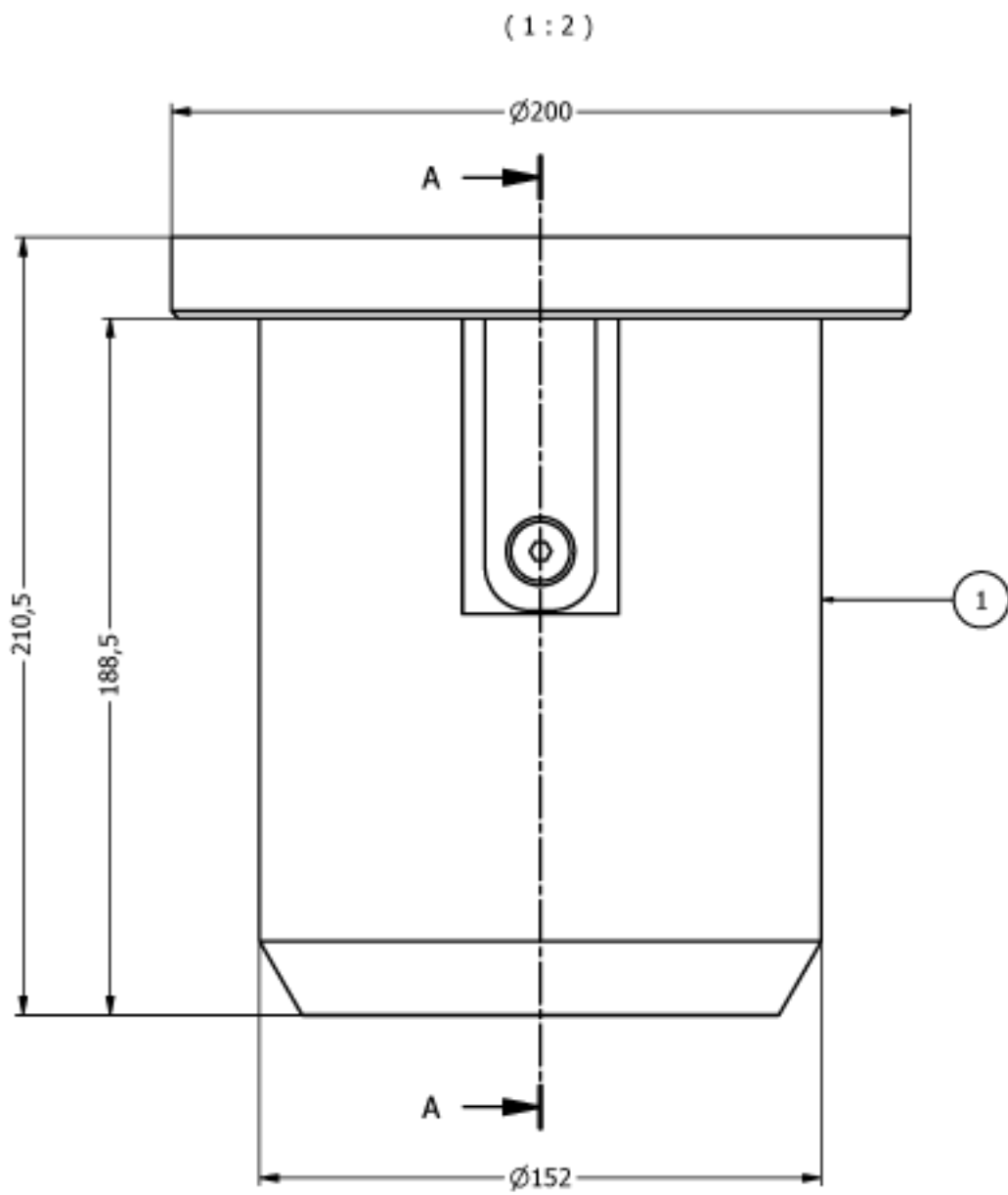
General tolerances unless otherwise specified:		
Tol. class acc. to: ISO 2768-1 Medium	Roughness: Ra μ m: 6.3	Broken edges: (R.A.B. 45) 0.1 - 0.5


Title: Torque Tool 7,5-75 Nm Torque Interface Assembly			Size: A3
Client: Sonsub			Sheet: 1 of 1
Project:		Drawing no: 1022-02	Rev: 0

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Sonsub





Item	Qty	Title	Ref.	Material	Weight Ea.	
1	1	Housing	1022-03-001	POKIC, Black	2,3 kg	
2	1	Wedge	1022-03-002	POKIC, Black	0,1 kg	
3	1	Bolt M8x30	CEH 7991	A4	0,014 kg	
Surface Treatment:					Est. tot. weight in air:	2,5 kg
Marking:					Est. tot. weight submerged:	N/A
General tolerances unless otherwise specified:						
Tol. class acc. to:		Roughness:	Broken edges:			
ISO 2768-1 Medium		Ra μm : 6,3	[R.A., 45] 0,1 - 0,5			
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Torque Tool 7,5-75 Nm Outer Housing Assembly						
Client:			Project:			
Sonsub			1022-03			

Rev.	Date	Reason for issue	Drawn by	Checked by	Appr. by	Rev. Appr. by
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