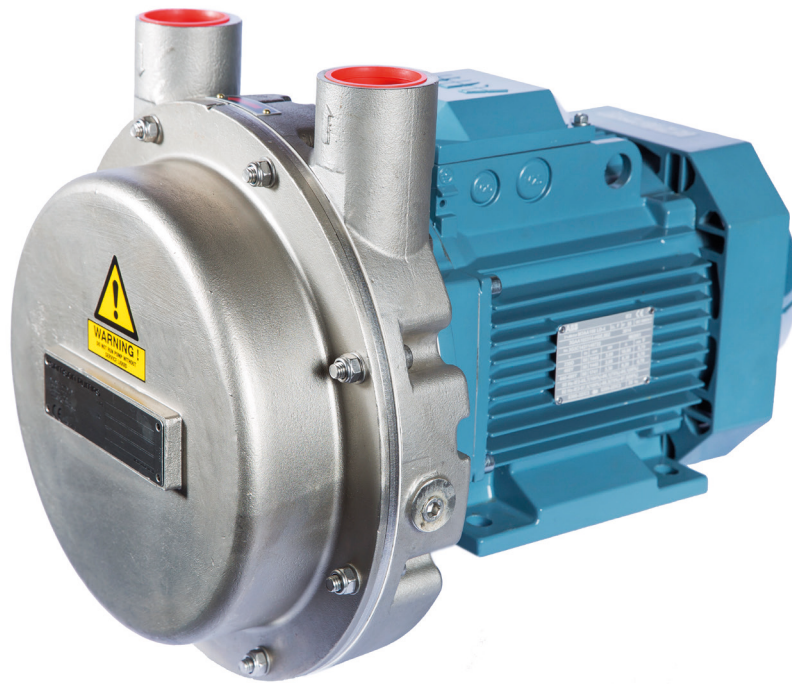


ASSEMBLY INSTRUCTIONS

LIQUID RING PUMP



ASSEMBLY INSTRUCTIONS FOR
SAMSON LIQUID RING PUMPS, TYPES:

ME65, ME160

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Date:	Revision:	Text:
13/05-15	A	Seal for ATEX pumps added.
01/04-16	B	ATEX zones corrected. Various minor corrections.
07/06-16	C	Various ATEX corrections.
16/05-17	D	Layout and procedure changed.
06/12-17	E	Implementation of assembly tools.
13/03-18	F	Logo updated.
23/01-19	G	M8x30 bolt changed to M8x35.
30/01-19	H	Washer on rotor shaft removed.
09/07-19	I	Layout updated.



- Bolt, radial shaft seal and O-rings lubricated with a thin layer of grease prior to assembly, unless indicated otherwise.
- Document Test Report RE8.6-02-01 to be completed.
- For service see chapter 6.



- This symbol indicates that the step in question must be performed for ATEX pumps!
- Document RE8.6-02-03_ATEX Zone 0-1_Check sheet to be completed.

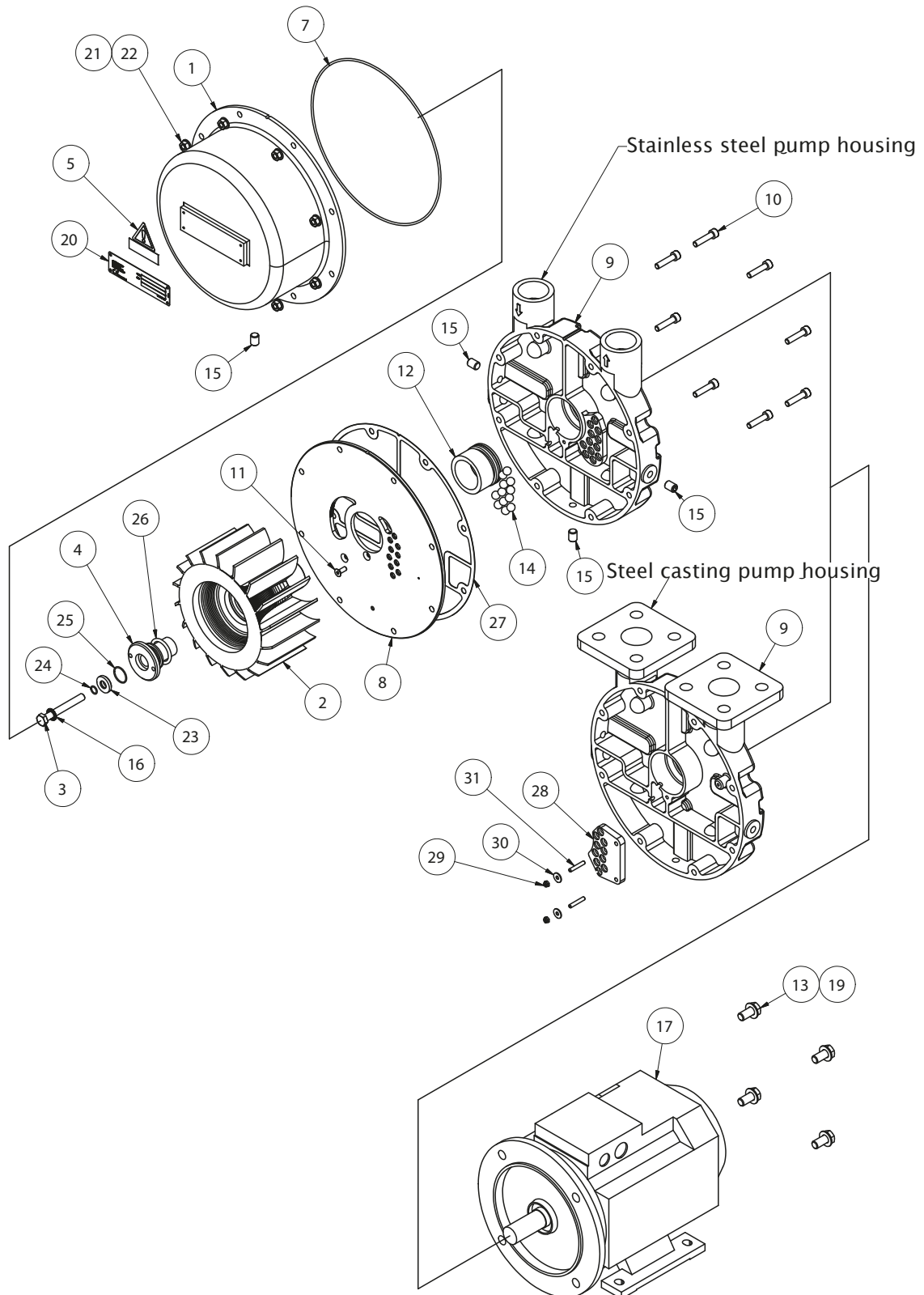
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1 COMPONENT OVERVIEW

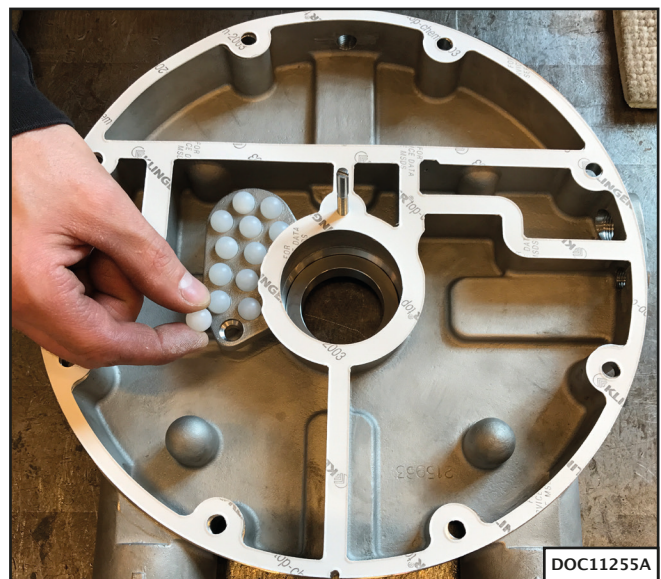
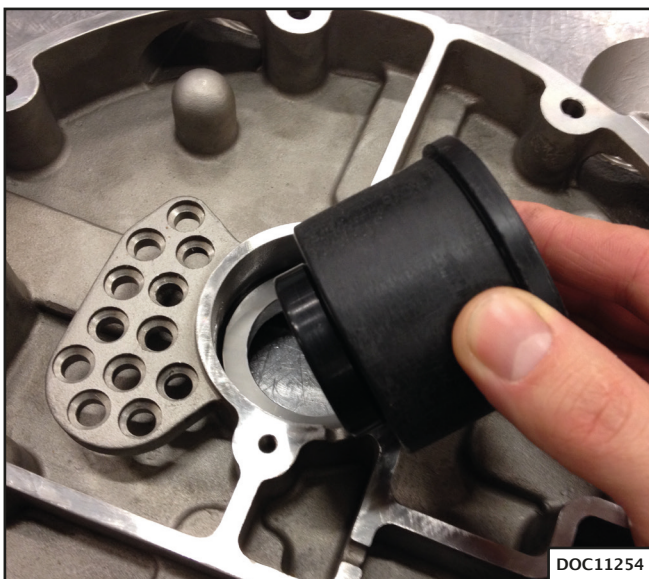
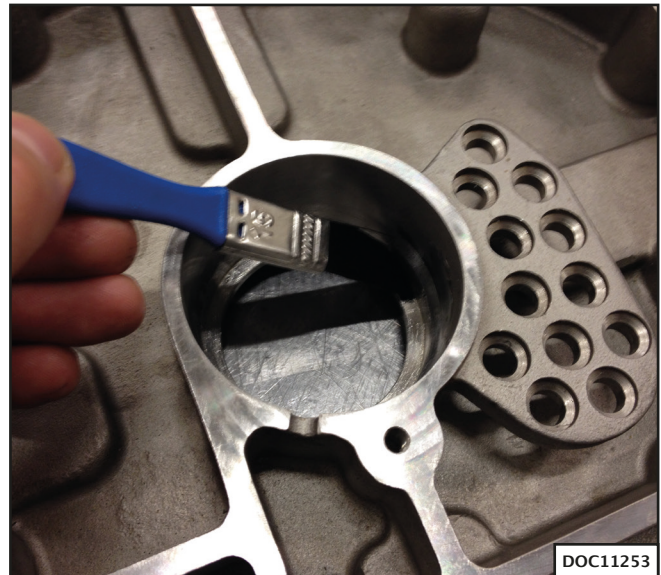
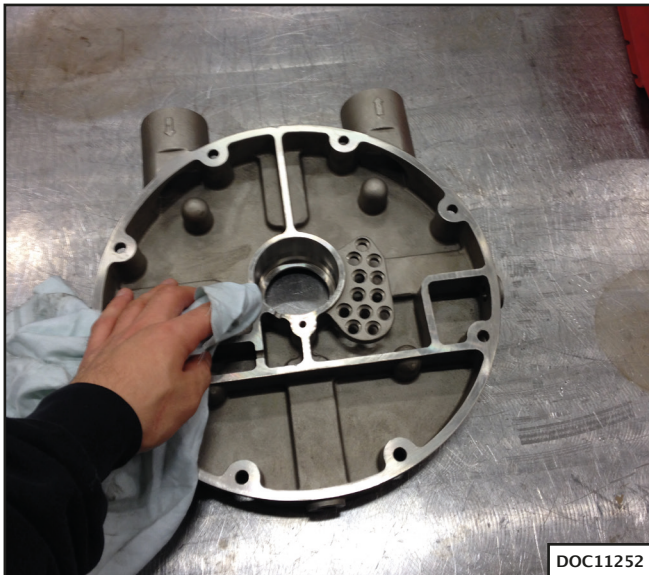


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Pos.	Description
1	Cover
2	Rotor
3	Bolt M10
4	Adjusting disc
5	Warning sticker
7	O-ring
8	Flow plate
9	Pump housing
10	Bolt M8x35
11	Screw M6x16
12	Mechanical shaft seal Ø45
13	Bolt M12x25
14	Valve ball Ø12
15	Plug 1/4"
16	Lock washer
17	Motor
19	M12 washer
20	Data plate
21	M8 washer
22	M8 lock nut
23	Reduction ring
24	O-ring
25	O-ring
26	O-ring
27	Gasket
28	Ball guide
29	M5 lock nut
30	M5 washer
31	M5x30 bolt

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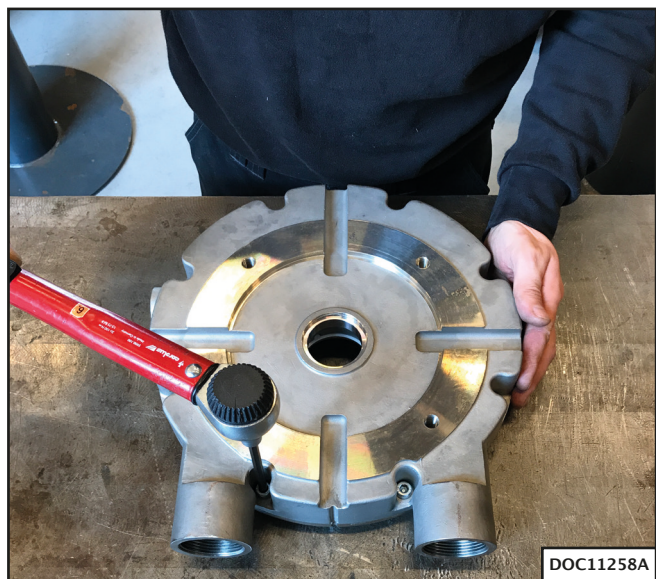
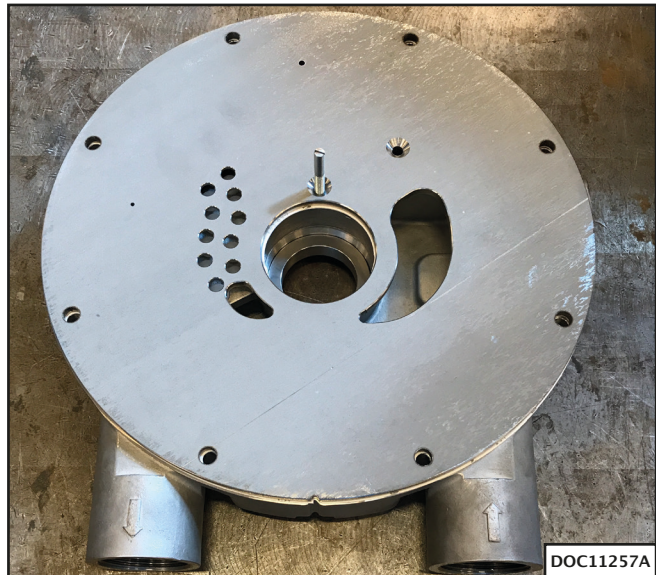
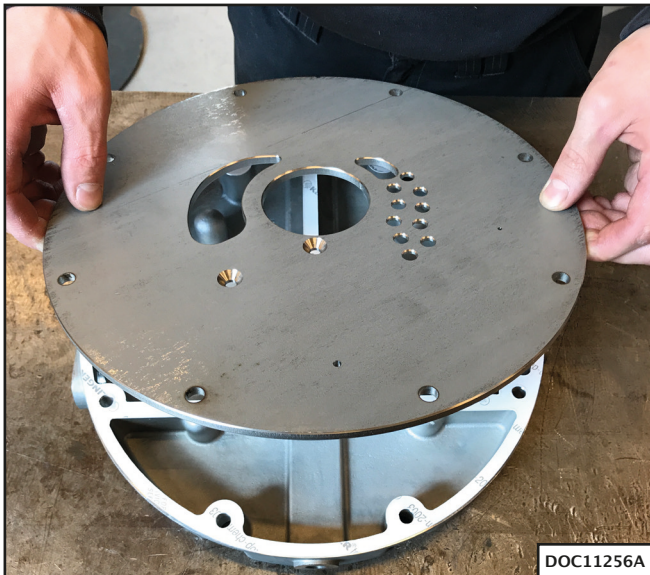
2 PUMP HOUSING & FLOW PLATE



- Clean pump housing and check sealing surfaces. File down any edges/unevenness.
- Lubricate the hole for the seal ring with a thin layer of grease and mount the seal ring with the smoothly finished surface facing upwards, by using the special tool.
- Mount the valve balls.
- Mount Teflon gasket on the pump housing.

Important: The gasket must be facing the right way (can be rotated a ½ rotation incorrectly).

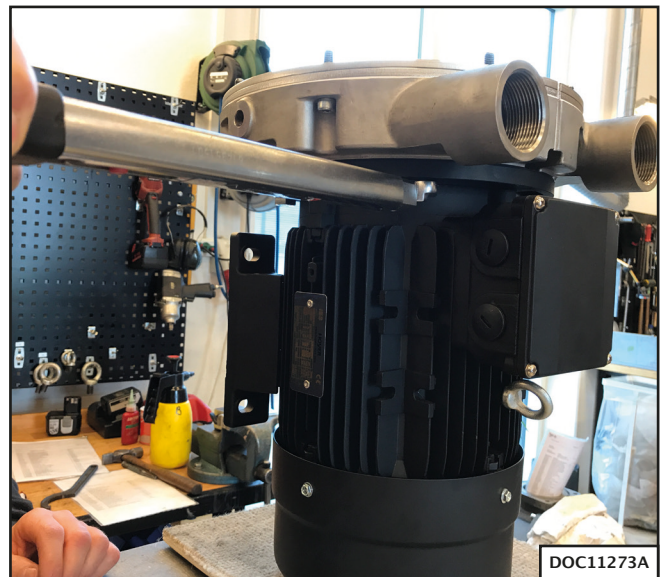
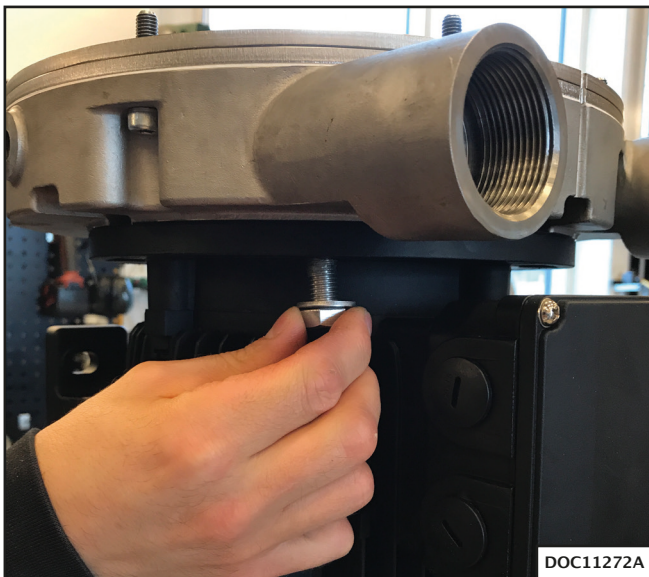
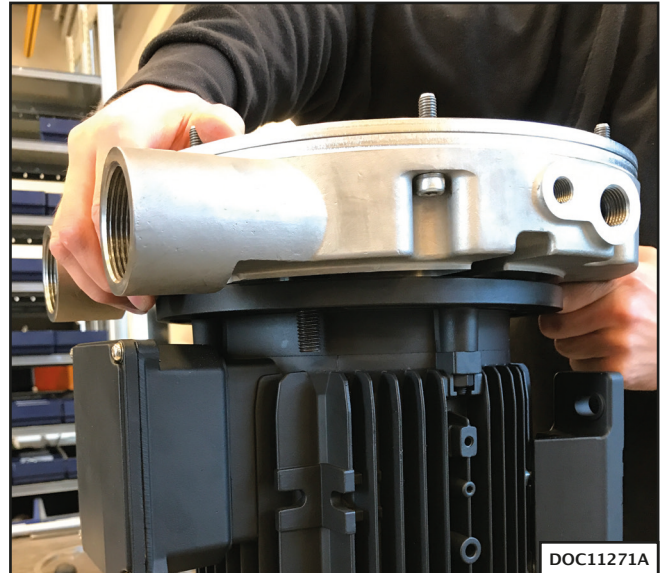
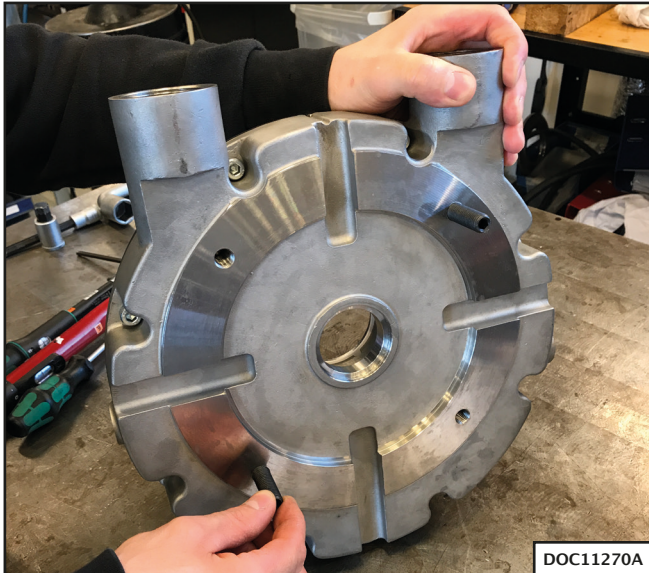
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- Prepare the flow plate by cleaning it and filing down any unevenness from the sealing surface.
 - Mount the flow plate above the Teflon gasket. Use 8 pcs. M8x35 socket head cap screws to guide the flow plate into place.
 - Apply a drop of Loctite and tighten the countersunk M6x16 bolt to 15 Nm, while 8 pcs. M8x35 socket head cap screws are loose.
- NOTE: There are marks on the pump housing, Teflon gasket and flow plate that must be in the same spot, i.e. at the top of the pump housing (between the vacuum and pressure connections).
- When the countersunk M6x16 bolt is tightened to the correct torque:
 - Tighten the 8 M8x35 bolts to 25 Nm.

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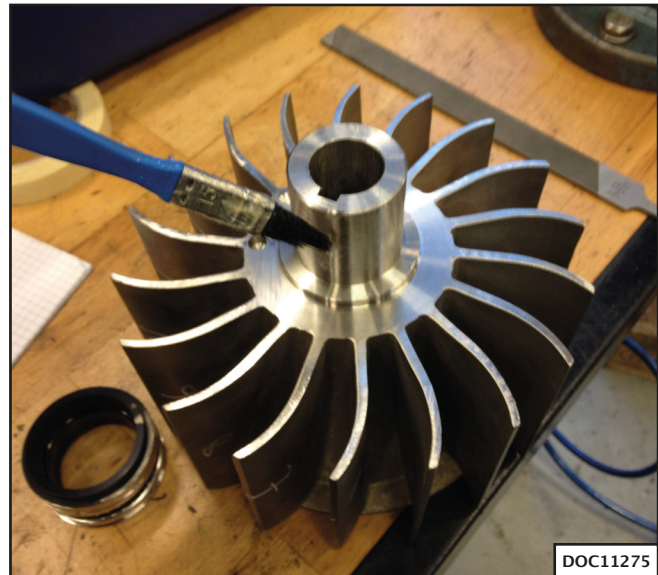
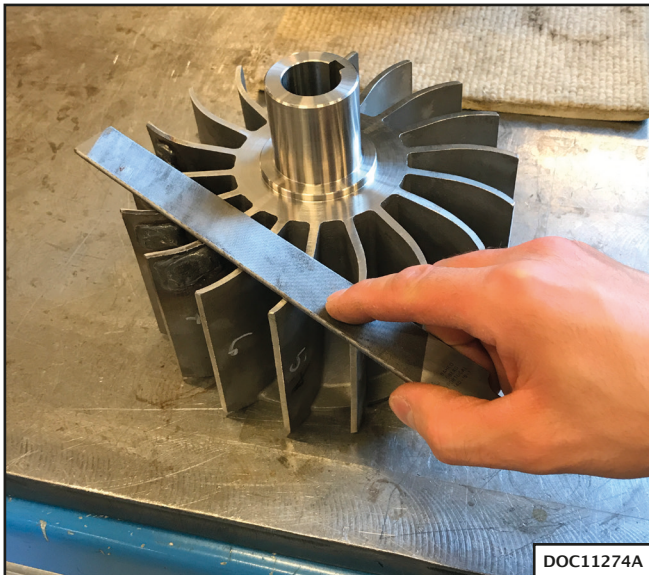
3 PUMP HOUSING-MOTOR ASSEMBLY



- Mount 2 M12x30 pointed bolts in the bottom of the pump housing; these will function as guide bolts.
- Centre the motor in relation to the pump housing using the 2 M12x30 pointed bolts.
- Remove the 2 M12x30 pointed bolts and tighten the motor and pump house together using 4 M12x25 steel set screws.
- Tighten the steel set screws to 50 Nm.

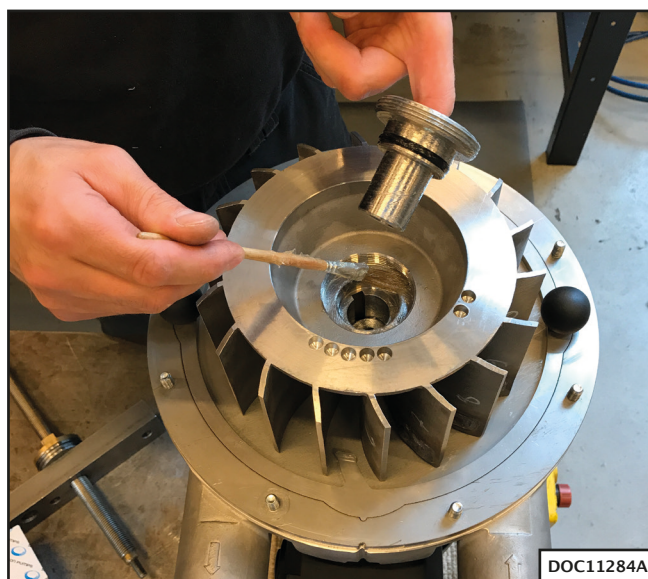
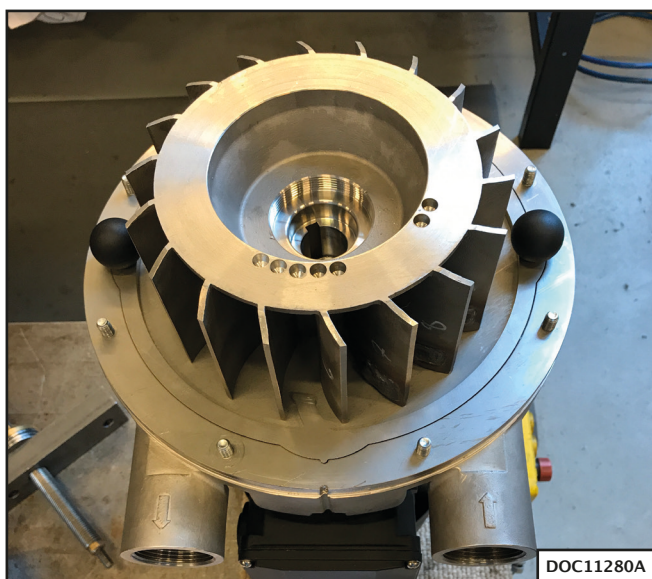
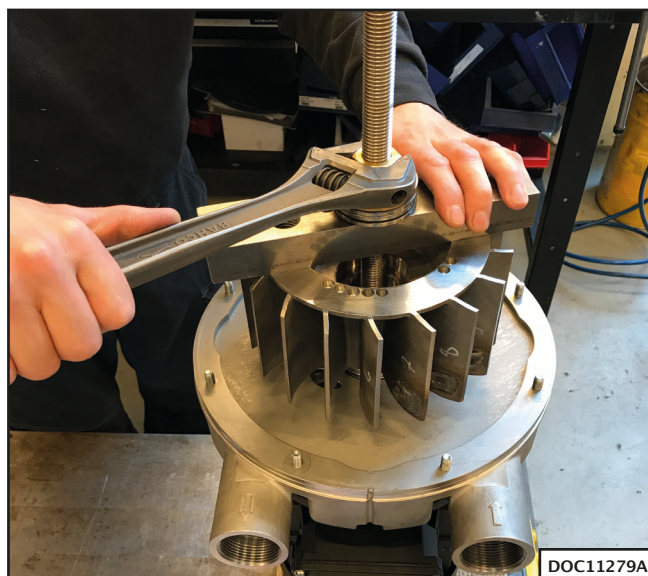
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4 ROTOR & ADJUSTMENT



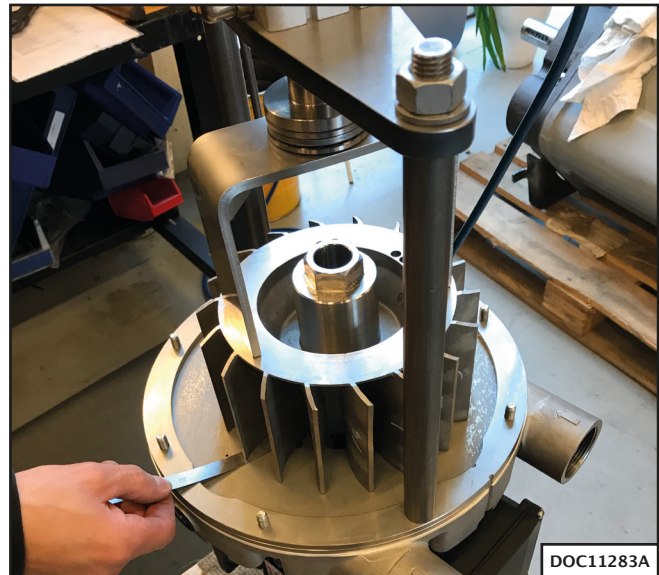
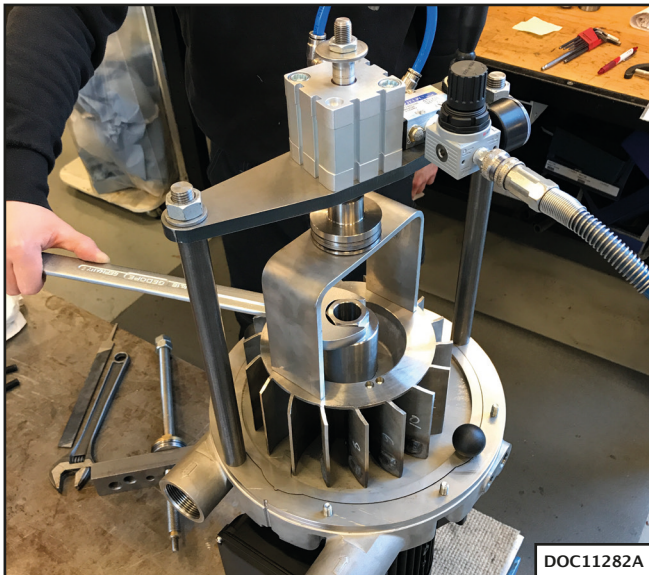
- Preparing the rotor:
- File the rotor and slightly out on the blade edges (all blades).
- Clean the rotor and blow on it with compressed air. If necessary, scrape away any welding residue/ beads.
- Lubricate the rotor shaft with a very thin layer of grease.
- Mount mechanical shaft seal on the rotor shaft.

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- Mount the prepared rotor on the motor shaft.
- Push the rotor down over the motor shaft using the pressing tool.
- The rotor must be pushed all the way down until it touches the flow plate.
- Before mounting the adjustment washer, lubricate the rotor, the adjustment washer's threads and the O-ring in the adjustment washer with a thin layer of grease.

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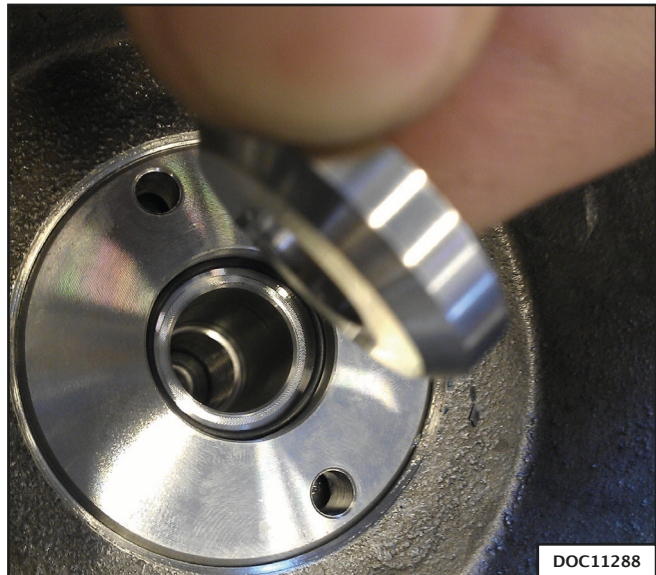


- Mount the press tool as shown in the pictures above.
- Clamp the rotor down using the pressing tool.
- Lift the rotor up by tightening the adjustment washer.
- The desired distance between the rotor and flow plate is 0.15 mm!
- A 0.15 mm feeler gauge must be able to fit easily between the rotor and flow plate, all the way around.

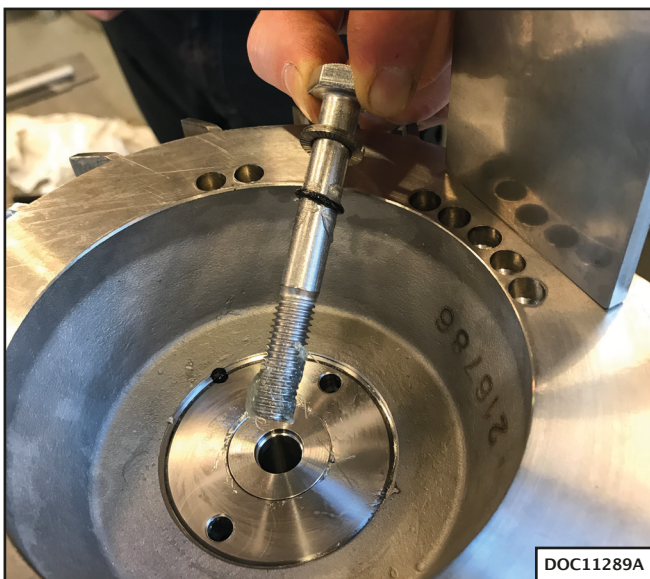
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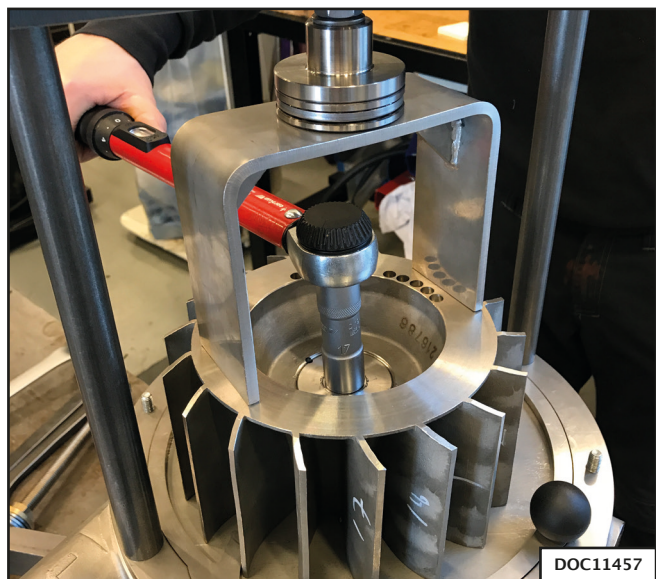
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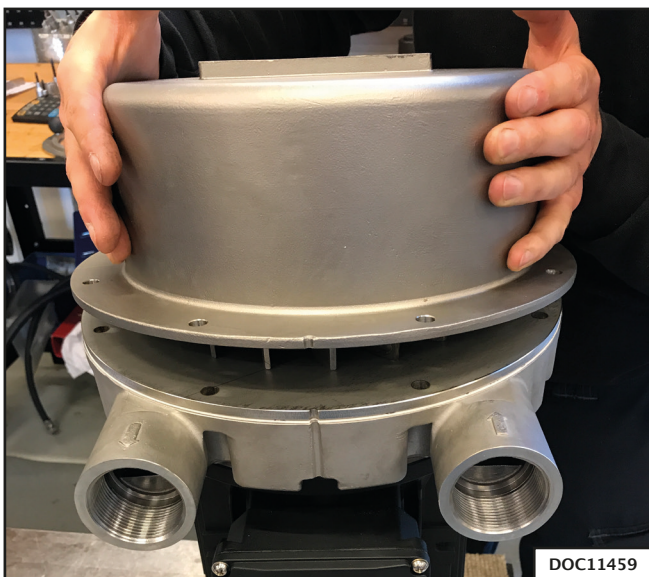
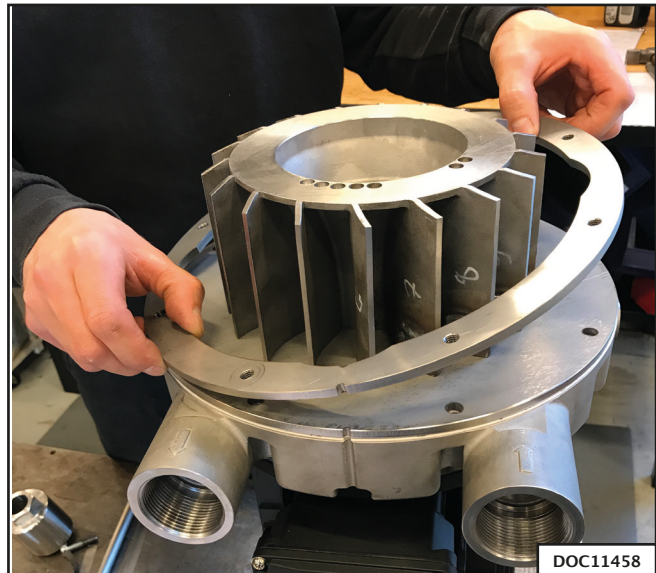
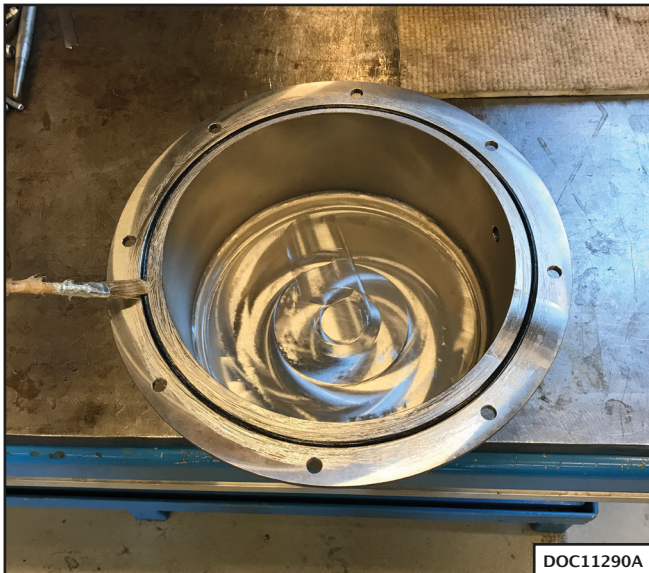


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- Mount the O-ring and reduction ring in the adjustment washer (at the top of the washer). Lubricate the O-ring with a small amount of grease.
- Lock the adjustment washer in place using the M10x80 steel bolt, which must be prepared for assembly in the following way and order:
- Mount 1 M10 Nordlock lock washer on the bolt. Mount the O-ring and lubricate the bolt threads with a small amount of grease.
- Next, mount the M10 bolt in the reduction ring/adjustment washer, and tighten it to 50 Nm.
- Check the distance again when the pump is fully adjusted and locked in place, by measuring with a 0.15 mm feeler gauge all the way around beneath the blades.
- The 0.15 mm feeler gauge must be able to fit between the rotor and flow plate, all the way around.

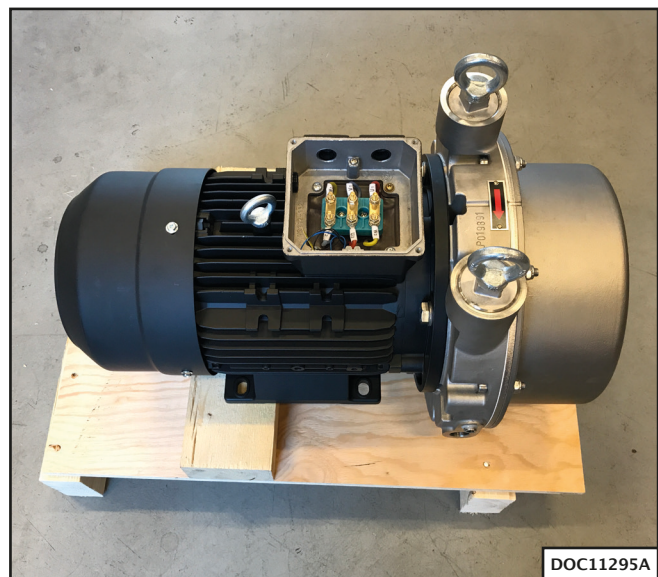
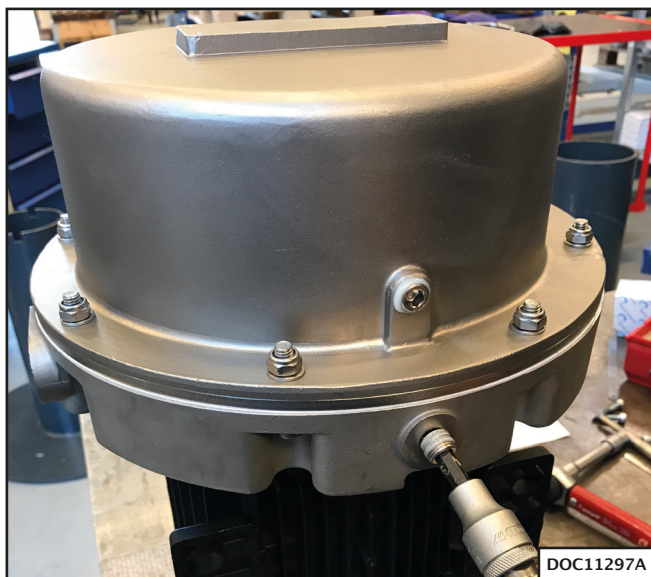
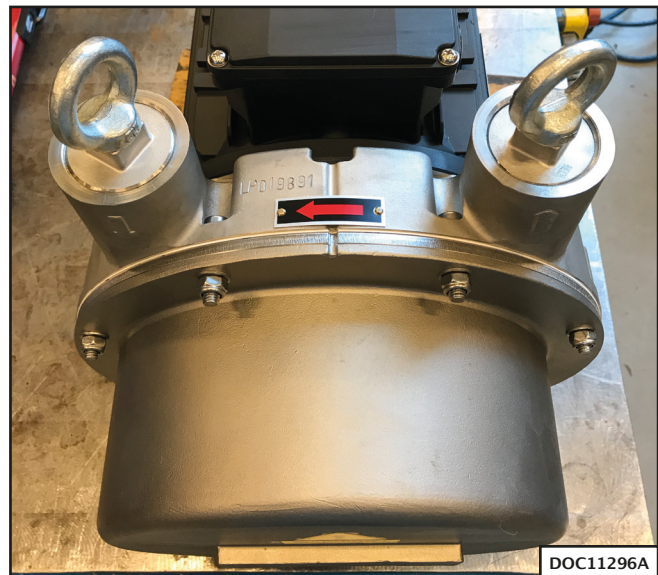
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5 COMPLETION



- When the pump is fully adjusted and the distance is OK, loosen and remove the 8 M8x35 bolts that are holding the flow plate in place.
- Lubricate the cover with a thin layer of grease where the O-ring will be mounted, and mount the O-ring and lubricate it with a thin layer of grease.
- Mount the cover by tightening it in place with 8 M8x35 bolts, washer and lock nuts.
- The cover must be tightened to 25 Nm.

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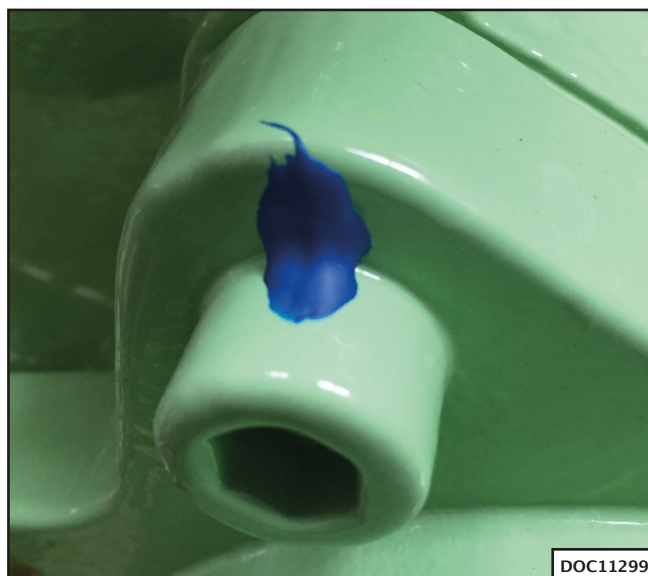
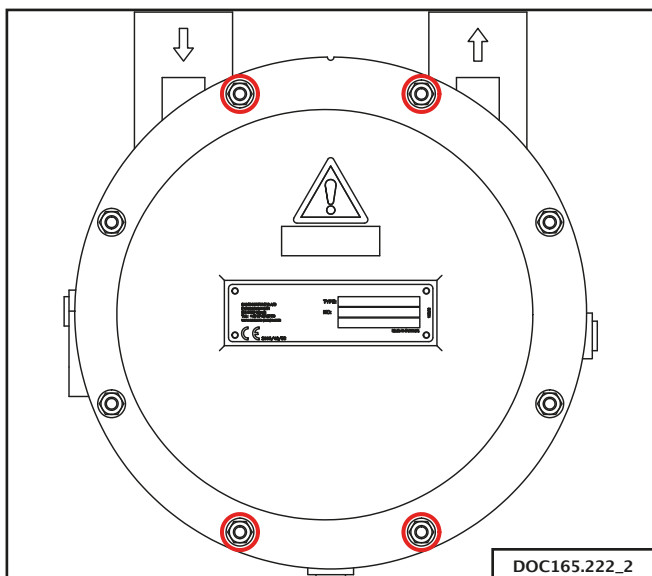
- Affix the data plate on raised material on the cover.
- Affix the directional arrow to the pump housing in the centre spot between the vacuum and pressure connections.
- Hammer the OP/LP number onto the pump housing close to the directional arrow.
- Insert plugs into the pump housing and cover.
- The pump is now ready for testing.



- | | |
|----|---|
| 5 | Test report RE8.6-02-01 filled out and signed by ATEX approval person. Zone 1 |
| 6 | Operating test performed on test stand. Zone 1 |
| 10 | Tighten screws and bolts as indicated in the assembly instructions. Zone 1 |
| 12 | Affix the ATEX data plate. Zone 1 |

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7 SEALING



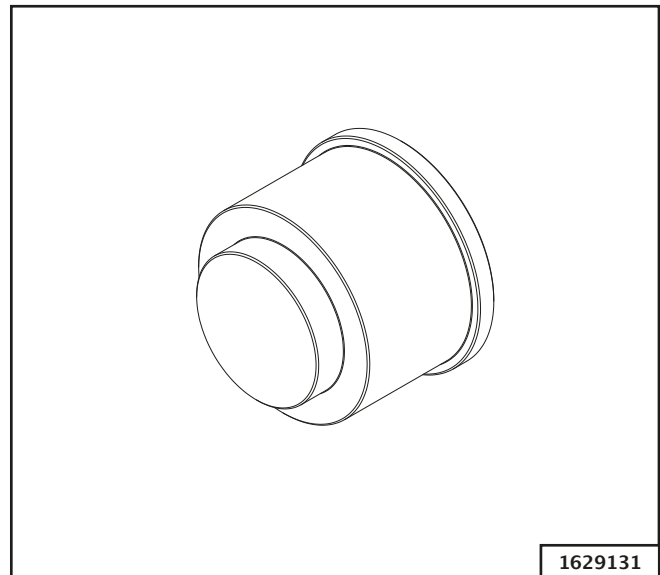
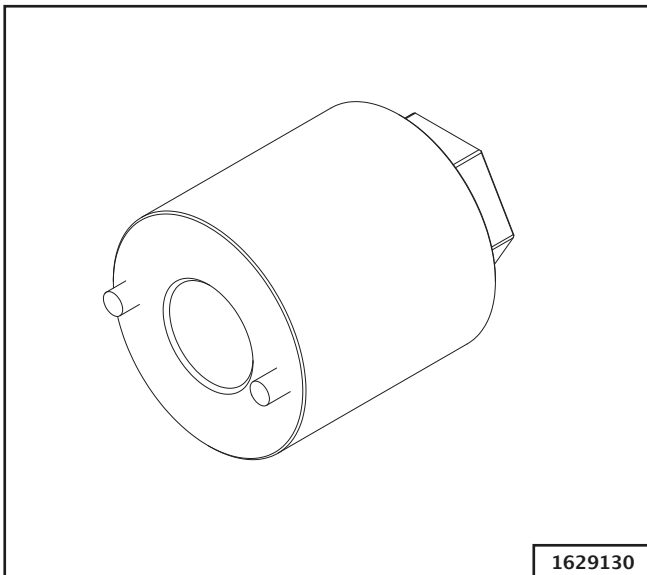
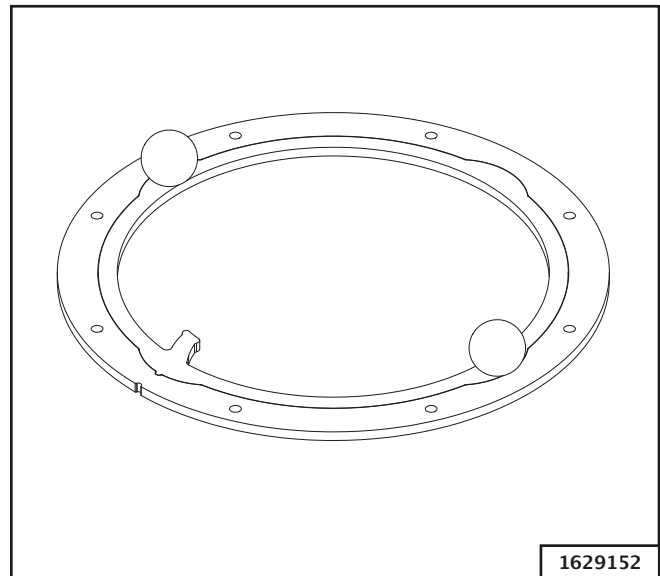
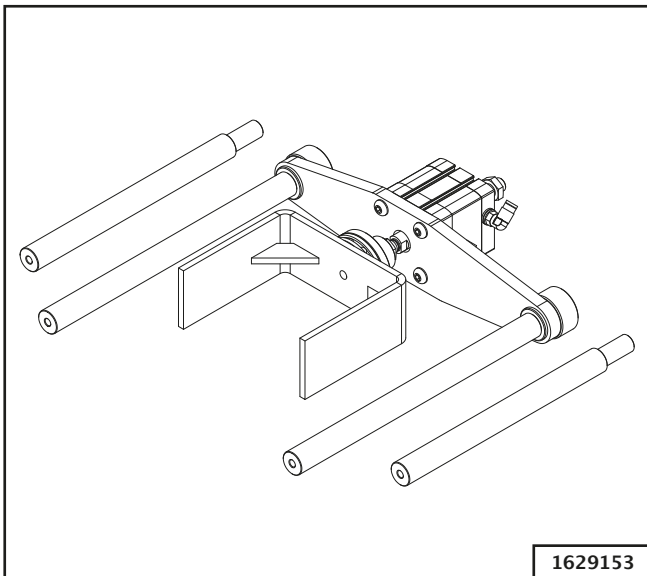
- Apply a drop of Loctite 7414 to the bolts marked red.



13 Pump sealed in accordance with the assembly instructions. Zone 1

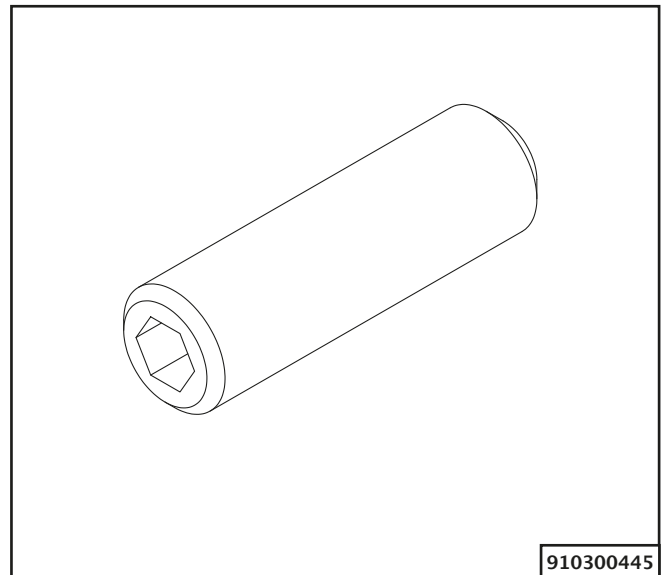
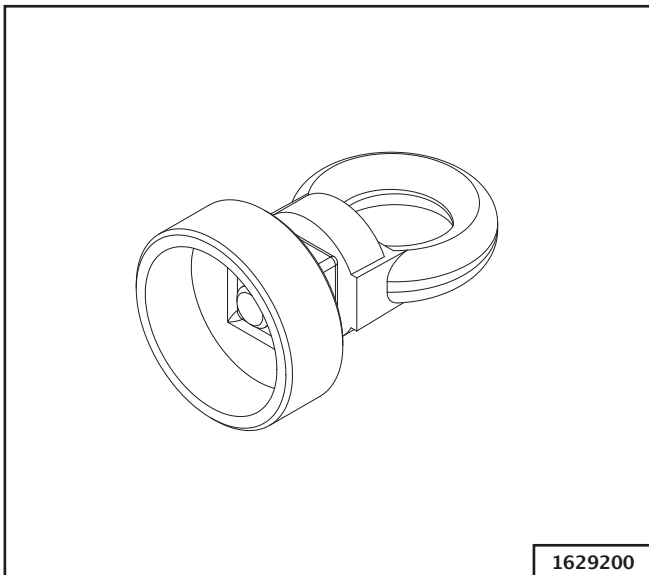
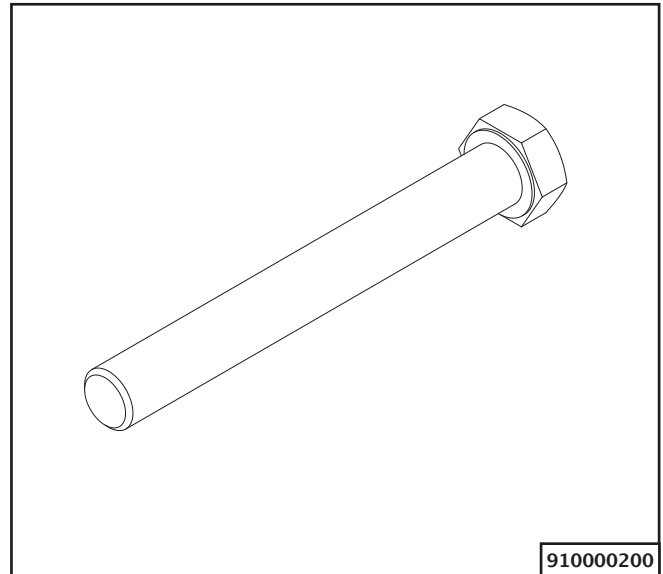
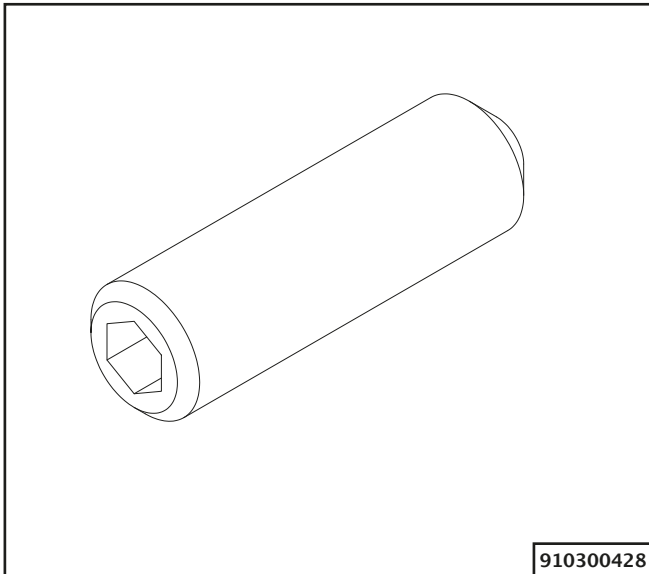
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8 ASSEMBLY TOOLS – SAMSON PUMPS



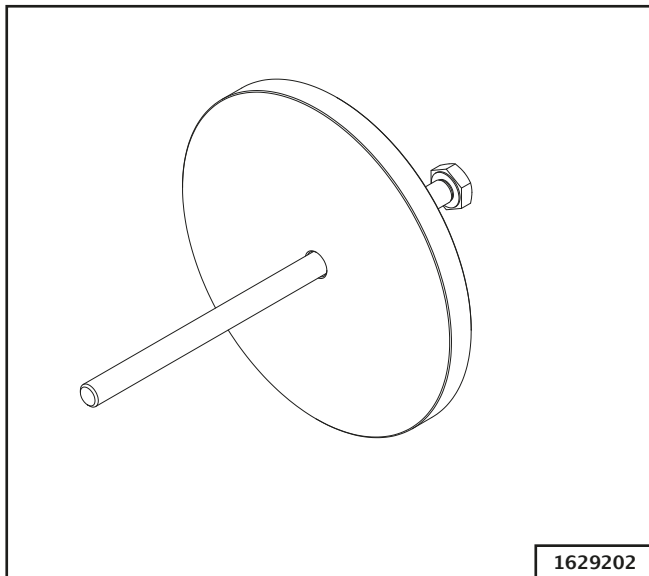
- **1629153** - Press tool.
- **1629152** - Mounting ring.
- **1629130** - Socket for ME adjusting disc.
- **1629131** - Mechanical shaft ring tool.

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- **910300428** - Guide pin / socket set screw M6x20. 2 pcs.
- **910000200** - Puller M16x130 mm set bolt.
- **1629200** - Lifting eye for pump housing of stainless steel. 2 pcs.
- **910300445** - Guide pin / socket set screw M12x40. 2 pcs.

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- **1629202** - Press tool for rotor assembly.

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9 ASSEMBLY TOOLS – STANDARD

Recommended tools accessible:

Crane, compressed air, straps and carabiners.

Description	Specification
Deburring tool	-
Torque wrench ¼"	1-25 Nm
Torque wrench ½"	20-100 Nm
Allen wrench socket ½"	7 mm, 6 mm long with ball-point, 1/4"
Allen wrench socket ¼"	4 mm
Socket ½"	13 mm, 17 mm long
Socket ¼"	7 mm, 8 mm
Flat file	-
Fork for torque wrench ½"	19 mm
Combination wrench	36 mm
Feeler gauges	0,1 mm, 0,15 mm, 0,2 mm
Screw driver	PH2
Hammer + Number and letter punches	-
Bearing grease	-
Mounting tool "seven iron"	-
Small brush	1 pcs.
Angled allen key	2,5 mm, 6 mm
Drill bit for direction arrow	2,2 mm
Drill bit til huller for identification plate	3,3 mm
Warranty seal	Loctite 7414
Thread sealant	-
Thread locker	-

SAMSON PUMPS

Samson Pumps is the only company in the world to specialise exclusively in liquid ring vacuum pumps. Samson pumps are made in Denmark and used around the globe. We offer worldwide delivery, and we export to more than 80 countries around the world.

For over 40 years, our name has been synonymous with the strongest pumps for vacuum trucks and tankers. We constantly adapt our products to meet the changing needs of our customers. Today, it is not enough to simply produce a pump. Products must be refined so the customer can concentrate on what they do best. We therefore offer a wide range of standardised components that allow our customers to build vacuum systems without the need for specialist in-house expertise.

Strength and durability are our hallmarks! We have often heard from customers that our pumps are working in many years, and in most cases without the need for maintenance or repair. This emboldens us to say that we have the strongest program of pumps on the market.