

## INSTRUCTION MANUAL

### LIQUID RING PUMP



# OCEAN MASTER 700

INSTRUCTION MANUAL FOR SAMSON LIQUID RING PUMP  
OCEAN MASTER 700 G2

- 
- Technical data
  - Design of a system
  - Installation and start-up
  - Service
  - Troubleshooting
  - Spare parts

The English version of the instruction manual is the legally binding version.

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# 1 INTRODUCTION

## 1.1 Declaration of conformity

**SAMSON PUMPS**

### Declaration of Conformity

Annex IIA

**Samson Pumps A/S**  
Petersmindevej 21  
DK-8800 Viborg

Hereby declares that the following products:

**Liquid ring pump**  
**Ocean Master 250, Ocean Master 450, Ocean Master 500,**  
**Ocean Master 700, Ocean Master 1000, Ocean Master SVF27**

Conforms to the directive:

**Machinery Directive 2006/42/EC**

I hereby declare that the liquid ring pumps are in conformity with the following harmonized standards:

DS/EN ISO 12100:2011	Safety of machinery – General principles for design – Risk assessment and risk reduction
DS/EN 1012-2 + A1:2009	Compressors and Pumps – Safety requirements – Part 2: Vacuum pumps

The standards above only apply to the extent that it is relevant for the purpose of the pump. The product must not be used before the complete system, which it must be incorporated in, has been conformity assessed and found to comply with all relevant health and safety requirements of 2006/42/EC and other relevant directives. The product must be included in the overall risk assessment.

Viborg, 05.12.2019



Jan S. Christiansen – Manager, Technical dept.

DOC4045A

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## 1.2 Explanation of warning symbols

Important technical and safety instructions are shown by symbols. If the instructions are not performed correctly, it can lead to personnel injuries or incorrect function of the pump.



To be used with all safety instructions that must be followed. A failure to follow the instructions may result in injuries and/or incorrect machine operation

## 1.3 Field of application



Inlet of foreign objects can damage the pump



The pump is designed exclusively to pump gases, including atmospheric air



**WARNING!**  
Avoid cavitation of the pump! For further information, see instruction manual for the Samson Pumps vacuum limiter

It must be ensured that the inlet gas cannot react with the service liquid and create aggressive bonds that break down the pump's components.

For other operating data, see specifications.

- The pump must only be used with media that is not aggressive to the pump's materials. See section 7 for components and materials.

## 1.4 Disposal

Samson's liquid ring pump is manufactured so that most of the device can be reused/recycled.

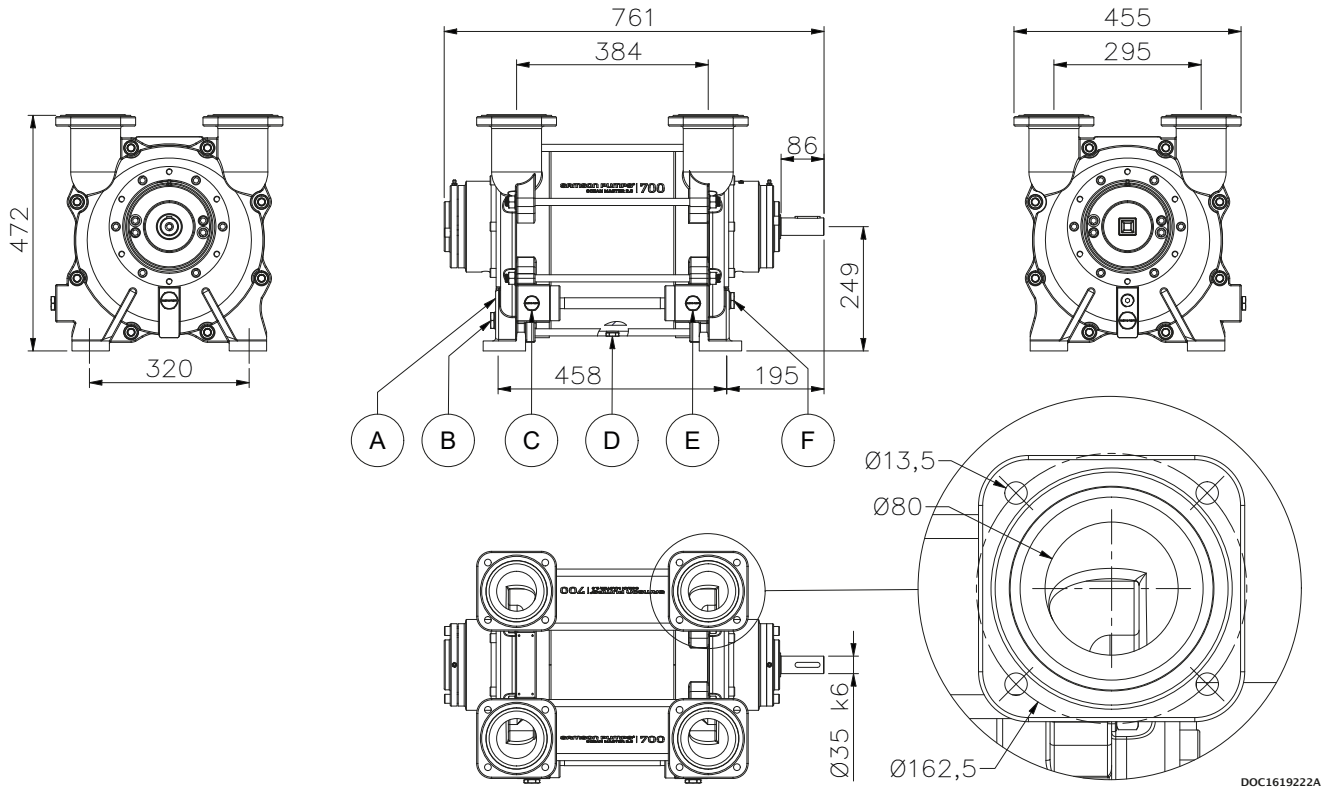
Samson Pumps offer users of the company's pumps the option of returning used pumps to be restored or scrapped.

Alternatively, the pump must be taken apart and sorted into its separate components, by the customer (see section 7 for the pump's material).

These components must be disposed of in accordance with national regulations.

# 2 TECHNICAL DATA

## 2.1 Dimensions



Pos.	Description	Size
A	Water inlet	G 3/4"
B, F	Drain plug	G 3/4"
C, E	Housing plug	G 1/2"
D	Shell plug	G 3/8"

## 2.2 Specifications



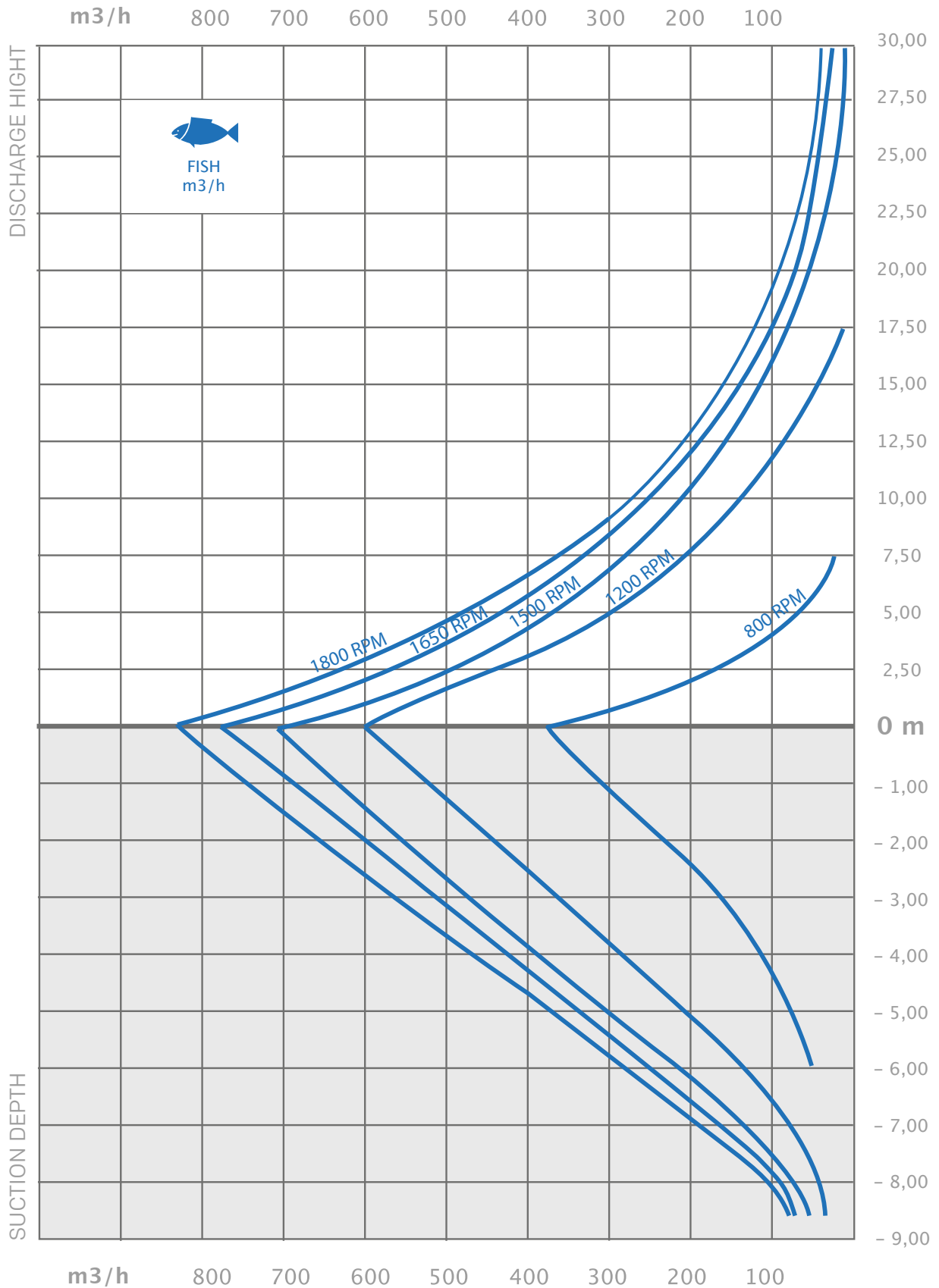
A failure to meet these specifications may result in damage to the pump

Description		Minimum	Maximum
Ambient temperature, operation	Below 0°C - see chapter 5.3	-20°C	55°C
Ambient temperature, storage		-20°C	55°C
Humidity		-	100%
Intake temperature, suction side		-	60°C
Intake temperature, service liquid		-	60°C
Service liquid pipe connection, dimension		¾"	-
Service liquid pipe connection, length		-	6 m
Noise level (measured 7 m from pump)		-	80 dB(A)
Water volume		-	42 L
Maximum radial load on drive shaft	Belt drive*	-	3900 N
	Direct drive*	-	-
Revolutions		800 rpm	1800 rpm
Pressure		150 mbar abs.	3 bar(g)
Lubricating grease (Only belt drive)*	Type of grease	SKF LGWA2	
	Automatic lubrication	SKF LAGD 125/WA2	
Weight	Without branch pipes	209 kg	
	With branch pipes	236 kg	

\* -See section 7.1 for identification of pump. (Belt drive or direct drive)

## 2.3 Power consumption and output

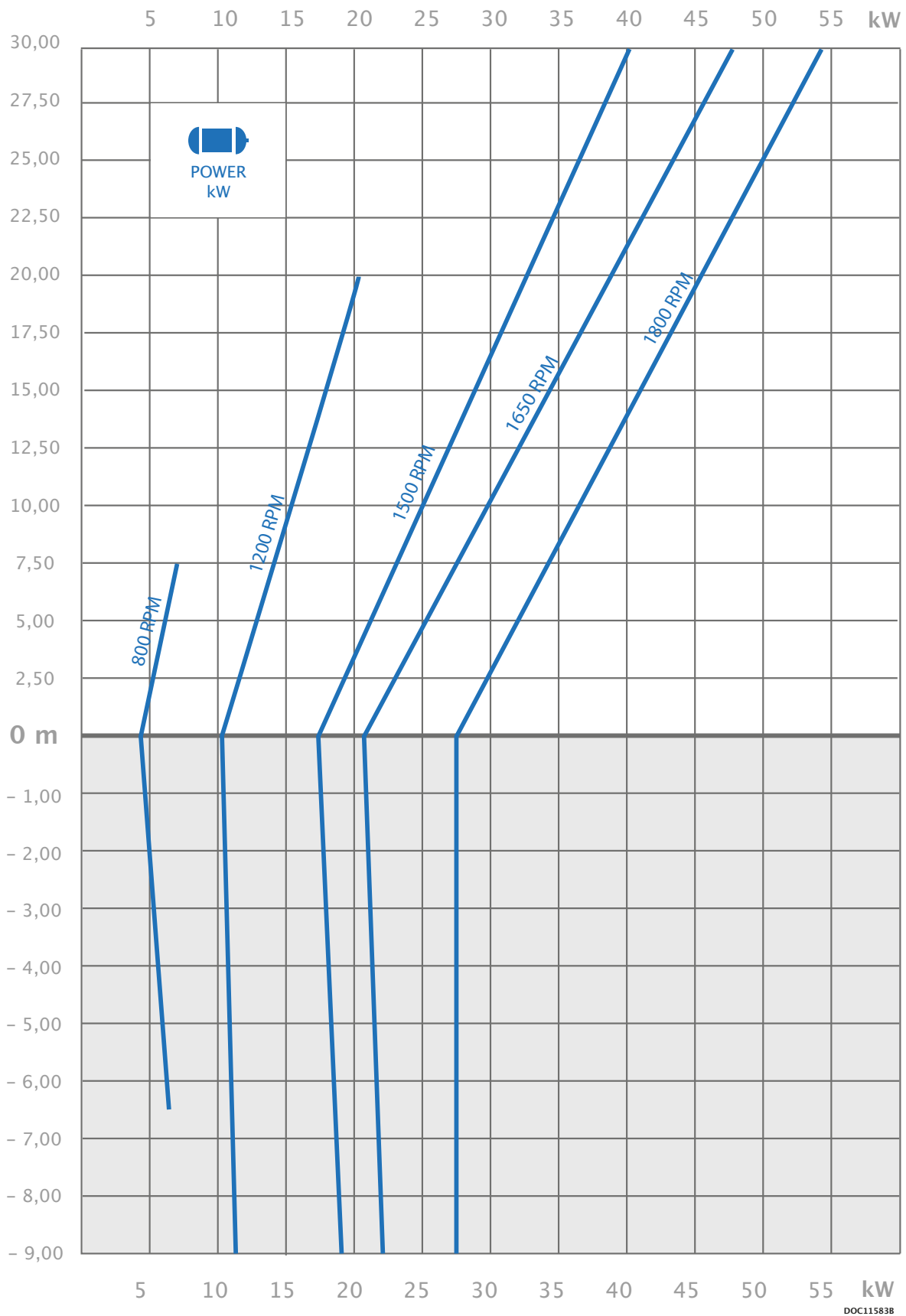
### 2.3.1 Performance



DOC11583B



### 2.3.2 Consumption



DOC115838

## 2.4 Handling and transport



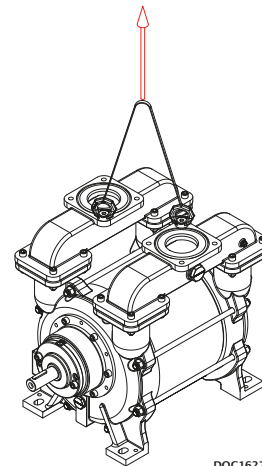
The pump must not be used if it is damaged or the identification plate is missing

The pump must be transported in such way that it is not exposed to vibrations and impacts that can overload the bearings.

The pump must be inspected for damages upon delivery. If the pump is damaged, it must not be used and the damage must be reported to the manufacturer.

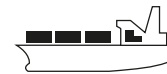
Ensure that the pump's identification plate is intact and that the marking of the pump corresponds to its use.

The pump must only be handled using approved lifting eyes, in accordance with nationally applicable regulations and only in a vertical motion.



DOC1627546

The pump can be transported in the following ways:



DOC11093A

## 2.5 Pump storage and draining procedure



A failure to comply with the requirements for storing the pump may result in internal damage to the device



If the temperature is below freezing point of the service liquid, it could damage the pump. Under these conditions, the pump must be drained completely.



All plugs and protective covers must be fitted during storage.

The pump's service liquid is drained on delivery, and the pump can be immediately stored in accordance with the technical specifications.

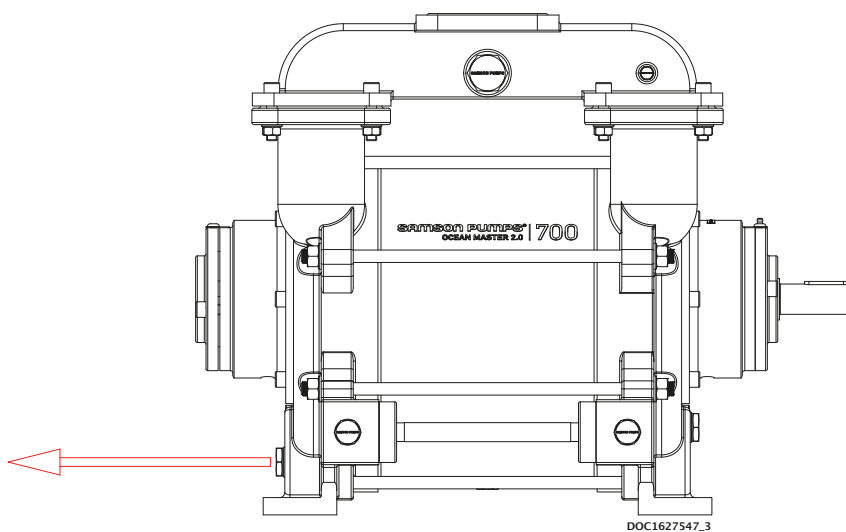
After operation, the pump can be stored for 30 days without further action.

If the pump remains out of operation for a longer period of time after use, its service liquid must be drained, and the liquid supply to the pump must be shut off.

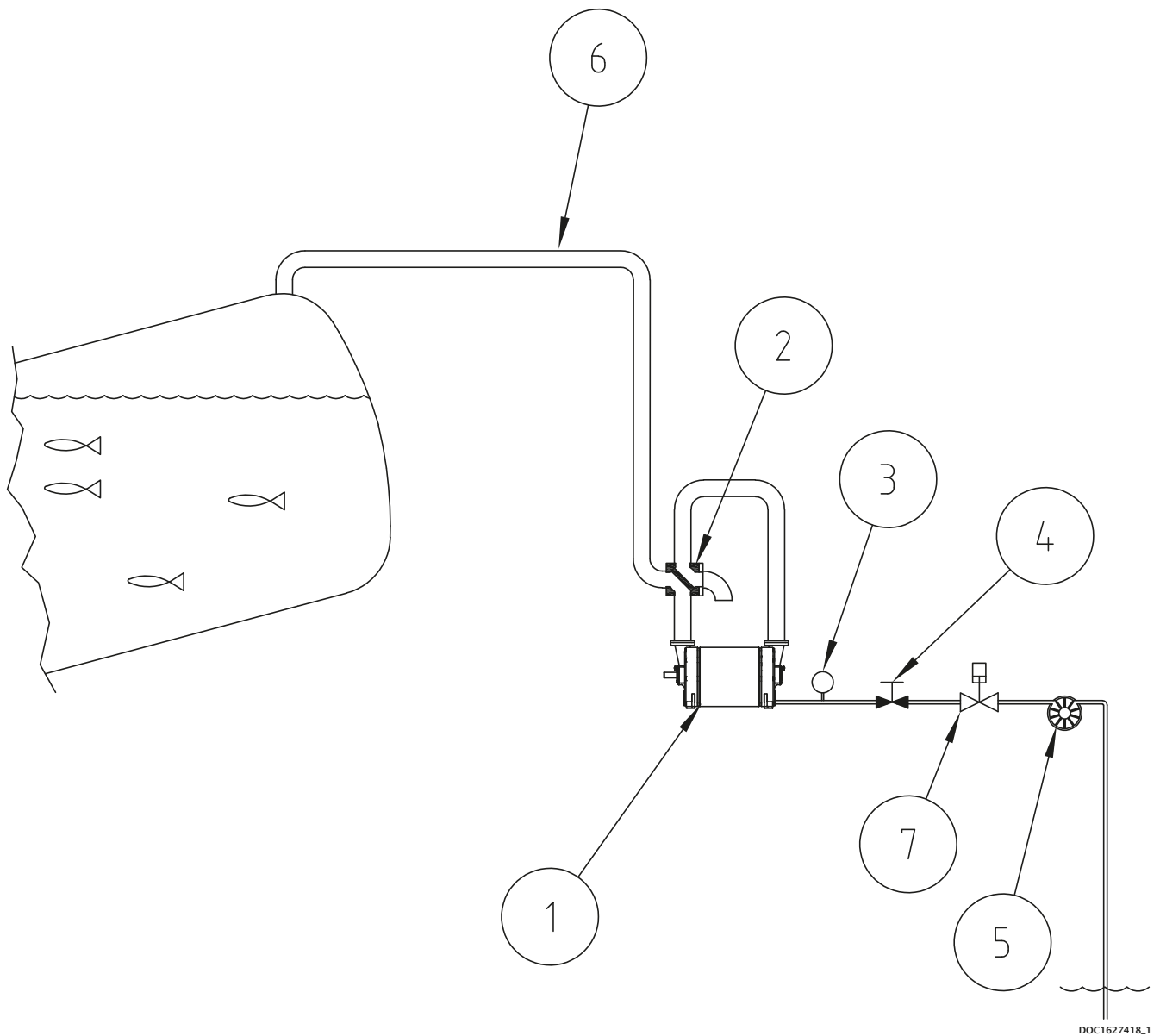
When emptying the pump, it is important that all chambers inside the pump are emptied.

The pump can be fitted with valves in the draining connections. See below.

After use with sea water it is recommended to drain and flush the pump with fresh water.



### 3 DESIGN OF A SYSTEM



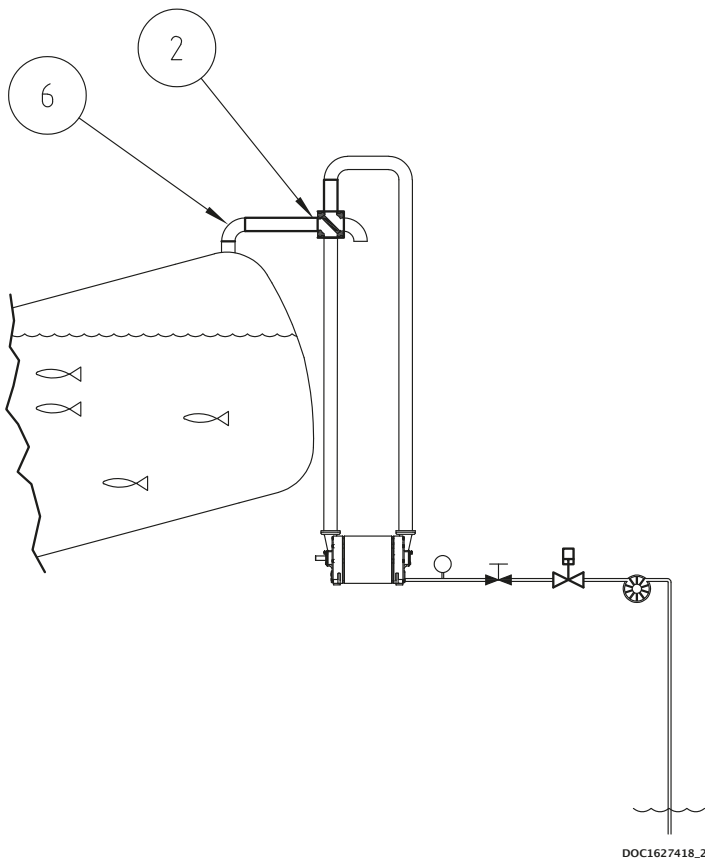
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Pos.	Description
1	Liquid ring pump
2	4-way valve
3	Pressure gauge
4	Regulating valve
5	Water pump
6	Pipe connection - Critical pipe
7	Stop valve

### 3.1 Piping

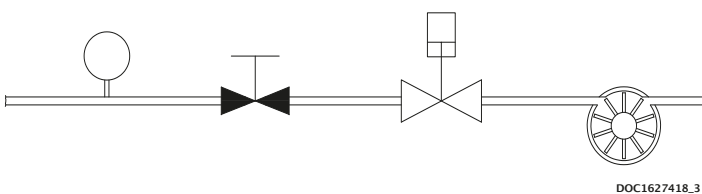
In a fish handling system, where the pump is working without liquid separator, the piping can be critical. The pipe pos 6 will be a combination of a discharge and a suction pipe and the design of this pipe is very important.

Figure below shows a standard setup. When the pump is discharging, the tank pipe pos 6 will carry a mixture of air and water, which is the sealing water supplied to the pump. When the 4 way valve pos 2 change position this pipe becomes the suction pipe and water that is in the pipe will enter the pump. In normal situation a small vibration will follow when the pump is injected with water on the suction side. It is important to keep a high velocity  $> 30 \text{ m/s}$  in this pipe and design it as short as possible without "water traps". The velocity can be calculated based on the nominal flow and the pipe diameter. Another and safer solution is to place the 4 way valve closer to the fish tank as illustrated below.



### 3.2 Service liquid adjustment - Pressure method

In order to get the correct water pressure to the pump it is recommended to build the supply line as illustrated below. For correct service liquid supply, the pressure needs to be adjusted to between 0,6 and 0,8 bar(g) when the pump is running unloaded.



### 3.3 Service liquid pump

The water pump must be able to have a flow on 3000 l/h at a pressure at 1 bar(g) in order to get the full performance of the liquid ring pump.

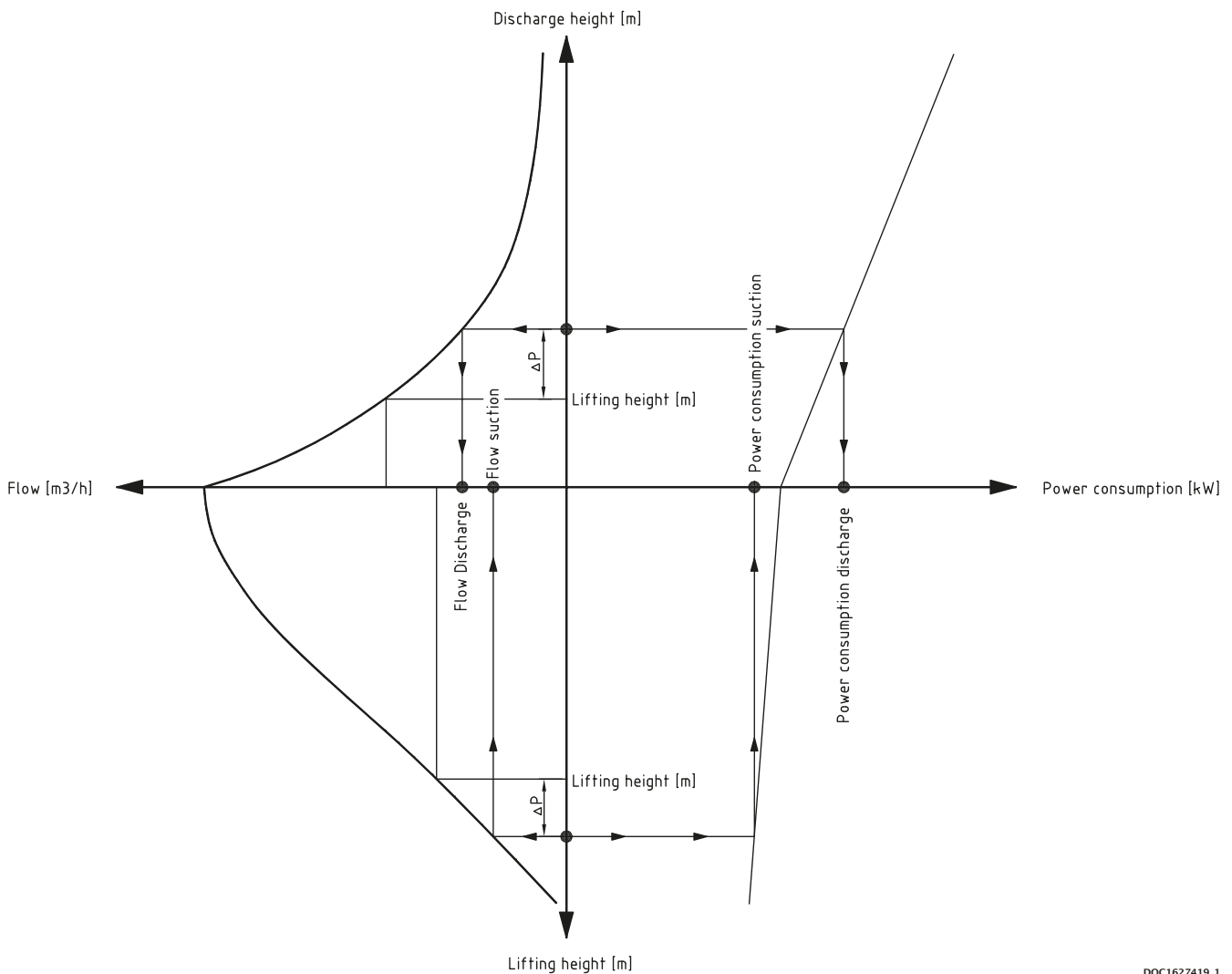
### 3.4 Pump performance

The pump performance can easily be found using the performance curves.

- Plot in the lifting height and add the calculated pressure drop in meter water column.
- Follow a horizontal line till you meet the performance curve.
- Go vertical down and read the performance.

For practical design it is important that the speed in the pipe system etc. is verified against a fish handling perspective.

Note: 1 meter water column = 0,1 bar = 100 mbar

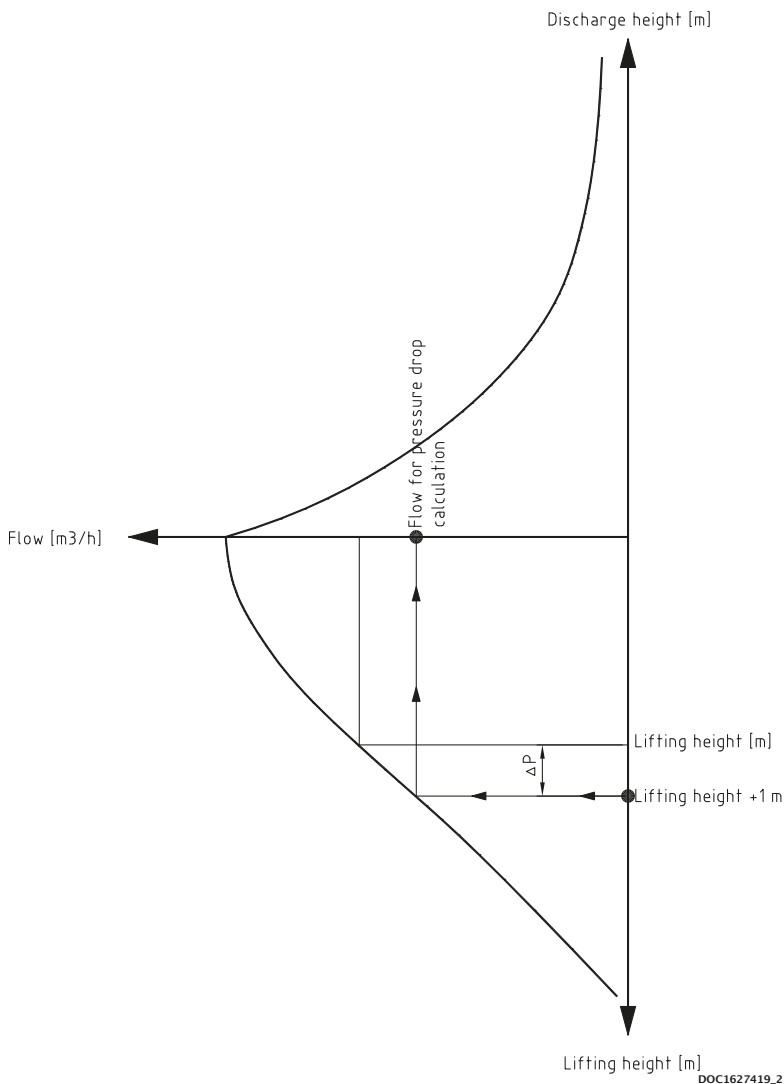


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### 3.5 Pressure drop

The pressure drop in the system depends on the flow and on the other side the flow will depend on the pressure drop.

It is a mathematical iteration process, therefore in practice we need to start the calculation with a guess. As a start value for the flow it will be recommended to use the flow corresponding to the static lift + 1 meter corresponding to 0,1 bar or 100 mbar.



It is possible to calculate the pressure drop manually, but there is a lot of free programs for download. Use the system data to evaluate the pressure drop used as start value. The calculated value can be used to find out if the start value is too low or too high.

#### Example

If the calculated pressure drop is far below the start value (100mbar) make a new calculation with the flow based on for example 50 mbar. Start with the static pressure + 50 mbar and find the flow from the curve.

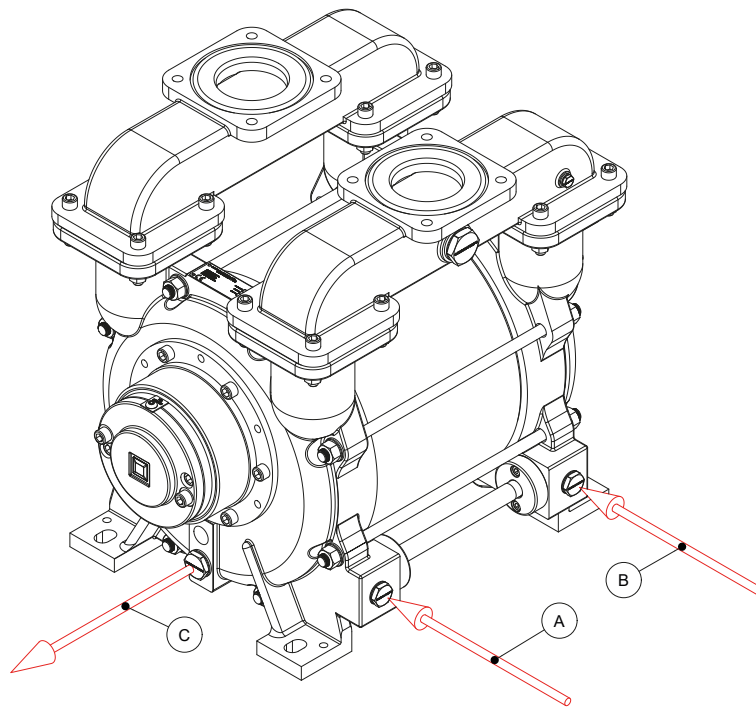
If the calculated pressure drop is far above the start value (100 mbar), make a new calculation with the flow based on for example 200 mbar. Start with the static pressure + 200 mbar and find the flow from the curve.

NOTE: Pressure drop above 100 mbar indicates that your pipe diameter is too small for the pump you are using.

### 3.6 Service liquid requirement

If sea water is used as sealing water, it is recommended to flush the pump with fresh water (inlet A or B) after use and drain the pump (outlet C) afterwards. See illustration below.

Before the pump is started again, remember to fill the pump to about shaft height before start up. Otherwise the pump will be started with dry run of the mechanical shaft seals, which will shorten the lifetime.



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# 4 INSTALLATION AND START-UP

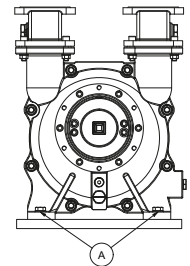
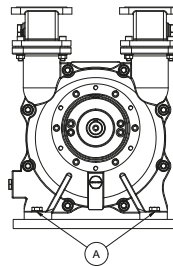
## 4.1 Securing the pump



Installation requirements must be observed, otherwise there is a risk of damage

The pump must be installed on a stable foundation, which must be level and stable, so that the pump is not twisted or exposed to a profile distortion.

The pump must be installed with M16 bolts on all four legs, which must be tightened to 180 Nm (A).



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## 4.2 Connections to the pump

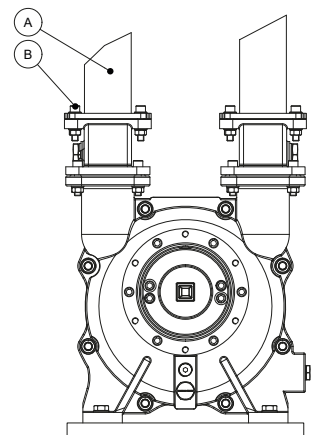


- Check for foreign objects in the pump and physical damage on pump
- Gaskets to be handled with highest degree of caution
- Gasket and sealing surfaces must be cleaned before assembly

Immediate before connecting the pipes, remove protective covers.

The M12 bolts must be tightened with 60 Nm (B).

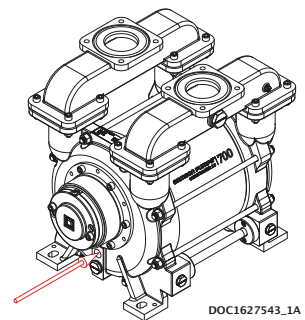
In order to prevent tensions in the pump, the pipe connections (A) must be tensionless while tightening the bolts.



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## 4.3 Connecting the service liquid

The service liquid must be connected to the pump at the hose connection, see illustration.



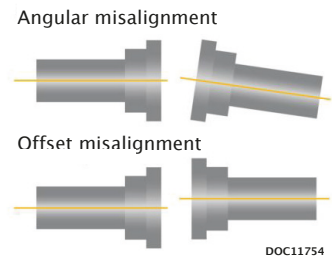
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## 4.4 Drive

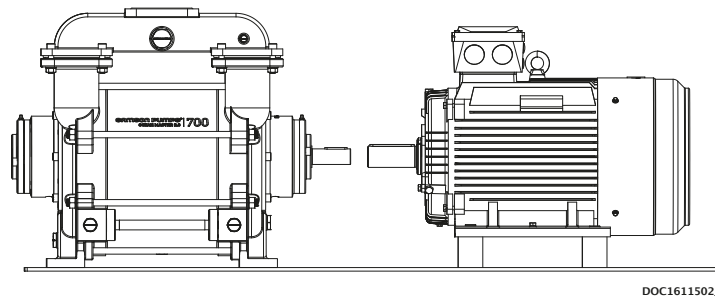
The pump can be connected through direct or belt drive.

The unit (pump & motor) must be installed on a stable foundation, which must be level and stable, so that the unit is not twisted or exposed to a profile distortion.

Misalignment tolerances must be complied. See illustration to the right for misalignment types.



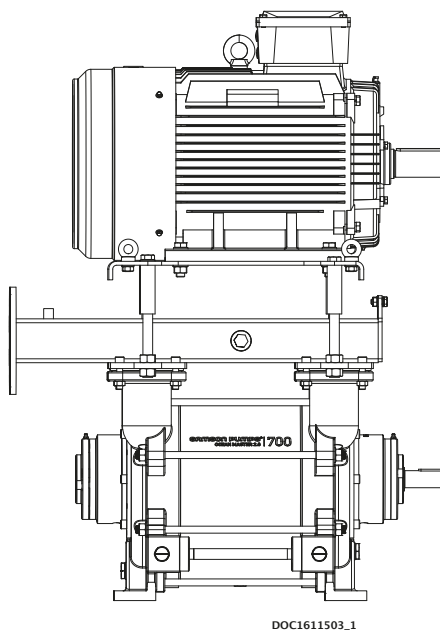
### 4.4.1 Direct drive



Angular misalignment : **0,08 mm / 100 mm**

Offset misalignment : **0,1 mm**

### 4.4.2 Belt drive



For belt drive, it must be ensured that the permissible radial force is not exceeded. See specifications.

Angular misalignment : **0,87 mm / 100 mm**

Offset misalignment : **0,1 mm**

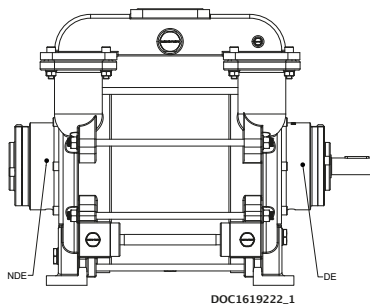
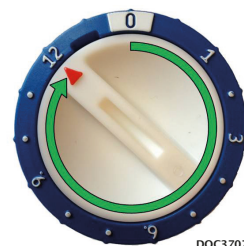
## 4.5 Prior to start-up



- Do not start the pump without service liquid, as this will damage the mechanical shaft seals
- Do not start the pump if it is completely filled with service liquid
- Do not start the pump before the grease cartridges have been activated, as this can damage the pump (if equipped)
- Stop the pump immediately if the rotational direction does not correspond to the directional arrow
- A failure to follow the above guidelines may result in damage to the pump

### Activating the grease cartridges (Accessories and only belt drive)

Turn the handle in NDE clockwise to position 12.  
 Turn the handle in DE clockwise to position 12.  
 The pump has been lubricated from factory and is ready to start.



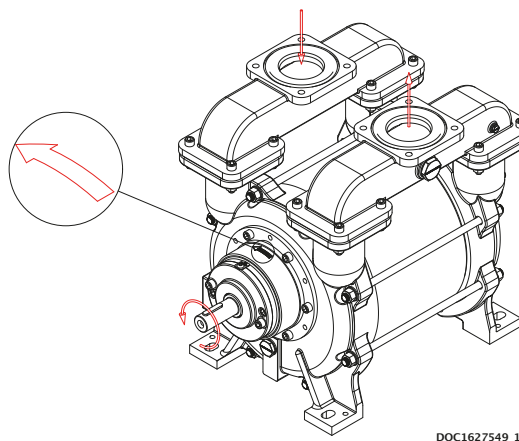
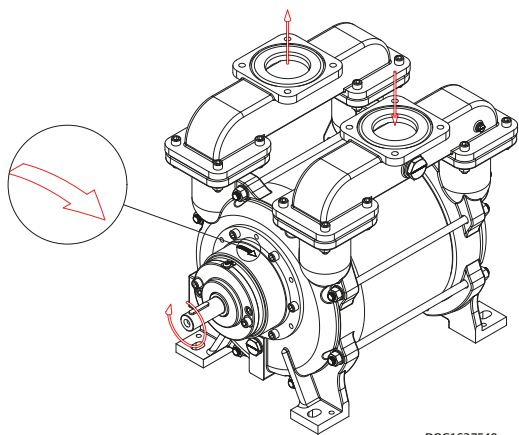
## 4.6 Direction of rotation

Check the direction of rotation by briefly starting the pump.

The direction of rotation of the rotor must correspond to the direction arrow!

Below left, a right-side pump is shown which has a clockwise direction of rotation (CW)

Below right, a left-side pump is shown which has a counter-clockwise direction of rotation (CCW)



# 5 SERVICE, OPERATION, MAINTENANCE AND INSPECTION INTERVALS



A failure to observe the inspection intervals described in table below may result in damage to the pump

Section	Operation	Interval
5.1	Check grease cartridges (if equipped) – Only belt drive	Weekly
5.2	Winterization	When below 0°C
5.3	Inspection and cleaning of service liquid's supply pipe	Monthly

## 5.1 Check grease cartridges – Only belt drive

If the pump is equipped with an automatic lubrication feature. It must be inspected and replaced as needed.

When the pump is commissioned for the first time, the cartridges must be activated by turning the arrow in the clockwise direction.

The cartridge is set to 12, which corresponds to an emptying time of 12 months. The cartridge must be replaced when empty.



It is only allowed to use automatic lubricator of type **LAGD 125/WA2**.

## 5.2 Winterization

If the pump needs to be used at a temperature below freezing point of the service liquid, it is necessary to protect the liquid from freezing by adding anti freeze liquid.

## 5.3 Inspection and cleaning of service liquid's supply pipe

The pipe connection between the liquid separator and pump must be inspected at least once a month, and any contaminants must be removed.

## 6 TROUBLESHOOTING

Problem	Cause	Effect	Corrective measure
<b>The pump is unable to create a vacuum</b>	<ul style="list-style-type: none"> <li>• Service liquid valve is closed</li> <li>• The pump is not receiving enough service liquid</li> <li>• The temperature of the service liquid is too high</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced output</li> <li>• The pump can become damaged during cavitation</li> </ul>	<ul style="list-style-type: none"> <li>• Check service liquid valve</li> <li>• Check the liquid supply</li> <li>• Stop the pump and wait until the temperature has dropped to a sufficient level, or lower the temperature of the service liquid inlet</li> </ul>
<b>The start-up power is too high</b>	<ul style="list-style-type: none"> <li>• Too much service liquid in the pump prior to start-up</li> </ul>	<ul style="list-style-type: none"> <li>• Noise at start-up and possible overload of the power supply</li> </ul>	<ul style="list-style-type: none"> <li>• Check the stop valves in the liquid supply for leakage</li> </ul>
<b>Noise during operation</b>	<ul style="list-style-type: none"> <li>• Cavitation</li> <li>• Too much water in the pipe system when switching from pressure to vacuum</li> </ul>	<ul style="list-style-type: none"> <li>• Severe damage to the pump and potential risk of breakdown</li> </ul>	<ul style="list-style-type: none"> <li>• Adjust the service liquid pressure</li> <li>• Redesign the pipe system (critical pipe)</li> </ul>
<b>Leakage from the bearing housing's drain holes</b>	<ul style="list-style-type: none"> <li>• Damaged shaft seal</li> </ul>	<ul style="list-style-type: none"> <li>• Bearings may become damaged</li> <li>• Potential risk of explosive gas leak</li> </ul>	<ul style="list-style-type: none"> <li>• Stop the pump and contact the manufacturer</li> </ul>

# 7 SPARE PARTS AND TOOLS

## 7.1 Marking and identification

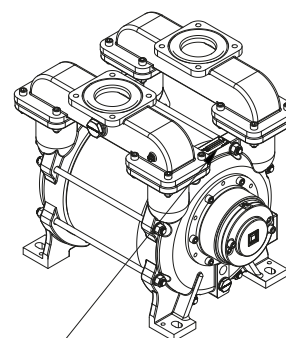
The pump is equipped with an identification plate as shown below.



Configuration example:

**OM 700 R 0 S S B 1 0 S SD**

- Type: ←
- Model: ←
- Rotation: ←
- Rotor type: ←
- Pump housing: ←
- Shell: ←
- Flow plates: ←
- Generation of pump: ←
- Gaskets: ←
- Colour: ←
- Documentation: ←

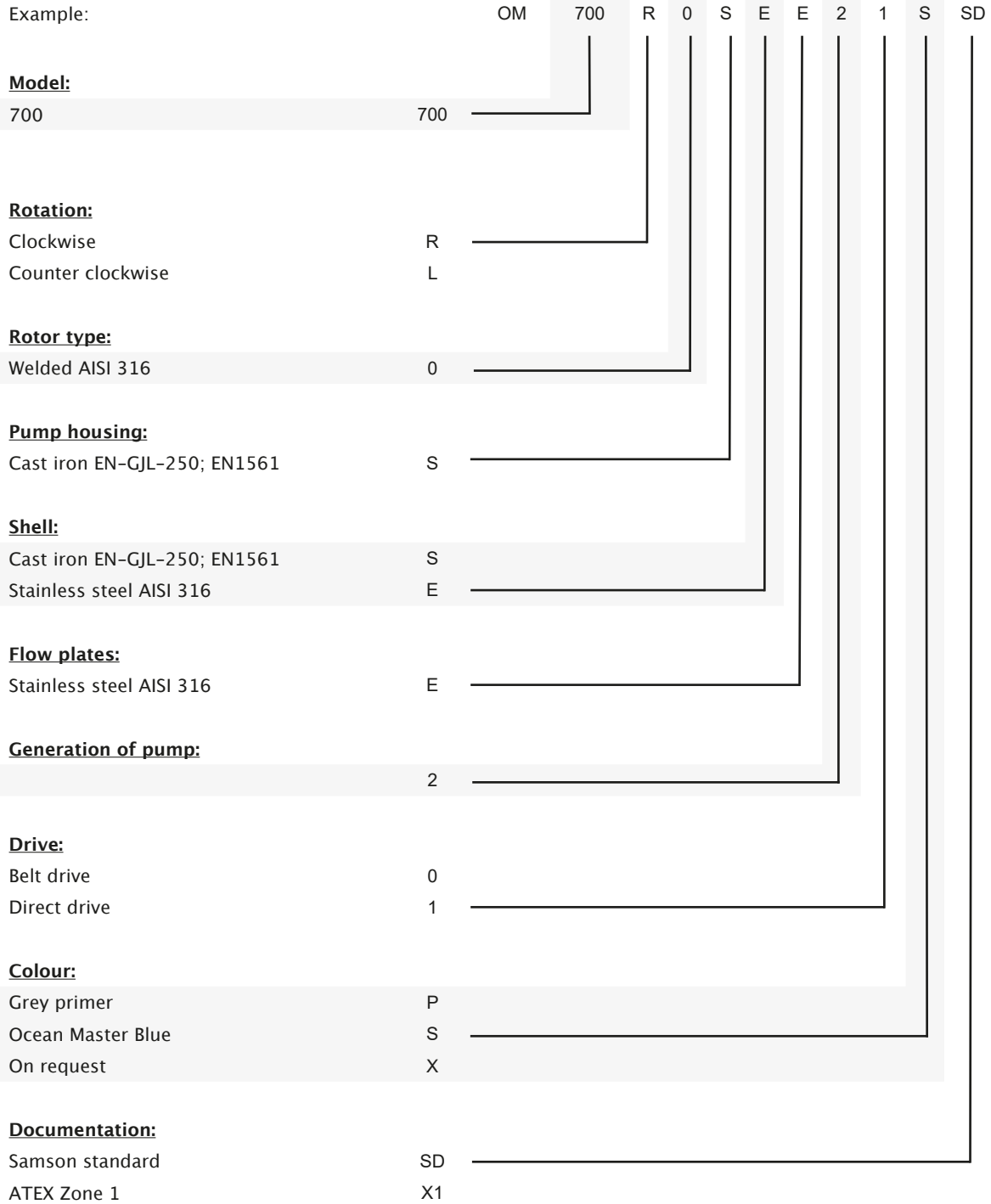


Location of ID plate

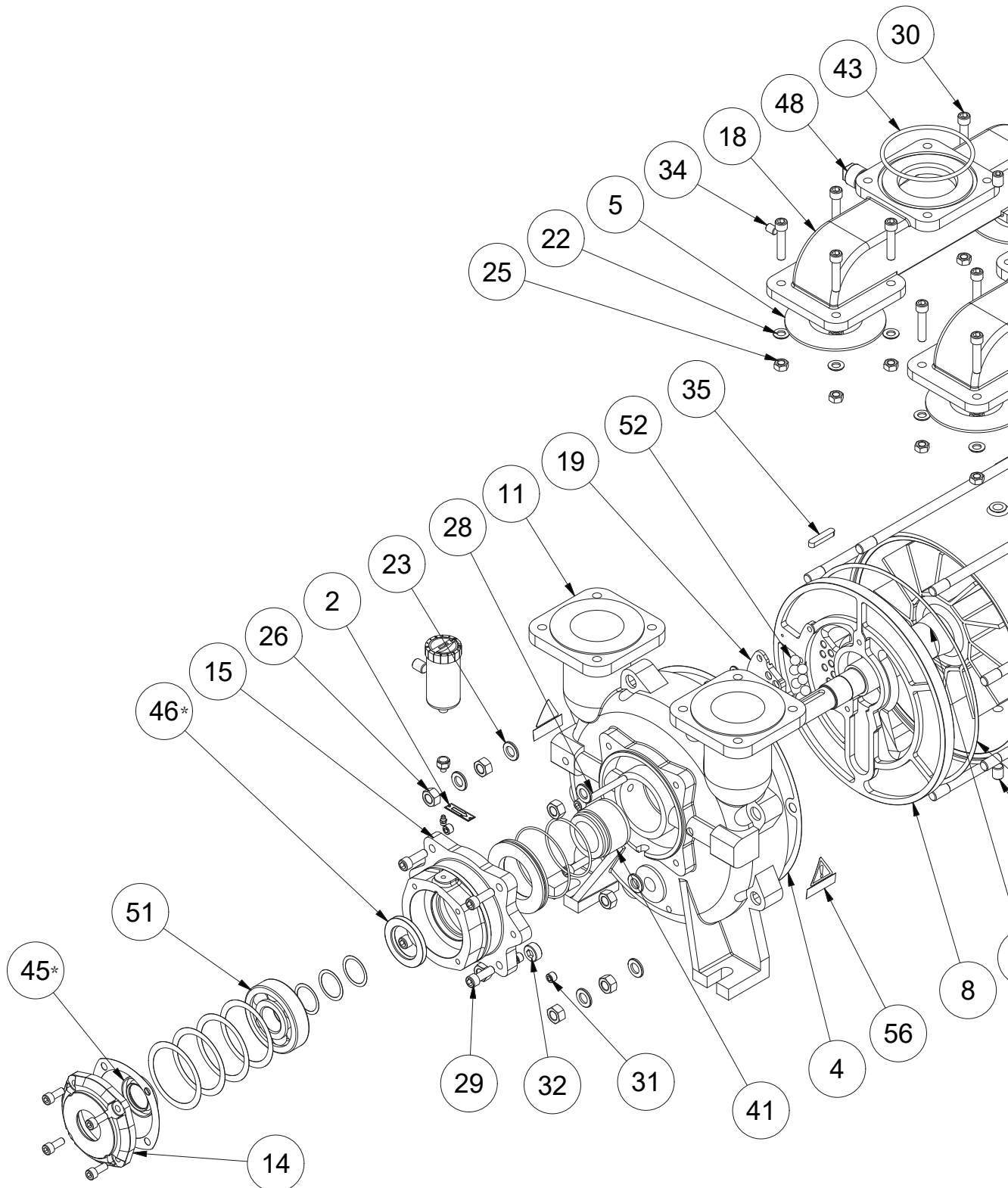
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## 7.2 How to order

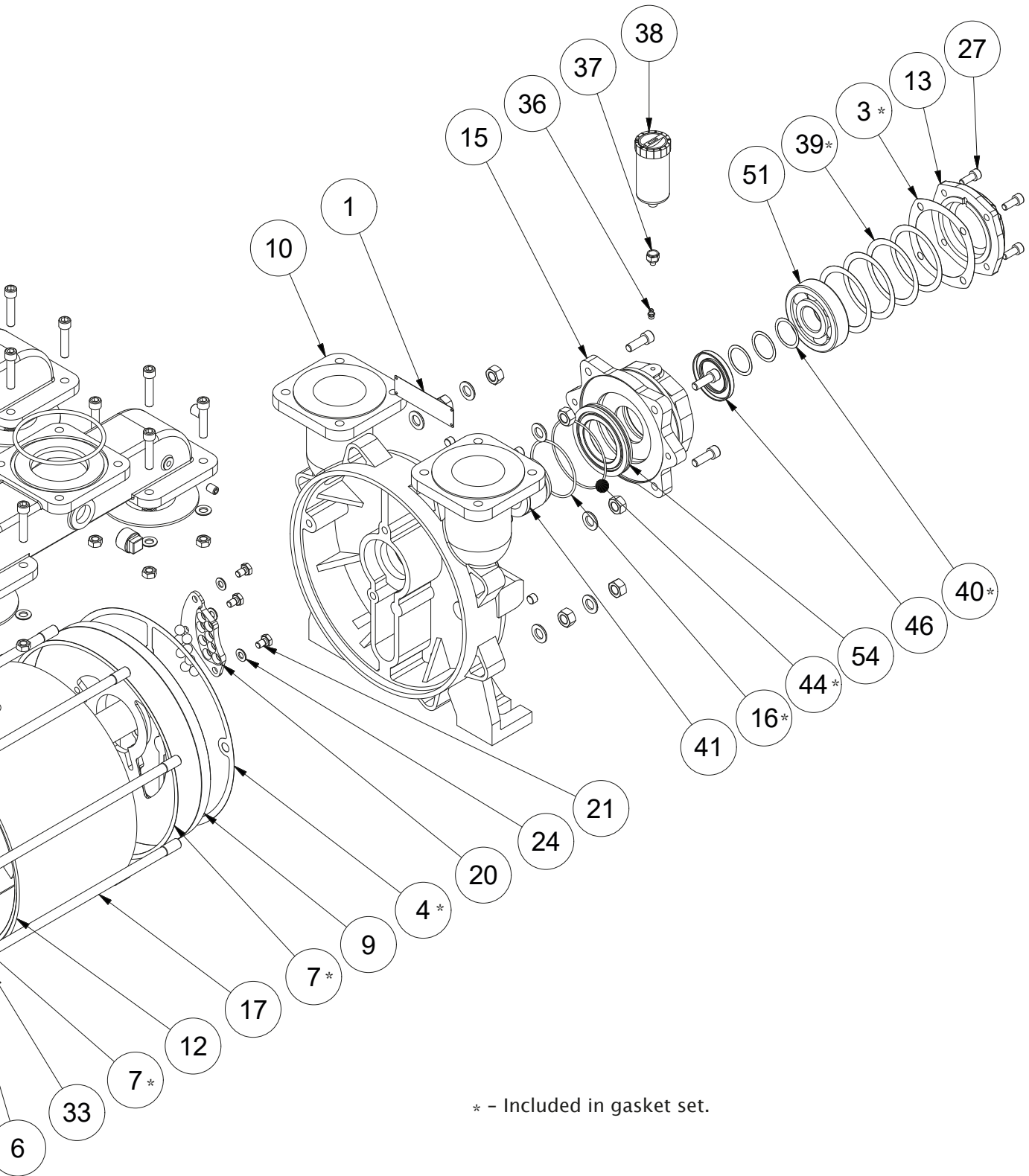
Example:



### 7.3 Spare parts - GENERATION 1







\* - Included in gasket set.

Pos.	Part number	Description	Qty.	Material
1	-	Identification plate	1	Stainless steel
2	-	Direction arrow	1	Aluminum
3	15053-P	Gasket set Ocean Master 700	1	-
4	15053-P	Gasket set Ocean Master 700	1	-
5	151.418	Gasket branch pipes	4	Rubber
6*	152.366	Rotor R	1	Stainless steel
	152.367	Rotor L	1	Stainless steel
7	15053-P	Gasket set Ocean Master 700	1	-
8*	157.320	Flow plate	1	Cast iron
	157.337	Flow plate	1	Bronze
9*	157.319	Flow plate	1	Cast iron
	157.338	Flow plate	1	Bronze
10	1619037	Pump housing NDE	1	Cast iron
11	1619038	Pump housing DE	1	Cast iron
12*	1619042	Shell	1	Cast iron
	1618074	Shell	1	Stainless steel
13	1619046	Bearing cover NDE	1	Cast iron
14	1619048	Bearing cover DE	1	Cast iron
15	1619199	Bearing housing	2	Cast iron
16	15053-P	Gasket set Ocean Master 700	1	-
17	1619059	Stay bolt	8	Steel
18	1619074	Branch pipe	2	Cast iron
19	1619150	Ball guide DE	1	Plastic
20	1619151	Ball guide NDE	1	Plastic
21	910000145	Screw	6	Stainless steel
22	910100016	Washer	16	Steel
23	910100022	Washer	16	Steel
24	910100135	Washer	6	Stainless steel
25	910200014	Nut	16	Steel
26	910200021	Nut	16	Steel
27	910300053	Allen screw	8	Steel
28	910300067	Allen screw	4	Steel
29	910300075	Allen screw	8	Steel
30	910300080	Allen screw	16	Steel
31	910300185	Plug	6	Steel
32	910300186	Plug	1	Steel
33	910300188	Plug	4	Steel
34	910300470	Plug	2	Stainless steel

\* -See section 7.1 for identification of pump.

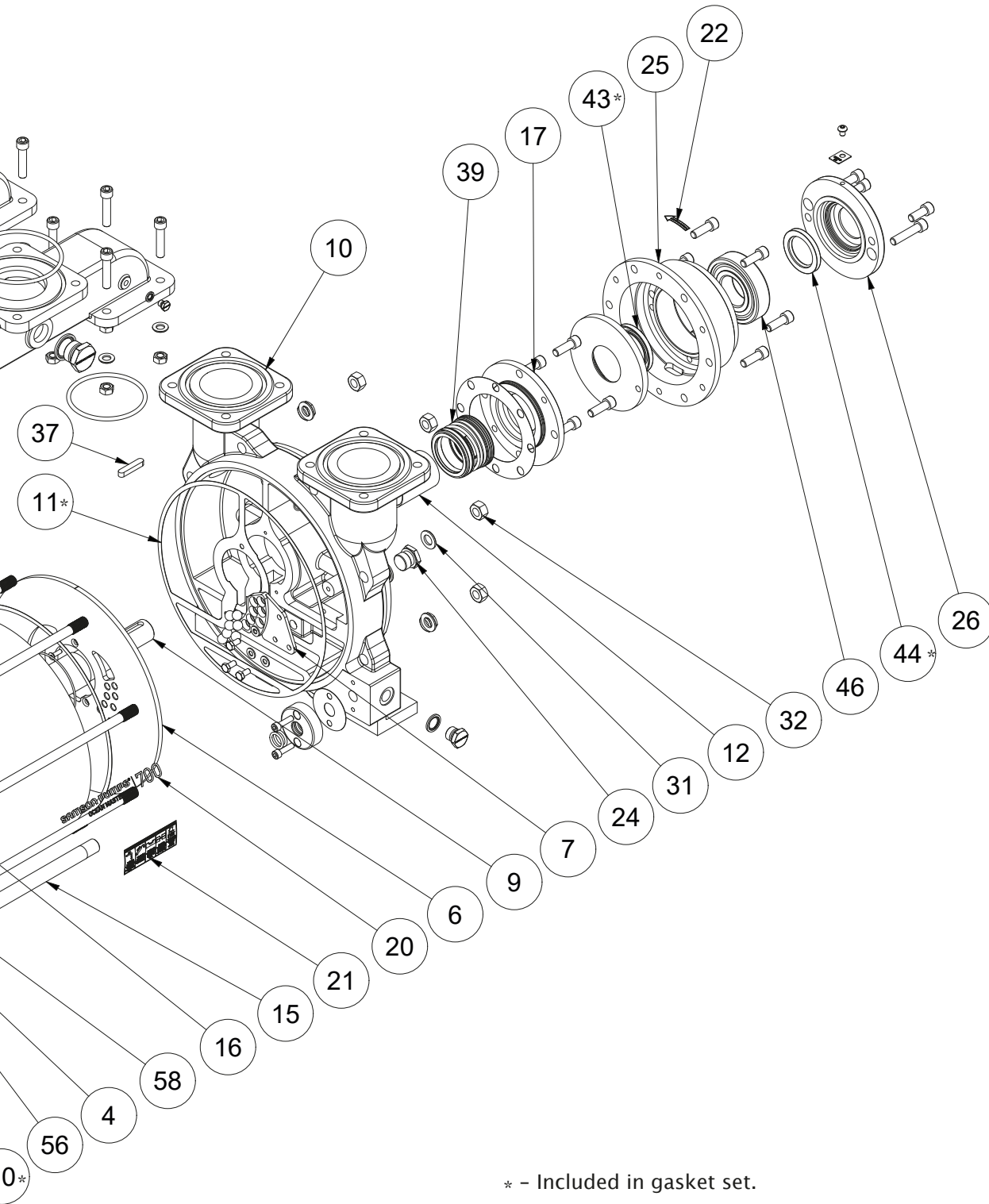
\*\*-Optional. Not equipped as standard.

Pos.	Part number	Description	Qty.	Material
35	915000010	Parallel key	1	Steel
36	915000050	Grease nipple	2	Steel
37**	1634773	Nipple	2	Brass
38**	915000225	Automatic lubricator LAGD 125/WA2	2	Plastic / grease
39	15053-P	Gasket set Ocean Master 700	1	-
40	15053-P	Gasket set Ocean Master 700	1	-
41	922000039	Mechanical shaft seal	2	Steel
43	922100085	O-ring Ø134,30x5,70	2	Rubber
44	15053-P	Gasket set Ocean Master 700	1	-
45	15053-P	Gasket set Ocean Master 700	1	-
46	15053-P	Gasket set Ocean Master 700	1	-
48	925000136	Plug	4	Steel
51	930000087	Ball bearing	2	Steel
52	962000046	Valve ball	16	Plastic
54	1619168	Insert for bearing housing	2	Stainless steel
56	1624020	Sticker Warning!	2	Plastic foil

\* -See section 7.1 for identification of pump.

\*\*-Optional. Not equipped as standard.





DOC1619222\_3

Pos.	Part number	Description	Qty.	Material
1	107934	HSR Samson Rotor transfer domet 25x25mm	1	Plastic foil
2	107943	Identification plate	1	Stainless steel
3	15058-P	Gasket set Ocean Master 700 G2	1	-
4	1619205	Stay Bolt	8	Steel
5	1619223	Pump Housing NDE	1	Cast iron
6	1619232	Flow plate	2	Stainless steel
7	1619233	Ball guide DE	1	Plastic
8	1619234	Ball guide NDE	1	Plastic
9	1619255	Rotor R	1	Stainless steel
10	1619240	Pump Housing DE	1	Cast iron
11	15058-P	Gasket set Ocean Master 700 G2	1	-
12	1619244	Protective sleeve	2	Plastic
13	1619246	Flange for water	2	Stainless steel
14	15058-P	Gasket set Ocean Master 700 G2	1	-
15	1619255	Pipe for water supply	1	Stainless steel
16*	1619251	Shell	1	Stainless steel
	1619273	Shell	1	Cast iron
17	1619263	Retainer	2	Stainless steel
18	1619270	Flow limiter Ø8mm	2	Stainless steel
19	15058-P	Gasket set Ocean Master 700 G2	1	-
20	1624095	Label Ocean Master 700	2	Plastic foil
21	1624074	Label	2	Plastic foil
22	1624087	Label arrow right	1	Plastic foil
23	1634825	Plug	2	Stainless steel
24	1634826	Plug	2	Stainless steel
25	1654019	Bearing housing	2	Cast iron
26	1654022	Bearing cover DE	1	Cast iron
27	1654023	Bearing cover NDE	1	Cast iron
28	1654025	Rear cap	2	Stainless steel
29	910000399	Bolt	6	Stainless steel
30	910100004	Washer	6	Stainless steel
31	910100021	Washer	16	Steel
32	910100161	Nut	16	Steel
33	910300073	Allen bolt	21	Stainless steel
34	910300074	Allen bolt	4	Stainless steel
35	910300079	Allen bolt	20	Stainless steel
36	910300267	Screw	4	Stainless steel

\* -See section 7.1 for identification of pump.

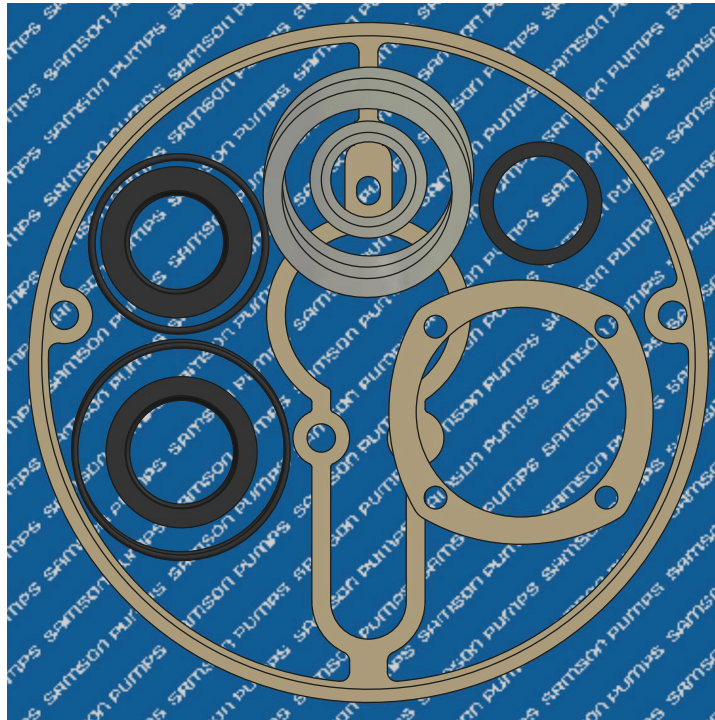
\*\*-Optional. Not equipped as standard.

Pos.	Part number	Description	Qty.	Material
37	915000010	Parallel key	1	Steel
39	1634850	Mechanical shaft seal	2	Steel
40	15058-P	Gasket set Ocean Master 700 G2	1	-
41	15058-P	Gasket set Ocean Master 700 G2	1	-
42	15058-P	Gasket set Ocean Master 700 G2	1	-
43	15058-P	Gasket set Ocean Master 700 G2	1	-
44	15058-P	Gasket set Ocean Master 700 G2	1	-
45	925200050	Hosestud	1	Stainless steel
46	930000086	Ball bearing	1	Steel
47	930000086	Ball bearing	1	Steel
48	930200057	LOCK NUT	1	Steel
49	962000062	Valve ball	14	Plastic
50	1619074	Branch pipe	2	Cast iron
51	922100085	O-ring	2	Rubber
52	910200010	Nut	16	Stainless steel
53	910100013	Washer	16	Stainless steel
54	1634822	Plug	4	Stainless steel
55	1634827	Plug	4	Stainless steel
56	910300137	Allen screw	6	Stainless steel
57	1624099	No grease sign	2	Stainless steel
58	1634824	Plug	1	Stainless steel
59	910300505	Button head screw	2	Stainless steel

\* -See section 7.1 for identification of pump.

\*\*-Optional. Not equipped as standard.

## 7.5 Gasket set – GENERATION 1



DOC15054-P

Pos.	Part number	Description	Qty.	Material
3	151.401	Gasket for bearing cover 0,4 mm	2	Paper
4	151.404	Gasket for pump housing / flow plate 0,4 mm	2	Paper
	152.503	Gasket for shell / flow plate 0,5 mm	2	Paper
7	1619101	Gasket for shell / flow plate 0,8 mm	2	Paper
	152.531	Gasket for shell / flow plate 1,0 mm	2	Paper
16	922100097	O-ring	2	Rubber
	920000028	Shim 90x110x0,1	4	Steel
39	920000029	Shim 90x110x0,2	4	Steel
	920000030	Shim 90x110x0,3	4	Steel
	920000016	Shim 40x50x0.1	2	Steel
40	920000193	Shim 40x50x0.3	2	Steel
	920000009	Shim 40x50x0.5	2	Steel
44	922100095	O-ring Ø88,49x3,53	2	Rubber
45	922200069	Radial shaft seal 55x80x8	1	Rubber / Steel
46	922200258	Radial shaft seal 50x80x8	1	Rubber / Steel
47	922200093	Radial shaft seal 50x65x10	1	Rubber / Steel
	920000172	Shim 50x62x0,2	2	Steel
56	920000208	Shim 50x62x0,1	2	Steel
	920000017	Shim 50x62x0,5	2	Steel

See spare parts drawing (DOC1627402\_3A) for positions.



## 7.6 Gasket set – GENERATION 2

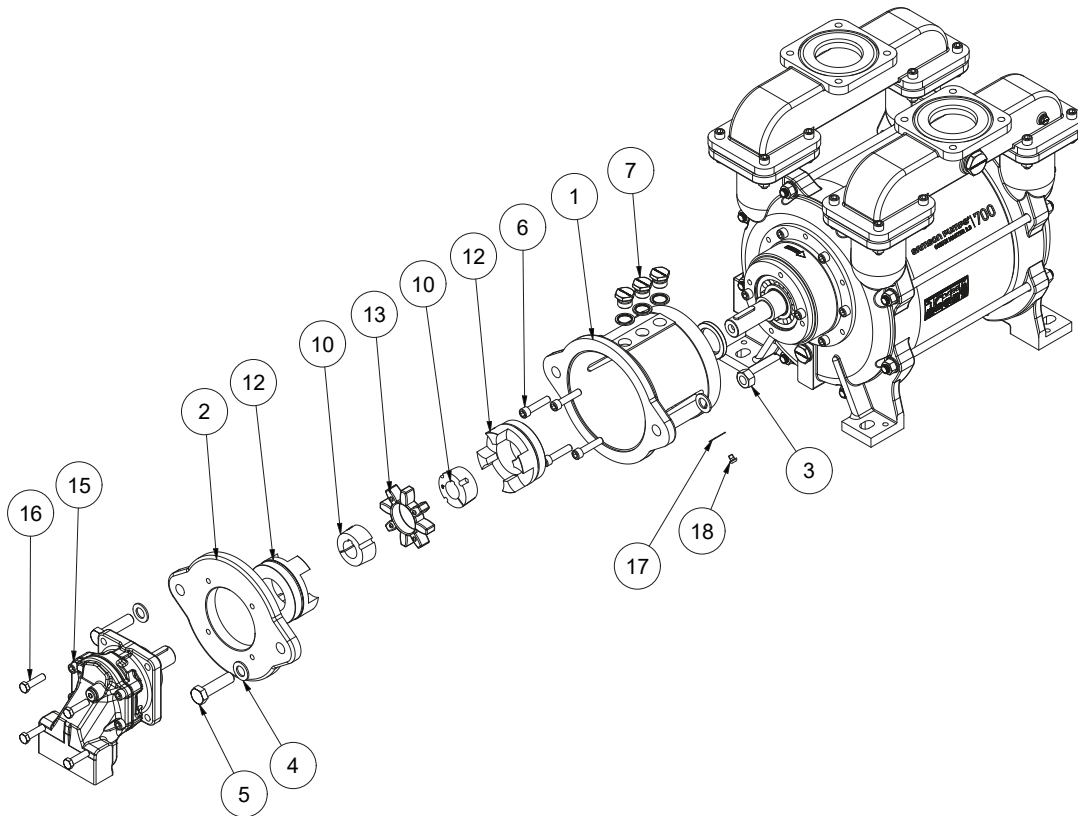


DOC15058-P

Pos.	Part number	Description	Qty.	Material
3	152.503	Gasket for shell / flow plate 0,5 mm	2	Paper
	1619101	Gasket for shell / flow plate 0,8 mm	2	Paper
	152.531	Gasket for shell / flow plate 1,0 mm	2	Paper
11	1619243	Gasket pump housing / flow plate 0,5 mm Gasket	2	Paper
14	1619247	Gasket for Water Flange	2	Paper
19	1619271	Gasket for Retainer	2	Paper
40	922100391	O-ring	4	Rubber
41	922100376	O-ring	1	Rubber
42	922100378	O-ring	4	Rubber
43	922200069	Lip seals	2	Rubber / Steel
44	922200269	Sealing ring	1	Rubber / Steel

See spare parts drawing (DOC1619222\_3) for positions.

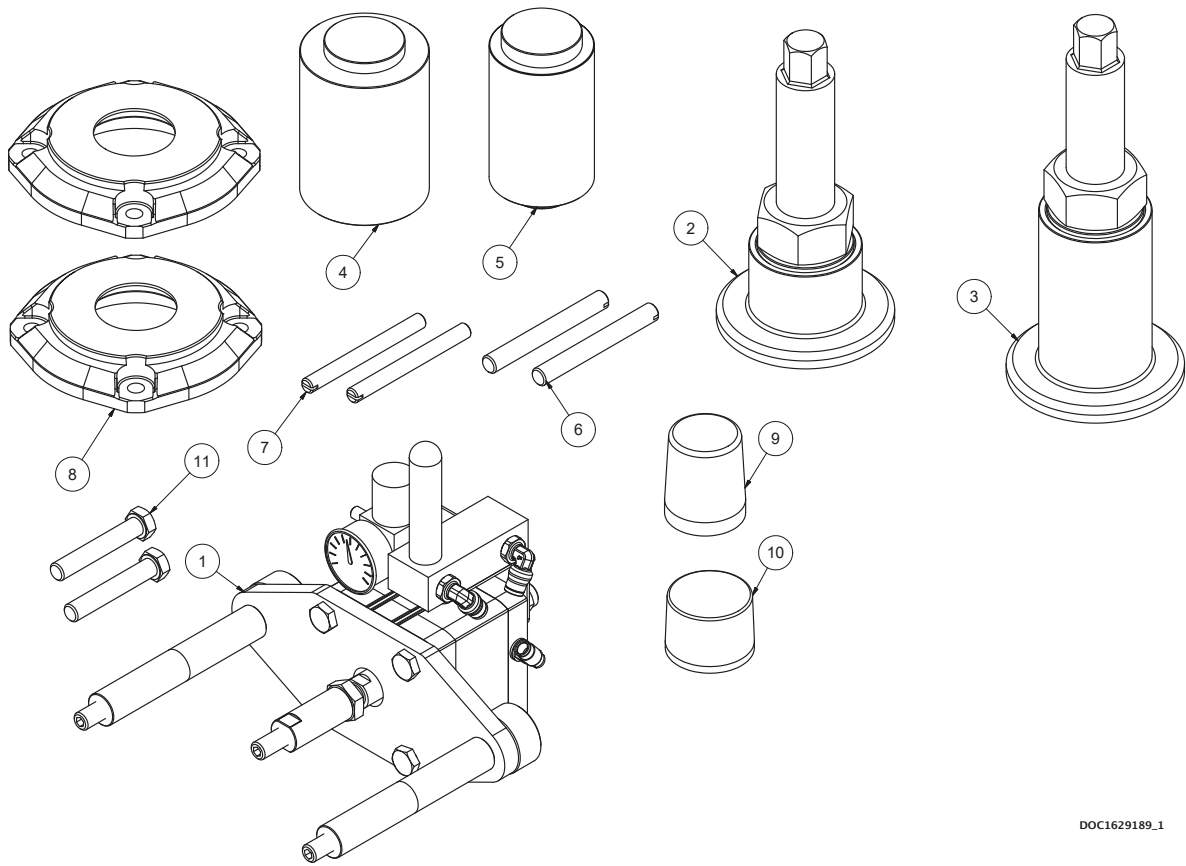
## 7.7 Adaptor - GENERATION 2



DOC1634874\_1

Pos.	Part number	Description	Qty.	Material
1	1654038	Adaptor, Machined	1	Cast iron
2	1654039	Flange for adapter	1	Cast iron
3	910000422	M20 Nut DIN 934 8.8 FZV	2	Steel
4	910000423	M20 Washer DIN 125-A 8.8 HDG	4	Steel
5	910000508	M20x75 Steel Bolt ISO 4014 8.8 HDG	2	Steel
6	910300080	M12x55 Allen screw DIN 912 8.8 FZB	4	Steel
7	1634826	Plug 3/4"	3	Steel
9	922200269	Sealing ring 48x72x8 DIN 3760A NBR Type: OA	1	Rubber / Steel
10	932300048	Taper Bush 2012-40	2	Cast iron
12	932400127	Coupling hub Klonex 55/70 cast iron	2	Cast iron
13	932400126	PU Polyuretan Red 98 Shore A	1	Rubber
15	944000083	Hydraulic motor 090 ISO	1	Steel
16	910000388	M12x45 Hexagon head screws DIN 933 A4.70	4	Stainless Steel
17	1624099	NO GREASE SIGN	1	Stainless Steel
18	910300505	M8x10 Hexagon socket button head screw	1	Stainless Steel

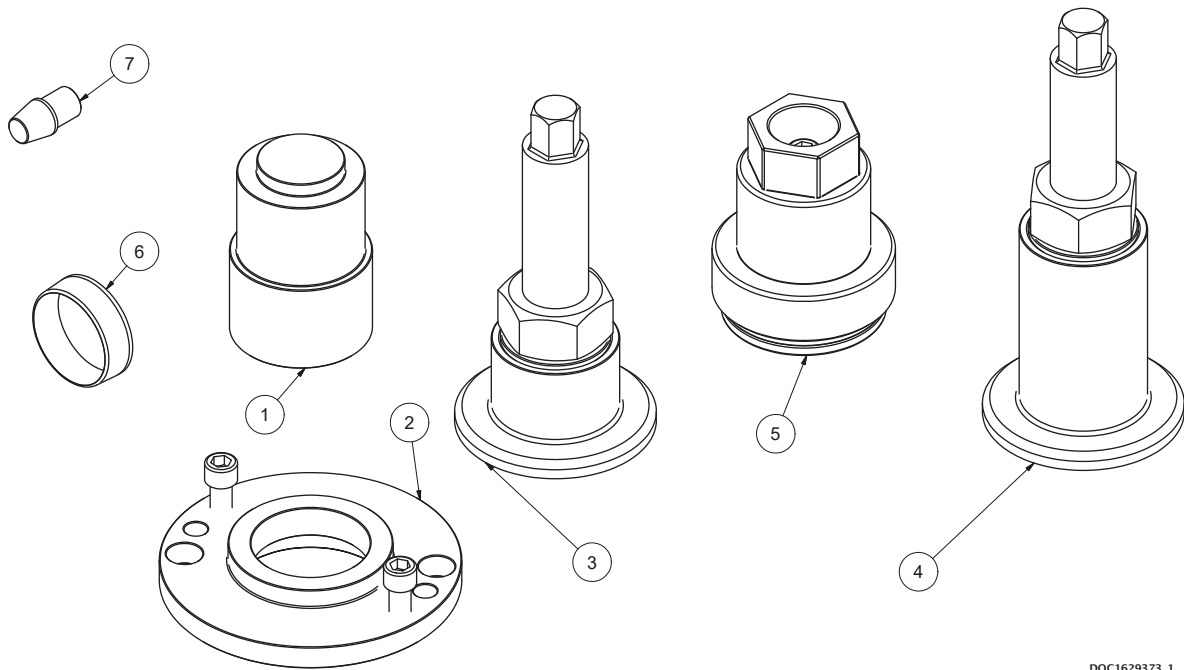
## 7.8 Special tool set - GENERATION 1



DOC1629189\_1

Pos.	Part number	Description	Qty.	Material
1	1629183	Bearing tool	1	Steel
2	1629107	Bearing mounting tool set NDE	1	Steel
3	1629108	Bearing mounting tool set DE	1	Steel
4	1629178	Mandrel radial shaft seal Ø50 + Ø55	1	Plastic
5	1629179	Mandrel radial shaft seal Ø40 + Ø50	1	Plastic
6	1629180	Guide pin M12	2	Steel
7	1629181	Guide pin M10	2	Steel
8	1629182	Machined bearing cap	2	Steel
9	1634151	Mounting sleeve for Ø50 mechanical shaft seal	1	Plastic
10	1634152	Mounting sleeve for Ø55 mechanical shaft seal	1	Plastic
11	910000366	M12x130 Set bolt	2	Steel

## 7.9 Special tool set - GENERATION 2



DOC1629373\_1

Pos.	Part number	Description	Qty.	Material
1	1629374	Mandrel radial shaft seal Ø48 + Ø55	1	Plastic
2	1629375	Machined bearing cap	1	Steel
3	1629107	Bearing mounting tool set NDE	1	Steel
4	1629108	Bearing mounting tool set DE	1	Steel
5	1629354	Bearing tool set	1	Steel
6	1629370	Mounting sleeve for Ø60 mechanical shaft seal	1	Plastic
7	1629369	Mounting mandrel for water supply pipe	1	Plastic







## **SAMSON PUMPS**

Samson Pumps is the only company in the world to specialize in liquid ring vacuum pumps. The pumps are made in Denmark and used all around the globe.

Truck Master, Ocean Master and Industrial Series Gamma are the company's three brands. Truck Master Series is designed and optimized for the vacuum truck market. Ocean Master Series is meant for the fish industry where the pumps are usually installed onboard fishing vessels. Gamma Series is designed to handle the harshest industrial vacuum jobs.

At the core of Samson Pumps' activity is the strong belief that our liquid ring vacuum pumps must be of superlative quality for our customers to focus on what they do best. We always improve the quality and design of our pumps to better suit the vacuum units built by OEMs all around the globe.

Strength and durability are our hallmarks! Time and time again we hear from our satisfied customers that our pumps continue operating year after year and in most cases without the need for maintenance or repair. Samson Pumps is your reliable liquid ring vacuum pump supplier.