

*ENGINEERING
YOUR SPRAY SOLUTION*



Maintenance Instructions
High impact tank
cleaning machine
Series 5TM



Maintenance Instructions



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INTRODUCTION

This manual shows how to maintain the Series 5TM high impact tank cleaning machine from Lechler.

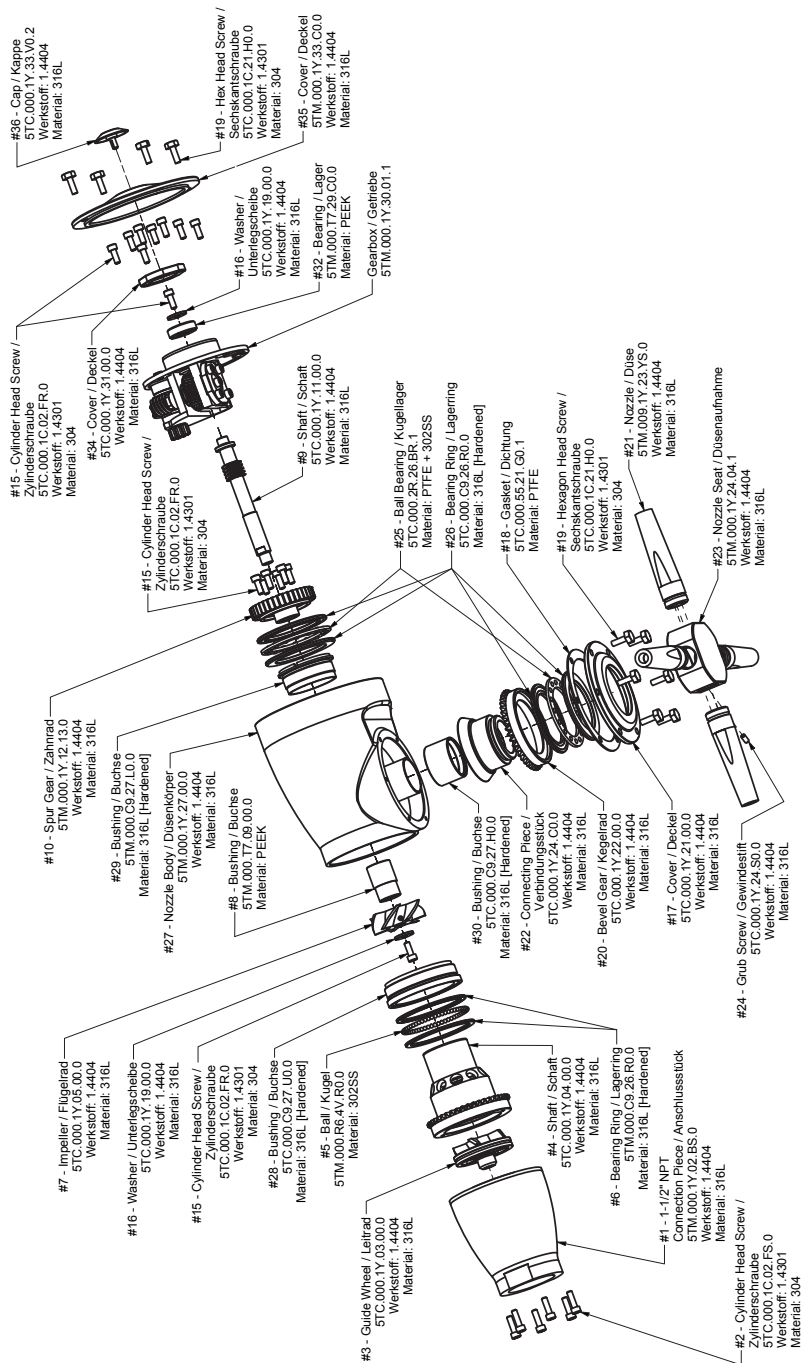
Due to varying operating conditions that components are subjected to, we recommend performing a maintenance in two steps: (1) **Minor** maintenance after **500 operating hours (Maintenance 1)**, and (2) **Major** maintenance after **1000 operating hours (Maintenance 2)**.

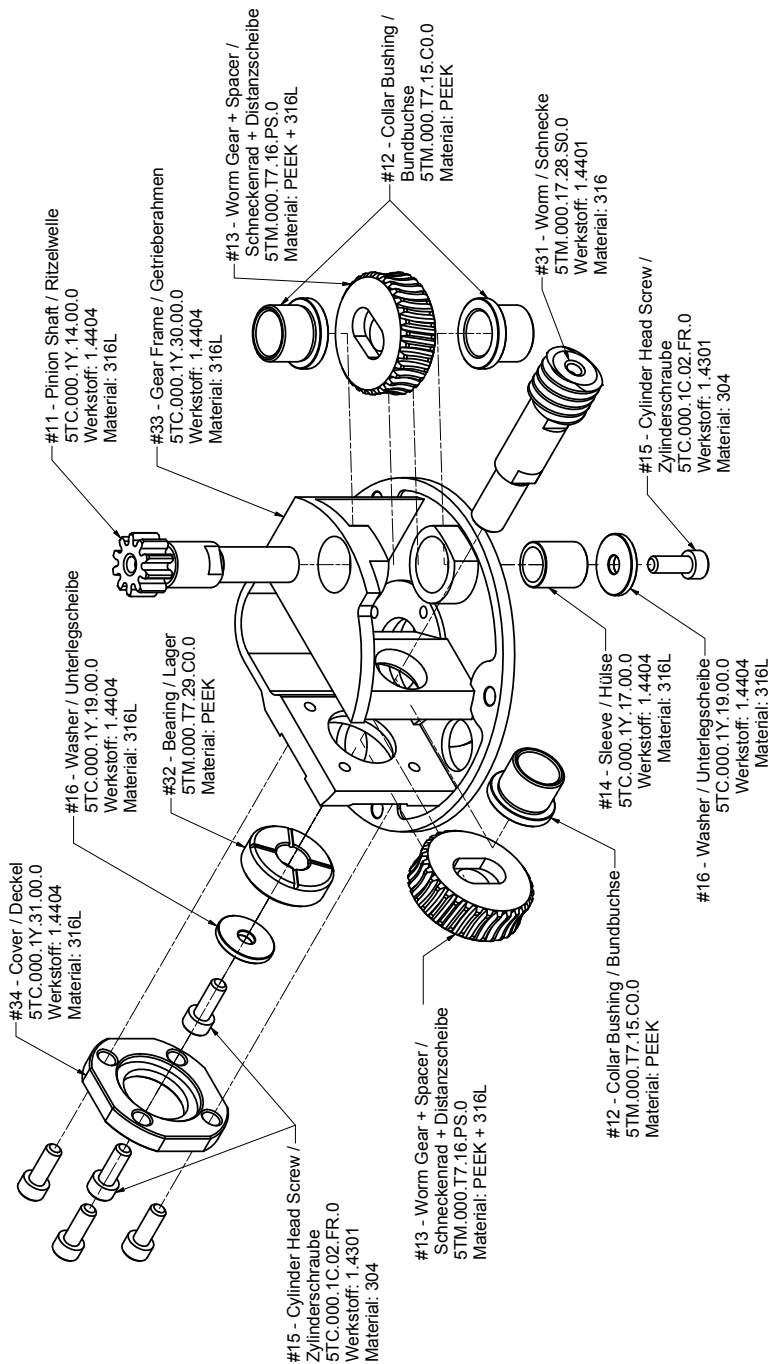
Note: Maintenance 2 is a comprehensive service that also includes all steps included in Maintenance 1.

A visual inspection must always be carried out at each maintenance interval of the parts for wear. Under correspondingly harsh operating conditions the time to maintenance should be reduced.

| Recommended maintenance intervals | |
|-----------------------------------|----------------------|
| Operating hours | Scope of maintenance |
| 500 | Maintenance 1 |
| 1000 | Maintenance 2 |
| 1500 | Maintenance 1 |
| 2000 | Maintenance 2 |

Only use original Lechler parts for maintenance. All cylinder and hexagon head screws are secured with thread lock lacquer. For use in the food industry we recommend LOCTITE® 243™.





PARTS LIST

| | Part Number | Description | Material | Machine (Nos) |
|---|---|---|----------|---------------|
| 1 | 5TM.000.1Y.02.AN.0 | Connection Piece: G 1" ISO 228 (F) | 316L SS | 1 |
| | 5TM.000.1Y.02.AM.0 | Connection Piece: G 1" ISO 228 (M) | 316L SS | |
| | 5TM.000.1Y.02.AS.0 | Connection Piece: G 1 ½" ISO 228 (F) | 316L SS | |
| | 5TM.000.1Y.02.AR.0 | Connection Piece: G 1 ½" ISO 228 (M) | 316L SS | |
| | 5TM.000.1Y.02.BS.0 | Connection Piece: 1 ½" NPT (F) | 316L SS | |
| | 5TM.000.1Y.02.BR.0 | Connection Piece: 1 ½" NPT (M) | 316L SS | |
| | 5TM.000.1Y.02.SP.0 | Connection Piece: 1 ½" SW-Flange CL-150 | 316L SS | |
| | 5TM.000.1Y.02.AW.0 | Connection Piece: G2" ISO 228 (F) | 316L SS | |
| 2 | 5TC.000.1C.02.FS.0 [For Inlet: - AS, BS, AW] | Cylinder Head Screw | 304 SS | 6 |
| | 5TC.000.1C.02.FR.0 [For Inlet: - AN, AM, AR, BR, SP] | Cylinder Head Screw | 304 SS | |
| 3 | 5TC.000.1Y.03.00.0 | Guide wheel | 316L SS | 1 |
| | 5TC.000.1Y.03.R0.0 [5TM.410 only] | Ring | 316L SS | 1 |

| | Part Number | Description | Material | Qty Machine |
|----|--------------------|--------------------|----------------------|------------------------|
| 4 | 5TC.000.1Y.04.00.0 | Shaft | 316L SS | 1 |
| 5 | 5TM.000.R6.4V.R0.0 | Ball | 302 SS | 58 |
| 6 | 5TM.000.C9.26.R0.0 | Bearing Ring | 316L SS Hardened] | 2 |
| 7 | 5TC.000.1Y.05.00.0 | Impeller | 316L SS | 1 |
| 8 | 5TM.000.T7.09.00.0 | Bushing | PEEK | 1 |
| 9 | 5TC.000.1Y.11.00.0 | Shaft | 316L SS | 1 |
| 10 | 5TM.000.1Y.12.13.0 | Spur Gear | 316L SS | 1 |
| 11 | 5TC.000.1Y.14.00.0 | Pinion Shaft | 316L SS | 1 |
| 12 | 5TM.000.T7.15.C0.0 | Collar Bushing | PEEK | 3 |
| 13 | 5TM.000.T7.16.PS.0 | Worm Gear + Spacer | PEEK + 316L SS | 2 Set |
| 14 | 5TC.000.1Y.17.00.0 | Sleeve | 316L SS | 1 |

| | Part Number | Description | Material | Qty Machine |
|----|--------------------|--|------------------|------------------------------|
| 15 | 5TC.000.1C.02.FR.0 | Cylinder Head Screw | 304 SS | 22 |
| 16 | 5TC.000.1Y.19.00.0 | Washer | 316L SS | 4 |
| 17 | 5TC.000.1Y.21.00.0 | Cover | 316L SS | 1 |
| 18 | 5TC.000.55.21.G0.1 | Gasket | PTFE | 1 |
| 19 | 5TC.000.1C.21.H0.0 | Hexagon Head Screw | 304 SS | 10 |
| 20 | 5TC.000.1Y.22.00.0 | Bevel Gear | 316L SS | 1 |
| 21 | 5TM.0XX.1Y.23.YS.0 | *XX = Nozzle opening [= 06, 07, 08, 09, 10 mm] | 316L SS | 04 [5TM.4XX] 02 [5TM.2XX] |
| 22 | 5TC.000.1Y.24.C0.0 | Connecting Piece | 316L SS | 1 |
| 23 | 5TM.000.1Y.24.02.1 | Nozzle Seat – 2 Nozzles | 316L SS | 1 |
| | 5TM.000.1Y.24.04.1 | Nozzle Seat – 4 Nozzles | 316L SS | |
| 24 | 5TC.000.1Y.24.S0.0 | Grub Screw | 316L SS | 1 |
| 25 | 5TC.000.2R.26.BR.1 | Ball Bearing | PTFE + 302 SS | 2 |

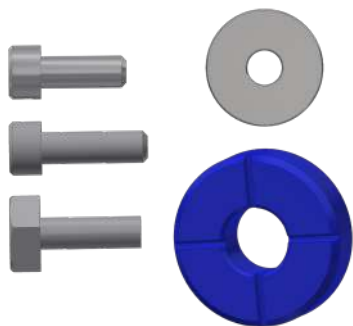
| | Part Number | Description | Material | Qty Machine (Nos) |
|----|---------------------------|--------------------|---------------------|------------------------------|
| 26 | 5TC.000.C9.26.R0.0 | Bearing Ring | 316L SS Hardened | 4 |
| 27 | 5TM.000.1Y.27.00.0 | Nozzle Body | 316L SS | 1 |
| 28 | 5TC.000.C9.27.U0.0 | Bushing – Upper | 316L SS Hardened | 1 |
| 29 | 5TM.000.C9.27.L0.0 | Bushing – Lower | 316L SS Hardened | 1 |
| 30 | 5TC.000.C9.27.H0.0 | Bushing | 316L SS Hardened | 1 |
| 31 | 5TM.000.17.28.S0.0 | Worm | [SS-316] | 1 |
| 32 | 5TM.000.T7.29.C0.0 | Bearing | PEEK | 2 |
| 33 | 5TC.000.1Y.30.00.0 | Gear frame | 316L SS | 1 |
| 34 | 5TC.000.1Y.31.00.0 | Cover | 316L SS | 2 |
| 35 | 5TM.000.1Y.33.C0.0 | Cover | 316L SS | 1 |
| 36 | 5TC.000.1Y.33.V0.2 | Cap | 316L SS | 1 |

MAINTENANCE 1

It is recommended to perform **Maintenance 1 every 500 operating hours.**

For this purpose, utilize **Spare parts package 1**, consisting of:

| Spare parts package 1 | | | | |
|-----------------------|---|----------|--------------------|---------------------------|
| Pos. spare parts list | Description | Quantity | Product number | Ordering number |
| 2 | Cylinder head screw 3/16" x 3/4", for following connections: AS, BS, AW | 6 pieces | 5TC.000.1C.02.FS.0 | 5TM.000.00.SP.02.1 |
| 2 | Cylinder head screw 3/16" x 1/2", for following connections: AN, AM, AR, BR, SP | 6 pieces | 5TC.000.1C.02.FR.0 | |
| 15 | Cylinder head screw 3/16" x 1/2" | 9 pieces | 5TC.000.1C.02.FR.0 | |
| 16 | Washer | 1 piece | 5TC.000.1Y.19.00.0 | |
| 19 | Hexagon head screw 3/16" x 1/2" | 4 pieces | 5TC.000.1C.21.H0.0 | |
| 32 | Bearing | 1 piece | 5TM.000.T7.29.C0.0 | |



The following steps, (described in more detail later in this manual), are necessary for Maintenance 1:

Disassembly:

Cover pos. 35
 Cover Pos. 34
 Info bearing Pos. 32
 Connection piece Pos. 1
 Bearing pos. 32 - for shaft pos. 9

Inspection

Assembly:

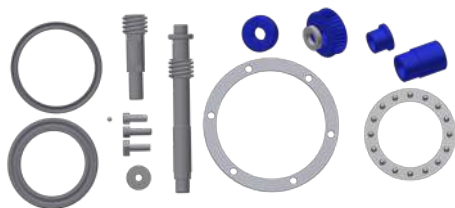
Bearing pos. 32 for shaft pos. 9
 Cover pos. 34
 Connector
 Cover Pos. 35

MAINTENANCE 2

It is recommended to perform **Maintenance 2 every 1.000 operating hours.**

For this purpose, utilize **Spare parts package 2**, consisting of:

| Spare parts package 2 | | | | |
|-----------------------|---|-----------|--------------------|---------------------------|
| Pos. spare parts list | Description | Quantity | Product number | Ordering number |
| 2 | Cylinder head screw 3/16" x 3/4", for following connections: AS, BS, AW | 6 pieces | 5TC.000.1C.02.FS.0 | 5TM.000.00.SP.01.1 |
| 2 | Cylinder head screw 3/16" x 1/2", for following connections: AN, AM, AR, BR, SP | 6 pieces | 5TC.000.1C.02.FR.0 | |
| 5 | Ball | 58 pieces | 5TM.000.R6.4V.R0.0 | |
| 6 | Bearing ring | 2 pieces | 5TM.000.C9.26.R0.0 | |
| 8 | Bushing | 1 piece | 5TM.000.T7.09.00.0 | |
| 9 | Shaft | 1 piece | 5TC.000.1Y.11.00.0 | |
| 12 | Collar bushing | 3 pieces | 5TM.000.T7.15.C0.0 | |
| 13 | Worm gear | 2 pieces | 5TM.000.T7.16.PS.0 | |
| 15 | Cylinder head screw 3/16" x 1/2" | 22 pieces | 5TC.000.1C.02.FR.0 | |
| 16 | Washer | 4 pieces | 5TC.000.1Y.19.00.0 | |
| 18 | Gasket | 1 piece | 5TC.000.55.21.G0.1 | |
| 19 | Hexagon head screw 3/16" x 1/2" | 10 pieces | 5TC.000.1C.21.H0.0 | |
| 25 | Ball bearing | 2 pieces | 5TC.000.2R.26.BR.1 | |
| 26 | Bearing ring | 4 pieces | 5TC.000.C9.26.R0.0 | |
| 31 | Worm | 1 piece | 5TM.000.17.28.S0.0 | |
| 32 | Bearing | 2 pieces | 5TM.000.T7.29.C0.0 | |



For this maintenance all steps described in the maintenance manual are necessary.

DISASSEMBLY

During maintenance, a visual inspection of all parts should always be carried out. The components that require special attention are described in the following steps.

The following tools are required for maintenance::

- Allen wrench with ball head 4 mm
- Hexagon socket wrench insert (8 mm)
- Round rod (brass or plastic) approx. Ø 4.0 mm
- Rubber mallet
- Allen wrench 2 mm (maintenance 2)
- Open-end wrench (flats 19) Nozzles (maintenance 2)
- Open-end wrench (flats 10), alternatively a flat nose pliers, width <4.5 mm (maintenance 2)
- Vise with protective jaws (maintenance 2)
- Face wrench (pin Ø 5.0 mm) (maintenance 2)

Info disassembly

All cylinder and hexagon head screws are coated with thread lock lacquer which makes it difficult to loosen the screws. Since we recommend to replace all parts included in the maintenance package, the dismantled maintenance parts (including Cylinder Head Screws and Hexagon Head Screws) can be put aside and disposed of later.

Cover Pos. 35



- Remove the cover 5TM.000.1Y.33.C0.0 pos. 35 with the four hexagonal screws wrench size 8 (SW 8). The cover may stick due to screw locking lacquer on the nozzle body. In this case, gently tap on the side of the cover with a rubber mallet to break the bond.

Cover Pos. 34



- Loosen the four cylinder head screws and remove the cover 5TC.000.1Y.31.00.0 (item 34).

Information on bearing (pos. 32) on the shaft (pos. 9)

To loosen the screw that fixes the bearing 5TM.000.T7.29.C0.0 (item 32) to the shaft (item 9), it is necessary to lock the impeller 5TC.000.1Y.05.00.0 (pos. 7) to prevent rotation.

For the size 5TM.410.XX.XX.XX.X, instead of the guide wheel 5TC.000.1Y.03.00.0 (pos. 3) a ring 5TC.000.1Y.03.R0.0 (pos. 3) is installed. To prevent rotation of the impeller, it is recommended to disassemble the connection piece according to your model.

| Pos. | Product name | Product number | Picture |
|------|--------------|--|---------|
| 3 | Guide wheel | 5TC.000.1Y.03.00.0 | |
| 3 | Ring | 5TC.000.1Y.03.R0.0 (nur bei 5TM.410.) | |

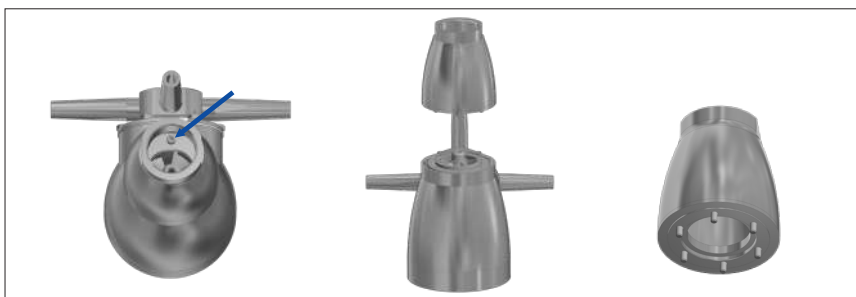
For all other sizes, the impeller can also be locked even with the assembled connection piece.

Note: When carrying out maintenance 2, the connection piece must be removed in any case.

Connection piece

For the 5TM there are different connection pieces (female thread, male thread, flange connection- see pos. 1 spare parts list).

All connection pieces can be loosened with a 4 mm allen wrench. Depending on the type of connection, a hexagon socket wrench with ball head may be required.



- Unscrew cylinder head screws (5TC.000.1C.02.FS.0 / if necessary 5TC.000.1C.02.FR.0) and remove the connection piece.



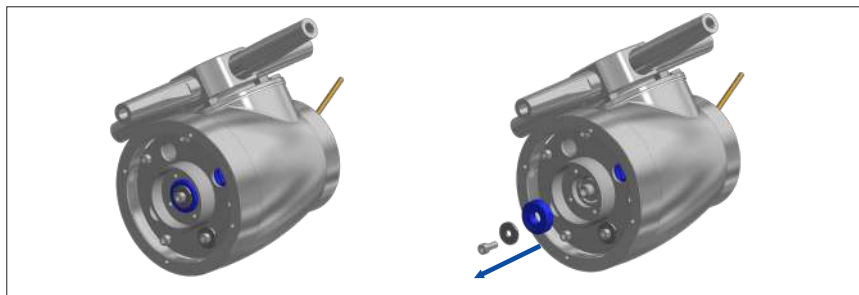
- Remove guide wheel. For the power size 5TA.410 the ring can be removed. However, this is not absolutely necessary.

Bearing pos. 32 – for shaft pos. 9



- Size 5TM.2XX and 5TM.40X:
- From the connection side push a rod made of brass or plastic (diameter approx. \varnothing 4.0 mm) through the guide wheel into the impeller, thereby the impeller is locked.

- Size 5TM.410.XX.XX.XX.X:
- With the connection piece removed, insert a rod made of brass or plastic (diameter approx. \varnothing 4.0 mm) into the impeller, thereby the impeller is locked.



- Now it is possible to loosen the cylinder head screw which is located in the shaft 5TC.000.1Y.11.00.0 (Pos.9) on the side of the bearing. Remove screw, washer and bearing.

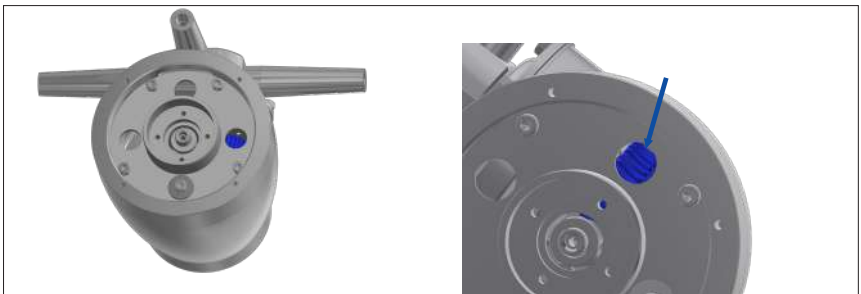
Note: Inspection of the worm gear during maintenance 1

During maintenance 1, the worm gear should be checked for wear. This can be done by a visual inspection. In case of premature wear, caused by harsh operating conditions, the shaft pos. 9 should also be inspected.

The following further steps are necessary for this:

- Impeller Page 68
- Gear frame Page 69 – 70
- Shaft pos. 9 Page 70 – 71

If the shaft pos. 9 also shows heavy wear, it is recommended to perform maintenance 2.



Impeller

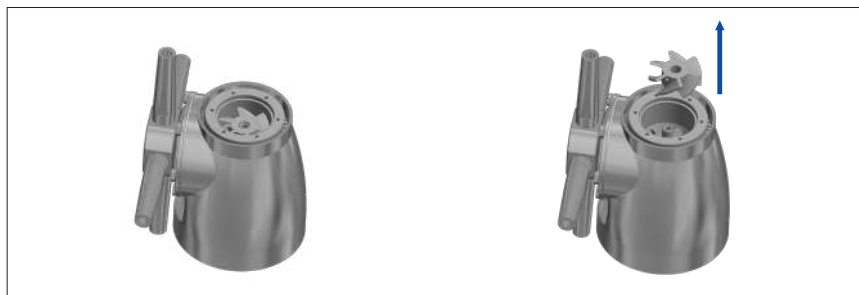
To loosen the screw that fixes the impeller 5TC.000.1Y.05.00.0 (item 7) it is necessary to lock the impeller with a round rod (e.g. made of brass or a plastic).



- Lock impeller



- Loosen hexagon socket screw and remove together with the washer.



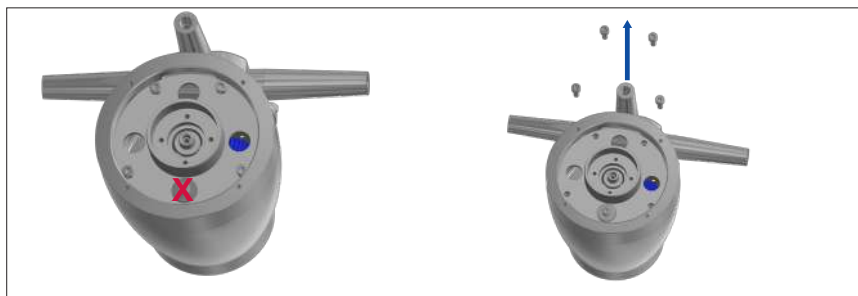
- Remove impeller



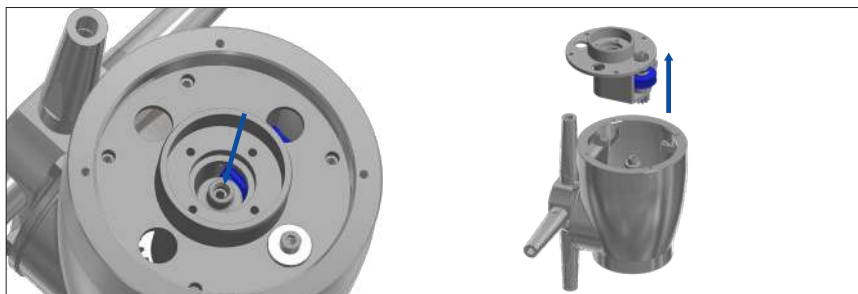
Hint:

It is possible that the impeller can not easily detached from the shaft. In this case the cylinder head screw (without washer) can be screwed in for approx. 3 rotations in the shaft. By striking on the head of the screw gently with a rubber mallet, the impeller can be detached from the shaft.

Gear frame

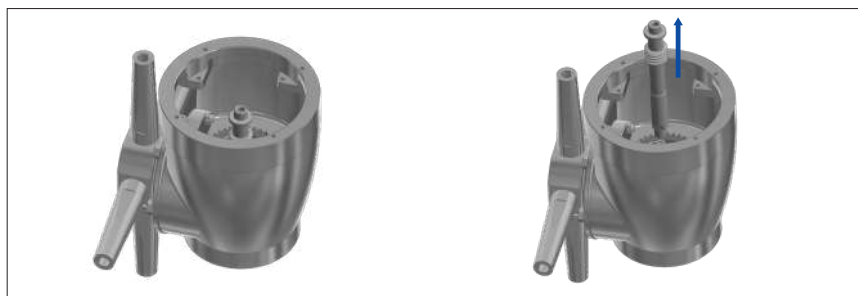


- Remove the four cylinder head screws of the gear unit frame.
- **Attention!** The screw with visible washer must not be removed.
- Then the gear frame can be removed.



■ **Hint:** Before removing the gear frame, press the shaft towards the connection side.

Shaft pos. 9



■ Remove the shaft upwards.

Note: Inspection of shaft pos. 9 in course of maintenance 1

During the course of maintenance 1, the shaft pos. 9 should be checked for wear. With premature wear, caused by correspondingly harsh operating conditions, it is recommended to run the maintenance 2.

The wear on the shaft pos. 9 can be visible at two places.

Worm:

The wear on the tooth flanks is visible at the worm. In this case, sharp edges on the tooth flanks can be clearly observed.



Bearing position to bushing pos. 8:

If the position on the shaft which serves as a counter surface to the bushing pos. 8 is worn, in most cases this indicates particles in the system. Solids deposited in the bushing cause premature wear of the shaft.

Note: If the shaft is worn at this position, the bushing pos. 8 should be replaced.

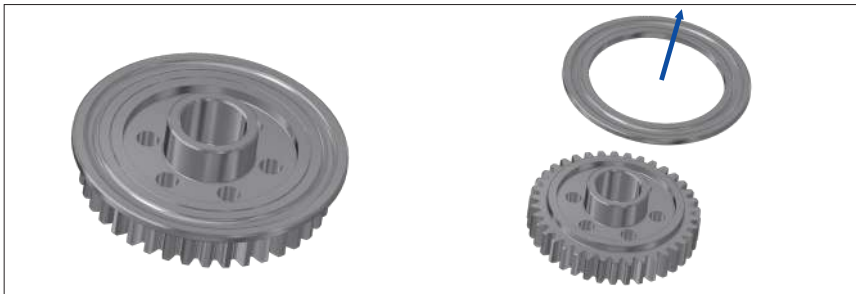


Spur gear

Attention: Make sure that the nozzle body pos. 27 is positioned on a straight and firm base.



- Loosen and remove the six cylinder screws of the 5TM.000.1Y.12.13.0 spur gear (pos. 10). For this purpose, the spur gear should be fixed with a suitable bolt (e.g. made of brass or plastic) and secured to prevent rotation. Securely lodge the bolt between the spur gear and nozzle body.
- The spur gear with bearing ring 5TC.000.C9.26.R0.0 (pos. 26) can now be moved upwards.

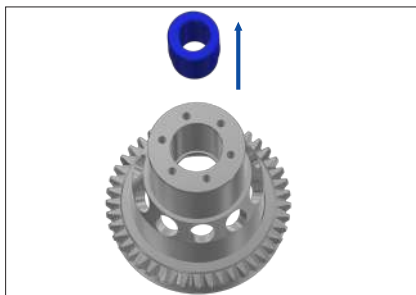


- Remove the bearing ring 5TC.000.C9.26.R0.0 (item 26) from the spur gear.



- Then lift the nozzle body. The shaft remains 5TC.000.1Y.04.00.0 (pos. 4) with the ball bearing on the base.
- **Attention! The shaft should not be lifted or moved, otherwise the ball bearing with the 58 balls will come loose.**

Bushing pos. 8



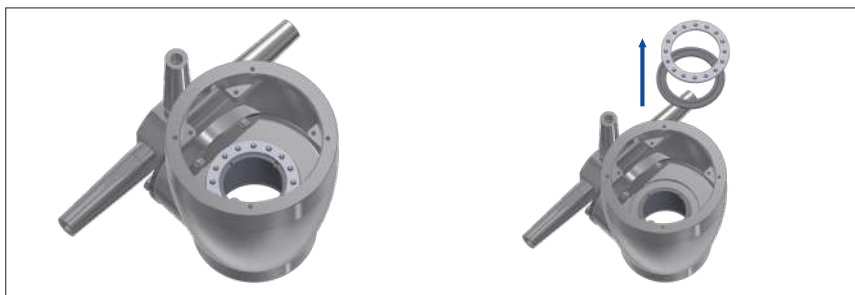
- Remove bushing 5TM.000.T7.09.00.0 (pos. 8) from the shaft.

Bearing on shaft – pos. 4



- Remove bearing consisting of 2x bearing ring 5TM.000.C9.26.R0.0 (pos. 6) and 58 x ball 5TM.000.R6.4V.R0.0 (pos. 5).

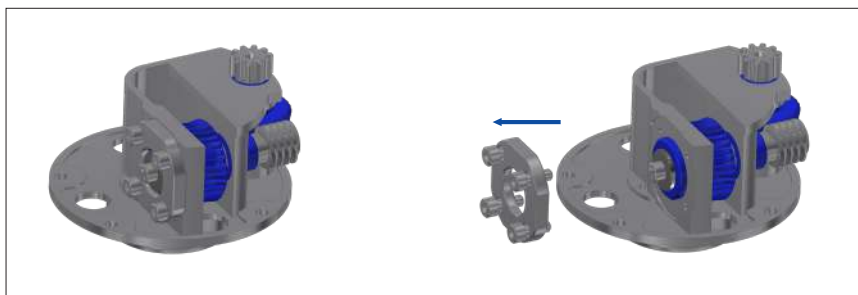
Bearing pos. 25 + 26 in nozzle body



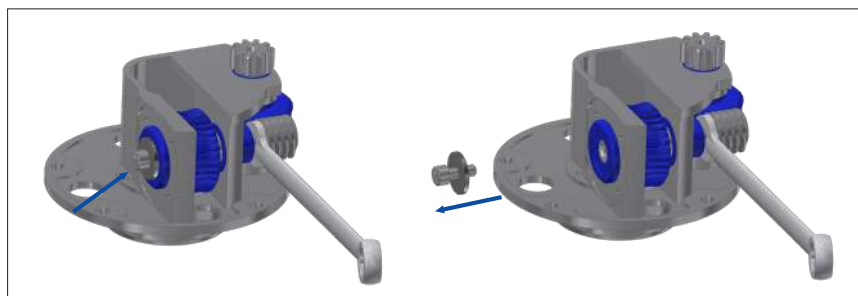
- Remove ball bearing 5TC.000.2R.26.BR.1 (pos. 25) and bearing ring 5TC.000.C9.26.R0.0 (pos. 26).

Gearbox assembly

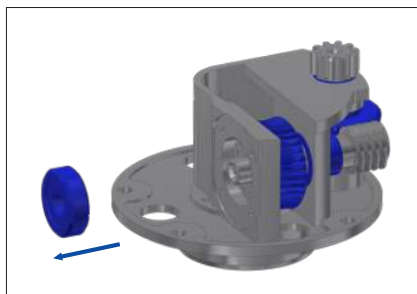
Worm



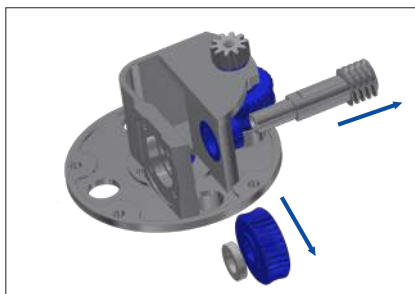
- Loosen the cover 5TC.000.1Y.31.00.0 (pos. 34) with the four cylinder screws and remove.



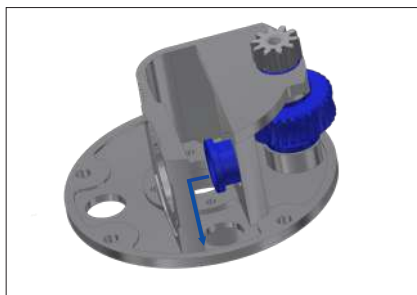
- Remove the cylinder screw including the washer of the worm (pos. 31). To do this, hold up with an open-end wrench (wrench size 10) at the flats of the worm. Alternatively, a suitable pair of pliers can be used.



- Remove bearing 5TM.000.T7.29.C0.0 (pos. 32)



- Remove worm 5TM.000.17.28.S0.0 (pos. 31) and at the same time pull out the worm gear and the spacer 5TM.000.T7.16.PS.0 (pos. 13).

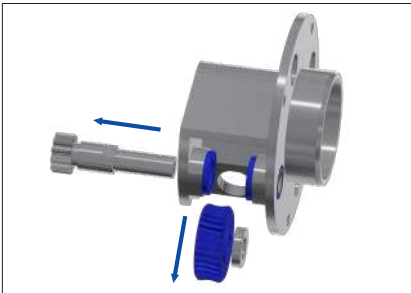


- Remove collar bushing 5TM.000.T7.15.C0.0 (pos. 12).

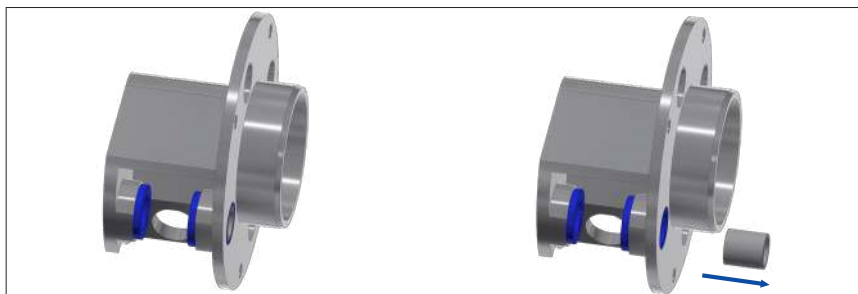
Pinion shaft



- To remove the pinion shaft 5TC.000.1Y.14.00.0 (pos. 11), place the gear wheel in soft protective jaws clamped in a vice. Then loosen and remove the socket head screw including washer.



- Pull out the pinion shaft 5TC.000.1Y.00.0 and at the same time remove the worm gear and the spacer 5TM.000.T7.16.PS.0 (pos. 13).



- Remove sleeve 5TC.000.1Y.17.00.0 (pos. 14)



- Remove collar bushings
5TM.000.T7.15.C0.0 (pos. 12).

Nozzle seat assembly



- To remove the nozzle seat 5TM.000.1Y.24.04.1 (pos. 23) from the nozzle body 5TM.000.1Y.27.00.0 (pos. 27), the 6 hexagon head screws must be removed.



- Remove grub screw 5TC.000.1Y.24.S0.0 (pos. 24) at the nozzle seat.



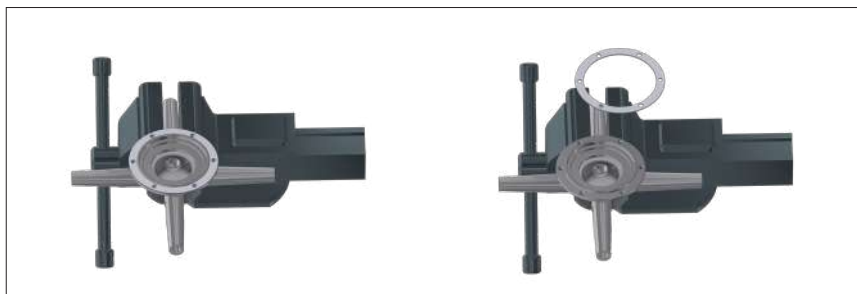
- Clamp one nozzle 5TM.0XX.1Y.23.YS.0 (pos. 21) in the vice and loosen the 5TC.0001Y.24.C0.0 connecting piece (pos. 22) with a face wrench (bolt diameter 5.0 mm).



- Remove bevel gear 5TC.000.1Y.22.00.0 (pos. 20).



- Remove upper bearing ring 5TC.000.C9.26.R0.0 (pos. 26), ball bearing 5TC.000.2R.26.BR.1 (pos. 25) and lower bearing ring 5TC.000.C9.26.R0.0 (pos. 26).



- Remove gasket 5TC.000.55.21.G0.1 (pos. 18).

Inspection

Inspect for foreign objects that may have entered the interior of the high impact tank cleaning machine. Foreign objects may adversely affect the life of the gearbox and turbine.

Worm gear

During maintenance 1, the worm gear should be visually inspected for wear. See note Inspection of worm gear on page 67.

Shank pos. 9

During maintenance 1, the shaft pos. 9 should be visually inspected for wear. See note on shaft inspection pos. 9 page 71.

Assembly

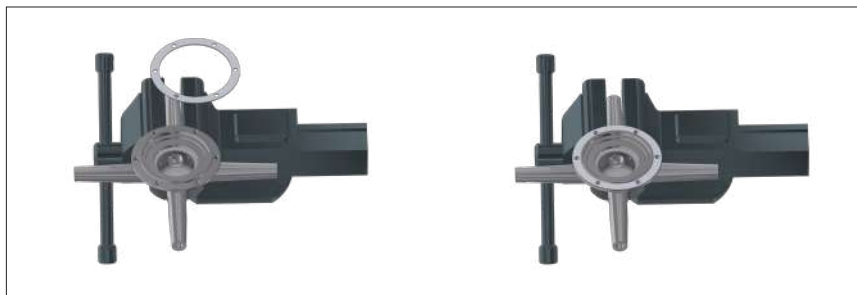
Information Assembly

The assembly of the 5TM is carried out in the reversed order of the disassembly. After disassembly of the high impact tank cleaning machine, all parts must be cleaned carefully. In the course of maintenance, we always recommend to replace all parts included in the maintenance package. In the following assembly instructions the parts are described with an item number. This item number you can find as well in the spare parts list and in the exploded view.

In addition to the steps describes below, please consider the following points during the assembly:

- All socket head screw and hexagon head screws must be secured with a threadlocker (e.g. Loctite® 243™).
- Tighten screws evenly and if necessary, crosswise.
- All socket head screws and hexagon head screws must be tightened to a torque of approx. 3 – 4 Nm (2.2 – 3 ft · lb).
- Observe correct position of the parts.

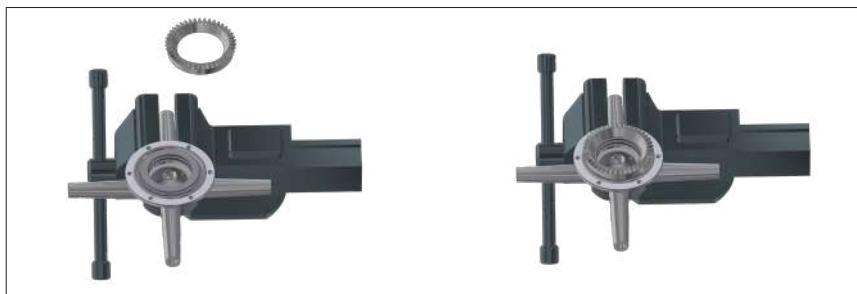
Nozzle seat assembly



- For the installation of the assembly of the nozzle seat it is helpful, as shown in the picture above to clamp one nozzle 5TM.009.1Y.23.YS.0 (pos. 21) in the vice.
- Insert the seal in the nozzle seat 5TC.000.55.21.G0.1 (pos. 18).



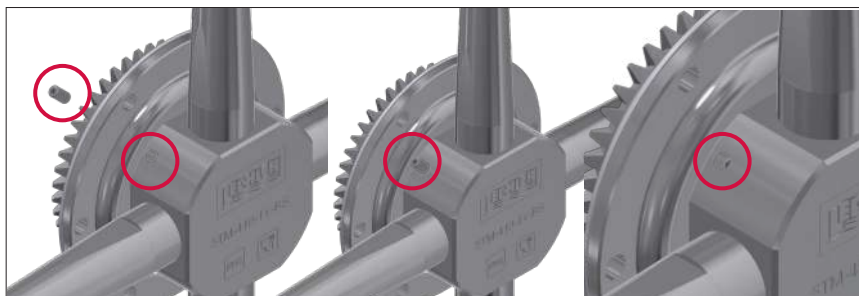
- Insert lower bearing ring 5TC.000.C9.26.R0.0 (pos. 26), ball bearing 5TC.000.2R.26.BR.1 (pos. 25) and upper bearing ring 5TC.000.C9.26.R0.0 (pos. 26).



- Insert bevel gear 5TC.000.1Y.22.00.0 (pos. 20).



- Place the connecting piece on the nozzle seat by hand and screw it in. Use a face wrench (pin diameter 5.0 mm) to tighten the 5TC.0001Y.24.C0.0 connecting piece (pos. 22).



- **Attention:** Important step, do not forget!
- The grub screw is used to secure the threaded connection between nozzle seat and the connecting piece against loosening. Screw the grub screw 5TC.000.1Y.24.S0.0 (pos. 24) into the nozzle seat.



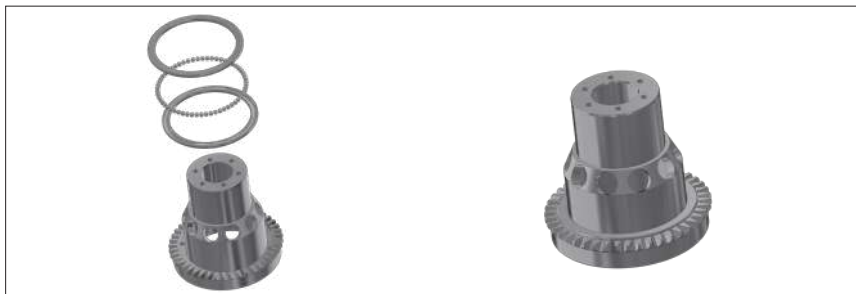
- Push the nozzle seat assembly onto the nozzle body and screw it evenly and crosswise to the body by using the 6 hexagon head screws. (approx. 3 – 4 Nm).

Bearing Pos. 25 + 26 in the nozzle body



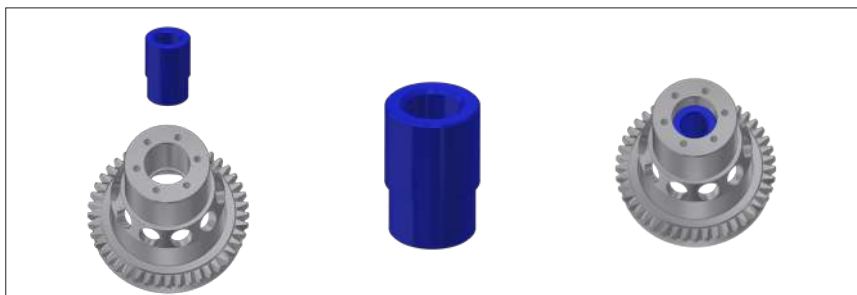
- Insert bearing ring 5TC.000.C9.26.R0.0 (pos. 26) and ball bearing 5TC.000.2R.26.BR.1 (pos. 25).

Bearing on shaft Pos. 4



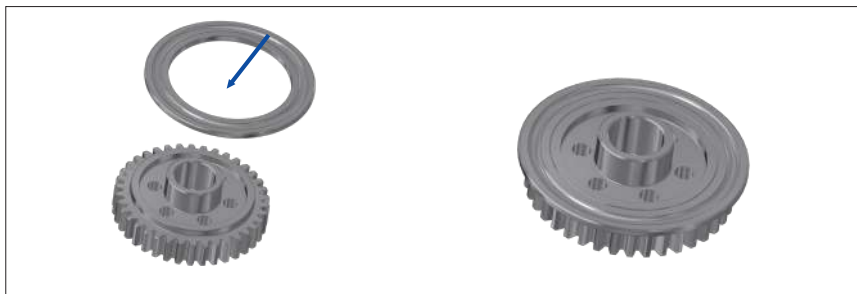
- Insert bearing consisting of 2 x bearing ring 5TM.000.C9.26.R0.0 (pos. 6) and 58 x ball 5TM.000.R6.4V.R0.0 (pos. 5)
- **Attention: Make sure that the shaft (pos. 4) rests on a straight and firm surface. The shaft should not be lifted or moved after the bearing has been mounted, otherwise the ball bearing with the 58 balls may come loose.**

Bushing Pos. 8



- Insert the bushing 5TM.000.T7.09.00.0 (pos. 8) with the small diameter facing down into the shaft 5TC.000.1Y.04.00.0 (pos. 4).

Spur gear



- The bearing ring 5TC.000.C9.26.R0.0 (pos. 26) can be pushed onto the spur gear by hand. Make sure that the bearing ring fits evenly.



- Place nozzle body back on the shaft 5TC.000.1Y.04.00.0 (pos. 4).



- The spur gear with the pressed-on bearing ring can now be inserted. Make sure that the side of the spur gear is facing upwards and the bearing ring is facing downwards towards the bearing.





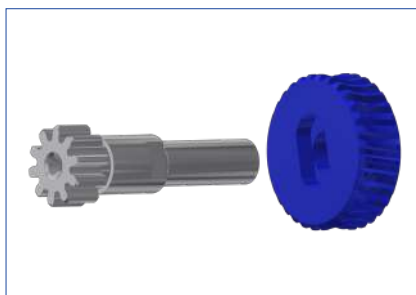
- Screw in the six hexagon socket screws of the spur gear and tighten them evenly and crosswise (approx. 3 – 4 Nm). For this purpose, the spur gear should be secured to prevent rotation with a suitable bolt (e.g. made of brass or plastic). Securely lodge the bolt between the spur gear and nozzle body.

Gearbox assembly

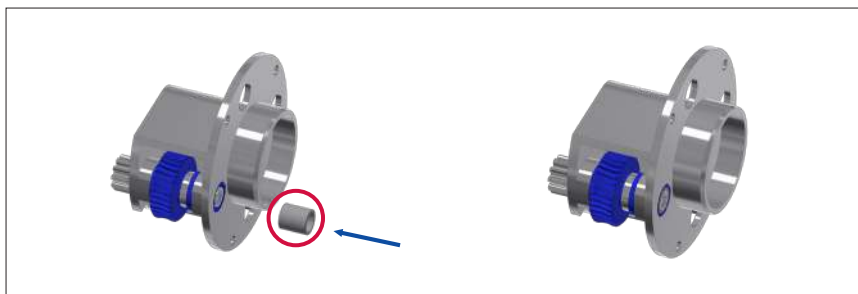
Pinion shaft



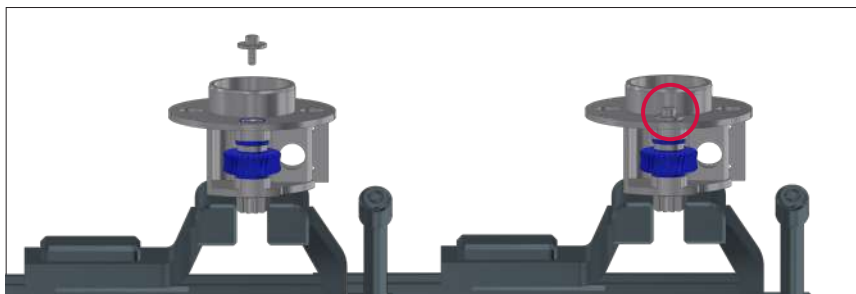
- Insert collar bushings 5TM.000.T7.15.C0.0 (pos. 12).



- Position the worm gear and the spacer 5TM.000.T7.16.PS.0 (pos. 13). Next, insert the pinion shaft 5TC.000.1Y.14.00.0 (pos. 11) with a rotary motion and hold on the worm gear. This ensures that the 2 flats of the pinion shaft snaps into the worm gear.

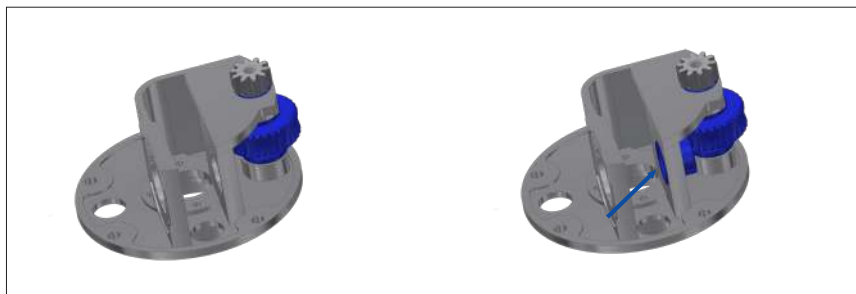


- Insert sleeve 5TC.000.1Y.17.00.0 (pos. 14).

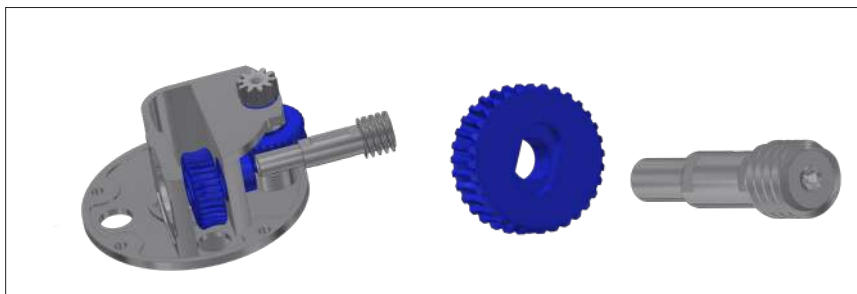


- Clamp the pinion shaft gear in a vice with soft protective jaws and tighten the cylinder head screw 5TC.000.1C.02.FR.0 (pos. 15) incl. washer 5TC.000.1Y.19.00.0 (pos. 16) (approx. 3 – 4 Nm).

Worm



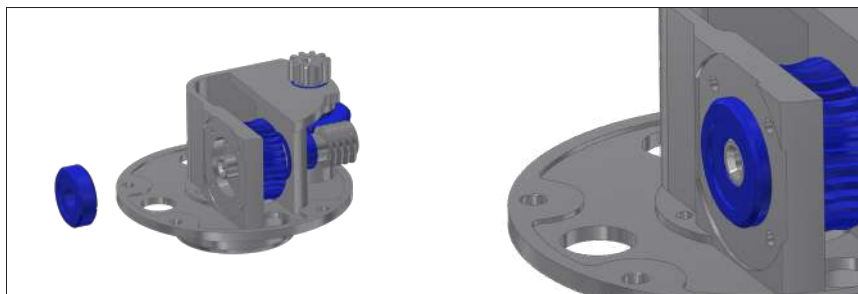
- Insert collar bushing 5TM.000.T7.15.CO.0 (pos. 12).



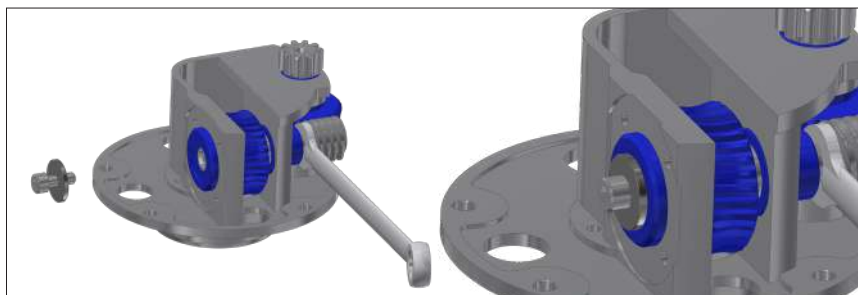
- Position worm gear from Set 5TM.000.T7.16.PS.0 (pos. 13) and then insert worm 5TM.000.17.28.S0.0 (pos. 31) with a rotary motion and hold on the worm gear. This ensures that the 2-flats of the worm snaps into the worm gear.



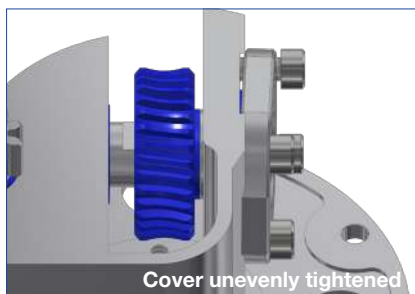
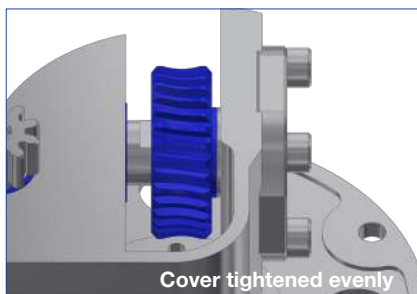
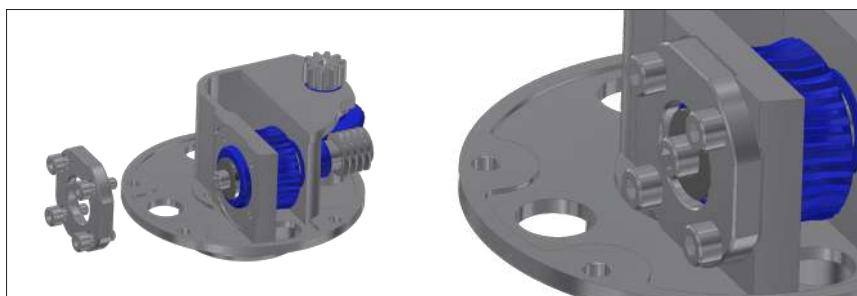
- Insert spacer from set 5TM.000.T7.16.PS.0 (pos. 13).



- Insert bearing 5TM.000.T7.29.C0.0 (pos. 32). Make sure that the side with shoulder at the bearing points towards the screw / washer.



- Screw the cylinder head screw 5TC.000.1C.02.FR.0 (pos. 15) including washer 5TC.000.1Y.19.00.0 (pos. 16) into the worm. To do this, hold up with an open-end wrench (wrench size 10) at the flats of the worm. Alternatively, suitable pliers can be used. (approx. 3 – 4 Nm)



- Tighten the cover 5TC.000.1Y.31.00.0 (pos. 34) (side with shoulder facing the bearing) with the four socket head screws 5TC.000.1C.02.FR.0 (pos. 15). Make sure that the screws are tightened evenly stepwise and crosswise up to a torque of 3 – 4 Nm. Otherwise the cover will tilt and the bearing will be loaded on one side during operation. This can cause the shaft to jam. It will also lead to premature wear.

Shaft Pos. 9



- Insert shaft 5TC.000.1Y.11.00.0 (Pos. 9) into bushing 5TM.000.T7.09.00.0 (pos. 8). Thereby the worm on the shaft should face upwards.

Impeller



- Mount the impeller 5TC.000.1Y.05.00.0 (pos. 7) with the pocket facing to the shaft (pos. 9). Position the pocket precisely on the 2 flats of the shaft.



- In order to fix the impeller with the cylinder screw, it is necessary to lock the impeller with a round rod (e.g. made of brass or plastic), as already done during disassembly.
- Next, the cylinder screw 5TC.000.1C.02.FR.0 (pos. 15) with washer 5TC.000.1Y.19.00.0 (pos.16) can be tightened (approx. 3 – 4 Nm).

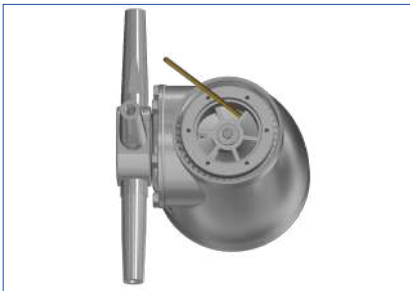
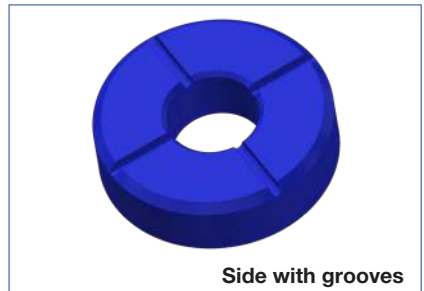
Gear frame



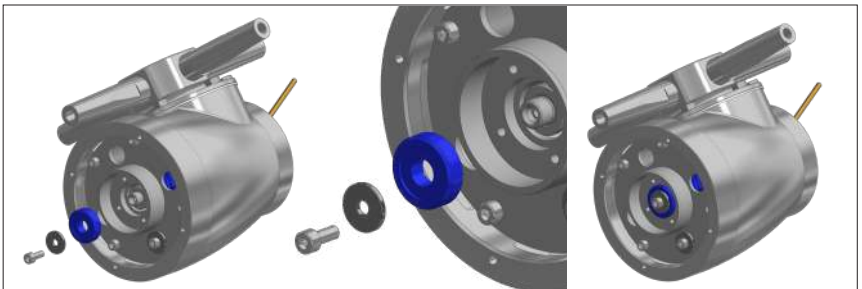
- Put the 5TM on the connection side. This causes that the shaft (pos. 9) will slide a little bit downwards and the pre-assembled gearbox can be easily inserted.
- Tighten the gear frame by using the 4 cylinder head screws evenly and crosswise 5TC.000.1C.02.FR.0 (pos. 15) (approx. 3 – 4 Nm).

Bearing pos. 32 for shaft pos. 9

- When assembling the bearing 5TM.000.T7.29.C0.0 (pos. 32), make sure that the shoulder on the bearing points in the direction of the screw / washer.



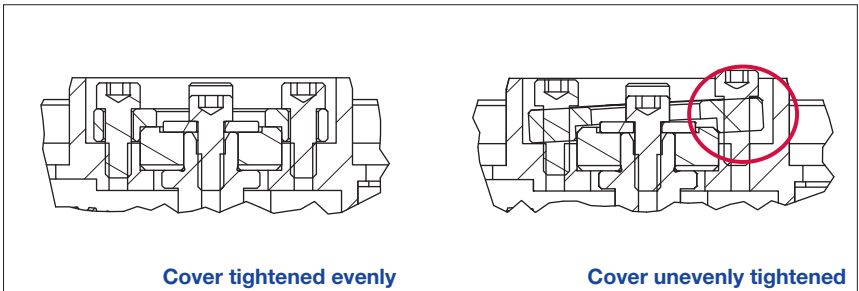
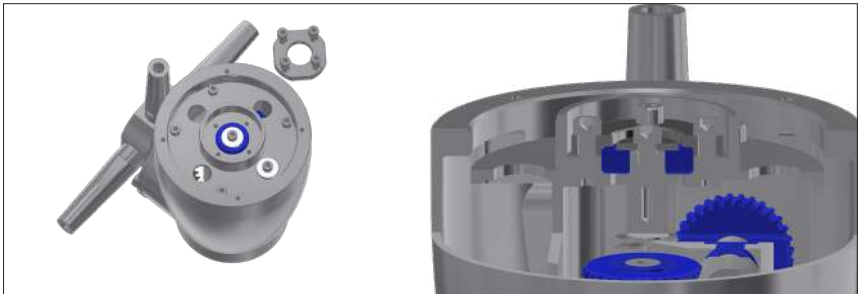
- To fix the bearing 5TM.000.T7.29.C0.0 (pos. 32), the impeller pos. 7 must be blocked. Therefore the impeller (pos. 7) must be secured to prevent rotation. Therefore the impeller (pos. 7) must be secured from the connection side with a round rod made of brass or plastic (diameter approx. \varnothing 4.0 mm) in the same way as done in disassembly.



- Now the bearing can be inserted with the shoulder side facing towards the screw and fixed (approx. 3 – 4 Nm) by the cylinder head screw 5TC.000.1C.02.FR.0 (pos. 15) incl. washer 5TC.000.1Y.19.00.0 (pos.16).

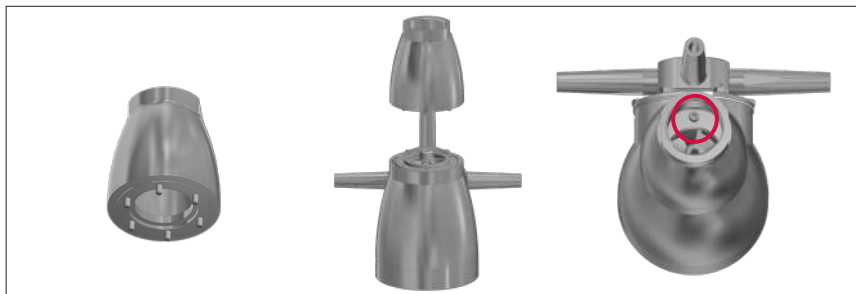
Cover Pos. 34

- Tighten the cover 5TC.000.1Y.31.00.0 (pos. 34) (side without shoulder faces upwards) with the four cylinder screws 5TC.000.1C.02.FR.0 (pos. 15). The following must be observed ensure that the screws are tightened evenly stepwise and crosswise up to a torque of 3 – 4 Nm. Otherwise the cover will tilt and the bearing will be loaded on one side during operation. This can cause the shaft to jam. It will also lead to premature wear.



Connection piece

- Place the connection piece (pos. 1) and tighten it evenly and crosswise (approx. 3 – 4 Nm) by using the 6 cylinder head screws 5TC.000.1C.02.FS.0 (if necessary 5TC.000.1C.02.FR.0).



Cover Pos. 35



- Place the cover 5TM.000.1Y.33.C0.0 (pos. 35) on the 5TM and tighten it evenly and crosswise (approx. 3 – 4 Nm) with the four hexagon head screws wrench size 8.

Checklist before commissioning after maintenance

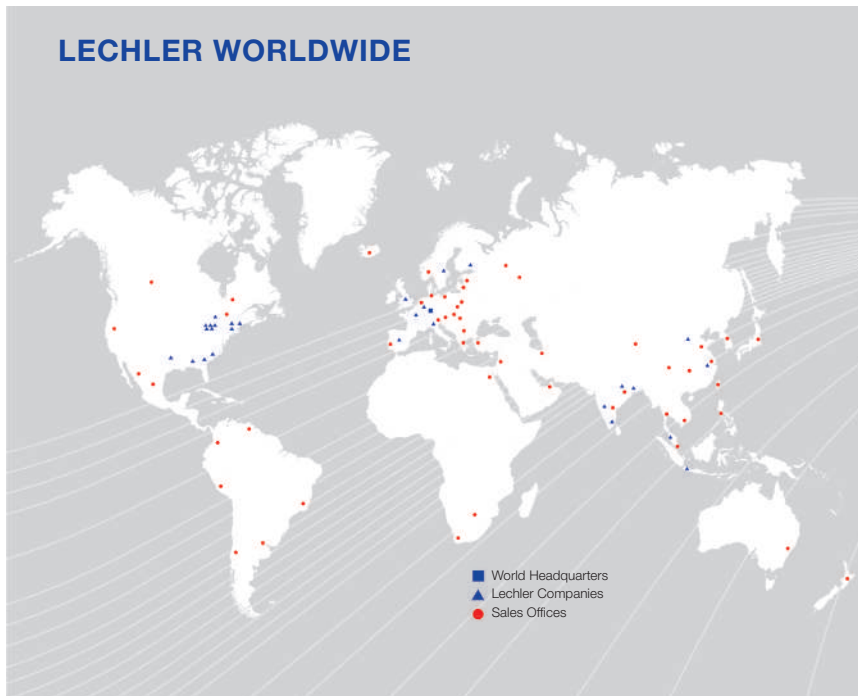
After the maintenance has been carried out, the following points should be checked before recommissioning:

- All cylinder and hexagon head screws are coated with thread lock lacquer (considering for drying time).
- Screws on the covers, pos. 34, are tightened evenly and crosswise.
- The specified torque values were observed.
- Grub screw 5TC.000.1Y.24.S0.0 (pos. 24) is screwed in.
- Functional test of the high impact tank cleaning machine: Rotation from 1.0 bar.

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