

# Dialog **io**® Dialog<sup>+</sup>®

Technical Information (TI)

Modification of Gear Pumps, Rev. 1.00.00 EN



Gear Pump

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1 General Information

This technical information describes the modification of the gear pumps FPE / FPA and EP for Dialog iQ and Dialog+.

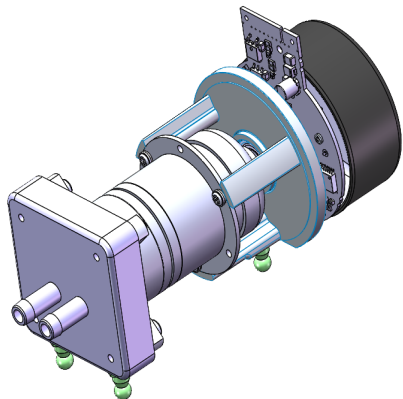
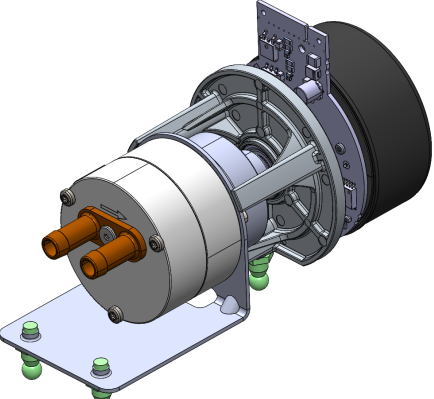
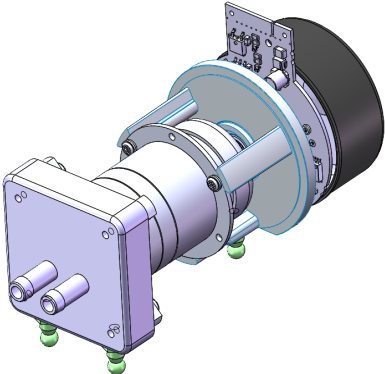
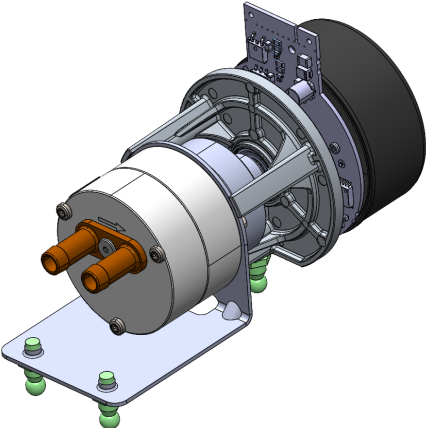
If a former gear pump FPA or FPE needs to be replaced, both gear pumps have to be changed, so that both pumps are from the same supplier.

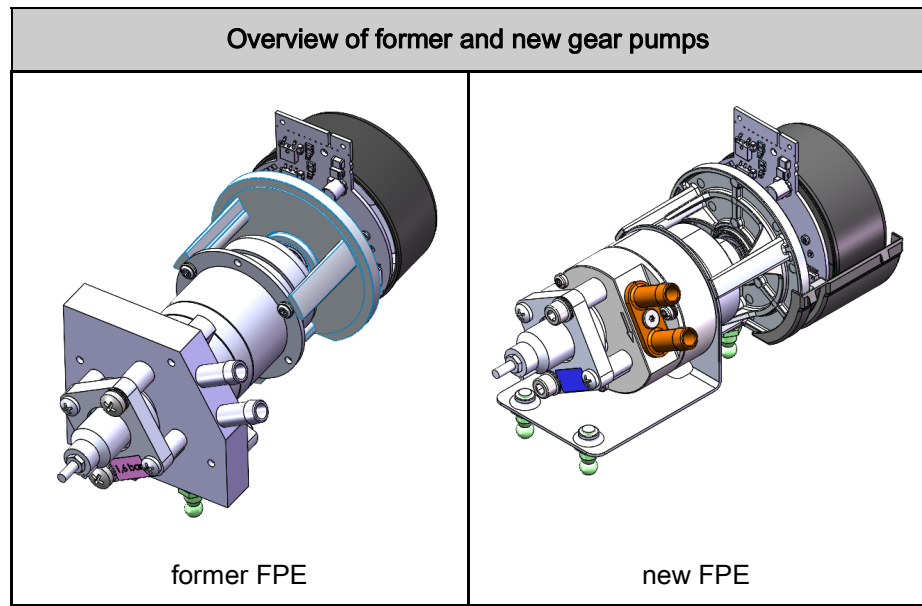
2 Dialog iQ

The disassembly instructions of the gear pumps are included in the Dialog iQ service manual chapter 5.6.8.

If the new version of gear pumps have already been installed in the dialysis machine, no retrofit kit is required.

An overview of new and former versions of the gear pumps can be found in the following table:

Overview of former and new gear pumps	
	
former EP	new EP
	
former FPA	new FPA



## 2.1 Adjusting Distance between Motor and Magnet

1. Screw in the screw of the magnet slightly.



Fig. 2-1 Gear pump magnet with screw to be screwed in



Fig. 2-2 Gear pump magnet

2. Remove magnet (only if a former pump is installed) and place new magnet on distance gauge.
3. Place motor on magnet. The flattened side of the motor shaft must be aligned with the screw.

- 1 Distance gauge
- 2 Magnet
- 3 Motor

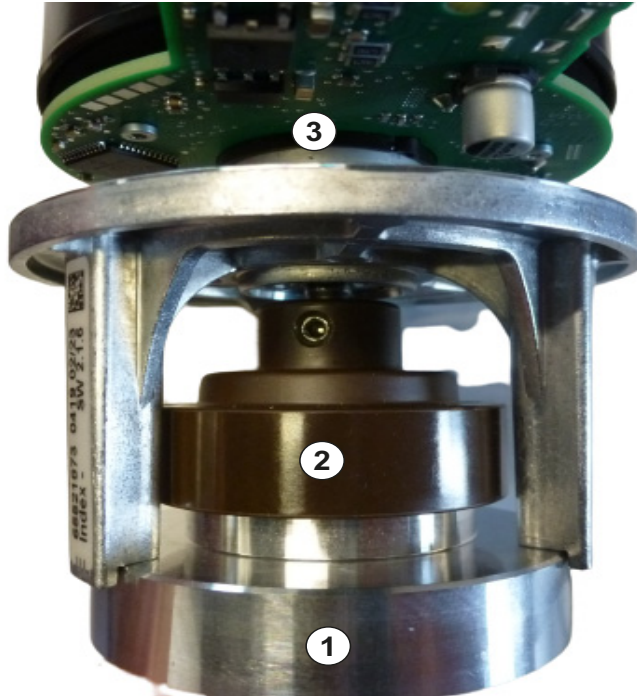


Fig. 2-3 Motor - Magnet - Distance gauge



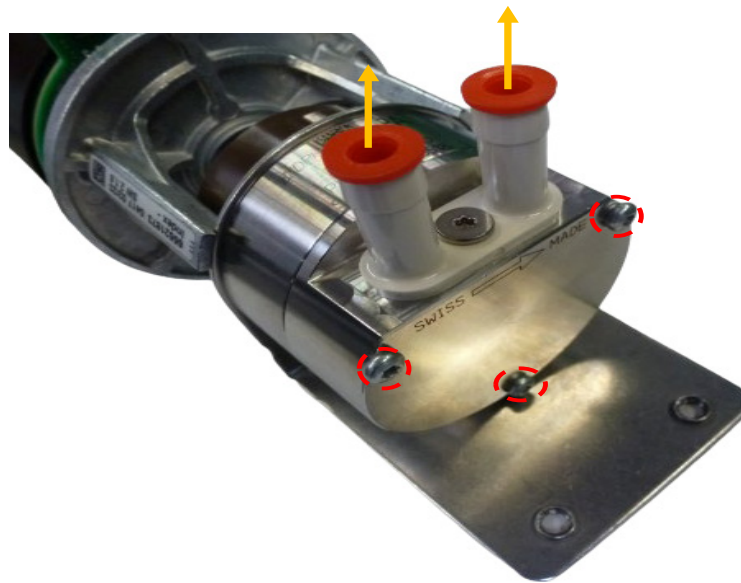
If the motor does not fit into the magnet, check the screw of the magnet.



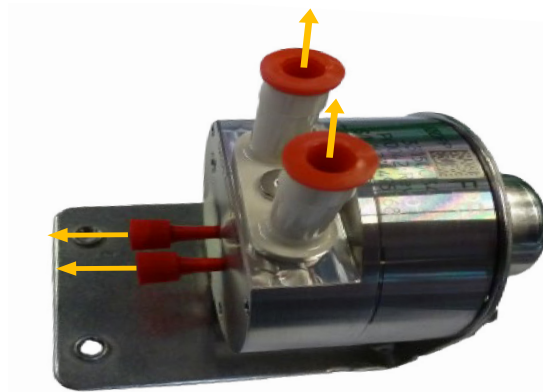
When you turn the motor and the magnet turns, too, the position between motor and magnet is correct.

4. Tighten magnet screw.
5. Join gear pump and motor (new 3 screws, see Fig. 2-4).
6. Remove red plugs and in case of a gear pump FPE, also remove the red cones.





**Fig. 2-4** Assembly group gear pump FPA/EP



**Fig. 2-5** Gear pump FPE



Washers are required for the marked FPE Dialog iQ screw connection (see Fig. 2-6).

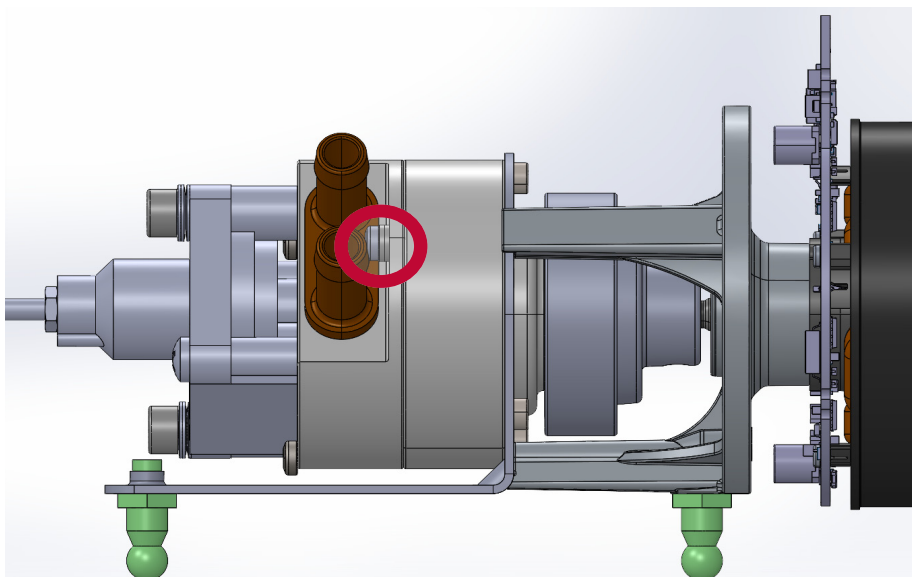
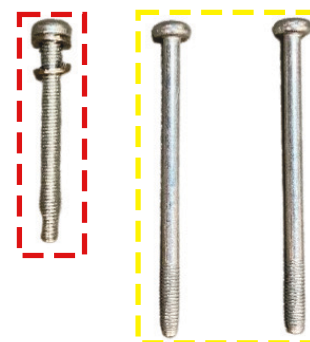
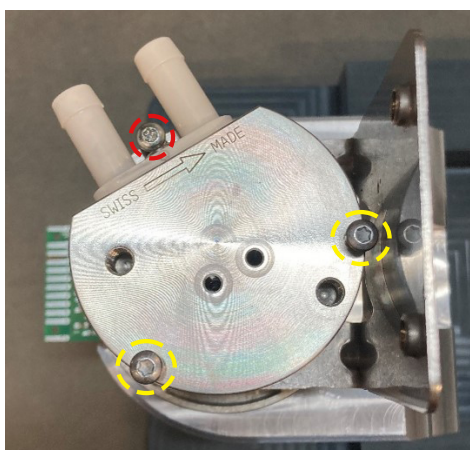


Fig. 2-6 Assembly group gear pump FPE



Tbl. 2-1 Assembly group gear pump FPE

## 2.2 FPE

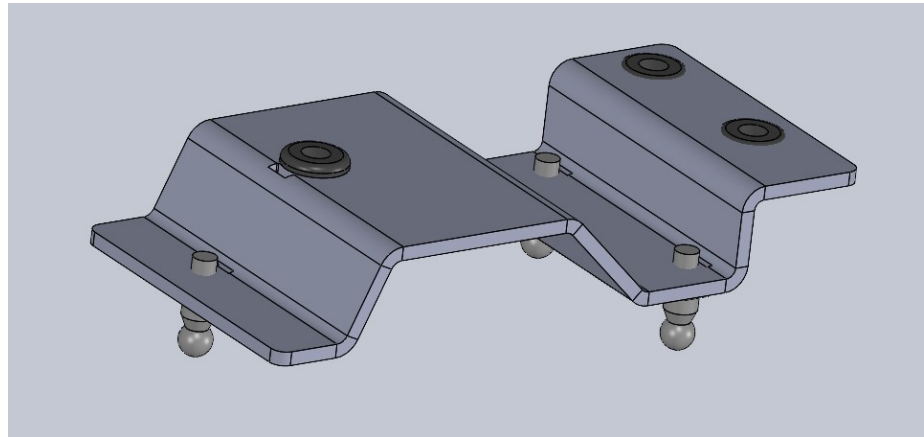
After disassembling the flow pump FPE and assembling gear pump with motor, start the following activities.

1. Assemble the RVFPE on the complete FPE group (see service manual chapter 5.6.8.1).



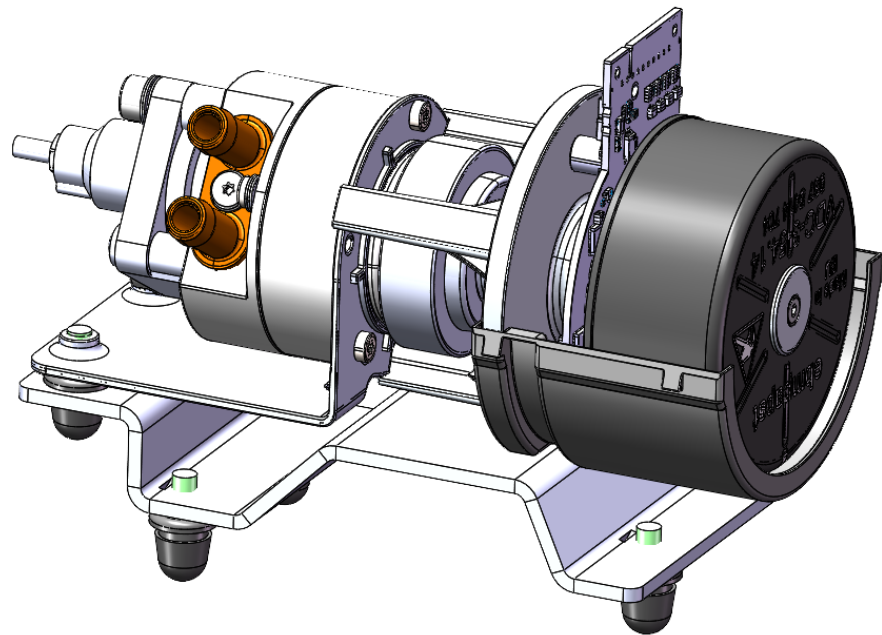
Pay attention to use the screws and washers from the new gear pump FPE.

2. Assemble snaplock couplings into adapter (see Fig. 2-7).
3. Insert adapter into the upper position from the flow pumps rack.



**Fig. 2-7** Adapter (part of the retrofit kit FPE)

4. Assemble lower motor cover.
5. Push the new complete FPE group on the adapter.



**Fig. 2-8** Gear pump FPE on adapter

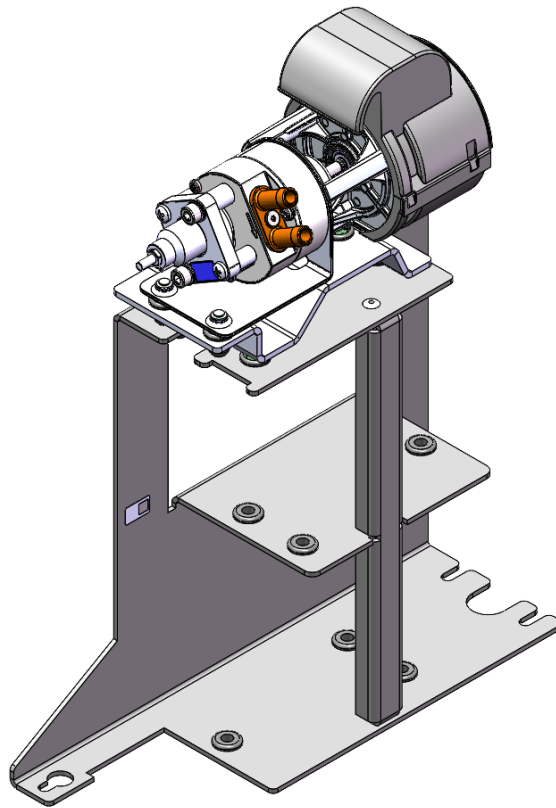


Fig. 2-9 Gear pump FPE mounted



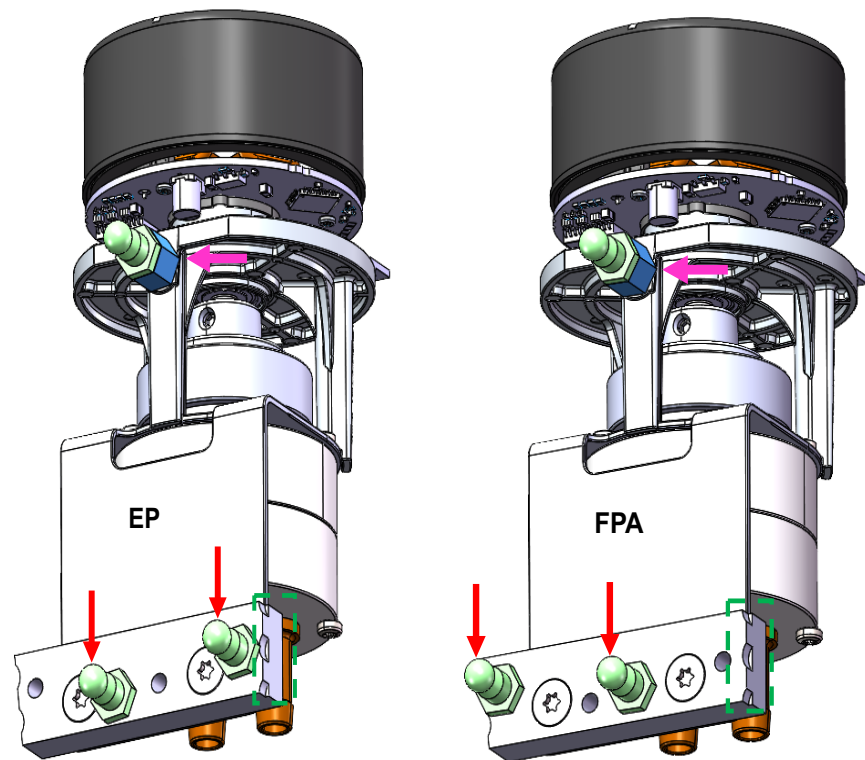
The flow direction is marked on the gear pump.

6. Assemble upper motor cover.
7. Connect the tubings and motor power supply.
8. Close bottom front panel and rear door.
9. Connect machine to mains.
10. Perform all tests and measures according to repair matrix (see service manual chapter 5.6.8.4).

### 2.3 FPA/EP

After disassembling the flow pump FPA/EP and assembling gear pump with motor, start the following activities.

1. Assemble adapter on flow pump FPA/EP.
  - ↖ Make sure to mount the adapter in the correct position.
  - ↖ Red arrows mark the position of the snaplock couplings.
  - ↖ Pink arrow marks the position of the distance bolt and snaplock coupling.



Tbl. 2-2 Gear pumps with adapter (part of retrofit kit FPA/EP)

- 1 Distance bolt
- 2 Snaplock coupling

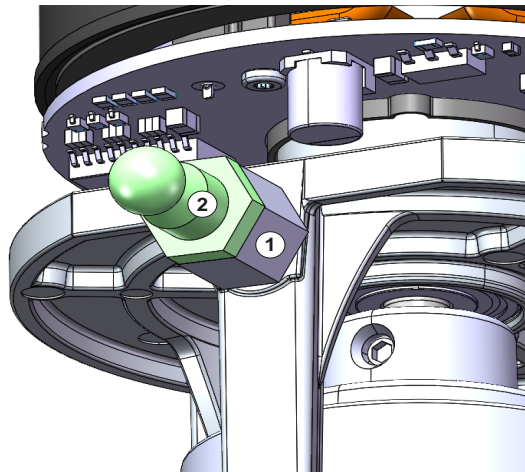


Fig. 2-10 Extract from gear pumps FPA/EP

- 2. Push the new complete FPA/EP into clamp holder.

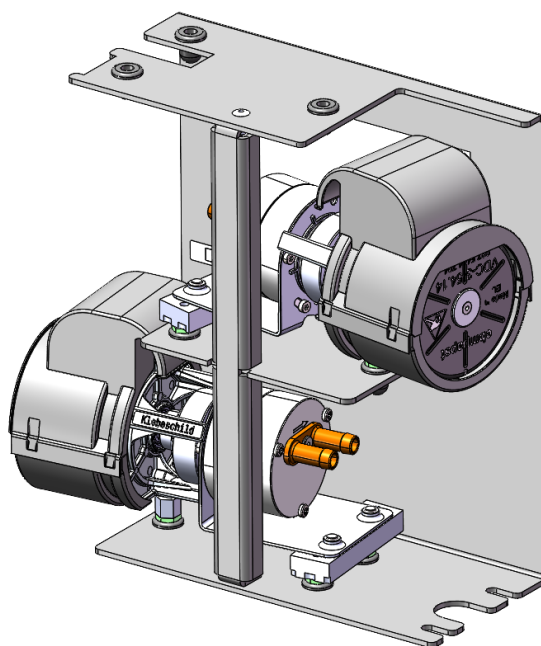


Fig. 2-11 Gear pump EP and FPA mounted

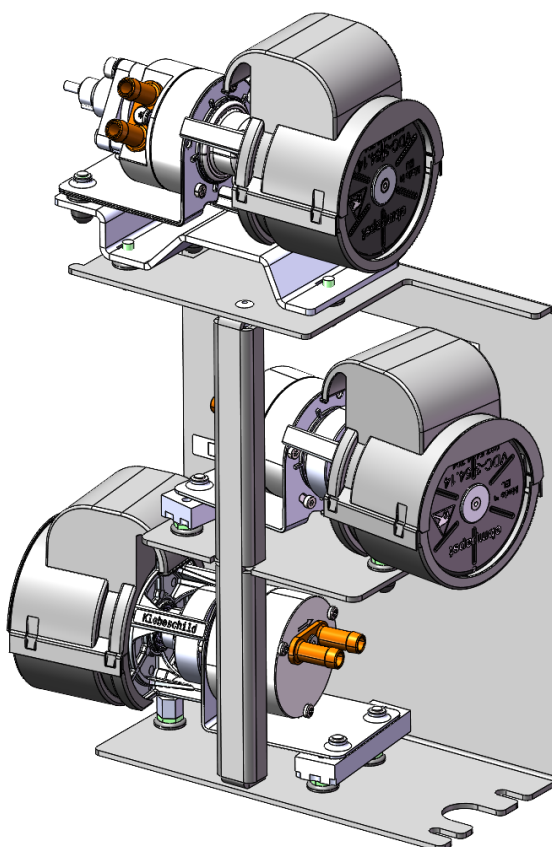


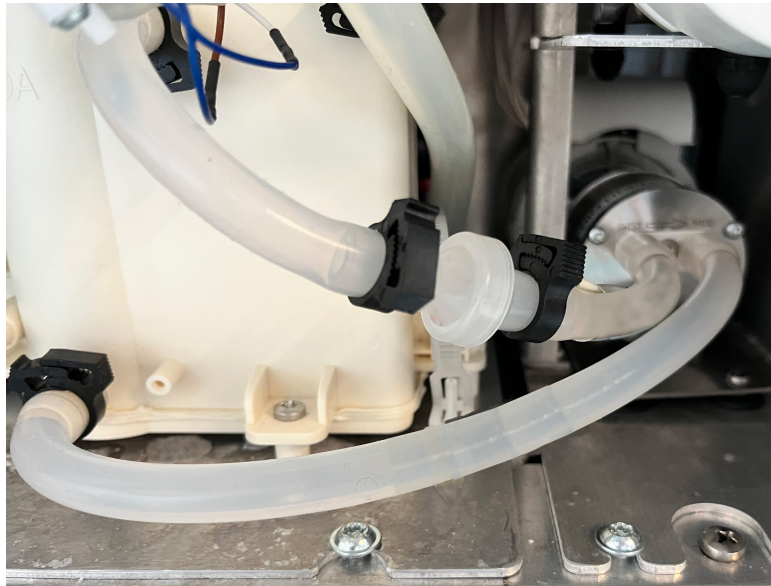
Fig. 2-12 All gear pumps mounted



The flow direction is marked on the gear pump.



3. Connect tubings and motor power supply.
4. Tubings from gear pump EP no longer need to be fitted with cable tie.



**Fig. 2-13** Gear pump EP mounted

5. Assemble motor cover.
6. Close bottom front panel and rear door.
7. Connect machine to mains.
8. Perform all tests and measures according to repair matrix (see service manual chapter 5.6.8.4).

### 3 Dialog+

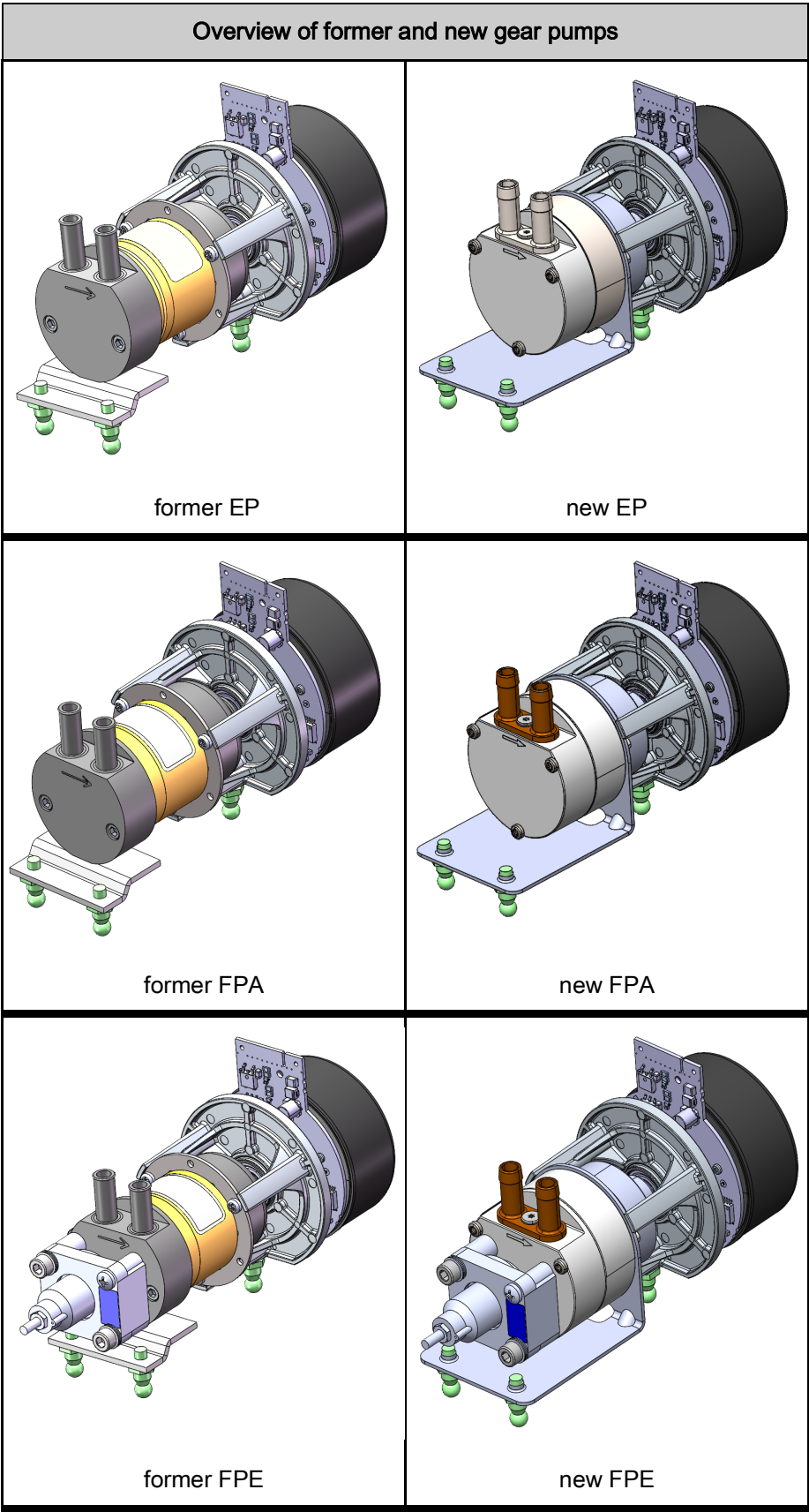


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In case of occurring noises after replacing the EP, an update to software  $\geq$  SW 9.1E is mandatory.

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An overview of new and former versions of the gear pumps can be found in the following table:



### 3.1 FPE/FPA

1. Disconnect machine from mains.
2. Open rear door.
3. Pull out DF sub-rack.
4. Disassemble motor cover.
5. Disconnect the tubings and motor power supply.
6. Pull out complete FPE or FPA group off clamp holder.
7. Disassembly complete FPE or FPA group (3 screws).
8. Remove magnet (only if a former pump is installed).
9. Screw in the screw of the magnet slightly.



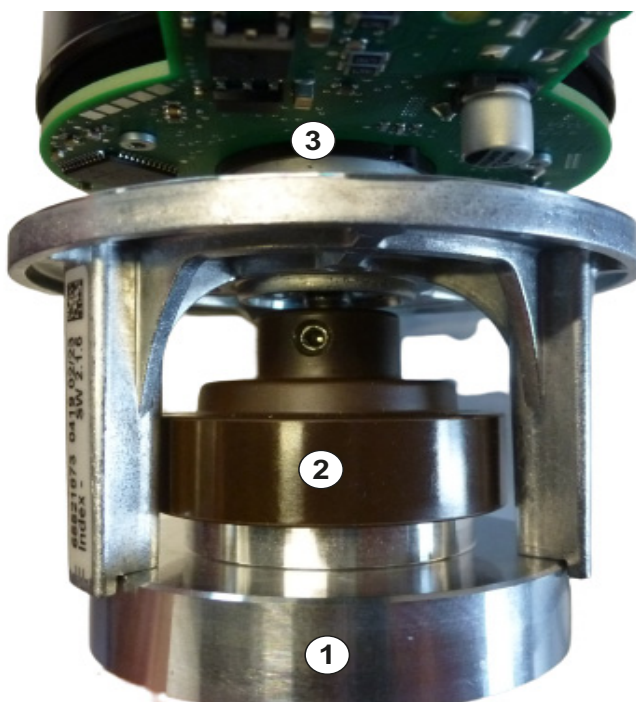
**Fig. 3-14** Gear pump magnet with screw to be screwed in



**Fig. 3-15** Gear pump magnet

10. Place magnet on distance gauge.
11. Place motor on magnet. The flattened side of the motor shaft must be aligned with the screw.

- 1 Distance gauge
- 2 Magnet
- 3 Motor



**Fig. 3-16** Motor - Magnet - Distance gauge



If the motor does not fit into the magnet, check the screw of the magnet.

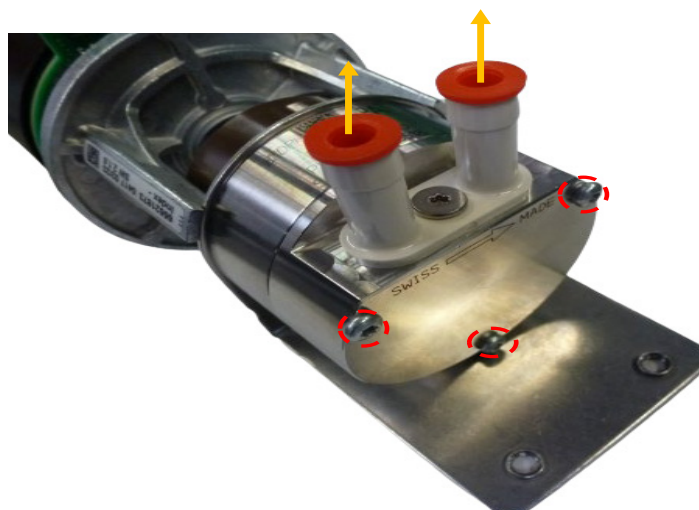


When you turn the motor and the magnet turns, too, the position between motor and magnet is correct.

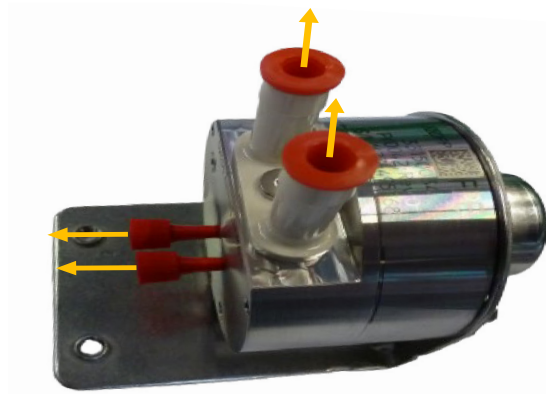
12. Tighten magnet screw.

13. Join gear pump and motor (new 3 screws, see Fig. 3-17).

14. Remove red plugs and in case of a gear pump FPE, also remove the red cones.



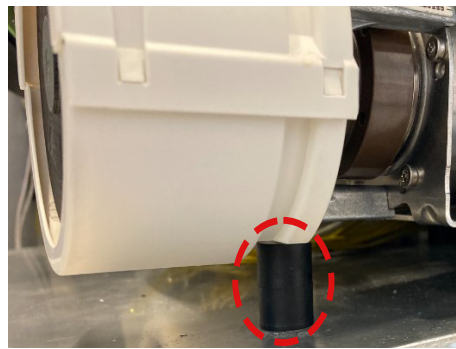
**Fig. 3-17** Assembly group gear pump



**Fig. 3-18** Gear pump FPE



For all Dialog<sup>+</sup> machines SN < 200,000 use the old rubber buffer under the pumps.



**Fig. 3-19** Dialog<sup>+</sup> SN < 200,000 with rubber buffer



Only FPE with RVFPE

- Assemble throttle including o-rings with 3 new washers and 2 screws.
- Pay attention to correct assembly of washers.

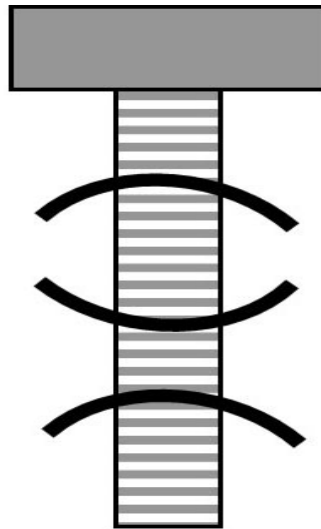


Fig. 3-20 Assembly of washers

15. Connect the tubings and motor power supply.
16. Assemble motor cover.

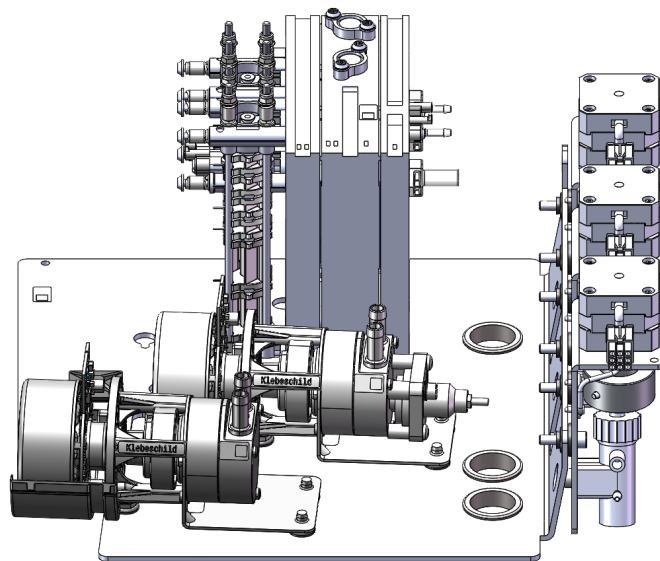


Fig. 3-21 Dialog+ gear pump FPE/FPA mounted

17. Push complete FPE or FPA group back into clamp holder.
18. Remove DF sub-rack and close rear door.
19. Connect machine to mains.
20. Perform all tests and measures according to repair matrix.



## 3.2 EP



For all Dialog+ machines SN < 200,000 a different pump variant (art. no. 3461097) is required due to the connections.

1. Disconnect machine from mains.
2. Disassemble bottom front panel with 4 screws.
3. Open rear door.
4. Disassemble motor cover.
5. Disconnect tubings and motor power supply.
6. Pull out complete EP group off clamp holder.
7. Disassembly complete EP group (3 screws).
8. Remove magnet (only if a former pump is installed).
9. Screw in the screw of the magnet slightly.



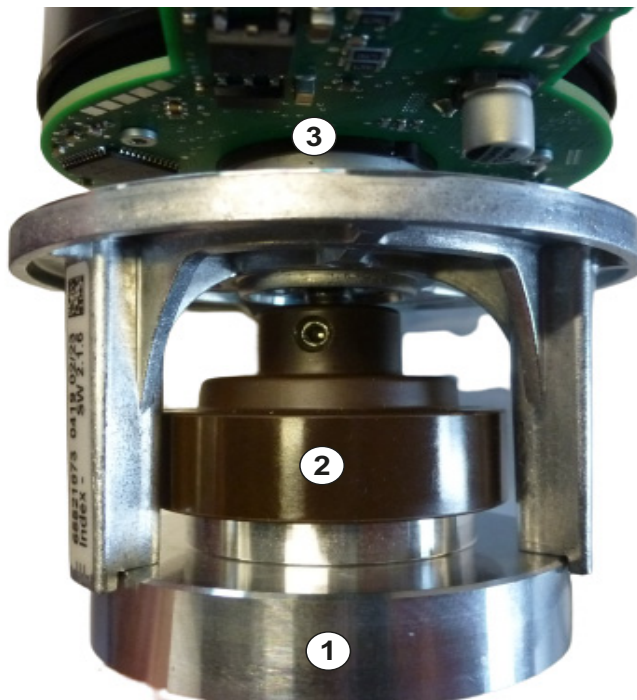
Fig. 3-22 Gear pump magnet with screw to be screwed in



Fig. 3-23 Gear pump magnet

10. Place magnet on distance gauge.
11. Place motor on magnet. The flattened side of the motor shaft must be aligned with the screw.

- 1 Distance gauge
- 2 Magnet
- 3 Motor



**Fig. 3-24** Motor - Magnet - Distance gauge



If the motor does not fit into the magnet, check the screw of the magnet.

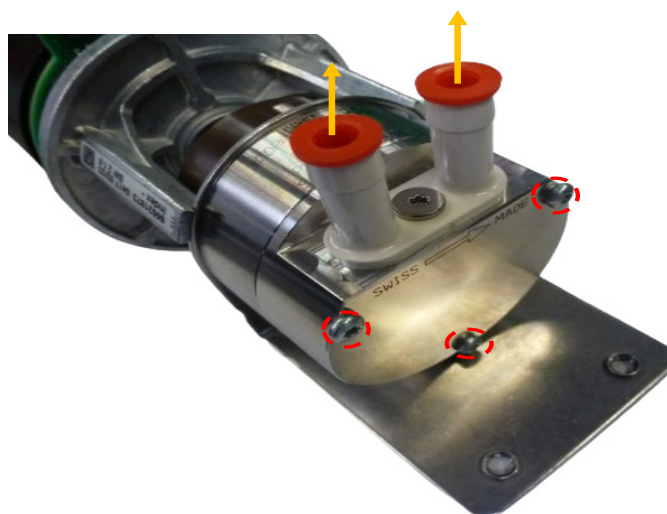


When you turn the motor and the magnet turns, too, the position between motor and magnet is correct.

12. Tighten magnet screw.

13. Join gear pump and motor (new 3 screws, see Fig. 3-25).

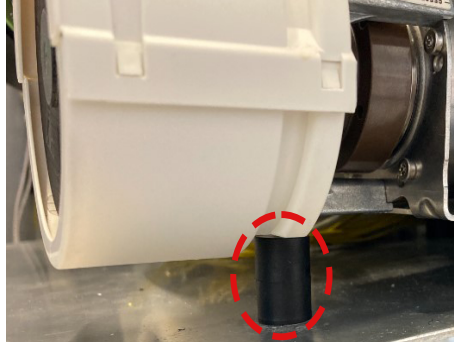
14. Remove red plugs.



**Fig. 3-25** Assembly group gear pump

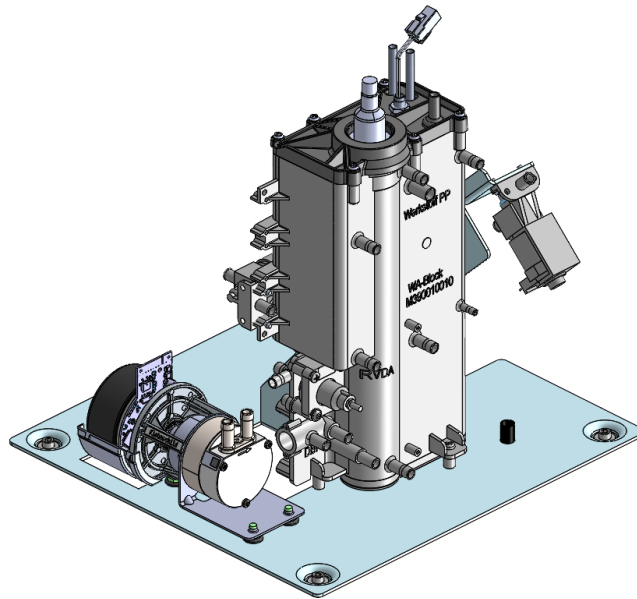


For all Dialog+ machines SN < 200,000 use the old rubber buffer under the pumps.



**Fig. 3-26** Dialog+ SN < 200,000 with rubber buffer

15. Connect the tubings and motor power supply.
16. Assemble motor cover.
17. Push complete EP group back into clamp holder.



**Fig. 3-27** Dialog+ gear pump EP mounted

18. Close rear door.
19. Assemble bottom front panel with 4 screws.
20. Connect machine to mains.
21. Perform all tests and measures according to repair matrix.

## 4 Ordering Numbers

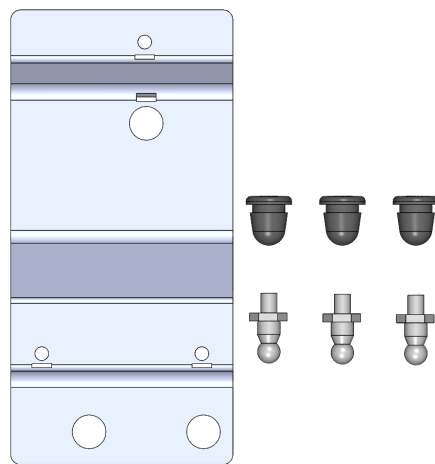


The distance gauge is not included in the retrofit kits nor in the gear pumps and must be ordered separately.

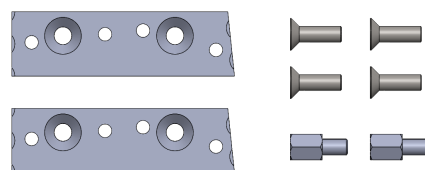
### 4.1 Dialog iQ

Art.-No.	Description	Comments
3461098	Retrofit kit FPE, consisting of: 1x adapter 3x snaplock couplings 3x snaplock couplings	only necessary for replacement of a former gear pump
3461099	Retrofit kit FPA/EP, consisting of: 2x adapter 4x countersunk screw M 5 x 16 2x distance bolts	only necessary for replacement of a former gear pump
3461095	Gear pump FPA, consisting of: 1x gear pump FPA 1x magnet 1x screw M 4 x 6 3x snaplock couplings 3x snaplock couplings 3x screw M 3 x 43,3	
3461096	Gear pump FPE, consisting of: 1x gear pump FPE 1x magnet 1x screw M 4 x 6 3x snaplock couplings 3x snaplock couplings 2x screw M 3 x 43,3 1x screw 3x 30 2x washer 2x screw M 5 x 25 6x spring washer	to mount RVFPE to mount RVFPE

Art.-No.	Description	Comments
3461097	Gear pump EP, consisting of: 1x gear pump EP 1x magnet 1x screw M 4 x 6 3x screw M 3 x 43,3 3x snaplock couplings 3x snaplock couplings	
7704134	Distance gauge gear pump	for Dialog iQ and Dialog <sup>+</sup>



**Fig. 4-28** Retrofit kit FPE (art. no. 3461098)



**Fig. 4-29** Retrofit kit FPA/EP (art. no. 3461099)

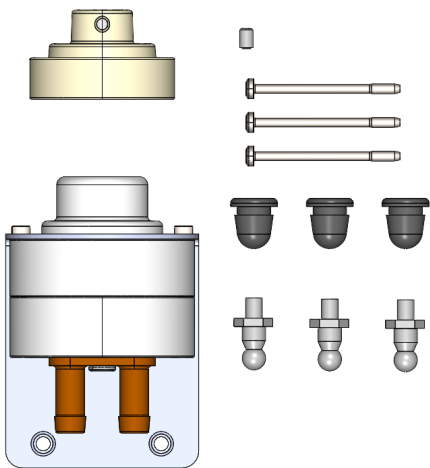


Fig. 4-30 Gear pump FPA (art. no. 3461095)

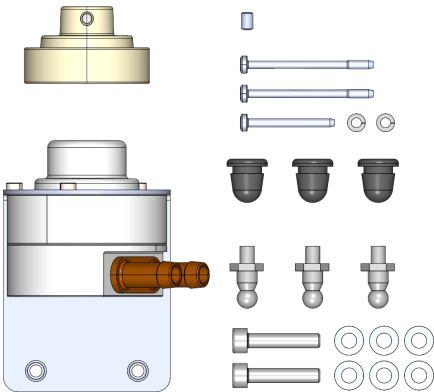


Fig. 4-31 Gear pump FPE (art. no. 3461096)

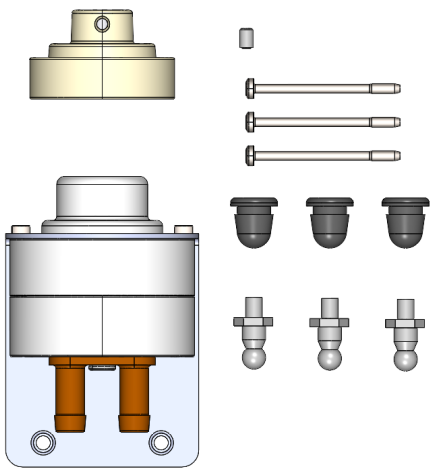
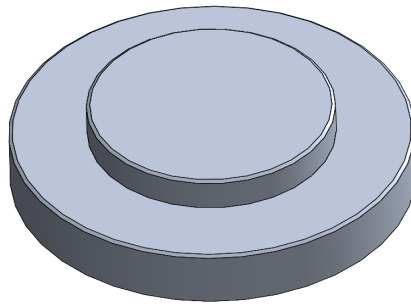


Fig. 4-32 Gear pump EP (art. no. 3461097)





**Fig. 4-33** Distance gauge gear pump (art. no. 7704134)

4.2 Dialog<sup>+</sup>

Art.-No.	Description	Comments
34562330	Gear pump FPA, consisting of: 1x gear pump FPA 1x magnet 1x screw M 4 x 6 3x snaplock couplings 3x snaplock couplings 3x screw M 3 x 43,3	
34562331	Gear pump FPE, consisting of: 1x gear pump 1x magnet 1x screw M 4 x 6 3x screw M 3 x 43,3 3x snaplock couplings 3x snaplock couplings 2x screw M 5 x 25 6x spring washer	to mount RVFPE to mount RVFPE
34562332	Gear pump EP, consisting of: 1x gear pump 1x magnet 1x screw M 4 x 6 3x screw M 3 x 43,3 3x snaplock couplings 3x snaplock couplings	for machines SN $\geq$ 200,000
3461097	Gear pump EP, consisting of: 1x gear pump EP 1x magnet 1x screw M 4 x 6 3x screw M 3 x 43,3 3x snaplock couplings 3x snaplock couplings	for machines SN < 200,000
7704134	Distance gauge gear pump	for Dialog iQ and Dialog <sup>+</sup>

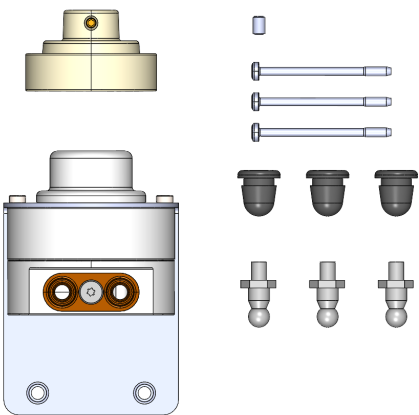


Fig. 4-34 Gear pump FPA (art.no. 34562330)

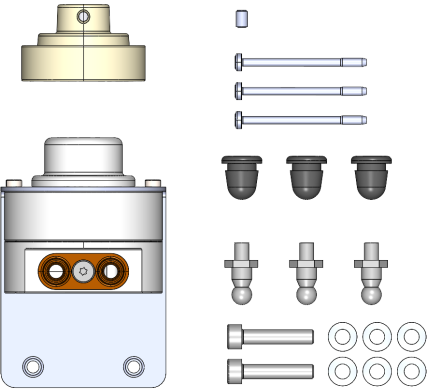


Fig. 4-35 Gear Pump FPE (art. no. 34562331)

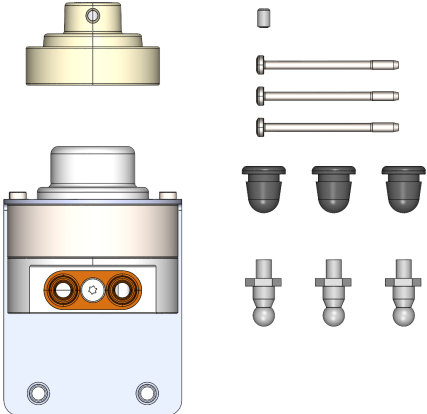
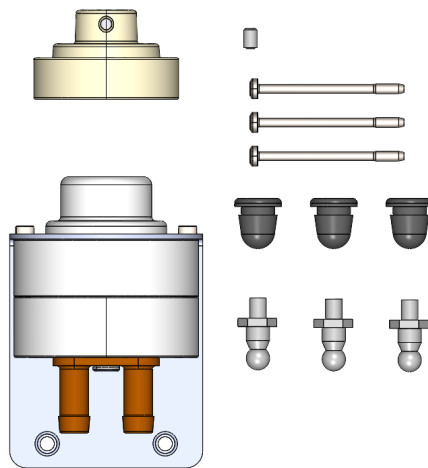
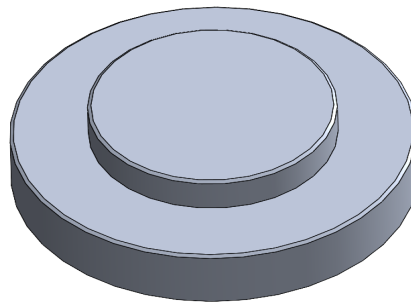


Fig. 4-36 Gear pump EP SN  $\geq$ 200,000 (art. no. 34562332)



**Fig. 4-37** Gear pump EP (art. no. 3461097)



**Fig. 4-38** Distance gauge gear pump (art. no. 7704134)