Pump models
TF50
TF100
TF200
TF400

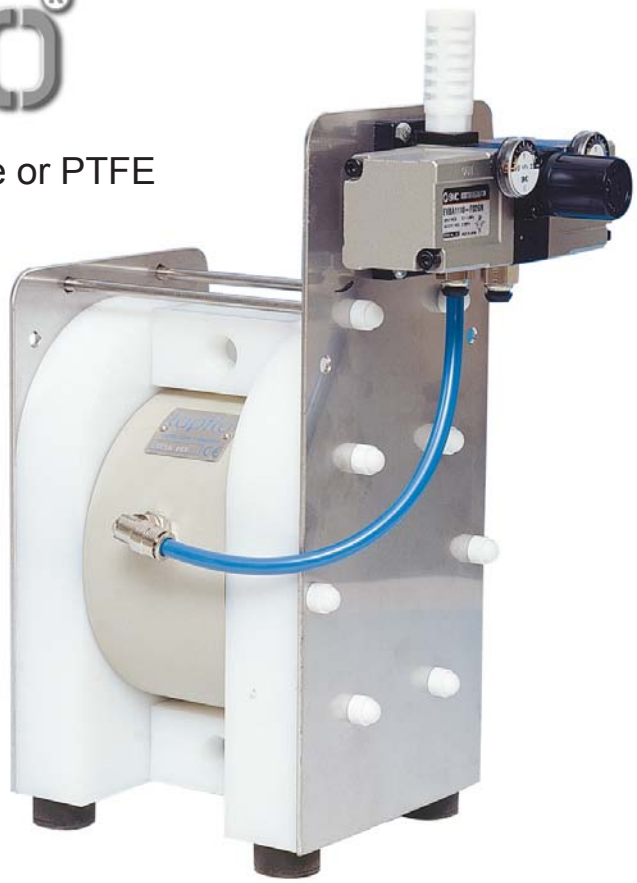
PE & PTFE series English

CE Instruction manual

TF diaphragm filterpress pumps

tapflo®

Pumps in polyethylene or PTFE



- Instructions for installation, start up, operation, maintenance and repair
- Spare parts

STOP **Read this instruction manual carefully, before you install and operate the pump**

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Edition 1/2010

CONTENTS

Declaration of conformity

Machinery directive 2006/42/EC

Tapflo AB declares that:

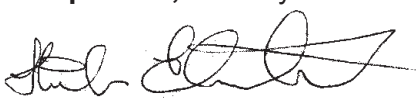
Product name: **Filterpress diaphragm pumps**
Models: **TF…**

Is in conformity with the essential health and safety requirements and technical construction file requirements of the EC Machinery directive 2006/42/EC.

Manufacturer: **Tapflo AB**

Address: **Filaregatan 4**
S-442 34 Kungälv
Sweden

Tapflo AB, January 2:nd 2010



Håkan Ekstrand
Managing director

0. GENERAL

0.1 Introduction

The Tapflo Air Operated Diaphragm Pump range is a complete serie of pumps for industrial applications. The pumps are designed to be safe simple and easy to use and maintain. The construction is sealless and without rotating parts. The pumps are suitable for almost all different chemicals used by the industry today..

With proper attention to maintenace, Tapflo Pumps will give efficient and trouble free operation. This instruction manual will familiarise operators with detailed information about installing, operating and maintaining the pump.

0.2 The warning symbols

The following warning symbols are present in this instruction manual. This is what they say.

This symbol stands next to all safety instructions in this instruction manual where danger to life and limb may occur. Observe these instructions and proceed with utmost caution in these situations. Inform also other users of all safety instructions. In addition to the instructions in this instruction manual, the general safety and accident prevention regulations must be observed.

This signal stands at points in this instruction manual of particular importance for compliance with regulations and directives, for correct work flow and for the prevention of damage to and destruction of the complete pump or its subassemblies.

1. INSTALLATION

1.1 Receiving inspection

Although precaution is taken by us when packing and shipping, we urge you to carefully check the shipment on receipt. Make sure that all parts and accesories listed on the packing list are accounted for. Immediately report any damage or shortage to the transport company and to us.

1.2 Storage

If the equipment is to be stored prior to installation, place it in a clean location. Do not remove the protective covers from the suction, discharge and air connections which have been fastened to keep pump internals free of debris. Clean the pump thoroughly before installation.

1.3 Foundation

The pump is furnished with vibration absorbing rubber feet. The pump will operate properly without being fixed to a foundation. If fixation is needed for an installation, make sure the foundation is able to absorb vibrations. It is essential for the operation of the pump to mount the pump with the feet in a downward direction (see sketch).

1.4 Suction and discharge pipings

Suction and discharge piping should be fully supported and anchored near to but independent of the pump. The piping to the pump should be a hose, to prevent undue stress and strain on the pump connections and the pipings.

1.4.1 Turnable connections

The suction and discharge connections are turnable 180°. This simplifies the assembling and installation considerably. If you wish to turn the connections, screw a threaded nipple into the connection and turn. On the larger models TF200 and TF400 it will simplify if the housing nuts are slightly released while turning the connections.

1.4.2 Connection of suction pipe

Remember that the suction pipe/connection is the most critical point, especially if the pump is priming. Just a small leakage will dramatically reduce the suction capability of the pump. When connecting the suction pipe, following is recommended.

1) For satisfactory operation, use reinforced hose or corresponding (the suction power may otherwise shrink the hose). The internal diameter of the hose should be the same as on the suction connection (at the bottom of the pump) to have best suction capability.

2) Make sure that the connection hose - pump is completely tight, otherwise the suction capability will be reduced.

3) Always use as short suction pipe as possible. Avoid air pockets which can arise with long pipings.

1.4.3 Connection of discharge pipe

For this connection it is only recommended a simple and positive flow connection. Use a hose or flexible piping (minimum one meter) between the discharge connection and any rigid fixed piping. Coil the hose at least one turn. All components (hose, pipe, valves etc) on the discharge piping must be designed for minimum PN 16.

1.5 Air connection

Screw the air hose into the air intake on the center block of the pump with for example a bayonet coupling. For best efficiency, use the same hose diameter as the internal diameter of the connection on the air intake.

1.5.1 Air treatment system

The air valve is constructed for oilfree air. Lubrication of the air is ***not allowed.*** However, if the air is ***very dry*** (laboratory air), the air may be lubricated with water. For TF50-TF100 maximum air pressure is 8 bar, for TF200-TF400 maximum air pressure is 6 bar. As prevention purpose, a filtration of the air by means of a 5 micron filter or finer is recommended. Dirt in the air can under unfortunate circumstances be the cause of breakdown. Recomended air quality according to PN-ISO8573 is particles class 3, water class 4 and oil class 3 .

To facilitate the operation of the pump we recommend an air treatment system connected to the air supply. These components should be included:

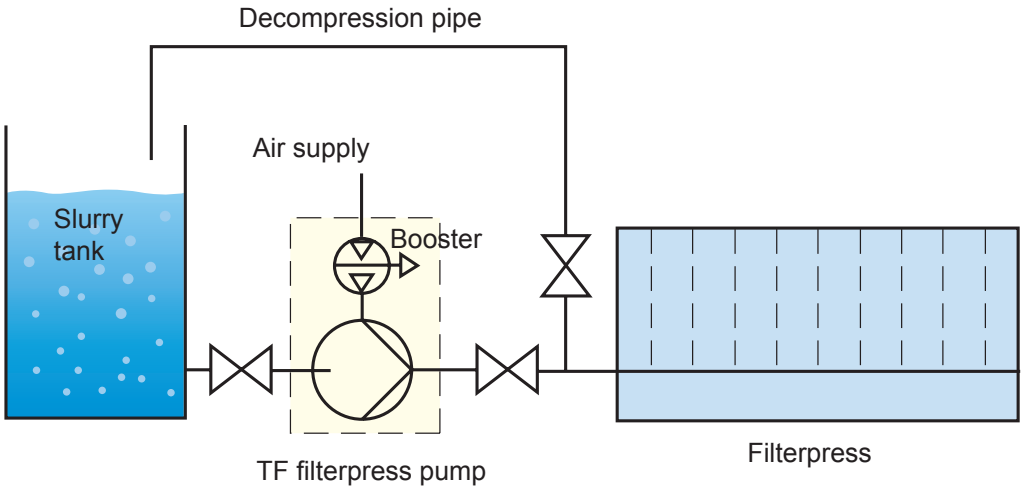
1) Regulator to adjust the air pressure
2) Manometer to read the actual pressure
3) Needle valve to adjust the air flow
4) Filter

These components are included in Tapflos **Air treatment system** which can be ordered from us.

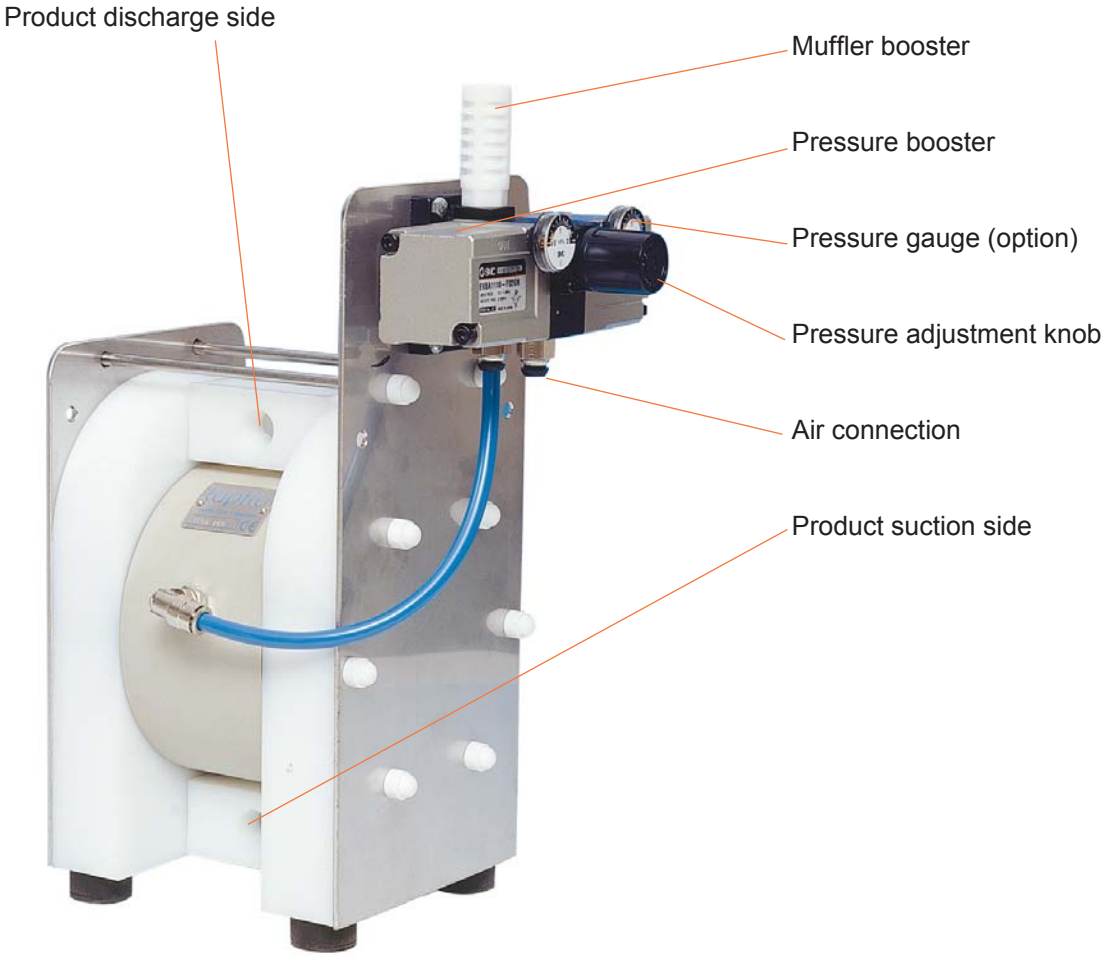
1.5.2 Pressure ratio 1:2

The pressure booster has the function to transmit the primary pressure (from air source) to an outgoing pressure of up to the double. The pressure ratio between primary and secondary side is 1:2.

1.6 Example of installation



1.7 Scope of supply



2. OPERATION

2.1 Health and safety

The pump must be installed according to local and national safety rules.

STOP **The pumps are constructed for particular applications. Do not use the pump on applications different from that for which it was sold without consulting us to ascertain its suitability.**

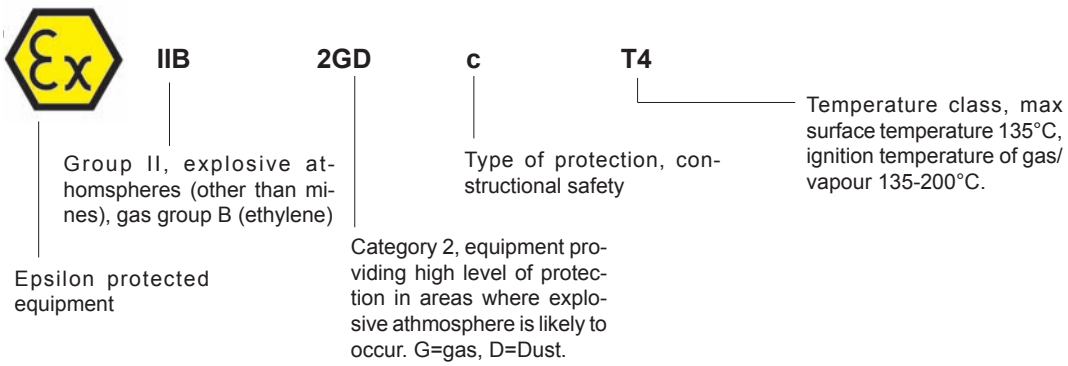
2.1.1 Protection

STOP In the interest of health and safety it is essential to wear protective clothing and safety goggles when operating, and/or working in the vicinity of Tapflo pumps.

2.1.2 Environments in danger of explosion - ATEX

STOP The standard PE or PTFE series pumps are not allowed to operate in environments in danger of explosion. Static electricity may occur in the pump under operation, which may cause explosion and injury. Special conductive pumps TXF are available for such applications. If you have purchased a TXF pump, follow below instructions and local/national rules for safe use.

ATEX (directive 94/9/EC) classification of Tapflo TXF pumps:



Earth connection of pump and other equipment

Connect a suitable earth wire to the stainless steel earth connection that is placed on the inside of one of the pump housings. Connect the other end of the earthwire to earth and also make sure that other equipment like hoses/pipes/containers etc are properly earthed/connected.

2.1.3 Air pressure

The maximum air pressure for Tapflo pumps is 8 bar. Higher air pressure than 8 bar can damage the pump and may cause injury to personel in vicinity of the pump. If you intend to apply a higher air pressure than 8 bar, please consult us.

2.1.4 Noise level

STOP At tests, the noise level from a Tapflo pump has not exceeded 80 dB(A). Under some circumstances, for example if the pump is operating under high air pressure at low discharge head, the noise can be inconvenient or hazardous for personel staying for long periods in vicinity of the pump. This hazard can be prevented by:

- using suitable ear protection
- lower the air pressure and/or raise the discharge head
- lead the outcomming air from the place by connecting a hose from the muffler connection of the pump.
- use elastomer valve balls (EPDM, NBR or polyurethane) instead of PTFE, ceramic or stainless steel, provided that the elastomer is compatible with the pumped liquid.

2. OPERATION

2.1.5 Temperature hazards

Raised temperature can cause damage on the pump and/or pipings and may also be hazardous for personel in the vicinity of the pump/pipings. Avoid quick temperature changes and do not exceed the maximum temperature specified when the pump was ordered. See also general max temperatures based on water in chapter 5 "Data".

2.2 Before starting the pump

- Make sure the pump is installed accordning to the installation instruction (section 1).
- Filling of the pump with liquid before start is not necessary.
- When installation is new or reinstalled, a test run of the pump with water should be conducted to make sure the pump operates normally and does not leak.

- When installation is new or reinstalled, check the pump housing nut tightening torque (see chapter 5.5 "Data"). After approx 1 week operation, the torque should be checked again. This is important to prevent leakage.

2.3 Starting and operating

- Open the discharge valve.
- ***Note! Considering the suction capacity when air is still in the suction pipe, it is recommended to start with low air pressure/flow in the beginning. This is not necessary if the pump is filled with liquid before start.***
- When the pump has been filled with liquid, the air pressure/flow may be raised to increase the suction capacity of the pump.
- The performance of the pump can be adjusted through the air supply by using a needle valve and a pressure regulator. The performance can also be adjusted by normal flow control on the discharge side of the system.

2.3.1 Dry running

The pump may run dry without any problem for shorter periods. Dry running for a longer period causes an increase of wear due to the high stroke frequency.

2.3.2 Optimizing the pump lifetime

Running at full frequenzy (maximum air pressure/flow) continiously will cause premature wear of the components. As a general rule, we recommend to run at half of the maximum capacity of the pump. For instance, a TF100 pump should run continious maximum at 60 l/min.

2.4 Pump stopping

When the filter press is filled and the maximum pressure is reached, it must be stopped by closing the air supply. Before the filter press is opended, the pressure has to drop down to 0.

To stop the pump automatically, various solenoid valves are available.

Stroke sensors can register the frequency of the pump. When the end pressure is reached, the pump moves slowly and a signal for stopping the filtration can be given.

3. MAINTENANCE

3.1 When the pump is new or reassembled

If the pump is new or reassembled after maintenance it is important to retighten the pump housing nuts (pos 37) after a few days of operation. Make sure to use the right torque, see chapter 5.5.

3.1.1 Performance test

When installation is new, a test run of the pump should be conducted. Gauge the capacity at specific air pressure/flow. This information is for use in checking performance as wear takes place. You will be able to set schedules for maintenance of the pump and to select spare parts to be kept on stock.

3.2 Routine inspection

Frequent observation of the pump operation is recommended to detect problems. A change in sound of the running pump can be an indication of weared parts (see below "location of faults"). Leaking liquid from the pump and changes of performance may also be detected. Routine inspections should be conducted frequently.

3.3 Complete inspection

The intervals for a complete inspection depend upon the operation conditions for the pump. The characteristics of the liquid, temperature, materials used in the pump and running time decide how often a complete inspection is necessary.

If a problem has occured, or if the pump is in need of a complete inspection, see later this chapter "location of faults" and "dismantling of the pump". You are of course warmly welcome to consult us for further help.

Worn parts should be carried in stock, see our recommendation in chapter 4.4.

3.4 Location of faults

Problem	Possible fault
The pump does not run	The air pressure is to low The air connection is blocked Muffler is blocked Air valve is defect Dirt in the pump chamber Diaphragm breakdown
The suction is bad	Suction connection is not tight Suction connection is blocked Muffler is blocked Valve balls are blocked Valve balls are damaged
The pump runs irregularly	Valve balls are blocked Sealings are defect in air valve or center block Diaphragm breakdown
Bad flow/pressure	Pressurefall in incomming air Suction or air connection blocked Muffler is blocked Air valve is defect Valve balls worn out/broken Air in liquid Diaphragm breakdown
Liquid leaks from the pump	Screws on the housing not properly fastened
Liquid comes out of the muffler	Diaphragm breakdown

3.5 Dismantling the pump

The numbers put in brackets, refer to the part numbers in the spare part drawings and spare part lists in chapter 4.

3.5.1 Before the dismantling procedure

STOP

Be sure to drain all liquid from the pump. Cleanse or neutralize the pump thoroughly. Disconnect the air connection and then the suction and discharge connections.

3.5.2 Mainparts

Fig 1.
First pull out the air hose from the booster to the pump.

Unscrew the housing nuts (37). Carefully pull out the pin screws (14). Lay the pump with one housing facing down and carefully lift the loose housing (11).

Carefully lift the suction and discharge connections (13) and the center block (12) from the remaining housing (11).

3.5.3 Valve seats and valve balls

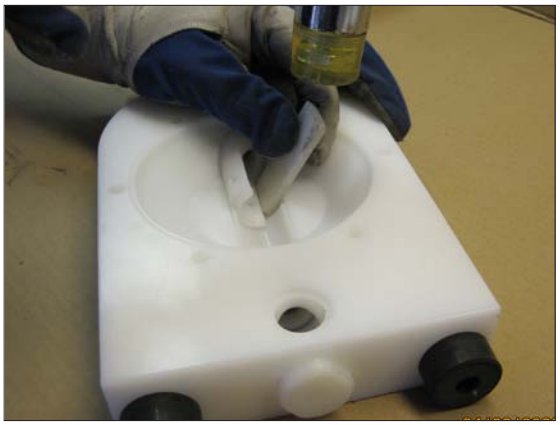


Fig 2. To remove the spacer sleeve (19), use a piece of plastic and a hammer to carefully knock to turn it.

Fig 3. Put one of the pin screws in the hole of the spacer sleeve (19) and turn it all the way 180°.

Fig 4. Carefully pull out the the spacer sleeve (19). Please note that force never shall be used for dismantling.

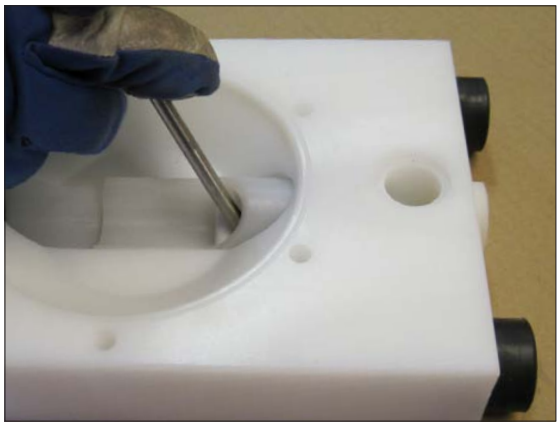


Fig 5. Pull out the lower valve seat (21) by means of one of the pin screws.

Fig 6. Push out the upper valve seat (20), be careful not to damage the edge of the connection hole.

In order to remove the valve ball (23) from the valve seat, use a pin screw and press carefully out the valve ball stopper (22) and the valve ball will be free.

3.5.3 Centerblock with circlips (TF50, TF100)

This instruction applies to above mentioned pumps and older models of TF200 (serial numbers 0803 and earlier) and TF400 (serial numbers 0801 and earlier).

Fig 9. Press the diaphragms (15) to their neutral position (both have the same distance to the center block). Hold one of the diaphragms (15) and unscrew the other. Then pull out the remaining diaphragm (15) with the diaphragm shaft (16).

Fig 10. If the shaft sealings (36) seem to be worn out (by internal leakage of air), carefully remove them with a pointed tool. During this operation, the sealing (36) and backup o-ring (47) usually get destroyed, so make sure to have replacement spares available.

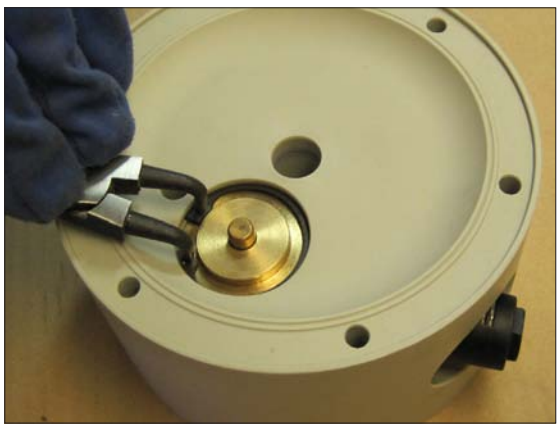


Fig 11. Carefully remove the circlip (27) with a circlip plier. While doing this, cover with your other hand, the circlip easily flips away! Do the same with the circlip (27) on the other side.

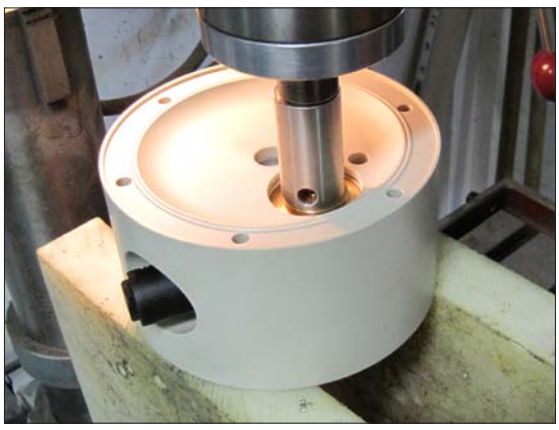


Fig 12. Press out the air valve (61) by means of a pressing device. Be careful not to damage the brass edges of the air valve.

3.5.4 Centerblock with threaded air valve (TF200 and TF400)

Remove diaphragms (15), diaphragm shaft (16) and shaft seals (36) as described in fig 9-10.

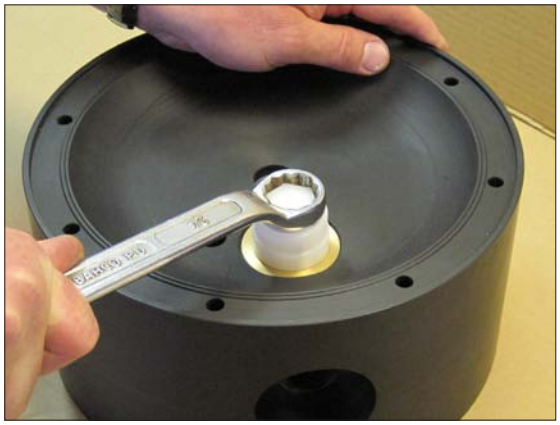


Fig 13. Carefully unscrew the air valve endcap by means of the mounting tool (282). Do the same with the endcap on the other side.

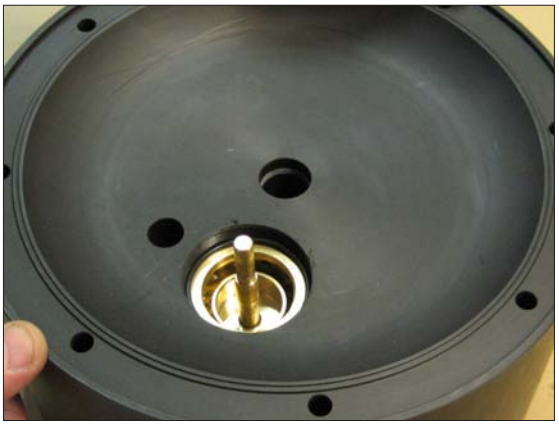


Fig 14. Now when both endcaps are removed, push out by hand the shaft and piston.

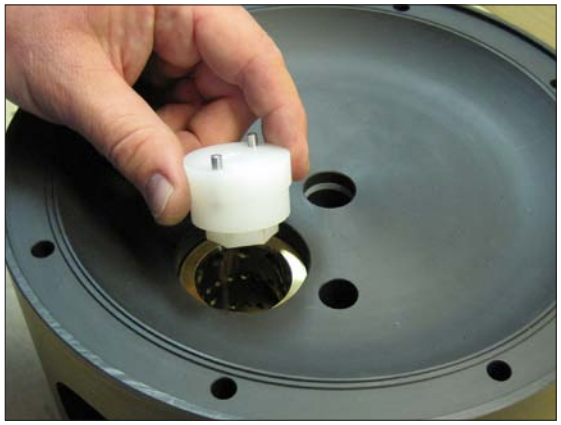


Fig 15. To push out the cylinder, use the other side of the mounting tool that fit into the cylinder.

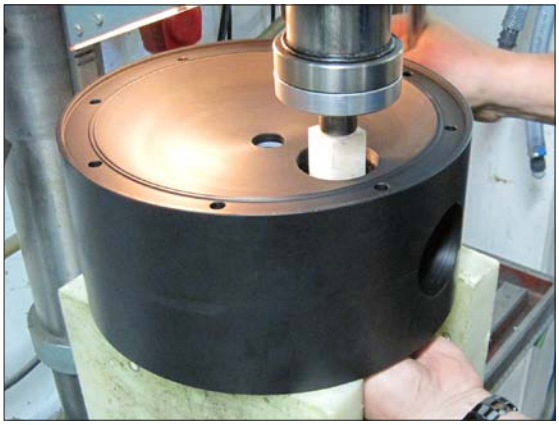


Fig 16. Press out the cylinder, be careful not to damage the edges of the cylinder.

Check seals and brass parts for wear or damage. If these are worn or damaged, replace the complete air valve assembly. If you are able to re use the air valve, replace the external o-rings (6 pcs pos 30) with new ones prior to assembly.

3.5.5 Maintenance of the booster

A seal kit is available for the booster and can be ordered from us. A maintenance instruction is included with this seal kit.

3.6 Assembly of the pump

3.6.1 Centerblock with circlips (TF50, TF100)

This instruction applies to above mentioned pumps and older models of TF200 (serial numbers 0803 and earlier) and TF400 (serial numbers 0801 and earlier).

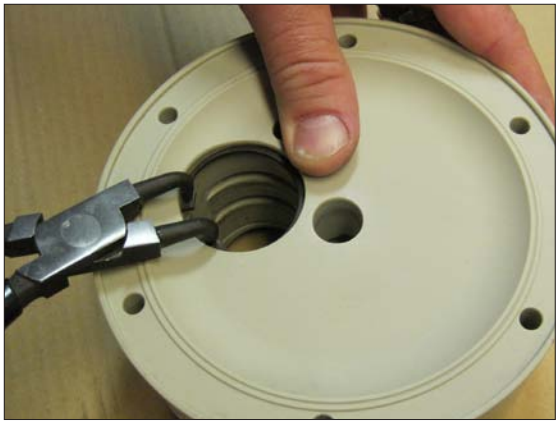


Fig 1. Mount the circlip (27) on one side.

Fig 2. Put a little water on the o-rings (30), other lubricants should not be used. Carefully push the air valve (61) into the housing. Mount the circlip (27) on the remaining side (see fig. 1).

3.6.2 Centerblock with threaded air valve (TF200 and TF400)

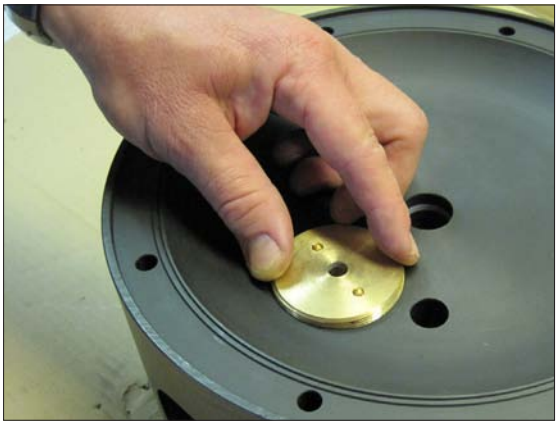


Fig 3. Carefully screw the endcap by hand into the centerblock. Sometimes you have to first screw counter clockwise until the threads match.

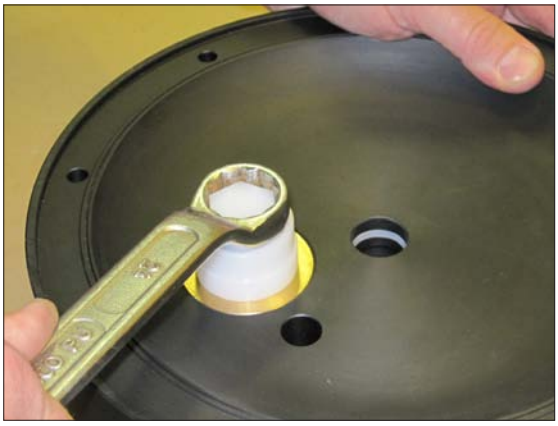


Fig 4. Tighten carefully by means of the mounting tool (pos 282) and a spanner.

Fig 5. Place one of the o-rings (pos 30) on the endcap.

Fig 6. Make sure all four o-rings (pos 30) are mounted on the cylinder. Use a little water on the o-rings to easier slide the cylinder into the centerblock. Other lubricants should not be used.

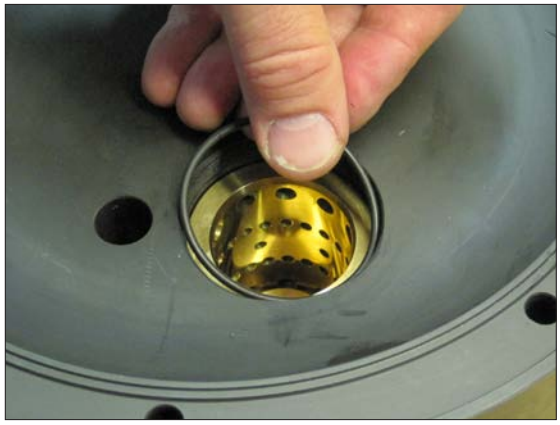


Fig 7. Place the last o-ring (pos 30) on the cylinder.

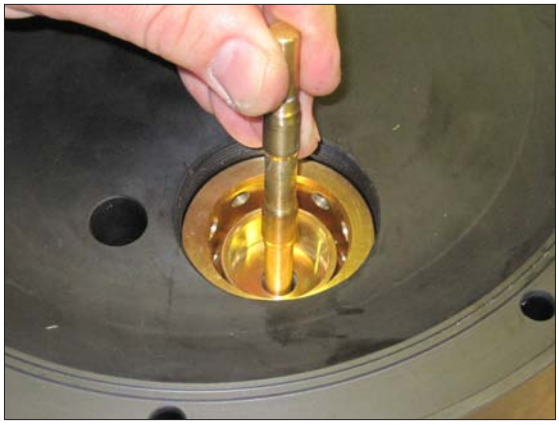


Fig 8. Carefully mount the piston and shaft by hand. Repeat steps Fig 3 and Fig 4 on the remaining side. Carefully secure the endcaps equally on both sides.

3.6.3 Diaphragms

Fig 9. Insert the shaft seal o-rings (47) in the groove.

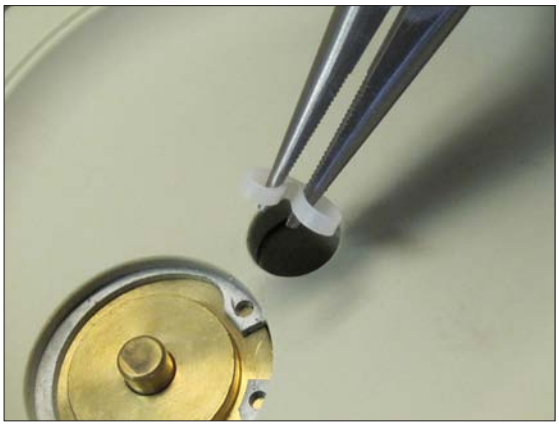


Fig 10. To mount the shaft seal (36), bend it to a kidney shape and insert carefully to the groove.

Fig 11. Mount the pin screw (part of the diaphragm shaft pos 16) securely in the diaphragm (15) by means of an allen key.

Fig 12. Mount the diaphragm shaft (16) on the diaphragm (15) and push the assembly carefully through the hole in the centerblock (12).

3.6.3 Valve seats and valve balls

Fig 13. Place the valve ball (23) in the lower valve seat (21) and mount the ball stop (22). Mount the valve seat o-ring (43) at the bottom of the seat (21)

Fig 14. Push the lower valve seat assembly into the housing (11)

Fig 15. Mount the upper seat assembly; upper seat (20), valve ball (23), ball stop (22) and o-ring (43).

Fig 16. Place the spacer sleeve (19) upside down and press it up towards the the upper valve seat (20).

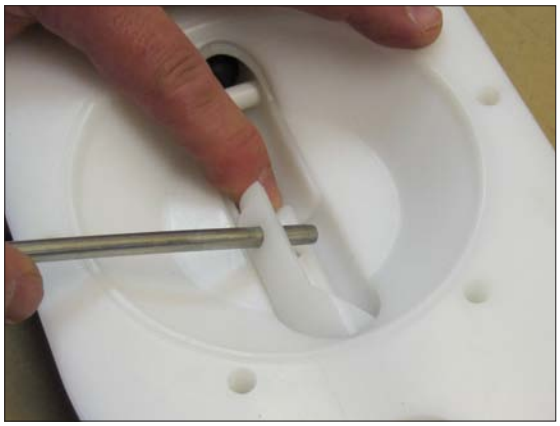


Fig 17. Put one of the pin screws into the hole of the spacer sleeve (19) and turn it gently. Knock also carefully with a plastic hammer to easier force down the spacer sleeve.

Fig 18. Make sure the seat and sleeve assembly is flat inside the housing.

3.6.4 Main unit assembly

Fig 20. Make sure all pin screws (14) have one nut (37) and one washer (38) each. Nut should only be put on one or two threads. Put the pin screws through the housing and the stainless steel side plate and mount carefully the center block assembly.

Fig 21. Put the small o-ring (pos 18) in the seat of the housing. On pumps with PTFE diaphragms the PTFE u-ring with its o-ring shall be mounted with o-ring facing upwards (see Fig. 21).

Fig 22. Put on the inlet and outlet connections (13), make sure all o-rings (18) are mounted.

Fig 23. Carefully lift on the remaining housing and the stainless steel side plate with booster.

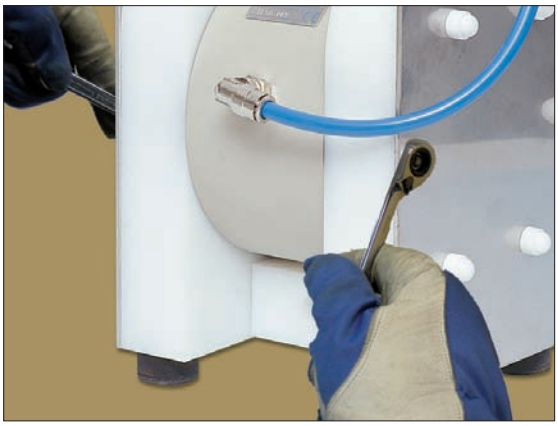


Fig 24. Fasten the nuts (37) alternatingly, with or without washers depending on how much of the thread comes out. If some of the nuts were fastened without washer, unscrew thoose and put washers underneath. Tighten the nuts according to recommended tightening torques in chapter 5.

3.6.5 Test run and follow up draft

We recommend you to conduct a test run of the pump before installing it to the system so no liquid gets wasted if the pump leaks or perhaps does not start according to wrong assembling of the pump.

After a few weeks operation a follow up draft of the nuts is recommended.

4. SPARE PARTS

4.1 Stocking recommendation

Even at normal operation some details in the pump will be subject to wear. In order to avoid expensive breakdowns we recommend having a few spare parts in stock.

Depending on the severity of the operation and the importance of not having a breakdown we offer two different spare part sets.

Set No 1

Qty	Description	Pos
2	Diaphragm	15
4	Valve ball	23
1	Muffler	25
4	O-ringset	18

Set No 2

Qty	Description	Pos
1	Spare part set No 1	-
1	Diaphragm shaft	16
2	Upper valve seat	20
2	Lower valve seat	21
2	Spacer sleeve	19
2****	Circlip	27
2	Center block seal	36
4	O-ring valve seat	43
2*/4***	O-ring	47
1	Air valve complete	61
1	Booster seal kit	995

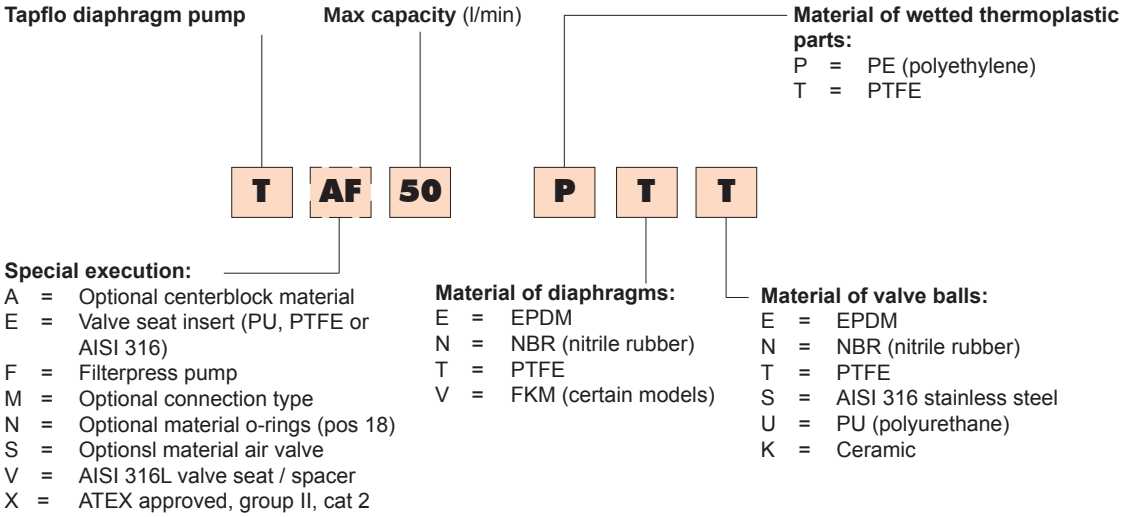
*** = For TF100
**** = Not TF200 (from serial No 0803) and TF400 (from serial No 0801)

4.2 How to order parts

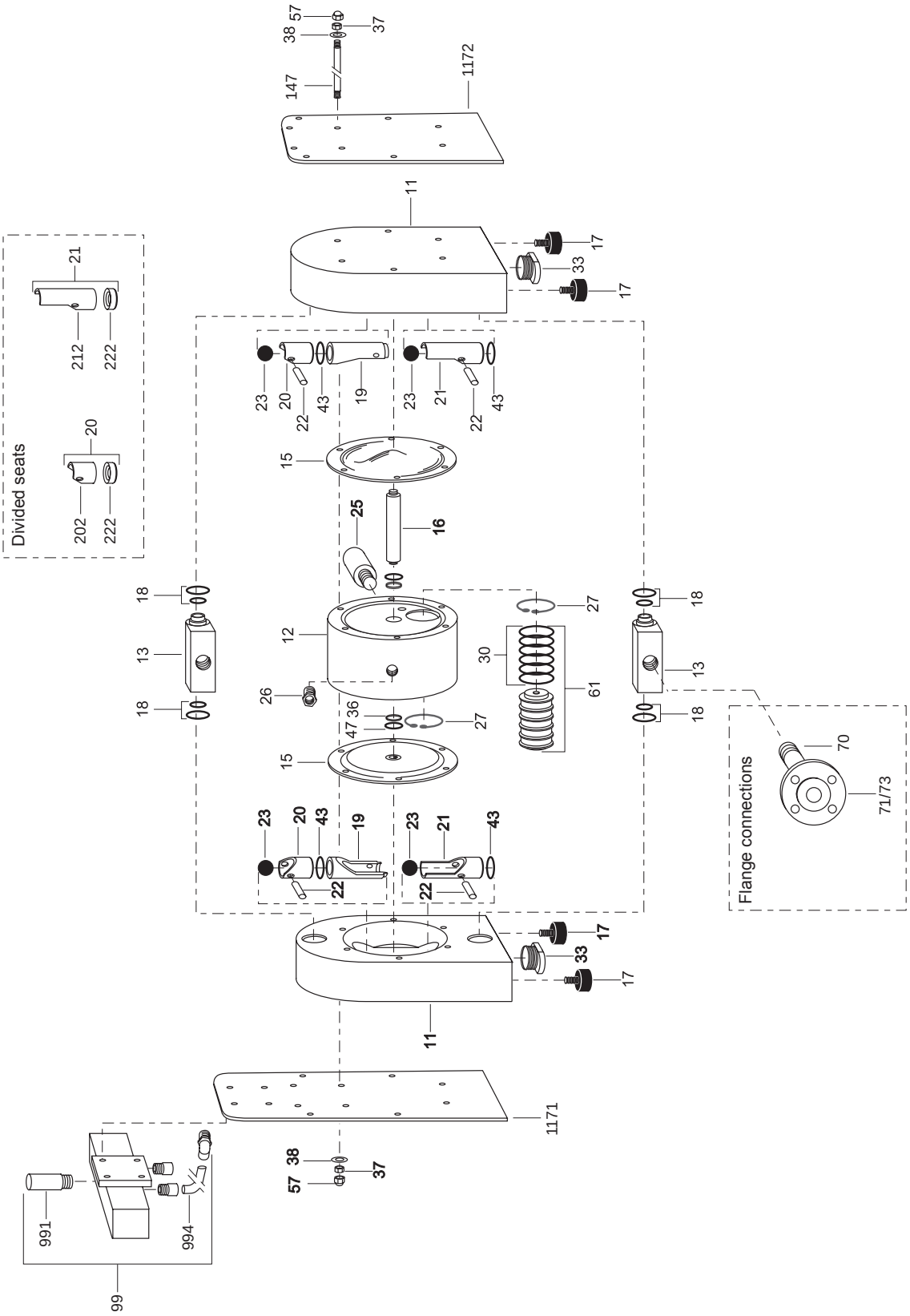
When ordering spare parts for Tapflo Pumps, please let us know the ***model number*** from the nameplate of the pump. Then just indicate the part numbers (refered to the spare part list) and quantity of each item.

4.3 Pump code

The model number on the pump tells the pump size and material of the pump components.



4.4 Spare part drawing TF50 and TF100

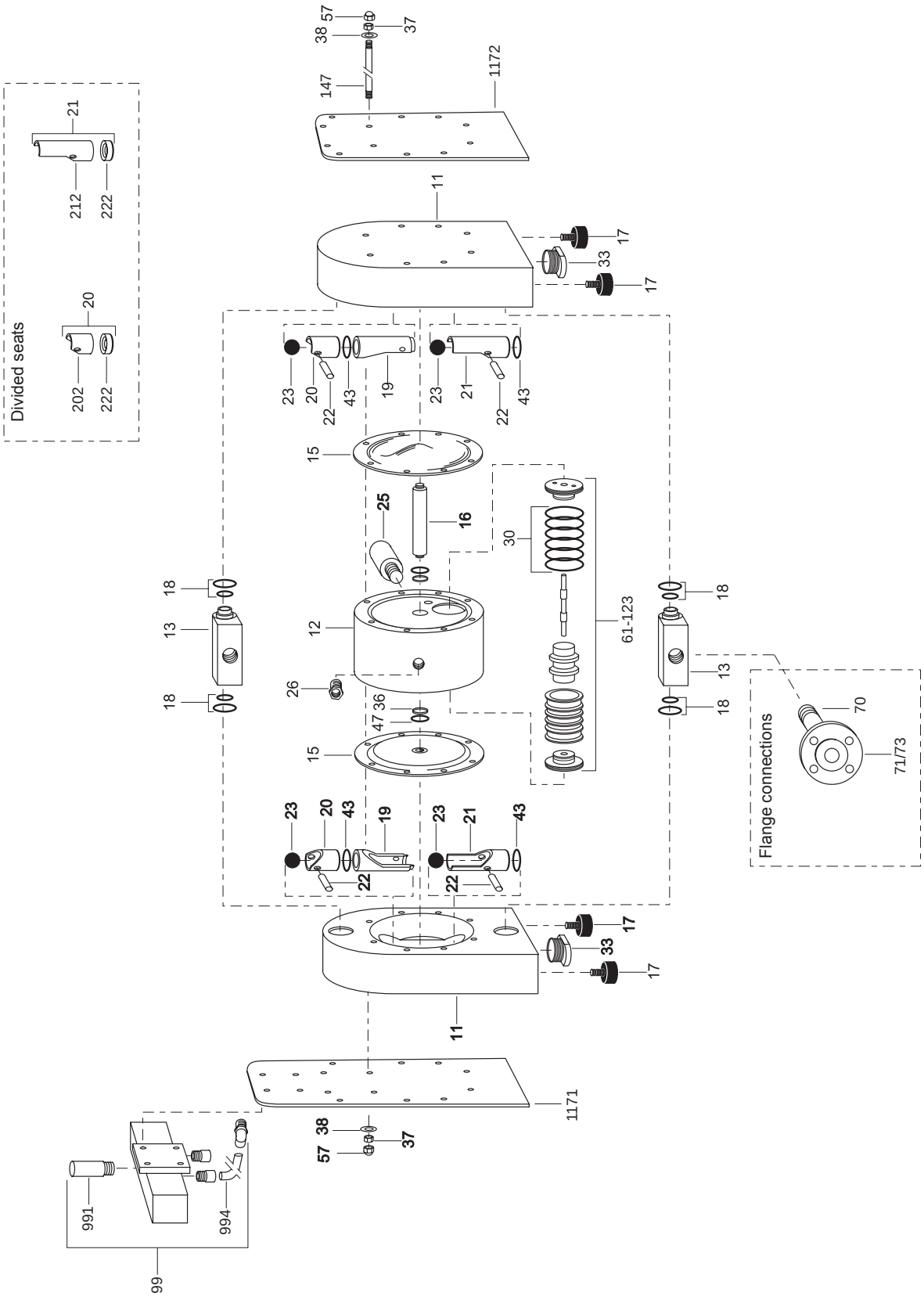


4.7 Spare part list TF50 and TF100

Pos	Description	Qty	Material options
11	Housing	2	PE or PTFE
1171	Reinforcement plate long	1	AISI 316
1172	Reinforcement plate short	1	AISI 316
12	Center block	1	PP
13	In/Outlet	2	PE or PTFE
14	Pin screw	8	AISI 304
15	Diaphragm	2	EPDM, PTFE, NBR or FKM*
16	Diaphragm shaft	1	AISI 316
17	Rubber foot	4	NBR
18	O-ring set (in/outlet)	4	PTFE/EPDM, EPDM, FKM, NBR or FEP
19	Spacer sleeve	2	PE or PTFE
20	Upper valve seat	2	PE or PTFE***
21	Lower valve seat	2	PE or PTFE***
22	Valve ball stop	4	PE** or PTFE
23	Valve ball	4	EPDM, PTFE, NBR, FKM AISI 316, PU or ceramic
25	Muffler	1	PP
26	Air intake adapter	1	Galvanized brass
27	Circlip	2	Phosphor bronze
30	O-ring	6	NBR (standard), EPDM or FKM
33	Plug	2	PE or PTFE
36	Center block sealing	2	PE
37	Nut	16	AISI 304
38	Washer	16	AISI 304
43	O-ring (valve seat)	4	EPDM, PTFE or FKM
47	O-ring (back up for 36)	2*/4**	NBR (standard), EPDM or FKM
57	Nut cover	16	PP
61	Air valve complete	1	Body brass (standard), AISI 316 or PET, o-rings NBR (standard), EPDM or FKM
99	Booster set complete	1	-
991	Muffler booster	1	PP
994	Pneumatic hose	1	PA
995	Booster seal kit	1	-
Options			
Divided seats * **			
202	Upper sleeve (divided seat)	2	PE or PTFE
212	Lower sleeve (divided seat)	2	PE or PTFE
222	Valve seat (divided seat)	4	PE, PTFE, PU or AISI 316
Flange connections			
70	Flange pipe (threaded)	2	PE or PTFE
71	Loose flange ring ANSI	2	PP, PTFE or AISI 316
73	Loose flange ring DIN	2	PP, PTFE or AISI 316

* = TF50 only
** TF100 only
*** = Divided seat type standard on PTFE pumps

4.8 Spare part drawing TF200 and TF400



4.9 Spare part list TF200 and TF400

Pos	Description	Qty	Material options
11	Housing	2	PE or PTFE
1171	Reinforcement plate long	1	AISI 316
1172	Reinforcement plate short	1	AISI 316
12	Center block	1	PP
13	In/Outlet	2	PE or PTFE
14	Pin screw	10	AISI 316
15	Diaphragm	2	EPDM, PTFE or NBR
16	Diaphragm shaft	1	AISI 316
17	Rubber foot	4	NBR
18	O-ring set (in/outlet)	4	PTFE/EPDM, EPDM, FKM, NBR or FEP
19	Spacer sleeve	2	PE or PTFE
20	Upper valve seat	2	PE or PTFE
21	Lower valve seat	2	PE or PTFE
22	Valve ball stop	4	PE or PTFE
23	Valve ball	4	EPDM, PTFE, NBR or PU
25	Muffler	1	PP
26	Air intake adapter	1	Galvanized brass
27	Circlip	2	Phosphor bronze
30	O-ring	6	NBR (standard), EPDM or FKM
33	Plug	2	PE
36	Center block sealing	2	PE
37	Nut	20	AISI 304
38	Washer	20	AISI 304
43	O-ring (valve seat)	4	EPDM, PTFE, NBR or FKM
47	O-ring (back up for 36)	2	NBR (standard), EPDM or FKM
57	Nut cover	20	PP
61-123*	Air valve complete	1	Body brass (standard), AISI 316 or PET, o-rings NBR (standard), EPDM or FKM
99	Booster set complete	1	-
991	Muffler booster	1	PP
994	Pneumatic hose	1	PA
995	Booster seal kit	1	-

Options

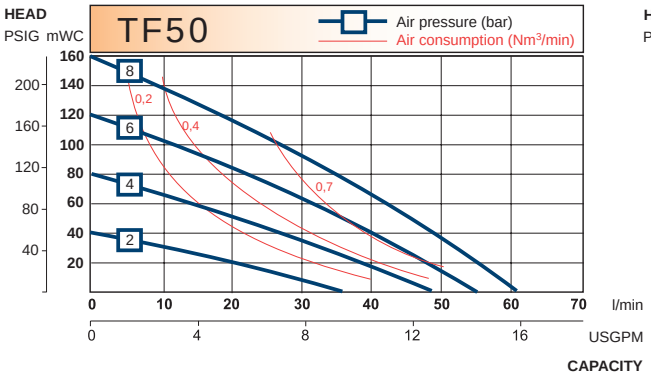
Divided seats			
202	Upper sleeve (divided seat)	2	PE or PTFE
212	Lower sleeve (divided seat)	2	PE or PTFE
222	Valve seat (divided seat)	4	PE, PTFE, PU or AISI 316
Flange connections			
70	Flange pipe (threaded)	2	PE or PTFE
71	Loose flange ring ANSI	2	PP, PTFE or AISI 316
73	Loose flange ring DIN	2	PP, PTFE or AISI 316

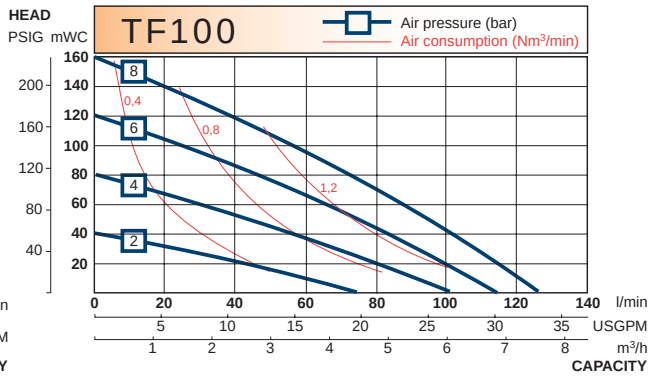
* = TF200 from serial No 0803 XXXX and T400 from serial No 0801 XXXX. On older pumps circlip mounted air valves pos 61 are used.

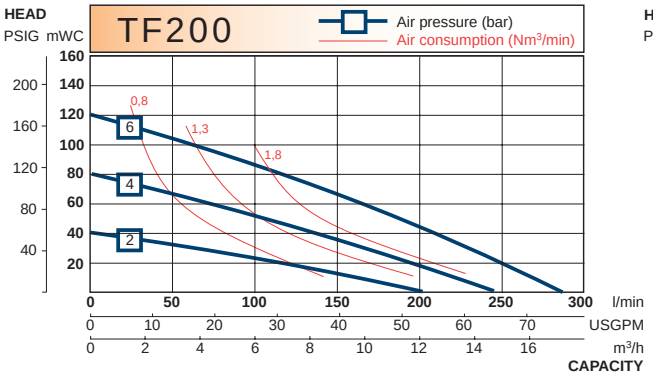
5. DATA

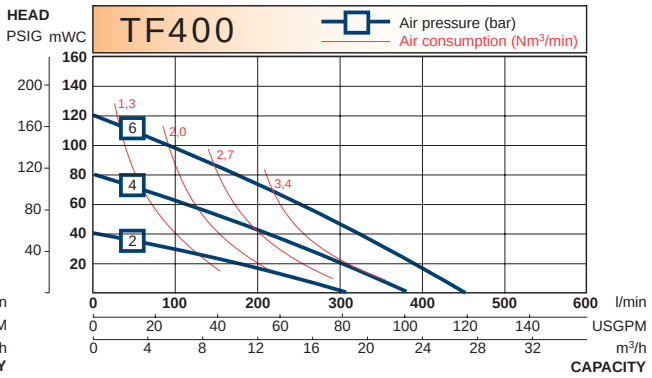
5.1 Capacity curves

The performance curves are based on water at 20°C.Other circumstances might change the performance. See page chapter 5.2 how the capacity will change at different viscosities and suction lifts.



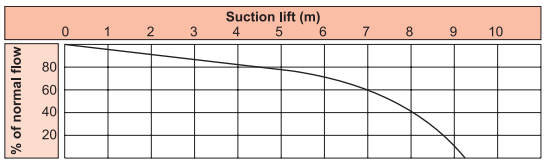




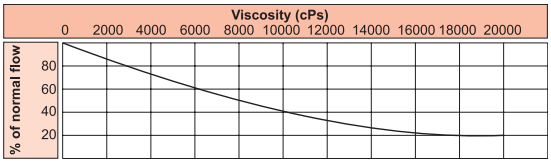


5.2 Capacity changes

Capacity changes at different suction lifts



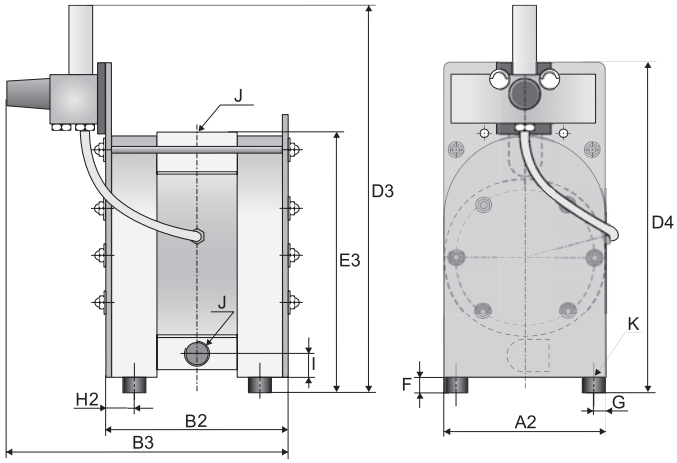
Capacity changes at different viscosities



5.3 Dimensions

Dimensions in mm (where other is not indicated)
Dimensions in inch (where other is not indicated)

Dim	Pump size 50	100	200	400
A2	150	300	300	404
	5.91	11.81	11.81	15.91
B2	168	221	320	390
	6.61	8.70	12.60	15.35
B3	277	391	490	598
	10.91	15.39	19.29	23.54
D3	385	550	700	770
	15.16	21.65	27.56	30.31
D4	343	477	630	690
	13.50	18.78	24.80	27.17
E3	250	333	467	588
	9.84	13.11	18.39	23.15
G	17	30	30	30
	0.67	1.18	1.18	1.18
H2	19	33	35	35
	0.75	1.30	1.38	1.38
J	1/2″	1″	1 1/2″	2″
	1/2	1	1 1/2	2
K	M8x25	M8x25	M8x25	M8x25
	M8	M8	M8	M8



General dimensions only, ask us for detailed drawings. Changes reserved without notice

5.4 Technical data

	TF50	TF100	TF200	TF400
Connections (BSP)	1/2"	1"	1 1/2"	2"
Max suction lift dry (m)	2	2.6	3	3
Max suction lift wet (m)	8	8	8	8
Max air feed pressure (bar)	8	8	6	6
Max discharge pressure (bar)	16	16	12	12
Temperature max PE pumps (°C)	70	70	70	70
Temperature max PTFE pumps (°C)	100	100	100	100
Weight PE pumps (kg)	6	12	27	49
Weight PTFE pumps (kg)	8	19	47	95

5.5 Tightening torques

The following tightening torques are recommended.

Pump size	Mounting torque (Nm)
TF50	8
TF100	16
TF200	20
TF400	23

6. WARRANTY & REPAIR

6.1 Returning parts

When returning parts to Tapflo AB please follow this procedure:

- Consult Tapflo AB for shipping instructions.

- Cleanse or neutralize and rinse the part/pump. Make sure the part/pump is completely empty from liquid.

- Pack the return articles carefully to prevent any damage under transport.

Goods will not be accepted unless the above procedure has been complied with.

6.2 Warranty

Tapflo warrants products under conditions as below for a period of not more than 12 months from installation and not more than 24 months from date of manufacture.

1. The following terms and condition apply to the sale of machinery, components and related services and products, of Tapflo (hereinafter “the products”)

2. Tapflo (the manufacturer) warrants that:

a.) its products as being free of defects in material, design and workmanship at the time of original purchase;
b.) its products will function in accordance with Tapflo operative manuals; Tapflo does not guarantee that the product will meet the precise needs of the Customer, except for those purposes set out in any invitation to render documents or other documents specifically made available to Tapflo before entering into this agreement;
c.) high quality materials are used in the construction of the pumps and that machining and assembly are carried out to the highest standards.

Except as expressly stated above, Tapflo makes no warranties, express or implied, concerning the products, including all warranties of fitness for a particular purpose.

3. This warranty shall not be applicable in circumstances other than defects in material, design, and workmanship. In particular warranty shall not cover the following:

a.) Periodic checks, maintenance, repair and replacement of parts due to normal wear and tear (seals, O-rings, rubber items, bushings, etc..);
b.) Damage to the product resulting from:
b.1.) Tampering with, abuse or misuse, including but not limited to failure to use the product for its normal purposes as stated at the time of purchase or in accordance withTapflo instructions for use and maintenance of the product, or the installation or improper ventilation or use of the product in a manner inconsistent with the technical or safety standard in force;

b.2.) Repairs performed by non skilled personell or use of non original Tapflo parts

b.3.) Accidents or any cause beyond the control of Tapflo, including but not limited to lightning, water, fire, earthquake, and public disturbances, etc.;

4 The warrantee shall cover the replacement or repairing of any parts, which is documentedly faulty due to construction or assembling, with new or repaired parts free of charges delivered by Tapflo. Parts subjected to normal tear and wear shall not be covered by the warranty. Tapflo shall decide as to whether the defective or faulty part shall be replaced or repaired.

5 The warrantee of the products shall be valid for a period in accordance to the current law from the date of delivery, under the condition that notice of the alleged defect to the products or parts thereof be given to Tapflo in written within the mandatory term of 8 days from the discovery.

6 Repair or replacement under the terms of this warranty shall not give a right to an extension to, or a new commencement of, the period of warranty. Repair or replacement under the terms of this warranty may be fulfilled with functionally equivalent reconditioned units. Tapflo qualified personnel shall be solely entitled to carry out repair or replacement of faulty parts after careful examination of the pump. Replaced faulty parts or components will become the property of Tapflo

7 The products are built in accordance with standard CE normative and are tested (where applicable) by Tapflo. Approval and tests by other control authority are for the customers account. The products shall not be considered defective in materials, design or workmanship if they need to be adapted, changed or adjusted to conform to national or local technical or safety standards in force in any country other than that for which the unit was originally designed and manufactured. This warranty shall not reimburse such adaptations, changes or adjustments, or attempt to do so, whether properly performed or not, nor any damage resulting from them, nor any adaptation, change or adjustments to upgrade the products from their normal purpose as described in the products operative manual without the prior written consent of Tapflo

8 Installation, including electric and other connections to utility mains according to Tapflo drawings, is for the cost and responsibility of the customer, unless otherwise agreed in writing.

9 Tapflo will not be liable on any claim, whether in contact, tort, or otherwise, for any indirect, special, incidental, or consequential damages, caused to the customer or to third parties, including loss of profits, arising by any possible infringement of par. 3 above or by the customer or third parties being in the impossibility of using the products.

Steady the above,Tapflo liability to the customer or third parties from any claim, whether in contract, tort, or otherwise, shall be limited to the total amount paid by the customer for the product that caused the damages.

6.3 Warranty form

Company: _____

Telephone: _____ Fax: _____

Address: _____

Country: _____ Contact name: _____

E-mail: _____

Delivery date: _____ Pump was installed (date): _____

Pump type: _____ Serial No (stamped on the pump housing): _____

Description of the fault: _____

_____

_____

The installation

Liquid: _____

Temperature (°C): _____ Viscosity (cPs): _____ Spec. grav. (kg/m^3): _____ pH-value: _____

Contents of particles: _____ %, of max size (mm): _____

Flow (l/min): _____ Duty (h/day): _____ No of starts per day: _____

Discharge head (mwc): _____ Suction head/lift (m): _____

Air pressure (bar): _____ Quality of the air (filter, micron?, lubrication?): _____

Other: _____

_____

_____

Place for sketch of the installation

Tapflo AB · Filaregatan 4 · S-442 34 Kungälv · Sweden
Tel (46) 303 63390 · Fax (46) 303 19916 · E-mail: sales@tapflo.com · www.tapflo.com

DISTRIBUTOR:

EC declaration of conformity

Directive 94/9/EC (ATEX 100a)

Tapflo AB declares that the following equipment:

Product name:	**Conductive air operated diaphragm pumps**
Models:	**TX…**
Pump material:	**Conductive PE**
	Conductive PTFE
	Aluminium
	Cast iron
	Stainless steel AISI 316/316L
	Hastelloy C
Diaphragm material:	**PTFE (conductive)**
	EPDM (conductive)
	NBR

are intended for operation in potentially explosive atmospheres according to:

Equipment Group:	**IIG (Gas) / IID (Dust)**
Category:	**2**
Apparatus group:	**IIB**
Temperature class:	**T4 (other temperature classes on request)**

The above equipment comply with the harmonised standards EN 13463-1 (Non-electrical equipment for potentially explosive atmospheres) and EN 1127-1 (Explosive atmospheres – Explosion prevention and protection).

Technical file reference: **03 ATEX S001**

Manufacturer: **Tapflo AB**

Address: **Filaregatan 4**
S-442 34 Kungälv
Sweden

Tapflo AB, June 1st, 2008

Håkan Ekstrand
Managing director

Tapflo AB
Filaregatan 4
S-442 34 Kungälv, Sweden

Phone
+46 303 63390

Fax
+46 303 19916

Website
www.tapflo.com

EC declaration of conformity

Directive 94/9/EC (ATEX 100a)

Tapflo AB declares that the following equipment:

Product name:	**Conductive pulsation dampener**
Models:	**PDX…**
Dampener material:	**Conductive PE**
	Conductive PTFE
	Aluminium
	Cast iron
	Stainless steel AISI 316/316L
	Hastelloy C
Diaphragm material:	**PTFE (conductive)**
	EPDM (conductive)
	NBR (conductive)

are intended for operation in potentially explosive atmospheres according to:

Equipment Group:	**IIG (Gas) / IID (Dust)**
Category:	**2**
Apparatus group:	**IIB**
Temperature class:	**T4 (other temperature classes on request)**

The above equipment comply with the harmonised standards EN 13463-1 (Non-electrical equipment for potentially explosive atmospheres) and EN 1127-1 (Explosive atmospheres – Explosion prevention and protection).

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