



STEINLE

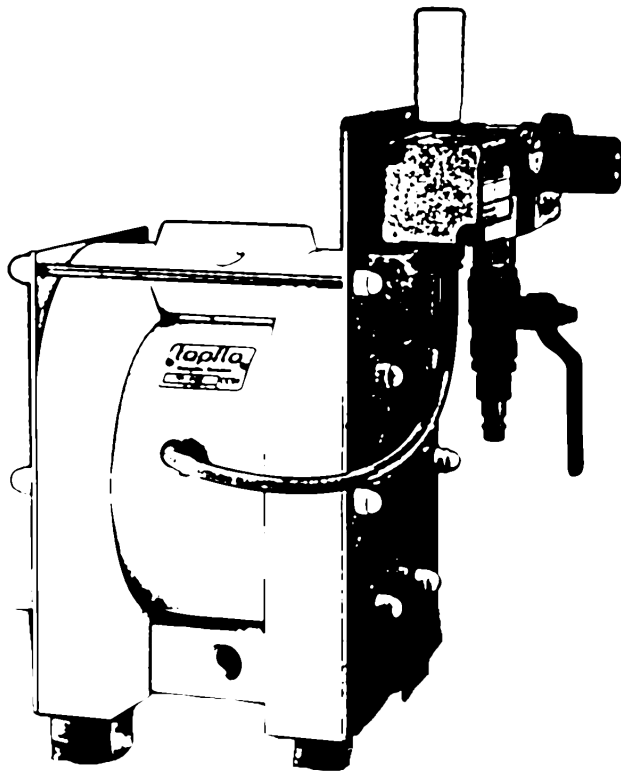
Pump models:
TF50
TF95
TF100
TF200
TF400

INSTRUCTION MANUAL

Filter Press Pumps TF PE & PTFE series

Model No

Serial No



**CE CERTIFICATE
INSTALLATION
OPERATION
MAINTENANCE
SPARE PARTS
DATA
WARRANTY & REPAIR**

NOTE!

Read this instruction manual carefully before installing the pump. If something is obscure, please consult us. The user shall also read and understand the warning labels and safety instructions for the pumped media.

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INTRODUCTION

The STEINLE TF filter press pump is very compact pump system, which can be installed directly at the filter press. 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 kinds of even aggressive slurries used by the industry today. It is air driven and needs no further equipment to control the flow rate when the pressure in the filter press rises up. Pressure regulator and needle valve are already installed at the pump.

The pumps are based on the approved Tapflo-pumps, which are exceptionally qualified for this application.

With proper attention to maintenance, the TF-series will give efficient and trouble free operation. This instruction manual will familiarise operators with detailed information about installing, operating and maintaining the pump.

Declaration of conformity

Machinery directive 89/392/EEC, Annex 2A

STEINLE Industripumpen declares that:

Product name: **Filter Press Pumps**
Models: **TF...**

Is in conformity with the essential health and safety requirements and technical construction file requirements of the EC Machinery directive 89/393/EEC with amendments 91/368/EEC, 93/94 EEC and 93/68 EEC.

Manufacturer: **STEINLE Industripumpen**

Address: **Varnhagenstr. 42
D-40225 Düsseldorf
Germany**

Düsseldorf, September 1st 2000



Michael Steinle
Managing director

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 accessories listed on the packing list are accounted for. Immediately report any damage or shortage to the transport company and to STEINLE Industripumpen.

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. They have a female thread to being fixed to a foundation. 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. Be careful so that the threads do not get damaged. 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 pressure booster on 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. The maximum air pressure for TF50-TF100 is 8 bar, for TF200-TF400 6 bar. For the TFF version the maximum pressure is the half of above.

1.5.1 Air treatment system

The air valve is constructed for oilfree air. Lubrication of the air is **not allowed**. Maximum air pressure is 8 bar. As prevention purpose some sort of filtration of the air is recommended. Dirt in the air can under unfortunate circumstances be the cause of breakdown. **Dry air** is also essential. Ice may appear in the air valve if the air is humid.

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) Filter

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

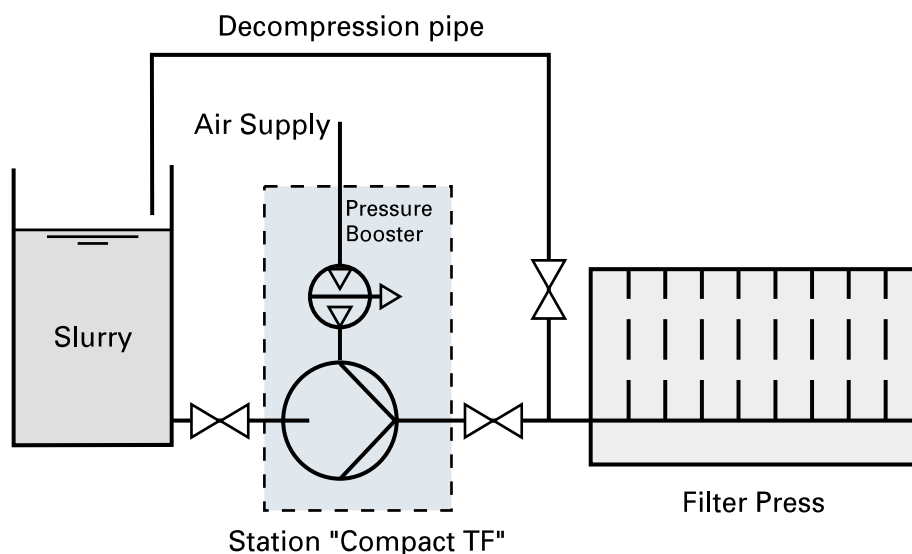
1.5.2 Version TFF with pressure transmission 1 : 4

- The first pressure booster, which is supplied as a single part, has to be installed external. This booster is connected with the air supply.
- Between this external booster and the booster mounted at the pump, the air connection hose has to be plugged in. Please leave at least a length 1m of the hose.
- The end pressure of the pump has to be adjusted at the booster mounted on the pump.

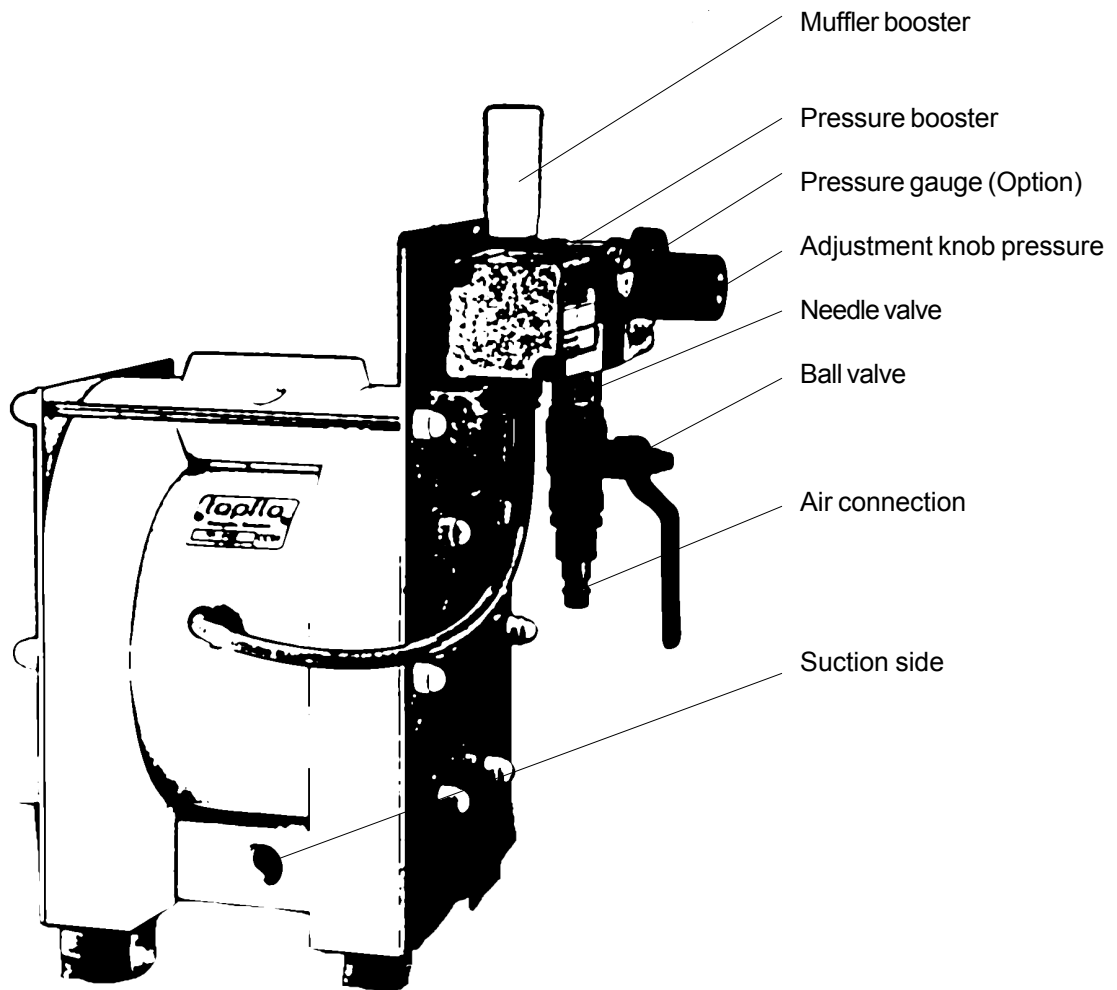
1.6 Muffler

The plastic muffler for the pressure booster and the metallic muffler for the pump are supplied as single parts because of transport safety. These mufflers has to be screwed into the pump.

1.7 Example of installation



1.8 Scope of supply



2.1 Health and safety

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



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



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 STEINLE pumps.

2.1.2 Environments in danger of explosion



For use in environments in danger of explosion, the pump must be of conductive material and properly earthed. Follow the explosion safety rules applicable at the location for the pump. Consult us for further information. Incorrect installation or use may cause injury or death to personnel in vicinity of the pump.

2.1.3 Air pressure



The maximum air pressure for STEINLE pumps is shown in chapter 1.5. Higher air pressure than 8 bar can damage the pump and may cause injury to personnel in vicinity of the pump.

2.1.4 Noise level



At tests, the noise level from a TF 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 personnel 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 outcoming air from the place by connecting a hose from the muffler connection of the pump.
- use elastomer valve balls EPDM or NBR instead of PTFE or stainless steel, provided that the elastomer is compatible with the pumped liquid.

2.1.5 Temperature hazards



Raised temperature can cause damage on the pump and/or pipings and may also be hazardous for personnel 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 according to the installation instruction (section 1).
- Filling of the pump with liquid before start is not necessary.
- When installing 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.
- Make sure that the maximum pressure for the pump and the piping is not exceeded.

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 adjusting the 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 a shorter time. 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 frequency (maximum air pressure/flow) continuously 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 TF120 pump should run continuous maximum at 5 m³/h.

2.4 Pump stopping

When the filter press is filled and the maximum pressure is reached, the must be stopped by closing the air supply. Before the filter press is opened, 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.

3.1 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 worn parts (see below "location of faults"). Leaking liquid from the pump and changes of performance may also be detected. Routine inspections should be conducted when a malfunction is suspected.

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 occurred, 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 chapter 4 "stocking recommendations".

3.4 Location of faults

Problem	Possible fault
The pump does not run	The air pressure is too 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	Pressure fall in incoming 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

3.5.1 Before the dismantling procedure

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

- 1) Pull out the air hose from the booster to the pump by pushing the ring on the fitting. Unscrew the nuts on one side of the housing and take the SS reinforcement sheet from the pump.
- 2) Place the pump on the side that still has the nuts (the pump lays on the nuts) on a stable ground, for example a table.
- 3) Carefully remove the "loose housing".
- 4) Carefully lift up the suction and discharge connections. You have the center block and one of the housings with pin screws left.
- 5) Upend the pump and carefully pull out the pin screws. Be careful with the diaphragms that easily can be damaged by the threads of the pin screws.

The mainparts of the pump are now dismantled. The following is for dismantling the housing and center block in detail.

3.5.3 Housing

- 1) Put the house wall with the flat side down on a plane surface that will not damage the housing, for example a table covered with cardboard.
- 2) Take one of the pin screws. Screw it in the hole on the spacer sleeve and turn it as far as it is possible, until it lays upside down (180°) compared to the starting position. Lead the spacer sleeve carefully against the lower valve seat until it is free and can be put out. Please note that force never shall be used for dismantling. When the spacer sleeve does not turn, use a flat punch and push with slight hammer beats the spacer sleeve on one side till it turns.
- 3) Stick something not pointed (for example a pin screw with one of the nuts on) into the hole for the discharge connection and press gently out the upper valve seat.
- 4) Place one of the pin screws on the inside (behind) the valve ball stopper on the lower valve seat. Carefully pull out the valve seat in the housing.
- 5) In order to remove the valve ball from the valve seat, use a pin screw and press carefully out the valve ball stopper and the valve ball will be free.

3.5.4 Center block

- 1) Press the diaphragms to their neutral position (both have the same distance to the center block).
- 2) Hold one of the diaphragms and unscrew the other. Then pull out the remaining diaphragm with the diaphragm shaft.
- 3) Place the center block on one of the housings. Observe that this is a faying surface, so be careful not to damage it. Place a piece of cardboard or similar underneath. Pull out the circlip carefully so it will not hurt you or disappear.
- 4) Turn the center block. Pull out the other circlip.

- 5) Press carefully on the other air valve rear end in the same direction. The main piston and air valve housing will slowly come out. Observe that the brass is soft material and changes figure easy. If those details are deformed they must be changed, so handle those with care.

The pump is now completely dismantled. Check all components for wear or damage and replace if necessary.

3.6 Assembly of the pump

3.6.1 Center block

The center block is assembled in the same way as dismantling it but in opposite direction. Put the diaphragm with shaft into the center block. Screw the next diaphragm onto the shaft and fix the holes. Sometimes you have to turn the diaphragms a little back to get the holes fixed.

3.6.2 Suction/discharge connections

Always make sure that the o-rings are placed on the in/outlet before all assembling of pump.

Special for pump with PTFE diaphragms:

U-rings are placed on the pump housing. Put u-ring with open side up so you carefully can put the o-ring in the groove. Make sure you do not fold the inner edge of the u-ring.

3.6.3 Assembling of the main units

The housing is assembled in opposite order to dismantling:

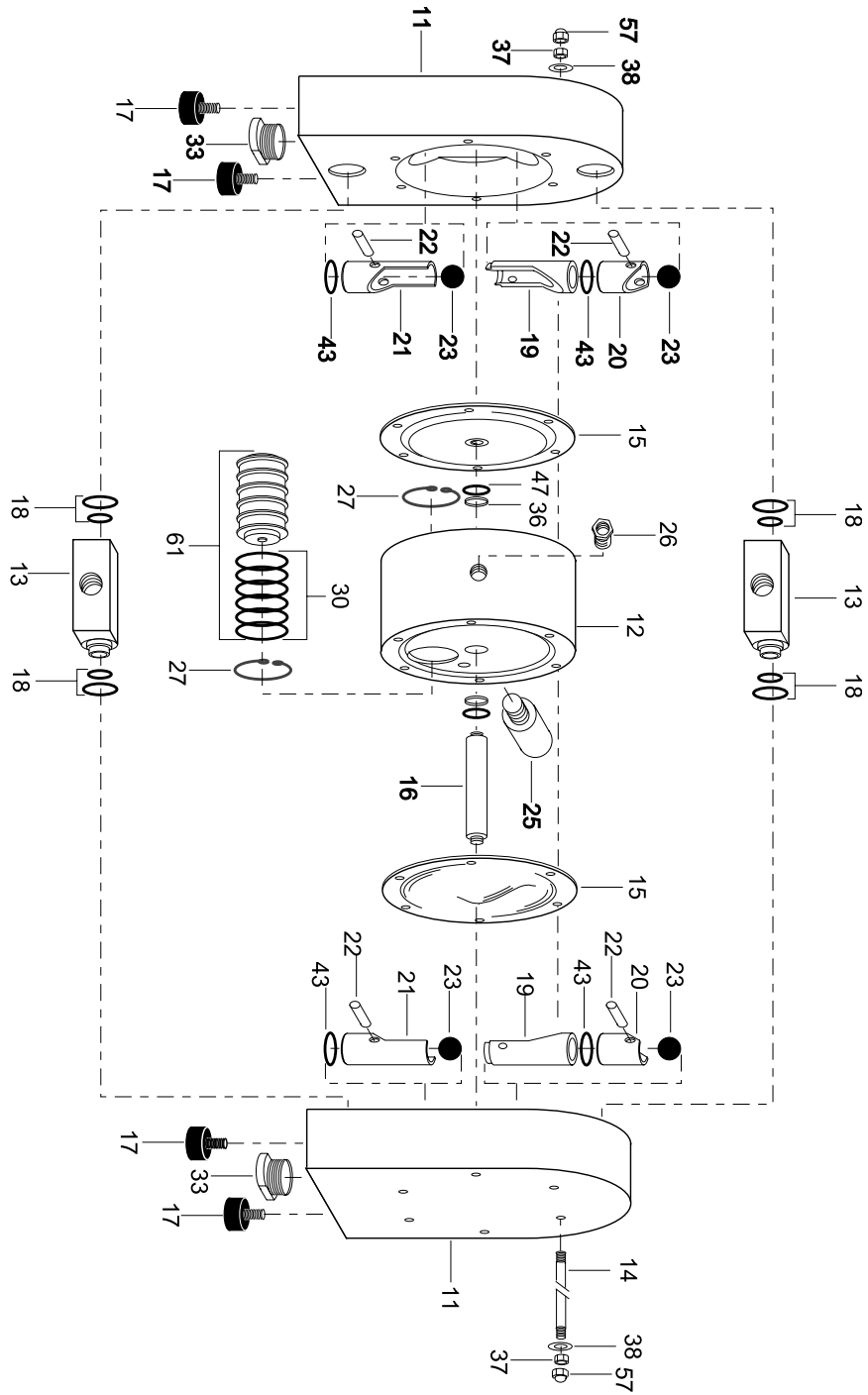
- 1) Turn the housing with the flat side up.
- 2) Make sure all pin screws have one nut and one washer each. Nut should only be put on one or two threads.
- 3) Put all the pin screws through the housing and then turn the housing so it rests on the nuts.
- 4) Let the center block gently be put to the housing with screws through center block. Be careful that threads on screws do not damage the diaphragms when assembling.
- 5) Place suction and discharge connections in their positions in the housing. Be careful not to damage the u-ring (PTFE model) and o-rings.
- 6) Put the second housing onto the pin screws. Make sure that suction/discharge connections are in right direction and again be careful with the u-ring/o-rings.
- 7) Fasten the nuts alternatingly by hand, with or without washers depending on how much of the thread comes out. When all nuts are fastened, turn them gently with a tool so that the pump gets closed. If some of the nuts were fastened without washer, unscrew those and put washers underneath. After a few weeks operation a follow up draft of the nuts is recommended.

The pump is now ready for service and can be reinstalled in the system according to chapter 1 and 2 (installation and operation).

3.6.4 Test run

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.

4.1 Spare part drawing TF50 - TF400



4.2 Spare part list TF50

Pos	Description	Material	Qty	Article No	Pos	Description	Material	Qty	Article No
11	Housing	FE	2	6-050-11	23	Valve ball	EPDM	4	6-050-23
		PTFE		6-050-11-1			PTFE		6-050-23-1
12	Center block	FP	1	6-050-12			NBR		6-050-23-3
13	In/Outlet	FE	2	6-050-13			AISI 316		6-050-23-5
		PTFE		6-050-13-1			PUR		6-050-23-7
14	Pin screw	AISI 316	6	6-050-14	25	Muffler	FP	1	6-050-25
15	Diaphragm	EPDM	2	6-050-15	26	Air intake adapter	Brass	1	6-050-26
		PTFE		6-050-15-1	27	Circlip	Phosph. br.	2	6-050-27
		NBR		6-050-15-3	30	O-ring	NBR	6	6-050-30
16	Diaphragm shaft	AISI 316	1	6-050-16	33	Plug	FE	2	6-050-33
17	Rubber foot	NBR	4	6-050-17			PTFE		6-050-33-1
18	O-ring set (in/outlet)	EPDM	4	6-050-18	36	Center block sealing	FE	2	6-050-36
		PTFE		6-050-18-1	37	Nut	AISI 316	12	6-050-37
		FKM (viton)		6-050-18-2	38	Washer	AISI 316	12	6-050-38
19	Spacer sleeve	FE	2	6-050-19	43	O-ring (valve seat)	EPDM	4	6-050-43
		PTFE		6-050-19-1			PTFE		6-050-43-1
20	Upper valve seat	FE	2	6-050-20			FKM (viton)		6-050-43-2
		PTFE		6-050-20-1	47	O-ring (back up for 36)	NBR	2	6-050-47
21	Lower valve seat	FE	2	6-050-21	57	Nut cover	FE	12	6-050-57
		PTFE		6-050-21-1	61	Air valve complete		1	6-050-61
22	Valve ball stop	PTFE	4	6-050-22-1	70	Service Kit Booster		1	KTVBA1110

4.3 Spare part list TF95/100

Pos	Description	Material	Qty	Article No	Pos	Description	Material	Qty	Article No
11	Housing	FE	2	6-100-11	23	Valve ball	EPDM	4	6-100-23
		PTFE		6-100-11-1			PTFE		6-100-23-1
12	Center block	FP	1	6-100-12			NBR		6-100-23-3
13	In/Outlet	FE	2	6-100-13			AISI 316		6-100-23-5
		PTFE		6-100-13-1			PUR		6-100-23-7
14	Pin screw	AISI 316	6	6-100-14	25	Muffler	FP	1	6-100-25
15	Diaphragm	EPDM	2	6-100-15	26	Air intake adapter	Brass	1	6-050-26
		PTFE		6-100-15-1	27	Circlip	Phosph. br.	2	6-050-27
		NBR		6-100-15-3	30	O-ring	NBR	6	6-050-30
16	Diaphragm shaft	AISI 316	1	6-100-16	33	Plug	FE	2	6-100-33
17	Rubber foot	NBR	4	6-050-17			PTFE		6-100-33-1
18	O-ring set (in/outlet)	EPDM	4	6-100-18	36	Center block sealing	FE	2	6-100-36
		PTFE		6-100-18-1	37	Nut	AISI 316	12	6-200-37
		FKM (viton)		6-100-18-2	38	Washer	AISI 316	12	6-200-38
19	Spacer sleeve	FE	2	6-100-19	43	O-ring (valve seat)	EPDM	4	6-100-43
		PTFE		6-100-19-1			PTFE		6-100-43-1
20	Upper valve seat	FE	2	6-100-20			FKM (viton)		6-100-43-2
		PTFE		6-100-20-1	47	O-ring (back up for 36)	NBR	4	6-100-47
21	Lower valve seat	FE	2	6-100-21	57	Nut cover	FE	12	6-200-57
		PTFE		6-100-21-1	61	Air valve complete		1	6-050-61
22	Valve ball stop	FE	4	6-100-22	70	Service Kit Booster	for TF100	1	KTVBA2100
		PTFE		6-100-22-1			for TF95	1	KTVBA1110

4.4 Spare part list TF200

Pos	Description	Material	Qty	Article No
11	Housing	FE	2	6-200-11
		PTFE		6-200-11-1
12	Center block	FP	1	6-200-12
13	In/Outlet	FE	2	6-200-13
		PTFE		6-200-13-1
14	Pin screw	AISI 316	8	6-200-14
15	Diaphragm	EPDM	2	6-200-15
		PTFE		6-200-15-1
		NBR		6-200-15-3
16	Diaphragm shaft	AISI 316	1	6-200-16
17	Rubber foot	NBR	4	6-400-17
18	O-ring set (in/outlet)	EPDM	4	6-200-18
		PTFE		6-200-18-1
		FKM (viton)		6-200-18-2
19	Spacer sleeve	FE	2	6-200-19
		PTFE		6-200-19-1
20	Upper valve seat	FE	2	6-200-20
		PTFE		6-200-20-1
21	Lower valve seat	FE	2	6-200-21
		PTFE		6-200-21-1

Pos	Description	Material	Qty	Article No
22	Valve ball stop	FE	4	6-200-22
		PTFE		6-200-22-1
23	Valve ball	EPDM	4	6-200-23
		PTFE		6-200-23-1
		NBR		6-200-23-3
		PU (polyurethane)		6-200-23-7
		AISI 316		6-200-23-5
25	Muffler	FP	1	6-100-25
26	Air intake adapter	Brass	1	6-400-26
27	Circlip	Phosph. br.	2	6-400-27
30	O-ring	NBR	6	6-400-30
33	Plug	FE	2	6-200-33
		PTFE		6-200-33-1
36	Center block sealing	FE	2	6-200-36
37	Nut	AISI 316	16	6-200-37
38	Washer	AISI 316	16	6-200-38
43	O-ring (valve seat)	EPDM	4	6-200-43
		PTFE		6-200-43-1
		FKM (viton)		6-200-43-2
47	O-ring (back up for 36)	NBR	2	6-200-47
57	Nut cover	FE	16	6-200-57
61	Air valve complete		1	6-400-61
70	Service Kit Booster		1	KTVBA2100

4.5 Spare part list TF400

Pos	Description	Material	Qty	Article No
11	Housing	FE	2	6-400-11
		PTFE		6-400-11-1
12	Center block	FP	1	6-400-12
13	In/Outlet	FE	2	6-400-13
		PTFE		6-400-13-1
14	Pin screw	AISI 316	8	6-400-14
15	Diaphragm	EPDM	2	6-400-15
		PTFE		6-400-15-1
		NBR		6-400-15-3
16	Diaphragm shaft	AISI 316	1	6-400-16
17	Rubber foot	NBR	4	6-400-17
18	O-ring set (in/outlet)	EPDM	4	6-400-18
		PTFE		6-400-18-1
		FKM (viton)		6-400-18-2
19	Spacer sleeve	FE	2	6-400-19
		PTFE		6-400-19-1
20	Upper valve seat	FE	2	6-400-20
		PTFE		6-400-20-1
21	Lower valve seat	FE	2	6-400-21
		PTFE		6-400-21-1
22	Valve ball stop	FE	4	6-400-22
		PTFE		6-400-22-1

Pos	Description	Material	Qty	Article No
23	Valve ball	EPDM	4	6-400-23
		PTFE		6-400-23-1
		NBR		6-400-23-3
		AISI 316		6-400-23-5
		Vulkollan		6-400-23-7
25	Muffler	FP	1	6-100-25
26	Air intake adapter	Brass	1	6-400-26
27	Circlip	Phosph. br.	2	6-400-27
30	O-ring	NBR	6	6-400-30
33	Plug	FE	2	6-400-33
		PTFE		6-400-33-1
36	Center block sealing	FE	2	6-400-36
37	Nut	AISI 316	16	6-400-37
38	Washer	AISI 316	16	6-400-38
43	O-ring (valve seat)	EPDM	4	6-400-43
		PTFE		6-400-43-1
		FKM (viton)		6-400-43-2
47	O-ring (back up for 36)	NBR	2	6-400-47
57	Nut cover	FE	16	6-400-57
61	Air valve complete		1	6-400-61
70	Service Kit Booster		1	KTVBA4100

4.6 Stocking recommendation

Even at normal operation some details in the pump will be worn. 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. When ordering a spare part set, the complete pump model number must be given to us (see this page "pump code").

Spare part set No 1

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

Spare part 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
4	Pin	22
2	Circlip	27
2	Center block seal	36
4	O-ring valve seat	43
2	O-ring	47
1	Air valve complete	61
1	Service Kit Booster	70

4.7 How to order parts

When ordering spare parts, this should be included in your order to us:

- 1) Model number of the pump (See name plate)
- 2) Article number or pos number of the detail
- 3) Description of the detail
- 4) Quantity of the detail

4.12 Pump code

The model number on the pump and on the front page of this instruction manual tells the pump size and materials of the pump components.

Example:

TF	C	50	-	P	E	U	S
1	2	3		4	5	6	7

1 = STEINLE Filter Press Pump TF

2 = Special executions:

C = Pump in conductive (Ex-proof) material
S = AISI 316 air valve

3 = Pump Size

4 = Material of the pump:

P = PE (Polyethylene)
T = PTFE

5 = Material of the diaphragms:

T = PTFE
E = EPDM
N = NBR

6 = Material of the valve balls:

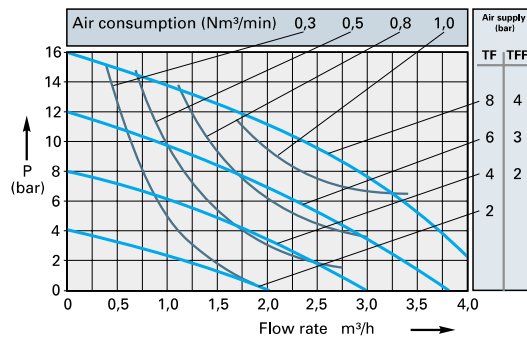
T = PTFE
E = EPDM
N = NBR
S = AISI 316 stainless steel
P = PU (polyurethane)

7 = Optional material of in/outlets:

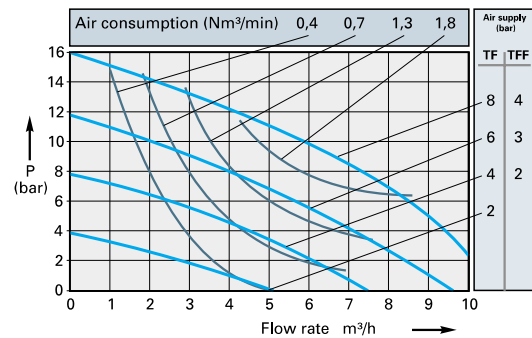
S = AISI 316 stainless steel

5.1 Performance curves

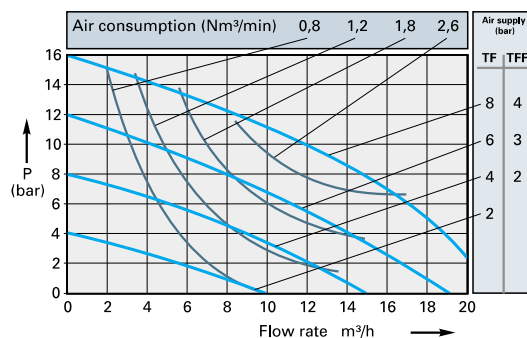
The performance curves are based on water at 20°C. Other conditions such as higher viscosity and/or higher specific gravity or higher temperature will change the pump performance.



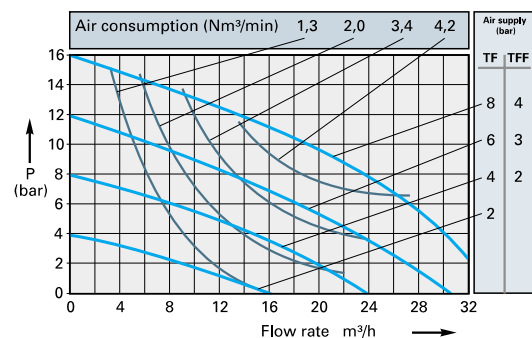
Performance curve TF50/95



Performance curve Station TF / TFF 100/130



Performance curve Station TF / TFF 200



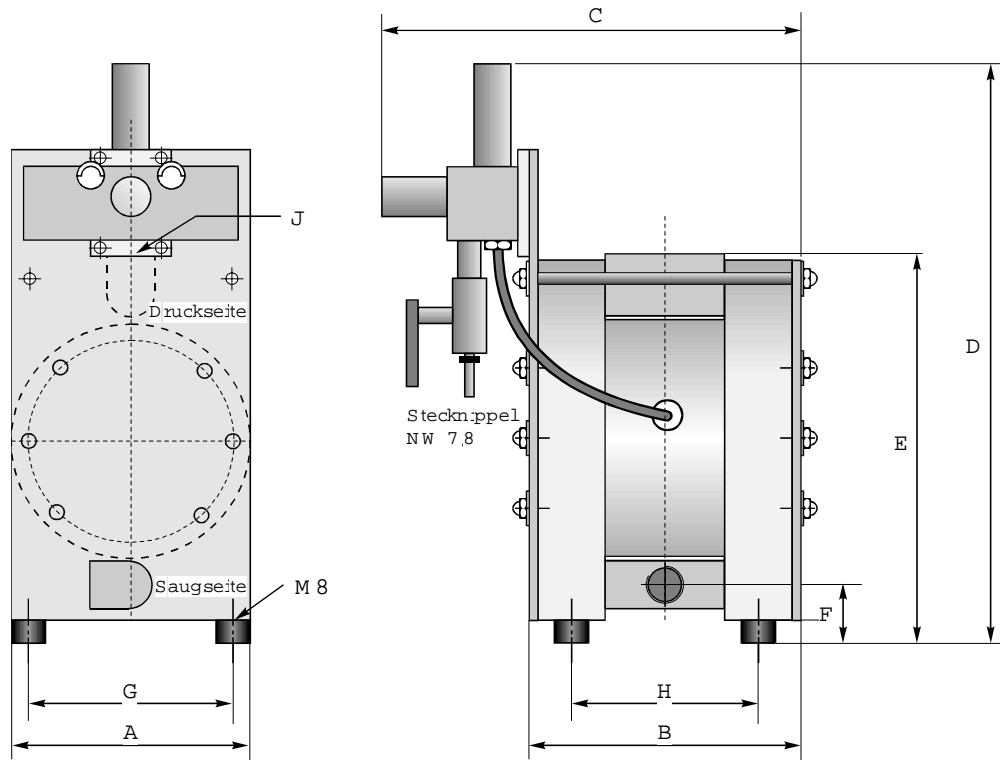
Performance curve Station TF / TFF 400

Example:

A flow rate of 6 m³/h is required and a pressure of 12 should be achieved. A TF 100 (100 l/min = 6 m³/h) is recommended, which has to be supplied with 6 bar compressed air.

When 16 bar should be achieved, the same pump must have an air supply of 8 bar. A TFF 100 is recommended, when 8 bar air pressure are not available. In this case only 4 bar air pressure are suitable.

5.2 Dimensions



	A	B	C	D	E	F	G	H	J
TF 50	150	166	264	360	245	36	130	140	1/2"
TF 95/100	200	220	376	522	320	44	140	154	1"
TF 200	270	316	446	652	450	68	210	250	1 1/2"
TF 400	350	386	564	802	560	80	290	320	2"

5.3 Technical data

	max. suction lift (mWS)		Solid size max. (mm)	Pressure max. (bar)	Temperature max. (°C)		Weight (kg)	
	dry	filled			PE	PTFE	PE	PTFE
TF 50	3	9	4	16	60	110	5	7
TF 95/100	4	9	6	16	60	110	10	17
TF 200	5	9	10	12	60	110	24	44
TF 400	5	9	15	12	60	110	44	90

6.1 Returning parts

When returning parts to STEINLE Industroieipumpen please follow this procedure:

- Consult STEINLE 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

STEINLE Industriebumpen warrants products* of it's own manufacture will be free from defects in raw material and manufacture under normal use and service for a period of not more than one year. STEINLE's obligation under this warranty being limited to repair or replacement of its products which shall be returned to STEINLE Industriebumpen. Follow the procedures above "returning parts". If a pump or part is received defected, report to STEINLE immediately. Parts returned to our company must have written authorisation from STEINLE. This warranty will not apply to any of our products which shall have been used other than for their intended use.

**** Even when products such as diaphragm pumps operate under normal conditions, some parts are subject to wear and may have to be replaced within one year. Examples of such parts in our diaphragm pumps are; diaphragms, valve balls, o-rings and gaskets etc. This warranty will not apply to these parts being subject to wear.***

WARRANTY & REPAIR

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/m³): _____ 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

STEINLE

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www.steinle-pumpen.de

DISTRIBUTOR: