

IOM manual

tapflo®

CTP Centrifugal Pumps

edition 2018 rev 2

Original instruction



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



Pump models:

CTP32-12

CTP50-12.5



» All about your flow

www.tapflo.com

CONTENTS

0.	GENERAL	5
0.1.	Introduction	5
0.2.	Warning symbols	5
0.3.	Qualification and training of personnel	5
1.	INSTALLATION	6
1.1.	Operation principle	6
1.2.	Receiving inspection	6
1.3.	Lifting and transportation	6
1.4.	Storage	7
1.5.	Foundation	7
1.6.	Environment	7
1.7.	Suction and discharge piping	7
1.7.1.	Connection of discharge pipe	8
1.7.2.	Connection of suction pipe	8
1.8.	Health and safety	8
1.8.1.	Protection	8
1.8.2.	Electrical safety	8
1.8.3.	Chemical hazard	8
1.8.4.	Dry running	9
1.8.5.	Noise level	9
1.8.6.	Temperature hazards	9
1.8.7.	Rotating parts	9
1.8.8.	Cleaning and disinfection	9
1.9.	Example of installation	10
1.10.	Instruments	11
1.10.1.	Electric power	11
1.10.2.	Optional instruments	11
1.10.3.	Thermometer	11
1.11.	Motor connection	11
1.12.	Motor standard	12
2.	OPERATION	13
2.1.	Start-up	13
2.1.1.	Starting the pump	13
2.1.2.	Restarting after power shut-off	13
2.2.	Stopping the pump	14

CONTENTS

2.3.	Cleaning and disinfection.....	14
3.	MAINTENANCE	15
3.1.	Inspections.....	15
3.2.	Location of faults	15
3.3.	Disassembly of the pump.....	16
3.3.1.	Disassembly procedure.....	16
3.4.	Assembly of the pump.....	19
3.4.1.	Test run	21
4.	OPTIONS	22
4.1.	Optional connections – 4A/F/H	22
4.2.	Trimmed impeller – 5I.....	23
5.	SPARE PARTS	24
5.1.	Spare parts drawing.....	24
5.2.	Spare parts list.....	24
5.3.	Interactive spare parts lists	25
5.4.	Recommended spare parts.....	25
5.5.	How to order parts.....	25
6.	DATA	26
6.1.	Pump code.....	26
6.2.	Dimensions	27
6.3.	Materials, data and limits.....	28
6.4.	Tightening torques and dimensions of screws/nuts.....	28
6.5.	Performance curves	29
6.6.	Permitted loads on inlet and outlet	30
7.	WARRANTY	31
7.1.	Returning parts	31
7.2.	Warranty	31
7.3.	Warranty form.....	33

EC DECLARATION OF CONFORMITY 01/EC/CTP/2017

Series:

CTP...

Serial numbers:

2017 - ... (from 1711 - ...)

Manufactured by:

Tapflo AB

Filaregatan 4

442 34 Kungälv, Sweden

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Object of declaration: **SINGLE STAGE CENTRIFUGAL PUMPS**

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

- Directive 2006/42/EC of European Parliament and of the Council of 17 May 2006 on machinery, amending Directive 95/16/EC;
- Directive 2014/35/UE of the European Parliament and of the Council of 14 February 2014 on harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits;

References to the relevant harmonised standards used or references to the other technical specifications in relation to:

- PN-EN 809+A1:2009
- PN-EN 809+A1:2009/AC:2010
- PN-EN 12162+A1:2009

Mr Michał Śmigiel is authorized to compile the technical file.

Tapflo Sp. z o.o.
ul. Czatkowska 4b
83-110 Tczew

Signed for and on behalf of Tapflo AB:



Håkan Ekstrand
Managing director

Tapflo AB, 01.11.2017

0. GENERAL

0. GENERAL

0.1. Introduction

The CTP pumps are semi open single stage centrifugal pumps. Since there are no metal parts on the liquid side, the pumps are ideal for chemicals transfer and circulation in surface treatment industries. CTP is a compact and reliable mechanically sealed centrifugal pump made in PP and PVDF. It is the right solution for liquids containing solid particles.

With proper attention to maintenance, CTP 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. 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.



This symbol signals possible danger caused by the presence of electric fields or live wires.

0.3. Qualification and training of personnel



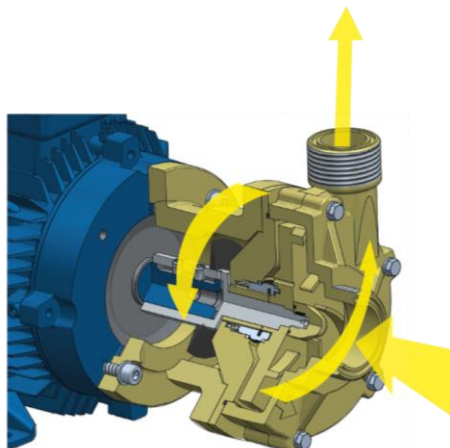
The personnel in charge of installation, operation and maintenance of the pumps we produce must be qualified to carry out the operations described in this manual. Tapflo shall not be held responsible for the training level of personnel and for the fact that they are not fully aware of the contents of this manual.

1. INSTALLATION

1. INSTALLATION

1.1. Operation principle

In order to operate the pump, the casing has to be filled with liquid before start-up. The liquid enters the pump casing axially to the shaft. The rotating impeller generates a centrifugal force accelerating the liquid through the pump casing and into the discharge piping.



1.2. 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 us.

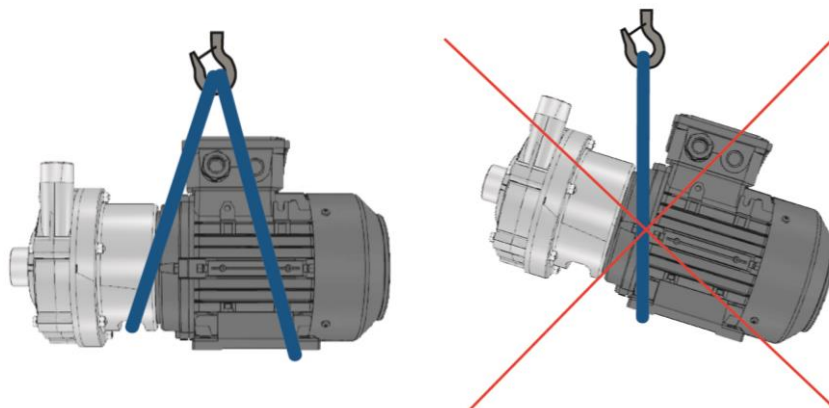
1.3. Lifting and transportation



Before handling the pump check the weight of the pump (see 6.2. *Dimensions*). Refer to Your local standards on how to handle the pump. If the weight is excessive to transport by hand it must be lifted using slings and a suitable lifting device e.g. a crane or forklift.

Always use at least two slings and make sure they are secured in such a way to prevent the pump from slipping and that the pump unit is hanging straight.

Never lift the pump with only one sling. Incorrect lifting can cause serious injury and/or damage to the pump.



Never lift the pump under pressure.

Be careful that nobody passes under the pump when lifted.

Never try to lift the pump by the manifolds or hoses attached to the pump.

1. INSTALLATION

1.4. 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 and discharge which have been fastened to keep pump internals free of debris. Clean the pump thoroughly before installation.

When in storage, turn the shaft by hand at least twice per week. The pump-motor unit should always be stored indoor in dry, vibration and dust free conditions.

1.5. Foundation



The pump-motor unit must stand on and be fixed to a sufficiently rigid structure that can support the entire perimeter on which the unit stands. The foundation on a firm bottom is the most satisfactory. Once the pump is in position, adjust level with metal shims between the feet and the surface on which it stands. Check that the feet of the pump motor unit stand well on each of them. The surface on which the foundation stands must be flat and horizontal. If the unit is fitted on a steel structure, make sure that it is supported so that the feet do not warp. In any case, it is advisable to fit some anti-vibration rubber pieces between the pump and the brickwork. The motor needs an additional stand as its level is higher than that of the pump casing. As an option the pump can be ordered with feet for the motor. For close-coupled type, pump motor alignment is not required.

1.6. Environment



- There should be enough space in the vicinity of the pump in order to operate, maintain and repair it.
- The area in which the pump is operated, must be sufficiently ventilated. Excessive temperature, humidity or dirt may affect the pump operation.
- Behind the cooling fan of the motor there must be sufficient room for the hot air to escape the motor.

1.7. Suction and discharge piping



A pump is generally part of a piping system that can include a number of components such as valves, fittings, filters, expansion joints, instruments, etc. The way the piping is arranged and the positioning of the components has a great influence on the operation and the lifetime of the pump. The pump cannot be used as a support for the components connected to it.

The flow of liquid from the pump must be as even as possible. It is advisable to avoid any tight bends or drastic reductions of diameters that may cause flow resistance in the installation. In case of diameter reduction, it is advisable to use appropriate conical reductions (possibly eccentric on suction side and concentric on discharge side) at changes of diameter and at a minimum distance from pump connections of five diameters.

1. INSTALLATION

1.7.1. Connection of discharge pipe



A check-valve and a shut-off/regulation valve are normally fitted on the discharge side.

The check-valve protects the pump from any backflow. The shut-off/regulation valve cuts off the pump from the line and adjusts the output. Never adjust flow rate using the valve on the suction pipe.

1.7.2. Connection of suction pipe



The suction piping is very important for the correct operation of the pump assembly. It must be as short and as direct as possible. If a longer suction line is unavoidable, the diameter should be large enough, i.e. at least as the inlet connection on the pump, to ensure less flow resistance. In any case, suction must be carried out properly avoiding any air locks.

The CTP pumps are single-stage centrifugal pumps, thus not self-priming. It will therefore always be necessary to install a bottom valve in all cases when the static height of the liquid is lower than the suction height of the pump. It is also crucial that the whole suction line is filled with liquid prior to starting the pump. The suction piping must be air tight. Critical points in these terms are also the seals between flanges and the seals of the valve stems. Even some small air let into the suction line cause serious operating problems that can make the pump stop. It is recommended to use check-valve in the suction line to avoid siphoning when the pump stops.

1.8. 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.

1.8.1. 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 Tapflo pumps.

1.8.2. Electrical safety



Do not carry out any maintenance or/and operation on the pump while it is running or before it has been disconnected from the power supply. Avoid any danger caused by electric power (for details see current regulations in force). Check that electrical specifications on the data plate are equivalent to the power supply to which it will be connected.

1.8.3. Chemical hazard



Whenever the pump is to be used for pumping a different liquid, it is essential to clean the pump beforehand in order to avoid any possible reaction between the two products.

The pump is equipped with a drain from the mechanical seal area to avoid liquid getting into contact with the motor. The liquid therefore is routed to the revision hole of the back casing. In order to prevent spills use a drip pan under the pump made of a material compatible with the liquid.

1. INSTALLATION

1.8.4. Dry running



Do not start nor carry out running tests before filling the pump with liquid. Always avoid dry operation of the pump. Start the pump when it is completely filled and with the valve on the discharge side almost completely closed.

NOTE! A frequency inverter can be used to protect the pump from dry running.

1.8.5. Noise level



CT pumps, including the motor, in normal operating conditions produce a sound level below 80 dB(A). The major sources of noise are: liquid turbulence in the installation, cavitation or any other abnormal operation that is independent from the pump construction nor the pump manufacturer. The user must provide suitable protective means if the sources of noise could produce a harmful noise level for operators and for the environment (in compliance with current local regulations).

1.8.6. Temperature hazards



Raised temperature can cause damage on the pump and/or piping and may also be hazardous for personnel in the vicinity of the pump/piping. The hot or cold parts of the machine must be protected to avoid accidental contacts.

1.8.7. Rotating parts



Do not tamper with the protection of the rotating parts, do not touch or approach rotating parts in movement.

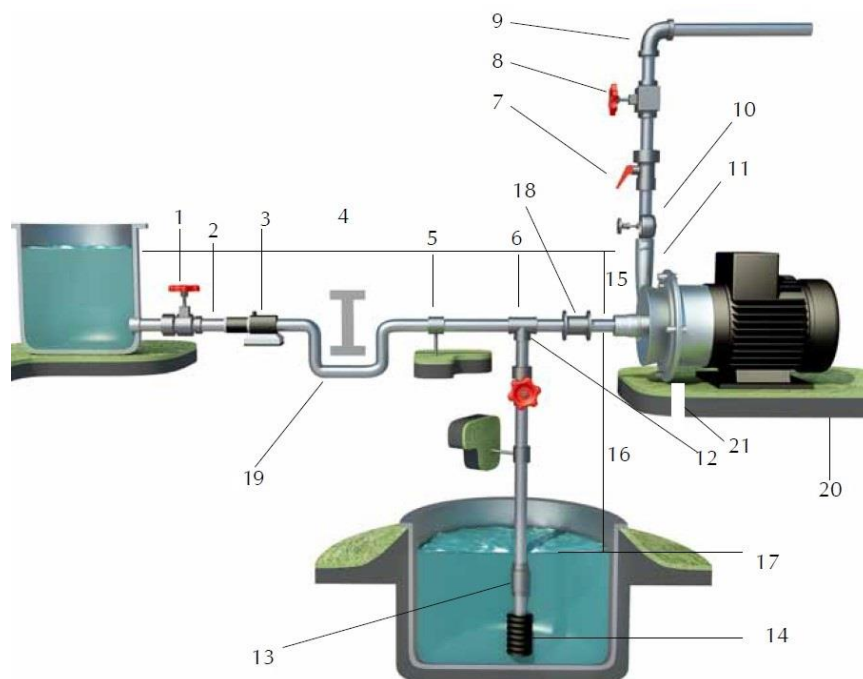
1.8.8. Cleaning and disinfection



Cleaning and disinfection of the pump system is of greatest importance when the pump is used in a food process installation. Use of a pump system that is NOT cleaned or disinfected can cause contamination of the product.

1. INSTALLATION

1.9. Example of installation



- 1) YES: Gate valve (may also be near pump in case of long piping)
- 2) With positive head: tilt of piping towards pump
- 3) YES: line strainer if particles are present
- 4) NO: air pockets – the circuit must be short and straight
- 5) YES: pipe fastening
- 6) Suction line as short and direct as possible
- 7) YES: attachment for gauge or safety pressure switch
- 8) YES: adjusting gate valve on outlet
- 9) Bends placed after valves and instruments not closer to the pump inlet than five times the piping diameter
- 10) YES: attachment for gauge or safety pressure switch
- 11) NO: elbow joints (and other parts) on the pump (discharge and suction lines)
- 12) With negative suction lift: tilt of piping towards suction tank
- 13) YES: check valve (with negative suction lift)
- 14) YES: strainer if particles are present
- 15) Suction head varies according to flow in order to prevent windage
- 16) Suction head
- 17) Immersion depth
- 18) YES: expansion joint (indispensable with long pipes or hot liquids) and/or anti-vibration facility during discharge and suction; anchored near to pump
- 19) YES: overcoming obstacles at lower depths
- 20) Fix the pump by the fixing holes provided: the supports must be level
- 21) YES: drainage channel around base

1. INSTALLATION

1.10. Instruments



In order to ensure a proper control of the performance and the conditions of the installed pump, we recommend using the following instruments:

- a pressure-vacuum gauge on the suction piping;
- a pressure gauge on the discharge piping.

The pressure intakes must be made of straight pieces of piping at a distance of minimum five diameters from the pump inlets. The pressure gauge on discharge must always be fitted between the pump and the shut-off / regulation valve. The output can be read on the pressure gauge, transformed into meters and then compared with the typical curves.

1.10.1. Electric power

The electric power absorbed by the motor can be measured by means of a wattmeter or an amp gauge.

1.10.2. Optional instruments

The optional instruments can indicate if pump is working in an abnormal way. The abnormal conditions can be caused by: accidentally closed valves, lack of pumped liquid, overloads, etc.

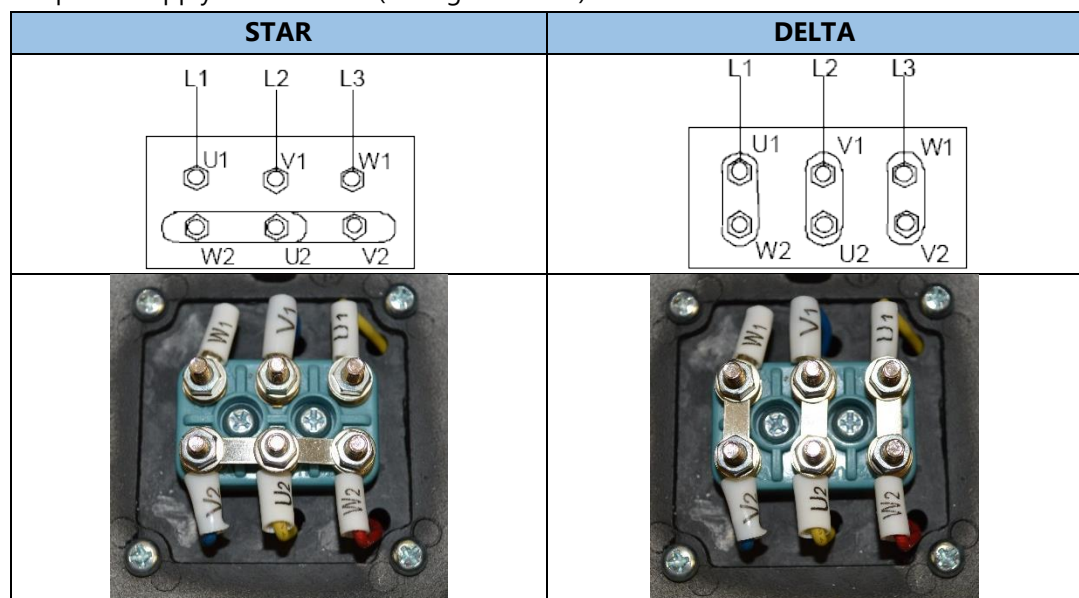
1.10.3. Thermometer

If the temperature of the pumped liquid is a critical parameter, provide the installation with a thermometer (preferably on the suction side).

1.11. Motor connection



An expert electrician must always carry out the electrical connection. Compare the power supply with the data plate specifications and then choose a suitable connection. The type of connection is stated on the motor data plate and can be Y (star) or D (Delta), according to the power supply of the motor (see figure below).



1. INSTALLATION

Follow the connection standard used in the plant. In no case connect the electrical motor directly to supply network but use a suitable electric switchboard equipped with a knife switch and suitable safety devices (e.g. motor breaker switches) in the power circuit. Safety devices against overloads must also protect the motors. Make sure that the motor has suitable grounding and that it has been connected properly.

1.12. Motor standard

As a standard Tapflo CT pump are equipped with motors of the following parameters:

- International Mounting Arrangement – **B34**
- Number of poles / Rotation speed [rpm] – **2**
- **Non ATEX**
- Protection grade – **IP55**
- Voltage – **3 phase**

Motor power	RPM	Voltage	Frequency
0,75 kW	2900	Δ 230 / Y400	50 Hz
	3500	Y460	60 Hz
1,1 kW	2900	Δ 230 / Y400	50 Hz
	3500	Y460	60 Hz
3,0 kW	2900	Δ 230 / Y400	50 Hz
	3500	Δ 265 / Y460	60 Hz
4,0 kW	2900	Δ 400 / Y690	50 Hz
	3500	Δ 460	60 Hz

2. OPERATION

2. OPERATION

2.1. Start-up

- Check manually that the motor is free to turn, moving the motor cooling fan.
- Make sure that the piping is not clogged and is free from residues or foreign objects. Make sure that the liquid flows regularly into the pump.
- The pump and piping connected to it, at least the suction pipe, must be full of liquid. Any air or gas must be carefully released. In case of suction with negative head, fill the suction piping and check how the bottom valve works. It must guarantee that the liquid must not flow back, emptying therefore the suction pipe with consequent disconnection of the pump.
- The suction shut-off valve (if any) must be completely open.
- The shut-off / regulation valve on the discharge side must be almost completely closed.



NOTE! Never run the pump against completely closed discharge valve.



- The motor must turn in the same direction as the arrow shown on the pump. The direction of rotation is always clockwise looking at the pump from the motor side; check by starting briefly, then looking at the direction of rotation of the motor fan through the fan lid. If it is wrong, the motor must be stopped immediately. Change the connection to the terminals of the electric motor (chapter 1.10 "Motor connection") and repeat the procedure described above.



- Any auxiliary connections must all be connected.

2.1.1. Starting the pump



Start the electric motor and open the discharge shut-off / regulation valve gradually until the desired output has been reached. The pump must not run two or three minutes with closed discharge. Longer operation in these conditions can seriously damage the pump.



If the pressure shown on the pressure gauge on the discharge piping does not increase, turn off the pump immediately and release pressure carefully. Repeat the connection procedure.



If there are changes of flow rate, head, density, temperature or viscosity of the liquid, stop the pump and get in touch with our technical service.

2.1.2. Restarting after power shut-off



In case of accidental stopping, make sure that the non-return valve has prevented backflow and check that the motor cooling fan has stopped. Start the pump again following the instructions of chapter 2.1.1 "Starting the pump".

If the pump intakes from a lower level than it is positioned, it can un-prime during the standstill and therefore you must check again before starting that the pump and the suction piping are full of liquid.

2. OPERATION

2.2. Stopping the pump



It is advisable to close the discharge shut-off / regulation valve gradually and stop the motor immediately after. The reverse sequence is not recommendable, especially with larger pumps or longer delivery piping. That is to avoid any problems due to water hammering. If a suction shutoff valve has been installed, it is advisable to close it completely after pump is fully stopped.

2.3. Cleaning and disinfection



Cleaning and disinfection of the pump system is of greatest importance when the pump is used in a food processing installation. Use of a pump system that is NOT cleaned or disinfected can cause contamination of the product. The cleaning cycles as well as chemicals to use for the cleaning vary depending on the pumped product and the process. The user is responsible to establish a suitable cleaning and / or disinfection program according to local and public health and safety regulations.

3. MAINTENANCE

3. MAINTENANCE



Maintenance work on electrical installations must be performed by qualified personnel and only when the power supply has been shut off. Follow the local and national safety regulations.

3.1. Inspections

- Periodically check suction and discharge pressures.
- Inspect the motor according to the instructions from the motor manufacturer.
- In general, a mechanical seal does not require maintenance, but the pump should never run when empty (dry). If a leakage occurs, replace the mechanical seal.

3.2. Location of faults

Overheating of motor	Insufficient flow rate or pressure in pump	No pressure on the discharge side	Irregular discharge flow / pressure	Noise and vibrations	The pump gets clogged	Overheating of the pump	Abnormal wear	Leak in mechanical seal		Possible reason	Solution
	X		X						Wrong direction of rotation	Invert the direction of rotation	
	X	X	X	X					Insufficient suction head (NPSH)	Increase available NPSH: ➤ Raise the suction reservoir ➤ Lower the pump ➤ Increase the pressure in the suction tank ➤ Reduce the vapour pressure ➤ Increase the diameter of the suction pipe ➤ Make suction pipe short and direct	
			X						Pump is clogged	Clean the pump	
	X		X	X			X		Cavitation	Increase suction pressure	
	X		X	X			X		The pump sucks air	Make sure all connections are tight	
		X	X	X					Suction pipe is blocked	Check pipes / valves and filters on the suction line	
	X			X					Discharge pressure too high	Reduce the head by increasing pipe diameter and/or reduce number of valves and bends	
X				X		X			Flow rate too high	Reduce the flow: ➤ Partially close the discharge valve ➤ Reduce the impeller diameter (contact us) ➤ Reduce the rotation speed	
	X			X	X	X	X		Liquid temperature too high	Cool the liquid	
								X	Broken or worn mechanical seal	Replace the seal	
								X	Wrong material of O-rings for the liquid	Mount O-rings in other material (contact us)	
X				X	X	X			The impeller scratches	Reduce the temperature and / or suction pressure. Adjust clearance between housing and impeller	
				X			X		Loads on the pipes	Connect the pipes independent of the pump	
				X	X	X	X		Foreign objects in the liquid	Use a filter on the suction side	
								X	Spring tension too low on mechanical seal	Adjust as mentioned in this manual	
		X							Shut-off valve closed on suction side	Check and open the valve	
	X								Discharge pressure too low	Increase the pressure – install an impeller with a bigger diameter (contact us)	
					X	X			Pump is not filled with liquid	Fill pump with liquid	
X	X			X					Liquid parameters different than calculated	Check pumped liquid parameters	

3. MAINTENANCE

3.3. Disassembly of the pump



The disassembly should be performed only by qualified personnel.



Each operation to be fulfilled with the machine must always be carried out once all the electrical contacts have been disconnected. The pump-motor unit must be placed in a position where it cannot be started unintentionally.



Before servicing in any way the parts that come in contact with the pumped liquid, make sure that the pump has been fully emptied and washed. When draining the liquid, make sure that there is no danger for people or the environment.

The numbers put in brackets, refer to the part numbers in the spare part drawings and spare part lists in chapter 5. "Spare parts".

3.3.1. Disassembly procedure

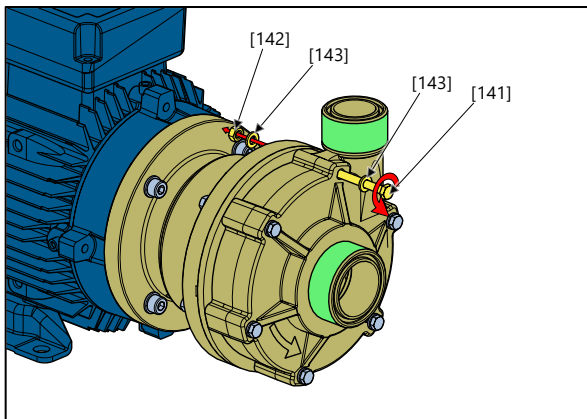


Fig. 3.3.1

Unscrew the casing mounting screws [141] and remove them with the nuts [143] and washers [142].

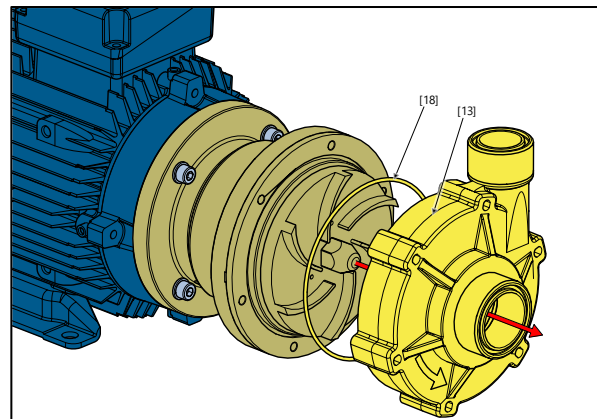


Fig. 3.3.2

Take off the pump casing [13] and remove the casing O-ring [18].

NOTE! After every disassembly the O-ring [18] has to be replaced by a new one.

3. MAINTENANCE

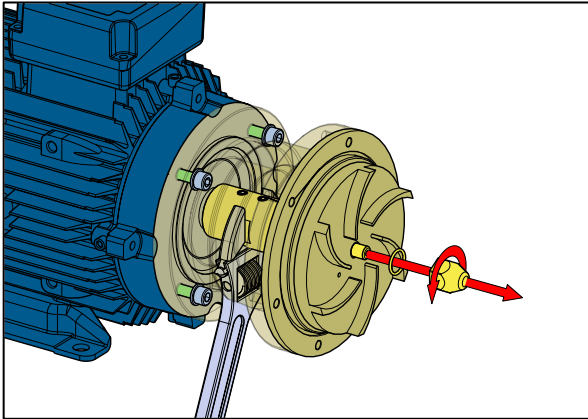


Fig. 3.3.3

Unscrew the impeller mounting nut [191] and remove the O-ring [192], use a spanner key in the opening of the pump back cover [11] to hold the shaft [16] during assembly and disassembly of the impeller.

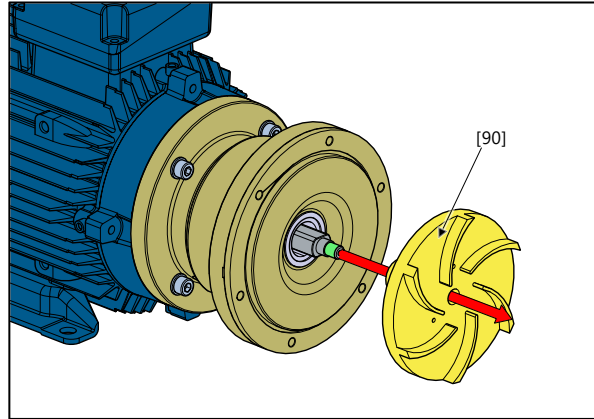


Fig. 3.3.4

Remove the impeller [90] along with the rotating part [15A] of the mechanical seal.

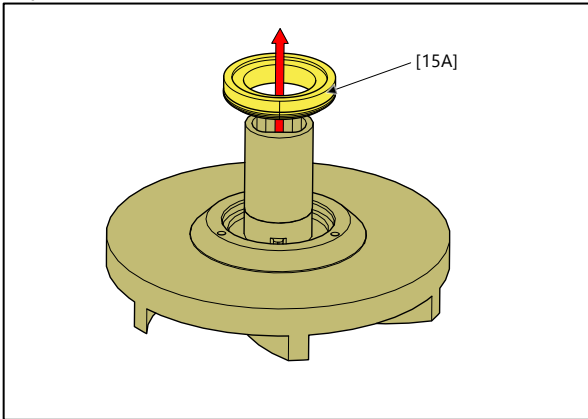


Fig 3.3.5

If necessary, remove the rotating part [15A] of the mechanical seal from the back of the impeller.

NOTE! Apply some alcohol or water before extracting of the mechanical seal.

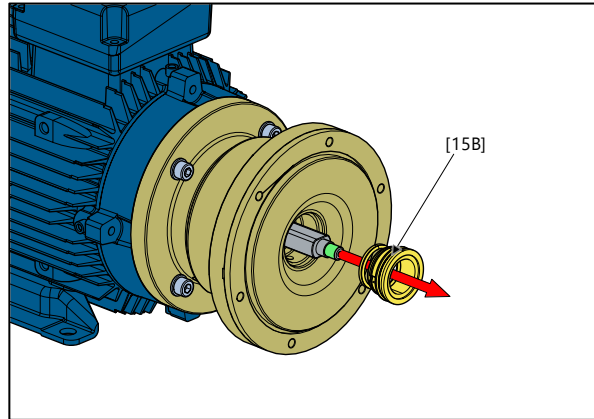


Fig 3.3.6

Using a screwdriver, carefully remove the static part of the mechanical seal [15B].

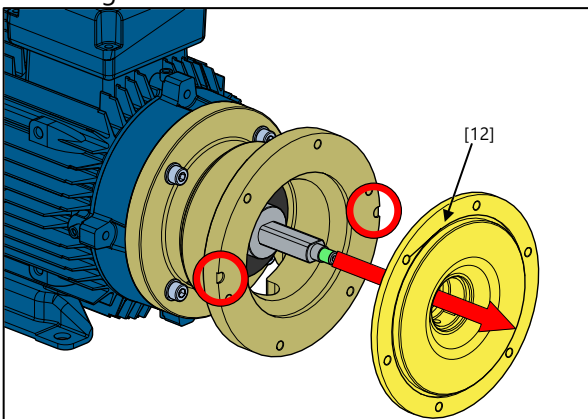


Fig 3.3.7

Remove the back casing [12]. Special undercuts are designed for easier screwdriver utilization.

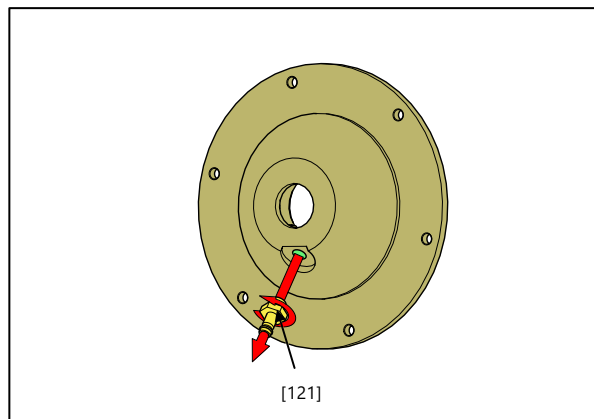


Fig 3.3.8

Unscrew the drainage hose connector [121].

3. MAINTENANCE

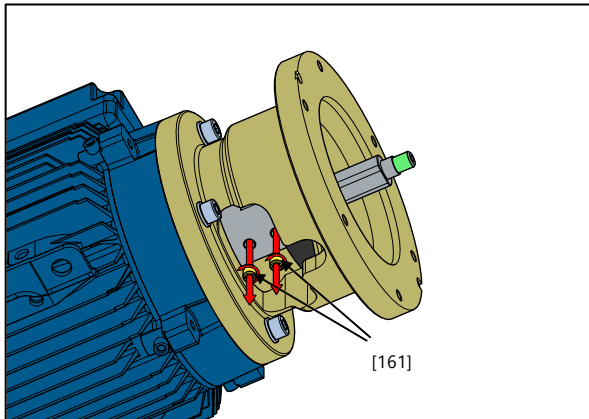


Fig 3.3.9

Loosen and remove the lock screws [161].

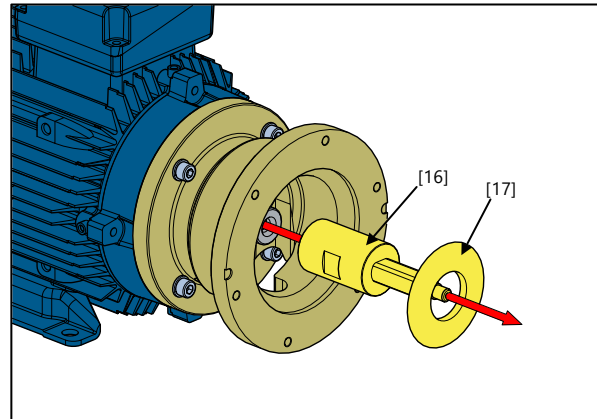


Fig 3.3.10

Remove the shaft [16] with the deflector [17].

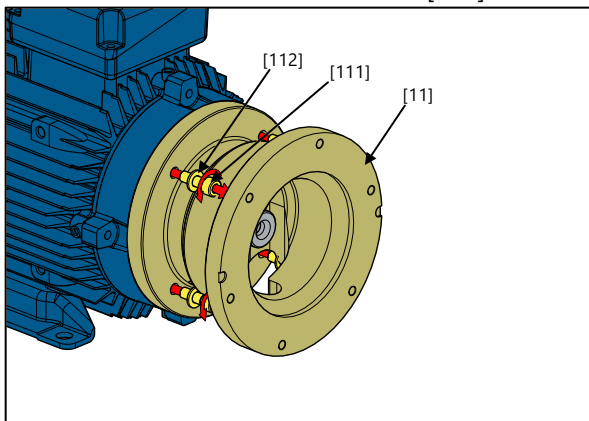


Fig 3.3.11

Remove the screws [111] and washers [112] fastening the back cover [11] to the motor.



The pump is now completely disassembled. Check all components, especially the mechanical seal, for wear or damage and replace if necessary. The casing O-ring should be replaced after every pump disassembly!

3. MAINTENANCE

3.4. Assembly of the pump

The assembly procedure is done in the reverse order to the disassembly.

Nevertheless there are a few things that you have to remember in order to assemble the pump correctly.

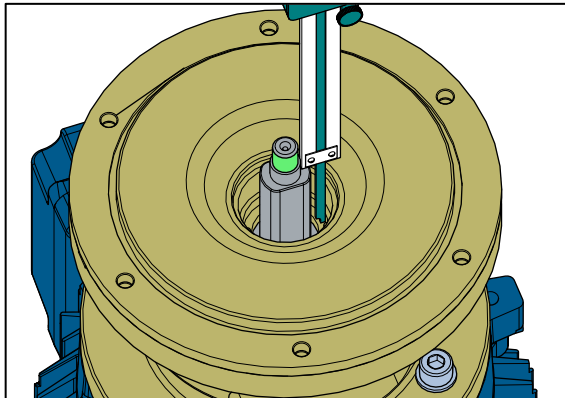


Fig. 3.4.1

Before inserting the static part [15B] of the mechanical seal, fit the back casing [12] onto the back cover [11] and check the seal fitting dimension according to the table below. This ensures that correct pressure is applied on the mechanical seal by the impeller.

NOTE! This is a very important procedure when you have taken off the shaft extension.

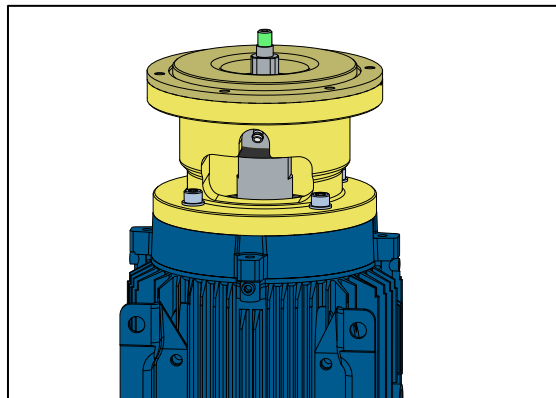


Fig. 3.4.2

Make sure the back casing [12] is assembled in the correct orientation i.e. to allow drainage of the mechanical seal chamber (facing downwards).

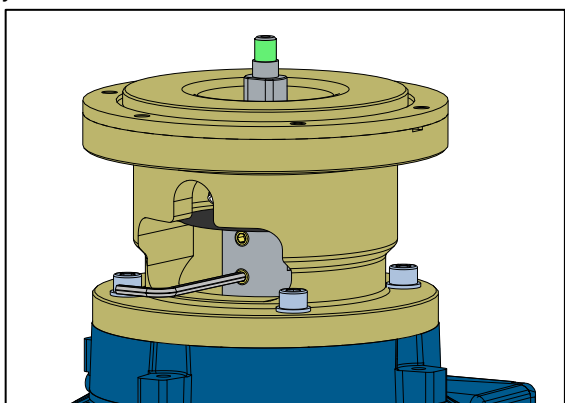
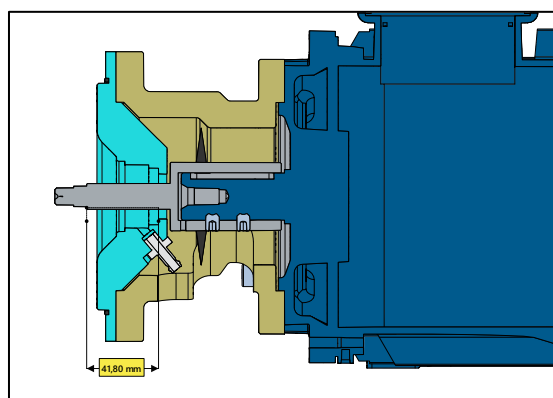


Fig. 3.4.3

Using a calliper, adjust the "S" dimension. It is achievable by loosening the lock screws [161] and moving the shaft extension [16] up or down.



Pump type	S [mm]
CTP32	41,8 ± 0,5
CTP50	41,8 ± 0,5

3. MAINTENANCE

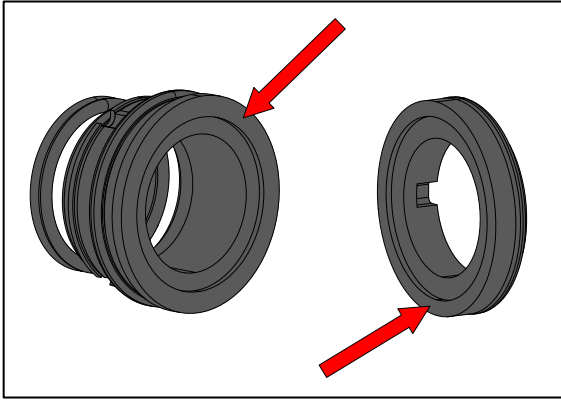


Fig. 3.4.4
Precisely clean and degrease the seal faces.

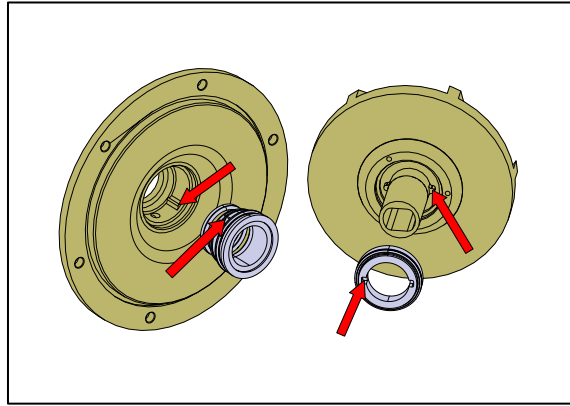


Fig. 3.4.5
When inserting the mechanical seal notice there are splines in the back casing [12] and impeller [90] and incisions in the mechanical seal. Align them to assure proper assembly.

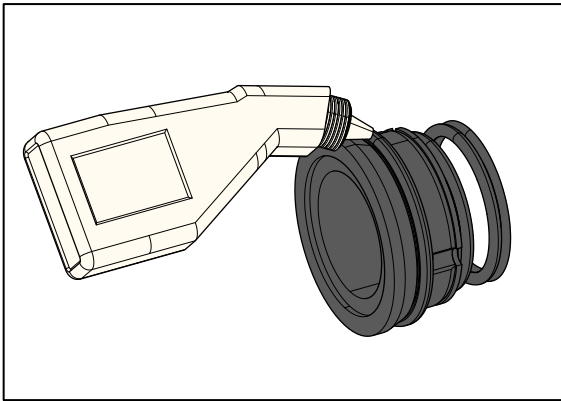


Fig. 3.4.6
Lubricate the static part [15B] of mechanical seal.

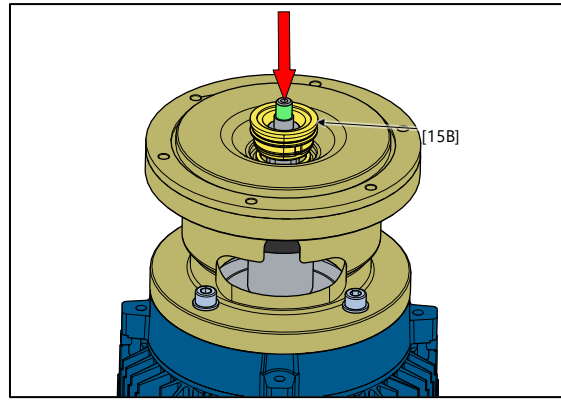


Fig. 3.4.7
Insert the static part [15B] of the mechanical seal into the back casing [12].

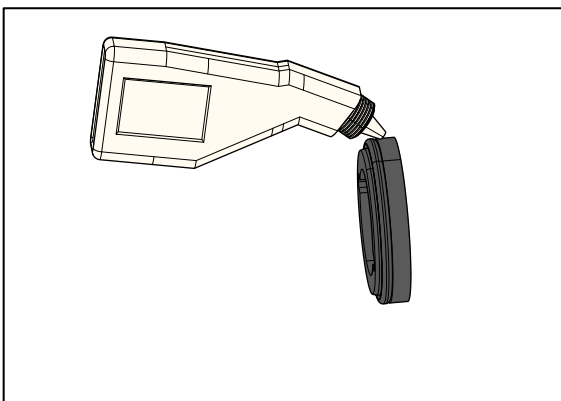


Fig. 3.4.8
Lubricate the rotating part [15A] of mechanical seal to provide more accurate assembly.

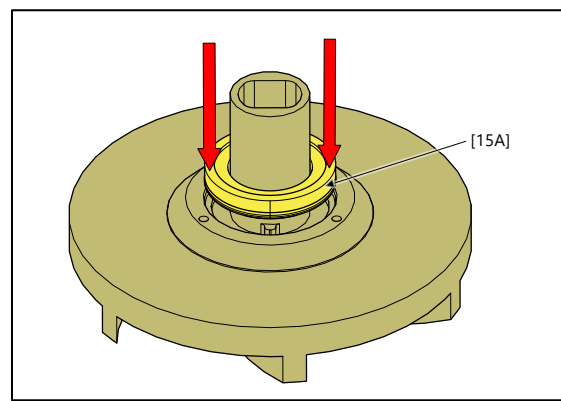


Fig. 3.4.9
Simultaneously with both hands push the static part [15A] of mechanical seal until the end.

3. MAINTENANCE

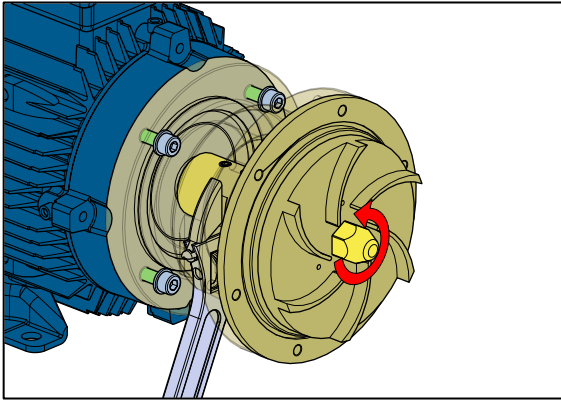


Fig. 3.4.10

After inserting the impeller [90] screw the plastic nut [191] with appropriate torque (see chapter 6.4. *Tightening torques*).

3.4.1. Test run



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

After a few weeks of operation retighten the screws with appropriate torque. See chapter 6.4. *Tightening torques*.

4. OPTIONS

4. OPTIONS

4.1. Optional connections – 4A/F/H

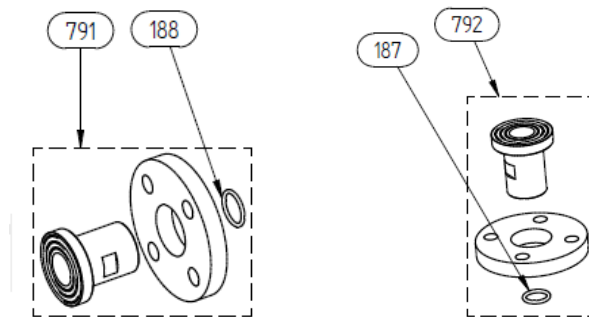
The pumps can be supplied with three kinds of optional connections:

- ANSI flange – **4A**
- DIN flange – **4F**
- hose connection – **4H**

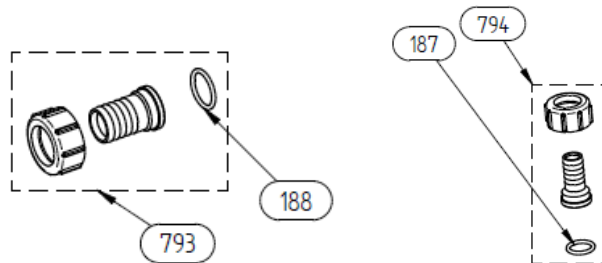
This option is available for all pump sizes.

Additional / different parts:

Flange connection:



Hose connection:



Art. no	Q-ty	Description	Material
4-xx-791	1	Flange connection set – suction side	PP, PVDF
4-xx-792	1	Flange connection set – discharge side	PP, PVDF
4-xx-793	1	Hose connection set – suction side	PP, PVDF
4-xx-794	1	Hose connection set – discharge side	PP, PVDF
4-xx-187	1	O-ring – suction side	EPDM, FKM, FEP
4-xx-188	1	O-ring – discharge side	EPDM, FKM, FEP

4. OPTIONS

4.2. Trimmed impeller – 5I...

Impeller trimming means reducing the outer diameter of the impeller. This leads to the reduction of the circumferential speed inside the centrifugal pump. This operation is done to fit the required duty point.

Throttling of the pump does not allow to simultaneously reduce the flow and head, we can only move up and down on the Q-H curve (by means of changing the system curve and not the pump hydraulics). Reduction of the impeller diameter provide an easy and effective way to permanently reduce both flow and head without changing the rotational speed of the motor.

For pump with a trimmed impeller please use the following pump code “-5Ixxx” code, where xxx = impeller diameter in mm.

For example: CTP50-12.5P-**5I90**-30

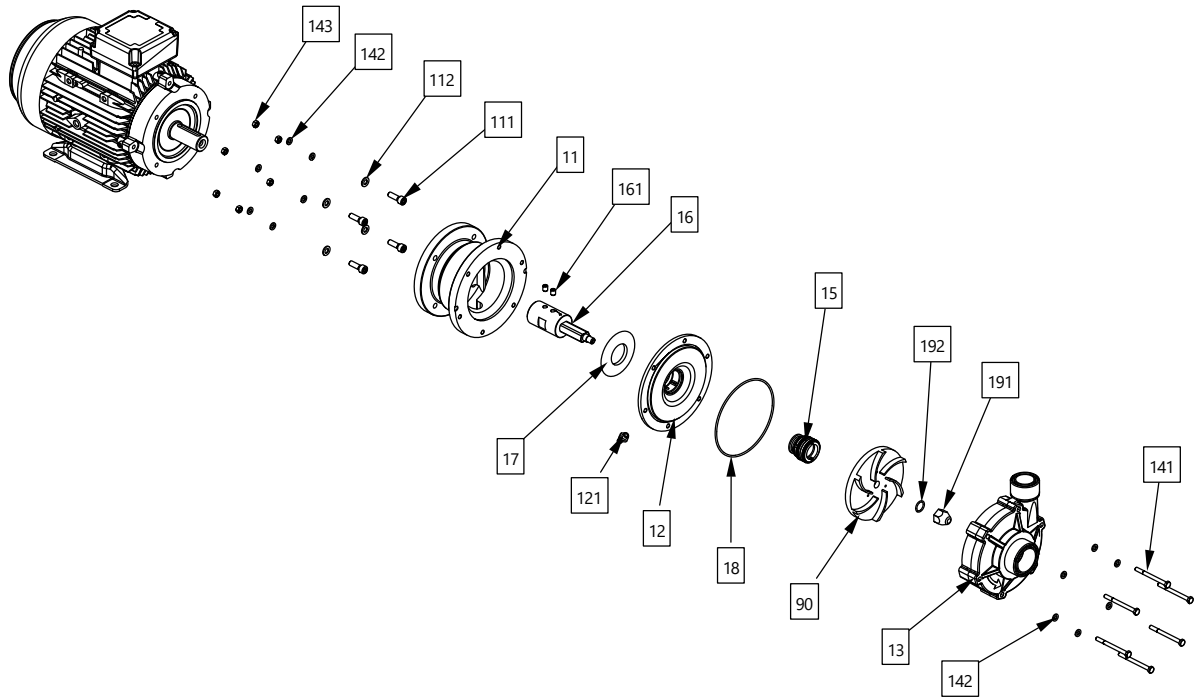
Please contact **Tapflo** for detailed pump curves with trimmed impellers.

The impellers can be trimmed by a maximum of 10 mm on the diameter.

5. SPARE PARTS

5. SPARE PARTS

5.1. Spare parts drawing



5.2. Spare parts list

Pos.	Description	CTP32	CTP50	Material
11	Drive cover	1	1	PP, PVDF
111	Motor mounting screw	4	4	A4-70
112	Motor mounting washer	4	4	A4-70
12	Back casing	1	1	PP, PVDF
121	Hose connector	1	1	PVDF
13	Pump casing	1	1	PP-GF, PVDF
141	Casing mounting screw	6	6	A4-70
142	Casing mounting washer	12	12	A4-70
143	Casing mounting nut	6	6	A4-70
15	Mechanical seal	1	1	See chapter 6.1
16	Shaft	1	1	AISI 316L
161	Set screw	1	2	A2
17	Deflector	1	1	NBR
18	Casing O-ring	1	1	EPDM, FKM, FEP/FKM
90	Impeller	1	1	PP, PVDF
91	Impeller mounting nut	1	1	PP, PVDF
92	Impeller O-ring	1	1	EPDM, FKM, FEP/FKM

5. SPARE PARTS

OPTIONAL CONNECTIONS				
791	Flange connection set – suction side	1	1	PP, PVDF
792	Flange connection set – discharge side	1	1	PP, PVDF
793	Hose connection set – suction side	1	1	PP, PVDF
794	Hose connection set – discharge side	1	1	PP, PVDF
187	O-ring – discharge side	1	1	EPDM, FKM, FEP/FKM
188	O-ring – suction side	1	1	EPDM, FKM, FEP/FKM

5.3. Interactive spare parts lists

The interactive spare parts lists are available under these links:

- [CTP32](#)
- [CTP50](#)

5.4. Recommended spare parts

Normally the CTP pump is maintenance free. However, depending on the nature of the liquid and temperature etc. some parts of the pump are subject to wear and have to be replaced. We recommend having the following parts in stock:

Pos.	Description	Q-ty
15	Mechanical seal	1
18	Casing O-ring	1
92	Impeller O-ring	1

5.5. How to order parts

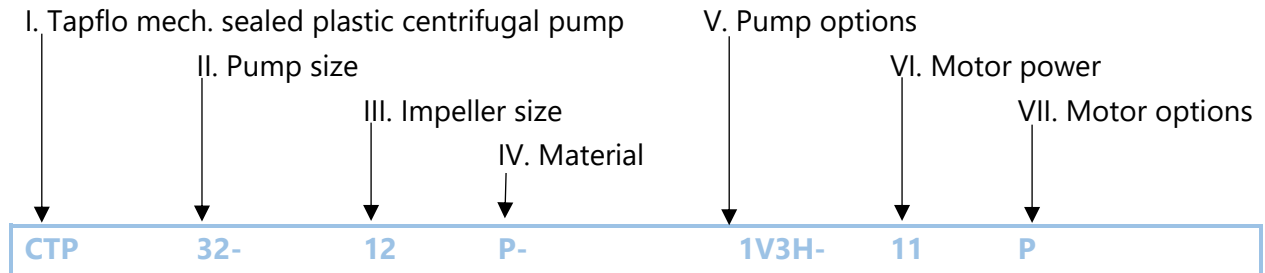
When ordering spare parts for Tapflo pumps please let us know what is the **model number** and **serial number** from the pump's name plate. Then just indicate the part numbers from the spare parts list and quantity of each item.

6. DATA

6. DATA

6.1. 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.



I. CTP = Tapflo mech. sealed plastic centrifugal pump

II. Pump size:

- 32 = Suction 1 ¼"; Discharge 1"
- 50 = Suction 2"; Discharge 1 ½"

III. Impeller size:

- 12 = 120 mm
- 12.5 = 125 mm

IV. Material

- P = PP (Polipropylene)
- K = PVDF (Polyvinylidene fluoride)

V. Pump options:

1. Mechanical seal:

- blank* = Carbon/SiC/EPDM for PP
- blank* = SiC/SiC/FKM for PVDF
- CSE = Carbon/SiC/EPDM
- CSV = Carbon/SiC/FKM
- SSV = SiC/SiC/FKM
- SSF = SiC/SiC/FEP/FKM

2. O-rings:

- blank* = EPDM for PP; FKM for PVDF
- E = EPDM
- V = FKM
- F = FEP/FKM

3. Shaft material:

- blank* = AISI 316L
- H = Hastelloy C-276

4. Optional connections:

- blank* = BSP thread
- A = ANSI flange
- F = DIN flange
- H = Hose connection

5. Other options:

- I = Optional impeller diameter [mm]

VI. Motor power / IEC mechanical size:

- 07 = 0.75 kW / 80
- 11 = 1.1 kW / 80
- 30 = 3.0 kW / 100
- 40 = 4.0 kW / 112

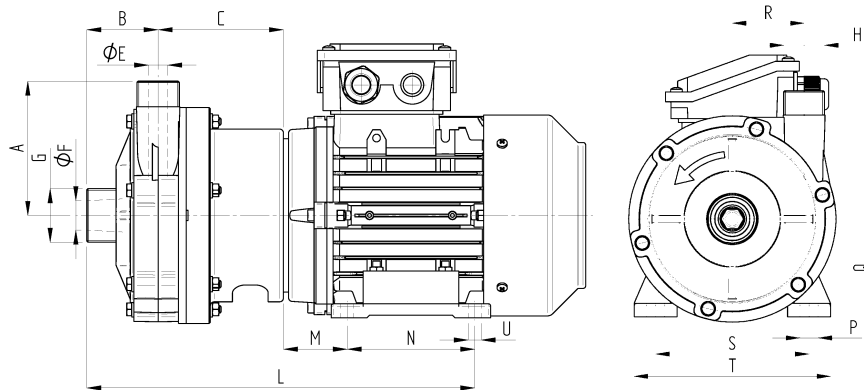
VII. Motor options

- P = 1-phase motor (220/230 VAC)
- V... = Alternative motor voltage
- T = PTC motor protection
- F60 = 60 Hz motor

* = standard execution

6. DATA

6.2. Dimensions



Dimensions in mm (where other is not indicated)

Dimensions in inch (where other is not indicated)

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

SIZE	CTP32	CTP50	
A	105	110	
	4.13	4.33	
B	56	54	
	2.20	2.13	
C	98	125	
	3.86	4.92	
ØE	15	30.8	
	0.59	1.21	
ØF	23	42	
	0.91	1.65	
G	G 1¼"	G 2"	
	G 1¼	G 2	
H	G 1"	G 1½"	
	G 1	G 1½	
L	304	382	389
	11.97	15.04	15.31
M	50	63	70
	1.97	2.48	2.76
N*	100	140	
	3.94	5.51	
P*	15	12	
	0.59	0.47	
Q	80	100	112
	3.15	3.94	4.41
R	58.5	52	
	2.30	2.05	
S*	125	160	190
	4.92	6.30	7.48
T	160	184	219
	6.30	7.24	8.62
U*	10	12	
	0.39	0.47	
Impeller	120	125	
	4.72	4.92	

	CTP32	CTP50		
Flange connection DIN (optional)				
Inlet	DN32	DN50		
Outlet	DN25	DN40		
Flange connection ANSI (optional)				
Inlet	1¼"	2"		
Outlet	1"	1½"		
Hose connection (optional)				
Inlet	OD=32	OD=50		
Outlet	OD=25	OD=40		
Motor				
Power	0.75 kW	1.1 kW	3 kW	4 kW
IEC size	80		100	112
Weight PP [kg]	23.3	25	32	33
Weight PVDF [kg]	24.3	26	33	34

*The dimension may vary depending on motor brand

6. DATA

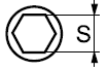
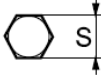
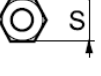
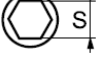

6.3. Materials, data and limits

Casing	PP-GF (30%) or PVDF
Impeller	PP or PVDF
Lantern (not wetted)	PP
O-rings	EPDM, FKM, FEP/FKM
Motor	IEC standard, 3x400 VAC (other on request), 2900 rpm, IP55, B34 frame
Mechanical seal	Rotating part: SiC or Graphite Stationary part: SiC or Ceramic Spring: AISI 316
Shaft	AISI 316L (standard) or Hastelloy C-276
Pressure rating	PP pumps: PN6 at 20°C; PN2 at 70°C PVDF pumps: PN6 at 20°C; PN2 at 90°C
Temperature limits	PP pumps: 0°C - 70°C PVDF pumps: 0°C - 90°C
Viscosity	200 cP (max)
Max solids	3mm – 10% max concentration, hardness 800 Vk

6.4. Tightening torques and dimensions of screws/nuts



Checking of the tightening torques is necessary after all periods of stoppage, when temperature variations are a factor and after all transport and maintenance of the pump. What is more for proper operation and safety the torque values should be checked frequently as part of preventive maintenance (please contact Tapflo for interval proposals).

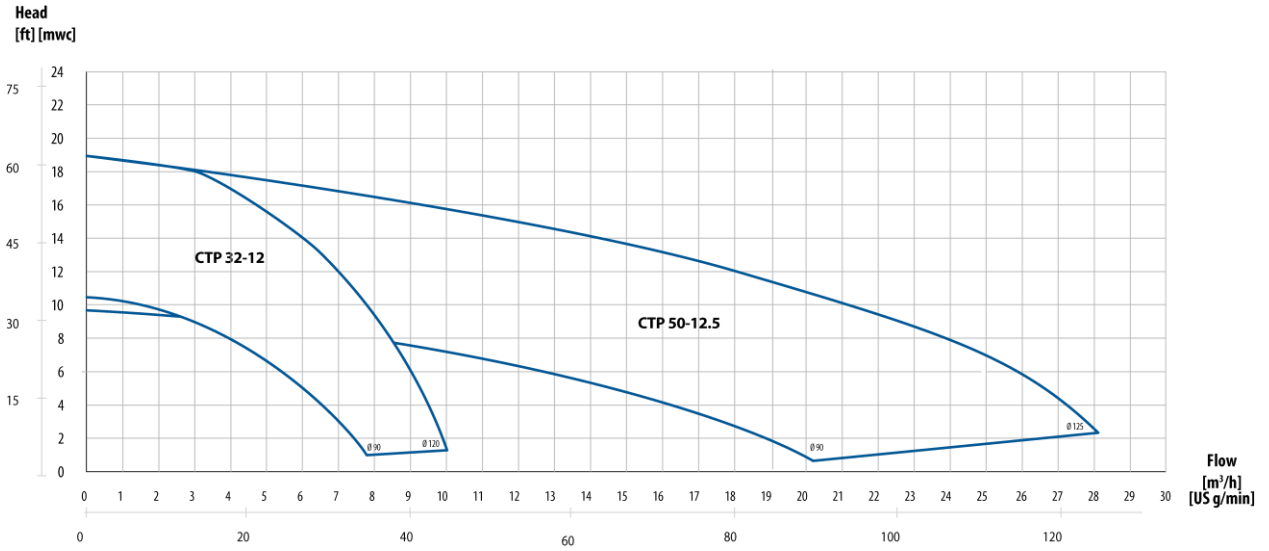
Type	Description	CTP32	CTP50
	Pos. 111 allen screw Mounting torque [Nm] Tool size "S" [mm] Thread	9 5 M6	9 6 M8
	Pos. 141 hexagonal screw Mounting torque [Nm] Tool size "S" [mm] Thread	9 10 M6	9 10 M6
	Pos. 143. hexagonal nut Mounting torque [Nm] Tool size "S" [mm] Thread	9 10 M6	9 10 M6
	Pos. 161 allen screw Mounting torque [Nm] Tool size "S" [mm] Thread	17 5 M6	17 6 M8
	Pos. 191 hexagonal cup nut Mounting torque [Nm] Tool size "S" [mm] Thread	5 16 M10	8 16 M10

6. DATA

6.5. Performance curves

The performance curves are based on water at 20°C. Speed 2900 rpm.
Contact us for detailed curves

Speed 2900 rpm



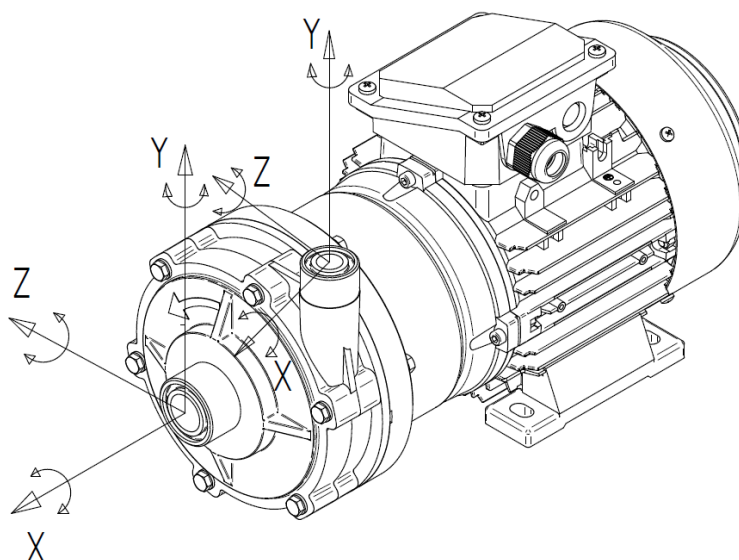
6. DATA

6.6. Permitted loads on inlet and outlet

We recommend not to exceed the following loads and forces reacting on the inlet and outlet.

CTP 32		
Direction	Load [N] (inlet/outlet)	Moment of force (inlet/outlet) [Nm]
X	15	3
Y	20	4
Z	15	3

CTP 50		
Direction	Load [N] (inlet/outlet)	Moment of force (inlet/outlet) [Nm]
X	15	3
Y	20	4
Z	15	3



7. WARRANTY

7. WARRANTY

7.1. Returning parts

When returning parts to Tapflo please follow this procedure:

- Consult Tapflo 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 during transportation.

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

7.2. Warranty

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

1. The following terms and conditions 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 are 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 with Tapflo 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 personnel or use of non-original Tapflo parts;

7. WARRANTY

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 documented 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. 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.
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 customer's 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 contract. 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.

7. WARRANTY

7.3. Warranty form

Company: _____	
Telephone: _____	Fax: _____
Address: _____	
Country: _____	Contact Name: _____
E-mail: _____	
Delivery Date: _____	Date of pump installation: _____
Pump type: _____	
Serial No (see name plate): _____	
Description of the fault: _____	

The installation:	
Liquid: _____	
Temperature [°C]: _____	Viscosity [cPs]: _____ Spec grav. [kg/m ³]: _____ pH-value: _____
Content of particles: _____	% of max size [mm]: _____
Flow [l/min]: _____	Duty [h/day]: _____ No of starts per day: _____
Discharge head [mWC]: _____	Suction head / lift [m]: _____
Other: _____	

Place for sketch of installation:	

Sweden

Filaregatan 4 | S-442 34 Kungälv

Tel: +46 303 63390

Fax: +46 303 19916

E-mail addresses:

Commercial questions: sales@tapflo.com

Orders: order@tapflo.com

Tech support: support@tapflo.com

Tapflo products and services are available in 75 countries on 6 continents.

Tapflo is represented worldwide by own Tapflo Group Companies and carefully selected distributors assuring highest Tapflo service quality for our customers' convenience.

AUSTRALIA | AUSTRIA | AZERBAIJAN | BAHRAIN | BELARUS | BELGIUM | BOSNIA & HERZEGOVINA | BRAZIL | BULGARIA | CANADA | CHILE | CHINA | COLOMBIA | CROATIA | CZECH REPUBLIC | DENMARK | ECUADOR | EGYPT | ESTONIA | FINLAND | FRANCE | GREECE | GEORGIA | GERMANY | HONG-KONG | HUNGARY | ICELAND | INDIA | INDONESIA | IRAN | IRELAND | ISRAEL | ITALY | JAPAN | JORDAN | KAZAKHSTAN | KUWAIT | LATVIA | LIBYA | LITHUANIA | MACEDONIA | MALAYSIA | MEXICO | MONTENEGRO | MOROCCO | THE NETHERLANDS | NEW ZEALAND | NORWAY | POLAND | PORTUGAL | PHILIPPINES | QATAR | ROMANIA | RUSSIA | SAUDI ARABIA | SERBIA | SINGAPORE | SLOVAKIA | SLOVENIA | SOUTH AFRICA | SOUTH KOREA | SPAIN | SUDAN | SWEDEN | SWITZERLAND | SYRIA | TAIWAN | THAILAND | TURKEY | UKRAINE | UNITED ARAB EMIRATES | UNITED KINGDOM | USA | UZBEKISTAN | VIETNAM

Tapflo Group Companies

Austria

Tapflo Austria
Tel: +43 732 27292910
sales@tapflo.at

Azerbaijan

Tapflo Azerbaijan LLC
Tel: +994 502660799
sales@tapflo.az

Baltic States

Tapflo Latvia
Tel: +371 67472205
sales@tapflo.lv

Belarus

Tapflo Belarus
Tel: +375 17 3934609
sales@tapflo.by

Bulgaria

Tapflo EOOD
Tel: +359 (2) 974 18 54
office@tapflo.org

Canada

Tapflo Canada
Tel: +1 514 813 5754
canada@tapflo.com

Croatia

Tapflo GmbH
Tel: +385 91 4884 666
sales@tapflo.hr

Czech Republic

Tapflo s.r.o.
Tel: +420 513033924
tapflo@tapflo.cz

China

Tapflo (Wuxi)
Tel: +86 510 8241 7602
sales@tapflo.cn

Denmark

Tapflo Danmark
Tel: +45 36 454600
info@tapflo.dk

France

Tapflo France
Tel: +33 1 34 78 82 40
info@tapflo.fr

Georgia

Tapflo Georgia
Tel: +995 577 463010
sales@tapflo.ge

India

Tapflo Fluid Handling India
Pvt Ltd
Tel: +91 20 65000215
ac@tapflo.in

Ireland

Tapflo Ireland Ltd
Tel: +353 1 2011911
info@tapflo.ie

Italy

Tapflo Italia
Tel: +39 0362307698
info@tapfloitalia.com

Japan

Tapflo Japan K.K.
Tel: +81-3-6240-3510
tapflojp@tapflo.co.jp

Kazakhstan

Tapflo Kazakstan
Tel: +7 727 3278347
sales@tapflo.kz

Poland

Tapflo Sp. z o.o.
Tel: +48 58 530 42 00
info@tapflo.pl

Romania

S.C. Tapflo Rom. S.r.l.
Tel: +40 21 3451255
sales@tapflo.ro

Russia

Tapflo Company
Tel: +7 495 232 18 28
sales@tapflo.com.ru

Serbia

Tapflo d.o.o.
Tel: +381 21 44 58 08
sales@tapflo.rs

Slovakia

Tapflo s.r.o.
Tel: +421 911 137 883
tapflo@tapflo.sk

Slovenia

Tapflo GmbH
Tel: +386 68 613 474
sales@tapflo.hr

Spain

Tapflo Iberica
Tel: +34 91 8093182
avives@tapfloiberica.es

South Africa

Tapflo (Pty) Ltd
Tel: +27 31 701 5255
sales@tapflo.co.za

Turkey

Tapflo Makina Ltd
Tel: +90 216 467 33 11
sales@tapflo.com.tr

Ukraine

TOB Tapflo
Tel: +380 44 222 68 44
sales@tapflo.com.ua

Uzbekistan

Tapflo Uzbekistan
Tel: +998 712370940
sales@tapflo.uz

United Kingdom

Tapflo (UK) Ltd
Tel: +44 2380 252325
sales@tapflo pumps.co.uk