

IOM manual

tapflo®

DT series Active Pulsation Dampener

edition 2016 rev 2



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



Dampener models:

DT/ DTX 9/20/25

DT/ DTX 50/70/80

DT/ DTX 100/120/125

DT/DTX 200/220/225

DT/ DTX 400/420/425

DT/ DTX 800/820/825



» 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. Storage.....	7
1.4. Health and safety	7
1.4.1. Protection	7
1.4.2. Explosion hazardous environments – ATEX.....	7
1.4.3. Air pressure.....	8
1.4.4. Noise level	8
1.4.5. Temperature hazards.....	8
1.5. Air connection	8
1.6. Example of installation	9
2. OPERATION	10
2.1. Before starting the dampener.....	10
3. MAINTENANCE	11
3.1. When the dampener is new or reassembled.....	11
3.2. Routine inspection	11
3.3. Complete inspection	11
3.4. Location of faults	11
3.5. Disassembly of the dampener.....	12
3.5.1. Before the disassembly procedure	12
3.5.2. Disassembly procedure.....	12
3.6. Assembly of the dampener	14
3.6.1. Test run	16
4. SPARE PARTS	17
4.1. Spare parts drawing - PE & PTFE, Aluminium	17
4.2. Spare parts drawing – steel and sanitary	18
4.3. Spare parts list – steel and sanitary	18
4.4. Stocking recommendation	19
4.5. How to order parts.....	19
4.6. Dampener code	19

CONTENTS

5.	TECHNICAL DATA	20
5.1.	Overall dimensions	20
5.2.	Tightening torques	21
6.	WARRANTY	22
6.1.	Warranty form.....	22
6.2.	Returning parts	23
6.3.	Warranty	23

EC declaration of conformity

Machinery directive 2006/42/EC

Pressure equipment directive 97/23/EC, Category I

Tapflo AB declares that:

Product name: Active Pulsation Dampener

Models: DT...

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

and is in conformity with the Pressure Equipment Directive (PED) 97/23/EC Category I.

Manufactured by Tapflo Sp. z o. o., Poland for:

Tapflo AB
Filaregatan 4
S-442 34 Kungälv
Sweden

Tapflo AB, January 1st 2014



Håkan Ekstrand
Managing director

0. GENERAL

0. GENERAL

0.1. Introduction

The active pulsation dampener is the most efficient way to remove pressure variations on the discharge of the pump. The Tapflo pulsation dampener works actively with compressed air and a diaphragm, automatically setting the correct pressure to minimize the pulsations. The pulsation dampener is available for all Tapflo pump sizes and material versions.

With proper attention to maintenance, Tapflo active pulsation dampeners will give efficient and trouble free operation. This instruction manual will familiarize operators with detailed information about installing, operating and maintaining the dampener.

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 dampener or its subassemblies.

0.3. Qualification and training of personnel



The personnel in charge of installation, operation and maintenance of the dampener 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.

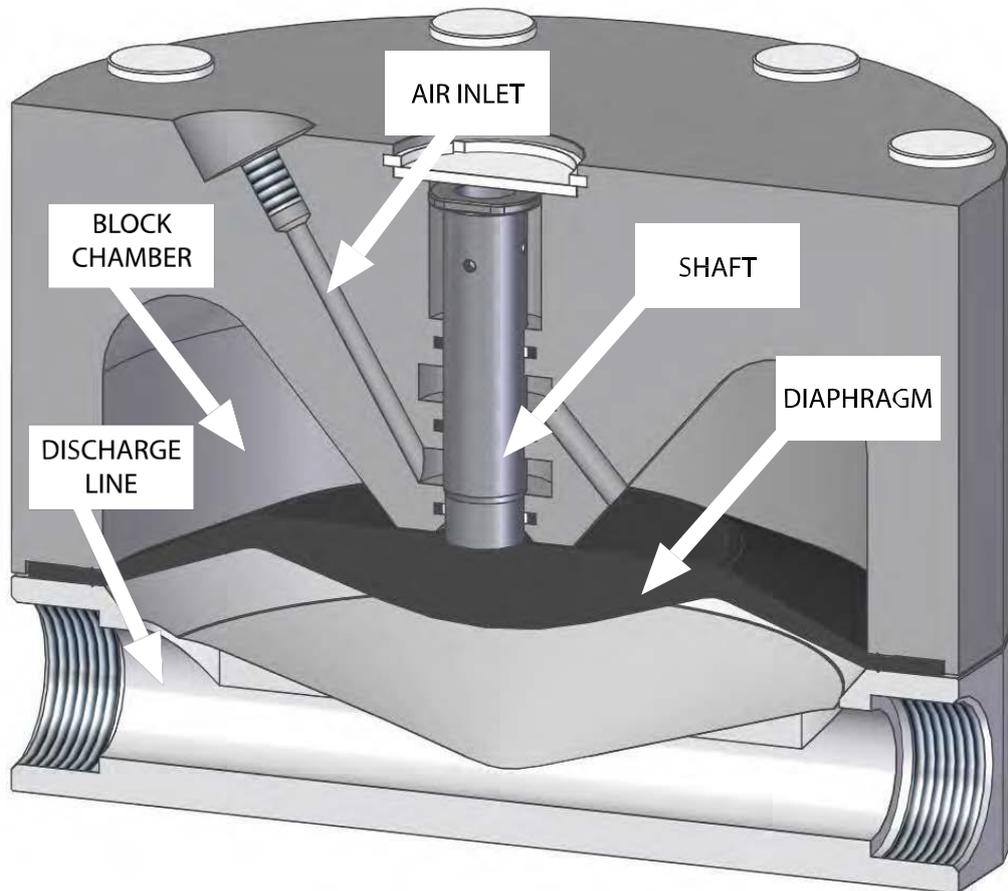
1. INSTALLATION

1. INSTALLATION

1.1. Operation principle

The pulsation dampener's main function is to remove pressure variations on the discharge of the pump. The dampener works actively with compressed air and a diaphragm, automatically setting the correct pressure to minimise the pulsations.

The air pressure supplied to the dampener is the same as the one supplied to the pump. The medium flowing through the dampener affects the diaphragm, which by means of the compressed air on the air side compensates the fluctuations of pressure in the discharge line. The air concentrated in the dampeners block works as a spring for the medium flowing through the dampener.



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. INSTALLATION

1.3. Storage



If the equipment is to be stored prior to installation, place it in a clean location. The dampener should be stored in an ambient temperature of 15°C (59°F) to 25°C (77°F) and relative humidity below 65%. It should not be exposed to any heat source e.g. radiator, sun as this could result in a negative way on the tightness of the dampener. Do not remove protective covers from the suction, discharge and air connections which have been fastened to keep pump internals free of debris. Clean the dampener thoroughly before installation.

1.4. Health and safety

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



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

1.4.1. 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 dampeners.

1.4.2. Explosion hazardous environments – ATEX



The standard DT series dampeners are not allowed to operate in environments where there is danger of explosion. Static electricity may occur in the pump under operation, which may cause explosion and injury. Special conductive DTX pumps are available for such applications. Follow below instructions and local/national rules for safe use.

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

ATEX II 2 GD IIB c T4

Equipment group:	II – all other explosive areas than mines;
Category group:	2 – high level of protection (can be used in zone 1);
Atmosphere:	G – gas; D – dust;
Explosion group:	IIB – such as ethylene;
Type of protection:	c – constructional safety;
Temperature class:	T4 – in the event of a malfunction, the maximum temperature of a surface that may be exposed to gas T4 = 135 °C.

Earth connection of the 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 earth wire to earth and also make sure that other equipment like hoses/pipes/containers etc. are properly earthed/connected.

1. INSTALLATION

1.4.3. Air pressure

The maximum air pressure for Tapflo dampeners is 8 bar. Higher air pressure than 8 bar can damage the dampener and may cause injury to personnel in vicinity of the dampener.

Please make sure that supply air to the dampener must have the same flow and pressure as the pump that dampener is installed with.

1.4.4. Noise level



At tests, the noise level from a Tapflo dampener has not exceeded 70 dB(A). Under some circumstances, for example if the dampener is operating under high air pressure at low discharge head, the noise can be inconvenient or hazardous for personnel staying for long periods in the vicinity of the pump. This hazard can be prevented by:

- using suitable ear protection;
- lowering the air pressure and/or raising the discharge head.

1.4.5. Temperature hazards

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



- When the dampener is exposed to ambient temperature variations or if there is big difference between the temperature of the product and the surrounding, the tightening torques of the housing nuts should be checked periodically as part of preventive maintenance.
- If a hot product is pumped, the dampener should not stand still when filled for a longer period of time. This could cause leakage.
- Below 0°C (32°F) plastic materials become more fragile what can cause increased wear of parts made of these materials. This is a hazard that has to be accepted when pumping cold products. Also in such case, when a dampener is not operational it should be drained of all liquid.

1.5. Air connection

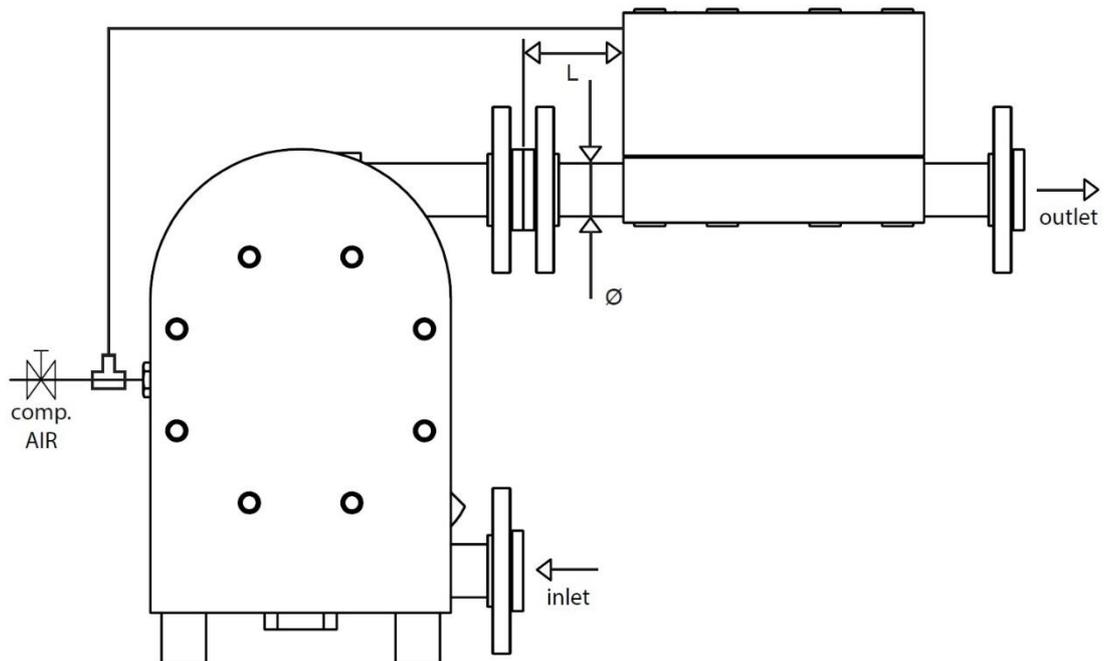
Screw the air hose into the air intake on the centre block of the dampener with for example a quick release coupling. For best efficiency, use the same hose diameter as the internal diameter of the connection on the air intake.

1. INSTALLATION

1.6. Example of installation

The pulsation dampener is installed according to the sketch. It can be connected with a nipple immediately after the pump outlet, or placed independent of the pump with a flexible hose between the pump and the dampener. Makes sure that the dampener does not cause any tension or strain to the pump. The air hose is connected to the pump air hose with a T-connection, between the pump and regulator/valves (See sketch). It is important that the air to the dampener must have the same flow and pressure as to the pump!

In order to ensure the most effective pulsation dampening the dampener should be installed not further than five times the diameter of the pipeline from the discharge flange of the pump $L < 5 \cdot \varnothing$



2. OPERATION

2. OPERATION

2.1. Before starting the dampener



- Make sure the pump is installed according to the installation instruction (pump IOM manual).
- When installation is new or reinstalled, a test run with water should be conducted to make sure that the dampener operates normally and does not leak.



- When installation is new or reinstalled, check the dampener housing nuts tightening torque (see chapter 5.5 "*Tightening torques*"). After approximately one week of operation, the torque should be checked again. This is important to prevent possible leakage.

3. MAINTENANCE

3. MAINTENANCE

3.1. When the dampener is new or reassembled



If the dampener is new or reassembled after maintenance it is important to retighten the dampener housing nuts (pos. 37) after a few days of operation.

Make sure to use the right torque – see chapter 5.2 "Tightening torques".

3.2. Routine inspection



Frequent observation of the dampener operation is recommended to detect problems. A change in sound of the running dampener can be an indication of wear (see chapter 3.4 "Location of faults" below).

Leaking liquid from the dampener 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 of the dampener. The characteristics of the liquid, temperature, materials used in the dampener and running time decide how often a complete inspection is necessary.

If a problem has occurred, or if the dampener is in need of a complete inspection, refer to chapters 3.4 "Location of faults" and 3.5 "Disassembly of the dampener". You are of course warmly welcome to consult us for further help.

Parts that are subject to wear should be kept in stock, see our recommendations in chapter 4.4 "Stocking recommendation".

3.4. Location of faults

PROBLEM	POSSIBLE FAULT	POSSIBLE SOLUTION
The dampener does not work	The air pressure is too low The air connection is blocked Muffler is blocked Dirt in the dampener chamber Diaphragm breakdown	Check if set pressure equals set pressure for the pump Check / clean air supply connection Check / clean / replace muffler Remove debris from the chambers Replace diaphragm
Liquid leaks from the dampener	Screws on the housing not properly tightened Damaged diaphragm Tension / stress from the installation	Check tightening torques of the screws Check / replace diaphragms Adjust installation, eliminate stress, provide separate support for dampener
Liquid comes out of the muffler	Diaphragm breakdown	Replace diaphragm
Diaphragm breakdown	Wrong selection of material Too high pressure in the installation Too high pressure on suction side	Contact us for information on material selection Use air treatment system for protection Make sure there is pressure balance between the air and liquid side of the diaphragm

3. MAINTENANCE

3.5. Disassembly of the dampener

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

3.5.1. Before the disassembly procedure



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

3.5.2. Disassembly procedure



Fig. 3.5.1

By means of a screwdriver, remove the circlip [27] and muffler [25]



Fig. 3.5.2

Remove the nut covers [579] from the dampener housing and block

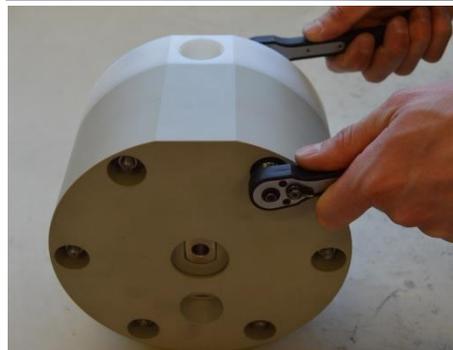


Fig. 3.5.3

Using two spanners unscrew the nuts [37] cross-side and take them out alongside with the washers [38].



Fig. 3.5.4

Take out the dampener block [12].

3. MAINTENANCE



Fig. 3.5.5

Take the pin screws [14] out of the dampener housing [11].



Fig 3.5.6

Unscrew the diaphragm [15] by hand (clockwise).



Fig 3.5.7

Using an allen key, unscrew the shaft ending [1652] from the diaphragm.

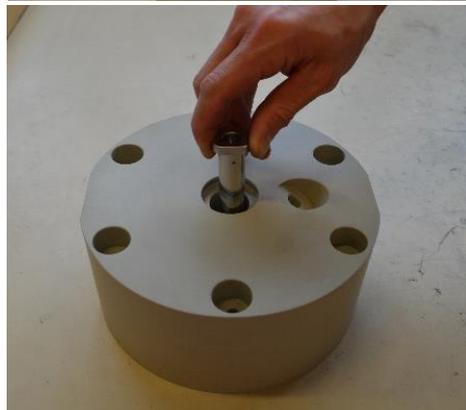


Fig 3.5.8

Push out the shaft [1651] from the dampener housing

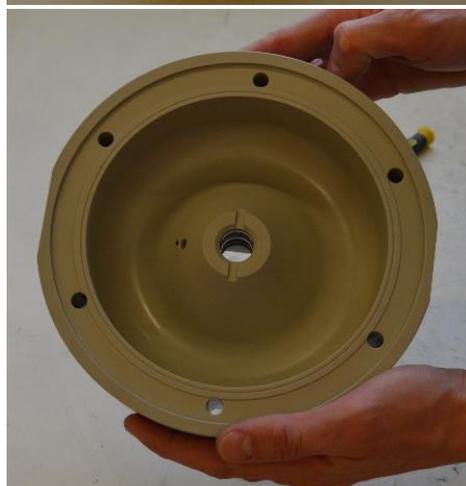


Fig 3.5.9

Check the inner seals [36] and O-rings [47]. If necessary, take them out using a screwdriver.

NOTE! If these parts are removed, they must be replaced with new ones. If the dampener sealing is worn, also check the shaft for wear and if necessary replace it.

3. MAINTENANCE

The dampener is now completely disassembled. Check all components for wear or damage and replace if necessary. Clean the diaphragm from grease. If the diaphragm does not need to be replaced, apply grease.

3.6. Assembly of the dampener

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. 3.6.1

Using a screwdriver, insert the O-rings [47] into the dampener block [12].



Fig. 3.6.2

Using a pair of pliers, insert the seals [36] into the dampener block [12]. To make the procedure easier bend the seals into a kidney shape and then fit them with a screwdriver.

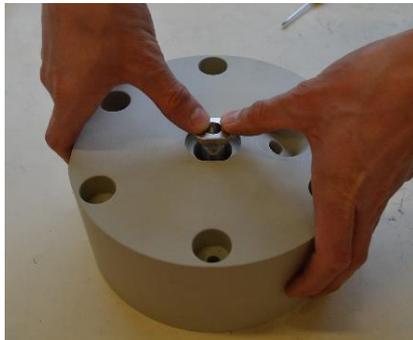


Fig. 3.6.3

Push the shaft [1651] into the dampener block [12].



Fig. 3.6.4

Screw the shaft ending [1652] into the diaphragm [15].

NOTE It is very important to screw the shaft ending (using an allen key) as deep as possible so it won't have the tendency to unscrew during operation

3. MAINTENANCE



Fig. 3.6.5

Screw the diaphragm [15] with the shaft ending [1652] onto the shaft [1651].

NOTE! When the diaphragm is screwed in the holes in the diaphragm must be aligned with the holes in the block.



Fig. 3.6.6

Push the diaphragm [15] in, so that it is touching the dampener block [12].



Fig. 3.6.7

Put the pin screws [14] and washers [38] into the dampener housing [11].



Fig. 3.6.8

Screw the nuts [37] onto the pin screws [14] so that ca. two threads are visible over the nut.

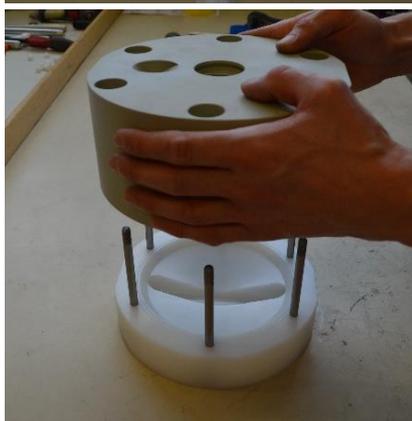


Fig. 3.6.9

Turn over the dampener housing [11] and insert the dampener block [12] onto the pin screws [14].



Fig. 3.6.10

Insert the washers [38] and nuts [37] on the pin screws [14] from the side of the block and pre-tighten the nuts cross side.

3. MAINTENANCE



Fig. 3.6.11

Tighten the nuts [37] cross-side by means of a torque wrench with the appropriate torque (see chapter 4.2.).



Fig. 3.6.12

Insert the nut covers [579] on both sides of the dampener.



Fig. 3.6.13

Insert the muffler [25] and the circlip [27] in a circular manner.

3.6.1. Test run



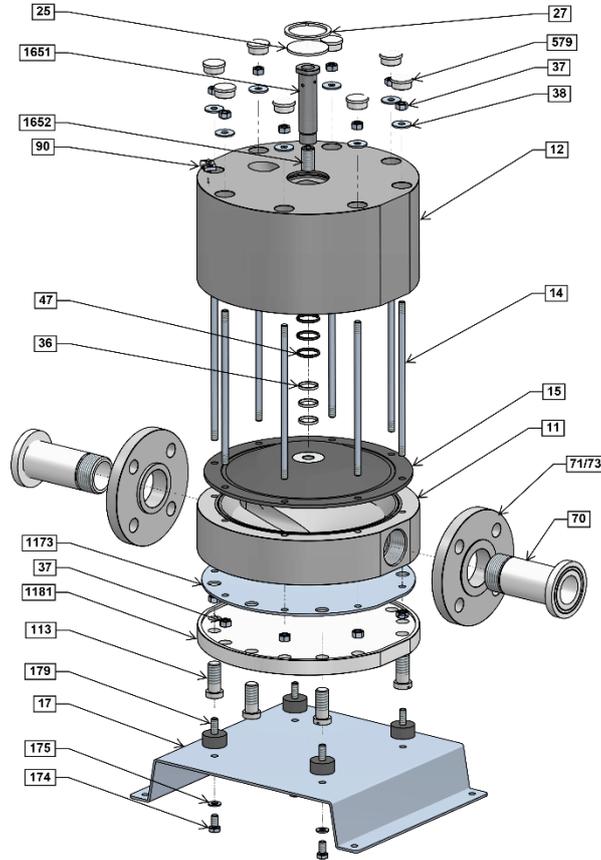
We recommend you to conduct a test run of the pump before installing it in the system, so no liquid gets wasted if the dampener leaks or perhaps does not start accordingly to wrong assembly of the dampener

After a few weeks of operation retighten the nuts with appropriate torque.

4. SPARE PARTS

4. SPARE PARTS

4.1. Spare parts drawing - PE & PTFE, Aluminium



Pos.	Q-ty	Description	Material
11	1	Dampener housing	PE, PTFE, Aluminium
113	4 (PE & PTFE)	Threaded insert	PET
1173	1***	Reinforcement plate	AISI 316L
1181	1***	Cover	PE
12	1	Dampener block	PP
14	4/6/8*	Pin screw	A4-80
15	1	Diaphragm	EPDM, PTFE, NBR, FKM****
1651	1	Shaft	AISI 316L
1552	1	Shaft ending	A4-80
17 (option)	1	Base	AISI 316L
174 (option)	4	Socket head cap screw	A4-70
175 (option)	4	Washer	A4-70
179 (option)	4	Rubber foot	NBR
25	1	Muffler	PPM-F
27	1	Circlip	Cr3 coated steel
36	3	Seal (O-ring)	PE
37	8/12/16*	Nut	A4-70
38	8/12/16* (PE,AL); 8/12/16* (PTFE)	Washer	A4-70
47	3/6**	O-ring (back up for 36)	NBR (standard), EPDM, FKM
579	8/12/16* (PE,AL); 8/12/16* (PTFE)	Nut cover	PE
70	2	Flange pipe (threaded)	PE, PTFE
71/73	2	Loose flange ring	PP
90	1	Grounding set	AISI 316L

* 4 / 8 in DT 9/20/25A; 6 / 12 in DT 50/70A and DT 100/120A; 8 / 16 in DT 200/220A, DT 400/420A and DT 800/820A

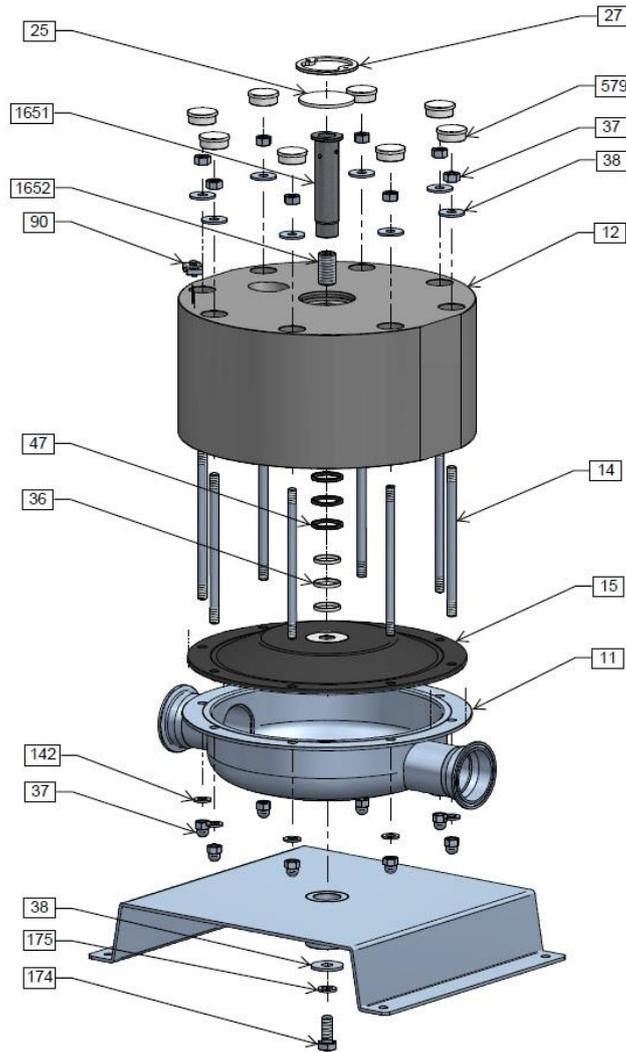
** 6 in DT 100/120A; 3 in the rest

*** only in PTFE execution

**** DT9/20.25A – DT50/70A only

4. SPARE PARTS

4.2. Spare parts drawing – steel and sanitary



4.3. Spare parts list – steel and sanitary

Pos.	Q-ty	Description	Material
11	1	Dampener housing	PE, PTFE, Aluminium
12	1	Dampener block	PP
14	4 / 6 / 8*	Pin screw	A4-80
15	1	Diaphragm	EPDM, PTFE, NBR, FKM**
1651	1	Shaft	AISI 316L
1552	1	Shaft ending	A4-80
17 (option)	1	Base	AISI 316L
174 (option)	1	Socket head cap screw	A4-70
175 (option)	1	Washer	A4-70
25	1	Muffler	PPM-F
27	1	Circlip	Cr3 coated steel
36	3	Seal (O-ring)	PE
37	8 / 12 / 16*	Nut	A4-70
38	4 / 6 / 8*	Washer	A4-70
47	3	O-ring (back up for 36)	NBR (standard), EPDM, FKM
579	4 / 6 / 8*	Nut cover	PE
90	1	Grounding set	AISI 316L

* 4 in DT25S; 6 in DT70S/80 and DT120S; 8 in DT220S/225, DT420S/425 and DT820S/825

** DT9/20.25A – DT50/70A only

4. SPARE PARTS

4.4. 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.

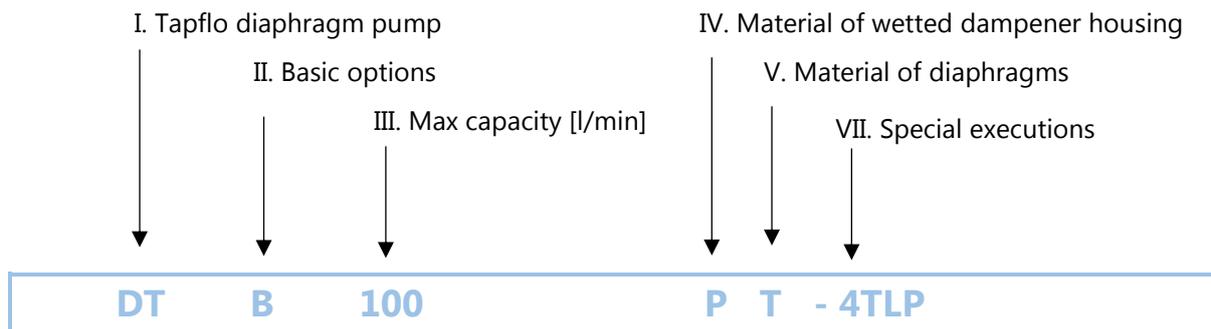
Pos.	Description	Quantity
15	Diaphragm	1
25	Muffler	1

4.5. How to order parts

When ordering spare parts for Tapflo dampeners, please let us know what is the **model number** and **serial number** from the pump centre body or housing. Then just indicate the part numbers from the spare parts list and quantity of each item.

4.6. Dampener 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. T = Tapflo diaphragm pump

II. Basic options:

- B = Backup diaphragm
- X = ATEX approved, group II, cat. 2

IV. Material of wetted parts:

- A = Aluminium
- P = Polyethylene
- S = Stainless steel AISI 316
- T = PTFE

V. Material of diaphragms:

- E = EPDM
- W = White (food grade) EPDM
- N = NBR (nitrile rubber)
- T = PTFE
- Z = PTFE with white back (food grade)
- B = PTFE TFM 1705b
- V = FKM (DT9/2025A – DT50/70A only)

VI. Special executions:

- 3 = Optional connection
- 4 = Backup diaphragm system configuration
- 5 = Other special executions*
- 6 = Optional material of dampener block
- 9 = Optional material of housing pin screws
- 11 = Housing reinforcement plates

5. DATA

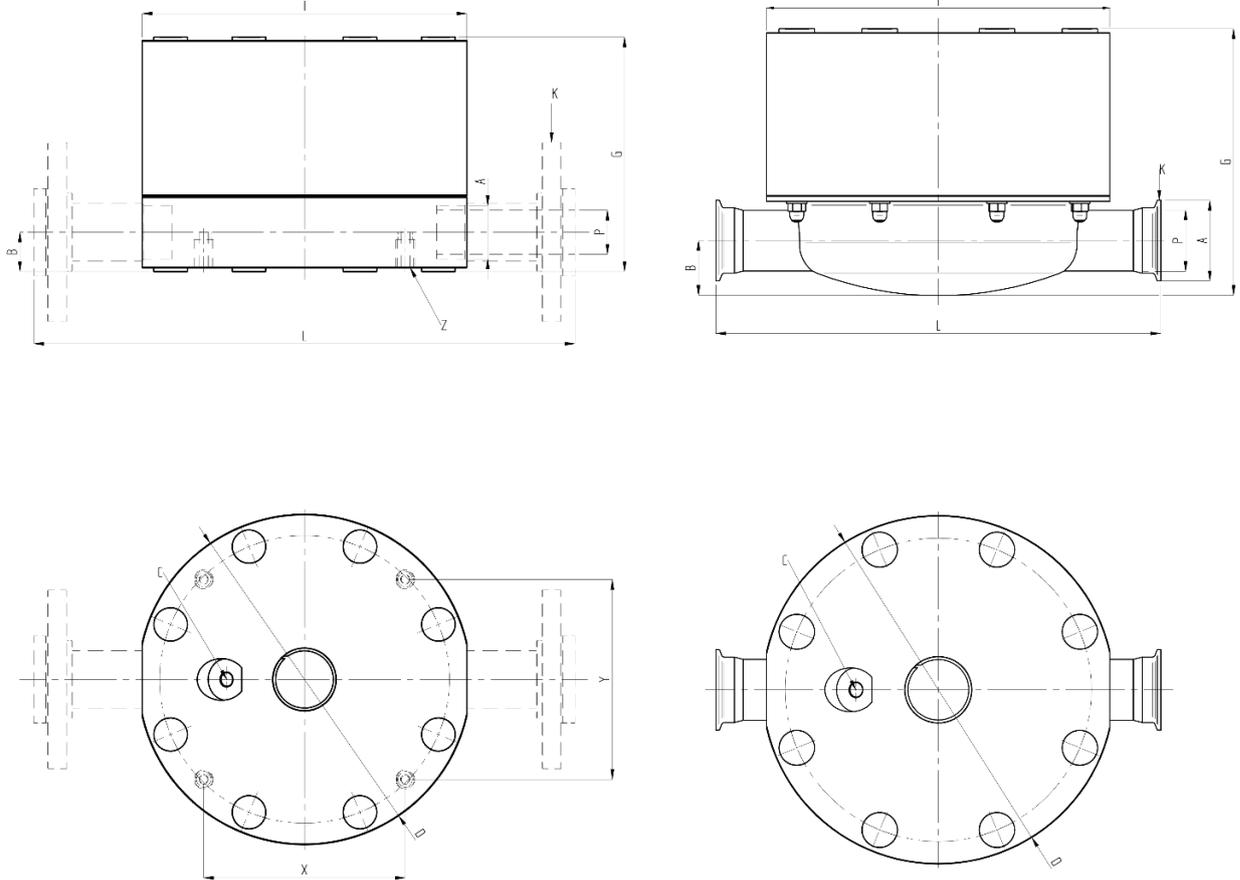
5. TECHNICAL DATA

5.1. Overall 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.



DIMENSION	DAMPENER SIZE																			
	9/20	25	30	50	70	80	100	120	125	200	220	225	400	420	425	800	820	825		
A (BSP)	G 3/8"			G 1/2"		G 3/4"		G 1"			G 1 1/2"			G 2"			-	G 3 1/2"		-
B	15/33 ¹	13	10,6	17/35 ¹	15,5	16,5	25,5/42,5 ¹	22,5	16,5	33/50 ¹	30	43,5	40,5/58 ¹	38	46	92	90	19,3		
	0,59/1,3 ¹	0,51	0,42	0,67/1,38 ¹	0,61	0,65	1/1,67 ¹	0,89	0,65	1,3/1,97 ¹	1,18	1,71	1,59/2,28 ¹	1,50	1,81	3,62	3,54	0,76		
C	G 1/8"			G 1/4"			G 1/4"			G 1/4"			G 1/4"			G 1/4"				
D	110			158			208			277			360			470				
	4,33			6,22			8,19			10,91			14,17			18,50				
G	85/103 ¹	81	78,5	109,5/129,5 ¹	105,5	117,5	144,5/161,5 ¹	141,5	135	200,5/217,5 ¹	197,5	216	244/261 ¹	241	256,5	394	392	330		
	3,35/4,06 ¹	3,19	3,09	4,31/5,1 ¹	4,15	4,63	5,69/6,36 ¹	5,57	5,31	7,89/8,56 ¹	7,78	8,50	9,61/10,28 ¹	9,49	10,10	15,51	15,43	12,99		
I	107			155			203			270			352			470				
	4,21			6,10			7,99			10,63			13,86			18,50				
K (BSP)	G 3/8"			G 1/2"		G 3/4"		G 1"			G 1 1/2"			G 2"			-	G 3 1/2"		-
L	DIN & ANSI Flange	235	-	285	-	375	-	450	-	550	-	700	-							
		9,25	-	11,22	-	14,76	-	17,72	-	21,65	-	27,56	-							
		107	-	155	-	203	-	270	-	352	-	470	-							
		4,21	-	6,10	-	7,99	-	10,63	-	13,86	-	18,50	-							
Other Connections ³	-	180	-	210	-	300	-	350	-	450	-	600	-							
	-	7,09	-	8,27	-	11,81	-	13,78	-	17,72	-	23,62	-							
P (BSP)	G 3/8"			G 1/2"		G 3/4"		G 1"			G 1 1/2"			G 2"			-	G 3 1/2"		-
X	36	-	90,3	-	113,8	-	167,6	-	226,3	-	297	-								
	1,42	-	3,56	-	4,48	-	6,60	-	8,91	-	11,69	-								
Y	86,8	-	100,3	-	135,6	-	167,6	-	226,3	-	297	-								
	3,42	-	3,95	-	5,34	-	6,60	-	8,99	-	11,69	-								
Z	M4x20	M4x17	-	M4x20	M4x17	-	M8x30/22 ¹	M8x25	-	M8x30/22 ¹	M8x25	-	M8x30/22 ¹	M8x25	-	M8x22 PTFE	M8x25	-		

1 - PE / PTFE

2 - ALU / SS

3 - ISO 2852, DIN 11851, SMS1145, BS 4825 (RJT)

5. DATA

DIMENSION		DAMPENER SIZE											
		9/20	30	50	80	100	125	200	225	400	425	800	825
A	DIN Flange	95 ⁵	95 ⁴	95 ⁵	105 ⁴	115 ⁵	115 ⁴	150 ⁵	150 ⁴	165 ⁵	165 ⁴	202 ⁵	200 ⁴
	ANSI	89 ⁶	90 ⁷	89 ⁶	100 ⁷	108 ⁶	110 ⁷	127 ⁶	125 ⁷	152 ⁶	150 ⁷	-	-
	ISO 2852	-	50,5	-	50,5	-	50,5	-	64	-	91	-	-
	DIN 11851	-	Rd 44x1/6"	-	Rd 52x1/6"	-	Rd 65x1/6"	-	Rd 78x1/6"	-	Rd 95x1/6"	-	Rd 110x1/4"
	SMS 1145	-	Rd 40x1/6"	-	Rd 40x1/6"	-	Rd 60x1/6"	-	Rd 70x1/6"	-	Rd 85x1/6"	-	-
	(RJT) BS 4825	-	Rd 30x1/8"	-	Rd 46x1/6"	-	Rd 58x1/6"	-	Rd 72x1/6"	-	Rd 98x1/6"	-	-
K	DIN Flange	DN15 ⁵	DN15 ⁴	DN15 ⁵	DN20 ⁴	DN25 ⁵	DN25 ⁴	DN40 ⁵	DN40 ⁴	DN50 ⁵	DN50 ⁴	DN80 ⁵	DN80 ⁴
	ANSI	1/2" ⁶	1/2" ⁷	1/2" ⁶	3/4" ⁷	1" ⁶	1" ⁷	1 1/2" ⁶	1 1/2" ⁷	2" ⁶	2" ⁷	-	-
	ISO 2852	-	DN 25	-	DN 25	-	1 1/2"	-	DN 50	-	DN 65	-	-
	DIN 11851	-	DN 20	-	DN 25	-	DN 40	-	DN 50	-	DN 65	-	DN 80
	SMS 1145	-	1" (25)	-	1" (25)	-	1 1/2" (38)	-	2" (51)	-	2 1/2"	-	-
	(RJT) BS 4825	-	3/4"	-	1"	-	1 1/2"	-	2"	-	3"	-	-
P	DIN Flange	10	17,3	10	22,9	22	29,7	37	44,3	48	56,3	80	80
		0,39	0,68	0,39	0,90	0,87	1,17	1,46	1,74	1,89	2,22	3,15	3,15
	ANSI	-	17,1	-	22,7	-	30,1	-	42,8	-	54,8	-	-
		-	0,67	-	0,89	-	1,19	-	1,69	-	2,16	-	-
	ISO 2852	-	22,6	-	22,6	-	35,6	-	49	-	66	-	-
		-	0,89	-	0,89	-	1,40	-	1,93	-	2,60	-	-
	DIN 11851	-	20	-	26	-	38	-	50	-	66	-	81
		-	0,79	-	1,02	-	1,50	-	1,97	-	2,60	-	3,19
	SMS 1145	-	22,6	-	22,6	-	35,6	-	48,6	-	60,6	-	-
		-	0,89	-	0,89	-	1,40	-	1,91	-	2,39	-	-
	(RJT) BS 4825	-	15,8	-	22,2	-	34,7	-	47,6	-	73	-	-
		-	0,62	-	0,87	-	1,37	-	1,87	-	2,87	-	-

4 - DIN 2642 , PN 10, loose montage

5 - DIN PN10/16 (according to UNI 2277/2278)

6 - FLANGE ANSI 150 (according to ASTM-A 182 SO/RF 150 lbs)

7 - ANSI B16.5 150 lbs , loose montage

5.2. Tightening torques

The following tightening torques are recommended.

DAMPENER SIZE	MOUNTING TORQUE [Nm]
DT9/20/25	6
DT 50/70/80	8
DT 100/120/125	16
DT 200/220/225	20
DT 400/420/425	23
DT 800/820/825	30

6. WARRANTY

6.2. 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.

6.3. Warranty

Tapflo warrants products under conditions as stated below for a period of not more than 5 years from installation and not more than 6 years 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, diaphragms, air valves 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;

6. 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.

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
ad@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 712340940
sales@tapflo.uz

United Kingdom

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