IOM manual

tapflo®

DT series
Active Pulsation Dampener

Original Instruction

edition 2020 rev 1

STOP

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

CE

Dampener models:

DT/ DTX 9/20/25/30

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

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EC DECLARATION OF CONFORMITY 01/EC/DT/2016

Series:

DT(...)

Serial numbers:

2018 - ... (from 1801-...)

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: **ACTIVE PULSATION DAMPENERS**

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;

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, 01.01.2018r

EU DECLARATION OF CONFORMITY 01/ATEX/DT/2016

Series:
DTX(...)

Serial numbers:
2018 - ... (from 1801-...)

Dampener materials:
Conductive PE, Conductive PTFE, Conductive PP, Aluminium, Stainless steel AISI 316/316L

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: **CONDUCTIVE PULSATION DAMPENERS**

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
- Directive 2014/34/EU of the European parliament and of the council of 26 February 2014 on Equipment or Protective System intended for use in potentially explosive atmospheres

and is intended for operation in potentially explosive atmospheres according to:

Equipment group: **IIG (Gas) / IID (Dust)**
Category: **2**
Apparatus group: **IIB**
Temperature class: **T4**

Signed for and on behalf of Tapflo AB

Håkan Ekstrand
Managing Director

Tapflo AB, 16.04.2016r

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.
In case any instructions in this manual are unclear or any information is lacking, please contact Tapflo before handling the dampener.

1. INSTALLATION

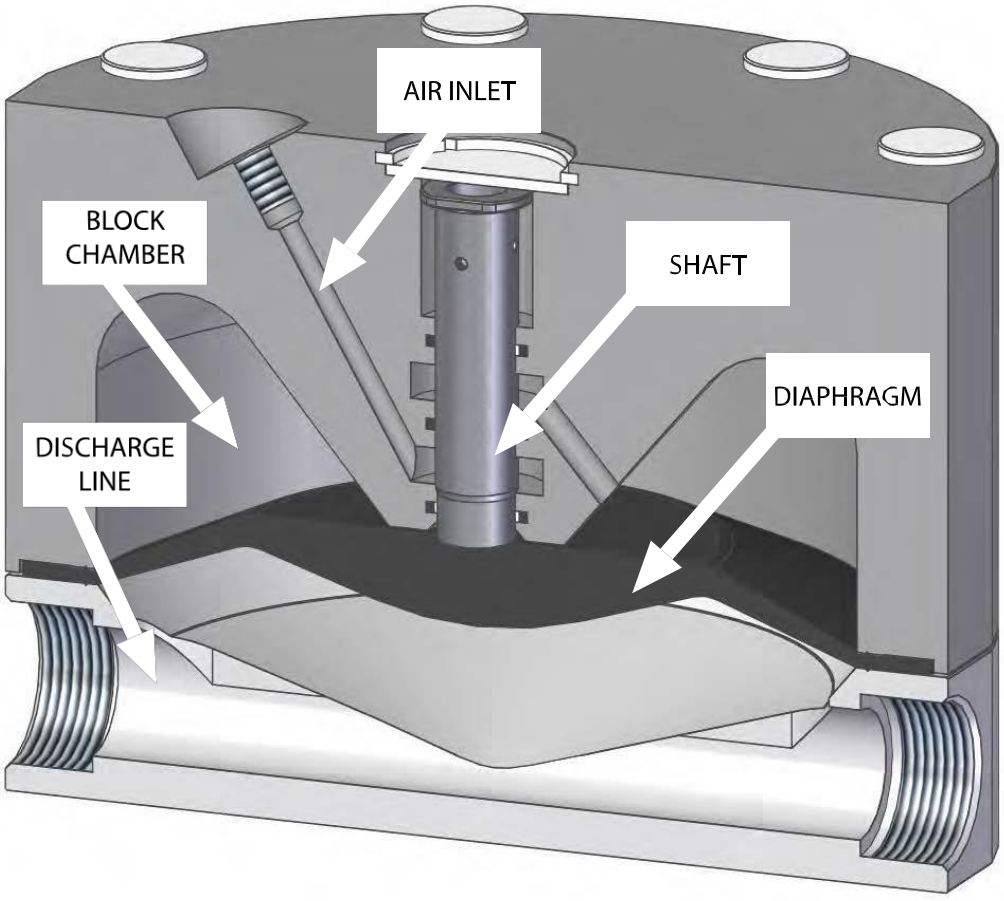
1. INSTALLATION

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.

When operating, dampener does not consume compressed air. It is only consumed during setting phase, when pump duty point is being changed.



1. INSTALLATION

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.

- Before handling the dampener check the weight of the dampener (see 6.3. "*Technical data*"). Refer to Your local standards on how to handle the dampener. 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 dampener from slipping and that the dampener is hanging straight. Never lift the dampener with only one sling. Incorrect lifting can cause serious injury and/or damage to the dampener.
- Never lift the dampener under pressure.
- Be careful that nobody passes under the dampener when lifted.
- Never try to lift the dampener by the connections (e.g. flange pipes) or hoses attached to the dampener.
- As an option, dampener can be equipped with lifting eyebolts connected with the dampener pin screws.

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 inlet/outlet and air connections which have been fastened to keep dampener 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.

The dampeners are tested with water. If the pumped product can come into reaction with water, please make sure the device is dry before putting it into operation.

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. INSTALLATION

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 dampener under operation, which may cause explosion and injury. Special conductive DTX dampeners are available for such applications. Follow below instructions and local/national rules for safe use.
ATEX (directive 2014/34/EU) classification of Tapflo DTX dampeners.

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 dampener and other equipment

Connect a suitable earth wire to the stainless steel earth connection that is placed on the top or on the side of the dampener block , depending on dampener size and execution. 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.

1.4.3. Air pressure

The maximum air pressure for standard 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.

For higher pressure rate, up to 16 bar (depending on the size) see optional dampener execution in chapter 4.2. DTF series.

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 dampener. This hazard can be prevented by:

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

1. INSTALLATION

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 dampener/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 6.3. *"Technical 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 operation it should be drained of all liquid.
- The fluid remaining in the connected piping, as well as in the dampener itself, may expand because of freezing or heat, which may cause damage to the dampener or/and piping, and lead to leakage of the fluid.

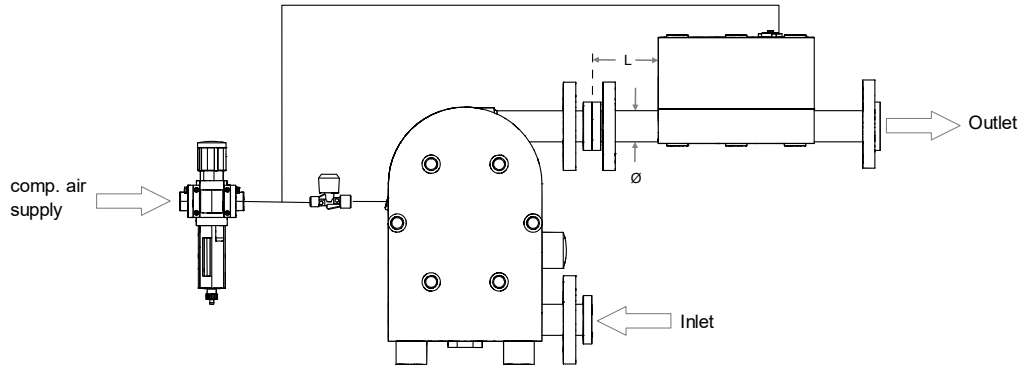
1.5. Air connection

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.

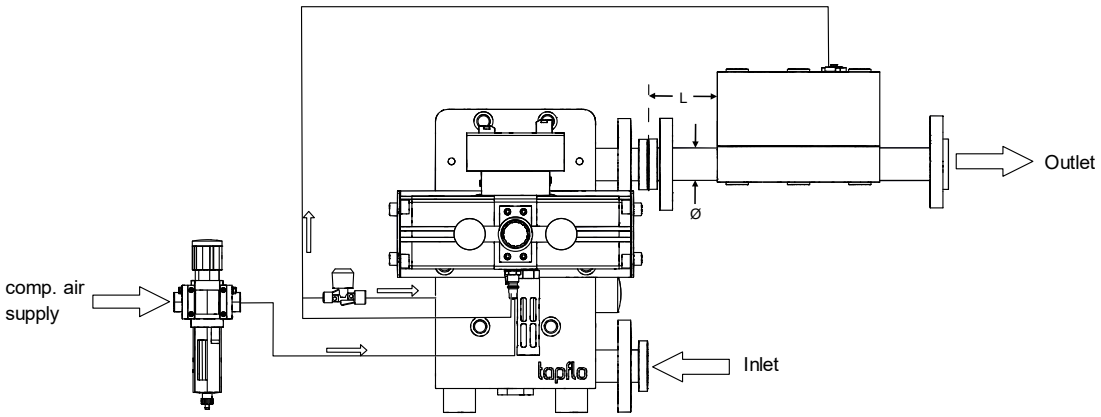
1. INSTALLATION

1.6. Example of installation

1.6.1. Standard pump



1.6.2. TF pump



The pulsation dampener must be 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 must be connected to the pump air hose with a T-connection, between the pump and filter-regulator (See sketch).

ATTENTION! The T-connection must be installed after the filter-regulator but before the needle valve. It is also mandatory that the air to the dampener has the same flow and pressure as 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*Ø

NOTE!

It is recommended to install a check / shut off valve after the dampener. If the pump and dampener are placed in a system with other pumps or in a pressurized system it is essential to cut the dampener form the installation and relief the pressure from the piping. In the case where the dampener is not cut off, the diaphragm is permanently under pressure from the liquid side without any support from the air side thus leaving it unbalanced resulting in premature damage of the diaphragm.

2. OPERATION

2.1. Before operating the dampener

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

- When installation is new or the dampener reinstalled, check the dampener housing nuts tightening torque (see chapter 6.*2 "Tightening torques"*). After approximately one week of operation, the torque must be checked again. This is important to prevent possible leakage.

2.2. Disposal after expiration of the expected lifetime

The metallic components like aluminium, stainless steel and carbon steel can be recycled. Plastic parts are not recyclable and must be disposed of as residual waste. The dampener must be disposed of properly, according to local regulations. It should be noted that potentially dangerous fluid residues may remain in the dampener and can create a hazard to the operator or the environment, therefore the dampener has to be thoroughly cleaned before disposal.

2.3. Actions in emergency

In case of transferred liquid leakage, the air supply have to be closed and the pressure released. During spillage of an aggressive liquid, local and national safety rules must be followed.

2.4. Residual risks

Even with proper application and observance of all points listed in this operating manual, there is still an estimable and unexpected residual risk when using the pumps. It may leak, fail due to wear, application-related causes or system-related circumstances.

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 week of operation.

Make sure to use the right torque – *see* chapter *6.2. "Tightening torques"*.

3.2. Routine inspection

Frequent observation of the dampener operation is recommended to detect problems. For possible issues see chapter *3.4. "Location of faults"*.

Leaking liquid from the dampener and changes of performance may also be detected.

We recommend to conduct a daily check and keep records of the following:

- Leakage of fluid from any connection of the dampener
- Tightness of all connection parts of the dampener

In case any of the above is not fulfilled, do not start the device and implement corrective actions. Establish a preventive maintenance schedule based on the device service history. Scheduled maintenance is especially important to prevent spills or leakage due to diaphragm failure. Although dampener applications vary, a general guideline is to re-torque the nuts every two weeks.

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 *5.5. "Stocking recommendation"*.

3. MAINTENANCE

3.4. Location of faults

PROBLEM	POSSIBLE FAULT	POSSIBLE SOLUTION
The dampener does not work	The air pressure is to low	Check if set pressure equals set pressure for the pump
	The air connection is blocked	Check / clean air supply connection
	Muffler is blocked	Check / clean / replace muffler
	Dirt in the dampener chamber	Remove debris from the chambers
	Diaphragm breakdown	Replace diaphragm
Liquid leaks from the dampener	Screws on the housing not properly tightened	Check tightening torques of the screws
	Damaged diaphragm	Check / replace diaphragms
	Tension / stress form the installation	Adjust installation, eliminate stress, provide separate support for dampener
Liquid comes out of the muffler	Diaphragm breakdown	Replace diaphragm
Continuous air leakage through muffler	Air leakage through diaphragm shaft	Replace dampener block seal or/and diaphragm shaft
Diaphragm breakdown	Wrong selection of material	Contact us for information on material selection
	Too high pressure in the installation	Use pressure regulator for protection
	Too high pressure on suction side	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 *5 "Spare parts"*.

3.5.1. Before the disassembly procedure

Be sure to drain all liquid from the dampener. Cleanse or neutralize the thoroughly. Disconnect the air supply and then the inlet and outlet.

3.5.2. Disassembly procedure

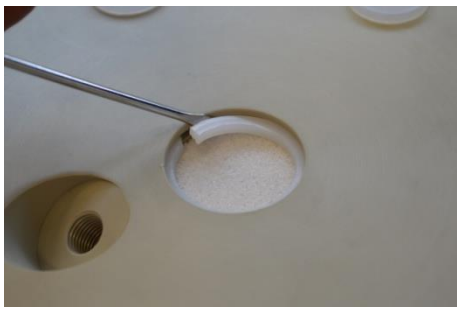


Fig. 3.5.1
By means of a screwdriver, remove the circlip [27] and muffler [25]

Fig. 3.5.2
Remove the nut covers [579] from the dampener housing and block

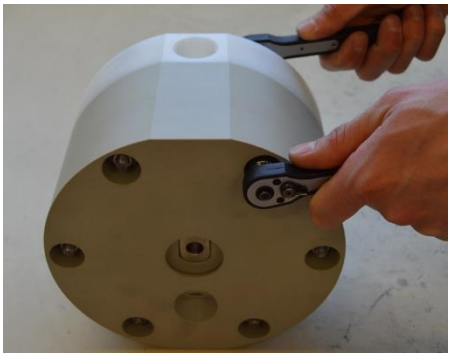


Fig. 3.5.3
Using two spanners unscrew the nuts [37] cross-side and take them out alongside with the washers [38].

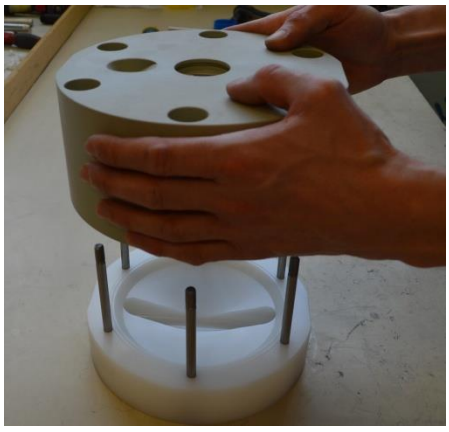


Fig. 3.5.4
Take out the dampener block [12].

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.

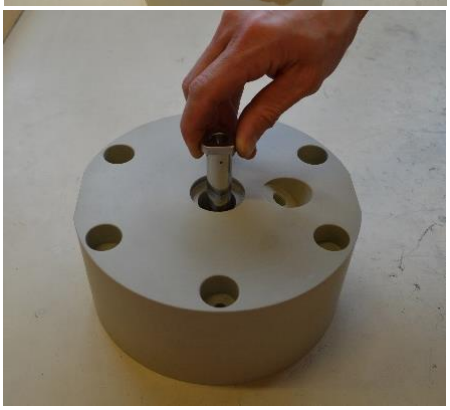


Fig 3.5.8
Push out the shaft [1651] from the dampener housing

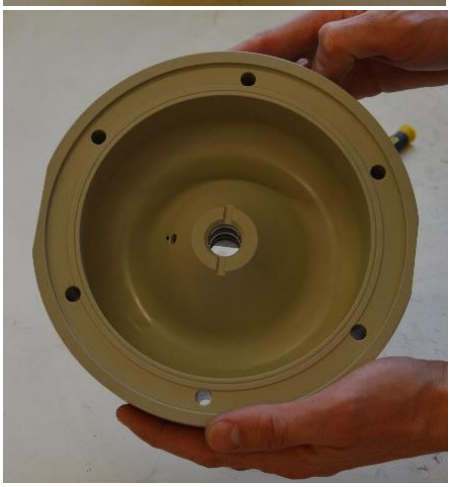


Fig 3.5.9
Check the inner seals [36] and O-rings [47]. If necessary, take them out using a screwdriver.
NOTE! If these parts are removed, they must be replaced with new ones. If the dampener sealing is worn, also check the shat for wear and if necessary replace it.

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

3. MAINTENANCE

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 dampener 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.

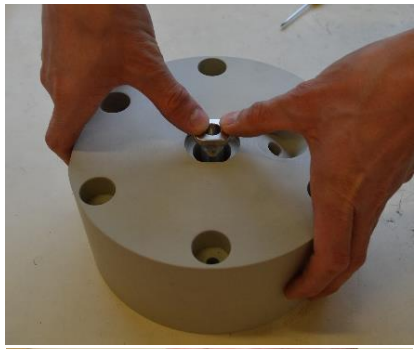


Fig. 3.6.3
Push the shaft [1651] into the dampener block [12].

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

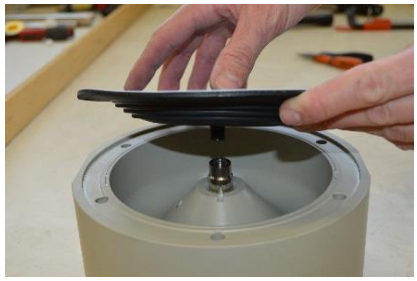


Fig. 3.6.5
Screw the diaphragm [15] with the shaft ending [1652] onto the shaft [1651].
NOTE! When the diaphragm is screwed in the holes in the diaphragm must be aligned with the holes in the block.

3. MAINTENANCE

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.

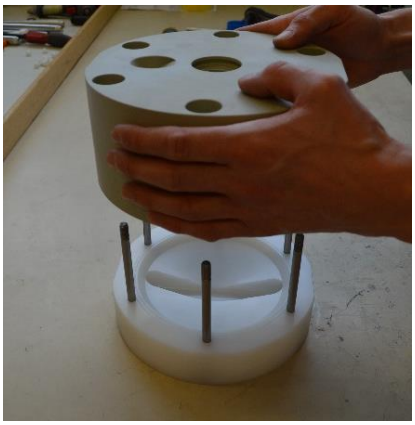


Fig. 3.6.9
Turn over the dampener housing [11] and insert the dampener block [12] onto the pin screws [14].

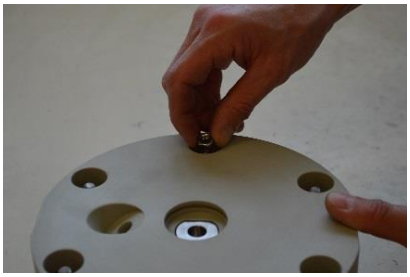


Fig. 3.6.10
Insert the washers [38] and nuts [37] on the pin screws [14] from the side of the block and pre-tighten the nuts cross side.

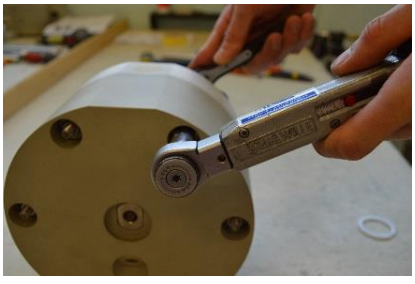


Fig. 3.6.11
Tighten the nuts [37] cross-side by means of a torque wrench with the appropriate torque (see chapter 6.2.).

3. MAINTENANCE

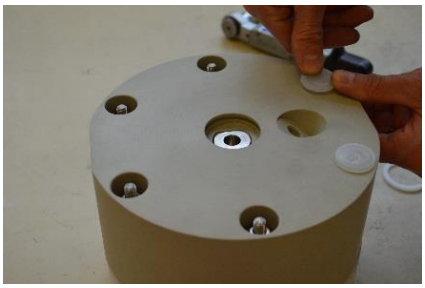


Fig. 3.6.12
Insert the nut covers [579] on both sides of the dampener.

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 of the dampener before installing it in the system, to detect if there is no air leakage through diaphragm shaft. In order to do so, supply pressurized air through air inlet. Proper operation is, when there is no continuous air flow through the muffler.

Note! Due to its principle of operation, when supplied with pressurized air, shaft may perform one stroke, resulting in short air release through muffler, which is not considered as a leakage.

After one week of operation retighten the nuts with appropriate torque.

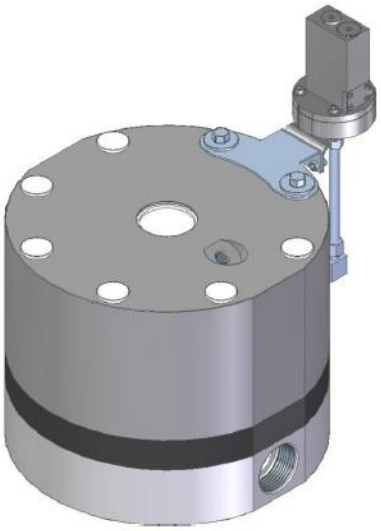
4. OPTIONS

4.1. DTB series

The DTB series equipped with fully pneumatic control system "Guardian" is perfect choice when the diaphragm rupture has to be immediately detected in order to avoid product leak to the environment. When rupture is detected the pump is automatically stopped and an alarm can be generated. For detailed guidelines see „Guardian system" IOM manual.

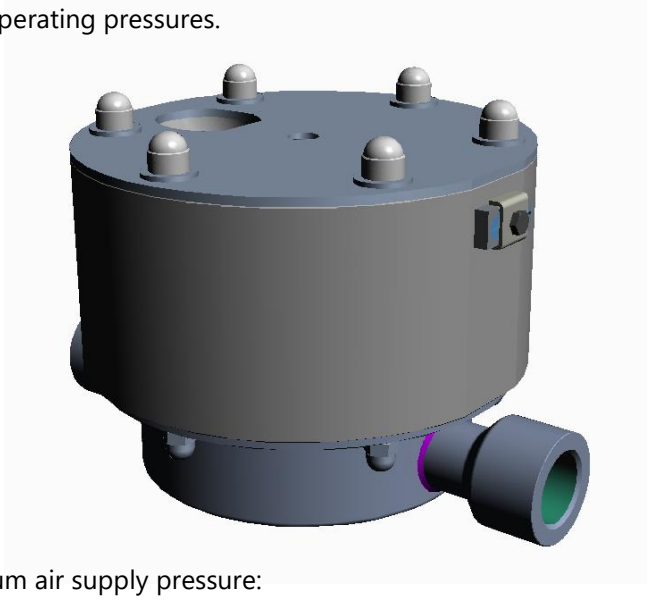
Available for sizes:

- DTB20, 25, 30
- DTB50, 70, 80
- DTB100, 120, 125
- DTB200, 220, 225
- DTB400, 420, 425



4.2. DTF series

The DTF series pulsation dampeners are special execution used widely with the TF series AODD pumps. Reinforcement steel plates are used to make the device more robust. Thanks to this, DTF dampeners can work within higher operating pressures.



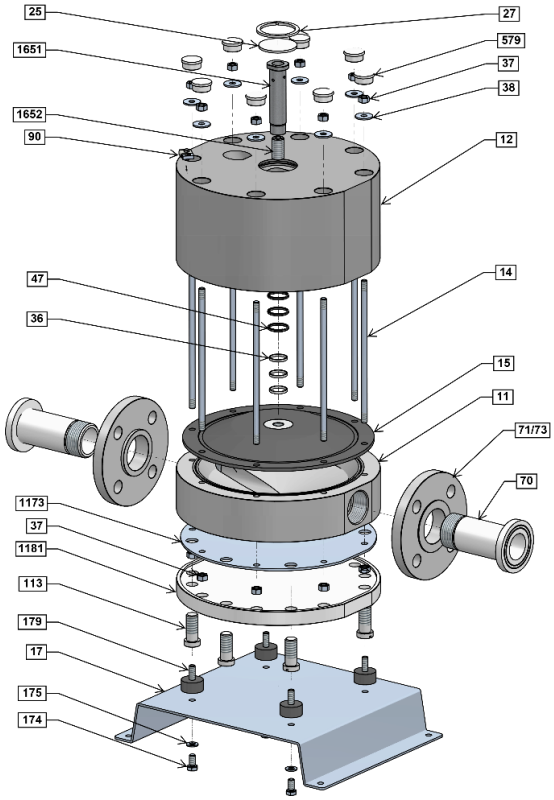
The maximum air supply pressure:

- DTF50, DTF70, DTF100 and DTF120 – 16 bar,
- DTF220 and DTF420 – 14 bar,
- DTF200 and DTF400 – 12 bar.

Keep in mind that TF pumps are supplied with air through the pressure booster. As a result the air directed to the pump can be multiplied up to 2 times. For detailed information see TF series IOM manual.

5. SPARE PARTS

5.1. Spare parts drawing - PE & PTFE, Aluminium



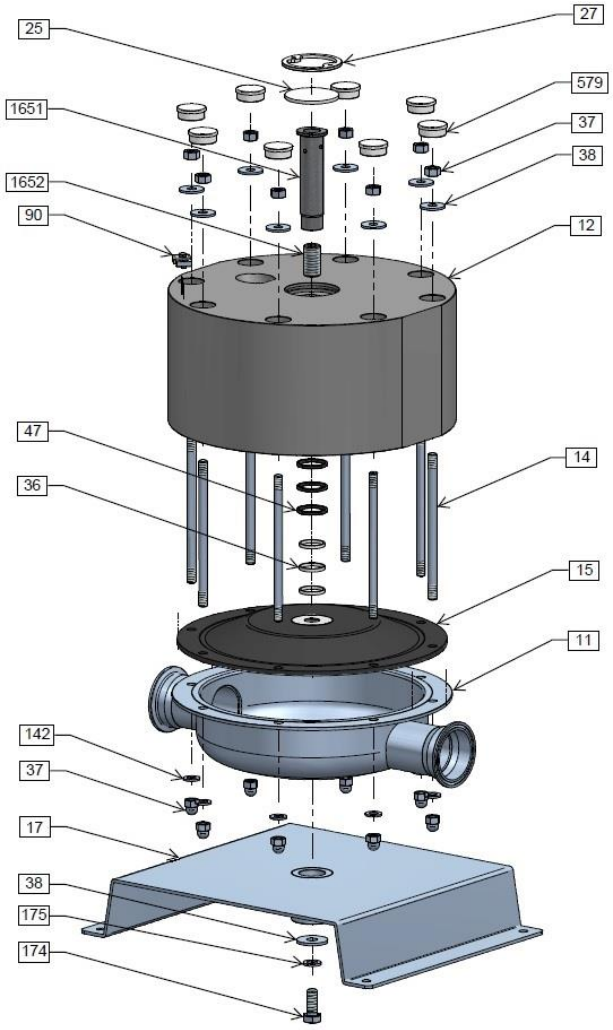
5.2. Spare parts list – PE & PTFE, Aluminium

Pos.	Q-ty	Description	Material
11	1	Dampener housing	PE, PTFE, Aluminium
113	4/6*****	Threaded insert	PET
1173	1***	Reinforcement plate	AISI 316L
1181	1***	Cover	PE
12	1	Dampener block	PP, Aluminum
14	4/6/8*	Pin screw	A4-80
15	1	Diaphragm	EPDM, PTFE, NBR, FKM
1651	1	Shaft	AISI 316L
1652	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	PE
36	3	Seal ring	PE
37	8/12/16*	Nut	A4-70
38	8/12/16*	Washer	A4-70
47	3/6**	O-ring (back up for 36)	NBR (standard), EPDM, FKM
579****	8/12/16*	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
**** PTFE pumps have half of the nut covers compared to PE and Aluminum dampeners (due to cover on the bottom)
***** Only in plastic dampeners; **4** in DT9/20, DT50, DT100, DT200 P, DT400 P, DT800 P / **6** in DT200 T, DT400 T

5. SPARE PARTS

5.3. Spare parts drawing – Stainless steel industrial and sanitary



5.4. Spare parts list – steel and sanitary

Pos.	Q-ty	Description	Material
11	1	Dampener housing	AISI 316L
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
1652	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	PE
36	3	Dampener block seal	PE
37	8/12/16*	Nut	A4-70
38	8/12/16*	Washer	A4-70
47	3/6**	O-ring (back up for 36)	NBR (standard), EPDM, FKM
579	4/6/8*	Nut cover	PE
90	1	Grounding set	AISI 316L

* **4/8** in DT30S; **6/12** in DT70S/80 and DT120S; **8/16** in DT220S/225, DT420S/425 and DT820S/825

** **6** in DT120 S/DT125 S; **3** in all the rest

5. SPARE PARTS

5.5. Stocking recommendation

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

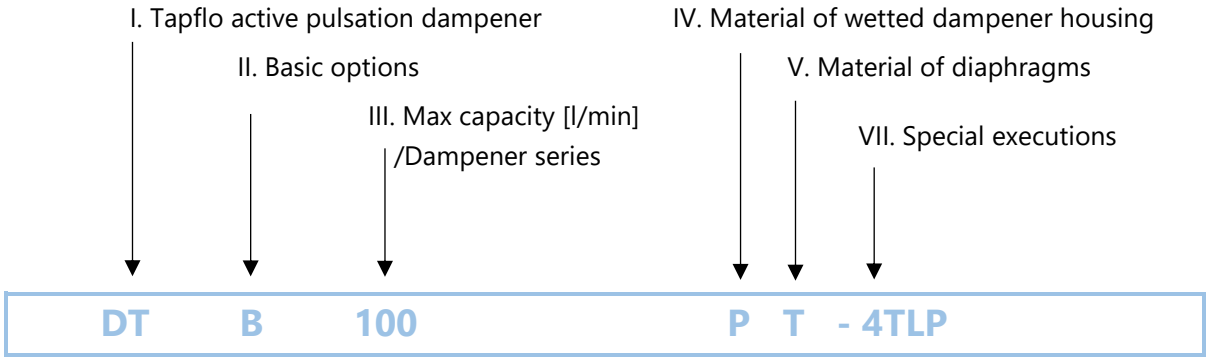
Pos.	Description	Quantity
15	Diaphragm	1
25	Muffler	1
16	Diaphragm shaft set	1
36	Dampener block seal	3
47	O-ring (back up for 36)	3

5.6. How to order parts

When ordering spare parts for Tapflo dampeners, please let us know what is the ***model number*** (see nameplate) and ***serial number*** (visible on nameplate and stamped on the top or on the side [DTF version] of the dampener block). Then just indicate the part numbers from the spare parts list and quantity of each item.

5.7. Dampener code

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



I. DT = Tapflo active pulsation dampener

II. Basic options:
- B = Backup diaphragm
- F = High pressure version
- K = Built-on version (for assembly on pump)
- X = ATEX approved, group II, cat. 2 (zone 1)

III. Dampener series:
- DT/DTX 9/20/50/100/200/400/800 = Plastic series
- DT/DTX 25/70/120/220/420/820 = Metal series
- DT/DTX 30/80/125/225/425/825 = Sanitary series

IV. Material of wetted parts:
- A = Aluminium
- P = Polyethylene
- S = 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

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
- 14 = Optional feet
- 17 = Pump/dampener assembly options

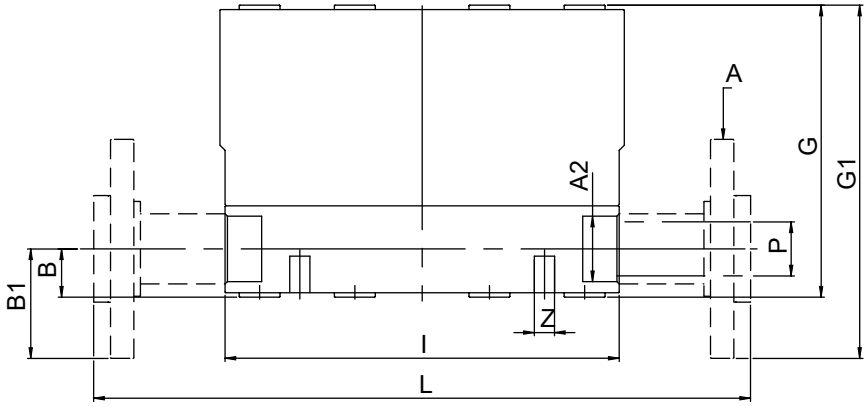
6. DATA

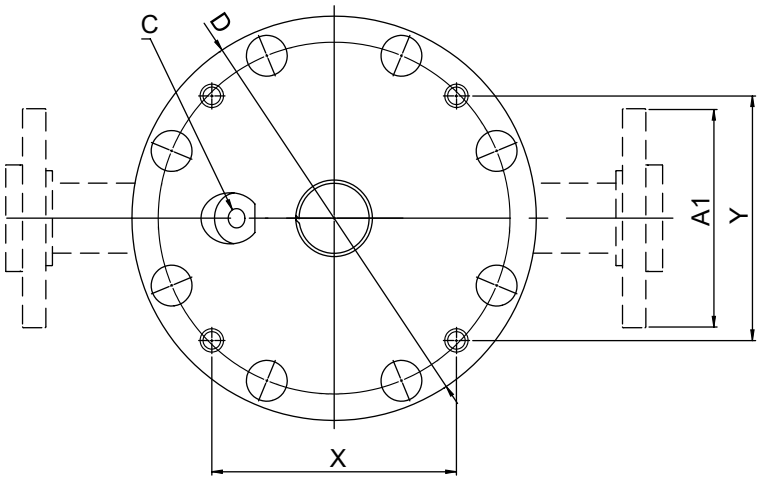
6.1. Overall dimensions

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.





6. DATA

6.1.1. Dimensions table – Plastic (PE&PTFE)

DIMENSION		Plastic dampeners – PE & PTFE series					
		DT9/20	DT50	DT100	DT200	DT400	DT800
A	BSP	G 3/8"	G 1/2"	G 1"	G 1.1/2"	G 2"	-
	DIN Flange[2]	DN15	DN15	DN25	DN40	DN50	DN80
	ANSI Flange[3]	1/2"	1/2"	1"	1.1/2"	2"	3"
A1	DIN Flange	95	95	115	150	165	202
	ANSI Flange	3.5	3.5	4.25	5	6	7.5
A2	BSP	G 3/8"	G 1/2"	G 1"	G 1.1/2"	G 2"	-
B		13/33[1]	17/35[1]	25.5/42[1]	33/50[1]	41/58[1]	91.5/-[1]
		0.51/1.3[1]	0.67/1.38[1]	1/1.65[1]	1.3/1.97[1]	1.61/2.28[1]	3.6/-[1]
B1	DIN Flange	47.5	47.5	57.5	75	82.5	101
	ANSI Flange	1.75	1.75	2.13	2.5	3	3.25
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		85.2/103[1]	109/126[1]	144/161[1]	201/217[1]	244/261[1]	403/-[1]
		3.35/4.06[1]	4.29/4.96[1]	5.67/6.34[1]	7.91/8.54[1]	9.61/10.28[1]	15.87/-[1]
G1	DIN Flange	119.7	139.5	176	243	285.5	412.5
	ANSI Flange	4.71	5.49	6.93	9.57	11.24	16.24
I		107	155	203	270	352	-
		4.21	6.10	7.99	10.63	13.86	-
L	DIN & ANSI Flange	235	285	375	450	550	700
		9.25	11.22	14.76	17.72	21.65	27.56
	BSP	107	155	203	270	352	-
		4.21	6.1	7.99	10.63	13.86	-
P	DIN & ANSI Flange	10	10	22	37	58	80
		0.39	0.39	0.87	1.46	2.28	3.15
X		36	90.3	113.8	167.6	226	297
		1.42	3.56	4.48	6.6	8.9	11.69
Y		86.8	100.3	135.6	167.6	226	297
		3.42	3.95	5.34	6.6	8.9	11.69
Z		4 x M4x20	4 x M4x20	4 x M8x20	4 x M8x30/ 6 x M8x22[1]	4 x M8x30/ 6 x M8x22[1]	4 x M8x30/ -[1]

1 – PE / PTFE

2 – Flange DIN PN10/16 (acc. to UNI 2277/2278)

3 – Flange ANSI 150 (acc. to ASTM-A 182 SO/RF 150 Lbs)

6. DATA

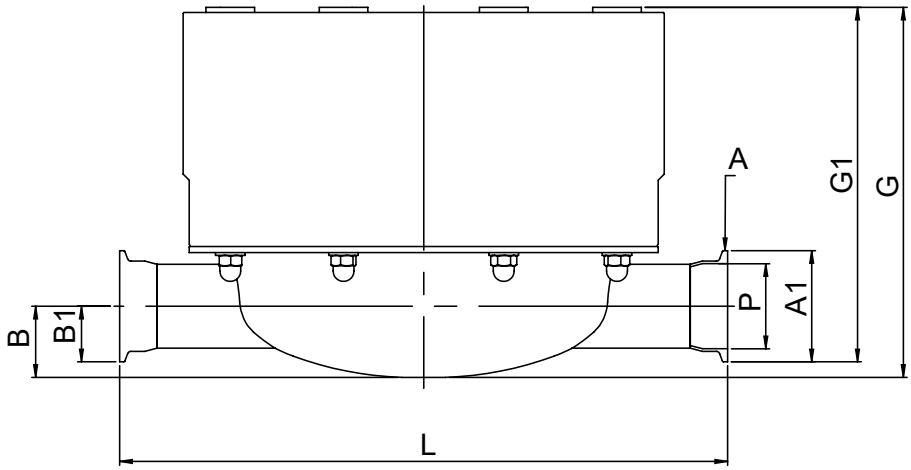
6.1.2. Dimensions table – Metal series (aluminium)

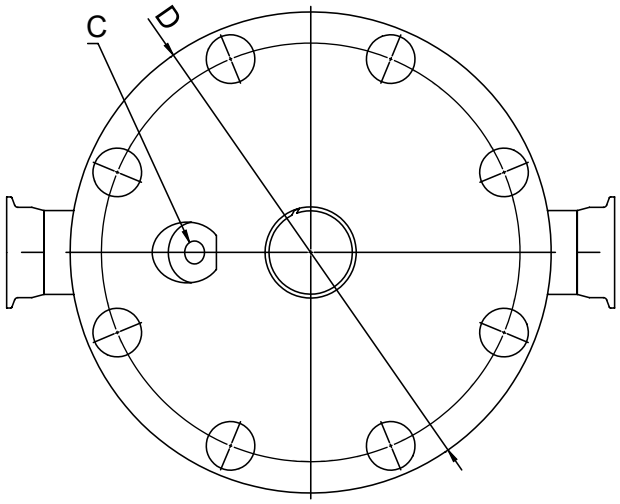
DIMENSION		Metal dampeners – Aluminium series					
		DT25 A	DT70 A	DT120 A	DT220 A	DT420 A	DT820 A
A	BSP	G 1/2″	G 3/4"	G 1"	G 1.1/2"	G 2"	G 3″
	DIN Flange[1]	DN15	DN20	DN25	DN40	DN50	DN80
	ANSI Flange[2]	1/2"	3/4"	1"	1.1/2"	2"	3"
A1	DIN Flange	95	105	115	150	165	202
	ANSI Flange	3.5	3.88	4.25	5	6	7.5
A2	BSP	G 1/2″	G 3/4"	G 1"	G 1.1/2"	G 2"	-
B		15	17	25.5	33	41	91.5
		0.59	0.67	1	1.3	1.61	3.6
B1	DIN Flange	47.5	52.5	57.5	75	82.5	101
	ANSI Flange	1.75	1.94	2.13	2.5	3	3.25
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		84.9	109.6	144	201	244	393.5
		3.34	4.31	5.67	7.91	9.61	15.49
G1	DIN Flange	117.4	145	176	243	285	403
	ANSI Flange	4.62	5.71	6.95	9.55	11.22	15.87
I		107	155	203	270	352	450
		4.21	6.10	7.99	10.63	13.86	17.72
L	DIN & ANSI Flange	235	285	375	450	550	700
		9.25	11.22	14.76	17.72	21.65	27.56
	BSP	107	155	203	270	352	450
		4.21	6.1	7.99	10.63	13.86	17.72
P		14	16	23	36	48	81
		0.55	0.63	0.91	1.42	1.89	3.19
X		36	90.3	113.8	167.6	226	297
		1.42	3.56	4.48	6.6	8.9	11.69
Y		86.8	100.3	135.6	167.6	226	297
		3.42	3.95	5.34	6.6	8.9	11.69
Z		4 x M4x17	4 x M4x17	4 x M8x25	4 x M8x25	4 x M8x25	4 x M8x25

1 – Flange acc. to EN 1092-1

2 – Flange ANSI 150 (acc. to ASTM-A 182 SO/RF 150 Lbs)

6. DATA





6. DATA

6.1.3. Dimensions table – Metal series (Stainless Steel)

DIMENSION		Metal dampeners – Stainless steel series (industrial)				
		DT70 S	DT120 S	DT220 S	DT420 S	DT820 S
A	BSP	G 3/4"	G 1"	G 1.1/2"	G 2"	-
	DIN Flange[1]	DN20	DN25	DN40	DN50	DN80
	ANSI Flange[2]	3/4"	1"	1.1/2"	2"	3"
A1	DIN Flange	105	115	150	165	202
	ANSI Flange	3.88	4.25	5	6	7.5
	BSP	38	45	55	70	-
B		16.5	16.5	41	46	19.3
		0.65	0.65	1.61	1.81	0.76
B1	DIN Flange	47.5	57.5	75	82.5	101
	ANSI Flange	1.94	2.13	2.5	3	3.25
	BSP	19	22.5	27.5	35	-
C		G 1/4"	G 1/4"	G 1/4"	G 1/4"	G 1/4"
D		158	208	277	360	470
		6.22	8.19	10.91	14.17	18.50
G		117	135	213	256	331
		4.61	5.31	8.39	10.08	13.03
G1	DIN Flange	148	176	247	292.5	411.5
	ANSI Flange	5.83	6.93	9.72	11.52	16.2
	BSP	119.5	141	199.5	245	-
L	DIN & ANSI Flange	235	285	375	450	550
		9.25	11.22	14.76	17.72	21.65
	BSP	210	300	350	450	-
		8.72	11.81	13.78	17.72	-
P		22	21.7	42	53.1	80.4
		0.87	0.85	1.65	2.09	3.17

1 – Flange acc. to EN 1092-1

2 – Flange ANSI 150 (acc. to ASTM-A 182 SO/RF 150 Lbs)

6. DATA

6.1.4. Dimensions table – Sanitary series

DIMENSION		Metal dampeners – Stainless steel series (hygienic)					
		DT30 S	DT80 S	DT125 S	DT225 S	DT425 S	DT825 S
A	Tri-clamp[1]	25	25	38	51	70	76.1
	DIN thread[2]	DN20	DN25	DN40	DN50	DN65	DN80
	SMS thread[3]	25	25	38	51	63.5	76.1
	RJT thread[4]	3/4"	1"	1.1/2"	2"	3"	-
A1	Tri-clamp	34	50,5	50,5	64	91	91
	DIN thread	Rd 44x1/6"	Rd 52x1/6"	Rd 65x1/6"	Rd 78x1/6"	Rd 95x1/6"	Rd 110x1/6"
	SMS thread	Rd 40x1/6"	Rd 40x1/6"	Rd 60x1/6"	Rd 70x1/6"	Rd 85x1/6"	Rd 98x1/6"
	RJT thread	Rd 46x1/8"	Rd 46x1/8"	Rd 58x1/8"	Rd 72x1/6"	Rd 98x1/6"	-
B		11	16.5	16.5	44.5	46	18.9
		0.43	0.65	0.65	1.75	1.81	0.74
B1	Tri-clamp	17	20.3	20.3	32	45.5	45.5
		0.67	0.80	0.80	1.26	1.79	1.79
	DIN thread	22	26	32.5	39	47.5	55
		0.87	1.02	1.28	1.54	1.87	2.17
	SMS thread	20	20	30	35	42.5	49
		0.79	0.79	1.18	1.38	1.67	1.93
	RJT thread	23	23	29	36	49	-
		0.91	0.91	1.14	1.42	1.93	-
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		79	117	135	216	255	312
		3.11	4.61	5.31	8.5	10.04	12.28
G1	Tri-clamp	85	120.75	138.75	204.5	254.5	338.6
		3.35	4.75	5.46	8.05	10.02	13.33
	DIN thread	90	126.5	151	211.5	256.5	348.1
		3.54	4.98	5.94	8.33	10.10	13.70
	SMS thread	88	120.5	148.5	207.5	251.5	342.1
		3.46	4.74	5.85	8.17	9.90	13.47
	RJT thread	91	123.5	147.5	208.5	258	-
		3.58	4.86	5.81	8.21	10.16	-
L		180	210	300	350	450	600
		7.09	8.27	11.81	13.78	17.72	23.62
P	Tri-clamp	15	22.6	21.7	44.3	53.1	66.8
		0.59	0.89	0.85	1.74	2.09	2.63
	DIN thread	15	22.6	21.7	44.3	53.1	81
		0.59	0.89	0.85	1.74	2.09	3.19
	SMS thread	15	22.6	21.7	44.3	53.1	81
		0.59	0.89	0.85	1.74	2.09	3.19
	RJT thread	15	22.6	21.7	44.3	53.1	-
		0.59	0.89	0.85	1.74	2.09	-

1 – SMS 3017 / ISO 2037 / ISO 2852
2 – DIN 11851
3 – SMS 1145
4 – BS 4825

6. DATA

6.2. Tightening torques

The following tightening torques are recommended.

DAMPENER SIZE	Pin screw pos.14 [Nm]	Grub screw pos. 1651 [Nm]
DT 9/20/25/30	3	-
DT 50/70/80	8	10
DT 100/120/125	16	13
DT 200/220/225	20	20
DT 400/420/425	23	22
DT 800/820/825	30	26

For routine inspection and maintenance schedule see chapter 3.2. *"Routine inspection"* and 3.3. *"Complete inspection"*.

Although applications vary, a general guideline is to re-torque the dampener every two weeks.

6.3. Technical data

TECHNICAL DATA	DAMPENER SIZE					
	DT9/20	DT50	DT100	DT200	DT400	DT800
Max air pressure [bar] / [psi]	8 / 116	8 / 116	8 / 116	8 / 116	8 / 116	8 / 116
Max air pressure DTF [bar] / [psi]	-	16 / 232	16 / 232	12 / 174	12 / 174	-
Max temp. in PE [°C] / [°F]	70 / 158	70 / 158	70 / 158	70 / 158	70 / 158	70 / 158
Max temp. in PTFE [°C] / [°F]	100 / 212	100 / 212	100 / 212	100 / 212	100 / 212	-
Weight in PE [kg] / [lb]	0.7 / 1.5	1.8 / 4	3.9 / 8.6	8.9 / 19.6	17.5 / 38.6	53.6 / 118.2
Weight in PTFE [kg] / [lb]	1.3 / 2.9	3 / 6.6	6.5 / 14.3	14 / 30.9	26 / 57.3	-
Internal volume [dm3] / [in3]	0.14 / 8.5	0.47 / 28.7	1.13 / 69	3.36 / 205	7.84 / 478	17.88 / 1091

COMPONENT	MATERIAL
Housing (wetted)	PE, PE AST, PTFE, PTFE AST
Block (not wetted)	PP, PP AST, Aluminium
Diaphragms	PTFE, PTFE with white back, EPDM, white EPDM, NBR, FKM, PTFE TFM
Housing pin screws	A4-80
Diaphragm shaft	AISI 316L

TECHNICAL DATA	DAMPENER SIZE					
	DT25 A	DT70 S/A	DT120 S/A	DT220 S /A	DT420 S/A	DT820S/A
Max air pressure [bar] / [psi]	8 / 116	8 / 116	8 / 116	8 / 116	8 / 116	8 / 116
Max air pressure DTF [bar] / [psi]	-	16 / 232	16 / 232	14 / 203	14 / 203	-
Max temp. with EPDM [°C] / [°F]	90 / 194	90 / 194	90 / 194	90 / 194	90 / 194	90 / 194
Max temp. with NBR [°C] / [°F]	70 / 158	70 / 158	70 / 158	70 / 158	70 / 158	70 / 158
Max temp. with PTFE [°C] / [°F]	110 / 230	110 / 230	110 / 230	110 / 230	110 / 230	110 / 230
Weight in aluminum [kg] / [lb]	1.2 / 2.7	4.5 / 9.9	6.2 / 13.7	12 / 26.5	16 / 3.3	94 / 207
Weight in stainless steel [kg] / [lb]	-	2.3 / 5.1	4.6 / 10.1	9.1 / 20.1	17.4 / 38.4	43.7 / 96.3
Internal volume [dm3] / [in3]	0.14 / 8.5	0.71 / 28.7	1.54 / 94	4.5 / 274.6	10.15 / 619.4	17.9 / 1092

COMPONENT	MATERIAL
Housing (wetted)	Aluminium, AISI 316L
Block (not wetted)	Aluminium, PP, PP AST
Diaphragms	PTFE, PTFE with white back, EPDM, white EPDM, NBR, FKM, PTFE TFM
Housing pin screws	A4-80
Diaphragm shaft	AISI 316L

6. DATA

TECHNICAL DATA	DAMPENER SIZE					
	DT30	DT80	DT125	DT225	DT425	DT825
Max air pressure [bar] / [psi]	8 / 116	8 / 116	8 / 116	8 / 116	8 / 116	8 / 116
Max temp. with EPDM [°C] / [°F]	90 / 194	90 / 194	90 / 194	90 / 194	90 / 194	90 / 194
Max temp. with NBR [°C] / [°F]	70 / 158	70 / 158	70 / 158	70 / 158	70 / 158	70 / 158
Max temp. with PTFE [°C] / [°F]	110 / 230	110 / 230	110 / 230	110 / 230	110 / 230	110 / 230
Weight [kg] / [lb]	1.4 / 3.1	2.4 / 5.3	4.4 / 9.7	9 / 19.8	17 / 34.5	43 / 94.8
Internal volume [dm3] / [in3]	0.18 / 11	0.71 / 43.3	1.54 / 94	4.8 / 292.9	10.09 / 615.7	22 / 1342.5

COMPONENT	MATERIAL
Housing (wetted)	AISI 316L stainless steel – electro polished to Ra<1.6 (liquid contact surface)
Block (not wetted)	PP, PP AST
Diaphragms	PTFE, PTFE with white back, EPDM, white EPDM, NBR, FKM, PTFE TFM
Housing pin screws	A4-80
Diaphragm shaft	AISI 316L

6. WARRANTY

7. WARRANTY

7.1. Warranty form

Company:

Telephone: Fax:

Address:

Country: Contact Name:

E-mail:

Delivery Date: Date of dampener installation:

Dampener type:

Serial No (see name plate or stamped on dampener housing):

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:

Liquid pressure [bar]:

Air pressure [bar]: Quality of the air (filter, micron, lubrication):

Other:

Place for sketch of installation:

6. WARRANTY

7.2. Returning parts

When returning parts to Tapflo please follow this procedure:

- Consult Tapflo for shipping instructions.
- Cleanse or neutralize and rinse the part/dampener. Make sure the part/dampener 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.

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

6. WARRANTY

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 dampener. 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 contact, tort, or otherwise, for any indirect, special, incidental, or consequential damages, caused to the customer or to third parties, including loss of profits, arising by any possible infringement of par. 3 above or by the customer or third parties being in the impossibility of using the products.

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

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Tapflo products and services are available worldwide.

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

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