

## Tapflo Sanitary Air Operated Double Diaphragm Pumps



The Tapflo Sanitary Series of Air Operated Double Diaphragm Pumps have been especially designed to meet the requirements of the food, beverage, pharmaceutical and cosmetic industries. Lubrication free air distribution system, maintenance free ball check valve system and total visual inspection of the wetted parts are some of the major features for this pump series. There are no hidden areas where bacteria can grow. The manifold clamps and the housing screws are simply removed for complete disassembly and cleaning. The pump is also designed for cleaning and sterilization in place – C.I.P. and S.I.P. After such operations, the pump is easily turned in its support for drainage.

Models are supplied with an extra fine surface finish to Ra 0.8 as standard and to Ra 0.5 upon request.

The pumps are supplied as standard with ISO Tri-Clamp connections. However, they may also be equipped with almost any type of connection used in the hygienic field – DIN clamps, SMS milk, RJT, DIN aseptic to mention a few.

Thanks to Tapflo's innovative, simple & ingenious design these pumps are compact, robust & reliable. Furthermore, they are quick & easy to maintain, keeping your service costs and process down time to an absolute minimum.

When used in conjunction with Tapflo's patented control and monitoring equipment, preventive and routine maintenance is also easily integrated into any process, whilst also enabling accurate and precise control of the pump's performance. Optimising your system to the best of its ability!

**ATEX Rated Pumps**

All of our Sanitary pumps are available in ATEX rated versions and are supplied with an earthing connection and conductive centre sections and Diaphragms (PTFE or EPDM).

**Certificates & Approvals:**

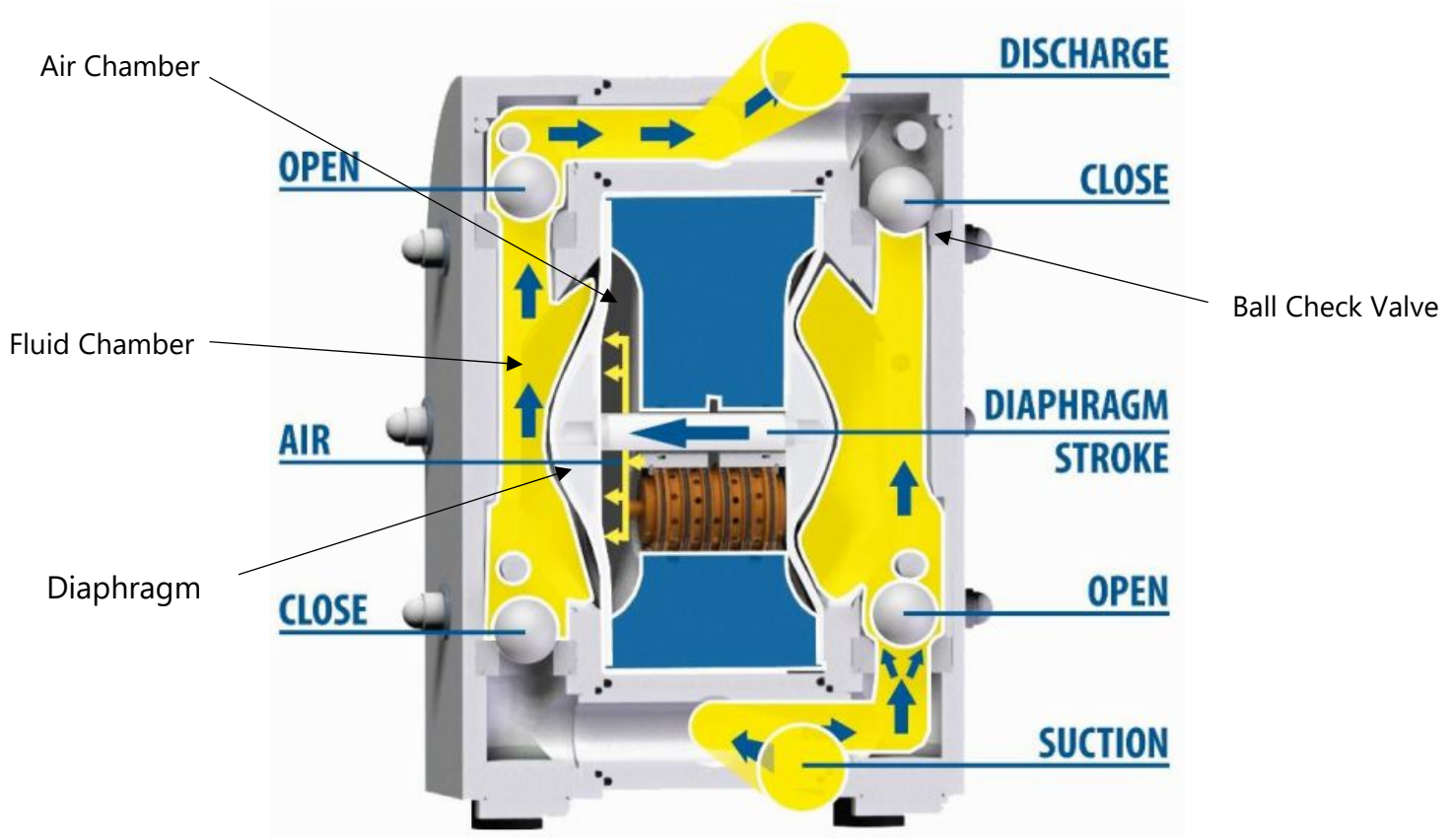


**Typical Applications:**

The Tapflo Sanitary Air Operated Diaphragm Pumps are ideally suited to a plethora of applications in numerous industries, such as:

Industry	Example of application
Dairy products	Milk, cream, yogurt, cream cheese, melted cheese
Grocery	Ketchup, mayonnaise, tomato products, mustard
Beverages	Flavours, colouring, fruit juice
Bakery	Dough, ingredients
Brewery	Beer, flavours, colouring, wort
Hygiene	Soap, toothpaste, shampoo
Cosmetics	Cream, alcohol, perfume

**Operating Principle:**



An Air Operated Diaphragm Pump is principally made up of 2 Liquid Chambers, 2 Air Chambers and 2 Diaphragms. The Liquid and Air Chambers are separated by a Flexible Diaphragm.

Compressed Air is supplied to the air valve which distributes the air from the Centre Block, where 2 ports direct the flow of air to the right and left side Air Chambers.

The same air pressure from the air supply is directly applied to the back side of one of the Diaphragms, forcing it forward and therefore the medium out of the Fluid Chamber, lifting the Ball Check Valve and out of the Discharge Port (2), with equal pressure to that which is supplied.

The Diaphragms are connected by a shaft which is screwed into the centre of each. As one of them is forced forward the other is pulled towards the Centre Block, causing a vacuum effect on the suction side. The medium is subsequently drawn through the Suction Port (1) and into Fluid Chamber.

The Air Valve automatically transfers the air pressure to the opposing side at the end of each stroke, reversing the action. Hence the term 1:1 reciprocating pump.

The Ball Check Valves alternately Open & Close in unison with the reciprocating action of the diaphragms. Enabling filling of the Fluid Chambers and preventing back flow through the pump. A variety of Balls can be supplied to provide both chemical resistance and different weights to suit the viscosity of the medium.

**General Benefits to Air Operated Diaphragm Pumps:**

- Run Dry without damage – No need for dry run protection devices
- Infinitely variable flow control – achievable by adjusting the air flow to the pump via a blocking needle valve
- Air Operated – Inherently safe and simple to install, no special training required.
- Self-priming up to 9 m, when wetted
- Solids Handling & resistant to abrasion
- Can handle both thin and viscous fluids
- Can operate against a closed valve without damage – the pump will simply stall
- Available in a wide variety of materials to suit almost any fluid
- Sealless – no mechanical seal, which is the weakest point on any type of pump
- Decent volumetric efficiency – enables them to be used in batching and metering applications
- Relatively low initial cost
- Simple maintenance and low cost of ownership
- Wide range of installation possibilities
- Discharge Pressures up to 8 bar as standard, 16 bar when being used with a booster

**Tapflo Design Features & Benefits:**

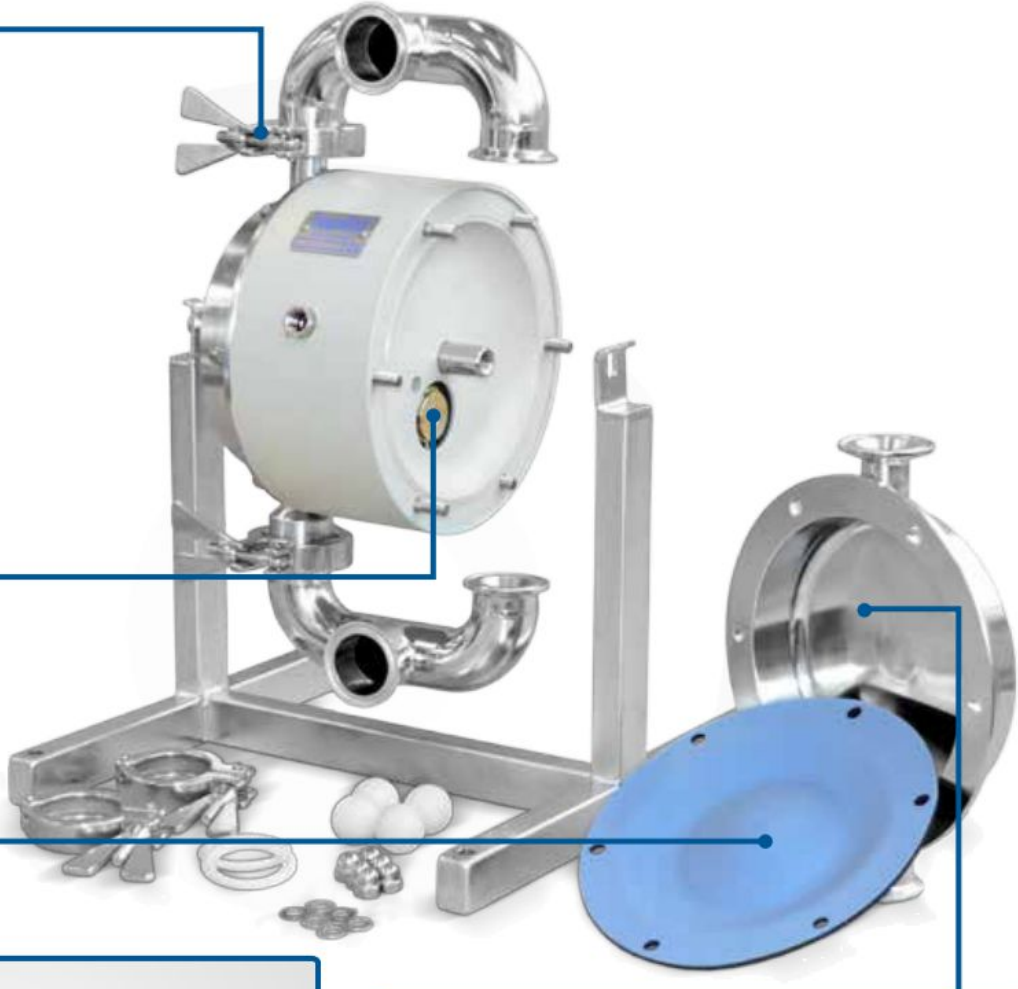
The pump has been innovatively designed with up to 70% fewer parts than other Air Operated Diaphragm Pumps on the market. Fewer components means a pump which is compact as well as easy & quick to maintain. The result is lower service costs and process down time. The Sanitary series has taken this innovative design philosophy and extended it to be cleanable with the following design features.

**Quick dismantling**  
The clamp system ensures rapid dismantling without any tools.

**Pollution free air valve**  
The sealing system is lubrication free, always keeping your product and environment free from oil contamination.

**Plain surface**  
The sandwich diaphragm has a completely plain surface, which eliminates bacteria growth problems. The diaphragm is available in food grade materials - PTFE or white EPDM.

**Superior finish**  
Both liquid side and outside is electropolished\*, to obtain superior finish and hygiene. Special surface finish may be done according to your requirements.



\*T825 is glass blasted

## ■ Easy draining

### Drain the pump by turning the pump in its support (T80-T825)

Our design allows for total visual inspection of the wetted parts. There are no hidden areas where bacteria can grow. The manifold clamps and the housing screws are simply removed for complete disassembly and cleaning. The pump is also designed for cleaning and sterilization in place – C.I.P. and S.I.P. After such operations, the pump is easily turned in its support for drainage.



After the CIP procedure, the pump usually has to be drained from the CIP fluid. The Tapflo sanitary series is supplied with a hygienic stand, enabling 360° rotation of the pump unit in 3 simple steps!

1. Disconnect the pump from the pipework
2. Loosen the two socket head cap screws on the stand & rotate the pump 180° to let the remaining fluid drain off. The airline may be left connected during this operation.
3. Rotate the pump back into position and refit the socket head cap screws and reconnect the pipework.

**Materials Data:**

Component	Material
Wetted Metal Parts	Stainless Steel AISI 316L electro polished (T825 glass blasted)
Centre Block	PP & Conductive PP
Diaphragms	PTFE, PTFE 1705B, PTFE with white back, EPDM, white EPDM, NBR
Valve Balls	PTFE, EPDM, NBR, AISI 316, PU, Ceramic
Air Valve	Brass (std.), stainless steel AISI 316L or PET with NBR (std.), EPDM or FKM O-rings
Sealing (Wetted)	PTFE or EPDM
Housing Pin Screws	Stainless Steel AISI 316
Diaphragm Shaft	Stainless Steel AISI 316L (T30 & T825), 304L (T80 – T425)

**Performance Range:**

The Tapflo Sanitary Air Operated Double Diaphragm Pumps have a wide range of capacities to suit almost any application, from metering and dosing to general transfer. The max capacity range varies from 30 – 825 l/min with discharges pressures up to 8 bar as standard & standard solids passage up to 15 mm or 100 mm with Flap Valves.

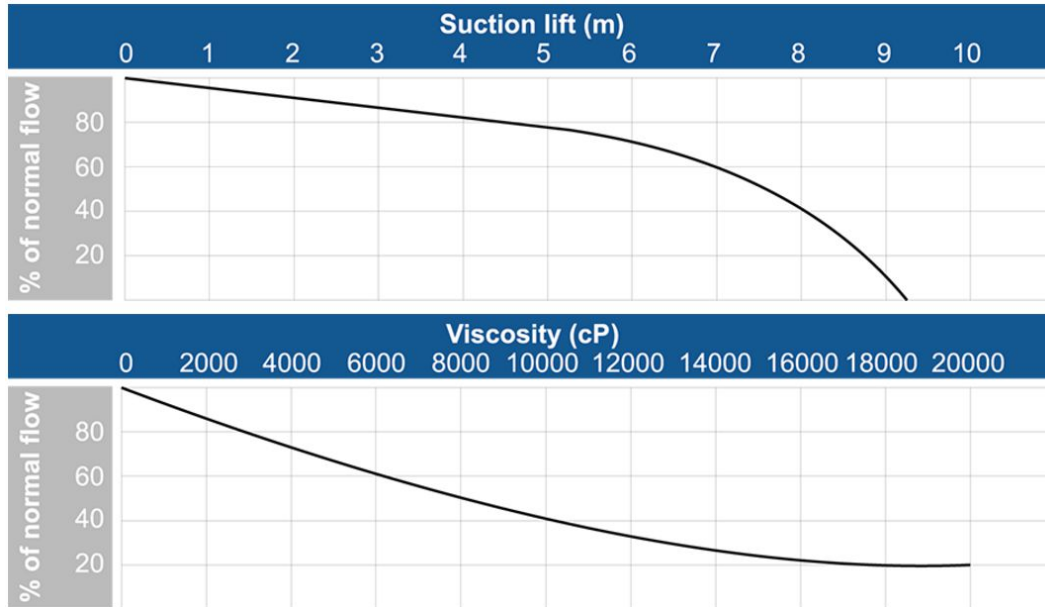
Data	Pump Size					
	T30	T80	T125	T225	T425	T825
Max Capacity, l/min	28	78	155	330	570	820
Volume / Stroke, ml (*)	70	87.5	300	933	2300	5000
Max Discharge Pressure, Bar	8	8	8	8	8	8
Max Air Pressure, Bar	8	8	8	8	8	8
Max Dry Suction Lift, m (**)	1.5	3	4	4	4	4
Max Wet Suction Lift, m	8	8	9	9	9	9
Max Permissible ø of Solids, mm (Ball Valves / Flap Valves)	3	4	6	10 / 51	15 / 51	27 / 100
Max Fluid Temp w/ EPDM / NBR Diaphragm, °C	80					
Max Fluid Temp w/ PTFE Diaphragm, °C	110					
Min Fluid Temp, °C	-20					
Weight, Kg	4	8	11	21	35	133

\* = The value is based on pumps with EPDM diaphragms. Pumps with PTFE diaphragms produce approx. 15% less volume

\*\* = This is max value with stainless steel valve balls, other valve ball materials may reduce the suction.

**Changes in Capacity due to Suction Lift & Viscosity:**

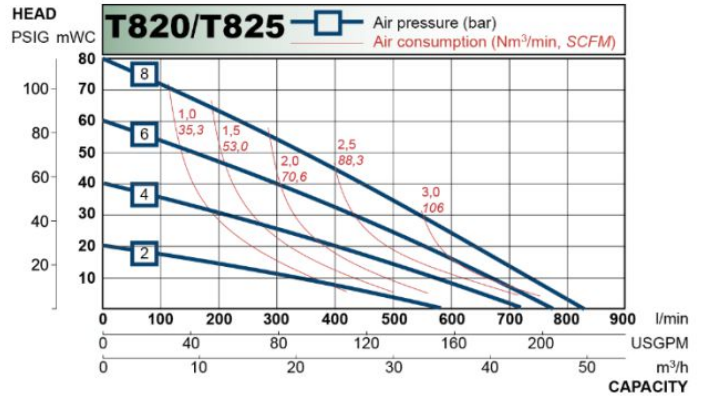
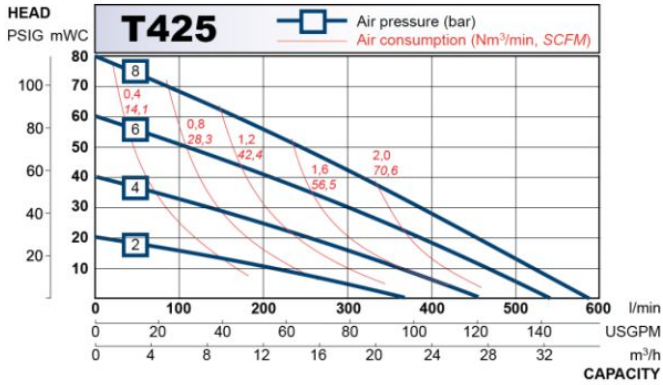
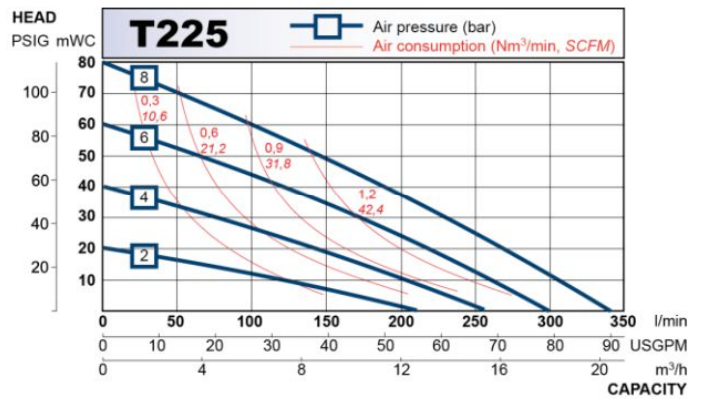
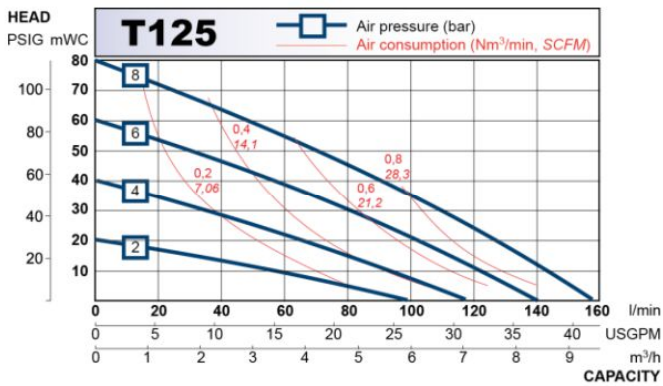
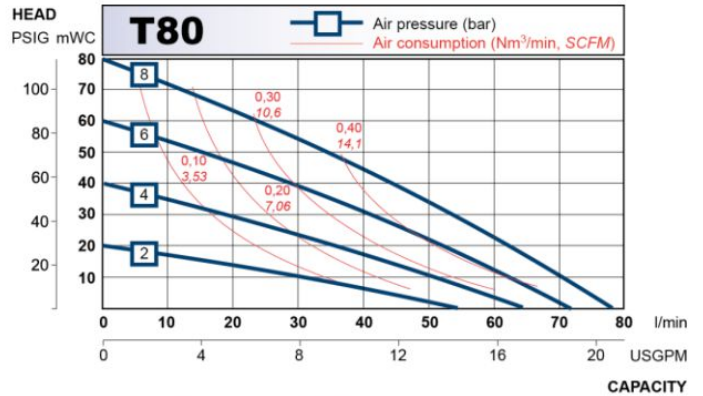
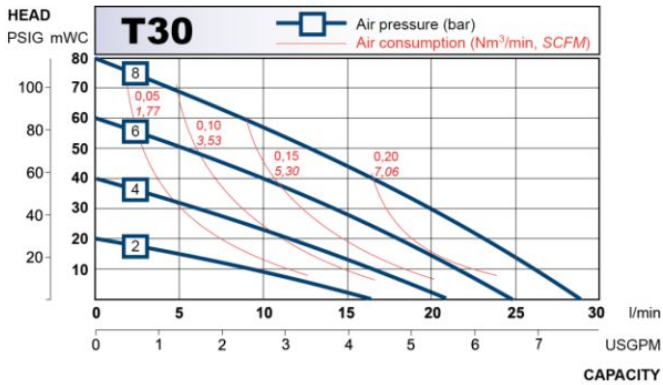
An AODDs capacity will vary according to changes in both viscosity and suction lift, below are charts displaying the % drops in flow according to the changes in both. These variations need to be taken into account when selecting a suitable pump.



All performance charts are based on test done with water, therefore, if an application demanded a 4 m suction lift on a fluid that was approx. 3000 cPs, then potentially a larger pump which could produce 40% more capacity would be required.

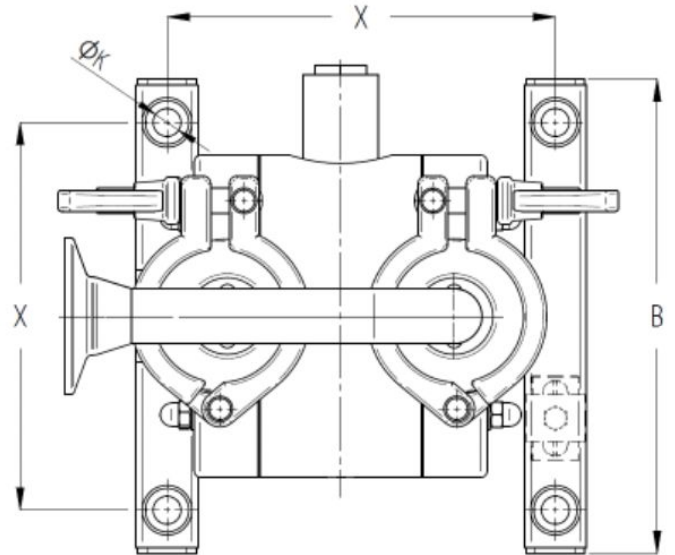
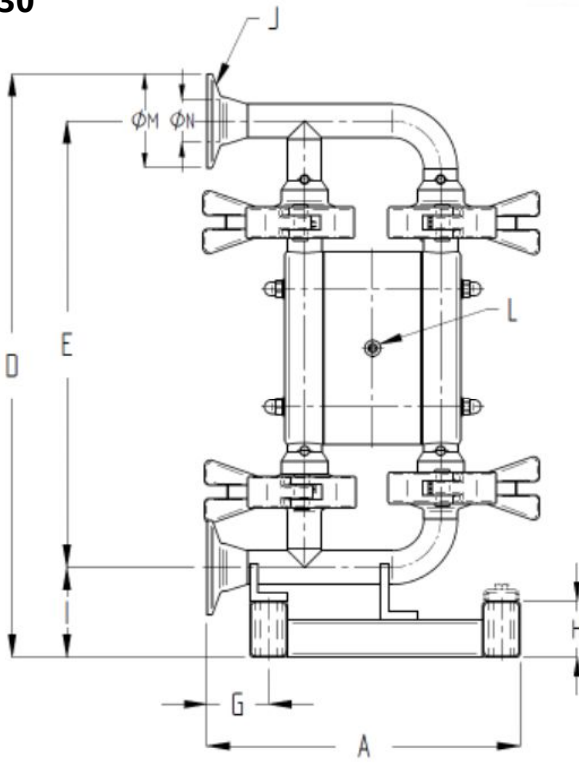


**Performance Curves:**

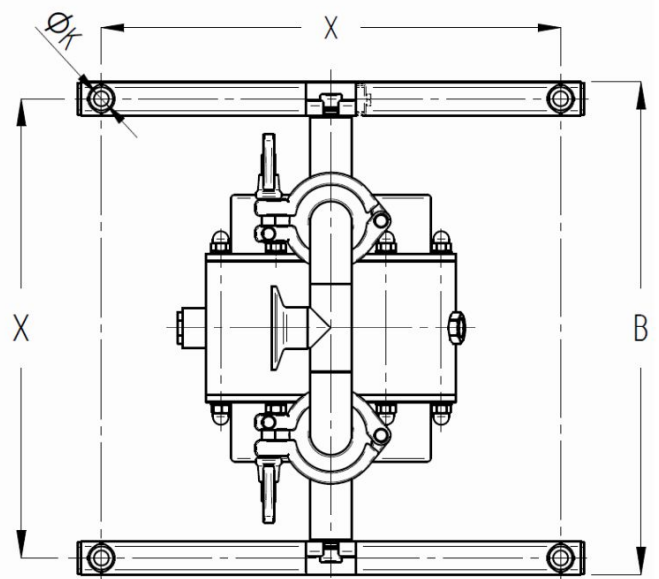
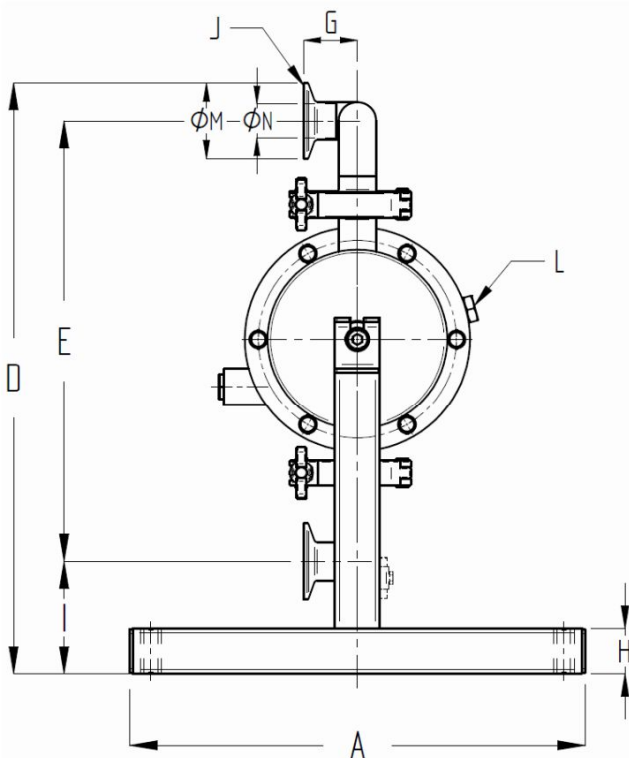


**General Dimensional Information:**

T30



T80 – T825



**Dimensions Table:**

NOTE: Build specific GA Drawings in 2D as well as DWG and STEP Files are available on request for easy integration into system installations and OEM products. Dimensions are in mm and based on standard build constructions.

Dim	Pump Size						
	T30	T80	T125	T225	T425	T825	
A	168	303	328	412	476	760	
B	153	295	320	404	468	750	
D	313	393	458	646 / 792**	808 / 950**	1306 / 1495**	
E	240	294	350	528 / 690**	664 / 775**	1034.5 / 1270**	
G	33	36	44	50	80	136 / 150**	
H	30	30	30	30	30	60	
I	48	74.5	83	86 / 70**	98 / 140**	206.5 / 165**	
J	TC <sup>1</sup>	1"	1"	1½"	2"	2½"	3" / 4"***
	DIN <sup>2</sup>	DN25	DN25	DN40	DN50	DN65	DN80
	SMS <sup>3</sup>	-	25	38	51	63.5	80
	RJT	¾"	1"	1½"	2½"	3"	3½"
K	9	9	9	9	9	25	
M*	50.5	50.5	50.5	64	91	91 / 119**	
N*	22.6	22.6	35.6	49	66	72.9 / 100**	
X	125	275	300	384	448	710	

\* = Dimensions according to standard Clamp Connections only

\*\* = Dimensions with Flap Valves and Heavy Duty Valve Cups

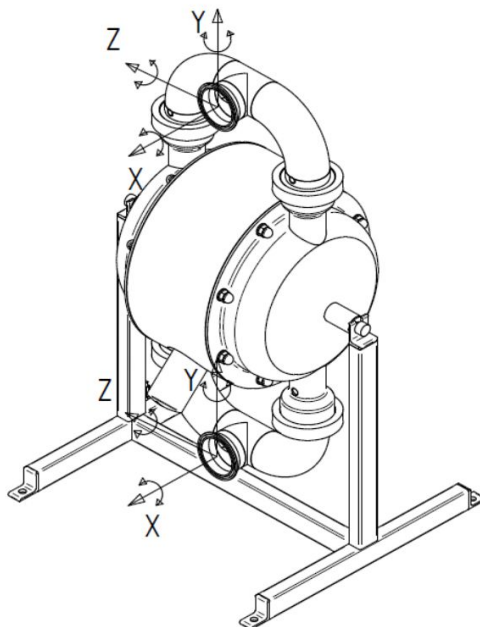
1 = Clamp connections according to SMS3017 (T30 – T225) / ISO2037 (T425-T825)

2 = Threaded connections according to DIN 11851

3 = Threaded connections according to SMS 1145

**Permitted Loads on Manifolds:**

We recommend not exceeding the following loads & forces reacting on the manifolds.

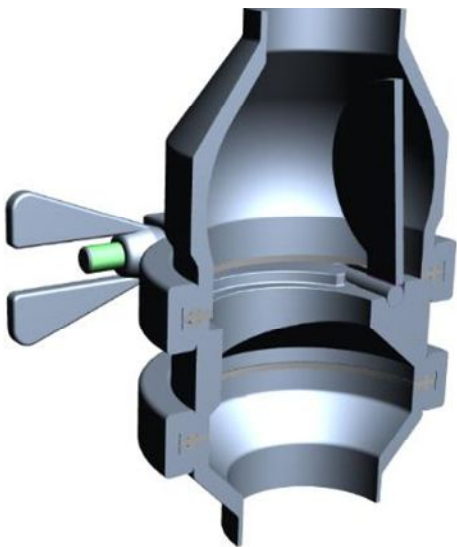


T30			T825		
Direction	Load (N)	Moment of Force (Nm)	Direction	Load (N)	Moment of Force (Nm)
X	16.2	3.4	X	93	13.2
Y	16.2	3.4	Y	93	13.2
Z	16.2	3.4	Z	93	13.2
T80					
Direction	Load (N)	Moment of Force (Nm)			
X	31	6.3			
Y	31	6.3			
Z	31	6.3			
T125					
Direction	Load (N)	Moment of Force (Nm)			
X	35	7.3			
Y	35	7.3			
Z	35	7.3			
T225					
Direction	Load (N)	Moment of Force (Nm)			
X	43	8.8			
Y	43	8.8			
Z	43	8.8			
T425					
Direction	Load (N)	Moment of Force (Nm)			
X	56	11.5			
Y	56	11.5			
Z	56	11.5			

**Special Versions / Options:**



**T225 & T425**



**T825**



**Flap Valves**

Available on 3 pump sizes: T225, T425 & T825  
 Provide solids passage from 50 – 100 mm, model dependent.  
 Provide Dry Suction Lifts up to 4.5 m

Flap valves are a great option when the product to be pumped has a high viscosity, contains big solids or solids that can be damaged by standard valve balls (e.g. fruits).

Mounted with clamps they provide easy maintenance and cleaning.

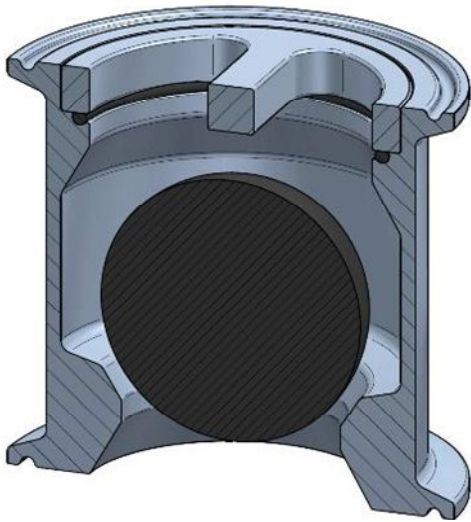
Made in AISI 316, they are mounted in a special flap valve cup with clamps between housing and manifold.

Pumps with flap valves differ from standard pump by valve type, manifolds and pump housing.

NOTE: Flap valves are not appropriate for pumping water-like products. If a liquid has low viscosity, the valve will open and close very fast with no shock absorption that is provided by viscous products. Also dry running of the pump for longer periods will cause rapid valve wear and eventually pump stopping.

Modify your existing pump to be fitted with flap valves with following additional parts!

- T225 = Flap Valve Compete x 4 (P/N: 6-225-24H)
- T425 = Flap Valve Compete x 4 (P/N: 6-425-24H)
- T825 = Flap Valve Compete x 4 (P/N: 6-825-24H)



## Ball Cup Valves

This option is a perfect solution when there is risk of damage to the valve seats from the product. If such situation is to occur there is no need to replace the whole manifolds or housings, just the valve cup what drastically reduces the spare parts cost.

Just like the flap valve it is made of AISI 316 stainless steel and is mounted between the housing and manifold with clamps. In the same way the manifolds, pump housing and pump stand have to be changed in comparison to a standard sanitary pump.

The following additional parts are required to optimise your pump to be fitted with ball cup valves.

- 4 x Ball Valve Cups
- 2 x Manifold for Ball Cup Valves
- 2 x Pump Housing – Ball Cup Valves
- 8 x 3-Clamp Seal
- 4 x 3-Clamps
- 4 x Valve Ball Stops
- 4 x O-Rings
- 1 x Pump Stand

## Heating Jacket

The heating jacket is a great option when the pumped product tends to solidify at lower temperatures e.g. Chocolate or paraffin.

When the pump has finished its duty and is left for some time without operation the product can solidify inside. This is when the heating jacket comes in. Before next pump start-up heating medium like water or steam is into the heating system for a defined period of time to melt the product inside the pump. Only then can the pump be started again with no risk of damage.

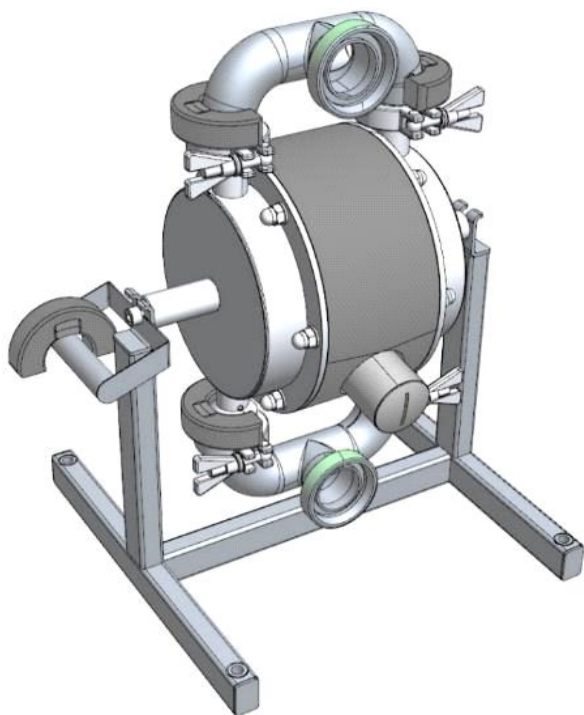
NOTES:

When using steam as the heating agent the flow must be from top to bottom (due to steam condensation). In case of hot water or other liquid it is the other way around.

Do NOT exceed 2 Bar pressure in the jacket.



## Magnetic Ball Lifters



Magnetic ball lifters are implemented in Sanitary and Aseptic EHEDG series of AODD pumps, to enable pump emptying without removing it from the installation when no other draining option is available. Rotating the pump is also no longer needed.

The balls are lifted by simply attaching the magnets to the pumps manifold.

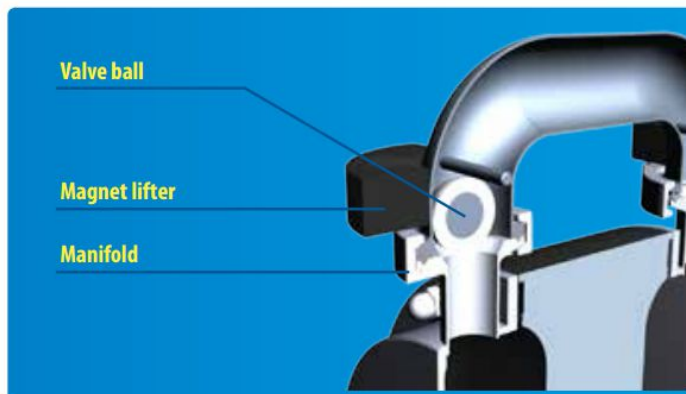
Valve balls are available in AISI 420 magnetic stainless steel or PTFE with steel cores.

Pump Emptying Procedure:

1. Install the magnets onto the pump manifolds in the valve seat area
2. Run the pump slowly
3. After a few cycles the pump will start to dry run
4. Turn off the pump
5. Take off the magnets & manifold

Modify your existing pump to be suitable for use with Magnetic Ball Lifters with the following additional parts!

- 4 x Valve Balls (PTFE Steel Core or AISI 420)
- 4 x Magnetic Ball Lifter
- 1 x Magnet Holder

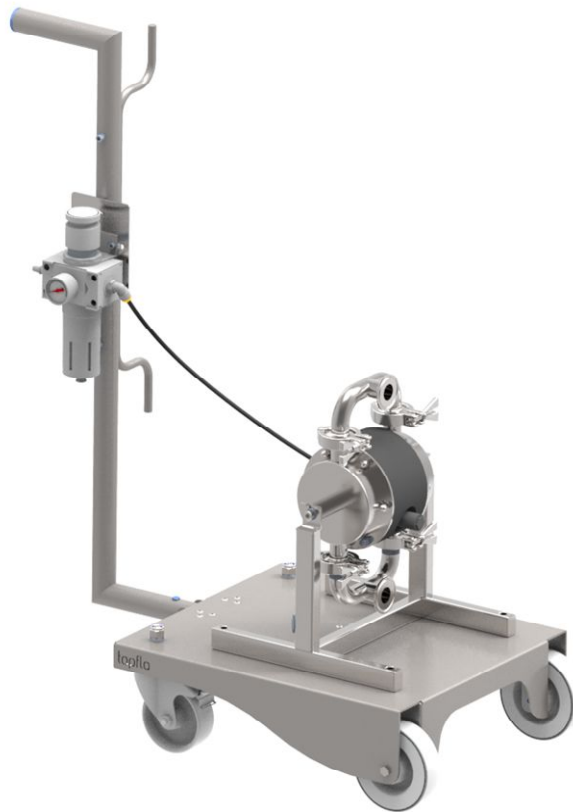


### ■ Working principle

Valve ball, either made of AISI 420 or PTFE with steel core, is lifted by magnet lifter attached onto the manifolds.



**Trolley Mounted Options:**



**Trolley Mounted Units** can be supplied to fit all sizes of Tapflo Sanitary pumps, with 2 or 4 wheels (2 fixed, 2 free) mounting plate for control apparatus, hose wrap points & / or fitted with a variety of dedicated control & protection features.

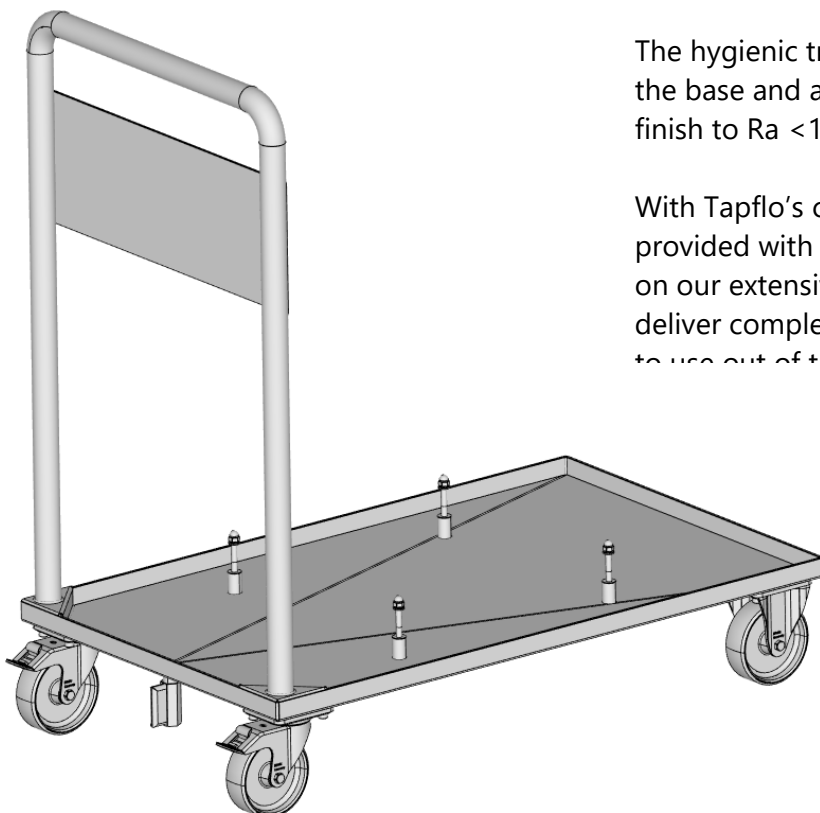
Such as:

- Variable Flow & Pressure Control
- Barrier Protection
- Pneumatic & Electronic Batching & Metering
- Dry Run & Stop
- Dead Head & Stop
- Dead Head & Restart
- Stroke Counters w/ VFC

The units can also be ATEX rated for use in hazardous areas and are hygienically rated for use in food environments and fitted with pneumatic wheels for use on uneven surfaces. The result is a mobile range of pump units providing a solution to a wide spread of technological processes. The portability of the units allows easy movement to various locations with almost limitless applications.

The hygienic trolleys are all fitted with drain channels in the base and a drain valve at the rear and have a surface finish to Ra <1.6

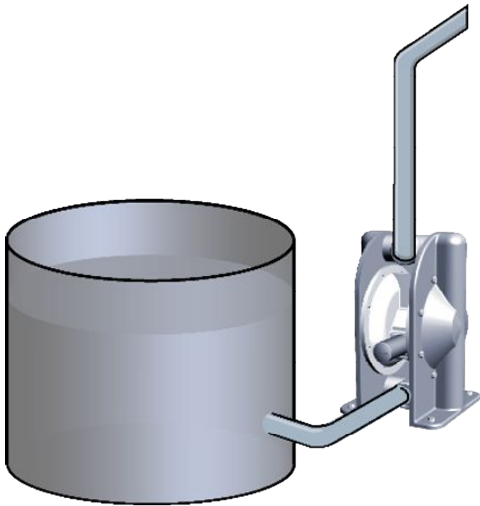
With Tapflo’s customised Mobile Solutions, the user is provided with not only a product but functionality. Based on our extensive experience with pumping skid units, we deliver complete “made to measure” mobile units, ready to use out of the box





## Types of Installations:

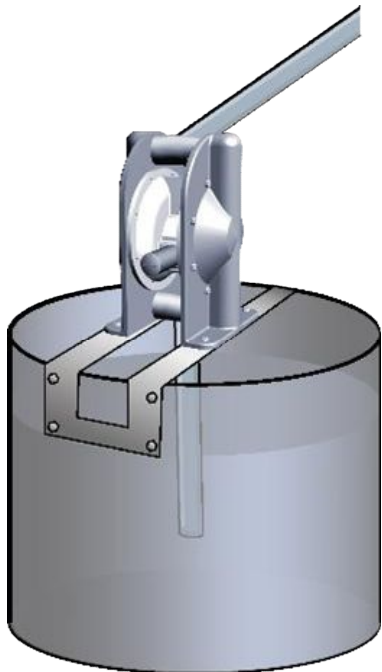
The Tapflo Sanitary Air Operated Double Diaphragm Pump is flexible to many types of installations. Below are the 2 types of installations which they are commonly operated in:



### **Flooded**

The piping system is designed so that the pump is fed with a positive suction head. This is the best way to install a pump when it is necessary to completely empty all the liquid from the suction tank or container, or where viscous products are being transferred.

Note: Do not exceed 0.7 bar suction pressure as higher pressures than this may cause premature diaphragm failure and irregular pump operation such as siphoning.



### **Self-Priming**

The Tapflo Air Operated Diaphragm Pump is designed to pull a high vacuum. It is able to evacuate air from an empty suction pipe without damaging itself. The suction lift capability is up to 5 m from an empty pipe and up to 8 m from a wetted pipe.

Note: The suction lift capability is dependent on the size of the pump.

**Installation Example:**

Below is an installation example showing “best practice” when installing a Tapflo Air Operated Diaphragm Pump. Our air valves are constructed for oil-free air. Lubricated air is not permitted and will damage the pump. However, if the air is very dry (laboratory air), the air may be lubricated with water. The maximum allowed air pressure is 8 bar, and as a preventative measure, the air must be filtered to at least 5 micron or less. Recommended air quality according to PN-ISO8573-1:2010 is particles class 6, water class 7 and oil class 4.

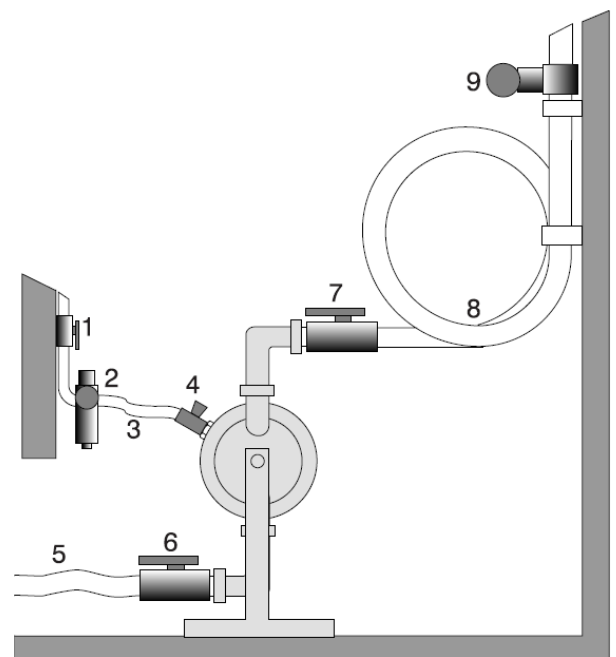
To facilitate the operation of the pump, and cater for the above parameters, we recommend an air treatment system connected to the air supply.

These components should be included:

1. Regulator to adjust the air pressure and therefore the discharge pressure generated by the pump.
2. Manometer to read the output pressure to the pump
3. Needle valve to adjust the air flow to the pump and therefore the flow rate generated by the pump. This is especially useful when operating the pump in the lower ranges of its performance capabilities and for accurate control of flow rate.
4. Filter to ensure that the pumps air valve doesn't become contaminated.

These components are included in Tapflo's Air treatment system which can be ordered from us and installed onto the pump so that it is ready to use upon delivery.

1. Ball valve for isolating compressed air supply
2. Air Filter and Pressure Regulator w/ mounted Manometer
3. Flexible Air Hose feeding to the pump Air Inlet
4. Needle Valve for regulating pump flow rate
5. Flexible Suction Hose feeding to pump suction side to absorb any vibrations and water hammer effects.
6. Butterfly / Ball Valve fitted to the pump suction to enable insolation for maintenance.
7. Butterfly / Ball Valve fitted to the pump discharge to enable insolation for maintenance.
8. Coiled flexible piping fitted to the pump discharge to provide back pressure and also the required distance between the pump and flow gauge / meter to retain accuracy.
9. Flow gauge to provide an accurate read out of generated flow to ensure that the pump is working comfortably.



**Trouble-Shooting:**

To ensure safe operation and the life of the pump and to form part of a preventative maintenance schedule, routine and complete inspection of the pump is recommended.

Routine Inspection can be done by frequent observation of the pump operation is required to detect problems. A change in sound of the running of the pump can be an indication of wearing parts as well as leakages and changes in performance.

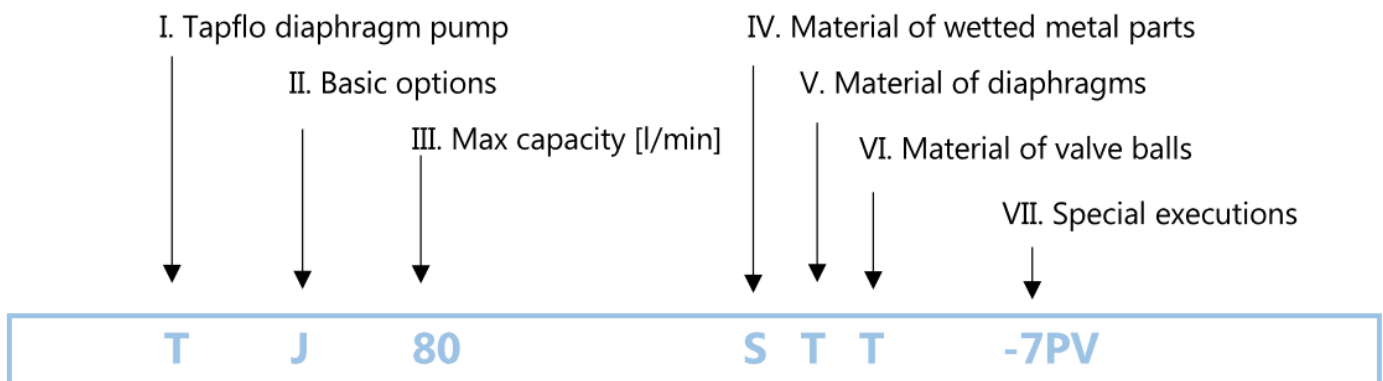
The intervals for a complete inspection depend upon the operation conditions of the pump. The characteristics of the liquid, temperature, materials used in the pump and running time decide how often a complete inspection is necessary. Nevertheless, Tapflo recommend to inspect the pump at least once a year. As part of this inspection Air and Liquid Kits should be changed and Valve Kits should be changed once every 2 years.

Tapflo recommend stocking at least a Liquid and Air Kit to ensure that expensive down time is avoided.

PROBLEM	POSSIBLE FAULT	POSSIBLE SOLUTION
<b>The pump does not run</b>	The air pressure is to low The air connection is blocked Muffler is blocked Air valve is defective Dirt in the pump chamber Diaphragm breakdown	Increase air pressure via a filter-regulator Check / clean air supply connection Check / clean / replace muffler Clean / replace complete air valve Remove debris from the chambers Replace diaphragm
<b>The suction is bad</b>	Suction connection is not tight Suction connection is blocked Muffler is blocked Valve balls are blocked or damaged Valve seats are worn Pump starts with high pressure Air in suction / discharge line Dry suction against discharge pressure	Tighten the suction line Clean suction line Check / clean / replace muffler Check dimensions and shape of valve balls Check dimensions and shape of valve seats Start the pump slowly (see chapter 2.2 of manual) Vent suction / discharge line Wet the pump / start without discharge pressure
<b>The pump runs irregularly</b>	Valve balls are blocked Sealing in centre block Air valve is defective Diaphragm breakdown Valve seats are worn Icing on the muffler	Check dimensions and shape of valve balls Replace sealing Clean / replace air valve Replace diaphragm Check dimensions and shape of valve seats Improve air quality (see chapters 1.7.1 and 2.2.2 of manual)
<b>Bad flow / pressure</b>	Pressure fall in air supply Pressure losses on suction side Air supply / air valve leaking Suction or air connection blocked Muffler is blocked Valve ball worn or broken Valve seats are worn Air in liquid	Increase air pressure via a filter-regulator Check/change installation on suction side Check / repair / replace air supply / air valve Check / clean air supply / suction connection Check / clean / replace muffler Check dimensions and shape of valve balls Check dimensions and shape of valve seats Seal suction line; check / refill container

	Diaphragm breakdown Icing on the muffler	Check / replace diaphragms Improve air quality (see chapters 1.7.1 and 2.2.2 of manual)
<b>Liquid leaks from the pump</b>	Screws on the housing not properly tightened O-rings on manifolds damaged Damaged diaphragm Tension / stress from the installation	Check tightening torques of the screws Replace O-rings Check / replace diaphragms Adjust installation, eliminate stress, when using a dampener provide separate support for it (see dampener IOM manual).
<b>Liquid comes out of the muffler</b>	Diaphragm breakdown	Replace diaphragm
<b>Diaphragm breakdown</b>	Wrong selection of material Too high pressure in the installation Long periods of dry running Too high pressure on suction side	Contact us for information on material selection Use air treatment system for protection When dry, run pump slowly (see chapter 2.2 of manual) Make sure there is pressure balance between the air and liquid side of the diaphragm

**Pump Codification:**



I. T = Tapflo diaphragm pump

II. Basic options:

- B = Backup diaphragm pump
- F = Filter-press pump
- J = Heating jacket
- X = ATEX approved, group II, cat. 2

IV. Material of wetted metal parts:

- S = stainless steel AISI 316L

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

VI. Material of valve balls:

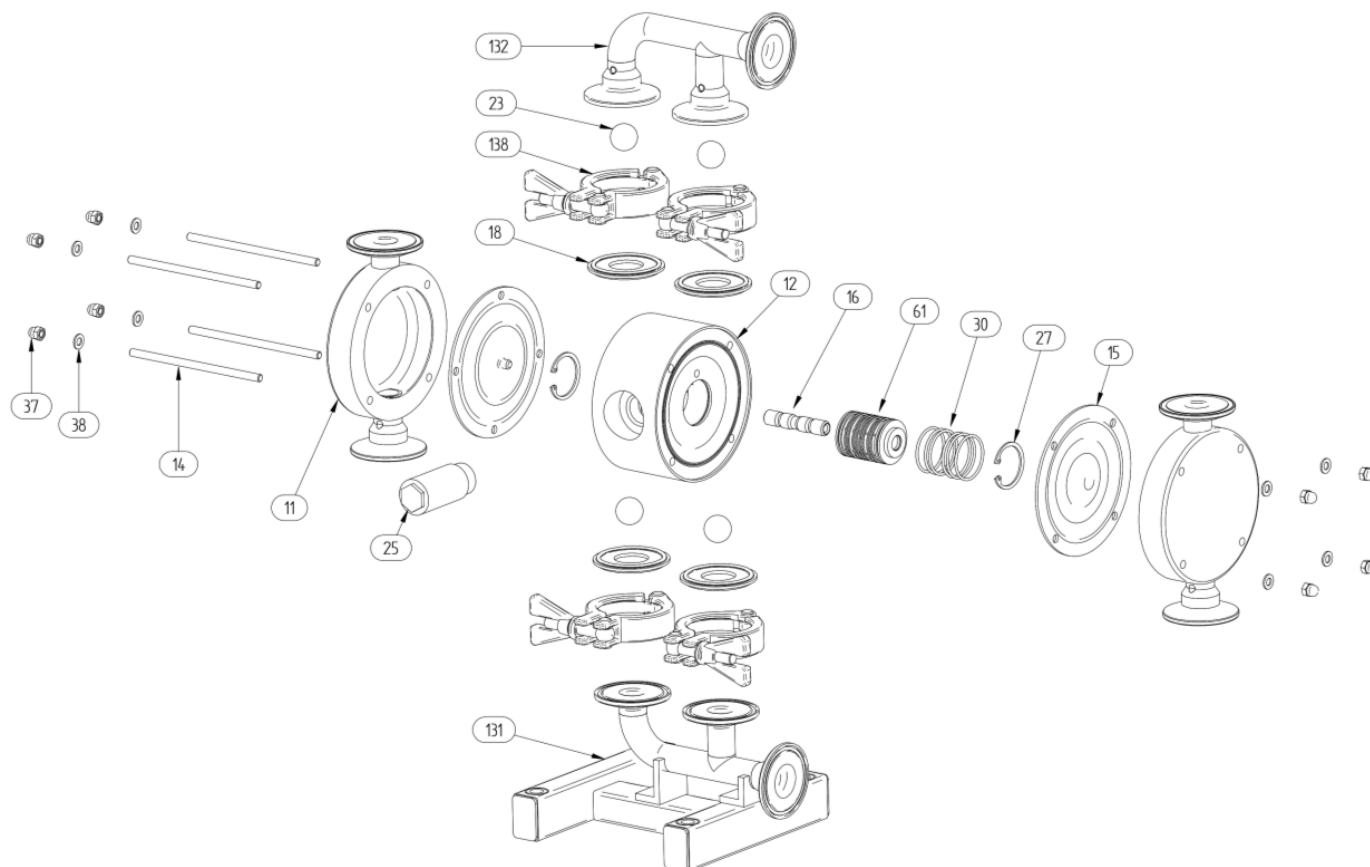
- E = EPDM
- N = NBR (nitrile rubber)
- T = PTFE
- S = AISI 316 stainless steel
- P = PU (polyurethane)
- K = Ceramic
- B = PTFE TFM 1635
- blank = flap valve version

VII. Special executions:

- 1 = Optional in/outlet
- 3 = Optional connection type
- 4 = Backup diaphragm system configuration
- 5 = Other special executions
- 6 = Optional material of centre body
- 7 = Optional material of air valve
- 8 = Optional material of pos. 18 seals
- 9 = Optional material of housing pin screws
- 14 = Optional pump feet
- 15 = Flap valve execution
- 16 = Optional clamp type

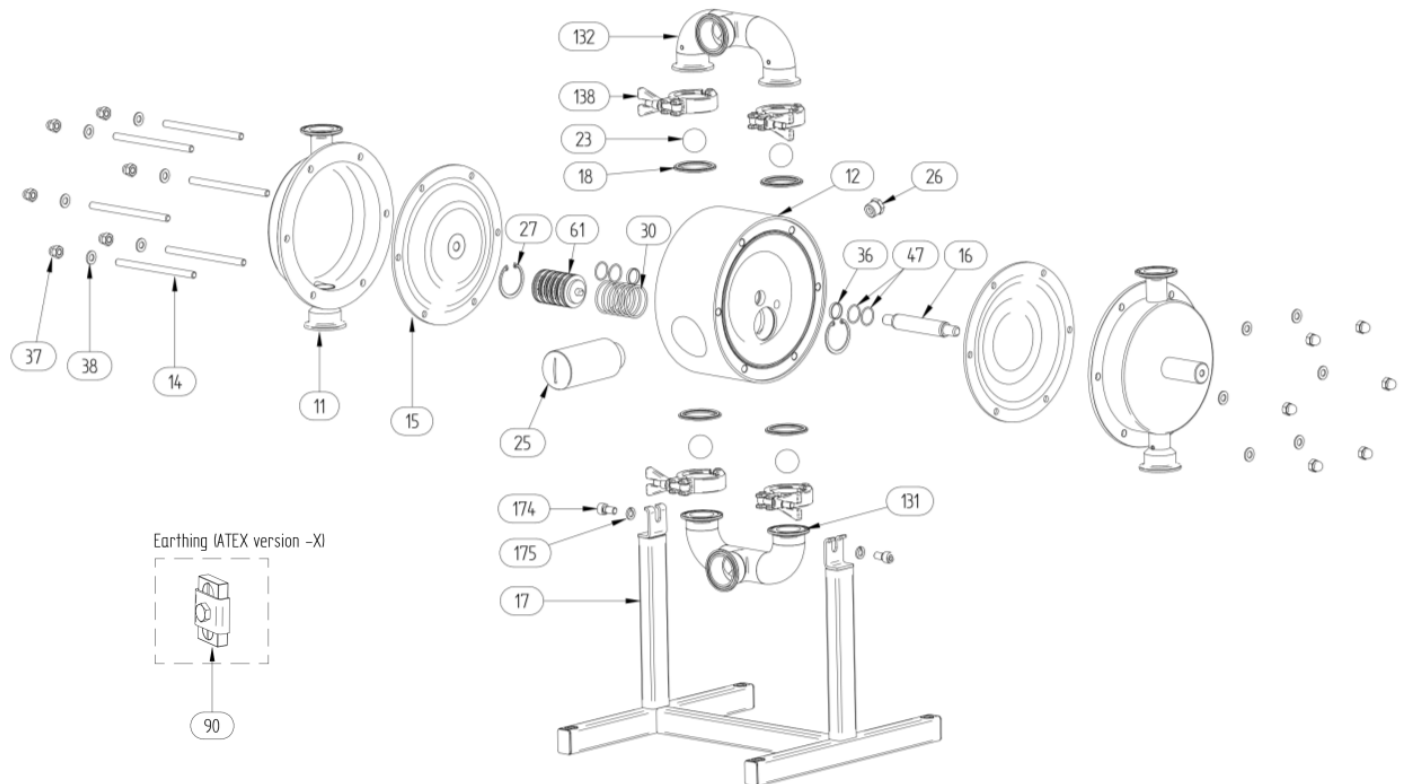
## Spare Parts

### T30



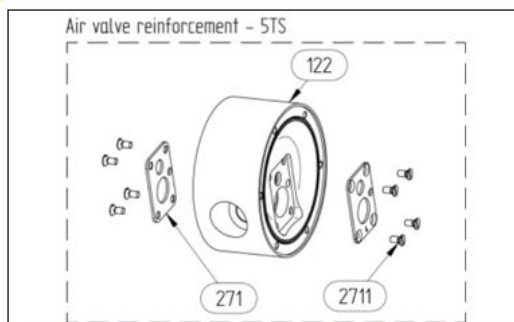
Pos.	Qty	Description	Material	KIT LIQ	KIT AIR
11	2	Housing	AISI 316L		
12	1	Centre Block	PP, Conductive PP		
131	1	Manifold Inlet & Stand	AISI 316L		
132	1	Manifold Outlet	AISI 316L		
138	4	3-Clamp	AISI 304		
14	4	Pin Screw	A4-80		
15	2	Diaphragm	EPDM, PTFE, NBR, PTFE/White EPDM, white EPDM	x	
16	1	Diaphragm Shaft	AISI 316L		
18	4	Sealing	EPDM / PTFE	x	x
23	4	Valve Ball	PTFE, AISI 316, EPDM, NBR, PU	x	
25	1	Muffler	PP		x
27	2	Circlip	Cr3 Coated Steel		
30	6	O-Ring	NBR, FKM, EPDM		
37	8	Nut	A4-70		
38	8	Washer	A4-70		
61	1	Air Valve Complete	AISI 316L/FKM, Brass/NBR, Brass/EPDM, AISI 316L/FKM, PET/FKM		x
90	1	Grounding Set	AISI 316L / A4-70		

T80 – T125



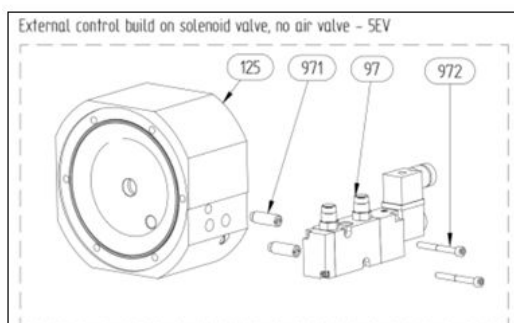
Pos.	Qty	Description	Material	KIT LIQ	KIT AIR
11	2	Housing	AISI 316L		
12	1	Centre Block	PP, Conductive PP		
131	1	Manifold Inlet & Stand	AISI 316L		
132	1	Manifold Outlet	AISI 316L		
138	4	3-Clamp	AISI 304		
14	6	Pin Screw	A4-80		
15	2	Diaphragm	EPDM, PTFE, NBR, PTFE/White EPDM, white EPDM	x	
16	1	Diaphragm Shaft	AISI 304L		x
17	1	Support	AISI 304L		
174	2	Socket Head Cap Screw	A4-70		
175	2	Socket Head Cap Screw	A4-70		
18	4	Sealing	EPDM, PTFE	x	x
23	4	Valve Ball	PTFE, PTFE 1635, AISI 316, EPDM, NBR, PU	x	
25	1	Muffler	PP		x
27	2	Circlip	Cr3 Coated Steel		
30	6	O-Ring	NBR, FKM, EPDM		
36	2	Centre Block Seal	PE		x
37	12	Nut	A4-70		
38	12	Washer	A4-70		
47	2/4*	O-Ring (Back up for 36)	NBR		x
61	1	Air Valve Complete	AISI 316L/FKM, Brass/NBR, Brass/EPDM, AISI 316L/FKM, PET/FKM		x
90	1	Grounding Set	AISI 316L / A4-70		

\* = T125 Only



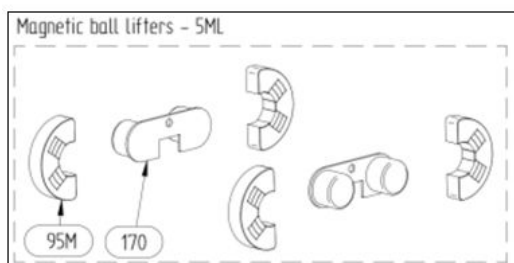
Air Valve Reinforcement - 5TS (T125 Only, Std. on TX125)

Pos.	Qty	Description	Material
122	1	Centre Block	PP, PP Cond.
271	1	Set of 2 Reinforcement Plates	AISI 316L
2711	8	Screws	A4-70



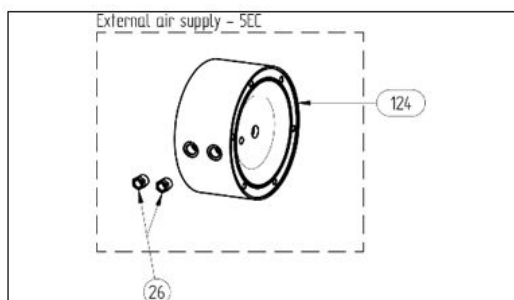
External Control, Built on Solenoid Valve - 5EV

Pos.	Qty	Description	Material
125	1	Centre Block	PP, PP Cond.
97	0	Solenoid Valve	-
971	2	Threaded Insert	AISI 316L
972	2	Screw	A4-70



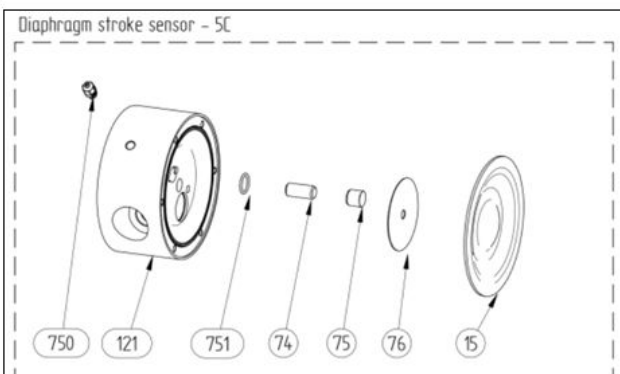
Magnetic Ball Lifters - 5ML

Pos.	Qty	Description	Material
23-15	4	Valve Ball	PTFE / SS Core
23-59	4	Valve Ball	AISI 420
95M	4	Magnetic Ball Lifter	PE1000
170	2	Holder	AISI 316L



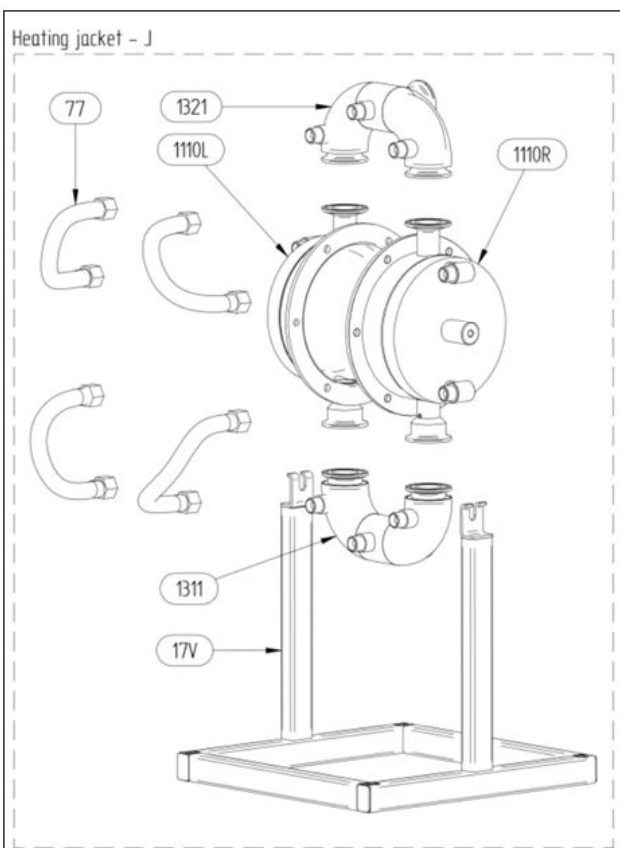
External Air Supply - 5EC

Pos.	Qty	Description	Material
124	1	Centre Block	PP, PP Cond.
26	2	Air Intake Adaptor	Brass



Diaphragm Stroke Sensor - 5C

Pos.	Qty	Description	Material
121	1	Centre Block for Stroke Sensor	PP
751	1	O-Ring	NBR, FKM, EPDM
74	1	Inductive Sensor	CuZn
75	1	Sensor Cap	PP
76	1	Sensing Plate	AISI 316L
750	1	Cable Gland	PP

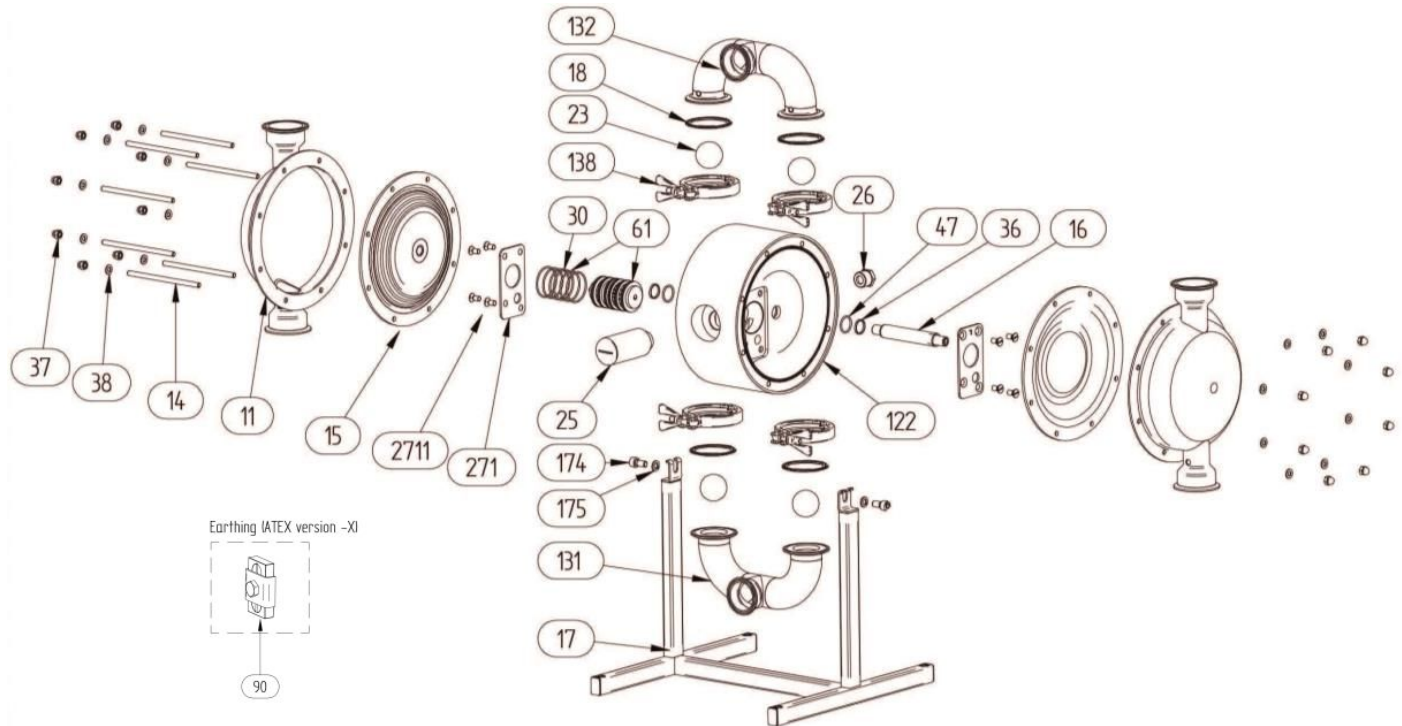


Heating Jacket - J

Pos.	Qty	Description	Material
1110L	1	Housing, Left	AISI 316L
1110R	1	Housing, Right	AISI 316L
1311	1	Inlet Manifold	AISI 316L
1321	1	Outlet Manifold	AISI 316L
17V	1	Stand	AISI 304
77	4	Hose	AISI 316Ti / 304

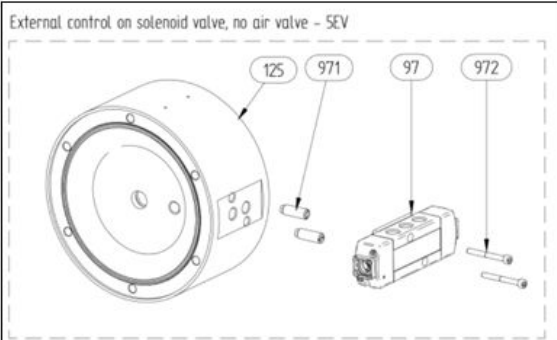


T225 – T425



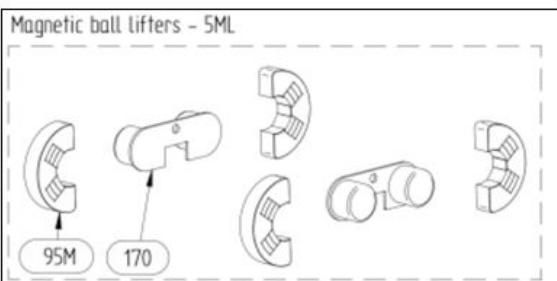
Pos.	Qty	Description	Material	KIT LIQ	KIT AIR
11	2	Housing	AISI 316L		
122	1	Centre Block	PP, Conductive PP		
131	1	Manifold Inlet & Stand	AISI 316L		
132	1	Manifold Outlet	AISI 316L		
138	4/8*	3-Clamp	AISI 304		
14	8	Pin Screw	A4-80		
15	2	Diaphragm	EPDM, PTFE, NBR, PTFE/White EPDM, white EPDM	x	
16	1	Diaphragm Shaft	AISI 304L		x
17	1	Support	AISI 304L		
174	2	Socket Head Cap Screw	A4-70		
175	2	Socket Head Cap Screw	A4-70		
18	4/8*	Sealing	EPDM, PTFE	x	x
23	4	Valve Ball	PTFE, PTFE 1635 AISI 316, EPDM, NBR, PU	x	
25	1	Muffler	PP		x
26	1	Air Intake Adaptor	Brass		
271	1	Set of 2 Plates (L + R)	AISI 316L		
2711	8	Screw	AISI 316		
30	6	O-Ring	NBR, FKM, EPDM		
36	2	Centre Block Seal	PE		x
37	16	Nut	A4-70		
38	16	Washer	A4-70		
47	2	O-Ring (Back up for 36)	NBR		x
61	1	Air Valve Complete	AISI 316L/FKM, Brass/NBR, Brass/EPDM, AISI 316L/FKM, PET/FKM		x
90	1	Grounding Set	AISI 316L / A4-70		

\* Flap Valve Version



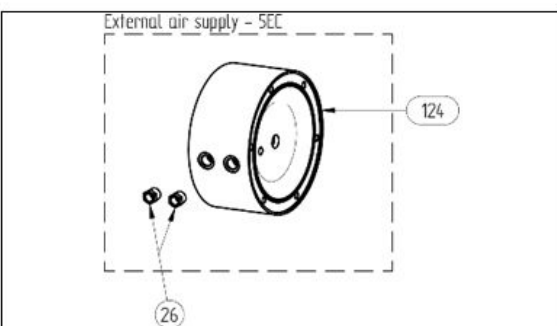
External Control, Built on Solenoid Valve - SEV

Pos.	Qty	Description	Material
125	1	Centre Block	PP, PP Cond.
97	0	Solenoid Valve	-
971	2	Threaded Insert	AISI 316L
972	2	Screw	A4-70



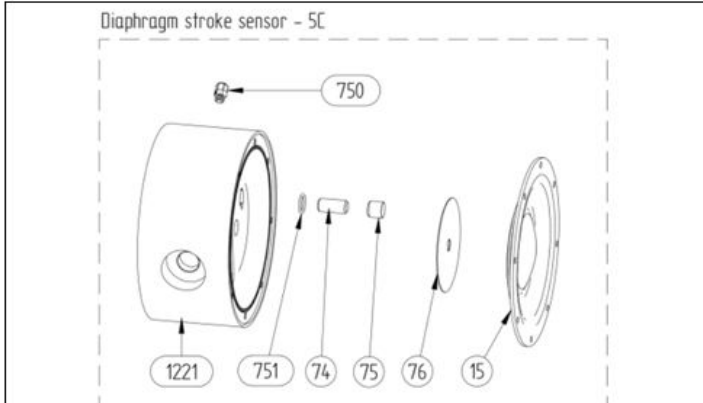
Magnetic Ball Lifters - 5ML

Pos.	Qty	Description	Material
23-15	4	Valve Ball	PTFE / SS Core
23-59	4	Valve Ball	AISI 420
95M	4	Magnetic Ball Lifter	PE1000
170	2	Holder	AISI 316L



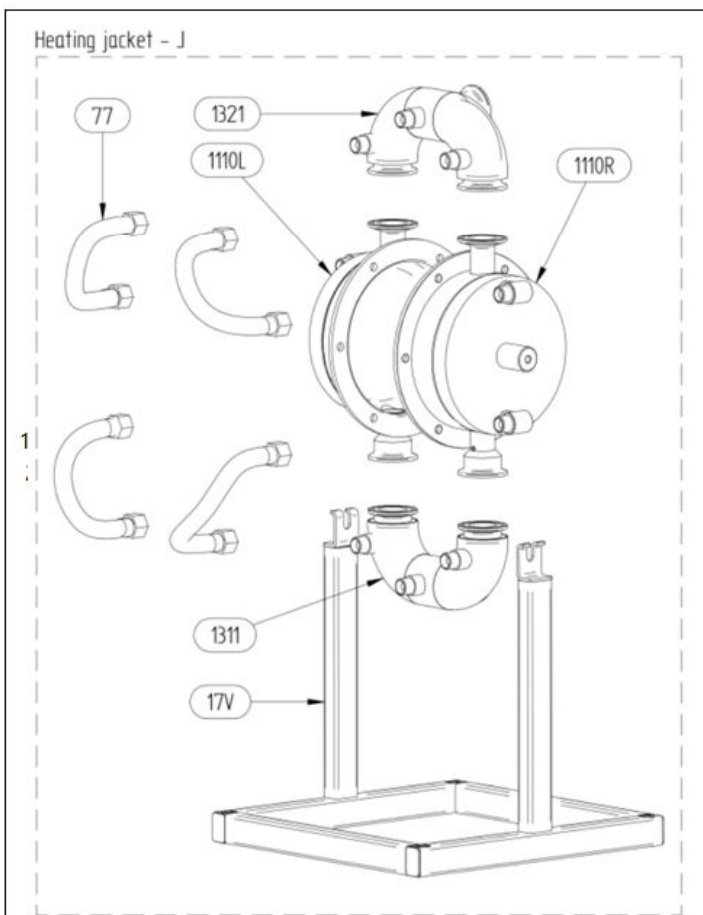
External Air Supply - 5EC

Pos.	Qty	Description	Material
124	1	Centre Block	PP, PP Cond.
26	2	Air Intake Adaptor	Brass



Diaphragm Stroke Sensor - 5C

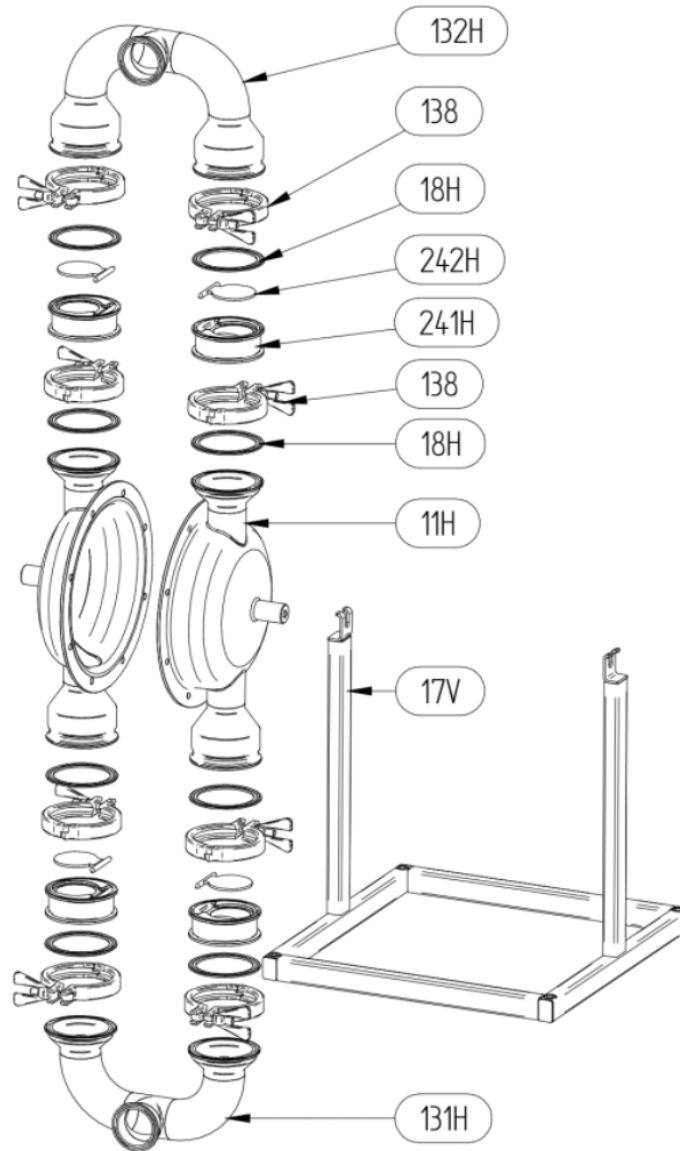
Pos.	Qty	Description	Material
1221	1	Centre Block for Stroke Sensor	PP
751	1	O-Ring	NBR, FKM, EPDM
74	1	Inductive Sensor	CuZn
75	1	Sensor Cap	PP
76	1	Sensing Plate	AISI 316L
750	1	Cable Gland	PP
15	2	Diaphragm	EPDM, PTFE, NBR, PTFE



Heating Jacket - J

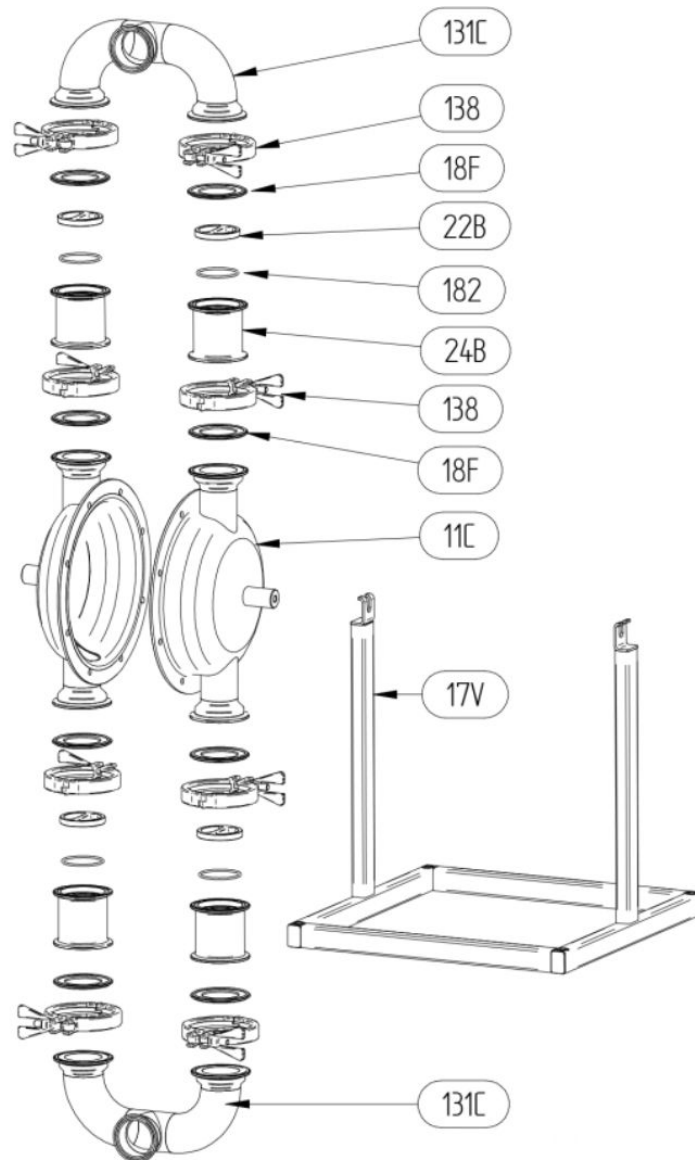
Pos.	Qty	Description	Material
1110L	1	Housing, Left	AISI 316L
1110R	1	Housing, Right	AISI 316L
1311	1	Inlet Manifold	AISI 316L
1321	1	Outlet Manifold	AISI 316L
17V	1	Stand	AISI 304
77	4	Hose	AISI 316Ti / 304

Pump with Heavy Duty Flap Valves – 5SF



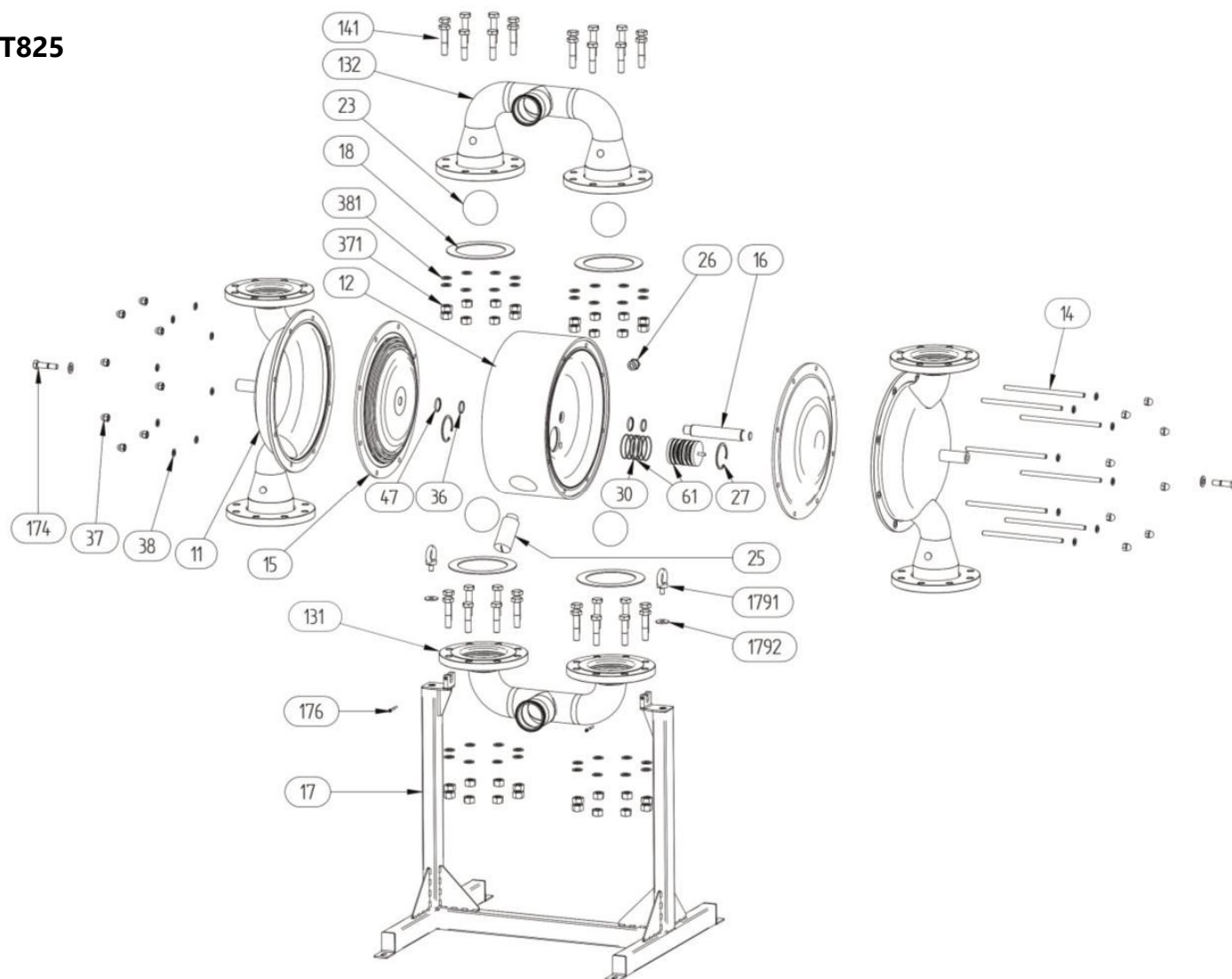
Pos.	Qty	Description	Material
11H	2	Housing	AISI 316L
131H	1	Inlet Manifold	AISI 316L
132H	1	In/Outlet	AISI 316L
138	8	Tri-Clamp	AISI 304
17V	1	Stand	AISI 304
18H	8	Sealing	PTFE, EPDM
241H	4	Flap Valve Seat	AISI 316L
242H	4	Flap	AISI 316L
24H	4	Muffler	AISI 316L

Pump with Replaceable Valve Seat Cups – 5SC



Pos.	Qty	Description	Material
11C	2	Housing	AISI 316L
131C	1	Inlet Manifold	AISI 316L
132C	1	In/Outlet	AISI 316L
138	8	Tri-Clamp	AISI 304
17V	1	Stand	AISI 304
18F	8	Sealing	PTFE, EPDM
182	4	Stopper O-Ring	FEP / FKM
22B	4	Valve Ball Stopper	AISI 316L
24B	4	Ball Valve Cup	AISI 316L

T825



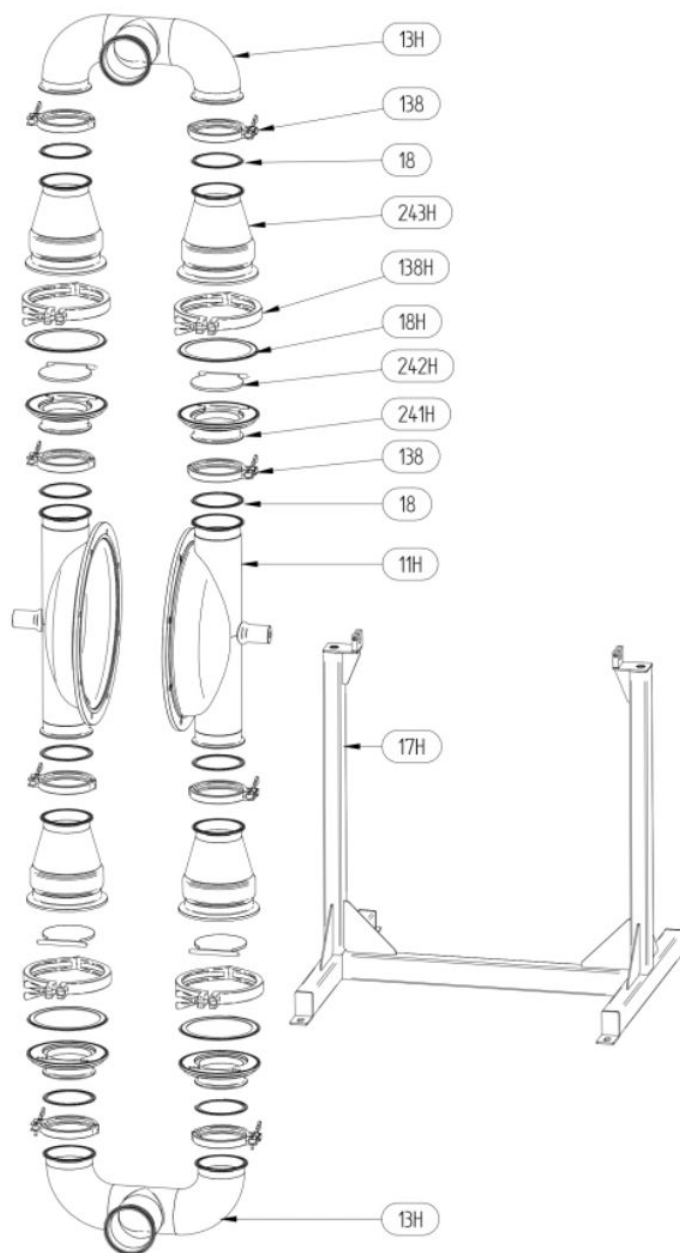
Pos.	Qty	Description	Material
11	2	Housing	AISI 316L
12	1	Centre Block	PP, Conductive PP
131	1	Manifold Inlet & Stand	AISI 316L
132	1	Manifold Outlet	AISI 316L
14	8	Pin Screw	A4-80
141	32	Manifold Screw	A4-70
15	2	Diaphragm	EPDM, PTFE, NBR, PTFE/White EPDM, white EPDM
16	1	Diaphragm Shaft	AISI 304L
17	1	Stand	AISI 304L
174	2	Socket Head Cap Screw	A4-70
176	2	Blocking Pin	AISI 316L
1791	2	Eye Bolt	A2-70
1792	2	Eye Bolt Washer	A2-70
18	4	Sealing	EPDM, PTFE
23	4	Valve Ball	PTFE, PTFE 1635 AISI 316, EPDM, NBR, PU
25	1	Muffler	PP
26	1	Air Intake Adaptor	Brass
27	2	Circlip	Cr3 Coated Steel
30	6	O-Ring	NBR, FKM, EPDM

36	2	Centre Block Seal	PE
37	16	Pin Screw Nut	A4-70
371	32	Manifold Screw Nut	A4-70
38	16	Pin Screw Washer	A4-80
381	32	Manifold Screw Washer	A4-70
47	2	O-Ring (Back up for 36)	NBR
61	1	Air Valve Complete	PET/NBR (standard); AISI 316/FKM, Brass/NBR, Brass/EPDM, AISI 316/FKM, PET/FKM

Air valve reinforcement - 5TS

Air Valve Reinforcement - 5TS			
Pos.	Qty	Description	Material
122	1	Centre Block	PP, PP Cond.
271	1	Set of 2 Reinforcement Plates	AISI 316L
2711	8	Screws	A4-70

**Pump with Heavy Duty Flap Valve – 5SF**



Pos.	Qty	Description	Material
11H	2	Housing	AISI 316L
13H	1	Inlet Manifold	AISI 316L
138	8	Tri-Clamp (DN100)	AISI 304L
138H	4	Tri-Clamp (DN150)	AISI 304L
17H	1	Stand	AISI 304L
18	8	Sealing (DN100)	EPDM
18H	4	Sealing (DN150)	EPDM
241H	4	Flap Valve Seat	AISI 316L
242H	4	Flap	AISI 316L
243H	4	Flap Valve Housing	AISI 316L
24H	4	Flap Valve Complete (241H + 242H + 243H)	AISI 316L

### Recommended Spares for Stocking:

Even during normal operating conditions some parts in the pump will be subject to wear and tear. In order to avoid expensive breakdowns we recommend having a few spare parts in stock.

Depending on the severity of the operation and the importance of assuring continuous operation we offer two different spare part KITS – KIT LIQ includes parts on pump wetted side and KIT AIR includes parts on the pump air side that are subject to wear.

#### T30, T80, T125, T225 & T425

	Pos.	Description	Qty
KIT LIQ	15	Diaphragm	2
	18	O-ring set in/outlet	4
	23	Valve Ball	4

#### T30

	Pos.	Description	Qty
KIT AIR	18	O-ring set in/outlet	4
	61	Air valve complete	1
	25	Muffler	1

#### T80, T125, T225 & T425

	Pos.	Description	Qty
KIT AIR	18	O-ring set in/outlet	4
	61	Air valve complete	1
	16	Diaphragm shaft	1
	36	Centre block seal	2
	47	O-ring(back up for 36)	2/4*
	25	Muffler	1

\* T125 Only