systems and accessories for pumps

brochure 2012 rev 2

the perfect choice for your pumping needs

tapflo®

the perfect choice for your pumping needs

Saving the environment is our challenge

Saving energy and thereby the environment, is one of the greatest challenges for today's industry. Of course this also involves process equipment such as pumps. Since many years back, we have developed our diaphragm pumps with the target to minimize the consumption of compressed air. However no matter of how well the pump performs, it is of greatest importance how the air supply to the pump is controlled. By using the Tapflo Guardian systems, level control, batch control, start & stop and filter regulators etc, the air supply will be optimized and the equipment will be used only when required by the process.

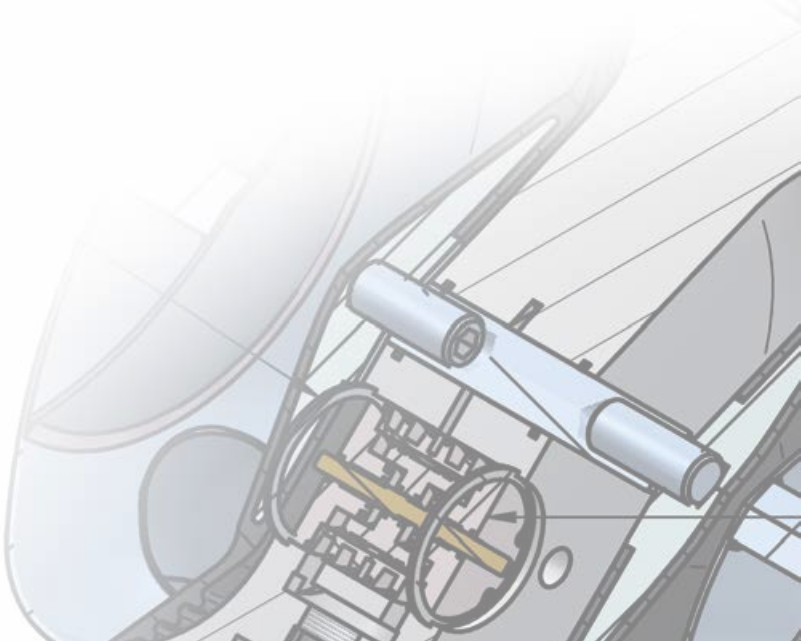
Tapflo quality

The Tapflo pump is usually an essential part in the process with hazardous fluids. We always strive to supply the safest and most environmental friendly solution for these fluids. As a part of our safety thinking, we are in the frontline following important standards, guidelines and directives. Many of our products comply with the EC ATEX directive for equipment in explosion hazardous environments. All our pumps are of course CE marked and followed by our comprehensive instruction manuals. Tapflo is an ISO 9001:2001 certified company. The EHEDG certification of our aseptic diaphragm pump was achieved in 2009.

The history of Tapflo

Tapflo was founded in Kungälv (north of Gothenburg), Sweden 1985 and has since then been working with design and manufacture of air operated diaphragm pumps. The product range has grown from a few plastic models, to complete PE & PTFE, metal and sanitary series and lately also with complete ranges of centrifugal pumps. Tapflo has now established sales offices in 20 countries and independent distributors in another 30 countries – spare parts and pumps are available worldwide.

Above certificates of Tapflo do not necessarily apply to the products shown in this brochure.



Guardian system

save energy and protect your system

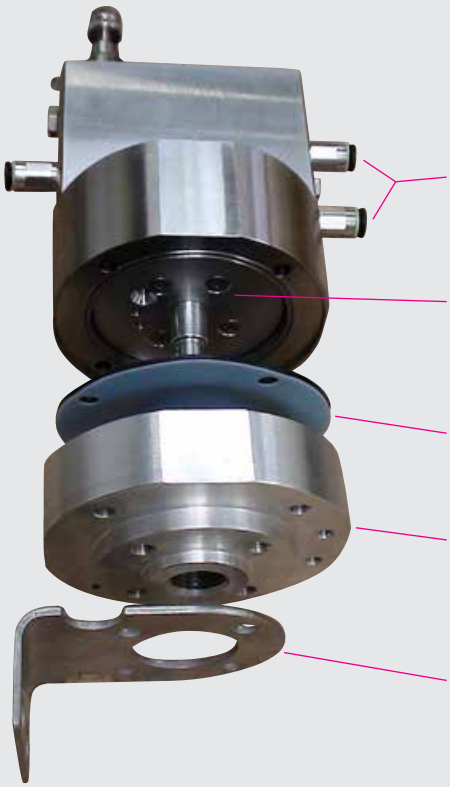
The Guardian is an energy conservation device designed to protect an air operated double diaphragm (AODD) pump from operating in an inefficient manner that uses unnecessary energy and reduces the life of its parts. It also offers the added benefit of providing greater safety to applications of high risk.

Functions and applications

The Guardian monitors fluid pressure, changing its output if the monitored pressure rises above or falls below the set point of the Guardian (dependant on configuration), controlling the associate pump accordingly for the following applications:

- *Dry Run & Stop*
- *Dead Head & Stop*
- *Dead Head & Restart*
- *Barrier Pump Monitoring and Control*

Features and components



The Guardian is a fully pneumatic, chemically inert pressure trip with an integral latching output control valve.

Pilot output to control the associate pump and pneumatic alarm output

Easily switch to another application by changing position of the seal plate.

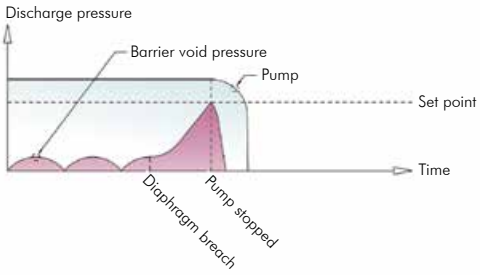
Floating PTFE diaphragm

Material choice of fluid side to suit any fluids - 316L stainless steel, PTFE (conductive) or Aluminum.

Mounting bracket

Guardian systems

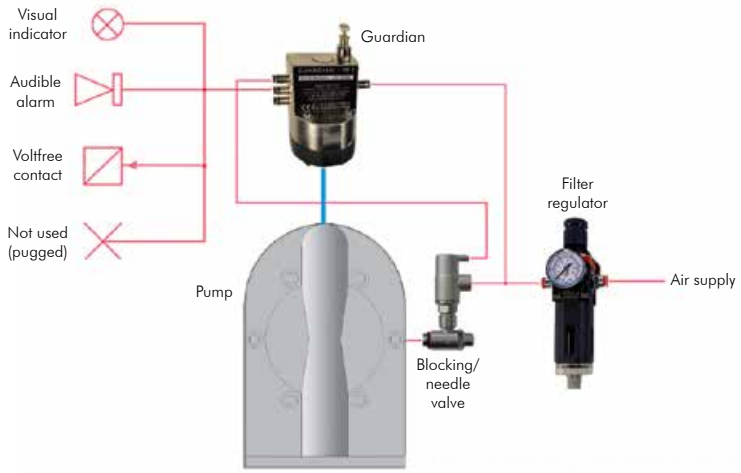
Barrier and stop installation circuit

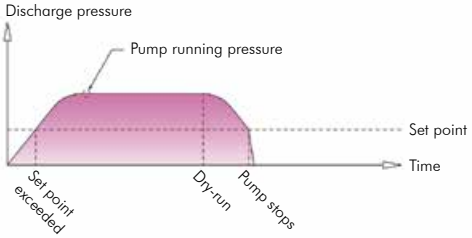


Principle of the Guardian barrier system

Barrier Protection

Barrier pumps (TB) have an additional set of diaphragms used to backup the primary diaphragms. In case of a breach the liquid remains inside the pump, instead of leaking out through the air exhaust. The Guardian monitors the pressure between the primary and secondary diaphragms, stopping the pump if the pressure increases above the set point.



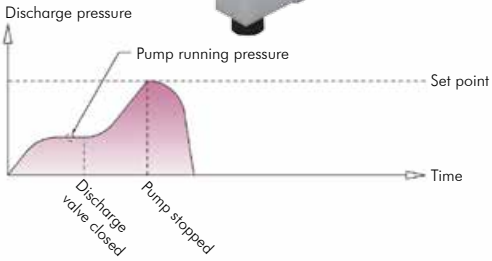


Principle of the Guardian dry run & stop system

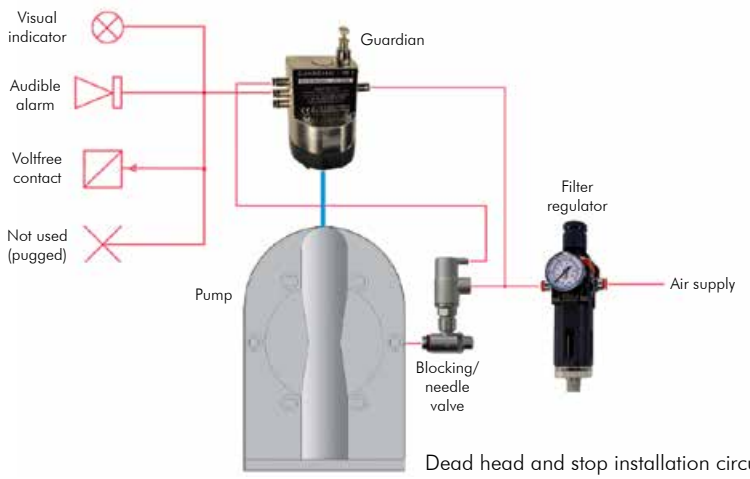
Dry run & stop

The Guardian monitors the fluid discharge pressure of the pump, stopping it if the pressure falls below the set point, caused by a lack of media on the suction causing air to be ingested into the pump.

Guardian systems



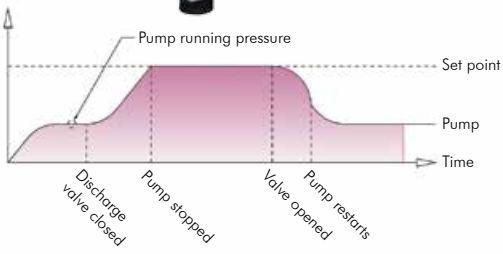
Principle of the dead head and stop system



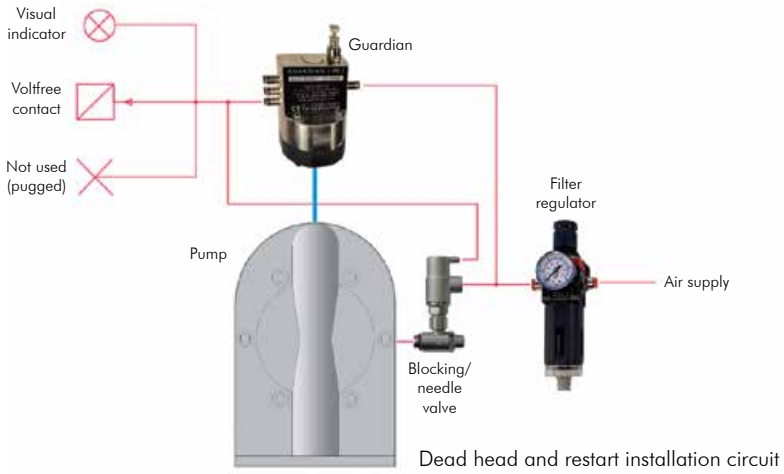
Dead head and stop installation circuit

Dead head and stop

The Guardian monitors the fluid discharge pressure of the pump, stopping it if the pressure rises to the set point, caused by a closed valve or over pressure in the discharge line.



Principle of the dead head and restart system



Dead head and restart installation circuit

Dead head and restart

The Guardian monitors the fluid discharge pressure of the pump, stopping it if the pressure rises to the set point, caused by a closed valve or over pressure in the discharge line. When the pressure falls below the set pressure, the pump automatically restarts.

Coding & data

TPUK = Tapflo pneumatic systems
GU3 = Guardian Mk. 3
Material of wetted housing
S = AISI 316L
A = Aluminum
T = PTFE

TPUK- **GU3** **X-** **S** **T-** **BARR**

X = ATEX approved

Material of diaphragm
T = PTFE

Function
BARR = Barrier
DH&S = Dead head & stop
DH&R = Dead head & restart
DR&S = Dryrun & stop

Data	
Temperature ambient	-20° to +40°C
Temperature media	-20° to + 110°C
Air pressure	3 to 8 bar (G)
Media pressure	max 8 bar (G)
Weight	2 kg (stainless steel version)
Dimensions	96 x 71 x 161 mm

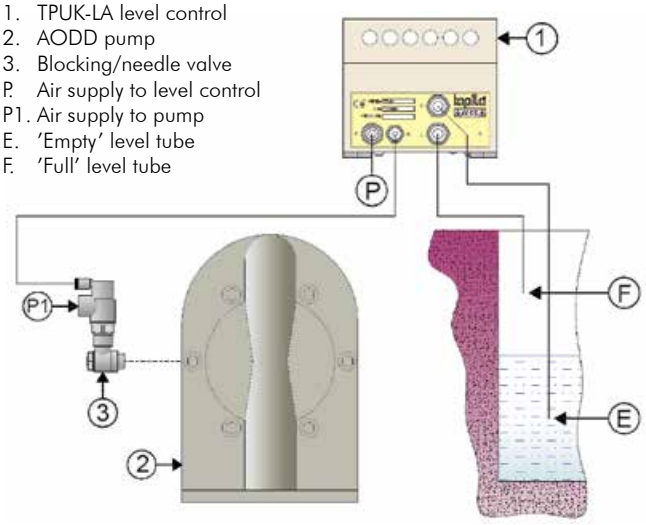
Level control

TPUK-LA:
Automatic start and stop

TPUK-LM:
Manual start and automatic stop

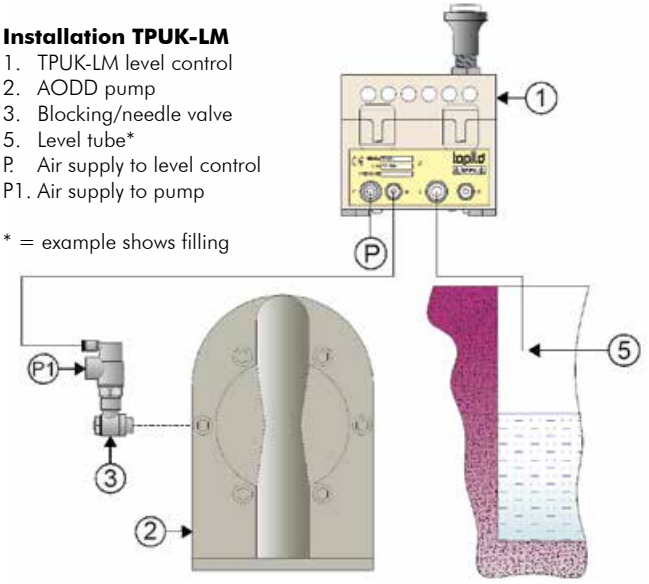
The level control is small, effective & extremely simple to install and use. This ingenious system is operated with pneumatic components only. The level control may be installed in sumps, tanks or tubs to start (automatic with TPUK-LA or manual with TPUK-LM) and automatic stop the pump at certain liquid levels.

Installation TPUK-LA
1. TPUK-LA level control
2. AODD pump
3. Blocking/needle valve
P. Air supply to level control
P1. Air supply to pump
E. 'Empty' level tube
F. 'Full' level tube



Installation TPUK-LM
1. TPUK-LM level control
2. AODD pump
3. Blocking/needle valve
5. Level tube*
P. Air supply to level control
P1. Air supply to pump

* = example shows filling



Fully automatic TPUK-LA

The level control utilizes low-pressure air passed through dip tubes to detect liquid levels. The system controls the liquid level between the dip tubes and can be configured in either 'filling' or 'emptying' modes.

Manually start TPUK-LM

The system controls an AODD pump that begins pumping when the system is manually started and automatically stopping when the liquid surface is detected at the dip tube. The system can be configured in either 'filling' or 'emptying' modes.

Coding & data

TPUK = Tapflo pneumatic systems

TPUK- **LA**

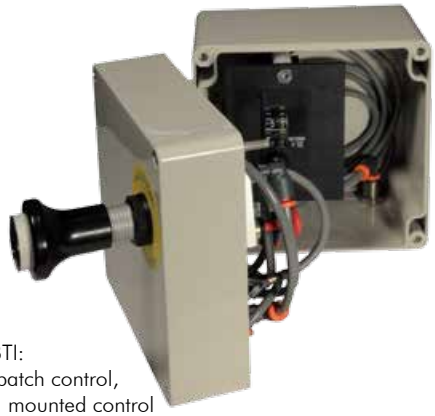
LA = Level control fully automatic
LM = Level control manual start / automatic stop

Data	
Temperature ambient	-5° to +40°C
Air pressure	3 to 7 bar (G)
Pilot output flow rate at 6 bar with p=1	120 Nl/min
Air consumption (system only)	2 L/min (average)
Weight	850 g
Dimensions	122x150x110 mm

Batch control

TPUK-BP:
Predetermining counter batch control

TPUK-BT:
Timed batch control

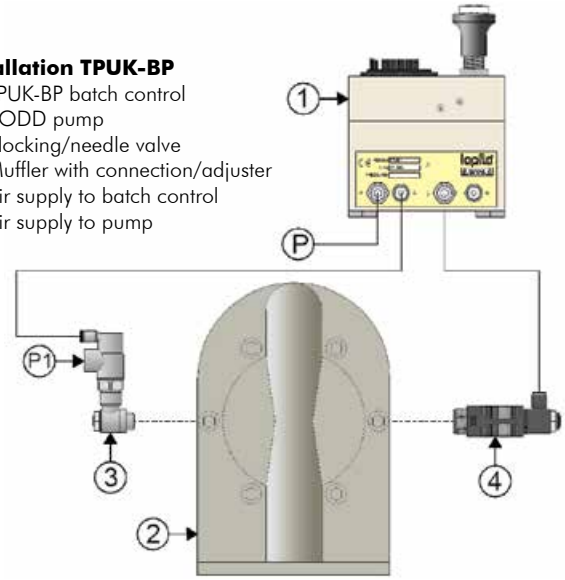


TPUK-BTI:
Timed batch control,
internal mounted control

Tapflo's totally pneumatic batcher can control any Tapflo AODD pump to produce accurate and repeatable dispensed volumes. Fully programmable allowing you to set the batch amount (TPUK-BP) or batch time (TPUK-BT). Available also with internal mounted control to prevent unauthorised adjustments (TPUK-BPI and TPUK-BTI).

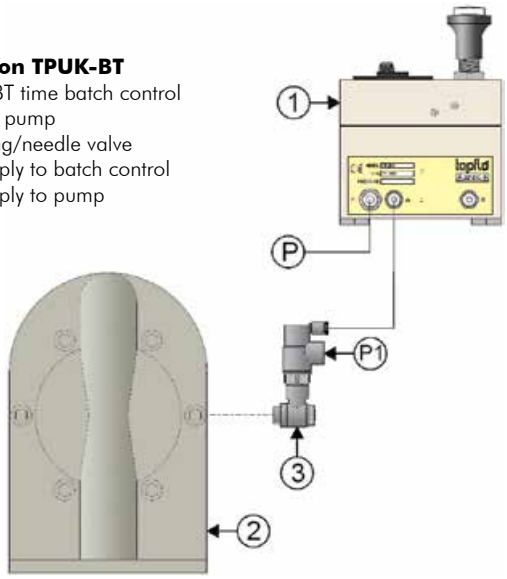
Installation TPUK-BP
1. TPUK-BP batch control
2. AODD pump
3. Blocking/needle valve
4. Muffler with connection/adjuster

P. Air supply to batch control
P1. Air supply to pump



Installation TPUK-BT
1. TPUK-BT time batch control
2. AODD pump
3. Blocking/needle valve

P. Air supply to batch control
P1. Air supply to pump



Predetermining batch TPUK-BP

The Pneumatic Batcher is a fully pneumatic predetermining counter system which records pump strokes as a series of low-pressure pulses from the air exhaust of an AODD pump, stopping the pump once a pre-set number of strokes have been recorded, thus controlling the volume of product dispensed by the pump.

Time batch TPUK-BT

The Pneumatic Timed Batcher is a fully pneumatic run time controller for use with an AODD pump. The pump can be started locally or remotely, stopping automatically once the set time has elapsed, thus controlling the volume of product dispensed by the pump.

Coding & data

TPUK = Tapflo pneumatic systems
B = Batch control

TPUK-	B	P	-120S

P = Predetermining batch
PI = Predetermining batch internal
T = Timed batch
TI = Timed batch internal

Time range (for timed batch only):
030S = 2-30 seconds
120S = 8-120 seconds
300S = 20-300 seconds

Data	
Temperature ambient	0° to +40°C
Air pressure (TPUK-BP / TPUK-BT)	3-7 bar (G) / 3-6 bar (G)
Weight (TPUK-BP / TPUK-BT)	1100 g / 800 g
Dimensions TPUK-BP and TPUK-BT	122x150x175 mm
Dimensions TPUK-BPI and TPUK-BTI	129x150x175 mm

Other pneumatic systems

TPUK-PS1:
Low pressure VFC

Low pressure VFC, TPUK-PS1

A stroke to volt free contact (VFC) is available for integration with PLC systems. Simply connect to any AODD pump via the air exhaust muffler to monitor the pump strokes. TPUK-PS1 must be combined with muffler type TPUK-MU (next page).

Data	
Temperature ambient	-10° to +50°C
Max pressure	1 bar (G)
Weight	135 g
Dimensions	80x80x55 mm
SPCO contacts rating	15 A / 250 VAC / 30 VDC

Life counter TPUK-LC

Tapflo's life counter simply connects to the AODD pump air exhaust, representing the strokes on the LCD display. Compact, easy to use and cost effective this simple system will allow you to control servicing and implement a preventative maintenance routine. TPUK-LC must be combined with muffler type TPUK-MU (next page).

Data	
Temperature ambient	-10° to +50°C
Max pressure	1 bar (G)
Weight	185 g
Dimensions	80x80x55 mm

Accessories for pneumatic systems

TPUK-PAM:
Audible alarm with mute

Audible alarm TPUK-PA

The audible alarm is a fully pneumatic option for use with the Guardian system. It will sound when the alarm output of the Guardian is triggered due to either a diaphragm break (Guardian barrier), pump dry running (guardian dry run) or a dead head situation (Guardian dead head).

Available models:

TPUK-PA	Audible alarm
TPUK-PAM	Audible alarm with mute function

Data	
Temperature ambient	-5° to +40°C
Air pressure	3 to 8 bar (G)
Weight	570 g
Dimensions	120x150x110 mm

Start/stop units

Add safety and ease to your system by using a start/stop unit.

Available models:

TPUK-SSE-24VDC	Start/stop electrical 24 V/DC
TPUK-SSE-110VAC	Start/stop electrical 110 VAC
TPUK-SSE-240VAC	Start/stop electrical 240 VAC
TPUK-SSP	Start/stop pump
TPUK-SSR*	Start/stop remote

* = used as accessory only together with TPUK-BT, BTI, BP, BPI, LM and SSP.

TPUK-SSP:
Start/stop pump

TPUK-SSR*:
Start/stop remote

TPUK-VFC:
Volt free contact

TPUK-NV:
Needle valve

TPUK-BV:
Blocking valve

TPUK-B/NV:
Blocking/needle valve

TPUK-MU:
Muffler with fitting

Blocking valves, mufflers & VFC

Volt free contact TPUK-VFC
This accessory is used to convert the Guardian alarm output signal into volt free contacts for integration with a PLC.

Needle valve TPUK-NV
Pump speed control that mount directly into the pumps air inlet, adjusted using a screwdriver.

Blocking valve TPUK-BV (relay valve)
Required accessory for the Guardian, level control and start/stop control. Available in sizes 1/8", 1/4" and 1/2".

Blocking/needle valve TPUK-B/NV
Required accessory for batch control and as alternative to blocking valve for level, and start/stop control. Available in sizes 1/8", 1/4" and 1/2".

Muffler with fitting TPUK-MU
Required accessory for batcher predetermining, life counter and low pressure VFC. Available in sizes 1/2" and 1".

Air treatment & solenoid valves

Filter regulator & needle valve kit

There are many benefits of using an individual filter regulator and needle valve for your AODD pump. You will always be able to run the pump with right air quality and optimum pressure and speed to save energy. Furthermore the lifetime of pump components will increase. The kit includes a filter regulator, gauge, wall bracket, needle valve, push fit connections and screw adaptor to suit the AODD pump.

Available models:

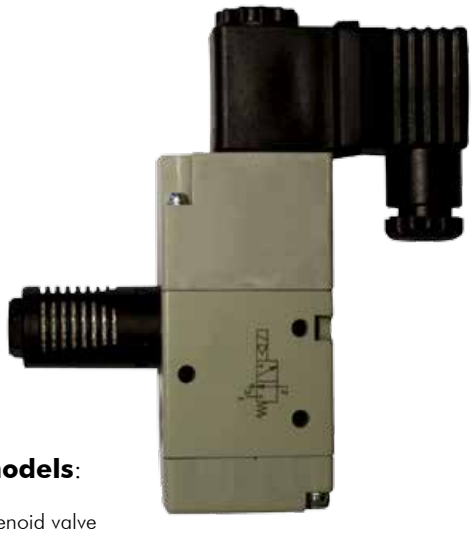
FR/NV1/8" 1/8" (for pumps TR9-T30)
FR/NV1/4" 1/4" (for pumps T50-T125)
FR/NV1/2" 1/2" (for pumps T200-T425)

Data			
Model	FR/NV1/8"	FR/NV1/4"	FR/NV1/2"
Material FR body	Technopolymer		
Material needle valve & push fit	Nickel plated brass		
FR and needle valve connections	1/8" BSP	1/4" BSP	1/2" BSP
Push fit connections	1/8" - 8 mm	1/4" - 8 mm	1/2" - 12 mm
Pressure rating	0-8 bar		
Filtration	5 micron, class ISO 8573-1:3.7.4		
Flow rate (FR) at 6 bar ΔP 0.5 bar		800 Nl/min	1600 Nl/min
Flow rate (FR) at 6 bar ΔP 1 bar		2000 Nl/min	3000 Nl/min
Temperature	-20 to +50°C		
Weight (complete kit)	510 g	510 g	1500 g
Padlockable knob on FR	Included	Included	Not included
FRL dimensions	198x42x44 mm	198x42x44 mm	245x94x63 mm
Condensate drain	Manual condensate discharge and automatic discharge at 0 pressure		
Gauge	0-8 bar, 1/8" connection		

Solenoid valves

Easily control on/off of an AODD pump by using a 3:2 solenoid valve. Standard configuration is NC (normally closed) that means the pump is turned on when electricity is turned on the solenoid. When the pump is turned off, the air is bled through the muffler. The solenoid valve comes complete with connector, muffler and spool, available for 24 VDC, 110 VAC or 220 VAC.

Data		
Model	SOV1/4"-...	SOV1/2"-...
Temperature ambient	-10° to +60°C	
Max pressure	10 bar (G)	
Weight	225 g	1045 g
Dimensions	118x110x25 mm	177x150x40 mm
Flow rate at 6 bar ΔP 0.5 bar	750 Nl/min	3200 Nl/min
Flow rate at 6 bar ΔP 1 bar	1100 Nl/min	4600 Nl/min
ATEX rating spool	Ex nA II3G/D T5	



Available models:

SOV = Tapflo solenoid valve

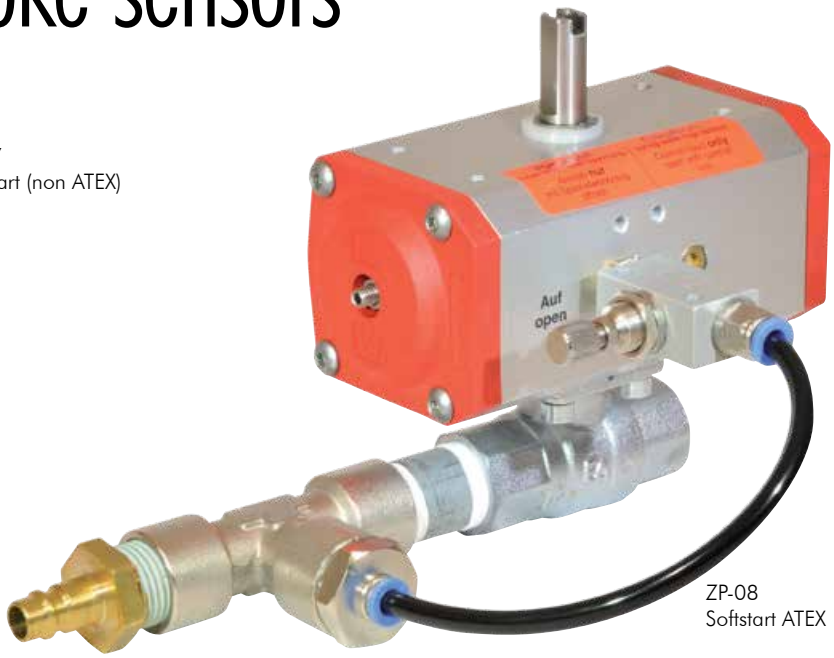
SOV **1/4"** **-24VDC**

1/4" = 1/4" connection
1/2" = 1/2" connection

24VDC = 24 VDC spool
110VAC = 110 VAC spool
220VAC = 220 VAC spool

Softstarts & stroke sensors

ZP-07
Softstart (non ATEX)



ZP-08
Softstart ATEX

Softstarts

An abrupt opening of the compressed air supply to the pump, e.g. by a solenoid valve, may cause pump damage or unwanted pressure peakes in the pipe system. By connecting this softstart device in the compressed air supply, it opens slowly and the pump can start gently.

Non ATEX softstart ZP-07
The delay time is adjustable within a certain range. This device is for non hazardous environments.

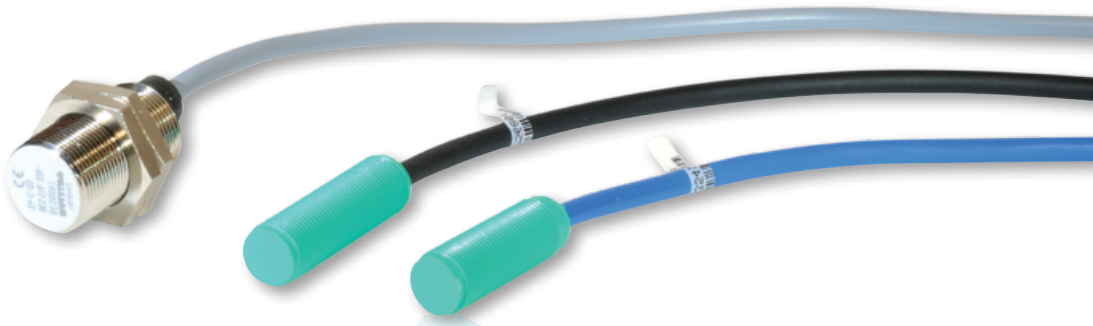
ATEX approved softstart ZP-08
This soft start valve is for pumps used in hazardous areas. It consists of a pneumatically actuated ball valve and a needle valve. The opening speed of the ball valve is set by means of the needle valve. The valve is closed by a spring return.

Available models:

Tapflo softstart
ZP-07 = Non ATEX softstart
ZP-08 = ATEX approved softstart

ZP-07 **1/2"**

1/2" = 1/2" connection
3/4" = 3/4" connection



Stroke sensors

To monitor the strokes of the pump electronically, an electronic proximity sensor mounted in the middle block is available (only from pump size T50). By a stainless steel disc, mounted behind the diaphragm this non-contact sensor switches at each pump stroke. The sensor specification is 24 VDC, PNP. The sensors are also available in ATEX approved Namur-type (blue wire). When using the ATEX sensor, it must be used together with an ATEX approved contact relay. The stroke sensors cannot be mounted subsequently.

Ordering a Tapflo AODD pump with sensor

Tapflo AODD pump model (below is just an example)
T... = Non ATEX pump, standard sensor mounted
TX... = ATEX pump, NAMUR sensor mounted

T50 PTT **-5C**

Sensor mounted in pump centerblock

Please contact us at your nearest Tapflo office

Tapflo has approximately 50 sales offices spread over more than 20 countries. In addition to this we are represented by independent distributors in about another 30 countries.

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www.tapflo.com

Austria
Tapflo GmbH
Tel: +43 732 27292920
sales@tapflo.at

Belarus
Tapflo Belarus
Tel: +375 17 3121370
sales@tapflo.by

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

Czech & Slovakia
Tapflo s.r.o.
Tel: +420 548 138 660
tapflo@tapflopump.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

India
Tapflo Pumps (India)
Tel: +91 44 26534479
tapfloindia@gmail.com

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

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

Kazakhstan
Tapflo Kazakstan
Tel: +7 727 256 05 45
sales@tapflo.kz

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

Poland
Tapflo Sp. z o.o.
Tel: +48 58 5301181
gda@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

Spain
Tapflo Iberica
Tel: +34 677 47 89 25
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

United Kingdom
Tapflo (UK) Ltd
Tel: +44 2380 252325
sales@tapflopumps.co.uk

Tapflo AB

Filaregatan 4
S-442 34 Kungälv, Sweden

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**