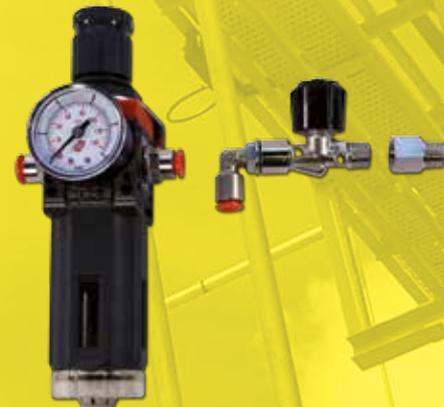


# SYSTEMS AND ACCESSORIES FOR PUMPS

edition 2015 rev 1



## All about your flow. Everywhere.

Tapflo is a leading pump manufacturer with the ambition to provide a wide range of premium products for various industrial applications. Tapflo is represented by own companies and independent distributors in more than 60 countries spread over the world on 6 continents – products and spare parts are available worldwide. The headquarters are situated in Sweden.



### About Tapflo

Tapflo Group is an independent, Swedish, family owned, manufacturer and global supplier of Air operated diaphragm pumps, centrifugal pumps and other industrial process equipment.

The company was founded as Temag Pumpar in Kungälv, Sweden in 1980 and has since then been working with design and manufacture of thermoplastic, metal and sanitary series diaphragm pumps and also with complete range of centrifugal pumps and industrial equipment. After years of dynamic development the company evolved into Tapflo Group with worldwide operations.

### Quality certified

At Tapflo we believe that quality is one of the highest values, both for our customers as well as our employees. As a result, we comply with various globally recognised certification and quality control institutions. Many of our products comply with EC ATEX directives for equipment intended for use in explosion hazardous environments.

The aseptic series is EHEDG certified (European Hygienic Engineering & Design Group), the pharmaceutical series has USP VI approval.

All our products are obviously CE marked and followed by our comprehensive instruction manuals. Tapflo manufacturing process is certified according to ISO 9001:2001.



### Our values

#### ■ Long term engagement is our core

Our aim is to continuously provide premium products according to evolving needs of our customers. That is why we see each customer relationship as a long term commitment.

#### ■ Local means on your terms

Tapflo is your global partner providing local support. No matter where your plant is located you can expect us to support you locally.

#### ■ Flexibility the foundation of good service

We are prepared to deal with reality, knowing that in practice this means answering questions, offering solutions and supplying spare parts with a minimal loss of time.

#### ■ Customizing to bring the product to the needs

Our intention is always to help our clients find the most cost effective solutions to increase their company's efficiency.

If this means changing the design of the pump we see it as a challenge - not a problem.

#### ■ To produce is to develop

When you are actively involved in the manufacturing of a product, it is almost impossible not to discover ways to improve it. This allows us to frequently offer solutions that are even more sustainable and efficient.

# 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.

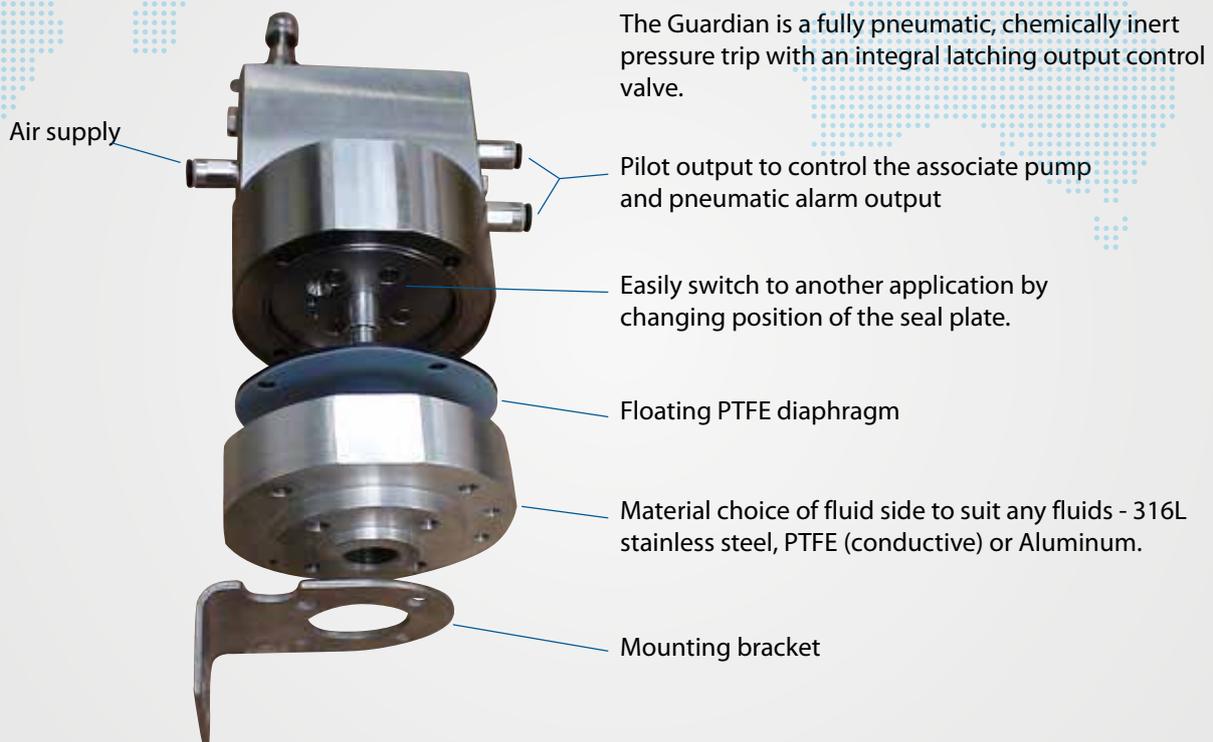
### Functions and applications

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:

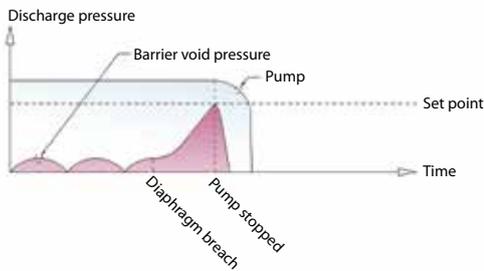
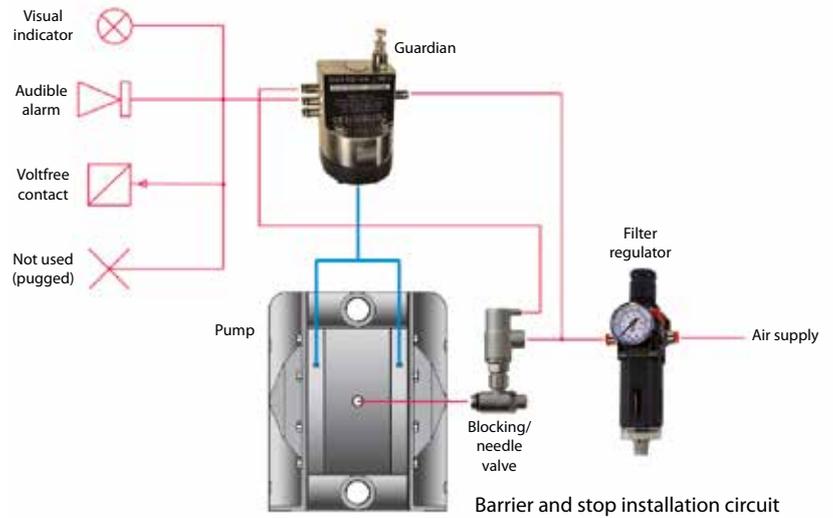
- ✓ Dry Run & Stop
- ✓ Dead Head & Stop
- ✓ Dead Head & Restart
- ✓ Barrier Pump Monitoring and Control



### Features and components



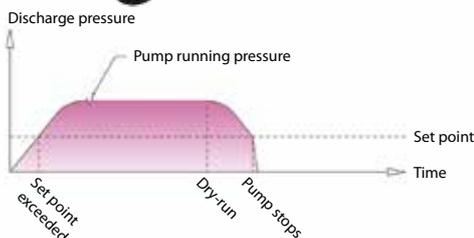
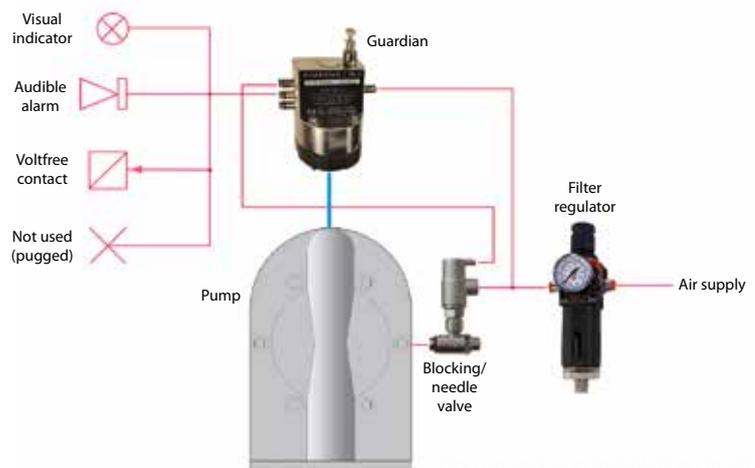
# Guardian systems



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.

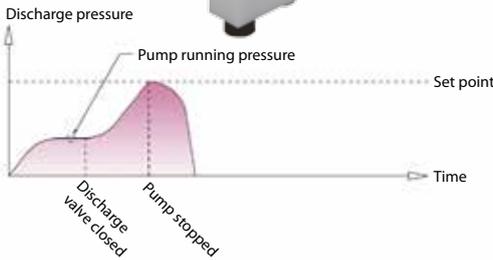


Principle of the Guardian dry run & stop system

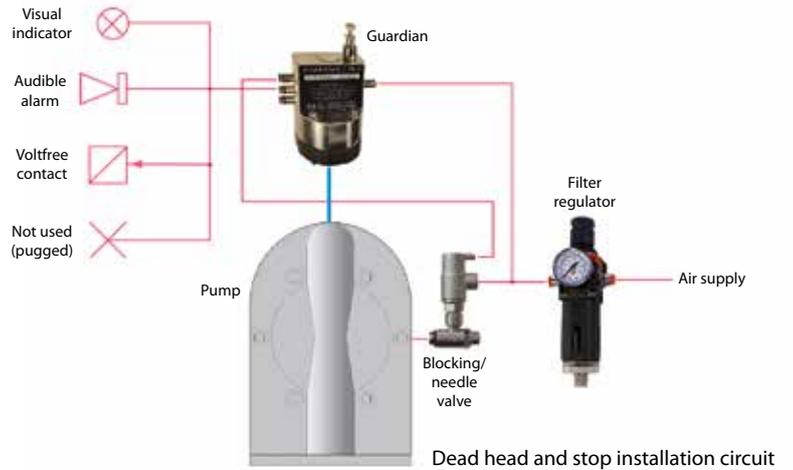
## Dry run & stop

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

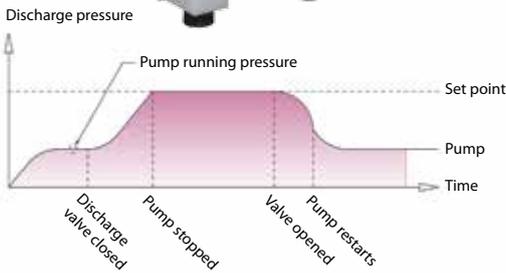


Principle of the dead head and stop system



## Dead head and stop

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

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

Material of wetted housing  
 S = AISI 316L  
 A = Aluminum  
 T = PTFE

Material of diaphragm  
 T = PTFE

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

TPUK = Tapflo pneumatic systems  
 GU3 = Guardian Mk. 3

X = ATEX approved

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

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

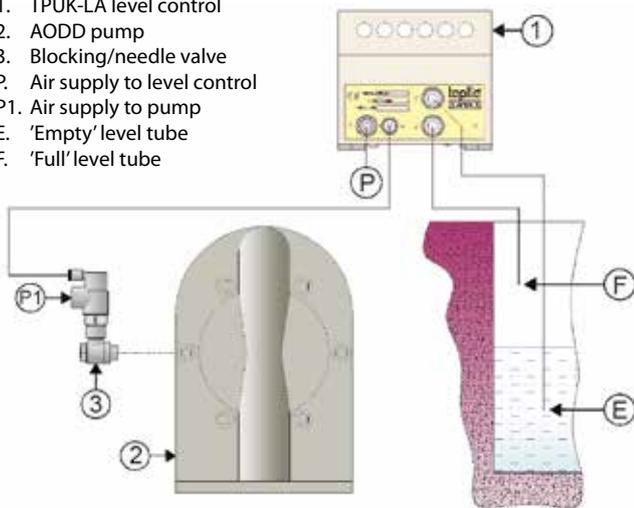


TPUK-LM:  
Manual start and automatic stop

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

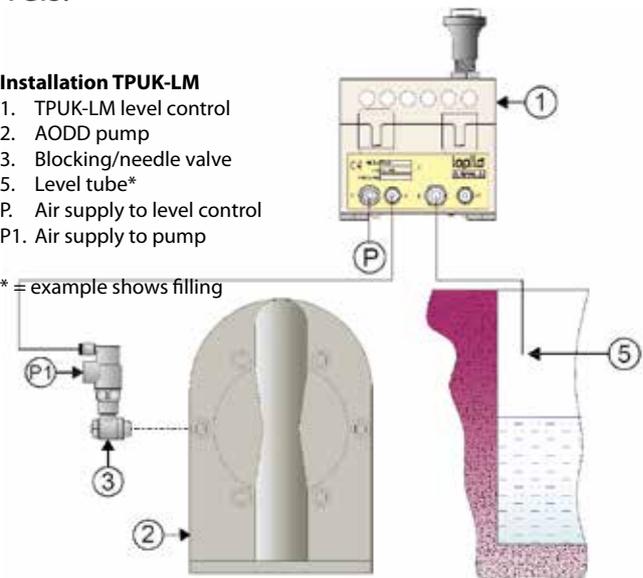
1. TPUK-LA level control
2. AODD pump
3. Blocking/needle valve
- P. Air supply to level control
- P1. Air supply to pump
- E. 'Empty' level tube
- F. 'Full' level tube



## 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



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 NI/min
Air consumption (system only)	2 L/min (average)
Weight	850 g
Dimensions	122x150x110 mm

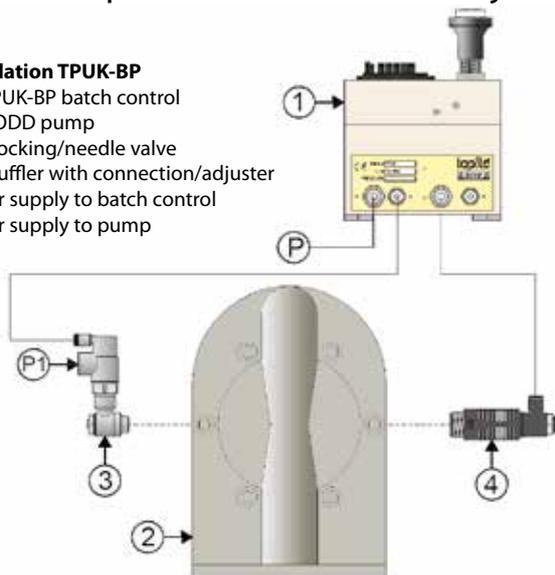
# Batch control



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).

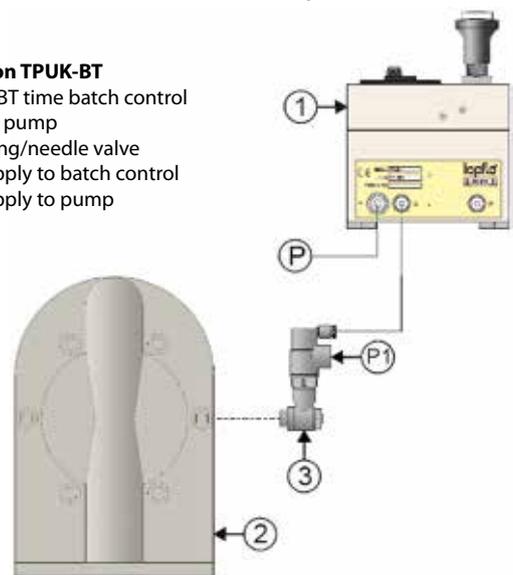
## Installation TPUK-BP

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



- 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

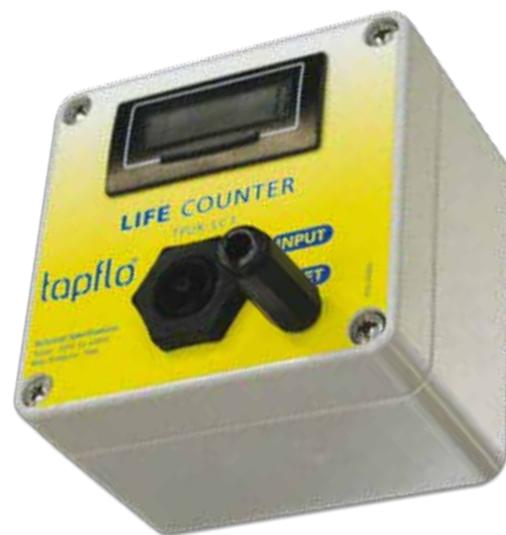
A stroke to volt free contact (VFC) is available for integration with PLC systems. Simply connect to any AODD pump via the air exhaust muffler to monitor the pump strokes. TPUK-PS1 must be combined with muffler type TPUK-MU (next page).

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-PAAudible 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 NI/min	1600 NI/min
Flow rate (FR) at 6 bar ΔP 1 bar		2000 NI/min	3000 NI/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 NI/min	3200 NI/min
Flow rate at 6 bar ΔP 1 bar	1100 NI/min	4600 NI/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 peaks 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

# TAPFLO AB

## Sweden

Filaregatan 4 | S-442 34 Kungälv

Tel: +46 303 63390

Fax: +46 303 19916

E-mail addresses:

Commercial questions: [sales@tapflo.com](mailto:sales@tapflo.com)

Orders: [order@tapflo.com](mailto:order@tapflo.com)

Tech support: [support@tapflo.com](mailto:support@tapflo.com)

## Tapflo products and services are available in 64 countries on 6 continents.

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

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

## Tapflo Group Companies

### Austria

Tapflo Austria  
Tel: +43 732 27292910  
[sales@tapflo.at](mailto:sales@tapflo.at)

### China

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

### Japan

Tapflo Japan K.K.  
Tel: +81-3-6240-3510  
[tapflojp@tapflo.co.jp](mailto:tapflojp@tapflo.co.jp)

### Slovenia

Tapflo GmbH  
Tel: +386 68 613 474  
[sales@tapflo.hr](mailto:sales@tapflo.hr)

### Azerbaijan

Tapflo Azerbaijan LLC  
Tel: +994 502660799  
[sales@tapflo.az](mailto:sales@tapflo.az)

### Denmark

Tapflo Danmark  
Tel: +45 36 454600  
[info@tapflo.dk](mailto:info@tapflo.dk)

### Kazakhstan

Tapflo Kazakstan  
Tel: +7 727 3278347  
[sales@tapflo.kz](mailto:sales@tapflo.kz)

### Spain

Tapflo Iberica  
Tel: +34 91 8093182  
[avives@tapfloiberica.es](mailto:avives@tapfloiberica.es)

### Baltic States

Tapflo Latvia  
Tel: +371 67472205  
[sales@tapflo.lv](mailto:sales@tapflo.lv)

### France

Tapflo France  
Tel: +33 1 34 78 82 40  
[info@tapflo.fr](mailto:info@tapflo.fr)

### Poland

Tapflo Sp. z o.o.  
Tel: +48 58 530 42 12  
[info@tapflo.pl](mailto:info@tapflo.pl)

### South Africa

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

### Belarus

Tapflo Belarus  
Tel: +375 17 3934609  
[sales@tapflo.by](mailto:sales@tapflo.by)

### Georgia

Tapflo Georgia  
Tel: +995 577 463010  
[sales@tapflo.ge](mailto:sales@tapflo.ge)

### Romania

S.C. Tapflo Rom. S.r.l.  
Tel: +40 21 3451255  
[sales@tapflo.ro](mailto:sales@tapflo.ro)

### Turkey

Tapflo Makina Ltd  
Tel: +90 216 467 33 11  
[sales@tapflo.com.tr](mailto:sales@tapflo.com.tr)

### Bulgaria

Tapflo EOOD  
Tel: +359 (0)2 974 18 54  
[office@tapflo.bg](mailto:office@tapflo.bg)

### India

Tapflo Fluid Handling India Pvt Ltd  
Tel: +91 20 65000215  
[ad@tapflo.in](mailto:ad@tapflo.in)

### Russia

Tapflo Company  
Tel: +7 495 232 18 28  
[sales@tapflo.com.ru](mailto:sales@tapflo.com.ru)

### Ukraine

TOB Tapflo  
Tel: +380 44 222 68 44  
[sales@tapflo.com.ua](mailto:sales@tapflo.com.ua)

### Croatia

Tapflo GmbH  
Tel: +385 91 4884 666  
[sales@tapflo.hr](mailto:sales@tapflo.hr)

### Ireland

Tapflo Ireland Ltd  
Tel: +353 1 2011911  
[info@tapflo.ie](mailto:info@tapflo.ie)

### Serbia

Tapflo d.o.o.  
Tel: +381 21 44 58 08  
[sales@tapflo.rs](mailto:sales@tapflo.rs)

### Uzbekistan

Tapflo Uzbekistan  
Tel: +998 712370940  
[sales@tapflo.uz](mailto:sales@tapflo.uz)

### Czech Republic

Tapflo s.r.o.  
Tel: +420 513 033 924  
[tapflo@tapflo.cz](mailto:tapflo@tapflo.cz)

### Italy

Tapflo Italia  
Tel: +39 0362307698  
[info@tapfloitalia.com](mailto:info@tapfloitalia.com)

### Slovakia

Tapflo s.r.o.  
+421 911 137 883  
[tapflo@tapflo.sk](mailto:tapflo@tapflo.sk)

### United Kingdom

Tapflo (UK) Ltd  
Tel: +44 2380 252325  
[sales@tapflopumps.co.uk](mailto:sales@tapflopumps.co.uk)