

# FLUID DAMPERS

## SERIES PICCOLO FLUIDO

### ▶ PRODUCT SPECIFICATIONS



Piccolo Fluido is exceptionally well suited for integration into drawer fittings. The robust stainless steel piston rod has a plastic coupler for secure fastening in the system.

### ▶ APPLICATION AREAS



Door



Sliding door



Drawer



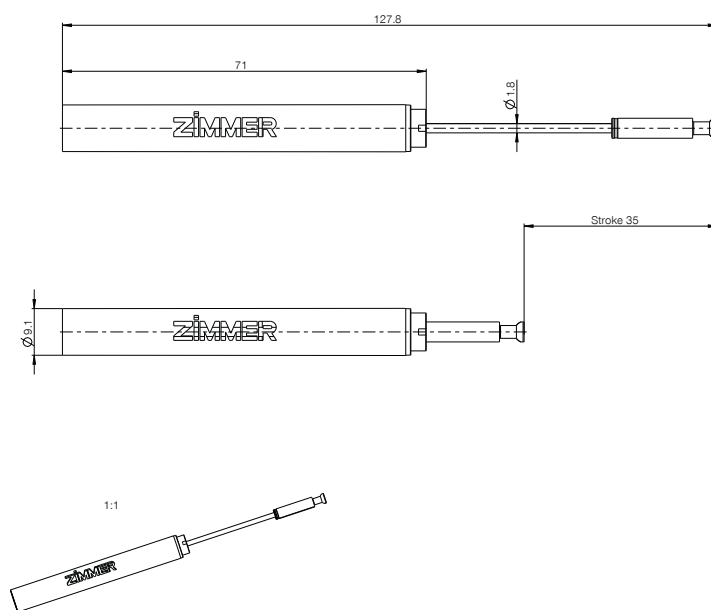
Hinge



### ▶ SERIES CHARACTERISTICS

Series	Stroke [mm]	Medium	Operating direction
Piccolo Fluido	35.0	Fluid	Pressure dampers

### ▶ TECHNICAL DRAWING



## ► TECHNICAL DATA

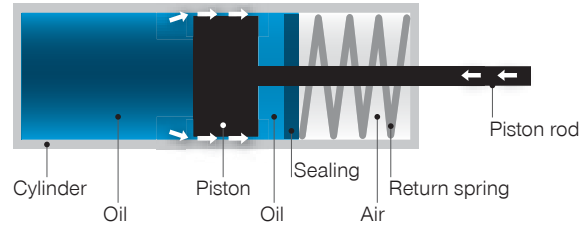
<b>Order no.</b>	<b>F035-09-006</b>
Technology	Defined Comfort
Damper characteristic curve	Linear-constant with free-run
Damper force [N]	12
Damper tolerance [N]	+3/-3
Damper speed [mm/s]	50
Free-run	Yes
Free-run length [mm]	5.0
Damper spring return	No
Damper housing color	Gray RAL7016
Damper cover color	Gray RAL7016
Damper Ø housing [mm]	9.2
Damper housing length [mm]	68.0
Damper Ø piston rod [mm]	1.8
Damper housing connection	Notches
Damper piston rod connection	Mushroom head
Application environment	Standard

# INDIVIDUAL DAMPERS

## FLUID DAMPERS

### PRINCIPLE OF FUNCTION

- ▶ In a closed housing a piston is moving back- and forward. A food-safe silicon-oil can flow in both directions through small channels. The viscosity of the oil, as well as the modification of the cross-section of the channels, leads to the friction needed to reduce the speed. The friction-heat will be channeled outside through the cylinder-wall.
- ▶ Highest energy-consumption on smallest cross section
- ▶ Different damping-characteristics possible



### DAMPER WITH AND WITHOUT RESET-FUNCTION

Damper **without** reset-function needs a coupler onto the pistonrod is needed to be used within the fitting. The pistonrod do not extract by itself, it has to be extracted manually.

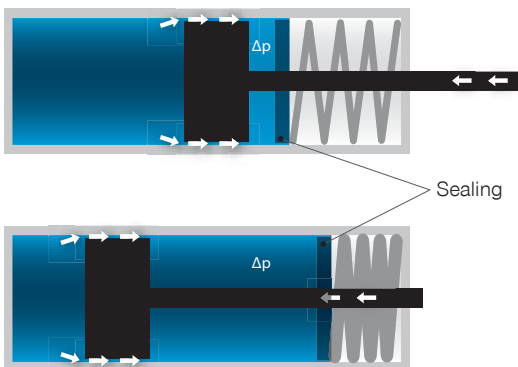


Damper **with** an integrated reset-function a Coupler is not needed onto the pistonrod within the fitting. The pistonrod will be extracted automatically.

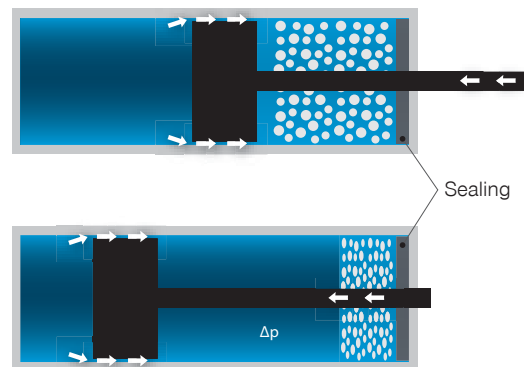


### VOLUME-COMPENSATION

Volume-compensation by means of a spring in an air-filled chamber (ZIMMER-principle)



Volume-adjustment by using a sponge (competitors)



$\Delta p$  = Pressure in cylinder higher than surrounding-pressure

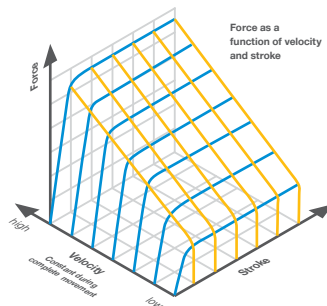
	Function	Leak-proof	Life-endurance
Cellular rubber	X	-	-
Volume-compensation	X	X	X

## TYPES

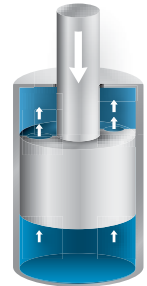
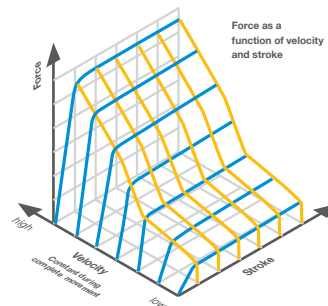
The nozzle let the oil flow constantly:

- ▶ Highest force on smallest space available
- ▶ Force can be modified through the cross-section of the nozzle
- ▶ No overload-protection

**Classic defined**



**Classic smooth**



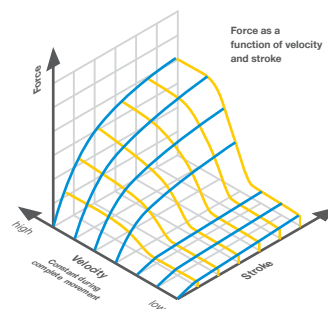
Oil is flowing around the piston. The housing is expanding at high pressure whereas through this gap the oil is flowing.

- ▶ Overload-protection
- ▶ Different graphs possible

**Comfort defined**



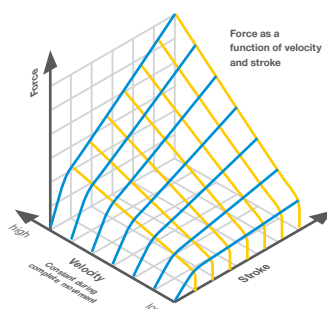
**Comfort smooth**



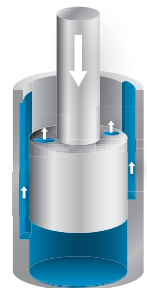
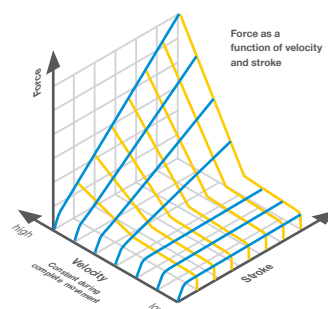
Through these two nozzles the oil can flow constantly. Channels in the housing enhances special cross-sections. Within this example the cross-section becomes smaller during retraction; thus the damping force becomes stronger.

- ▶ Various damper-characteristics possible
- ▶ Force can be modified by varying the cross-section and by changing the number of the channels

**Versatile defined**



**Versatile smooth**



**defined:** speed independent

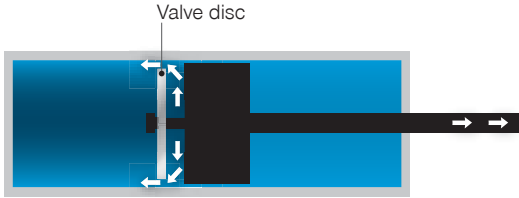
**smooth:** depending on speed, smooth reaction at low velocities, less opening time, constant closing picture, small opening force

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## FLUID DAMPERS

### OPENING-MOVEMENT

Piston **defined**

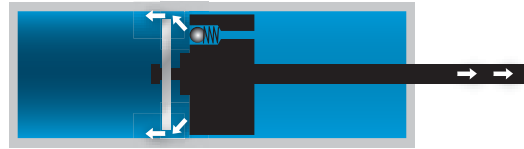


Damper pulled out (release)



Damping

Piston **smooth**



Damper pulled out (release)



Damping

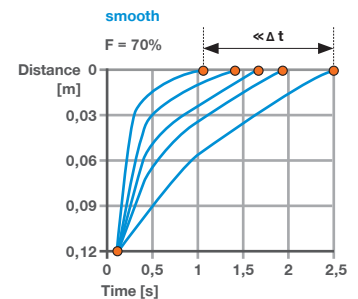
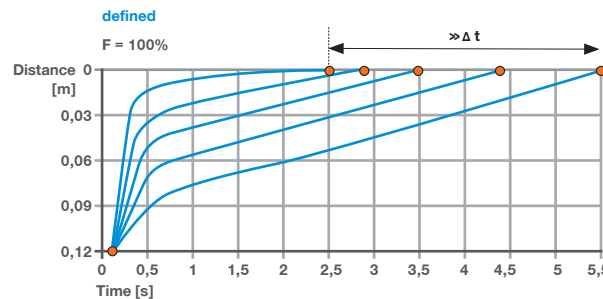


Valve disc as well as drillings lead to a minimized resistance at opening and the damping force needed during closing-movement.

### COMPARASION DEFINED/SMOOTH IN SELF-CLOSING UNIT

#### ▶ EXAMPLE CHARACTERIS- TIC CHIUSO 100

- ▶ Load: 70kg sliding door
- ▶ Chart shows the closing time from 0,1–0,5 m/s in different graphs
- ▶ Opening force is reduced about 30% in version: **smooth**

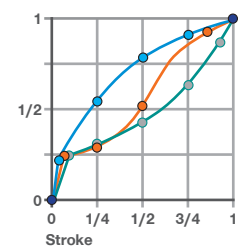
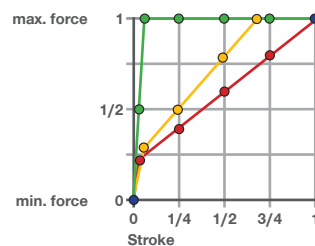


### FLUID DAMPER CHARACTERISTIC WITH CONSTANT SPEED

#### Characteristic curves fluid damper

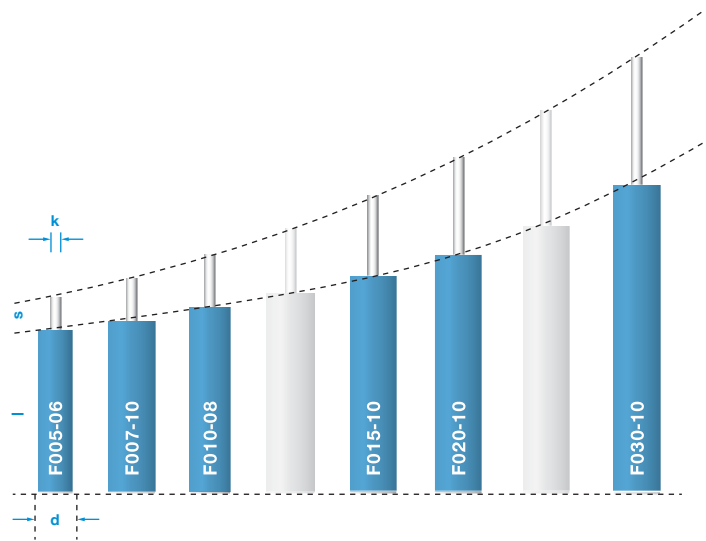
Damping force according to the stroke

- Linear rising
- Linear rising – constant
- Linear constant
- Inclining
- S-Line
- Declining



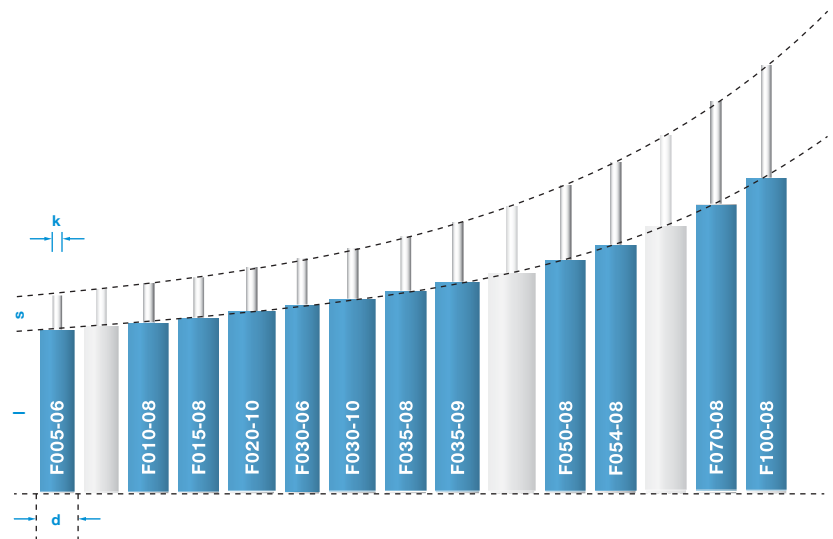
## PRODUCT RANGE DAMPER CLASSIC

- ▶ Housing length (l): 42 mm bis 67 mm
- ▶ Housing diameter (d): 6 mm, 8 mm und 10 mm
- ▶ Stroke (s): 5 mm bis 30 mm
- ▶ Piston rod diameter (k): 2,3 mm



## PRODUCT RANGE DAMPER COMFORT

- ▶ Housing length (l): 29,5 mm bis 151,6 mm
- ▶ Housing diameter (d): 6 mm, 8 mm und 10 mm
- ▶ Stroke (s): 10 mm bis 100 mm
- ▶ Piston rod diameter (k): 1,5 bis 2,3 mm



## PRODUCT RANGE DAMPER VERSATILE

- ▶ Housing length (l): 42 mm bis 67 mm
- ▶ Housing diameter (d): 6 mm, 8 mm und 10 mm
- ▶ Stroke (s): 5 mm bis 30 mm
- ▶ Piston rod diameter (k): 2,3 mm

