FLUID DAMPERS
SERIES MASSIMO

▶ PRODUCT SPECIFICATIONS

The compact Massimo absorbs high forces despite its exceptionally small type of construction. It is ideal for all applications where a high mass needs to be braked over a short distance.
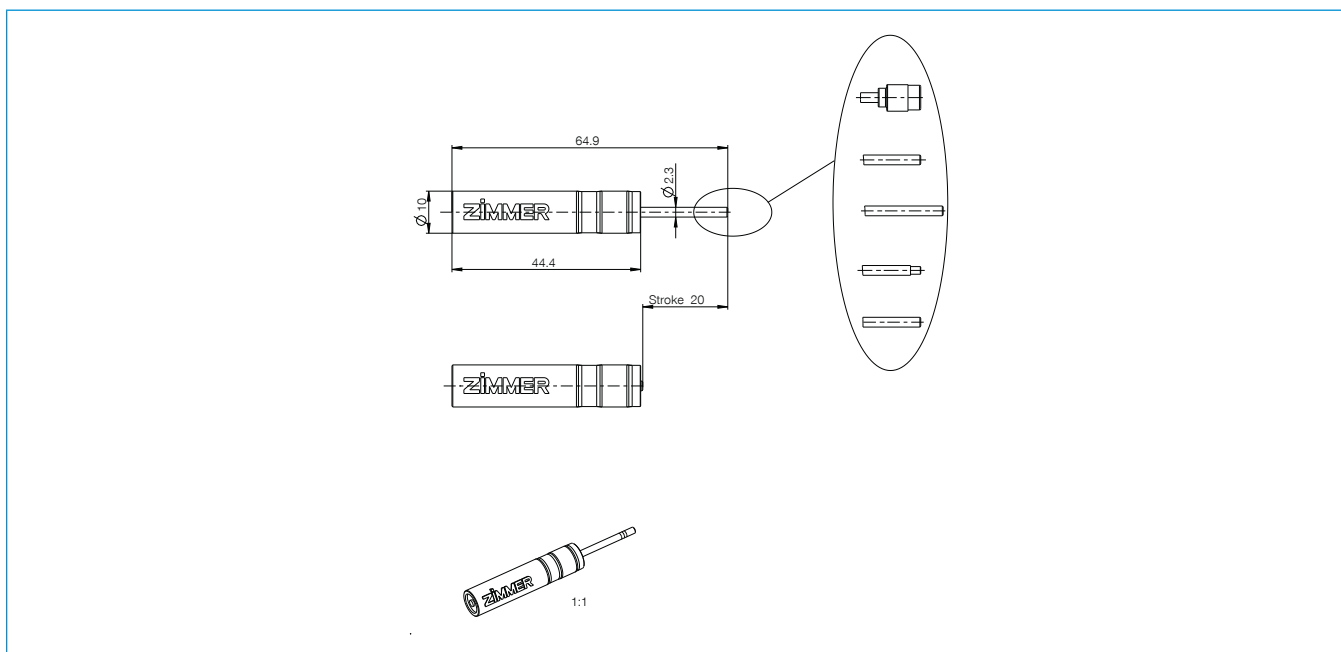
▶ APPLICATION AREAS

Door		●
Sliding door		
Drawer		
Hinge		●

▶ SERIES CHARACTERISTICS

Series	Stroke [mm]	Medium	Operating direction
Massimo	20.0	Fluid	Pressure dampers

▶ TECHNICAL DRAWING

64.9

$\varnothing$ 2.3

$\varnothing$ 10

44.4

Stroke 20

1:1

► TECHNICAL DATA

Order no.	F020-10-009	F020-10-041	F020-10-042
Technology	Defined Comfort	Defined Versatile	Defined Versatile
Damper characteristic curve	S-curve	S-curve	S-curve
Damper force [N]	70	30	90
Damper tolerance [N]	+15/-15	+5/-5	+10/-10
Damper speed [mm/s]	10	10	10
Free-run	No	No	No
Free-run length [mm]	0.0	0.0	0.0
Damper spring return	Yes	Yes	Yes
Damper housing color	Green PMS364C	Brown RAL8004	Brown RAL8000
Damper cover color	Gray RAL7035	Gray RAL7035	Gray RAL7035
Damper Ø housing [mm]	10.0	10.0	10.0
Damper housing length [mm]	44.4	45.0	45.0
Damper Ø piston rod [mm]	2.3	2.3	2.3
Damper housing connection	Without connection	Without connection	Without connection
Damper piston rod connection	No head	No head	No head
Application environment	Standard	Standard	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

Cylinder — Oil — Piston — Oil — Sealing — Air — Return spring — Piston rod

DAMPER WITH AND WHITOUT RESET-FUNCTION
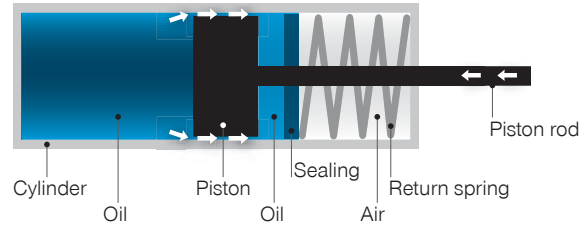
Damper **without** reset-function needs a coupler onto the pistonrod is needed to be used within the fitting. The pistonrod do not extract by itself, it has to be extracted manually.
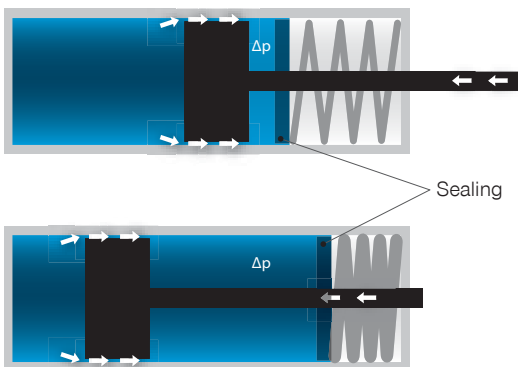
Damper **with** a integrated reset-function a Coupler is not needed onto the pistonrod within the fitting. The pistonrod will be extracted automatically.
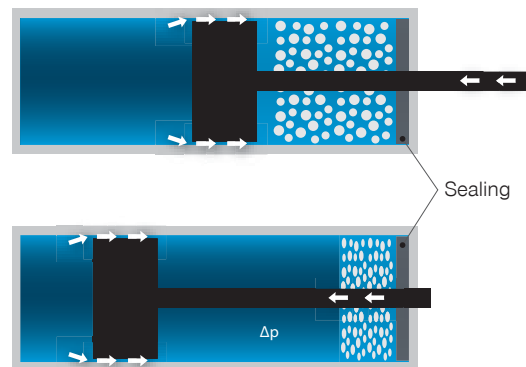

VOLUME-COMPENSATION

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

Volume-adjustment by using a sponge (competitors)

Sealing

Sealing
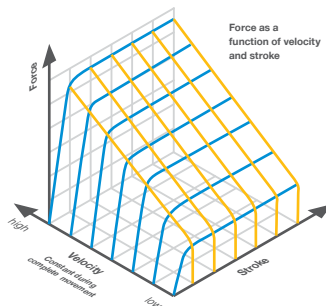
Δp = Pressure in cylinder higher than surrounding-pressure

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

The nozzle let the oil flow constantly:

▶ Highest force on smallest space available

▶ Force can be modified through the crosssection of the nozzle
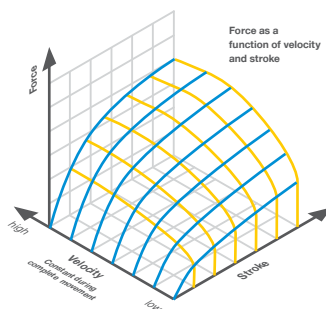
▶ No overload-protection

Classic defined

Force as a function of velocity and stroke

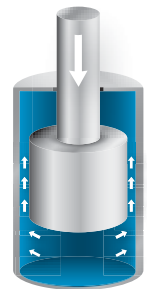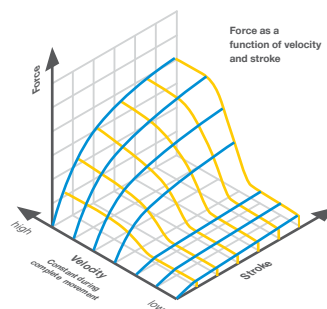**Classic** smooth

Force as a function of velocity and stroke
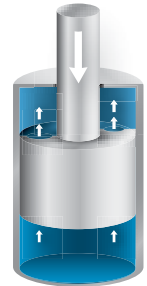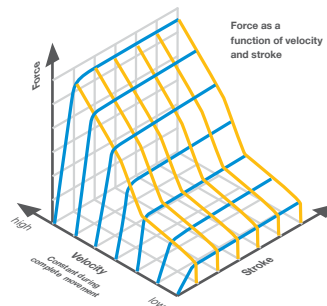
Oil is flowing around the piston. The housing is expanding at high pressure whereas through this gap the oil is flowing.

▶ Overload-protection

▶ Different graphs possible
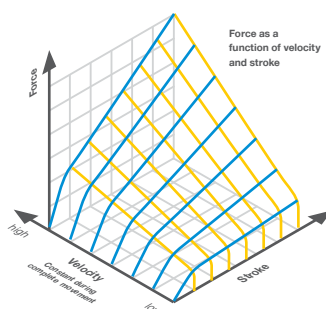
Comfort defined

Force as a function of velocity and stroke

**Comfort** smooth

Force as a function of velocity and stroke

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

Force as a function of velocity and stroke

Versatile smooth

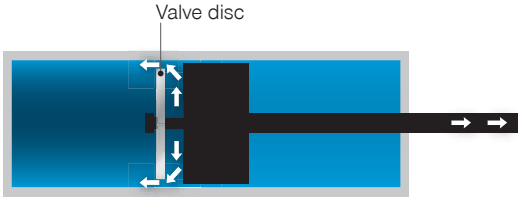Force as a function of velocity and stroke
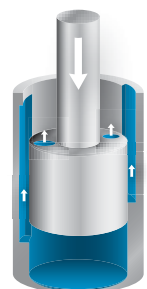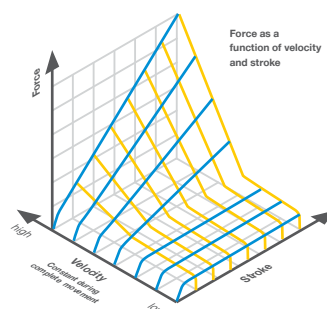
defined: speed independent

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

INDIVIDUAL DAMPERS
FLUID DAMPERS

OPENING-MOVEMENT

Piston defined

Valve disc

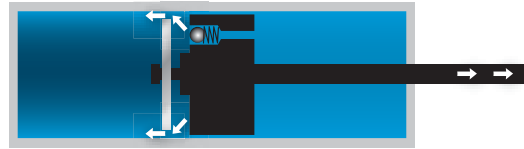

Damper pulled out (release)
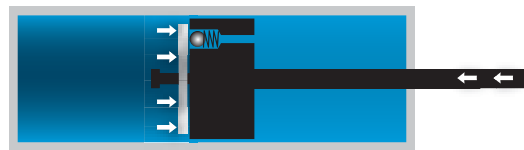

Damping

Piston smooth


Damper pulled out (release)

Damping

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

COMPARSATION DEFINED/SMOOTH IN SELF-CLOSING UNIT

► **EXAMPLE CHARACTERISTIC CHIUSO 100**

► Load: 70kg sliding door

► Chart shows the closing time from 0,1–0,5 m/s in different graphs

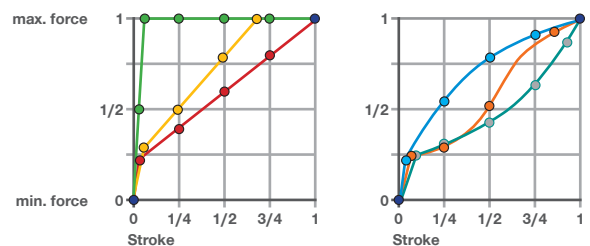► Opening force is reduced about 30% in version: smooth
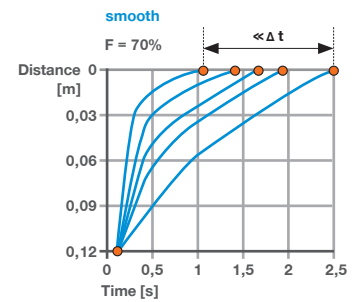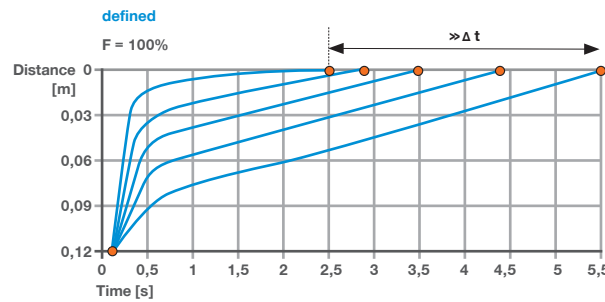
FLUID DAMPER CHARACTERISTIC WITH CONSTANT SPEED
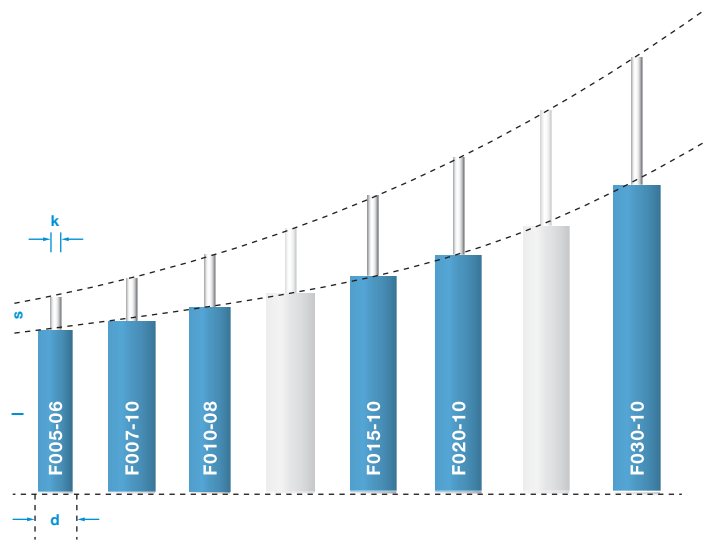
Characteristic curves fluid damper
Damping force according to the stroke

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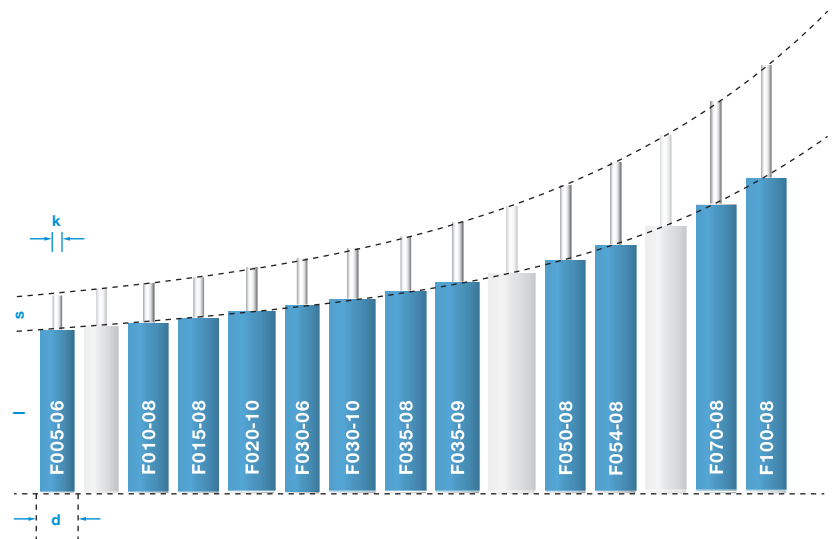
● Inclining
● S-Line
● Declining

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