



LENGERSDORF GmbH

Specialists in Softclose Damping Systems for Sliding Doors

OTIUM
SoftClose Dampers

1979 **40** 2019
YEARS

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otium.de



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imprint

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who we are....

Specialists

Specialists in Damping of Sliding Doors

Lengersdorf GmbH is amongst the first companies worldwide to develop and manufacture damping specifically for sliding doors.

We constantly develop new products to implement our clients' needs and to cater to market requirements.

Location

South of Munich, GERMANY

We are easy to reach, thanks to an international airport on our doorstep.

International Clients

Supplying custom solutions
to customers worldwide

All In-house

Expertise • R&D • Testing
Mold-making & Production



our history

1979

- **founding** of the family business
- **moulded plastic precision parts** & assembly groups

AUTO INDUSTRY

- very high **quality standards**
- **just-in-time delivery** operations
- ongoing **innovations**
- high **eco- and environmental** standards
- numerous **distinctions & awards**
- **A+ supplier** throughout



2003

SOFTCLOSE DAMPERS

- invention and patenting of **soft close dampers for sliding doors**
- introduction of **OTIUM**
- ongoing **development & improvement** of products
- high level of **automation**



2005

INTERZUM AWARD

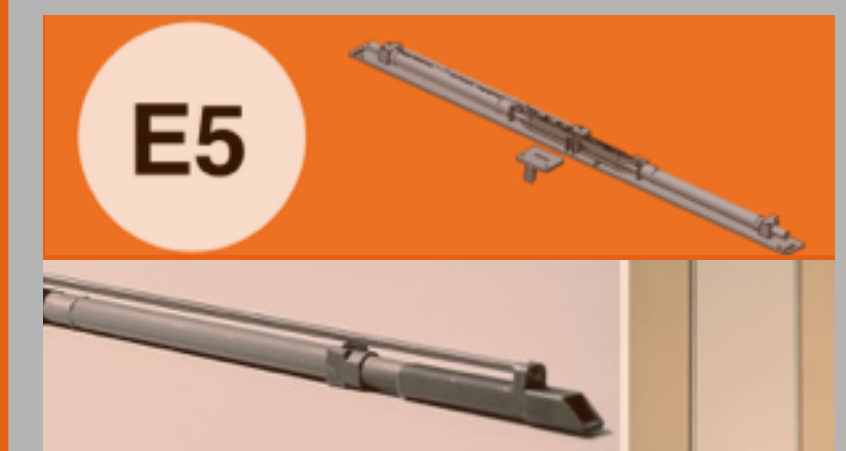
- “**BEST of the BEST**” award at the **2005 INTERZUM Trade Fair**
- production of the **OTIUM E3** series
- heightening **iso 9001** standards
- setting up own **test & control facilities**



2010

MIDDLE DAMPING

- **first** in industry to introduce **MIDDLE DAMPING** on central doors - for 3 leaf sliding door systems
- concept and R&D of the **OTIUM E2** series
- develop the **E2S** damper as special solution for very **light & narrow doors**



All-in-One damping solution

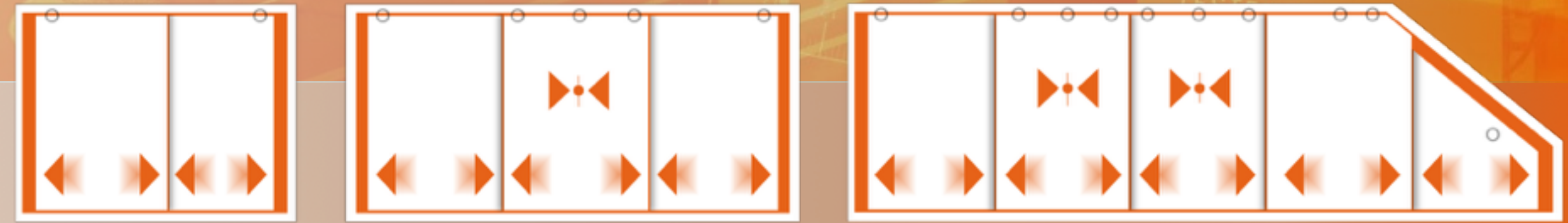


2019



LENGERSDORF GmbH
40th ANNIVERSARY

our latest release...



the ultimate

all-in-one damping solution

for analogue damping

- all damping combinations possible
- closing & damping **all directions & centring** on a single door
- **all door widths & all door weights** up to 80 kg
- **quick & easy installation** (without any measuring or pin cutting)
- **adaptable** to most profiles with **only one pin** per door
- available in sets as **upgrade-kit**
- **eco-friendly** - no oils or grease - easy to recycle



why air-damping

only air

We believe damping with air is better

- air-damping ensures softer, more gradual deceleration after damper engages - i.e. braking is less abrupt and doors jump or jolt less
- air-damping is more constant in a wider ranges of temperatures
- there is no malfunctioning due to abrasion from dust on oily damper parts
- no oil, no fluids, no grease = no leaking

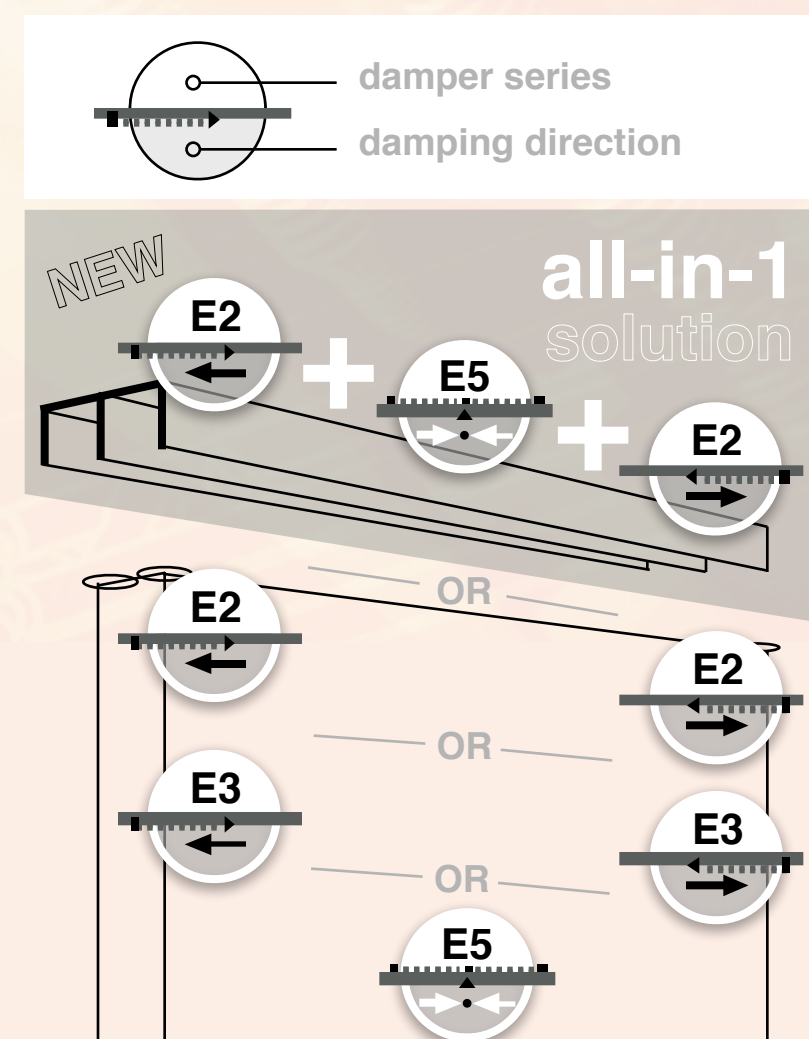


Sustainability

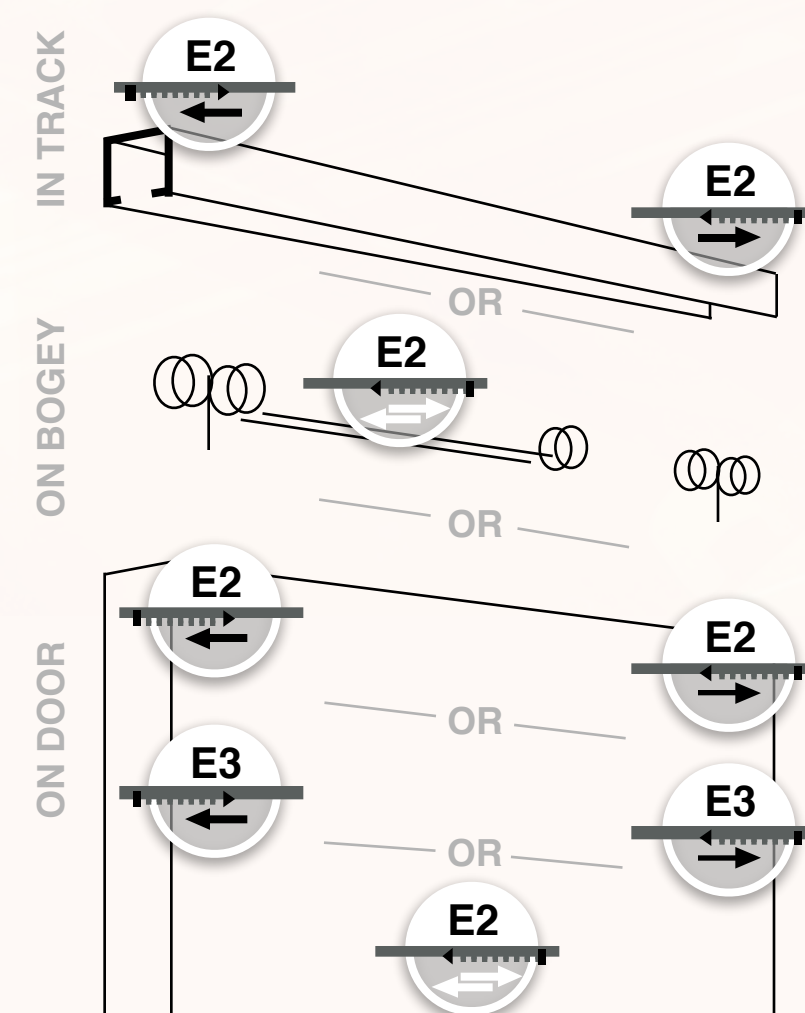
- without fluids, air-damper parts are easy to recycle
- Manufacturing is energy- and resource efficient
- Products conform to REACH requirements
 - for shipping, mandatory labelling is not required



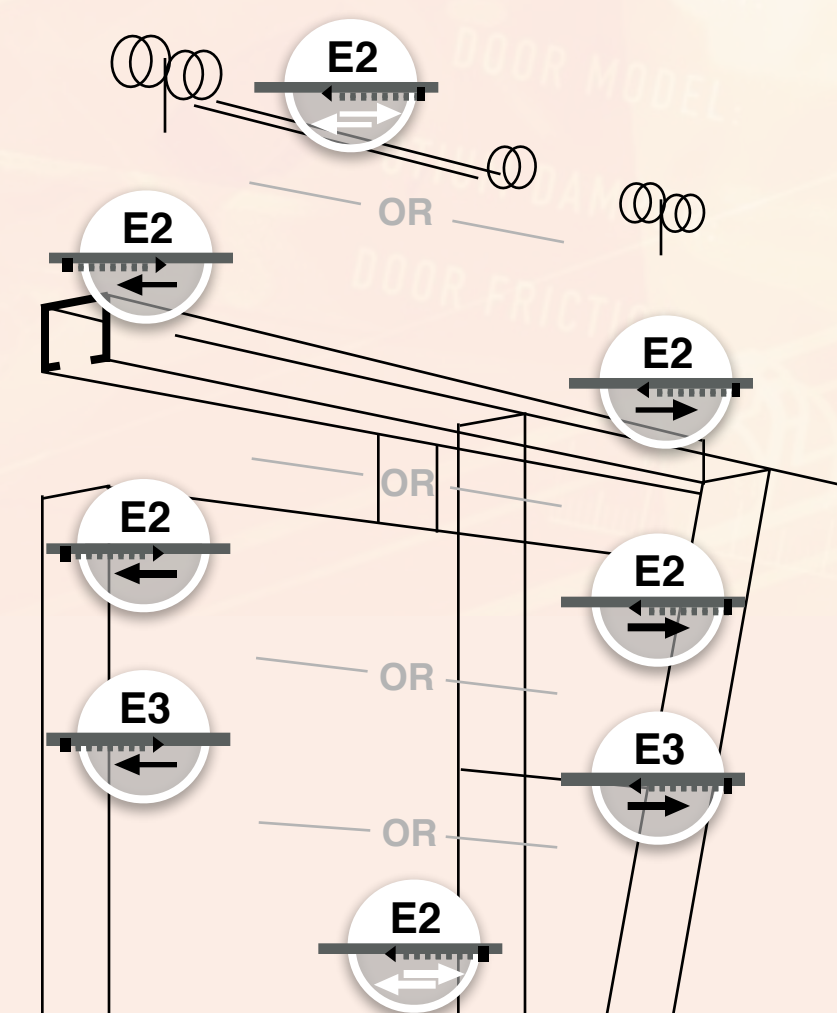
sliding door soft-close application options



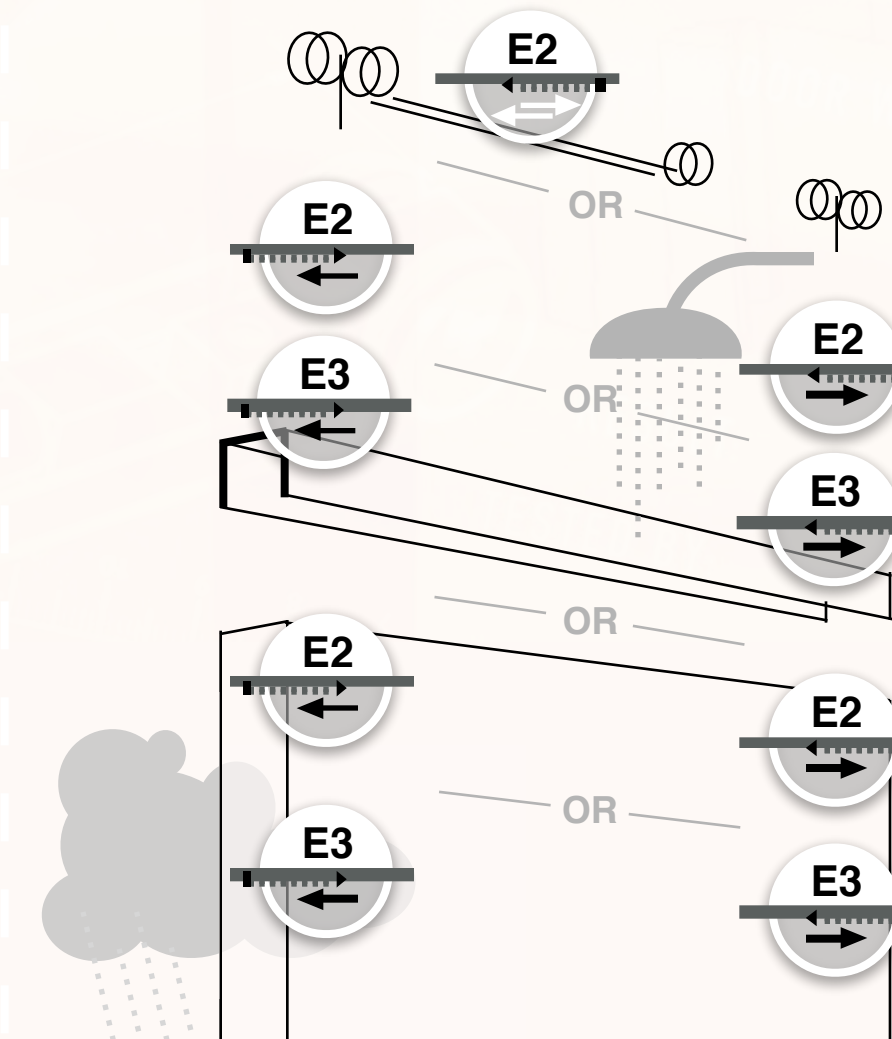
bottom rolling
doors



architectural-
or
hanging doors



pocket doors



special
applications
exterior or wet areas

OTIUM range & damping combinations



With OTIUM Soft-close dampers built into the upper track of a bottom rolling door system, all damping combinations are possible

- with only a single pin installation per door. *

Mounting one pin per door, allows for quick & easy installation. The door is removed from the track only once. Our custom mounting adapters need no (placement position) formulas or measuring. When dampers are positioned in the profile, there are no limitations to door width. OTIUM dampers cover all door weight ranges - from light doors, below 10 kg - all the way to 140 kg doors.

Doors in combinations which can be soft-close damped in all directions - and/or centred:

pocket door



2 door



3 door



4 door



4 door - Alternative



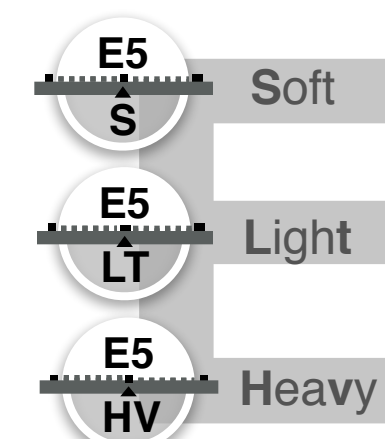
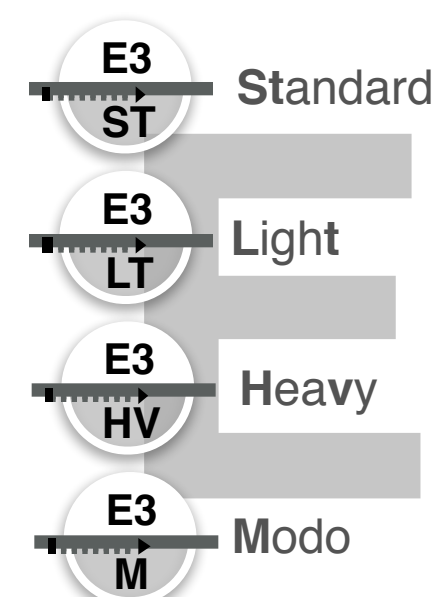
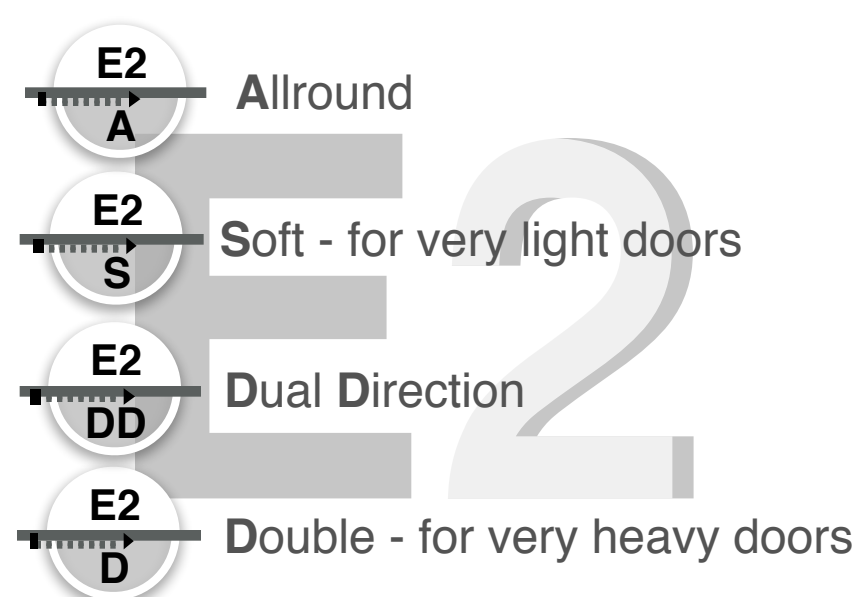
5 door - 2 track



5 door - 3 track



The OTIUM range:

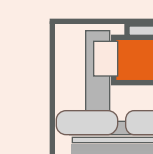


Damper position:

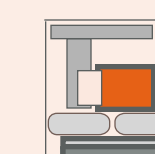
A: In bottom rolling door systems, mounting dampers in the upper track has many advantages over mounting dampers on the door (B&C). Not only is mounting quicker and easier, it also allows for door widths without limitations - and more than one damper can be activated by the same pin. This makes the OTIUM "All-in-One" solution.

B: With dampers mounted *on* doors, trigger pins run the risk of colliding with rollers. This solution is not ideal, because it requires cutting pins to correct lengths and extra caution during installation.

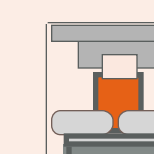
C: By mounting a damper horizontally, the trigger pin can extend *through* the catch claw. This prevents malfunctioning when settlement occurs or tracks are not 100% level.



A

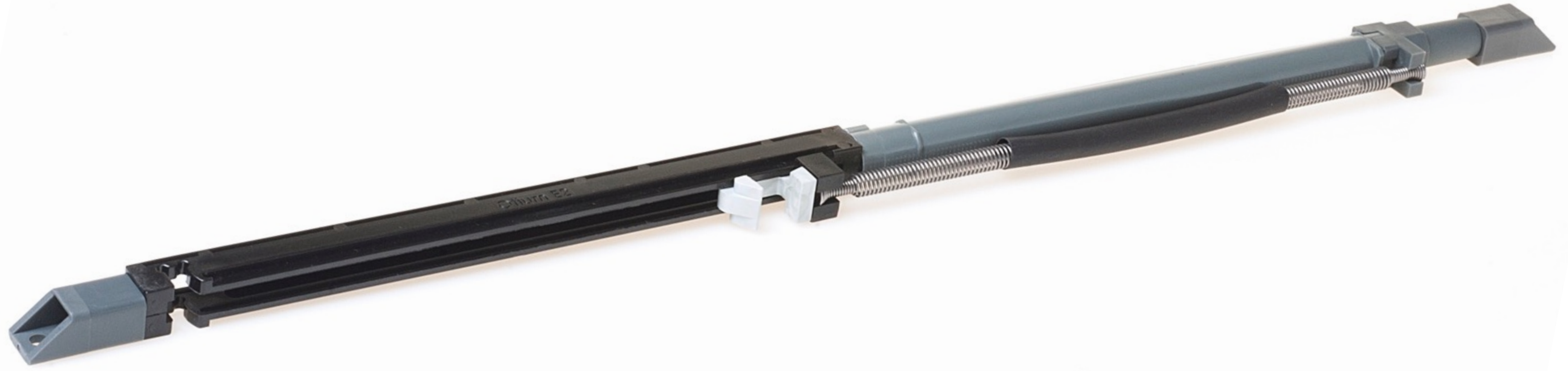


B



C

* ≥ 35 mm track width





E2
A

E2-A Allround

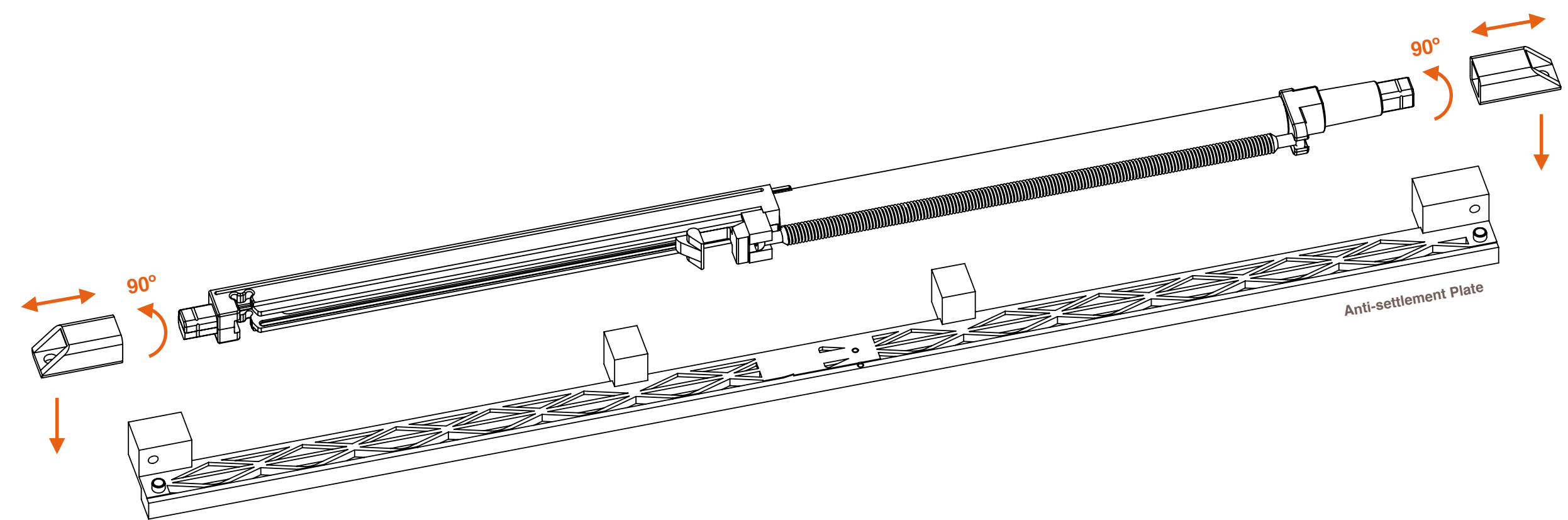
The narrow OTIUM E2 *Allround* damper series is optimised for tight narrow spaces while still covering a very wide range of door weights.

By using square end-pieces for mounting, the damper can quickly and easily be adapted to a vertical or horizontal position.

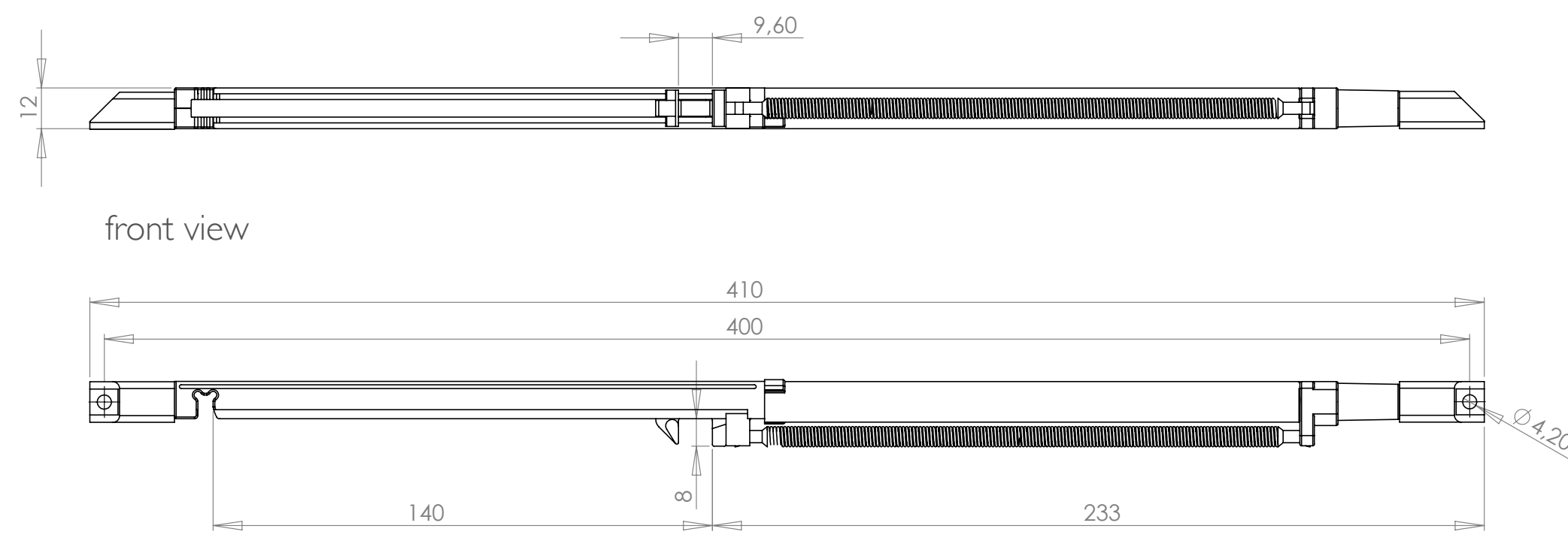
Screw-mounting onto an AS-plate (Anti-settlement) or onto the profile, is flexible and easy, thanks to the modular end-pieces.

Damper Model	E2F6	E2F9	E2F11	E2F13	E2F13+
Door Weight in Kg	10-20	20-40	40-60	60-80	80
Damping Force \approx	60-80 N	70-90 N	80-100 N	80-100 N	80-100 N
Spring Model	F6	F9	F11	F13	F13+
F1 Closing Force	7 N	10 N	12 N	14 N	15 N
F2 Opening Force	15 N	21 N	25 N	32 N	34 N

The spring load ratings vary with ± 2 N • Opening force is measured at 130 mm



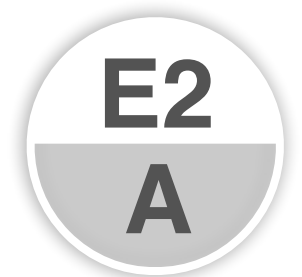
axonometric



front view

side view

top view

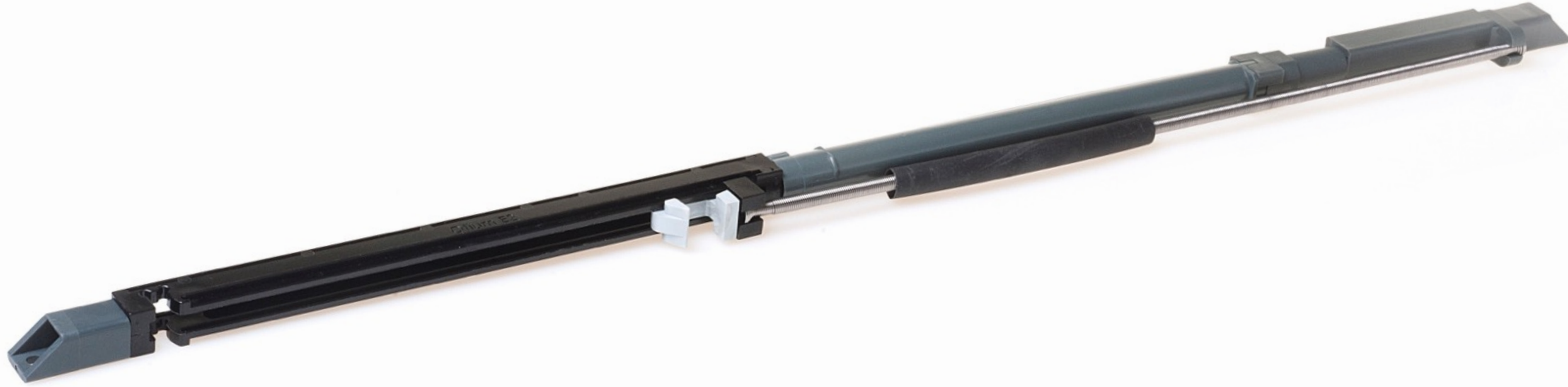


* NTS - measurements in mm

series

E2

OTIUM





E2
S

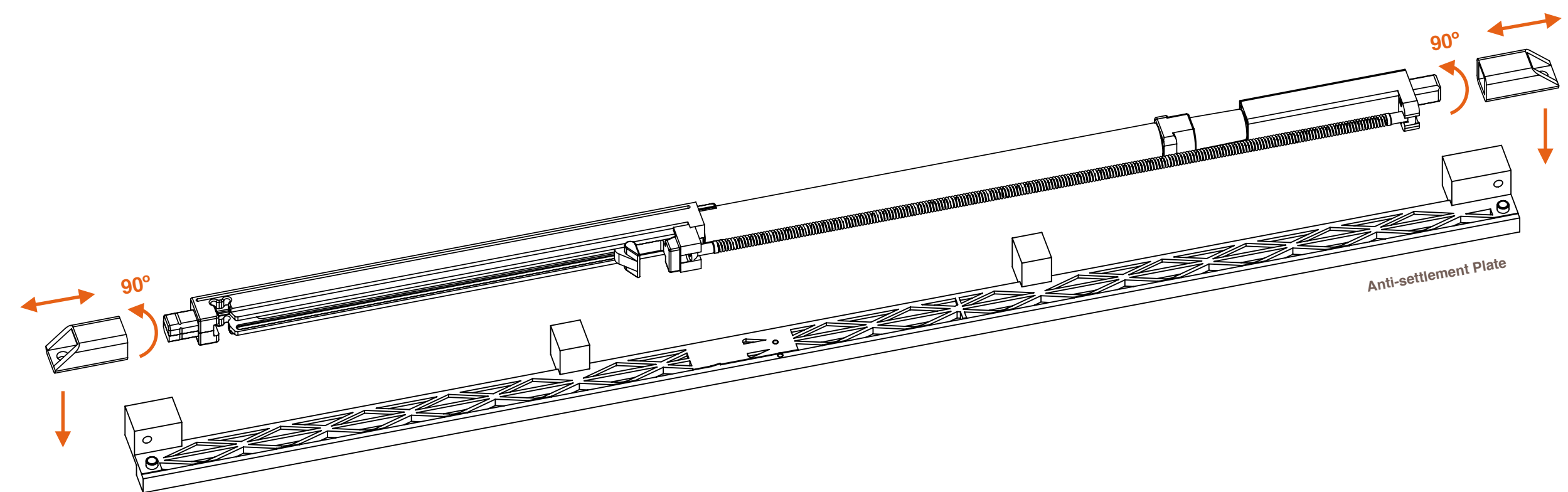
E2-S Soft

By adapting the OTIUM E2 damper for different specifications, we created the E2-S, to specially accommodate and dampen very narrow doors – without the door tilting when dampened or opened.

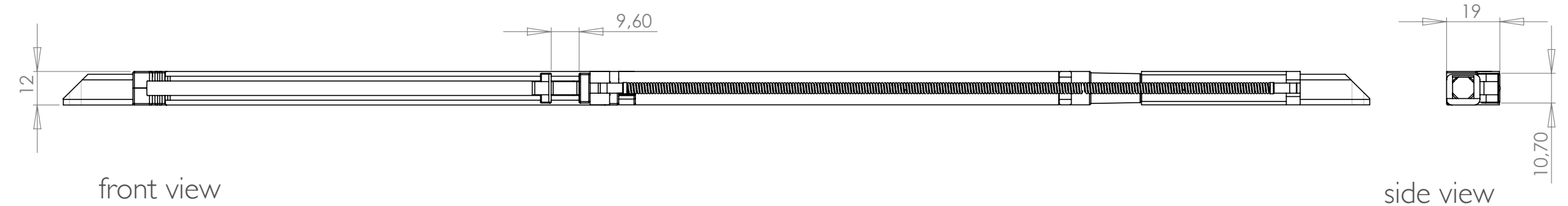
The resistance (force F2) when opening the door is hardly noticeable. In cases where double-sided dampening is required: The damper is mounted in the upper profile (track) and the trigger pin on the door. This allows for dampening and closing on both sides.

Damper Model	E2-S
Door Weight in Kg	0-10
Damping Force \approx	20-40 N
Spring Model	F4
F1 Closing Force	4 N
F2 Opening Force	9 N

The spring load ratings vary with ± 2 N • Opening force is measured at 130 mm

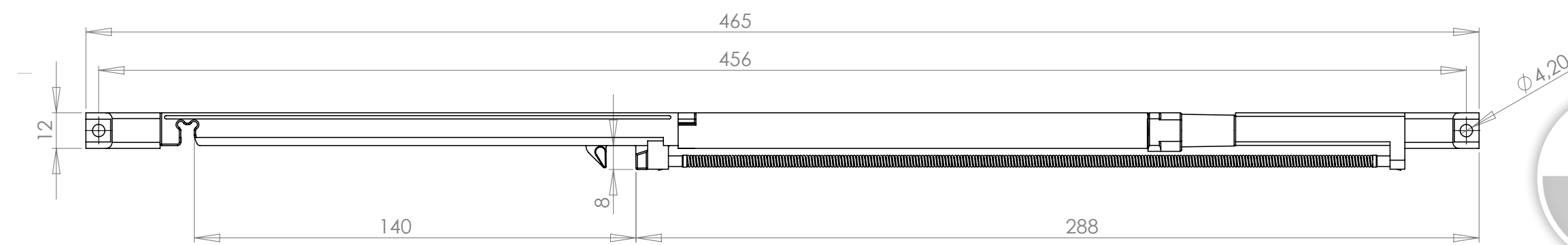


axonometric



front view

side view



top view

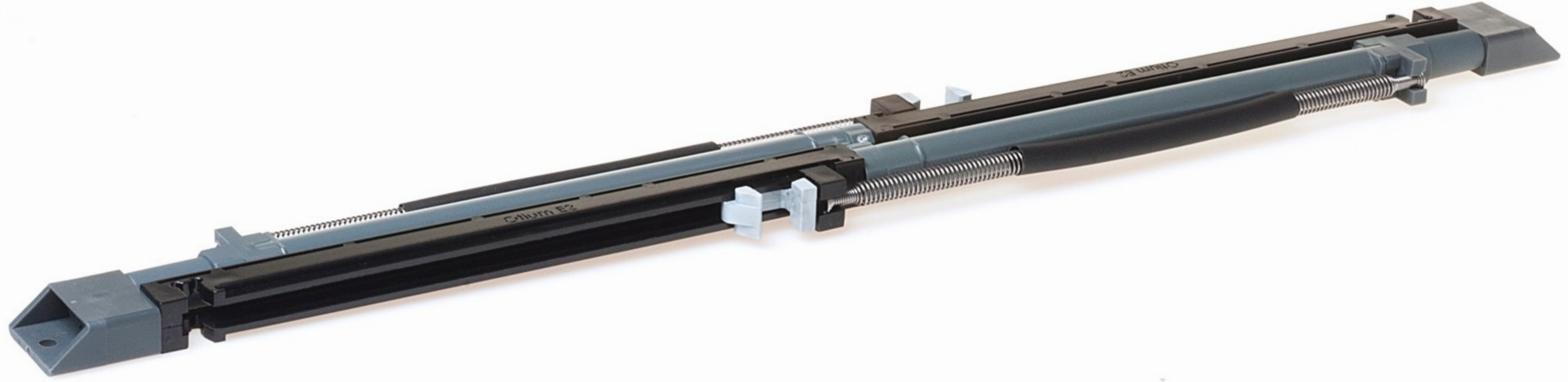
E2
S

* NTS - measurements in mm

series

E2

OTIUM





E2
DD

E2-DD Dual-Direction

Configuration: Vertical or Horizontal

The narrow OTIUM E2 damper can also function as a „dual-direction“ (side-by-side) damper, whereby it dampens and stops in the left and right end-positions of a door.

The great advantage is that, particularly narrow doors, can now be effectively dampened and soft closed to the right and left. The trigger pins are positioned on both sides.

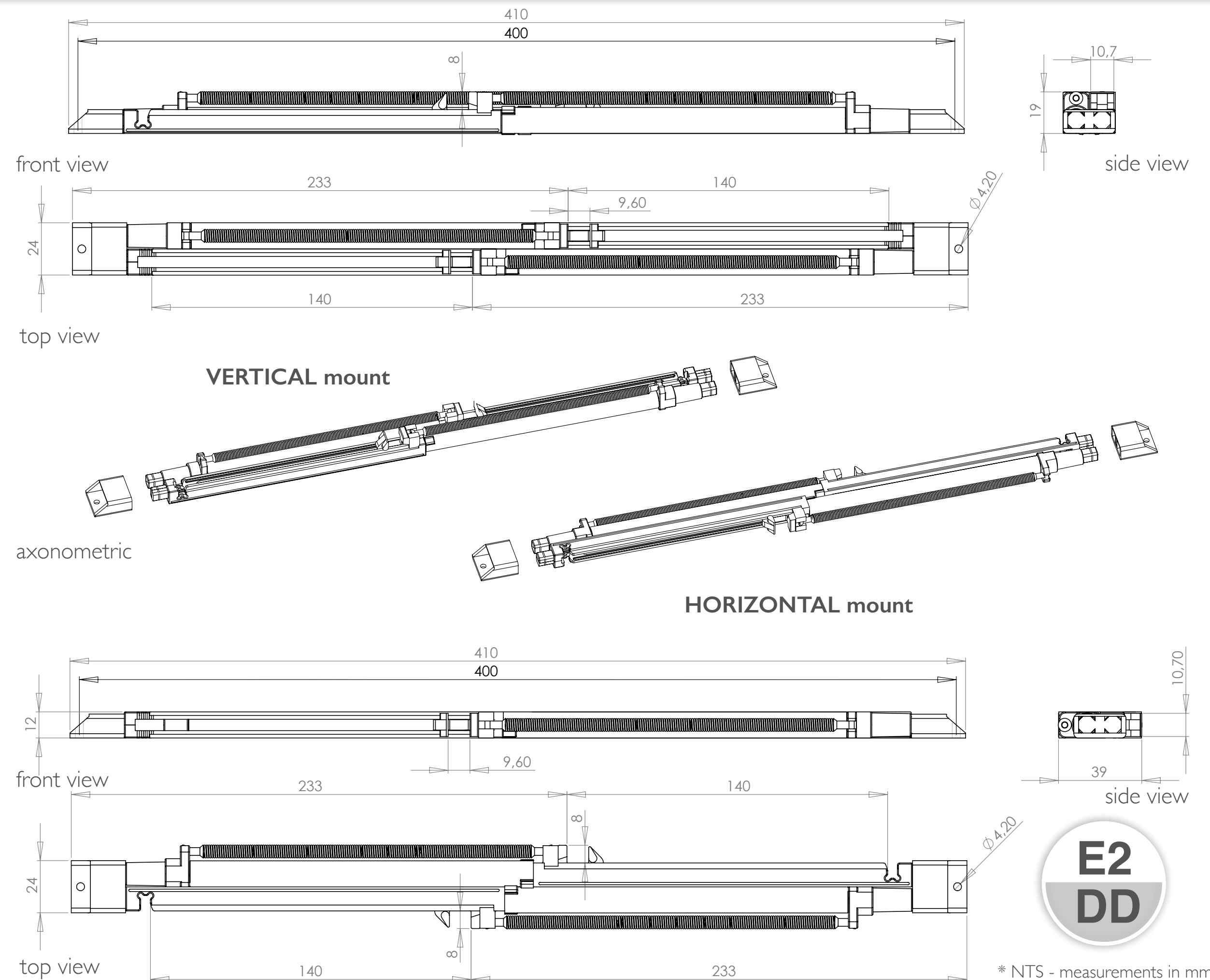
The mounting-end-pieces allows a fixed positioning of the dampers next to each other. Screw-mounting onto the profile is facilitated by holes in the end-pieces.

Damper Integrated	E2F6	E2F9	E2F11	E2F13
Door Weight in Kg	10-20	20-40	40-60	60-80
Damping Force \approx *	60-80 N	80-100 N	80-100 N	80-100 N
Spring Model	F6	F9	F11	F13
F1 Closing Force	7 N	10 N	12 N	14 N
F2 Opening Force	15 N	21 N	25 N	32 N

The spring load ratings vary with ± 2 N • Opening force is measured at 130 mm

• (in both directions)

An aluminium base plate available as an option. Trigger pins need to be customised.



* NTS - measurements in mm

series

E2

OTIUM





E2
D

E2-D Double

Configuration: Vertical or Horizontal

The narrow OTIUM E2 damper can also function as a „double“ (side-by-side) damper, whereby it can damp and softclose heavier doors in the 80 to 140 Kg weight range. One trigger pin activates both sides.

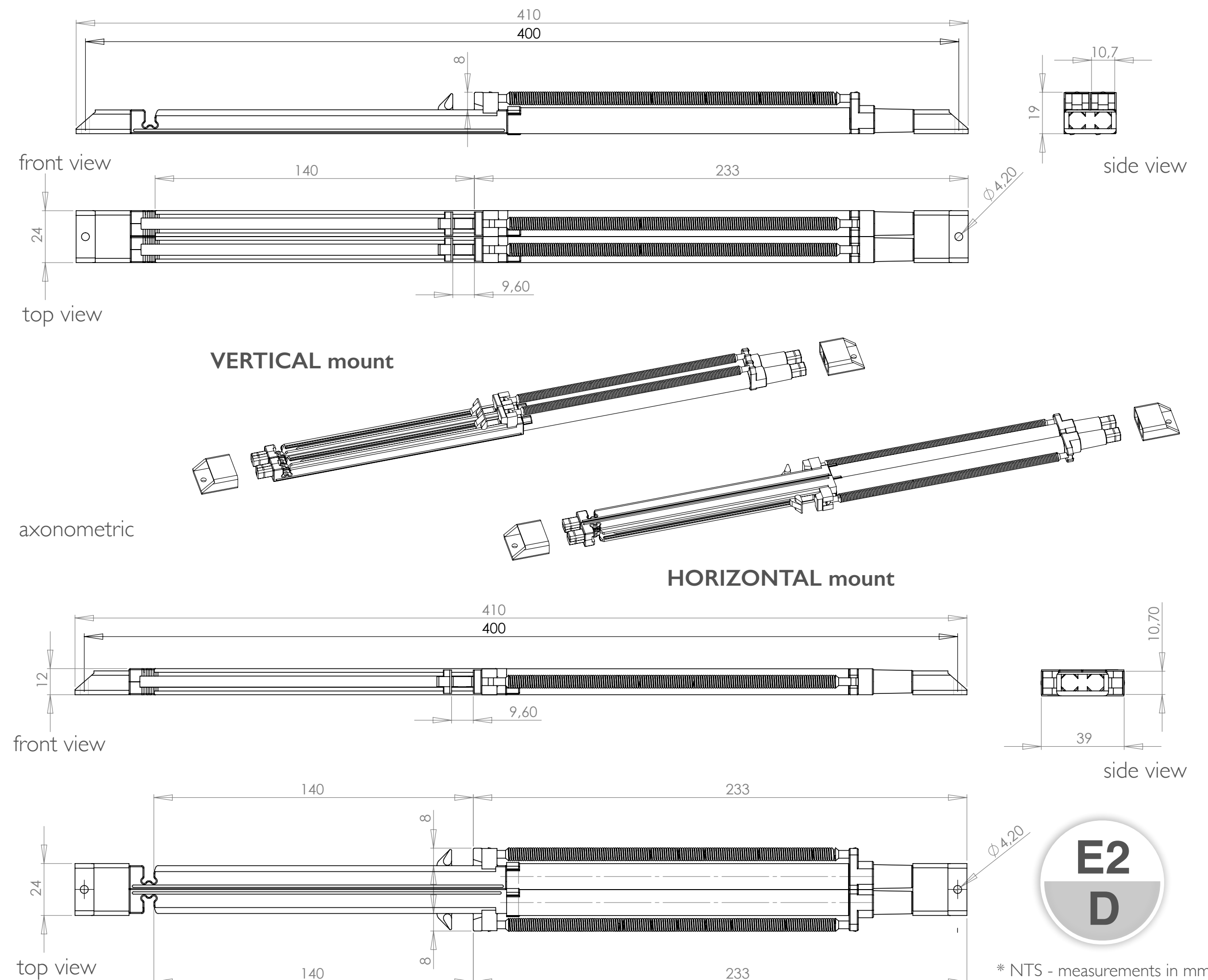
The mounting-end-pieces allows a fixed positioning of the dampers next to each other. Screw-mounting onto the profile is facilitated by holes in the end-pieces.

Damper Integrated	E2F11	E2F13
Door Weight in Kg	80-100	100-140
Damping Force \approx *	80-100 N	80-100 N
Spring Model	F11	F13+
F1 Closing Force	24 N	30 N
F2 Opening Force	42 N	64 N

The spring load ratings vary with ± 2 N • Opening force is measured at 130 mm

* (in one direction)

An aluminium base plate available as an option. Trigger pins need to be customised.



series

E2

OTIUM





E3
LT

E3-LT *Light*

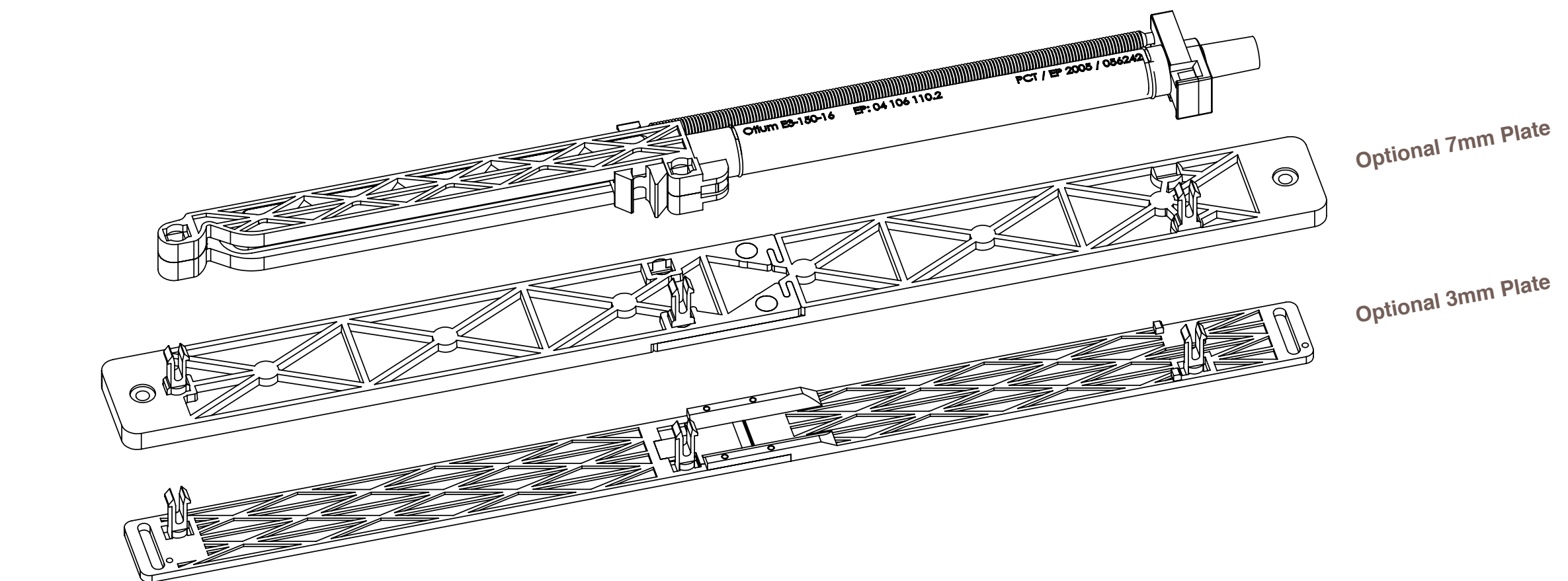
Dampers from the „Light“-series cannot be adjusted for load, therefore, they are priced lower than the other models in the E3 series.

The spring load rating of the „LT60N“ („or LT80N“) is determined such that a door with a maximum door weight of 25 kg (50kg for LT80N) can be cycled up to 40 000 times, with the damper still functioning as per specification thereafter.

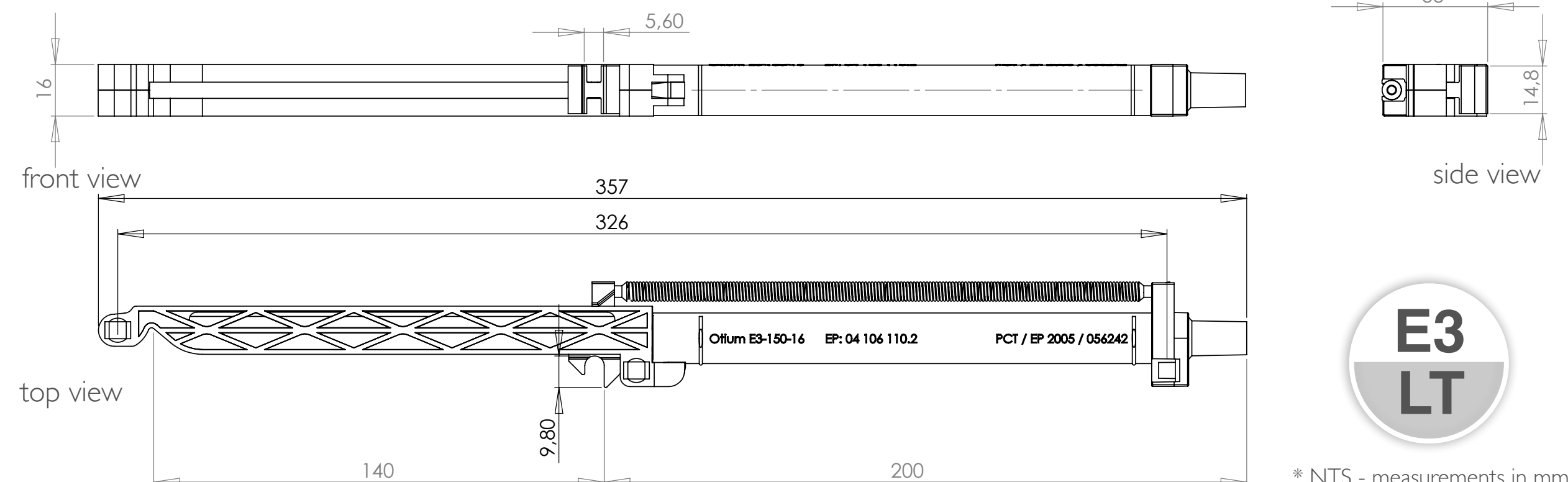
On request, springs with a higher force rating (closing capacity) can be supplied as an extra.

Damper Model	E3 LT60N	E3 LT80N
Door Weight in Kg	10-25	25-50
Damping Force \approx	60 N	100 N
Spring Model	F6	F9
F1 Closing Force	7 N	10 N
F2 Opening Force	15 N	21 N

The spring load ratings vary with ± 2 N • Opening force is measured at 130 mm



axonometric



* NTS - measurements in mm

series

E3

OTIUM





E3
ST

E3-ST Standard

The spring load rating of the „ST60N“ („or ST90N“) is determined such that a door with a maximum door weight of 25 kg (or 50 kg for the ST90N) can be cycled up to 40 000 times, with the damper still functioning as per specification.

Adjusting the variable set screw has no effect on the closing of the door, but only regulates the damping strength (force).

Caution: The screw must not be rotated/adjusted too far (see below)!

On request, springs with a higher force rating (closing capacity) can be supplied as an extra.

Damper Model	E3 ST60N	E3 ST90N
Door Weight in Kg	0-25	25-50
Damping Force \approx	60 N	100 N
Spring Model	F6	F9
F1 Closing Force	7 N	10 N
F2 Opening Force	15 N	21 N

ST60N



Factory setting ca. 60 N.
Adjustment: anti-clockwise for less damping. (no damping after about 300° turn)

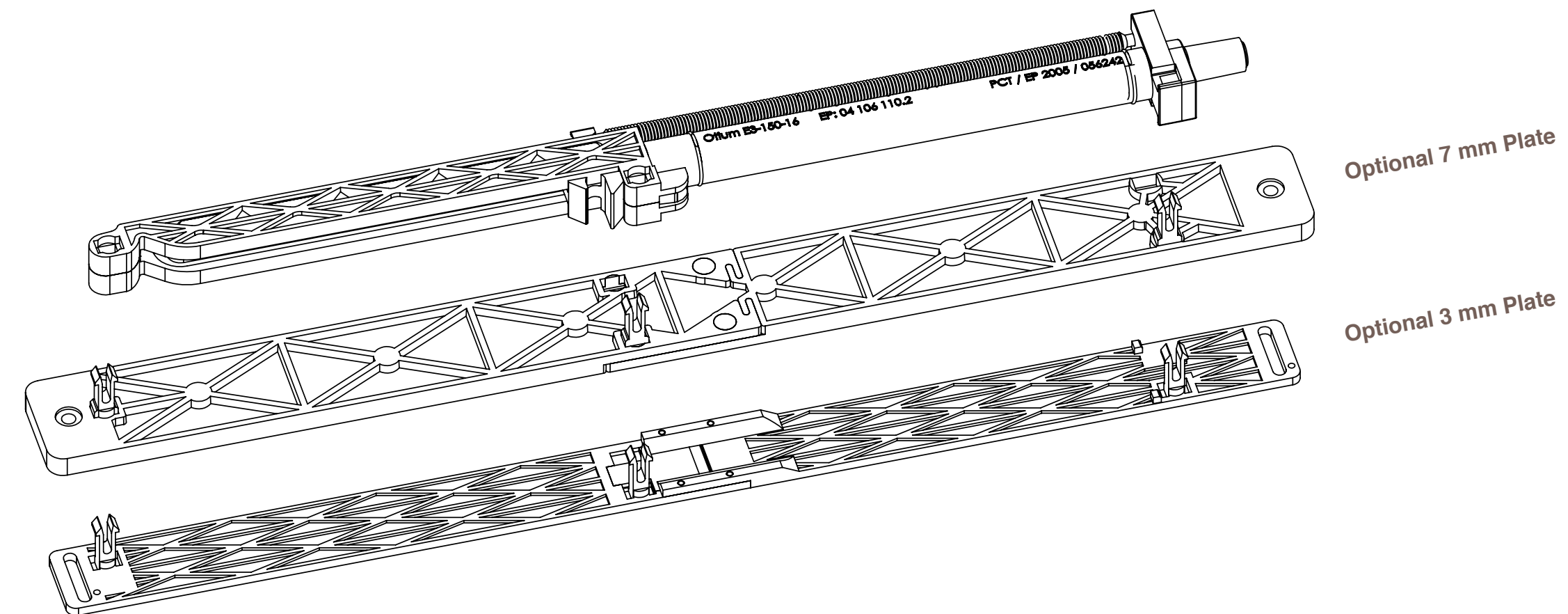
Suited for fine adjustment when used on light doors

ST90N

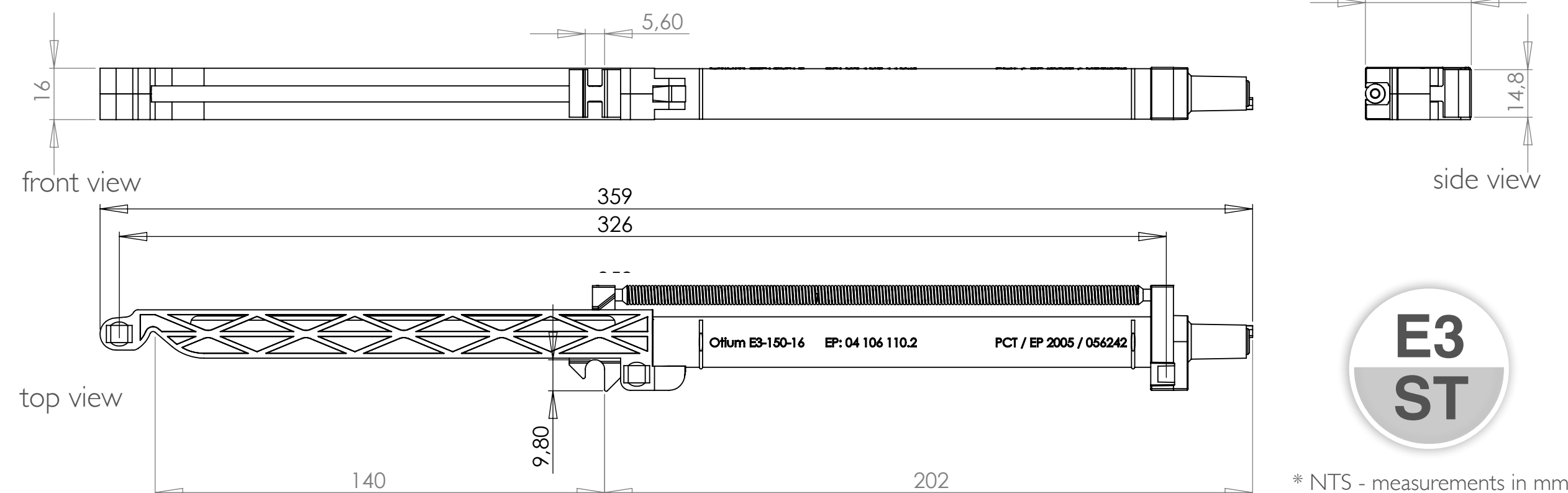


Factory setting ca. 100 N.
Only adjust when more or less damping force is required (± 5 N per half turn)

The spring load ratings vary with ± 2 N • Opening force is measured at 130 mm



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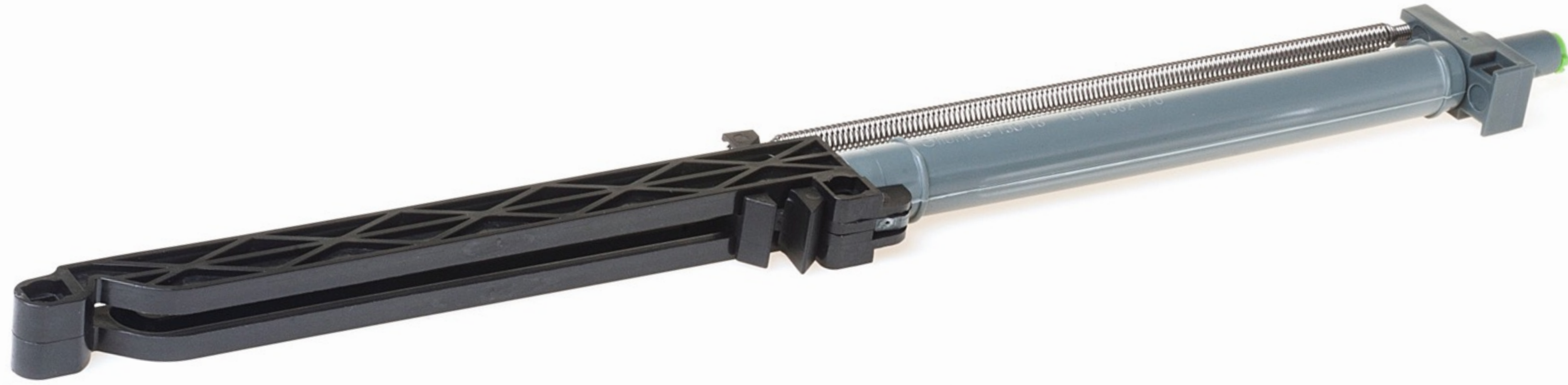


* NTS - measurements in mm

series

E3

OTIUM





E3 HV

E3-HV Heavy

This damper is fitted with 2 springs.

The spring load rating of the „HV70N“ („or HV90N“) is determined such that a door with a maximum door weight of 70 kg (or 100 kg for the HV90N) can be cycled up to 40 000 times, with the damper still functioning as per specification.

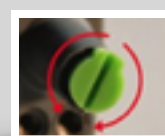
Adjusting the variable set screw has no effect on the closing of the door, but only regulates the damping strength.

Caution: The screw must not be rotated/adjusted too far (see below)!

On request, springs with a higher force rating (closing capacity) can be supplied as an extra.

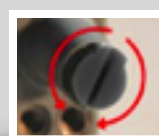
Damper Model	E3 HV70N	E3 HV90N
Door Weight in Kg	40-70	70-100
Damping Force \approx	90 N	110 N
Spring Model	1x F6 + 1x F9	1x F9 + 1x F11
F1 Closing Force	17 N	22 N
F2 Opening Force	35 N	48 N

HV70N



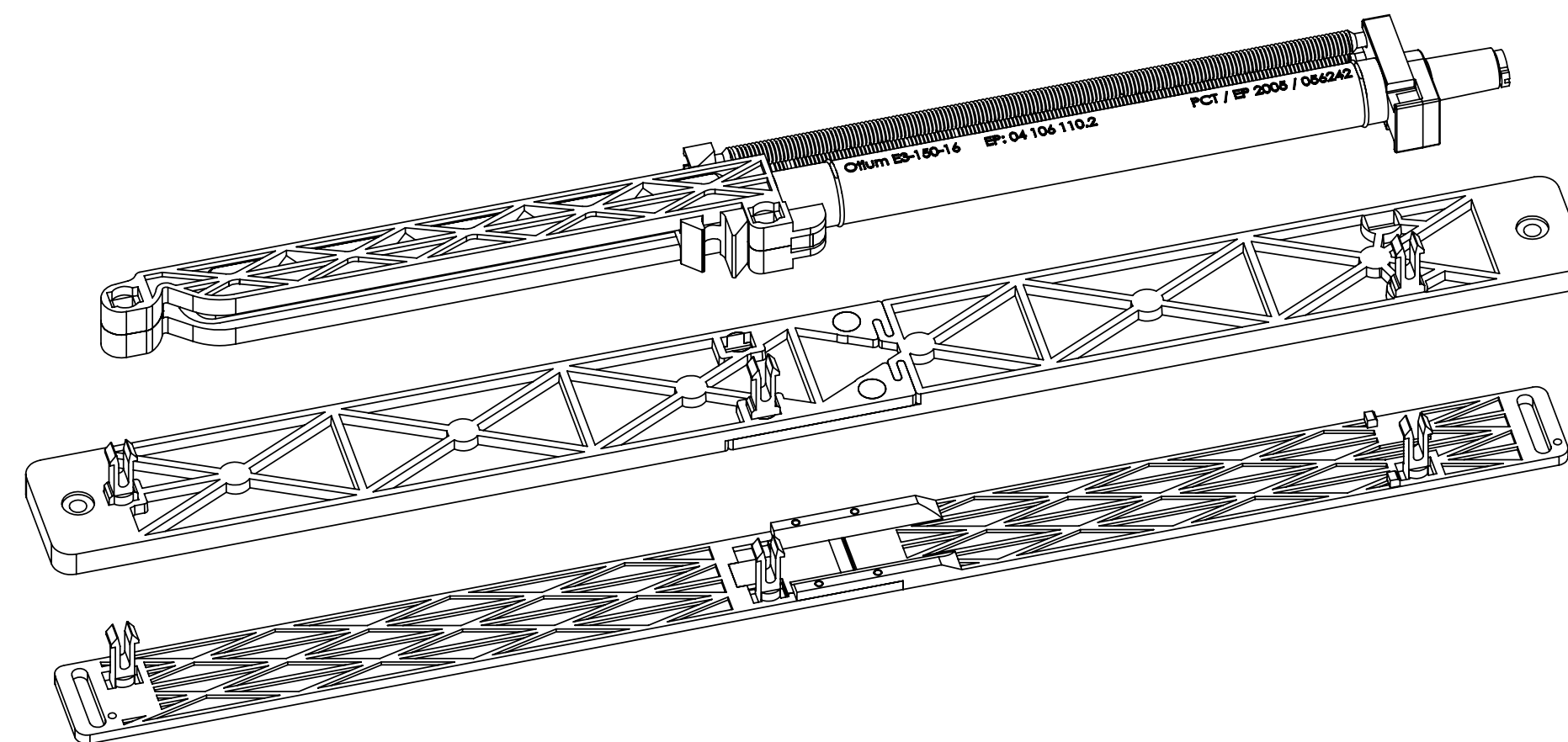
Only adjust when more or less damping force is required (± 5 N per half turn)
Factory setting ca. 90 N.

HV90N



Only adjust when more or less damping force is required (± 5 N per half turn)
Factory setting ca. 110 N

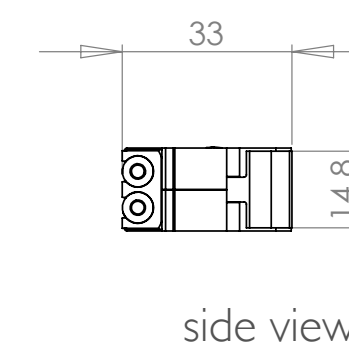
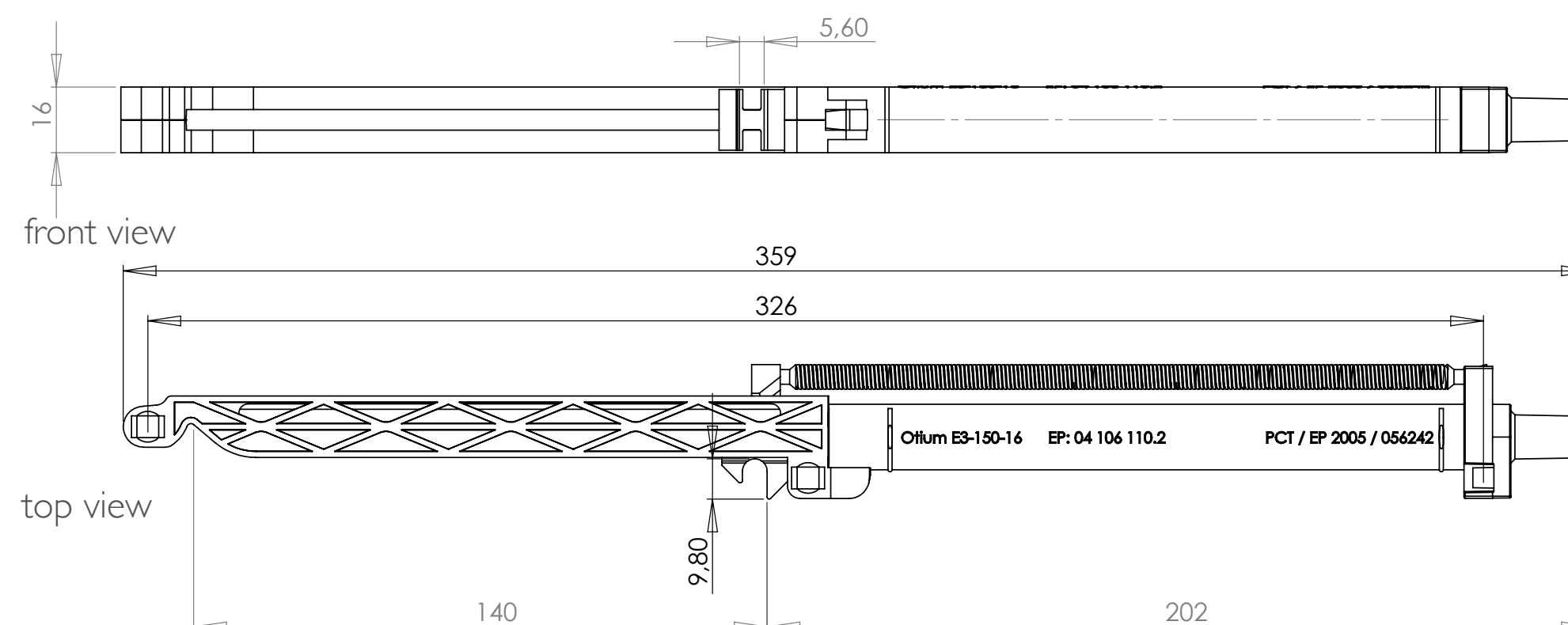
The spring load ratings vary with ± 2 N • Opening force is measured at 130 mm



Optional 7 mm Plate

Optional 3 mm Plate

axonometric



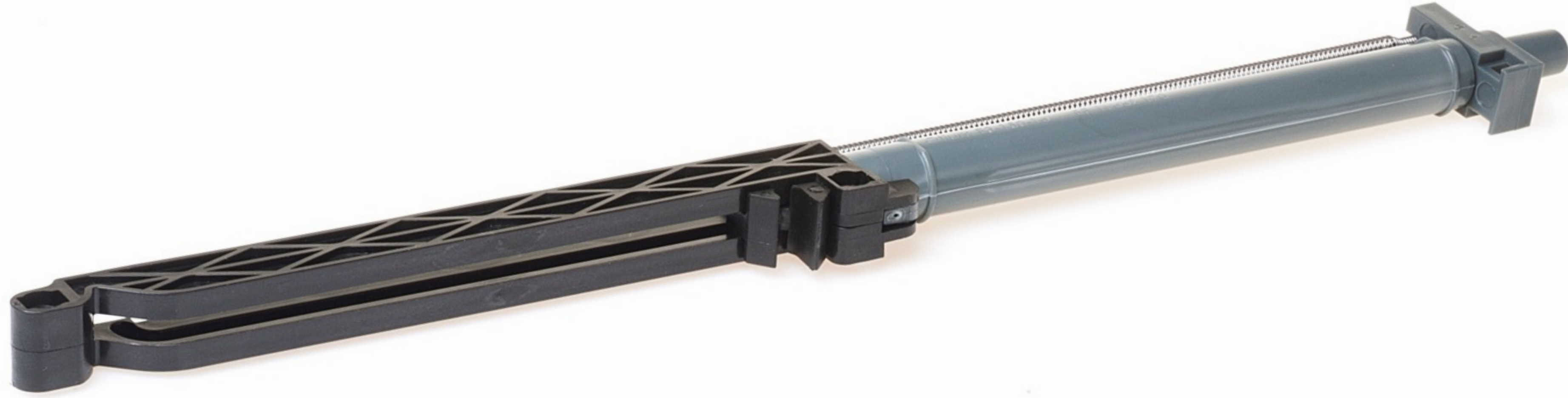
E3 HV

* NTS - measurements in mm

series

E3

OTIUM





E3
M

E3-M *MODO*

This Allround damper was developed for damping and closing doors of 20 to 80 kg in weight.

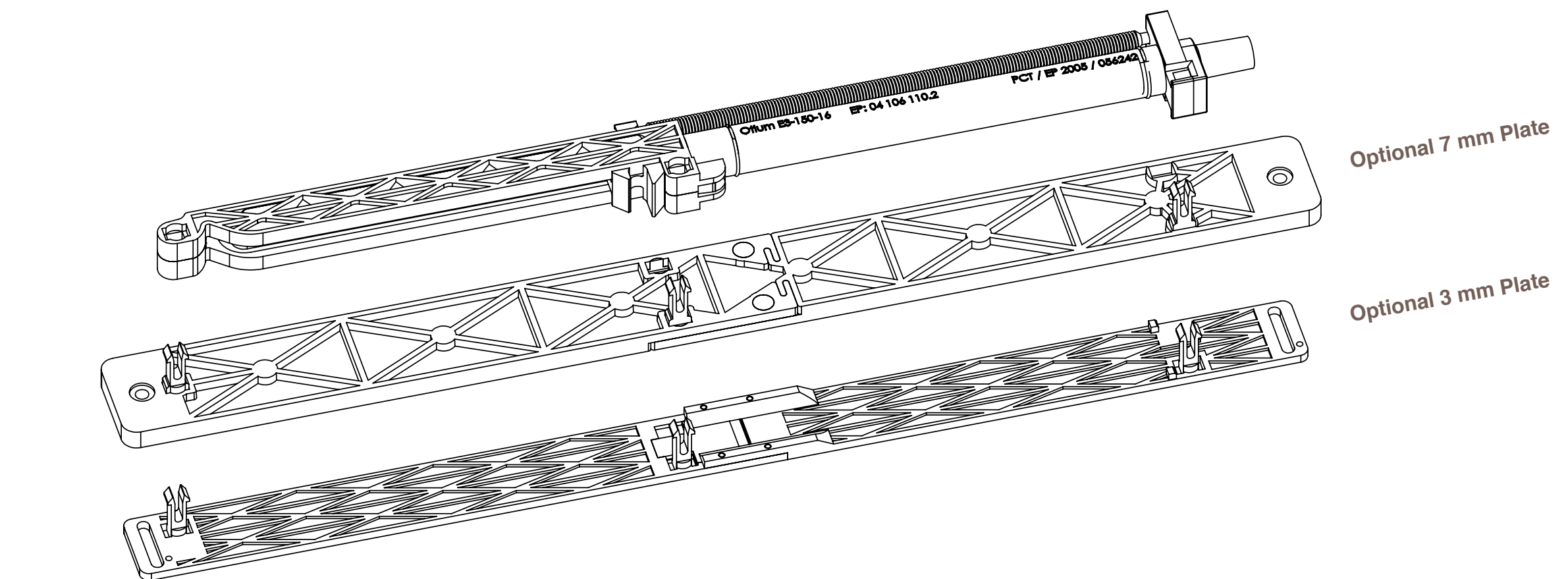
The damper comes standard with a light spring (with a force rating of 9 Newton).

On request, a stronger F11 (11 Newton) spring can be supplied as an extra, which can then easily be exchanged, when needed.

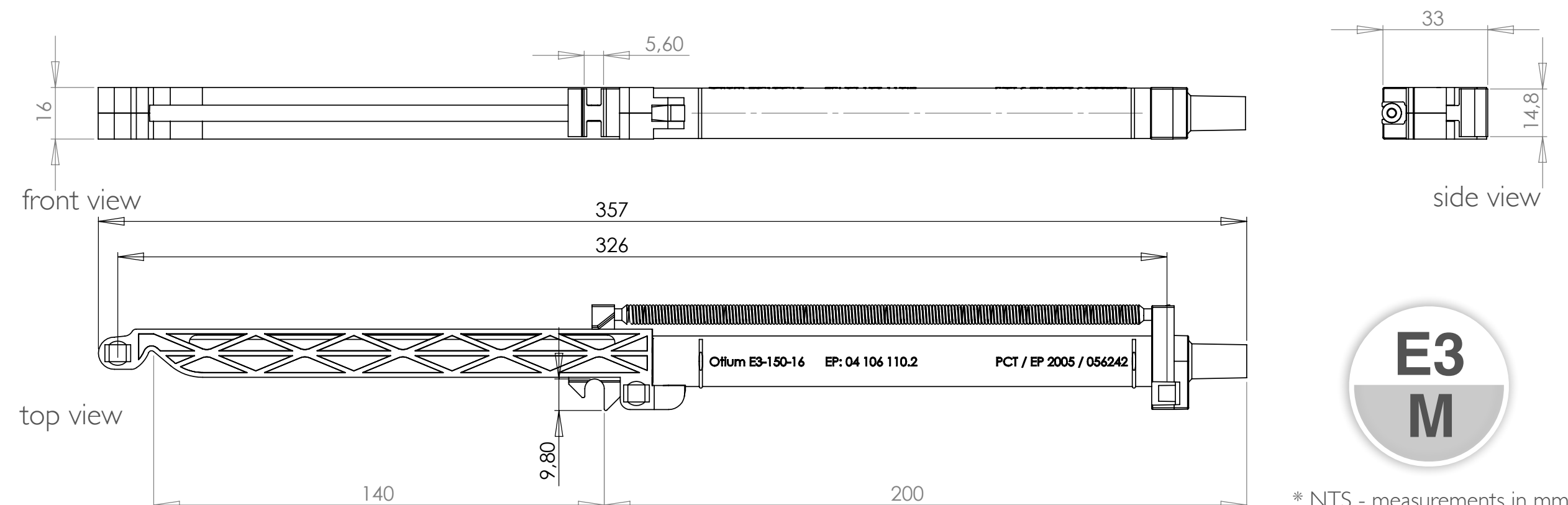
This could be necessary when the door weight is heavier than initially specified or aspects of the construction (like sloping floors or ceilings) create extra friction or drag on the system.

Damper Model	E3 M F9	E3 M F11
Door Weight in Kg	20-50	50-80
Damping Force \approx	110 N	110 N
Spring Model	F9	F11
F1 Closing Force	10 N	12 N
F2 Opening Force	21 N	27 N

The spring load ratings vary with ± 2 N • Opening force is measured at 130 mm



axonometric



* NTS - measurements in mm

series

E3

OTIUM



With correct installation, functionality to specification has been tested and measures over 40 000 cycles.

* NTS - measurements in mm

glossary



Activator

Pin which engages with the damper catch claw to engage or disengage damping and prime or release the soft close damper spring when opening or closing a sliding door

Actuator

See **Activator**.

All-in-1 System

A Soft-close damping system where any door can be damped in all directions and centred where needed by only using one central activator per door.

Anti-Settlement Plate

A mounting plate specifically designed to allow dampers to be horizontally mounted inside upper guiding tracks. This allows for an effective height adjustment range, without compromising the stability of the pin - catch claw connection and seating. By extending the pin through the catch claw, there will be no need to re-adjust the door when settlement occurs.

Architectural Door

A sliding door system where a door hangs off a track with rollers – as opposed to sliding („standing“) on bottom rollers with a guide track along the top and bottom.

A **Hanging- or Suspended Door** system allows for a wider range of door leaf designs to be used on a sliding system – in particular suited for once-off, purpose-made or designer doors. Settlement is less of a problem on hanging doors.

Soft-close damper systems are usually mounted on top of the door or (hidden) on roller trains inside the upper guiding track.

AS-Plate

See **Anti-Settlement Plate**.

Bottom Rail

See **Floor Track**.

Bottom Rollers

Rollers at the base of a „bottom rolling“ sliding door system. These normally run in a guide track and carry the weight of the door.

Bottom Rolling Door

A sliding door system where the door leaf rolls (in a guiding track) on rollers attached to the underside of the door. The top of the door is fitted with rollers which guides the door along a top mounted guide track/profile.

Soft-close damper systems are usually mounted on top of the door or in the upper guiding track/profile.

Bottom Track

See **Floor Track**.

Box Track

See **Hanger**.

Catch

See **Catch Claw**.

Catch Claw

A claw-like latch that tilts or swivels in order to release or engage the actuator and prime or trigger the damper spring. The claw is normally at the end of a rod which plunges into the damper cylinder (when a sliding door is damped). Bigger catch claws allow pins to engage effectively when building structures move due to foundation settlement or when doors are out of alignment or slide in skew or buckled tracks.

Catch Gap

See **Catch Claw**.

Claw Hand

See **Catch Claw**.

Cycle

A cycle is one complete opening and closing action of a sliding door.

Dual Direction Damper

A damper unit that allows damping and soft closing in both directions – to the “closing” and the “opening” side of a sliding door.

Drive Post

See **Activator**.

Drive Arm

See **Activator**.

Double Track

Same channel design as with a **Track**, but two channels/tracks side by side.

Damper Spring

The two main functions of a soft-close damper are damping (slowing down a door) and then closing the door. Normally the energy needed to close a door (F1) derives from - and is stored in a damper coil spring.

When opening the door, the spring is extended/ primed/loaded (F2). On closing, the spring contracts when the pin triggers the damper catch claw.

Door Handle Profile

The vertical components making up the frame on the left and right side of a sliding door leaf. Normally extruded in aluminium with grooves to hold the door leaf panelling and attachment to upper and lower door profiles.

Door Leaf

The part of the door which opens. Often made up of panels. Weight of the door panel relates directly to correct soft-close damper matching.

Door Profile

The upper or lower (cross member part) that makes up the frame of a door. Normally extruded in

aluminium with specific design features to allow easy assembly, structural stability and slots for attaching roller guides, rollers and soft-close damper components. In the case of a bottom rolling door, the upper door profile fits and slides in the upper guide track. Some door leaf types do not have upper or lower door profiles.

Door Panel

The part of the door that mostly is mounted inside or held by framing support sections. Panels can be one single leaf or made up of several sections separated by horizontal rails or mullions (cross support sections). Some door panels only have door handle profiles on the left and right sides.

Extension

The distance a damper arm/rod travels – between open (primed) and closed positions. A longer travel distance allows for smoother transition and damping, as well as less force needed when opening doors (priming dampers F2).

Floor Track

A profile guide (normally extruded aluminium) at the base of a „bottom rolling“ sliding door system. It has rails or grooves to guide the bottom rollers, which carry the door weight.

Floor Guide

See **Floor Track**.

FRP

Fibre Reinforced Polymer

Grip

See **Catch Claw**.

Guide Rollers

See **Top Rollers**.

Guiding Rollers

See **Top Rollers**.

Guide track

See **Track**.

Hanger

A metal (normally U-shaped aluminium or steel) extruded or rolled profile from which sets of rollers can hang – thereby suspending a sliding („Architectural“) door. This track is mounted along the wall above a door opening or on the door top jamb of a pocket sliding door.

Hanging Door

See **Suspended Door**.

Hook

See **Catch Claw**.

Horizontal Mount

See **Side Mount**.

Jamb

The vertical sides of a sliding door opening or door frame (exterior doors). A soft-close damper pulls a door closed into the jamb.

Latch

See **Catch Claw**.

Load

See **Prime**.

Middle damper

A damper unit which positions the middle door(s) on the exact centre point needed to close the door when it is part of a 3 (or more) door leaf system. The middle door can be opened in both directions – to the left or to the right. Not for damping of doors at opened or closed position.

Mounting Accessories

See **Mounting Parts**.

Mounting Adapter

Adapters which are specifically designed to allow easy fitting/mounting of soft-close dampers on a particular sliding door system or guide track.



Mounting Plate

A mounting plate makes it easier to install and attach soft-close damper hardware to a sliding door system – especially when mounted on a narrow door profile. The plate also provides structural stability to dampers without bulky housings – e.g. on a suspended sliding door system when dampers are mounted inside box tracks.

Mounting Parts

Adapters and accessories specifically designed to allow easy fitting/mounting of soft-close dampers on a particular sliding door system or guide track. These parts can also provide the basis for a modular damping system – allowing flexibility, simplicity and cutting costs.

Multi Track / Multi-track

Same channel design as with a **Track**, but with two or more channels/tracks next to each other.

Pin

Post which engages with the damper catch claw to engage or disengage damping and prime or release the soft close damper spring when opening or closing a sliding door.

Pocket Door

A sliding door which is mounted inside a wall – as opposed to along an opening in a wall. Often used in dry-wall constructed spaces.

Prime

Sliding the **Catch Claw** along its rails into a cradled position - where it has extended/tensioned the spring and by tilting over releases the pin – so that a sliding door can roll into an opened position. This happens automatically when a door is opened. The damper is then in a „primed“ state.

Profile

See **Track**.

Roller Bogie / Hanger Bogie

A trolley-like assembly or chassis - in suspended

track sliding door systems - which connects, holds and guides the roller wheels which run on or in a track and carries the weight of doors hanging off it on bolts or pins. A soft-close damper can be fitted into this assembly.

Roller Train

See **Roller Bogie**.

Rolling Damper

See **Roller Bogie**.

Rollers

Rollers mounted at the bottom and top of a bottom rolling sliding door system or inside/on a guide track in a suspended sliding door system. The rollers carry the weight of the door – and additionally run in a guide track at the top of the door (in case of a bottom rolling sliding door system).

Rolling Door

See **Bottom Rolling Door**.

Rolling Resistance

The friction that acts on rollers when a sliding door is moved/rolled. Quality (manufacturing tolerances) and materials used in components of a sliding door system can greatly influence the rolling resistance and thereby indirectly add considerable „weight“ to a door. Matching the wrong damper class as a result, will lead to problematic soft-close damping.

Rolling resistance can easily be measured by using a push/pull Newton scale.

SAFE-Loc

With OTIUM soft-close dampers, SAFE-Loc is a specific design function and stands for (SAFE) Spring Anti- Fatigue Efficiency - Locking system. This feature eliminates the effects of **Spring Creep** and **Spring Fatigue** and enable dampers to close doors effectively – even if dust and dirt change the rolling friction of a sliding door system.

In a cylinder stroke, near the end of the damping phase, the damping resistance is designed to fall away completely, so that the rated spring force can close the door perfectly.

Settlement

A construction term for movement (usually downwards) in construction elements of built spaces – often caused at foundation level. Drying and wetting of soils and heavy structures pushing down on badly compacted soil can cause movement in built elements. Also timber contracts or expands due to ageing or damp issues. Settlement often cause normal swinging doors to sag or stick.

All of the above can change mounting tolerances of doors and thus create complications for effective damping and soft-closing.

Side Jamb

See **Jamb**.

Side Mount

A damper mounted with the catch claw pointing sideways – so that the pin has space to extend (up or down) „through“ the claw – thereby allowing ample movement in structure up or down (e.g. when settlement becomes an issue) without compromising the pin-catch claw engagement. This ensures effective damping over a long period – without the need to re-adjust doors or dampers.

Soft Close / Softclose / Soft-close

The closing action is dampened and then the door closed gently. Normally a cylindrical damper filled with air, fluid or gas which absorbs the kinetic energy of a sliding door in order to slow it down and prevent it from slamming into the door jamb, when closing. Mostly it also has a spring which is used to pull the door closed - once it has been dampened.

Soft Stop / Softstop / Soft-stop

See **Soft Close**.

Soft Brake / Soft-brake / Softbrake

See **Soft Close**.

Spring Fatigue

Over time, corrosion, wear, stress and shock loading (when extending and contracting a coil spring) can cause a spring to lose up to about 10-20% of its strength. When a soft-close damper spring becomes weaker, it loses the ability to close (F1) the final few millimetres of a door – this is when the spring is contracted in its now longer „fatigued“ state.

Good soft-close dampers are designed to compensate for **Spring Fatigue**.

Spring Creep

Similar to **Spring Fatigue**. Happens on a molecular level over time and is influenced by temperature and stress. Creep also relates to the melting temperature that a metal was formed at. Different metals and alloys will have different creep characteristics.

Spring Force

Spring force is governed by Hooke's law and measured in Newton (N).
(F1 = Closing Force / F2 = Opening Force)

Stroke

See **Extension**.

Suspended Door

A sliding door system where a door hangs off a track with rollers – as opposed to sliding („standing“) on bottom rollers with a guide track along the top and bottom.

A **Hanging- or Suspended Door** system allows for a wider range of door leaf designs to be used on a sliding system – in particular suited for once-off, purpose-made or designer doors. Therefor the

sliding system sets are mostly sold without a door leaf. Settlement is less of a problem on hanging doors.

Soft-close damper systems are usually mounted on top of the door or (hidden) on roller trains inside the upper guiding track.

Top Hung Door

See **Suspended Door**.

Top Rollers

Rollers on the top door profile of a „bottom rolling“ sliding door system. These normally run in a guide track. The do not carry any of the weight of the door.

Track

A metal (normally U-shaped aluminium or steel) extruded or rolled profile from which sets of rollers can hang from or be guided in – thereby carrying or guiding a sliding door. This track is mounted along the top of a door opening, the door top jamb if it is a double track or on the ceiling underside when used in sliding wardrobe systems.

For bottom rolling sliding doors, tracks can also be double channelled or more – next to each other e.g. for sliding wardrobe doors.

Tracks vary in design – due to functionality required and patented systems.

Travel

See **Extension**.

Uptake

See **Extension**.

Upright Mount

A damper mounted in a position where the catch claw points upwards or downwards.

Vertical Mount

See **Upright Mount**.



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