



Damping technology

Industrial
+ Profile dampers BasicStop

THE KNOW-HOW FACTORY



"WE ARE PLEASED TO BE TAKING A MAJOR STEP INTO THE FUTURE WITH ZIMMER GROUP. THE UMBRELLA BRAND ZIMMER GROUP SYMBOLIZES OUTWARDLY WHAT WE HAVE ALREADY INTERNALIZED—THE UNITY OF PREVIOUSLY SEPARATE COMPANIES.

AS ZIMMER GROUP, OUR FAMILY-RUN ENTERPRISE CAN DELIVER EVEN GREATER VALUE AND SUPPORT FOR OUR CUSTOMERS.

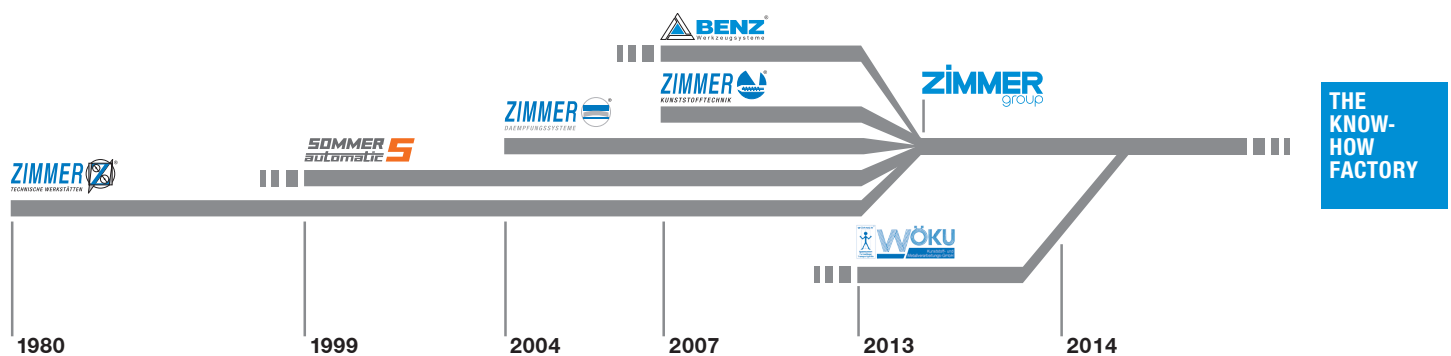
NOW AND IN THE FUTURE. CONTINUING UR INTERNATIONALIZATION, ENGAGING WITH ALL INDUSTRIES, AND SOLVING ALL TYPES OF DEVELOPMENT TASKS ARE SOME OF THE CHALLENGES THAT WE WILL OVERCOME AS THE KNOW-HOW FACTORY."

GÜNTHER ZIMMER, MARTIN ZIMMER AND ACHIM GAUSS

Managing Directors, from left to right



ZIMMER GROUP COMMITTED TO OUR CUSTOMERS



WE HAVE SUCCEEDED FOR YEARS BY OFFERING OUR CUSTOMERS INNOVATIVE AND INDIVIDUALIZED SOLUTIONS. ZIMMER HAS GROWN CONTINUOUSLY AND TODAY WE HAVE REACHED A NEW MILESTONE: THE ESTABLISHMENT OF THE KNOW-HOW FACTORY. IS THERE A SECRET TO OUR SUCCESS?

Foundation. Excellent products and services have always been the foundation of our company's growth. Zimmer is a source of ingenious solutions and important technical innovations. This is why customers with high expectations for technology frequently find their way to us. When things get tricky, Zimmer Group is in its best form.

Style. We have an interdisciplinary approach to everything we do, resulting in refined process solutions in six areas of technology. This applies not just to development but to production as well. Zimmer Group serves all industries and stands ready to resolve even unique and highly individualized problems. Worldwide.

Motivation. Customer orientation is perhaps the most important factor of our success. We are a service provider in the complete sense of the word. Even our decision to identify ourselves as Zimmer Group reflects this reality. With Zimmer Group, our customers now have a single, centralized contact for all of their needs. We approach each customer's situation with a high level of competence and a broad range of possible solutions.

TECHNOLOGIES



HANDLING TECHNOLOGY

WITH MORE THAN 30 YEARS OF EXPERIENCE AND INDUSTRY KNOWLEDGE, OUR PNEUMATIC, HYDRAULIC AND ELECTRICAL HANDLING COMPONENTS AND SYSTEMS ARE GLOBAL LEADERS.

Components. More than 2000 standardized gripper systems, positioning systems, robotools and much more. We offer a complete selection of technologically superior products that are ready for rapid delivery.

Semistandard. Our modular approach to design enables custom configurations and high rates of innovation for process automation.

Systems. We are particularly strong in providing custom system solutions for handling technologies, robotics and vacuum engineering.



DAMPING TECHNOLOGY

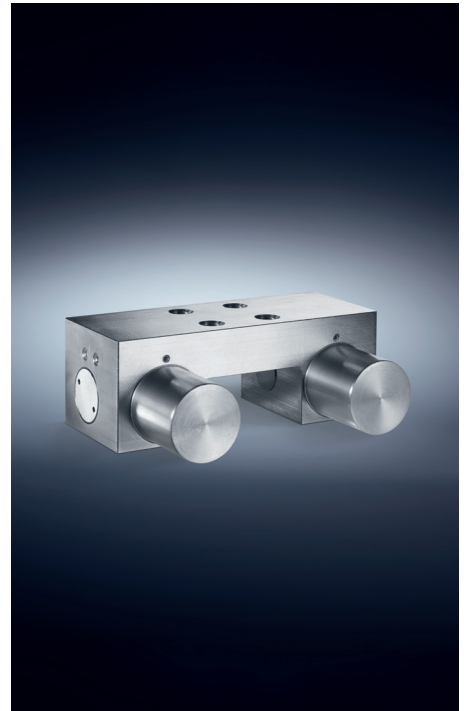
INDUSTRIAL DAMPING TECHNOLOGY AND SOFT CLOSE PRODUCTS EXEMPLIFY THE INNOVATION AND PIONEERING SPIRIT OF THE KNOW-HOW FACTORY.

Industrial damping technology.

Whether standard or customized solutions, our products stand for the highest cycle rates and maximum energy absorption with minimal space requirements.

Soft close. Development and mass production of pneumatic and hydraulic dampers with extraordinary quality and rapid delivery.

OEM and direct. Whether they need components, returning mechanisms or complete production lines – we are the trusted partner of many prestigious customers.



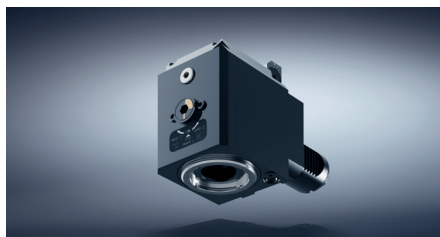
LINEAR TECHNOLOGY

WE DEVELOP LINEAR COMPONENTS AND SYSTEMS THAT ARE INDIVIDUALLY ADAPTED TO OUR CUSTOMERS' NEEDS.

Clamping and braking elements.

We offer more than 4000 types for profiled and rounded rails as well as for a variety of guide systems from all manufacturers. It makes no difference whether you prefer manual, automatic, electric or hydraulic drive.

Individualized systems. The unique functionality and precision of our clamping and braking elements open up numerous possibilities for custom applications such as active or semi-active braking and damping.



PROCESS TECHNOLOGY

MAXIMUM EFFICIENCY IS ESSENTIAL FOR SYSTEMS AND COMPONENTS USED IN PROCESS TECHNOLOGY. HIGH-LEVEL CUSTOM SOLUTIONS ARE OUR TRADEMARK.

A rich reservoir of experience. Our know-how ranges from the development of materials, processes and tools through product design to production of series products. Challenge us!

Deep production capabilities. The Zimmer Group pairs these capabilities with flexibility, quality and precision, even when making custom products.

Series production. We manufacture demanding products out of metal (MIM), elastomers and plastics with flexibility and speed.

TOOLING TECHNOLOGY

ZIMMER GROUP DEVELOPS INNOVATIVE WOOD AND METAL PROCESSING TOOL SYSTEMS FOR ALL INDUSTRIES. NUMEROUS CUSTOMERS CHOOSE US AS THEIR SYSTEMS AND INNOVATION PARTNER.

Knowledge and experience. Industry knowledge and a decades-long development partnership for exchangeable assemblies, tool interfaces and tool systems predestine us for new challenges around the world.

Components. We deliver numerous standard components from stock and develop innovative, customized systems for OEM and end customers – far beyond just the metal and wood processing industries.

Variety. Whether you have machining centres, lathes, or flexible production cells, the power tools, holders, assemblies and drilling heads of Zimmer Group are ready for action.

MACHINE TOOLING TECHNOLOGY

AS A DRIVING FORCE IN OUR INDUSTRY, WE DELIVER HIGH-VALUE SOLUTIONS IN THE FIELD OF MECHANICAL ENGINEERING, FULLY ACCORDING TO THE NEEDS OF OUR CUSTOMERS.

Development partner. We accompany you from brainstorming to inspection of the final machine, always according to your expectations.

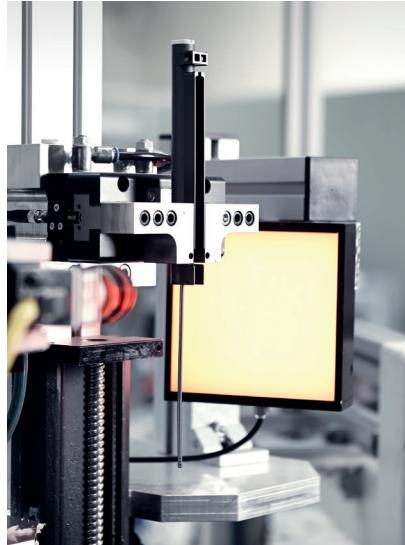
Components. We deliver series products and modules, five-axis heads, motor spindles, gearbox swivelling heads, add-on assemblies and motors.

Systems. The Know-how Factory stands for solutions in the fields of mechanical engineering systems, specialty solutions, custom assemblies and mechanical modules. We manufacture and configure multiple-spindle and large-angles as well as large boring heads.

THE KNOW-HOW FACTORY



**HANDLING
TECHNOLOGY**



**DAMPING
TECHNOLOGY**



**LINEAR
TECHNOLOGY**



**PROCESS
TECHNOLOGY**



**TOOLING
TECHNOLOGY**



**MACHINE TOOLING
TECHNOLOGY**



PROFILE DAMPERS

BASICSTOP



BasicStop Axial Standard

Zimmer Group is expanding its product portfolio for hydraulic damping in the area of material damping with the addition of its new BasicStop profile dampers, underscoring the company's presence as a full-range supplier in the area of damping technology in the process.

These profile dampers feature high-performance plastic and a specially developed shape. The plastic comes from a group of thermoplastic elastomers on a copolyester base (TPC). This plastic acquires its unique properties after receiving a special treatment. These properties allow it to absorb large amounts of energy even under the toughest conditions while also achieving high damping rates. In addition, the uniquely developed shape of these profile dampers enables unlimited, customer-specific adjustment of the characteristics (force-stroke curve).

Unlike hydraulic industrial shock absorbers, material dampers do not damp 100 % of the impact energy. Instead, they convert just a specific percentage of the kinetic energy into heat. This is called the damping percentage. The residual energy, on the other



hand, is stored in the material as spring energy, which is released again when the damper is reset, what causes a rebound. Conventional rubber pads only have a very small damping percentage and are really more of a spring than a damper. Use of these pads hardly takes any kinetic energy from the system, which in turn can lead to damage to the system. In addition, after certain periods of time the plastics may fail due to settling losses, creep behavior, media incompatibility or overloading.

This is the area where BasicStop profile dampers are setting new standards in the realm of material damping. With damping rates between 30-75 % depending on the speed, this is where profile dampers achieve values never imagined before. Due to the high durability of the material, they also do not show any signs of failure even under the harshest conditions. Because of the processed material, the profile dampers show an extremely high resistance against water, sea water, ultraviolet light, ozone, oil, grease and other hydraulic medias, whereby in contrast to rubber there is no moisture expansion, decomposing or embrittlement of the material. Therefore unnecessary costs for replacement and maintenance are obmitted. In addition, the dampers are RoHS- and Reach-compliant, PWIS-free as well as clean room compatible.

Also one ecological benefit of these dampers is that the thermoplastic properties of TPC make them 100 % recyclable using a special melting and reprocessing procedure.

In addition, BasicStop dampers from Zimmer provide full compatibility with common profile dampers on the market. By bundling the Zimmer Group's expertise and in-house production, however, there is a considerable price advantage. As a result, even custom solutions can be implemented for you as quickly as possible.



BasicStop Radial Standard



BasicStop Axial Advanced

PROFILE DAMPERS

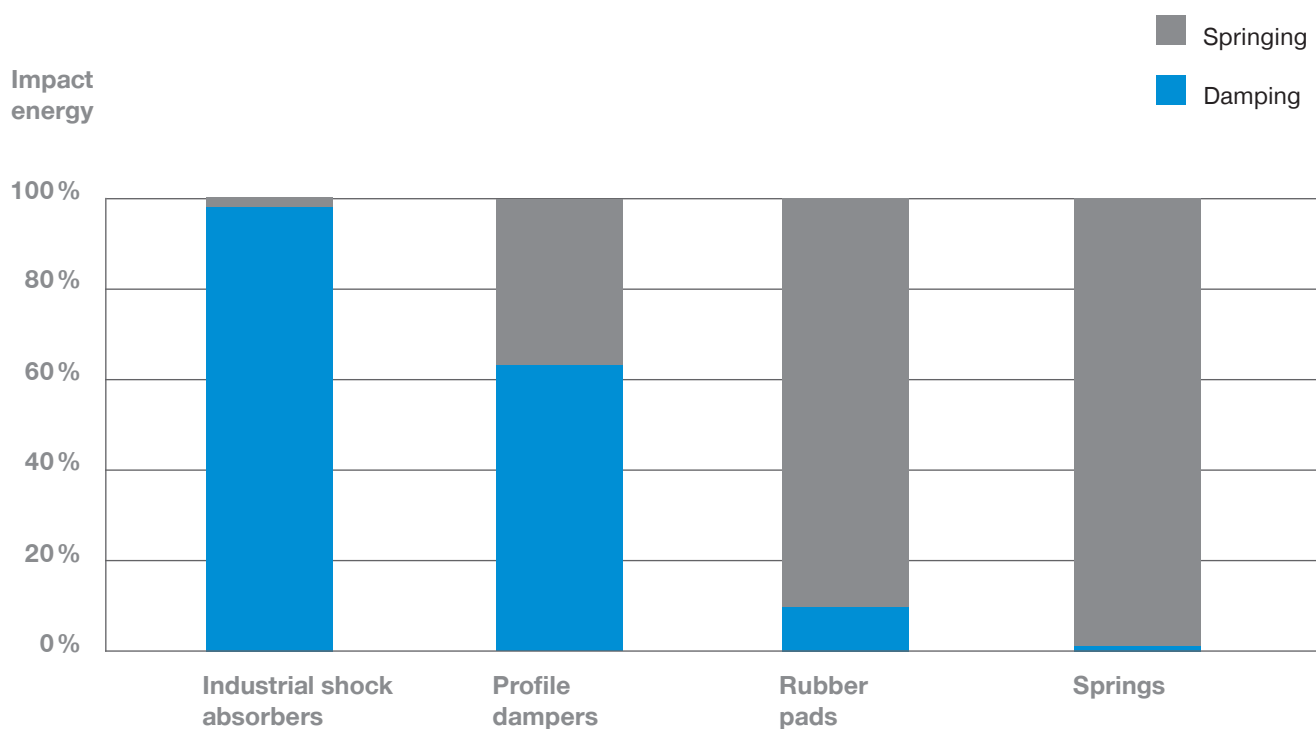
BASICSTOP



- High energy absorption at a high damping rate
- High durability and resistance to all media
- Three series in various sizes and hardness grades
- Expertise in design and production at Zimmer – customized designs are possible
- Its molecular structure and geometric design with memory effect are matched to the application area
- Thermoplastic elastomer on a copolyester base (TPC)

PRODUCT COMPARISON

DAMPING VS. SPRINGING

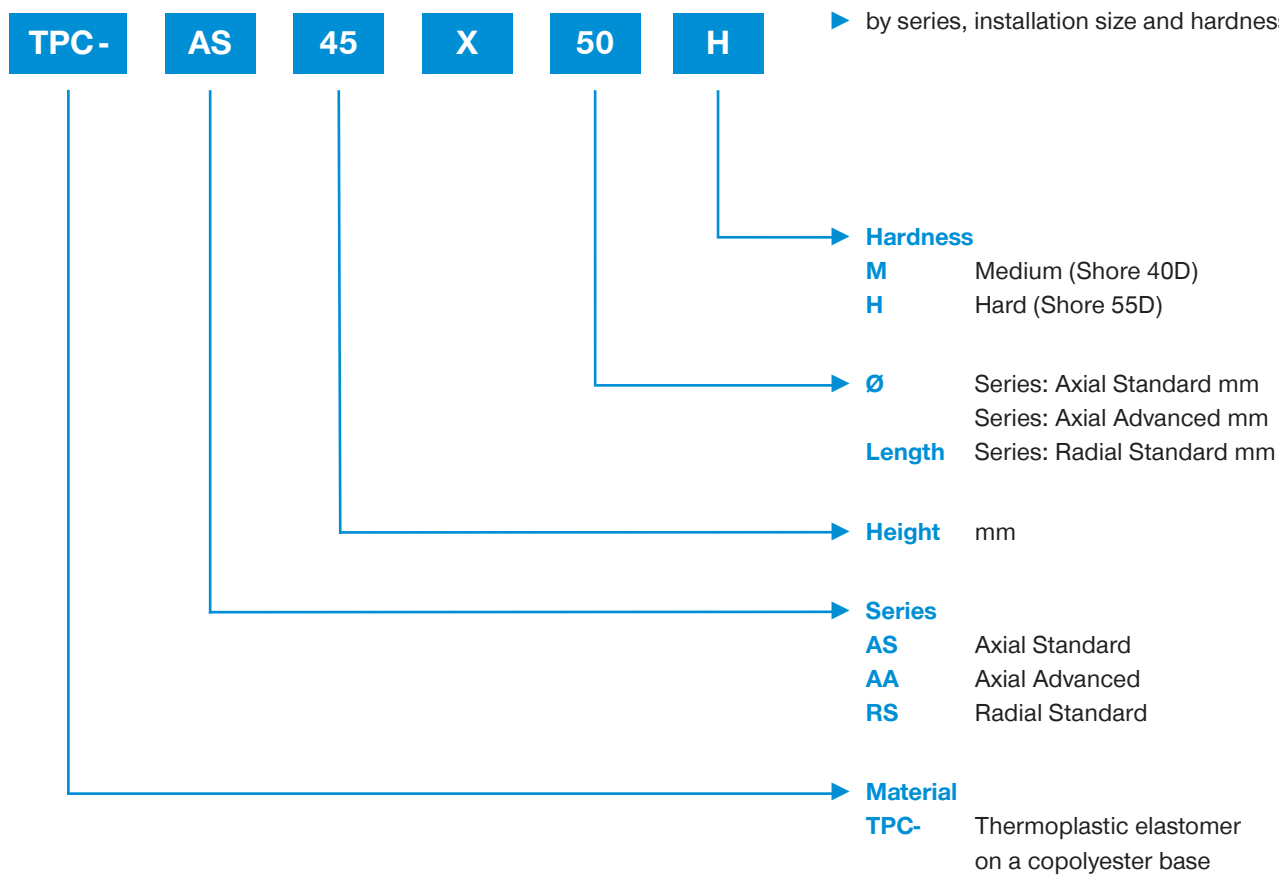


PRODUCT KEY

PROFILE DAMPERS

Selection of profile dampers

- by series, installation size and hardness

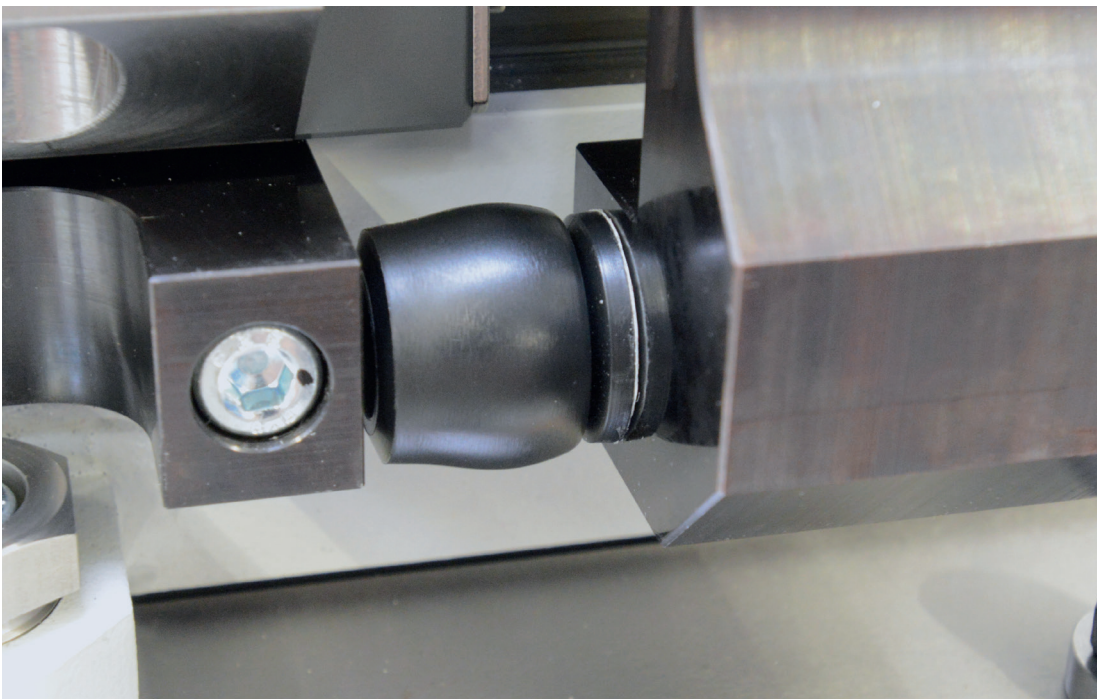
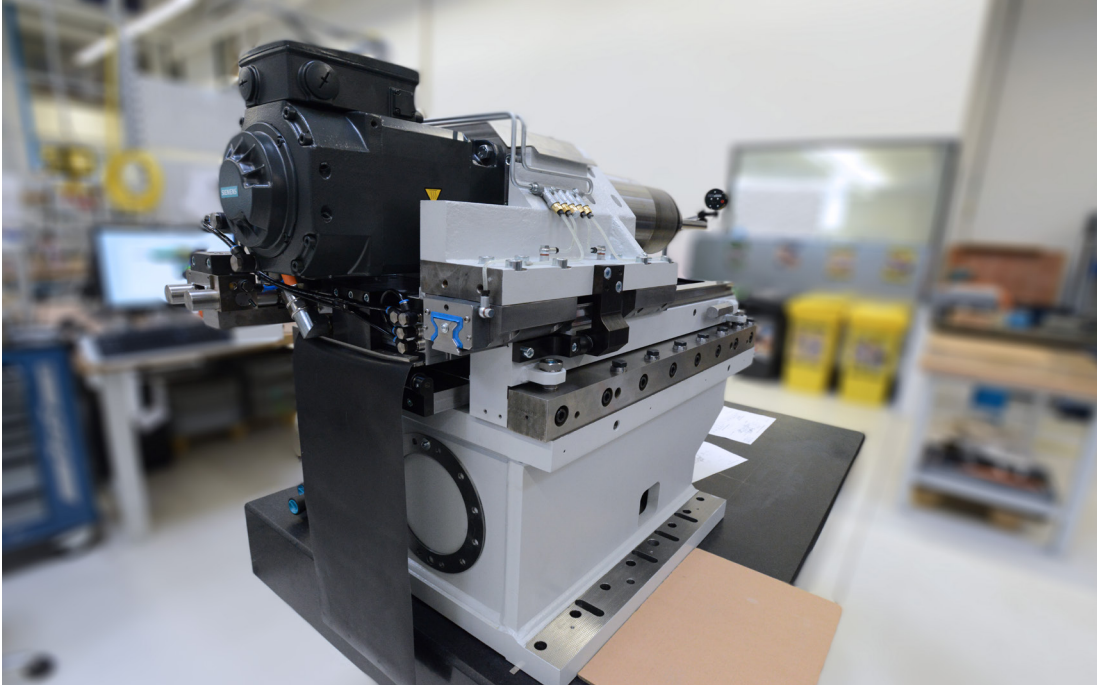


Notes:

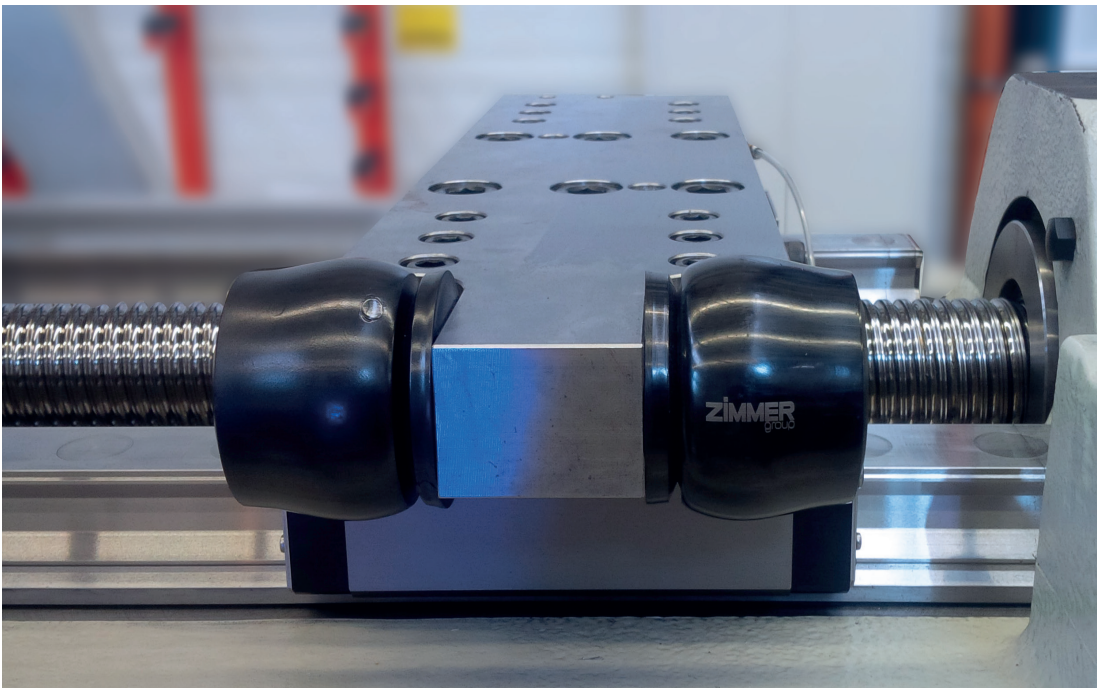
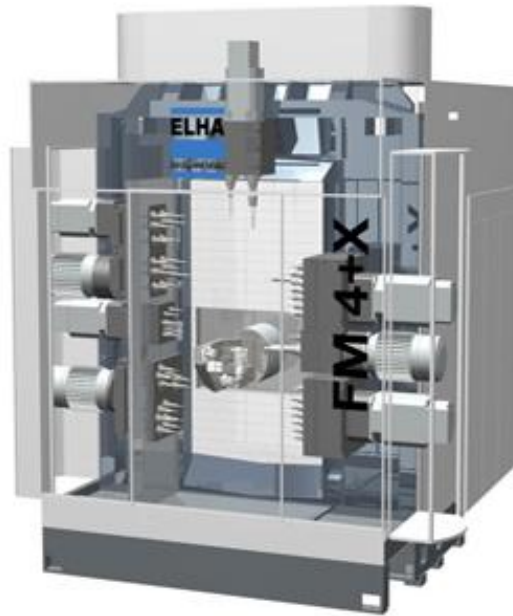
- Delivery includes a special screw for a simple and save installation
- Energy absorption and impact speed can be determined by the help of the formulas and calculations in this catalogue

APPLICATION AREAS

BASICSTOP PROFILE DAMPERS



- Emergency stop protection in the movement axis of a spindle tailstock



- End-position damping in the linear axes of production modules from ELHA

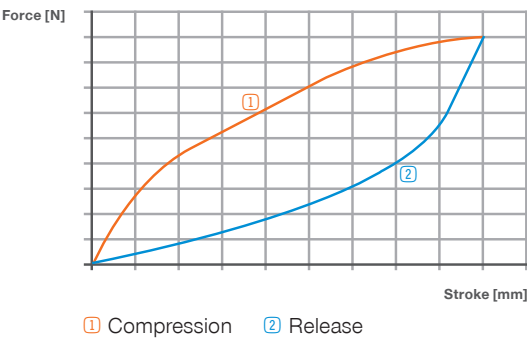
PROFILE DAMPERS SERIES AXIAL STANDARD

▶ PRODUCT INFORMATION



- ▶ **Damping proportion hard** up to 75 %
- ▶ **Damping proportion medium** up to 65 %
- ▶ **Impact speed** 0 ... 10 [m/s]
- ▶ **Permissible temperature range** -50 ... +90 [°C]

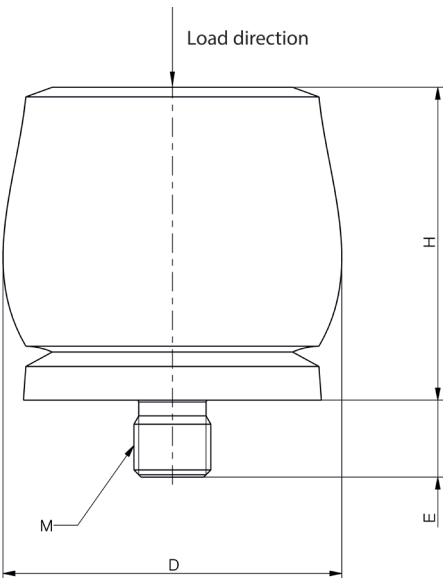
▶ TECHNICAL DATA



▶ Installation instructions

Thread M	Wrench size	Clamping torque
	[mm]	[Nm]
M3	2.5	1.3
M4	3	2.9
M5	4	6
M6	5	7
M8	6	17
M12	10	40
M16	14	100

- the profile dampers must completely contact the underside
- for the installation space, use the dimensions without loads and at complete deformation



► TECHNICAL DATA

► Technical data

	Order No.	Energy absorption per stroke max.		Stroke max.	Shore hardness	Diameter D		Height H	Screw-in depth max. E	Thread M	Weight (incl. screw)
		Continuous operation	Emergency stop operation			Stroke=0	Stroke=max.				
		[Nm]	[Nm]	[mm]		[mm]	[mm]	[mm]	[mm]		[g]
HARD	TPC-AS11X12H	2	3	5	55D	12	15	11	3	M3	2
	TPC-AS16X17H	6	9	7	55D	17	22	16	4	M4	4
	TPC-AS19X22H	10	16	9	55D	22	27	19	5	M5	8
	TPC-AS19X20H	11.5	21	10	55D	20	27	19	6	M6	8
	TPC-AS26X28H	29	46	12	55D	28	36	26	6	M6	15
	TPC-AS30X34H	48	87	14	55D	34	43	30	6	M6	22
	TPC-AS33X37H	65	112	16	55D	37	48	33	6	M6	29
	TPC-AS35X39H	82	130	16	55D	39	51	35	8	M8	41
	TPC-AS38X43H	112	165	18	55D	43	55	38	8	M8	51
	TPC-AS41X46H	140	173	19	55D	46	59	41	12	M12	75
	TPC-AS45X50H	170	223	22	55D	50	64	45	12	M12	85
	TPC-AS47X53H	201	334	22	55D	53	68	47	12	M12	103
	TPC-AS51X57H	242	302	24	55D	57	73	51	12	M12	115
	TPC-AS54X62H	304	361	25	55D	62	77	54	12	M12	132
	TPC-AS57X65H	374	468	27	55D	65	82	57	12	M12	152
	TPC-AS69X60H	421	524	29	55D	69	86	60	12	M12	175
	TPC-AS65X71H	482	559	31	55D	71	91	65	16	M16	264
	TPC-AS69X79H	570	831	32	55D	79	100	69	16	M16	314
	TPC-AS74X82H	683	921	35	55D	82	105	74	16	M16	348
	TPC-AS76X85H	797	1043	36	55D	85	109	76	16	M16	385
	TPC-AS80X89H	934	1249	38	55D	89	114	80	16	M16	424
	TPC-AS86X97H	1147	1555	40	55D	97	123	86	16	M16	512
	TPC-AS101X116H	2014	2951	47	55D	116	146	101	16	M16	794

	Order No.										
MEDIUM	TPC-AS15X14M	2	3	7	40D	14	19	15	4	M4	2
	TPC-AS19X17M	4	6	9	40D	17	24	19	5	M5	6
	TPC-AS21X20M	6	7	10	40D	20	27	21	6	M6	8
	TPC-AS28X26M	11.5	15	14	40D	26	37	28	6	M6	13
	TPC-AS32X31M	23	26	16	40D	31	44	32	6	M6	19
	TPC-AS36X35M	30	36	19	40D	35	48	36	6	M6	25
	TPC-AS38X37M	34	42	19	40D	37	51	38	6	M6	29
	TPC-AS41X41M	48	63	21	40D	41	55	41	12	M12	61
	TPC-AS45X44M	63	72	23	40D	44	60	45	12	M12	70
	TPC-AS49X48M	81	91	25	40D	48	64	49	12	M12	80
	TPC-AS52X51M	92	114	26	40D	51	69	52	12	M12	95
	TPC-AS55X54M	122	158	28	40D	54	73	55	12	M12	105
	TPC-AS59X58M	149	154	31	40D	58	78	59	12	M12	122
	TPC-AS62X61M	163	169	32	40D	61	83	62	16	M16	201
	TPC-AS66X64M	208	254	34	40D	64	87	66	16	M16	222
	TPC-AS69X68M	227	272	35	40D	68	92	69	16	M16	247
	TPC-AS75X75M	291	408	38	40D	75	101	75	16	M16	288
	TPC-AS79X77M	352	459	40	40D	77	105	79	16	M16	314
	TPC-AS84X82M	419	620	44	40D	82	110	84	16	M16	347
	TPC-AS85X84M	475	635	43	40D	84	115	85	16	M16	377
	TPC-AS92X90M	580	778	47	40D	90	124	92	16	M16	455
	TPC-AS109X107M	902	966	56	40D	107	147	109	16	M16	687

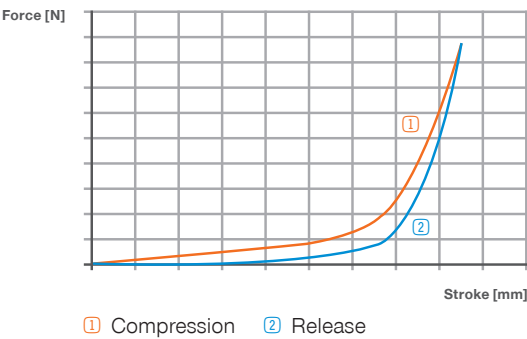
PROFILE DAMPERS SERIES AXIAL ADVANCED

▶ PRODUCT INFORMATION



- ▶ **Damping proportion medium / hard** up to 65 %
- ▶ **Impact speed** 0 ... 10 [m/s]
- ▶ **Permissible temperature range** -50 ... +90 [°C]

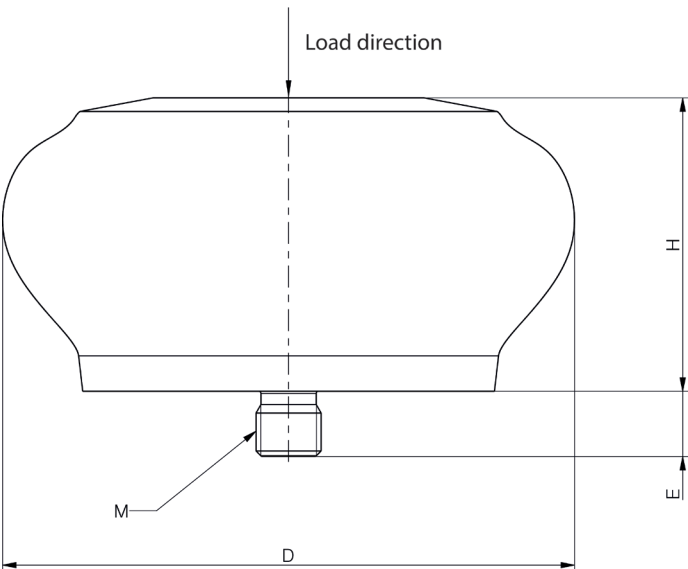
▶ TECHNICAL DATA



▶ Installation instructions

Thread M	Wrench size	Clamping torque
	[mm]	[Nm]
M12	10	80
M16	14	200

- the profile dampers must completely contact the underside
- for the installation space, use the dimensions without loads and at complete deformation

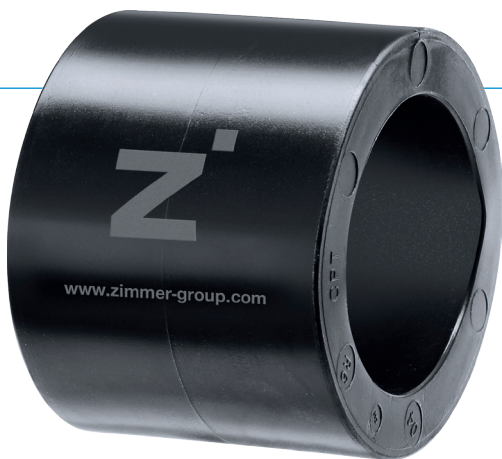


► TECHNICAL DATA

		► Technical data									
		Energy absorption per stroke max.		Stroke max.	Shore hardness	Diameter D		Height H	Screw-in depth max. E	Thread M	Weight
		Continuous operation	Emergency stop operation			Stroke=0	Stroke=max.	Stroke=0			(incl. screw)
Order No.		[Nm]	[Nm]	[mm]		[mm]	[mm]	[mm]	[mm]		[g]
MEDIUM / HARD	TPC-AA79X64M	450	630	62	40D	64	89	79	12	M12	177
	TPC-AA96X74M	980	1372	75	40D	74	114	96	12	M12	241
	TPC-AA57X88M	1210	1695	40	40D	88	133	57	12	M12	285
	TPC-AA68X88H	1640	2295	49	55D	88	124	68	12	M12	286
	TPC-AA84X100M	1785	2500	59	40D	100	149	84	12	M12	515
	TPC-AA53X108H	1900	2660	30	55D	108	133	53	12	M12	394
	TPC-AA94X85M	1940	2715	74	40D	85	127	94	12	M12	325
	TPC-AA98X102H	1970	2760	63	55D	102	140	98	16	M16	645
	TPC-AA129X116M	3710	5195	97	40D	116	187	129	16	M16	1062
	TPC-AA106X136H	4250	5950	65	55D	136	178	106	16	M16	1195
	TPC-AA114X137M	6350	8890	89	40D	137	216	114	16	M16	1129
	TPC-AA224X152M	7260	10165	176	40D	152	241	224	16	M16	2370
	TPC-AA186X140M	7310	10230	144	40D	140	214	186	16	M16	1596
	TPC-AA118X146H	8330	11660	67	55D	146	191	118	16	M16	1535
	TPC-AA241X149M	8860	12400	178	40D	149	224	241	16	M16	2589
	TPC-AA166X168M	10100	14140	124	40D	168	260	166	16	M16	2297
	TPC-AA252X177M	12725	17810	198	40D	177	279	252	16	M16	3161

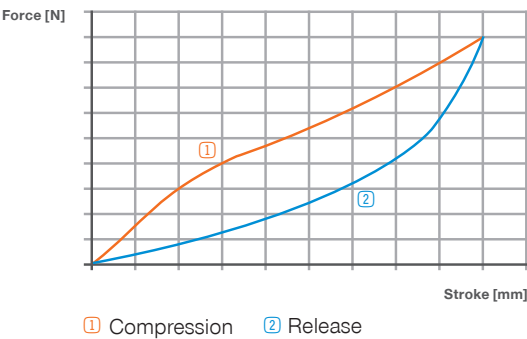
PROFILE DAMPERS SERIES RADIAL STANDARD

▶ PRODUCT INFORMATION



- ▶ **Damping proportion hard** up to 60 %
- ▶ **Damping proportion medium** up to 50 %
- ▶ **Impact speed** 0 ... 10 [m/s]
- ▶ **Permissible temperature range** -50 ... +90 [°C]

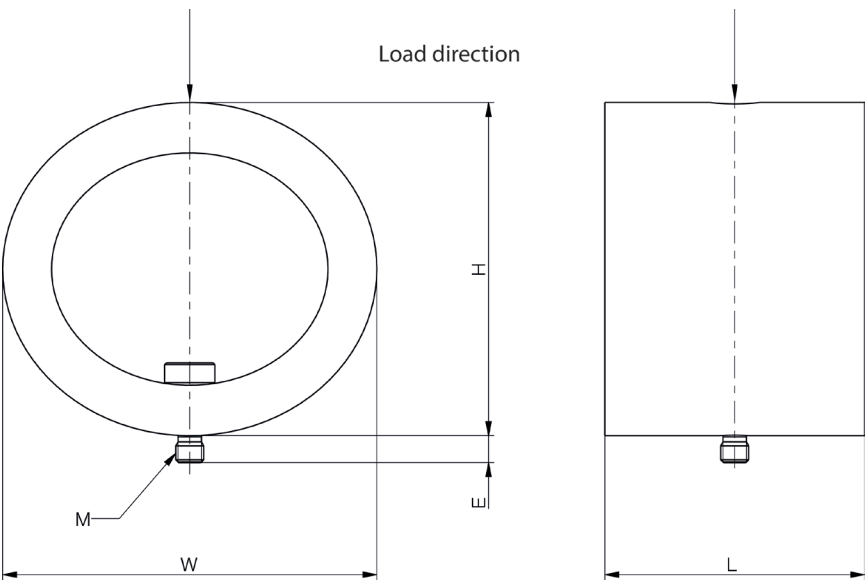
▶ TECHNICAL DATA



▶ Installation instructions

Thread M	Wrench size	Clamping torque
	[mm]	[Nm]
M5	4	6
M6	5	7
M8	6	17

- the profile dampers must completely contact the underside
- for the installation space, use the dimensions without loads and at complete deformation



► TECHNICAL DATA

► Technical data

	Order No.	Energy absorption per stroke max.		Stroke max.	Shore hardness	Width W		Height H	Length L	Screw-in depth max. E	Thread M	Weight
		Continuous operation	Emergency stop operation			Stroke=0	Stroke=max	Stroke=0				(incl. screw)
		[Nm]	[Nm]	[mm]		[mm]	[mm]	[mm]	[mm]	[mm]		[g]
HARD	TPC-RS23X13H	2.7	5.7	15	55D	30	38	23	13	5	M5	4
	TPC-RS30X19H	6	18	19	55D	39	50	30	19	5	M5	11
	TPC-RS36X20H	8.7	24	23	55D	45	58	36	20	5	M5	16
	TPC-RS42X34H	11.7	20	32	55D	52	68	42	34	5	M5	25
	TPC-RS53X43H	25	46	41	55D	64	87	53	43	5	M5	51
	TPC-RS56X46H	66.5	98	37	55D	68	88	56	46	5	M5	80
	TPC-RS64X46H	81.5	106	42	55D	79	102	64	46	6	M6	105
	TPC-RS69X51H	124	206	45	55D	86	109	69	51	6	M6	146
	TPC-RS68X67H	158	261	46	55D	86	111	68	67	8	M8	190
	TPC-RS77X82H	228	342	50	55D	95	124	77	82	8	M8	266
	TPC-RS84X81H	290	427	56	55D	102	133	84	81	8	M8	319
MEDIUM	Order No.											
	TPC-RS25X13M	1.2	1.8	17	40D	28	38	25	13	5	M5	6
	TPC-RS32X19M	2.3	5.4	21	40D	37	50	32	19	5	M5	13
	TPC-RS37X20M	3.5	8.1	25	40D	42	58	37	20	5	M5	17
	TPC-RS44X35M	5.8	8.3	34	40D	50	68	44	35	5	M5	26
	TPC-RS55X43M	12	17	43	40D	63	87	55	43	5	M5	51
	TPC-RS59X46M	23	33	40	40D	66	88	59	46	5	M5	77
	TPC-RS67X46M	34.5	43	46	40D	76	102	67	46	6	M6	104
	TPC-RS73X51M	45	74	50	40D	83	109	73	51	6	M6	142
	TPC-RS73X67M	68	92	50	40D	85	111	73	67	8	M8	206
	TPC-RS83X83M	92	122	57	40D	93	124	83	83	8	M8	297
	TPC-RS88X81M	115	146	60	40D	100	133	88	81	8	M8	335

CHECK LIST INDUSTRIAL DAMPING TECHNOLOGY

Customer number	<input type="text"/>	Telephone number	<input type="text"/>
Company	<input type="text"/>	Fax number	<input type="text"/>
Contact		E-mail	<input type="text"/>
Mr. <input type="checkbox"/> Mrs. <input type="checkbox"/>	<input type="text"/>		
Sales database			
Editor	<input type="text"/>	Article	<input type="text"/>
Desired delivery date	<input type="text"/>	Target price	<input type="text"/>
Quantity	<input type="text"/>	Pot. quantity (p.a.)	<input type="text"/>
		Other	<input type="text"/>

Possible / Favored damping

☐ hydraulic damping ► industrial shock absorber (PowerStop)

☐ material damping ► profile damper (BasicStop)

Installation conditions

SA = shock absorber

Application	<input type="text"/>						
Equivalent SA from Competition	<input type="checkbox"/> yes	Manufacturer	<input type="text"/>	Type	<input type="text"/>	Ø/Thread	<input type="text"/>
Max. installation space	Length (stroke direction)	<input type="text"/>	mm	Diameter	<input type="text"/>	mm	
SA installation position	<input type="checkbox"/> horizontal	<input type="checkbox"/> vertical	<input type="checkbox"/> angle	<input type="text"/>	°	►	<input type="checkbox"/> upward ↗ + <input type="checkbox"/> downward ↘
Environment	Temperature	min	<input type="text"/>	°C	max	<input type="text"/>	°C
	<input type="checkbox"/> chips	<input type="checkbox"/> dirt	<input type="checkbox"/> oil / grease	Other	<input type="text"/>		
Fixed stop	Fixed stop using installation design	<input type="checkbox"/> yes	<input type="checkbox"/> no				

Operating conditions

				Form of movement-No.	<input type="text"/>
Operating type	<input type="checkbox"/> continuous	►	Cycle time	<input type="text"/>	Strokes / h
	<input type="checkbox"/> emergency stop	►	No. of cycles	<input type="text"/>	No. of cycle
Movement	<input type="checkbox"/> translational	►	Drive force	<input type="text"/>	N
	<input type="checkbox"/> rotational	►	Torque	<input type="text"/>	Nm
			SA swivel radius	<input type="text"/>	mm
					Mass swivel radius
Speed	<input type="checkbox"/> translational	►	min.	<input type="text"/>	m/s
	<input type="checkbox"/> rotational	►	min.	<input type="text"/>	1/s
Mass / Moment of inertia	<input type="checkbox"/> translational	►	min.	<input type="text"/>	kg
	<input type="checkbox"/> rotational	►	min.	<input type="text"/>	kg m ²
					max.
					max.
					max.

Accessories industrial shock absorber

Head	<input type="checkbox"/> no	<input type="checkbox"/> yes	►	<input type="checkbox"/> SA with installed steel head	<input type="checkbox"/> SA with installed plastic head
Accessories	<input type="checkbox"/> steel locknut	<input type="checkbox"/> air barrier adapter	<input type="checkbox"/> stop sleeve	<input type="checkbox"/> cooling nut	
	<input type="checkbox"/> stainless steel locknut	<input type="checkbox"/> side load adapter	<input type="checkbox"/> clamping flange		

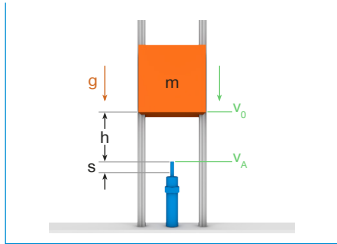
Special industrial shock absorber

<input type="checkbox"/> SA with bellow	Approvals (e.g. RoHS, LABS, EG/CE, Ex protection, clean room)	<input type="text"/>
<input type="checkbox"/> Adjustable SA	Other (oil, characteristic curve, stroke, size, thread type, scraper)	<input type="text"/>

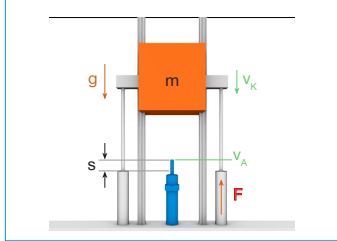
FORMS OF MOVEMENT

Translational

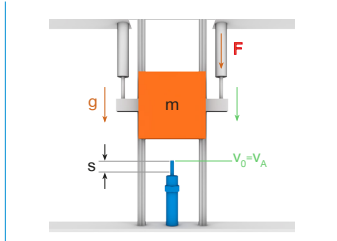
1. Free-falling mass



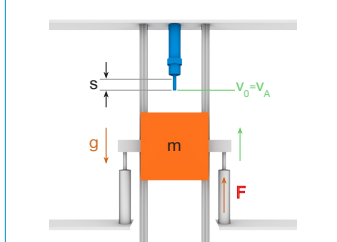
2. Downward moving mass at constant velocity



3. Downward moving mass with drive force

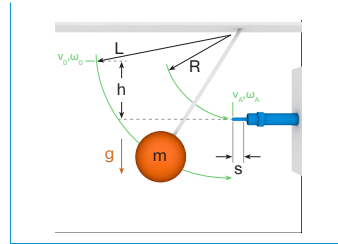


4. Upward moving mass with drive force

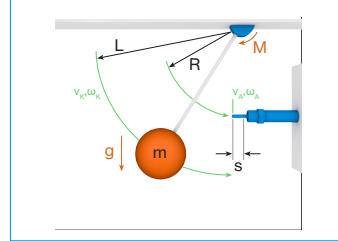


Rotational

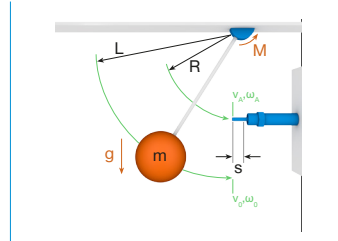
9. Freely oscillating mass



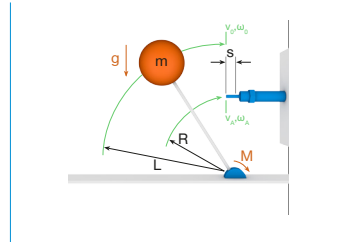
10. Downward moving mass at constant velocity



11. Downward moving mass with drive torque

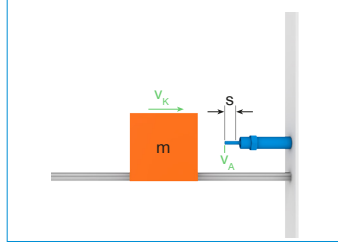


12. Upward moving mass with drive torque

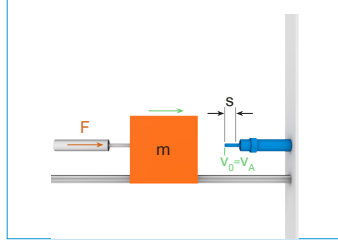


Translational

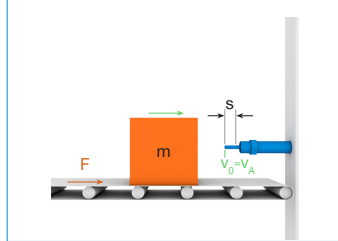
5. Horizontally moving mass at constant velocity



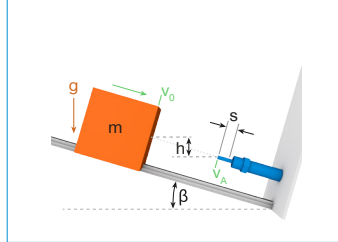
6. Horizontally moving mass with form-locking drive force



7. Horizontal moving mass with frictional drive force

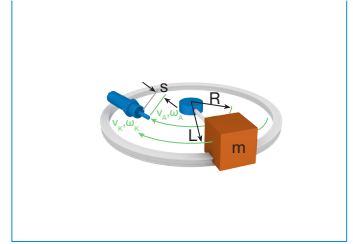


8. Falling mass on an inclined plane

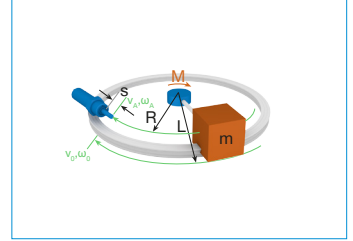


Rotational

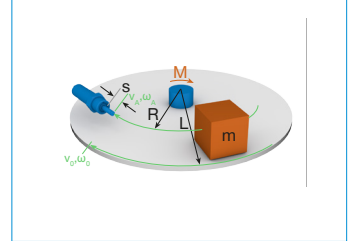
13. Horizontally swinging mass at constant velocity



14. Horizontally swinging mass with form-locking drive torque



15. Horizontal pivoting mass with frictional drive torque



USAGE NOTE

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USAGE NOTE

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We hereby declare that our elements meet the following basic requirements of the Machinery Directive 2006/42/EC as an incomplete machine

No.1.1.2., No.1.1.3., No.1.1.5., No.1.3.2, No. 1.3.4, No. 1.3.7, No.1.5.3, No.1.5.4, No.1.5.8., No.1.6.4, No.1.7.1, No.1.7.3, No.1.7.4.

We also declare that the specific technical documents were produced in accordance with Annex VII Part B of this Directive.

We undertake to provide the market supervisory bodies with electronic versions of the incomplete machine's special documents via our documentation department should they have reason to request them. The incomplete machine may only be commissioned if the machine or system in which the incomplete machine is to be installed has been determined to satisfy the conditions of the Machinery Directive 2006/42/EC and the EC Declaration of Conformity has been produced in accordance with Annex II A.

The contents and data correspond to the status as of printing. Edition 10/2014

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