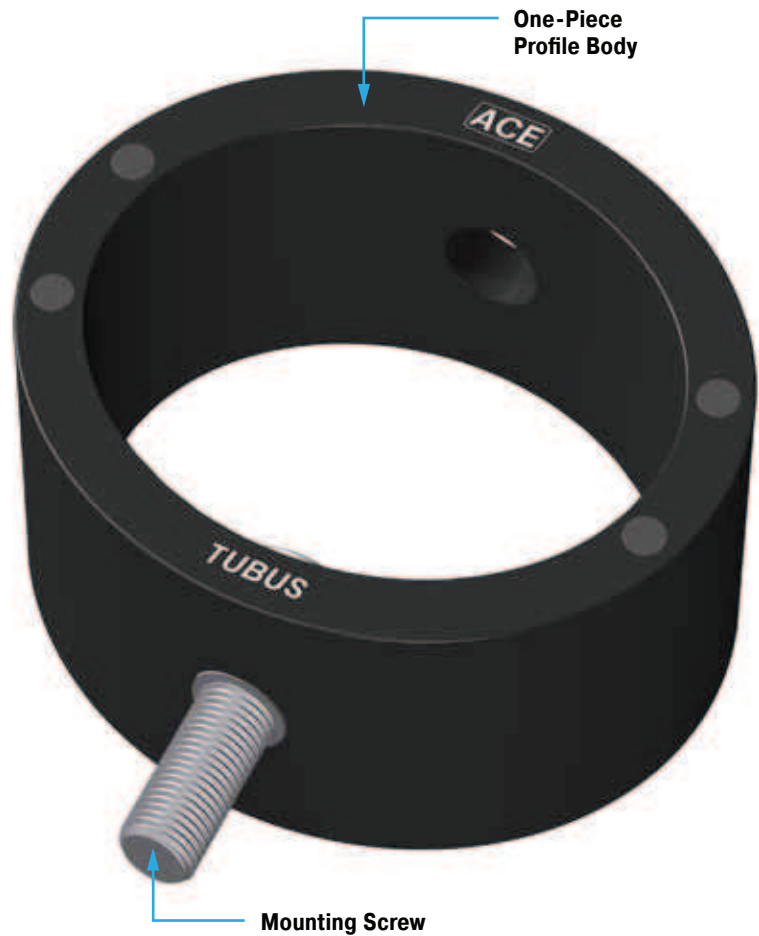


Like the standard model TR, the **profile damper type TR-H** is used for radial damping and therefore provides a very long and soft deceleration. The profile dampers from the innovative ACE TUBUS series are maintenance-free, self-contained damping elements made from a special Co-Polyester Elastomer. With nearly the same dimensions the TUBUS TR-H type provides a much higher energy absorption due to a harder mixture of materials. The TR-H type completes the TUBUS series between the progressive model type TR and the almost linear type TS. This offers an individual and widely graduated range of damping characteristics within the whole TUBUS series. The excellent temperature characteristic of the material provides consistent damping performance over a temperature of -40 °C to 90 °C. The low installed weight, the economic price and the long operating life of up to 1 million cycles make this an attractive alternative to hydraulic end position damping, if the moving mass does not have to stop in an exact datum position and it is not necessary to absorb 100% of the incoming energy. The **space saving package size** ranges from Ø 30 mm up to Ø 102 mm and is very simply and quickly installed with the supplied special stepped mounting screw. The TR-H series have been specially developed to provide **maximum stroke** in the **minimum mounting space** in the capacity range from 2.7 Nm up to 290 Nm.

Life expectancy is extremely high; **up to twenty times** longer than for urethane dampers, **up to ten times** longer than rubber bumpers and **up to five times** longer than steel springs.

Calculation and selection to be approved by ACE.



Impact velocity range: Up to max. 5 m/s

Environment: Resistant to oil, grease, seawater and to microbe or chemical attack. Excellent UV and ozone resistance. Material does not absorb water or swell.

Mounting: In any position

Dynamic force range:
600 N to 14 400 N

Operating temperature range:
-40 °C to 90 °C

Energy absorption: 39% to 50%

Material hardness rating:
Shore 55D

Max. torque:
M5: 6 Nm
M6: 10 Nm
M8: 25 Nm

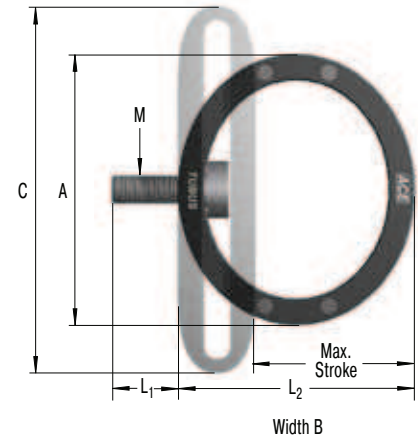
On request: Special strokes, -characteristics, -spring rates, -sizes and -materials.



Ordering Example

TUBUS Radial _____ ↑ ↑ ↑
 Outer-Ø 95 mm _____ ↑ ↑ ↑
 Stroke 50 mm _____ ↑ ↑ ↑
 Hard Version _____ ↑ ↑ ↑

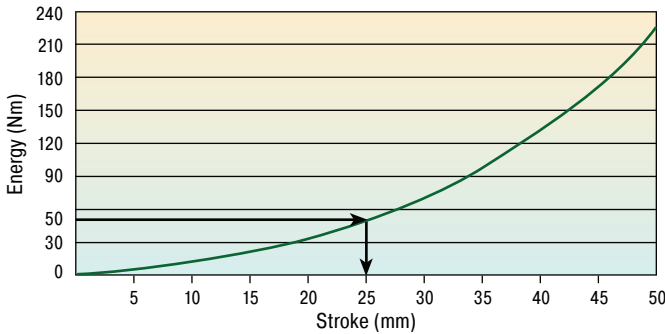
TR95-50H



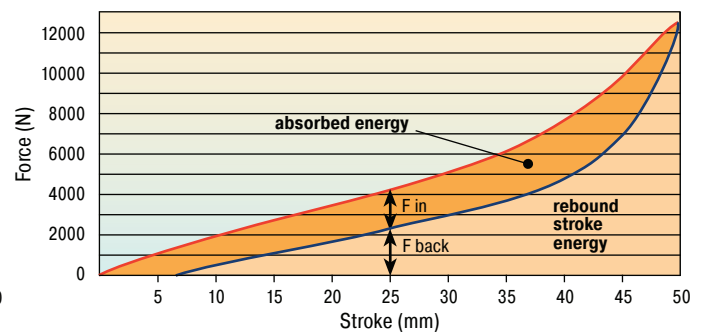
The calculation and selection of the required profile damper should be carried out or be approved by ACE.

Characteristics of Type TR95-50H

Energy-Stroke Characteristic (dynamic)
 (with impact velocity over 0.5 m/s)



Force-Stroke Characteristic (dynamic)
 (with impact velocity over 0.5 m/s)



With the aid of the characteristic curves above you can estimate the proportion of the total energy that will be absorbed.
 Example: With impact energy of 50 Nm the Energy-Stroke diagram shows that a stroke of about 25 mm is needed.
 On the Force-Stroke diagram you can estimate the proportion of absorbed energy to rebound energy at this stroke length.

Dynamic ($v > 0.5$ m/s) and static ($v \leq 0.5$ m/s) characteristics of all types are available on request.

Dimensions and Capacity Chart

Type	¹ W ₃		Max. Stroke mm	A	L ₁	M	L ₂	B	C	Weight kg
	Nm/Cycle	Nm/Cycle								
TR30-15H	2.7	5.7	15	30	5	M5	23	13	38	0.004
TR39-19H	6	18	19	39	5	M5	30	19	50	0.011
TR45-23H	8.7	24	23	45	5	M5	36	20	58	0.016
TR52-32H	11.7	20	32	52	5	M5	42	34	68	0.025
TR64-41H	25	46	41	64	5	M5	53	43	87	0.051
TR68-37H	66.5	98	37	68	5	M5	56	46	88	0.080
TR79-42H	81.5	106	42	79	6	M6	64	46	102	0.105
TR86-45H	124	206	45	86	6	M6	69	51	109	0.146
TR87-46H	158	261	46	86	8	M6	68	67	111	0.190
TR95-50H	228	342	50	95	8	M8	77	82	124	0.266
TR102-56H	290	427	56	102	8	M8	84	81	133	0.319

¹ Max. energy capacity per cycle for continuous use.

² Energy capacity per cycle for emergency use.