

The **profile damper type TR** from the innovative ACE TUBUS series is maintenance free, self-contained damping element made from a special Co-Polyester Elastomer.

The radial deformation of the TR series provides a very long and soft deceleration with a progressive energy absorption towards the end of stroke. 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 29 mm up to Ø 100 mm and is very simply and quickly installed with the supplied special stepped mounting screw. The TR Series have been specially developed to provide **maximum stroke in the minimum mounting space** in the capacity range from 2 Nm up to 115 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.

Capacity rating: For emergency use only (1 cycle) it is possible to exceed the W_3 rating by +40 %.

Mounting: In any position

Dynamic force range: 300 N to 6 200 N

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

Energy absorption:
17 % to 35 %

Material hardness rating:
Shore 40D

Mounting screw torque:
M5: 6 Nm
M6: 10 Nm
M8: 25 Nm

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

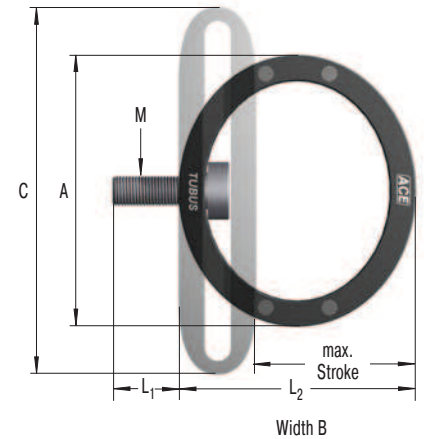


Ordering Example

TUBUS radial _____ ↑ ↑ ↑
 Outer-Ø 93 mm _____ ↑ ↑ ↑
 Stroke 57 mm _____ ↑ ↑ ↑

TR93-57

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



Dimensions and Capacity Chart

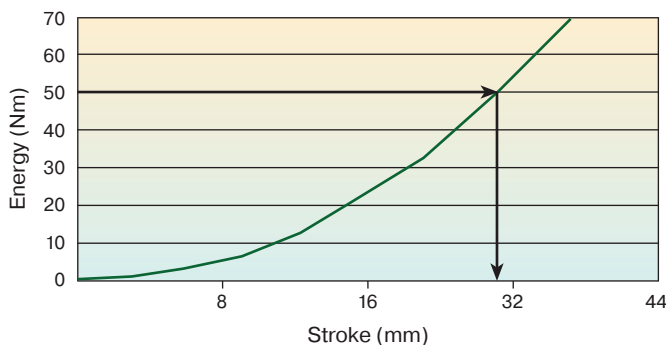
Type	¹ W ₃ Nm/Cycle	² W ₃ Nm/Cycle	Max. Stroke mm	A	L1	M	L2	B	C	Weight kg
TR29-17	2	3	17	29	5	M5	25	13	38	0.010
TR37-22	3	4.5	22	37	5	M5	32	19	50	0.015
TR43-25	4	5.5	25	43	5	M5	37	20	58	0.020
TR50-35	6	8.5	35	50	5	M5	44	34	68	0.025
TR63-43	15	21	43	63	5	M5	55	43	87	0.055
TR67-40	25	35	40	67	5	M5	59	46	88	0.080
TR76-46	40	56	46	76	6	M6	67	46	102	0.105
TR83-50	45	63	50	83	6	M6	73	51	109	0.150
TR85-50	70	98	50	85	8	M8	73	69	111	0.195
TR93-57	90	126	57	93	8	M8	83	83	124	0.295
TR100-60	115	161	60	100	8	M8	88	82	133	0.335

¹ Max. energy capacity per cycle for continuous use.

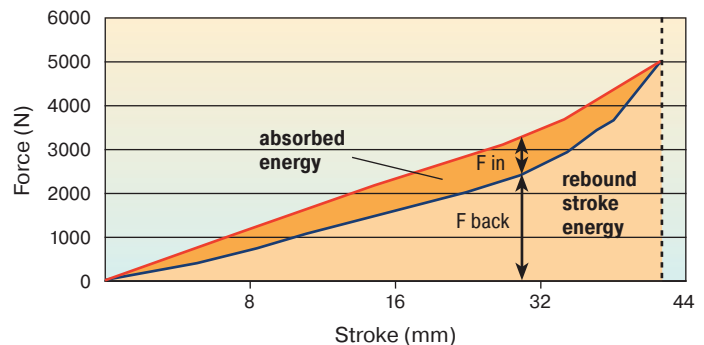
² Energy capacity per cycle for emergency use.

Characteristics of Type TR93-57

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 31 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.