

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

As a result of the almost linear damping characteristic it provides a very smooth energy absorption with minimum reaction loads on the machine. 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 14 mm up to 107 mm and is very simply and quickly installed with the supplied specially stepped mounting screw. The TS series have been specially developed to provide **maximum energy capacity** in the **minimum mounting space** in the capacity range from 2 Nm up to 910 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:** 670 N to 24 000 N

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

**Energy absorption:**  
26 % to 56 %

**Material hardness rating:**  
Shore 40D

**Mounting screw torque:**

M4: 4 Nm  
M5: 6 Nm  
M6: 10 Nm  
M12: 85 Nm  
M16: 210 Nm

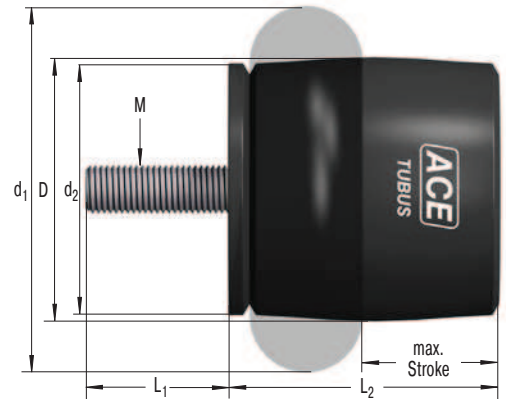
**On request:** Special strokes, -characteristics, -spring rates, -sizes and materials.



#### Ordering Example

TUBUS axial soft \_\_\_\_\_ **TS44-23**  
 Outer-Ø 44 mm \_\_\_\_\_  
 Stroke 23 mm \_\_\_\_\_

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



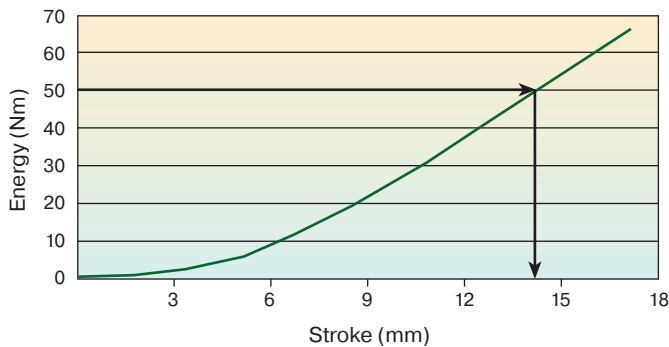
#### Dimensions and Capacity Chart

Type	<sup>1</sup> W <sub>3</sub> Nm/Cycle	<sup>2</sup> W <sub>3</sub> Nm/Cycle	Max. Stroke mm	D	L1	M	L2	d1	d2	Weight kg
TS14-7	2	3	7	14	4	M4	15	19	13	0.003
TS18-9	4	5.5	9	18	5	M5	18	24	16	0.004
TS20-10	6	8.5	10	20	6	M6	21	27	19	0.005
TS26-15	15	21	15	26	6	M6	28	37	25	0.010
TS32-16	25	35	16	32	6	M6	32	44	30	0.015
TS35-19	30	42	19	35	6	M6	36	48	33	0.025
TS40-19	35	49	19	40	6	M6	38	51	34	0.030
TS41-21	45	63	21	41	12	M12	41	55	38	0.040
TS44-23	65	91	23	44	12	M12	45	60	40	0.045
TS48-25	80	112	25	48	12	M12	49	64	44	0.060
TS51-27	90	126	27	51	12	M12	52	69	47	0.070
TS54-29	115	161	29	54	12	M12	55	73	50	0.080
TS58-30	135	189	30	58	12	M12	59	78	53	0.100
TS61-32	160	224	32	61	16	M16	62	83	56	0.120
TS64-34	195	273	34	64	16	M16	66	87	60	0.145
TS68-36	230	322	36	68	16	M16	69	92	63	0.165
TS75-39	285	399	39	75	16	M16	75	101	69	0.210
TS78-40	340	476	40	78	16	M16	79	105	72	0.245
TS82-44	395	553	44	82	16	M16	84	110	75	0.275
TS84-43	460	644	43	84	16	M16	85	115	78	0.300
TS90-47	565	791	47	90	16	M16	92	124	84	0.395
TS107-56	910	1 274	56	107	16	M16	110	147	100	0.615

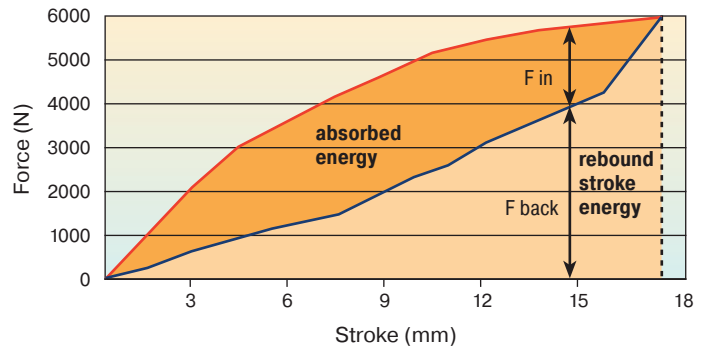
<sup>1</sup> Max. energy capacity per cycle for continuous use.  
<sup>2</sup> Energy capacity per cycle for emergency use.

#### Characteristics of Type TS44-23

**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 14 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.**