The **profile damper type TC** from the innovative ACE TUBUS Series is a maintenance free, self-contained damping element made from a special Co-Polyester Elastomer.
They have been specially developed for crane equipment applications and fulfill the international Industry standards OSHA and CMAA. Many crane applications require a spring rate with a high return force. This is achieved with the unique **Dual-Profile Concept** of the TC-S models. For Energy-Management-Systems the TC model types provide a cost efficient solution with a high return force capability.
The very small and light package size from Ø 64 mm up to Ø 176 mm covers an energy absorption capacity ranging from 450 Nm up to 12 720 Nm/cycle. The excellent resistance to UV, seawater chemical and microbe attack together with the wide operating temperature range from -40 °C to 90 °C enables a wide range of applications.

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:
80 000 N bis 978 000 N

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

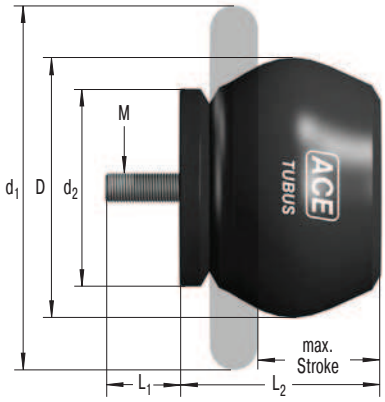
Energy absorption:
31 % to 63 %

Material hardness rating:
Shore 55D

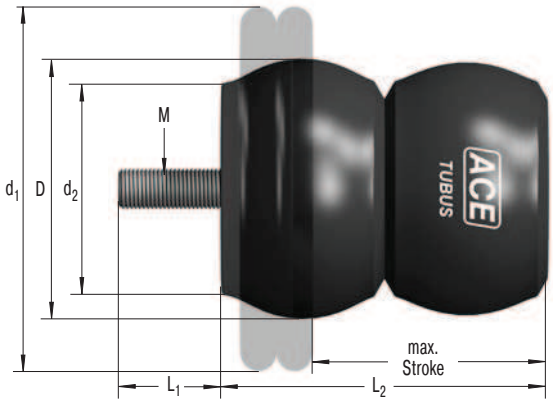
Mounting screw torque:
M12: 85 Nm
M16: 210 Nm

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

Issue 9.2007 Specifications subject to change



Model Type TC



Model Type TC-S

Ordering Example

TC83-73-S

TUBUS Crane Buffer
Outer-Ø 83 mm
Stroke 73 mm
Model Type Soft

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

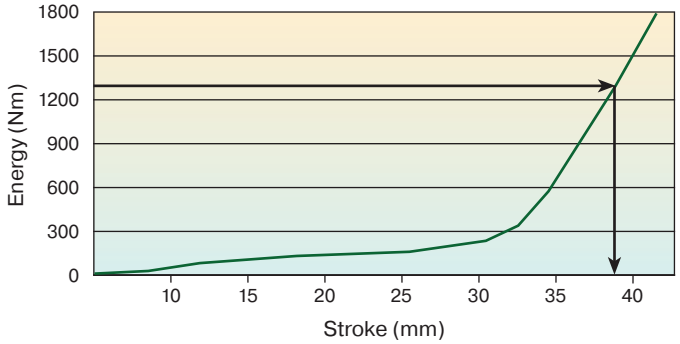
Dimensions and Capacity Chart

Type	[1] W_3 Nm/Cycle	[2] W_3 Nm/Cycle	Max. Stroke mm	D	L1	M	L2	d1	d2	Weight kg
TC64-62-S	450	630	62	64	12	M12	79	89	52	0.20
TC74-76-S	980	1 372	76	74	12	M12	96	114	61	0.25
TC83-73-S	1 900	2 660	73	83	12	M12	94	127	69	0.30
TC86-39	1 210	1 695	39	86	12	M12	56	133	78	0.25
TC90-49	1 630	2 282	49	90	12	M12	68	124	67	0.25
TC100-59	1 770	2 480	59	100	12	M12	84	149	91	0.50
TC102-63	1 970	2 760	63	102	16	M16	98	140	82	0.50
TC108-30	1 900	2 660	30	108	12	M12	53	133	77	0.35
TC117-97	3 710	5 195	97	117	16	M16	129	188	100	1.00
TC134-146-S	7 290	10 210	146	134	16	M16	188	215	117	1.60
TC136-65	4 250	5 950	65	136	16	M16	106	178	106	1.10
TC137-90	6 350	8 890	90	137	16	M16	115	216	113	1.10
TC146-67-S	8 330	11 660	67	146	16	M16	118	191	99	1.50
TC150-178-S	8 860	12 400	178	150	16	M16	241	224	132	2.60
TC153-178-S	7 260	10 165	178	153	16	M16	226	241	131	2.30
TC168-124	10 100	14 140	124	168	16	M16	166	260	147	2.30
TC176-198-S	12 720	17 810	198	176	16	M16	252	279	150	3.60

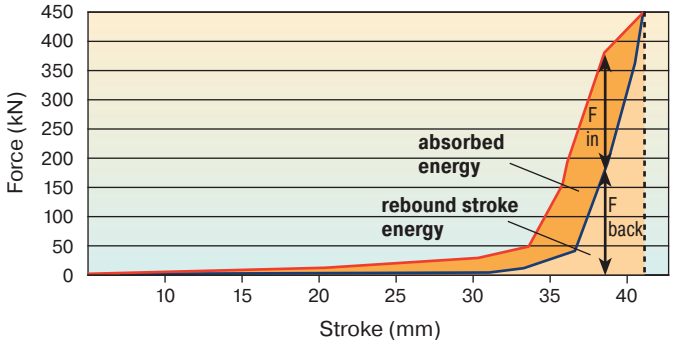
[1] Max. energy capacity per cycle for continous use.
[2] Energy capacity per cycle for emergency use.

Characteristics of Type TC90-49

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 1300 Nm the Energy-Stroke diagram shows that a stroke of about 38 mm is needed. On the Force-Stroke diagram you can estimate the proportion of absorbed energy to rebound energy at this stroke length.
Note: With these types the return force towards the end of the stroke is significant and we recommend you try to use a minimum of 90 % of the total stroke available.

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