

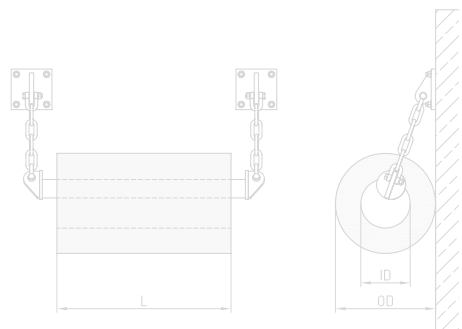


CYLINDRICAL FENDERS

Cylindrical Fenders were the first fender type to be produced with a defined performance. Adequate installation is simply achieved by using chains, bars, ropes or specially designed ladder brackets. Their proportional increase of reaction force and energy absorption all the way to the rated deflection is an advantage resulting in softer berthing. Other advantages are:

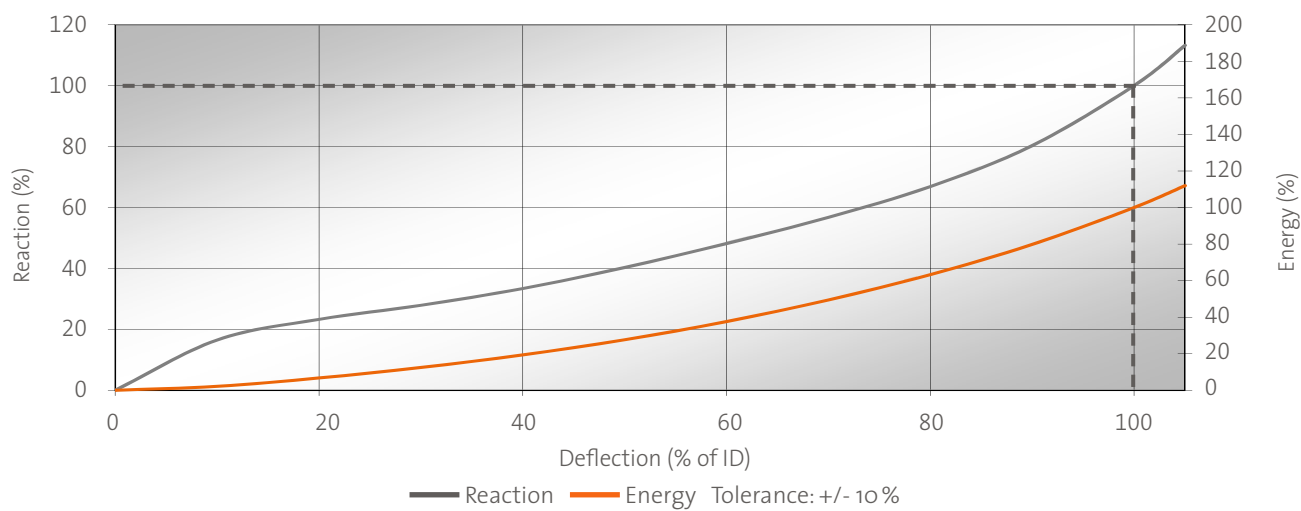
- ▶ Very robust and simple fender type
- ▶ Easy to install, allowing multiple usage at different berths
- ▶ Outside diameter up to 2.700 mm and inside diameter ranging from only 50 to 1.300 mm
- ▶ Variable in length up to 20 m, limited mainly by handling and transport

Special dimensions and features such as pre-bending or jointing can be requested.





GENERIC PERFORMANCE CURVE CYLINDRICAL FENDERS



Leisure Jetty, Kota Kinabalu, Malaysia



Container Terminal, Hamburg, Germany

DIMENSIONS & PERFORMANCE VALUES

OD x ID [mm]	E [kNm/m]	R [kN/m]	P [kN/m ²]	Weight [kg/m]
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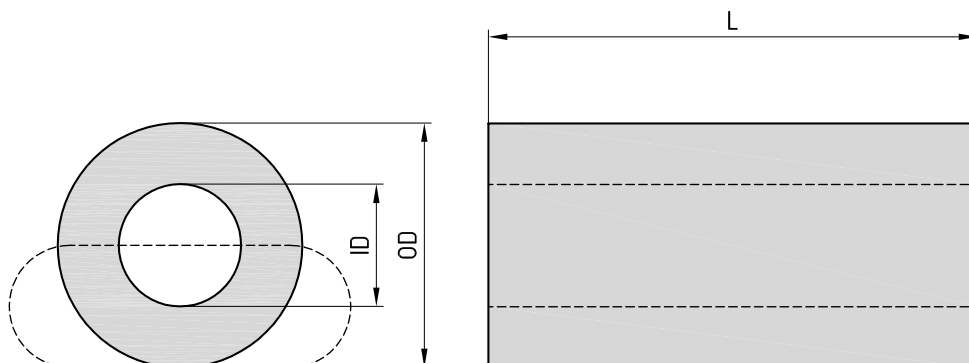
EXTRUDED FENDER

100 x 50	0.8	43	547	7.2
125 x 65	1.3	51	500	11.0
150 x 75	1.8	65	552	16.3
175 x 75	2.7	92	781	24.1
200 x 100	3.3	86	547	29.0
250 x 125	5.1	108	550	45.3
300 x 150	7.4	129	547	65.2
380 x 190	11.8	164	550	105.0
400 x 200	13.1	172	547	116.0
450 x 225	16.6	194	549	147.0
500 x 250	28.0	275	700	181.0

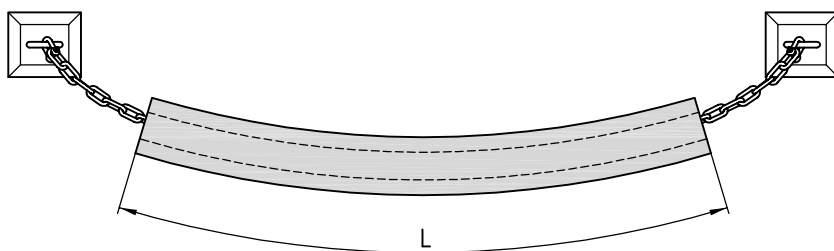
WRAPPED-FENDER

600 x 300	40.0	330	700	255.0
800 x 400	72.0	440	700	453.0
900 x 450	86.0	470	700	573.0
1000 x 500	112.0	550	700	707.0
1100 x 600	131.0	541	574	800.0
1200 x 600	162.0	660	700	1018.0
1300 x 700	184.0	650	591	1131.0
1400 x 700	220.0	770	700	1386.0
1400 x 800	208.0	649	516	1245.0
1500 x 750	253.0	825	700	1591.0
1500 x 800	246.0	760	605	1517.0
1600 x 800	288.0	880	700	1810.0
1600 x 900	273.0	757	535	1650.0
1800 x 900	364.0	990	900	2290.0
2000 x 1000	432.0	1060	700	2827.0
2000 x 1200	415.0	871	517	2414.0
2200 x 1200	524.0	1083	575	3204.0
2400 x 1200	647.0	1321	700	4073.0
2700 x 1300	818.0	1486	605	5278.0

Performance data per 1000 mm length and based on deflection of fender equal to the ID Tolerance +/- 10%



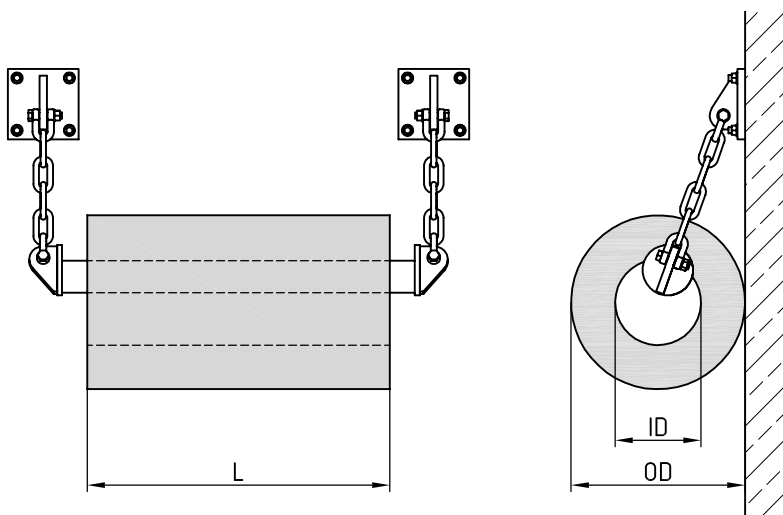
FIXING DETAILS SMALL CYLINDRICALS



Small cylindricals ($\leq \varnothing 600$ mm) are often suspended from chains connected to brackets or U-anchors on the quay wall.



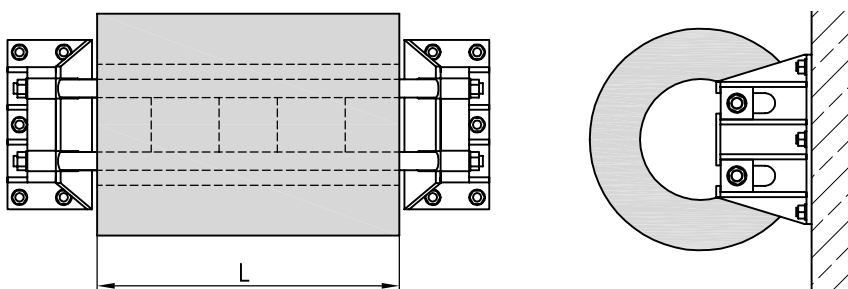
FIXING DETAILS LARGE CYLINDRICALS



Large cylindricals ($\varnothing 600$ mm – $\varnothing 1600$ mm) often use a central support bar connected at each end to chains which go back to brackets or U-anchors on the quay wall.



FIXING DETAILS VERY LARGE CYLINDRICALS



Very large cylindricals ($\geq \varnothing 1600$ mm) may require special ladder brackets due to their weight. These are specially designed for each application.

