

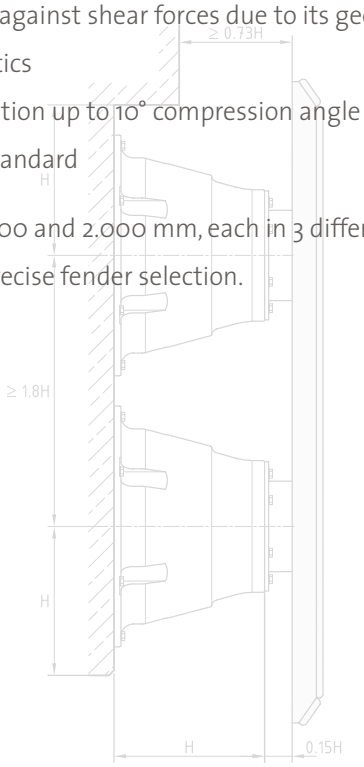
SPC CONE FENDERS

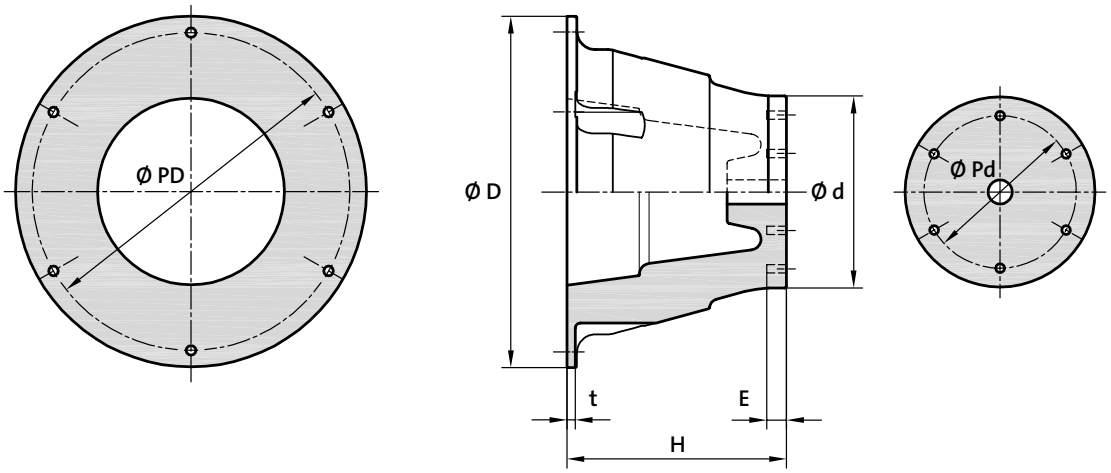
The SPC Fender is the result of continuous product development. This fender design is based on the Cone Fender which was introduced to world-wide markets more than 30 years ago. Its refined geometry and conical shape result in a number of out-standing performance characteristics which include:

- Exceptional good energy absorption to reaction force ratio (E / R)
- Outstanding energy absorption per weight of fender
- High shear stability which allows the fender to carry even larger panel weights without using chains
- Very good inherent resistance against shear forces due to its geometry and self-centering characteristics
- No reduction of energy absorption up to 10° compression angle
- Internal overload stopper as standard

Availability in heights between 300 and 2.000 mm, each in 3 different main hardness grades* for the most precise fender selection.

* Intermediate rubber grades see page 10–11





SPC CONE FENDER DIMENSIONS

Fender Size	H [mm]	Ø D [mm]	Ø d [mm]	t [mm]	E [mm]	Ø PD [mm]	Ø Pd [mm]	Anchors / Bolts	Weight [kg]
SPC 300	300	500	262	18	38	440	210	4 x M20	34
SPC 350	350	575	306	20	38	510	245	4 x M20	52
SPC 400	400	650	350	20	38	585	280	4 x M20	74
SPC 500	500	820	435	22	45	730	350	4 x M24	148
SPC 600	600	900	525	23	45	810	420	4 x M24	243
SPC 700	700	1120	615	26	72	1020	490	4 x M30	396
SPC 800	800	1280	700	31	72	1165	560	6 x M30	577
SPC 900	900	1450	785	36	72	1313	630	6 x M30	846
SPC 1000	1000	1600	875	38	82	1460	700	6 x M36	1114
SPC 1100	1100	1760	963	40	92	1605	770	6 x M42	1525
SPC 1150	1150	1850	1010	41	92	1550	805	6 x M42	1731
SPC 1200	1200	1920	1050	46	92	1750	840	8 x M42	1951
SPC 1300	1300	2080	1140	50	105	1900	910	8 x M48	2446
SPC 1400	1400	2240	1230	53	105	2040	980	8 x M48	2987
SPC 1600	1600	2560	1400	64	105	2330	1120	8 x M48	4409
SPC 1800	1800	2880	1575	74	120	2620	1260	10 x M56	6618
SPC 2000	2000	3090	1750	80	120	2920	1400	10 x M56	9560

PERFORMANCE TABLE SPC CONE FENDERS (RPD = Rated Performance Data in acc. with PIANC)

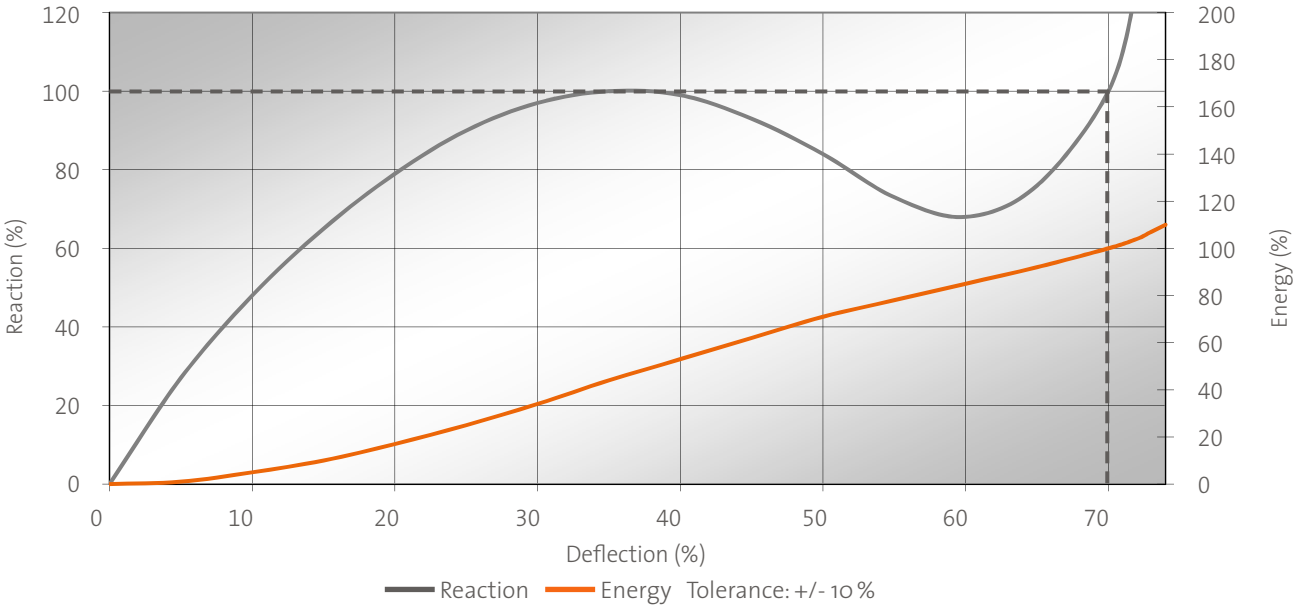
Fender Size	E/R	Rubber Grade / Performance Value	G 0.9	G 1.0	G 1.1	G 1.2	G 1.3	G 1.4	G 1.5	G 1.6	G 1.7	G 1.8
SPC 300	0.16	Energy	9	**9**	10	10	10	11	11	12	12	12
		Reaction	55	**57**	60	62	65	68	70	73	76	78
SPC 350	0.17	Energy	13	**14**	14	15	15	16	16	17	17	18
		Reaction	76	**78**	91	93	96	98	100	102	104	107
SPC 400	0.21	Energy	21	**21**	22	23	24	25	26	27	28	29
		Reaction	98	**102**	106	111	115	120	125	129	134	138
SPC 500	0.26	Energy	40	**42**	44	46	47	49	51	53	55	57
		Reaction	153	**159**	166	173	180	188	195	202	209	217
SPC 600	0.31	Energy	69	**72**	75	79	82	85	88	92	95	98
		Reaction	220	**229**	239	249	260	270	281	291	302	312
SPC 700	0.36	Energy	111	**114**	120	125	130	136	141	146	151	156
		Reaction	300	**312**	325	340	354	368	382	397	411	425
SPC 800	0.42	Energy	165	**170**	179	187	194	202	210	218	226	233
		Reaction	392	**407**	425	444	462	481	500	518	537	555
SPC 900	0.47	Energy	234	**243**	254	265	277	288	299	310	321	332
		Reaction	496	**515**	538	562	585	609	632	656	680	703
SPC 1000	0.52	Energy	321	**333**	349	364	379	394	410	425	440	455
		Reaction	612	**636**	665	694	723	752	781	810	839	868
SPC 1100	0.57	Energy	427	**443**	465	484	504	524	546	566	586	606
		Reaction	741	**767**	805	840	875	910	945	980	1015	1050
SPC 1150	0.60	Energy	487	**506**	529	552	575	599	622	645	668	691
		Reaction	810	**841**	879	918	956	995	1033	1072	1110	1149
SPC 1200	0.62	Energy	554	**575**	601	628	654	680	706	733	759	785
		Reaction	882	**916**	958	1000	1042	1083	1125	1167	1209	1251
SPC 1300	0.68	Energy	706	**732**	766	799	833	866	900	933	967	1000
		Reaction	1030	**1070**	1118	1167	1216	1265	1314	1363	1412	1461
SPC 1400	0.74	Energy	881	**914**	956	998	1040	1082	1123	1165	1207	1249
		Reaction	1201	**1247**	1304	1361	1418	1475	1532	1589	1646	1703
SPC 1600	0.84	Energy	1316	**1364**	1426	1489	1551	1616	1682	1744	1807	1869
		Reaction	1567	**1628**	1702	1780	1855	1929	2004	2078	2152	2227
SPC 1800	0.94	Energy	1874	**1942**	2031	2120	2208	2301	2395	2483	2572	2661
		Reaction	1984	**2061**	2156	2255	2350	2445	2539	2633	2729	2823
SPC 2000	1.04	Energy	2570	**2664**	2786	2908	3029	3157	3285	3407	3529	3650
		Reaction	2450	**2544**	2661	2784	2901	3018	3135	3252	3369	3485

Performance values are for single units. Standard tolerance of +/- 10 % Energy absorption in kNm, Reaction force in kN at rated deflection of 70 %, max. deflection 74 %.

Liquid Bulk Terminal, Amsterdam, Netherlands

G 1.9	G 2.0	G 2.1	G 2.2	G2.3	G 2.4	G 2.5	G 2.6	G 2.7	G 2.8	G 2.9	G 3.0	G 3.1	Fender Size
13	**13**	14	14	14	15	15	16	16	16	17	**17**	18	SPC 300
81	**83**	86	89	91	94	96	99	102	104	107	**110**	112	
18	**19**	19	19	20	20	21	21	22	22	23	**23**	28	SPC 350
109	**111**	114	117	120	123	126	129	132	135	138	**141**	155	
30	**31**	32	33	34	35	36	37	38	39	40	**41**	42	SPC 400
143	**148**	152	157	162	166	171	176	180	185	190	**194**	199	
59	**61**	63	65	66	68	70	72	74	76	78	**80**	82	SPC 500
224	**231**	238	246	253	260	268	275	282	289	297	**304**	311	
102	**105**	108	111	115	118	121	125	128	131	135	**138**	141	SPC 600
323	**333**	344	354	365	375	385	396	406	417	427	**438**	448	
162	**167**	172	177	183	188	193	198	203	209	214	**219**	224	SPC 700
439	**454**	468	482	496	511	525	539	553	568	582	**596**	610	
241	**249**	257	265	272	280	288	296	304	311	319	**327**	335	SPC 800
574	**593**	611	630	648	667	686	704	723	741	760	**779**	797	
343	**354**	365	376	388	399	410	421	432	443	454	**465**	476	SPC 900
727	**750**	774	797	821	844	868	891	915	939	962	**986**	1009	
471	**486**	501	516	531	547	562	577	592	608	623	**638**	653	SPC 1000
897	**926**	955	984	1013	1043	1072	1101	1130	1159	1188	**1217**	1246	
627	**647**	667	687	707	728	748	768	788	809	829	**849**	869	SPC 1100
1085	**1120**	1156	1191	1226	1262	1297	1332	1367	1402	1437	**1473**	1508	
714	**737**	760	784	807	830	853	876	899	922	945	**969**	992	SPC 1150
1187	**1225**	1264	1302	1341	1379	1418	1456	1495	1533	1571	**1610**	1648	
812	**838**	864	890	917	943	969	996	1022	1048	1074	**1101**	1127	SPC 1200
1293	**1335**	1377	1418	1460	1502	1544	1586	1628	1670	1712	**1753**	1795	
1034	**1067**	1101	1134	1168	1201	1234	1268	1301	1335	1368	**1402**	1435	SPC 1300
1510	**1559**	1608	1656	1705	1754	1803	1852	1901	1950	1999	**2048**	2097	
1291	**1332**	1374	1416	1458	1499	1541	1583	1625	1667	1708	**1750**	1792	SPC 1400
1760	**1817**	1874	1931	1988	2045	2102	2159	2216	2273	2330	**2387**	2444	
1931	**1994**	2056	2118	2181	2243	2305	2368	2430	2442	2555	**2617**	2673	SPC 1600
2301	**2376**	2495	2524	2599	2673	2747	2882	2896	2971	3045	**3119**	3190	
2750	**2838**	2927	3016	3105	3194	3282	3371	3460	3549	3637	**3726**	3806	SPC 1800
2918	**3013**	3108	3202	3297	3392	3486	3581	3676	3771	3865	**3960**	4050	
3772	**3894**	4016	4137	4259	4381	4503	4624	4746	4868	4990	**5111**	5221	SPC 2000
3602	**3719**	3836	3953	4070	4187	4304	4421	4538	4655	4772	**4889**	5000	

GENERIC PERFORMANCE CURVE SPC CONE FENDERS



FENDER PERFORMANCE AT INTERMEDIATE DEFLECTION

Deflection in % of original fender height	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	72	73	74
Energy absorption in % of original value	0	1	5	10	17	25	34	44	53	62	71	78	85	92	100	104	107	110
Reaction Force in % of original value	0	27	48	65	79	90	97	100	99	93	84	73	68	76	100	132	148	165

TEMPERATURE FACTOR

Temperature in °C	-30	-20	-10	0	10	23	30	40	50	60
Correction Factor	1.559	1.375	1.182	1.083	1.034	1	0.976	0.945	0.918	0.917

VELOCITY FACTOR

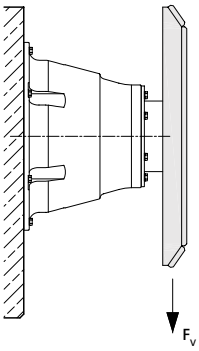
Compression Time in sec.	1	2	3	4	5	6	7	8	≥10
Correction Factor	1.050	1.020	1.012	1.005	1.000	1.000	1.000	1.000	1.000

ANGLE FACTOR

Compression Angle in °	0	3	6	9	10	12	15	20
Energy Correction Factor	100	100	100	100	100	96	92	80
Reaction Force Correction Factor	100	100	100	100	100	100	100	100

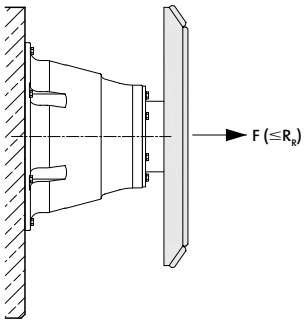
WEIGHT SUPPORT CAPACITY

Due to its geometry, the SPC Fender can support a front panel with at least the same weight as the fender body itself. For panel with a higher weight, we recommend the use of weight support chains.



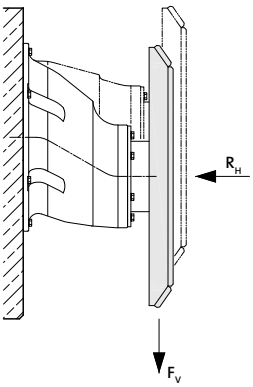
TENSION

Tension chains are recommended when tensile loads might exceed the rated reaction force of the rubber fender. Please contact us for detailed advice.



SHEAR

SPC Fenders are very stable against horizontal and vertical shear forces. However depending on the application and layout of the system shear chains might become necessary. Please contact us for further information.



CLEARANCES

The fender design should allow for:

- increased diameter of SPC Fenders during compression
- sufficient clearance of front panel
- minimum edge distance for anchoring
- angular compression

Fender Size	H [mm]	i [mm]	j [mm]	k [mm]	ED [mm]
SPC 300	300	225	540	45	≥ 300
SPC 350	350	263	630	53	≥ 350
SPC 400	400	300	720	60	≥ 400
SPC 500	500	375	900	75	≥ 500
SPC 600	600	450	1080	90	≥ 600
SPC 700	700	525	1260	105	≥ 700
SPC 800	800	600	1440	120	≥ 800
SPC 900	900	675	1620	135	≥ 900
SPC 1000	1000	750	1800	150	≥ 1000
SPC 1100	1100	825	1900	165	≥ 1100
SPC 1150	1150	863	2070	173	≥ 1150
SPC 1200	1200	900	2160	180	≥ 1200
SPC 1300	1300	975	2340	195	≥ 1300
SPC 1400	1400	1050	2520	210	≥ 1400
SPC 1600	1600	1200	2880	240	≥ 1600
SPC 1800	1800	1350	3240	270	≥ 1800
SPC 2000	2000	1500	3600	300	≥ 2000