



SPC Cone Fenders.

Characteristics

- ▶ Exceptionally good energy absorption to reaction force ratio (E/R)
- ▶ Outstanding energy absorption per fender weight
- ▶ High shear stability
- ▶ No loss of performance up to 10° contact angle
- ▶ Sophisticated and optimized fender geometry
- ▶ Optional overload stopper

Applications

- ▶ Container & Bulk Terminals
- ▶ Oil & Gas Terminals
- ▶ General Cargo Terminals
- ▶ Cruise Terminals
- ▶ Ferry & RoRo Terminals
- ▶ Navy

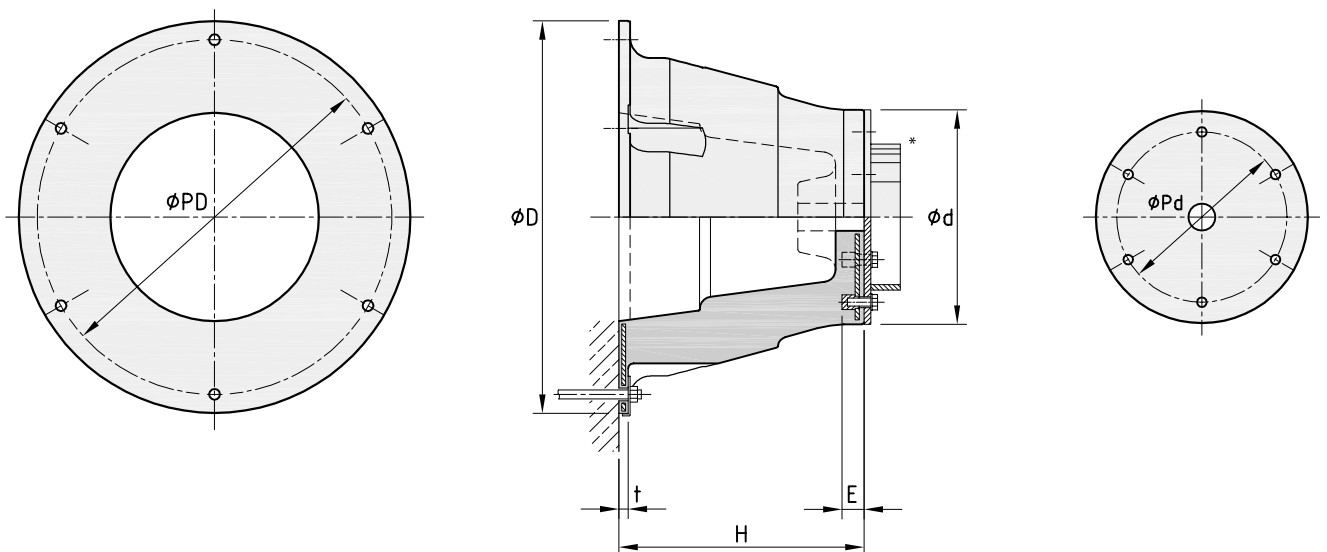
SAFIM AS AGENT

SPC 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 | 35 |
| SPC 350 | 350 | 575 | 306 | 20 | 38 | 510 | 245 | 4 x M20 | 53 |
| SPC 400 | 400 | 650 | 350 | 20 | 38 | 585 | 280 | 4 x M20 | 75 |
| SPC 500 | 500 | 820 | 435 | 22 | 45 | 730 | 350 | 4 x M24 | 149 |
| SPC 600 | 600 | 900 | 525 | 23 | 45 | 810 | 420 | 4 x M24 | 251 |
| SPC 700 | 700 | 1,120 | 615 | 26 | 72 | 1,020 | 490 | 4 x M30 | 395 |
| SPC 800 | 800 | 1,280 | 700 | 31 | 72 | 1,165 | 560 | 6 x M30 | 592 |
| SPC 900 | 900 | 1,450 | 785 | 36 | 72 | 1,313 | 630 | 6 x M30 | 850 |
| SPC 1000 | 1,000 | 1,600 | 875 | 38 | 82 | 1,460 | 700 | 6 x M36 | 1,128 |
| SPC 1100 | 1,100 | 1,760 | 963 | 40 | 92 | 1,605 | 770 | 6 x M42 | 1,484 |
| SPC 1150 | 1,150 | 1,850 | 1,010 | 41 | 92 | 1,550 | 805 | 6 x M42 | 1,714 |
| SPC 1200 | 1,200 | 1,920 | 1,050 | 46 | 92 | 1,750 | 840 | 8 x M42 | 1,938 |
| SPC 1300 | 1,300 | 2,080 | 1,140 | 50 | 105 | 1,900 | 910 | 8 x M48 | 2,413 |
| SPC 1400 | 1,400 | 2,240 | 1,230 | 53 | 105 | 2,040 | 980 | 8 x M48 | 2,915 |
| SPC 1600 | 1,600 | 2,560 | 1,400 | 64 | 105 | 2,330 | 1,120 | 8 x M48 | 4,357 |
| SPC 1800 | 1,800 | 2,880 | 1,575 | 74 | 120 | 2,620 | 1,260 | 10 x M56 | 6,203 |
| SPC 2000 | 2,000 | 3,090 | 1,750 | 80 | 120 | 2,920 | 1,400 | 10 x M56 | 8,074 |

Intermediate or larger sizes available upon request

SPC FENDER DRAWING



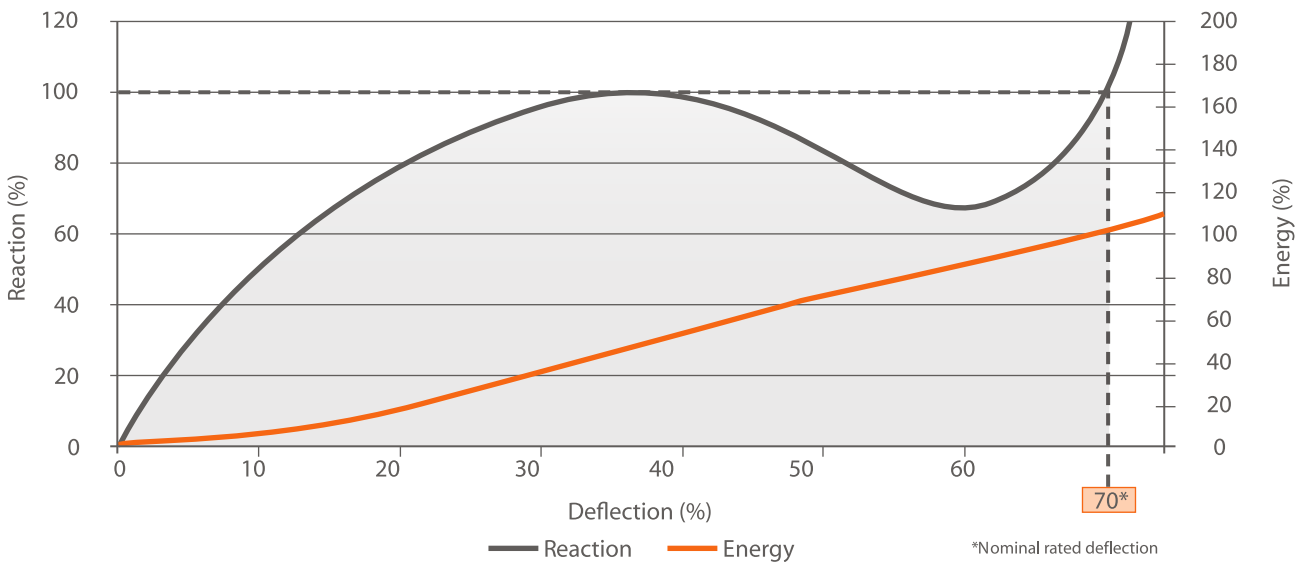
* Steel panel spool piece

PERFORMANCE TABLE S PC FENDERS (RPD = Rated Performance Data in acc. with PIANC)

| Fender Size | E/R | Rubber Grades | | | | | | | | | |
|-------------|----------------|---------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 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 | E _A | 9 | 9 | 10 | 10 | 10 | 11 | 11 | 12 | 12 | 12 |
| | R _F | 55 | 57 | 60 | 62 | 65 | 68 | 70 | 73 | 76 | 78 |
| SPC 350 | E _A | 13 | 14 | 14 | 15 | 15 | 16 | 16 | 17 | 17 | 18 |
| | R _F | 76 | 78 | 91 | 93 | 96 | 98 | 100 | 102 | 104 | 107 |
| SPC 400 | E _A | 21 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| | R _F | 98 | 102 | 106 | 111 | 115 | 120 | 125 | 129 | 134 | 138 |
| SPC 500 | E _A | 40 | 42 | 44 | 46 | 47 | 49 | 51 | 53 | 55 | 57 |
| | R _F | 153 | 159 | 166 | 173 | 180 | 188 | 195 | 202 | 209 | 217 |
| SPC 600 | E _A | 69 | 72 | 75 | 79 | 82 | 85 | 88 | 92 | 95 | 98 |
| | R _F | 220 | 229 | 239 | 249 | 260 | 270 | 281 | 291 | 302 | 312 |
| SPC 700 | E _A | 111 | 114 | 120 | 125 | 130 | 136 | 141 | 146 | 151 | 156 |
| | R _F | 300 | 312 | 325 | 340 | 354 | 368 | 382 | 397 | 411 | 425 |
| SPC 800 | E _A | 165 | 170 | 179 | 187 | 194 | 202 | 210 | 218 | 226 | 233 |
| | R _F | 392 | 407 | 425 | 444 | 462 | 481 | 500 | 518 | 537 | 555 |
| SPC 900 | E _A | 234 | 243 | 254 | 265 | 277 | 288 | 299 | 310 | 321 | 332 |
| | R _F | 496 | 515 | 538 | 562 | 585 | 609 | 632 | 656 | 680 | 703 |
| SPC 1000 | E _A | 321 | 333 | 349 | 364 | 379 | 394 | 410 | 425 | 440 | 455 |
| | R _F | 612 | 636 | 665 | 694 | 723 | 752 | 781 | 810 | 839 | 868 |
| SPC 1100 | E _A | 427 | 443 | 465 | 484 | 504 | 524 | 546 | 566 | 586 | 606 |
| | R _F | 741 | 767 | 805 | 840 | 875 | 910 | 945 | 980 | 1,015 | 1,050 |
| SPC 1150 | E _A | 487 | 506 | 529 | 552 | 575 | 599 | 622 | 645 | 668 | 691 |
| | R _F | 810 | 841 | 879 | 918 | 956 | 995 | 1,033 | 1,072 | 1,110 | 1,149 |
| SPC 1200 | E _A | 554 | 575 | 601 | 628 | 654 | 680 | 706 | 733 | 759 | 785 |
| | R _F | 882 | 916 | 958 | 1,000 | 1,042 | 1,083 | 1,125 | 1,167 | 1,209 | 1,251 |
| SPC 1300 | E _A | 706 | 732 | 766 | 799 | 833 | 866 | 900 | 933 | 967 | 1,000 |
| | R _F | 1,030 | 1,070 | 1,118 | 1,167 | 1,216 | 1,265 | 1,314 | 1,363 | 1,412 | 1,461 |
| SPC 1400 | E _A | 881 | 914 | 956 | 998 | 1,040 | 1,082 | 1,123 | 1,165 | 1,207 | 1,249 |
| | R _F | 1,201 | 1,247 | 1,304 | 1,361 | 1,418 | 1,475 | 1,532 | 1,589 | 1,646 | 1,703 |
| SPC 1600 | E _A | 1,316 | 1,364 | 1,426 | 1,489 | 1,551 | 1,616 | 1,682 | 1,744 | 1,807 | 1,869 |
| | R _F | 1,567 | 1,628 | 1,702 | 1,780 | 1,855 | 1,929 | 2,004 | 2,078 | 2,152 | 2,227 |
| SPC 1800 | E _A | 1,874 | 1,942 | 2,031 | 2,120 | 2,208 | 2,301 | 2,395 | 2,483 | 2,572 | 2,661 |
| | R _F | 1,984 | 2,061 | 2,156 | 2,255 | 2,350 | 2,445 | 2,539 | 2,633 | 2,729 | 2,823 |
| SPC 2000 | E _A | 2,570 | 2,664 | 2,786 | 2,908 | 3,029 | 3,157 | 3,285 | 3,407 | 3,529 | 3,650 |
| | R _F | 2,450 | 2,544 | 2,661 | 2,784 | 2,901 | 3,018 | 3,135 | 3,252 | 3,369 | 3,485 |

Performance values for single units | Energy Absorption (E_A) in kNm, Reaction Force (R_F) in kN | Nominal rated deflection is 70 % , max. deflection is 74 % | Actual deflection at Rated Performance Data may vary | Properties, tolerances, and testing standards can be found on pages 123 ff.

GENERIC PERFORMANCE CURVE SPC FENDERS



| Rubber Grades | | | | | | | | | | | | | Fender Size |
|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-------------|
| G 1.9 | G 2.0 | G 2.1 | G 2.2 | G 2.3 | G 2.4 | G 2.5 | G 2.6 | G 2.7 | G 2.8 | G 2.9 | G 3.0 | G 3.1 | |
| 13 81 | 13 83 | 14 86 | 14 89 | 14 91 | 15 94 | 15 96 | 16 99 | 16 102 | 16 104 | 17 107 | 17 110 | 18 112 | SPC 300 |
| 18 109 | 19 111 | 19 114 | 19 117 | 20 120 | 20 123 | 21 126 | 21 129 | 22 132 | 22 135 | 23 138 | 23 141 | 28 155 | SPC 350 |
| 30 143 | 31 148 | 32 152 | 33 157 | 34 162 | 35 166 | 36 171 | 37 176 | 38 180 | 39 185 | 40 190 | 41 194 | 42 199 | SPC 400 |
| 59 224 | 61 231 | 63 238 | 65 246 | 66 253 | 68 260 | 70 268 | 72 275 | 74 282 | 76 289 | 78 297 | 80 304 | 82 311 | SPC 500 |
| 102 323 | 105 333 | 108 344 | 111 354 | 115 365 | 118 375 | 121 385 | 125 396 | 128 406 | 131 417 | 135 427 | 138 438 | 141 448 | SPC 600 |
| 162 439 | 167 454 | 172 468 | 177 482 | 183 496 | 188 511 | 193 525 | 198 539 | 203 553 | 209 568 | 214 582 | 219 596 | 224 610 | SPC 700 |
| 241 574 | 249 593 | 257 611 | 265 630 | 272 648 | 280 667 | 288 686 | 296 704 | 304 723 | 311 741 | 319 760 | 327 779 | 335 797 | SPC 800 |
| 343 727 | 354 750 | 365 774 | 376 797 | 388 821 | 399 844 | 410 868 | 421 891 | 432 915 | 443 939 | 454 962 | 465 986 | 476 1,009 | SPC 900 |
| 471 897 | 486 926 | 501 955 | 516 984 | 531 1,013 | 547 1,043 | 562 1,072 | 577 1,101 | 592 1,130 | 608 1,159 | 623 1,188 | 638 1,217 | 653 1,246 | SPC 1000 |
| 627 1,085 | 647 1,120 | 667 1,156 | 687 1,191 | 707 1,226 | 728 1,262 | 748 1,297 | 768 1,332 | 788 1,367 | 809 1,402 | 829 1,437 | 849 1,473 | 869 1,508 | SPC 1100 |
| 714 1,187 | 737 1,225 | 760 1,264 | 784 1,302 | 807 1,341 | 830 1,379 | 853 1,418 | 876 1,456 | 899 1,495 | 922 1,533 | 945 1,571 | 969 1,610 | 992 1,648 | SPC 1150 |
| 812 1,293 | 838 1,335 | 864 1,377 | 890 1,418 | 917 1,460 | 943 1,502 | 969 1,544 | 996 1,586 | 1,022 1,628 | 1,048 1,670 | 1,074 1,712 | 1,101 1,753 | 1,127 1,795 | SPC 1200 |
| 1,034 1,510 | 1,067 1,559 | 1,101 1,608 | 1,134 1,656 | 1,168 1,705 | 1,201 1,754 | 1,234 1,803 | 1,268 1,852 | 1,301 1,901 | 1,335 1,950 | 1,368 1,999 | 1,402 2,048 | 1,435 2,097 | SPC 1300 |
| 1,291 1,760 | 1,332 1,817 | 1,374 1,874 | 1,416 1,931 | 1,458 1,988 | 1,499 2,045 | 1,541 2,102 | 1,583 2,159 | 1,625 2,216 | 1,667 2,273 | 1,708 2,330 | 1,750 2,387 | 1,792 2,444 | SPC 1400 |
| 1,931 2,301 | 1,994 2,376 | 2,056 2,495 | 2,118 2,524 | 2,181 2,599 | 2,243 2,673 | 2,305 2,747 | 2,368 2,822 | 2,430 2,896 | 2,442 2,971 | 2,555 3,045 | 2,617 3,119 | 2,673 3,190 | SPC 1600 |
| 2,750 2,918 | 2,838 3,013 | 2,927 3,108 | 3,016 3,202 | 3,105 3,297 | 3,194 3,392 | 3,282 3,486 | 3,371 3,581 | 3,460 3,676 | 3,549 3,771 | 3,637 3,865 | 3,726 3,960 | 3,806 4,050 | SPC 1800 |
| 3,772 3,602 | 3,894 3,719 | 4,016 3,836 | 4,137 3,953 | 4,259 4,070 | 4,381 4,187 | 4,503 4,304 | 4,624 4,421 | 4,746 4,538 | 4,868 4,655 | 4,990 4,772 | 5,111 4,889 | 5,221 5,000 | SPC 2000 |



Ferry Terminal | Zadar | Croatia



Eurotank Jetty | Amsterdam | The Netherlands

CORRECTION FACTORS

FENDER PERFORMANCE AT INTERMEDIATE DEFLECTION

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

TEMPERATURE FACTOR

| | | | | | | | | | | | | | |
|-------------------|---|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Temperature [° C] | -60 | -50 | -40 | -30 | -20 | -10 | 0 | 10 | 23 | 30 | 40 | 50 | 60 |
| Correction Factor | Contact your local SFT office for special compound consultation | | | 1.559 | 1.375 | 1.182 | 1.083 | 1.034 | 1.000 | 0.976 | 0.945 | 0.918 | 0.917 |

VELOCITY FACTOR

| | | | | | | | | | |
|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Compression Time [s] | 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

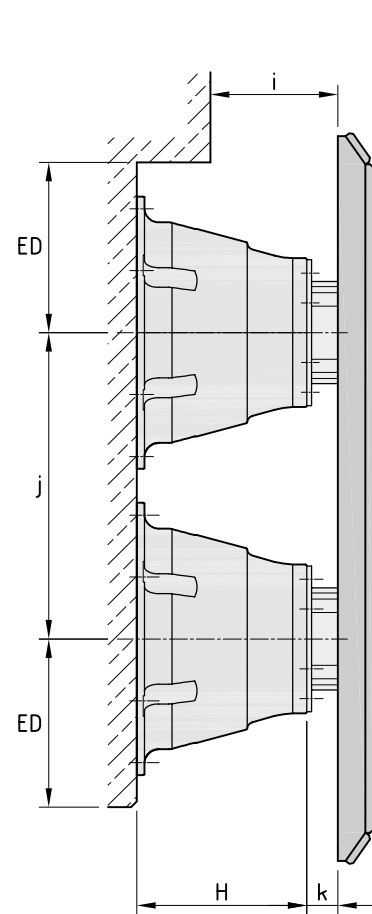
| | | | | | | | | |
|---|-----|-----|-----|-----|-----|-----|-----|-----|
| Compression Angle [°] | 0 | 3 | 6 | 9 | 10 | 12 | 15 | 20 |
| Energy Absorption of original value [%] | 100 | 100 | 100 | 100 | 100 | 96 | 92 | 80 |
| Reaction Force of original value [%] | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

INSTALLATION CLEARANCES

| 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 | 1,080 | 90 | 600 |
| SPC 700 | 700 | 525 | 1,260 | 105 | 700 |
| SPC 800 | 800 | 600 | 1,440 | 120 | 800 |
| SPC 900 | 900 | 675 | 1,620 | 135 | 900 |
| SPC 1000 | 1,000 | 750 | 1,800 | 150 | 1,000 |
| SPC 1100 | 1,100 | 825 | 1,900 | 165 | 1,100 |
| SPC 1150 | 1,150 | 863 | 2,070 | 175 | 1,150 |
| SPC 1200 | 1,200 | 900 | 2,160 | 180 | 1,200 |
| SPC 1300 | 1,300 | 975 | 2,340 | 195 | 1,300 |
| SPC 1400 | 1,400 | 1,050 | 2,520 | 210 | 1,400 |
| SPC 1600 | 1,600 | 1,200 | 2,880 | 240 | 1,600 |
| SPC 1800 | 1,800 | 1,350 | 3,240 | 270 | 1,800 |
| SPC 2000 | 2,000 | 1,500 | 3,600 | 300 | 2,000 |

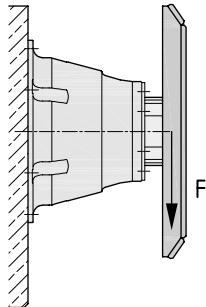
The fender system design should allow for:

- ▶ increased diameter of SPC Fenders during compression [j]
- ▶ sufficient clearance of front panel [i]
- ▶ minimum edge distance for anchoring and to other protrusions [ED]
- ▶ angular compression
- ▶ spool piece [k]



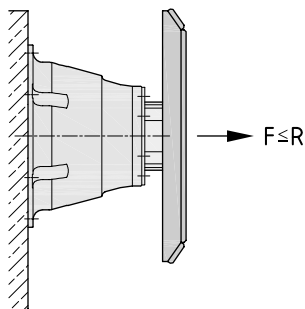
WEIGHT SUPPORT CAPACITY

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



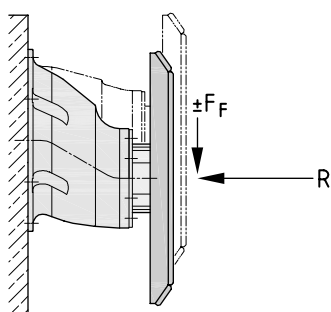
TENSION

Tension chains are recommended, especially when tensile loads might exceed the rated reaction force of the rubber fender.*



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.*



Mauritius Container Terminal | Port Louis | Mauritius



Oil Terminal | Pepel Island | Sierra Leone



Container Terminal | Aqaba | Jordan

* For detailed advice, please contact your local SFT office. SFT generally recommends the use of properly designed suspension chain systems to support the fender's performance and reduce the risk of damages.