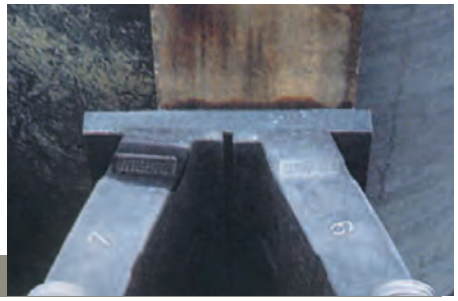
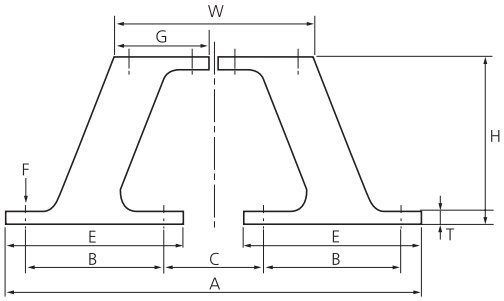
# TR - Fender(YTR)

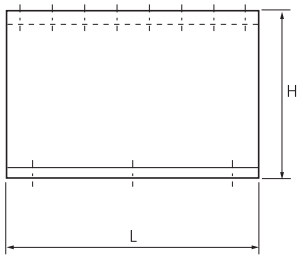


## Feature

1. The choice of symmetrical and asymmetric boltings
2. Excellent high shear strength in lengthwise wise plan
3. Sizes to suit every application
4. Easy and quick installation

## Drawing




## Dimension

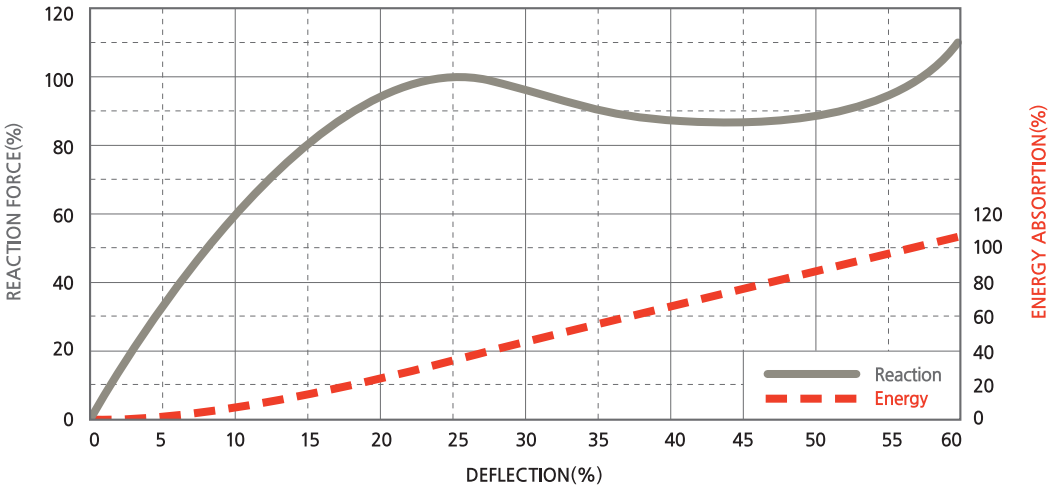
Unit : mm

| Dimension / Height | F | A | B | C | E | G | T | W | L |
|---|---|---|---|---|---|---|---|---|---|
| YTR 600H | M48(2") | 1435 | 450 | 375 | 592.5 | 180 | 50 | 965 | 1000 ~ 3000 |
| YTR 800H | M64(2 1/2") | 1850 | 585 | 480 | 765 | 240 | 60 | 800 | |
| YTR 1000H | M64(2 1/2") | 2180 | 685 | 610 | 890 | 300 | 65 | 1000 | |
| YTR 1150H | M64(2 1/2") | 2500 | 800 | 650 | 1005 | 345 | 65 | 1150 | |
| YTR 1300H | M76(3") | 2740 | 880 | 750 | 1115 | 395 | 65 | 1300 | |
| YTR 1450H | M76(3") | 3100 | 1000 | 800 | 1300 | 675 | 100 | 1450 | |
| YTR 1600H | M76(3") | 3300 | 1100 | 800 | 1400 | 750 | 100 | 1600 | |
| YTR 1800H | M76(3") | 3670 | 1200 | 970 | 1500 | 830 | 110 | 1800 | |
| YTR 2000H | M76(3") | 4050 | 1300 | 1150 | 1600 | 880 | 120 | 2000 | |
| YTR 2250H | M76(3") | 4400 | 1400 | 1300 | 1700 | 945 | 130 | 2250 | |
| YTR 2500H | M76(3") | 4860 | 1500 | 1560 | 1800 | 1000 | 140 | 2500 | |

Notes
- Above detail dimension of components can be changed depending on owner specification and local environment condition.
- Detail dimension will be guided by our drawing and specification.

# System Fender

## Performance Curve



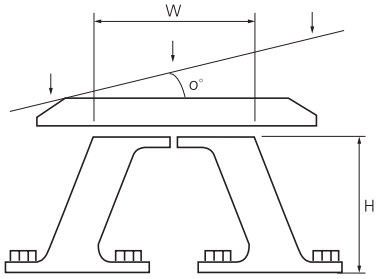

## Performance of Intermediate Deflection

| Deflection(%) | 5% | 10% | 15% | 20% | 25% | 30% | 35% | 40% | 45% | 50% | 55% | 57.5% | 60% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reaction(%) | 32% | 58% | 79% | 94% | 100% | 95% | 90% | 87% | 86% | 89% | 93% | 100% | 110% |
| Energy(%) | 2% | 6% | 13% | 24% | 35% | 44% | 56% | 65% | 75% | 85% | 94% | 100% | 106% |

## Angular Berthing

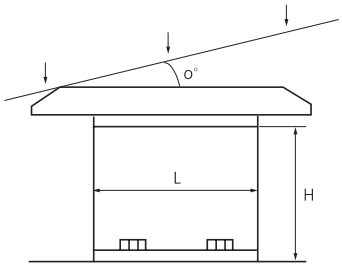
Fender System 1
[ Transversal
Angular Berthing ]

· Case1 : W=H
· Case2 : W=1.25H
· Case3 : W=1.5H




Fender System 2
[ Longitudinal
Angular Berthing ]

· Case1 : W=L/H=1
· Case2 : W=L/H=1.5
· Case3 : W=L/H=2




## Angular Performance Factor

| Angle | | 0° | | 3° | | 6° | | 9° | | 12° | | 15° | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Performance | | R · F | E · A | R · F | E · A | R · F | E · A | R · F | E · A | R · F | E · A | R · F | E · A |
| Transversal Angular | Case1 [W=1] | 1.00 | 1.00 | 0.95 | 0.94 | 0.93 | 0.88 | 0.92 | 0.82 | 0.91 | 0.76 | 0.90 | 0.70 |
| | Case2 [W=1.25H] | 1.00 | 1.00 | 0.94 | 0.92 | 0.92 | 0.85 | 0.90 | 0.78 | 0.88 | 0.70 | 0.86 | 0.63 |
| | Case3 [W=1.5H] | 1.00 | 1.00 | 0.93 | 0.90 | 0.91 | 0.82 | 0.88 | 0.74 | 0.85 | 0.65 | 0.82 | 0.56 |
| Longitudinal Angular | Case1 [L/H=1] | 1.00 | 1.00 | 0.97 | 0.94 | 0.94 | 0.89 | 0.92 | 0.85 | 0.90 | 0.80 | 0.88 | 0.75 |
| | Case2 [L/H=1.5] | 1.00 | 1.00 | 0.94 | 0.92 | 0.93 | 0.85 | 0.90 | 0.78 | 0.86 | 0.72 | 0.80 | 0.65 |
| | Case3 [L/H=2] | 1.00 | 1.00 | 0.94 | 0.89 | 0.92 | 0.80 | 0.89 | 0.72 | 0.89 | 0.65 | 0.90 | 0.58 |

## Performance Table

Unit : mm

| Size / Performance | | YTR 600H | YTR 800H | YTR 1000H | YTR 1150H | YTR 1300H | YTR 1450H | YTR 1600H | YTR 1800H | YTR 2000H | YTR 2250H | YTR 2500H |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G260 | R · F[kN] | 645 | 859 | 1074 | 1236 | 1397 | 1558 | 1719 | 1934 | 2148 | 2418 | 2686 |
| | E · A[kN-m] | 175 | 311 | 486 | 642 | 821 | 1021 | 1243 | 1573 | 1942 | 2459 | 3036 |
| G250 | R · F[kN] | 623 | 831 | 1038 | 1195 | 1350 | 1506 | 1661 | 1869 | 2077 | 2337 | 2596 |
| | E · A[kN-m] | 169 | 300 | 469 | 620 | 794 | 987 | 1202 | 1521 | 1878 | 2377 | 2935 |
| G240 | R · F[kN] | 602 | 802 | 1003 | 1154 | 1303 | 1454 | 1604 | 1805 | 2005 | 2257 | 2507 |
| | E · A[kN-m] | 163 | 290 | 453 | 599 | 766 | 953 | 1161 | 1468 | 1813 | 2295 | 2833 |
| G230 | R · F[kN] | 580 | 773 | 967 | 1113 | 1257 | 1403 | 1547 | 1740 | 1934 | 2176 | 2417 |
| | E · A[kN-m] | 158 | 279 | 437 | 577 | 739 | 919 | 1119 | 1416 | 1748 | 2213 | 2732 |
| G220 | R · F[kN] | 559 | 745 | 931 | 1071 | 1210 | 1351 | 1490 | 1676 | 1862 | 2095 | 2327 |
| | E · A[kN-m] | 152 | 269 | 421 | 556 | 712 | 885 | 1078 | 1363 | 1683 | 2131 | 2631 |
| G210 | R · F[kN] | 537 | 716 | 895 | 1030 | 1164 | 1299 | 1432 | 1611 | 1790 | 2015 | 2238 |
| | E · A[kN-m] | 146 | 259 | 405 | 535 | 684 | 851 | 1036 | 1311 | 1619 | 2049 | 2530 |
| G200 | R · F[kN] | 516 | 688 | 859 | 989 | 1117 | 1247 | 1375 | 1547 | 1719 | 1934 | 2148 |
| | E · A[kN-m] | 140 | 248 | 389 | 513 | 657 | 817 | 995 | 1258 | 1554 | 1967 | 2429 |
| G190 | R · F[kN] | 494 | 659 | 824 | 948 | 1071 | 1195 | 1318 | 1482 | 1647 | 1854 | 2059 |
| | E · A[kN-m] | 134 | 238 | 372 | 492 | 630 | 783 | 953 | 1206 | 1489 | 1885 | 2327 |
| G180 | R · F[kN] | 473 | 630 | 788 | 906 | 1024 | 1143 | 1260 | 1418 | 1576 | 1773 | 1969 |
| | E · A[kN-m] | 128 | 228 | 356 | 471 | 602 | 749 | 912 | 1154 | 1424 | 1803 | 2226 |
| G170 | R · F[kN] | 451 | 602 | 752 | 865 | 978 | 1091 | 1203 | 1354 | 1504 | 1692 | 1880 |
| | E · A[kN-m] | 123 | 217 | 340 | 449 | 575 | 715 | 870 | 1101 | 1360 | 1721 | 2125 |
| G160 | R · F[kN] | 430 | 573 | 716 | 824 | 931 | 1039 | 1146 | 1289 | 1432 | 1612 | 1790 |
| | E · A[kN-m] | 117 | 207 | 324 | 428 | 547 | 681 | 829 | 1049 | 1295 | 1639 | 2024 |
| G150 | R · F[kN] | 408 | 544 | 680 | 783 | 884 | 987 | 1089 | 1225 | 1361 | 1531 | 1701 |
| | E · A[kN-m] | 111 | 197 | 308 | 406 | 520 | 647 | 788 | 996 | 1230 | 1557 | 1923 |
| G140 | R · F[kN] | 387 | 516 | 645 | 742 | 838 | 935 | 1031 | 1160 | 1289 | 1451 | 1611 |
| | E · A[kN-m] | 105 | 186 | 291 | 385 | 493 | 613 | 746 | 944 | 1165 | 1475 | 1821 |
| G130 | R · F[kN] | 365 | 487 | 609 | 700 | 791 | 883 | 974 | 1096 | 1217 | 1370 | 1522 |
| | E · A[kN-m] | 99.2 | 176 | 275 | 364 | 465 | 579 | 705 | 891 | 1101 | 1393 | 1720 |
| G120 | R · F[kN] | 344 | 458 | 573 | 659 | 745 | 831 | 917 | 1031 | 1146 | 1289 | 1432 |
| | E · A[kN-m] | 93.4 | 166 | 259 | 342 | 438 | 545 | 663 | 839 | 1036 | 1311 | 1619 |
| G110 | R · F[kN] | 322 | 430 | 537 | 618 | 698 | 779 | 859 | 967 | 1074 | 1209 | 1343 |
| | E · A[kN-m] | 87.6 | 155 | 243 | 321 | 411 | 511 | 622 | 787 | 971 | 1229 | 1518 |
| G100 | R · F[kN] | 301 | 401 | 501 | 577 | 652 | 727 | 802 | 902 | 1003 | 1128 | 1253 |
| | E · A[kN-m] | 81.7 | 145 | 227 | 299 | 383 | 477 | 580 | 734 | 906 | 1148 | 1417 |

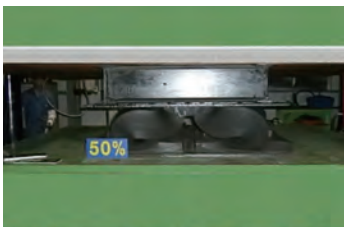
- R · F : Reaction Force[kN] - E · A : Energy Absorption[kN-m] - Tolerance : ±5% or ±10% - Rated Deflection : 57.5% - Maximum Deflection : 60%

## Compression Test

DEFLECTION : 0%


DEFLECTION : 30%


DEFLECTION : 50%

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