



# Marine Fenders International, Inc.

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## Ocean Guard™ Monopile Donut Fender

- Thick, tough filament nylon reinforced non-marking urethane skin.



- Heat laminated closed cell energy absorbing foam core.



- Anti-friction bearing pads allows fender to rotate freely.



- Floats with water level.

- Fender performance is engineered at 60% compression. The monopile deflection provides additional energy absorption for the same reaction force rating.

| Fender Size     |      |     | Standard Capacity |                   |                       |                   | High Capacity         |                   |                       |                   | Extra High Capacity   |                   |                       |                   | Super High Capacity   |                   |                       |                   | Ultra High Capacity   |                   |                       |                |       |      |       |
|-----------------|------|-----|-------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|-------------------|-----------------------|----------------|-------|------|-------|
| Fender Diameter | Pile |     | Flat Length       | Energy Absorption |                       | Reaction Force    |                       | Energy Absorption |                       | Reaction Force    |                       | Energy Absorption |                       | Reaction Force    |                       | Energy Absorption |                       | Reaction Force    |                       | Energy Absorption |                       | Reaction Force |       |      |       |
|                 | ft   | m   |                   | (60% Compression) | (When EA is Achieved) | (60% Compression) | (When EA is Achieved) | (60% Compression) | (When EA is Achieved) | (60% Compression) | (When EA is Achieved) | (60% Compression) | (When EA is Achieved) | (60% Compression) | (When EA is Achieved) | (60% Compression) | (When EA is Achieved) | (60% Compression) | (When EA is Achieved) | (60% Compression) | (When EA is Achieved) |                |       |      |       |
| ft              | m    | ft  | m                 | ft                | m                     | ft-kips           | ton-m                 | kips              | ton                   | ft-kips           | ton-m                 | kips              | ton                   | ft-kips           | ton-m                 | kips              | ton                   | ft-kips           | ton-m                 | kips              | ton                   | ft-kips        | ton-m | kips | ton   |
| 4.5             | 1.4  | 2   | 0.6               | 2                 | 0.6                   | 4                 | 0.6                   | 18                | 8.2                   | 7                 | 1.0                   | 29                | 13.2                  | 10                | 1.4                   | 44                | 20.0                  | 15                | 2.1                   | 66                | 29.9                  | 20             | 2.8   | 90   | 40.8  |
| 4.5             | 1.4  | 2   | 0.6               | 3                 | 0.9                   | 6                 | 0.8                   | 27                | 12.2                  | 10                | 1.4                   | 43                | 19.5                  | 15                | 2.1                   | 66                | 29.9                  | 22                | 3.0                   | 99                | 44.9                  | 30             | 4.1   | 135  | 61.2  |
| 4.5             | 1.4  | 2   | 0.6               | 4                 | 1.2                   | 8                 | 1.1                   | 35                | 15.9                  | 13                | 1.8                   | 58                | 26.3                  | 20                | 2.8                   | 88                | 39.9                  | 30                | 4.1                   | 132               | 59.9                  | 40             | 5.5   | 180  | 81.6  |
| 4.5             | 1.4  | 2   | 0.6               | 5                 | 1.5                   | 10                | 1.4                   | 44                | 20.0                  | 16                | 2.2                   | 72                | 32.7                  | 25                | 3.5                   | 110               | 49.9                  | 37                | 5.1                   | 165               | 74.8                  | 51             | 7.1   | 225  | 102.1 |
| 4.5             | 1.4  | 2   | 0.6               | 6                 | 1.8                   | 12                | 1.7                   | 53                | 24.0                  | 20                | 2.8                   | 87                | 39.5                  | 30                | 4.1                   | 132               | 59.9                  | 44                | 6.1                   | 198               | 89.8                  | 61             | 8.4   | 270  | 122.5 |
| 4.5             | 1.4  | 2   | 0.6               | 7                 | 2.1                   | 14                | 1.9                   | 62                | 28.1                  | 23                | 3.2                   | 101               | 45.8                  | 35                | 4.8                   | 154               | 69.9                  | 52                | 7.2                   | 230               | 104.3                 | 71             | 9.8   | 315  | 142.9 |
| 4.5             | 1.4  | 2   | 0.6               | 8                 | 2.4                   | 16                | 2.2                   | 71                | 32.2                  | 26                | 3.6                   | 116               | 52.6                  | 40                | 5.5                   | 176               | 79.8                  | 59                | 8.2                   | 263               | 119.3                 | 81             | 11.2  | 360  | 163.3 |
| 5               | 1.5  | 2.5 | 0.8               | 2                 | 0.6                   | 5                 | 0.7                   | 21                | 9.5                   | 8                 | 1.1                   | 34                | 15.4                  | 12                | 1.7                   | 51                | 23.1                  | 17                | 2.4                   | 77                | 34.9                  | 24             | 3.3   | 105  | 47.6  |
| 5               | 1.5  | 2.5 | 0.8               | 3                 | 0.9                   | 7                 | 1.0                   | 31                | 14.1                  | 11                | 1.5                   | 51                | 23.1                  | 17                | 2.4                   | 77                | 34.9                  | 26                | 3.6                   | 115               | 52.2                  | 35             | 4.8   | 157  | 71.2  |
| 5               | 1.5  | 2.5 | 0.8               | 4                 | 1.2                   | 10                | 1.4                   | 41                | 18.6                  | 15                | 2.1                   | 68                | 30.8                  | 23                | 3.2                   | 103               | 46.7                  | 35                | 4.8                   | 154               | 69.9                  | 47             | 6.5   | 210  | 95.3  |
| 5               | 1.5  | 2.5 | 0.8               | 5                 | 1.5                   | 12                | 1.7                   | 52                | 23.6                  | 19                | 2.6                   | 84                | 38.1                  | 29                | 4.0                   | 128               | 58.1                  | 43                | 5.9                   | 192               | 87.1                  | 59             | 8.2   | 262  | 118.8 |
| 5               | 1.5  | 2.5 | 0.8               | 6                 | 1.8                   | 15                | 2.1                   | 62                | 28.1                  | 23                | 3.2                   | 101               | 45.8                  | 35                | 4.8                   | 154               | 69.9                  | 52                | 7.2                   | 230               | 104.3                 | 71             | 9.8   | 315  | 142.9 |
| 5               | 1.5  | 2.5 | 0.8               | 7                 | 2.1                   | 17                | 2.4                   | 72                | 32.7                  | 27                | 3.7                   | 118               | 53.5                  | 40                | 5.5                   | 180               | 81.6                  | 60                | 8.3                   | 269               | 122.0                 | 83             | 11.5  | 367  | 166.5 |
| 5               | 1.5  | 2.5 | 0.8               | 8                 | 2.4                   | 20                | 2.8                   | 83                | 37.6                  | 30                | 4.1                   | 135               | 61.2                  | 46                | 6.4                   | 205               | 93.0                  | 69                | 9.5                   | 307               | 139.3                 | 94             | 13.0  | 419  | 190.1 |
| 6               | 1.8  | 3   | 0.9               | 2                 | 0.6                   | 7                 | 1.0                   | 24                | 10.9                  | 12                | 1.7                   | 39                | 17.7                  | 18                | 2.5                   | 59                | 26.8                  | 26                | 3.6                   | 88                | 39.9                  | 36             | 5.0   | 120  | 54.4  |
| 6               | 1.8  | 3   | 0.9               | 3                 | 0.9                   | 11                | 1.5                   | 35                | 15.9                  | 17                | 2.4                   | 58                | 26.3                  | 26                | 3.6                   | 88                | 39.9                  | 40                | 5.5                   | 132               | 59.9                  | 54             | 7.5   | 180  | 81.6  |
| 6               | 1.8  | 3   | 0.9               | 4                 | 1.2                   | 14                | 1.9                   | 47                | 21.3                  | 23                | 3.2                   | 77                | 34.9                  | 35                | 4.8                   | 117               | 53.1                  | 53                | 7.3                   | 176               | 79.8                  | 72             | 10.0  | 240  | 108.9 |
| 6               | 1.8  | 3   | 0.9               | 5                 | 1.5                   | 18                | 2.5                   | 59                | 26.8                  | 29                | 4.0                   | 96                | 43.5                  | 44                | 6.1                   | 147               | 66.7                  | 66                | 9.1                   | 219               | 99.3                  | 90             | 12.4  | 300  | 136.1 |
| 6               | 1.8  | 3   | 0.9               | 6                 | 1.8                   | 21                | 2.9                   | 71                | 32.2                  | 35                | 4.8                   | 116               | 52.6                  | 53                | 7.3                   | 176               | 79.8                  | 79                | 10.9                  | 263               | 119.3                 | 108            | 14.9  | 360  | 163.3 |
| 6               | 1.8  | 3   | 0.9               | 7                 | 2.1                   | 25                | 3.5                   | 83                | 37.6                  | 41                | 5.7                   | 135               | 61.2                  | 62                | 8.6                   | 205               | 93.0                  | 92                | 12.7                  | 307               | 139.3                 | 126            | 17.4  | 419  | 190.1 |
| 6               | 1.8  | 3   | 0.9               | 8                 | 2.4                   | 29                | 4.0                   | 94                | 42.6                  | 46                | 6.4                   | 154               | 69.9                  | 70                | 9.7                   | 234               | 106.1                 | 105               | 14.5                  | 351               | 159.2                 | 144            | 19.9  | 479  | 217.3 |
| 7               | 2.1  | 3.5 | 1.1               | 3                 | 0.9                   | 15                | 2.1                   | 40                | 18.1                  | 24                | 3.3                   | 65                | 29.5                  | 37                | 5.1                   | 99                | 44.9                  | 56                | 7.7                   | 148               | 67.1                  | 76             | 10.5  | 202  | 91.6  |
| 7               | 2.1  | 3.5 | 1.1               | 4                 | 1.2                   | 19                | 2.6                   | 53                | 24.0                  | 33                | 4.6                   | 87                | 39.5                  | 49                | 6.8                   | 132               | 59.9                  | 74                | 10.2                  | 198               | 89.8                  | 101            | 14.0  | 270  | 122.5 |
| 7               | 2.1  | 3.5 | 1.1               | 5                 | 1.5                   | 24                | 3.3                   | 66                | 29.9                  | 41                | 5.7                   | 109               | 49.4                  | 62                | 8.6                   | 165               | 74.8                  | 93                | 12.9                  | 247               | 112.0                 | 126            | 17.4  | 337  | 152.9 |
| 7               | 2.1  | 3.5 | 1.1               | 6                 | 1.8                   | 29                | 4.0                   | 80                | 36.3                  | 49                | 6.8                   | 130               | 59.0                  | 74                | 10.2                  | 198               | 89.8                  | 111               | 15.4                  | 296               | 134.3                 | 152            | 21.0  | 404  | 183.3 |
| 7               | 2.1  | 3.5 | 1.1               | 7                 | 2.1                   | 34                | 4.7                   | 93                | 42.2                  | 57                | 7.9                   | 152               | 68.9                  | 87                | 12.0                  | 231               | 104.8                 | 130               | 18.0                  | 346               | 156.9                 | 177            | 24.5  | 472  | 214.1 |
| 7               | 2.1  | 3.5 | 1.1               | 8                 | 2.4                   | 39                | 5.4                   | 106               | 48.1                  | 65                | 9.0                   | 174               | 78.9                  | 99                | 13.7                  | 264               | 119.8                 | 148               | 20.5                  | 395               | 179.2                 | 202            | 27.9  | 539  | 244.5 |
| 7.5             | 2.3  | 4   | 1.2               | 3                 | 0.9                   | 17                | 2.4                   | 44                | 20.0                  | 27                | 3.7                   | 72                | 32.7                  | 41                | 5.7                   | 110               | 49.9                  | 62                | 8.6                   | 165               | 74.8                  | 84             | 11.6  | 225  | 102.1 |
| 7.5             | 2.3  | 4   | 1.2               | 4                 | 1.2                   | 22                | 3.0                   | 59                | 26.8                  | 36                | 5.0                   | 96                | 43.5                  | 55                | 7.6                   | 147               | 66.7                  | 82                | 11.3                  | 219               | 99.3                  | 112            | 15.5  | 300  | 136.1 |
| 7.5             | 2.3  | 4   | 1.2               | 5                 | 1.5                   | 28                | 3.9                   | 74                | 33.6                  | 45                | 6.2                   | 121               | 54.9                  | 69                | 9.5                   | 183               | 83.0                  | 103               | 14.2                  | 274               | 124.3                 | 140            | 19.4  | 375  | 170.1 |
| 7.5             | 2.3  | 4   | 1.2               | 6                 | 1.8                   | 33                | 4.6                   | 89                | 40.4                  | 54                | 7.5                   | 145               | 65.8                  | 82                | 11.3                  | 220               | 99.8                  | 120               | 16.6                  | 329               | 149.2                 | 169            | 23.4  | 449  | 203.7 |
| 7.5             | 2.3  | 4   | 1.2               | 7                 | 2.1                   | 39                | 5.4                   | 103               | 46.7                  | 63                | 8.7                   | 169               | 76.7                  | 96                | 13.3                  | 256               | 116.1                 | 144               | 19.9                  | 384               | 174.2                 | 197            | 27.2  | 524  | 237.7 |
| 7.5             | 2.3  | 4   | 1.2               | 8                 | 2.4                   | 45                | 6.2                   | 118               | 53.5                  | 72                | 10.0                  | 193               | 87.5                  | 110               | 15.2                  | 293               | 132.9                 | 165               | 22.8                  | 439               | 199.1                 | 225            | 31.1  | 599  | 271.7 |
| 8.3             | 2.5  | 4.5 | 1.4               | 3                 | 0.9                   | 20                | 2.8                   | 49                | 22.2                  | 33                | 4.6                   | 80                | 36.3                  | 50                | 6.9                   | 121               | 54.9                  | 75                | 10.4                  | 181               | 82.1                  | 102            | 14.1  | 247  | 112.0 |
| 8.3             | 2.5  | 4.5 | 1.4               | 4                 | 1.2                   | 27                | 3.7                   | 65                | 29.5                  | 44                | 6.1                   | 106               | 48.1                  | 66                | 9.1                   | 161               | 73.0                  | 100               | 13.8                  | 241               | 109.3                 | 136            | 18.8  | 330  | 149.7 |
| 8.3             | 2.5  | 4.5 | 1.4               | 5                 | 1.5                   | 33                | 4.6                   | 81                | 36.7                  | 55                | 7.6                   | 133               | 60.3                  | 83                | 11.5                  | 201               | 91.2                  | 124               | 17.1                  | 302               | 137.0                 | 170            | 23.5  | 412  | 186.9 |
| 8.3             | 2.5  | 4.5 | 1.4               | 6                 | 1.8                   | 40                | 5.5                   | 97                | 44.0                  | 66                | 9.1                   | 159               | 72.1                  | 100               | 13.8                  | 242               | 109.8                 | 149               | 20.6                  | 362               | 164.2                 | 204            | 28.2  | 494  | 224.1 |
| 8.3             | 2.5  | 4.5 | 1.4               | 7                 | 2.1                   | 47                | 6.5                   | 114               | 51.7                  | 77                | 10.6                  | 186               | 84.4                  | 116               | 16.0                  | 282               | 127.9                 | 174               | 24.1                  | 422               | 191.4                 | 238            | 32.9  | 577  | 261.7 |
| 8.3             | 2.5  | 4.5 | 1.4               | 8                 | 2.4                   | 54                | 7.5                   | 130               | 59.0                  | 88                | 12.2                  | 212               | 96.2                  | 133               | 18.4                  | 322               | 146.1                 | 199               | 27.5                  | 483               | 219.1                 | 272            | 37.6  | 659  | 298.9 |
| 9               | 2.7  | 5   | 1.5               | 3                 | 0.9                   | 24                | 3.3                   | 53                | 24.0                  | 39                | 5.4                   | 87                | 39.5                  | 59                | 8.2                   | 132               | 59.9                  | 89                | 12.3                  | 198               | 89.8                  | 121            | 16.7  | 270  | 122.5 |
| 9               | 2.7  | 5   | 1.5               | 4                 | 1.2                   | 32                | 4.4                   | 71                | 32.2                  | 52                | 7.2                   | 116               | 52.6                  | 79                | 10.9                  | 176               | 79.8                  | 119               | 16.5                  | 263               | 119.3                 | 162            | 22.4  | 360  | 163.3 |
| 9               | 2.7  | 5   | 1.5               | 5                 | 1.5                   | 40                | 5.5                   | 89                | 40.4                  | 65                | 9.0                   | 145               | 65.8                  | 99                | 13.7                  | 220               | 99.8                  | 148               | 20.5                  | 329               | 149.2                 | 202            | 27.9  | 449  | 203.7 |
| 9               | 2.7  | 5   | 1.5               | 6                 | 1.8                   | 48                | 6.6                   | 106               | 48.1                  | 78                | 10.8                  | 174               | 78.9                  | 119               | 16.5                  | 264               | 119.8                 | 178               | 24.6                  | 395               | 179.2                 | 243            | 33.6  | 539  | 244.5 |
| 9               | 2.7  | 5   | 1.5               | 7                 | 2.1                   | 56                | 7.7                   | 124               | 56.2                  | 91                | 12.6                  | 203               | 92.1                  | 138               | 19.1                  | 308               | 139.7                 | 207               | 28.6                  | 461               | 209.1                 | 283            | 39.1  | 629  | 285.3 |
| 9               | 2.7  | 5   | 1.5               | 8                 | 2.4                   | 64                | 8.9                   | 142               | 64.4                  | 104               | 14.4                  | 232               | 105.2                 | 158               | 21.9                  | 352               | 159.7                 | 237               | 32.8                  | 527               | 239.0                 | 324            | 44.8  | 719  | 326.1 |

\* Actual values for above sizes may vary +/- 15% due to variations in materials, speed of compression, temperatures and tolerances.

The fender performance is engineered at 60% foam compression. The monopile deflection provides additional energy absorption for the same reaction force rating